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# IONOSPHERIC DATA IN JAPAN

FOR OCTOBER 1957

Vol. 9 No. 10



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Prepared by

**THE RADIO RESEARCH LABORATORIES**

KOKUBUNJI, TOKYO, JAPAN

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## CONTENTS

	Page
Site of the radio wave observatories.....	2
Symbols and Terminology .....	2
Graphs of Ionospheric Data .....	8
Tables of Ionospheric Data at Wakkanai.....	10
Tables of Ionospheric Data at Akita.....	22
Tables of Ionospheric Data at Kokubunji .....	34
Tables of Ionospheric Data at Yamagawa .....	48
Data on Solar Radio Emission .....	60
Radio Propagation Conditions .....	62



## 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

$f_0F2$	} The ordinary-wave critical frequency for the $F2$ , $F1$ and $E$ layers respectively.
$f_0F1$	
$f_0E$	
$f_0E_s$	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 $f_0E_s$ .
$h_pF2$	The virtual height of the $F2$ layer measured on the ordinary-wave branch at a frequency equal to $0.834 f_0F2$ .
$y_pF2$	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 $h_pF2$ 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 normal 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 preceding symbol on monthly tabulation sheets.

D	<i>greater than.....</i>
E	<i>less than.....</i>
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* A 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 thick 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*, at 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  $l$ .

" An  $E_s$  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  $6 \times 4$  dipole broadside array and an ordinary superheterodyne receiver. The type of observation is of intensity recording of both steady flux and outstanding occurrences.

**a. Daily Data**

*Steady flux*

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

*Variability*

Variability is expressed in four grades as follows:

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

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

**b. Outstanding occurrences**

*Starting time*

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

*Maximum time*

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

*Time of end*

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

*Type*

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

- S: simple rise and fall of intensity
- C: complex variation of intensity
- A: appears to be part of general activity
- D: distinct from (i.e. apparently superposed upon) the general activity
- M: multiple peaks separated by relatively long period of

quietness

F : multiple peaks separated by relatively short period of quietness

E : sudden commencement or rise of activity

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

*Maximum intensity*

Instantaneous: The highest value above the base level.

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

The tabulated circuits contain 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 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 prepared from the field intensities of 6 circuits received at Hiraiso, and are given in the tabulated form.

*Circuits and intensities*

WS.....WWV 20, 15 and 10 Mc (Washington, D.C.)  
S F.....WNA-27 7.6550 Mc; WND-20 10.4925 Mc  
          WNC-93 13.7525 Mc; WNC-37 17.4200 Mc (San Francisco)  
HA.....WWVH 15 and 10 Mc (Hawaii)  
TO.....JJY 15 and 10 Mc (Tokyo)  
MN.....DZM-28 14.5850 Mc (Manila)  
LN.....GIJ-37 14.6702 Mc (London)

*Drop-out Intensities* (in db) are tabulated for each circuit arranged above. *Start-time, Duration, Type* and *Importance* given in the table are determined from the data of a circuit (underlined) that secured the event with the highest confidence.

**Types**

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

**Importances**

Degrees of SWF are derived from the *Drop-out Intensity* of the underlined circuit with some statistical consideration and classified in 9 grades from 1- (slight) to 3+ (very great) as follows:

1-	2-	3-
1	2	3
1+	2+	3+

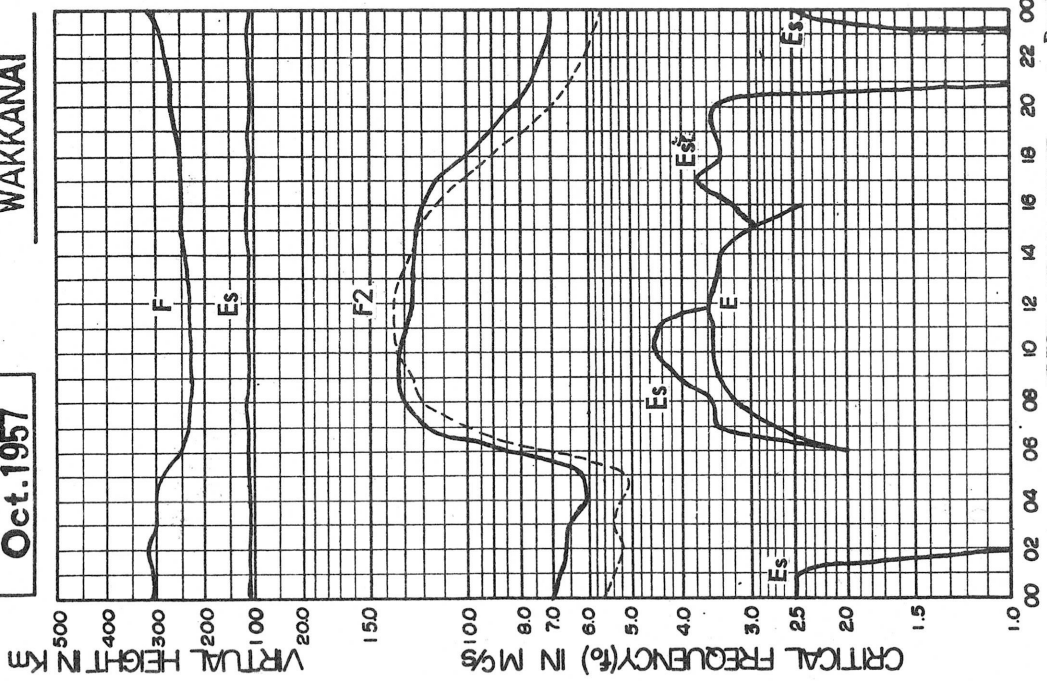
The data of sudden enhancement of atmospherics (SEA) observed on 28 kc are tabulated on each *Start-time, Duration* and *Importance*.

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

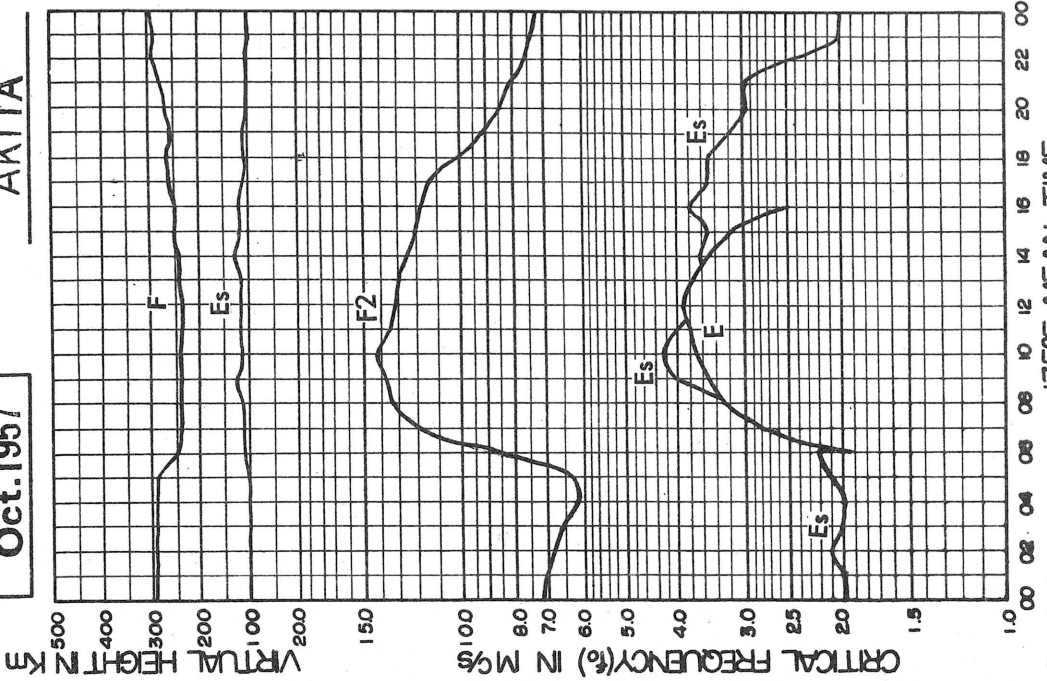
Oct. 1957

WAKKANAI



Oct. 1957

AKITA



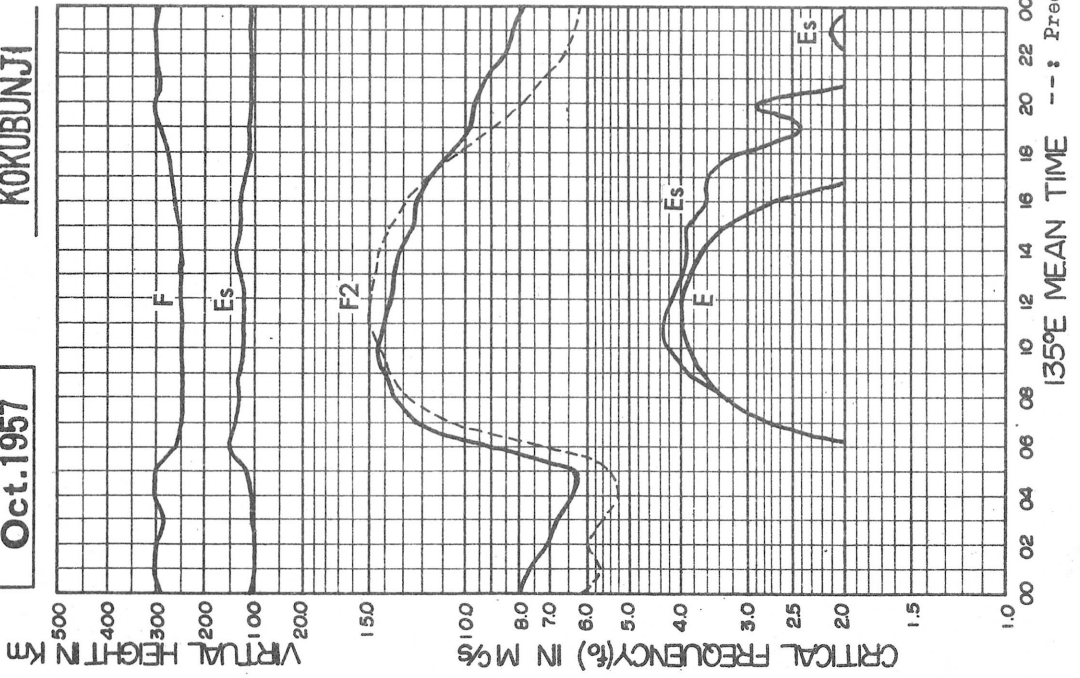
---: Predicted value in 3 months

advance by R.R.I.

IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS

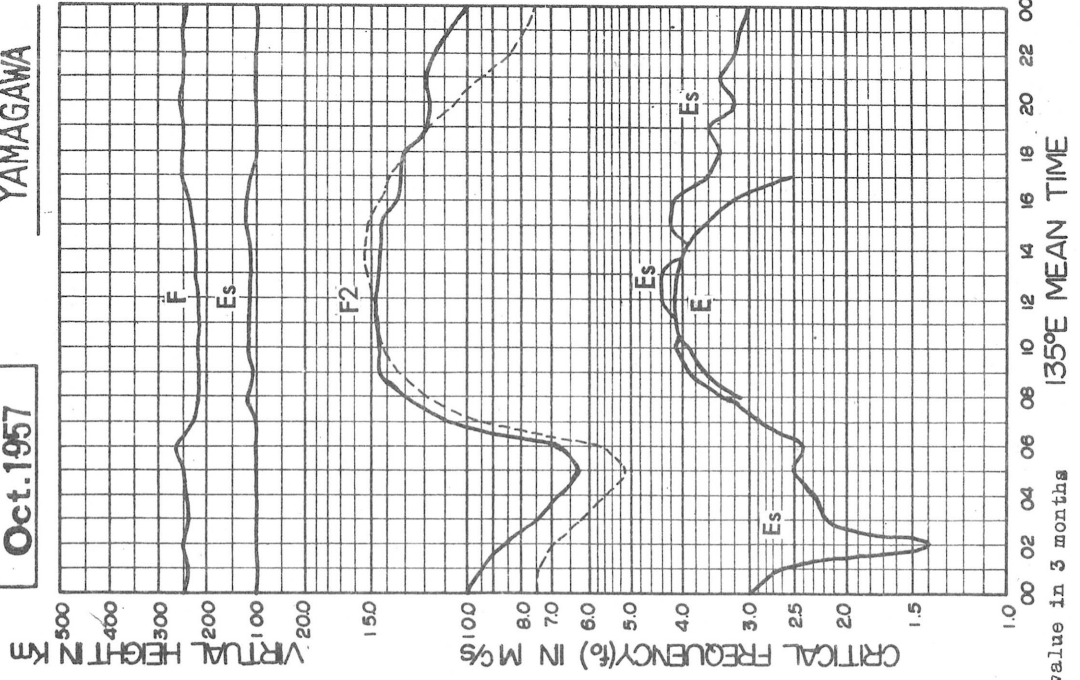
Oct. 1957

KOKUBUNJI



Oct. 1957

YAMAGAWA



135°E MEAN TIME ---: Predicted value in 3 months

135°E MEAN TIME

advance by R.R.I.



# IONOSPHERIC DATA

**Wakkanai**

Lat. 46° 23.6' N  
Long. 141° 41.1' E

135° E Mean Time (GMT.+9h.)

foF2

Oct. 1957

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	72	67	66	65	60	60	84	85	117	127	127	130	128 <sup>c</sup>	127	121	121	118	112	103	85	S	S	80	77	
2	67	66	68	65	62	60	78	80	128	128	130	124	125	119	124	123	122	112	95	88	82	75	73	72	
3	70	68	68	65	65	65	93	115	130	135	134	128	128	126	125	120	118	115	105	94	83	73	66	64	
4	68 <sup>s</sup>	62	60 <sup>A</sup>	58	61	64	86	114	130	132	131	128	128	128	125	126	122	115	103	90	81	76	73	70	
5	63	63	63	62	59	60	85	111	128	130	128	128	130	125	123	122	115	112	100	87	87	78	70	65	
6	67	65	65	60	60	63	90	115 <sup>c</sup>	140	133	135	128	128	126	123	121	115	105	96	88	75	71	68	67	
7	66	66	65	63	60	62	90	110	117	124 <sup>c</sup>	123	128	126	120	116	117	117	113	98	83	74	77	75	73	
8	71	70	71 <sup>s</sup>	73	70	70	99	119	130	135	128	130	128	125	123	122	120	115	98	92	80 <sup>s</sup>	73	74	71	
9	70	66	66	66	64	66 <sup>v</sup>	98	119	130	128	128	126	123	121	120	121	120	113	103	93	81	82	79 <sup>s</sup>	73	
10	63	60	60	60	57	62	93	123	133	128	135	130	128	128	122	115	115	110	95	90	80	74	76	65	
11	61	59	58	60	60 <sup>v</sup>	61	78	122	133	135	134 <sup>R</sup>	128	128	128	126	121	118	113	95	85	76 <sup>s</sup>	67	60	58	
12	57	58	55	54	50	50	63	90	87	88	93	91	100	97	103	100	98	92	80	74	61	59	62	58	
13	54	53	50	49	50	53	87	112	C	C	C	C	C	C	C	C	C	106	98	90	82 <sup>s</sup>	72	70	70	
14	66	60	58	57	56	58	83	120	130	138	133	128	128	128	126	121	115	120	105	92	73	69	73	73 <sup>s</sup>	
15	70	59	55	57	58	55	63	86	95	91	89	79	80	83	88	90	88	85	77	65	61	58	55	51	
16	62	53	51	51	45	43	73	115	130	133	130	128	128	126	124	120	115	108	91	83 <sup>s</sup>	78 <sup>s</sup>	73	70	66	
17	67	67	65	62	60	60	78	114	130	135	133	132 <sup>s</sup>	127	126	125	123	115	107	91	87 <sup>s</sup>	82	75	70	72	
18	77	74	71	68	66	70	91	120	142 <sup>R</sup>	135	130	130	128	126	125	122	115	107	100	72	84 <sup>s</sup>	81	75	72	
19	72	68	67	67	62	59 <sup>F</sup>	80	121	135	138 <sup>R</sup>	130	128	128	128	123	121	115	104	98	93	87	73	70	70	
20	70	68	66	66	68	68 <sup>v</sup>	89	126	135	138 <sup>R</sup>	135	135 <sup>R</sup>	133 <sup>R</sup>	127	125	125	120	111	102	93	85 <sup>s</sup>	77 <sup>s</sup>	73	70	
21	71	72	73	68	65	66	70	124	138	135	132 <sup>s</sup>	130	130	128	128	126	122	120	108	93	85 <sup>s</sup>	78 <sup>s</sup>	72	71	
22	68	68	64	65	65	66	83	107	130	138	135	137	128	128	127	126	122	120	108	98	87	78 <sup>s</sup>	78	78	
23	81	75	73	68	71	73	98	130	143	140 <sup>R</sup>	135	135	133	130	128	128	125	120	103	92 <sup>A</sup>	85 <sup>s</sup>	78	74	73	
24	73	71	70	68	65	64	85	126	135	R	R	R	135 <sup>R</sup>	130	128	128	125	118	100	88	88	80	70	65	
25	68	71	67	65	60	52	78	122	R	R	R	R	130	128	127	124	113	97	90	80	80	78 <sup>s</sup>	75	75	
26	75	73	73	72	70	68	87	128	R	R	R	130 <sup>R</sup>	130	128	128	126	122	118	108	93	91	87	80	72	
27	74	75	73	69	68 <sup>v</sup>	70	95	C	C	C	C	C	C	C	C	C	C	113	104	92	83	80	66	65	
28	70	74	61	67	65	75 <sup>c</sup>	92	128	140	R	R	R	R	R	130	128	125	117	104	98	93 <sup>s</sup>	91	75	76	
29	73	73	72	70	59	61	85	125	129 <sup>R</sup>	132 <sup>R</sup>	R	R	R	128	128	123	120	102	90	88	80 <sup>s</sup>	78 <sup>s</sup>	65	65	
30	68	70	71	69	63	64	77	120	132 <sup>R</sup>	R	R	R	R	127	126	125	124	114	103	91	90	83	72	70	
31	72	69	73 <sup>s</sup>	73	67	58	73	115	135 <sup>R</sup>	R	R	R	R	130	128	126	121	115	100	92	83	74	68	61	
No.	31	31	31	31	31	31	31	30	27	23	22	23	25	28	29	29	29	31	31	31	30	30	31	31	
Median	70	68	66	65	61	62	85	119	130	133	132	130	128	127	125	122	120	113	100	90	82	76	73	70	
U.A.	72	71	71	68	65	66	91	123	135	138	135	131	130	128	128	126	122	117	103	93	85	80	75	73	
L.Q.	61	62	60	60	57	59	78	111	128	128	128	128	128	126	123	121	115	108	96	88	80	73	70	65	
Q.R.	11	09	11	08	06	07	13	12	07	10	07	03	02	02	05	05	07	09	07	05	05	05	07	05	08

Sweep 1.0 Mc to 2.0 Mc in \_\_\_\_\_ min in automatic operation.

foF2

The Radio Research Laboratories, Japan.

**W 1**

# IONOSPHERIC DATA

Lat. 45° 23.6' N  
 Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foF1

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	C	L										
2												L	L	L										
3														L										
4														L										
5												L	L	L										
6								C				L	L	L										
7									C		L	U <sub>A2</sub> L		L										
8											L	L	L	L										
9											L	L	L	L										
10											L	A	L	L										
11											L	L	L	L		L								
12								L	L		L	L	L	L										
13								C	C		C	C	C	C		C								
14											L	L	L	L										
15								L	L	L	6.1	5.9 <sup>L</sup>	5.9 <sup>L</sup>	L	L	L								
16									L		L	L	L	L										
17											L	L	L	L										
18											L	L	L	L										
19											L	L	L	L		L								
20											L	L	L	L										
21											L	L	L	L										
22											L	L	L	L										
23											L	L	L	L										
24									L		L	L	L	L										
25											L	L	L	L										
26											L	L	L	L		L								
27								C	C		C	C	C	C		C								
28											L	L	L	L										
29											L	L	L	L										
30											L	L	L	L										
31											L	L	L	L										
No.											1	2	1											
Median											6.1	6.0	5.9											

Lat. 45° 23.6' N  
Long. 141° 41.1' E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

foE

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						2.00	2.80	3.25	3.55	3.50	3.50	3.55 <sup>C</sup>	3.50	3.40	3.00	C								
2						2.25	2.75	3.35	3.50	3.50	3.50	3.60	3.70	3.60	3.10	2.60								
3						A	2.90	3.15	3.35	3.50	3.50	3.50 <sup>H</sup>	A	A	3.05	A								
4						A	2.75	3.30 <sup>H</sup>	3.50	3.65	3.70	3.50	3.50	3.40	2.90	2.60 <sup>H</sup>								
5						2.05	2.75 <sup>A</sup>	3.20	3.50	3.60	3.60	3.60	3.50	3.15	3.05	2.55	A							
6						A	C	A	3.50	3.50	3.45	3.40	3.45 <sup>A</sup>	3.50	3.05	2.35								
7						2.00	2.70	3.15	3.50 <sup>C</sup>	3.60	3.55	3.70	3.40 <sup>A</sup>	3.25	3.05	2.60 <sup>H</sup>	A							
8						2.05	2.85	3.35	3.55	3.65	3.55	3.60	3.65 <sup>H</sup>	3.50	3.10	2.50	1.70							
9						2.05	2.75	3.20	3.50 <sup>H</sup>	3.50	3.50	3.50	3.50 <sup>A</sup>	3.50	3.05	2.60 <sup>H</sup>								
10						2.15	2.75	3.15	3.30	A	A	3.50	3.50	3.50	3.10	2.45								
11						2.25	2.90	3.35	3.55	3.60	A	A	3.50	3.40 <sup>H</sup>	3.15	2.40								
12						A	2.65	3.15	3.50	3.55	3.65	3.55	3.50	3.50	3.10	2.50								
13						2.00	A	C	C	C	C	C	C	C	C	C								
14						2.10	2.60	3.20	3.45 <sup>H</sup>	3.50	3.55 <sup>A</sup>	3.60	3.55	3.35	3.00	2.50 <sup>H</sup>								
15						1.95	2.60	3.15	3.30	A	A	A	3.50	3.35	3.00	2.35								
16						1.80 <sup>S</sup>	2.50	3.15 <sup>A</sup>	3.50	3.60	3.55	A	A	A	A	2.35								
17						A	2.75 <sup>A</sup>	3.05	3.50	3.50	A	A	A	A	A	A								
18						A	2.75 <sup>A</sup>	3.05	3.50	3.50	3.55	3.50	3.50	3.50	3.00	2.30								
19							2.70	3.30	A	A	A	3.60	A	A	A	A								
20							2.70	3.30	3.50	3.50	3.40 <sup>A</sup>	3.55 <sup>B</sup>	3.80	3.40	3.00	2.30								
21							2.75	3.20	3.50	3.70	3.80	3.80	3.60	3.40	2.90	A								
22							A	A	A	3.55	3.50	3.50	3.55	3.40	3.10	A								
23							2.50	3.10	A	A	A	3.55	3.50	3.50	2.95	2.05								
24							A	A	A	A	A	A	3.50	3.40 <sup>A</sup>	2.95	2.20								
25						2.00	A	A	A	A	3.60	3.60	3.50	3.35	2.80	2.00								
26						1.80	A	A	A	A	A	3.70	3.55	3.40	2.90	A								
27							C	C	C	C	C	C	C	C	C	C								
28						1.75	2.70	2.95	3.10 <sup>R</sup>	3.50	3.90 <sup>H</sup>	3.80	3.60 <sup>H</sup>	3.50	A	A								
29						2.35	A	A	A	A	3.60	3.55	3.30	2.90	1.90									
30						2.45	3.00 <sup>A</sup>	3.45	3.55	3.65	3.55	3.60	3.30	2.65	1.95									
31						A	A	A	A	A	3.55	3.60 <sup>A</sup>	3.50	3.15	2.75	A								
No.						15	2.2	2.2	2.1	1.9	2.0	2.4	2.5	2.5	2.5	2.0	1							
Median						2.00	2.70	3.20	3.50	3.55	3.55	3.60	3.50	3.40	3.00	2.40	1.70							

Sweep 1.0 Mc to 2.6.7 Mc in 1 min in automatic operation.

foE

The Radio Research Laboratories, Japan.

W 3

IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foEs

Oct. 1957

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	3.0M	2.5M	2.5M	E	E	E	2.3	3.1	3.5	G	6.4M	3.9	C	G	G	G	C	C	C	C	C	C	C	C
2	E	E	E	E	E	E	3.5	3.5	G	G	4.0	4.5	G	G	G	G	G	E	E	E	E	E	E	E
3	E	E	E	C	E	3.5	5.5M	3.5	G	G	3.8	3.9	G	4.5M	4.7M	3.9M	3.5	4.0	3.5M	5.5M	5.5M	6.5M	6.0M	2.1M
4	5.3M	4.0M	7.0M	11.5M	8.0M	5.2M	3.5M	5.3M	3.6	4.2	4.5	5.7M	4.2	3.7	4.0	3.5	G	E	E	E	2.8M	3.0M	E	4.8M
5	4.2M	5.8M	3.0M	2.4M	2.4M	3.5M	G	3.5M	G	4.0	4.5	4.4	4.2	4.0	4.0	3.4	G	3.2M	E	E	E	E	E	E
6	E	E	E	E	E	E	3.5M	C	3.1	4.0	6.5M	5.8M	G	4.2	4.0	3.6	2.7	E	E	E	2.0	E	E	2.3
7	6.3M	3.0M	2.3M	2.6M	E	E	G	3.1M	G	C	4.0	G	G	6.2M	3.9	3.5	G	3.5M	E	E	E	3.0M	E	E
8	E	E	E	E	E	E	2.3M	G	5.5M	G	G	6.0M	3.5	3.5	G	G	G	G	2.5	4.7M	3.5M	5.3M	6.6M	5.2M
9	3.5M	3.5M	E	E	E	E	2.7	3.9	4.1	4.2	4.2	5.2M	4.0	G	G	G	G	3.5M	3.5M	5.5M	3.5M	4.9M	E	3.3M
10	3.5M	3.5M	3.5M	E	E	E	G	3.5	3.6	5.2M	10.1M	8.0M	G	G	4.1	6.3M	3.5	4.5	3.5M	E	E	3.5M	E	2.6M
11	E	3.1M	2.4M	2.3M	E	E	E	G	3.5	G	5.5M	5.5M	8.0M	G	G	G	3.0	5.0M	3.4M	3.5M	4.3M	3.5M	3.5M	3.5M
12	3.5M	2.8M	3.2M	2.4M	E	2.3M	3.0M	3.5M	3.7	9.2	G	3.5G	G	G	G	G	G	G	2.6	3.4M	E	6.2M	E	2.5
13	2.5	2.5	E	E	E	E	G	3.5M	C	C	C	C	C	C	C	C	C	4.5M	3.4M	4.2M	4.5M	5.0M	3.5M	E
14	E	E	E	E	E	E	E	3.5M	G	G	5.3M	5.7M	G	G	G	G	G	6.5M	3.4M	5.0M	5.0M	E	E	E
15	E	E	E	E	E	E	G	3.5	G	G	5.2M	5.5M	5.5M	G	G	G	3.8	3.1	4.5M	E	3.5M	3.4M	E	3.5M
16	E	3.4M	E	E	E	E	E	G	3.5	G	G	G	4.4	5.3M	6.6M	4.5M	2.8	3.5M	5.2M	4.2M	6.3M	5.5M	3.5M	3.2M
17	3.5M	3.8M	3.5M	3.1M	3.5M	3.5M	4.2M	4.6M	4.6M	4.2	3.5	4.5M	3.8	3.5	3.8	5.1M	3.5M	4.5M	4.7M	3.5M	3.5M	6.6M	E	E
18	E	E	E	E	E	2.3	6.5M	4.5	3.5	G	G	G	G	4.7M	G	3.6	G	4.4M	4.7M	3.5M	5.7M	7.0M	5.0M	E
19	3.2M	3.5M	4.0M	3.5M	3.5M	E	E	E	3.5	5.3M	6.0M	4.5M	4.4	6.0M	6.1M	6.0M	3.5M	4.8M	3.6M	3.5M	5.0M	E	E	E
20	E	E	2.8M	3.5M	E	E	E	G	G	G	G	3.7	B	5.3	G	4.0	3.5	5.2M	E	3.5M	3.5M	E	E	E
21	E	2.3M	3.5M	3.5M	5.5M	E	E	G	3.5	4.0	G	4.1	4.8	G	4.2	6.4M	10.5M	4.1M	4.1M	3.5M	E	E	E	E
22	E	E	E	3.4M	3.5M	6.5M	5.3M	3.5M	3.5M	5.7M	G	G	G	G	G	G	5.0M	5.0M	E	E	E	E	E	E
23	E	E	E	E	E	E	E	G	G	5.7M	6.3M	5.7M	G	G	G	G	3.5M	3.0M	3.5M	1.28M	5.5M	3.4M	E	E
24	E	3.5M	E	E	E	E	E	3.5	3.5	5.2M	5.0M	5.5M	4.4M	3.5	3.6	G	3.2	4.7M	3.5M	E	E	E	3.1M	2.0
25	3.4M	E	E	E	E	E	E	G	3.5M	3.5	4.5M	6.5M	G	G	G	G	2.7	E	E	3.2M	3.2M	3.5M	3.5M	3.5M
26	3.1M	3.0M	2.8M	3.2M	2.4M	3.0M	G	4.0M	5.5M	5.5M	5.0M	5.2M	4.0	3.4G	G	G	4.0M	4.0M	3.5M	3.5M	3.5M	E	3.5M	3.4M
27	3.1M	2.3M	E	2.4M	3.4M	E	E	C	C	C	C	C	C	C	C	C	C	C	3.5M	3.5M	3.5M	E	E	E
28	3.5M	3.5M	2.3M	2.4M	E	C	E	G	4.2	5.5M	3.4G	G	G	G	G	3.5M	6.4M	3.1M	5.0M	5.0M	2.5M	E	E	3.5M
29	3.9M	3.1M	3.4M	3.0M	2.4M	E	E	G	3.7	5.1M	5.8M	4.7M	G	G	G	G	4.4M	3.5M	4.4M	3.5M	5.6M	5.0M	3.4M	3.6M
30	3.4M	2.4M	3.5M	3.5M	3.1M	3.2M	3.1M	2.0G	3.5M	G	G	G	G	G	G	G	2.3	5.5M	3.0M	3.5M	E	E	E	E
31	E	E	E	E	E	E	3.5M	4.5M	7.5M	5.5M	5.5M	5.5M	G	G	G	3.4	3.5M	E	3.5M	4.5M	3.5M	E	2.6M	E
No.	3.1	3.1	3.1	3.0	3.1	3.0	3.1	2.9	2.9	2.8	2.9	2.9	2.7	2.9	2.9	2.9	2.8	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Median	2.5	2.5M	E	E	E	E	G	3.5M	3.5	4.1M	4.5M	4.5M	G	G	G	G	3.0	3.8M	3.4M	3.5M	3.5M	E	E	E
U.Q.	3.5	3.5	3.2	3.1	2.4	3.5	3.5	3.5	3.7	5.2	5.6	5.5	4.4	4.1	4.0	3.8	3.5	4.5	3.5	4.2	4.5	4.9	3.5	3.4
L.Q.	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	2.6	E	E	E	E	E	E
Q.R.																		1.9						

Sweep 1.0 Mc to 20.7 Mc in 1.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

W 4

foEs

Lat. 45° 23.6' N  
Long. 141° 41.1' E

IONOSPHERIC DATA

Wakkanai

135° E Mean Time (GMT.+9h.)

fpEs

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	G	G	G	G	5.0	G	G	G	G	G	C	C	C	C	C	C	C	C
2	E	E	E	C	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
3	E	E	E	C	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
4	3.7	2.8	A	3.1	5.0	E	G	G	G	G	4.4	4.0	4.1	3.9	4.0	G	G	E	E	E	E	E	E	2.6
5	2.5	2.0	E	E	E	E	G	G	G	G	4.4	4.1	4.1	4.1	4.0	G	G	E	E	E	E	E	E	E
6	E	E	E	E	E	E	G	G	G	G	4.1	4.1	4.1	5.5	4.0	G	G	E	E	E	E	E	E	E
7	E	E	E	E	E	E	G	G	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
8	E	E	E	E	E	E	G	G	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
9	E	E	E	E	E	E	G	G	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
10	E	E	E	E	E	E	G	G	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
11	E	E	E	E	E	E	G	G	G	G	4.6	4.6	4.6	5.5	4.6	G	G	E	E	E	E	E	E	E
12	E	E	E	E	E	E	G	G	G	G	2.7	2.7	2.7	2.7	2.7	G	G	E	E	E	E	E	E	E
13	E	E	E	E	E	E	G	G	G	G	2.7	2.7	2.7	2.7	2.7	G	G	E	E	E	E	E	E	E
14	E	E	E	E	E	E	G	G	G	G	2.7	2.7	2.7	2.7	2.7	G	G	E	E	E	E	E	E	E
15	E	E	E	E	E	E	G	G	G	G	2.7	2.7	2.7	2.7	2.7	G	G	E	E	E	E	E	E	E
16	E	E	E	E	E	E	G	G	G	G	2.7	2.7	2.7	2.7	2.7	G	G	E	E	E	E	E	E	E
17	2.6	3.0	2.1	E	E	E	2.2	3.7	G	G	4.2	4.2	4.2	4.2	4.2	G	G	E	E	E	E	E	E	E
18	E	E	E	E	E	E	2.6	3.9	G	G	4.1	4.1	4.1	4.1	4.1	G	G	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	G	G	4.1	4.1	4.1	4.1	4.1	G	G	E	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	G	G	4.1	4.1	4.1	4.1	4.1	G	G	E	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	G	G	4.1	4.1	4.1	4.1	4.1	G	G	E	E	E	E	E	E	E
22	E	E	E	E	E	E	3.5	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	G	G	4.5	4.5	4.5	4.5	4.5	G	G	E	E	E	E	E	E	E
29	2.4	E	E	E	E	E	E	E	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	G	G	4.0	4.0	4.0	4.0	4.0	G	G	E	E	E	E	E	E	E
No.	31	31	31	30	31	30	31	29	29	28	29	29	27	29	29	29	28	30	30	30	30	30	30	30
Median	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E

Sweep 1.0 Mc to 2.0.7 Mc in 1 min in automatic operation.

fpEs

The Radio Research Laboratories, Japan.

W 5



IONOSPHERIC DATA

Lat. 45° 23.8' N  
Long. 141° 41.1' E

Wakanai

138° E Mean Time (GMT.+ 9h.)

f-min

Oct. 1957

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 <sup>S</sup>	E1.25 <sup>S</sup>	E1.10 <sup>S</sup>	E	E	E1.50 <sup>S</sup>	1.80	1.65	1.80	1.90	2.00	2.00	1.85 <sup>S</sup>	2.05	2.00	2.00	2.80	2.10	E2.00 <sup>S</sup>	E2.00 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.70
2	E1.40 <sup>S</sup>	E1.30 <sup>S</sup>	E1.50 <sup>S</sup>	E	E	E1.50 <sup>S</sup>	2.00	2.00	2.00	2.00	2.00	2.60	2.20	2.05	2.00	2.00	1.80	1.80	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
3	E1.60 <sup>S</sup>	E1.40 <sup>S</sup>	E	C	E1.75 <sup>S</sup>	E1.50 <sup>S</sup>	E1.60 <sup>S</sup>	1.65	1.80	1.95	1.90	2.00	2.05	2.05	2.00	1.85	1.85	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
4	E1.60 <sup>S</sup>	E1.30 <sup>S</sup>	E	E	E	E1.10 <sup>S</sup>	E1.60 <sup>S</sup>	1.70	1.85	2.05	2.00	2.05	2.10	1.95	1.85	1.85	1.80	1.85	1.70	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
5	E1.55 <sup>S</sup>	E	E	E	E	E1.50 <sup>S</sup>	E1.60 <sup>S</sup>	1.90	1.70	1.80	2.00	2.35	2.10	1.85	1.85	1.80	1.70	1.80	1.70	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
6	E1.60 <sup>S</sup>	E1.25 <sup>S</sup>	E	E	E	E1.60 <sup>S</sup>	E1.65 <sup>S</sup>	1.75	1.75	1.80	1.85	1.70	1.60	1.80	1.60	1.60	1.60	1.90	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
7	E1.60 <sup>S</sup>	E1.25 <sup>S</sup>	E	E	E	E1.55 <sup>S</sup>	1.75	E1.60 <sup>S</sup>	1.85	E1.80 <sup>S</sup>	1.90	1.80	2.10	2.00	1.80	1.80	1.60	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
8	1.60	E1.25 <sup>S</sup>	E	E	E	E1.20 <sup>S</sup>	1.70	1.75	1.80	1.80	2.00	1.95	1.70	1.65	1.80	1.80	1.70	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
9	1.60	E1.25 <sup>S</sup>	E1.10 <sup>S</sup>	E1.25 <sup>S</sup>	E1.10 <sup>S</sup>	E1.50 <sup>S</sup>	1.65	1.80	1.80	1.85	1.80	2.00	1.85	2.65	1.80	1.80	1.70	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
10	1.60	E1.10 <sup>S</sup>	E	E	E	E1.50 <sup>S</sup>	1.70	1.80	2.00	1.85	1.85	1.85	1.85	1.80	1.80	1.70	1.75	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
11	1.60	E1.05 <sup>S</sup>	E	E	E	E1.45 <sup>S</sup>	1.60	1.80	1.85	1.90	2.00	2.05	2.05	1.95	1.90	1.60	1.65	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
12	E1.40 <sup>S</sup>	E1.25 <sup>S</sup>	E	E	E	E1.25 <sup>S</sup>	1.60	1.60	1.85	1.85	1.80	2.00	1.80	1.90	1.80	1.80	1.80	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
13	1.60	E1.30 <sup>S</sup>	E	E	E	E1.35 <sup>S</sup>	1.65	1.80	C	C	C	C	C	C	C	C	C	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
14	1.60	E1.30 <sup>S</sup>	E	E	E	E1.50 <sup>S</sup>	1.60	1.80	1.65	2.05	1.95	2.00	2.15	2.05	1.80	1.85	1.60	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
15	1.60	E1.50 <sup>S</sup>	E1.10 <sup>S</sup>	E	E	E1.50 <sup>S</sup>	1.60	1.65	1.85	2.00	2.35	2.05	2.50	2.60	1.85	1.80	1.70	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
16	1.60	E1.30 <sup>S</sup>	1.10	E	E	E1.40 <sup>S</sup>	1.80	1.80	1.80	1.80	2.05	2.80	2.40	2.05	1.95	1.80	1.70	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
17	1.60	E1.25 <sup>S</sup>	E	E	E	E1.40 <sup>S</sup>	1.60	1.80	2.00	2.00	2.10	2.45	2.00	1.90	1.85	1.80	1.70	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
18	1.60	E1.50 <sup>S</sup>	E1.20 <sup>S</sup>	E1.75 <sup>S</sup>	E	E1.40 <sup>S</sup>	1.70	1.90	1.80	1.85	2.50	2.50	1.80	1.80	1.80	1.95	1.65	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
19	1.60	E1.50 <sup>S</sup>	E1.15 <sup>S</sup>	E	E	E1.50 <sup>S</sup>	1.80	1.80	1.80	1.80	2.00	2.00	2.10	1.90	1.95	1.85	1.80	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
20	1.60	1.60	E1.15 <sup>S</sup>	E	E	E1.40 <sup>S</sup>	2.00	1.80	1.80	1.85	1.80	2.60	5.00	2.10	1.90	1.80	1.80	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
21	1.60	E1.25 <sup>S</sup>	E1.10 <sup>S</sup>	E	E	E1.50 <sup>S</sup>	1.90	1.75	1.85	1.80	2.05	2.10	2.10	1.85	2.00	1.85	1.80	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
22	1.60	E1.20 <sup>S</sup>	E1.05 <sup>S</sup>	E	E	E1.40 <sup>S</sup>	1.60	1.80	1.80	1.80	1.85	2.00	2.05	2.00	1.85	1.80	1.65	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
23	1.60	E1.25 <sup>S</sup>	E	E	E	E1.50 <sup>S</sup>	1.75	1.70	1.75	1.90	2.10	2.00	2.10	1.80	1.80	1.80	1.75	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
24	1.60	E1.20 <sup>S</sup>	E1.10 <sup>S</sup>	E	E	E1.40 <sup>S</sup>	E1.50 <sup>S</sup>	1.60	1.80	2.35	2.05	1.85	1.70	2.00	1.65	1.70	1.80	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
25	1.60	E1.45 <sup>S</sup>	E1.10 <sup>S</sup>	E1.05 <sup>S</sup>	E	E1.40 <sup>S</sup>	1.60	1.60	2.00	1.85	1.95	1.95	1.80	2.00	1.85	1.80	1.70	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
26	1.60	E1.25 <sup>S</sup>	E	E	E	E1.40 <sup>S</sup>	1.65	1.60	1.85	1.85	2.45	2.50	2.00	1.85	1.85	1.80	1.60	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
27	1.60	E1.20 <sup>S</sup>	E	E	E	E1.50 <sup>S</sup>	1.70	C	C	C	C	C	C	C	C	C	C	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
28	1.60	E1.25 <sup>S</sup>	E	E	E	C	1.60	1.80	1.85	1.80	2.05	2.05	1.85	1.85	1.85	1.80	1.70	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
29	1.60	E1.30 <sup>S</sup>	E	E	E	E1.50 <sup>S</sup>	1.70	1.60	1.80	1.80	1.90	1.85	1.90	1.85	1.80	1.80	1.70	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
30	1.60	E1.30 <sup>S</sup>	E	E	E	E1.50 <sup>S</sup>	1.60	1.60	1.80	1.80	1.90	1.90	1.90	1.80	1.80	1.80	1.65	1.60	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
31	1.60	E1.30 <sup>S</sup>	E	E	E	E1.40 <sup>S</sup>	1.60	1.60	1.85	1.85	1.85	2.10	2.00	1.80	1.70	1.80	1.65	1.65	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>	E1.60 <sup>S</sup>
No.	31	31	20	23	25	30	31	30	29	29	29	29	29	29	29	29	29	31	30	30	31	31	31	31
Median	1.60	E1.25 <sup>S</sup>	E	E	E	E1.50	1.65	1.75	1.80	1.85	2.00	2.00	2.00	1.90	1.85	1.80	1.70	1.60	E1.60	E1.60	E1.60	E1.60	E1.60	E1.60

Sweep 1.0 Mc to 2.7 Mc in 1 min in automatic operation.

The Radio Research Laboratories, Japan.

f-min

W 6

Lat. 45° 23.6' N  
Long. 141° 41.1' E

# Wakkanai

## IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

Oct. 1957

(M3000)F2

(M3000)F2

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	2.45	2.40	2.40	2.45	2.45	2.55	2.90	2.90	2.90	3.10	2.85	2.90	2.85	2.75	2.70	2.70	2.80	2.85	2.80	2.70	S	S	2.60	2.55
2	2.40	2.35	2.40	2.45	2.40	2.45	3.00	3.05	3.05	3.05	2.95	2.75	2.80	2.60	2.65	2.75	2.85	2.85	2.75	2.75	2.70	2.65	2.60	2.65
3	2.65	2.55	2.45	2.45	2.45	2.60	3.05	3.05	3.05	3.00	2.90	2.90	2.85	2.75	2.70	2.70	2.70	2.80	2.85	2.95	2.80	2.65	2.45	2.35
4	2.50	2.45	2.35	2.45	2.35	2.55	2.90	3.00	3.00	3.00	2.90	2.90	2.75	2.80	2.70	2.75	2.80	2.95	2.75	2.75	2.75	2.85	2.60	2.55
5	2.40	2.35	2.40	2.40	2.55	2.50	3.00	3.05	3.05	3.05	3.05	2.85	2.80	2.70	2.75	2.70	2.80	2.75	2.70	2.70	2.80	2.80	2.60	2.50
6	2.55	2.60	2.65	2.50	2.45	2.55	3.10	3.00	3.00	3.05	3.00	3.00	2.85	2.75	2.55	2.75	2.85	2.75	2.85	2.85	2.75	2.65	2.55	2.70
7	2.55	2.70	2.70	2.75	2.65	2.75	3.20	3.20	3.10	3.10	2.90	2.90	2.80	2.70	2.65	2.75	2.80	2.85	2.75	2.90	2.70	2.55	2.70	2.65
8	2.65	2.45	2.45	2.50	2.60	2.60	2.90	3.05	3.05	3.05	3.00	2.85	2.75	2.70	2.65	2.70	2.75	2.80	2.80	2.75	2.75	2.75	2.60	2.80
9	2.70	2.60	2.60	2.65	2.50	2.70	2.95	3.10	3.05	3.00	2.95	2.95	2.65	2.65	2.60	2.70	2.65	2.70	2.55	2.80	2.70	2.70	2.75	2.85
10	2.60	2.35	2.35	2.45	2.40	2.35	2.85	3.20	3.00	3.05	2.90	2.95	2.75	2.65	2.60	2.60	2.60	2.65	2.55	2.70	2.80	2.40	2.65	2.65
11	2.30	2.35	2.45	2.40	2.45	2.55	2.85	2.85	2.95	3.05	3.00	2.85	2.85	2.65	2.70	2.60	2.70	2.65	2.65	2.65	2.70	2.35	2.40	2.15
12	2.10	2.25	2.20	2.20	2.25	2.25	2.55	2.80	2.85	2.70	2.70	2.65	2.65	2.55	2.50	2.75	2.70	2.70	2.70	2.65	2.60	2.40	2.45	2.50
13	2.40	2.30	2.25	2.25	2.20	2.20	2.90	2.85	C	C	C	C	C	C	C	C	C	C	2.60	2.65	2.70	2.70	2.65	2.50
14	2.40	2.35	2.40	2.40	2.45	2.45	2.90	3.00	3.05	3.05	3.00	2.80	2.70	2.35	2.75	2.55	2.85	2.65	2.60	2.65	2.60	2.30	2.45	2.55
15	2.70	2.20	2.15	2.15	2.25	2.25	2.30	2.65	2.55	2.55	2.15	2.45	2.50	2.55	2.55	2.70	2.75	2.75	2.65	2.50	2.60	2.55	2.35	2.25
16	2.20	2.30	2.25	2.30	2.25	2.25	2.75	2.85	3.00	2.95	2.90	2.75	2.80	2.60	2.60	2.60	2.65	2.75	2.70	2.70	2.70	2.65	2.55	2.55
17	2.50	2.50	2.45	2.50	2.50	2.50	3.00	2.90	3.10	3.00	2.85	2.90	2.70	2.65	2.50	2.55	2.55	2.55	2.65	2.65	2.60	2.40	2.65	2.60
18	2.65	2.70	2.40	2.50	2.45	2.85	2.85	2.90	3.00	3.10	2.80	2.85	2.65	2.50	2.55	2.55	2.55	2.55	2.65	2.65	2.65	2.60	2.65	2.50
19	2.50	2.55	2.50	2.55	2.60	2.40	2.75	3.00	3.05	3.05	3.00	2.85	2.75	2.65	2.50	2.70	2.55	2.60	2.55	2.70	2.60	2.55	2.50	2.45
20	2.45	2.45	2.35	2.45	2.50	2.55	2.55	3.00	3.05	3.05	2.85	2.85	2.65	2.60	2.50	2.55	2.60	2.60	2.60	2.60	2.60	2.65	2.70	2.60
21	2.35	2.45	2.45	2.40	2.30	2.40	2.75	2.85	3.05	3.00	2.80	2.90	2.85	2.70	2.65	2.65	2.60	2.60	2.60	2.65	2.65	2.65	2.50	2.45
22	2.40	2.40	2.30	2.25	2.25	2.45	2.85	2.75	3.05	2.95	3.00	3.00	2.90	2.80	2.80	2.80	2.75	2.65	2.60	2.55	2.55	2.50	2.75	2.45
23	2.45	2.45	2.45	2.35	2.30	2.55	2.75	3.00	3.05	3.10	3.00	2.95	2.85	2.60	2.80	2.75	2.65	2.60	2.55	2.65	2.75	2.65	2.60	2.50
24	2.55	2.55	2.50	2.55	2.80	2.65	2.85	2.90	3.05	R	R	R	2.80	2.80	2.70	2.70	2.70	2.60	2.70	2.65	2.65	2.75	2.60	2.40
25	2.40	2.55	2.55	2.60	2.70	2.30	2.85	2.90	R	R	R	2.90	2.80	2.70	2.70	2.70	2.65	2.65	2.70	2.60	2.80	2.70	2.65	2.70
26	2.65	2.55	2.65	2.55	2.65	2.45	2.80	3.05	R	R	R	2.90	2.80	2.65	2.70	2.60	2.55	2.55	2.60	2.70	2.65	2.75	2.70	2.45
27	2.55	2.55	2.55	2.50	2.55	2.55	2.75	C	C	C	C	C	C	C	C	C	C	C	2.60	2.65	2.70	2.55	2.55	2.25
28	2.40	2.60	2.25	2.40	2.35	2.50	2.70	3.05	R	R	R	R	R	R	2.65	2.55	2.55	2.50	2.55	2.55	2.60	2.70	2.55	2.50
29	2.40	2.40	2.35	2.45	2.20	2.35	2.90	2.90	3.00	3.00	R	R	R	R	2.65	2.55	2.60	2.55	2.50	2.65	2.55	2.55	2.60	2.35
30	2.25	2.40	2.40	2.45	2.30	2.35	2.65	2.90	3.05	R	R	R	R	R	2.50	2.55	2.50	2.50	2.45	2.55	2.60	2.65	2.50	2.40
31	2.35	2.40	2.50	2.60	2.85	2.60	2.80	2.90	3.10	R	R	R	R	R	2.55	2.55	2.60	2.50	2.55	2.60	2.70	2.65	2.50	2.30
No.	31	31	31	31	31	31	31	30	27	23	22	23	25	28	29	29	29	29	31	31	30	30	31	31
Median	2.45	2.45	2.40	2.45	2.45	2.50	2.85	2.90	3.05	3.05	2.90	2.90	2.80	2.65	2.65	2.70	2.65	2.65	2.65	2.65	2.70	2.65	2.60	2.50

Sweep 1.0 Mc. to 2.0 Mc. in 1 min 500 sec in automatic operation.

(M3000)F2

The Radio Research Laboratories, Japan.

W 7

# IONOSPHERIC DATA

Lat. 45° 23.6' N  
 Long. 141° 41.1' E

**Wakanai**

135° E Mean Time (GMT.+ 9h.)

(M3000)F1

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	C	L										
2												L	L	L										
3													L	L	L									
4												L	L	L	L									
5												L	L	L	L									
6								C				L	L	L	L									
7										C	L	0370	L	L	L									
8											L	L	L	L	L									
9											L	L	L	L	L									
10											L	A	L	L	L									
11											L	L	L	L	L									
12								L	L	L	L	L	L	L	L									
13								C	C	C	C	C	C	C	C									
14								L	L	L	L	L	L	L	L									
15								L	L	L	3.15	330	335	L	L	L								
16								L	L	L	L	L	L	L	L									
17								L	L	L	L	L	L	L	L									
18										L	L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	L	L	L	L	L									
21										L	L	L	L	L	L									
22										L	L	L	L	L	L									
23										L	L	L	L	L	L									
24										L	L	L	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	L	L	L									
27								C	C	C	C	C	C	C	C									
28										L	L	L	L	L	L									
29										L	L	L	L	L	L									
30										L	L	L	L	L	L									
31										L	L	L	L	L	L									
No.										1	2	1												
Median										3.15	3.50	3.35												

(M3000)F1



# IONOSPHERIC DATA

Lat. 46° 23.6' N  
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

RF2

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1												L	C	L											
2												L	L	L	L										
3													L	L	L	L									
4													L	L	L	L									
5												L	L	L	L	L									
6								C				L	L	L	L	L									
7										C	L	U300 <sup>L</sup>	L	L	L	L									
8											L	L	L	L	L	L									
9											L	L	L	L	L	L									
10											L	A	L	L	L	L									
11											L	L	L	L	L	L									
12									L	L	L	L	L	L	L	L									
13									C	C	C	C	C	C	C	C									
14											L	L	L	L	L	L									
15									L	L	510	500 <sup>L</sup>	455 <sup>L</sup>	L	L	L									
16									L	L	L	L	L	L	L	L									
17											L	L	L	L	L	L									
18											L	L	L	L	L	L									
19											L	L	L	L	L	L									
20											L	L	L	L	L	L									
21											L	L	L	L	L	L									
22									L	L	L	L	L	L	L	L									
23											L	L	L	L	L	L									
24											L	L	L	L	L	L									
25											L	L	L	L	L	L									
26											L	L	L	L	L	L									
27									C	C	C	C	C	C	C	C									
28											L	L	L	L	L	L									
29											L	L	L	L	L	L									
30											L	L	L	L	L	L									
31											L	L	L	L	L	L									
No.									1	2			1												
Median									510	400		455													

Sweep 1.0 Mc to 2.7 Mc in 1 min in automatic operation.

RF2

The Radio Research Laboratories, Japan.

W 9

# IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

**Wakkanai**

135° E Mean Time (GM.T. + 9h.)

**R'F**

**Oct. 1957**

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	285	300	320	320	310	310	265	235	230	235	250	230	235 <sup>c</sup>	230	240	235	250	245	250	250	270	260	280	290	
2	310	350	315	290	280	330	250	230	235	235	240	235	215	240	245	250	245	240	240	260	255	280	290		
3	290	290	280	300 <sup>c</sup>	300	295	250	230	235	245	230	240	240	245	245	245	250	250	260	A	330 <sup>A</sup>	360			
4	A	A	A	A	A	290	230	235	245	245	230	230	230	220	240	250	245	245	250	250	255	265	270	300 <sup>A</sup>	
5	325 <sup>A</sup>	350 <sup>A</sup>	335	315	300	290	225	240	245	230	230	225	240	240	235	250	240	245	245	250	260	250	255	280	
6	290	285	280	270	250	240	230 <sup>c</sup>	230 <sup>c</sup>	230	235	230	230 <sup>A</sup>	225	225	245	245	250	245	245	240	245	260	270	280	
7	280	280	280	270	250	260	235	230	230	230 <sup>c</sup>	225	225	240	250 <sup>A</sup>	230	250	260	245	240	245	260	290	280	280	
8	290	305	310	300	290	270	245	240	240	240	240	230	240	240	240	250	255	250	240	255 <sup>A</sup>	275	290 <sup>A</sup>	280		
9	285	285	290	290	265	275	240	235	230	230	230	220	240	245	250	250	260	250	250	250	250	290	270	250	
10	265	350	350	340	330	360	245	240	235	250	260	245 <sup>A</sup>	240	235	245	250	250	250	250	245	250	265	275	260	
11	320	345	360	300	265	280	275	250	250	240	250	250	260 <sup>A</sup>	240	250	250	250	245	230	270 <sup>A</sup>	280 <sup>A</sup>	300	420		
12	415	395	300	350	370	395	300 <sup>A</sup>	260	240	245	250	235	250	250	245	250	250	250	250	250	280 <sup>A</sup>	290	310	280	
13	280	325	310	380	360	350	270	240	C	C	C	C	C	C	C	C	C	C	C	270	240	250	300	300	
14	320	370	330	300	300	310	245	240	240	240	230	230	240	240	240	250	250	260	260	260	280 <sup>A</sup>	275	300	280	
15	280	335	375	370	380	380	335	270	260	250	280	250	250	255	255	260	260	280	280	250	245	275	310 <sup>A</sup>	410 <sup>A</sup>	
16	400	350	335	290	325	360	270	245	245	235	230	235	240	250	250 <sup>A</sup>	250	250	250	250	300 <sup>A</sup>	285 <sup>A</sup>	300 <sup>A</sup>	270	285	290
17	320	340	320	310	285	250	235	235	230	235	250	230	250	245	240	260	245	250	260	275	270	295	315	320	
18	300	270	285	300	295	320 <sup>A</sup>	240	235	240	240	240	245	240	240	250	260	255	260	290	265	280	300	280	280	
19	300	305	320	290	250	280	255	230	230	235	250	240	240	230	250	260	250	260	290	270	250	260	290	310	
20	310	310	340	330	300	250	250	240	225	235	240	245	250	235	245	255	250	250	260	265	270	270	300	280	
21	325	310	320	300	310	320	245	240	240	230	235	240	250	240	250	270	270 <sup>A</sup>	275	270	255	265	270	280	295	
22	330	345	330	350	350	335 <sup>A</sup>	245	235	250	230	240	235	230	230	245	245	260	250	250	270	285	290	270	260	
23	300	290	300	315	295	290	245	230	240	235	235	240	230	240	250	245	250	250	260	275 <sup>A</sup>	300	260	280	280	
24	295	285	295	290	245	250	245	245	235	230	225	235	240	245	245	250	250	265	240	260	270	280	335	280	
25	335	295	275	260	255	280	260	230	240	235	240	240	235	240	245	250	245	255	255	270	280	290	285	285	
26	290	300	300	285	260	255	245	240	235	240	240	240	235	245	245	245	245	260	275	270	290	275	295	290	
27	300	275	260	275	275	290	245	C	C	C	C	C	C	C	C	C	C	245	270	270	270	275	285	350	
28	345	275	260	275	310	300 <sup>c</sup>	260	245	235	240	235	245	240	235	245	250	260	265	270	275	270	265	280	295	
29	345	305	300	270	330	330	250	240	240	240	230	240	245	240	255	255	255	270	290	305 <sup>A</sup>	295	290	315	290	
30	360	320	290	300	305	295	255	240	225	225	235	240	245	230	245	250	275	260	255	285	260	270	290	290	
31	320	305	295	280	245	255	250	245	235	225	230	235	235	230	245	260	235	270	255	260	250	270	280	360	
No.	30	30	30	30	30	31	31	30	29	29	29	29	29	29	29	29	29	31	31	31	30	30	31	31	
Median	305	305	310	300	300	290	250	240	235	235	235	235	240	240	245	250	250	250	250	260	270	270	280	290	

Sweep 1.0 Mc to 2.7 Mc in      min in automatic operation.

The Radio Research Laboratories, Japan.

**R'F**

**W 10**

IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+ 9h.)

R'Es

Oct. 1957

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

Sweep 1.0 Mc to 20.7 Mc in 1 min in automatic operation.

R'Es

The Radio Research Laboratories, Japan.

W 11

# IONOSPHERIC DATA

Lat. 45° 23.6' N  
Long. 141° 41.1' E

## Wakkanai

135° E Mean Time (GMT.+9h.)

Types of Es

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	f	f					C		f		C													
2							C	f	f		f													
3								f	f		C													
4	f3	f4	f6	f4	f2	f	f	f	f		C													
5	f4	f3	f3	f	f	f	f	f	f		C													
6	f2	f	f	f	f	f	f	f	f		C													
7											C													
8											C													
9	f	f	f	f	f	f	C	C	f		C													
10	f	f	f	f	f	f	f	f	f		C													
11	f	f	f	f	f	f	f	f	f		C													
12	f	f	f	f	f	f	f	f	f		C													
13	f	f	f	f	f	f	f	f	f		C													
14											C													
15											C													
16	f2	f4	f2	f2	f	f	f	f	f		C													
17	f	f	f	f	f	f	f	f	f		C													
18	f	f	f	f	f	f	f	f	f		C													
19	f	f	f	f	f	f	f	f	f		C													
20											C													
21											C													
22											C													
23											C													
24											C													
25	f	f	f	f	f	f	f	f	f		C													
26	f	f	f	f	f	f	f	f	f		C													
27	f	f	f	f	f	f	f	f	f		C													
28	f	f	f	f	f	f	f	f	f		C													
29	f	f	f	f	f	f	f	f	f		C													
30	f	f	f	f	f	f	f	f	f		C													
31											C													
No.																								
Median																								

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.7 Mc in 1 min in automatic operation.

Types of Es

W 12



Lat. 39° 43.5' N  
Long. 140° 08.9' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

foF2

Oct. 1957

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	8.0	7.7	7.2	7.0	7.5	7.6	10.6	13.1	13.0	13.1	13.6	13.6	13.6	12.9	13.8	12.7	12.2	12.0	10.4	8.6	8.5	9.0	8.6	8.2
2	7.2	6.9	6.9	7.1	6.4	6.2	8.5	12.1	12.7	13.4	13.5	12.4	12.7	12.2	12.7	12.8	12.2	12.0	9.9	8.5	8.6	8.1	7.8	7.7
3	7.7	7.1	6.6	6.1	6.1	6.6	9.5	12.0	12.6	13.9	14.2	13.6	13.0	13.0	12.5	12.4	12.4	12.0	11.0	9.6	7.9	7.8	7.4	7.1
4	7.2	7.4	6.6	6.5	7.0	6.7	9.2	11.6	13.0	13.8	14.4	14.2	14.5	13.5	13.0	13.0	12.4	12.4	11.2	9.3	8.7	8.1	7.8	7.6
5	7.1	6.9	6.6	6.8	6.4	6.5	9.9	11.1	12.5	13.7	14.5	13.7	13.0	13.5	12.5	12.2	12.4	12.0	10.9	9.4	9.2	8.5	7.3	7.3
6	7.1	6.9	6.7	5.8	6.0	6.4	9.6	12.1	12.4	13.5	13.7	13.0	13.0	12.7	12.7	12.2	11.9	11.4	10.1	8.9	7.8	7.1	7.0	7.2
7	7.1	6.9	6.5	6.1	5.8	5.9	9.0	10.3	11.4	11.3	12.4	12.9	12.2	11.7	11.9	11.9	12.0	12.0	10.0	8.0	7.8	7.9	7.8	7.5
8	7.3	6.7	7.1	7.3	7.0	7.0	9.6	12.0	12.9	13.4	13.6	12.1	12.7	12.4	12.1	11.9	12.0	11.7	10.2	8.6	8.5	8.3	8.4	8.2
9	7.1	6.8	6.7	6.5	6.1	6.6	9.8	11.5	12.9	12.4	12.5	12.9	13.6	12.5	12.4	12.3	12.2	11.8	10.4	8.3	8.8	8.0	R	7.6
10	6.5	6.1	6.0	5.9	5.9	6.0	9.1	12.4	13.5	14.0	14.5	14.4	14.5	13.5	12.2	11.6	11.5	11.5	9.6	8.8	8.1	7.6	8.1	7.1
11	6.0	6.4	6.1	6.1	6.1	6.4	8.6	12.2	14.5	14.6	14.0	13.4	13.8	13.5	13.2	12.2	11.8	11.1	10.0	8.6	8.1	7.3	7.0	6.5
12	6.2	6.5	6.4	6.0	6.1	6.1	7.2	9.9	10.9	11.4	12.1	12.9	11.6	11.5	11.0	11.2	11.0	10.0	8.8	8.2	7.5	6.7	6.7	6.8
13	5.8	5.7	5.7	5.4	5.4	5.4	9.2	12.9	13.5	13.6	13.2	12.9	12.2	12.4	11.4	11.4	10.8	10.4	10.0	8.4	7.7	7.6	7.5	7.4
14	6.9	6.6	6.6	6.5	6.0	6.4	8.5	11.2	C	C	C	C	12.8	13.0	12.7	12.0	11.1	11.2	10.4	8.5	8.0	7.3	7.4	8.2
15	7.3	5.5	5.6	5.8	6.0	5.9	6.5	9.2	8.5	9.2	9.6	10.4	10.6	10.7	10.6	10.6	10.5	9.5	8.4	7.2	6.7	6.6	6.1	6.0
16	5.9	5.7	5.7	5.6	5.0	5.0	7.6	12.1	15.0	14.5	14.6	14.5	14.4	13.9	12.9	12.1	11.6	11.0	9.5	7.6	8.0	7.7	7.2	7.0
17	7.2	7.1	7.2	6.6	6.1	5.9	7.9	11.0	13.0	14.1	14.3	13.8	13.2	13.0	11.4	11.6	11.5	10.5	9.2	8.0	R	8.4	7.5	7.3
18	8.0	7.8	6.9	6.5	6.5	6.2	8.4	11.6	13.7	13.4	13.6	12.9	12.4	11.6	11.2	11.2	10.8	10.5	9.5	9.1	8.1	8.1	8.1	7.8
19	7.5	7.5	7.3	7.2	6.5	5.6	8.0	11.0	13.6	13.8	14.3	13.5	13.0	12.2	11.6	11.5	11.2	10.0	9.2	8.2	7.6	7.4	7.4	7.3
20	7.0	7.1	6.6	6.7	6.8	6.7	8.9	11.7	13.4	13.8	14.1	14.0	12.5	12.3	11.6	12.0	11.5	10.4	9.8	8.6	8.5	8.9	7.9	7.8
21	7.1	7.5	7.7	7.0	6.4	6.7	8.9	12.3	13.7	13.7	14.1	13.7	13.7	13.3	12.5	12.1	11.9	11.4	10.1	9.1	8.6	8.5	7.9	8.1
22	7.6	7.0	6.8	6.9	6.8	6.7	9.0	11.9	C	14.5	15.2	14.0	13.1	12.6	12.2	12.2	12.1	11.7	11.0	9.8	9.6	9.4	9.0	8.6
23	8.3	8.2	7.8	7.0	7.0	7.1	9.6	13.1	14.5	15.7	16.0	14.5	13.9	13.9	13.5	13.0	12.4	11.6	10.8	9.6	9.2	8.4	8.2	7.4
24	7.6	7.7	7.4	6.9	6.4	5.3	8.0	11.5	13.8	14.2	14.6	13.9	13.7	13.5	13.0	12.3	12.1	11.1	10.2	8.2	8.7	8.5	7.5	7.0
25	7.2	7.5	7.2	6.6	6.1	5.4	8.2	12.8	13.4	14.6	14.4	14.2	13.5	13.0	12.3	12.1	11.3	10.4	9.5	9.1	8.6	9.0	7.6	7.6
26	7.4	6.7	7.0	6.9	6.1	5.8	8.6	12.6	13.9	14.8	14.5	13.7	13.5	13.0	12.3	11.7	11.4	11.4	9.8	9.5	9.0	8.5	7.8	7.4
27	7.5	7.5	7.2	6.7	6.4	6.6	9.1	12.2	14.0	14.5	14.1	13.7	13.2	12.6	12.5	12.1	11.6	11.0	9.9	9.3	9.2	9.1	8.2	7.5
28	7.1	7.5	5.9	6.6	6.4	6.8	9.8	C	R	15.2	14.6	14.4	13.7	13.4	13.0	12.5	12.1	11.1	10.6	9.7	9.2	9.1	8.2	7.5
29	7.6	7.5	7.1	6.9	5.9	6.1	9.0	12.6	13.4	14.5	14.5	13.6	13.0	12.7	12.4	12.0	11.5	10.7	9.6	9.2	8.7	8.1	7.9	6.6
30	6.8	7.0	7.2	6.9	6.2	6.3	8.3	11.5	13.5	13.1	13.5	13.2	13.1	12.7	12.2	12.1	12.1	11.4	10.3	9.6	9.0	8.4	7.5	7.4
31	7.4	7.5	7.6	7.4	6.6	5.4	7.6	11.5	13.1	14.5	14.5	13.7	13.1	12.8	12.2	12.1	11.7	11.2	10.6	9.2	8.7	7.5	6.9	6.3
No.	31	31	31	31	31	31	31	30	28	29	30	30	31	31	31	31	31	31	30	29	29	29	30	31
Median	7.2	7.0	6.8	6.6	6.2	6.3	8.9	12.0	13.4	13.8	14.2	13.6	13.1	13.0	12.5	12.1	11.9	11.4	10.1	9.1	8.5	8.1	7.6	7.4
U.Q.	7.5	7.5	7.2	6.9	6.5	6.7	9.5	12.2	13.7	14.5	14.5	14.0	13.7	13.4	12.7	12.3	12.1	11.8	10.6	9.4	8.9	8.5	7.9	7.7
L.Q.	7.0	6.7	6.5	6.1	6.0	5.9	8.2	11.5	12.8	13.4	13.6	13.0	12.9	12.3	12.1	11.7	11.4	11.0	9.8	8.6	8.0	7.6	7.4	7.0
Q.R.	0.5	0.8	0.7	0.8	0.5	0.8	1.3	0.7	0.5	1.1	0.9	1.0	0.8	1.1	0.6	0.6	0.7	0.8	0.8	0.5	0.9	0.9	0.5	0.7

Sweep 285 Mc to 22.0 Mc in 2 min in automatic operation.

The Radio Research Laboratories, Japan.

foF2

A 1

# IONOSPHERIC DATA

Lat. 39° 43.5' N  
 Long. 140° 08.2 E

Akita

135° E Mean Time (GMT.+ 9h.)

foF1

Oct. 1957

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	L	L								
2										L	L	L	L	L	A	L	L							
3										L	L	L	L	L	L	L	L							
4										L	L	L	L	L	L	L	L							
5										L	L	L	L	L	L	L	L							
6										L	L	L	L	L	L	L	L							
7										L	L	L	L	L	L	L	L							
8										L	L	4.7	5.6 <sup>H</sup>	L	L	L	L							
9										L	L	L	L <sup>H</sup>	L	L	L	L							
10										L	L	L	L	L	L	L	L							
11																								
12																								
13																								
14									C															
15																								
16																								
17												C												
18																								
19																								
20																								
21											L	5.4												
22																								
23																								
24											L													
25																								
26																								
27																								
28																								
29																								
30																								
31																								
No.												2	1											
Median											5.0	5.6												

foF1

**A 2**

Lat. 39° 43.6' N  
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

foE

Oct. 1957

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							1.95	3.00	3.40	3.65	3.80	A	A	A	A	3.20	2.55	2.20						
2							2.05	2.90	3.30	3.60	3.80	3.90	3.60	3.60	3.40	3.20	2.50	1.95						
3							2.00	2.80	3.25	3.50	3.75	R	R	R	A	3.40	3.05	A						
4							1.95	3.00	3.25	3.50	3.70	3.90	3.90	3.55	3.25	A	A							
5							A	2.90	3.40	3.55	A	R	A	A	3.50	3.30	A							
6							2.10	2.90	3.40	3.60	3.80	3.80	3.90	3.70	3.55	3.30	2.65	1.95						
7							1.90	2.75	3.30	3.50	3.70	3.80	R	A	3.60	3.20	2.80							
8							A	2.70 <sup>A</sup>	3.30	3.75	3.80 <sup>R</sup>	3.85	3.75	3.80	3.55	3.20	2.75	A						
9							2.00	2.80	3.40	3.60	A	A	A	3.90 <sup>R</sup>	3.70	3.30	2.80	A						
10							2.20	2.80	3.30	3.65	3.70	3.85 <sup>R</sup>	4.00 <sup>R</sup>	3.80	3.55	3.15 <sup>C</sup>	2.70							
11							2.20	2.75 <sup>A</sup>	3.45	3.70	3.70	3.80 <sup>R</sup>	3.90	3.60	3.50	3.25	2.90							
12							A	2.60	3.25 <sup>A</sup>	3.50	3.80	3.95	4.00	3.70	3.55	3.45	2.70	A						
13							A	2.60	3.20	3.45	A	R	R	R	R	C	C							
14							A	2.70 <sup>C</sup>	3.30	3.55	3.60	3.55	3.60	3.55	3.70	3.20	2.55							
15							2.00	2.55	3.30	3.50	3.65	3.75	4.00	3.80 <sup>R</sup>	3.55	3.20	2.50							
16							A	3.10 <sup>A</sup>	3.30	3.60 <sup>A</sup>	3.80 <sup>B</sup>	3.80	3.70	A	A	A	2.60	R						
17							A	R	A	A	A	C	A	A	3.50	A	A							
18							A	2.60	3.20	3.60 <sup>R</sup>	3.80	3.95	3.95	3.80 <sup>C</sup>	3.60	3.00	2.45							
19							2.05	2.60	3.30	3.50	3.60	3.80	3.80	3.80	A	A	A							
20								2.70	3.40	3.60	3.60	3.75	3.90 <sup>R</sup>	3.90	3.60	3.10	2.45							
21							1.80	2.75	3.30	3.60	3.60	3.75	3.90	3.80	3.60	3.05	A	A						
22							1.70	2.50	3.00	3.50	3.65	3.80	3.90	3.90	3.50	3.20	2.35	A						
23							1.70	2.50	3.25	3.50	3.70	3.80	3.75	3.70	3.60	3.20	2.35							
24							R	2.90	3.55 <sup>A</sup>	3.75	3.75	3.75	3.90	3.90	3.45	3.00	2.50							
25							1.80	2.90	3.25 <sup>C</sup>	3.55	3.65 <sup>R</sup>	3.80 <sup>A</sup>	3.85	3.90	3.50	3.05	A							
26							1.90	A	A	C	A	4.00	3.95	3.75	3.60	3.05	2.50							
27							2.65	3.20 <sup>A</sup>	3.50	3.75	3.80	3.85	3.85	3.65	3.50	3.20	A							
28							2.70	3.25	3.60	3.75	3.90	3.90	3.90	3.75	3.20	3.00	2.30	A						
29							2.40	3.00	R	A	3.80	3.80	3.80	3.75	3.50	3.20	2.25							
30							2.50	3.25	3.50	3.80	3.85	4.00	3.90	3.50	3.50	2.90	2.10							
31							1.70	2.50	2.85 <sup>A</sup>	3.50	3.70	3.80 <sup>A</sup>	3.80	3.70	3.50	3.15	2.20							
No.							1.7	2.7	2.9	2.8	2.5	2.5	2.4	2.5	2.6	2.3	3							
Median							1.95	2.80	3.30	3.55	3.70	3.80	3.90	3.75	3.50	3.20	2.50	1.95						

Sweep 0.85 Mc to 2.2 Mc in 2 min see in automatic operation.

The Radio Research Laboratories, Japan.

foE

A 3

IONOSPHERIC DATA

Lat. 39° 43.6' N  
Long. 140° 08.3' E

Akita

135° E Mean Time (GMT.+9h.)

foEs

Oct. 1957

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	2.2 <sup>M</sup>	3.1 <sup>M</sup>	2.7 <sup>M</sup>	3.0 <sup>M</sup>	2.5 <sup>M</sup>	2.1 <sup>M</sup>	2.2 <sup>M</sup>	G	3.7	4.0	G	5.3 <sup>M</sup>	4.7 <sup>M</sup>	3.8	4.6 <sup>M</sup>	G	G	3.2 <sup>M</sup>	2.2 <sup>M</sup>	2.1 <sup>M</sup>	E	E	E	E	
2	E	E	3.2	1.0	3.0 <sup>M</sup>	2.0 <sup>M</sup>	3.0 <sup>M</sup>	3.3	3.6	4.2	4.3	4.2	4.1	3.9	7.1 <sup>M</sup>	5.2 <sup>M</sup>	3.6 <sup>M</sup>	3.1 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	3.0 <sup>M</sup>	1.8 <sup>M</sup>	2.5 <sup>M</sup>	E	
3	2.0 <sup>M</sup>	2.2 <sup>M</sup>	2.1 <sup>M</sup>	2.5 <sup>M</sup>	2.0 <sup>M</sup>	2.9 <sup>M</sup>	G	3.1	G	3.8	G	4.0	G	G	5.2 <sup>M</sup>	3.5	3.9	4.7	4.7	4.3	3.0 <sup>M</sup>	E	E	E	
4	2.6 <sup>M</sup>	2.5 <sup>M</sup>	2.5 <sup>M</sup>	1.2	E	E	G	G	G	5.2 <sup>M</sup>	4.4	5.0 <sup>M</sup>	4.3	4.0	4.5 <sup>M</sup>	5.2 <sup>M</sup>	5.0 <sup>M</sup>	3.9 <sup>M</sup>	6.5 <sup>M</sup>	4.5 <sup>M</sup>	4.6 <sup>M</sup>	2.7 <sup>M</sup>	E	E	
5	E	2.2 <sup>M</sup>	1.4	E	E	E	G	G	G	4.8 <sup>M</sup>	4.8 <sup>M</sup>	4.5 <sup>M</sup>	5.2 <sup>M</sup>	4.7	4.1	5.2 <sup>M</sup>	4.1 <sup>M</sup>	3.5 <sup>M</sup>	4.5 <sup>M</sup>	3.2 <sup>M</sup>	2.0 <sup>M</sup>	E	E	E	
6	E	E	2.2 <sup>M</sup>	1.9 <sup>M</sup>	1.4	E	G	G	G	4.0	4.3	4.0	G	G	3.7	G	3.4 <sup>M</sup>	3.4 <sup>M</sup>	2.1 <sup>M</sup>	E	E	E	E	E	
7	1.9 <sup>M</sup>	E	4.1	2.8	2.5 <sup>M</sup>	2.4 <sup>M</sup>	G	G	G	3.7	G	4.2	G	4.5 <sup>M</sup>	3.9	4.3	4.0 <sup>M</sup>	3.7 <sup>M</sup>	3.6 <sup>M</sup>	2.6 <sup>M</sup>	E	E	E	E	
8	E	E	E	2.5 <sup>M</sup>	2.2 <sup>M</sup>	E	2.2 <sup>M</sup>	3.5 <sup>M</sup>	G	G	G	G	G	4.3	4.2	3.5	3.6	2.0 <sup>M</sup>	E	E	E	E	2.6 <sup>M</sup>	2.0 <sup>M</sup>	
9	2.5 <sup>M</sup>	3.4 <sup>M</sup>	3.0 <sup>M</sup>	3.0 <sup>M</sup>	2.0 <sup>M</sup>	E	2.5 <sup>M</sup>	3.5 <sup>M</sup>	G	4.4	4.6 <sup>M</sup>	4.0	4.6 <sup>M</sup>	G	G	G	G	4.2	3.5 <sup>M</sup>	E	2.4 <sup>M</sup>	2.2 <sup>M</sup>	E	E	
10	E	E	E	E	E	E	2.4	3.1	4.9 <sup>M</sup>	3.9	4.2	G	G	G	4.5	C	5.7 <sup>M</sup>	5.0 <sup>M</sup>	5.9 <sup>M</sup>	4.4 <sup>M</sup>	3.2 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	2.5 <sup>M</sup>	
11	2.5 <sup>M</sup>	E	E	E	E	E	G	3.5 <sup>M</sup>	G	4.0	4.3	G	G	G	G	G	6.5 <sup>M</sup>	4.0 <sup>M</sup>	3.0 <sup>M</sup>	3.5 <sup>M</sup>	3.3 <sup>M</sup>	3.1 <sup>M</sup>	2.5 <sup>M</sup>	2.3 <sup>M</sup>	
12	3.0 <sup>M</sup>	2.5 <sup>M</sup>	3.2	2.1 <sup>M</sup>	2.5 <sup>M</sup>	2.5 <sup>M</sup>	3.1 <sup>M</sup>	5.0 <sup>M</sup>	5.0 <sup>M</sup>	3.9	4.0	G	G	G	G	3.7	3.1	2.2	E	E	3.1 <sup>M</sup>	3.5 <sup>M</sup>	4.5 <sup>M</sup>	5.5 <sup>M</sup>	
13	E	E	E	2.5 <sup>M</sup>	2.4 <sup>M</sup>	2.5 <sup>M</sup>	2.0	3.3	5.0 <sup>M</sup>	4.1	5.0 <sup>M</sup>	G	G	G	G	C	C	C	C	E	2.4 <sup>M</sup>	6.5 <sup>M</sup>	3.5 <sup>M</sup>	2.0 <sup>M</sup>	
14	C	E	E	E	3.0 <sup>M</sup>	2.2 <sup>M</sup>	3.0 <sup>M</sup>	C	C	G	G	G	4.2 <sup>M</sup>	4.0	B	C	G	G	E	E	3.2 <sup>M</sup>	4.5 <sup>M</sup>	5.5 <sup>M</sup>	4.6 <sup>M</sup>	
15	2.5 <sup>M</sup>	2.7 <sup>M</sup>	2.5 <sup>M</sup>	2.0 <sup>M</sup>	3.5 <sup>M</sup>	3.4 <sup>M</sup>	G	G	G	4.1	3.9	4.0	G	G	G	3.5	3.7	3.2	6.1 <sup>M</sup>	3.0 <sup>M</sup>	2.7 <sup>M</sup>	3.0 <sup>M</sup>	2.5 <sup>M</sup>	E	
16	E	E	E	1.1	2.0 <sup>M</sup>	E	3.1 <sup>M</sup>	3.0 <sup>M</sup>	5.6 <sup>M</sup>	8.0 <sup>M</sup>	5.0 <sup>M</sup>	B	G	G	4.5 <sup>M</sup>	4.5 <sup>M</sup>	3.7	2.7	4.5 <sup>M</sup>	4.5 <sup>M</sup>	4.1 <sup>M</sup>	3.0 <sup>M</sup>	3.1 <sup>M</sup>	2.4 <sup>M</sup>	
17	E	2.2 <sup>M</sup>	3.1 <sup>M</sup>	3.2	3.1 <sup>M</sup>	2.6 <sup>M</sup>	2.7	4.4 <sup>M</sup>	4.4 <sup>M</sup>	5.1 <sup>M</sup>	4.5 <sup>M</sup>	C	5.2 <sup>M</sup>	4.0	4.7	4.5 <sup>M</sup>	4.5 <sup>M</sup>	5.0 <sup>M</sup>	8.0 <sup>M</sup>	6.0 <sup>M</sup>	4.1 <sup>M</sup>	4.5 <sup>M</sup>	3.0 <sup>M</sup>	2.8 <sup>M</sup>	
18	E	2.0 <sup>M</sup>	1.4	E	E	2.5 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	G	G	G	G	G	C	4.0	4.2	5.3 <sup>M</sup>	3.0 <sup>M</sup>	2.4 <sup>M</sup>	5.5 <sup>M</sup>	2.2 <sup>M</sup>	3.1 <sup>M</sup>	4.6 <sup>M</sup>	5.5 <sup>M</sup>	
19	6.0 <sup>M</sup>	4.5 <sup>M</sup>	2.1 <sup>M</sup>	2.0 <sup>M</sup>	3.2 <sup>M</sup>	2.3 <sup>M</sup>	G	G	3.9	5.7 <sup>M</sup>	5.0 <sup>M</sup>	4.4	4.5	4.5	4.2 <sup>M</sup>	4.4 <sup>M</sup>	4.2 <sup>M</sup>	3.2 <sup>M</sup>	3.7 <sup>M</sup>	4.1 <sup>M</sup>	3.8 <sup>M</sup>	E	E	E	
20	E	1.4	1.4	E	1.4	E	G	G	G	G	4.0	4.0	5.1 <sup>M</sup>	4.2	5.7 <sup>M</sup>	6.0 <sup>M</sup>	5.8 <sup>M</sup>	4.7 <sup>M</sup>	8.0 <sup>M</sup>	1.7 <sup>M</sup>	E	4.5 <sup>M</sup>	E	3.1 <sup>M</sup>	
21	3.1 <sup>M</sup>	3.0 <sup>M</sup>	E	2.6 <sup>M</sup>	3.5 <sup>M</sup>	2.5 <sup>M</sup>	E	G	3.8	4.0	4.0	4.9 <sup>M</sup>	4.5	4.3	4.2	4.5 <sup>M</sup>	4.6 <sup>M</sup>	6.0 <sup>M</sup>	4.6 <sup>M</sup>	3.5 <sup>M</sup>	3.0 <sup>M</sup>	3.0 <sup>M</sup>	E	E	
22	E	E	1.2	E	1.4	E	6.9 <sup>M</sup>	G	G	G	G	G	C	C	C	3.9	3.5 <sup>M</sup>	3.5 <sup>M</sup>	E	E	E	3.3 <sup>M</sup>	E	E	
23	E	E	1.3	2.1 <sup>M</sup>	2.0 <sup>M</sup>	E	G	G	G	G	G	G	G	G	G	G	4.0 <sup>M</sup>	3.5 <sup>M</sup>	4.0 <sup>M</sup>	E	E	5.0 <sup>M</sup>	6.0 <sup>M</sup>	3.5 <sup>M</sup>	
24	3.5 <sup>M</sup>	3.2 <sup>M</sup>	3.4 <sup>M</sup>	1.4	3.2 <sup>M</sup>	E	2.0 <sup>M</sup>	G	4.2 <sup>M</sup>	4.3	G	G	G	G	2.4 <sup>M</sup>	3.5	3.5	3.5 <sup>M</sup>	6.5 <sup>M</sup>	6.0 <sup>M</sup>	5.1 <sup>M</sup>	4.4 <sup>M</sup>	E	3.4 <sup>M</sup>	
25	3.1 <sup>M</sup>	3.2 <sup>M</sup>	3.0 <sup>M</sup>	2.1 <sup>M</sup>	2.0 <sup>M</sup>	2.1 <sup>M</sup>	G	G	C	C	G	4.5 <sup>M</sup>	G	G	G	G	3.9 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	3.2 <sup>M</sup>	3.1 <sup>M</sup>	2.8 <sup>M</sup>	E	E	
26	E	E	E	E	E	4.2 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	4.4 <sup>M</sup>	C	6.2 <sup>M</sup>	G	4.4	G	G	3.3	4.6 <sup>M</sup>	3.8 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	2.1 <sup>M</sup>	2.2 <sup>M</sup>	5.0 <sup>M</sup>	4.0 <sup>M</sup>	3.5 <sup>M</sup>
27	3.2 <sup>M</sup>	E	E	1.1	E	E	E	G	3.9	G	G	G	3.5 <sup>M</sup>	3.7 <sup>M</sup>	G	G	2.2 <sup>M</sup>	3.2 <sup>M</sup>	2.5 <sup>M</sup>	4.5 <sup>M</sup>	3.5 <sup>M</sup>	4.1 <sup>M</sup>	4.3 <sup>M</sup>	3.9 <sup>M</sup>	
28	2.2 <sup>M</sup>	2.0 <sup>M</sup>	2.2 <sup>M</sup>	2.0 <sup>M</sup>	2.1 <sup>M</sup>	2.1 <sup>M</sup>	E	G	G	G	G	G	G	4.0	3.5	G	2.6	2.9 <sup>M</sup>	E	5.0 <sup>M</sup>	5.0 <sup>M</sup>	6.7 <sup>M</sup>	3.4 <sup>M</sup>	3.7 <sup>M</sup>	
29	2.1 <sup>M</sup>	2.5 <sup>M</sup>	3.0 <sup>M</sup>	4.0 <sup>M</sup>	3.0 <sup>M</sup>	2.5 <sup>M</sup>	3.1 <sup>M</sup>	3.1 <sup>M</sup>	3.5	4.1 <sup>M</sup>	4.5 <sup>M</sup>	4.4 <sup>M</sup>	2.8 <sup>M</sup>	G	G	G	4.1 <sup>M</sup>	E	E	E	3.5 <sup>M</sup>	4.4 <sup>M</sup>	3.2 <sup>M</sup>	2.0 <sup>M</sup>	
30	2.5 <sup>M</sup>	2.2 <sup>M</sup>	2.1 <sup>M</sup>	E	3.5 <sup>M</sup>	3.1 <sup>M</sup>	3.2 <sup>M</sup>	G	3.9	5.5 <sup>M</sup>	4.0	4.0	G	G	G	3.9 <sup>M</sup>	G	E	E	3.5 <sup>M</sup>	2.5 <sup>M</sup>	3.3 <sup>M</sup>	3.1 <sup>M</sup>	2.8 <sup>M</sup>	
31	2.1 <sup>M</sup>	1.2	2.7 <sup>M</sup>	3.3 <sup>M</sup>	2.2 <sup>M</sup>	E	2.5 <sup>M</sup>	2.2 <sup>M</sup>	4.2 <sup>M</sup>	4.7	7.2 <sup>M</sup>	4.5 <sup>M</sup>	G	3.0 <sup>M</sup>	G	3.4	3.2 <sup>M</sup>	4.1 <sup>M</sup>	2.7 <sup>M</sup>	3.1 <sup>M</sup>	4.6 <sup>M</sup>	2.8 <sup>M</sup>	2.7 <sup>M</sup>	2.9 <sup>M</sup>	
No.	30	31	31	30	31	31	30	29	30	31	29	4.0	3.1	3.0	3.0	2.9	3.0	3.0	3.1	3.1	3.1	3.1	3.0	3.1	3.1
Median	2.0 <sup>M</sup>	2.0 <sup>M</sup>	2.1 <sup>M</sup>	2.0 <sup>M</sup>	2.0 <sup>M</sup>	2.1 <sup>M</sup>	2.2	G	G	4.0	4.3	4.0	G	G	3.6	3.5	3.8 <sup>M</sup>	3.5 <sup>M</sup>	3.5 <sup>M</sup>	3.2 <sup>M</sup>	3.0 <sup>M</sup>	3.0 <sup>M</sup>	2.5 <sup>M</sup>	2.0 <sup>M</sup>	
U.Q.	2.5	2.5	3.0	2.5	3.0	2.5	3.0	3.3	4.2	4.2	4.6	4.4	4.4	4.0	4.5	4.4	4.5	4.0	4.6	4.4	4.4	3.5	4.4	3.4	3.1
L.Q.	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	3.2	3.1	E	1.7	2.0	E	E	E	
Q.R.																	1.3	0.9		2.7	1.5				

The Radio Research Laboratories, Japan.

Sweep 0.25 Mc to 22.1 Mc in 2 min in automatic operation.

foEs



IONOSPHERIC DATA

Lat. 39° 45.6' N  
Long. 140° 08.9' E

Akita

135° E Mean Time (GMT.+ 9h.)

fbEs

Oct. 1957

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	1.5	2.2	1.7	1.5	1.5	E	G	G	G	4.0	G	4.0	4.1	4.0	3.9	G	G	G	1.8	E	E	E	E	E
2	1.6	E	E	E	1.3	E	G	G	G	4.1	4.2	4.2	G	G	4.4	4.4	3.5	4.0	3.0	2.0	E	E	E	E
3	1.6	1.2	E	E	1.0	E	G	G	G	4.5	4.1	4.0	4.0	4.0	3.9	4.3	3.7	2.7	3.5	2.6	1.8	1.8	E	E
4	1.8	1.7	1.7	E	E	E	G	G	G	G	4.1	4.4	4.0	4.1	4.0	4.0	3.5	2.0	2.2	2.5	1.9	E	E	E
5	E	1.5	E	E	E	E	G	G	G	G	G	4.1	G	G	3.8	G	G	G	E	E	E	E	E	E
6	E	E	E	E	E	E	G	G	G	3.7	G	4.2	G	G	3.8	3.7	G	3.0	2.8	E	E	E	E	E
7	E	E	2.5	1.0	1.2	E	G	G	G	G	G	4.2	G	G	4.1	G	G	G	E	E	E	E	E	E
8	E	E	E	1.1	E	E	G	G	G	4.0	4.0	G	G	G	G	G	G	2.3	A	E	E	E	E	E
9	1.6	1.5	1.2	E	E	E	G	G	G	3.8	3.9	G	G	G	G	C	4.6	4.0	5.0	2.0	2.0	2.5	2.5	E
10	E	E	E	E	E	E	G	G	G	G	4.0	G	G	G	G	G	G	3.7	2.2	E	E	E	1.9	E
11	1.4	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	3.0	3.0	E
12	E	1.5	E	E	1.1	1.5	G	G	3.8	G	G	G	G	G	G	C	C	C	E	E	2.0	E	C	E
13	E	E	E	E	1.5	E	G	3.3	4.1	4.0	4.3	G	G	4.0	G	G	G	2.0	E	E	3.6	5.5	2.5	1.8
14	C	E	E	C	E	E	G	G	G	G	G	G	G	G	G	G	A	2.5	5.4	2.3	2.3	2.3	E	E
15	1.7	1.3	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	2.3	2.5	3.5	3.0	2.0	2.0	E
16	E	E	E	E	E	E	E	2.2	G	4.1	4.2	B	G	G	G	G	G	2.3	2.5	3.5	3.0	2.0	2.0	E
17	E	1.1	1.1	1.9	E	2.4	G	G	G	G	G	C	4.6	G	4.5	G	3.6	2.2	2.6	2.5	2.3	2.9	1.9	E
18	E	1.2	E	E	E	E	G	G	G	G	G	G	4.4	C	4.0	4.0	4.0	2.7	1.8	1.8	E	E	2.4	2.1
19	1.6	2.0	E	E	E	E	G	G	G	4.4	G	4.4	4.4	4.4	4.1	3.5	3.1	2.3	2.7	2.5	2.4	E	E	E
20	E	1.3	E	E	E	E	G	G	G	G	4.0	G	4.8	4.1	G	5.3	5.3	3.5	A	E	E	2.4	E	2.5
21	E	1.6	E	1.2	E	E	G	G	G	G	G	G	G	G	G	G	3.6	G	2.2	E	2.0	2.1	E	E
22	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	2.8	G	E	E	E	1.6	E	E
23	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	3.2	2.3	2.9	E	E	2.5	3.5	2.9
24	2.7	2.4	1.9	1.3	1.1	E	G	G	G	G	G	G	G	G	G	G	G	2.5	4.5	2.7	2.7	2.3	E	E
25	E	1.2	E	1.1	1.0	E	G	G	C	G	G	G	G	G	G	G	3.3	2.4	2.4	2.0	1.8	E	E	E
26	E	E	E	E	E	E	G	G	G	C	G	G	G	G	G	G	G	1.9	1.8	E	E	2.5	2.9	2.0
27	2.4	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	2.1	2.4	2.0	1.8	3.0	2.4	2.6
28	1.7	1.3	1.1	E	E	E	G	G	G	G	G	G	G	G	G	G	G	2.2	E	2.3	3.0	3.7	2.5	1.6
29	E	1.5	1.8	E	E	1.4	G	G	G	G	G	G	G	G	G	G	2.8	E	E	E	2.4	3.0	2.4	E
30	1.7	1.3	E	E	E	2.9	G	G	G	G	G	G	G	G	G	G	G	E	E	2.6	E	1.8	1.9	E
31	E	1.2	1.6	1.7	E	E	G	G	G	G	G	G	G	G	G	G	G	2.4	E	E	3.1	1.8	1.9	E
No.	30	31	31	30	31	31	31	31	29	30	31	29	31	30	30	29	30	30	31	31	31	31	30	31
Median	E	1.2	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	2.2	2.2	E	1.8	1.8	E	E

Sweep 2.85 Mc to 22.0 Mc in 2 min in automatic operation.

fbEs

The Radio Research Laboratories, Japan.

A 5

Lat. 39° 43.5' N  
Long. 140° 08.2 E

**Akita**

**IONOSPHERIC DATA**

135° E Mean Time (GMT.+9h.)

**f - min**

**Oct. 1957**

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.40	1.10	E	E	E	E	E	1.80	1.70	1.80	1.80	2.05	1.80	1.95	1.80	1.80	1.60	1.70	E	E	E	E	E	E
2	E	1.30	E	E	E	E	E	1.80	1.80	1.80	1.90	2.70	2.00	2.50	2.00	1.90	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	1.55	1.60	1.70	2.10	2.00	2.05	2.10	2.00	2.00	2.00	E	E	E	E	E	E	E
4	1.40	E	E	E	E	E	E	2.00	2.00	1.90	2.00	2.00	1.90	2.05	2.00	1.90	1.90	1.60	E	E	1.80	E	E	E
5	1.40	E	E	E	E	E	E	1.80	1.90	1.90	2.50	2.30	2.50	2.00	1.90	1.80	1.80	E	E	E	E	E	E	E
6	1.40	E	E	E	E	E	E	1.80	2.00	2.00	1.95	2.00	2.00	1.95	1.90	1.60	E	E	E	E	E	E	E	E
7	E	1.00	E	E	E	E	E	1.55	E	E	1.80	2.05	2.10	2.40	1.60	2.00	1.60	E	E	E	E	E	E	E
8	1.50	1.20	E	E	E	E	E	1.80	2.00	2.05	1.70	2.40	1.90	1.80	1.70	1.80	1.70	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	1.70	1.80	2.30	2.10	2.05	2.90	2.00	2.00	1.80	E	E	E	E	E	E	E
10	1.50	E	E	E	E	E	E	1.95	1.80	1.90	2.30	2.50	2.40	2.50	2.00	1.90	1.90	E	E	E	E	E	E	E
11	1.40	E	E	E	E	E	E	1.80	1.90	1.75	2.40	2.40	2.20	1.80	1.80	1.60	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	1.70	2.00	2.30	2.40	1.95	2.40	2.05	2.00	1.70	1.60	E	E	E	E	E	E
13	1.45	E	E	E	E	E	E	E	1.70	1.90	2.00	2.50	2.00	2.40	2.25	2.00	1.80	C	E	E	E	1.60	C	E
14	C	1.20	E	C	E	E	E	E	2.00	2.00	2.15	2.50	2.40	2.05	2.00	2.05	1.60	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	1.60	2.05	2.00	2.50	3.05	3.05	2.50	1.80	2.00	1.55	E	E	E	E	E	E
16	1.50	E	E	E	E	E	E	E	2.00	2.10	2.50	4.50	2.50	2.50	2.25	1.90	1.95	1.60	E	E	E	E	E	E
17	1.50	E	E	E	E	E	E	E	2.10	2.30	2.25	2.80	2.30	2.10	2.10	2.00	1.70	E	E	E	E	E	E	E
18	1.50	E	E	E	E	E	E	E	2.00	2.00	2.60	2.05	2.40	2.00	2.05	2.00	1.90	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	2.00	2.30	2.05	2.25	2.90	2.50	2.50	2.00	2.30	E	E	1.80	1.90	E	E	E
20	1.50	1.20	E	E	E	E	E	E	2.00	2.15	2.15	2.60	3.00	2.40	2.00	2.00	1.95	E	E	E	E	2.50	1.90	E
21	E	E	E	E	E	E	E	E	2.25	2.05	2.05	2.40	3.00	2.40	2.00	2.00	1.95	E	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	2.50	1.90	2.05	2.05	2.40	2.30	2.30	1.80	1.60	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	1.60	1.80	1.90	2.40	2.00	2.00	2.00	E	1.80	E	E	E	E	E	E	E
24	1.45	E	E	E	E	E	E	E	1.65	2.00	2.30	2.40	2.00	2.30	1.90	2.25	1.80	E	E	E	E	E	E	1.60
25	E	E	E	E	E	E	E	E	1.60	1.60	2.30	2.00	2.00	2.00	2.50	1.60	1.80	E	E	E	E	E	E	E
26	1.50	E	E	E	E	E	E	E	C	2.00	2.40	2.00	2.10	1.95	1.80	E	E	E	E	E	E	E	E	1.60
27	1.45	1.20	1.45	E	E	E	E	E	1.80	2.20	2.50	2.60	2.50	2.40	1.80	1.60	1.60	E	E	E	E	E	E	E
28	1.50	E	E	E	E	E	E	E	1.95	2.70	2.00	2.95	2.00	1.80	1.80	1.80	E	E	E	E	E	E	E	1.70
29	E	E	E	E	E	E	E	E	2.00	1.90	2.70	2.00	2.60	2.50	2.15	1.60	E	E	E	E	E	E	E	E
30	1.50	E	E	E	E	E	E	E	1.95	2.25	2.60	1.60	2.40	2.40	1.80	1.60	1.60	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	1.80	1.80	1.90	2.40	2.10	2.00	1.90	1.80	E	E	E	E	E	E	E	E
No.	30	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31
Median	1.40	E	E	E	E	E	E	E	1.60	1.80	2.00	2.25	2.40	2.20	2.10	2.00	1.70	E	E	E	E	E	E	E

Note: Lowest limit of observable frequency is 1.80 Mc/s due to radio interference except from 11.00 to 06.00

Sweep 0.35 Mc to 2.20 Mc in 2 min in automatic operation.

The Radio Research Laboratories, Japan.

**A 6**

# IONOSPHERIC DATA

Lat. 39° 43.6' N  
Long. 140° 08.2' E

## Akita

135° E Mean Time (GM.T.+ 9h.)

(M3000)F2

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	260	260	250	245	255	270	295	310	285	290	285	280	270	270 <sup>m</sup>	275	270	290	290	280	280	265	280	285	290
2	255	230	250	260	250	245	295	320	300	290	285	270	270	265	275	285	285	290	280	285	280	270	265	285
3	285	260	265	255	245	265	295	315	305	290	280	270	270	265	260	265	265	270	280	280	285	260	245	240
4	250	260	230	230	245	255	300	310	290	285	270	270	270	260	260	260	275	280	275	290	270	270	270	270
5	255	245	240	250	250	255	310	305	305	290	270	280	270	265	265	260	275	275	275	290	275	285	265	250
6	255	275	270	260	250	260	310	315	305	290	295	285	270	260	265	270	275	285	280	280	280	270	255	265
7	280	275	280	280	285	285	325	320	325	300	290 <sup>m</sup>	280 <sup>m</sup>	275	265	265	260	275	285	R	R	270	265	270	270
8	265	255	240	250	265	260	305	300	295	285	280	280	265	270	270	275	280	285	280	285	280	270	285	290
9	275	260	265	265	260	270	310	325	310	260	280	270	265	255	255	270	275	275	280	270	270	R	R	290
10	280	250	235	240	235	235	310	320	305	290	275	255	255	260	260	265	260	270	280	270	270	265	270	295
11	235	235	230	255	245	250	280 <sup>f</sup>	290	305	300	275	270	270	260	255	270	270	270	270	275	260	260	240	220
12	210	215	235	225	230	220	275	300	300	270	270	275	280	265	270	280	280	280	280	275	275	260	255	265
13	260	240	245	225	220	240	295	300	290	280	265	275	250	260	260	270	260	275	280	295	290	265	260	270
14	250	235	245	250	250	250	270 <sup>c</sup>	310	C	C	C	C	265	260	250	255	260	265	270	265	250	250	245	270
15	265 <sup>R</sup>	250	225	225	220	230	240	265 <sup>m</sup>	250 <sup>m</sup>	260 <sup>m</sup>	250 <sup>m</sup>	250 <sup>m</sup>	255 <sup>m</sup>	265 <sup>m</sup>	265 <sup>m</sup>	270 <sup>m</sup>	280	285	280 <sup>R</sup>	270	260	260	245	235
16	235	235	245	250	225	225	280	300	295	290	290	270	265	260	265	270	270	275	275	270	260	285	270	280
17	265	270	255	270	265	270	290	310	290 <sup>m</sup>	285	280 <sup>m</sup>	270 <sup>c</sup>	260 <sup>m</sup>	260 <sup>m</sup>	265	265	260	265	260	R	R	270	255	250
18	260	280	275	250	260	245	295	300	300	280	265	260 <sup>m</sup>	250 <sup>m</sup>	250 <sup>m</sup>	255 <sup>m</sup>	260	260	265	265	265	260	260	270	270
19	260	260	265	270	275	245	280	290	290	280	270	255	245	255	260	250	260	255	255	265	265	255	255	255
20	265	260	240	255	255	270	280	300	300	280	270	255	270	245	260 <sup>m</sup>	260	260	255	265	280	270	270	275	270
21	255	260	260	250	235	255	290	300	290	280	270	260	255	240 <sup>m</sup>	255	270	270	270	270	260	270	260	265	260
22	245	230	250	230	230	255	280	285	C	C	280	265	255	260	250	255	250	260	265	255	260	255	255	270
23	265	260	255	240	250	250	280	290	280 <sup>m</sup>	280	270	260 <sup>m</sup>	260 <sup>m</sup>	250 <sup>m</sup>	250 <sup>m</sup>	255	260	260	260	260	260	260	265	265
24	250	275	270	275	280	255	290	295	305	285	280	265	260	250	260	260	255	260	265	260	265	270	265	240
25	250	270	275	275	260	250	280	310	295	280	270	260	260	245	255	255	265	265	260	260	270	265 <sup>R</sup>	260	265
26	270	270	255	275	280	255	285	295	300	280	275	255	250 <sup>m</sup>	240 <sup>m</sup>	250 <sup>m</sup>	255	255	260	260	260	265	R	R	255
27	260	265	270	280	250	260	285	310	305	280	275	255	255	250	250	250	260	265	255	265	R	R	265	240 <sup>R</sup>
28	240	285	235	240	235	250	285	C	R	285	280 <sup>m</sup>	285 <sup>m</sup>	240 <sup>m</sup>	240 <sup>m</sup>	240 <sup>m</sup>	245 <sup>m</sup>	250	260	265	255	255	270 <sup>R</sup>	255	255
29	270	255	250	260	230	230	270	280	295	270 <sup>m</sup>	270 <sup>m</sup>	255 <sup>m</sup>	240 <sup>m</sup>	235	245	250 <sup>m</sup>	250	260	255	255	255	260 <sup>R</sup>	260	265
30	230	250	255	255	245	240	270	285	280	275	260	260 <sup>m</sup>	245 <sup>m</sup>	245 <sup>m</sup>	250 <sup>m</sup>	250 <sup>m</sup>	250 <sup>m</sup>	250	245	250	245	275	255	245
31	250	265	265	270	285	255	275	290	295	275	270 <sup>m</sup>	260 <sup>m</sup>	250 <sup>m</sup>	245 <sup>m</sup>	255 <sup>m</sup>	250 <sup>m</sup>	255	255	265	260	270	265	270	240
No.	31	31	31	31	31	31	31	30	28	29	30	30	31	31	31	31	31	31	31	29	29	29	30	31
Median	260	260	250	255	250	255	285	300	300	285	275	265	260	260	260	260	260	270	270	270	270	265	260	265

(M3000)F2

Sweep 48.5 Mc to 22.0 Mc in 2 min in automatic operation.

The Radio Research Laboratories, Japan.

A 7

# IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

**Akita**

(M3000)F1

Oct. 1957

135° E Mean Time (GMT.+ 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																								
2										L	L	L	L	L	A	L								
3										L	L	L	L	L	L	L								
4										L	L	L	L	L	L	L								
5									L	L	L	L	L	L	L	L								
6																								
7																								
8												4.05	L	L	L	L								
9										L	L	L	L <sup>H</sup>	L <sup>H</sup>	L	L								
10										L	L	L	L	L	L	L								
11																C								
12																								
13																								
14									C															
15																								
16																								
17												C												
18																								
19																								
20																								
21												3.90												
22									L		L													
23																								
24											L													
25									C															
26										C														
27																								
28																								
29																								
30																								
31																								
No.												2	1											
Median											4.00	3.75												

(M3000)F1

Lat. 39° 43.5' N  
Long. 140° 08.2' E

# Akita

## IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

R'F2

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											250 <sup>L</sup>	245 <sup>L</sup>	250 <sup>H</sup>	250 <sup>L</sup>										
2										250	240 <sup>L</sup>	250	250 <sup>H</sup>	250 <sup>L</sup>	A									
3										L	L	240 <sup>H</sup>	L <sup>H</sup>	L <sup>H</sup>	L	L								
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L								
6											250	250	L	L	L	L								
7											235 <sup>H</sup>	245 <sup>H</sup>	L	L <sup>H</sup>	L	L								
8											240 <sup>H</sup>	240 <sup>H</sup>	290 <sup>H</sup>			L								
9										250	240 <sup>L</sup>	240 <sup>L</sup>	L <sup>H</sup>	L <sup>H</sup>	L <sup>H</sup>	L								
10										L <sup>H</sup>	L	L <sup>H</sup>	L	L	L	C								
11																								
12																								
13																								
14																								
15																								
16																								
17												C												
18																								
19																								
20												260 <sup>H</sup>												
21											250													
22																								
23																								
24												245												
25																								
26																								
27																								
28																								
29																								
30																								
31																								
No.										1	2	7	8	3	1									
Median										250	250	245	250	250	250									

Sweep 0.85 Mc to 2.2 Mc in 2 min in automatic operation.

R'F2

The Radio Research Laboratories, Japan.

A 9



Lat. 38° 43.5' N  
Long. 140° 08.3' E

**A k i t a**

**IONOSPHERIC DATA**

135° E Mean Time (GMT.+9h.)

R'F

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	260	300	300	310	300	280	240	240	240	230	240	230	220	245	240 <sup>H</sup>	245	250	250	245	250	280	285	275	270
2	245	350	300	280	245	310	245	250	225	240	240	240	220	240	245	250	250	250	245	250	270	260	260	280
3	290	260	260	270	290	300	245	240	240	225	235	220	220	240	245	245	250	260	250	250	250	250	245	345
4	345	300	350	340	305	255	240	240	225	240	240	230	230	245	240	260	250	260	250	255	255	260	290	280
5	275	340	310	300	290	300	245	240	220	225	240	240	210	245	240	240	250	260	250	255	250	245	250	280
6	295	260	260	270	300	280	250	240	240	240	240	245	240	230	240	250	250	250	245	250	245	270	290	290
7	270	260	290	250	260	255	245	230	240	220	210	225	240	240	230	250	250	250	245	250	255	290	280	280
8	290	290	320	305	260	270	240	220	240	240	245	225	200 <sup>H</sup>	250	240 <sup>H</sup>	245 <sup>H</sup>	250	250	245	245	250	250	280	260
9	260	290	295	260	265	280	240	230	245	240	220	210	200 <sup>H</sup>	250	245	250	255	250	250	250	255	260	255	250
10	260	290	340	350	310	355	250	245	230	225	245	240	240	245	245 <sup>H</sup>	250 <sup>C</sup>	270	270	295 <sup>A</sup>	260	270	280	300	250
11	295	345	350	300	240	295	260	250	250	245	245	225	245	245 <sup>H</sup>	245 <sup>H</sup>	250	250	280	250	250	280	290	305	305
12	400	390	300	340	350	400	290	245	250	230 <sup>H</sup>	245	220 <sup>H</sup>	245	240 <sup>H</sup>	240 <sup>H</sup>	245 <sup>H</sup>	245	250	250	260	260	300 <sup>A</sup>	310 <sup>A</sup>	275
13	250	300	300	360	390	350	260	250	240	230 <sup>H</sup>	240 <sup>H</sup>	240 <sup>H</sup>	250 <sup>H</sup>	230 <sup>H</sup>	240 <sup>H</sup>	250 <sup>H</sup>	250 <sup>H</sup>	270	245	250	250	260	290 <sup>C</sup>	290
14	300	330	305	300	270	275	245	225	225	245	245	245	245	245	250 <sup>H</sup>	250	255	280	245	230	320 <sup>H</sup>	350 <sup>A</sup>	350	280
15	280	300	390	400	360	350	325	250 <sup>H</sup>	260 <sup>H</sup>	250 <sup>H</sup>	230 <sup>H</sup>	230 <sup>H</sup>	250 <sup>H</sup>	250 <sup>H</sup>	250 <sup>H</sup>	250 <sup>H</sup>	250 <sup>H</sup>	250	250	250	245	300	310	340
16	350	325	300	290	300	375	255	240	230 <sup>A</sup>	245	230	240	235 <sup>H</sup>	240 <sup>H</sup>	245 <sup>H</sup>	245 <sup>H</sup>	250 <sup>H</sup>	250	250	250	245	300	260	275
17	290	275	280	295	255	260	225	240	220 <sup>H</sup>	230	230	240	245	240 <sup>H</sup>	250	245	255	250	280	310	245	290	300	310
18	245	250	260	265	290	290	250	230	240	245	250	240 <sup>H</sup>	245 <sup>H</sup>	250 <sup>H</sup>	245 <sup>H</sup>	250	285	275	260	280	255	295	300	295
19	285	300	295	270	250	280	250	230	240	240	240	250	245	250 <sup>H</sup>	245 <sup>H</sup>	250	255	250	280	280	255	295	300	295
20	300	245	300	300	280	250	250	240	230	225	240	250	245	250	250	250 <sup>H</sup>	260 <sup>A</sup>	270	280	270	280	300	310	300
21	305	300	280	295	280	325	250	245	245	240	240	250	245	245	245 <sup>H</sup>	250 <sup>H</sup>	260 <sup>A</sup>	270	280	270	280	300	260	300
22	290	320	300	330	300	280	250	245	245	240	235	240	245	250 <sup>H</sup>	245 <sup>H</sup>	250 <sup>H</sup>	250	260	250	280	280	290	290	295
23	280	290	285	290	290	250	255	245	245	240	240	230 <sup>H</sup>	240 <sup>H</sup>	240 <sup>H</sup>	240 <sup>H</sup>	245	250	255	275	250	295	290	250	260
24	310	295	270	260	250	240	250	245	240	245	240	245	240	240 <sup>H</sup>	240 <sup>H</sup>	245	255	260	280	260	270	280	300	300
25	320	285	250	250	245	300	290	245	230 <sup>C</sup>	240	245	240	230 <sup>H</sup>	240 <sup>H</sup>	245	245	250	250	295	280 <sup>A</sup>	300 <sup>A</sup>	275	255	300
26	290	260	280	270	250	270	250	240	235	245	250	250	240	250 <sup>H</sup>	240 <sup>H</sup>	240	250	255	295	290	290	275	270	270
27	310	270	255	255	255	295	255	235	240	240	240	240	240	240	245	245	250	280	280	275	290	300	300	370
28	350	260	290	340	310	310	250	225	240	245	240	245	245	245 <sup>H</sup>	240 <sup>H</sup>	250	250	280	275	290	295	295	295	295
29	290	290	290	255	300	340	250	240	245	225	245	240	245	245	245	245	260	270	275	275	280	375	295	280
30	340	320	270	255	290	350	260	230	245	240	245	245	245	245 <sup>H</sup>	250 <sup>H</sup>	250 <sup>H</sup>	250	270	290	290	260	270	290	300
31	300	290	290	280	240	250	270	245	240	245	240	240	240	245	245 <sup>H</sup>	245 <sup>H</sup>	250	260	280	260	285	265	280	320
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	295	295	295	290	290	290	250	240	240	240	240	240	240	245	245	250	250	255	260	255	270	280	290	290

Sweep 0.85 Mc to 2.20 Mc in 2 min in automatic operation.

The Radio Research Laboratories, Japan.

R'F

A 10

IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.3' E

Akita

135° E Mean Time (GMT.+ 9h.)

f'Es

Oct. 1957

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

Sweep 0.85 Mc to 2.2 Mc in 2 min in automatic operation.

f'Es

The Radio Research Laboratories, Japan.

A 11

# IONOSPHERIC DATA

Lat. 39° 43.5' N  
Long. 140° 08.2' E

## A k i t a

135° E Mean Time (GMT.+ 9h.)

Types of Es

Oct. 1957

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	f7	f2	f3	f3	f	f		f	C		l	l	l				l	f	f				
2			f	f	f	f	l	l	f	f	C	C	C	C	C3	C2	C	l	f2	f3	f2	f	f	
3	f	f	f	f	f	f			f	f	C	C	f	f	l2	f	C	l2	f3	f3	f	f		
4	f2	f2	f2	f2						f	C	f	l	l	C	C	l2	f2	f3	f2	f2			
5	f	f	f							f	C	f	l	l	C	C	l	l	f	f2	f2			
6			f2	f	f2	f2				f	f	f		l	f	f	l	f3	f3	f				
7	f		f3	f2	f3	f2				f	f	f		l	f	f	l	f3	f3	f				
8			f2	f2	f					f	C	l	l	l	f	f	l3	l	f2	f2	f	f	f	
9	f2	f2	f						f	f	C	l	l	l	f	f	C2	f3	f3	f2	f2	f2	f2	f
10										f	C	l	l	l	f	f	C3	l2	f2	f2	f2	f2	f2	f
11	f									f	C	l	l	l	f	f	C	l	f	f	f	f2	f2	f
12	f		f2	f	f2	f2	l2	l2	l	f	C	l	l	l	f	f	C	l	f	f	f	f2	f2	f2
13			f	f	f3	f	l	C	C2	C	C	l	l	l	f	f	C	l	f	f	f	f2	f2	f2
14					f	f	l	l	l	l	l	l	l	l	f	f	l	f	f	f	f3	f3	f	f
15	f		f	f	f	f	l	l	C2	C	f	f	l	l	f	f	C3	f2	f2	f3	f2	f	f	f
16			f2	f2	f	l	l	l	C2	C	l	l	l	l	l	f	l	l	f	f3	f2	f	f	f
17			f	f2	f2	l	l	C	l	C	l	l	l	l	f	f	l	f2	f2	f2	f	f	f	f
18			f	f	f	l	l	l	l	l	l	l	l	l	f	f	C2	f	f	f	f	f	f	f
19	f2	f2	f	f	f3	f2	l	l	C	C	C	f	l	l	f	f	C4	f2	f4	f	f	f	f	f
20	f		f	f	f	f			f	f	C	C	C	l	f	f	C2	f2	f4	f	f	f2	f	f
21	f		f	f	f	f	l	l	f	f	l	l	l	l	f	f	C	l2	l2	f	f	f	f	f
22			f	f	f	l	l	l	l	l	l	l	l	l	f	f	C	l	l	f	f	f	f	f
23			f	f	f	l	l	l	l	l	l	l	l	l	f	f	C	l	f3	f3	f3	f3	f2	f
24	f3	f3	f2	f2	f2	l	l	l	l	C	l	l	l	l	l	f	C	f	f5	f3	f3	f2	f	f
25	f		f	f	f	f	l	l	l	l	l	l	l	l	f	f	l2	f	f2	f	f	f	f	f
26																								
27	f		f	f	f	f	l	l	l	l	l	l	l	l	f	f	l	f2	f2	f2	f2	f2	f	f
28	f2	f	f2	f	f	f	l	l	l	l	l	l	l	l	f	f	l	f2	f2	f2	f2	f2	f	f
29	f	f2	f4	f	f2	f	l	l	C	l	l	l	l	l	f	f	l	f2	f2	f2	f2	f2	f	f
30	f	f	f2	f2	f5	f2	l	l	l	C	C	C	l	l	f	f	C	l	f2	f2	f2	f2	f	f
31	f	f	f3	f6	f3	C	l	l	l	l	l2	l	l	l	f	f	l	f2	f	f	f2	f2	f2	f
No.																								
Median																								

Sweep 0.85 Mc to 22.4 Mc in 2 min in automatic operation.

The Radio Research Laboratories, Japan.

A 12

Types of Es



# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

**Kokubunji Tokyo**

135° E Mean Time (GMT.+9h.)

foF2

Oct. 1957

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	8.1 <sup>s</sup>	8.0	7.7	7.5	7.8	8.2	10.9	12.9	13.5	14.0	14.3 <sup>k</sup>	14.4 <sup>h</sup>	14.3 <sup>h</sup>	14.2	14.3 <sup>h</sup>	13.8 <sup>h</sup>	13.3	12.6	11.1	9.3	9.6 <sup>s</sup>	9.9	9.6	8.3
2	7.4	7.0	7.2	7.1	6.6	6.3	7.2	13.2	13.5	13.2	13.1	13.8 <sup>h</sup>	13.6 <sup>h</sup>	13.6	13.5 <sup>h</sup>	C	C	C	11.8	10.0	9.8 <sup>s</sup>	9.2	9.5	9.2
3	8.8	7.8	7.2	6.4	6.4	6.5	9.6	12.8	13.4	13.7	14.7 <sup>k</sup>	14.0	13.3 <sup>h</sup>	13.6 <sup>h</sup>	13.3 <sup>h</sup>	13.2 <sup>h</sup>	12.9	12.9	11.8	10.1 <sup>s</sup>	9.9	8.9	8.5	8.2 <sup>s</sup>
4	8.0 <sup>s</sup>	8.3 <sup>k</sup>	7.0	6.8	7.2	7.1	9.7 <sup>s</sup>	12.7	12.7	14.0	15.2 <sup>k</sup>	15.0 <sup>h</sup>	14.7 <sup>h</sup>	14.8 <sup>h</sup>	14.1 <sup>h</sup>	13.5 <sup>h</sup>	13.8	13.5	11.9	10.4 <sup>s</sup>	9.8 <sup>s</sup>	9.3	9.2	9.2
5	9.0 <sup>s</sup>	8.0 <sup>s</sup>	7.2	7.3	6.8	6.6	6.6	11.4	12.6	13.8	14.8	14.5	13.8 <sup>h</sup>	13.7 <sup>h</sup>	13.2 <sup>h</sup>	12.7 <sup>h</sup>	12.9	12.9	12.4	10.6 <sup>s</sup>	9.3	8.7	7.9	8.4 <sup>k</sup>
6	7.9 <sup>s</sup>	7.7	7.0	5.8	6.0	6.4	9.5	12.2	12.2	11.5	12.6	13.1 <sup>h</sup>	13.7 <sup>h</sup>	13.5 <sup>h</sup>	13.5 <sup>h</sup>	12.9	12.7	12.4	10.6 <sup>s</sup>	9.3	8.7	7.9	7.9	8.4 <sup>k</sup>
7	8.2 <sup>s</sup>	8.3	7.0 <sup>s</sup>	6.8	6.1	5.7	8.6	11.5	11.2	11.5	12.6	13.1 <sup>h</sup>	12.6 <sup>h</sup>	12.7 <sup>h</sup>	12.2 <sup>h</sup>	11.9 <sup>h</sup>	12.1	12.2	10.5 <sup>s</sup>	8.7 <sup>k</sup>	8.3	7.7	8.1	8.0
8	7.2	6.9	6.6 <sup>s</sup>	6.9	6.6	6.7	10.1 <sup>s</sup>	12.3	12.5	12.8	13.5 <sup>h</sup>	12.8	13.0 <sup>h</sup>	13.5 <sup>h</sup>	12.5	12.2	12.3	12.1	11.1 <sup>s</sup>	9.9 <sup>s</sup>	9.9 <sup>s</sup>	9.8 <sup>s</sup>	9.5	9.1
9	7.7 <sup>s</sup>	7.9 <sup>k</sup>	7.0	6.9	6.4	6.8	10.1 <sup>s</sup>	12.6	12.9	12.7	12.8	13.3 <sup>h</sup>	13.7 <sup>h</sup>	13.8 <sup>h</sup>	13.7 <sup>h</sup>	13.0	12.7	12.5	11.1 <sup>s</sup>	9.4	9.5	9.4 <sup>s</sup>	8.7	8.3
10	7.6 <sup>s</sup>	6.1	6.1	5.9	5.9 <sup>s</sup>	6.1	9.3	13.5	14.9	14.2	14.6 <sup>h</sup>	14.7 <sup>h</sup>	14.4 <sup>h</sup>	14.4 <sup>k</sup>	13.4	12.4 <sup>h</sup>	11.9	11.9	10.8 <sup>s</sup>	9.9 <sup>s</sup>	8.9	8.4 <sup>s</sup>	8.2	8.1
11	6.3	6.5	6.3	6.4	6.3 <sup>s</sup>	6.6	8.8	12.6	15.1 <sup>s</sup>	16.3	15.5 <sup>k</sup>	15.2 <sup>h</sup>	15.3 <sup>h</sup>	14.6 <sup>h</sup>	13.9 <sup>h</sup>	13.2	12.3	11.8	10.6 <sup>s</sup>	9.0	8.5	7.9	7.2	6.9
12	6.5	6.8	6.9	6.7	6.7	6.6	8.7	12.2	12.5	13.1	13.8	13.5 <sup>h</sup>	13.2	12.6 <sup>h</sup>	11.6 <sup>h</sup>	12.0 <sup>h</sup>	11.9	10.7	10.0 <sup>s</sup>	8.7	8.4	7.2	6.9	7.0
13	6.0	5.8	6.0	5.6	5.4	5.7	7.6	13.1	13.3	14.2	14.5	14.2 <sup>h</sup>	13.9 <sup>h</sup>	13.4 <sup>h</sup>	13.3 <sup>h</sup>	12.5	11.6	11.0	10.8 <sup>s</sup>	9.1	8.3 <sup>k</sup>	7.7 <sup>s</sup>	7.9	8.2
14	7.5 <sup>s</sup>	6.9	7.0	6.8	6.5	6.5	9.0	11.5	13.6	14.5 <sup>k</sup>	14.8	13.4	13.4 <sup>h</sup>	13.6 <sup>h</sup>	13.1 <sup>h</sup>	12.2 <sup>h</sup>	11.4	11.5	11.1	9.0	7.8 <sup>k</sup>	7.9	8.0	8.5
15	6.9	6.0	6.0	6.0	6.1	6.2	7.6 <sup>s</sup>	10.4 <sup>k</sup>	11.7	12.3 <sup>k</sup>	13.0	12.9 <sup>h</sup>	13.2	12.4 <sup>h</sup>	12.1 <sup>h</sup>	11.6 <sup>h</sup>	11.2	10.7 <sup>s</sup>	9.3 <sup>s</sup>	8.2	7.8 <sup>s</sup>	7.6 <sup>s</sup>	7.1	6.9
16	6.5 <sup>s</sup>	6.7	6.3 <sup>s</sup>	6.0	5.5 <sup>s</sup>	5.4	7.7	11.9	14.9 <sup>k</sup>	15.3 <sup>h</sup>	15.3 <sup>h</sup>	15.8	15.7 <sup>h</sup>	15.0 <sup>h</sup>	14.4 <sup>h</sup>	13.3 <sup>h</sup>	12.2	11.9	10.7	9.0	9.0	9.2	8.6	8.2 <sup>k</sup>
17	8.0	8.2	7.4	6.9	6.4	5.6	8.2	11.5	13.5	14.2	14.8 <sup>h</sup>	14.4	14.0 <sup>h</sup>	13.6 <sup>h</sup>	13.1 <sup>h</sup>	12.4 <sup>h</sup>	12.3	11.7	10.4 <sup>s</sup>	9.7 <sup>s</sup>	9.8 <sup>s</sup>	9.8 <sup>s</sup>	8.6	8.5 <sup>s</sup>
18	8.9	8.7	7.1	6.4	6.4	6.0	8.5	11.6	13.5	13.9	13.7 <sup>h</sup>	13.1	13.0 <sup>h</sup>	12.7 <sup>h</sup>	12.0 <sup>h</sup>	11.2 <sup>h</sup>	11.2	11.1	10.0 <sup>s</sup>	9.2 <sup>s</sup>	8.9	8.8 <sup>s</sup>	9.0	8.7
19	8.5	7.9	7.7	7.1	6.4	5.1	7.7 <sup>s</sup>	11.9	13.0	13.8	13.8 <sup>h</sup>	13.9 <sup>h</sup>	13.2	12.8 <sup>h</sup>	12.4 <sup>h</sup>	11.8 <sup>h</sup>	11.5	11.0	10.0 <sup>s</sup>	9.4	8.6	8.0 <sup>s</sup>	7.8	7.9
20	7.8 <sup>s</sup>	7.3	6.9 <sup>s</sup>	6.8	6.6	6.5	8.8	11.8	14.0	13.9	14.4	14.0 <sup>h</sup>	13.7 <sup>h</sup>	12.8 <sup>h</sup>	12.4 <sup>h</sup>	12.1 <sup>h</sup>	11.6	11.0	10.1 <sup>s</sup>	9.4 <sup>s</sup>	9.3 <sup>s</sup>	9.4 <sup>s</sup>	8.8	8.5
21	8.2 <sup>s</sup>	8.2 <sup>s</sup>	7.9	7.3	6.6	6.7	9.3	12.5	14.0	14.4	14.2 <sup>h</sup>	13.9 <sup>h</sup>	13.8 <sup>h</sup>	13.5 <sup>h</sup>	12.6 <sup>h</sup>	12.4	12.4	11.8	10.7 <sup>s</sup>	10.0 <sup>s</sup>	9.5 <sup>s</sup>	9.5	9.2	9.0
22	8.4	7.4	7.5	6.9	6.9	7.0	9.3 <sup>s</sup>	12.8	14.4 <sup>k</sup>	16.5 <sup>k</sup>	15.1 <sup>h</sup>	14.7 <sup>h</sup>	14.4 <sup>h</sup>	13.5 <sup>h</sup>	12.8 <sup>h</sup>	12.5	12.3	12.2	11.5	10.8 <sup>s</sup>	11.0	10.3	10.2	9.5
23	8.9	8.7	8.3 <sup>k</sup>	7.4	7.3 <sup>s</sup>	6.9	9.8	13.5	14.8 <sup>k</sup>	15.9 <sup>h</sup>	16.1 <sup>h</sup>	15.1 <sup>h</sup>	15.0 <sup>h</sup>	14.7 <sup>h</sup>	13.8 <sup>h</sup>	13.1 <sup>h</sup>	12.6	12.0	11.1 <sup>s</sup>	10.0 <sup>s</sup>	9.8 <sup>s</sup>	9.7 <sup>s</sup>	9.1	8.4
24	8.0	8.6	8.2	6.8	6.0	5.1	7.8	11.1	13.5	14.9 <sup>k</sup>	15.0 <sup>k</sup>	14.3 <sup>h</sup>	14.2 <sup>h</sup>	14.0 <sup>h</sup>	13.8 <sup>h</sup>	12.9 <sup>h</sup>	12.2	11.8	10.6 <sup>s</sup>	9.8 <sup>s</sup>	9.7 <sup>k</sup>	9.3 <sup>s</sup>	8.6	7.9
25	7.7	8.2	7.6 <sup>s</sup>	6.8	5.0 <sup>s</sup>	5.2	8.4	13.1	13.6	14.0	14.3 <sup>h</sup>	15.0 <sup>h</sup>	14.7 <sup>h</sup>	14.1 <sup>h</sup>	13.0 <sup>h</sup>	12.3 <sup>h</sup>	11.6	10.7	10.2	9.9 <sup>h</sup>	10.3 <sup>s</sup>	9.9 <sup>h</sup>	9.2	8.5
26	8.0 <sup>s</sup>	7.0	6.9	6.7	5.8 <sup>s</sup>	5.4	8.1	11.3	13.8	14.6 <sup>k</sup>	14.2	14.4 <sup>h</sup>	14.2 <sup>h</sup>	13.8 <sup>h</sup>	12.9 <sup>h</sup>	12.0 <sup>h</sup>	11.6	11.3	9.8 <sup>s</sup>	9.7	9.3	9.1	8.2 <sup>s</sup>	7.7 <sup>s</sup>
27	7.6	7.5	7.1	6.9	6.0	6.1 <sup>s</sup>	9.1	12.6	13.9	14.6	14.4	14.3 <sup>h</sup>	14.1 <sup>h</sup>	13.8 <sup>h</sup>	13.2 <sup>h</sup>	12.3 <sup>h</sup>	12.0	11.6	10.0 <sup>s</sup>	9.8 <sup>s</sup>	9.7 <sup>s</sup>	9.4 <sup>s</sup>	8.4 <sup>s</sup>	7.2
28	7.2	7.9 <sup>s</sup>	6.1	6.4	6.6	7.0	9.8	13.2	15.1	15.2	15.2 <sup>h</sup>	14.7 <sup>h</sup>	14.1 <sup>h</sup>	14.2 <sup>h</sup>	13.8 <sup>h</sup>	13.5 <sup>h</sup>	12.7	12.1	11.5 <sup>s</sup>	10.9 <sup>s</sup>	10.8 <sup>s</sup>	9.8 <sup>s</sup>	8.3 <sup>s</sup>	8.0 <sup>s</sup>
29	8.4	7.6	7.1	6.5	5.7 <sup>s</sup>	5.9	9.0	12.3	13.6 <sup>h</sup>	14.3	14.8 <sup>h</sup>	14.0 <sup>h</sup>	13.3 <sup>h</sup>	13.6 <sup>h</sup>	13.4 <sup>h</sup>	12.7 <sup>h</sup>	12.6	12.3	11.1 <sup>s</sup>	10.1 <sup>s</sup>	9.9 <sup>s</sup>	9.6 <sup>s</sup>	9.1	8.1 <sup>s</sup>
30	7.2	7.3	7.5	7.1	6.0	6.1	8.6	10.9	13.3	13.3	14.0 <sup>h</sup>	13.6 <sup>h</sup>	13.8 <sup>h</sup>	13.2 <sup>h</sup>	12.8 <sup>h</sup>	12.6 <sup>h</sup>	12.2	11.9	S	9.9 <sup>s</sup>	9.6	8.7 <sup>s</sup>	7.9 <sup>s</sup>	7.9 <sup>s</sup>
31	8.0 <sup>s</sup>	8.3	7.6 <sup>s</sup>	7.1	5.8	5.2	7.8 <sup>s</sup>	12.0	13.9	14.3	14.1 <sup>h</sup>	13.9 <sup>h</sup>	13.6 <sup>h</sup>	13.5 <sup>h</sup>	13.0 <sup>h</sup>	12.4 <sup>h</sup>	12.4	11.8	11.0 <sup>s</sup>	10.0 <sup>s</sup>	9.9	9.0 <sup>s</sup>	8.0	7.0
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31
Median	7.9	7.7	7.1	6.8	6.4	6.3	9.0	12.3	13.5	14.0	14.4	14.0	13.8	13.6	13.2	12.4	12.2	11.8	10.8	9.8	9.6	9.2	8.5	8.2
U.Q.	8.2	8.2	7.5	7.1	6.6	6.7	9.6	12.8	14.0	14.6	14.8	14.7	14.3	14.1	13.7	13.0	12.6	12.2	11.1	10.0	9.8	9.6	9.1	8.5
L.Q.	7.2	6.9	6.9	6.4	6.0	5.7	8.4	11.5	12.9	13.7	13.8	13.6	13.3	13.4	12.6	12.2	11.6	11.3	10.2	9.2	8.7	8.0	8.0	7.9
Q.R.	1.0	1.3	0.6	0.7	0.6	1.0	1.2	1.3	1.1	0.9	1.0	1.1	1.0	0.7	1.1	0.8	1.0	0.9	0.9	0.8	1.1	1.6	1.1	0.6

Sweep 2.0 Mc to 20.0 Mc in 20 sec in automatic operation.

foF2

The Radio Research Laboratories, Japan.

**K 1**

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

foF1

135° E Mean Time (GMT.+9h.)

Oct. 1957

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														A		C	C	C							
4														6.0											
5																									
6																									
7																									
8																									
9																									
10																									
11																									
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26																									
27																									
28																									
29																									
30																									
31																									
No.																									
Median																									

IONOSPHERIC DATA

Lat. 36° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

foE

135° E Mean Time (GMT.+9h.)

Oct. 1957

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							B	2.95	3.40	3.70	3.90	3.85	3.70	3.60	A	A	A	E						
2							2.20	2.85	3.15	3.70	3.85	3.90	B	B	B	C	C	C						
3							2.10	2.95	3.45	3.75	B	R	B	3.70	3.45	2.90	A	A						
4							2.90	3.30	3.70	3.90	B	B	B	3.90	3.55	3.00	A	A						
5							2.80	3.40	B	B	B	B	B	B	B	3.30	A	E						
6							2.90	3.35	3.65	3.90	R	R	B	B	B	3.20	2.85	A						
7							B	3.35	3.70	3.85	B	B	B	R	3.70	3.35	2.90	E						
8							2.85	3.35	3.55	3.80	B	B	B	B	R	3.35	2.80	E						
9							2.80	3.55	3.70	3.90	R	R	R	R	B	B	2.95	E						
10							A	2.70	3.40	3.75	4.00	4.10	4.05	3.95	3.65	3.40	2.80	E						
11							E	3.00	3.50	3.65	B	B	B	B	3.65	3.40	2.75	E						
12							B	2.65	B	B	C	B	4.00	3.90	3.50	3.40	2.90	E						
13							B	2.75	3.30	3.60	R	B	A	B	B	3.20	2.70	E						
14							2.85	B	B	B	B	4.10	B	B	B	3.40	2.70	E						
15							2.05	2.85	3.30	3.60	3.90	4.00	B	B	B	3.50	2.65	E						
16							2.05	2.75	3.30	3.65	3.80	3.90	B	B	3.85	3.80	2.70	E						
17							E	2.75	2.95	3.25	3.60	3.55	3.55	3.65	3.80	A	A							
18							E	2.90	3.40	3.70	B	B	B	B	3.90	3.80	3.30	E						
19							E	2.75	3.55	3.70	3.85	3.95	4.00	3.90	3.60	3.30	2.50	E						
20							E	2.70	3.40	3.70	3.80	B	B	B	3.95	3.60	2.50	E						
21							E	2.75	3.40	3.70	3.85	4.00	4.00	3.90	3.75	3.30	2.50	E						
22							E	2.70	3.30	3.40	3.80	3.90	4.00	3.80	3.70	3.30	2.30							
23							E	2.70	3.30	3.60	3.95	4.00	4.05	4.05	3.95	3.70	2.60							
24							E	2.90	3.45	3.60	3.90	4.00	4.05	4.05	3.90	3.35	2.75	E						
25							E	2.75	3.35	R	B	R	R	R	3.95	3.70	2.70	B						
26							E	2.50	3.35	R	B	B	4.00	4.05	4.00	3.75	3.30	2.50	E					
27							E	2.50	3.35	3.50	3.95	4.00	4.00	3.60	R	A	B	B						
28							B	2.80	3.25	3.70	4.00	4.00	3.95	3.85	3.65	3.25	2.40	E						
29							E	2.50	3.25	3.70	3.85	3.90	4.00	4.00	3.95	3.70	2.50	E						
30							B	2.70	3.35	3.60	3.90	4.00	4.10	3.75	3.55	3.25	2.25	E						
31							E	2.60	3.25	3.75	3.95	4.05	4.05	4.05	3.90	3.65	3.20	2.40	B					
No.							12	30	29	26	22	18	16	20	20	26	25	20						
Median							E	2.75	3.35	3.70	3.90	4.00	4.00	3.90	3.70	3.30	2.70	E						

foE

Sweep 2.0 Mc to 20.0 Mc in 2.0 sec

The Radio Research Laboratories, Japan.

K 3

in automatic operation.

IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

Kokubunji Tokyo

foEs

Oct. 1957

135° E Mean Time (GMT.+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	2.1	2.1	E	E	E	2.9 <sup>M</sup>	2.3	3.3	3.9	4.3	4.1	4.3	4.4	4.7	5.9 <sup>M</sup>	5.3 <sup>M</sup>	3.9 <sup>M</sup>	E	E	E	E	E	E	E	
2	2.1 <sup>M</sup>	E	E	E	E	E	2.5	3.0	3.6	B	B	4.5	4.7	7.7 <sup>M</sup>	4.7	C	C	C	E	5.8	E	E	E	E	
3	E	E	E	2.5 <sup>M</sup>	E	E	2.2	3.1	3.6	G	B	4.4	4.7	7.1 <sup>M</sup>	G	G	3.2	2.7	3.9 <sup>M</sup>	E	E	E	E	E	
4	E	E	E	E	E	E	E	3.3	G	G	5.0	4.5	4.3	4.5	4.4	4.4	3.0	3.4	2.3	3.3	4.3 <sup>M</sup>	E	E	E	
5	E	E	E	E	E	E	E	G	G	B	B	B	B	B	B	5.0	4.3	4.3	E	E	E	E	E	E	
6	E	E	E	E	E	E	2.1 <sup>M</sup>	G	3.7	4.0	4.5	4.3	B	4.1	B	G	G	2.4	2.4	E	E	E	E	E	
7	E	E	E	E	E	E	2.9 <sup>M</sup>	3.3 <sup>M</sup>	3.6	4.2	B	4.0	B	4.7	5.0	5.3 <sup>M</sup>	6.3 <sup>M</sup>	2.1 <sup>M</sup>	6.1 <sup>M</sup>	3.9 <sup>M</sup>	E	E	E	E	
8	E	E	E	2.3 <sup>M</sup>	E	E	E	2.2 <sup>M</sup>	G	G	B	B	B	B	B	3.8	3.1	2.2	2.2	E	E	E	E	E	
9	E	E	E	E	E	E	E	3.0	4.0	3.8	G	G	G	B	B	B	G	2.7	2.7	E	E	E	E	E	
10	E	E	E	E	E	E	E	2.5	3.8	4.0	G	G	G	G	G	3.9	3.3	4.3	3.5	3.0 <sup>M</sup>	3.5 <sup>M</sup>	E	E	E	
11	E	E	E	E	E	E	2.0 <sup>M</sup>	3.2	G	4.0	4.0	B	4.2	4.2	G	3.9	3.3	4.3	3.5	2.3 <sup>M</sup>	3.8 <sup>M</sup>	E	E	E	
12	3.3 <sup>M</sup>	3.0 <sup>M</sup>	E	E	E	E	2.9	4.3	3.5	B	C	B	4.3	4.3	B	3.7	4.2	4.2	E	2.3 <sup>M</sup>	3.8 <sup>M</sup>	E	E	E	
13	2.2 <sup>M</sup>	E	E	E	E	E	E	3.1	3.9	4.6	4.6	4.4	B	4.0	B	3.9	3.3	3.6	2.1 <sup>M</sup>	E	2.2 <sup>M</sup>	E	E	E	
14	E	E	E	E	E	E	E	B	B	B	B	4.6	B	B	B	G	3.6	3.5	2.2	2.0	2.6 <sup>M</sup>	3.1 <sup>M</sup>	2.4 <sup>M</sup>	2.1 <sup>M</sup>	
15	2.2 <sup>M</sup>	E	E	E	E	E	E	G	B	B	6.0 <sup>M</sup>	4.4	B	B	B	4.2	4.3	6.3 <sup>M</sup>	3.7	E	2.4 <sup>M</sup>	4.3	3.9	2.1 <sup>M</sup>	
16	4.8 <sup>M</sup>	E	E	E	E	E	2.3 <sup>M</sup>	2.4 <sup>M</sup>	B	3.4	4.1	B	B	B	B	3.6	3.6	3.8	4.4	2.4	4.2	3.8	3.5	3.2 <sup>M</sup>	
17	E	E	E	E	E	E	E	E	3.2	6.0 <sup>M</sup>	4.2	5.3	4.5	5.1 <sup>M</sup>	6.0 <sup>M</sup>	6.7 <sup>M</sup>	5.6 <sup>M</sup>	4.3	3.9	2.9	3.3	E	E	E	
18	E	E	E	E	E	E	E	G	G	4.2	4.7	B	G	4.5	4.3	4.4	5.9	4.2	3.1	3.3	E	E	E	E	
19	E	E	E	3.4 <sup>M</sup>	E	E	E	G	3.7	4.3	4.4	5.4	4.7	4.4	4.0	4.2	4.8	4.2	4.0	5.7	6.6	E	E	E	
20	E	E	E	E	E	E	E	G	G	G	4.2	B	B	4.6	4.4	6.0 <sup>M</sup>	3.9 <sup>M</sup>	E	3.6	4.7	3.6	3.9	4.2	3.7 <sup>M</sup>	
21	3.2 <sup>M</sup>	2.5 <sup>M</sup>	2.4 <sup>M</sup>	E	E	E	E	E	G	3.9	4.1	4.2	B	4.6	5.4	6.1	6.0	3.6	3.6	3.6	3.6	4.2	4.2	4.1	3.8 <sup>M</sup>
22	3.2 <sup>M</sup>	2.7 <sup>M</sup>	E	E	E	E	E	G	G	G	4.2	G	4.2	G	4.5	6.8 <sup>M</sup>	4.5	2.4	3.3	E	E	E	E	E	
23	2.5 <sup>M</sup>	E	E	E	E	E	E	E	3.7	4.3	4.4	5.4	4.7	4.4	4.0	4.2	4.8	4.2	3.1	3.3	E	E	E	E	
24	E	E	2.5 <sup>M</sup>	2.5	E	E	E	E	G	B	4.3	4.2	B	G	4.0	3.9 <sup>M</sup>	3.9 <sup>M</sup>	E	3.6	4.7	3.6	3.9	4.2	3.7 <sup>M</sup>	
25	2.7 <sup>M</sup>	2.4 <sup>M</sup>	2.4 <sup>M</sup>	E	E	E	E	E	B	4.3	4.2	4.4	G	G	G	2.9	2.9	B	E	E	E	E	E	E	
26	E	E	8.8 <sup>M</sup>	E	E	E	E	E	G	B	4.3	4.2	G	G	G	G	G	2.9	B	E	E	E	E	E	
27	3.0 <sup>M</sup>	3.5 <sup>M</sup>	3.1 <sup>M</sup>	2.9 <sup>M</sup>	E	E	E	E	2.7	3.0	B	B	B	4.0	3.7	3.3	B	B	3.6	3.0	3.8	3.8	3.3	E	
28	E	2.3	E	E	E	E	E	E	G	G	G	B	G	G	3.7	3.7	2.6	2.2	2.5	E	E	E	E	E	
29	2.4 <sup>M</sup>	E	2.4 <sup>M</sup>	E	E	E	E	E	G	3.7	3.8	4.6	3.7	3.9	4.4	3.5	3.7	3.5	4.0	S	E	E	E	E	
30	2.9 <sup>M</sup>	E	E	E	E	E	E	E	3.4	4.6	4.1	4.2	G	4.0	3.8	3.5	G	E	E	E	E	E	E	E	
31	E	2.4 <sup>M</sup>	E	E	E	E	E	E	2.6	2.5	3.1	4.3	3.1	G	G	G	3.8	B	4.1	3.7	2.1	E	5.9	3.9	
No.	31	31	31	31	31	31	28	29	28	23	22	21	20	24	25	29	29	26	31	31	30	31	31	31	
Median	E	E	E	E	E	E	G	G	G	3.9	4.2	4.3	4.2	4.0	3.9	3.6	3.6	3.2	3.2	2.4	2.9	E	E	2.1	
U.Q.	2.5	2.1	E	E	E	E	3.6	4.2	4.5	4.4	4.4	4.4	4.4	4.6	4.4	4.7	4.4	4.2	3.8	3.9	3.9	3.4	3.3	3.0	
L.Q.	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	3.4	3.0	2.2	2.1	E	E	E	E	E	
Q.R.																1.3	1.4	2.0	1.7						

Sweep 2.0 Mc to 20.0 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan.

foEs

K 4



# IONOSPHERIC DATA

**Kokubunji Tokyo**

Lat. 35° 42.4' N  
Long. 139° 28.3' E

135° E Mean Time (GMT.+9h.)

fbEs

Oct. 1957

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	2.3	3.3	3.9	4.3	4.1	4.2	4.4	4.6	4.4	3.5	2.9	E	E	E	E	E	E	E	
2	E	E	E	E	E	E	2.5	3.0	G	B	4.4	5.2	4.6	7.3	4.6	C	C	E	E	4.5	E	E	E	E	
3	E	E	E	E	E	E	2.2	3.1	3.6	G	B	4.3	5.8	G	G	G	3.2	2.7	2.3	E	E	E	E	E	
4	E	E	E	E	E	E	E	3.4 <sup>h</sup>	G	G	5.0	4.5	4.6 <sup>h</sup>	4.5	4.2	3.7	3.0	2.5	E	E	2.3	E	E	E	
5	E	E	E	E	E	E	E	G	G	B	B	B	B	B	B	5.0	4.1 <sup>s</sup>	E	E	E	E	E	E	E	
6	E	E	E	E	E	E	E	2.2 <sup>h</sup>	G	3.7	4.0	4.2	4.5 <sup>h</sup>	4.2 <sup>h</sup>	B	G	4.1	2.5 <sup>h</sup>	E	E	E	E	E	E	
7	E	E	E	E	E	E	E	2.2	3.0	3.6	4.2	B	4.1 <sup>h</sup>	4.7	4.8	4.1	G	2.2 <sup>h</sup>	2.9	2.4	E	E	E	E	
8	E	E	E	E	E	E	E	2.2	G	G	G	B	B	B	G	3.8	3.1	2.1	E	E	E	2.6	E	E	
9	E	E	E	E	E	E	E	E	3.1 <sup>h</sup>	G	G	G	G	B	B	G	G	E	E	E	E	E	E	E	
10	E	E	E	E	E	E	E	E	2.3	G	4.0	G	G	G	3.8	3.8	3.2	3.6	2.9	2.7	2.5	3.0 <sup>s</sup>	A	2.3	
11	E	E	E	E	E	E	E	E	3.2	G	4.0	B	B	4.3 <sup>h</sup>	G	3.6	3.1	3.5	2.6	E	2.5	E	E	2.8	
12	E	E	E	E	E	E	E	E	3.5	3.7 <sup>h</sup>	C	B	B	4.4 <sup>h</sup>	G	3.6	4.1	B	E	E	2.6	2.3	2.8	2.6	
13	E	E	E	E	E	E	E	E	3.0	3.5	4.6	4.5	4.4	4.3 <sup>h</sup>	4.0 <sup>h</sup>	3.7	3.2	2.2	E	E	E	E	E	E	
14	E	E	E	E	E	E	E	E	B	B	B	4.4	B	B	G	3.5	3.2	6.0	2.9	E	E	2.8	2.7	E	
15	E	E	E	E	E	E	E	E	3.1	B	B	5.3	4.5 <sup>h</sup>	B	B	4.2	3.2	6.0	2.9	E	E	2.8	2.4	2.5	
16	3.4 <sup>s</sup>	E	E	E	E	E	E	E	B	3.6 <sup>h</sup>	B	4.5 <sup>h</sup>	B	B	B	3.6	3.2	2.1	2.5	E	2.0	2.8 <sup>s</sup>	2.4	2.5	
17	E	E	E	E	E	E	E	E	G	3.4 <sup>h</sup>	4.1	4.1	4.4	4.3	5.0	A	4.4	2.9	E	2.2	2.1	2.1	E	E	
18	E	E	E	E	E	E	E	E	G	G	4.2	4.7	B	G	4.3	4.0	3.8	2.6	2.2	E	E	E	E	E	
19	E	E	E	E	E	E	E	E	G	3.7	4.2	4.5 <sup>h</sup>	4.8	4.7	4.3	3.9	4.1 <sup>s</sup>	3.3	2.0	A	2.6	E	E	E	
20	E	E	E	E	E	E	E	E	G	G	G	4.2	B	B	4.6	4.4	5.2 <sup>s</sup>	3.3	E	2.6	2.4	2.9	3.8 <sup>s</sup>	E	2.6
21	E	2.0	E	E	E	E	E	E	G	4.0 <sup>h</sup>	4.0	4.5 <sup>h</sup>	B	4.5	4.5	6.0	4.0 <sup>s</sup>	3.1	3.0	2.5	2.3	2.6	2.6	2.0	
22	E	E	E	E	E	E	E	E	G	G	G	4.3 <sup>h</sup>	G	4.5	3.7	3.5	2.3	2.0	E	E	E	E	E	2.3	
23	E	E	E	E	E	E	E	E	G	3.4	S	G	B	G	3.9	3.6	3.7	4.2 <sup>s</sup>	2.5	2.3	2.4	E	E	E	
24	E	E	E	E	E	E	E	E	G	B	G	B	B	G	4.0	3.6	4.0	4.1	3.3	2.4	2.4	2.6	2.2	2.6	
25	2.7	E	E	E	E	E	E	E	G	4.2	4.3 <sup>h</sup>	4.4	G	G	G	G	G	B	E	E	E	2.5 <sup>s</sup>	E	E	
26	E	E	E	E	E	E	E	E	G	B	B	G	G	4.1 <sup>h</sup>	G	G	G	E	E	E	2.3	E	E	E	
27	2.3	2.5	2.5	2.2	E	E	E	E	G	G	B	B	B	4.0	3.8	3.3	B	B	2.8	2.2	2.2	2.9	2.3	E	
28	E	2.3	E	E	E	E	E	E	G	G	G	B	G	G	G	G	G	2.2	E	E	E	E	E	2.1	
29	E	E	E	E	E	E	E	E	G	G	G	G	4.1	G	3.9	3.9	S	2.9	3.1	3.1	S	E	E	E	
30	E	E	E	E	E	E	E	E	G	3.5	4.1	4.2	4.3 <sup>h</sup>	G	4.2 <sup>h</sup>	3.8	3.4	E	E	E	2.8	E	E	E	
31	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	2.8	B	3.2	2.4	E	E	2.6	3.4	
No.	31	31	31	31	31	31	27	29	28	23	21	20	19	24	25	29	28	26	31	31	30	31	31	31	
Median	E	E	E	E	E	E	E	G	G	4.0	4.2	4.4	4.1	4.2	3.9	3.6	3.2	2.5	2.0	E	E	E	E	E	

Sweep 2.0 Mc to 2.00 Mc in 2.0 sec <sup>mean</sup> in automatic operation.

The Radio Research Laboratories, Japan.

fbEs

K 5

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

f-min

Oct. 1957

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	2.10	E	2.30	2.85	3.70	3.60	3.70	3.10	2.60	2.50	E	2.10	E	E	E	E	E	E
2	E	E	E	E	E	E	E	2.05	2.60	4.10	3.10	3.10	3.90	4.00	3.85	C	C	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	2.40	3.10	3.00	5.30	3.65	3.30	3.30	3.20	3.05	2.30	E	E	E	E	E	E	E
4	E	E	E	2.00	E	E	2.30	2.25	2.70	3.30	3.00	4.05	4.05	3.65	3.20	2.30	2.25	2.00	E	E	E	E	E	2.05
5	E	E	E	E	E	E	2.55	2.35	2.80	4.10	4.30	4.60	4.40	4.20	4.05	2.80	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	2.10	2.50	3.00	3.90	3.10	4.50	3.80	3.90	2.80	2.25	2.00	E	E	E	E	E	E
7	E	E	E	E	E	E	E	2.55	2.60	2.90	4.05	3.80	4.60	3.05	2.90	2.50	2.10	E	E	E	E	E	E	E
8	E	E	E	E	E	E	E	2.20	2.30	3.10	3.40	4.10	4.20	4.20	3.10	2.80	2.00	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	2.30	2.10	2.40	2.55	3.10	3.50	5.05	4.05	3.80	E	2.00	E	E	E	E	E	E
10	E	E	E	E	E	E	E	2.00	E	2.20	2.65	3.40	3.80	3.70	3.60	2.75	2.60	2.20	E	E	E	E	E	E
11	E	E	E	E	E	E	E	2.20	2.90	3.55	3.75	4.40	3.80	3.90	3.10	2.60	2.20	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	2.05	E	2.80	4.00	3.85	4.80	2.70	4.10	2.30	2.10	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	2.20	2.05	2.50	2.80	3.15	3.80	3.65	3.55	3.50	2.80	2.10	E	E	E	E	E	E
14	E	E	E	E	E	E	E	3.05	3.60	4.20	4.35	3.95	4.10	4.30	3.80	2.30	E	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	3.55	3.90	3.90	4.00	4.70	5.10	4.00	3.50	E	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	3.00	2.80	3.90	3.30	5.30	4.55	4.20	3.90	2.20	2.10	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	2.00	2.10	2.40	3.30	3.25	3.40	3.00	2.90	2.65	2.20	2.00	2.00	E	E	2.00	2.10	E
18	E	E	E	E	E	E	E	E	2.10	2.80	3.45	4.60	4.50	3.30	4.10	2.65	2.60	E	E	E	E	E	2.00	E
19	E	E	E	E	E	E	E	2.00	2.10	2.90	3.00	3.90	4.05	2.20	3.60	3.60	2.90	2.60	E	E	E	E	E	E
20	E	E	E	E	E	E	E	2.00	E	2.10	2.20	3.00	3.00	4.50	3.10	2.80	2.30	2.20	2.20	E	E	E	E	E
21	E	E	E	E	E	E	E	E	2.30	2.55	3.70	2.95	4.00	4.35	4.10	2.95	2.40	2.10	E	E	E	E	E	E
22	E	E	E	E	E	E	E	2.10	2.00	2.20	2.75	4.20	3.50	3.45	2.40	2.20	E	E	E	E	E	E	E	E
23	E	E	E	E	E	E	E	2.10	2.05	2.35	2.95	4.40	3.10	5.20	3.80	3.20	2.60	2.10	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	2.80	4.40	2.40	4.40	4.50	3.25	3.50	2.95	2.75	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	2.10	E	4.00	2.60	4.05	2.70	2.30	3.10	2.90	2.60	2.70	2.50	2.00	E	E	E	E
26	E	E	E	E	E	E	E	2.15	E	3.90	4.60	3.80	3.40	3.60	2.80	2.40	2.00	2.05	E	E	E	E	E	E
27	2.10 <sup>s</sup>	E	E	E	E	E	E	2.00	2.20	2.50	4.05	4.40	3.70	2.90	2.05	2.30	2.80	2.40	E	E	E	E	E	E
28	E	E	E	E	E	E	E	2.05	E	2.55	2.55	3.50	4.20	3.50	2.90	2.15	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	2.05	2.60	3.00	3.20	2.90	2.95	2.70	2.30	2.05	2.10	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	E	2.15	2.90	3.55	3.20	3.25	2.90	2.20	E	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	2.15	2.50	2.60	3.50	2.20	2.85	2.65	2.25	2.05	2.20	E	E	E	E	E	E
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	2.10	2.55	3.00	3.70	3.80	3.70	3.60	3.10	2.50	2.10	E	E	E	E	E	E	E

Sweep 2.0 Mc to 2.0.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

K 6

f-min

# IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

**Kokubunji Tokyo**

135° E Mean Time (GMT.+9h.)

(M3000)F2

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U 2.75	2.50	2.50	2.40	2.50	3.10	3.10	3.00	2.85	2.75	2.65	2.60	2.55	2.60	2.60	2.70	2.75	2.70	2.70	2.60	2.60	2.75	2.80	2.85
2	2.65	2.30	2.50	2.60	2.55	2.40	2.95	3.05	2.90	2.65	2.65	2.65	2.55	2.50	2.50	C	C	C	2.95	2.65	2.60	2.70	2.65	2.80
3	2.75	2.80	2.85	2.35	2.45	2.50	3.00	3.15	3.00	2.85	2.80	2.65	2.55	2.55	2.55	2.60	2.65	2.75	2.80	2.55	2.65	2.60	2.45	2.30
4	2.40	2.60	2.30	2.30	2.50	2.65	3.05	3.00	2.90	2.80	2.75	2.60	2.55	2.55	2.55	2.55	2.60	2.75	2.75	2.70	2.50	2.50	2.50	2.60
5	2.60	2.40	2.45	2.60	2.45	2.40	3.00	3.05	2.85	2.75	2.75	2.70	2.60	2.55	2.55	2.60	2.60	2.75	2.85	2.70	2.70	2.70	2.50	2.55
6	2.65	2.80	2.75	2.50	2.70	3.00	3.10	3.00	2.85	2.75	2.75	2.65	2.55	2.50	2.50	2.60	2.65	2.80	2.85	2.70	2.55	2.60	2.60	2.75
7	2.85	2.90	2.85	2.80	2.90	2.80	3.15	3.20	3.15	2.90	2.80	2.65	2.60	2.60	2.60	2.60	2.65	2.80	2.75	2.70	2.55	2.60	2.60	2.75
8	2.70	2.45	2.35	2.45	2.65	2.60	3.15	3.15	3.00	2.95	2.80	2.65	2.55	2.55	2.55	2.60	2.65	2.80	2.75	2.60	2.75	2.70	2.75	2.85
9	2.85	2.70	2.65	2.60	2.65	2.80	3.10	3.15	3.05	2.85	2.70	2.55	2.50	2.50	2.55	2.55	2.60	2.70	2.60	2.55	2.65	2.70	2.75	2.75
10	3.00	2.55	2.30	2.30	2.30	2.30	2.85	2.95	2.90	2.70	2.75	2.55	2.50	2.50	2.55	2.45	2.50	2.70	2.75	2.60	2.60	2.55	2.60	2.85
11	2.40	2.30	2.25	2.30	2.35	2.45	2.75	2.80	2.85	2.90	2.65	2.60	2.45	2.45	2.45	2.50	2.55	2.65	2.60	2.55	2.50	2.55	2.50	2.80
12	2.15	2.10	2.30	2.25	2.30	2.15	2.75	3.00	2.85	2.85	2.65	2.60	2.45	2.45	2.45	2.60	2.70	2.65	2.70	2.55	2.65	2.65	2.45	2.70
13	2.60	2.25	2.35	2.15	2.20	2.30	2.85	3.05	2.85	2.70	2.60	2.40	2.40	2.40	2.40	2.45	2.50	2.60	2.65	2.60	2.60	2.50	2.55	2.65
14	2.65	2.45	2.40	2.50	2.45	2.50	2.80	2.95	2.85	2.80	2.70	2.50	2.45	2.45	2.45	2.45	2.45	2.45	2.50	2.45	2.35	2.40	2.35	2.60
15	2.60	2.50	2.10	2.10	2.15	2.25	2.50	2.60	2.55	2.50	2.50	2.55	2.55	2.55	2.55	2.65	2.65	2.70	2.70	2.60	2.45	2.60	2.50	2.45
16	2.35	2.35	2.50	2.40	2.40	2.20	2.65	2.80	2.80	2.70	2.60	2.55	2.50	2.45	2.45	2.45	2.50	2.55	2.60	2.45	2.45	2.65	2.65	2.55
17	2.75	2.70	2.70	2.70	2.65	2.65	2.95	3.00	2.90	2.70	2.60	2.45	2.40	2.40	2.40	2.40	2.40	2.40	2.45	2.45	2.50	2.45	2.45	2.70
18	2.60	2.80	2.75	2.60	2.60	2.65	2.80	2.85	2.80	2.80	2.55	2.50	2.45	2.40	2.40	2.40	2.40	2.45	2.55	2.50	2.45	2.45	2.45	2.55
19	2.60	2.70	2.70	2.80	2.90	2.45	2.85	2.75	2.70	2.70	2.55	2.45	2.40	2.40	2.40	2.40	2.45	2.55	2.50	2.50	2.45	2.45	2.45	2.55
20	2.55	2.65	2.45	2.50	2.55	2.60	2.75	2.80	2.85	2.60	2.60	2.45	2.40	2.40	2.40	2.45	2.50	2.55	2.60	2.55	2.55	2.55	2.45	2.50
21	2.50	2.50	2.60	2.75	2.45	2.40	2.70	2.80	2.75	2.65	2.50	2.40	2.40	2.35	2.30	2.40	2.40	2.55	2.50	2.40	2.40	2.45	2.55	2.50
22	2.50	2.45	2.55	2.30	2.35	2.45	2.70	2.75	2.70	2.80	2.60	2.45	2.35	2.45	2.35	2.40	2.45	2.50	2.50	2.50	2.50	2.50	2.50	2.60
23	2.60	2.55	2.65	2.45	2.45	2.35	2.85	2.90	2.75	2.65	2.60	2.45	2.35	2.40	2.40	2.35	2.45	2.55	2.60	2.60	2.45	2.45	2.60	2.55
24	2.55	2.75	2.95	2.80	2.65	2.90	2.80	2.95	2.75	2.75	2.60	2.45	2.40	2.40	2.40	2.40	2.50	2.55	2.55	2.45	2.45	2.60	2.55	2.50
25	2.50	2.65	2.75	2.80	2.65	2.60	2.65	2.95	2.85	2.65	2.60	2.50	2.45	2.40	2.40	2.45	2.50	2.50	2.35	2.55	2.55	2.70	2.50	2.60
26	2.60	2.70	2.60	2.75	2.70	2.50	2.85	3.10	2.80	2.70	2.60	2.45	2.35	2.40	2.35	2.40	2.40	2.40	2.55	2.60	2.45	2.50	2.50	2.75
27	2.55	2.60	2.70	2.80	2.50	2.60	2.85	3.10	2.90	2.75	2.50	2.45	2.35	2.35	2.35	2.40	2.45	2.60	2.50	2.55	2.65	2.55	2.45	2.45
28	2.45	2.75	2.45	2.25	2.40	2.55	2.85	2.90	2.80	2.70	2.50	2.40	2.35	2.30	2.25	2.35	2.40	2.50	2.50	2.40	2.50	2.65	2.55	2.50
29	2.60	2.65	2.70	2.55	2.40	2.30	2.80	2.85	2.65	2.65	2.40	2.30	2.30	2.30	2.30	2.30	2.40	2.45	2.40	2.60	2.60	2.55	2.50	2.40
30	2.30	2.45	2.75	2.70	2.40	2.40	2.80	2.85	2.65	2.65	2.50	2.35	2.30	2.30	2.30	2.30	2.40	2.45	2.40	2.55	2.50	2.55	2.55	2.40
31	2.50	2.60	2.70	2.85	2.65	2.50	2.70	2.90	2.75	2.65	2.50	2.40	2.35	2.35	2.35	2.35	2.45	2.55	2.45	2.60	2.55	2.50	2.50	2.45
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31
Median	2.60	2.60	2.60	2.50	2.45	2.50	2.85	2.95	2.85	2.75	2.60	2.50	2.45	2.45	2.40	2.45	2.50	2.60	2.60	2.55	2.55	2.60	2.55	2.55

Sweep 2.0 Mc to 2.02 Mc in 2.0 sec <sup>max</sup> in automatic operation.

(M3000)F2

The Radio Research Laboratories, Japan.

**K 7**

# IONOSPHERIC DATA

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

**Kokubunji Tokyo**

135° E Mean Time (GMT.+ 9h.)

(M3000)F1

Oct. 1957

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									L					A		C	C	C						
4														3.55										
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12											C													
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24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
No.																								
Median																								

Sweep 2.0 Mc to 2.0.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

(M3000)F1

**K 8**



IONOSPHERIC DATA

Lat.  $35^{\circ}42.4'N$   
 Long.  $139^{\circ}29.3'E$

Kokubunji Tokyo

135° E Mean Time (GMT.+ 9h.)

R'F2

Oct. 1957

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										Z50				355		C	C	C						
3														325										
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12											300													
13																								
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22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31														300 <sup>M</sup>										
No.										1	1			3										
Median										Z50	300			Z25										

Sweep Z.0 Mc to Z.0 Mc in Z.0 <sup>min</sup> sec in automatic operation.

The Radio Research Laboratories, Japan. **K 9**

R'F2

Lat. 35° 42.4' N  
Long. 139° 29.3' E

**Kokubunji Tokyo**

**IONOSPHERIC DATA**

135° E Mean Time (G.M.T.+ 9h.)

**R'F**

**Oct. 1957**

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.80	3.00	3.40	3.20	3.25	2.80	2.50	2.45	2.45	2.45	2.40	2.25	2.40	2.50	2.55	2.50	2.55	2.55	2.50	2.60	3.00	3.00	2.80	2.75
2	3.10	3.75	3.25	2.90	2.75	3.05	2.70	2.50	2.40	2.35	2.45	2.55	2.50	2.55	2.60	2.60	2.45	2.45	3.00	2.95	2.80	2.95	2.85	
3	2.80	2.75	2.75	3.00	3.25	3.20	2.55	2.50	2.45	2.30	2.50	2.50	2.60	2.50	2.50	2.55	2.60	2.70	2.55	2.60	2.70	2.60	3.05	3.55
4	3.50	3.05	3.45	3.00	3.40	2.80	2.50	2.40	2.30	2.45	2.45	2.45	2.50	2.50	2.50	2.55	2.70	2.70	2.50	2.55	2.70	2.90	3.00	2.95
5	2.90	3.30	3.20	3.10	3.05	3.05	2.55	2.55	2.35	2.40	2.40	2.50	2.40	2.40	2.50	2.60	2.70	2.70	2.50	2.55	2.70	2.90	3.00	2.95
6	2.90	2.80	2.70	2.85	3.50	3.00	2.55	2.50	2.50	2.50	2.35	2.50	2.20	2.50	2.40	2.55	2.55	2.70	2.50	2.55	2.65	2.75	3.00	3.00
7	2.80	2.65	2.60	2.70	2.55	2.75	2.50	2.50	2.40	2.40	2.20	2.20	2.50	2.55	2.55	2.55	2.65	2.65	2.55	2.55	3.00	3.05	3.00	2.80
8	2.95	3.05	3.65	3.30	2.90	3.00	2.55	2.50	2.50	2.50	2.40	2.50	2.50	2.50	2.55	2.50	2.55	2.70	2.60	2.50	2.90	2.80	2.80	2.80
9	2.70	3.00	3.00	2.95	2.90	2.90	2.50	2.50	2.50	2.45	2.30	2.45	2.50	2.60	2.55	2.60	2.70	2.70	2.50	2.55	2.85	2.70	2.80	2.70
10	2.70	2.95	3.80	3.90	3.65	3.90	2.65	2.50	2.50	2.50	2.30	2.50	2.65	2.55	2.50	2.55	2.65	2.70	2.80	3.05	2.85	3.00	3.20	2.70
11	3.00	3.60	3.90	3.50	2.85	3.00	2.80	2.55	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.55	2.60	2.65	2.70	2.55	3.00	2.95	3.15	4.00
12	4.20	4.30	3.60	3.55	3.60	4.40	2.90	2.50	2.45	2.50	2.45	2.45	2.50	2.50	2.50	2.50	2.60	2.50	2.55	2.75	2.85	2.95	3.20	3.00
13	2.75	3.50	3.50	4.05	4.15	3.75	2.70	2.50	2.40	2.50	2.50	2.40	2.50	2.55	2.50	2.60	2.65	2.70	2.55	2.65	2.90	3.15	2.95	
14	2.95	3.40	3.45	3.20	3.00	2.90	2.55	2.40	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.55	2.60	2.60	2.60	2.45	3.10	3.50	3.50	3.00
15	2.55	3.00	4.40	4.50	4.00	3.70	3.00	2.55	2.50	2.45	2.55	2.50	2.50	2.55	2.50	2.65	2.50	2.60	2.60	2.45	3.10	3.50	3.50	3.00
16	4.10	3.50	3.10	2.90	3.30	4.00	2.70	2.50	2.50	2.40	2.50	2.55	2.50	2.50	2.50	2.55	2.55	2.75	2.60	2.60	3.00	3.10	3.00	3.00
17	2.95	2.95	2.90	2.85	2.85	2.55	2.50	2.40	2.50	2.45	2.30	2.35	2.50	2.50	2.55	2.65	2.50	2.55	2.55	2.65	3.00	3.00	3.05	3.15
18	3.00	2.60	2.80	2.85	3.00	2.90	2.50	2.50	2.50	2.45	2.50	2.50	2.50	2.60	2.55	2.55	2.75	2.80	3.00	3.00	3.00	3.00	3.00	2.90
19	2.95	3.00	2.90	2.80	2.60	3.00	2.65	2.50	2.50	2.50	2.50	2.60	2.50	2.50	2.55	2.60	2.70	3.00	3.00	3.10	2.90	3.10	3.45	3.15
20	3.00	3.00	3.30	3.25	3.00	2.65	2.60	2.50	2.50	2.50	2.45	2.50	2.55	2.50	2.65	3.00	2.60	2.65	3.00	3.05	3.20	3.20	2.90	3.00
21	3.05	3.20	2.95	2.80	3.05	3.45	2.55	2.55	2.55	2.50	2.50	2.50	2.55	2.50	2.50	2.55	2.65	2.70	3.00	3.00	3.05	3.10	3.05	3.00
22	3.00	3.20	3.05	3.50	3.40	2.75	2.70	2.55	2.55	2.50	2.40	2.50	2.50	2.50	2.50	2.60	2.70	2.90	3.00	3.00	3.05	3.10	3.05	3.00
23	2.80	3.00	2.90	2.90	3.10	2.55	2.75	2.60	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.55	2.70	2.95	2.80	2.90	3.00	2.95	2.75	2.85
24	2.95	3.00	2.60	2.60	2.60	2.50	2.75	2.50	2.50	2.50	2.50	2.50	2.50	2.55	2.50	2.55	2.55	2.80	2.90	3.00	3.05	3.00	2.95	2.80
25	3.50	3.00	2.60	2.55	2.50	3.40	3.00	2.50	2.45	2.55	2.50	2.50	2.50	2.55	2.50	2.55	2.60	2.70	3.00	3.00	3.05	3.00	3.00	3.30
26	2.95	2.95	3.05	2.80	2.55	2.95	2.60	2.50	2.45	2.50	2.60	2.60	2.50	2.50	2.50	2.55	2.60	2.70	3.00	3.05	3.00	3.00	2.80	2.90
27	3.10	3.05	2.95	2.85	3.00	3.10	2.90	2.55	2.50	2.50	2.50	2.50	2.45	2.50	2.50	2.50	2.75	2.90	2.95	3.10	3.05	3.00	3.05	3.05
28	3.50	2.75	3.00	3.90	3.45	3.30	2.75	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.70	2.95	3.00	2.95	3.00	2.75	3.00	3.25
29	3.00	2.80	2.80	2.90	3.45	4.00	2.70	2.50	2.40	2.50	2.50	2.50	2.55	2.50	2.50	2.55	2.70	2.95	3.00	2.95	3.05	2.60	3.00	2.95
30	3.45	3.50	2.95	2.80	3.40	3.40	2.70	2.50	2.40	2.50	2.50	2.50	2.50	2.55	2.50	2.50	2.70	2.90	2.90	2.95	3.00	2.95	2.95	3.40
31	3.10	2.95	2.75	2.60	2.60	3.00	2.75	2.55	2.50	2.50	2.50	2.50	2.50	2.55	2.50	2.50	2.45	2.80	2.70	2.95	2.75	2.80	2.95	3.40
No.	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1
Median	2.95	3.00	3.00	2.90	3.00	3.00	2.65	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.55	2.65	2.70	2.75	2.95	3.00	2.95	3.00	3.00

Sweep Zo Mc to Zo Mc in Zo sec in automatic operation.

The Radio Research Laboratories, Japan.

**K 10**

**R'F**

IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

Oct. 1957

f'Es

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	E	E	E	105	155	140	130	120	140	120	120	120	110	115	110	E	E	E	E	E	E	E
2	110	E	E	E	E	E	120	190 <sup>B</sup>	G	B	130	120	125	120	125	C	C	C	E	110	E	E	110	E
3	E	E	E	105	E	E	180	155	G	G	B	120	105	G	G	G	135	130	110	E	E	E	E	E
4	E	E	E	E	E	E	E	135	G	G	B	130	135	130	B	125	120	115	110	110	E	E	E	E
5	E	E	E	E	E	E	E	160	G	G	B	130	B	B	B	120	115	120	E	E	E	E	E	E
6	E	E	E	E	E	E	105	105	120	150	140	B	B	160	150	140	130	145	120	E	E	E	E	E
7	E	E	E	E	E	E	170	G	G	G	B	B	B	B	G	150	130	130	E	E	E	E	E	E
8	E	E	E	E	E	E	E	155	140	130	G	G	G	B	B	B	G	150	130	E	E	105	E	E
9	E	E	E	E	E	E	E	145	G	140	140	G	G	G	G	150	150	120	120	115	110	110	105	105
10	E	E	E	E	E	E	E	170	170 <sup>B</sup>	G	135	130	B	125	135	G	150	150	120	115	110	110	105	105
11	E	E	E	E	E	E	E	140	125	B	C	B	B	105	B	160	125	B	E	125	105	105	105	105
12	105	105	E	E	E	E	E	130	125	120	120	120	115	120	120	120	140	135	110	E	105	105	105	105
13	105	E	E	E	E	E	E	130	B	B	B	130	B	B	B	G	140	120	120	120	105	105	105	105
14	E	E	E	E	E	E	E	E	B	B	B	125	140	B	B	150	125	115	110	E	110	105	105	105
15	105	E	E	E	E	E	E	180	B	B	B	140	B	B	B	150	125	115	110	E	110	105	105	105
16	100	E	E	E	E	E	E	140	125	B	115	B	B	B	B	155	140	120	105	110	105	105	105	105
17	E	E	E	E	E	E	E	E	G	125	115	120	120	120	115	120	110	110	110	105	105	105	105	105
18	E	E	E	E	E	E	E	E	G	150	140	B	G	150	150	110	105	100	105	105	E	E	E	E
19	E	E	E	E	E	E	E	E	G	140	130	125	125	125	125	120	120	110	105	105	105	105	105	105
20	E	E	E	E	E	E	E	E	G	200 <sup>B</sup>	B	B	B	B	155	140	120	125	E	110	110	105	105	100
21	100	100	100	100	E	E	E	E	G	140	140	140	B	150	145	120	120	115	105	105	100	100	100	105
22	105	100	E	E	E	E	E	E	G	G	B	G	180	G	140	130	115	120	110	E	E	E	E	100
23	100	E	E	E	E	E	E	E	155	140	G	G	B	G	130	155	130	115	115	110	110	E	E	E
24	E	E	E	E	105	E	E	E	G	125	B	B	B	G	165	150	140	115	105	105	105	105	105	100
25	100	100	100	E	E	E	E	E	G	B	150	150	150	G	G	G	155	B	E	E	E	105	E	E
26	E	E	E	E	E	E	E	E	G	140	B	B	G	G	G	G	G	E	100	E	105	E	E	105
27	105	105	100	100	100	E	E	E	G	110	115	B	G	130	145	130	B	B	110	110	105	100	105	E
28	E	100	E	E	E	E	E	E	G	G	G	B	G	G	105	190 <sup>B</sup>	130	105	E	E	E	E	110	E
29	110	E	105	E	E	E	E	E	G	120	120	110	110	110	155	130	130	125	110	110	S	E	110	115
30	110	E	E	E	E	E	E	E	105	140	125	130	G	130	125	175	G	E	E	E	100	105	105	105
31	E	130	E	E	E	E	E	E	125	110	105	105	105	G	G	G	115	B	105	105	105	E	105	100
No.	13	8	5	7	5	4	10	12	16	15	16	16	12	16	16	23	24	22	24	18	20	14	15	16
Median	105	100	100	105	105	115	150	140	130	135	125	125	120	130	140	130	130	130	110	110	105	105	105	105

Sweep 2.0 Mc to 2.00 Mc in 2.0 sec

The Radio Research Laboratories, Japan.

K 11

f'Es

IONOSPHERIC DATA

Lat. 35° 42.3' N  
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GM.T.+ 9h.)

Types of Es

Oct. 1957

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	Y	Y				Y	h	h	h	C	C	C	l	C	h	l	l			Y3					
2	Y						h	h	h	h	h	C	l	h	l		C	l	Y2	Y					
3				Y			h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
4							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
5							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
6							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
7							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
8				Y			h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
9							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
10							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
11							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
12	Y2	Y2					h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
13	Y						h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
14							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
15	Y3						h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
16							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
17							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
18							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
19							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
20							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
21	Y	Y					h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
22	Y	Y					h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
23	Y						h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
24							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
25	Y						h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
26							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
27	Y	Y					h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
28							h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
29	Y	Y					h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
30	Y						h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
31	Y						h	h	h	h	h	h	h	h	C	C	l	l	Y2	Y					
No.																									
Median																									

The Radio Research Laboratories, Japan.

in automatic operation.

Sweep 2.0 Mc to 2.02 Mc in 2.0 sec

Types of Es

K 12



Lat. 35° 42.4' N  
Long. 139° 29.3' E

**Kokubunji Tokyo**

**IONOSPHERIC DATA**

135° E Mean Time (GMT.+ 9h.)

f<sub>o</sub>F<sub>2</sub>

Oct. 1957

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	390 <sup>S</sup>	425	450	470	445	405	320	315	335	355	380 <sup>R</sup>	395 <sup>H</sup>	415 <sup>H</sup>	430	420 <sup>H</sup>	405 <sup>H</sup>	385	375	370	410	425	390	360	355	
2	425	505	430	400	400	470	340	330	310	350	395	405 <sup>H</sup>	410 <sup>H</sup>	430	440 <sup>H</sup>	C	C	C	350	395	400 <sup>S</sup>	400 <sup>S</sup>	395	375	
3	375	355	360	445	455	440	320	310	325	370	380 <sup>R</sup>	405	430 <sup>H</sup>	430	440 <sup>H</sup>	425 <sup>H</sup>	400	360	370	395	430	405	450	490 <sup>S</sup>	
4	465	475 <sup>R</sup>	500	505	445	400	330 <sup>S</sup>	325	340	390	395 <sup>R</sup>	415 <sup>H</sup>	435 <sup>H</sup>	430 <sup>H</sup>	440 <sup>H</sup>	445 <sup>H</sup>	400	370	365	395 <sup>S</sup>	430 <sup>S</sup>	405	450	440	
5	405 <sup>S</sup>	450 <sup>S</sup>	450	405	445	450	325 <sup>R</sup>	305	345	390	400	400	410	425 <sup>H</sup>	420 <sup>H</sup>	425 <sup>H</sup>	405	370	365	370	380	390	415	415	
6	400 <sup>S</sup>	365	365	425	450	400	340	310	325	360	380	400	430 <sup>H</sup>	440 <sup>H</sup>	425 <sup>H</sup>	400	390	360	350 <sup>S</sup>	385	390	400	415	400 <sup>R</sup>	
7	355 <sup>S</sup>	350	350	360	345	355	305	295	305	345	360 <sup>H</sup>	360 <sup>H</sup>	405 <sup>H</sup>	405 <sup>H</sup>	405 <sup>H</sup>	400 <sup>H</sup>	395	355	365 <sup>S</sup>	390 <sup>S</sup>	415	405	400	365	
8	395	440	455	425	400	400	305	300	315	340	370 <sup>H</sup>	400	425 <sup>H</sup>	415	415	400	395	350	360	405	395	380	390	365	
9	355 <sup>S</sup>	400	400	405	395	375	320 <sup>S</sup>	300	315	350	370	405	445 <sup>H</sup>	450 <sup>H</sup>	445 <sup>H</sup>	420	405	385	395 <sup>S</sup>	430	400	480 <sup>S</sup>	385	375	
10	350 <sup>S</sup>	410	500	505	510 <sup>S</sup>	505	355	330	345	385	400 <sup>H</sup>	430 <sup>R</sup>	455 <sup>R</sup>	450 <sup>R</sup>	450 <sup>R</sup>	445 <sup>H</sup>	420	400	390 <sup>S</sup>	395	410	415	410	355	
11	450	500	515	500	470 <sup>S</sup>	450	375	355	355 <sup>S</sup>	365	400 <sup>R</sup>	445 <sup>R</sup>	455 <sup>R</sup>	445 <sup>R</sup>	455 <sup>R</sup>	435	410	400	405 <sup>S</sup>	400	415	410	450	520	
12	590	590	525	525	505	565	360	320	355	355	410	405 <sup>H</sup>	405 <sup>H</sup>	405 <sup>H</sup>	420 <sup>H</sup>	405 <sup>H</sup>	395 <sup>H</sup>	390	395 <sup>S</sup>	405	380	400	450	395	
13	405	570	500	550	550	505	355	330	355	395	400	450 <sup>H</sup>	465 <sup>H</sup>	475 <sup>H</sup>	460 <sup>H</sup>	445	420	400	400	400	400	445	420	400	
14	405	455	470	450	460	420	350	330	370	370 <sup>R</sup>	395	415	460 <sup>H</sup>	450 <sup>H</sup>	450 <sup>H</sup>	450 <sup>H</sup>	445	440	400	435	490 <sup>R</sup>	480 <sup>S</sup>	490	400	
15	405	430	590	600	560	505	420	395	400	430 <sup>R</sup>	410 <sup>H</sup>	430 <sup>H</sup>	420 <sup>H</sup>	410 <sup>H</sup>	420 <sup>H</sup>	400	390	390 <sup>S</sup>	405	400	450 <sup>S</sup>	405	430	455	
16	500 <sup>S</sup>	490	450	455	465 <sup>S</sup>	545	390	350	360 <sup>R</sup>	400 <sup>R</sup>	410	425	455 <sup>H</sup>	455 <sup>H</sup>	460 <sup>R</sup>	450 <sup>N</sup>	415 <sup>H</sup>	400	400	425	440	400 <sup>S</sup>	400	400	400 <sup>R</sup>
17	390	375	390	380	400	395	325	350	350	400	400 <sup>H</sup>	430	465 <sup>H</sup>	460 <sup>H</sup>	455 <sup>H</sup>	460 <sup>H</sup>	410	405	450 <sup>S</sup>	445	415	400 <sup>S</sup>	440	445	
18	400	355	385	405	410	410	350	340	360	370	420 <sup>H</sup>	450 <sup>H</sup>	455 <sup>H</sup>	470 <sup>H</sup>	450 <sup>H</sup>	465 <sup>H</sup>	455	415	420	450	430	440	405	395	
19	400	385	395	360	350	450	350 <sup>S</sup>	335	385	400	420 <sup>H</sup>	445 <sup>H</sup>	460 <sup>H</sup>	475 <sup>H</sup>	455 <sup>H</sup>	455 <sup>H</sup>	420	415	445 <sup>S</sup>	420	430	450 <sup>S</sup>	455	425	
20	410 <sup>S</sup>	400	455	450	425	400	360	350	355	405	430	450	470	475 <sup>H</sup>	480 <sup>H</sup>	450 <sup>H</sup>	445	425	440	425	435	415	400	410	
21	440 <sup>S</sup>	440 <sup>S</sup>	400	375	455	480	365	355	370	400	425 <sup>H</sup>	455 <sup>H</sup>	455 <sup>H</sup>	475 <sup>H</sup>	500 <sup>H</sup>	465	440	400	440	455	450	440	420	425	
22	425	455	445	510	490	450	390	360	380 <sup>R</sup>	365 <sup>R</sup>	415 <sup>R</sup>	455 <sup>R</sup>	490 <sup>H</sup>	460 <sup>H</sup>	460 <sup>H</sup>	455 <sup>H</sup>	450	450	445	445	440	415	430	405	
23	405	405	400	450	450	455	405	345	375 <sup>R</sup>	395 <sup>R</sup>	405 <sup>R</sup>	455 <sup>R</sup>	490 <sup>H</sup>	460 <sup>H</sup>	480 <sup>H</sup>	460 <sup>H</sup>	445	420	410 <sup>S</sup>	445	450	410	400	400	
24	410	390	345	350	395	445	355	325	375	395 <sup>R</sup>	405 <sup>R</sup>	445 <sup>R</sup>	465 <sup>R</sup>	460 <sup>H</sup>	460 <sup>H</sup>	455 <sup>H</sup>	420	415	425	435	450 <sup>R</sup>	400	400	450	
25	450	390	355	350	385	450	385	325	345	400	415 <sup>H</sup>	450 <sup>H</sup>	455 <sup>R</sup>	460 <sup>H</sup>	465 <sup>H</sup>	450 <sup>H</sup>	420	435	460	425 <sup>N</sup>	410 <sup>S</sup>	400 <sup>S</sup>	400	450	
26	400 <sup>S</sup>	395	405	370	375 <sup>S</sup>	415	350	355	365	390 <sup>R</sup>	410	450 <sup>R</sup>	490 <sup>H</sup>	480 <sup>H</sup>	475 <sup>H</sup>	460 <sup>H</sup>	450	430	435	420	420	430	425	400	
27	420	405	400	370	430	420	350	310	350	390	435	455 <sup>H</sup>	485 <sup>H</sup>	490 <sup>H</sup>	470 <sup>H</sup>	460 <sup>H</sup>	450	400	430 <sup>S</sup>	430 <sup>S</sup>	400 <sup>S</sup>	400 <sup>S</sup>	405	450	
28	475	380	450	510	500	425	350	350	395	340	430	460 <sup>H</sup>	500 <sup>H</sup>	500 <sup>H</sup>	505 <sup>H</sup>	495 <sup>H</sup>	460	440	450	425	425	390	430	430	
29	395	405	395	425	460	510	355	350	395 <sup>R</sup>	400	440 <sup>H</sup>	500 <sup>H</sup>	500 <sup>H</sup>	500 <sup>H</sup>	500 <sup>H</sup>	495 <sup>H</sup>	455	445	450	420	420	415	440	435	
30	500	455	390	400	455	475	350	350	385	420	445 <sup>H</sup>	490 <sup>H</sup>	500 <sup>H</sup>	500 <sup>H</sup>	505 <sup>H</sup>	495 <sup>H</sup>	475	450	450	425	440	410	440	465	
31	420	405	370	350	400	425	395 <sup>S</sup>	350	370	400	435 <sup>H</sup>	490 <sup>H</sup>	490 <sup>H</sup>	490 <sup>H</sup>	480 <sup>H</sup>	480 <sup>H</sup>	450	425	450	405	415	400 <sup>S</sup>	455	460	
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31	
Median	405	405	405	425	445	445	330	330	355	390	405	445	455	460	455	450	420	400	405	420	420	405	420	400	

Sweep 2.0 Mc to 20.0 Mc in 2.0 <sup>min</sup> sec in automatic operation.

The Radio Research Laboratories, Japan.

**K 13**

f<sub>o</sub>F<sub>2</sub>



IONOSPHERIC DATA

Lat. 35° 42.4' N  
Long. 139° 28.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+ 9h.)

Oct. 1957

YF2

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	90 <sup>S</sup>	145	95	130	110	140	85	90	90	100	110 <sup>R</sup>	130 <sup>H</sup>	105 <sup>F</sup>	120	100 <sup>H</sup>	115 <sup>H</sup>	115	115	125	140	100	165 <sup>S</sup>	95	100	
2	120	105	120	145	130	140	115	95	90	105	115	100 <sup>H</sup>	140 <sup>H</sup>	120	115 <sup>H</sup>	C	C	C	125	105	125 <sup>S</sup>	145	115	105	
3	110	115	90	125	145	110	90	120	100	110 <sup>R</sup>	125	125 <sup>H</sup>	125	125	125 <sup>H</sup>	125 <sup>H</sup>	105	120	130	125 <sup>S</sup>	145	145	170	110	
4	115 <sup>S</sup>	105 <sup>R</sup>	150	115	105	140	130 <sup>S</sup>	135	150	95	105 <sup>S</sup>	130 <sup>H</sup>	115 <sup>H</sup>	130 <sup>H</sup>	115 <sup>H</sup>	115 <sup>H</sup>	130	120	145	95 <sup>S</sup>	170 <sup>S</sup>	150 <sup>S</sup>	170	145	
5	125 <sup>S</sup>	145 <sup>S</sup>	95	135	115	120	115 <sup>S</sup>	120	110	75	150	100	135 <sup>H</sup>	115 <sup>H</sup>	130 <sup>H</sup>	135 <sup>H</sup>	140	130	150	125 <sup>S</sup>	160	135	135	135	
6	105 <sup>S</sup>	110	125	160	150	140	85	95	125	100	100	115	120 <sup>H</sup>	120 <sup>H</sup>	120 <sup>H</sup>	140	115	140	125 <sup>S</sup>	125	120	100 <sup>S</sup>	135	150 <sup>R</sup>	
7	100 <sup>S</sup>	135	100 <sup>S</sup>	135	120	115	90	70	95	105	130 <sup>H</sup>	110 <sup>H</sup>	135 <sup>H</sup>	140 <sup>H</sup>	135 <sup>H</sup>	145 <sup>H</sup>	135	145	130 <sup>S</sup>	140 <sup>R</sup>	135	110	150	130	
8	105	130	150 <sup>S</sup>	130	115	110	90 <sup>S</sup>	90	105	120	90	115	130 <sup>H</sup>	115	135	135	115	135	135 <sup>S</sup>	140 <sup>S</sup>	95 <sup>S</sup>	145 <sup>S</sup>	105	100	
9	90 <sup>S</sup>	110	100	145	105	115	80 <sup>S</sup>	90	95	105	140	140 <sup>H</sup>	105 <sup>H</sup>	105 <sup>H</sup>	115 <sup>H</sup>	150	140	120	105 <sup>S</sup>	130	145	140 <sup>S</sup>	115 <sup>S</sup>	125	
10	100 <sup>S</sup>	130	125	95	115 <sup>S</sup>	115	120	85	110	110	100 <sup>H</sup>	120 <sup>H</sup>	110 <sup>R</sup>	100 <sup>R</sup>	150	155 <sup>H</sup>	175	140	100 <sup>S</sup>	115 <sup>S</sup>	140	185 <sup>S</sup>	115	105	
11	110	150	125	150	140 <sup>S</sup>	110	135	145	100 <sup>S</sup>	105	130 <sup>R</sup>	130 <sup>R</sup>	120 <sup>R</sup>	115 <sup>R</sup>	120 <sup>H</sup>	135	160	145	120 <sup>S</sup>	150	160	130 <sup>S</sup>	120	150 <sup>R</sup>	
12	130	160	145	175	145	155	145	180	120	140	95	120 <sup>H</sup>	115 <sup>H</sup>	115 <sup>H</sup>	135 <sup>H</sup>	145 <sup>H</sup>	130 <sup>H</sup>	115	100 <sup>S</sup>	150	140	105	150	105	
13	140	100	140	150	140	150	140	80	125	110	120	120	135 <sup>H</sup>	140 <sup>H</sup>	140 <sup>H</sup>	150	150	150	125	150	140 <sup>R</sup>	130 <sup>S</sup>	135	130	
14	105	145	140	115	110	140	150	120	95	130 <sup>S</sup>	105	135	135 <sup>H</sup>	135 <sup>H</sup>	140 <sup>H</sup>	150 <sup>H</sup>	155	140	130	165	140 <sup>R</sup>	120 <sup>S</sup>	160	125	
15	145	170	160	180	180	140	180	215 <sup>R</sup>	190	165 <sup>R</sup>	195 <sup>H</sup>	135	135 <sup>H</sup>	135 <sup>H</sup>	135 <sup>H</sup>	150	120	150 <sup>S</sup>	145 <sup>S</sup>	150	155 <sup>S</sup>	145 <sup>S</sup>	140	145	
16	100 <sup>S</sup>	160	120	150	140 <sup>S</sup>	155	130	120	140 <sup>R</sup>	110	110	125	145 <sup>H</sup>	145 <sup>H</sup>	145 <sup>H</sup>	155 <sup>H</sup>	155 <sup>H</sup>	155	150	110	175	160	130 <sup>S</sup>	120	150 <sup>R</sup>
17	110	145	130	145	140	130	130	90	95	110	145 <sup>H</sup>	125	135 <sup>S</sup>	140 <sup>H</sup>	150 <sup>H</sup>	160 <sup>H</sup>	185	195	155 <sup>S</sup>	145 <sup>S</sup>	140 <sup>S</sup>	130 <sup>S</sup>	150	145 <sup>R</sup>	
18	150	145	115	145	140	140	145	120	120	100	140 <sup>H</sup>	160 <sup>H</sup>	145 <sup>H</sup>	135 <sup>H</sup>	150 <sup>H</sup>	165 <sup>H</sup>	155	175	115 <sup>S</sup>	155 <sup>S</sup>	155	135 <sup>S</sup>	155	125	
19	130	115	105	110	105	105	120 <sup>S</sup>	120	120	105	130 <sup>H</sup>	145 <sup>H</sup>	145 <sup>H</sup>	135 <sup>H</sup>	165 <sup>H</sup>	185 <sup>H</sup>	180	145	115 <sup>S</sup>	130 <sup>S</sup>	150	110 <sup>S</sup>	135	125	
20	110 <sup>S</sup>	125	145 <sup>S</sup>	150	130	150	190	150	95	160	125	125 <sup>H</sup>	135 <sup>H</sup>	150 <sup>H</sup>	170 <sup>H</sup>	150 <sup>H</sup>	135	135	145	135 <sup>S</sup>	115 <sup>S</sup>	135 <sup>S</sup>	160	165	
21	125	100 <sup>S</sup>	120	165	145	125	140	145	125	135	140 <sup>H</sup>	145 <sup>H</sup>	135 <sup>H</sup>	130 <sup>H</sup>	160 <sup>H</sup>	160	160	155	110 <sup>S</sup>	145 <sup>S</sup>	145	140	130 <sup>S</sup>	175	
22	175	145	135	145	150	150	110 <sup>S</sup>	125	120 <sup>R</sup>	120 <sup>R</sup>	133 <sup>H</sup>	115 <sup>H</sup>	135 <sup>H</sup>	140 <sup>H</sup>	165 <sup>H</sup>	185 <sup>H</sup>	155	150	145	105 <sup>S</sup>	150	155	120	145	
23	140	145	105 <sup>R</sup>	150	130 <sup>S</sup>	165	135	105	135 <sup>R</sup>	100 <sup>H</sup>	100 <sup>H</sup>	120 <sup>H</sup>	125 <sup>H</sup>	140 <sup>H</sup>	125 <sup>H</sup>	150 <sup>H</sup>	155	135	140 <sup>S</sup>	95 <sup>S</sup>	110 <sup>S</sup>	120 <sup>S</sup>	140	150	
24	130	115	95	120	125	125	105	85	120	100 <sup>R</sup>	145 <sup>R</sup>	130 <sup>H</sup>	115 <sup>H</sup>	120 <sup>H</sup>	150 <sup>H</sup>	145 <sup>H</sup>	175	185	110 <sup>S</sup>	140 <sup>S</sup>	140 <sup>R</sup>	140 <sup>S</sup>	180	110	
25	105	125	115 <sup>S</sup>	150	120 <sup>S</sup>	150	165	120	105	115	125 <sup>H</sup>	140 <sup>H</sup>	155 <sup>R</sup>	140 <sup>H</sup>	185 <sup>H</sup>	155 <sup>H</sup>	175	130	150	100 <sup>S</sup>	100 <sup>S</sup>	140 <sup>S</sup>	155	150	
26	100 <sup>S</sup>	105	140	185	135 <sup>S</sup>	175	115	175	120	110 <sup>R</sup>	120	140 <sup>H</sup>	115 <sup>H</sup>	135 <sup>H</sup>	145 <sup>H</sup>	145 <sup>H</sup>	150	150	120	115 <sup>S</sup>	110	135	125	115 <sup>S</sup>	100 <sup>S</sup>
27	110	135	105	105	125	130 <sup>S</sup>	145	110	110	120	120	130 <sup>H</sup>	120 <sup>H</sup>	145 <sup>H</sup>	135 <sup>H</sup>	160 <sup>H</sup>	130	155	115	120 <sup>S</sup>	100 <sup>S</sup>	100 <sup>S</sup>	135 <sup>S</sup>	105	
28	100	120 <sup>S</sup>	170	155	160	120	100	100	115	100	95 <sup>H</sup>	145 <sup>H</sup>	130 <sup>H</sup>	145 <sup>H</sup>	150 <sup>H</sup>	150 <sup>H</sup>	150	140	130	140 <sup>S</sup>	120 <sup>S</sup>	130 <sup>S</sup>	110 <sup>S</sup>	120 <sup>S</sup>	
29	110	100	115	125	130 <sup>S</sup>	140	145	130	110	140	140 <sup>H</sup>	130 <sup>H</sup>	150 <sup>H</sup>	140 <sup>H</sup>	150 <sup>H</sup>	170 <sup>H</sup>	160	150	140 <sup>S</sup>	175 <sup>S</sup>	100 <sup>S</sup>	135 <sup>S</sup>	150	150 <sup>S</sup>	
30	145	100	80	120	140	125	120	130	165	135	110 <sup>H</sup>	130 <sup>H</sup>	145 <sup>H</sup>	150 <sup>H</sup>	175 <sup>H</sup>	160 <sup>H</sup>	125	155	110 <sup>S</sup>	110 <sup>S</sup>	120	145 <sup>S</sup>	150 <sup>S</sup>	175 <sup>S</sup>	
31	120 <sup>S</sup>	140	120 <sup>S</sup>	105	105	130	95 <sup>S</sup>	115	85	110	115 <sup>H</sup>	90 <sup>H</sup>	110	135 <sup>H</sup>	145 <sup>H</sup>	155 <sup>H</sup>	150	150	125	135 <sup>S</sup>	120	130 <sup>S</sup>	95	140	
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	30	31	31	31	31	31
Median	110	130	120	145	130	140	120	120	115	110	120	130	135	135	140	150	150	140	125	135	140	130	135	130	130

The Radio Research Laboratories, Japan.

K 14

Sweep 2.0 Mc to 2.00 Mc in 2.0-sec

YF2

in automatic operation.

Lat. 31° 12.6' N  
Long. 130° 37.7' E

# Yamagawa

## IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

foF2

Oct. 1957

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	8.8	7.4	7.4	7.2	7.5	8.0	11.1	13.3	14.4	15.0	15.0	15.4	15.8	15.8	16.1	15.7	15.0	14.4	13.2	13.0	13.0	13.1	12.8	12.8
2	10.7	8.9	8.7	8.5	7.6	6.5	11.5	15.2	15.2	11.8	12.0	14.6	14.3	14.3	14.5	14.4	14.7	14.7	15.0	14.3	14.3	13.1	12.9	12.4
3	11.4	10.6	9.1	7.4	6.6	6.2	7.6	12.0	14.1	13.6	14.0	14.3	14.1	14.3	14.6	14.3	14.3	14.3	14.3	14.3	14.3	12.7	12.2	11.6
4	10.2	10.4	9.9	8.6	8.2	7.6	8.0	11.5	12.9	14.6	15.2	15.8	16.0	15.6	15.0	15.8	14.4	14.8	14.3	14.3	14.3	12.9	12.2	11.6
5	13.6	10.8	8.9	8.5	7.6	6.7	7.7	10.9	12.1	13.9	15.5	15.1	14.8	14.8	14.4	14.8	14.8	14.8	14.8	14.8	14.8	13.0	12.4	11.9
6	10.9	10.7	8.9	6.7	5.6	5.6	6.4	10.5	12.7	14.6	14.5	14.6	15.1	15.0	14.7	14.5	14.5	14.5	14.5	14.5	14.5	12.5	12.5	11.0
7	S	13.5	10.7	10.0	7.9	5.5	5.9	10.2	11.0	12.4	13.1	13.2	13.4	13.7	13.2	12.9	12.9	12.6	13.0	11.7	10.9	11.0	11.6	10.5
8	9.2	8.2	7.7	7.5	7.0	6.5	7.6	11.4	12.6	12.9	13.1	14.4	13.9	14.2	13.8	13.4	13.4	13.2	13.0	13.2	13.6	14.2	13.6	11.5
9	10.2	8.2	8.8	7.5	7.3	6.7	7.5	11.6	12.3	12.0	13.0	14.0	14.3	15.0	14.3	14.3	14.3	14.0	13.0	12.1	12.3	12.7	11.4	10.5
10	10.3	8.6	7.7	7.2	6.7	6.5	7.5	12.1	14.8	14.5	14.6	15.1	14.8	15.5	14.3	13.5	13.0	13.0	12.5	11.0	10.7	10.4	9.5	9.4
11	8.4	7.5	7.2	7.0	7.0	6.4	7.0	10.8	15.0	15.9	15.7	15.7	15.8	15.8	14.4	13.7	13.7	13.3	12.1	10.7	9.6	9.0	8.9	8.5
12	7.6	7.6	8.1	7.9	7.9	7.8	8.3	12.4	14.2	15.1	15.3	15.3	14.8	13.7	13.4	12.4	12.3	12.0	10.5	10.1	9.2	8.0	7.9	7.9
13	7.5	6.1	6.2	5.6	5.7	5.7	7.0	10.8	13.1	14.9	15.9	15.0	15.0	14.3	14.2	13.0	12.4	12.4	12.5	10.5	10.5	9.9	9.6	9.4
14	C	C	C	C	C	6.2	6.8	10.4	12.3	14.5	15.2	14.3	13.8	14.3	14.2	13.0	12.4	12.4	12.5	10.5	10.5	9.9	9.6	9.5
15	9.5	6.8	5.7	5.8	5.7	6.0	6.8	11.8	14.5	15.5	16.0	16.1	16.2	14.8	14.3	13.5	12.4	12.3	12.0	10.5	10.1	9.2	8.0	7.9
16	8.8	8.6	8.5	7.5	6.8	6.1	6.9	11.0	14.5	15.5	16.0	16.1	16.2	14.8	14.3	13.5	12.4	12.3	12.0	10.5	10.1	9.2	8.0	7.9
17	11.0	10.1	8.6	7.3	6.3	6.0	6.7	10.6	13.5	13.6	14.7	15.0	15.2	15.3	14.7	14.5	14.5	14.6	13.2	11.8	11.8	12.0	11.5	11.0
18	13.1	12.7	9.9	8.5	7.2	6.4	7.3	10.6	13.4	14.8	14.2	14.0	14.1	14.3	14.3	14.0	14.0	14.0	13.7	13.1	12.0	11.5	11.0	10.5
19	C	C	C	C	6.8	5.3	5.6	10.1	12.9	14.8	14.5	14.5	14.5	13.9	13.1	12.6	12.5	12.5	12.0	11.1	11.1	10.6	10.6	11.0
20	10.1	8.5	7.7	7.2	6.8	6.4	6.4	10.4	13.6	14.5	14.4	14.4	14.1	13.7	13.1	12.6	12.5	12.2	11.4	10.6	11.3	12.4	12.6	11.8
21	10.6	9.5	9.3	8.8	7.0	6.4	7.4	11.0	13.1	14.9	14.9	14.7	14.6	14.6	13.7	12.8	12.8	12.5	12.5	11.3	11.3	11.6	11.9	11.8
22	S	10.3	9.6	7.9	7.7	7.8	7.8	10.9	13.0	15.8	C	C	15.5	15.0	15.8	13.2	12.7	12.2	12.2	12.6	12.8	11.9	11.9	11.8
23	C	C	C	C	C	C	C	C	C	S	S	15.4	15.5	15.6	15.1	14.4	13.8	13.6	13.0	11.9	12.3	12.7	12.7	11.1
24	10.9	10.6	10.0	8.4	5.5	4.6	5.5	9.7	12.8	15.5	15.5	15.0	15.0	15.5	14.5	14.3	13.4	12.8	12.2	11.2	11.5	11.5	10.7	9.2
25	9.3	9.5	8.9	7.1	5.2	4.9	5.7	11.0	13.0	14.3	15.0	15.8	15.6	15.8	15.7	14.9	13.6	13.1	13.0	12.4	13.3	12.8	12.2	10.8
26	9.9	8.4	7.2	7.2	5.9	5.1	5.6	10.0	12.7	14.5	14.4	14.4	14.5	14.6	13.5	12.9	12.5	12.5	12.0	11.1	11.6	11.3	11.0	11.2
27	10.9	10.0	9.8	8.6	6.2	5.5	6.5	10.9	13.0	13.6	14.5	14.3	14.7	15.3	14.7	14.4	13.5	13.0	12.6	11.7	12.5	12.7	11.5	10.4
28	9.4	9.7	7.8	6.7	7.2	7.4	8.6	11.6	13.5	15.1	14.9	14.5	14.4	14.5	14.4	14.5	13.5	13.1	13.0	12.4	12.3	11.3	11.3	9.4
29	9.5	8.7	7.6	6.8	5.8	5.5	6.9	10.0	11.8	14.3	14.5	14.3	13.9	14.5	14.3	13.7	13.5	13.6	13.3	13.0	S	S	12.3	10.7
30	9.1	8.5	8.3	7.4	5.9	5.6	6.9	10.5	12.2	13.6	14.1	14.0	14.4	14.3	13.5	13.5	13.4	13.3	12.9	12.4	11.8	11.3	10.1	9.5
31	10.0	10.0	8.5	7.4	5.6	5.0	5.5	10.6	12.9	13.7	14.5	14.4	14.3	14.6	14.4	14.3	14.4	14.2	S	S	S	S	12.6	11.4
No.	26	28	28	28	29	30	30	30	30	30	30	30	30	30	29	30	30	30	29	27	27	23	25	26
Median	10.0	9.5	8.6	7.4	6.8	6.2	6.9	10.9	13.0	14.5	14.6	14.6	14.8	14.6	14.4	14.3	13.5	13.2	13.0	11.9	11.8	11.9	11.5	10.8
L.Q.	10.9	10.4	9.2	8.4	7.4	6.5	7.6	11.5	13.6	14.9	15.4	15.1	15.4	15.3	15.0	14.5	14.3	14.2	13.2	12.8	12.5	12.7	12.6	11.2
L.Q.	9.2	8.4	7.7	7.2	5.9	5.5	6.4	10.5	12.7	13.6	14.3	14.3	14.3	14.3	14.0	13.5	12.9	12.5	12.2	11.0	10.9	10.6	9.8	9.5
Q.R.	1.7	2.0	1.5	1.2	1.5	1.0	1.2	1.0	0.9	1.3	1.1	0.8	1.1	1.0	1.0	1.0	1.4	1.7	1.0	1.8	1.6	2.1	2.8	1.7

Sweep 1.0 Mc to 20.0 Mc in 1 min in automatic operation.

foF2

The Radio Research Laboratories, Japan.  
Y 1

IONOSPHERIC DATA

Lat. 31° 12.6' N  
 Long. 130° 37.7 E

Yamagawa

foF1

Oct. 1957

135° E Mean Time (GMT.+9h.)

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

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.0 Mc in 1 min sec in automatic operation.

foF1

Y 2

Lat. 31° 12.6' N  
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

foE

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							S	2.50	3.30	3.65 <sup>C</sup>	3.85 <sup>C</sup>	3.90 <sup>C</sup>	C	C	C	C	C	3.25 <sup>C</sup>	3.70 <sup>C</sup>						
2								2.50 <sup>H</sup>	3.20	3.60 <sup>C</sup>	3.80 <sup>C</sup>	3.90	4.10	4.00 <sup>S</sup>	4.00	3.70 <sup>C</sup>	3.25	2.70	S						
3								2.50	3.10 <sup>H</sup>	3.75	3.85 <sup>R</sup>	R	R	4.00 <sup>R</sup>	3.80 <sup>C</sup>	C	3.30	2.60	S						
4								2.50	3.05	3.40 <sup>R</sup>	3.60	4.05	4.10	4.00	R	3.65 <sup>C</sup>	3.30 <sup>R</sup>	2.55 <sup>A</sup>	A						
5								2.20	3.15	3.65 <sup>C</sup>	3.90	4.00 <sup>R</sup>	4.05	4.00	3.90	3.65 <sup>C</sup>	3.30	2.65	S						
6								2.50	3.15	3.65 <sup>C</sup>	3.90 <sup>R</sup>	4.00 <sup>R</sup>	4.10 <sup>R</sup>	4.05 <sup>R</sup>	3.90 <sup>R</sup>	3.65 <sup>C</sup>	3.30	2.55	S						
7								2.45	3.05	3.60	3.70 <sup>C</sup>	C	3.85	3.95 <sup>R</sup>	R	C	3.30	2.50	S						
8								2.50	3.25	3.75 <sup>C</sup>	3.80 <sup>C</sup>	4.00 <sup>R</sup>	4.05 <sup>R</sup>	4.10 <sup>R</sup>	3.90 <sup>R</sup>	3.60 <sup>C</sup>	3.25	2.50	S						
9								2.60	3.30	3.65 <sup>C</sup>	3.80 <sup>C</sup>	4.00 <sup>R</sup>	4.10 <sup>R</sup>	R	R	R	3.30 <sup>H</sup>	A							
10							S	2.60	3.20	3.75 <sup>C</sup>	3.95	4.10	4.10	R	3.95 <sup>R</sup>	3.60 <sup>C</sup>	3.25	2.55 <sup>R</sup>	S						
11								2.60	3.30	3.80 <sup>C</sup>	3.95	4.10 <sup>S</sup>	4.00	4.10	R	4.10	S	3.35	2.60	S					
12								2.60	3.10	3.55	4.05	4.15 <sup>C</sup>	C	C	C	C	3.35 <sup>R</sup>	2.50	S						
13								2.40 <sup>R</sup>	R	C	4.00	4.10	4.00	3.95	C	3.55	R	2.40	S						
14								2.20	3.20	3.80	3.90 <sup>R</sup>	4.10	4.05	3.95	3.85 <sup>J</sup>	3.70	3.30	2.40	S						
15								2.15	3.10 <sup>H</sup>	3.50	3.90	4.00	4.15 <sup>R</sup>	4.10 <sup>B</sup>	4.10	3.90	R	2.40	S						
16								A	A	A	A	R	4.20	A	A	A	R	2.35 <sup>R</sup>	S						
17								2.35	3.20	3.65	3.85	4.00 <sup>R</sup>	4.05	4.10	4.05	3.50	3.00	A							
18								2.30 <sup>H</sup>	3.20 <sup>R</sup>	3.50	3.70	4.25	4.20	4.10	C	C	C	C	C						
19								2.30 <sup>H</sup>	3.20 <sup>R</sup>	3.65 <sup>R</sup>	4.00	4.15	4.25	4.30	3.95	R	3.50 <sup>H</sup>	R							
20								2.30	3.10	3.65	3.90	4.00	4.10 <sup>B</sup>	4.20 <sup>S</sup>	4.00	3.80	3.20	2.25							
21								2.25	3.00	3.60	3.90	4.10 <sup>S</sup>	4.05 <sup>R</sup>	4.20	4.00	3.70	3.20	R							
22								2.30	3.10	3.60	C	C	A	4.00	3.95 <sup>A</sup>	3.65	3.10	A							
23								C	C	C	3.65	4.00	4.10	4.25	4.15	3.90	3.20	2.30							
24								2.20	3.20	3.65	3.95	4.10	4.20	4.20	3.95	3.80	3.35	2.25							
25								2.10	3.25	3.70	4.00	4.00	4.20	4.10	3.95	3.60	3.00	2.40							
26								2.10	3.10	3.60	4.10	4.20	4.10	R	4.00	3.70	3.15	2.50							
27								2.15	3.15 <sup>H</sup>	3.60 <sup>H</sup>	R	A	A	4.10	4.00	3.90	3.10 <sup>A</sup>	2.30							
28								2.25	3.10	3.65	4.00	4.10	4.20	4.10	4.00	3.60 <sup>H</sup>	3.10	S							
29								2.00	2.95	3.60	3.85 <sup>R</sup>	3.90	4.10 <sup>R</sup>	4.05 <sup>A</sup>	3.90 <sup>F</sup>	3.80	3.20	R	S						
30								2.10	3.10	3.50	3.90	3.90	4.20	4.10	3.90	3.55	3.10	A							
31								1.95	3.00	3.65	4.00	4.30	4.20	4.20	4.05 <sup>A</sup>	3.65	3.05	2.30							
No.								2.9	2.8	2.9	2.8	2.6	2.6	2.5	2.3	2.2	2.6	2.2							
Median								2.30	3.15	3.65	3.90	4.10	4.10	4.10	3.95	3.65	3.20	2.50							

foE

Sweep 1.0 Mc to 2.0 Mc in 1 min in automatic operation.

The Radio Research Laboratories, Japan.

Y 3



# IONOSPHERIC DATA

Lat. 31° 12.5' N  
Long. 130° 37.7' E

**Yamagawa**

135° E Mean Time (GMT.+9h.)

foEs

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S	E	E	2.5 <sup>M</sup>	3.0 <sup>M</sup>	S	G	3.3	4.0	C	C	C	C	C	C	C	C	C	C	C	C	2.6 <sup>M</sup>	S	2.5 <sup>M</sup>	
2	S	S	S	E	S	S	S	2.7	3.5	3.9	4.3	4.8	5.1	4.4	G	G	G	3.1	2.3	5.4	5.7 <sup>M</sup>	5.8 <sup>M</sup>	3.2 <sup>M</sup>	S	
3	S	S	E	3.6 <sup>M</sup>	E	S	S	G	4.0	4.0	G	4.6	4.9	5.5	G	4.3	4.2	5.1	4.2 <sup>M</sup>	4.0	3.2 <sup>M</sup>	S	2.6 <sup>M</sup>	S	
4	S	S	E	E	E	E	S	S	3.5	3.9	4.1	4.8	4.8	4.3	5.1	5.2	3.6	7.0 <sup>M</sup>	2.5	3.6	4.0	3.6 <sup>M</sup>	3.5	3.7 <sup>M</sup>	
5	3.3 <sup>M</sup>	2.7 <sup>M</sup>	2.1 <sup>M</sup>	3.1 <sup>M</sup>	3.4 <sup>M</sup>	2.5 <sup>M</sup>	S	G	G	G	4.8	4.3	4.3	4.2	G	G	3.6	3.2	5.7	6.5	5.5 <sup>M</sup>	3.5 <sup>M</sup>	3.2 <sup>M</sup>	S	
6	S	S	E	3.0 <sup>M</sup>	3.1 <sup>M</sup>	2.5 <sup>M</sup>	S	3.9	3.9	G	G	G	G	5.6 <sup>M</sup>	G	G	3.4	2.7	1.9	3.1 <sup>M</sup>	S	3.0 <sup>M</sup>	3.6 <sup>M</sup>	2.5 <sup>M</sup>	
7	S	E	3.2 <sup>M</sup>	S	3.0 <sup>M</sup>	S	S	3.1	3.3	5.5 <sup>M</sup>	4.6	4.1	4.3	G	G	4.9	4.6	3.5	5.8 <sup>M</sup>	3.2	3.1 <sup>M</sup>	2.7 <sup>M</sup>	2.5 <sup>M</sup>		
8	2.1 <sup>M</sup>	S	E	E	E	S	S	2.8	G	5.8 <sup>M</sup>	G	G	G	G	G	G	4.2	4.0	3.6 <sup>M</sup>	S	S	2.9 <sup>M</sup>	3.0	3.2 <sup>M</sup>	
9	2.5 <sup>M</sup>	2.2 <sup>M</sup>	S	E	E	S	S	3.3 <sup>M</sup>	G	3.9	4.3	5.7 <sup>M</sup>	G	G	G	G	3.6 <sup>M</sup>	3.6 <sup>M</sup>	3.1 <sup>M</sup>	S	S	S	S	S	
10	S	S	E	E	E	S	S	3.3 <sup>M</sup>	3.3	G	G	G	5.2	G	G	G	3.6	3.9	2.6	2.5 <sup>M</sup>	S	S	S	S	
11	S	S	2.2 <sup>M</sup>	2.1 <sup>M</sup>	1.4	S	S	3.7 <sup>M</sup>	5.7 <sup>M</sup>	4.1	4.3	4.5	4.3	4.2	G	G	3.9	3.2	2.0	S	S	3.1 <sup>M</sup>	S	2.1 <sup>M</sup>	
12	2.3 <sup>M</sup>	S	E	E	E	3.2 <sup>M</sup>	S	3.0	G	G	4.2	C	C	C	C	5.0	4.9	2.9	3.3	2.6	3.1 <sup>M</sup>	3.0	3.6 <sup>M</sup>	5.2	
13	4.4	3.6 <sup>M</sup>	2.5 <sup>M</sup>	1.4	2.3 <sup>M</sup>	2.4 <sup>M</sup>	S	G	3.6	4.3	4.4	4.7	4.6	4.7	4.5	4.1	4.0	3.6	3.7 <sup>M</sup>	4.5	2.1 <sup>M</sup>	C	C	C	
14	C	C	C	C	C	S	S	G	3.6	G	5.3	G	5.2	4.3	G	4.2	6.2	6.7 <sup>M</sup>	5.7 <sup>M</sup>	4.8 <sup>M</sup>	3.6 <sup>M</sup>	4.2	2.3 <sup>M</sup>	2.4 <sup>M</sup>	
15	2.4 <sup>M</sup>	3.3 <sup>M</sup>	3.3 <sup>M</sup>	3.4 <sup>M</sup>	3.2 <sup>M</sup>	2.1 <sup>M</sup>	S	3.1 <sup>M</sup>	G	4.8	4.7	5.0	5.0	B	G	G	4.1	3.6	3.6 <sup>M</sup>	3.6 <sup>M</sup>	2.6 <sup>M</sup>	S	2.5 <sup>M</sup>	S	
16	S	3.1 <sup>M</sup>	4.3 <sup>M</sup>	3.6 <sup>M</sup>	3.3 <sup>M</sup>	2.5 <sup>M</sup>	S	4.3	5.7 <sup>M</sup>	6.2	5.2	G	G	5.0	5.4 <sup>M</sup>	5.0	5.0	4.0	5.2 <sup>M</sup>	4.5	3.6 <sup>M</sup>	4.7 <sup>M</sup>	4.3 <sup>M</sup>	3.6 <sup>M</sup>	
17	3.3 <sup>M</sup>	2.2 <sup>M</sup>	2.7 <sup>M</sup>	2.7 <sup>M</sup>	3.6 <sup>M</sup>	2.6 <sup>M</sup>	2.4 <sup>M</sup>	3.7 <sup>M</sup>	G	G	4.3	4.7	7.2 <sup>M</sup>	5.0	4.6	10.0	3.6	2.8	3.7	3.7	3.1 <sup>M</sup>	5.9	3.3	2.7 <sup>M</sup>	
18	S	2.3 <sup>M</sup>	1.4	3.3 <sup>M</sup>	E	3.0 <sup>M</sup>	2.4 <sup>M</sup>	G	3.7 <sup>M</sup>	G	G	G	G	5.2	C	C	C	C	C	C	C	C	C	C	
19	3.7 <sup>M</sup>	3.1 <sup>M</sup>	2.2 <sup>M</sup>	E	E	S	S	G	3.6	G	G	G	G	5.5 <sup>M</sup>	4.6	4.8	5.5	6.7 <sup>M</sup>	5.4 <sup>M</sup>	5.5	2.6 <sup>M</sup>	3.7 <sup>M</sup>	3.3 <sup>M</sup>	3.6 <sup>M</sup>	
20	2.6 <sup>M</sup>	3.6 <sup>M</sup>	1.3	E	E	S	S	G	3.7 <sup>M</sup>	5.7 <sup>M</sup>	G	G	B	4.6	4.4	5.8 <sup>M</sup>	4.5	2.6	4.5	5.2	5.8 <sup>M</sup>	3.6 <sup>M</sup>	3.1 <sup>M</sup>	3.1 <sup>M</sup>	
21	3.2 <sup>M</sup>	C	C	E	E	E	S	G	3.3	G	5.9 <sup>M</sup>	G	G	G	5.0	4.8	4.2	2.4	3.1 <sup>M</sup>	3.9 <sup>M</sup>	3.2 <sup>M</sup>	S	S	S	
22	3.4 <sup>M</sup>	C	C	E	E	3.0 <sup>M</sup>	3.4 <sup>M</sup>	C	3.2 <sup>M</sup>	G	C	C	6.2 <sup>M</sup>	5.6 <sup>M</sup>	5.6 <sup>M</sup>	4.4	5.2	4.0	3.4	3.0 <sup>M</sup>	3.2	3.7 <sup>M</sup>	3.6 <sup>M</sup>	C	
23	3.0 <sup>M</sup>	S	E	2.9 <sup>M</sup>	2.9 <sup>M</sup>	3.1 <sup>M</sup>	3.3 <sup>M</sup>	G	C	G	G	G	G	4.7	5.2	4.2	6.2	6.6 <sup>M</sup>	5.0 <sup>M</sup>	8.8 <sup>M</sup>	4.5 <sup>M</sup>	3.2 <sup>M</sup>	2.8 <sup>M</sup>	3.1 <sup>M</sup>	
24	3.1 <sup>M</sup>	2.6 <sup>M</sup>	3.1 <sup>M</sup>	2.9 <sup>M</sup>	3.0 <sup>M</sup>	2.2 <sup>M</sup>	2.4 <sup>M</sup>	2.4	3.5	5.6	4.4	4.4	5.6 <sup>M</sup>	G	G	G	5.7 <sup>M</sup>	3.1 <sup>M</sup>	3.0 <sup>M</sup>	3.0 <sup>M</sup>	2.4	3.0 <sup>M</sup>	S	S	
25	S	S	E	E	E	E	S	2.6	3.5	5.7 <sup>M</sup>	4.6	4.8	5.0	G	5.1 <sup>M</sup>	G	5.5 <sup>M</sup>	3.1 <sup>M</sup>	3.2	2.3 <sup>M</sup>	S	S	3.5 <sup>M</sup>	S	
26	S	S	2.4 <sup>M</sup>	2.4 <sup>M</sup>	2.7 <sup>M</sup>	2.7 <sup>M</sup>	S	3.1 <sup>M</sup>	G	5.7 <sup>M</sup>	G	4.6	4.2	4.3	G	G	3.9	5.4	2.1	3.2 <sup>M</sup>	3.1 <sup>M</sup>	S	S	S	
27	S	S	E	E	E	E	S	G	3.6 <sup>M</sup>	G	G	G	G	G	G	4.6	3.7	3.1 <sup>M</sup>	3.1 <sup>M</sup>	2.7 <sup>M</sup>	S	S	S	S	
28	S	3.1 <sup>M</sup>	E	E	E	2.3 <sup>M</sup>	E	2.7	3.4	G	G	G	4.6	4.7 <sup>M</sup>	4.2	4.3	4.7	5.0	2.5	2.4 <sup>M</sup>	2.9 <sup>M</sup>	3.1 <sup>M</sup>	2.4 <sup>M</sup>	S	
29	S	E	2.4 <sup>M</sup>	3.0 <sup>M</sup>	2.4 <sup>M</sup>	S	3.1 <sup>M</sup>	3.5	5.0	G	4.1	4.5	4.5	4.8	4.3	G	G	2.7 <sup>M</sup>	S	S	S	S	3.1 <sup>M</sup>	S	S
30	S	E	S	E	2.4 <sup>M</sup>	S	S	2.4	G	5.7	4.4	G	4.4	4.5	4.5	G	3.6	3.2	3.5 <sup>M</sup>	E	S	S	S	S	
31	S	E	S	E	2.4 <sup>M</sup>	S	S	2.4	G	5.7	4.4	G	4.4	4.5	4.5	G	3.6	3.2	3.5 <sup>M</sup>	E	S	S	S	S	
No.	13	15	25	26	27	19	9	30	30	30	29	28	28	28	28	29	29	29	28	25	20	18	19	14	
Median	3.1 <sup>M</sup>	2.6 <sup>M</sup>	1.4	2.2 <sup>M</sup>	2.3 <sup>M</sup>	2.5 <sup>M</sup>	2.4 <sup>M</sup>	2.9	3.3	3.9	4.1	G	4.4	4.4	G	4.2	4.2	3.6	3.4 <sup>M</sup>	3.6 <sup>M</sup>	3.2 <sup>M</sup>	3.4 <sup>M</sup>	3.2 <sup>M</sup>	3.1 <sup>M</sup>	
U.Q.	3.3	3.1	2.6	3.0	3.0	3.1	3.0	3.2	3.6	5.5	4.4	4.6	5.0	4.9	4.6	4.8	5.0	5.0	4.8	4.6	3.8	3.7	3.5	3.6	
L.Q.	2.4	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	3.6	3.1	2.8	2.8	2.8	3.0	2.7	2.5	
Q.R.	0.9																1.4	1.9	2.0	1.8	1.0	0.7	0.8	1.1	

Sweep 1.0 Mc to 20.0 Mc in \_\_\_\_\_ min in automatic operation.

The Radio Research Laboratories, Japan.

foEs

**Y 4**



Lat. 31° 12.6' N  
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

fbEs

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	E	E	E	E	E	S	2.8	3.4	C	C	C	C	C	C	C	C	C	C	C	C	S	S	S
2	S	E	E	E	E	E	S	3.5	3.9	C	C	4.6	4.7	4.4	G	G	G	3.0	2.2	3.4	3.0	A	1.7	S
3	S	S	E	E	E	S	S	G	3.9	G	G	4.5	4.5	4.6	G	4.3	3.9	3.2	3.8	2.5	2.0	S	S	S
4	S	E	E	E	E	E	S	2.9	3.5	G	G	4.7	4.7	4.5	G	4.2	3.5	6.4	2.4	2.4	3.1	2.6	1.8	1.9
5	2.2	S	1.3	S	2.3	S	S	G	G	G	G	4.3	4.5	G	G	G	G	G	G	2.6	3.9	2.0	2.0	S
6	S	S	E	E	E	S	S	2.2	3.8	G	G	G	G	4.2	G	G	G	2.7	1.9	S	S	1.8	2.6	1.8
7	S	E	E	E	E	S	S	G	3.2	G	G	4.4	4.4	G	G	4.6	3.8	3.0	1.8	S	S	2.2	2.4	2.0
8	S	S	E	E	E	E	S	G	G	G	G	4.4	G	G	G	G	4.1	4.0	2.9	S	S	S	2.1	2.1
9	S	S	S	E	E	S	S	2.7	G	G	G	4.4	G	G	G	G	G	G	S	S	S	S	S	S
10	S	S	E	E	E	S	S	G	G	G	G	G	G	G	G	G	3.8	3.8	2.4	S	S	S	S	S
11	S	E	1.3	E	1.3	S	S	G	G	G	G	4.5	4.5	G	G	G	G	3.1	1.9	S	S	2.4	S	1.9
12	S	E	E	E	E	S	S	2.7	G	G	C	C	C	C	C	4.6	4.5	2.8	2.4	1.8	2.2	1.8	1.9	2.0
13	2.1	A	1.8	1.3	S	S	S	G	3.3	4.1	4.1	4.5	4.6	4.6	4.5	4.4	3.8	3.7	2.7	3.2	S	C	C	C
14	C	C	C	C	C	S	S	G	G	G	G	5.0	5.0	G	G	4.1	5.1	6.0	4.8	4.1	2.9	3.0	S	S
15	S	2.2	2.5	2.5	2.2	S	S	2.8	G	4.7	4.5	5.0	4.4	B	G	G	4.0	3.8	2.4	2.6	S	S	S	S
16	S	S	1.9	2.7	2.0	A	S	G	4.2	4.3	4.1	G	G	4.0	4.5	4.1	G	4.1	4.6	2.9	2.2	3.8	A	2.9
17	2.6	S	1.9	1.8	1.8	1.8	S	G	G	G	4.1	4.5	5.4	4.6	G	4.2	3.3	C	C	C	C	C	C	1.9
18	S	S	1.7	1.3	E	E	S	G	3.4	4.6	G	G	G	5.0	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	E	E	S	G	3.5	G	G	G	G	4.6	4.6	4.5	5.1	6.0	4.6	4.1	1.7	A	A	2.9
20	2.7	2.0	1.7	E	E	S	S	G	G	3.8	G	G	B	4.6	4.4	4.5	4.1	2.8	2.1	4.5	3.3	1.9	1.8	2.1
21	1.8	1.7	1.3	E	E	E	S	G	3.3	G	4.1	G	G	G	4.9	4.6	4.0	2.4	2.2	2.9	A	S	S	S
22	1.8	E	2.2	2.2	1.9	1.7	S	G	G	G	C	C	C	G	G	4.1	4.1	2.5	2.3	1.9	A	A	2.9	2.9
23	2.5	C	C	C	C	C	C	C	C	C	C	C	C	G	G	4.5	4.5	A	6.5	4.8	2.1	S	S	1.9
24	S	S	E	1.9	2.0	1.7	S	G	G	G	G	G	G	4.5	4.3	4.1	4.6	4.0	4.5	8.0	2.5	2.0	S	S
25	S	1.8	1.7	1.7	1.7	1.7	S	2.5	3.5	4.1	G	G	G	G	G	G	G	G	S	S	S	S	S	S
26	S	E	E	E	E	E	S	G	3.5	G	4.4	4.7	4.5	G	G	G	G	G	S	S	S	S	S	S
27	S	S	1.7	1.8	1.7	1.7	S	G	G	G	G	4.5	4.1	4.2	G	G	G	G	1.9	2.2	S	S	S	S
28	S	E	E	E	E	E	S	G	G	G	G	G	G	G	G	4.5	3.5	2.5	2.0	S	S	S	S	S
29	S	E	E	E	E	E	S	2.5	3.4	G	G	G	4.5	G	G	4.0	3.9	4.9	1.9	S	S	S	S	S
30	S	E	E	1.1	1.2	E	S	2.5	3.4	4.8	G	4.1	4.5	4.6	4.1	G	G	2.0	S	S	S	S	S	S
31	S	E	E	E	E	S	S	G	G	3.2	G	G	G	4.4	4.1	G	G	G	S	E	S	S	S	S
No.	7	17	27	27	28	16	2	30	30	30	29	28	28	28	28	29	29	29	24	1.8	13	14	12	12
Median	2.2	E	E	E	E	E	1.8	G	G	G	G	G	G	G	G	4.1	3.8	3.0	2.4	2.6	2.9	2.3	2.2	2.0

Sweep 1.0 Mc to 20.0 Mc in 1 min in automatic operation.

The Radio Research Laboratories, Japan.

fbEs

Y 5



# IONOSPHERIC DATA

Lat. 81° 12.5' N  
Long. 180° 37.7 E

Yamagawa

135° E Mean Time (GMT.+9h.)

Oct. 1957

(M3000)F2

(M3000)F2

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 U 2.80 J 2.85	2.85 U 2.80 J 2.90	2.65 J 2.70 J 2.75	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20
2	2.85 U 2.80 J 2.90	2.85 U 2.80 J 2.90	2.65 J 2.70 J 2.75	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20
31	2.65 J 2.70 J 2.75	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20	3.10 J 3.15 J 3.20
No.	26	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	
Median	2.80	2.85	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 2.0 Mc in 1 min in automatic operation.

Y 7

# IONOSPHERIC DATA

Lat. 31° 12.6' N  
 Long. 130° 31.7' E

Yamagawa

135° E Mean Time (GMT.+ 9h.)

(M3000)F1

Oct. 1957

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

Sweep 1.0 Mc to 20.0 Mc in 1 min 1 sec in automatic operation.

(M3000)F1

The Radio Research Laboratories, Japan.

Y 8

# IONOSPHERIC DATA

Lat. 31° 12.5' N  
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT.+9h.)

Oct. 1957

R'F2

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

Sweep 1.0 Mc to 20.0 Mc in \_\_\_ min in automatic operation.

R'F2

The Radio Research Laboratories, Japan.

Y 9



Lat. 31° 12.6' N  
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

Oct. 1957

R'F

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	245	220	295	280	275	240	230	220	220	215	200	200	200	205	220	220	220	235	240	240	240	250	240	225
2	250	275	275	230	205	220	295	240	215	205	205	220	220	220	220	215	240	245	240	240	255	285	250	240
3	240	240	220	225	250	255	270	230	225	220	220	225	205	225	230	230	245	245	250	240	245	250	250	240
4	265	250	250	295	275	240	245	220	205	220	210	210	210	220	220	225	235	260	240	240	250	270	245	250
5	245	250	250	250	250	255	270	215	210	215	220	200	205	215	215	225	225	245	240	245	240	235	250	250
6	245	225	200	240	250	265	255	230	225	225	215	200	200	210	225	230	240	250	235	225	240	245	250	250
7	245	225	205	225	205	200	240	230	215	205	205	200	200	230	225	240	235	245	240	225	240	245	250	250
8	245	255	240	260	245	230	250	210	220	220	205	200	200	245	220	225	245	245	250	245	245	270	265	245
9	245	240	250	230	245	235	245	220	220	220	205	200	200	220	240	235	230	250	240	240	250	240	215	250
10	240	215	250	270	275	295	300	230	225	220	230	210	200	230	220	235	240	250	250	250	240	245	245	250
11	245	250	285	285	245	220	285	240	240	220	215	210	220	205	225	225	240	245	240	225	260	250	275	285
12	305	340	300	270	270	325	325	230	215	225	210	200	C	C	C	225	240	230	240	240	255	240	235	255
13	245	285	300	300	350	305	265	220	215	215	220	215	215	220	235	230	265	300	270	255	280	340	295	250
14	C	C	C	C	C	250	240	220	220	220	220	210	230	230	205	225	225	240	240	245	250	280	295	250
15	245	240	295	410	325	295	305	235	220	210	220	225	225	220	205	225	225	240	240	245	250	280	295	250
16	275	275	250	245	245	290	300	235	220	220	220	210	230	230	230	230	265	300	270	255	280	340	295	250
17	245	235	230	230	245	245	245	225	225	220	210	205	225	225	220	225	230	250	255	255	280	295	280	255
18	245	220	220	235	225	245	250	220	220	220	230	220	240	220	220	230	230	250	240	265	270	255	255	255
19	C	C	C	C	220	245	300	245	225	220	225	225	215	230	240	230	250	A	290	290	250	280	275	280
20	250	240	250	265	245	240	240	240	225	225	230	220	240	225	225	230	230	245	255	300	300	270	250	250
21	245	245	250	225	240	270	290	240	225	225	225	230	230	230	230	230	235	350	250	275	290	270	250	335
22	240	250	250	285	285	255	245	245	235	230	C	C	220	220	220	220	235	240	265	280	280	270	255	250
23	245	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	240	300	275	250	260	240	240	240
24	240	250	240	225	200	240	250	245	240	225	215	215	225	230	235	240	250	265	275	350	290	260	250	255
25	275	245	230	220	200	300	310	245	220	230	220	220	220	230	225	230	240	240	250	260	280	250	245	240
26	245	230	250	240	205	240	260	245	235	235	230	225	230	230	220	230	240	255	265	275	260	245	245	250
27	250	240	245	225	225	250	270	240	230	220	215	230	205	220	230	230	240	250	245	280	275	250	240	250
28	285	220	225	300	255	270	255	225	225	230	220	220	220	220	225	230	245	250	275	260	255	245	235	270
29	250	235	220	225	245	350	270	220	210	220	225	210	220	230	240	235	250	300	255	260	275	240	235	250
30	270	280	245	230	240	300	265	240	220	225	230	230	230	230	230	230	225	250	260	260	255	250	250	275
31	255	235	220	220	200	275	280	245	225	220	225	220	220	220	225	230	240	250	250	260	260	255	240	245
No.	29	28	28	28	29	30	30	30	30	31	30	30	30	30	30	29	30	29	30	30	30	29	29	29
Median	245	240	250	240	245	250	265	230	220	220	220	215	220	225	225	230	240	250	250	250	255	250	250	250

Sweep 1.0 Mc to 2.0 Mc in / min in automatic operation.

R'F

The Radio Research Laboratories, Japan.  
Y 10

# IONOSPHERIC DATA

Lat. 31° 12.6' N  
Long. 130° 31.7' E

**Yamagawa**

135° E Mean Time (GMT.+9h.)

f<sup>o</sup>F<sub>2</sub>

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S	E	E	100	100	S	G	130	120	C	C	C	C	C	C	C	C	C	C	C	C	C	95	S	95
2	S	S	S	E	S	S	S	170	150	E 145 <sup>B</sup>	130	115	115	120	G	G	G	170	140	100	100	100	100	100	S
3	S	S	E	120	S	S	S	G	G	130	G	120	115	105	G	140	140	110	100	100	100	100	100	100	S
4	S	S	E	E	E	E	S	120	110	110	120	115	110	120	110	120	115	100	100	100	100	100	100	100	S
5	100	100	95	100	100	100	S	G	G	G	G	115	120	120	G	E 190 <sup>B</sup>	140	125	125	100	100	100	100	100	95
6	S	S	E	100	110	100	S	100	125	G	G	G	120	G	G	G	135	125	115	110	105	100	100	100	100
7	S	E	110	S	100	S	S	120	115	100	110	115	120	G	G	G	125	110	105	S	S	100	100	100	95
8	95	S	E	E	E	E	S	140	G	100	G	G	G	G	G	G	100	100	100	S	S	100	100	100	S
9	95	100	S	S	E	S	S	100	G	125	110	100	100	G	G	G	100	100	100	S	S	100	100	100	S
10	S	S	E	E	E	S	S	105	140	G	G	G	110	G	G	G	145	120	110	100	S	S	100	100	S
11	S	S	100	100	100	S	S	90	110	130	120	120	120	130	G	G	130	125	110	S	100	100	100	100	100
12	100	S	E	E	E	120	S	130	G	E 155 <sup>B</sup>	C	C	C	C	C	120	110	120	105	100	100	100	100	100	100
13	100	100	100	100	100	100	S	G	115	115	120	105	110	105	105	110	120	105	100	100	100	100	100	100	C
14	C	C	C	C	C	S	S	G	130	G	110	G	110	120	G	145	110	105	100	100	100	100	100	100	100
15	100	100	95	95	100	100	S	95	G	120	125	110	145	B	G	G	130	120	110	100	100	100	100	100	S
16	S	100	95	95	95	95	100	100	100	105	100	G	G	105	100	100	120	125	105	100	100	100	100	100	100
17	95	95	95	95	95	95	95	95	G	G	115	105	105	105	105	105	105	105	100	100	100	100	100	100	100
18	S	100	100	100	100	E	100	100	100	110	G	G	G	160	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	E	S	S	G	115	G	G	G	G	100	145	140	120	100	100	100	100	100	100	100	95
20	95	95	100	E	E	S	S	100	100	100	G	G	B	150	150	100	125	125	100	100	100	100	100	100	95
21	100	100	100	E	E	100	S	G	105	G	100	G	G	100	130	125	115	115	100	100	100	100	100	100	S
22	100	S	110	95	95	95	100	100	G	100	C	C	C	100	100	120	110	100	100	100	100	100	100	100	95
23	100	C	C	C	C	C	C	C	C	C	G	G	G	G	G	95	125	110	100	100	100	100	100	100	95
24	95	S	E	100	100	100	100	G	G	100	G	G	G	145	105	120	120	105	100	100	100	100	100	100	100
25	100	100	100	95	95	95	95	150	150	120	130	125	100	G	G	G	100	95	95	100	100	100	100	100	S
26	S	S	E	E	E	E	S	145	155	100	145	135	140	G	120	G	100	95	95	95	S	S	S	S	S
27	S	S	95	95	95	95	S	100	G	100	G	105	105	115	G	G	105	105	105	100	95	S	S	S	S
28	S	S	E	E	E	E	S	G	G	100	G	G	G	G	G	130	120	95	95	90	S	S	S	S	S
29	S	100	E	E	E	E	105	120	145	150	G	G	140	100	150	135	120	110	100	95	100	100	100	100	S
30	S	E	100	100	100	95	S	95	115	105	G	115	120	105	110	G	G	90	S	S	S	S	100	100	S
31	S	E	S	E	100	S	S	150	G	100	120	G	120	115	105	G	110	100	100	100	E	S	S	S	S
No.	13	11	14	15	16	14	8	21	17	19	14	14	18	19	13	16	26	29	28	24	20	18	17	15	
Median	100	100	100	100	100	100	100	100	115	105	120	115	115	115	110	120	120	110	100	100	100	100	100	100	100

Sweep 1.0 Mc to 20.0 Mc in  $\frac{1}{100}$  sec in automatic operation.

f<sup>o</sup>F<sub>2</sub>

The Radio Research Laboratories, Japan.

Y 11

# IONOSPHERIC DATA

Lat. 31° 12.6' N  
Long. 130° 37.7' E

**Yamagawa**

135° E Mean Time (GMT.+ 9h.)

Types of Es

Oct. 1957

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1				f	f			C2	h2				h2	h				h2	h2	f3	h4	f2		f	
2				f				h	h	h	h	h2	h2	h2		h	h2	C4	C4L	h3	h4	f4			
3																									
4									C3	C	C	C	C	C	C										
5	f5	f	f2	f	f3	f																			
6									h2	h	h	h	h	h		h	h	h2	h2	h	h	h2	h3	f	
7									C2	h	h	h	h	h		h	h2	C4	C2	h	h	h2	h3	f	
8	f								h	h	h	h	h	h		h	h2	C4	C2	h	h	h2	h3	f	
9	f2	f							h	h	h	h	h	h		h	h2	C3	h4		h	h2	h3	f	
10									h	h	h	h	h	h		h	h2	C3	h4		h	h2	h3	f	
11									h	h	h	h	h	h		h	h2	C3	h4		h	h2	h3	f	
12	f2								h	h	h	h	h	h		h	h2	C2	C4	h	h	h2	h3	f	
13	f2	f5	f5	f2	f3	f2			C2	C	C	C	C	C		h2	h2	C5	C4	h	h	h2	h3	f	
14									h2	h	h	h	h	h		h	h2	C7	h7	h8	h7	h5	h2	f4	
15	f3	f6	f6	f8	f3	f			h2	h	h	h	h	h		h	h2	h6	C4	h6	h2	h2	h2	f4	
16									h4	h3	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
17	f2	f2	f2	f	f2	f			h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
18									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
19									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
20	f3	f	f						h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
21	f2	f	f						h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
22	f								h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
23	f								h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
24	f								h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
25	f								h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
26									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
27									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
28									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
29									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
30									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
31									h	h	h	h	h	h		h	h	h3	C6	h4	h2	h2	h4	f6	
No.																									
Median																									

Sweep 1.0 Mc to 20.0 Mc in 1 min 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.

Oct. 1957	Steady Flux					Variability				
	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	12	15	22	17	15	0	0	0	0	0
2	22	23	25	14	22	1	1	1	1	1
3	15	15	28	14	17	1	1	1	0	1
4	13	13	10	26	13	0	0	0	2	0
5	18	21	21	15	21	0	0	0	1	1
6	14	18	14	13	15	1	1	0	1	1
7	19	23	23	15	20	1	1	1	2	1
8	21	27	22	14	21	2	2	2	1	2
9	13	21	25	17	18	1	2	2	0	2
10	37	28	30	-	29	1	1	1	2	1
11	70	58	23	18	54	2	2	2	2	2
12	18	27	29	25	23	2	3	2	2	2
13	75	68	72	12	57	3	2	3	1	3
14	19	23	23	16	20	1	1	1	2	1
15	19	20	19	12	19	1	1	0	2	1
16	14	14	12	11	13	1	0	1	0	1
17	13	15	19	12	15	1	1	1	1	1
18	19	15	13	11	15	1	0	0	0	1
19	16	21	-	18	16	1	1	-	0	1
20	13	12	-	13	14	1	0	-	0	1
21	12	14	14	13	13	0	0	0	0	0
22	13	14	16	13	14	0	0	0	0	0
23	13	12	15	17	13	0	0	0	0	0
24	17	19	21	23	18	0	0	1	1	0
25	16	14	17	18	17	1	0	0	0	1
26	19	22	28	-	22	0	0	0	-	0
27	-	-	-	-	-	-	-	-	-	-
28	14	23	37	29	24	0	1	1	1	1
29	30	31	-	-	30	1	1	1	0	1
30	12	13	13	10	13	0	0	0	1	0
31	11	10	11	-	10	0	0	0	0	0

## Outstanding Occurrences

Oct. 1957	Start- time	Dura- tion	Type	Max. Int.		Max. Time	Remarks
				Inst.	Smd.		
4	2101	1m30s	CD/8	630	255	2101-30s	
5	2126	30s	CD/8	670	-	-	
6	0425	1m	CD/8	690	-	-	
	2231-40s	30s	CD/4	740	250	-	
8	0233-20s	2m	SD/8	880	470	-	
9	0150	30s	CD/4	270	136	-	
	0746-30s	50s	CD/8	700	145	-	
10	0535	20s	CD/4	380	144	-	
13	2235	20s	CD/4	210	65	-	
	2349-30s	1m40s	SD/4	290	78	2349-30s	
16	0625 ?	30s ?	CD/4	350	91	-	
	0657-40s	50s	CD/8	350	104	0758	
17	0625-30s	1m	SD/8	>2000	-	-	
20	0138-50s	1m30s	CD/3	-	60	-	mean flux
	0248	1m ?	SD/8	>2000	>700	-	
	2140-10s	1m	SD/8	1140	430	-	
21	0628	10s	SD/4	840	-	-	
24	2054-10s	50s	CD/3	1500	170	-	
25	0051-50s	40s	SD/4	820	216	-	
31	0028 ?	20s	SD/4	550	-	-	



## RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Oct. 1957	Whole Day Index	W W V				S. F.				W W V H				Warning				Principal magnetic storms		
		00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	1+	2	2	1	1	2	2	1	2	2	2	2	1	N	N	N	N	---	---	
2	2+	2	2	1	1	2	3	4	3	1	2	2	1	N	N	N	N	---	0400	
3	2+	2	3	2	1	2	3	2	2	2	2	1	2	N	N	N	N			
4	2o	2	3	2	2	2	2	(1)	2	3	3	1	1	N	N	N	N			
5	2-	1	2	2	2	2	2	2	2	3	3	2	2	N	N	N	N			
6	2-	1	2	1	2	2	3	(2)	2	1	1	3	1	N	N	N	N			
7	1o	1	1	1	1	2	1	(2)	1	2	2	1	1	N	N	N	N			
8	1o	1	1	2	2	1	(1)	1	1	2	2	2	1	N	N	N	N			
9	1+	2	1	2	(1)	1	2	(2)	2	3	2	(3)	2	N	N	N	N			
10	2-	1	2	2	2	2	(3)	2	1	2	2	(3)	3	N	N	N	N			
11	3-	3	3	3	3	1	2	3	2	2	1	3	1	N	N	N	N			
12	3-	3	3	4	1	3	2	2	2	1	2	2	3	N	N	N	N			
13	2-	2	2	3	2	(1)	1	(2)	2	2	2	1	(2)	N	N	N	N			
14	3-	3	(3)	3	2	(2)	2	2	(3)	2	3	(3)	2	N	N	N	N			
15	3-	(3)	3	4	3	2	(1)	2	(3)	2	2	3	3	N	N	N	N			
16	2+	2	2	2	3	2	2	2	2	(1)	2	2	3	N	N	N	N			
17	3-	3	2	3	3	(3)	2	2	2	(2)	2	2	2	N	N	N	N			
18	2-	2	2	3	3	1	(1)	1	1	2	3	3	2	N	N	N	N			
19	2o	2	3	2	3	1	1	(1)	2	3	4	3	3	N	N	N	N			
20	2+	1	2	2	2	3	(3)	3	2	2	3	3	3	N	N	N	N			
21	2+	1	3	3	3	(2)	2	2	2	(1)	1	3	3	N	N	N	N			
[22] <sup>x</sup>	2o	2	3	2	1	2	2	2	2	1	2	1	1	U	U	U	U			
[23] <sup>x</sup>	3-	2	3	2	3	2	2	(2)	3	2	2	1	1	N	N	N	N			
[24]	3-	2	2	2	3	3	(2)	2	3	2	2	1	1	N	N	N	N			
25	3-	2	1	2	2	3	3	3	4	2	2	2	1	N	N	N	N			
26	3o	2	1	2	3	4	4	4	4	3	3	2	1	N	N	N	N			
27	3o	2	2	2	2	4	(4)	4	3	3	2	1	2	N	N	N	N			
28	3-	2	2	2	2	(2)	3	4	3	3	2	1	1	N	N	N	N			
29	2+	2	2	2	2	2	3	(3)	2	3	3	2	3	N	N	N	N			
30	2-	3	2	2	2	(1)	2	2	1	3	3	1	2	N	N	N	N			
31	1+	2	1	1	2	(1)	2	2	2	3	2	2	3	N	N	N	N			

x = day of Special World Interval  
 () = inaccurate

[] = Regular World Day  
 --- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Oct. 1957	S W F						S E A			Correspondence					
	Drop-out Intensities (db)						Start-time	Type	Imp.	Dura- tion	Start-time	Imp.	Flare	Solar noise	Mag.
	WA	SF	HA	TO	MN	LN									
2	(14)	24					02.35	35	2-	G					
3		10			13		00.40	60	2-	G					
4															
5	22						23.10	53	2-	G					
8	25	9	13	20			02.33	20	2+	S					
9	12	8	8	13			03.44	45	2-	G					
14	25						01.50	45	2-	S					
	27						04.12	52	2	S					
	42	12					05.10	20	3	S					
15	20						02.43	25	2-	S					
	17						03.44	30	2-	S					
	16	30				14	21.53	10	3	S					
16	32	39	19	26			01.53	25	3	S					
	6	15	19	8			04.22	15	2	S					
18		19		9			02.47	30	1+	S					
	15	24	9	17		8	22.06	34	2-	S					
19	(28)	45		10			01.26	20	1+	slow					
	23	16		>30	>13		19.22	19	3	S					
20		47					02.40	21	3-	S					
	9					7	16.42	-	3+	S					
23							02.29	10	1	S					
	19					18	20.31	11	2+	S					
	14			8		7	23.50	13	1	S					

( ) = inaccurate

- = unreadable

Oct. 1957	S W F						S E A			Correspondence						
	Drop-out Intensities (db)						Start-time	Dura- tion	Imp.	Type	Start-time	Dura- tion	Imp.	Flare	Solar noise	Mag.
	WA	SF	HA	TO	MN	LN										
24	10		-				00.20	11	1-	S	22.59	56	2		x	
25	22		8				22.59	9	2-	S						
27	18		8				01.27	12	1+	G						
	7						00.08	26	1-	S						
	7		4		9	14	00.40	14	2-	S						
	7	13	16	13	15		01.30	22	2-	S					x	

( ) = inaccurate

- = unreadable

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IONOSPHERIC DATA IN JAPAN FOR OCTOBER 1957

電 波 観 測 報 告 第 9 卷 第 10 号

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1957年12月5日 印 刷  
1957年12月10日 発 行

(不許複製非売品)

編 集 兼  
発 行 人

藤 木 栄  
東 京 都 北 多 摩 郡 小 金 井 町 5 7 3

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電 話 国 分 寺 1 3 8, 1 3 9, 1 5 1

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