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IONOSPHERIC DATA IN JAPAN

FOR OCTOBER 1959

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THE RADIO RESEARCH LABORATORIES
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THE RADIO RESEARCH LABORATORIES

KOKUBUNJI, TOKYO, JAPAN

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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_oE_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.
$(M3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$(M3000)F1$	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*, and frequencies which greatly exceed the E layer critical frequency (e.g. about 6 Mc/s) whereas at low latitudes it usually rises from equatorial type E_s, q , at frequencies near the E region critical frequency.
- f* An E_s trace which shows no appreciable increase of height with

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

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

d. Multiple Reflections from E_s

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

B. SOLAR RADIO EMISSION

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

a. Daily Data

Steady flux

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

Variability

Variability is expressed in four grades as follows:

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

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

b. Outstanding occurrences

Starting time

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

Maximum time

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

Time of end

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

Type

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

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

activity

M: multiple peaks separated by relatively long period of quietness

F: multiple peaks separated by relatively short period of quietness

E: sudden commencement or rise of activity

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

Maximum intensity

Instantaneous: The highest value above the base level.

Smoothed: By multiplying the duration, the approximate total power of the phenomenon 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 intensity records on following circuits received at Hiraiso. Characteristics of the phenomenon are classified as follows.

Circuits and Drop-out intensity

W S WWV 20 Mc, 15 Mc and 10 Mc (Washington)
 S F WNA-27: 7.6550 Mc, WND-20: 10.4925 Mc, WNC-93: 13.7525 Mc,
 WMJ-30A2: 20.8173 Mc (San Francisco)
 H A WWVH 15 Mc and 10 Mc (Hawaii)
 T O JYJ 15 Mc and 10 Mc (Tokyo)
 M N DZM-28: 14.5850 Mc (Manila)
 L N GIJ-34: 14.6702 Mc (London)

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

*Start-times and Durations**Types*

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

Importances

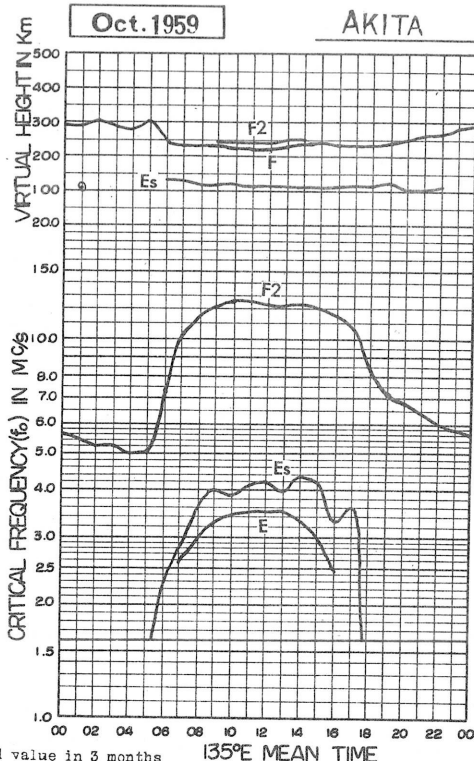
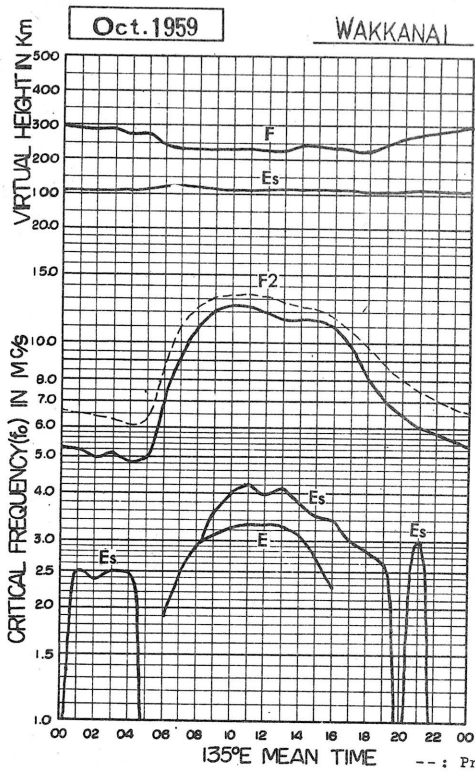
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out;

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

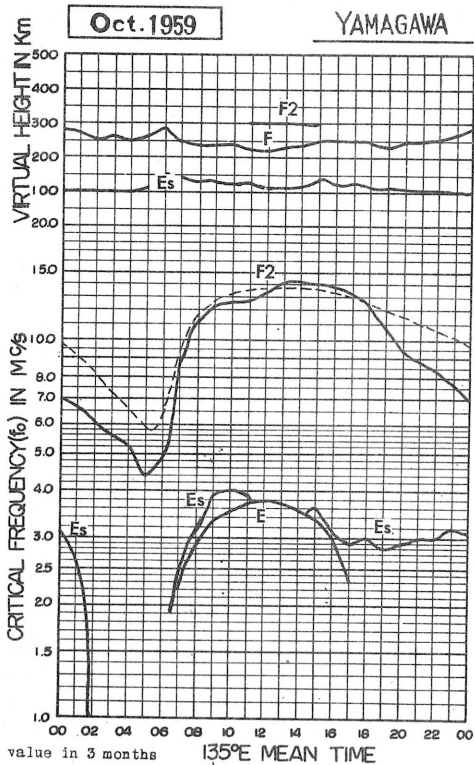
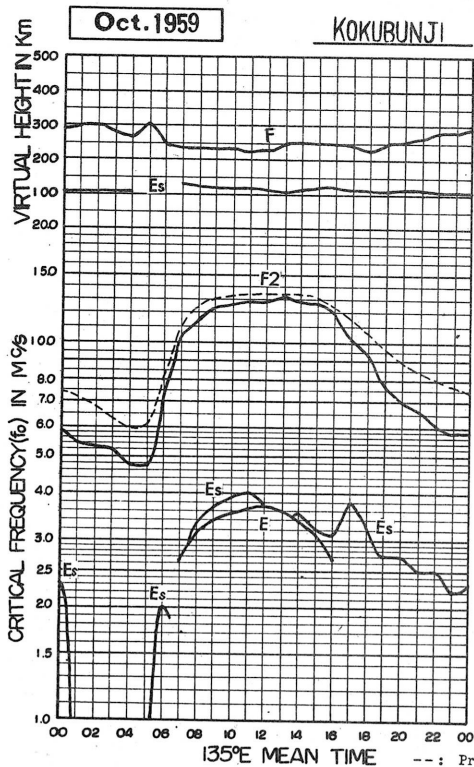
The data of sudden enhancement of atmospheric (SEA) observed on 28 kc are tabulated on each *Start-time, Duration and Importance*.

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

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foF2

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.8	5.8	5.8	5.7	5.7	5.4	7.3	9.6	12.2	12.8	12.5	11.5	11.7	11.2	10.5 ^R	10.1	10.5 ^S	10.0 ^S	10.2 ^S	10.1 ^S	7.0	6.9	6.0	5.8
2	5.8	5.6	5.3	5.1	5.0	5.3	7.0	10.7 ^C	10.7 ^R	11.3	12.3	11.0	10.4 ^H	11.2	10.8	9.8	10.5	10.6 ^C	9.3	7.0	6.3	5.9	5.3	5.3
3	5.3	5.2	4.8	4.6	4.3	4.5	8.0	10.3	12.5	12.5	12.5	11.9	11.1	11.8	11.9	11.1	10.8 ^S	S	S	7.2	7.4	6.6	6.1	
4	6.2	6.0	5.2	5.2	4.7	5.2	6.1	6.0	6.3	7.8 ^R	8.0	8.8	9.1 ^H	10.5 ^H	9.9	9.5	9.9	8.8	7.9 ^S	7.4	6.7	6.0	5.5	5.1
5	F	F	F	F	F	5.3	6.6	8.1	10.7	9.8	11.2 ^H	10.0	10.1 ^H	10.0 ^H	10.0	10.0	9.3	8.6	6.8	5.9	5.8	5.5	5.1	5.1
6	4.9	4.8	4.8	4.1	4.1	3.6	5.7	7.3 ^H	8.0	9.8	10.9	11.6	11.3	11.3	10.8	10.3	10.3	10.7 ^S	7.8 ^S	6.0	5.8	5.3 ^S	4.3 ^S	4.4
7	4.2	4.0	4.1	3.8 ^H	3.8	3.5	4.6	5.2 ^H	6.0	6.0	5.6	5.3	5.3	5.7	5.9	6.5	1.4	6.6	4.8	4.3	4.3 ^A	3.8	3.8	3.8
8	3.8 ^A	4.0	4.0	3.9 ^A	3.8	4.0	6.6	8.1	9.8	10.5 ^H	10.3	10.9 ^H	11.4	10.4	10.4	10.5 ^S	10.0	9.3	7.5	6.5	6.3	5.8	5.5	5.5
9	5.3	5.0	5.0	5.2	4.9	5.1	7.3	9.1	9.9	10.3	11.9	12.0 ^H	11.6	11.1	10.6	10.8	10.3 ^S	9.4	7.8 ^S	6.8	6.7	6.3	5.8	5.6
10	5.4	5.3	5.3	5.3	5.0	5.3	7.7	8.9	10.5	12.0	12.3	11.5	11.5	11.3	10.5	11.0 ^H	10.5	9.3	7.6 ^S	6.6 ^S	6.3	6.1	5.8	5.7
11	5.3	5.4	5.3	5.1	5.0 ^F	5.3 ^F	7.8	9.6	10.0	C	C	C	C	C	C	11.0	11.0	9.8	S	S	S	6.0	5.7	5.7
12	5.3	5.3	5.3	5.3	5.3	C	7.8	9.8	9.5	10.6	11.8	11.5	11.3	11.0	10.9	10.1	10.3	9.8	8.4	7.4 ^S	7.0	6.2	5.7	5.5
13	5.3	C	C	C	C	C	8.0 ^S	9.7	10.5 ^R	11.3	11.1 ^H	12.0 ^H	12.0	11.5	11.6	11.8	11.2	10.1 ^S	9.0 ^S	8.0	7.1	6.0	5.8	5.5
14	5.3	5.3	5.5	5.3	5.3	5.3	7.5	9.9	11.1	12.6	12.2	11.2	12.0 ^H	12.3	11.9	12.0	11.8	9.8	8.3	6.5	6.5	6.5	6.5	6.3 ^F
15	5.8 ^F	6.0 ^F	5.7	5.6	5.5	5.8	7.3 ^C	9.3	10.8 ^R	11.7	12.0	13.3 ^R	12.5	12.5	11.8	12.1	11.5	10.3	7.2 ^S	7.0	6.8	6.5	5.8	5.9
16	5.8	5.8	5.7	5.8	5.2	4.8	6.8	9.7	11.4	12.8	14.3 ^R	13.1	12.0	11.7	11.5	11.8	11.6	10.3	8.3	6.5	6.8	6.5	6.3	5.8
17	5.5	5.3	5.3	5.4 ^S	5.7	6.3 ^H	7.2	9.5	11.5	12.0	12.5	12.8	12.0 ^H	11.7	11.5 ^H	12.3	11.7	10.0	8.8 ^S	7.0 ^S	7.3 ^S	7.4 ^S	6.3	6.3
18	6.0 ^F	6.2 ^F	F	F	F	6.3 ^F	7.2 ^S	10.3 ^R	11.3 ^H	12.7	12.8	12.4	12.0	12.4	12.3	12.3	11.2	9.5	8.0	7.3	7.2	6.5	6.8	6.5
19	5.3	5.9	5.5	5.8	5.8	5.8	8.1	11.5	11.1	12.0 ^R	13.3	13.3	12.3	12.5	11.7	11.5	11.7	10.8	8.3 ^S	7.1	6.0	5.8	5.3	5.3
20	5.3	4.8	4.9	4.9	4.6	4.8	7.8	10.6	12.0	11.3	12.6	13.0	12.8	12.0	12.5	12.3	11.5	10.3	7.8 ^S	7.3	7.0	6.2	5.8	5.0
21	5.0	5.1	5.2	5.3	5.3	5.0	7.3	10.3	11.7	13.0	12.8	12.5 ^H	11.8	11.7	11.6	11.6	11.0	10.3	9.3	7.8 ^S	7.5	6.6	5.8	5.4
22	5.1	5.0 ^F	5.3	5.3	4.9	5.0	6.1	9.0	10.7	12.4	13.8 ^R	11.8	11.5	12.4 ^C	12.3	12.3	11.7	10.5	9.2	8.5	7.6	6.0	6.0	5.5
23	5.3	5.1	4.9	4.7	4.8	4.9	7.1	11.0 ^S	12.7	14.3 ^R	13.8	13.8 ^C	13.0	12.3	11.7	12.0	10.8	8.9	7.7	6.8	5.8	5.2	5.0	5.0
24	4.6	4.4	4.3	4.1	4.3	4.5	4.8	10.3	12.3	13.0	12.9	12.5	11.3	11.3	12.0	11.5	10.5	9.1	7.4	7.2	6.1	5.3	5.0	4.7
25	4.6	4.6	4.7	4.6	4.5	4.3	6.3	9.8	C	C	C	C	C	C	C	13.0	11.6	10.1	8.1	6.7	6.5	5.2	5.1	5.3
26	5.4	5.2	4.9	5.0	4.6 ^H	5.0	6.8	9.1	12.8	12.7	14.3 ^R	14.3 ^R	13.6 ^R	13.0	11.7	11.0	11.0	9.8	8.9	8.0	6.5	5.3	5.3	5.0
27	4.8	4.2	3.8	4.0	4.6	4.3	6.1	10.3	11.7	13.0	13.2 ^R	13.0	12.9	12.5	12.3	10.9	9.5	7.3	6.0	5.3	5.0	5.0	4.8	4.8
28	4.8	4.4	4.7	4.9	4.8	3.5	5.7	8.3	11.5	11.8	13.3 ^R	13.4 ^R	13.0	12.5	12.1	12.2	9.8	8.0	7.1	5.8	4.9	4.8	4.9	4.9
29	4.9	4.8	4.9	4.8	4.9	4.8	6.1	9.4	11.3	12.1	12.5	13.0	12.3	11.3	12.0	11.7	11.3	9.8	8.0	6.4	5.3	4.9	4.8	4.8
30	4.6	4.8	4.6	4.6	4.8	4.3	5.7	9.3	11.7	11.3	11.7	12.5	12.0	11.6	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	12.6	13.3	14.4 ^R	13.3 ^R	12.2	12.3	11.0	11.1	10.0	8.0	7.2	6.1	5.4	5.2	5.0	5.0
No.	2.9	2.8	2.7	2.7	2.9	2.9	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.9	3.0	2.9	2.8	2.8	2.9	3.0	3.0	2.9
Median	5.3	5.2	5.0	5.1	4.9	5.0	7.0	9.6	11.1	12.0	12.5	12.5	12.0	11.6	11.6	11.6	11.0	9.8	8.0	7.0	6.5	6.0	5.3	5.4
UQ	5.6	5.5	5.3	5.3	5.3	5.3	7.8	10.3	11.7	12.6	13.2	13.2	12.5	12.3	12.2	12.1	11.5	10.3	8.8	7.4	7.0	6.5	6.0	5.3
LQ	4.8	4.8	4.7	4.6	4.6	4.6	6.1	8.9	10.2	11.0	11.8	11.5	11.2	10.7	10.4	10.5	9.4	7.4	6.5	5.9	5.3	5.2	5.0	5.0
QR	0.8	0.7	0.6	0.9	0.7	0.9	1.7	1.4	1.5	1.6	1.4	1.7	1.2	1.1	1.5	1.7	1.0	6.9	1.0	0.9	1.1	1.2	0.3	0.8

Sweep 1.0 Mc to 20.7 Mc in 1 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. 1959

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									4.5	4.5	4.7	4.8 ^H	4.9 ^H	L	A	L									
8																									
9																									
10																									
11									C	C	C	C	C	C	C	C									
12																									
13																									
14																									
15																									
16																									
17																									
18																									
19									L																
20																									
21																									
22																									
23											C														
24													L												
25										C	C	C	C	C	C										
26																									
27																									
28											L														
29																									
30																									
31									C	C															
No.									1	1	1	1	1												
Median									4.5	4.5	4.7	4.8 ^H	4.9 ^H												

Sweep 1.6 Mc to 2.7 Mc in 1 min 1 sec in automatic operation.

The Radio Research Laboratories, Japan.

foF1

W 2

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

Oct. 1959

foE

135° E Mean Time (GM.T.+ 9h.)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						2.00	2.65	3.05	3.35	3.25	3.35	A	A	A	A	3.00	A	A						
2						S	C	3.05	3.35	3.40	A	A	A	A	A	A	2.50	C						
3						S	2.65	3.00	3.25	3.40	3.40	A	A	A	A	A	A	A						
4						S	2.85	2.80	3.15	3.30	3.35	3.20	A	A	A	A	A	A						
5						S	2.60	2.75	3.05	3.10	3.30	3.30	3.30	3.15	2.90	A	A	A						
6						1.90	2.55	2.90	3.15	3.35	A	A	A	A	A	A	A	A						
7						2.25	2.45A	2.90	3.05	3.10	3.15	3.30A	A	A	A	A	A	A						
8						S	2.50	2.85	3.10	3.30	3.30A	3.15	3.05	A	A	A	A	A						
9						S	2.55	3.00	3.15	3.25	3.40	3.40	3.30	3.30	3.10A	2.70A	2.25	A						
10						A	2.60	2.95	3.25	3.40	3.45	3.50	3.30A	3.20	3.20A	2.80A	2.25A	S						
11						S	2.45	2.85	C	C	C	C	C	C	C	C	2.5	A						
12						S	2.50	3.00	3.20	3.40	3.40	3.30	3.25	3.30A	2.75	2.20	A							
13							2.45	2.90	3.10	3.40	3.50	3.55	3.35	3.20	2.80	2.35	A							
14						S	2.50	2.90	3.20	3.30	3.50	3.50	3.30	3.10	2.80H	2.35H	A							
15						S	2.50	2.90	3.20	3.25	3.30	3.30A	3.35	3.10	2.70A	2.25	A							
16						1.80	2.45H	2.80	3.20	3.40	3.30	3.25	2.95	A	A	A	A							
17						1.90	2.60	2.90	3.10	3.00	3.50	3.45	3.30A	3.15	2.85	2.20	A							
18						A	2.35A	2.85	3.30	3.35	3.25	3.25	3.30	3.05	A	A	A							
19						S	2.45	2.90	3.05	3.20	3.30A	3.25	3.20	3.05A	A	A	A							
20							2.40	2.80	3.00	3.10	3.00	A	A	A	A	2.70	2.20S							
21						S	2.35	2.90	3.05	3.00	3.10	2.90A	3.00A	3.10	A	A	A							
22							2.40	2.90	3.20	3.35	3.40	3.40	3.35	3.10C	2.70	S	A							
23							2.30	2.75	2.90	A	C	A	3.20	S	A	A	A							
24							S	2.75	3.00	3.10	3.25A	3.30	3.20	3.05	S	A	A							
25							2.35	2.75	C	C	C	C	C	C	C	2.50	S							
26							2.35	2.75	3.05	3.10	3.00	3.25	3.15	3.00	2.60	S	A							
27							2.20	2.65	3.00	3.00	2.95A	3.10A	3.20	2.90A	2.50	2.15	A							
28							2.25A	2.70	3.05	3.15	3.00	3.15A	3.25A	3.10A	2.70A	S	A							
29							2.25	2.80	2.90	3.00	A	A	A	A	A	A	A							
30							2.25	2.70	3.05	3.05	3.20A	3.40	3.25	C	C	C	C							
31							C	C	3.00	3.20	3.30	3.30	3.25	3.05	2.60	S	A							
No.						5	2.0	3.0	2.9	2.8	2.5	2.3	2.1	1.6	1.4	1.1								
Median						1.90	2.45	2.90	3.10	3.25	3.30	3.30	3.25	3.10	2.70	2.25								

foE

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

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

foEs

Oct. 1959

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	25M	E	E	E	E	G	G	45	60M	65M	65M	115M	100M	65M	G	35M	35M	43M	25M	E	E	E	E
2	E	32M	23M	32M	E	50M	45M	C	49M	41	41	57M	47M	47M	60M	34M	G	C	35M	E	E	E	E	E
3	E	E	E	E	E	31M	25	34	35	46	68M	60	52M	49M	70M	67M	80M	35M	43M	31M	35M	27M	E	E
4	E	E	E	E	E	35M	E	23	55M	53M	41	36	41M	53M	52M	52M	35M	S	30M	35M	S	35M	E	E
5	E	27M	35M	25M	E	25M	28	35	56M	45	50M	58M	40	37	35	48M	35M	42M	32M	37M	35M	34M	26M	E
6	28M	25M	24M	24M	25M	32M	G	G	36	40	G	G	50M	41M	42M	35M	32M	52M	58M	31M	E	E	26M	E
7	E	E	E	68M	25M	E	35	35M	35	37	41	37	35M	60M	82M	35M	35M	43M	45M	43M	45M	40M	38M	E
8	65M	31M	24M	65M	32M	31M	23	G	45	45	50M	49	50M	50M	65M	53M	50M	40M	40M	E	35M	32M	31M	E
9	E	25M	31M	25M	E	35M	S	G	40	G	G	G	35M	35M	35M	35M	G	31M	E	E	27M	E	48M	E
10	35M	40M	37M	35M	E	35M	22G	G	40	42	62M	53M	55M	55M	30G	35	30M	S	26M	50M	50M	50M	50M	32M
11	E	E	E	E	E	E	S	35	56M	C	C	C	C	C	C	C	G	35M	58M	41M	34M	31M	E	E
12	E	E	E	E	E	25M	E	S	G	G	G	G	G	G	45M	35	G	E	E	E	E	E	E	E
13	E	E	E	E	E	C	E	G	G	G	36	G	34G	32G	31G	30	G	E	E	E	E	E	E	E
14	E	E	E	E	E	22M	28M	S	32	35	G	G	27G	32G	20G	20G	G	E	25M	E	E	E	E	E
15	E	E	E	E	E	E	S	G	G	G	53M	G	40M	40	G	35M	G	E	E	E	E	E	E	E
16	31M	E	24M	E	30M	E	G	G	40	35	G	58M	38	50M	45M	35M	35M	55M	50M	40M	38M	31M	E	26M
17	35M	30M	30M	24M	E	E	G	32	32	35	55M	G	53M	G	35	60M	45M	E	E	40M	E	E	E	E
18	35M	35M	50M	25M	24M	32M	31M	40M	G	40	58M	43	G	G	35	50M	35M	E	E	E	30M	26M	E	E
19	24M	25M	24M	25M	35M	E	S	G	G	G	40M	40M	31G	26G	50M	57M	65M	35M	E	E	30M	E	E	E
20	E	E	E	25M	30M	E	E	G	G	35	39	40	42M	75M	42M	G	S	E	E	20	E	E	32M	25M
21	E	E	E	25M	30M	E	S	G	G	36	41	48M	43M	48M	45M	60M	43M	30M	E	E	E	5.5M	31M	
22	E	35M	35M	58M	50M	35M	E	G	G	42	45M	40	39	C	C	G	S	E	35M	35M	34M	27M	E	E
23	66M	60M	57M	60M	35M	40M	E	G	57M	40	58M	C	42M	40	S	35M	40M	35M	36M	35M	35M	30M	E	E
24	E	40M	E	24M	38M	26M	60M	S	G	35	G	36M	35	35	G	S	40M	26M	E	E	E	31M	32M	E
25	E	E	E	31M	E	22M	E	G	G	C	C	C	C	C	C	G	S	30M	31M	28M	24M	25M	E	30M
26	32M	35M	35M	25M	24M	E	E	G	G	G	37	37	115M	35	G	31	S	27M	32M	30M	23M	30M	28M	E
27	E	35M	32M	41M	40M	30M	E	58M	37	36	40	40M	40M	G	37M	G	29	40M	35M	E	35M	50M	30M	E
28	E	70M	E	31M	E	E	E	38M	39	41	60M	40	43M	40M	68M	35M	28	50M	110M	60M	E	35M	57M	32M
29	E	34M	35M	35M	25M	27M	E	G	40	56M	51M	58M	48M	38M	38M	68M	24M	50M	35M	38M	35M	32M	40M	32M
30	50M	35M	30M	30M	40M	32M	E	G	G	36	50M	G	G	G	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	35	37	45	46	56M	37	G	G	E	E	E	E	E	E	E	25M
No.	30	29	29	29	29	29	23	28	30	29	28	29	27	26	28	28	26	27	30	30	30	29	30	30
Median	E	25M	24M	25M	25M	E	E	G	G	36	40	42M	40	41M	38M	35M	34M	30M	28M	26M	E	30M	E	E
UQ	31	35	35	34	34	E	28	34	39	40	52	53	48	50	53	50	40	40	35	38	35	32	34	30
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	34	31	25	G	E	E	E	E	E	E	E
QR														16	22	25								

Sweep 1 sec Mc to 200 Mc in 1 min in automatic operation.

foEs

The Radio Research Laboratories, Japan.

W 4

IONOSPHERIC DATA

Lat. 45° 28.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GM.T. + 9h.)

fbES

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
8	A	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
10	24	25	29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
11																								
12																								
13																								
14																								
15																								
16	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
20																								
21																								
22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
23	45	25	40	29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
25																								
26	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
30	3.0	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	10	18	17	20	19	14	9	10	14	22	20	21	24	25	21	22	18	17	17	17	14	18	15	13
Median	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

The Radio Research Laboratories, Japan.

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

fbES

IONOSPHERIC DATA

Lat. 45° 23.8' N
Long. 141° 41.1' E

Wakanai

135° E Mean Time (GMT.+9h.)

f-min

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E 1.10 ^S	E 1.30 ^S	E 1.40 ^S	E	E 1.15 ^S	E 1.10 ^S	E 1.70 ^S	1.70	1.30	1.85	1.90	1.90	1.90	1.90	1.90	1.85	1.80	E 1.60 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.30 ^S	E 1.60 ^S	E 1.60 ^S	
2	E 1.70 ^S	E 1.20 ^S	E 1.20 ^S	E	E 1.60 ^S	E 1.70 ^S	E 1.65 ^S	1.65 ^C	1.75	1.90	2.00	2.20 ^S	1.80	1.90	1.75	1.75	1.70	E 1.60 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.70 ^S	E 1.70 ^S
3	E 1.60 ^S	E 1.60 ^S	E 1.30 ^S	E 1.20 ^S	E	E 1.60 ^S	E 1.60 ^S	1.65	1.75	2.40 ^S	2.50 ^S	1.90	2.50 ^S	2.40 ^S	2.40 ^S	2.40 ^S	1.65	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
4	E 1.70 ^S	E 1.60 ^S	E 1.20 ^S	E	E	E 1.60 ^S	E 1.70 ^S	1.60	1.70	1.90	2.40 ^S	2.40 ^S	2.50 ^S	2.40 ^S	1.90	1.60	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
5	E 1.60 ^S	E	E	E	E	E 1.60 ^S	E 1.65 ^S	1.70	1.65	1.70	1.90	1.90	1.85	1.70	1.70	1.75	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
6	E 1.60 ^S	E 1.40 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.70	1.85	1.80	1.80	1.70	1.75	1.70	1.70	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
7	E 1.70 ^S	E 1.40 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.70	2.10	1.85	1.90	1.85	1.75	1.75	1.75	1.75	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
8	E 1.70 ^S	E	E	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.85	1.75	1.75	2.40 ^S	1.80	1.75	1.80	1.75	1.65	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
9	E 1.60 ^S	E	E	E	E	E 1.60 ^S	E 2.00 ^S	1.60	1.75	1.70	1.85	1.70	1.90	1.90	1.90	1.70	1.65	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
10	E 1.60 ^S	E 1.40 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.65	1.75	1.80	1.90	1.85	2.40 ^S	1.70	1.60	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
11	E 1.60 ^S	E 1.60 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.60	1.60	C	C	C	C	C	C	1.80	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
12	E 1.40 ^S	E 1.25 ^S	E 1.20 ^S	E	E	E 1.60 ^S	E 1.80 ^S	1.60	1.75	1.80	1.90	2.15	2.40 ^S	2.10	1.85	1.70	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
13	E 1.60 ^S	C	C	C	C	C	E 1.60 ^S	1.60	1.70	1.90	2.10	2.00	1.80	1.70	1.70	1.70	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
14	E 1.40 ^S	E 1.40 ^S	E	E	E	E 1.60 ^S	E 1.80 ^S	1.70	1.75	1.90	1.75	1.85	1.70	1.70	1.80	1.60	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
15	E 1.60 ^S	E 1.40 ^S	E	E	E	E 1.60 ^S	E 1.80 ^S	1.70	1.70	1.80	2.50 ^S	1.80	2.40 ^S	1.75	1.80	1.60	1.75	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
16	E 1.60 ^S	E 1.30 ^S	E 1.20 ^S	E	E	E 1.60 ^S	E 1.60 ^S	1.70	1.75	1.70	1.70	1.75	1.85	2.00	1.90	1.70	1.75	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
17	E 1.60 ^S	E 1.20 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.70	1.70	1.75	1.65	1.90	1.70	1.70	1.75	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
18	E 1.60 ^S	E 1.20 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.70	1.75	1.90	2.00	1.90	1.85	1.75	1.60	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
19	E 1.60 ^S	E 1.35 ^S	E	E	E	E 1.60 ^S	E 1.70 ^S	1.75	1.60	1.70	1.70	1.60	1.80	1.75	1.60	1.60	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
20	E 1.60 ^S	E 1.25 ^S	E 1.20 ^S	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.60	1.70	1.75	1.75	2.40 ^S	1.90	1.70	1.70	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
21	E 1.60 ^S	E 1.40 ^S	E 1.25 ^S	E	E	E 1.60 ^S	E 1.70 ^S	1.70	1.70	1.80	1.75	2.10	1.90	1.80	1.80	1.70	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
22	E 1.65 ^S	E 1.30 ^S	E 1.20 ^S	E	E	E 1.60 ^S	E 1.60 ^S	1.60	1.70	1.75	1.85	1.90	1.80 ^C	1.90	1.80 ^C	2.00	2.40 ^S	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
23	E 1.70 ^S	E	E	E	E	E 1.60 ^S	E 2.00 ^S	1.75	1.75	2.00	2.00	2.00	2.40 ^S	2.10	2.40 ^S	2.00	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
24	E 1.70 ^S	E 1.60 ^S	E	E	E	E 1.60 ^S	E 1.70 ^S	2.40 ^S	2.10	1.80	2.40 ^S	2.00	1.85	1.80	2.00	2.60 ^S	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
25	E 1.70 ^S	E 1.60 ^S	E 1.40 ^S	E	E	E 1.60 ^S	E 1.70 ^S	1.70	1.70	1.70	C	C	C	C	C	1.80	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
26	E 1.70 ^S	E 1.40 ^S	E	E	E	E 1.60 ^S	E 1.60 ^S	1.70	1.80	1.80	2.00	1.80	1.80	2.00	1.75	1.70	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
27	E 1.60 ^S	E 1.30 ^S	E	E	E	E 1.60 ^S	E 1.70 ^S	1.70	1.75	1.75	2.00	1.90	2.40 ^S	2.00	2.00	2.00	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
28	E 1.70 ^S	E 1.60 ^S	E 1.20 ^S	E	E	E 1.60 ^S	E 1.70 ^S	1.70	1.75	1.75	2.40 ^S	2.00	2.50 ^S	2.40 ^S	1.80	1.75	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
29	E 1.70 ^S	E 1.40 ^S	E 1.60 ^S	E	E	E 1.60 ^S	E 1.80 ^S	1.80	1.80	1.80	2.00	2.10	2.40 ^S	2.00	2.00	1.70	1.70	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
30	E 1.60 ^S	E 1.60 ^S	E 1.40 ^S	E	E	E 1.60 ^S	E 1.70 ^S	1.80	1.90	1.80	2.10	2.10	2.00	2.00	1.90	1.70	1.60	E 1.80 ^S	E 1.40 ^S	E 1.40 ^S	E 1.40 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S	E 1.60 ^S
31	C	C	C	C	C	C	C	C	C	1.75	1.80	2.40 ^S	1.80	1.80	1.80	1.80	1.80	E 1.90 ^S	E 1.70 ^S	E 1.70 ^S	E 1.70 ^S	E 1.80 ^S	E 1.80 ^S	E 1.80 ^S	E 1.80 ^S
No.	30	27	16	28				30	28	24	26	23	22	22	26	27	24	30	30	30	30	30	30	30	30
Median	1.60	1.30						1.70	1.75	1.80	1.90	1.85	1.80	1.80	1.80	1.70	1.70	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60

f-min

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

The Radio Research Laboratories, Japan.

W 6

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 31.1' E

Wakkanai

135° E Mean Time (GM.T.+ 9h.)

Oct. 1959

(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	2.50	2.45	2.45	2.60	2.75	2.85	2.95	3.05	3.00	2.95	2.80	2.80	2.85	2.85	2.85	2.75	2.90	2.80	2.80	2.50	2.75	2.75	2.50	2.60
2	2.60	2.65	2.65	2.65	2.70	2.80	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.85	2.95	2.90	2.90	2.70	2.60	2.70	2.70	2.60
3	2.65	2.65	2.70	2.60	2.55	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
4	2.40	2.45	2.30	2.35	2.20	2.45	2.95	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.55	2.80	2.80	2.45	2.45
5	F	F	F	F	F	2.55	3.00	2.85	3.00	2.90	3.05	3.10	2.90	2.90	3.05	3.00	3.10	3.10	3.10	3.10	2.55	2.70	2.85	2.55	2.55
6	2.50	2.40	2.70	2.50	2.50	2.50	2.90	2.90	3.10	2.95	3.00	2.95	2.85	2.90	3.05	3.00	3.10	3.10	3.10	3.10	2.55	2.65	2.65	2.55	2.55
7	2.45	2.65	2.75	2.70	2.55	2.55	2.60	2.60	2.65	2.85	2.80	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
8	2.60	2.65	2.65	2.70	2.85	2.75	2.20	2.15	2.10	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
9	2.75	2.65	2.60	2.60	2.80	2.80	2.20	2.30	2.25	2.00	2.10	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
10	2.75	2.65	2.65	2.65	2.80	2.75	2.10	2.35	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
11	2.85	2.75	2.65	2.75	2.60	2.65	2.10	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
12	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85
13	2.65	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	2.75	2.75	2.80	2.75	2.75	2.85	2.15	2.25	2.25	2.15	2.20	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
15	2.85	2.75	2.65	2.60	2.65	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
16	2.60	2.60	2.60	2.60	2.75	2.75	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
17	2.70	2.80	2.80	2.75	2.70	2.85	2.65	2.20	2.15	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
18	2.75	2.65	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
19	2.60	2.60	2.60	2.60	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
20	2.85	2.80	2.65	2.75	2.65	2.70	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
21	2.60	2.60	2.70	2.75	2.85	2.85	2.15	2.20	2.20	2.15	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
22	2.60	2.60	2.60	2.60	2.65	2.70	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
23	2.75	2.75	2.55	2.40	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
24	2.70	2.75	2.60	2.65	2.60	2.55	2.10	2.15	2.25	2.25	2.15	2.05	2.95	2.90	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
25	2.45	2.45	2.60	2.65	2.70	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
26	2.75	2.70	2.45	2.60	2.50	2.70	2.95	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85
27	2.70	2.40	2.45	2.40	2.65	2.25	2.25	2.30	2.95	2.90	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
28	2.65	2.45	2.45	2.65	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
29	2.65	2.65	2.65	2.70	2.75	2.90	2.20	2.20	2.30	2.20	2.15	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
30	2.65	2.85	2.65	2.60	2.75	2.60	2.10	2.25	2.25	2.20	2.05	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	2.9	2.8	2.7	2.7	2.9	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Median	2.65	2.65	2.65	2.65	2.65	2.75	3.05	3.20	3.15	3.05	3.05	3.05	2.90	2.95	2.95	3.00	3.05	3.05	3.05	2.95	2.85	2.75	2.70	2.70	2.70

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

The Radio Research Laboratories, Japan.

(M3000)F2

W 7

IONOSPHERIC DATA

Lat. 45° 23.6' N
 Long. 141° 41.1' E

Wakkanai

135° E Mean Time (GMT.+9h.)

(M3000)F1

Oct. 1959

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									325	335	340	335 ^H	340 ^H	L	A	L								
8																								
9																								
10																								
11										C	C	C	C	C	C	C								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19									L															
20																								
21																								
22																								
23											C													
24													L											
25										C	C	C	C	C	C									
26																								
27																								
28											L													
29																								
30																								
31										C	C													
No.									I	I	I	I	I											
Median									325	335	340	335 ^H	340 ^H											

Sweep 1.0 Mc to 2.0-7 Mc in 1 min sec in automatic operation. The Radio Research Laboratories, Japan.

(M3000)F1

W 8

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

135° E Mean Time (G.M.T. + 9h.)

Oct. 1959

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									420	390	410	490	510	L	A	L								
8																								
9																								
10																								
11										C	C	C	C	C	C	C								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20										L														
21																								
22																								
23											C													
24													L											
25											C	C	C	C	C									
26																								
27																								
28											L													
29																								
30																								
31																								
No.																								
Median																								

Sweep 1.0 Mc to 2.5 Mc in 1 min in automatic operation.

The Radio Research Laboratories, Japan.

R'F2

W 9

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakanai

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

rf

Oct. 1950

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	310	340	350	370	275	250	250	240	250	250	250	250	250	250	250	250	250	250	240	245	280	270	270	300
2	300	320	295	270	270	270	270	270	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	320
3	300	275	260	260	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	320
4	345	350	360	350	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	360	310
5	325	325	310	280	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	270
6	310	320	275	270	350	360	270	240	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245	260
7	300	275	270	245	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	380
8	335	300	300	270	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	280
9	275	270	270	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	300
10	305	320	245	275	240	275	240	275	230	230	240	250	225	235	230	235	240	225	235	250	270	270	275	275
11	285	270	270	270	275	300	235	230	225	C	C	C	C	C	C	C	245	225	240	250	235	250	260	265
12	270	275	285	270	260	260	225	220	225	225	240	220	225	225	240	245	240	230	220	240	245	245	260	270
13	310	C	C	C	C	C	225	230	235	220	215	240	240	240	245	245	240	235	235	240	235	260	265	275
14	270	270	270	280	265	260	230	225	230	225	230	220	210	225	245	240	240	220	220	225	280	290	270	275
15	300	270	250	270	270	310	220	225	225	230	230	235	235	230	240	245	240	225	220	245	260	250	275	300
16	275	285	300	270	250	245	245	230	225	235	230	235	240	235	245	240	245	240	240	250	260	280	260	265
17	275	285	305	275	260	250	225	225	220	230	230	220	225	240	230	235	240	225	240	250	260	280	260	265
18	270	275	285	270	270	270	270	270	275	275	285	285	220	240	245	240	210	230	250	265	295	270	300	275
19	270	270	280	340	320	275	250	235	225	225	230	230	220	245	250	250	250	240	225	225	240	275	265	280
20	270	265	285	270	285	270	240	225	235	225	230	240	240	240	240	240	240	220	220	270	245	240	260	270
21	285	285	300	280	270	255	230	230	230	235	225	230	220	230	240	250	240	230	245	225	240	245	255	265
22	270	280	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
23	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
24	270	265	270	280	270	300	255	220	230	230	220	220	220	220	220	220	220	220	220	220	220	220	220	220
25	320	300	280	260	265	275	260	240	230	C	C	C	C	C	C	240	225	220	230	265	255	300	325	315
26	310	260	270	300	270	300	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270
27	270	340	400	420	330	350	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
28	300	270	310	280	250	220	255	230	230	225	220	210	200	230	245	240	240	235	230	240	245	285	300	300
29	280	270	300	300	295	250	240	225	230	225	220	220	220	220	220	220	220	220	220	220	220	220	220	220
30	315	310	280	270	280	235	245	220	230	225	220	230	240	240	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
No.	30	29	29	29	29	29	30	30	29	29	29	29	29	29	28	29	30	30	30	30	30	30	30	30
Median	300	275	270	270	275	275	245	230	230	230	230	225	230	245	245	245	240	230	230	230	230	230	230	230

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

rf

The Radio Research Laboratories, Japan.

W 10

IONOSPHERIC DATA

Lat. 46° 23.6' N
Long. 141° 41.1' E

Wakanaï

135° E Mean Time (GMT.+ 9h.)

Oct. 1959

f_oF₂

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	110	E	E	E	E	E	E	115	115	110	110	110	110	110	G	115	105	120	100	E	120	E	E
2	E	105	100	120	E	125	120	C	115	120	120	110	110	110	110	G	105	C	100	E	E	E	E	E
3	E	E	E	E	E	105	150	140	125	115	110	110	115	115	105	105	105	105	105	100	120	105	E	E
4	E	E	E	E	125	125	125	125	120	115	115	G	115	110	110	110	115	115	115	120	110	S	120	E
5	E	110	105	110	E	140	130	125	120	115	115	115	115	115	110	110	110	110	E	115	105	105	115	120
6	110	110	110	110	105	110	G	G	125	120	G	G	105	105	105	105	120	115	110	110	E	115	E	120
7	E	E	E	E	105	105	E	110	125	120	115	115	110	110	105	105	110	110	100	105	110	110	110	110
8	105	105	105	100	100	105	105	G	G	115	G	G	110	115	110	110	105	115	105	E	105	105	100	E
9	E	105	110	105	E	105	S	G	G	115	G	G	G	G	110	115	G	105	E	E	120	E	115	
10	110	105	105	105	E	E	110	110	G	115	120	115	130	110	110	115	115	S	100	110	105	105	100	
11	E	E	E	E	E	E	S	1.0	100	C	C	C	C	C	C	G	105	100	100	100	100	E	E	100
12	E	E	E	E	E	E	S	G	G	G	G	G	G	110	110	110	G	E	E	E	E	E	E	E
13	E	C	C	C	C	C	E	G	G	G	105	G	105	105	100	100	G	E	E	E	E	E	E	E
14	E	E	E	E	E	100	100	S	140	125	G	G	105	105	G	100	G	E	100	E	E	E	E	E
15	E	E	E	E	E	E	S	G	G	G	105	G	110	105	G	110	G	E	E	E	E	E	E	E
16	110	110	E	115	E	110	E	G	130	140	G	110	115	110	110	115	100	110	105	105	105	105	E	115
17	110	110	110	105	E	E	G	140	140	125	G	110	G	110	G	150	140	E	E	110	E	E	E	E
18	105	105	105	110	105	110	110	120	G	120	105	110	G	G	105	105	105	E	E	E	E	E	E	E
19	110	100	105	100	100	100	E	S	G	G	G	110	110	105	100	100	100	100	100	100	100	110	110	100
20	E	E	E	105	100	100	E	E	G	115	115	110	110	105	110	G	S	E	E	105	E	E	E	100
21	E	E	E	105	105	105	E	S	G	120	110	115	110	105	110	105	110	E	E	E	E	E	E	110
22	E	115	110	105	105	110	E	G	G	110	110	110	110	110	110	G	S	E	E	105	110	110	110	115
23	110	110	105	105	105	105	E	G	110	120	110	C	110	110	S	100	105	110	110	105	105	105	E	E
24	E	110	E	105	105	105	E	S	G	115	G	105	105	100	G	S	100	100	E	E	105	105	E	E
25	E	E	100	E	100	E	E	G	G	105	C	C	C	C	C	G	S	100	100	100	100	100	E	110
26	105	105	105	105	100	105	E	G	G	115	110	110	110	110	110	G	105	105	100	100	100	100	110	E
27	E	105	110	105	105	120	E	120	125	120	115	110	110	G	105	G	130	125	120	E	E	115	110	110
28	E	105	E	100	E	E	E	130	125	120	115	110	110	110	105	105	125	135	115	110	110	105	105	105
29	E	105	100	100	100	100	E	G	120	110	110	110	105	105	105	105	110	E	110	110	110	110	105	105
30	110	105	110	110	105	110	E	G	G	115	110	110	G	G	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	140	130	120	120	125	120	110	G	S	E	E	E	E	E	E	115
No.	10	18	17	20	19	14	9	10	14	22	20	21	24	25	21	22	18	17	17	17	14	18	15	13
Median	110	105	105	105	105	110	120	125	120	120	115	110	110	110	110	110	110	110	105	105	105	110	110	110

Sweep 1.0 Mc to 20.2 Mc in _____ min _____ sec in automatic operation.

The Radio Research Laboratories, Japan.

W 11

IONOSPHERIC DATA

Lat. 45° 23.6' N
Long. 141° 41.1' E

Wakkanai

Types of Es

Oct. 1959

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

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

The Radio Research Laboratories, Japan.

Types of Es

Lat. 38° 43.5' N
Long. 140° 08.2' E

IONOSPHERIC DATA

Akita

135° E Mean Time (GMT.+ 9h.)

foF2

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	6.5	6.1	6.0	5.9	5.8	5.8	8.3	11.4	13.1	13.0	12.6	11.9	12.3 ^H	12.2	11.7	11.1	11.0	11.0	11.5 ^S	8.4	6.4	7.3	6.4	6.0
2	5.8	5.9	5.5	5.5	5.5	5.9	8.1	11.8	12.4	12.7	13.2	13.1	11.4	11.9	12.4	10.9	10.7 ^S	12.1 ^S	10.4 ^S	6.7 ^S	6.1 ^S	5.7 ^S	5.6	5.2 ^S
3	5.3	5.5 ^S	4.9 ^S	4.6 ^S	4.6 ^S	4.7 ^S	7.7 ^S	11.9 ^S	13.2	12.0	11.5	12.6	13.2	12.7	12.3	11.8 ^S	11.3 ^S	11.1 ^S	10.4 ^S	8.6 ^S	7.1 ^S	7.0 ^S	6.7	6.1 ^S
4	6.1 ^S	6.1 ^S	5.6	5.6 ^S	5.3 ^S	5.5	7.3 ^S	7.4	9.1	9.5	10.7	10.7 ^H	10.8	11.7	12.3	10.5	10.9	9.7	8.0	7.6	7.5 ^S	7.3	7.3	6.2
5	6.1	6.0	6.5	6.1	5.9	6.1	8.4	10.0	9.2	11.7	12.3	12.0	12.2	12.7	10.7	10.7 ^S	11.1 ^S	9.9 ^S	7.2 ^S	5.9 ^S	5.7 ^S	6.0 ^S	5.9	5.5 ^S
6	5.5 ^S	5.0 ^S	5.3	4.5 ^S	4.2 ^S	4.1 ^S	6.5	10.1 ^S	12.1	11.3	12.6	13.1	13.2	12.4	12.1	11.7	11.1	11.1 ^S	10.0 ^S	7.0 ^S	6.1 ^S	5.8 ^S	5.6 ^S	6.1 ^S
7	4.9 ^S	4.9 ^S	5.0 ^S	4.9	4.2 ^S	4.4 ^S	6.0 ^S	6.8 ^S	6.9	6.9	6.1	5.9 ^A	6.6	7.8	8.0	8.1	8.3	7.9	6.7	5.0	4.9	4.6	4.5	4.5
8	4.1	4.4	4.2	4.2	4.0	4.0	8.6	10.0	9.7	10.9	12.1	11.8	11.8	12.1 ^H	12.0	11.9	11.6 ^S	11.2	8.2 ^S	7.0 ^S	6.6 ^S	6.5	6.4 ^S	6.0 ^S
9	5.6	5.2 ^S	5.1 ^S	5.1 ^S	4.9 ^S	4.7	7.5 ^S	9.5 ^S	10.4	10.7	11.1	12.0	11.9	11.9	11.6	11.2	11.0	10.2	9.2	7.1	6.8	6.2	5.8	5.9
10	5.7	5.4	5.3	5.1	5.0	5.0	7.7	11.0	10.3	10.8	12.1	12.1	12.0	12.1	11.9	11.0	10.8 ^S	10.2 ^S	8.3 ^S	6.9	6.5 ^S	6.6 ^S	6.2 ^S	6.0
11	5.9	5.5	5.3	5.4 ^S	5.2 ^S	5.2	7.6 ^S	10.0 ^S	10.3 ^S	11.7	12.4	12.6	11.9	10.9	11.1	10.5	11.1	11.4	9.4	7.9	7.0	6.1	6.0	6.0
12	5.8	5.5	5.5	5.5	5.2	5.1	7.6	9.3	10.0	10.6	11.6	12.1	11.9	11.1 ^H	11.6	11.2	10.7	10.8	9.4	7.6	7.0	6.2	5.5	5.6
13	5.4	5.4	5.3	5.4	5.4	5.0	7.4	9.9	10.8	11.1	11.6	12.2	12.6	12.2	12.2	12.5	11.9 ^S	11.2 ^S	9.7 ^S	8.5 ^S	6.6 ^S	6.1	6.1 ^S	5.7 ^S
14	5.5 ^S	5.5 ^S	5.4 ^S	5.4 ^S	5.4 ^F	5.5 ^F	7.8 ^S	10.6 ^S	11.3 ^S	12.7	12.0	11.4	12.3	12.2	12.5	12.3	11.9	11.4	8.7	6.9	6.7	6.9	6.5	6.6
15	5.9	6.1 ^F	6.0 ^F	6.0 ^F	5.8 ^F	5.8 ^F	8.7	10.6	10.4	11.1	12.0	12.7 ^H	12.8	12.1	12.4	12.2 ^S	12.2 ^S	11.0 ^S	8.1 ^S	7.0 ^S	6.9	6.7 ^S	5.9 ^S	5.9 ^F
16	5.9 ^F	5.9 ^F	6.1 ^F	6.7 ^F	5.6 ^F	5.7 ^F	7.5 ^F	11.1 ^S	12.2	12.1	13.7	12.7	12.2	12.3	12.7	12.6	11.6 ^S	11.1 ^S	8.1 ^S	6.9 ^S	7.0 ^S	7.0 ^S	6.4 ^S	6.1 ^S
17	5.8 ^S	5.4 ^S	5.1 ^S	5.2 ^S	4.9	4.9 ^S	7.5 ^S	9.4 ^S	10.7	11.7	12.1	12.2	12.8	11.7 ^H	12.3	11.5	11.6	10.5	8.4	7.7	7.2	6.9	6.1	6.0
18	5.9	5.6	5.9	5.6	5.5	5.4	5.7	11.7	12.0	12.6	12.7	12.5	12.4	12.6	13.1	13.0	12.1	10.2 ^S	8.7 ^S	7.8 ^S	7.6 ^S	7.3 ^S	6.7	7.3 ^S
19	5.6 ^S	5.5	5.5	5.5	5.4	5.8	8.6 ^S	11.2	12.4	12.3	13.1	13.5	12.5	12.2 ^H	12.6 ^H	12.4	12.0 ^S	11.0 ^S	8.9 ^S	7.7 ^S	6.6	6.1	6.4 ^S	5.7
20	5.2 ^S	5.0	5.1	5.1 ^S	4.6	4.5	7.6 ^S	10.8 ^S	11.2	11.8	11.5	13.3	12.8	13.0	13.1 ^H	13.1	11.8	10.7	8.3	7.1	7.9	6.6	5.3	4.9
21	5.0	5.0	5.0	5.4	4.9	4.6	7.2	10.2	11.8	12.6	13.1	12.7	12.0	11.7 ^H	12.3 ^H	12.0	11.9	10.8	9.6	9.0	7.9	6.8	6.1	5.5
22	5.1	5.1	5.2	5.2	5.0	4.9	7.0	9.1	11.2	11.6	12.9	12.5	11.9	12.3 ^S	12.7 ^H	12.9	12.5	11.3 ^S	9.3 ^S	9.2 ^S	7.2 ^S	6.7 ^S	6.2 ^S	5.9
23	5.8	5.8	5.1 ^S	5.0	5.1	5.1 ^S	7.4 ^S	11.6 ^S	14.1	14.9	14.3	13.8	13.3	12.4	12.5 ^H	12.4	12.0 ^S	9.9 ^S	7.6 ^S	7.3 ^S	7.3 ^S	6.6 ^S	5.8	5.4 ^S
24	5.3 ^S	4.9 ^S	4.5 ^S	4.4 ^S	4.4	4.4 ^S	6.7	11.2 ^S	11.2	13.0	12.9	12.7	11.2	10.9 ^H	11.7	12.0	10.9	9.7 ^S	7.2 ^S	6.6	6.9	6.1 ^S	5.0 ^S	4.6 ^S
25	4.6 ^S	4.4 ^S	4.6	4.5	4.2	4.1 ^S	6.6	10.6 ^S	12.4	13.1	13.6	13.2	12.5	12.9	12.4	12.5	12.1 ^S	10.7 ^S	7.9	7.1 ^S	7.1 ^S	5.8 ^S	5.7	6.0 ^S
26	5.6 ^S	5.6 ^S	4.6	4.8 ^S	4.5	5.1 ^S	7.1 ^S	11.0 ^S	12.2	13.5	14.2 ^H	14.4	14.1	14.1	13.7 ^S	12.2 ^S	11.3 ^S	10.5 ^S	9.8 ^S	9.0 ^S	6.5	5.6 ^S	5.5 ^S	5.3 ^S
27	5.3	4.7 ^S	4.5 ^S	4.6	5.0	5.1 ^S	6.9	11.1	12.9	14.2 ^S	14.2	15.1	14.6	14.9 ^H	14.5	13.6	12.1 ^S	10.4 ^S	8.2 ^S	6.7 ^S	6.1 ^S	5.5	5.5	4.8 ^S
28	4.9 ^S	4.8 ^S	C	C	C	C	C	C	12.3	13.1	14.1	14.8 ^C	14.4 ^C	14.2 ^C	13.7	12.2	12.0	11.0	1.8 ^A	7.3	6.3	A	A	A
29	A	A	4.9	5.1	5.1	5.0	6.3	9.7	11.3	12.5	12.7	12.8	12.6	12.6	12.3	12.5	11.9	10.5 ^S	8.0	6.5	5.4 ^S	5.2 ^S	5.1 ^C	5.0 ^S
30	4.9 ^S	4.9	4.9 ^S	5.0 ^S	4.9 ^S	4.4 ^S	6.0	9.9 ^S	11.6	12.9	12.3	11.8 ^A	12.1	12.7	13.1	13.0	11.1 ^S	8.9 ^S	7.7 ^S	7.3 ^S	7.8 ^S	8.0 ^S	6.4 ^S	5.3 ^S
31	5.4 ^S	5.5 ^S	5.4	5.4	5.0	4.9 ^S	6.6	9.7 ^S	11.5	12.4	13.1	14.0	13.6	12.5	11.5 ^H	11.9	11.6	10.8 ^S	8.3 ^S	6.9	6.4 ^S	5.7	5.3	5.5
No.	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30
Median	5.6	5.4	5.2	5.2	5.0	5.0	4.4	10.4	11.5	12.1	12.6	12.6	12.3	12.2	12.3	12.0	11.6	10.8	8.4	7.1	6.8	6.4	6.0	5.8
U.Q.	5.8	5.6	5.5	5.5	5.4	5.5	7.7	11.1	12.4	12.9	13.1	13.2	12.8	12.7	12.7	12.5	12.0	11.1	9.4	7.8	7.2	6.9	6.4	6.0
L.Q.	5.1	5.0	4.9	4.9	4.6	4.6	6.7	9.7	10.4	11.1	11.6	12.1	11.9	11.9	11.7	11.2	11.0	10.2	8.0	6.9	6.4	5.8	5.5	5.3
G.R.	0.7	0.6	0.6	0.6	0.8	0.9	1.0	1.4	2.0	1.8	1.5	1.1	0.9	0.8	1.0	1.3	1.0	0.9	1.4	0.9	0.8	1.1	0.9	0.7

Sweep 160 Mc to 200 Mc in 20 sec

The Radio Research Laboratories, Japan.

A 1

foF2

foF2

in automatic operation.

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

foF1

Oct. 1959

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									L		L	L	L	L										
2											L	L	L	L	L									
3											L	L ^H	L	L	L									
4											L	L	L	L	L									
5											L	A	A	L	L	A								
6									L		L	L	L	L	L	L								
7								A	45	45	15.0 ^H	5.1	5.2	L	L	L								
8									L	L	L	L	L	L	L	L								
9											L	L ^H	L	L	L	L								
10											L	L	L	L	L	L								
11									L	L	L	L	L	L	L	L								
12											L	L	L	L	L	L								
13									L	L	L	L	L	L	L	L								
14											L	L	L	L	L	L								
15											L	L	L	L	L	L								
16											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								
23											A	L	L	L	L	L								
24									L	L	L	L	L	L	L	L								
25											L	L	L	L	L	L								
26											L	L	L	L	L	L								
27											L	L	L	L	L	L	A	A						
28											L	L	L	L	L	L								
29											L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31											L	L	L	L	L	L								
No.									1	1	1	1	1											
Median									45	45	45.0	5.1	5.2											

Sweep 140 Mc to 200 Mc in 20 sec in automatic operation.

The Radio Research Laboratories, Japan. A 2

foF1

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+ 9h.)

foE

Oct. 1959

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	270 ^H	305	240 ^A	255 ^A	R	K	345	345	320	285	B						
2							B	270	310	345	350	345	A	A	A	A	A	B						
3							B	255	320	345	365	370	360	350	A	R	A	B						
4							B	255	285	325	330	330	R	A	A	245	240	B						
5							B	255	295	320 ^A	340	330 ^A	A	A	A	A	A	B						
6							B	A	A	340	A	A	A	350 ^A	330 ^A	310	265	B						
7							1.95	260	305	345	355	A	K	355	325	305	B	B						
8							B	270	300	300 ^H	340	355	245	225	300	250	B							
9							B	250	310	345 ^K	360	360	350 ^A	340 ^A	320 ^A	300	B							
10							A	260	305 ^A	345	355	360	350 ^A	355	A	A	B							
11							B	R	305	335 ^A	350	365 ^B	360	355	340	205	240							
12							B	255	305	345	355	360	340	320	A	A	245	A						
13							B	255	305	320	350	325	365	325	330	300	B	B						
14							B	260 ^K	300	340	345	355 ^K	355	350	320	305	B							
15								260	305	320	340	330	355 ^A	350 ^A	330 ^A	A	A	B						
16							B	R	305	A	A	325	345 ^A	A	A	A	A	B						
17							B	B	305	350	355	350	355	355	325	305	B	B						
18							B	A	305	330 ^K	345	355	A	A	A	A	A	B						
19							B	R	300	325	R	A	A	R	330	A	A	B						
20							B	330	295	305	A	R	R	B	225	A	A	B						
21								R	295 ^K	330	330	A	A	A	A	A	R							
22								250	320 ^A	345	345	360	370	355 ^A	325	300	B	B						
23							B	R	300	320	345	310	A	A	A	300	B	B						
24							B	250	300	315 ^A	330	345 ^K	340 ^K	335	330	295	B	B						
25							B	225	295	325	325	325	A	A	S	S	B	B						
26							B	B	290	320	325	A	A	A	320	300	B	B						
27							B	295	295	320	320	310	A	A	A	295	B	B						
28							C	C	C	C	R	A	R	A	A	C	C	C						
29							C	C	300	300	A	A	A	A	A	C	C	C						
30							B	A	A	A	A	C	A	A	A	A	A	A						
31							B	B	290	310	325	350	350	345	325	280	B							
No.							1	18	28	24	21	14	16	16	17	16	5							
Median							1.95	255	300	330	345	350	350	350	330	300	245							

Sweep 1.6 sec Mc to 2.0 Mc in 2.0 sec in automatic operation.

foE

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.3' E

Akita

135° E Mean Time (GMT.+ 9h.)

foEs

Oct. 1959

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	33	52 ^M	40 ^M	45 ^M	36	36	40	37 ^M	G	B	58 ^M	E	E	E	E	E	
2	E	E	E	E	E	E	25	35	42	43 ^M	56 ^M	60 ^M	45 ^M	49 ^M	52 ^M	59 ^M	37 ^M	47 ^M	31 ^M	36 ^M	E	E	E	E	
3	E	E	E	E	E	E	B	30	37	56 ^M	78 ^M	54 ^M	50	40	60	65 ^M	49 ^M	47 ^M	39 ^M	40 ^M	49 ^M	E	E	E	
4	28 ^M	E	30 ^M	E	35 ^M	39 ^M	39 ^M	42 ^M	42	56 ^M	55 ^M	41	39	39	39	45 ^M	G	B	27 ^M	E	E	20 ^M	27 ^M	37 ^M	
5	E	43 ^M	37 ^M	31 ^M	E	E	23	46 ^M	49	64 ^M	52 ^M	78 ^M	41	42	65 ^M	47 ^M	100	71 ^M	40 ^M	90 ^M	47 ^M	35 ^M	30 ^M	35 ^M	
6	36 ^M	43 ^M	37 ^M	30 ^M	40 ^M	47 ^M	23	37	56 ^M	63 ^M	52 ^M	45 ^M	44	41	42	42	42	68 ^M	40 ^M	36 ^M	47 ^M	56 ^M	36 ^M	22 ^M	
7	E	30	E	27 ^M	71 ^M	42 ^M	24	59	37	40	40	66 ^M	44	40	50	42 ^M	G	B	E	E	E	56 ^M	36 ^M	E	
8	34 ^M	E	E	23	20 ^M	E	21	G	40	36	36	46	38	39	39	54 ^M	47 ^M	47 ^M	89 ^M	50 ^M	38 ^M	27 ^M	E	E	
9	E	E	E	E	E	E	E	28	33	40	G	G	G	G	55 ^M	G	B	B	E	36 ^M	E	28 ^M	E	E	
10	E	E	E	E	E	67 ^M	45 ^M	29	40	41	41	57	54	37	31 ^M	41 ^M	E	E	40 ^M	E	E	E	E	E	
11	25 ^M	28 ^M	E	E	E	E	B	G	G	40 ^M	G	B	39	39	37	43 ^M	23	49 ^M	E	E	E	E	E	E	
12	E	E	E	E	E	E	E	G	G	36	37	40	40	35	44 ^M	43 ^M	G	32	E	E	E	E	E	E	
13	E	E	E	E	E	E	B	G	G	G	37	38	G	38	G	G	B	E	E	E	E	E	E	E	
14	E	E	E	E	E	E	B	28	33	40	36	G	G	G	G	G	B	31 ^M	E	E	E	E	E	E	
15	E	E	E	E	E	E	E	G	33	40	36	36	42	42	40	40	B	B	E	E	E	E	E	E	
16	E	E	E	E	E	E	B	28	37	42	44 ^M	41	42	43	45 ^M	45 ^M	37 ^M	35 ^M	E	E	35 ^M	29 ^M	E	E	
17	E	E	E	E	E	E	B	B	G	G	38	41	42	43	45 ^M	45 ^M	55 ^M	B	E	E	35 ^M	E	E	E	
18	E	E	E	E	E	E	B	59 ^M	39	G	38	39	41	45	37	42 ^M	B	36 ^M	E	E	E	E	E	E	
19	32 ^M	28 ^M	E	E	E	42 ^M	B	G	39	G	29	38	46 ^M	45 ^M	46 ^M	45 ^M	37 ^M	32 ^M	E	36 ^M	42 ^M	26 ^M	58 ^M	39 ^M	
20	E	E	E	E	E	E	B	G	34	36	G	46 ^M	43	G	G	62 ^M	31 ^M	39 ^M	49 ^M	37 ^M	E	E	E	29 ^M	
21	E	E	E	E	E	38 ^M	E	G	G	40	43 ^M	G	54 ^M	B	37 ^M	45 ^M	38 ^M	E	E	E	35 ^M	43 ^M	E	E	
22	E	E	E	E	E	E	E	G	36	39 ^M	42	G	42	42	39 ^M	43 ^M	G	B	E	E	E	E	E	E	
23	E	E	E	E	E	E	B	G	36	54 ^M	55 ^M	47 ^M	57 ^M	44	43 ^M	G	B	B	E	E	E	E	E	E	
24	E	20 ^M	E	E	E	E	B	G	36	40	36	36	40	44	43 ^M	G	B	B	27 ^M	E	E	E	E	E	
25	E	E	E	E	E	E	B	25	34	37	39	36	44	G	S	S	B	B	E	E	E	E	E	E	
26	E	E	E	E	E	E	B	B	G	G	37	56 ^M	47 ^M	40 ^M	S	S	B	B	E	E	E	E	E	E	
27	49 ^M	E	E	E	E	E	B	30	36	42	38	51 ^M	31 ^M	43 ^M	50 ^M	48 ^M	82 ^M	66 ^M	90 ^M	42 ^M	E	35 ^M	45 ^M	48 ^M	
28	99 ^M	49 ^M	C	E	C	C	C	35	38	37	39	46 ^M	G	53 ^M	41 ^M	C	30	35 ^M	32 ^M	45 ^M	31 ^M	28 ^M	31 ^M	E	
29	E	40 ^M	40 ^M	E	E	E	C	C	32	38	45 ^M	36	46 ^M	30 ^M	49 ^M	C	C	40 ^M	36 ^M	65 ^M	65 ^M	81 ^M	124 ^M	90 ^M	
30	E	40 ^M	50 ^M	E	E	E	E	37 ^M	36 ^M	45 ^M	41 ^M	46 ^M	46 ^M	45 ^M	33 ^M	50 ^M	C	36 ^M	42 ^M	33 ^M	32 ^M	40 ^M	E	E	
31	E	75 ^M	37 ^M	E	E	E	B	B	44 ^M	32	G	36	36	G	34	35	25	30 ^M	30 ^M	E	E	E	28 ^M	E	E
No.	31	30	30	30	30	30	14	27	31	31	31	29	31	30	30	28	19	20	31	31	31	31	30	31	
Median	E	E	E	E	E	E	23	28	36	40	39	41	42	40	43 ^M	42	34 ^M	32 ^M	E	E	E	E	E	E	
U.Q.	E	28	E	E	E	E	25	35	39	45	44	52	47	43	51	52	35	48	40	37	35	35	30	28	
L.Q.	E	E	E	E	E	E	E	G	32	36	37	36	G	35	37	G	G	32	E	E	E	E	E	E	
Q.R.									0.7	0.9	1.07	1.6		0.8	1.4		1.6	1.6							

Sweep 440 Mc to 20.0 Mc in 2.0 sec

The Radio Research Laboratories, Japan.

foEs

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

fbEs

Oct. 1959

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							F	39	40	41	41	41	40	36	32	32	B	25						
2							F	39	40	41	41	41	40	36	32	32	B	25						
3							F	39	40	41	41	41	40	36	32	32	B	25						
4	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
5	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
6	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
7	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
8	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
9	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
10	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
11	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
12	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
13	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
14	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
15	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
16	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
17	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
18	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
19	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
20	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
21	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
22	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
23	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
24	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
25	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
26	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
27	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
28	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
29	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
30	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
31	E	E	E	E	E		F	39	40	41	41	41	40	36	32	32	B	25						
No.	7	10	6	5	5	5	10	15	24	26	27	24	21	23	24	18	14	17	14	13	11	13	9	8
Median	29	E	E	E	E	E	23	23	33	36	38	39	39	37	36	32	29	25	E	E	E	E	E	E

fbEs

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+ 9h.)

f-min

Oct. 1959

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	2.00	1.90	2.10	2.15	2.50	2.50	3.20	2.60	2.50	2.50	1.75	2.00	E	E	E	E	E	E
2	E	E	E	E	E	E	1.90	2.05	2.00	2.50	2.50	2.60	2.80	2.80	2.75	2.00	1.90	1.90	E	E	E	E	E	E
3	E	E	E	E	E	E	1.90	1.85	2.20	2.50	2.50	2.80	2.90	2.75	2.45	1.90	1.95	2.05	E	E	E	E	E	E
4	E	E	E	E	E	E	1.90	1.90	2.20	2.50	2.60	2.90	2.70	2.70	2.80	2.00	2.05	2.05	E	E	E	E	E	E
5	E	E	E	E	E	E	1.85	2.00	1.95	2.45	2.05	2.75	2.75	2.50	1.95	2.00	2.00	2.00	E	E	E	E	E	E
6	E	E	E	E	E	E	1.90	1.90	1.95	2.40	2.40	2.40	2.50	2.30	2.45	2.10	1.85	1.90	E	E	E	E	E	E
7	E	E	E	E	E	E	1.75	1.90	2.00	2.45	2.45	2.90	2.70	2.70	2.00	2.00	2.60	2.00	E	E	E	E	E	E
8	E	E	E	E	E	E	1.70	2.00	1.75	2.30	2.10	2.50	2.70	2.75	2.50	2.40	1.95	1.80	E	E	E	E	E	E
9	E	E	E	E	E	E	1.90	1.80	2.20	2.55	2.40	2.10	2.20	2.00	2.05	2.00	2.70	1.80	E	E	E	E	E	E
10	E	E	E	E	E	E	E	1.95	1.80	2.30	2.25	2.25	2.80	3.00	2.75	2.20	2.90	1.80	E	E	E	E	E	E
11	E	E	E	E	E	E	1.90	2.00	2.25	2.40	2.70	3.30	2.60	2.70	2.10	2.10	2.20	2.00	E	E	E	E	E	E
12	E	E	E	E	E	E	E	1.90	2.40	2.45	2.30	2.55	2.60	2.75	2.30	1.95	2.00	1.70	E	E	E	E	E	E
13	E	E	E	E	E	E	1.90	1.75	2.00	1.95	2.10	2.00	2.40	2.30	1.90	2.00	2.50	2.00	E	E	E	E	E	E
14	E	E	E	E	E	E	1.80	2.00	1.95	2.10	2.60	3.00	2.95	2.70	2.00	2.05	2.60	2.00	E	E	E	E	E	E
15	E	E	E	E	E	E	E	1.90	2.30	2.50	2.80	2.80	2.90	2.85	2.70	2.45	1.95	2.00	E	E	E	E	E	E
16	E	E	E	E	E	E	1.90	1.95	2.00	2.70	2.90	2.80	3.20	2.95	2.10	2.45	2.00	2.00	E	E	E	E	E	E
17	E	E	E	E	E	E	1.90	2.50	2.30	2.55	2.95	2.65	2.50	2.60	2.50	1.90	2.50	2.00	E	E	E	E	E	E
18	E	E	E	E	E	E	1.90	2.00	2.60	2.70	2.90	2.50	2.70	2.70	2.50	2.10	2.00	2.00	E	E	E	E	E	E
19	E	E	E	E	E	E	1.90	2.00	2.80	2.70	2.50	2.75	2.90	2.45	2.45	2.00	1.90	2.05	E	E	E	E	E	E
20	E	E	E	E	E	E	2.00	2.00	2.35	2.40	2.95	2.70	2.90	3.50	2.25	1.90	1.95	2.00	E	E	E	E	E	E
21	E	E	E	E	E	E	E	2.20	2.40	2.75	2.60	2.70	2.75	2.70	2.70	2.50	1.90	2.00	E	E	E	E	E	E
22	E	E	E	E	E	E	E	1.80	2.00	2.40	2.60	2.75	2.80	2.45	1.90	1.95	2.70	2.00	E	E	E	E	E	E
23	E	E	E	E	E	E	1.80	1.85	2.45	2.45	2.80	2.60	2.80	2.70	2.80	2.00	2.55	1.70	E	E	E	E	E	E
24	E	E	E	E	E	E	2.00	1.95	2.00	2.45	3.00	2.50	3.10	2.75	2.50	2.00	2.50	1.90	E	E	E	E	E	E
25	E	E	E	E	E	E	1.80	1.90	1.90	2.45	2.75	2.70	2.55	2.50	3.70	3.00	2.45	2.00	E	E	E	E	E	E
26	E	E	E	E	E	E	1.80	2.45	2.00	2.40	2.45	2.55	2.40	2.20	1.95	2.45	2.00	2.00	E	E	E	E	E	E
27	E	E	E	E	E	E	2.10	1.90	2.60	2.45	2.45	2.80	2.75	2.70	2.50	2.40	2.25	1.90	E	E	E	E	E	E
28	E	E	E	C	C	C	C	2.50	2.30	2.40	2.90	2.80	2.95	2.50	2.05	2.25	2.30	2.50	2.10	E	E	E	E	E
29	1.90	2.40	E	E	E	E	E	2.50	2.70	2.80	3.00	2.80	2.80	2.75	2.80	3.20	2.90	1.80	E	E	E	E	E	E
30	E	E	E	E	E	E	E	1.90	1.90	1.70	2.40	2.40	2.80	2.30	2.40	1.90	1.90	2.00	E	E	E	E	E	E
31	E	E	E	E	E	E	1.75	2.45	2.00	2.00	2.00	2.20	2.50	2.50	2.45	1.95	1.95	2.00	E	E	E	E	E	E
No.	30	30	30	30	30	30	29	29	29	29	29	29	29	30	29	29	29	30	31	30	30	30	30	30
Median	E	E	E	E	E	E	1.90	1.95	2.00	2.45	2.50	2.45	2.75	2.60	2.45	2.00	2.05	1.85	E	E	E	E	E	E

The Radio Research Laboratories, Japan. Sweep 1.40 Mc to 2.40 Mc in 20 sec. In automatic operation. A 6

Lat. 39° 43.5' N
Long. 140° 08.2' E

Akita

IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

Oct. 1959

(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	250	240	240	250	260	270	300	3.15	3.05	3.05	2.95	2.80	2.80	2.80	2.80	2.85	2.90	3.00	3.10 ^S	3.00	2.50	2.75	2.80	2.55	
2	250	250	255	255	240	270	3.10	3.20	3.15	3.10	3.00	3.05	2.90	2.95	3.00	2.95	2.80 ^S	3.00 ^S	3.10 ^S	3.20 ^S	2.80 ^S	2.80 ^S	2.75	2.10	2.60 ^S
3	240	270 ^S	270 ^S	270 ^S	260 ^S	245 ^S	3.10 ^S	3.25 ^S	3.20	3.15	2.85	3.00	2.95	3.00	2.90	2.95 ^S	2.95 ^S	3.00 ^S	3.05 ^S	3.00 ^S	2.85 ^S	2.80 ^S	2.70	2.50 ^S	
4	250 ^S	250 ^S	240	245 ^S	250 ^S	250	3.40 ^S	3.20	3.30	3.10	2.95	3.00 ^H	2.95	2.95	3.00	3.00	3.00	3.00	3.20	2.90	2.80	2.75	2.70	2.70	
5	250 ^S	255	265	265	250	280	3.10	3.00	3.20	3.20	3.20	3.05	3.05	3.10	3.05	3.00 ^S	3.15 ^S	3.25 ^S	3.20 ^S	2.75 ^S	2.60 ^S	2.60 ^S	2.80	2.70 ^S	
6	255 ^S	260 ^S	280	260 ^S	265 ^S	240 ^S	2.90	3.15 ^S	3.20	3.10	3.00	2.95	3.00	2.95	2.95	3.00	3.00	3.05 ^S	3.10 ^S	2.95 ^S	2.65 ^S	2.70 ^S	2.55 ^S	2.80 ^S	
7	270 ^S	250 ^S	275 ^S	245	240 ^S	250 ^S	3.00 ^S	2.90 ^S	2.75	2.90	2.90	2.60 ^A	2.90	2.90	3.00	3.20	3.20	3.25	3.30	2.90	2.80	2.90	2.60	2.60	
8	255	265	280	285	280	270	3.25	3.30	3.20	3.10	2.95	3.00	2.90	3.00 ^H	2.90	2.95	3.05 ^S	3.20 ^S	3.20 ^S	3.00 ^S	2.85 ^S	2.85	2.85 ^S	2.80 ^S	
9	290	270 ^S	265 ^S	280 ^S	295 ^S	290	3.10 ^S	3.25 ^S	3.25	3.20	3.10	3.10	2.95	2.95	2.95	3.00	3.10	3.05	3.25	3.00	2.85 ^S	2.85	2.85 ^S	2.70	
10	275	275	270	280	275	280	3.35	3.40	3.30	3.15	3.15	3.00	2.95	2.95	2.95	3.00	3.05 ^S	3.10 ^S	3.15 ^S	3.05	2.90	2.90	2.80	2.70	
11	290	270	270	275 ^S	270 ^S	275	3.30 ^S	3.25 ^S	3.20 ^S	3.15	3.20	3.10	3.00	3.00	2.95	2.95	3.00	3.15	3.10	3.05	3.05	2.95	2.80	2.75	
12	280	270	270	280	285	280	3.35	3.35	3.20	3.10	3.10	3.05	3.00	2.90 ^H	3.00	3.05	3.00	3.10	3.20	3.00	3.05	3.00	2.80	2.70	
13	240	245	245	275	285	280	3.25	3.30	3.25	3.10	3.05	3.05	3.00	2.95	2.95	3.05	3.10 ^S	3.10 ^S	3.15 ^S	3.10 ^S	3.00 ^S	2.80	2.90 ^S	2.80 ^S	
14	270 ^S	265 ^S	270 ^S	270 ^S	275 ^S	270 ^S	3.20 ^S	3.10 ^S	3.25 ^S	3.20	3.20	3.00	2.90	2.95	2.95	3.00	3.05	3.15	3.20	2.85	2.70	2.75	2.65	2.85	
15	260	280 ^F	275 ^F	285 ^F	270 ^F	270 ^F	3.15	3.30	3.25	3.10	3.10	3.00 ^H	2.95	2.95	2.90	2.95	3.20 ^S	3.10 ^S	3.10 ^S	2.90 ^S	2.75	3.00 ^S	2.75	2.60 ^F	
16	270 ^F	270 ^F	260 ^F	280 ^F	290 ^F	275 ^F	3.20 ^S	3.15 ^S	3.25	3.10	3.00	3.00	2.90	2.95	2.90	3.00	2.95	3.15	3.05 ^S	2.90 ^S	2.70 ^S	3.05 ^S	2.80 ^S	2.75 ^S	
17	275 ^S	275 ^S	275 ^S	275 ^S	285	280 ^S	3.20 ^S	3.20 ^S	3.20	3.20	3.10	3.00	2.95	2.95	2.90	2.95	3.10	3.05	2.90	2.90	2.90	2.90	2.85	2.70	
18	285	260	270	265	260	260	3.70	3.20	3.25	3.10	3.10	2.90	2.90	2.90	2.85	2.90	3.00	3.05 ^S	2.90 ^S	2.85 ^S	2.75 ^S	2.70 ^S	2.60	3.00 ^S	
19	260 ^S	260	260	250	255	270	3.15 ^S	3.30	3.30	3.25	3.10	3.00	2.85	2.85	2.85	2.85	2.95 ^S	3.05 ^S	3.15 ^S	3.00 ^S	2.85	2.75	2.85 ^S	2.90	
20	275 ^S	270	275	275 ^S	275	275	3.20 ^S	3.25 ^S	3.30	3.30	3.00	3.05	2.95	2.95	2.90	2.95	2.95	3.05	3.05	2.80	3.00	3.20	2.70	2.70	
21	270	270	270	280	280	280	3.25	3.20	3.25	3.20	3.20	3.05	3.00	2.95	2.95	3.00	3.00	2.95	3.05	3.05	3.05	3.00	2.95	2.90	
22	275	270	260	260	265	3.40	3.40	3.40	3.30	3.20	3.10	3.15	2.85	2.80 ^S	2.80 ^H	3.00	2.95	3.00 ^S	2.90 ^S	2.95 ^S	2.95 ^S	2.85 ^S	2.75	2.60	
23	260	270	255 ^S	245	245	255 ^S	3.00 ^S	3.00 ^S	3.10	3.15	3.00	2.90	2.95	2.90	2.85 ^H	3.00	3.10 ^S	3.05	2.95 ^S	2.95 ^S	3.05 ^S	2.90 ^S	2.90	2.70 ^S	
24	280 ^S	290 ^S	270 ^S	270 ^S	255	255 ^S	3.10	3.40 ^S	3.30	3.25	3.20	3.10	3.05	2.95 ^H	3.00	3.10	3.15	3.20 ^S	3.10 ^S	2.90	3.15	3.05 ^S	2.85 ^S	2.65 ^S	
25	260 ^S	250 ^S	270	285	270	255 ^S	2.90	3.20 ^S	3.25	3.20	3.10	3.00	2.95	2.95	2.90	2.90	3.05 ^S	3.10 ^S	2.90	2.80 ^S	2.90 ^S	2.60 ^S	2.65	2.55 ^S	
26	270 ^S	300 ^S	260	265 ^S	245	240 ^S	2.95 ^S	3.20 ^S	3.00	3.10	3.00 ^H	2.95	2.90	2.95	2.95	3.05 ^S	3.10 ^S	3.05 ^S	3.20 ^S	3.10 ^S	2.95 ^S	2.60 ^S	2.65	2.55 ^S	
27	275	260 ^S	235 ^S	240	260	280 ^S	3.05	3.15	3.10	3.10 ^S	3.00	3.05	2.95	2.95	2.95	3.10	3.15	3.20	3.05 ^S	3.00 ^S	3.10 ^S	2.70	2.70	2.70 ^S	
28	260 ^S	260 ^S	C	C	C	C	C	C	3.25	3.15	3.10	3.15 ^C	3.05 ^C	3.05 ^H	3.15	3.15	3.15	3.20	3.20 ^C	3.15	3.25	A	A	A	
29	A	A	260	280	290	3.35	3.30	3.30	3.30	3.20	3.15	3.05	2.95	3.10	3.00	3.10	3.20	3.05 ^S	3.15	3.10	2.95 ^S	2.80 ^S	2.70 ^C	2.90 ^S	
30	275 ^S	275	270 ^S	290 ^S	295 ^S	3.00	3.35 ^S	3.30	3.30	3.25	3.25	3.00 ^C	2.95	3.00	2.90	3.00	3.05 ^S	3.00 ^S	2.80 ^S	2.90 ^S	2.95 ^S	3.15 ^S	3.25 ^S	2.65 ^S	
31	265 ^S	265 ^S	260	265	255	240 ^S	3.05	3.30 ^S	3.20	3.10	3.05	3.00	2.90	2.95	2.95	3.05	3.00	3.00 ^S	3.10 ^S	3.05	2.90 ^S	2.70	2.60	2.55	
No.	30	30	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	
Median	270	270	270	270	270	270	3.20	3.20	3.25	3.15	3.10	3.00	2.95	2.95	2.95	3.00	3.05	3.10	3.10	3.00	2.90	2.85	2.75	2.70	

Sweep 6.0 Mc to 20.0 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

(M3000)F2

A 7

IONOSPHERIC DATA

Lat. 39° 43.6' N
Long. 140° 08.3' E

Akita

135° E Mean Time (GMT.+9h.)

(M3000)F1

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L			L	L	L										
2											L	L ^H	L	L	L									
3											L	L ^H	L	L	L									
4												L	L	L	L									
5											L	A	A	L	L	A								
6									L	L	L	L	L	L	L	L								
7								A	325	380	350 ^H	340	345 ^L	L	L	L								
8									L	L	L	L ^H	L	L	L									
9										L	L	L	L	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L	L									
12										L	L	L	L	L	L	L								
13									L	L	L	L	L	L	L	L								
14										L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18										L	L	L	L	L	L	L								
19										L	L	L	L	L	L	L								
20										L	L	L	L	L	L	L								
21										L	L	L	L	A										
22										L	L	L	L	L										
23										A	L	L	L	L										
24									L	L	L	L	L	L	L									
25										L	L	L	L	L	L									
26										L	L	L	L	A		A	A							
27										L	L	L	L	L										
28										L	L	L	L	L										
29										L	L	L	L	L	L									
30									L	L	L	L	L	L	L									
31									L	L	L	L	L	L	L									
No.									325	380	350	340	345											
Median																								

The Radio Research Laboratories, Japan.

Sweep 1.60 Mc to 2.00 Mc in 20 sec ^{min} in automatic operation.

(M3000)F1

IONOSPHERIC DATA

Lat. 39° 43.5' N
Long. 140° 09.3' E

Akita

R'F2

Oct. 1959

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									L		245	245	245 ^H	L											
2											L	L	L	L	L										
3																									
4																									
5											250 ^L	A	A	260 ^L	255	A									
6									260 ^L				255 ^L	L	L										
7							A		365	355	375	465 ^A	375	320 ^L	L	L									
8									260 ^L	250 ^L	260 ^L	255	240 ^L	260 ^H	L	L									
9									245	245	250	250 ^L	250 ^L	250 ^L	250 ^L										
10																									
11										255	255	245	245	L	L										
12													240 ^L	L	L	250 ^L									
13									235				L	L	250 ^H	255 ^L	L								
14										245	245	245	250 ^H	250 ^L	250 ^L	250 ^L									
15										235	245	250 ^H	L	L	L	260 ^L									
16										240 ^L	250 ^L	230	L	L	L	L									
17										245	245	245	250	L	L	L									
18											240	240 ^L	L	L	L	L									
19										245 ^L	260 ^L	250 ^L	L	L	L	L									
20										245	245	250 ^L	L	L	L	L									
21											245	245	245 ^L	245 ^A											
22											250 ^L	230 ^L	L	L	L	L									
23											A	230 ^H	240 ^L	L	L	L									
24									L	240 ^L	240	230 ^L	230	L	L	L									
25										235	240	230	L	L	L	L									
26										230				A	A	A									
27											240 ^L	230	L	L	L	L									
28											230 ^L	L	L	L	L	L									
29											225	L	L	L	L	L									
30									L	250 ^L	240	C	L	L	L	L									
31										L	240 ^L	L	L	250	L	L									
No.									3	14	21	18	13	9	6										
Median									260	245	245	245	245	250	250										

Sweep 1.60 Mc to 2.0 Mc in 20 sec in automatic operation.

R'F2

The Radio Research Laboratories, Japan.

A 9

IONOSPHERIC DATA

Lat. 39° 43.6' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+9h.)

Oct. 1959

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	290	340	350	310	300	290	280	285	230	245	210	230	215	230	245	250	250	250	245	240	220	300	260	270
2	305	305	290	295	305	305	260	245	245	240	240	230	215	225	250	240	255	245	235	200	215	240	295	340
3	295	280	245	300	300	340	250	245	240	225	225	200	210	240	250	250	245	240	240	235	240	210	295	320
4	345	350	380	360	345	340	280	230	235	245	245	245	245	245	245	245	245	230	245	250	210	285	290	290
5	290	340	310	280	255	310	250	280	250	225	230	245	240	240	A	A	245	240	A	A	A	225	280	280
6	A	AS	A	310	420	330	250	250	240	240	235	225	210	220	245	245	245	245	225	215	280	300	295	270
7	240	305	290	270	270	310	280	270	250	245	215	255	225	250	230	245	245	245	220	245	280	260	310	290
8	330	305	290	290	255	300	240	245	245	235	225	220	210	225	240	245	245	230	225	240	240	260	245	255
9	280	280	300	280	290	285	240	230	230	215	210	200	230	220	240	245	245	240	235	240	240	255	240	290
10	285	290	290	280	255	260	245	245	230	230	220	250	240	240	240	240	240	240	220	245	245	250	240	285
11	290	280	295	290	290	290	230	220	225	230	220	215	240	240	225	240	250	245	215	240	240	240	245	245
12	295	295	295	280	250	260	235	215	235	230	230	220	220	230	245	245	245	245	220	240	240	245	245	240
13	305	300	300	295	255	245	235	235	220	220	240	220	225	235	230	245	240	240	220	230	240	240	250	240
14	275	300	280	280	280	280	240	230	230	235	215	210	225	240	245	250	245	245	210	240	240	290	280	270
15	270	295	270	260	240	300	245	240	230	230	230	220	235	240	240	250	250	230	230	210	260	270	260	295
16	300	270	305	290	230	280	245	230	230	230	225	220	220	225	240	250	240	245	205	245	210	250	245	245
17	260	280	280	290	240	285	240	225	230	225	245	210	205	235	245	250	250	250	215	250	255	260	240	280
18	260	300	270	300	305	305	240	245	245	230	220	210	235	240	250	250	240	240	230	240	245	280	270	250
19	265	245	300	345	325	290	245	245	230	220	210	210	230	220	240	250	240	240	230	230	235	245	210	260
20	260	290	290	270	275	300	240	245	230	220	205	200	245	240	245	250	235	235	205	260	255	230	255	290
21	295	300	300	290	250	260	245	225	245	245	230	210	220	215	245	245	245	245	240	245	240	245	245	250
22	290	290	310	300	290	305	280	225	235	230	230	210	210	240	240	250	240	240	230	240	245	240	265	295
23	280	290	305	340	350	340	270	245	240	245	230	225	235	235	240	245	240	220	230	230	255	245	235	260
24	245	250	290	290	305	320	250	230	220	220	225	215	210	220	240	245	240	240	230	210	250	240	255	280
25	335	340	310	280	240	340	255	240	230	230	230	220	220	225	245	250	230	230	225	230	250	240	255	280
26	260	230	210	340	320	335	245	230	225	225	225	220	220	225	240	240	230	225	230	230	225	210	280	315
27	310	310	300	380	300	250	250	245	240	240	225	220	225	220	250	235	230	220	230	240	240	240	285	280
28	290	300	C	C	C	C	C	235	230	225	220	240	230	225	245	230	230	225	230	240	A	A	A	A
29	A	A	320	340	270	265	230	225	225	235	220	240	230	225	245	230	230	225	230	210	220	245	280	245
30	280	290	300	295	260	255	250	215	230	240	225	220	230	225	245	245	240	220	215	245	255	260	245	245
31	290	310	330	295	345	355	275	225	220	220	215	240	230	240	230	250	240	210	220	240	250	240	245	330
No.	29	29	29	30	30	30	30	31	31	31	31	31	31	31	30	30	31	31	30	30	29	30	30	30
Median	290	295	300	290	280	300	245	230	230	230	225	220	225	230	245	245	240	235	230	240	250	260	265	280

R'F

Sweep 1.60 Mc to 2.02 Mc in 2.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

A 10

IONOSPHERIC DATA

Lat. 39° 43.6' N
Long. 140° 08.2' E

Akita

135° E Mean Time (GMT.+ 9h.)

R'ES

Oct. 1959

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	125	G	440	115	110	G	G	125	125	G	G	B	110	E	E	E	E	E
2	E	E	E	E	E	E	140	135	120	110	110	110	115	110	110	110	120	125	125	120	E	E	E	E
3	E	E	E	E	E	E	B	150	130	120	110	115	120	120	110	110	105	B	100	120	105	100	100	100
4	100	E	E	E	110	E	130	125	120	115	110	110	G	110	G	G	B	100	120	105	105	110	120	115
5	E	105	105	105	E	E	140	120	110	110	120	110	105	110	110	105	105	105	105	105	105	110	120	115
6	110	105	105	105	105	110	130	120	105	110	105	105	105	105	105	G	G	110	110	115	105	105	105	105
7	E	105	E	105	100	100	130	120	120	120	110	110	G	105	105	105	B	B	E	E	E	E	E	E
8	105	E	E	100	100	E	155	G	120	120	140	100	120	115	110	110	110	110	105	105	100	105	E	E
9	E	E	E	E	E	E	B	150	140	G	G	G	G	110	G	G	B	B	E	105	100	E	E	E
10	E	E	E	E	E	105	105	130	105	125	125	115	110	115	115	120	B	B	E	E	E	E	E	E
11	100	105	E	E	E	E	B	G	G	110	G	B	145	G	G	G	135	110	E	E	E	E	E	E
12	E	E	E	E	E	E	E	G	G	140	130	115	110	115	110	110	G	105	E	E	E	E	E	E
13	E	E	E	E	E	E	B	G	G	140	135	G	145	G	G	G	B	B	E	E	E	E	E	E
14	E	E	E	E	E	E	B	155	140	125	125	G	G	145	G	G	B	100	E	E	E	E	E	E
15	E	E	E	E	E	E	E	G	145	125	120	120	120	120	120	110	110	B	E	110	110	E	E	E
16	E	E	E	E	E	E	B	150	125	120	110	120	105	110	120	115	110	B	E	E	105	E	E	E
17	E	E	E	E	E	E	B	B	G	135	125	125	125	G	160	135	B	135	E	E	E	E	E	E
18	E	E	E	E	E	105	B	110	115	125	125	120	110	110	120	120	100	100	100	130	120	110	110	105
19	105	105	E	E	E	E	B	G	G	110	G	105	105	G	G	105	100	100	100	100	E	E	E	105
20	E	E	E	E	E	E	B	G	120	110	110	G	G	105	105	105	105	E	E	E	E	E	E	105
21	E	E	E	E	E	105	E	G	G	120	115	110	105	105	110	110	G	E	E	E	100	105	E	E
22	E	E	E	E	E	E	E	G	115	110	120	G	G	105	105	G	B	B	E	E	E	E	E	E
23	E	E	E	E	E	E	B	G	120	120	110	110	105	105	120	G	B	B	110	E	E	E	E	E
24	E	110	E	E	E	E	B	G	125	120	125	130	G	G	G	100	B	B	E	E	E	E	E	E
25	E	E	E	E	E	E	B	150	130	125	120	120	115	115	S	S	B	B	E	E	E	E	E	E
26	E	E	E	E	E	E	B	B	G	115	105	105	105	100	110	105	125	115	125	120	E	105	105	105
27	105	E	E	E	E	E	B	130	120	120	110	110	115	120	105	G	140	125	120	120	110	110	110	E
28	E	105	C	C	C	C	C	130	120	125	120	120	G	110	110	C	C	125	110	120	110	105	105	105
29	105	100	100	E	E	E	C	125	120	110	105	105	105	105	110	C	C	120	120	120	110	110	C	E
30	E	110	110	105	E	E	E	110	105	105	C	125	120	120	120	120	120	110	115	E	E	E	E	E
31	E	105	105	E	E	E	E	110	105	130	G	160	160	G	150	125	120	110	E	E	E	E	120	115
No.	7	10	6	5	5	5	10	15	24	26	27	24	21	23	24	18	14	17	15	13	11	13	9	8
Median	105	105	105	105	105	105	130	130	120	120	120	110	115	110	110	110	115	110	110	120	105	105	110	105

The Radio Research Laboratories, Japan.

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

R'ES

A 11

IONOSPHERIC DATA

Lat. 39° 43.6' N
Long. 140° 08.3' E

Akita

Types of Es

135° E Mean Time (GMT.+9h.)

Oct. 1959

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

Sweep 1.62 Mc to 2.42 Mc in 2.2 sec in automatic operation.

Types of Es

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

foF1

Oct. 1959

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									S	S	S	S	S											
8																		A						
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
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21																								
22																								
23																								
24																								
25																								
26																								
27																								
28																								
29																								
30																								
31																								
No.																								
Median																								

The Radio Research Laboratories, Japan.

K 2

Sweep 1.0 Mc to 2.0 Mc in 2.0 sec in automatic operation.

foF1

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

135° E Mean Time (GMT. + 9h.)

foE

Oct. 1959

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							2.30 ^N	4.60 ^R	3.30 ^R	3.50 ^R	A	R	R	3.50 ^R	3.70 ^N	3.70 ^N	2.95 ^B							
2							S	2.80	3.20	3.60 ^N	3.50	A	A	R	3.60 ^N	3.40 ^R	2.70 ^N	4.20 ^R						
3							S	4.20 ^N	3.15	3.50 ^N	3.60 ^R	3.80 ^N	3.70 ^N	3.50 ^N	A	A	R	4.20 ^R						
4							S	4.20 ^R	3.00	3.60 ^R	3.60 ^A	A	A	A	4.40 ^N	3.10 ^R	A	A						
5							S	2.60 ^N	3.00 ^A	S	R	S	R	J	R	J	A	S						
6							S	J	A	3.60 ^N	S	R	3.70 ^N	S	J	A	3.60 ^R	2.50						
7							S	4.30 ^N	3.10	S	A	J	S	J	A	3.20 ^N	4.60 ^R							
8							B	J	3.20	3.30	3.55	3.60 ^N	3.60 ^N	3.40 ^N	3.25	2.75	A	A						
9							S	2.70	3.30 ^N	3.55	3.70 ^R	3.80 ^R	3.75	3.60 ^R	3.40 ^R	3.10 ^R	4.70 ^R							
10							2.15	2.80	3.20	3.40	3.60 ^N	3.60	3.70 ^N	3.70 ^N	3.70 ^N	3.00 ^A	A	A						
11							B	2.80	3.15	3.40 ^N	3.50 ^R	3.70 ^N	3.70 ^N	3.65 ^R	3.50	3.30	2.70	B						
12							B	4.20 ^R	3.20 ^R	3.40 ^R	3.55 ^R	3.50 ^A	3.50 ^N	3.50 ^N	3.00 ^A	4.20 ^R	B							
13							B	2.80	3.15	3.40	3.70 ^R	3.65	3.70 ^R	3.65	3.50 ^R	3.10	2.65	B						
14							B	2.70 ^N	3.15	3.40	3.70 ^R	3.70 ^R	3.70 ^R	3.70 ^R	3.50	3.70 ^N	4.20 ^R	B						
15							B	2.50	2.90	3.40	3.40 ^A	A	R	R	A	S	A							
16							B	2.80	3.20 ^R	3.50 ^R	3.60 ^N	3.80 ^R	3.70 ^R	A	A	4.20 ^R	A							
17							B	2.70	3.20 ^R	3.50 ^R	3.70	3.70	3.50 ^R	3.50 ^R	3.15	2.60	B							
18							B	2.50 ^A	3.05	3.65	3.65 ^R	3.75	3.80 ^N	3.80 ^N	A	R	A	A						
19							B	2.80	3.30 ^R	A	A	A	A	A	A	A	A	A						
20							C	3.50 ^N	3.50 ^R	3.50 ^R	3.50 ^R	3.60 ^N	3.70 ^N	3.50 ^R	3.15	2.70 ^N	B							
21							B	2.80	3.20 ^R	3.40	A	J	A	S	3.70 ^N	3.20	S	B						
22							B	2.60 ^R	3.10 ^N	3.50 ^N	3.65 ^R	R	J	3.70 ^R	3.50	3.20 ^R	2.50 ^N	B						
23							1.75	2.55	3.10	3.35	3.45 ^A	A	A	3.60	3.50 ^R	3.15	4.20 ^R	A						
24							B	2.80 ^N	3.00	3.30	3.55 ^R	3.70 ^R	3.75	3.65 ^R	3.30 ^R	3.10	2.50	A						
25							B	2.70	3.15	3.40 ^N	3.45 ^N	3.50 ^N	3.50 ^N	3.50 ^N	3.35	3.00 ^A	2.30 ^N	B						
26							B	2.55	3.00	3.30 ^A	3.70 ^N	3.70 ^N	3.65 ^R	3.50	3.30	A	A	A						
27							J	2.50 ^N	3.00	3.25	3.30 ^N	3.45 ^N	3.60 ^N	3.35 ^N	3.00 ^R	2.30 ^N	A							
28							B	2.50	2.90	3.10	A	A	A	A	3.50 ^R	3.10 ^N	S	B						
29							B	2.60 ^R	3.00	3.30 ^A	A	A	A	A	3.10 ^N	4.20 ^R	A							
30							B	2.60	3.15	3.20 ^N	3.40	3.50 ^A	3.40 ^N	A	A	4.20 ^R	B							
31							S	4.20 ^N	3.05	3.10 ^N	3.35	3.35	3.30 ^R	3.45	3.30	2.85	A	B						
No.							3	28	30	28	23	19	19	20	21	24	19	1						
Median							2.15	2.65	3.15	3.40	3.55	3.65	3.70	3.60	3.40	3.10	2.65	4.20						

Sweep 1.0 Mc to 20.0 Mc in 2.0 ^{min} sec in automatic operation.

The Radio Research Laboratories, Japan.

K 3

foE

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 59.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+ 9h.)

foEs

Oct. 1959

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	2.9 ^M	2.5 ^M	2.5 ^M	2.4 ^M	2.8 ^M	E	G	G	G	G	3.9	G	3.6	G	G	G	G	2.5	3.7 ^M	5.5 ^M	6.5 ^M	E	E	E	
2	2.3 ^E	2.5 ^M	2.4 ^M	2.2 ^M	2.1 ^M	2.0 ^M	G	2.9	3.8	4.2	4.5	5.1 ^M	4.9 ^M	4.7 ^M	4.1 ^M	4.1 ^M	G	G	4.9 ^M	6.4 ^M	8.6 ^M	5.5 ^M	E	E	
3	E	2.4 ^M	E	2.1 ^M	2.4 ^M	2.2 ^M	S	S	3.7	4.2	4.6	8.6 ^S	4.7 ^M	5.7 ^M	8.9 ^M	5.5	3.0	2.7	4.4 ^S	8.9 ^M	7.4 ^M	6.0 ^S	4.5 ^M	4.5 ^M	
4	4.0 ^M	3.3 ^M	2.7 ^M	E	3.5 ^M	E	E	5.0 ^S	4.1	G	4.5	4.0 ^M	4.7 ^S	3.9 ^M	3.5 ^S	2.7 ^M	3.5 ^M	3.2 ^M	E	2.2 ^M	E	E	4.3 ^M	3.0 ^M	
5	E	E	E	E	E	E	S	3.0 ^S	3.3	G	G	S	3.5 ^M	G	S	3.3	6.5 ^S	4.7 ^M	4.1 ^M	5.5 ^S	5.4 ^M	5.6 ^M	5.0 ^M	E	
6	S	E	E	E	E	E	S	4.4 ^S	3.8	S	S	3.4 ^M	3.4 ^M	3.5 ^M	3.8 ^M	G	G	3.0	3.8 ^M	5.8 ^M	4.6 ^M	4.3 ^M	4.1 ^M	E	
7	E	2.7 ^M	2.7 ^M	2.4 ^M	E	E	S	S	4.0	G	3.9	G	G	G	G	G	G	S	E	E	E	E	2.2 ^M	E	
8	E	E	2.7 ^M	E	E	E	B	S	G	G	3.7	S	3.8	3.8	4.5 ^M	3.5	3.7 ^M	7.0 ^M	3.4 ^M	3.9 ^M	3.0 ^M	4.0 ^M	4.1 ^M	3.0 ^M	
9	E	E	E	E	E	E	G	G	G	G	G	G	G	G	2.6 ^M	B	B	2.5 ^M	3.0 ^M	4.5 ^M	3.2 ^M	4.9 ^M	3.5 ^M	3.2 ^M	
10	2.5 ^M	E	E	E	E	E	G	G	3.4	4.0	4.0 ^S	4.2 ^S	3.9 ^S	B	3.7	3.3	3.0 ^M	2.0 ^M	2.5 ^M	E	E	E	E	E	
11	C	E	E	E	E	E	B	G	3.3 ^M	S	2.5 ^M	4.0 ^S	4.5 ^S	3.8	3.8	G	G	B	E	E	E	E	E	E	
12	E	E	E	E	E	E	B	S	G	G	4.1	4.0	3.9	4.0	3.5	3.2	3.8 ^M	2.4	2.5 ^M	E	E	E	E	E	
13	E	E	E	E	E	E	B	G	G	3.7	4.1	4.0	2.8 ^M	4.0	G	3.2	3.8 ^M	3.1	B	E	E	E	E	E	
14	E	E	E	E	E	E	B	G	3.3	3.6	2.9 ^M	G	G	G	G	G	S	B	2.4 ^M	2.7 ^M	E	E	E	E	
15	2.9 ^M	E	E	E	E	E	B	2.8	3.3	3.7	4.0	4.1	4.4	G	G	3.9 ^M	4.4 ^S	3.2 ^M	E	E	7.3 ^M	7.4 ^M	3.1 ^M	E	
16	2.3 ^M	3.7 ^M	E	E	E	E	B	G	3.5	G	G	G	G	4.0	4.0	4.0 ^S	4.4 ^S	4.4	5.5 ^M	3.9 ^M	3.4 ^M	3.6 ^M	4.2 ^M	2.5 ^M	
17	3.0 ^M	1.7	2.7 ^M	E	E	E	B	3.0 ^M	G	3.7	4.0	4.0	4.0	4.2	3.9	3.7	3.3	4.5	E	E	E	2.5 ^M	5.0 ^M	4.3 ^M	
18	E	E	E	E	E	E	B	3.3	4.9 ^M	G	3.9 ^M	S	3.9 ^M	4.4 ^S	3.5 ^M	3.1	4.0 ^M	3.8 ^M	3.9 ^M	3.6 ^M	E	E	E	3.7 ^M	
19	3.5 ^M	3.8 ^M	3.0 ^M	3.7 ^M	3.9 ^M	3.2 ^M	B	G	3.9	3.9	4.9 ^S	6.7	4.3	4.0	4.3 ^M	5.9 ^S	4.1 ^M	4.9	3.8 ^M	4.0	3.8 ^M	E	E	E	
20	3.1 ^M	2.4 ^M	C	C	C	C	C	C	3.3	S	3.8	3.8	4.1 ^M	G	G	G	G	B	E	E	2.6 ^M	E	E	2.3 ^M	
21	2.9 ^M	E	E	E	E	E	B	G	G	3.7	4.0 ^S	4.5 ^S	3.5 ^M	S	S	G	S	B	5.3 ^M	6.0 ^M	4.4 ^M	3.0 ^M	2.7 ^M	3.5 ^M	
22	3.1 ^M	E	E	E	E	E	B	G	S	G	G	S	G	G	G	G	S	B	3.9 ^M	3.0 ^M	2.9 ^S	3.9 ^M	2.7 ^M	E	
23	E	E	E	E	E	E	B	2.7	3.8	3.8	6.4 ^M	4.0	4.2 ^M	G	G	4.0	3.0	4.3 ^M	4.0	3.0 ^M	2.7 ^M	3.0 ^M	E	3.2 ^M	
24	2.8 ^M	E	E	E	E	E	B	3.4 ^M	3.3	3.9	G	G	2.3 ^M	G	G	G	2.7	3.9 ^M	3.3 ^M	2.7 ^M	E	E	E	E	
25	E	3.3 ^M	2.9 ^M	E	E	E	B	G	3.4	3.8	4.2 ^S	3.9	3.6	3.8	G	3.7 ^M	G	B	E	E	E	E	E	E	
26	E	E	E	E	E	E	B	2.8	3.3	3.5	G	G	G	G	4.3	4.5 ^M	6.1 ^M	5.9 ^M	4.3 ^M	6.7 ^M	8.8 ^M	E	E	6.9 ^M	3.6 ^M
27	2.8 ^M	2.8 ^M	2.0 ^M	3.0 ^M	E	E	E	2.7	3.9 ^S	4.3 ^S	6.7 ^M	6.4 ^M	4.0 ^M	4.6 ^M	G	2.3 ^M	3.4	4.3 ^M	6.0 ^M	E	6.8 ^M	9.9	8.0	2.6 ^M	
28	3.8 ^M	E	E	E	E	E	B	2.8	3.6	4.0	4.0	9.1 ^S	4.6 ^S	S	G	G	S	B	2.1	1.9	3.8	9.9 ^M	4.0	4.4 ^M	
29	3.7 ^M	5.6 ^M	3.4 ^M	2.1 ^M	E	E	B	G	G	3.9	4.0	6.9	11.9 ^M	6.0 ^S	3.6	3.5	S	4.3 ^M	3.3 ^M	3.7 ^M	3.7 ^M	2.9 ^M	E	E	
30	2.7 ^M	E	E	E	4.0 ^M	E	B	G	G	3.4	3.8	4.1	3.7 ^S	3.9	3.9	4.0 ^S	S	B	E	E	E	2.4 ^M	3.3 ^M	E	
31	E	E	E	E	3.8 ^M	2.1 ^M	2.5	G	G	3.4	3.5	3.7 ^S	3.7	G	3.5	3.3	3.8 ^M	B	E	E	E	E	3.1 ^M	2.6 ^M	2.9
No.	2.9	3.1	3.0	3.0	3.0	3.0	9	2.6	3.0	2.7	3.0	2.7	3.1	2.8	2.8	3.0	2.3	2.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Median	2.3 ^M	E	E	E	E	E	2.0	G	3.3	3.7	3.9	4.0	3.7	G	3.5	3.2	3.1	3.8 ^M	3.3 ^M	2.7 ^M	2.7 ^M	2.5 ^M	2.5 ^M	2.2	
U.O	3.0	2.5	2.4	2.1	E	E	2.6	3.0	3.7	3.9	4.1	4.5	4.4	4.0	3.9	3.7	3.8	4.4	4.0	4.0	4.4	4.0	4.1	3.2	
L.Q	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E
Q.R																									

Sweep 1.0 Mc to 26.1 Mc in $\frac{1}{2}$ sec in automatic operation.

The Radio Research Laboratories, Japan.

foEs

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+ 9h.)

fbEs

Oct. 1959

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	2.0	1.9	2.0						3.9				3.6			7.5	3.0	3.6	1.9				
2	E	2.1	E	E	E			p2.9 ^s	3.8	S	S	S	S	S	S			S	6.1 ^s	A		S			
3		p2.4 ^B			E	2.1	S	3.6	3.6	S	4.6	5.8 ^s	S	5.0	6.9	4.8	p3.0 ^B	7.7	7.5	3.5	6.5	A	5.0	4.1 ^s	
4	3.6	2.8	2.1		7.8		p2.5 ^s	4.6 ^s	4.1		4.2	4.0	4.5	3.8	p3.5 ^s	2.7	3.3	7.4	2.0	2.0	5.0 ^s	4.0 ^s	1.9	7.2	
5	S						S	2.9	3.3		S	S	S	p3.3 ^B	4.1 ^s	4.7	4.1	4.7	2.3	4.9 ^s	5.0 ^s	4.0 ^s	4.1		
6	S					2.0	S	S	S	S	S	S	3.4	S	3.8		3.0	7.0	7.2	3.9 ^A	2.6	2.3	3.7	E	
7		E	2.0	2.0			S	S	S	3.6	S	S						S							
8			E				B	S						3.8	4.5 ^s	3.5	3.0	5.3	1.9	7.7	2.9	2.6	3.1	2.7	
9														2.6	B		p2.5 ^B	2.2	2.9	2.2	2.2	2.8	2.6	2.1	
10	2.0							3.4	3.8	4.0	4.2 ^s	3.7	B	3.7	3.3	2.9	2.9	2.0	2.2						
11	C						B	2.3 ^A	2.5	S	2.5	S	4.5 ^s	3.8	3.8			B							
12							B	S		B	3.9	S	p3.5 ^s	S	S	3.7	2.9	2.1	2.5 ^s						
13							B			3.7	S	S	2.8	S	S	3.4	G	B							
14							2.0			3.6	2.7						S	B	7.7	2.1			1.8	E	
15	E						B	2.8	3.3	3.7	S	S	4.4 ^s			3.2	2.8	S			2.0	1.7	2.5		
16	2.1	2.0					B	2.9	3.4	3.7	S	S	4.0 ^B	4.2 ^s	p3.8 ^s	3.4	3.0	3.0	3.7	3.1	3.0	2.8	2.8	E	
17	2.2	1.7	1.9		2.0		B	2.9	3.7	3.7	S	p3.9 ^s	3.9 ^s	3.9 ^s	3.5	3.1 ^B	3.2	2.2	2.9	E		2.0	1.9		
18	3.5	3.0	2.5	2.9	3.4	2.4	B	3.3	4.5	3.4	p4.9 ^s	4.7	4.2	S	4.1	4.2	3.6	4.5	3.1	3.1	3.5	2.4	4.1	3.3	
19	2.3	2.4	C	C	C	C	C	C	3.3	S	S	S	S					B							2.6
20	2.2						B			p3.7 ^s	S	4.3 ^s	S	S	S		S	B	3.5	3.6	2.3	E	1.7	2.6	
21	1.6						G		S		S	S					S	B	2.4	E	2.0	7.2	E		
22							G	2.8	G	p3.8 ^s	5.5	S	S			3.5	S	3.2	4.0	2.0	7.3	2.2			
23							B	G	3.3	3.6				p2.3 ^B			2.1	7.9	7.9	E					
24	E						B	3.4	3.8	4.2	3.9	p3.6 ^s	3.7			3.0		B							
25		2.6	2.2				B	G	3.3	3.5				4.3	3.7	5.1	5.7	4.2	4.1	E			A	2.8	
26							B	G	3.3	3.5	5.2	5.6	4.0 ^s				p2.3 ^B	3.1	2.5	5.4	4.1	A	4.5	E	
27	E	E	E	1.8			2.0	3.0	3.4	p4.3 ^s	3.6	6.1 ^s	4.6 ^s	S			S	B	2.1	1.8	2.9	A	2.8	3.0	
28	1.9						B	2.8	3.4	3.3	3.6	4.0 ^s	5.1	5.0 ^s	5.1	3.5	3.5	3.1 ^s	2.6	2.9	2.1	E	2.2		
29	2.6	3.0 ^A	2.2	E			B			3.6	4.0 ^s	6.4	5.0 ^s	3.7	3.7	3.8	3.3	S	B						
30	2.1				2.6		B			3.4	3.7	4.1	3.7	3.7	3.5	3.2	2.9	B							
31										p3.4 ^B	p3.5 ^s	3.7	3.7												
No.	16	12	12	10	9	5	5	11	17	16	13	12	12	10	15	16	16	18	19	19	17	18	17	18	16
Median	2.0	2.2	2.0	1.8	2.0	2.1	2.0	2.9	3.4	3.6	4.0	4.2	4.3	3.8	3.8	3.4	3.0	2.8	2.6	2.9	2.4	2.4	2.7	2.2	

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

fbEs

The Radio Research Laboratories, Japan.

K 5

IONOSPHERIC DATA

Lat. 36° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

195° E Mean Time (GMT.+9h.)

f - min

Oct. 1959

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	1.90	1.80	1.70	1.60	1.50	2.00	2.50	2.70	2.70	2.70	2.70	2.60	2.60	2.70	2.70	2.35	2.00	1.50	1.50	1.80	1.70	1.40	1.70	
2	1.60	1.70	1.60	1.40	1.50	1.90	2.70	2.15	2.30	2.40	2.90	2.50	2.60	2.80	2.10	2.60	2.35	1.90	1.60	1.70	1.80	2.00	2.50	1.90	
3	1.80	2.00	1.80	1.50	1.80	2.60	2.00	2.00	2.10	2.65	2.55	2.60	2.60	2.50	2.50	2.30	1.95	2.00	1.70	1.80	1.70	1.60	1.80	1.90	
4	1.50	1.50	1.10	2.10	1.80	2.10	1.90	2.40	2.50	2.40	3.20	2.50	2.50	2.05	2.70	1.90	1.80	1.60	1.70	1.50	1.80	2.00	1.50	1.50	
5	1.10	1.90	1.40	2.20	1.40	2.50	2.00	2.40	2.00	2.50	3.10	2.70	2.70	2.30	2.55	2.00	2.00	1.60	1.80	1.90	1.80	1.80	1.90	1.90	
6	2.80	1.90	1.90	1.70	1.30	2.60	2.00	2.00	2.15	2.70	2.15	2.30	2.70	2.70	2.40	2.60	1.70	1.90	2.00	1.80	2.10	1.60	1.50	1.90	
7	2.20	1.60	E	1.10	1.20	2.30	2.30	2.00	2.10	2.00	2.40	2.40	2.60	2.70	1.90	1.90	1.80	3.10	2.70	1.60	1.50	1.80	1.80	1.70	
8	1.70	1.50	1.50	1.75	1.30	2.70	2.40	1.80	2.10	2.70	2.90	2.40	2.40	2.30	2.30	2.30	1.90	1.60	1.60	1.70	1.60	1.60	1.30	1.95	
9	1.80	1.65	1.60	1.90	1.60	1.70	1.25	2.30	2.30	2.20	2.50	2.40	2.40	2.10	2.00	3.75	2.90	1.80	1.60	1.50	1.70	1.80	1.90	1.60	
10	1.00	1.70	1.70	1.40	1.50	1.90	2.10	2.70	2.20	2.25	2.20	1.90	1.90	4.10	2.10	2.40	1.40	1.10	1.90	1.80	2.00	1.60	1.90	1.90	
11	1.85	1.20	1.40	1.70	1.30	1.90	2.00	1.80	1.90	1.90	2.45	2.60	2.20	2.70	2.70	2.30	1.90	2.10	1.80	1.90	1.80	1.80	2.00	1.80	
12	1.80	1.90	1.90	1.20	1.40	E	2.30	2.80	2.25	2.20	2.40	2.50	2.20	2.80	2.20	1.80	1.80	1.90	2.70	1.90	1.80	1.80	1.40	1.90	
13	1.80	1.10	1.90	1.10	1.70	1.80	2.00	1.80	2.00	2.70	2.15	2.00	2.00	2.00	2.00	1.90	1.80	2.00	1.90	1.60	1.70	1.40	1.50	1.50	
14	1.70	1.80	1.40	1.20	1.30	1.60	1.20	1.90	2.00	1.90	2.70	2.80	2.80	2.20	2.40	2.10	1.80	2.10	1.40	2.00	1.80	2.00	1.60	1.90	
15	1.80	1.60	1.50	1.10	1.00	1.80	2.00	1.40	1.90	2.50	2.30	2.60	2.60	2.50	2.00	1.90	1.70	1.70	1.80	1.70	1.70	1.70	2.0	1.50	
16	1.60	1.75	1.20	1.70	1.20	2.00	2.20	2.00	2.10	2.30	2.25	2.35	2.20	2.00	2.30	1.90	1.90	1.70	1.80	1.60	1.50	1.40	1.70	1.80	
17	1.80	1.10	1.20	1.20	1.60	1.60	1.90	2.00	2.20	2.20	2.30	2.50	2.40	1.80	2.20	1.90	1.90	1.90	1.60	2.00	1.50	1.90	1.10	1.70	
18	2.00	2.00	1.80	1.70	1.70	1.70	2.10	2.20	2.70	2.30	2.20	2.10	1.90	1.90	1.50	2.20	1.90	1.40	1.80	1.80	2.10	2.0	1.10	1.10	
19	1.70	1.50	1.20	1.10	1.20	1.00	2.00	1.80	2.10	2.00	2.20	2.00	2.40	2.10	2.10	1.60	1.80	1.80	1.40	1.00	1.10	2.00	2.00	1.20	
20	1.60	1.50	C	C	C	C	C	2.30	2.20	2.30	2.40	2.00	2.00	2.15	2.00	2.00	2.00	2.00	1.40	1.00	1.50	1.50	1.90	2.00	
21	1.80	2.00	1.70	1.30	1.70	1.60	2.30	1.90	2.20	2.20	2.00	1.90	2.10	2.10	2.30	2.10	2.40	1.90	1.80	1.70	1.80	1.80	1.30	1.60	
22	1.30	1.30	1.40	1.40	1.70	1.50	2.20	1.90	2.00	2.15	2.30	2.00	2.00	2.25	1.90	2.20	2.20	1.90	2.00	1.60	1.70	1.40	1.60	1.30	
23	1.70	2.00	1.15	1.40	1.70	2.00	1.80	1.90	1.70	2.10	2.50	2.60	2.70	2.10	2.20	2.70	1.90	1.60	1.15	1.40	1.70	1.90	2.00	2.00	
24	2.10	2.00	2.20	2.10	1.60	2.00	2.20	2.10	1.80	1.70	2.20	2.20	2.10	1.70	2.10	2.15	1.70	1.55	1.50	1.70	2.00	1.80	1.90	1.90	
25	1.50	1.20	1.20	1.70	1.20	1.80	2.00	1.70	1.70	2.10	2.90	2.10	1.90	2.10	2.70	1.70	1.50	2.10	1.90	1.80	1.80	1.40	1.40	1.50	
26	2.10	1.60	1.40	1.65	1.50	1.80	1.90	1.60	1.00	2.10	1.90	2.10	1.40	1.80	1.80	1.80	E	1.30	1.00	1.90	1.60	1.40	1.20	1.40	
27	1.50	1.90	1.90	1.50	1.50	1.50	1.80	1.85	1.85	1.30	1.80	1.50	2.20	2.25	2.20	1.85	1.80	1.30	1.80	1.80	1.60	1.20	1.70	1.40	
28	1.30	2.00	1.90	1.50	1.90	2.00	1.90	1.40	1.30	2.00	1.50	2.00	1.70	4.70	2.30	2.20	2.50	2.30	1.50	1.20	1.70	1.80	1.40	E	
29	1.50	1.10	1.20	1.40	1.10	1.50	1.85	1.40	1.50	2.00	1.25	2.40	1.30	1.60	2.15	1.70	1.70	1.90	2.20	2.20	2.20	3.0	2.20	1.80	
30	1.30	1.20	1.20	1.40	1.70	1.20	1.90	2.00	2.00	2.10	2.70	2.30	2.30	2.00	1.70	2.00	1.90	2.20	2.10	2.10	1.30	4.0	2.0	1.90	
31	1.90	2.00	1.20	1.25	1.50	1.70	1.90	2.00	1.80	1.40	2.00	1.50	2.15	2.40	2.20	2.00	1.80	2.00	1.60	2.00	1.75	1.50	1.10	1.90	
No.	29	30	30	30	30	26	26	31	31	31	31	31	30	28	29	31	27	30	30	31	31	31	31	31	30
Median	1.70	1.70	1.45	1.40	1.45	1.70	1.90	2.00	2.00	2.10	2.20	2.30	2.20	2.20	2.10	2.15	1.80	1.90	1.75	1.70	1.70	1.60	1.60	1.60	1.80

f - min

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

The Radio Research Laboratories, Japan.

K 6

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+ 9h.)

(M3000)F1

Oct. 1959

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															A									
5																								
6																								
7									S															
8									S															
9									S															
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28																								
29																								
30																								
31																								
No.																								
Median																								

Sweep L Mc to Z Mc in Z min sec in automatic operation.

The Radio Research Laboratories, Japan.

K 8

(M3000)F1

IONOSPHERIC DATA

Lat. $35^{\circ}42.4'N$
 Long. $139^{\circ}29.8'E$

Kokubunji Tokyo

135° E Mean Time (G.M.T.+9h.)

Oct. 1959

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									350	360	370	380	305											
8														300				250						
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28																								
29																								
30																								
31																								
No.																								
Median																								

Sweep 1.0 Mc to 2.0 Mc in 2.0 $\frac{\text{min}}$ sec in automatic operation.

R'F2

The Radio Research Laboratories, Japan.

K 9

IONOSPHERIC DATA

Lat. 36° 42.4' N
Long. 139° 28.3' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

R'F

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	330	350	320	305	260	250	250	740	730	745 ^A	740	720	740	740	750	755	750	755	740	745	300	780	755
2	300	305	305	300	295	310	255	250	730	250 ^S	250	255	265 ^S	250 ^S	260 ^S	240	255	250	255	255 ^A	275 ^A	345	300	310
3	315	280	250	265	305	350	250	250	745	250 ^S	265 ^A	270 ^S	270 ^S	255	A	255	250	250	240	250	320 ^A	4	400 ^S	405 ^A
4	405 ^A	370 ^A	355	355	350	355	225	225	730	225	250	225	250	245	245	245	250	245	225	275	780	795	760	
5	300	330	300	280	255	305	255	240	750	220	225 ^S	255 ^S	260 ^S	255 ^S	250 ^S	225	250	230	220	400 ^A	400 ^S	325 ^A	305 ^A	775
6	300 ^S	300	300	245	375	395	255 ^S	255 ^S	750 ^S	255 ^S	225	255 ^S	270	250 ^S	250	250	250	250	270	215 ^A	715 ^A	310	350 ^A	300
7	250	330	295	255	215	320	255 ^S	265	S	230	250 ^S	245 ^S	230 ^S	265 ^S	250	250	250	250	220	720	755	760	300	785
8	310	300	255	265	255	305	240	255 ^S	745	710	755 ^S	755 ^S	770	760 ^S	750	750	750	740 ^A	725	740	755	790	300	770
9	270	260	300	280	250	250	240	240	740	725	250	225	255	255 ^S	240	245	745	750	735	740 ^A	725	265	300	300
10	300	275	280	275	250	270	250	245	740	230	220	220	210	255	250	240	250	250	235	230	250	760	775	280
11	270 ^A	250	290	300	275	300	245	240	750	250 ^S	230	250 ^S	250 ^S	225	230	250	250	250	225	730	730	240	290	300
12	300	290	300	255	240	255	240	225	740	250	255	225	255 ^S	245 ^S	250	235	750	250	250	720	740	255	255	305
13	315	275	300	260	250	250	235	230	730	230	730	755 ^S	255 ^S	255	250	250	250	230	720	735	265	255	255 ^S	
14	295	290	270	260	275	290	250	240	740	730	250 ^S	255 ^S	255 ^S	240	245	250	250	240	235	735	795	290	295	775
15	265	280	275	260	260	300	245	230	730	240	255 ^S	255 ^S	260 ^S	255 ^S	270 ^S	245	250	240	210	745	770	250	260	300
16	300	300	295	275	205	300	255	240	745	250	250	250	255 ^S	270 ^S	240	250	250	240	230	760	300 ^A	760	265	255
17	265	250	265	275	250	260	250	235	740	245	740	765 ^S	260 ^S	250 ^S	255 ^S	250	250	250	220	770	255	270	265	280
18	265	300	300	290	300	300	240	250	750	250	240 ^S	225	220 ^S	250 ^S	250	250	225	220	250	260	275	305	305 ^A	770 ^A
19	290 ^A	350 ^A	320	375 ^A	370 ^A	300	250	250	725	225	240 ^S	255 ^A	235 ^A	250 ^S	260	255	250	245	250	255	270	770	280	250
20	290	300	C	C	C	C	C	C	735	250 ^S	250 ^S	255 ^S	255 ^S	245	270 ^S	250	250	245	220	255	260	230	265	305
21	315	300	300	265	245	290	250	230	730	250 ^S	250 ^S	225	215 ^S	255 ^S	240 ^S	250	255	250	260	750	240	245	245	765
22	270	270	300	295	265	300	250	230	730	230	230	240 ^S	255 ^S	260 ^S	250	245	255	250	250	250	250	265	290	265
23	290	300	260	300	350	345	270	250	250	250 ^S	250 ^S	250 ^S	250 ^S	250 ^S	250	260	250	230	755	785	255	250	260	255
24	255	250	300	300	275	310	260	230	715	220	225	250 ^S	240	250	250	250	250	245	230	260	265	245	235	300
25	315	275 ^A	325	265	250	350	255	245	740	240	235	225	270 ^S	235	250	250	250	225	740	270	250	260	265	280
26	265	250	250	315	305	345	255	245	725	255 ^S	260 ^S	230 ^S	250 ^S	250	250	250	250	255	260	255 ^A	225	265	310 ^A	305
27	255	300	400	400	300	265	250	250	750	245 ^A	250 ^A	250 ^A	250 ^A	245 ^A	250	250	240	230	755 ^A	250	255	270 ^A	355 ^A	205 ^A
28	265	300	330	290	250	285	235	235	740	225 ^S	245 ^S	250 ^S	255 ^S	255 ^S	250	240	240	270	740	250	285 ^A	290 ^A	305 ^A	
29	300 ^A	305 ^A	320	300	265	255	230	230	725	230	250	250 ^A	255 ^A	250	245 ^S	250	240 ^S	730	720	250	250	275	265	285
30	265	270	290	350 ^A	270	245	255	230	740	240	250 ^S	220 ^S	215	240	250	245	240	750	750	775	275	250	250	270
31	300	330	355	350 ^S	355	375	280	225	745	740	745 ^S	220 ^S	240 ^S	245	250	250	255	240	215	250	270	300	315	355
No.	29	30	30	29	30	30	30	30	30	29	23	18	16	25	27	31	31	31	30	29	28	29	29	30
Median	290	300	300	280	270	300	250	240	240	240	240	230	230	250	250	250	250	245	230	250	255	265	280	280

Sweep 1.0 Mc to 2.0 Mc in 0.1 sec

R'F

The Radio Research Laboratories, Japan.

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.3' E

Kokubunji Tokyo

135° E Mean Time (GM.T.+ 9h.)

Oct. 1959

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

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

The Radio Research Laboratories, Japan.

f'Es

K 11

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 29.8' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

Types of Es

Oct. 1959

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

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

The Radio Research Laboratories, Japan.

K 12

Types of Es

IONOSPHERIC DATA

Lat. 35° 42.4' N
Long. 139° 28.8' E

Kokubunji Tokyo

135° E Mean Time (GMT.+9h.)

Oct. 1959 ypf2

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	12.5 ³⁰	14.5 ³⁰	13.0 ³⁰	13.0	11.5	11.5	12.0 ³⁰	9.0	10.0	11.0	9.5	9.5	10.0	9.5	7.0	10.0	10.0	8.0	7.5	9.5	1.50	1.10	9.5	11.5 ³⁰	
2	15.0	10.5	10.0 ³⁰	11.0 ³⁰	4.00	4.00	8.5	10.0	9.5	11.5	9.0	8.5	8.5	12.0	8.5	8.5	7.5	10.0	7.00	12.5	A	S	4.30	11.0	
3	11.5 ³⁰	10.5 ³⁰	9.5	9.5	11.5	10.5 ³⁰	10.0 ³⁰	5.5 ³⁰	7.0	8.5	10.5	9.5	10.5	9.0	10.0	10.0	10.0	1.0	1.0	9.5	4.20	4.30	4.10	9.0 ³⁰	
4	4.10	4.30	12.0	12.5	12.0	4.5	19.5	8.5	7.5	7.5	8.0	6.5	5.0	9.5	6.5	7.8 ³⁰	8.0	8.0	8.5	7.5	5.20	4.0	11.5	14.0	
5	10.5	16.5	16.5	7.5	12.0	4.30	8.5	9.0	4.50	4.00	8.0	8.5	13.0	6.0	10.0	8.5	8.0	8.5	7.5	7.5	11.0	12.5	11.0	10.0	
6	14.0	12.5	4.30	11.5	4.10	4.5	11.0	8.5	4.80	4.30	9.0	12.0	9.5	7.0	9.0	11.5	10.0	9.0	4.00	4.10	1.50	1.30	14.0	11.0	
7	12.5 ³⁰	11.5	12.5 ³⁰	12.5 ³⁰	15.0	12.0 ³⁰	13.0	4.25	22.5	7.0	14.0	4.5	14.0	1.0	10.5	15.0	8.5	1.00	1.20	14.0	1.70	11.5	10.5	14.0	
8	11.5	8.0	4.15	10.0	15.0	10.0	10.5	6.0	6.0	10.0	7.0	6.5	9.5	8.5	7.0	6.5	8.5	9.0	9.5	11.0	11.0	12.0	4.00	7.0	
9	9.5	9.5	7.0	11.0	9.5	10.5	9.5	6.0	6.5	6.0	9.5	9.0	10.0	7.5	8.5	9.0	8.0	8.0	4.80	9.5	4.15	10.0	11.5	10.0	
10	10.5	12.5	12.0	11.0	11.0	10.5	10.0 ³⁰	6.0	7.0	9.5	8.0	8.0	8.0	8.0	9.0	7.0	7.5	8.5	7.0	10.5	1.30	1.00	10.5	10.0	
11	4.00	9.0	11.0	9.5	11.5	13.5	10.5 ³⁰	7.0	5.0	11.5	7.0	9.5	8.5	8.0	9.0	8.0	9.0	7.0	1.90	1.00	12.0	12.5	10.0	10.5	
12	10.5 ³⁰	12.0 ³⁰	11.0	10.0	12.5	10.0 ³⁰	8.5	8.0	8.0	8.5	9.5	10.0	6.5	9.0	10.0	8.5	7.0	7.8	1.95	1.00	1.00	11.0	13.0	11.0	
13	10.0	14.0 ³⁰	14.0	13.0	11.0	11.5	11.5	9.0	7.5	6.0	8.0	10.5	7.5	8.0	9.5	9.0	8.5	9.5	1.00	1.00	15.0	12.0	10.5	14.0	
14	9.5	11.5	9.5	13.5	12.5	10.5	6.0	4.75	5.8	8.0	12.0	8.0 ³⁰	7.5	10.0	8.5	8.5	1.05	9.0	10.0	16.5	13.0	12.0	11.0	14.0	
15	14.0	13.5	14.0	11.5	12.0	13.0	9.5	4.55	4.75	10.0	9.5	9.5	8.5	9.0	10.0	10.0	1.05	1.05	1.05	15.0	14.0	16.5	15.0	14.5	
16	11.0	11.5	11.5	12.0	13.0	9.0 ³⁰	9.5	9.5	7.0	10.0	8.5	10.0	9.0	9.0	8.5	11.0	1.5	8.0	4.20	4.30	7.80	1.70	1.00	11.0	
17	10.5	12.0	11.5	11.0	12.5	10.0	4.20	4.80	8.5	7.0	12.0	12.0	9.0	8.0	9.0	10.0	8.5	1.00	7.5	4.05	4.10	4.10	12.0	12.5	
18	9.0	12.0	10.0	11.5	14.0	13.0	8.5	7.0	8.5	8.5	7.0	10.0	1.05	1.00	1.90	10.5	11.5	8.0	1.00	4.8	1.10	1.00	12.0	4.10	
19	12.5	13.0	10.0	13.0	12.0	14.0	7.5	6.0	8.5	9.0	10.0	8.5	9.5	9.0	11.0	8.5	10.5	9.5	1.50	2.5	11.0	14.5	14.0	13.5	
20	13.5	14.0	C	C	C	C	C	C	6.5	7.0	10.0	10.0	9.5	9.0	4.05	12.0	12.0	1.0	1.35	1.00	4.90	1.80	12.0	18.5	
21	9.5	11.5	8.5	9.0	10.0 ³⁰	18.5	13.5	7.0	7.0	7.0	9.0	9.0	11.5	9.5	10.0	10.0	10.0	1.00	1.95	1.90	4.30	4.0	10.0	13.5	
22	10.5	13.5	10.5	10.5	11.0	10.0	8.5	9.0	7.0	8.5	10.0	9.0	11.0	8.0	9.5	9.5	13.5	10.0	7.5	7.0	4.25	1.55	13.5	12.0	
23	15.0	4.05	15.5	13.5	10.0	12.0	10.0	12.0	7.0	4.9	8.0	15.0	9.0	9.5	11.5	7.5	9.0	11.0	1.00	9.0	4.25	1.55	13.5	12.0	
24	16.0	11.5	10.5	10.0	14.0	10.5	12.0	11.0	4.5	10.0	9.5	7.5	12.5	9.5	9.0	9.0	9.0	9.5	1.00	9.5	4.25	1.55	13.5	12.0	
25	9.5	12.0	13.5	10.5	14.0	14.0	10.0	7.0	7.5	6.5	9.5	10.0	10.0	7.5	8.5	10.0	10.0	1.00	1.00	4.05	4.90	1.55	4.45	13.0	
26	10.0 ³⁰	12.0	11.0	11.5	9.5	9.5	4.05	5.0	10.0	7.0	7.5	9.0	7.5	9.0	9.0	10.5	10.0	9.0	1.00	1.00	11.0	10.0	11.5	4.0	
27	14.0	11.0	8.5	12.0 ³⁰	11.5	9.5	12.0	11.5	5	5	5	5	9.0	9.0	9.0	10.0	8.5	8.5	1.00	1.00	9.5	9.5	11.0	13.5	
28	12.5	11.5	10.5	9.0	12.0	10.5	4.60	7.5	6.0	9.5	5	5	5.90	6.0	19.0	10.5	4.10	6.5	10.5	7.5	11.0	11.5	12.0	10.0	
29	10.5	10.0	9.0	13.0	10.5	9.0	8.5	8.5	6.5	7.0	8.0	7.0	8.0	7.0	10.0	10.0	10.0	9.5	9.5	9.0	12.0	10.5	12.0	11.0	
30	11.0	12.0	11.0	9.5	10.0	12.0	10.5	9.0	5.0	5.0	5.5	12.0	10.5	9.5	10.0	9.0	11.0	13.0	4.5	4.5	10.5	8.5	8.5	10.0	
31	12.0	13.0 ³⁰	10.0	9.0	11.5	10.5	10.5	9.0	9.0	11.5	9.5	7.5	10.5	8.0	10.0	8.0	10.0	8.5	4.0	4.0	11.0	12.0	11.0	12.0	11.0
No.	31	31	30	30	30	30	30	30	30	30	29	29	31	31	31	31	31	31	31	31	30	30	30	31	31
Median	11.0	12.0	11.0	11.0	11.5	10.5	10.0	8.0	7.0	8.5	9.5	9.0	9.5	9.0	9.0	9.5	10.0	9.5	10.0	10.5	12.0	11.5	11.5	11.0	

Sweep 1.0 Mc to 2.0 Mc in 500 kc in automatic operation.

The Radio Research Laboratories, Japan.

ypf2

K 14

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 31.7' E

Yamagawa

foF1

Oct. 1959

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

Sweep 1.0 Mc to 2.03 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

foF1

Y 2

IONOSPHERIC DATA

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GM.T.+9h.)

foE

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							A	230	290	350	380 ^A	390	390	385 ^R	375 ^H	350	320	270	S						
2							S	230	300	340	350	R	R	A	380	350	330	250	S						
3							S	250 ^H	300	340	370	380	385 ^A	370	370 ^R	350	310	250	S						
4							S	240	290	330	350 ^A	375 ^A	380	A	A	330	300	240	S						
5							S	230	295 ^A	340	365 ^A	370	375 ^C	365 ^C	360 ^A	340	310	250	S						
6							S	230	A	A	A	A	380	380	360	340	300 ^A	A	A						
7							S	230	290	335	355 ^C	360	375 ^H	370 ^A	360	330	300 ^H	240 ^H	S						
8							S	220	300	320	360 ^H	375 ^A	380	375	360	340	300	200							
9							S	220	310	330	360	370	375	370 ^R	370	340	300	240	S						
10							S	235	300	335 ^C	350 ^H	360	A	A	A	345	305	220	A						
11							S	210	300	335 ^C	350	370	380	375	360	340	290 ^A	230	S						
12							S	215	290	330	355	360	350 ^R	365 ^R	355	340 ^A	295 ^A	240	S						
13							S	230	300	330	350	370	380	380	365	340	320	A	S						
14							S	220	300	330	350	360 ^A	360 ^A	370	365	A	A	A	S						
15							S	270	300	330	355	370	A	B	A	A	305	230	S						
16							S	215	290	335	370	380	375 ^R	370 ^R	370 ^R	350	300	240	S						
17							S	230	300	335	370	380	380	380	370	335	300	220	S						
18							S	220	300	C	C	C	C	C	360	335	A	A	S						
19							C	C	C	C	C	380 ^H	380	370 ^A	360	340	300	220 ^B	S						
20							S	210	280	325	350	380	380 ^R	380 ^R	360	340	300	195	S						
21							S	220	300	330	345	360	370	375 ^R	360	330	270	230	S						
22							S	220	280	320	345 ^A	370 ^R	370	380	370	350	300	220	S						
23							C	210 ^H	285	330	350	355	350 ^A	380 ^B	370	350	305	225 ^H	S						
24							S	220	290	335	355	365	360 ^A	360 ^A	350	335	290 ^A	230	S						
25							S	210	285 ^H	330	355	370	360	350 ^A	355 ^A	330	280	205	S						
26							C	C	280	320	330	370 ^A	370	360	350 ^A	335	300	210	S						
27							S	205	270	315	330	A	A	360 ^R	360	335	290	220	S						
28							S	190	260	A	A	A	380 ^R	380 ^R	360	330	300	210	S						
29							S	B	270	315	350	355	350 ^H	360	330	290	S	S							
30							S	210	270	315	350	360 ^H	365 ^R	380	360 ^R	325 ^R	270	A							
31							C	C	280	320	340	365	370 ^R	360	365	335	280 ^A	210	S						
No.								27	29	27	27	26	26	26	28	29	29	25							
Median								220	290	330	350	370	375	370	360	340	300	230							

Sweep 1.0 Mc to 20.3 Mc in 3.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

foE

Y 3

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT.+9h.)

foEs

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	E	E	E	E	3.2 ^M	2.3 ^G	3.0	G	4.4 ^M	G	G	G	G	G	G	3.3	4.6 ^M	5.8 ^M	5.5 ^M	4.4 ^M	3.9 ^M	3.2 ^M
2	3.0 ^M	3.6	3.8 ^M	3.7 ^M	E	E	2.9	2.6	3.9	4.4	6.0 ^M	G	G	5.6 ^M	G	G	G	G	S	S	6.8 ^M	3.1 ^M	3.4 ^M	
3	2.3 ^M	E	E	E	E	E	S	3.0	3.4	4.0	4.2	5.8 ^M	G	G	G	G	G	2.7	3.1 ^M	6.0 ^M	5.2 ^M	5.5 ^M	3.4 ^M	
4	3.9 ^M	2.9 ^M	2.8 ^M	E	E	E	S	2.8	4.0	5.7 ^M	6.0 ^M	5.9 ^M	5.2	6.0 ^M	6.9 ^M	3.6	G	G	2.1 ^M	4.8 ^M	5.6 ^M	S	3.9 ^M	4.4 ^M
5	S	E	E	E	E	E	S	2.4	3.8 ^M	G	3.8	G	C	C	4.5 ^M	G	3.7 ^M	3.1 ^M	4.1 ^M	4.1 ^M	2.2 ^M	S	3.0 ^M	3.5 ^M
6	6.0 ^M	3.0 ^M	2.1 ^M	2.1 ^M	E	E	S	2.9	5.2 ^M	5.8 ^M	12.1 ^M	5.0 ^M	G	G	G	G	3.1	3.5 ^M	4.5 ^M	2.8	S	S	C	S
7	S	S	E	E	E	E	S	2.8	3.5	3.7	C	G	G	6.1 ^M	G	G	3.1	3.1 ^M	2.5 ^M	S	S	S	S	S
8	2.4 ^M	2.3 ^M	E	E	E	E	S	2.6	G	4.5 ^M	G	5.0 ^M	G	G	G	G	3.3	3.1	4.5 ^M	2.8 ^M	2.3 ^M	2.8 ^M	S	S
9	S	S	2.9 ^M	2.5 ^M	E	E	S	2.5	3.3	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S
10	S	E	3.1 ^M	E	E	E	G	G	G	C	G	3.5 ^G	4.8 ^M	4.4 ^M	4.0	3.5 ^M	3.4 ^M	2.8 ^M	2.8 ^M	S	S	S	E	S
11	S	E	E	E	E	E	G	G	G	C	3.7	3.9	4.5	4.1	4.8	3.9	3.5	3.5	3.0 ^M	S	S	4.8 ^M	3.9 ^M	3.9 ^M
12	3.1 ^M	2.1 ^M	E	E	E	E	G	G	G	3.6	4.0	4.0	4.5	4.1	3.4 ^G	3.7	4.4 ^M	5.2 ^M	3.6 ^M	3.0 ^M	S	S	2.5 ^M	S
13	E	S	E	E	E	E	S	G	G	3.4	3.9	3.9	4.1	4.2	4.1	3.9	6.7 ^M	3.7 ^M	2.8 ^M	2.5 ^M	5.8 ^M	S	S	S
14	S	S	E	E	E	E	S	2.4	G	3.7	G	3.9	4.1	3.5 ^G	3.5 ^G	3.7	3.3	2.6	S	2.1 ^M	S	S	2.3 ^M	3.1 ^M
15	2.1 ^M	4.8 ^M	1.2	2.9 ^M	E	S	G	2.9	3.4	4.2	4.1	4.1	3.9	3.6 ^G	3.8	3.8	4.1	3.5	G	2.2 ^M	2.9 ^M	2.7 ^M	3.0 ^M	2.8 ^M
16	S	E	E	E	E	E	G	2.4	3.4	3.4	G	G	G	G	G	G	G	3.6	S	2.3 ^M	3.0 ^M	2.9 ^M	2.7 ^M	S
17	S	S	E	E	E	E	S	3.0	3.6 ^M	4.1	4.9	4.1	G	G	G	G	G	3.6	S	2.1 ^M	2.1 ^M	S	S	S
18	4.4 ^M	3.0 ^M	2.5 ^M	E	E	E	S	2.8 ^M	5.8 ^M	C	C	C	C	C	G	G	3.1	4.3 ^M	3.3 ^M	3.3 ^M	3.8 ^M	S	2.8 ^M	2.1 ^M
19	2.2 ^M	E	E	E	E	E	C	C	C	C	C	4.4 ^M	4.4 ^M	5.2 ^M	5.0 ^M	5.8 ^M	5.7 ^M	5.0 ^M	5.6 ^M	2.2 ^M	S	2.7 ^M	S	S
20	S	E	E	E	E	E	S	2.6	G	3.6	3.8 ^M	G	G	G	G	G	3.6	2.7	3.6 ^M	2.8 ^M	2.2 ^M	S	3.0 ^M	3.3 ^M
21	S	S	E	E	E	E	S	2.7	3.4	3.7	4.2	4.5	G	G	G	3.6	3.1	G	S	2.7 ^M	3.3 ^M	3.3 ^M	2.1 ^M	S
22	S	S	E	E	E	E	S	G	3.1	5.8 ^M	4.8 ^M	G	G	G	G	3.6	3.7	3.7	3.7	S	2.0	S	2.1 ^M	4.3 ^M
23	4.6 ^M	2.8 ^M	2.4 ^M	3.6 ^M	2.9 ^M	S	C	2.4	3.6	4.1	4.6	6.0 ^M	4.1	3.7 ^G	4.1	G	3.4	5.8 ^M	9.0 ^M	S	3.6 ^M	5.3 ^M	5.4 ^M	3.0 ^M
24	3.7 ^M	3.0 ^M	2.7 ^M	2.8 ^M	2.7 ^M	2.5 ^M	S	G	3.6	4.3	4.8	4.5	4.1	3.9	3.2 ^G	3.6	4.9 ^M	5.0 ^M	5.8 ^M	2.9 ^M	2.3 ^M	2.1 ^M	S	S
25	S	S	E	E	E	E	S	2.5	3.1	4.0	4.4	5.0	6.0 ^M	4.5	4.1	G	2.7 ^M	2.9 ^M	G	2.8 ^M	3.0 ^M	2.4 ^M	2.7 ^M	2.8 ^M
26	S	S	E	E	E	E	C	C	C	3.9	3.9	3.8	3.5 ^G	G	3.8 ^M	2.7 ^G	3.3	G	S	2.2	S	S	2.3 ^M	2.7 ^M
27	2.3 ^M	2.3 ^M	4.0 ^M	3.4 ^M	E	E	S	2.3	3.9	6.2 ^M	6.9 ^M	6.5 ^M	5.8 ^M	3.5 ^G	4.3	3.5	3.3	3.1 ^M	3.1 ^M	2.8 ^M	3.1 ^M	3.2 ^M	4.0 ^M	3.6 ^M
28	4.3 ^M	2.9 ^M	2.9 ^M	2.9 ^M	2.7 ^M	2.3 ^M	S	2.3	3.1	3.5 ^M	4.3 ^M	3.9 ^M	4.1 ^M	G	G	3.7	2.9 ^G	2.6	S	S	S	5.9 ^M	5.2 ^M	3.0 ^M
29	3.2	3.6 ^M	E	2.7 ^M	2.5 ^M	S	S	G	3.1	3.4	3.8	4.2	3.8	3.9	G	G	G	2.3	2.5 ^M	S	S	2.7 ^M	3.2 ^M	3.0 ^M
30	3.6 ^M	2.8 ^M	2.8 ^M	2.8 ^M	3.1 ^M	5.1 ^M	S	G	G	6.0 ^M	3.8	3.9	3.1 ^G	G	4.0	3.5	3.1 ^M	2.9 ^M	2.4 ^M	2.4 ^M	3.6 ^M	3.0 ^M	3.0 ^M	S
31	2.9 ^M	C	C	C	C	C	C	G	G	3.6	3.8	3.9	3.9	3.9	G	4.2	3.1	G	2.8 ^M	3.6 ^M	3.0 ^M	3.0 ^M	3.0 ^M	3.2 ^M
No.	17	20	29	28	28	24	10	28	30	27	28	30	29	29	31	31	31	31	25	21	16	21	16	19
Median	3.1 ^M	2.6 ^M	E	E	E	E	G	2.4	3.2	3.9	4.0	3.9	G	G	G	3.6	3.1	2.9	3.0 ^M	2.8 ^M	2.9 ^M	3.0 ^M	3.0 ^M	3.2 ^M
L.Q	4.1	3.0	2.8	2.8	2.6	2.2	2.5	2.8	3.6	4.4	4.7	4.5	4.2	4.2	4.1	3.8	3.5	3.6	4.1	3.4	3.7	4.6	3.9	3.6
L.Q	2.3	E	E	E	E	E	G	G	G	3.5	3.8	G	G	G	G	G	G	G	G	2.5	2.2	2.6	2.7	2.8
Q.R	1.8						0.9	0.9	0.9		0.9									0.9	1.5	2.0	1.2	0.8

Sweep 1.0 Mc to 20.3 Mc in 3.0 sec in automatic operation.

The Radio Research Laboratories, Japan.

foEs

Y 4

IONOSPHERIC DATA

Lat. 81° 12.6' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (G.M.T. + 9h.)

fbEs

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S			S	1.7	1.9	2.1	Gr		Gr			4.5		4.0		Gr	3.9	5.0	3.3	2.0	2.5	1.8
2	1.8	2.5	2.3	1.8		1.5	Gr	Gr	3.8	4.3	4.8							Gr	S	2.0	3.3	2.0	2.2	2.2
3	E						S	Gr	3.4	3.8	4.1	4.8	4.6					Gr	2.4	4.8	3.8	3.2	2.0	2.0
4	3.9 ^s	E	1.7		1.5	1.4	S	Gr	4.0	4.8	4.5	4.2	5.0	4.2	4.2	3.5	2.6	2.3	4.2	5.0	S	S	2.5	2.5
5	S				E		S	S	Gr	Gr	Gr		C	C	Gr		Gr	2.8	3.3	S	S	1.9	2.5	2.5
6	2.3	2.2	1.6	1.5	1.7		S	Gr	4.4	4.0	5.5	4.1					Gr	4.0	2.5	S	S	C	S	S
7	S	S				S	S	Gr	3.5	3.7	C			Gr			Gr	2.0	1.8	S	S	S	S	S
8	1.8	S		1.9	1.6	S	S	Gr	2.4		4.1						Gr	3.0	3.7	1.8	E	E	S	S
9	S	S	2.0	1.7	1.9		S	Gr									Gr	S	S	S	S	S	S	S
10	S		2.3				S		Gr	C		3.4	Gr	4.0	Gr	2.9	2.5	1.9	Gr	S	S	S	S	S
11	S									C	Gr	Gr	4.2	4.0	3.8	3.8	3.4	Gr	Gr	S	E	3.7	3.4	2.2
12	2.3	1.7								Gr	3.9	Gr	Gr	3.4	3.4	Gr	3.5	3.2	3.5	E	E	1.9	S	S
13	S	S					S	Gr	Gr	Gr	3.8	Gr	Gr	4.2	Gr	Gr	5.5	Gr	1.8	S	4.7	S	S	S
14	S	S					S	Gr		Gr	Gr	Gr	Gr	3.5	3.5	Gr	Gr	Gr	S	E	S	S	E	2.1
15	1.7	2.7	1.2 ^B	2.1		S		Gr	Gr	4.0	4.0	4.0	Gr	Gr	Gr	Gr	Gr	2.6	E	E	E	E	2.0	1.8
16	S							Gr	Gr										E	E	2.0	2.2	1.9	S
17	S	S					S	Gr	Gr	Gr	4.0	4.1			4.3	3.9		3.3	S	S	S	S	S	S
18	4.3	2.4	1.9				S	Gr	Gr	C	C	C	C	C			Gr	Gr	2.0	1.9	2.8	S	1.9	E
19	E					C	C	C	C	C	C	Gr	3.4	4.0	3.1	3.1	3.9	4.7	4.4	5.0	2.1	S	E	S
20	S						S	Gr	Gr	Gr	3.8						Gr	Gr	3.4	1.9	E	S	2.0	2.1
21	S	S					S	Gr	Gr	Gr	4.0	4.5			Gr	Gr	Gr	Gr	S	S	E	2.1	2.4	E
22	S	S					S	Gr	Gr	Gr	4.0	4.2			4.2	Gr	Gr	3.7	2.8	S	1.9	S	S	3.1
23	2.8	1.9	1.8	1.8	1.8	S	C	Gr	3.4	3.9	4.4	4.6	Gr	Gr	4.1	Gr	Gr	2.7	8.4	S	2.3	4.6	4.3	2.4
24	2.8	2.4	1.8	1.8	S	1.8	S	Gr	Gr	4.2	4.6	4.4	4.1	Gr	3.2	Gr	4.1	3.4	4.6	S	E	E	S	S
25	S	S				S	S	Gr	Gr	3.9	4.1	4.8	5.2	4.3	4.1 ^B		2.4	Gr	1.8	2.2	E	E	1.7	2.1
26	S	S	C	C	C	C	C	C	Gr	3.8	Gr	Gr	3.3	3.8	3.8	2.3	3.2	S	2.4	2.2	2.2	S	E	2.1
27	E	E	3.3	2.4	1.8	1.4	1.9	Gr	3.7 ^A	5.4	4.2	6.0	5.3	3.0	4.2	Gr	2.5	2.0	2.3	1.9	2.2	2.4	2.3	2.1
28	4.2	E	1.9	2.5	1.9	1.8	1.8	Gr	3.1	Gr	Gr	Gr	3.5	Gr		Gr	2.2	Gr	S	S	S	S	4.5	2.8
29	2.9	2.6		1.9	1.9	1.9	S	Gr	Gr	Gr	4.1	Gr	Gr	Gr			Gr	Gr	Gr	S	S	1.9	2.5	2.1
30	2.3	2.0	1.8	1.9	2.1	2.6	2.2	Gr	Gr	Gr	Gr	Gr	3.1	Gr		3.9	3.4	Gr	Gr	S	S	S	S	S
31	2.1	C	C	C	C	C	C	C	3.6	3.8	Gr	Gr	Gr	Gr		Gr	Gr	Gr	2.0	S	S	2.0	2.1	2.5
No.	16	12	11	11	10	8	5	20	20	23	23	22	16	16	17	19	21	22	19	18	18	15	20	19
Median	2.3	2.1	1.9	1.9	1.8	1.8	1.9	Gr	Gr	3.7	4.0	4.0	3.4	3.4	3.5	Gr	2.4	2.0	2.3	1.9	2.2	2.0	2.2	2.1

The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.3 Mc in 30. sec ^{min} in automatic operation.

fbEs

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 37.7' E

Yamagawa

135° E Mean Time (GMT.+9h.)

f-min

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.80 ^s	5.75 ^s	1.70	1.00	E	1.10	5.60 ^s	1.70	1.80	2.05	1.90	2.30	2.35	1.90	1.90	1.90	1.70	1.70	1.80	5.80 ^s	5.70 ^s	5.80 ^s	5.80 ^s	5.60 ^s
2	5.60 ^s	5.60 ^s	5.70 ^s	1.40	1.30	1.20	1.40	1.70	1.70	1.85	1.90	1.90	2.00	2.00	2.00	1.80	1.50	1.60	1.80	5.80 ^s	5.70 ^s	5.60 ^s	5.80 ^s	5.60 ^s
3	5.60 ^s	1.70	1.80	E	1.05	E	1.10	5.60 ^s	1.80	1.70	1.70	1.90	2.00	2.00	1.70	1.80	1.70	1.40	1.80	1.30	5.60 ^s	5.60 ^s	5.80 ^s	5.70 ^s
4	5.60 ^s	5.70 ^s	1.20	1.40	E	E	1.20	5.50 ^s	1.70	1.70	1.85	1.85	2.20	1.80	1.80	1.70	1.35	1.70	1.70	5.80 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.60 ^s
5	5.80 ^s	1.50	1.10	E	E	E	1.20	5.70 ^s	1.60	1.80	1.70	1.90	C	C	2.20	1.80	1.50	1.50	1.80	5.80 ^s	5.50 ^s	5.70 ^s	5.60 ^s	5.70 ^s
6	5.50 ^s	5.70 ^s	E	E	E	E	1.40	5.50 ^s	1.70	1.50	1.80	2.00	2.20	2.00	1.85	1.80	1.80	1.40	1.70	5.70 ^s	5.70 ^s	5.50 ^s	C	5.60 ^s
7	5.50 ^s	5.80 ^s	1.80	1.20	1.40	5.60 ^s	5.70 ^s	1.80	1.70	1.80	2.25	2.40	2.20	2.20	2.35	2.20	1.80	1.80	5.70 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.80 ^s	5.80 ^s
8	5.50 ^s	5.80 ^s	1.40	E	E	5.70 ^s	5.60 ^s	1.70	1.50	1.70	2.00	2.20	2.25	1.80	2.10	2.05	1.90	1.40	5.50 ^s	5.70 ^s	5.70 ^s	5.60 ^s	5.80 ^s	5.70 ^s
9	5.90 ^s	5.80 ^s	1.15	E	E	1.20	5.70 ^s	1.80	1.90	1.70	1.80	2.15	1.80	1.85	2.10	1.90	1.60	5.60 ^s	1.60	5.70 ^s	5.60 ^s	5.60 ^s	5.70 ^s	5.70 ^s
10	5.70 ^s	1.80	E	1.10	1.00	1.20	5.50 ^s	1.80	1.80	5.80 ^s	1.80	2.10	2.20	2.35	2.20	1.70	1.60	5.70 ^s	5.80 ^s	5.70 ^s	5.60 ^s	5.60 ^s	1.80	5.70 ^s
11	5.70 ^s	1.70	1.40	E	1.15	1.40	1.40	1.65	1.80	1.75	1.90	2.40	3.00	2.30	1.90	2.20	1.85	1.70	5.80 ^s	5.20 ^s	5.80 ^s	5.70 ^s	5.70 ^s	5.60 ^s
12	5.80 ^s	5.60 ^s	1.10	E	E	1.25	5.70 ^s	1.80	1.70	5.30	1.80	1.80	1.85	2.00	1.85	1.90	1.85	1.70	5.80 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.70 ^s	5.80 ^s
13	1.70	5.70 ^s	1.70	1.00	E	1.25	5.70 ^s	1.70	2.10	1.80	1.80	1.85	2.00	2.20	2.20	1.80	1.80	1.80	5.70 ^s	5.70 ^s	5.80 ^s	5.80 ^s	5.80 ^s	5.70 ^s
14	5.70 ^s	5.40 ^s	1.70	E	E	1.30	5.70 ^s	1.80	1.70	1.70	1.90	1.90	2.00	2.20	1.90	1.90	1.90	5.70 ^s	1.70	5.70 ^s	5.80 ^s	5.80 ^s	5.70 ^s	5.70 ^s
15	5.60 ^s	1.70	E	E	1.20	5.70 ^s	2.00	1.70	1.80	1.70	2.20	2.00	1.80	2.00	1.85	1.90	1.70	5.70 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.60 ^s
16	5.70 ^s	1.80	E	E	E	1.30	5.70 ^s	1.90	1.80	1.80	1.85	1.90	2.10	1.90	2.20	1.90	1.90	1.80	5.60 ^s	5.60 ^s	5.80 ^s	5.70 ^s	5.80 ^s	5.80 ^s
17	5.80 ^s	5.80 ^s	1.00	1.00	E	1.30	5.80 ^s	2.00	1.90	1.80	2.00	1.90	3.20	1.95	2.30	1.90	1.80	1.80	1.80	5.20 ^s	5.70 ^s	5.80 ^s	5.80 ^s	5.80 ^s
18	5.60 ^s	5.60 ^s	1.80	E	1.20	E	5.90 ^s	1.70	1.80	C	C	C	C	C	1.90	1.60	1.80	1.60	5.80 ^s	5.60 ^s	5.70 ^s	5.90 ^s	5.70 ^s	5.70 ^s
19	5.80 ^s	1.80	1.80	C	C	C	C	C	C	C	C	C	C	C	C	1.90	1.50	1.60	5.80 ^s	5.80 ^s	5.80 ^s	5.80 ^s	5.80 ^s	5.80 ^s
20	5.80 ^s	1.50	1.70	E	E	1.20	5.80 ^s	1.60	1.80	1.80	1.90	1.80	2.00	1.90	2.20	1.70	2.00	1.80	5.75 ^s	5.70 ^s	5.80 ^s	5.80 ^s	5.80 ^s	5.70 ^s
21	5.70 ^s	5.70 ^s	1.70	E	E	1.70	5.70 ^s	1.90	1.80	1.80	1.90	1.90	2.20	2.60	2.10	1.85	2.20	1.80	5.70 ^s	5.80 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.60 ^s
22	5.80 ^s	5.75 ^s	1.90	1.80	E	1.30	5.80 ^s	1.80	1.80	1.90	1.90	2.00	2.20	2.40	2.30	2.15	1.90	1.80	5.75 ^s	5.75 ^s	5.70 ^s	5.70 ^s	5.70 ^s	1.75
23	5.60 ^s	1.75	E	E	E	5.70 ^s	C	1.75	1.70	1.80	2.00	2.10	2.20	2.35	2.40	2.00	1.80	5.60 ^s	5.80 ^s	5.80 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.70 ^s
24	5.70 ^s	5.70 ^s	E	E	1.10	1.15	5.70 ^s	1.70	1.80	1.90	2.00	2.00	2.20	2.20	2.20	2.05	2.00	5.70 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.70 ^s	5.80 ^s	5.75 ^s
25	5.70 ^s	5.80 ^s	E	1.70	1.70	5.70 ^s	5.80 ^s	1.70	1.75	1.75	1.80	1.90	1.90	2.00	2.00	2.00	1.70	5.70 ^s	5.60 ^s	5.60 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.75 ^s
26	5.80 ^s	5.85 ^s	C	C	C	C	C	C	1.80	1.80	1.80	1.85	1.90	1.90	1.70	1.90	1.80	1.70	5.80 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.80 ^s
27	5.70 ^s	5.50 ^s	1.00	1.70	E	E	5.80 ^s	1.70	1.80	1.80	1.90	1.90	2.10	1.90	1.90	1.80	1.60	5.50 ^s	5.90 ^s	5.70 ^s	5.70 ^s	5.70 ^s	1.80	5.80 ^s
28	5.80 ^s	1.90	E	E	E	5.70 ^s	5.70 ^s	1.70	1.70	1.80	2.30	1.90	1.90	2.40	1.90	1.80	1.80	1.70	5.80 ^s	5.80 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.80 ^s
29	5.70 ^s	1.80	1.00	1.05	E	1.20	5.75 ^s	1.80	1.80	1.80	1.90	1.85	1.90	1.70	1.90	1.90	1.80	5.75 ^s	5.75 ^s	5.70 ^s	5.70 ^s	5.70 ^s	5.80 ^s	5.70 ^s
30	5.60 ^s	5.70 ^s	E	E	E	E	5.70 ^s	1.80	1.80	1.75	1.90	2.00	1.90	1.90	1.80	1.60	1.75	5.80 ^s	5.70 ^s	5.90 ^s	5.70 ^s	5.80 ^s	5.80 ^s	5.75 ^s
31	5.70 ^s	C	C	C	C	C	C	C	1.80	1.70	1.80	1.80	2.50	2.60	2.40	2.20	1.80	1.75	5.70 ^s	5.75 ^s	5.75 ^s	5.80 ^s	5.80 ^s	5.80 ^s
No.	31	30	28	28	28	22	27	28	30	28	29	31	29	29	31	31	31	29	31	31	31	31	30	31
Median	5.70	5.70	1.10	E	E	1.20	5.70	1.70	1.80	1.80	1.90	1.90	2.10	2.00	1.90	1.90	1.80	5.70	5.70	5.70	5.70	5.70	5.80	5.70

Sweep 1.0 Mc to 20.3 Mc in 3.0 sec
in automatic operation.

f-min

The Radio Research Laboratories, Japan.

Lat. 31° 12.6' N
 Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT.+ 9h.)

(M3000)F₂

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280 ^S	245 ^S	240	250 ^S	250 ^S	275 ^S	280 ^S	295 ^S	315 ^S	305	285	285	280	275	265	275 ^S	280 ^S	285	290 ^S	280	S	S	F ^S	F ^S
2	275 ^S	265	250 ^S	255	260 ^S	265	265	310 ^S	305 ^S	290	280 ^S	285 ^S	280 ^S	280 ^S	S	275 ^S	275 ^S	295 ^S	290 ^S	295	270 ^S	245	275 ^S	260 ^S
3	250 ^H	285 ^S	270 ^S	270	255	250	275	325 ^S	320	305	300	275	280	280	275	280	285 ^S	290 ^S	295	300	285 ^S	275	260	260 ^S
4	250	255	265	240	250	225	270 ^S	330	305 ^S	295	295	280 ^S	285 ^S	285 ^S	280 ^H	285 ^S	285	305	275	285 ^S	250 ^S	260 ^S	270 ^S	275 ^S
5	250	250	250	270 ^S	270 ^S	255 ^S	275	305 ^S	310	310	315	290	C	C	290 ^S	265 ^S	S	310	295	285 ^S	250 ^S	260 ^S	275 ^S	275 ^S
6	280	255	285	295	275 ^S	235	250	305 ^S	310	320	295	280	295 ^S	290 ^S	280 ^H	285 ^S	285 ^S	290 ^S	290 ^S	290 ^S	295 ^S	275 ^S	255 ^S	260 ^S
7	295 ^S	245	275	295	245 ^H	260	265	295 ^S	310	300	305 ^S	300	285 ^H	285	290	290	300 ^S	290	310 ^S	295 ^S	295 ^S	280	275	260
8	270	260	305	285	265	255 ^H	275	325	320 ^S	330 ^H	285	290	280 ^H	285 ^S	280 ^H	290 ^S	285	290 ^S	295 ^S	S	S	S	275 ^S	270 ^S
9	270 ^S	240 ^S	270	275	270 ^S	295	285	340	325	320	300	295	295	285 ^H	285 ^S	285 ^S	285	285	295	305	290 ^S	270 ^S	260 ^S	260 ^S
10	265	315	285	280	305	285	270	320	325	330 ^C	295	285 ^H	280	285	275 ^S	285	285	290 ^S	295	305	290 ^S	265	270 ^S	275
11	280 ^S	275 ^S	275	280	285	280	270 ^S	310 ^S	320	320 ^C	300	300 ^H	295	280	275	285	290	290 ^S	295	300 ^S	290 ^S	265	270 ^S	275
12	270	275 ^S	265	285 ^S	305	305	280	315	310	315 ^S	300 ^S	295 ^H	280 ^H	270	280	280 ^S	295	300	315	300 ^S	290 ^S	265	270 ^S	275
13	280	270	270	290	315	285 ^H	280	315	305	320 ^S	290	285 ^H	280	285	280	280	285 ^S	305	300 ^S	305 ^S	290 ^S	265	270 ^S	275
14	275 ^S	285	295	290 ^S	280	270	275	300 ^S	325	315	335	285	285 ^H	285 ^S	290 ^H	275 ^S	285	295	295	280 ^S	255 ^S	260 ^S	270 ^S	270 ^S
15	265	260	285	295	285	250 ^S	270 ^S	310 ^S	S	310	300 ^H	285	280 ^H	280 ^H	280 ^S	280	290 ^S	285 ^S	295	305	290 ^S	265	275 ^S	260 ^S
16	250	265	270 ^S	275	305 ^S	270	275	315	315	305	300	285 ^S	S	S	S ^H	280	285	290 ^S	295	290 ^S	280 ^S	265	275 ^S	260 ^S
17	295	295	290 ^S	275	280 ^S	275	290 ^S	320	325	325	305	275	290 ^H	280 ^S	280	280	285	300 ^S	295	280 ^S	275	265	270 ^S	270 ^S
18	285	270	245	280	250	250 ^S	275	290 ^S	315	C	C	C	C	C	275 ^S	S	S	290	285 ^S	280 ^S	275	265	270 ^S	270 ^S
19	275 ^S	280	255	C	C	C	C	C	C	C	C	C	265 ^H	S	S	S	S	290	285 ^S	280 ^S	275	265	270 ^S	270 ^S
20	270 ^S	275	295	295	295	295	330 ^S	305	305	285 ^S	305	290	275	275	S	S	285	285 ^S	285 ^S	280 ^S	280 ^S	275	265	270 ^S
21	260 ^S	270	285	295	320	245	280	325 ^S	310	305	310 ^S	290	270 ^H	S	S	S	S	290	285 ^S	280 ^S	275	265	270 ^S	270 ^S
22	265	270 ^S	270	280	295 ^S	275	275	315	315	305	295 ^S	305 ^H	270 ^H	S	S	S	S	295	285 ^S	275	S	S	310 ^S	290 ^S
23	245	270	240 ^S	255	240	250 ^S	285	295 ^S	315	295	285 ^S	285 ^S	S ^H	S	S	S	S	295	295 ^S	285 ^S	S	S	310 ^S	290 ^S
24	270 ^S	280	275	290	270	260	265 ^S	305 ^S	330 ^S	325	295	305	285 ^H	280 ^S	280	280	285	295	295 ^S	285 ^S	265	270 ^S	280 ^S	260
25	250	245	260	C	C	C	270 ^S	305 ^S	320	315	310	300	285 ^H	270 ^S	285	290	285	300	300	300 ^S	S	S	300	270 ^S
26	270 ^S	290 ^S	C	C	C	C	C	C	320	305 ^S	S ^H	295	285 ^S	280 ^S	275	285	280 ^S	300	300	300	S	S	300	270 ^S
27	280 ^S	295	240	245 ^S	255	250 ^S	270	C	310	300	S	S	S ^H	S	S	S	300	300	285	290 ^S	280 ^S	285	270 ^S	270 ^S
28	265	275	265	285 ^S	305	270	275	305 ^S	315	295	305 ^H	S ^H	S	R	S	S	290	290 ^S	280 ^S	280 ^S	S	S	290	265
29	270 ^S	285	275	260 ^S	275	310	295	335 ^S	S	310	305 ^H	285 ^H	285 ^H	S	S	S	S	S	295	285	S	S	300	265
30	290 ^S	245	275	275	295 ^S	265	290 ^S	340 ^S	325	310	S	300	270 ^S	S	S	S	S	295	290 ^S	285	265	270 ^S	300	265
31	260 ^S	C	C	C	C	C	C	C	290 ^S	295 ^S	S	S	285 ^S	280 ^S	S	S	S	295	280 ^S	270 ^S	270	S	S	245 ^S
No.	31	30	29	28	28	28	28	26	28	29	26	27	25	20	20	19	20	29	27	24	21	22	26	28
Median	270	270	270	280	280	265	275	315	315	305	300	290	280	280	280	280	280	285	295	285	280	270	275	270

Sweep \sim 0 Mc to 20.3 Mc in \sim 2.0 sec in automatic operation.

(M3000)F₂

IONOSPHERIC DATA

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

(M3000)F1

Oct. 1959

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

Sweep 1.0 Mc to 20.3 Mc in 3.0 sec ^{where} in automatic operation.

(M3000)F1

The Radio Research Laboratories, Japan.

Y 8

IONOSPHERIC DATA

Lat. 31° 12.5' N
Long. 130° 51.7' E

Yamagawa

Oct. 1959

R'F2

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												300	300	300	300	300	300								
2												290	300	300	300	300	300								
3												300	L	300	295	300	270								
4												300	L	300		300	300								
5												325	1280 ^f	1290 ^f		300									
6													300	280											
7													L	L	300	300									
8												295	L	L											
9												1295 ^f			300										
10									C					300	300	295									
11									C					300	300										
12													300	L											
13												L	300	300		300									
14												L	300	300		300									
15												300	300	300											
16												1300 ^f	300	300		300									
17												C	C	C	C	1300 ^f	300								
18												C	C	C	C	1310 ^f	300								
19												C	C	C	C	300	1300 ^f								
20													300	300	300	300									
21														300	325	300									
22														1310 ^f	300	300									
23														300	300										
24														300	300										
25														300	305										
26													300	1300 ^f	300										
27														300											
28														300											
29													300	300											
30													300	300											
31																									
No.												6	11	19	18	12	4								
Median											300	300	300	300	300	300	300								

Sweep 1.0 Mc to 20.3 Mc in 30 sec ^{min} in automatic operation.

R'F2

IONOSPHERIC DATA

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

f_oF

Oct. 1959

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	260	280	345	300	270	250	265	250	240	240	230	225	200 ^M	235	245	245	250	250	260	260	250	250	320	290	250
2	260	270	295	290	255	300	300	250	245	245	250	225 ^M	240	240	240 ^M	250 ^M	250 ^M	260	240	245	215	300	280	300	300
3	325 ^M	250	220	240	260	315	300	250	240	240	230	200 ^M	225	200 ^M	250	240	250	250	240	240	255	280	350	340	340
4	410	340	300	350	310	360	280	225	240	250	250	240	270	245	245	240 ^M	250	250	245	300	300	300	275	295	295
5	310	300	315	300	250	250	295	250	250	230	215	210	205 ^M	235 ^C	230	230	250	250	220	245	250	280	270	295	295
6	280	295	250	245	330 ^A	350	325	250	250	245	265	225	210	240	245 ^M	250	245	250	250	230	230	250	285 ^C	300	300
7	250	300	295	250	275 ^M	295	300	250	250	230	230 ^C	220	210 ^M	205	220	240	250	240	235	225	235	245	250	255	255
8	290	300	250	250	270	300 ^M	295	240	240	220	240	225	205 ^M	205 ^M	235	250	250	250	245	210	230	250	255	250	255
9	255	260	285	255	230	240	275	245	250	230	220	210	200	215 ^M	230	230	240	250	245	220	215	250	255	290	290
10	295	260	255	260	230	240	300	245	235	235 ^C	230	205 ^M	205	245 ^M	240	245	250	250	245	235	235	250	255	255	255
11	260	250	250	255	250	250	280	230	240	240 ^C	230	210 ^M	250	220	230	245	245	250	250	230	210	255	280	290	290
12	280	255	250	245	215	220	290	240	240	245	240	225 ^M	205 ^M	205 ^M	235 ^M	250	250	250	250	240	225	250	280	290	290
13	295	280	250	250	230	200 ^M	280	250	250	245	240	230 ^M	220	250	240	250	280	255	245	230	255	250	250	255	255
14	260	250	250	250	250	250	295	250	250	235	230	230	230	225	230 ^M	240	250	250	240	230	230	270	255	290	290
15	250	290	250	260	240	315	250	235	240	240	235 ^M	225	230	240 ^M	245	245	250	250	245	205	255	250	250	270	270
16	275	280	255	260	220	250	295	250	245	240	235	225	245	230	240 ^M	250	250	250	245	245	235	250	250	250	250
17	250	245	245	250	230	250	255	240	245	245	240	225	205 ^M	250	250	250	250	250	235	250	250	255	255	275	275
18	300 ^A	300	295	275	300	305	285	250	250	C	C	C	C	C	225	250	250	250	250	250	275	290	275	250	250
19	250	250	300	C	C	C	C	C	C	C	C	210 ^M	200 ^M	200	225	250	250	250	245	225	250	245	255	305	305
20	280	275	250	250	250	240	285	245	240	245	250	240	240	225	240	250	250	250	245	245	245	240	225	250	250
21	320	300	265	250	225	300 ^S	300	250	250	250	245	240	215 ^M	230	250	250	250	250	240	235	250	245	250	300	300
22	260	280	290	290	250	255	295	240	235	245	240	220 ^M	210 ^M	250	250	250	250	250	240	235	250	245	250	300	300
23	320	280	250	305	350	300	290 ^C	255	250	240	245	250	220 ^M	245	245	250	255	245	285	240	270	250	250	240	240
24	255	245	255	255	270	295	280	250	235	240	250	250	235 ^M	240	220	250	250	250	245	210	255	240	225	240	240
25	280	300	275	250	250	290	300	250	250	250	245	240	245 ^M	240	250	255	255	250	240	250	250	250	250	275	230
26	270	240 ^C	C	C	C	C	C	C	230 ^C	250	230 ^M	230	225	250	250	250	250	250	240	235	250	240	280	265	265
27	245	250	420 ^A	380	300	255	300	255	245	250	240	250	250	220 ^M	240	250	235	240	225	235	250	240	255	275	275
28	300	275	300	290	230	300	275	245	245	240	225 ^M	235 ^M	225	245 ^M	240	240	245	240	230	220	245	240	290	290	290
29	295	275	250	295	275	250	240	235	230	240	205 ^M	205 ^M	230 ^M	240	240	240	250	245	225	215	230	245	250	255	255
30	275	270	280	285	260	285 ^A	270	240	230	240	250	230	220	230	250	250	245	245	245	230	255	250	285	245	245
31	280	C	C	C	C	C	C	C	235	240	245	230	230	220	245	250	250	250	220	220	250	255	240	240	340
No.	30	30	28	28	27	26	28	28	30	29	29	30	30	31	31	31	31	31	31	31	31	31	31	31	31
Median	280	275	255	260	250	255	290	250	240	240	240	225	220	235	240	250	250	250	245	235	250	250	255	250	270

f_oF

Sweep 1.0 Mc to 20.3 Mc in 30 sec in automatic operation.

The Radio Research Laboratories, Japan.

Y 10

Lat. 31° 12.6' N
Long. 130° 37.7' E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (GMT.+9h.)

Oct. 1959

f_oF₂

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	E	E	105	105	105	105	150	150	100	100	100	120	120	200	150	125	125	115	120	120	120	100
2	110	110	100	105	E	105	110	135	125	125	120	125	115	120	120	120	160	160	110	100	100	100	100	100
3	105	E	E	E	E	E	S	150	125	130	130	125	130	135	135	135	100	100	110	110	110	100	100	100
4	100	100	100	E	110	110	S	140	130	125	120	115	130	100	100	100	100	120	100	100	110	100	100	100
5	S	E	E	E	100	E	S	125	110	110	110	100	100	100	105	105	100	100	100	100	100	100	100	100
6	100	100	100	100	100	E	S	130	115	110	100	100	100	100	105	105	105	100	100	100	100	100	100	100
7	S	S	E	E	E	S	S	150	145	140	C	100	100	105	105	105	100	100	100	100	100	100	100	100
8	100	100	E	100	100	105	S	170	100	100	100	105	105	105	105	140	130	110	105	105	105	100	100	100
9	S	S	100	100	100	E	S	150	135	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
10	S	E	100	E	E	E	S	140	130	125	130	125	105	105	105	105	100	100	100	100	100	100	100	100
11	S	E	E	E	E	E	S	140	130	125	130	125	105	105	105	105	115	100	100	100	105	100	100	100
12	100	100	E	E	E	E	S	150	140	130	140	130	140	140	145	125	115	125	120	120	120	100	100	100
13	E	S	E	E	E	E	S	160	145	150	145	140	140	140	140	180	140	130	120	120	110	100	100	100
14	S	S	E	E	E	E	S	145	135	125	130	125	105	110	105	110	120	120	120	115	110	105	105	105
15	105	105	105	100	E	S	S	140	130	125	130	125	105	105	105	115	140	130	120	120	105	105	105	105
16	S	E	E	E	E	E	S	145	130	125	130	125	105	105	105	115	140	130	120	120	110	105	100	100
17	S	S	E	E	E	E	S	150	145	140	140	145	100	100	100	145	120	110	110	105	100	100	100	100
18	100	100	100	E	E	E	S	125	110	C	C	C	C	C	100	120	110	110	110	105	100	100	100	100
19	100	E	E	E	C	C	C	C	C	110	100	100	100	105	105	100	150	135	140	120	100	100	100	100
20	S	E	E	E	E	E	S	150	140	130	130	140	100	100	100	145	125	115	110	110	110	105	105	105
21	S	S	E	E	E	E	S	150	150	150	140	140	100	100	100	140	130	125	110	110	110	105	105	105
22	S	S	E	E	E	E	S	150	125	110	110	100	100	100	100	140	140	140	125	110	110	105	105	105
23	105	105	105	105	S	C	C	145	130	130	125	120	110	110	135	165	155	130	125	110	105	105	100	100
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No.	16	13	12	11	12	9	5	20	20	23	23	22	16	16	17	19	20	21	19	21	16	20	19	19
Median	100	100	100	100	100	105	105	145	130	130	125	125	110	110	115	140	120	125	115	110	105	105	105	100

Sweep 1.0 Mc to 20.3 Mc in 30. sec in automatic operation.

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IONOSPHERIC DATA

Lat. 81° 12.6' N
Long. 180° 37.7' E

Yamagawa

135° E Mean Time (GMT.+ 9h.)

Types of Es

Oct. 1959

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1					f	f2	l2	l	h	l.								h	l2	h4	f4	f2	f2	f2	
2	f	f3	f3	f2		f2	l2	h2	c2	h2	c2			l2		h		h2		h4	f4	f2	f2	f2	
3	f	f	f2			f		h2	h2	h2	h2	l2	h2	l2h	l2	h2		h2	l	f8	f4	f3	f3	f2	
4	f4	f	f2		f	f		l	h2	h4	h2	l2	h2	l2h	l2	h2		h2	l	f6	f4	f3	f4	f2	
5	f4	f2	f		f	f		l	l3	l2	l3	l	l	l3	l3	l		l	l3	f5	f	f2	f4	f6	
7	f2	f	f2		f2	f		h2	h2	h2	h2	l2		l		h		c3	h2	f	f				
9								h2	h			l2													
10												l2	l2	l	l	l2h	l2c	l2c	l2						
11											h	h	h	h	h	h2	h2	h2	l			f4	f3	f2	
12	f2	f						h	h	h	h	h	h	h	h	h	h2	h3	l3	f	f4	f			
13								h	h	h	h	h	h	h	h	h	h2	h2	l3	f	f4	f			
14								h	h	h	h	h	h	h	h	h	h2	h2	l	f	f4	f			
15	f	f4	f					h2	h2	h2	h2	l2	l2	l2	l2	l2	h2	h2	l2	h	f2	f	f	f4	
16								h	h	h	h	h	h	h	h	h	h2	h2	l2	h	f2	f2	f2	f2	
17								h	h	h	h	h	h	h	h	h	h	h2	h2	h	f	f	f	f2	
18	f4	f3	f					h	h	h	h	h	h	h	h	h	h2	h2	l	f5	f	f	f	f2	
19	f							h	h	h	h	h	h	h	h	h2	h2	h3h2	c3h	f5	f	f	f	f2	
20								h2	h2	h	h	h	h	h	h	h2	h	h2	l2	f	f	f	f	f2	
21								h2	h	h	h	h	h	h	h	h	h	h2	l2	f	f	f2	f	f	
22								h2	h	h	h	h	h	h	h	h	h	h2	l4	f	f	f2	f3	f3	
23	f4	f3	f					h2	h2	h2	h2	h2	l	l	h	h	h	h2	l2	f3	f6	f4	f2	f2	
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30	f3	f2	f2					h2	h2	h2	h2	h	h	h	h2	h2	h2	l2	h2	f	f2	f3	f3	f	
31	f2							h2	h2	h2	h2	h	h	h	h	h	h2	l2	h2	f	f2	f2	f	f2	
No.																									
Median																									

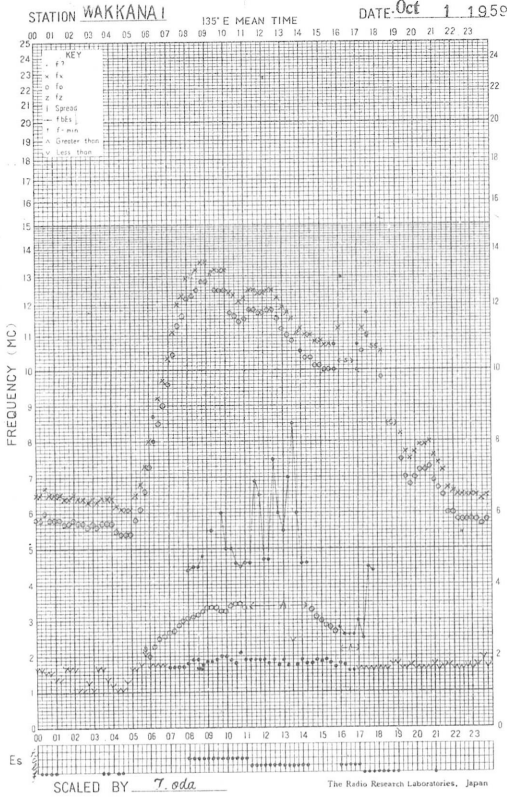
The Radio Research Laboratories, Japan.

Sweep 1.0 Mc to 20.5 Mc in 0.0 sec in automatic operation.

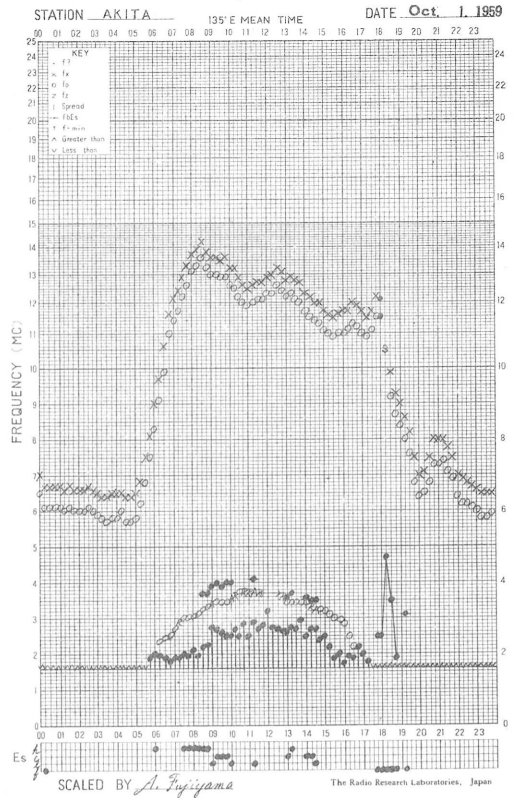
Types of Es

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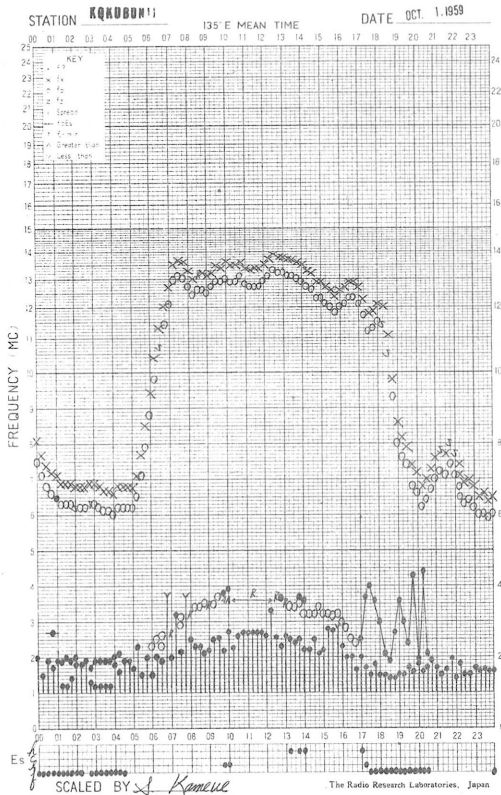
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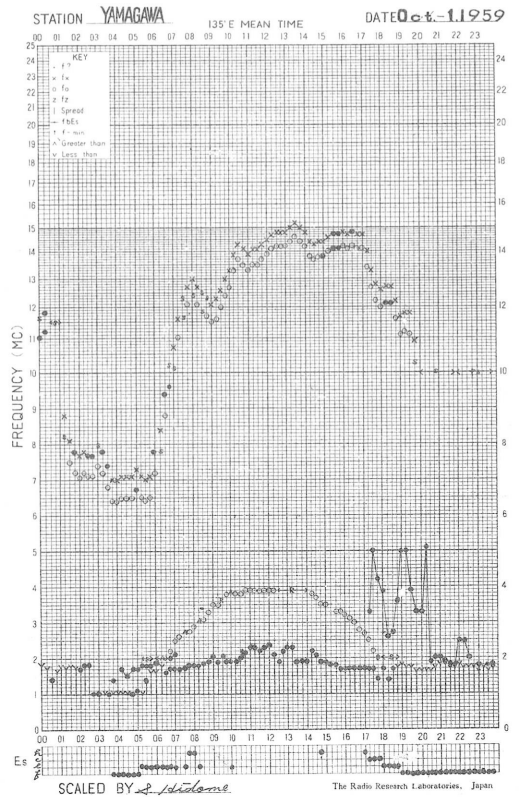
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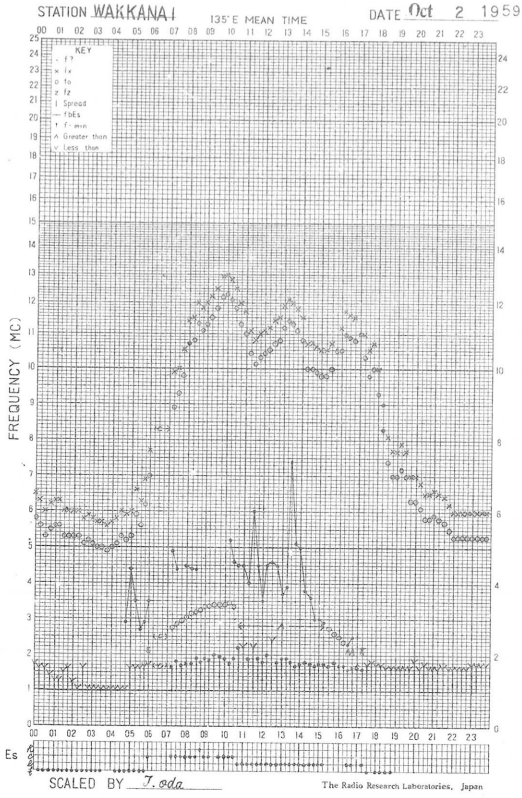
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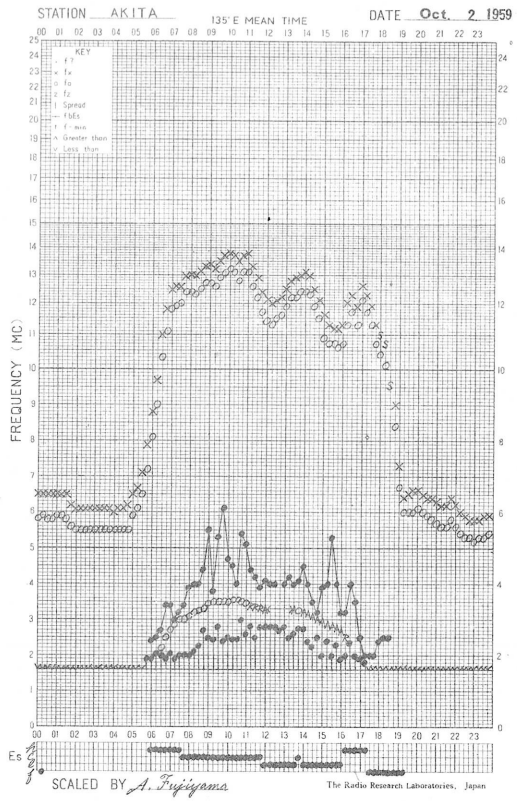
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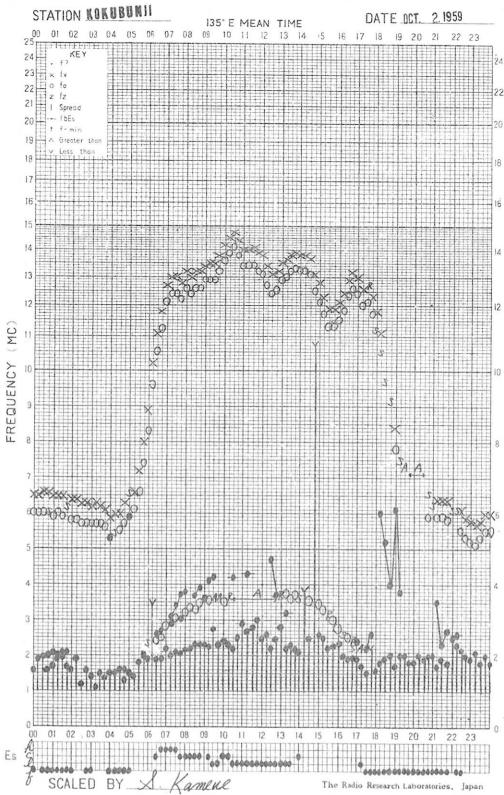
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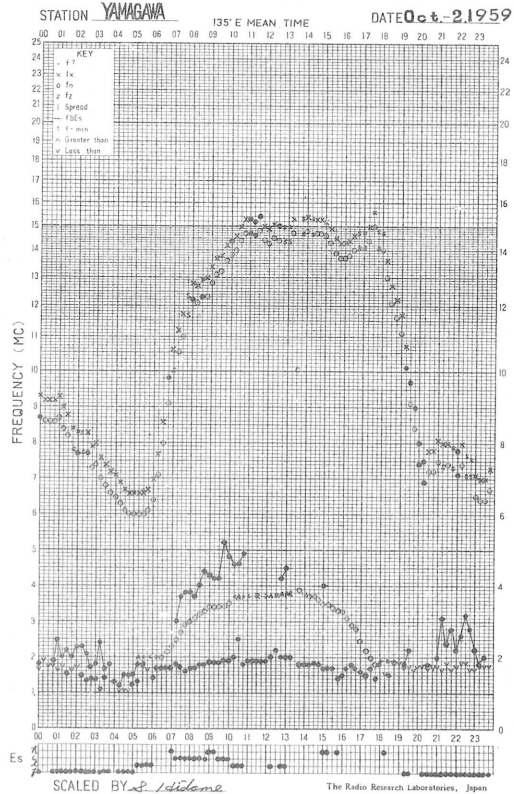
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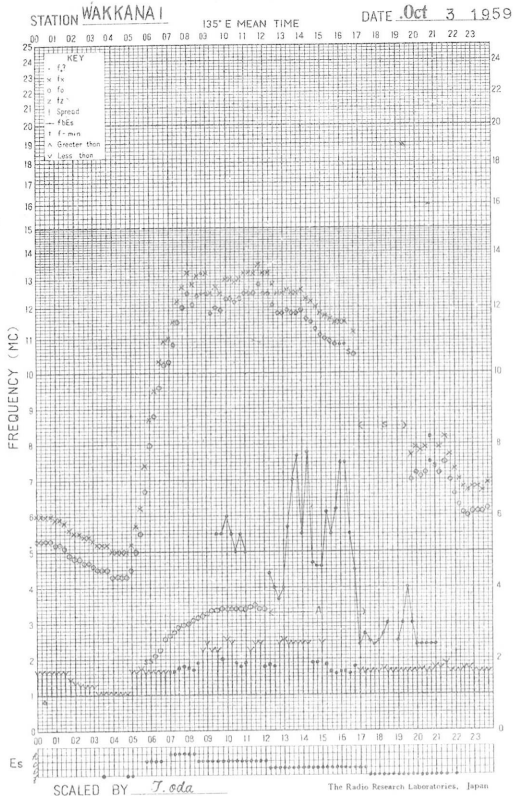
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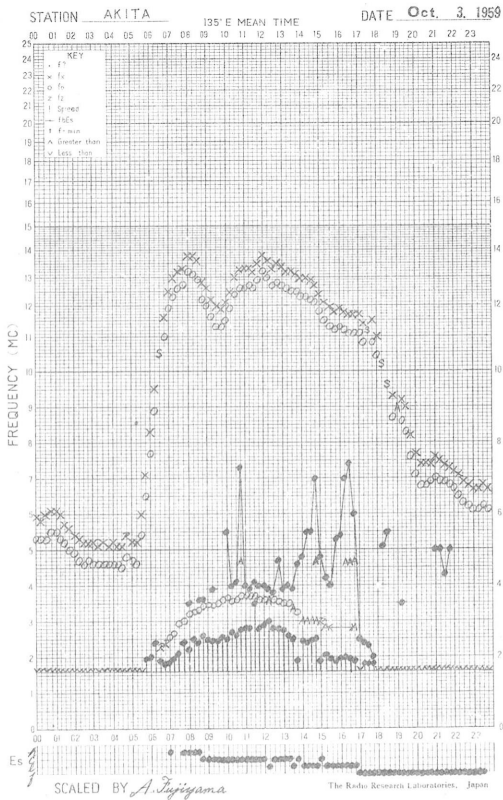
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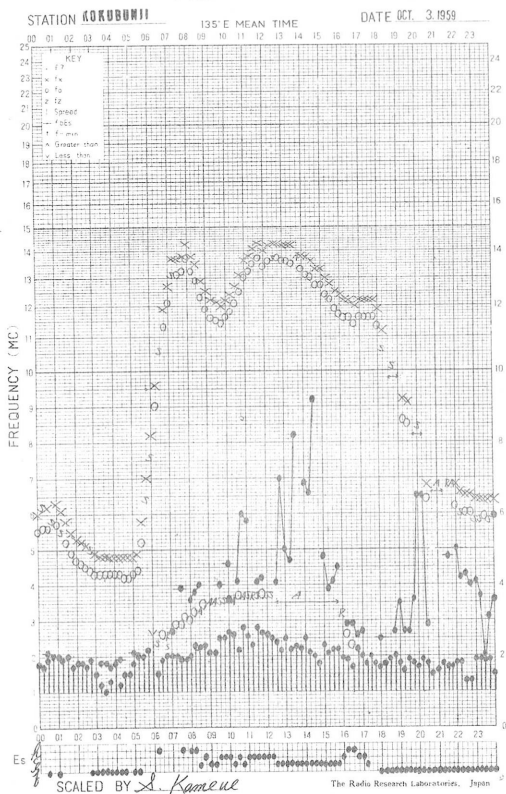
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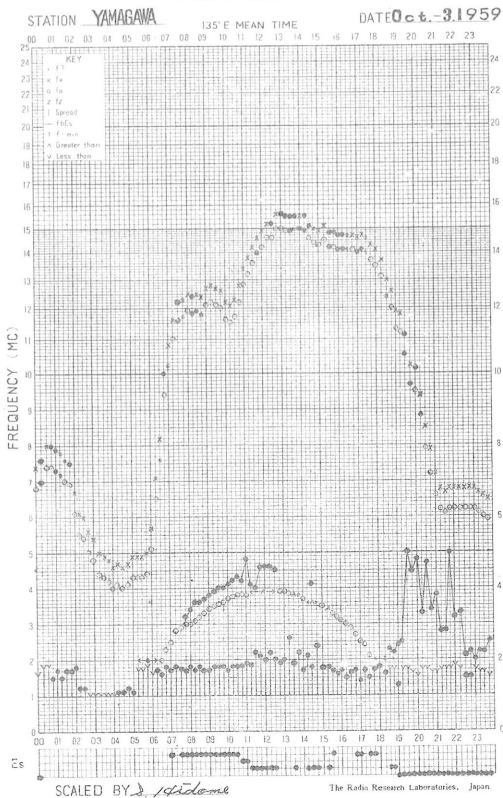
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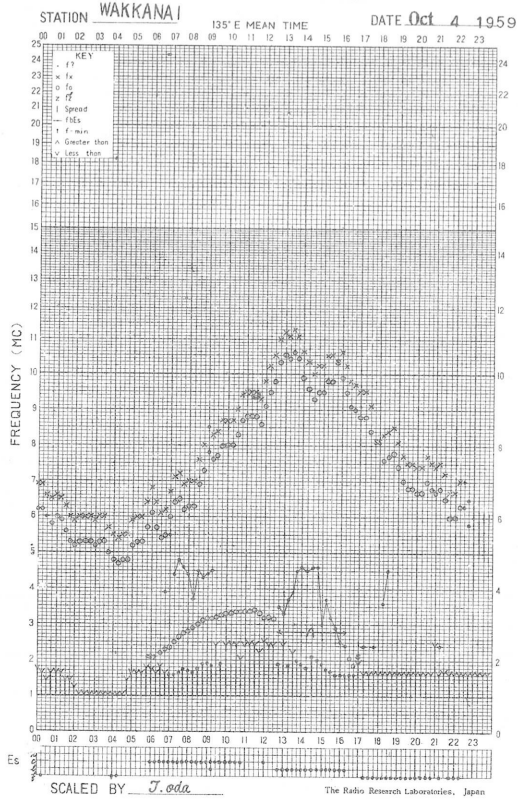
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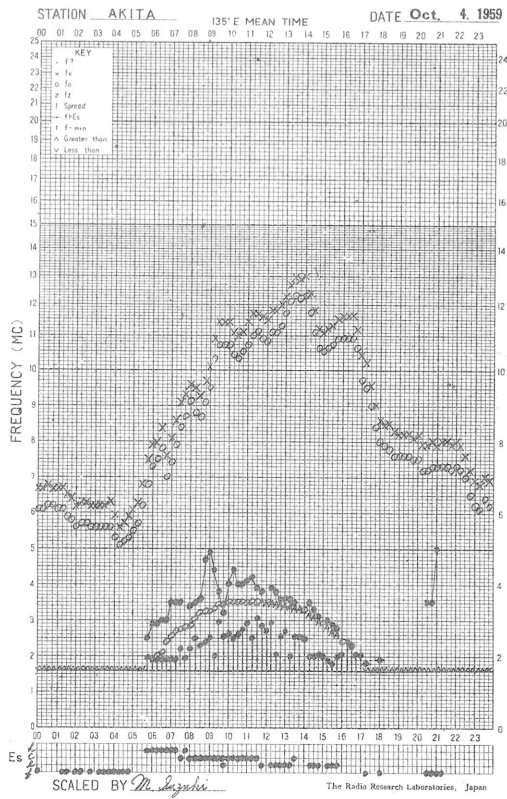
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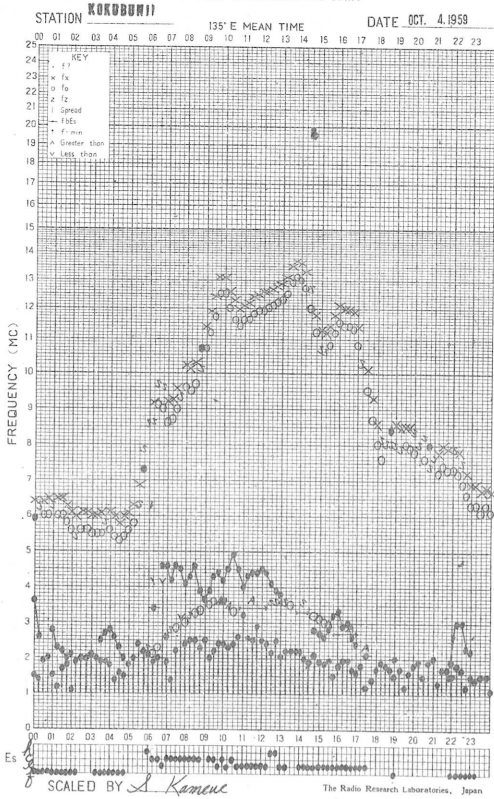
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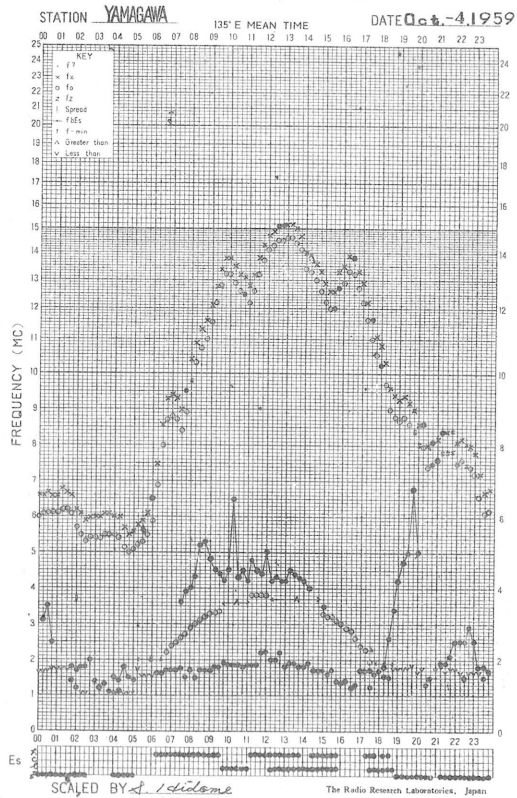
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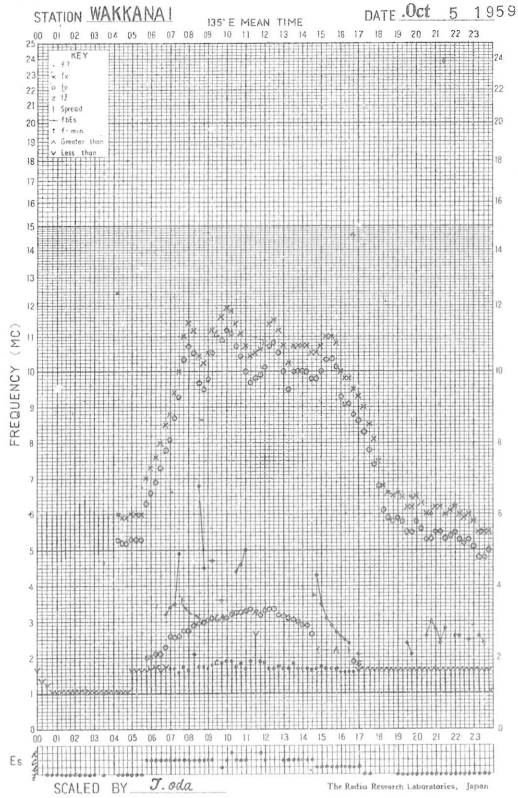
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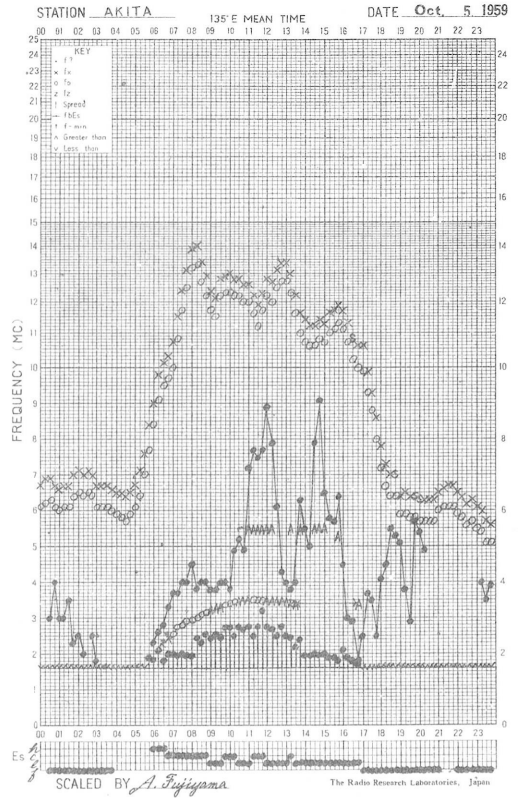
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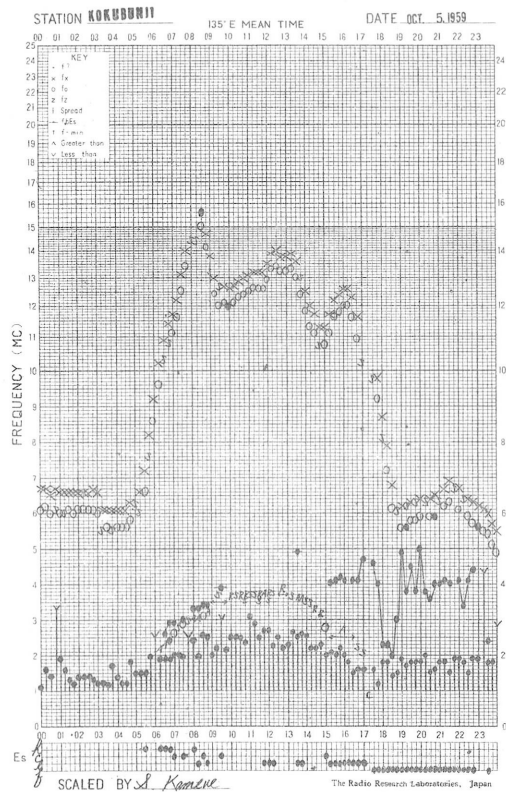
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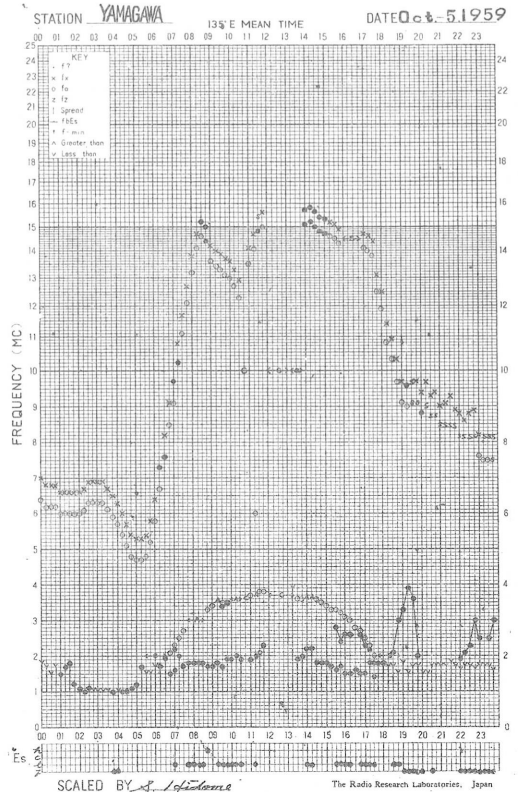
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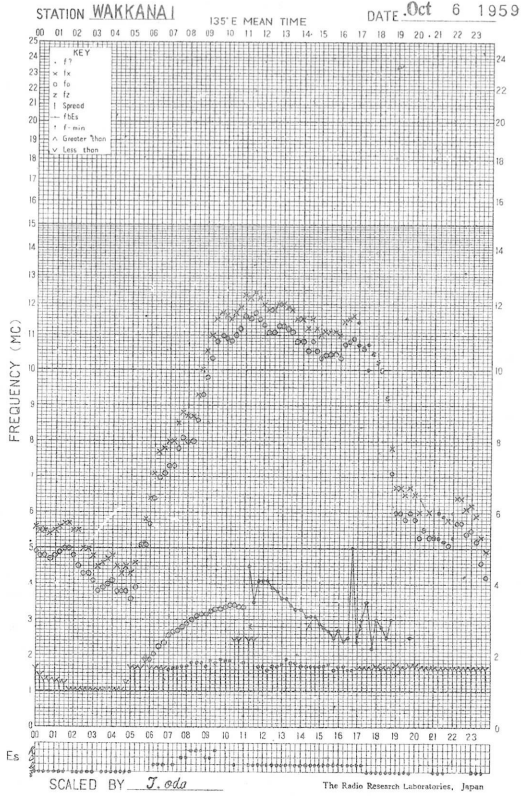
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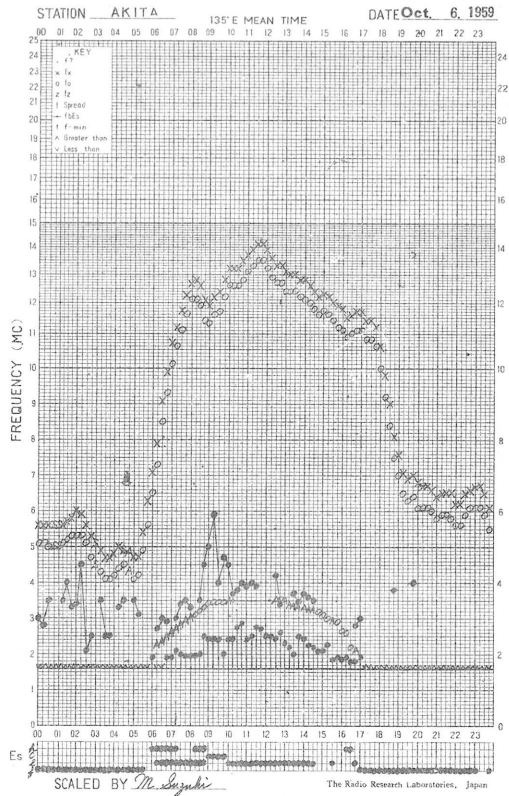
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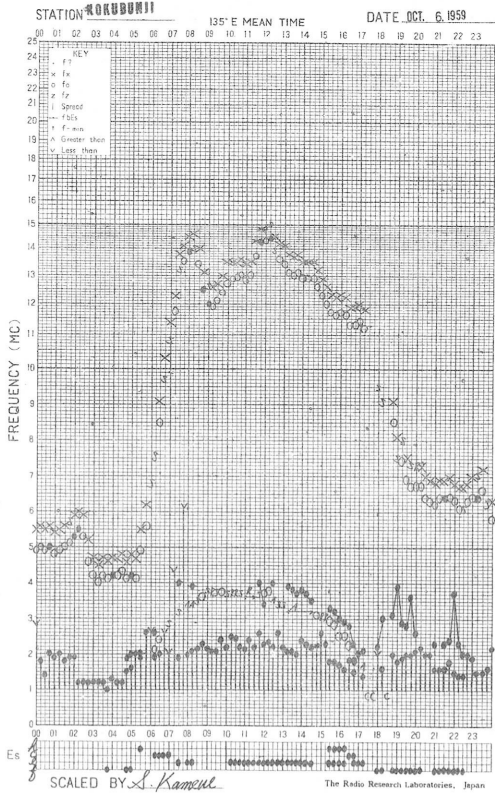
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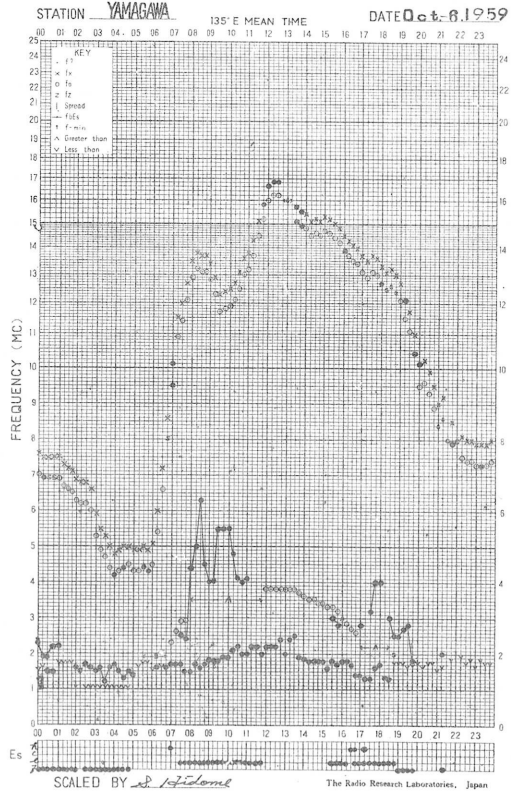
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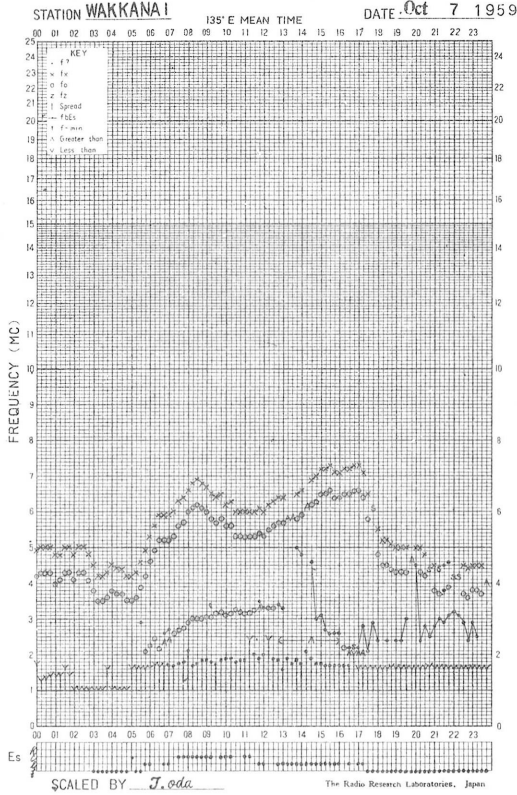
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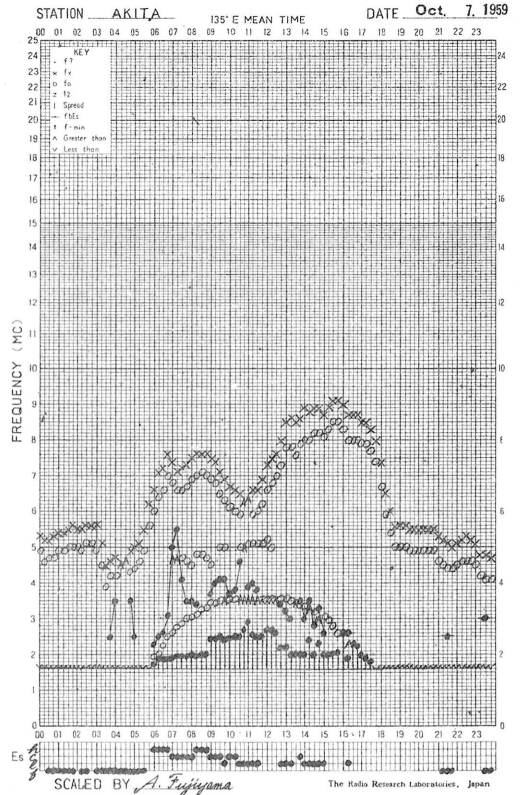
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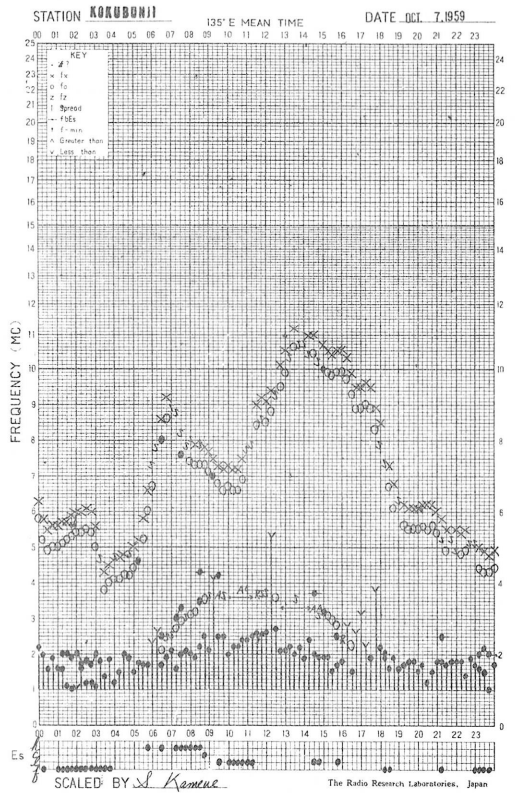
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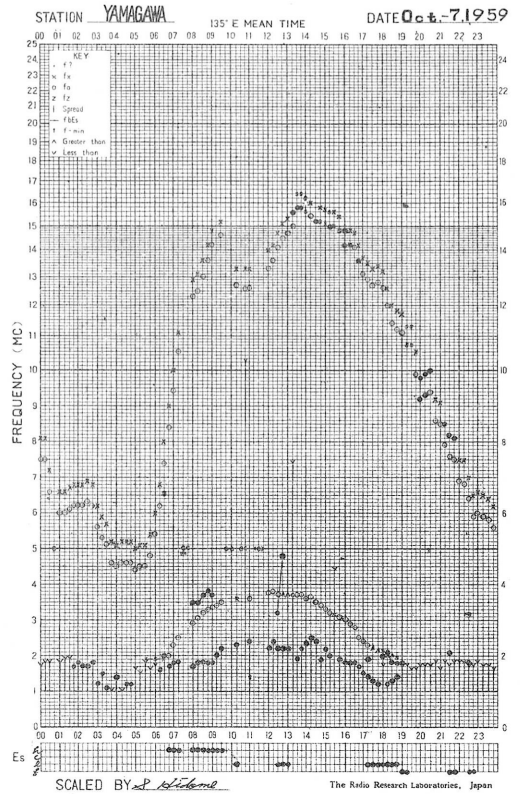
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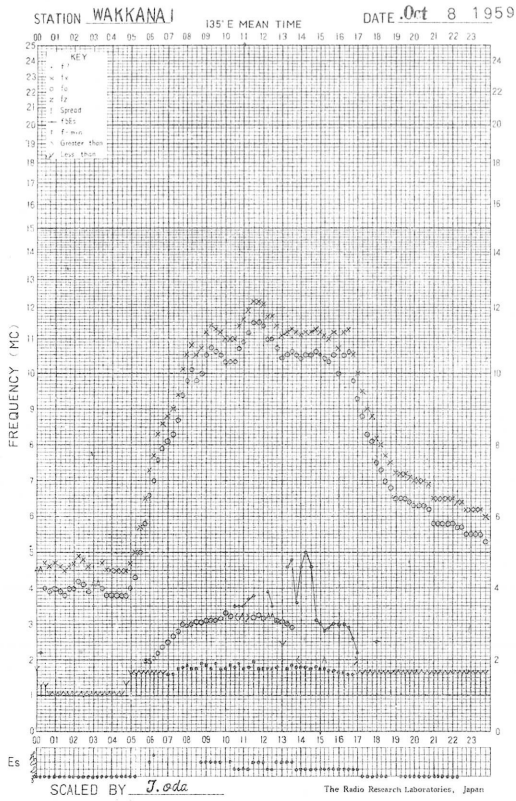
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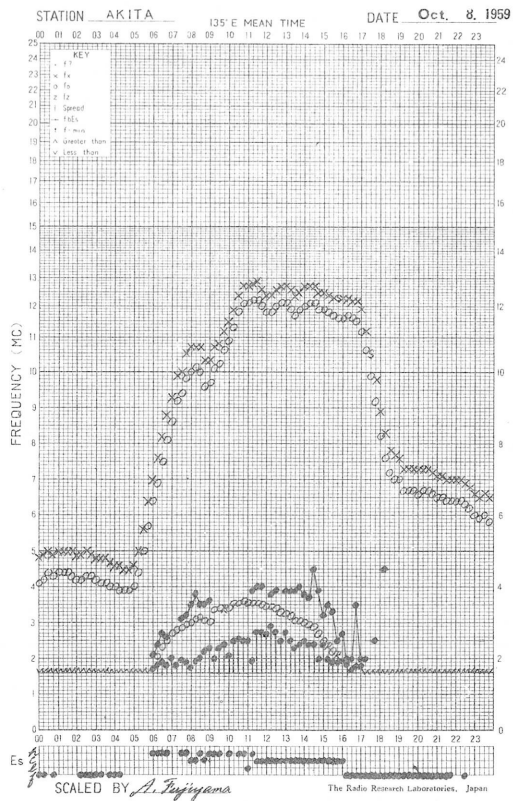
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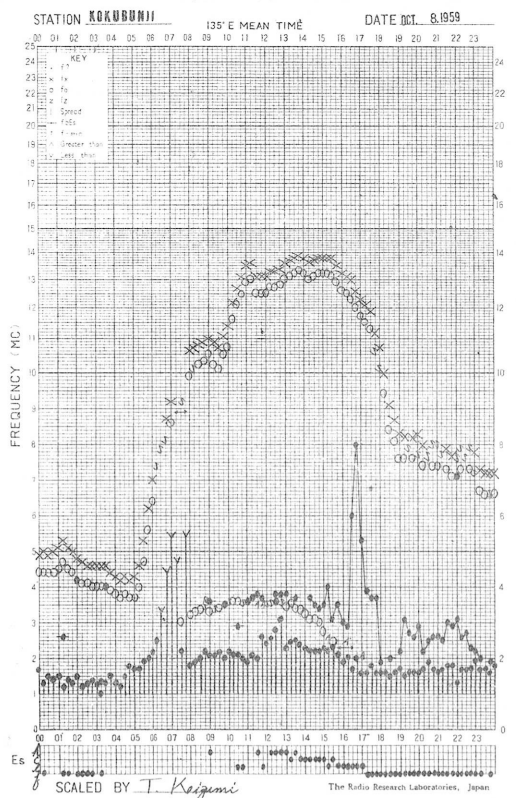
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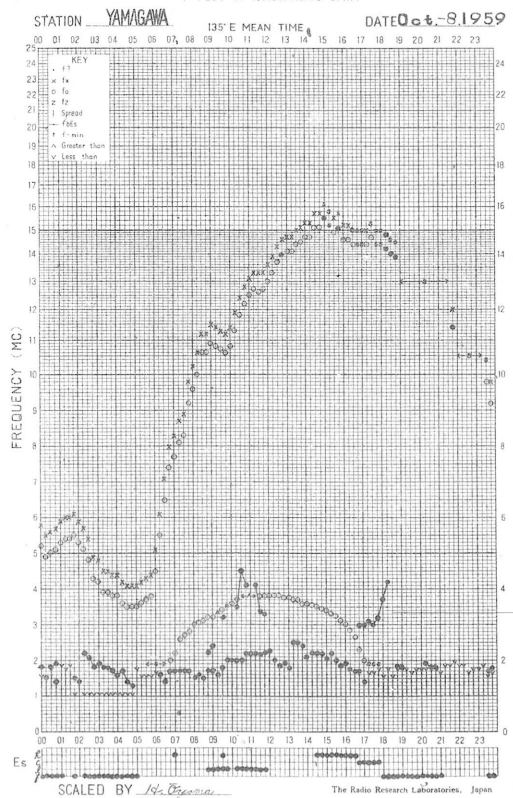
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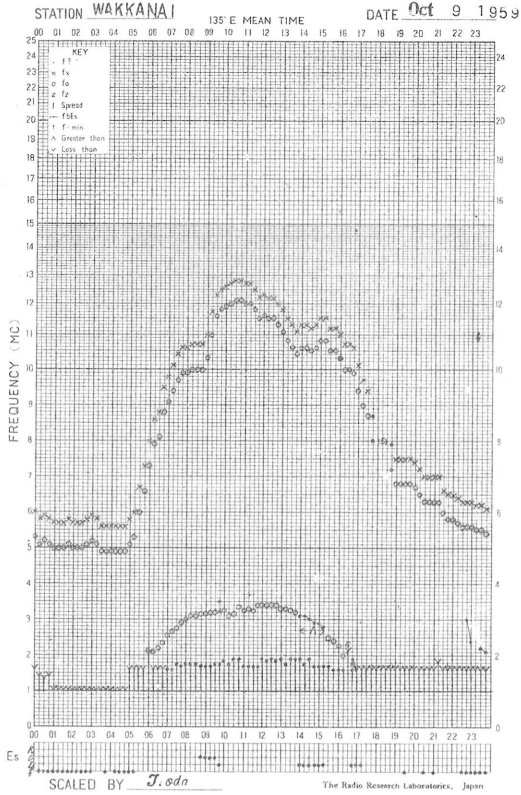
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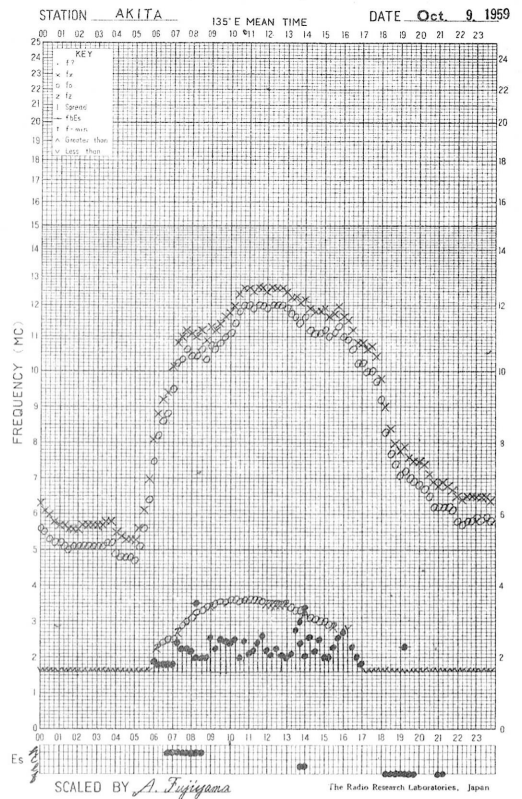
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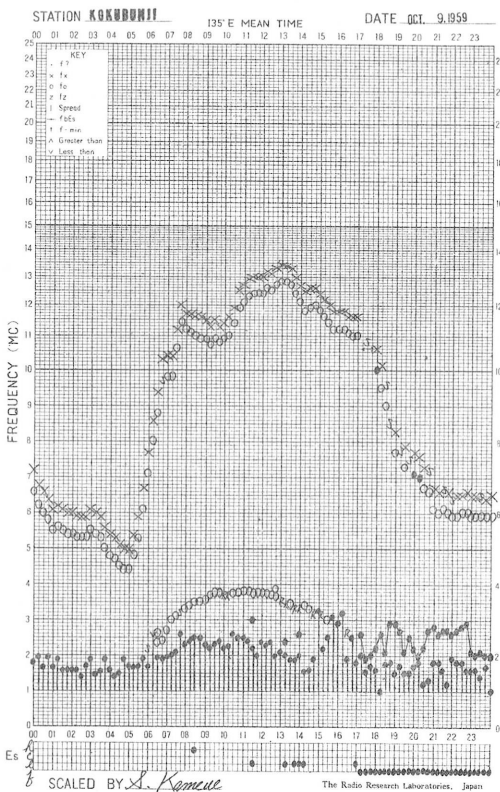
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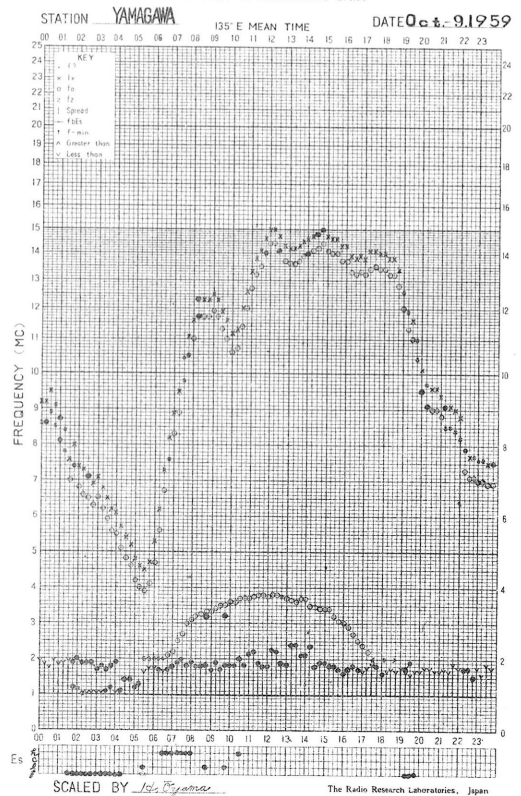
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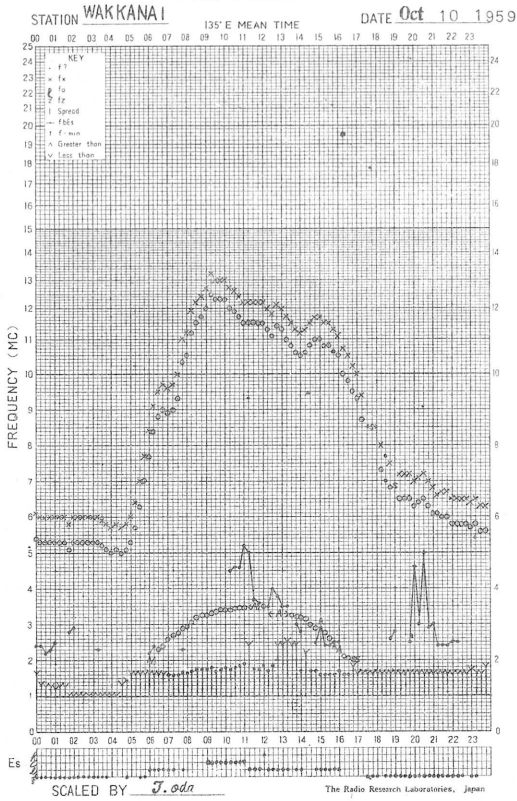
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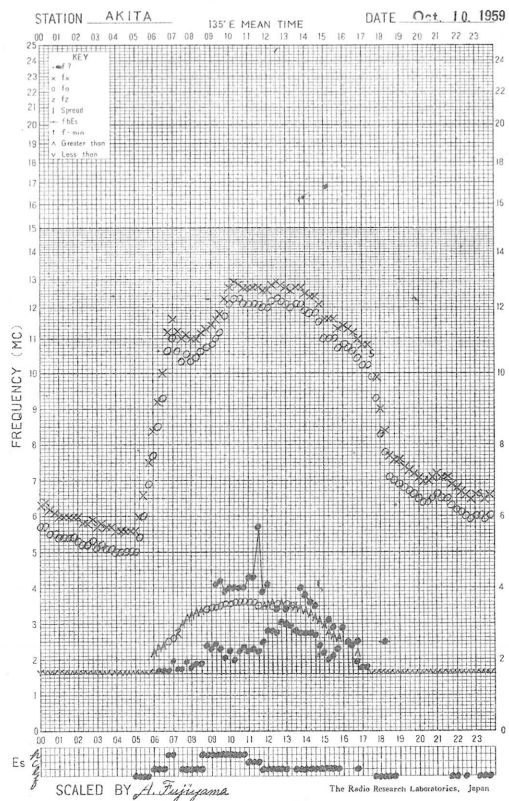
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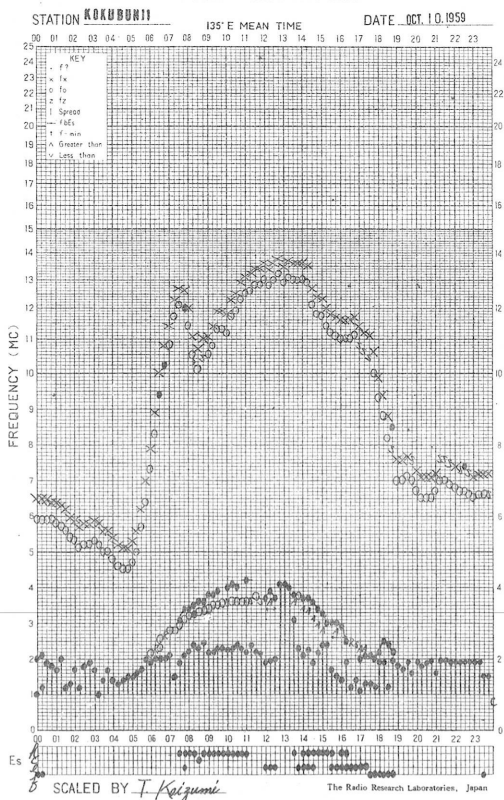
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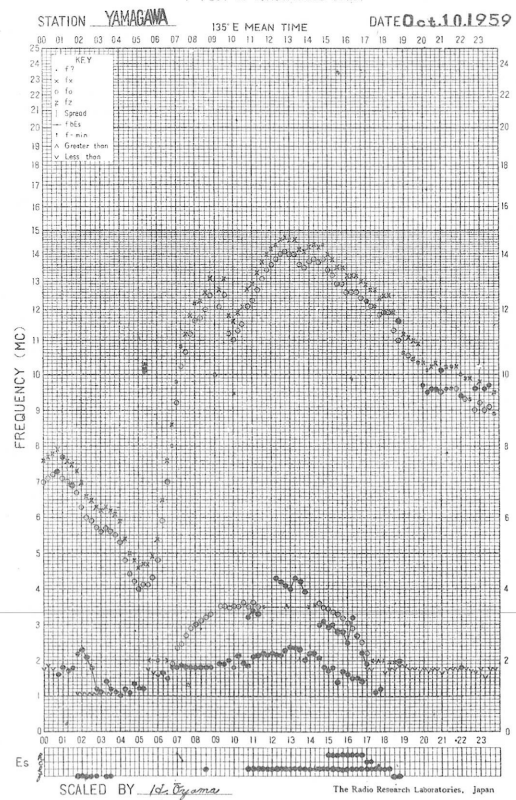
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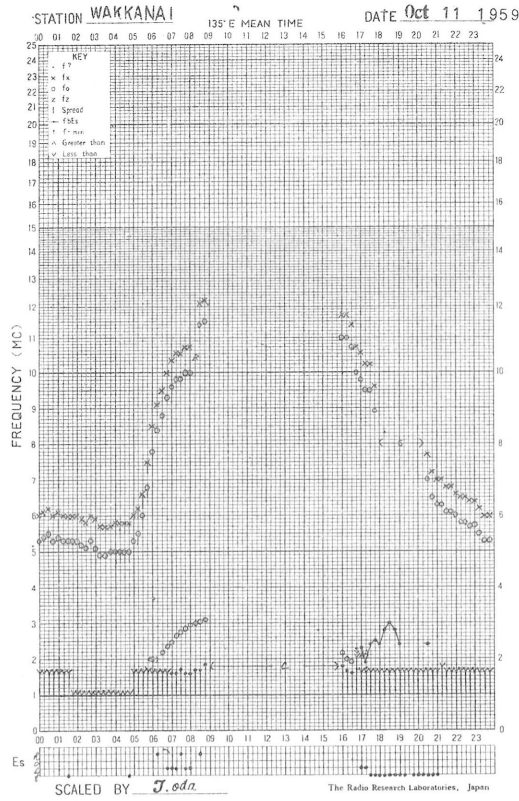
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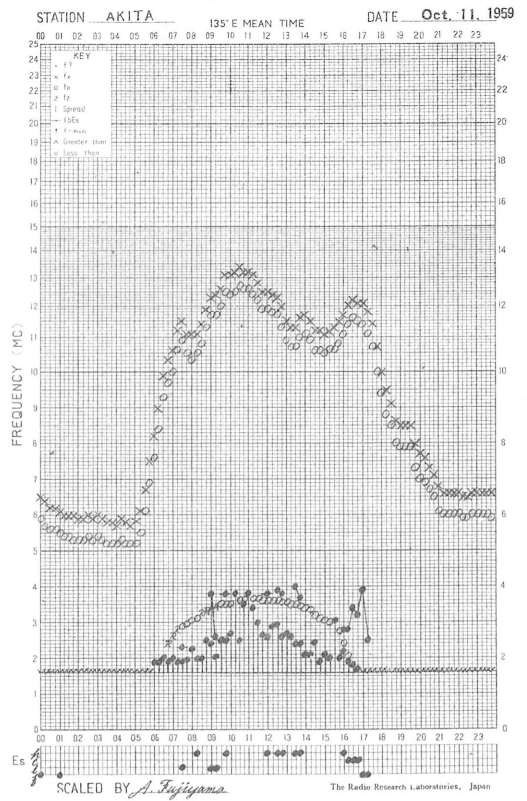
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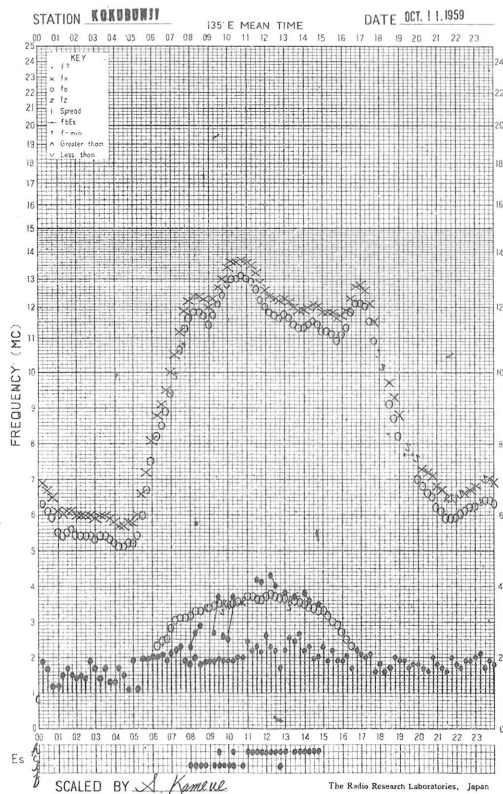
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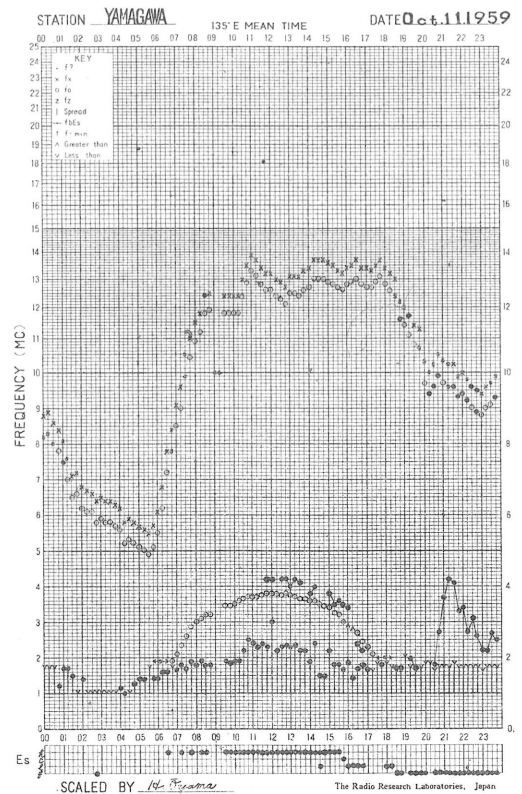
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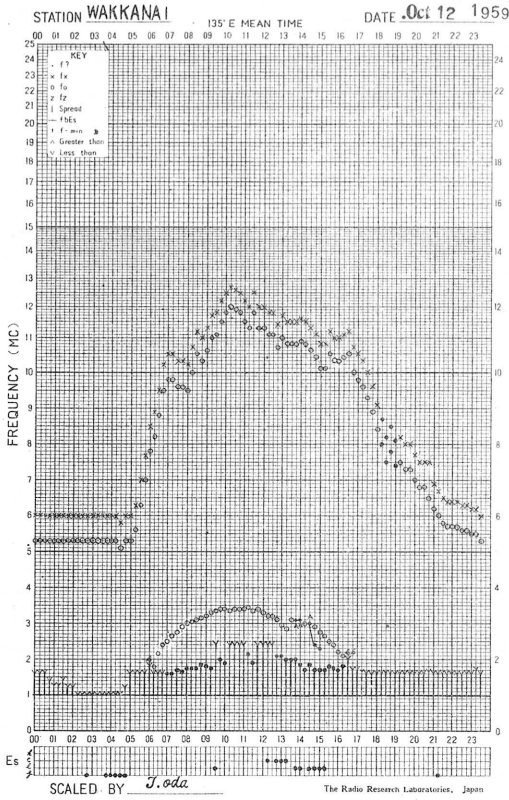
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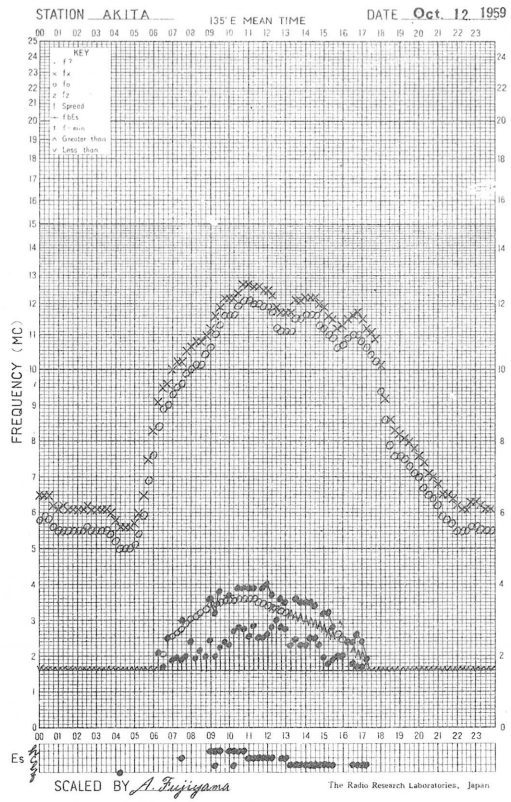
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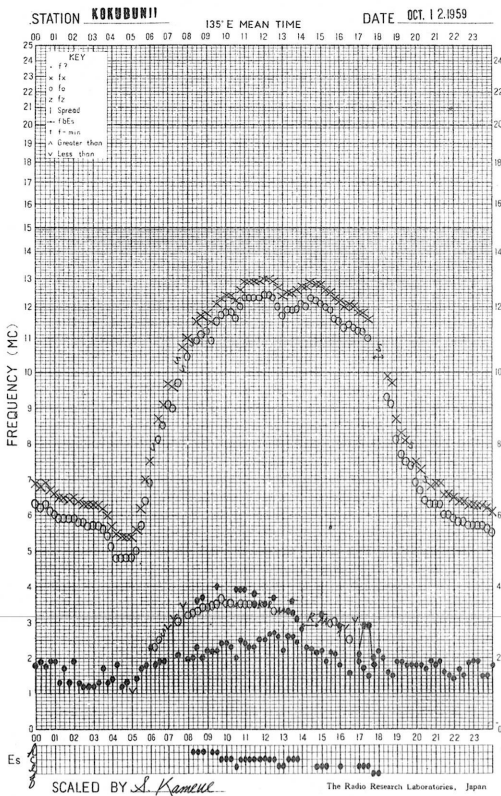
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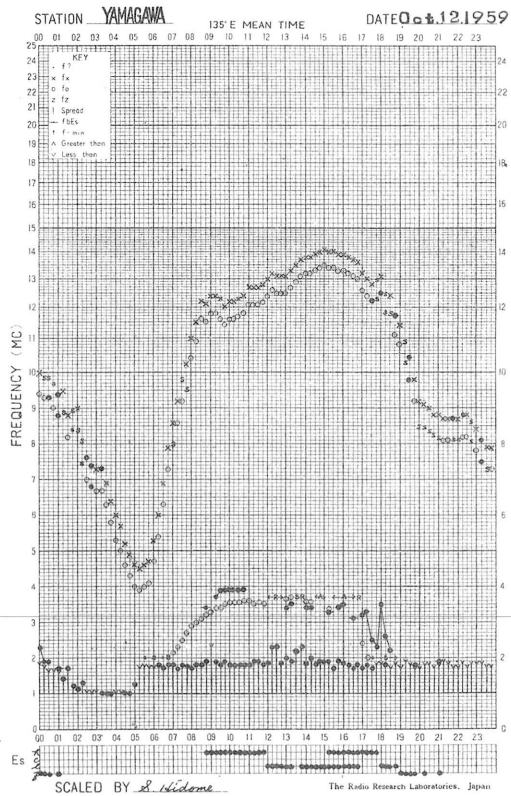
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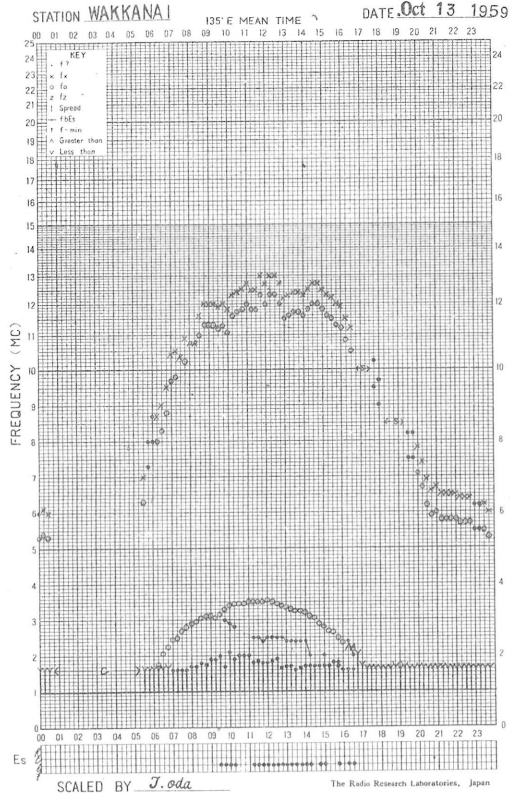
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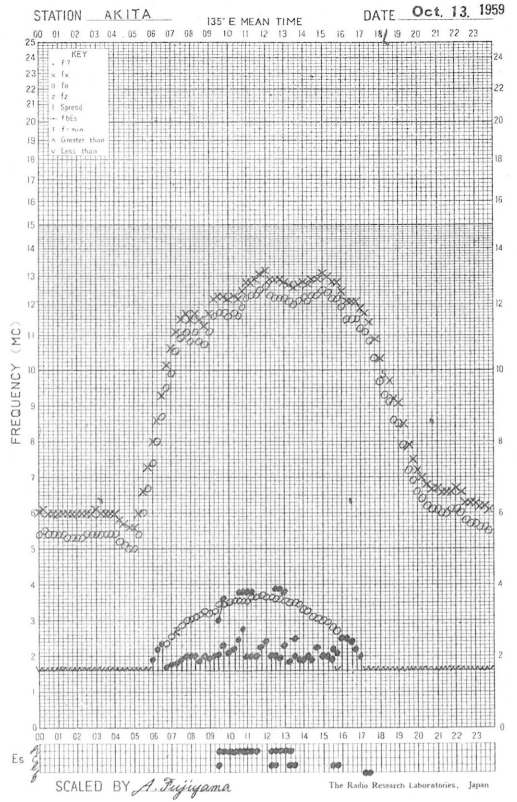
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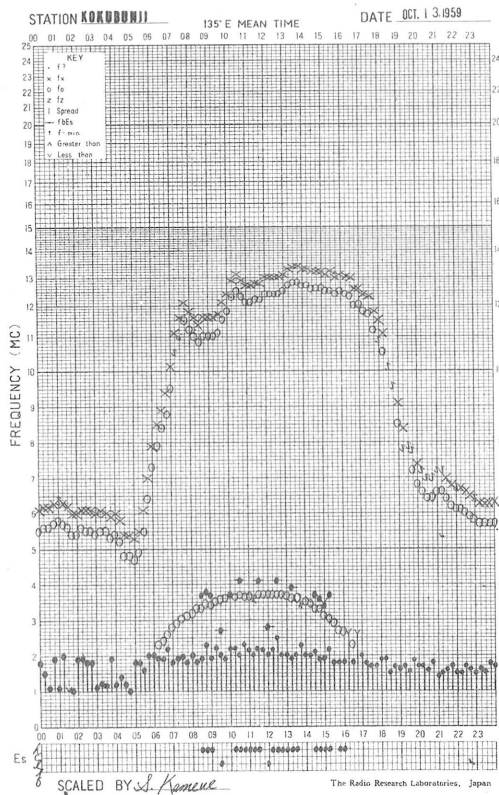
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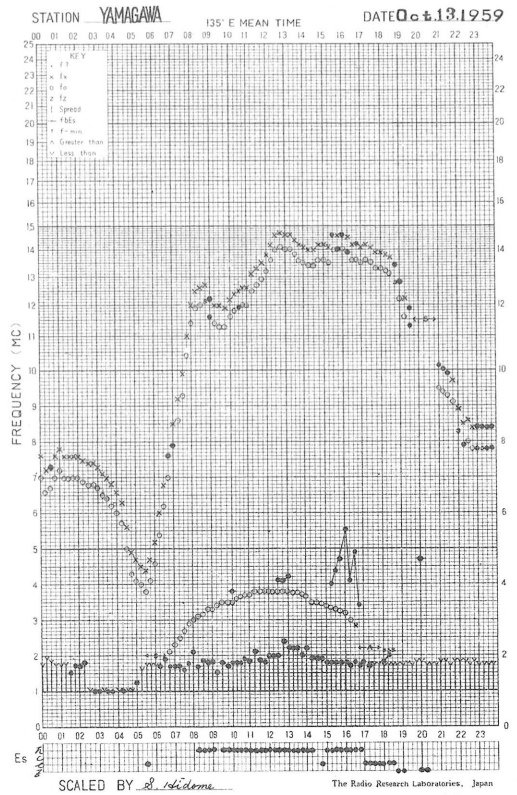
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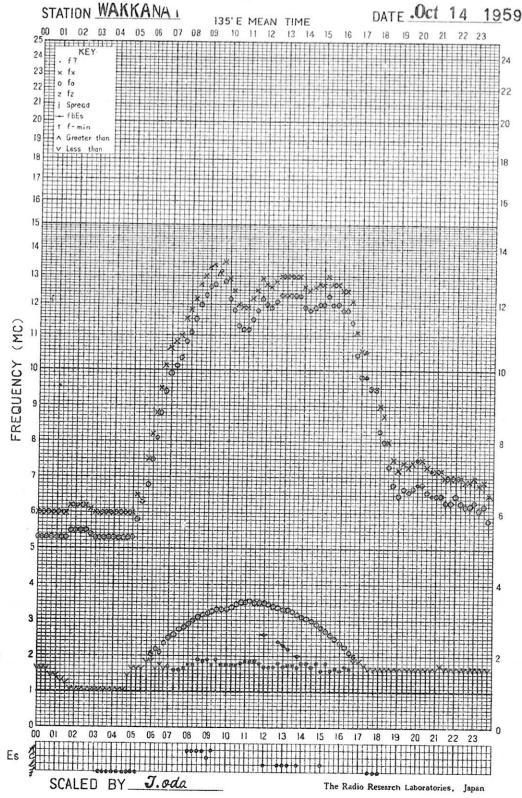
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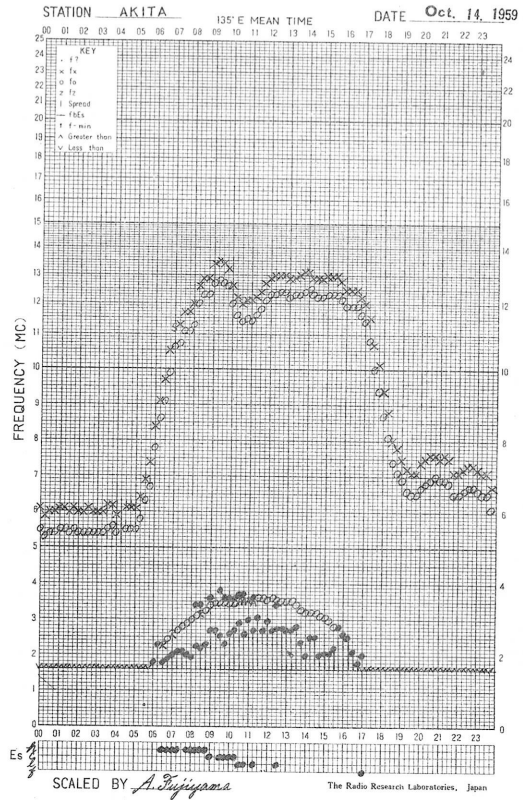
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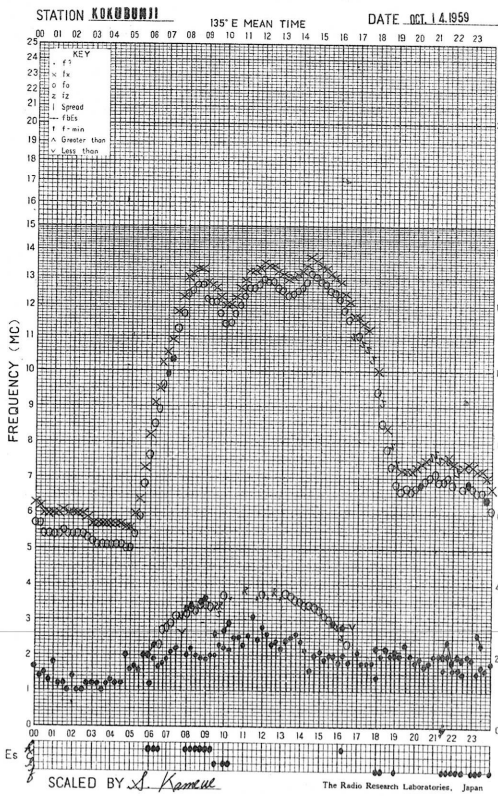
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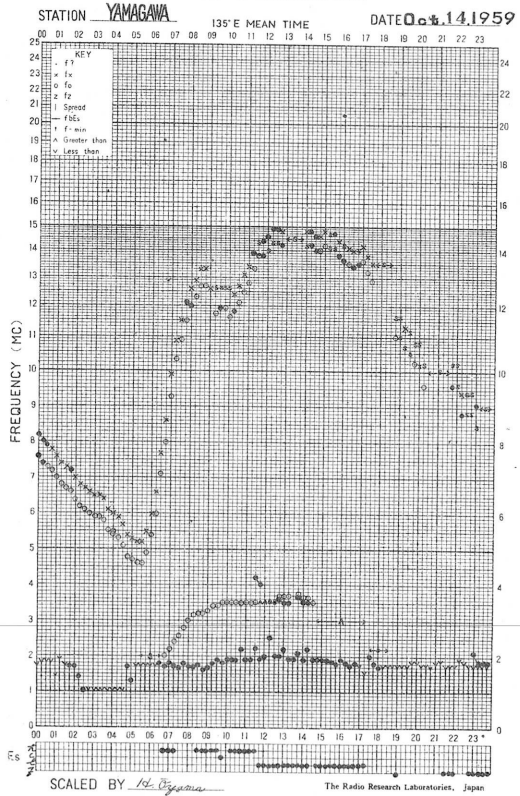
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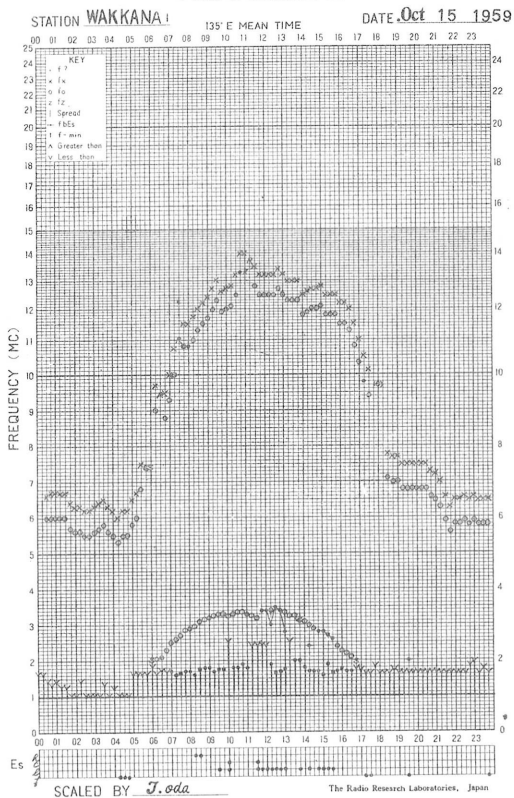
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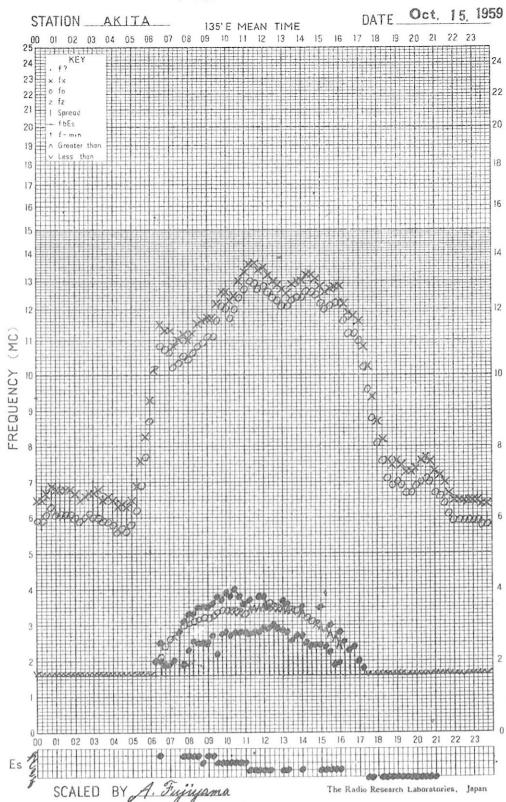
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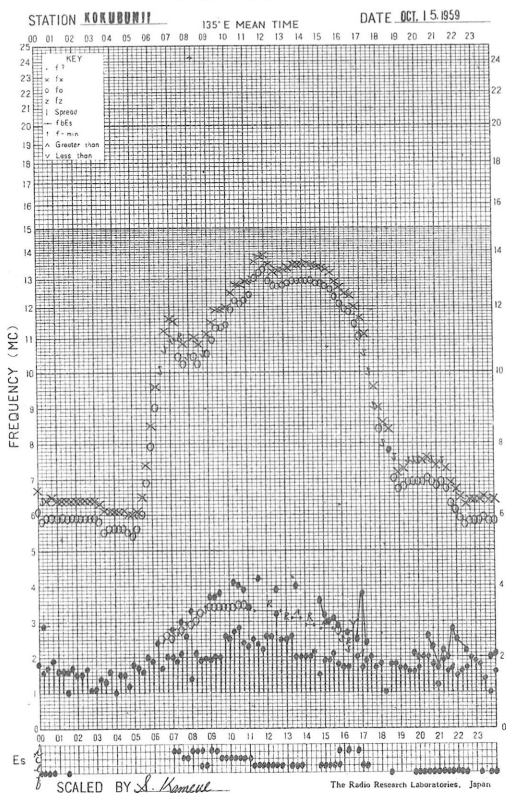
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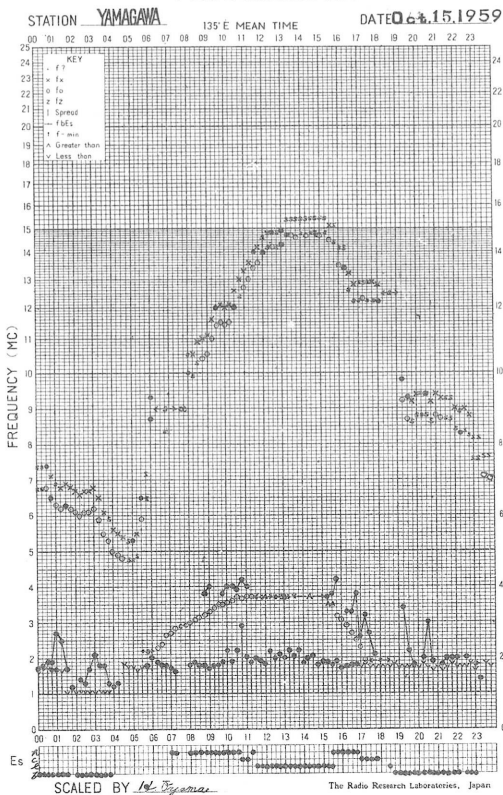
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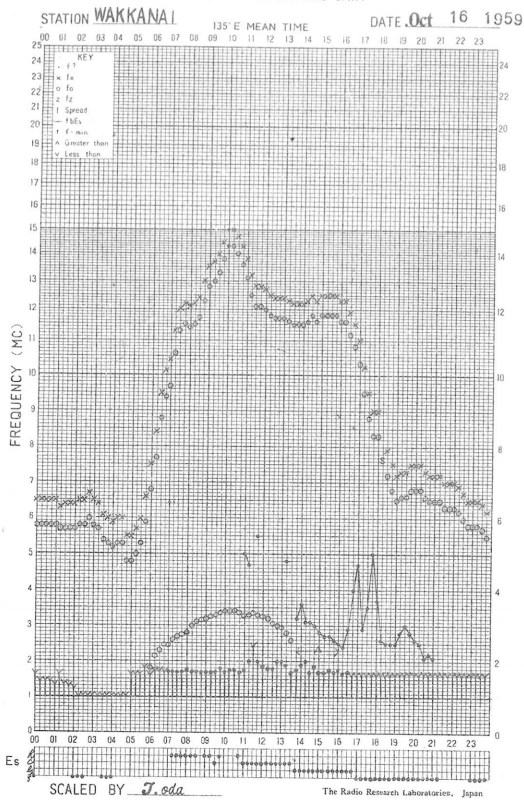
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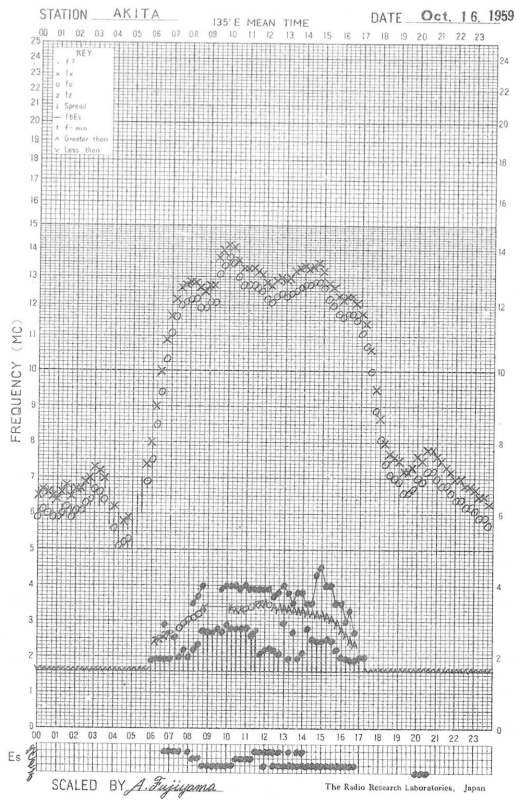
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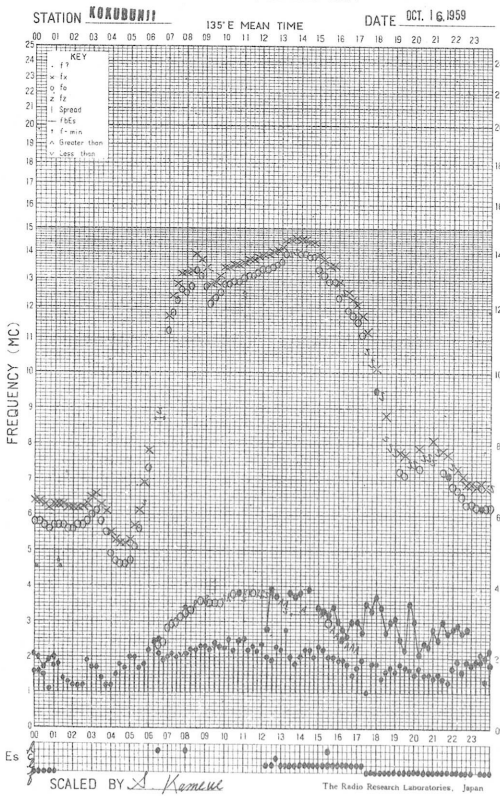
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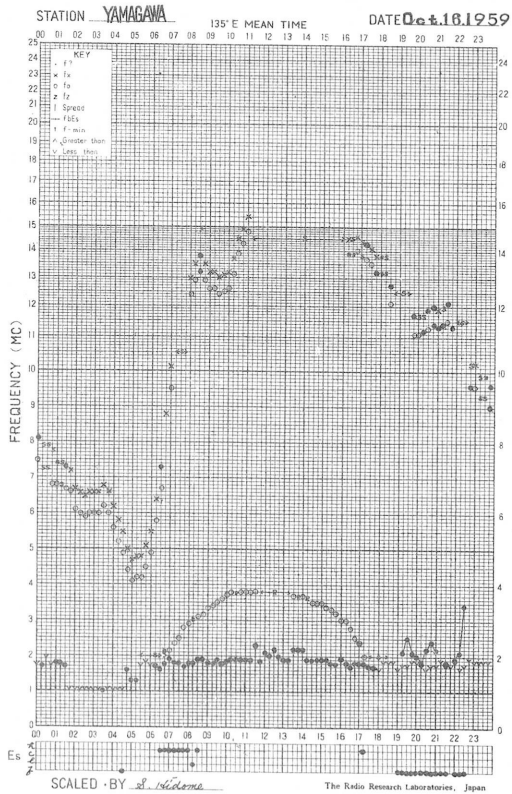
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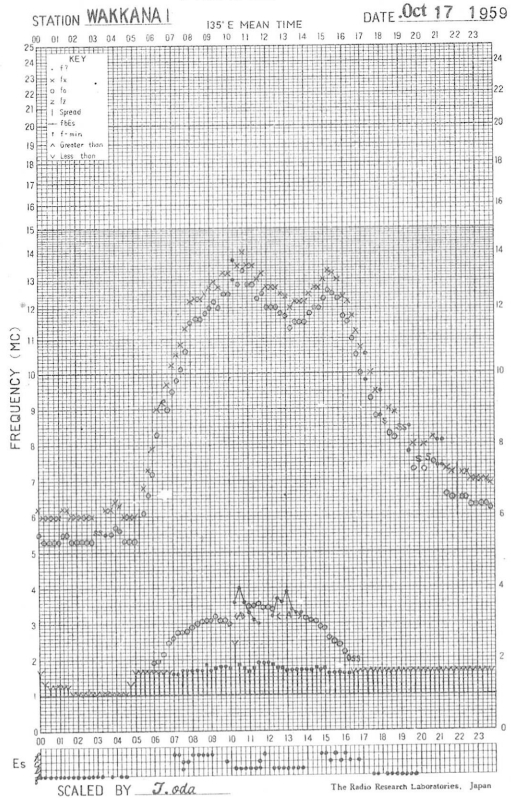
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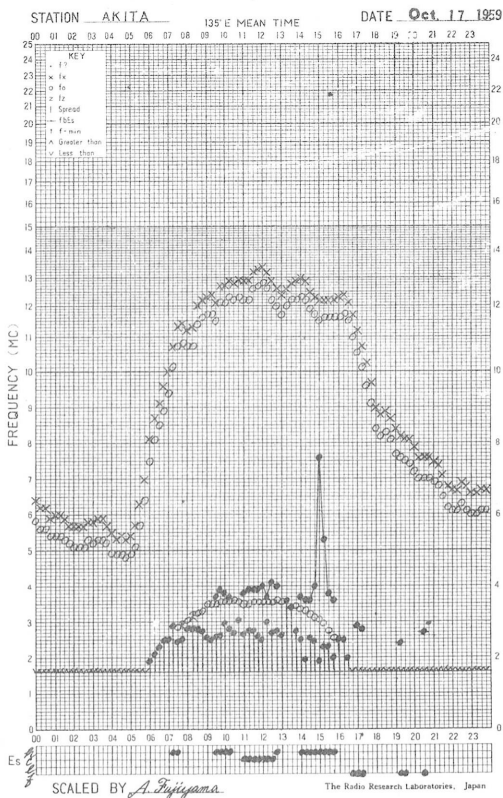
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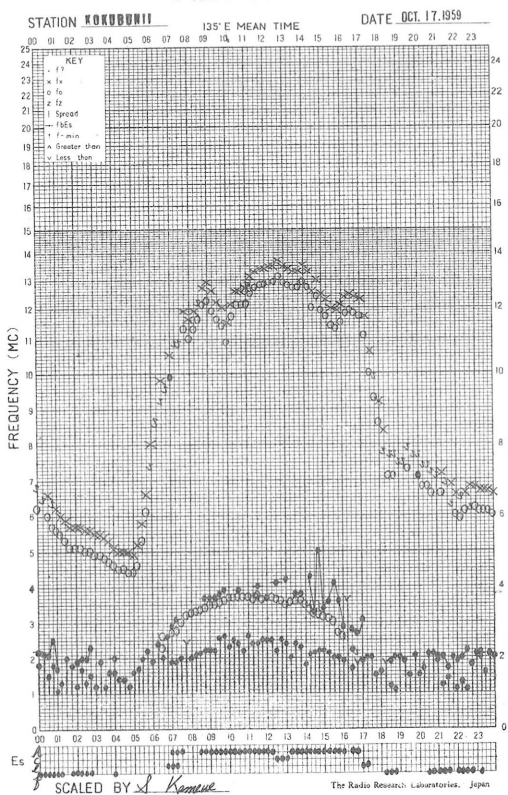
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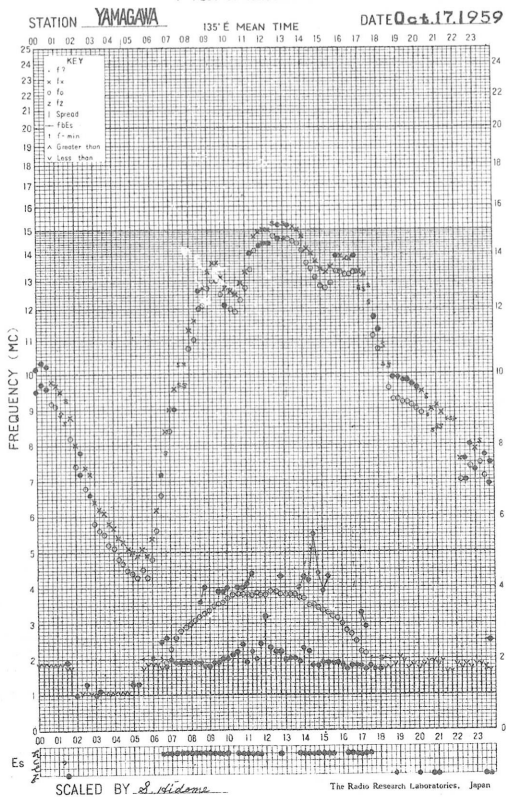
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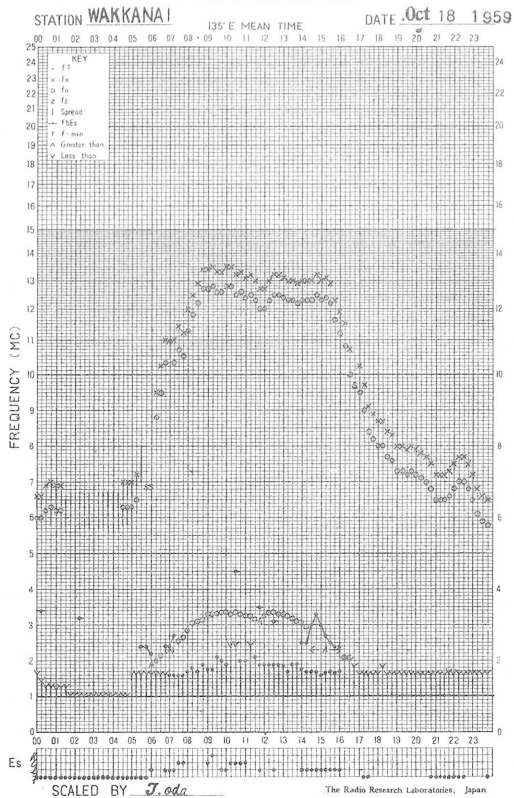
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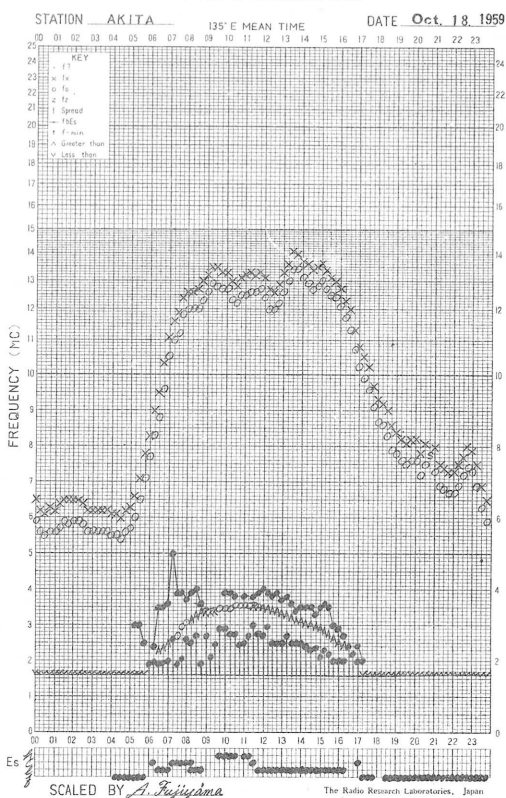
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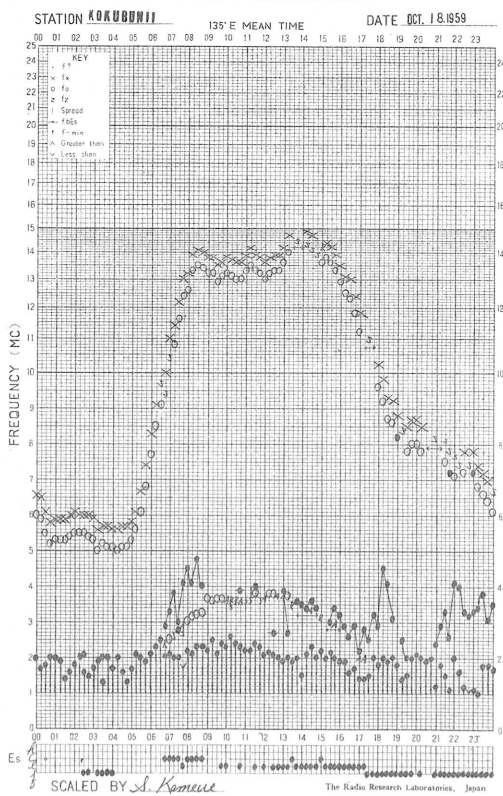
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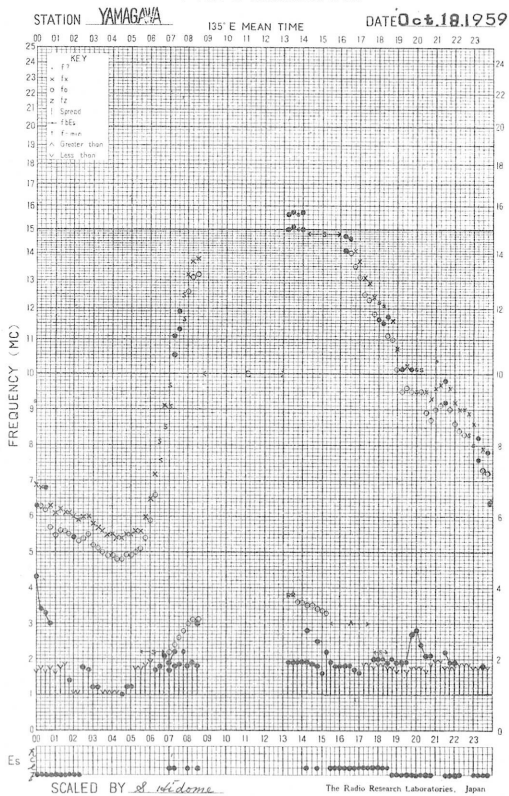
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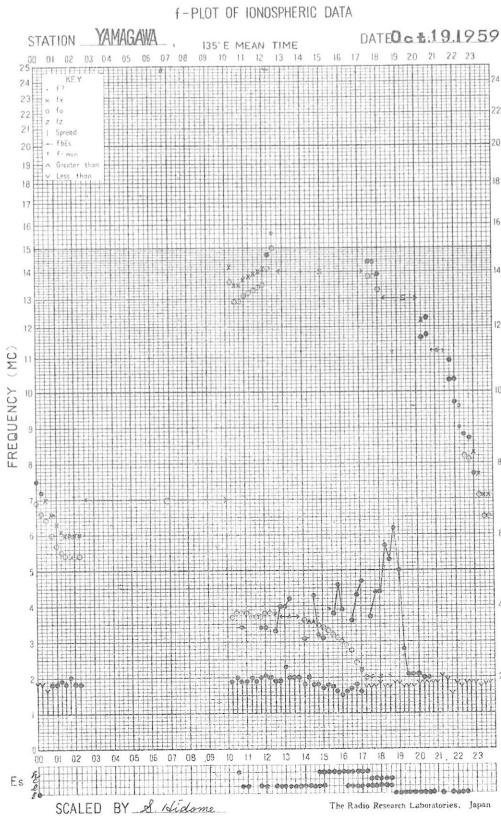
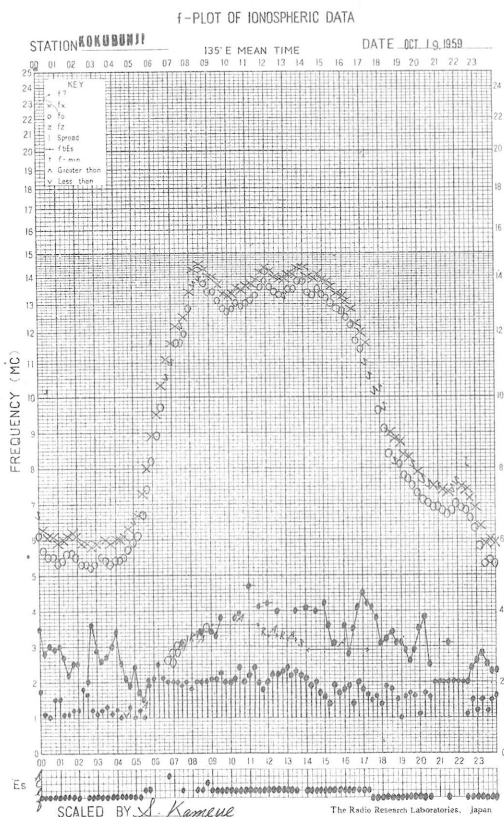
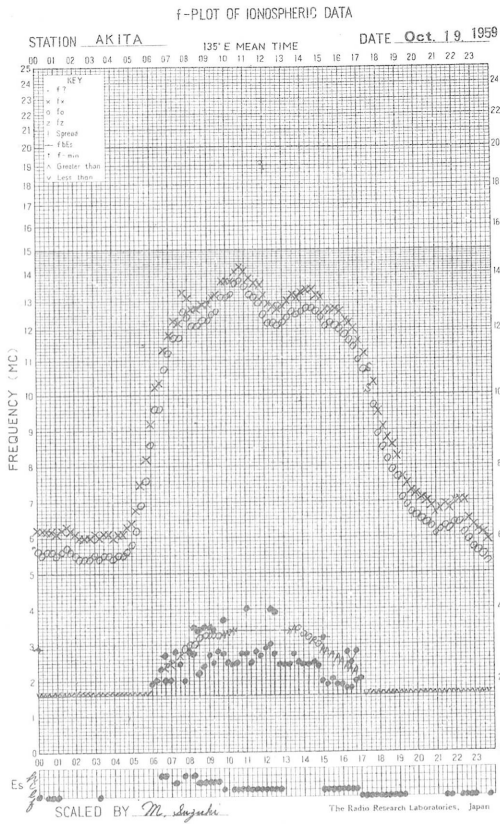
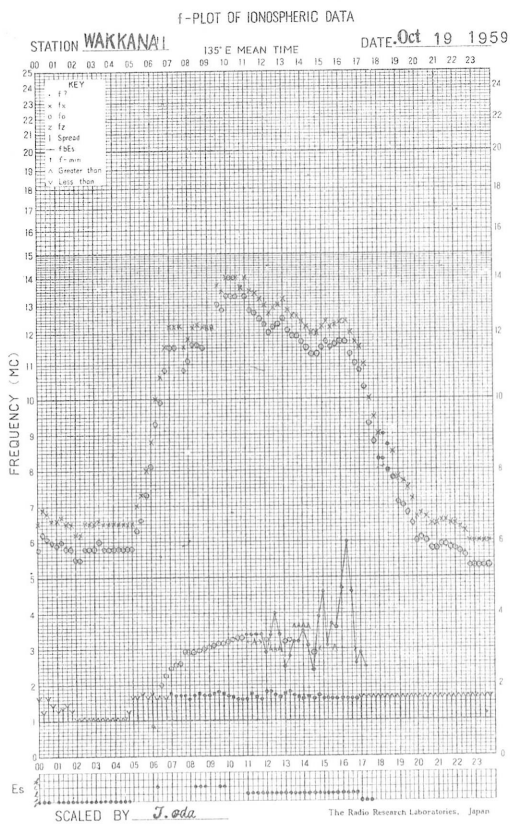


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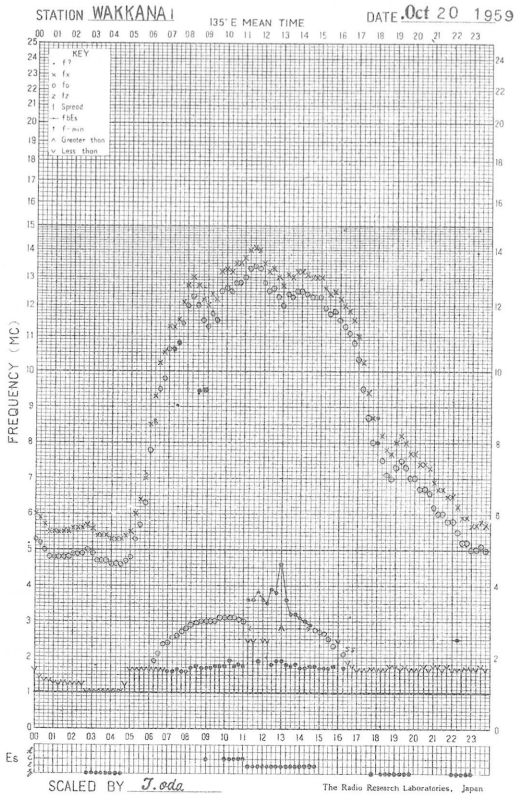


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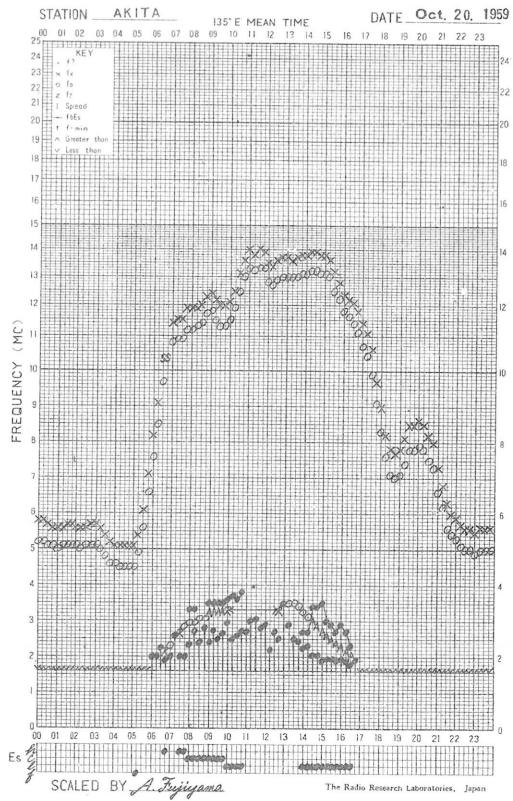




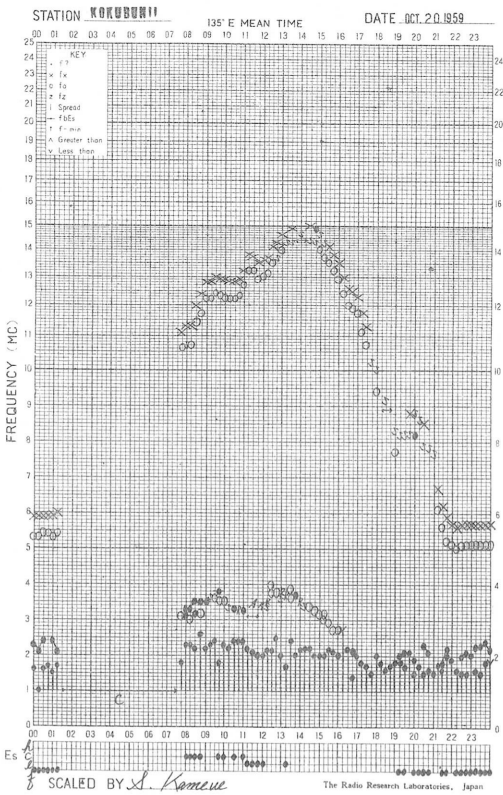
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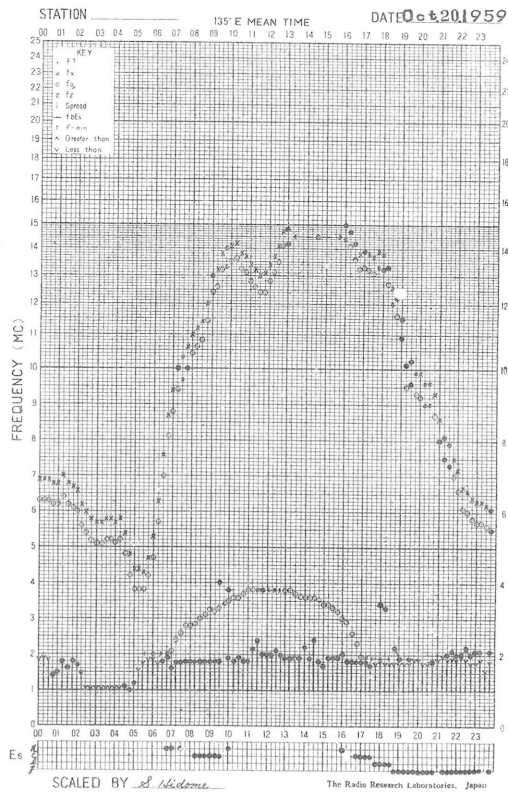
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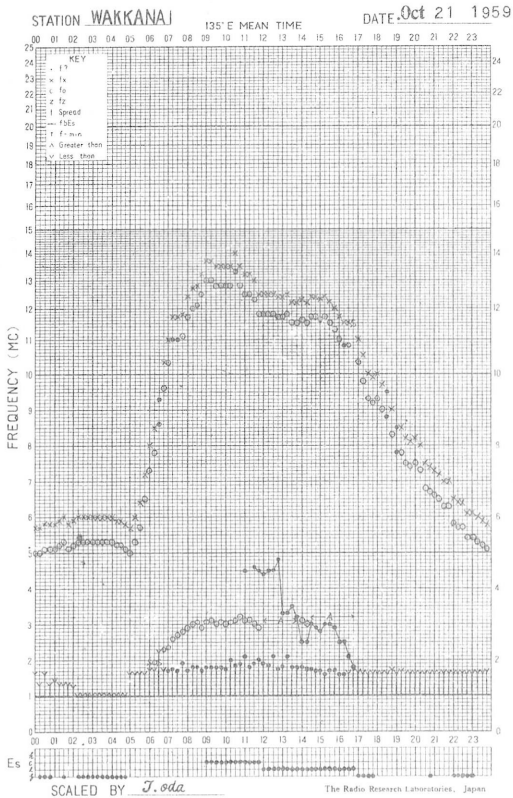
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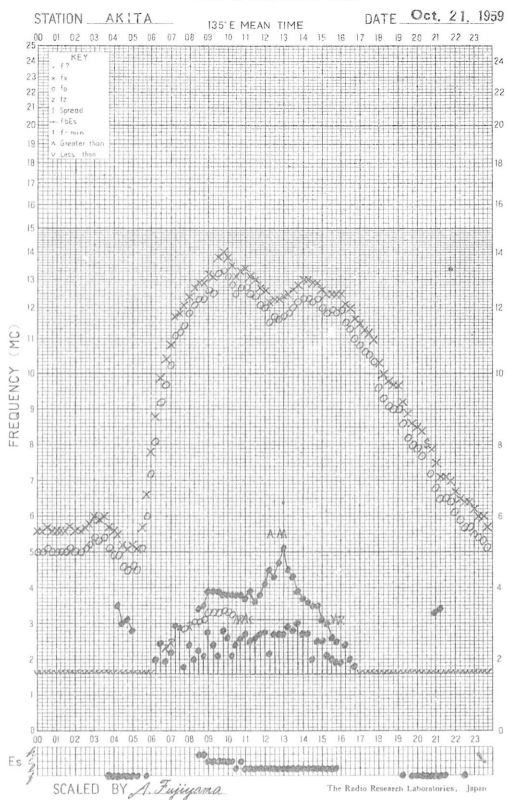
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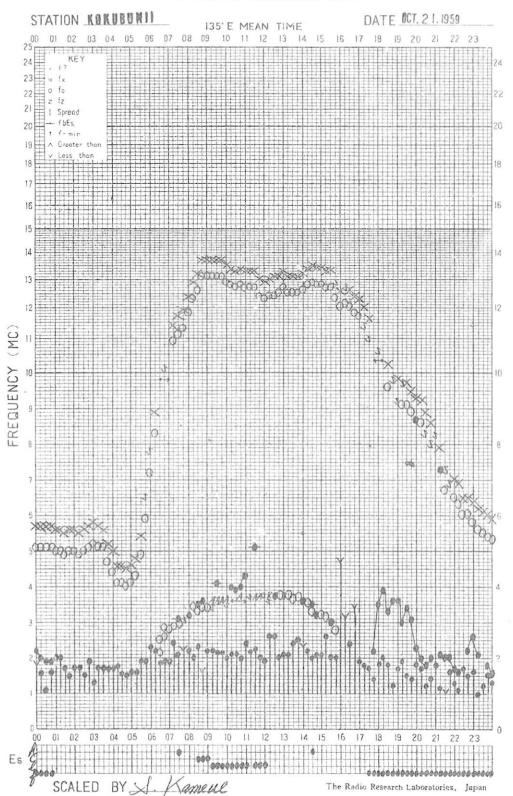
f-plot of IONOSPHERIC DATA



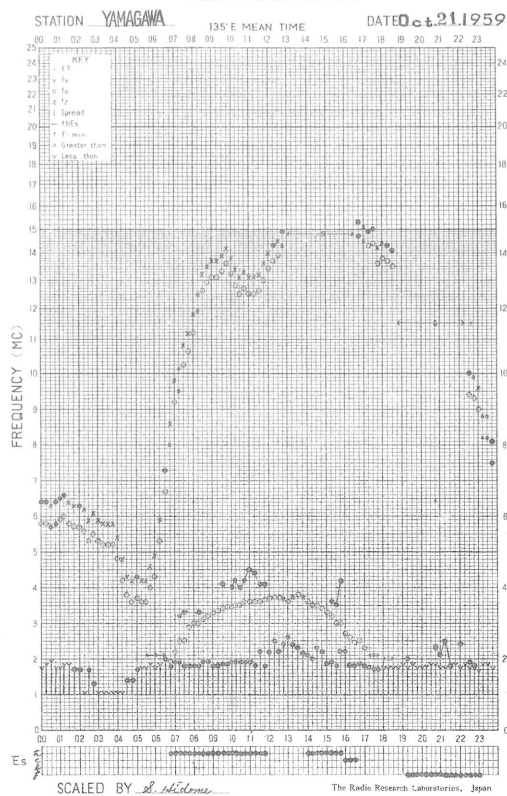
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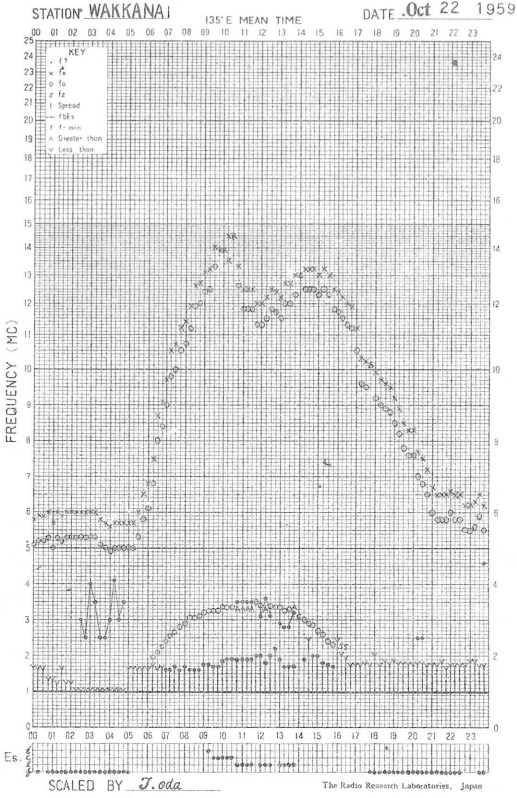
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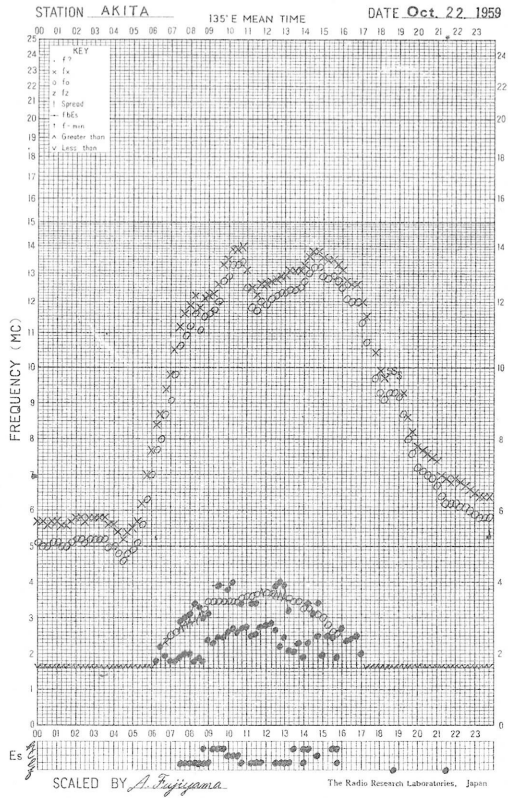
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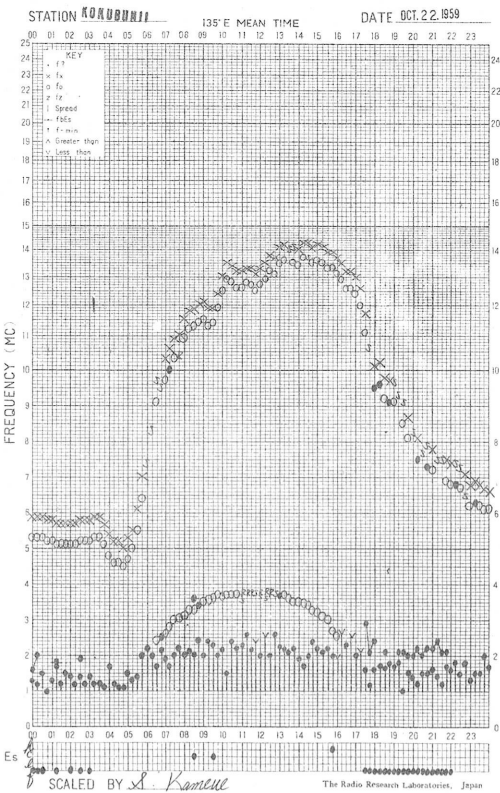
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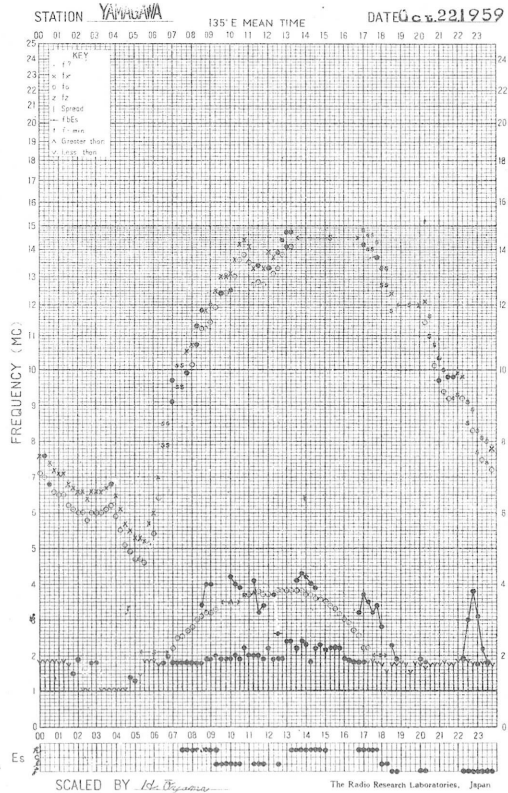
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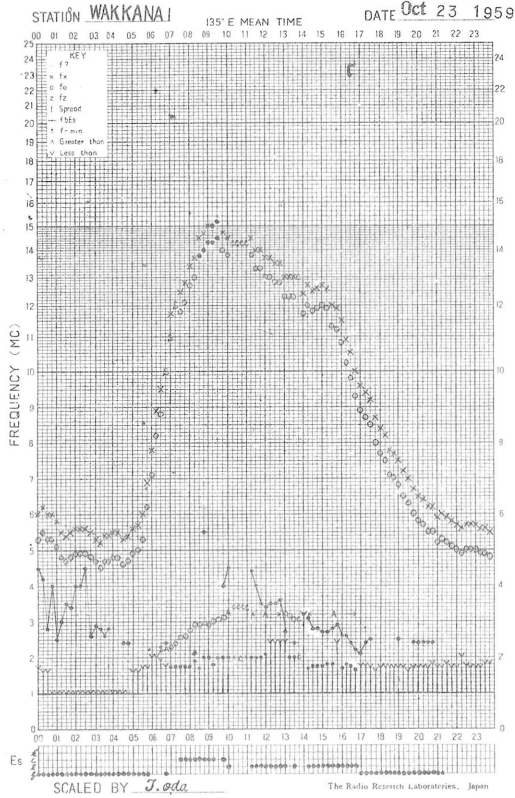
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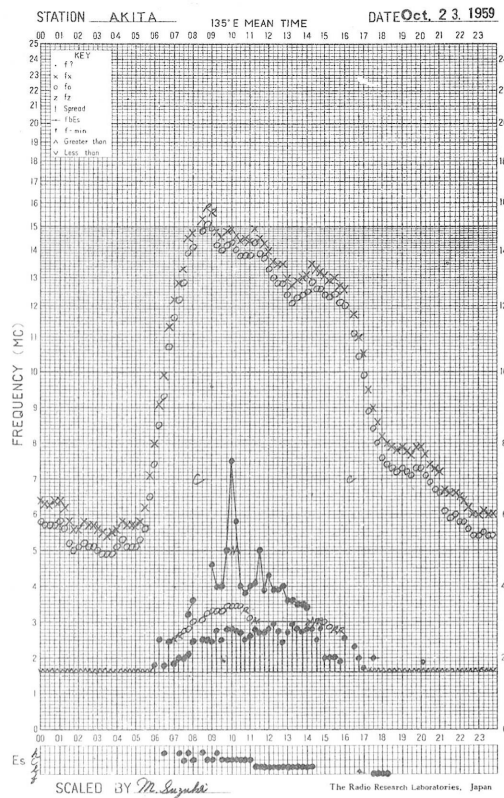
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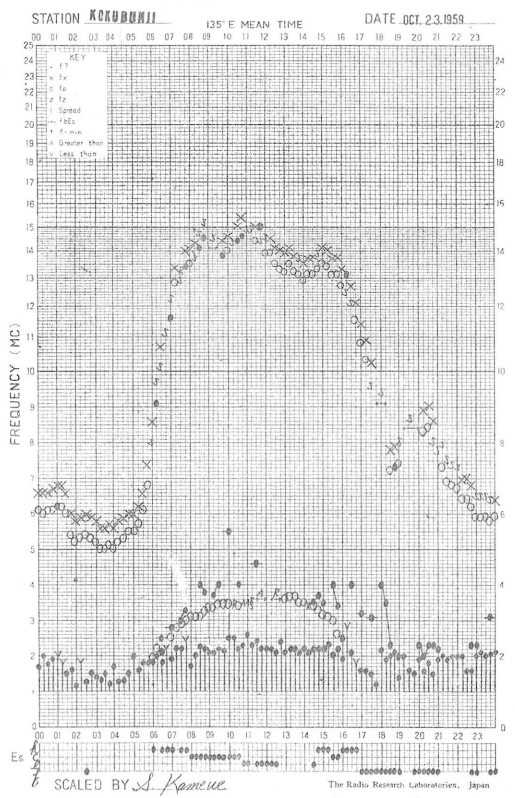
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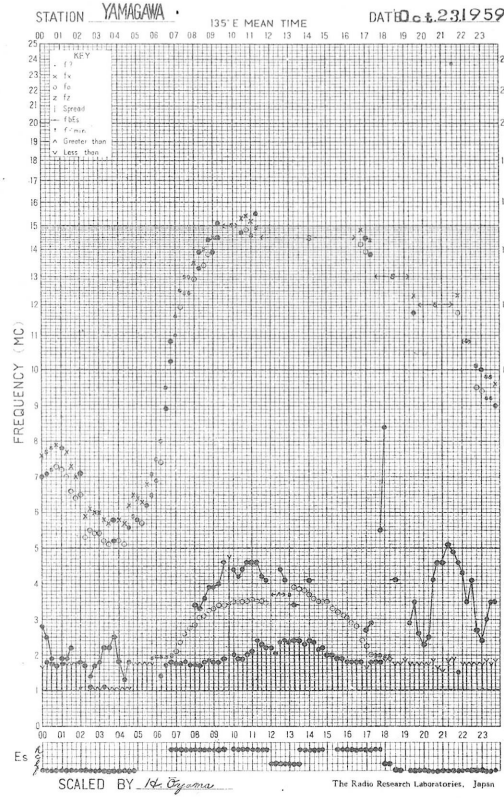
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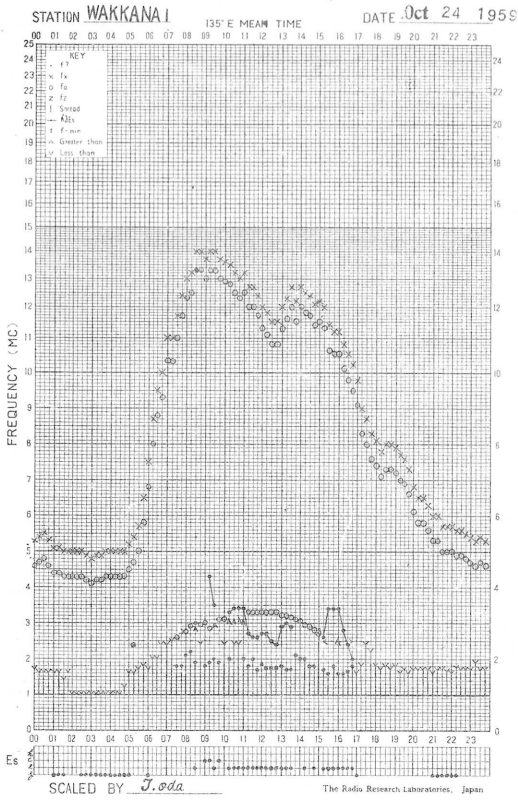
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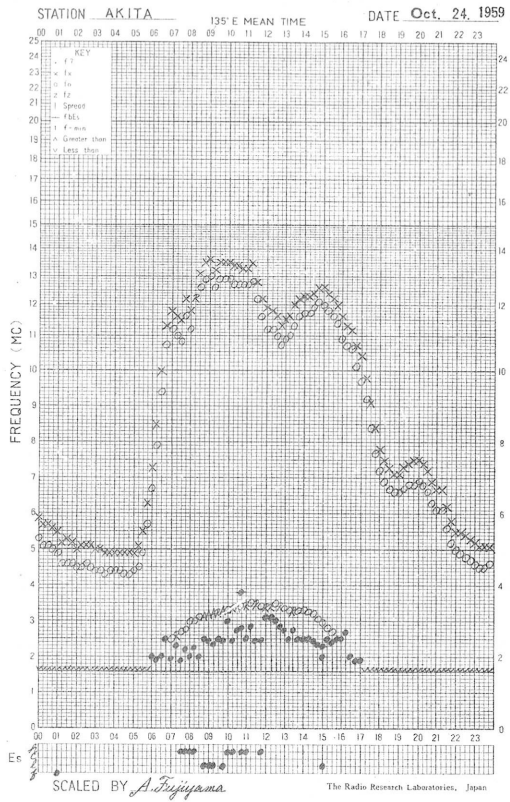
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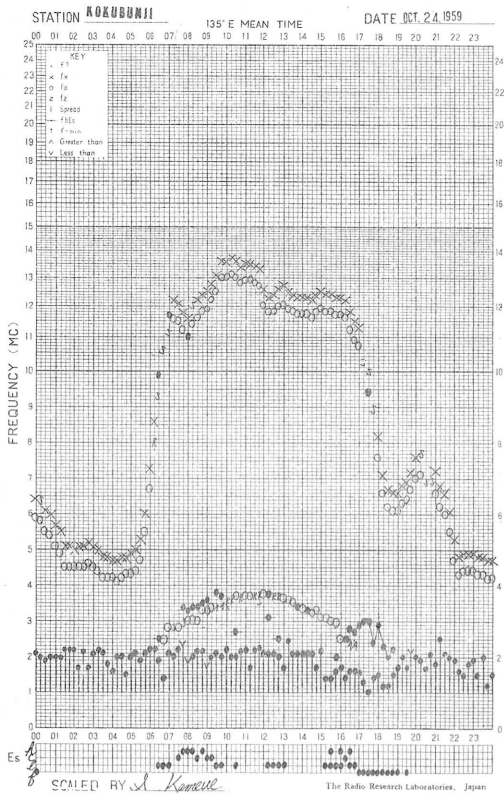
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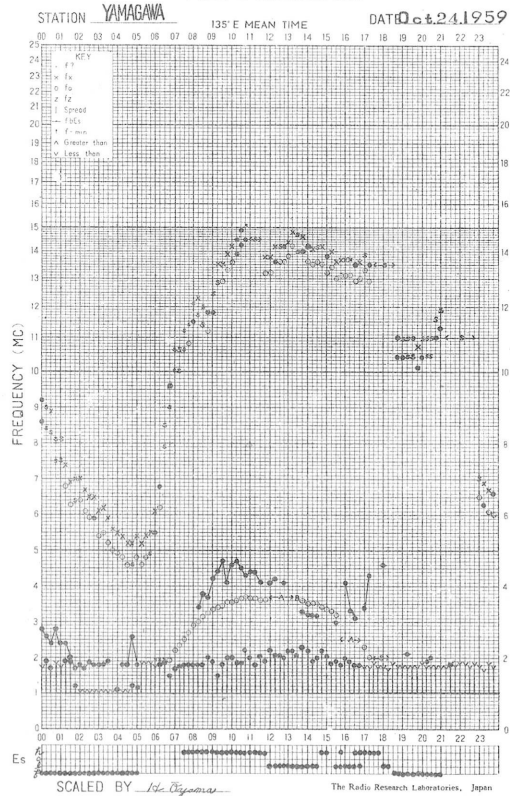
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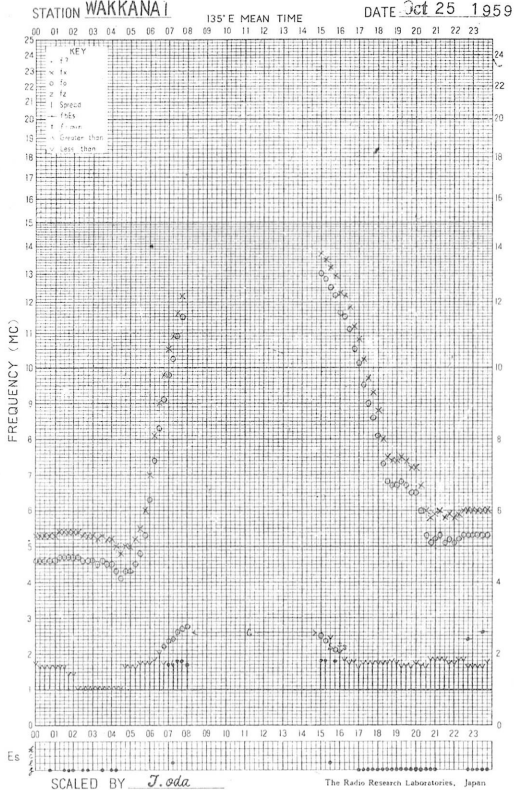
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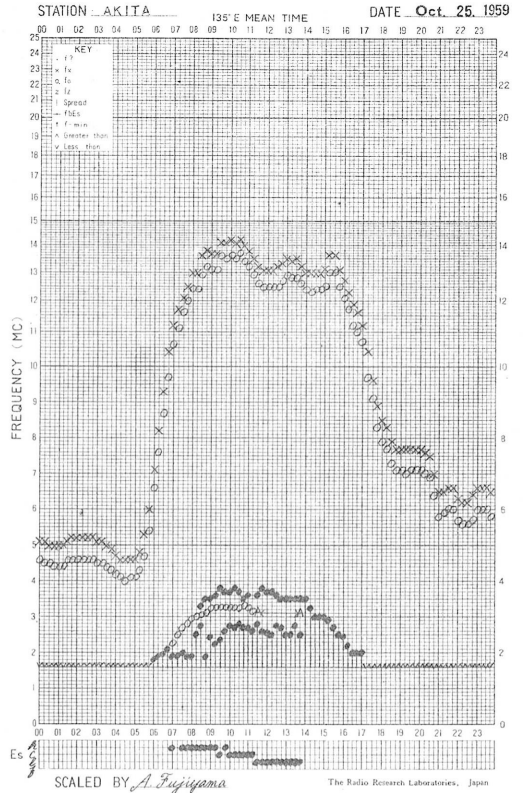
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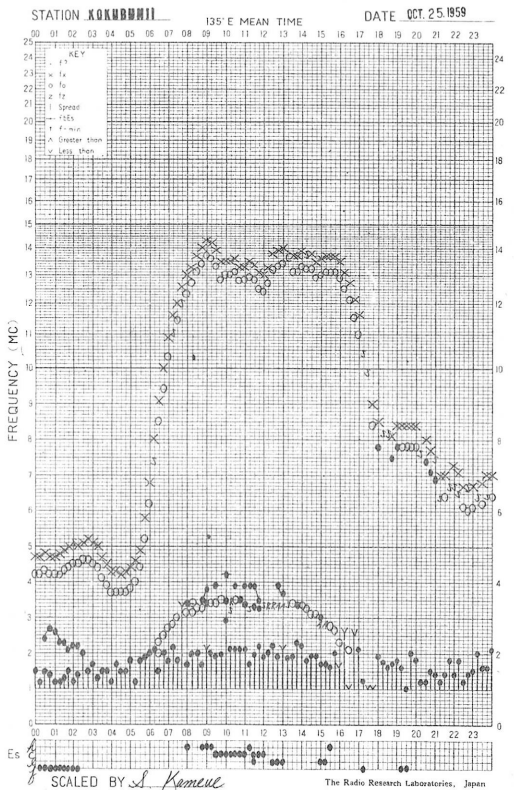
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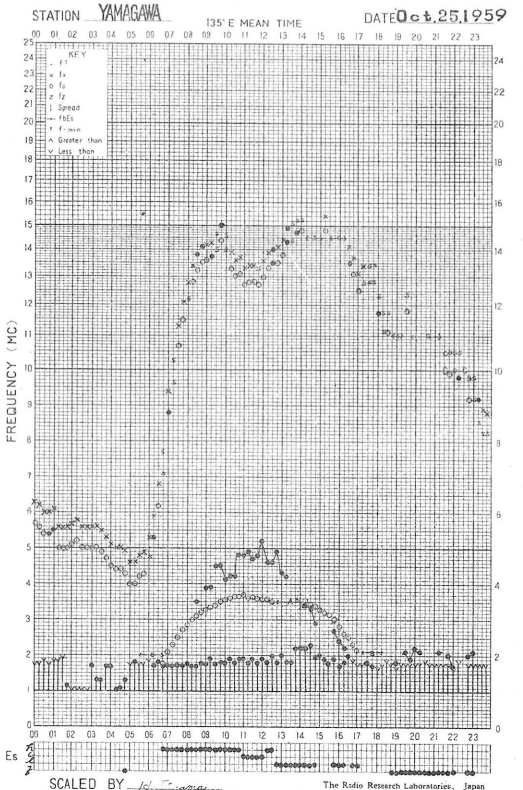
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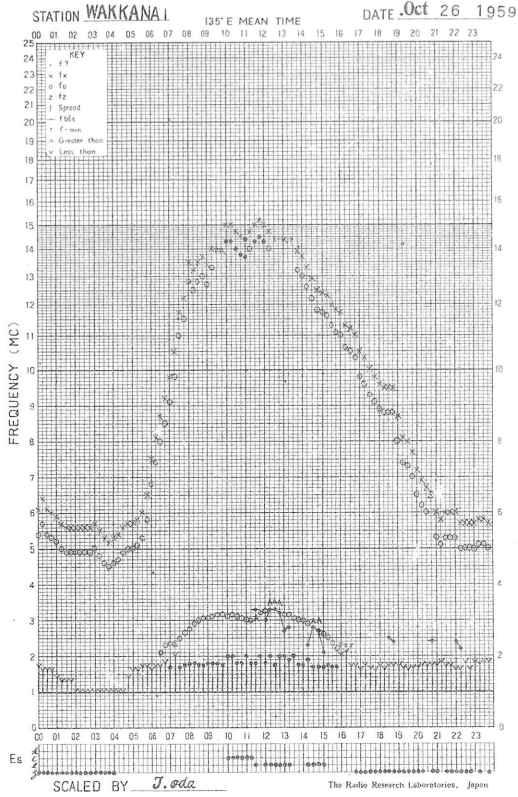
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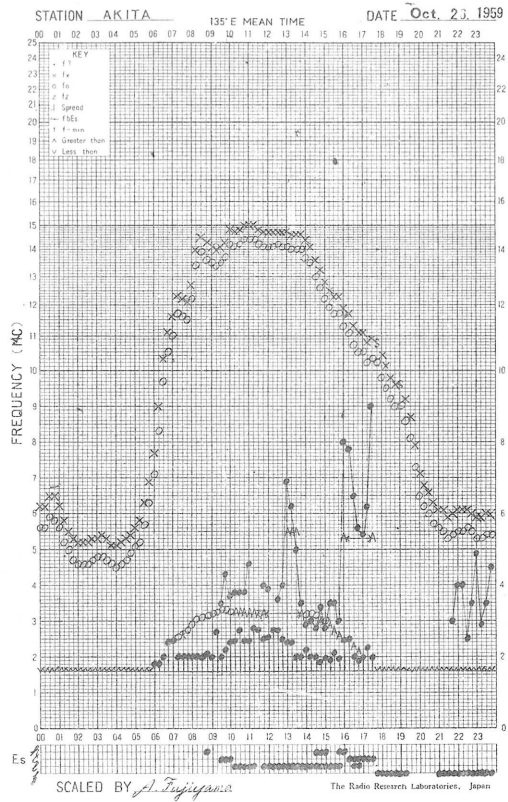
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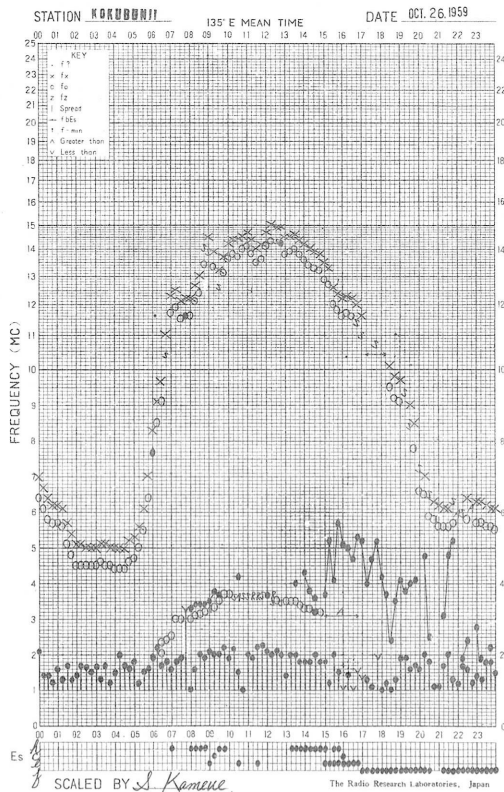
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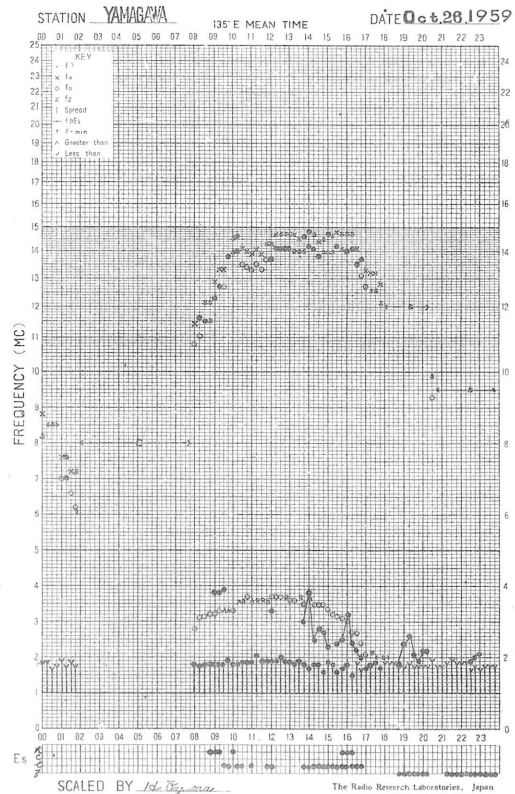
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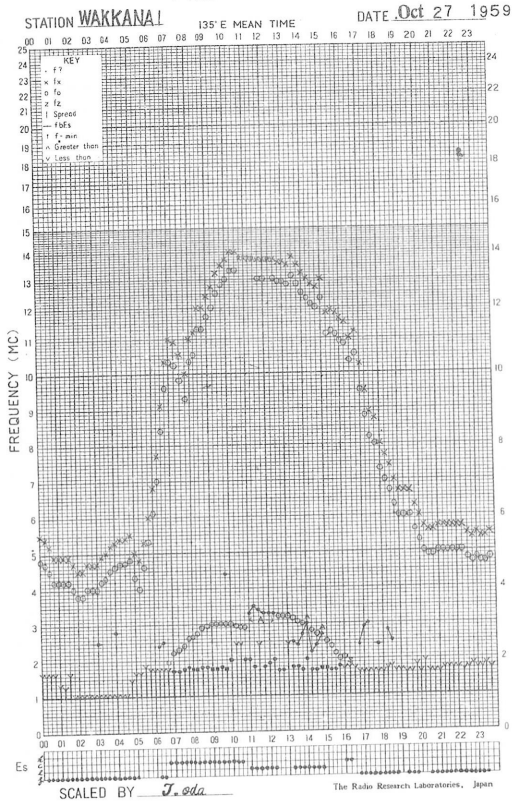
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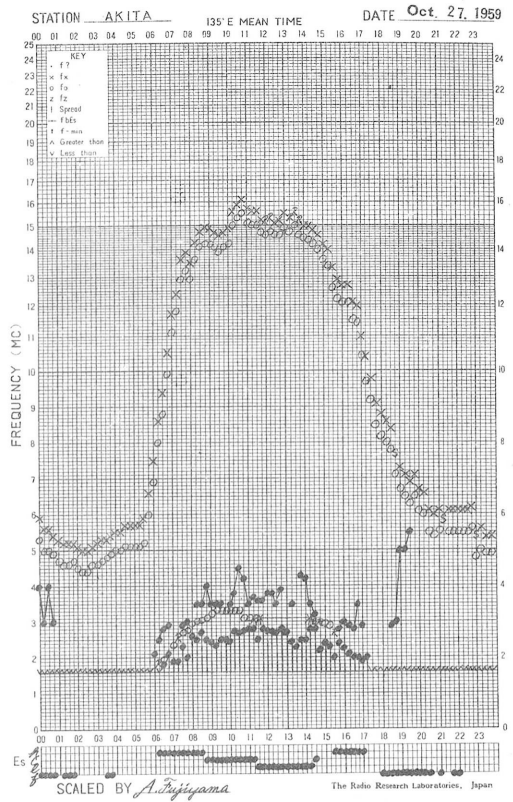
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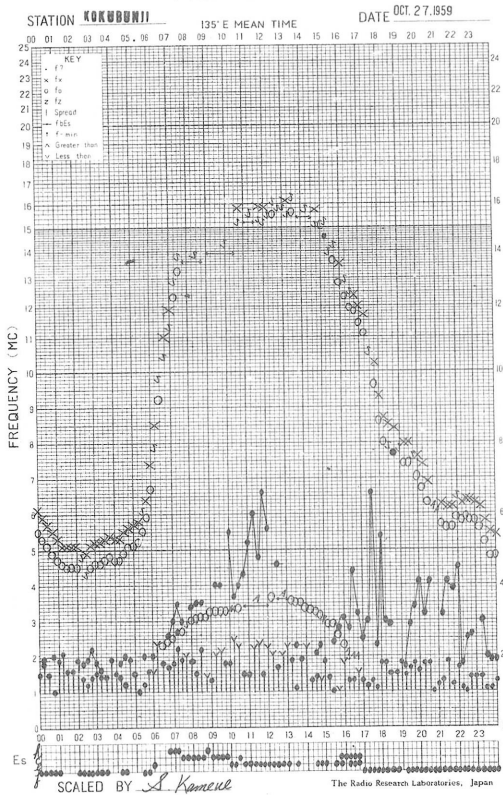
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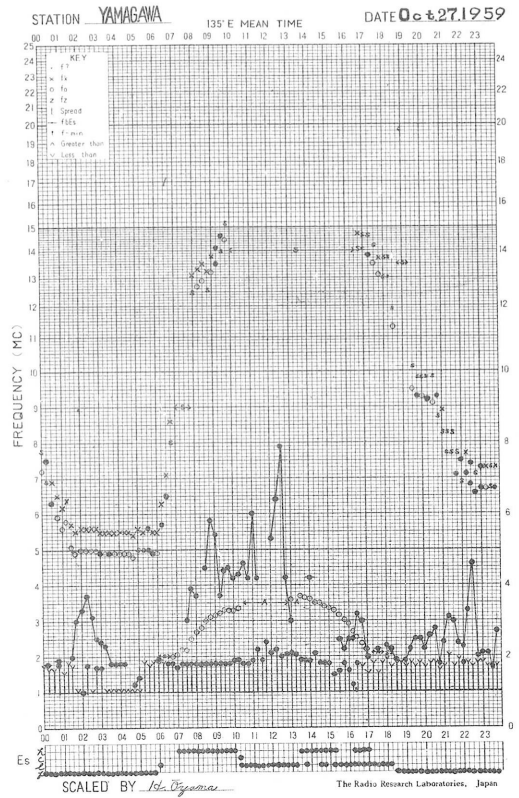
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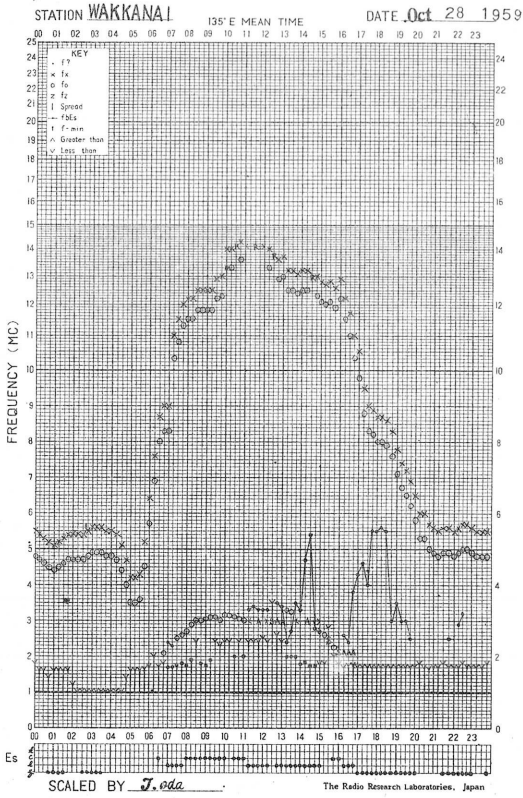
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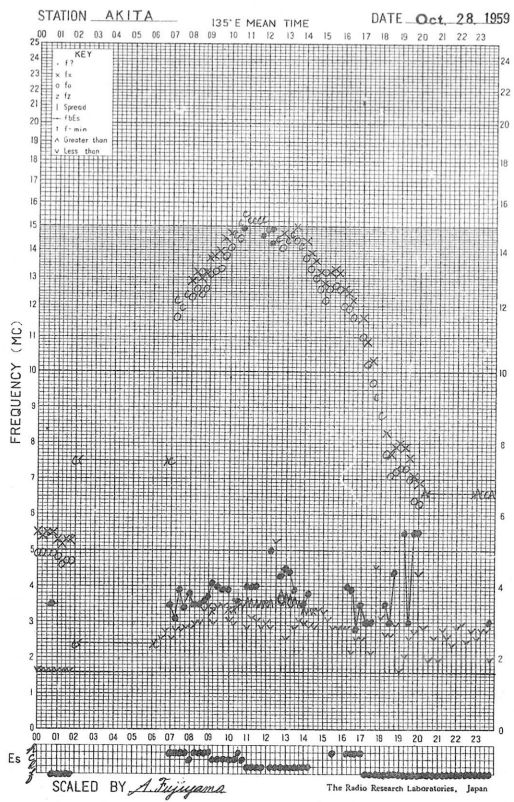
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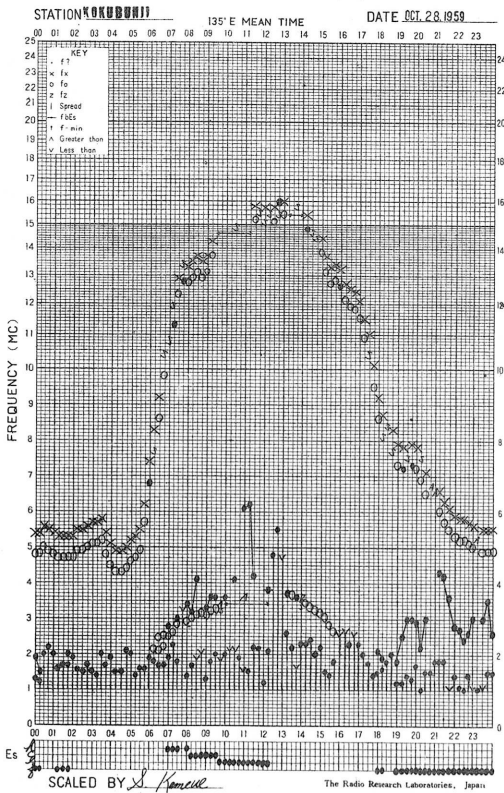
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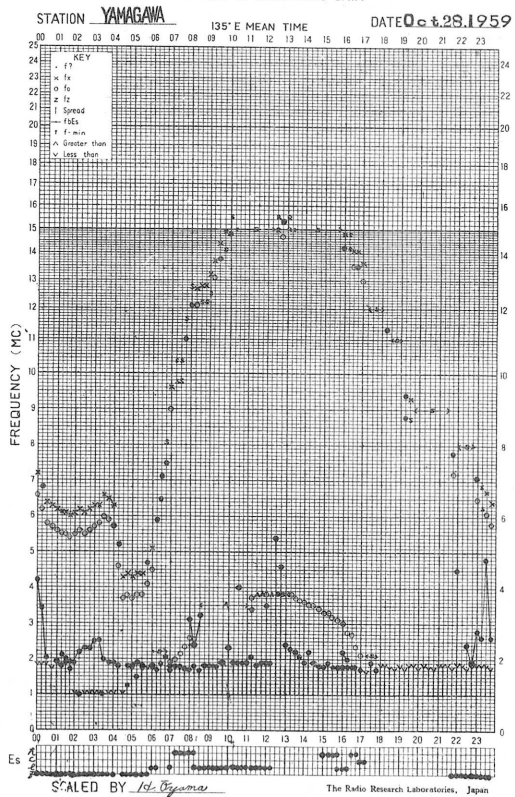
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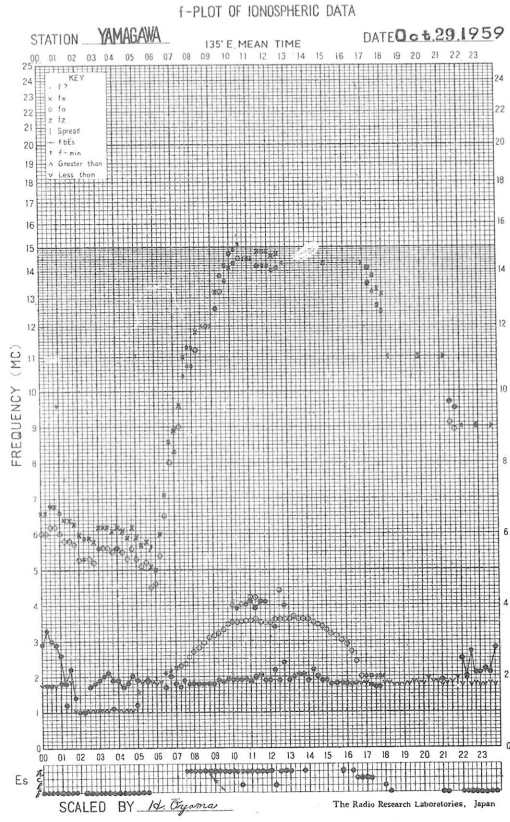
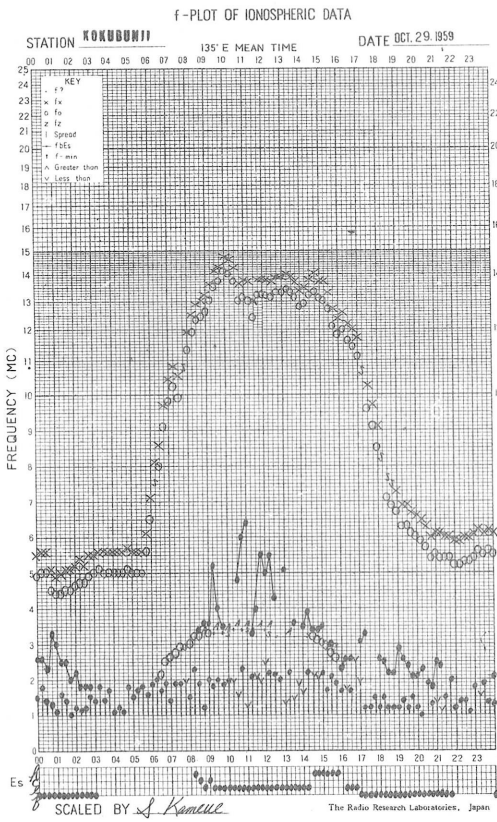
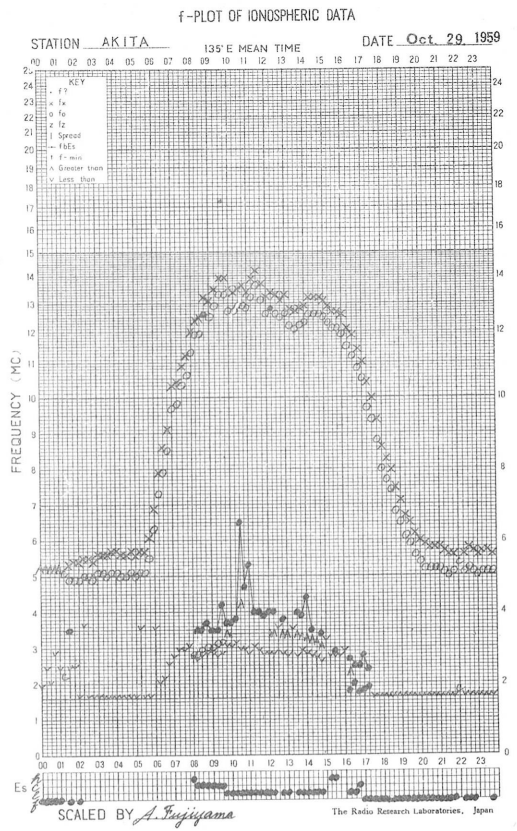
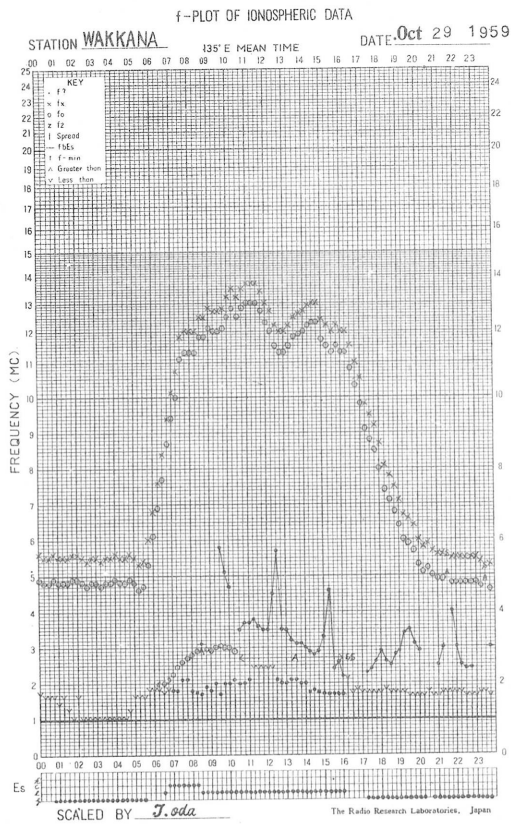


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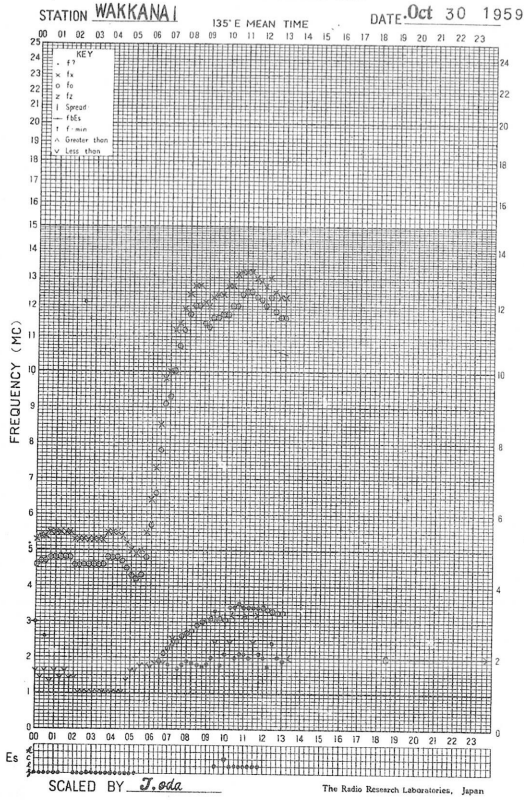


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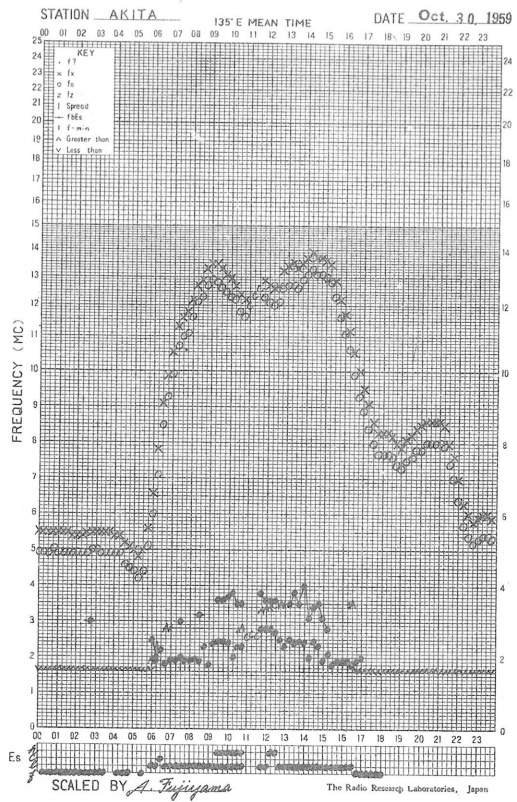




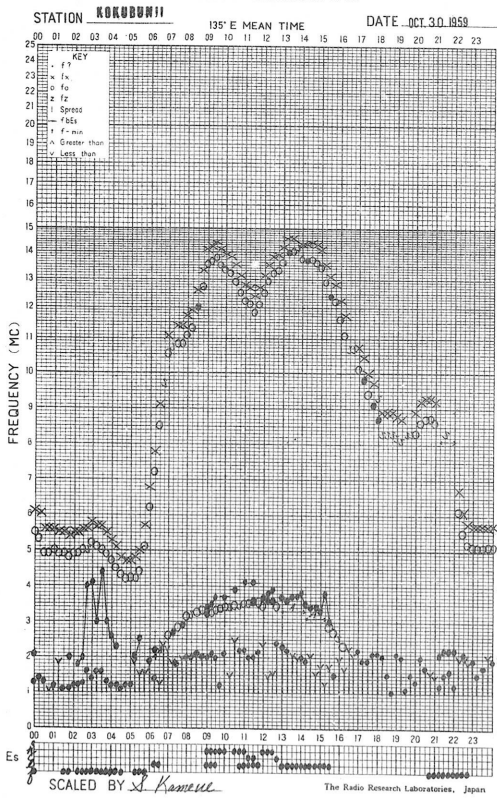
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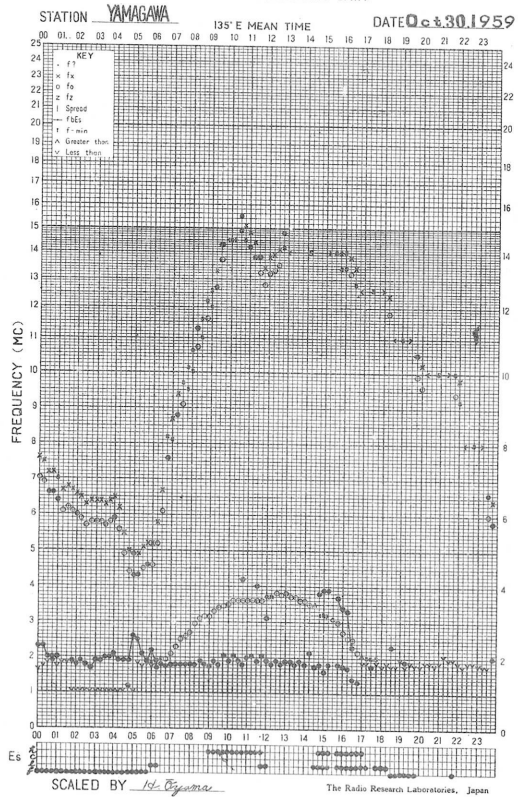
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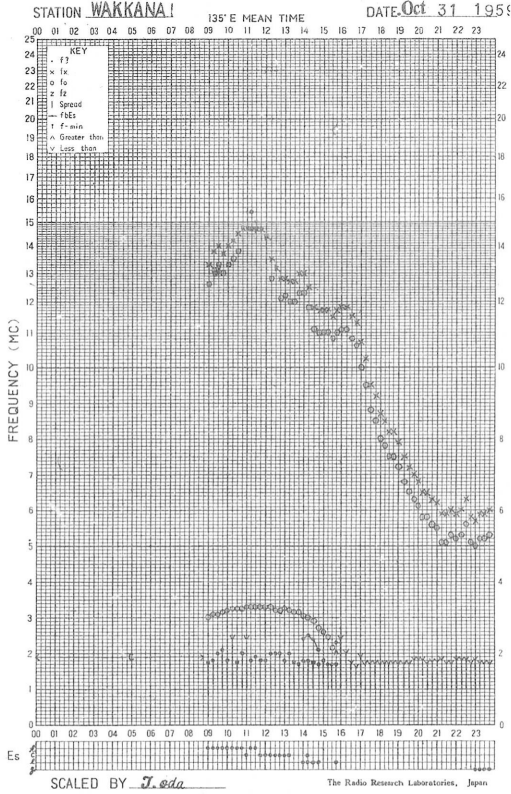
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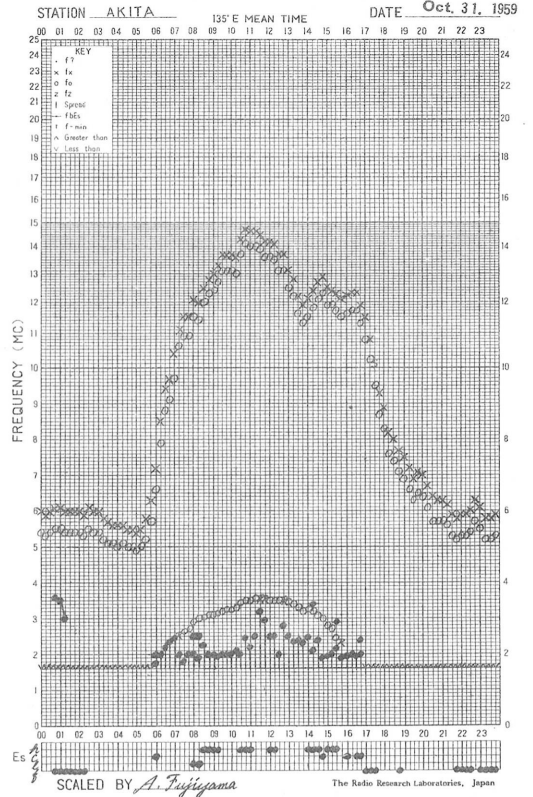
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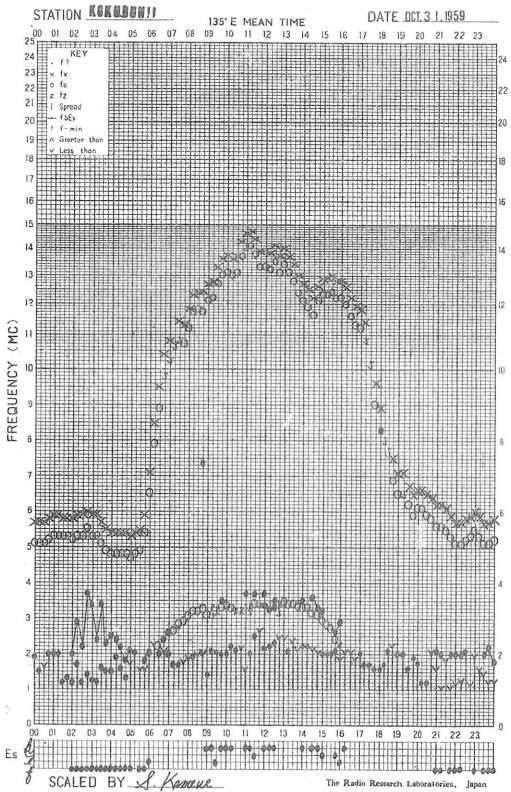
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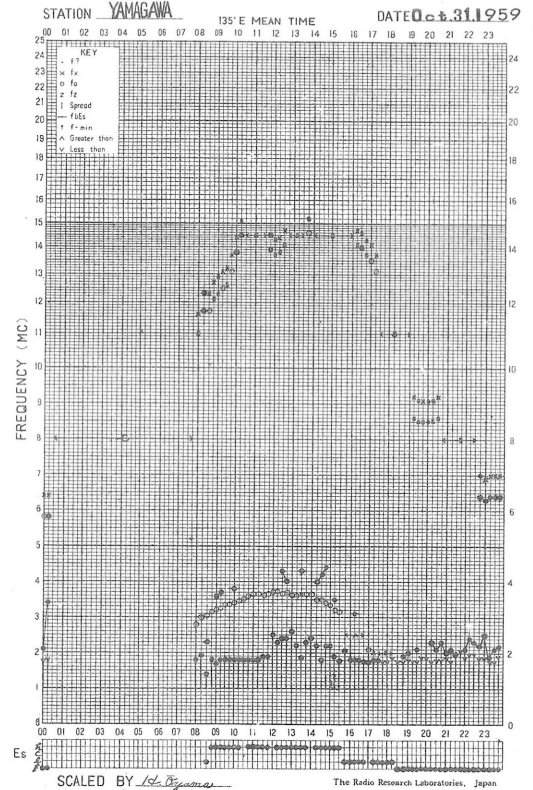
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION 200 Mc/s

October 1959

HIRAISO

Time in U.T.

day	activity	day	activity	day	activity
1	-	11	A	21	B
2	-	12	(A)	22	A
3	A	13	A	23	A
4	A	14	A	24	A
5	(A)	15	A	25	A
6	(A)	16	A	26	A
7	(A)	17	A	27	A
8	(A)	18	A	28	B
9	A	19	A	29	A
10	A	20	A	30	A
				31	A

We had no regular observations during the whole of October,

1st and 2nd, no observation,

3rd to 20th, observation by a doublet antenna, fixed.

21st and after, observation by a 12-element Yagi, patrolling.

because the regular antenna was overhauled.

No remarkable phenomenon was observed in this month, by antennae written above.

Daily flux values are not shown, but approximately classified as follows:

A : seems to be calm

B : with some activities

C : seems to be fairly active (including noise storm)

bracket means ambiguity.

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Oct. 1959	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	06	12	18	24	Start	End	ΔH
		06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
[1]	2o	1	3	3	2	2	2	1	2	1	1	3	3	N	N	N	N							
[2]	2+	3	3	(3	1)	(3	2	2)	2	2	2	3	3	N	N	N	N							
[3]	2o	1	1	1	(3)	2	(2)	3	2	(1)	2	3	3	N	N	N	N							
4	3-	3	3	3	2	3	3	1	2	1	1	1	1	N	N	N	N							
5	3-	2	3	3	2	2	3	3	3	2	3	3	3	N	N	N	N	1603	---					
6	3-	2	3	3	(2)	3	3	2	3	1	1	1	2	N	N	N	N	---	---					
7	3o	3	3	3	2	3	3	3	2	1	3	3	2	N	N	N	N	---	1600			128 ^y		
8	2o	1	3	1	2	2	3	2	1	1	2	2	1	N	N	N	N							
[9]	2-	1	(2)	1	3	2	2	2	1	2	1	3	1	N	N	N	N							
[10]	1+	1	(2)	1	1	1	2	2	(2)	1	2	3	2	N	N	N	N							
[11]	1+	1	(1)	1	2	1	(2)	2	1	1	(2	2)	2	N	N	N	N							
12	2-	3	2	1	2	2	(2)	2	1	2	2	2	2	N	N	N	N							
13	1+	1	(2)	1	1	2	1	1	2	(2	1	2	2)	N	N	N	N							
14	1o	1	1	1	1	2	1	1	2	(1	1	3)	1	N	N	N	N							
15	1+	1	3	2	(2)	1	1	1	1	3	3	3	3	N	N	N	N							
16	1+	2	2	1	1	1	2	1	1	2	2	3	2	N	N	N	N							
17	1o	1	1	1	1	1	2	1	1	2	2	2	2	N	N	N	N							
18	1+	2	3	1	1	1	1	1	2	2	3	3	2	N	N	N	N							
19	1+	2	2	1	2	2	1	1	2	2	2	3	2	N	N	N	N							
20	2-	2	2	2	2	1	2	2	1	1	1	2	2	N	N	N	N							
21	1o	1	2	1	1	1	2	(1)	1	1	1	2	2	N	N	N	N							
22	1+	1	2	2	1	1	1	(2)	1	2	1	2	2	N	N	N	N							
23	2-	2	2	2	2	2	(2	2)	1	2	3	3	2	N	N	N	N							
24	1+	1	2	2	2	1	2	1	1	2	3	3	2	N	N	N	N							
25	1+	1	3	3	1	1	1	1	1	2	2	2	2	N	N	N	N							
26	2o	2	3	3	1	1	1	2	2	1	2	2	(2)	N	N	N	N							
27	2o	1	3	3	2	2	2	1	(1)	2	3	2	2	N	N	N	N							
28	1+	(1)	2	1	1	2	2	1	1	(1	1	2)	1	N	N	N	N							
29	1o	1	1	1	1	1	1	1	1	(1	1)	2	2	N	N	N	N	2347	---					
30	1+	1	1	1	1	1	2	3	1	2	1	2	1	N	N	N	N	---	---					
31	2o	2	2	3	1	1	2	3	2	1	1	2	2	N	N	N	N	---	---					187 ^y

* = day of Special World Interval

[] = Regular World Day

() = inaccurate

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

Time in U.T.

HIRAI SO

Oct. 1959	Drop-out Intensities (db)			S W F		S E A			Correspondence					
	JS	SF	HA	TO	LN	Start-time	Dura-tion	Type	Imp.	Start-time	Dura-tion	Imp.	Flare Noise	Solar Mag.
28	-	-	-	-	-	03.17	30	S	2+				X	

IONOSPHERIC DATA IN JAPAN FOR OCTOBER 1959

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