

F—207

# IONOSPHERIC DATA IN JAPAN

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FOR FEBRUARY 1966

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## SITE 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.	Midori-cho, Wakkanai-shi, Hokkaido
Akita	39°43.5'N.	140°08.2'E.	Tegata Nishishin-machi, Akita-shi, Akita-ken
Kokubunji	35°42.4'N.	139°29.3'E.	Nukuikita-machi, Koganei-shi, Tokyo-to
Yamagawa	31°12.1'N.	130°37.1'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.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken

## SYMBOLS AND TERMINOLOGY

### A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction," 1961.

#### Terminology

$f_oF2$	} The ordinary wave critical frequency for the $F2$ , $F1$ and $E$ layers, respectively.
$f_oF1$	
$f_oE$	
$f_oE_s$	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$f_sE_s$	The lowest ordinary wave frequency at which the $E_s$ layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
$f$ -min	The frequency below which no echoes are observed.
$M(3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$	The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$	The minimum virtual height, $h'F2$ , refers to the highest, most stable stratification observed in the $F$ region and can only be scaled when such stratification is present.
$h'F$	The natural and most significant $F$ region virtual height parameter is that for lowest $F$ region stratification. This will be denoted by $h'F$ . Thus $h'F$ is identical with the current $h'F2$ when $F$ region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'E_s$	The lowest virtual height of the trace used to give the $f_oE_s$ .
$h_pF2$	The virtual height of the $F2$ layer measured on the ordinary

$ypF2$  wave branch at a frequency equal to  $0.834f_0F2$ .

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

**a. Descriptive Letters**

The following letters are entered after or used to replace a numerical value on the 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 of the layer is too small to enable it to be made accurately.
- H Measurement influenced by, or impossible because of, the presence of a stratification.
- L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
- M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
- N Conditions are such that the measurement cannot be interpreted.
- O Measurement refers to the ordinary component.
- R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
- S Measurement influenced by, or impossible because of, interference or atmospherics.
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
- 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 Letters**

The following letters are entered in the first column before a numerical

value on the monthly tabulation sheets.

D	greater than.
E	less than.
I	Missing value has been replaced by an interpolated value.
J	Ordinary component characteristic deduced from the extraordinary component.
O	Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)
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 magneto-ionic component.

**c. Description of Standard Types of  $E_s$**

The eight standard types of  $E_s$  are identified by corresponding lower case letters: *f, l, c, h, q, r, a, s*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. It is strongly emphasized that these names are not restrictive. The letter 'n' is used to designate any  $E_s$  trace that does not correspond to any of the eight types.

*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*.

*l* A flat  $E_s$  trace at or below the normal  $E$  layer minimum virtual height in the day or below the night  $E$  layer minimum virtual height at night.

*c* An  $E_s$  trace showing a relatively symmetrical cusp at or below  $f_0E$ . This is usually continuous with the normal  $E$  trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)

*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. (Usually a daytime type.)

*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 showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick  $E$  layer) by the lack of group retardation in the  $F$  layer traces at corresponding frequencies and the lack of complete blanketing.

*a* An  $E_s$  having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These

sometimes extend over several hundred kilometers of virtual height.

s A diffuse  $E_s$  trace which rises steadily with frequency and usually emerges from another type  $E_s$  trace. The rising trace alone is classified as 's'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal  $E_s$  trace such as  $E_s-l$  or  $E_s-f$ , at frequencies which greatly exceed the  $E$  layer critical frequency, whereas at low latitudes it usually rises from  $E_s-g$ ,  $E_s-c$ , or  $E_s-h$  at frequencies near the regular  $E$  critical frequency. Type  $s$  is never used to determine  $f_oE_s$  and  $h'E_s$ . The slant trace is sometimes observed to start at  $f_oE$  without echoes clearly identifiable as  $E_s$  echoes being seen.

n The designation 'n' is used to denote an  $E_s$  trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. 'n' should be used sparingly.

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 observations are carried out on 200 and 500 Mc/s at Hiraiso Radio Wave Observatory.

Antennas are a broadside array of  $6 \times 4$  doublets for 200 Mc/s and a parabolic reflector of 5 meter for 500 Mc/s, each having the total power receiver.

Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

The unit is  $10^{-22} \text{ W} \cdot \text{m}^{-2} \cdot (\text{c/s})^{-1}$  for both components of polarization.

b. Daily Data

*Flux density*

The three-hourly and daily mean values are given.

*Variability*

The three-hourly and daily mean values are given at 200 Mc/s only.

Variability is expressed in the following four grades:

0=Quiet or no burst,

1=A few bursts,

2=Many bursts,

3=Very many bursts.

The number of bursts exceeding the flux level is counted.

### c. Distinctive Events

The phenomena are picked up on the following criteria:

1. Distinct from the prevailing kind of activity,
2. Correlated with other known solar phenomena,
3. Remarkable change-over from one situation to another.

*Starting time* and *Time of maximum* are given to nearest minute in general, but to nearest a tenth minute for short intense occurrences or clear commencements.

*Duration* is given in minutes and to nearest a tenth minute, if short or clear.

*Descriptive type* is denoted by the following symbols:

S = Simple rise and fall of intensity;

C = Complex variation of intensity,

C + = Prolonged broad-band enhancement of radiation, generally of spectral type IV;

F = Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;

RF = More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;

e = Sudden beginning of burst with steep rise of intensity;

E = Steep rise of intensity of continuum background;

p.i. = post-burst increase;

onset storm = clear-cut beginning of a noise storm.

*Peak intensity* is the flux density of the highest peak reached during the occurrence, measured above the pre-burst level.

*Mean intensity* is the flux density averaged over the burst's duration, measured above the pre-burst level; therefore, multiplying the duration, the total energy of the occurrence can be estimated.

## C. RADIO PROPAGATION CONDITIONS

### a. Field Intensities of WWV and WWVH

Field intensity observations of WWV and WWVH transmitted from Washington D.C. and Hawaii, respectively, are carried out at Hiraio Radio Wave Observatory. In order to avoid interferences with several standard frequency waves on the same frequency, the upper side-band of 440 c/s is picked up by the use of a narrow band pass filter of  $\pm 40$  c/s bandwidth.

Tabulated *field intensity* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

Transmitter

	WWV	WWVH
Location	Washington, D.C. Long. 76°51' W Lat. 39°00' N	Maui, Hawaii Long. 156°28' W Lat. 20°46' N
Power	3 kW for the upper side-band	0.5kW * for the upper side-band
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	10050 km	6270 km

\* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

Receiver

Antenna	4.5m vertical rod
Bandwidth	$\pm 40$ c/s for the upper side-band
Calibration	each half hour

*Descriptive symbols* are as follows:

- C: Measurement influenced by, or impossible because of, any non-propagational reasons.
- S: Measurement influenced by, or impossible because of, interferences or atmospheric.
- ( ): Unaccurate measurement influenced by interferences, atmospheric, or non-propagational reasons.
- <: Less than the following figure.

**b. Radio Propagation Quality Figures**

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

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

The tabulated circuits contain Hamburg (commercial circuit), WWV (frequencies 10, 15, 20Mc broadcast from Washington, D.C.), San Francisco (commercial circuit) and WWVH (frequencies 10, 15Mc 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 averages of the 6-hourly indices of Hamburg WWV and S. F.

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

c. Sudden Ionospheric Disturbance (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*

WS.....WWV 20 Mc, 15 Mc and 10 Mc (Washington)  
 SF.....Various commercial circuits (San Francisco)  
 HA.....WWVH 15 Mc and 10 Mc (Hawaii)  
 TO.....JJY 15 Mc and 10 Mc (Tokyo)  
 SH.....BPV 15 Mc and 10 Mc (Shanghai)  
 HB.....Various commercial circuits(Hamburg)

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 (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

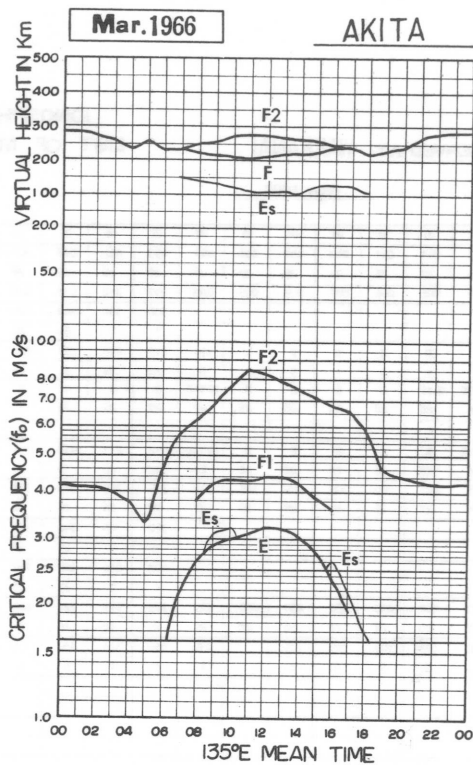
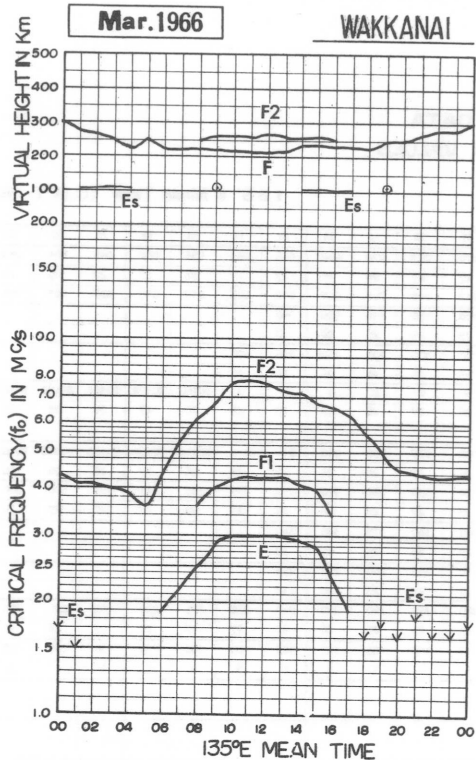
*Importances*

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

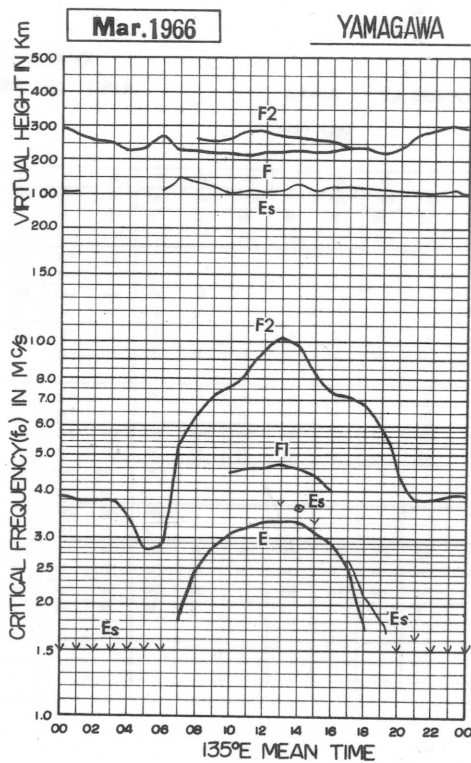
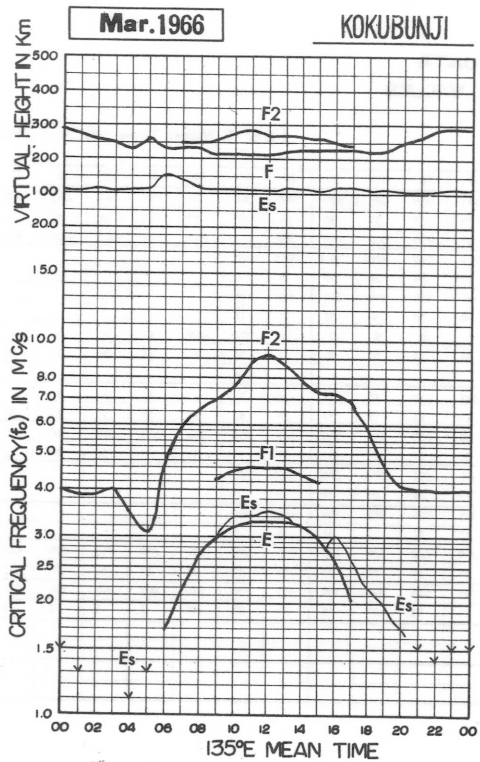
1-	1	1+
2-	2	2+
3-	3	3+

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 LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Mar. 1966

135° E Mean Time (G.M.T. +9h)

Table with columns for time (00-23) and rows for parameters: foF2, foF1, foE, foEs, f-min, M(3000)F2, M(3000)F1, h'F2, h'F, h'Es, hpF2, ypF2. Each parameter has MED and CNT values.

IONOSPHERIC DATA LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Mar. 1966

135° E Mean Time (G.M.T. +9h)

Table with columns for time (00-23) and rows for parameters: foF2, foF1, foE, foEs, f-min, M(3000)F2, M(3000)F1, h'F2, h'F, h'Es, hpF2, ypF2. Each parameter has MED and CNT values.

IONOSPHERIC DATA LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Mar. 1966

135° E Mean Time (G. M. T. +9h)

Table with 24 columns (00-23) and multiple rows for various ionospheric parameters (foF2, foE, foEs, fmin, M(3000)F2, h'F2, h'Es, hpF2, ypF2) including MEDIAN, Q R, and CNT values.

IONOSPHERIC DATA LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Mar. 1966

135° E Mean Time (G. M. T. +9h)

Table with 24 columns (00-23) and multiple rows for various ionospheric parameters (foF2, foE, foEs, fmin, M(3000)F2, h'F2, h'Es, hpF2, ypF2) including MEDIAN, Q R, and CNT values.

# IONOSPHERIC DATA

**Mar. 1966**

foF2

0.1 Mc **135° E Mean Time** (G.M.T. +9h)

Wakkanai

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	SF	035F	035F	SF	SF	035	041	058	063	067	066	066	066	066	060	063	061	054	044	037	037	037	030	033
2	035	035	036	034	034	032	041	051	056	059	070	064H	064	065	064	056	058	050	043	041	041	032	s	s
3	034	036	035	034	034	034	041S	052	055H	062	071	062	063	068	064	063	061	053	045	047	045	047	045	044
4	044	043	043	043	042	043	050	066	058	067	076	072	073	065	064	063	063	057	050	050	046	039	043	043S
5	043S	044F	SF	SF	SF	045	051	053	061H	074	082	079	077	069	073	063H	075	066	047	044	040	040	043	044S
6	044S	045	046	043	041	033	041	052	057	063	071	085	073	076	075	068	062H	053	050	046	043	043	043	044S
7	044	043	043	043	043	036	042S	057	062	070	069	076	073	070	066	064	067	066	053	039	038	039	040S	042S
8	038	039	041S	040	043	036	044	057	056	058	067	080	081	071	061	063H	068	066	053	045	047	044	043	043
9	044	043	043	044	044	044	053	056	060	066	068	071	069	074	073	c	c	c	c	c	c	c	c	c
10	c	c	c	c	c	c	c	c	c	c	078	080	081	c	c	c	062H	063	059	s	s	043	043	042S
11	039S	040	041	044	045	034	s	053	064	077H	078	077	081	071	c	c	066	066	061	054	044	044	042	041S
12	041	041	041	038	041	036	046	057	056	068	070	087	081	073	068	070	065	053	057	043	038	042	039	041S
13	042S	041	039	040	037	031	044	054	067	072	069	073	063	073	068	070	064	058	051	045	044	044	044	044
14	043	042	037	037	037	036	041	050	070H	072H	087	089	094	089	101	083	080	074	066	066	060	056	044	039
15	037	037	032	031	033	025	041S	075	069	080	097	086	080H	078	077	068	066	066	060	044	046	044	044	043S
16	043	040	040	039	039	038	043	048	063	064	082	080	076C	073	074	066	075	069	055	044	045	045	042	043
17	041	042	042	043	040	033	041	051	063H	070	077	080	076H	075	074	073	067	062	057	053	050	046	047	044
18	043	043	043	043	042	036	050	055	063	075	083	078	075	080	072	069	073	065	062	051	051	051	047	047
19	043	043	043	044	043	036	051	060	063	065	077	084	080	077	070	065	071	073	060	054	057	054	053	051
20	050	051	051	053	044	041	057	c	c	086	097	078	c	c	c	c	c	c	c	c	c	c	c	c
21	c	c	c	c	c	c	c	c	c	c	083H	091	081	077	075	075	070	066	064	054	053	051	050	050
22	050	050	050	050	051	042	051	058H	077	078	090	082	093	086	070	072	073	071	072	059	050	046	043	042
23	041	041	041	041	038	036	057	063	070H	085	090	076	086	078	083	081	076	078	075	059	057	051	052	048
24	048S	050	040	037	032	030	046	044H	045	053	060	058	078	078	070	069	063	061	054	045	044	SF	SF	048
25	047	SF	SF	SF	SF	SF	038	046	054H	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
26	c	c	c	c	c	c	c	c	c	080	074	073	070	070	076	076	065	058	056	050	044S	043S	038	038
27	038S	038	039	034	029	033	050	050	c	c	c	c	c	c	c	c	c	c	c	053	051	043	043S	044
28	044S	043	043	043	036	033	044	050	062	069	077C	086G	080	070	074	070	060	060	062	055	053	053	049	046
29	043	036	037	030	027	026	036	038	040	046	049R	052	053	055	060	067F	057F	050	042	034	037	034	033	033
30	030	026	026	024	017	025	044	049	054	063	079	084	076	067	074	065	067	064	068	053	043	SF	SF	SF
31	SF	035F	037F	F	036F	041	046	050	057H	064	077	074	068	071	073	066	059	065	067	063	056	F	F	F
Count	26	27	26	24	25	27	27	27	26	26	28	29	27	27	26	26	27	27	26	27	27	25	24	25
Median	043	041	041	040	039	036	044	053	062	068	077	078	076	073	072	068	066	063	056	050	045	044	043	043
U. Q.	044	043	043	043	043	038	050	057	064	074	082	084	081	078	074	070	071	066	062	054	051	049	046	045
L. Q.	039	037	037	036	034	033	041	050	056	063	070	072	069	069	066	063	062	058	050	044	043	040	042	042
Q. R.	005	006	006	007	009	005	009	007	008	011	012	012	012	009	008	007	009	008	012	010	008	009	004	003

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

foF2

The Radio Research Laboratories, Japan

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G. M. T. + 9h)

foF1

Mar. 1966

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									350	390	400	390	420H	400	400	380								
2									390	390	400	I420B	430	I400B	400									
3									380	400	400	420	400	400	400	I400L								
4									370	380	420	420	400	410L	400	390	300							
5									400	410	410	420	430	410H	400	350	280							
6									400	420	420	430H	430	420	400	380								
7									350L	400	B	420	B	410	400	I390B								
8									A	400	420	420	430	420	400H									
9									400	420	420	430	430	430	410H	C	C							
10								C	C	420	430	430	C	C	C									
11									410	C	C	C	430	410	C	C								
12									400	410	430	430	430H	410	400	400	340							
13									400	420H	430	A	A	A	A	400	340							
14									370	420	420	430H	430	430	430	400	320							
15									430H	430	430	410	410	430L	400	340								
16									380H	410	430	430	I430C	420	420	400L	U370L							
17									U430L	430	430	430	430	430H	400L									
18									420H	440	430H	440	440	430	420	400								
19									420L	430	430	440	I430B	420										
20								C	C	420L	430L	430	C	C	C	C	C							
21								C	C	C	C	430L	450	430	440L	410								
22									U430L	420	430	430H	450H	440	410									
23									410L	430	430	450	450	430L	430	400								
24									370	400	430	430	I460B	430	410	400								
25									C	C	C	C	C	C	C	C	C							
26								C	C	C	430	430	440	440	430	400	360							
27									C	C	C	C	C	C	C	C	C							
28									420	I420C	I430C	440H	430	430	430	400	370							
29								330	360	380	I410R	420	430	430	410	380	340							
30									450	430	440H	440	430	430	420	400								
31									430	430	430	440	440	430	420H	400								
No.								1	7	25	26	28	25	26	25	20	10							
Median								330	360	400	420	430	430	430	410	400	340							
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

foF1

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G. M. T. +9h)

f<sub>o</sub>E

Mar. 1966

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 190	235	280	300	300	300	300	290	265	230	A						
2							S S	S 200	245	280	300	B	B	B	I300B I295B	260	210	S						
3							S	S 185	225	265R	295	300	300	300	295	270	220	S						
4							S	S 195	225	270	295	300	300	300	295	260	215	S						
5							S	S 190	235	285	300	300	300	300	295	265	215	S						
6				E			S	S 190	235	280	I290B	300	305	300	290	260	215	S						
7			E				S S	S S	I245B	B	B	B	B	B	I300B	I265B	225	150	S					
8							S S	S S	B B	A	300	300	305	305	295	260	215	160						
9							S S	S S	245	285	295	300	300	300	285	C	C	C	C					
10							C C	C C	C C	C C	300	300	C	C	C	260	215	S	S					
11							S S	S S	S S	280	C	C	C	300	C	C	S	C	S					
12					E		S S	S 210	240	280	295	295	300	295	275	225	185	S						
13							S S	S 215	245	270	285	I310A	A	A	A	270	230	S	S					
14							A	A	200	250	285	300	295	A	A	280	230	160	S					
15				E	E		S S	S 205	255	290	300	300	300	295	300	285	235	S	S					
16							S S	S 215	260	290	300	295	I295C	I295A	295	280	225	A	A					
17							S S	S 220	270	290	300	300	300	300	295	285	250	200	S					
18							S S	S 215	270	285	300	300	305	315	305	290	245	190	S					
19							S S	S 225	280	300	310	I310R	305	I310B	320	300	255	200	S					
20		S		E	E		S S	S C	C C	290	305	310	C	C	C	C	C	C						
21							C C	C C	C C	C C	305	310	305	300	295	280	250	190	S					
22							S S	S 230	295	305	310	320	300	300	300	290	250	190	S					
23							S S	S 230	275	295	300	I300A	I300R	310	300	290	240	165	S					
24		E	E	E	E		S 180	S 215	250	285	290	I295R	I325B	310	290	285	235	190	S					
25							200	210	255	C	C	C	C	C	C	C	C	C						
26							C C	C C	C C	C C	305	310	305	310	300	290	235	190	S					
27							S S	S 230	C C	C C	C C	C C	C C	C C	C C	C C	C C	C C						
28							S S	S 230	260	300	I300C	I300C	300	I300R	I300B	285	245	S	S					
29							150	280	280	285	300	300	300	300	300	280	235	200	A					
30							S 190	230	285	300	300	305	300	300	295	280	240	190	S					
31							S 190	230	270	295	295	300	310	300	295	285	245	205	S					
No.	1	3	4	5	3	5	22	24	24	24	26	26	23	25	24	26	26	15						
Median	E	E	E	E	E	E	190	215	250	285	300	300	300	300	295	280	230	190						
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

W 3

f<sub>o</sub>E

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. + 9h)

foEs

Mar. 1966

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	E011S	E	E	013	E	E011S	E016S	G	G	G	G	G	G	G	G	G	G	G	020	J023	J022	E017S	E016S	E016S	
2	E019S	E	E	E	E	E	E016S	E022S	G	G	G	E043B	E034B	E034B	G	G	G	G	E	E019S	E	E016S	S	E020S	
3	E020S	E015S	E	E	E	E	E015S	G	G	G	G	G	G	G	G	G	026	E020S	E018S	E015S	E018S	E020S	E022S	E022S	
4	E018S	E	E	E	E	E	E016S	G	G	G	G	G	G	G	G	020G	G	E018S	E012S	E016S	E	E018S	E017S	E015S	
5	E	015	E	E	E	E	E015S	G	024	027B	G	G	G	G	G	G	G	023	J025	J023	E020S	E018S	E015S	E015S	
6	E016S	E016S	E	E	E	E	E014S	G	G	G	E038B	G	G	G	G	G	G	E020S	E016S	E017S	E012S	S	E020S	E020S	
7	E020S	E	E	E	E	E	E017S	E024S	E027B	E030B	E041B	E036B	E042B	E035B	G	E040B	G	G	E020S	E018S	E020S	E016S	S	E020S	
8	E015S	E015S	E	E	E	E016S	E015S	E021S	E027B	040	G	G	G	G	G	G	G	G	E	E018S	E020S	E018S	E016S	E016S	
9	E	E016S	E	E	E	E	E016S	E023S	G	G	G	G	G	G	G	G	G	G	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	020G	G	E019S	S	S	S	S	S	C	
11	S	E016S	E	E	E023S	E018S	S	E030S	E028S	G	E040C	E047C	G	G	G	C	E025S	C	E012S	E015S	E016S	S	J021	E016S	
12	E018S	E015S	017	015	E	E	E015S	G	G	G	G	G	G	G	G	020G	G	G	E011S	E017S	E018S	E017S	E020S	E020S	
13	E018S	J021	J021	J030	J023	E	E019S	G	G	G	G	035	J058	J056	053M	G	G	E020S	E020S	E020S	E015S	E015S	E016S	E020S	
14	E017S	J023	E	J021	E	E012S	020	G	G	G	G	034	033	033	033	G	020G	G	E015S	E016S	E017S	E012S	E017S	E017S	
15	J021	J022	E	E	E	E015S	E018S	G	G	G	033	G	033	G	051	034	018G	024	E020S	J023	J025	E018S	J021	E016S	
16	E018S	E015S	018	J023	E	E	E017S	G	G	G	G	034	C	043M	024G	G	G	J030	J020	J021	E020S	E	E017S	E016S	
17	E015S	E017S	018	015	E	E015S	E020S	G	G	G	G	G	G	G	G	024G	G	G	E020S	E011S	E016S	E020S	E016S	E016S	
18	E018S	E	E	E	E	E	E019S	G	G	G	G	G	G	G	G	G	G	G	E013S	E013S	E019S	E015S	E019S	E015S	
19	E013S	E	E	E	E	E	E	021	028	G	G	G	G	G	G	G	G	G	E015S	E	E016S	E013S	E015S	E015S	
20	E017S	E015S	E	E	E	E	E011S	E020S	C	032	G	G	G	G	G	C	C	C	C	C	C	C	C	C	
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	020	E019S	E015S	E020S	E020S	E014S	E018S	
22	E016S	E	E	E	E	E	022	G	G	G	G	G	G	G	G	G	G	G	E016S	E015S	E012S	E012S	E015S	E016S	
23	E018S	E	E	E	E	E	E020S	G	G	034	033	033	G	039	G	G	016G	G	E015S	E020S	E018S	E025S	E016S	E015S	
24	E015S	E	E	E	E	E	E	G	034	G	042	G	E047B	G	G	G	G	G	E016S	E017S	E016S	E015S	E015S	E015S	
25	E015S	E	E	018	016	E	E	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	020G	015G	G	E017S	E017S	S	E020S	E017S	E020S	
27	S	E	E	E	E	E	E020S	029	C	C	C	C	C	C	C	C	C	C	C	E020S	E020S	E020S	E017S	E017S	
28	E017S	J021	020	015	013	E	E020S	G	G	G	C	C	G	G	E037B	G	G	E020S	E017S	E016S	E015S	E012S	E015S	E015S	
29	E020S	E	E	013	013	013	E016S	G	029	G	034	G	G	G	G	G	G	G	020	020	E017S	E	E016S	E015S	
30	E014S	025	018	019	019	E	E	024	029	033	040	G	G	G	G	G	G	G	E016S	E	E015S	E015S	E015S	E015S	
31	E016S	E015S	E	E	E	E	E017S	G	G	G	G	G	G	G	G	G	G	G	E014S	E017S	E016S	E	E018S	E016S	
No.	26	28	28	28	28	28	27	27	26	26	27	28	26	27	26	26	27	26	26	27	26	26	26	26	27
Median	E017S	E015	E	E	E	E	E017S	G	G	G	G	G	G	G	G	G	G	G	E016S	E017S	E016S	E018S	E016S	E016S	
U. Q.	E018	E016	E	014	E	E012	E020	E022	G	G	033	G	G	G	G	G	G	G	E020	E020	E020	E020	E018	E020	
L. Q.	E015	E	E	E	E	E	E015	G	G	G	G	G	G	G	G	G	G	G	E014	E015	E015	E015	E015	E015	
Q. R.																									

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

W 4



Mar. 1966

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

0.1 Mc 135° E Mean Time (G. M. T. +9h)

Wakkanai

Lat. 45° 23.6'N  
Long. 141° 41.1'E

IONOSPHERIC DATA

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S			E		S	S	S										019	016	020	020	018	S	S	
2	S					S	S	S		B			B	B	B			S		S		S	S	S	
3	S	S				S	S									024G	020G	G	S	S	S	S	S	S	
4	S					S	S											S	S	S		S	S	S	
5		015				S	S	S	024	026G								023	022	018	S	S	S	S	
6	S	S				S	S				B							S	S	S	S	S	S	S	
7	S					S	S	S	B	B	B	B	B			B		S	S	S	S	S	S	S	
8	S	S				S	S	S	B	038										S	S	S	S	S	
9		S				S	S	S												S	S	S	S	S	
10	C	C	C	C		C	C	C	C	C			C	C	C	020G		C	C	C	C	C	C	C	
11	S	S				S	S	S	S		C	C						S	S	S	S	S	S	S	
12	S	S	015	013		S	S	S								020G		C	S	S	S	S	S	020	
13	S	019	016	020	017		S			034	050	053	050	053	050			S	S	S	S	S	S	S	
14	S	3012S		016		S	017			G	G	033	031	030			018G		S	S	S	S	S	S	
15	018	018				S	S	S		G		G	G	G	G	G	018G	G	S	020	020	S	S	020	
16	S	S	016	012		S	S	S		G	G	C	C	035	024G			022	015	018	S	S	S	S	
17	S	S	016	E		S	S											S	S	S	S	S	S	S	
18	S					S	S										022G		S	S	S	S	S	S	
19	S					G	G						B					S		S	S	S	S	S	
20	S	S				S	S	C	C	G		C	C	C	C			C	C	C	C	C	C	C	
21	C	C	C	C		C	C	C	C									017	S	S	S	S	S	S	
22	S					G													S	S	S	S	S	S	
23	S					S				G	G	033					015G		S	S	S	S	S	S	
24	S								G		037		B						S	S	S	S	S	S	
25	S			E	E				G	C	C	C	C	C	C			C	C	C	C	C	C	C	
26	C	C	C	C		C	C	C	C	C						020G	015G		S	S	S	S	S	S	
27	S					S	G	C	C	C	C	C	C	C	C			C	C	S	S	S	S	S	
28	S	015	E	E	E	S	S				C	C		B				S	S	S	S	S	S	S	
29	S		E	E	E	S		G			G							S	S	S	S	S	S	S	
30	S	017	016	013	E		G	G	G										017	017	S	S	S	S	
31	S	S				S													S	S	S	S	S	S	
No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

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

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. +9h)

f-min

Mar. 1966

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	E011S	E	E	E	E	E011S	E016S	E	012	021	020	020	020	020	019	016	011	011	E015S	E	E	E011S	E017S	E016S	
2	E-19S	E	E	E	E	E	E016S	E022S	017	020	022	043	035	043	034	012	011	E020S	E	E019S	E	E016S	S	E020S	
3	E020S	E015S	E	E	E	E	E015S	017	010	011	012	020	020	018	019	018	012	E020S	E018S	E015S	E019S	E018S	E020S	E022S	
4	E018S	E	E	E	E	E	E016S	011	011	011	018	020	018	011	011	011	017	E018S	E012S	E016S	E	E018S	E017S	E015S	
5	E	E	E	E	E	E	E015S	011	011	012	023	021	018	020	020	015	017	E017S	E	E	E020S	E018S	E015S	E015S	
6	E016S	E016S	E	E	E	E	E014S	E	E	020	038	020	020	020	018	012	014	E020S	E016S	E017S	E012S	S	E020S	E020S	
7	E020S	E	E	E	E	E	E017S	E024S	027	030	041	036	042	035	021	040	020	E	E020S	E018S	E020S	E016S	S	E020S	
8	E015S	E015S	E	E	E	E	E016S	E021S	027	011	025	023	020	020	012	013	010	010	E	E018S	E020S	E018S	E016S	E016S	
9	E	E016S	E	E	E	E	E	E023S	011	015	012	017	012	018	018	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	011	018	C	C	C	011	012	E019S	S	S	S	E020S	E018S	S	
11	S	E016S	E	E	E	E023S	E018S	S	E030S	E028S	020	E040C	018	018	C	C	021	E025S	C	E012S	E015S	E016S	S	E	
12	E018S	E015S	E	E	E	E	E	E015S	015	011	012	012	017	025	012	011	011	E	E011S	E017S	E014S	E018S	E017S	E020S	
13	E018S	E	E	E	E	E	E	E019S	015	012	011	013	020	020	011	017	012	E020S	E020S	E020S	E015S	E015S	E016S	E020S	
14	E017S	E012S	E	E	E	E	E012S	E	010	011	012	012	013	011	011	011	011	011	011	E015S	E016S	E015S	E017S	E012S	
15	E015S	E	E	E	E	E	E015S	E018S	015	011	017	016	020	012	012	011	011	011	E017S	E020S	E016S	E017S	E018S	E015S	
16	E018S	E015S	E	E	E	E	E	E017S	015	011	017	018	020	C	021	020	017	018	E	E	E012S	E020S	E	E017S	
17	E015S	E017S	E	E	E	E	E015S	E020S	015	012	011	017	020	017	020	020	017	011	E020S	E011S	E016S	E020S	E016S	E016S	
18	E018S	E	E	E	E	E	E	E019S	E	011	016	020	021	018	018	027	011	017	013	E013S	E019S	E015S	E019S	E045S	
19	E013S	E	E	E	E	E	E	E015S	015	016	017	012	020	045	020	017	015	017	E015S	E	E016S	E013S	E015S	E015S	
20	E017S	E015S	E	E	E	E	E011S	E020S	C	011	020	020	C	C	C	C	C	C	C	C	C	C	C	C	
21	C	C	C	C	C	C	C	C	C	C	012	020	020	021	020	020	017	011	E019S	E015S	E015S	E020S	E014S	E018S	
22	E016S	E	E	E	E	E	E	E013S	E	020	017	017	020	020	015	018	016	E	E016S	E015S	E015S	E012S	E015S	E016S	
23	E018S	E	E	E	E	E	E	E020S	E	011	012	017	020	012	020	016	011	011	E015S	E020S	E018S	E025S	E016S	E015S	
24	E015S	E	E	E	E	E	E	E	011	020	017	020	047	020	020	021	020	012	E016S	E017S	E016S	E015S	E015S	E015S	
25	E015S	E	E	E	E	E	E	E016S	E	011	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
26	C	C	C	C	C	C	C	C	C	C	020	020	020	017	020	011	011	011	E017S	E017S	S	E020S	E017S	E020S	
27	S	E	E	E	E	E	E	E020S	E	C	C	C	C	C	C	C	C	C	C	E020S	E017S	E020S	E020S	E017S	
28	E017S	E	E	E	E	E	E	E020S	012	018	C	C	020	022	037	018	019	E020S	E020S	E017S	E016S	E015S	E012S	E015S	
29	E020S	E	E	E	E	E	E016S	E	011	020	027	027	022	021	020	018	012	011	E	E	E017S	E	E016S	E015S	
30	E014S	E	E	E	E	E	E	E	011	012	021	022	024	021	022	018	018	012	E016S	E	E015S	E015S	E015S	E015S	
31	E016S	E015S	E	E	E	E	E	E017S	015	011	017	016	022	017	020	020	017	012	E014S	E017S	E016S	E	E018S	E016S	
No.	26	28	28	28	28	28	28	27	26	26	27	26	26	26	26	26	27	26	26	26	27	26	26	26	27
Median	E016S	E	E	E	E	E	E	E016S	E012	011	016	018	020	020	020	016	014	E012	E015S	E016S	E016S	E016S	E016S	E016S	
U. Q.																									
L. Q.																									
Q. R.																									

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

The Radio Research Laboratories, Japan

f-min

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M. T. +9h)

M(3000)F2  
0.01

Mar. 1966

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	SF	320F	305F	SF	SF	315	365	350	365	360	340	335	340	345	335	350	360	355	345	315	330	330	300	305
2	285	285	310	305	335	315	360	375	375	360	335	315H	350	345	345	340	350	350	325	330	345	305	S	S
3	300	305	315	295	310	325	U355S	360	350H	350	350	340	340	345	345	350	355	360	320	325	310	300	310	305
4	325	325	300	310	310	300	335	355	360	350	345	335	330	330	360	350	350	355	330	320	325	310	280	300S
5	315S	305F	SF	SF	SF	320	355	360	325H	325	330	330	340	335	345	335H	345	360	350	305	320	1295S	U290S	295
6	I310S	310	325	315	350	335	350	350	350	340	340	340	320	330	350	350	355H	360	340	325	300	I300S	310	I300S
7	295	300	300	305	340	330	345S	350	360	355	350	330	330	345	345	350	355	365	340	310	310	300	I300S	U310S
8	315	320	U315S	325	325	330	355	355	375	345	335	335	340	350	345	335H	355	365	335	315	325	310	300	300
9	295	300	305	315	320	320	345	355	365	360	340	330	345	335	335	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	335	330	C	C	C	340H	350	355	S	S	S	300	300	I305S
11	I300S	295	275	295	355	330	S	360	345	325H	310	345	335	330	C	C	350	I345C	340	320	330	I295S	300	300S
12	300	295	295	315	325	335	350	370	355	345	340	350	335	340	345	345	355	355	355	320	315	285	310	U295S
13	295S	300	305	300	325	325	345	350	360	350	350	355	350	335	340	345	360	345	335	310	300	295	305	U300S
14	280	280	310	315	310	305	340	320	345H	305H	300	300	310	295	325	330	335	325	290	290	290	285	285	280
15	295	290	285	280	335	305	315S	355	335	325	340	335	325H	340	350	355	360	350	335	295	305	295	295	285S
16	300	305	300	290	290	310	325	325	350	315	335	350	I340C	330	345	350	345	350	345	320	320	310	280	280
17	290	300	295	315	340	335	365	365	340H	325	340	335	315H	320	335	340	355	345	335	310	300	305	300	295
18	300	280	280	300	335	315	345	365	345	335	320	340	330	340	345	335	340	355	335	300	300	315	305	305
19	290	280	300	305	335	315	345	350	350	340	340	320	300	340	340	315	340	340	335	295	300	305	290	295
20	295	295	295	320	320	295	350	C	C	315	330	320	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	305H	330	320	330	335	345	340	345	315	290	295	300	285
22	290	290	300	300	335	310	350	345H	340	320	330	315	325	330	330	320	330	340	335	340	300	305	285	285
23	280	280	295	295	320	305	335	350	325H	320	320	330	330	310	325	325	325	335	320	295	285	265	270	265
24	255S	300	275	270	270	285	335	300H	290	320	315	305	315	330	330	340	345	345	335	315	295	SF	SF	290
25	280	SF	SF	SF	SF	SF	355	325	325H	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	330	320	320	325	330	345	355	345	340	305	I305S	U295S	280	270
27	I280S	295	310	310	300	290	340	345	C	C	C	C	C	C	C	C	C	C	C	315	320	300	U275S	295
28	U285S	280	300	305	330	335	365	340	375	335	I335C	I345C	340	320	340	345	345	335	325	290	300	290	285	305
29	290	280	300	275	295	310	335	295	235	285	I310R	310	305	310	300	330F	330F	340	335	325	290	270	275	275
30	285	300	310	335	305	300	340	345	335	300	320	335	335	325	335	340	345	345	345	345	325	SF	SF	SF
31	SF	265F	280F	F	330F	330	350	360	315H	325	340	335	320	325	330	345	340	340	330	315	310	F	F	F
Count	26	27	26	24	25	27	27	27	26	26	28	29	27	27	26	26	27	27	26	27	27	25	24	25
Median	295	295	300	305	325	315	345	350	350	330	335	335	330	330	340	340	350	345	335	315	305	300	300	295
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

M(3000)F2

The Radio Research Laboratories, Japan

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

0.01 M(3000) F1

Mar. 1966

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1									4.10	4.05	4.00	4.20	3.85H	3.80	4.00	3.95										
2									4.00	4.00	I3.95B	3.70	I3.95B	3.80	3.80	U3.75L										
3									4.25	4.00	3.80	4.00	3.90	3.80	3.75	U3.75L	4.00									
4									4.25	4.00	3.70	3.80	3.95	3.90L	3.80	3.85	4.00									
5									4.25	3.90	3.90	3.80	3.70	3.65H	3.75	3.80	3.80									
6									4.00	I3.90B	3.70H	3.95	3.80	3.75	3.95	3.95	4.20									
7									4.00L	3.90	B	U3.80B	B	3.75	3.75	I3.95B										
8										A	3.80	3.80	3.75	3.80	3.95H											
9										3.90	3.85	3.70	3.80	3.70	3.90H		C									
10								C	C	C	3.90	3.80	C	C	C											
11										3.85	C	C	3.70	3.90	C	C										
12										3.90	3.90	3.70	3.95	3.70H	3.70	3.75	3.85									
13										3.85	4.05H	3.80	A	A	A	3.95	3.80									
14										4.10	3.60	3.70H	3.95	3.70	3.50	3.80	3.65									
15										3.70H	3.80	3.90	4.10	3.75L	3.80	4.20										
16										3.95H	3.85	3.75	3.90	I4.05C	4.05	3.80	U3.80L									
17										U3.80L	3.80	3.80	4.00	3.95	3.70H	3.90L										
18										3.85H	3.85	3.95H	3.85	3.70	3.80	3.85										
19										4.00L	3.80	3.80	3.85	I3.90B	3.80											
20								C	C	3.90L	3.70L	3.90	C	C	C	C	C									
21								C	C	C	C	3.95L	3.65	3.95	3.85L	3.90										
22									U3.70L	3.80	3.95	3.95H	3.75H	3.85	3.90											
23										4.00L	3.95	4.00	3.60	3.80L	3.70	3.80										
24									3.50	3.60	I3.55A	3.75	I3.60B	3.70	3.75	3.85										
25										C	C	C	C	C	C	C	C									
26								C	C	C	3.70	3.75	3.65	3.70	3.70	3.80	3.90									
27									C	C	C	C	C	C	C	C	C									
28										3.80	I3.75C	I3.75C	3.85H	3.70	3.70	3.80	4.05									
29								3.40	3.60	3.45	I3.60R	3.95	3.50	3.50	3.65	3.70	3.80									
30										3.65	3.70	3.85H	3.75	3.95	3.75	3.80										
31										3.75	3.70	3.95	3.90	3.85	3.60H	3.80										
No.								1	7	25	26	28	25	26	25	20	10									
Median								3.40	3.95	3.90	3.80	3.80	3.85	3.80	3.75	3.85	3.80									
U. Q.																										
L. Q.																										
Q. R.																										

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

M(3000) F1

W 8

# IONOSPHERIC DATA

Mar, 1968

h'F2

km

1 35° E Mean Time (G.M.T. +9h)

Wakkanai

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								235	230	245	260	265	260	260	250										
2									250	260	260H	270	260	275											
3									250	250	250	260	270	255	260										
4								225	260	260	260	275	265	250	260	250	250								
5									255	260	260	265	275	250	240	240									
6									255	265	255	270	250	255	250	225									
7								240	250	260	255	275	255	260	260										
8									265	260	260	255	250	260											
9									250	275	260	260	260	275	245	C	C								
10								C	C	255	270	C	C	C	C										
11									250	280	250	265	255	C	C										
12									250	260	260	285	260	265	250	245									
13									250	245	250	260	280	275	250	240									
14									260	300	270	295	280	265	260	255									
15									265	260	260	260H	260	250	245										
16								250	270	275	260	1255C	260	260	250	250									
17									290	250	265	260	275	260	250										
18									260	290	250	280	260	260	260										
19									255	265	265	260	265	260											
20									C	C	240	260	265	C	C	C	C								
21									C	C	C	260H	270	270	265	255									
22								255	270	250	260	275	265	260											
23									265	260	250	270	260	280	260										
24								4.15	300	305	320	310	275	275	260										
25									C	C	C	C	C	C	C	C									
26									C	C	C	270	280	280	300	275	260	245							
27									C	C	C	C	C	C	C	C									
28									275	1265C	1265C	250	295	265	255	250									
29								4.05	420	1355R	350	350	345	335	285	260									
30									320	295	270	270	290	275	260										
31									290	275	270	275	290	270	265										
Count								1	7	26	28	29	27	27	26	20	10								
Median								4.05	250	260	260	260	270	265	260	260	250								
U. Q.																									
L. Q.																									
Q. R.																									

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

km

*h'F*

Mar. 1966

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	250	275	250	250	250	225	220	210	210	205	200	185H	200	235	245	235	225	220	250	250	240	275	265	
2	300	290	260	250	230	250	220	220	225	210	200	I220B	250	I240B	235	240	235	220	215	245	220	250	S	275	
3	300	270	260	270	255	250	205	210	215	200	190	230	200	200	190	255	240	220	245	250	250	260	265	275	
4	250	240	250	250	250	260	235	220	220	215	210	210	195	230	230	250	240	225	230	235	225	250	285	270	
5	250	280	270	250	250	235	210	220	210H	235	205	200	200	200H	240	210H	225	215	220	250	250	280	290	280	
6	265	260	240	215	210	200	225	215	220	200	I220B	190H	230	240	225	225	215	220	220	250	I280S	285	285	285	
7	275	265	260	250	220	210	225	225	210	225	B	B	B	235	250	I240B	235H	220	210	240	275	270	I280S	250	
8	255	255	240	240	230	235	220	225	230	I220A	250	215	235	210	210H	245H	250	220	210	250	250	250	260	265	
9	260	275	270	250	250	235	210	220	225	220	210	210	245	210	205H	C	C	C	C	C	C	C	C	C	
10	C	C	C	C	C	C	C	C	C	C	210	200	C	C	C	225H	240	230	S	S	S	275	270	I270S	
11	I280S	300	275	250	230	215	S	225	240	240	C	C	210	225	C	C	I230C	225	225	240	I270S	280	280	280	
12	290	285	260	260	230	230	225	225	200H	210	205	225	205	200H	200	235	240	225	210	240	255	275	280	290	
13	300	270	280	275	250	225	225	225	235	240	230H	210	A	A	A	250	235	240	225	250	260	290	260	275	
14	300	300	285	265	250	250	225	245	235	210	225	200H	200	245	250	240	250	240	250	260	260	285	250	320	
15	305	285	290	270	220	275	245	235	240	220H	220	200	225	245	245	215	240	235	220	250	295	280	290	295	
16	285	260	290	275	260	260	250	225	210H	220	210	235	I230C	205	210	230	235	225	220	245	250	250	275	300	
17	300	275	265	250	225	225	225	225	235H	215	210	200	220	200	205H	235	245	230	225	225	250	275	275	290	
18	300	290	275	250	220	230	225	235	225	200H	210	220H	200	200	250	245	245	230	225	230	260	260	260	260	
19	265	280	260	250	220	250	225	240	240	230	210	210	210	I230B	245	245	250	240	220	250	265	250	270	280	
20	275	270	265	240	220	275	240	C	C	240	225	235	C	C	C	C	C	C	C	C	C	C	C	C	
21	C	C	C	C	C	C	C	C	C	C	C	C	225	250	250	240	245	225	225	245	260	260	270	295	
22	300	270	255	250	220	200	210	225H	245	225	225	205H	190H	210	245	250	245	240	230	215	250	260	260	295	
23	300	290	270	250	230	275	235	230	210H	240	225	210	210	245	240	240	235H	250	220	260	300	E340S	330	305	
24	310	275	310	300	330	310	275	240H	250	225	I230A	225	I230B	260	240	240	245	240	225	235	280	310	300	295	
25	300	260	240	235	210	290	240	235H	220H	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
26	C	C	C	C	C	C	C	C	C	C	240	220	230	220	220	240	210	240	230	235	I250S	300	325	350	
27	I320S	290	250	235	245	295	230	225	C	C	C	C	C	C	C	C	C	C	C	250	250	280	310	300	
28	290	300	260	235	210	250	225	240	245	220	I220C	200H	215	250	250	240	250	235	250	275	275	275	275	275	
29	300	300	275	300	305	310	275	280	260	270	240	250	250	250	245	240	240	245	250	295	295	305	330	310	
30	300	300	290	245	275	280	245	245	240	220	230	195H	230	220	225	235	240	250	225	205	240	270	310	300	
31	300	300	295	250	225	250	225	220	200H	230	225	210	280	215	200H	250	245	255	245	250	250	265	280	275	
Count	28	28	28	28	28	28	27	27	26	26	26	27	25	26	25	26	27	27	26	27	27	28	27	28	28
Median	300	280	270	250	230	250	225	225	225	220	220	210	220	220	240	240	240	230	225	250	250	270	280	280	
U. Q.																									
L. Q.																									
Q. R.																									

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

W 10

The Radio Research Laboratories, Japan

*h'F*

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

135° E Mean Time (G.M.T. +9h)

h'Es

Mar. 1966

km

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

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 8.0 Mc in 40 sec in automatic operation

h'Es

W 11

IONOSPHERIC DATA

Lat. 45° 23.6'N  
Long. 141° 41.1'E

Wakkanai

Types of Es

135° E Mean Time (G. M. T. +9h)

Mar. 1966

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

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 18.0 Mc in 40 sec in automatic operation

Types of Es

W 12



Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. +9h)

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

Mar. 1966

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	038S	038S	038F	039	038	036	046	057	067	059	067	073	072	070	066	063	062	062	048	040	036	034	030	032
2	033	034	033	035	031	029	036	058	063	065	054	065	065	066	066	061	061	061	044	040	034	028	031	032
3	032	032	032	031	030	033	042	049	060H	056H	065H	070S	066	061	067	066	068	060	042	042	042	040S	040	041
4	037	036	038	037	036F	036F	FS	059S	065H	057	065	074	075	072	062	066	063	060	053	045	045S	037	039	039
5	037F	039S	039S	038F	040S	043S	052S	055	059	069	079	084R	083	078	075	072	070	060	049	044	047	041	041S	042S
6	043	044	046	FS	040	030	039	057	063	065	064	076	094	092	078	071	055	049	049	042	043F	043S	042	043
7	044	043	043	044S	046	033	040	060	065	067	081	073	075R	077	071	067	070	067	049	036	037	036	039	040
8	039	038	040	042	043	033	042	057	060	064	065	086R	082	073	063	063	071	073	052	043	043	040	040	041
9	042	040S	042	042	041	042	049	057	061	060	069	080	076	083	078	072	059	057	049	034	036	036	035	036
10	036	034	036	034	035	032	042	050	063	071	080	080	086	082	071	064	062	062	060	046	043	042	039	040
11	039	036	037	040	044	028	038	053	063	069	078	087	096	078	069	075	071	066	059	050	044	043	1043R	045
12	043	041	042	042	041	036	045	056	065	063	065	077	083	081	075	064H	067	071	054	039	040	040	041S	041S
13	040	042	041	040	036	033	042	056	059	066	078	080	066	068	072	070	063	063	057	041	042	041S	042S	042
14	042	041	040	040	040	035	043	049	071	070	080	100	095	104Z	102	092	1088R	077	059	065	068	062	056	045
15	046	049	038	034	033	030	048	072	077	083	091	096	076H	080	087	068	075	067	059	040	044	044	044	043
16	044	043	041	039	036	039	048	060	076	077	080	101	083	079	074	071	079	076	060	045	046	047	043	043
17	044	044	044	043	038	030	045	054	065	077	084	092	090	080	076	072	076	066	056	050	048	043	042	043
18	042	041	041	043	041	029	046	064	067	073	072H	085	077	077	076	069	071	072	064	054	049	050	049	043
19	043	042	043	043	041	033	047	064	072	073	073	075	084	077	071	066	072	081	068	050	052	052	050	050
20	049	050S	046S	051	042	041	057	074	1084R	082	073	091	087	072	076	076	072	070	064	060	047	046	045	045
21	046	045	046	043	044	033	050	069	065	075	084	094	086	086	086	075	070	070	066	055	050	049	050	051
22	049S	050	050	050	046	040	051	063	080	086	081H	086	095	094	077	072	079	085	074	056	043	044	042	041
23	041	041	042	042	038	035	050	067	074	074	086	090R	081R	081	077	079	085	087	079S	057	056	059S	054S	051S
24	FS	FS	F	1041R	036	036	065	053	056	060	077	088	082	092	091	075	068	065	060	044	1046R	049S	FS	FS
25	052F	FS	051F	047F	F	F	044	051	063	071	082	101	085	082	076	068	067	069	065	054	043	041	041	040
26	039S	041	042	043	037	027F	045	059	061	068	075	087	087	079	080	080	067	062	055	049	042	040	042	040
27	040	040	044	033	027	029	049	052	059	073	083	078	084	083	073	069	062	065	065	046	046	043	043	044
28	044	042	041	039	030	029	047	054	059	071	069	088	096S	079	074	075	065	061	057	052	051	051	047S	045S
29	043	043	042	038	036	031	035	042	046	052	066	066	066	068	073	080	063	057	052	048	FS	FS	FS	FS
30	FS	FS	FS	038F	F	F	044	055	060	069	077	094	099	079	076	084	072	076	073	053	036	035	036	036
31	036	036F	036F	036F	F	031F	048	052	056	064	076	086	076	068	072	071	068	066	075	068	058	054	053F	053
Median	042	041	041	040	038	033	046	057	063	069	077	085	083	079	075	071	068	066	059	046	044	043	042	042
U. Q.	044	043	044	043	041	036	049	060	067	073	081	091	087	082	077	075	072	072	065	054	048	049	046	045
L. Q.	038	038	038	038	036	030	042	053	060	064	067	076	076	072	071	066	063	061	052	042	042	040	040	040
Q. R.	006	005	006	005	005	006	007	007	007	009	014	015	011	010	006	009	009	011	013	012	006	009	006	005

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 1

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

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.01 Mc  $f_oF_1$  135° E Mean Time (G. M. T. + 9h)

$f_oF_1$

Mar. 1966

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	420	410	L	430L	420	380L	L							
2								LH	LH	L	400L	410	L	L	420L	370	280							
3								L	L	L	380	LH	L	LH	L	L	L							
4								L	L	L	420	420	420	430	400	360L	L							
5								L	L	L	430L	420L	420L	420L	420	400	320L							
6								L	L	L	380L	420L	430L	410	420	370L	L	220						
7								L	L	L	430	420L	430L	L	420	380L	L							
8								L	L	L	420L	420	430L	420	LH	370	L							
9								LH	L	LH	420	420	430	420	420	L	L							
10								L	L	L	370L	420L	430	450	440	420L	L							
11								L	L	L	390L	430	450L	430	430L	LH	L							
12								230	L	L	410L	430L	LH	450	440L	420L	L	360L						
13								L	L	L	400	430	430L	430	450	LH	390L	L						
14								LH	LH	L	LH	450	410	L	430L	390L	L							
15								L	L	L	430	L	LH	450	LH	410L	L							
16								L	L	L	380L	420L	450L	450L	430	420L	L	L						
17								270	360	430	440L	430	470L	LH	420L	380L	L							
18								L	L	L	370L	430L	420	430L	450L	420L	L							
19								L	L	L	400L	420L	450	450L	1460B	420L	L							
20								L	L	L	390L	410	430	440	440L	420L	L	370L	L					
21								L	L	L	380L	LH	470	430	450L	460L	410L	L						
22								L	L	L	430L	430	440	460L	L	L	380L							
23								L	L	L	380L	L	430H	470L	450	430L	400L	L	L					
24								L	L	L	380	410	430	420	L	450L	L	L	L					
25								L	L	L	420	450L	1440B	450	430L	420	390L	L						
26								L	L	L	350L	420L	430L	460L	430L	420	LH	L						
27								L	L	L	420L	420	430	430L	430L	430L	360L	L						
28								L	L	L	430	430	420	440	L	430L	LH	LH						
29								310	1360A	420H	LH	450L	440	430	430	400	L							
30								L	L	L	400L	430L	450	440	460L	430L	420	380L						
31								L	L	L	420L	430	L	470H	440	430L	L	L						
No.								3	10	22	28	26	27	24	24	17	7	1						
Median								270	380L	420L	430	430	440	440	420L	390L	360L	220						
U. Q.																								
L. Q.																								
Q. R.																								

$f_oF_1$

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan  
A 2

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.01 Mc 135° E Mean Time (G. M. T. +9h)

f<sub>o</sub>E

Mar. 1966

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								200	250	280	300	305	310	305	295	265	240H	A							
2								195	250	290	305	I310A	315	A	A	275	230	A							
3								A	250	285	295	310	315	305	295	270	220	A							
4								190	235	270	295	305	310	305	290	270	220	B							
5								B	235	270	290	I310A	310	305	290	265	230	E							
6								B	240	275	290	305	310	310	290	265	235	B							
7								E	235	275	295	305	315	310	300	275	240	B							
8								205	250	280	295	315	320	315	295	275	230	E							
9								195	250	280	300	310	315	310	295	270	230H	180							
10								185	245	280	295	305	315	310	295	275	235	B							
11								190	250H	I285A	300	310	315	315	300	270	235	A							
12								A	A	A	295	I305A	315	310	295	270	240	180							
13								E	210	250	285	305	310R	315H	315	300	I270A	245	A						
14								E	200H	255	280	300	315	I315A	320	300	280	245	195						
15								E	205	260	285	305	310	320	315	305	285	255	200						
16								E	220	270H	285	300	315	320	I315A	305	285	I250A	A						
17								E	215	265	I290A	I300A	315	320	320	305	260	I195A							
18								E	215	265	300H	315	I325A	320	330	290	260	210							
19								E	215	270	305	I315A	325	330	I325B	335	315	275	195						
20								E	220	270	300	A	A	R	330	310	275	255	205						
21								E	220	265	295	320	325	330R	320R	310	285	265	A						
22								E	230	290	310	320R	325	325	320	300	255	210							
23								E	220	280	310	I320A	325	I325A	I330A	320	305	270	200						
24								E	230	270	300	310	I320A	I320A	320	310	I290A	260	200						
25								E	215	260	290	300	I310B	325R	330	315	305	265	A						
26								E	215	260	290	310	320	I325A	325	310	290A	265	195						
27								E	225	275	300A	I310A	I320A	325	320	310	290	245	195						
28								E	235H	280	300	315A	320	325R	330	320	290	255	190						
29								E	225	265	300	315A	A	R	330	320	280	245	A						
30								185	230A	270	290	I310A	I320A	I330R	330R	325	300	I260A	210						
31								175	235	280	300	310	A	A	325R	320	290	255	215						
No.								19	27	30	30	28	28	30	30	31	31	31	18						
Median								E	215	260	290	300	310	320	310	280	245	195							
U. Q.																									
L. Q.																									
Q. R.																									

f<sub>o</sub>E

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 3

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

foEs 0.1 Mc 135° E Mean Time (G. M. T. +9h)

Mar. 1966

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	J015E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	030	026	J022	J012E	J025	J016E	J020	E	
2	E	E	E	E	J019	E	E	021	G	G	032	G	033	032	029	026	018	J017	E	E	E	E	E	
3	E	E	E	E	J016E	E	E	022	G	030	037	G	038	038	037	G	033	J026	J013E	E	E	J016E	E	
4	E	E	E	E	E	E	J013E	021	G	030	G	G	G	G	G	G	026	024	J022	E	J018	E	E	
5	E	E	E	E	E	E	E	022	G	031	032	J037	G	G	J027G	029	025	023	J015E	J015E	E	E	E	
6	E	E	E	E	E	J016E	J013E	025	G	G	038	G	037	035	032	031	G	J017	E	E	E	E	E	
7	E	E	E	E	E	E	J016E	E	G	G	G	G	G	035	033	G	031	021	J016E	J016E	E	E	E	
8	E	E	E	E	E	E	E	023	G	G	036	037	038	034	G	G	032	J033	J018	J013E	J023	E	E	
9	E	E	E	E	E	E	E	G	G	J033	G	G	G	G	G	G	G	G	J015E	E	E	E	E	
10	E	E	E	E	E	E	E	021	026	G	G	G	G	G	G	G	022G	022	E	E	E	E	E	
11	E	E	E	E	E	E	E	G	G	031	033	033	G	G	G	G	G	018	E	E	E	E	E	
12	J013E	E	J017	J016E	E	E	E	023	029	035	G	J035	G	G	J030	G	027	019	J018	J018	E	J016E	E	
13	E	J017	J025	J025	E	E	J016E	G	G	G	G	G	G	G	G	029	018G	J020	J017	J021	J013E	J013E	E	
14	J013E	E	E	J012E	J013E	E	J016E	G	J025G	G	037	G	033	030G	G	025G	032	J045	J034	J043	J012E	E	J015E	
15	J023	J029	J030	J018	J012E	E	J013E	023	G	031	J040	033	G	G	G	033	028	023	J016E	J016E	J015E	J015E	J012E	
16	E	E	J040	J047	J016E	J016E	J013E	020G	G	030	G	G	G	G	032	029G	J039	J025	J018	J013E	E	E	J027	
17	E	J013E	E	E	E	E	E	E	G	029	033	033	G	030G	025G	G	032	022	J016E	J013E	E	E	E	
18	E	E	E	E	E	E	E	G	029	032	G	J041	024G	020G	G	020G	018G	024	J016E	E	E	E	E	
19	E	E	E	E	E	E	E	028	030	033	033	G	G	E050B	G	G	G	022	018	J015E	J012E	E	E	
20	E	E	E	E	E	E	E	G	G	033	032	J038	G	G	028G	G	G	G	E	J015E	E	E	E	
21	E	E	E	E	E	E	E	021	027	030	J034	G	G	G	G	G	G	023	J015E	E	E	E	E	
22	E	E	E	E	E	E	E	025	G	036	G	G	G	G	G	G	028	025	J017	E	E	E	E	
23	E	E	E	E	E	E	E	021	026	034	036	G	J033	034	035	033	J031	G	J017	E	E	E	J015E	
24	J015E	E	E	J013E	E	E	020	025	031	J046	038	034	J035	G	022G	030	021G	022	J030	J016E	E	E	J025	
25	E	E	E	E	E	E	E	G	G	031	032	E049B	036	G	039	037	032	029	J021	J032	J025	E	E	
26	E	E	E	E	E	E	E	G	028	031	033	G	J043	J039	G	031	032	022	J018	J013E	J015E	J018	E	
27	J017	E	J026	J016E	E	E	E	G	029	033	034	033	G	G	G	G	G	023	J013E	E	E	E	E	
28	J016E	E	E	E	E	E	E	022	030	032	033	G	G	G	G	G	020G	027	019	E	E	E	E	
29	E	J013E	J015E	J011E	E	E	022	029	039	037	039	034	G	G	025G	024G	J031	J018	J018	J015E	E	E	J015E	
30	J013E	J013E	J013E	J018	J013E	J012E	G	033	032	033	J044	035	G	028G	026G	G	029	023	019	J020	J024	J015E	J013E	
31	J013E	J016E	E	E	E	E	E	024	027	037	037	043	033	G	G	021G	019G	022	J015E	E	E	E	E	
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	021	G	031	032	G	G	G	G	G	026	022	017	E	E	E	E	
U. Q.	E	E	E	E	E	E	E	025	029	033	036	035	033	032	G	029	031	025	018	E	E	E	E	
L. Q.	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	020	E	E	E	E	E	
Q. R.																		005						

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

foEs

A 4

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. + 9h)

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

Mar. 1966

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																028	025	020	019					
2					E			021				032			030	029	025	018	E				E	
3								020		G	034		036	037	035		029	025						
4								021		030							026	021	021					
5								022		031	032	033			025G	029	025	020			E			
6								025				038	037	035	032	035		017						
7								023					035	034	033		029	020						
8										026	035	036	036	034			031	021	E		017			
9																								
10								021	026								019G	022						
11											029	033						018						
12			E					019	027	029	033				019		026	019	E	E				
13			E	E								033				029	018G	020	E	E				
14									024G		032		033	030G		025G	028	040	022	043				
15	E	025	018	E				023		031	035	033				030	027	022						
16			018	029				018G		030				U032R	029G	025G	027	020	E					018
17																								
18									027	030	033		029G	025G			027	021						
19									029	032		035	023G	020G		018G	018G	022						
20									030	033	033			B				022	017					
21									032	032	032	035		026G										
22									030	033								022						
23									024		033						027	025	E					
24									018	026	034	033			U033R	U034R	G	E	E					
25									020	025	031	032	037	034	U022R	030	020G	022	025					E
26										031	U032R	B	036		033	032	032	025	E	028	018			
27	E								028	031	U033R		035	035		030	028	021	E					
28									029	G	033	U033R						022						
29									030	032	033						019G	027	017					
30				E					021	028	030	032	033				019G	027	017					
31									021	025	039	035	037	U034R		025G	023G	025	E	E				
									030	030	032	036	035		028G	025G	029	023	E	E	E			
									024	027	034	036	042	U033R		021G	019G	022						
No.																								
Median																								
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

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

A 5

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G. M. T. +9h)

f-min

Mar. 1966

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	017	017	017	017	018	017	017	017	017	E	E	E	E	E	E	E	E
2	E	E	E	E	E	E	E	E	E	017	017	017	017	026	017	017	E	E	E	E	E	E	E	E
3	E	E	E	E	E	E	E	017	E	017	017	017	018	017	017	017	018	E	E	E	E	E	E	E
4	E	E	E	E	E	E	E	E	017	017	017	018	019	017	017	017	E	017	E	E	E	E	E	E
5	E	E	E	E	E	E	E	018	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
6	E	E	E	E	E	E	E	017	E	017	017	018	017	018	018	017	E	017	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	017	017	017	017	017	017	018	017	017	017	E	E	E	E	E	E
8	E	E	E	E	E	E	E	017	E	E	017	E	E	017	017	E	017	E	E	E	E	E	E	E
9	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
10	E	E	E	E	E	E	E	E	E	017	017	017	017	E	017	017	E	018	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	017	017	017	017	017	018	018	E	E	E	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	E	017	018	017	017	017	E	E	E	E	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	E	E	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	E	017	017	018	018	017	017	017	017	E	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	E	017	017	017	017	017	018	E	E	E	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	017	017	017	017	017	050	021	021	017	017	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	E	017	018	019	019	017	017	017	017	017	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	017	017	019	017	018	018	018	017	017	017	E	E	E	E	E	E
22	E	E	E	E	E	E	E	017	019	017	017	019	018	017	019	017	017	017	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	017	017	017	017	017	020	017	018	017	017	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	017	017	018	019	031	017	017	018	E	E	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	E	017	018	049	029	022	017	017	017	017	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	E	E	023	017	017	017	017	017	017	E	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	017	017	017	018	019	018	019	018	017	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	E	017	017	018	019	019	027	017	017	E	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	E	017	024	028	023	022	019	017	E	E	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	017	017	021	018	024	021	018	017	018	E	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	017	018	017	023	018	018	017	017	E	E	E	E	E	E	E	E
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E	E	E	E	E	E	E	E	E	017	017	017	017	017	017	017	017	E	E	E	E	E	E	E
U. Q.																								
L. Q.																								
Q. R.																								

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0Mc in 20 sec in automatic operation

f-min

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

0.01

135° E Mean Time (G. M. T. +9h)

Mar. 1966

M(3000) 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	305S	305S	315F	305	325	315	350	370	370	370	335	335	330	345	345	355	340	355	350	330	330	335	310	290
2	300	295	305	295	320	315	335	370	355	385	350	355	345	345	340	350	355	355	345	355	330	300	295	300
3	310	305	310	305	305	310	365	365	355H	350H	300H	350S	340	330	340	345	345	365	340	305	320	300S	295	315
4	305	310	305	305	300F	305F	FS	360S	365H	345	325	345	340	345	355	340	340	350	345	320	325S	305	295	295
5	285F	305S	295S	295F	315S	315S	350	365	350	330	315	340R	325	350	345	355	360	365	335	320	325	295	295S	300S
6	300	305	315	FS	360	305	325	370	345	345	330	310	340	330	345	360	365	335	325	315	305F	295S	305	295
7	305	295	310	325S	340	305	320	360	340	330	335	345	345R	350	345	340	350	360	360	315	315	310	290	305
8	315	310	320	320	335	315	335	350	345	355	335	355R	340	355	335	340	350	360	345	330	320	300	300	305
9	305	295S	300	305	315	310	340	365	360	345	325	330	325	340	345	355	365	345	340	310	310	310	290	295
10	295	300	310	295	310	315	345	345	350	320	335	315	325	330	345	340	350	350	345	315	305	305	305	300
11	295	290	300	310	355	340	335	355	345	340	325	320	335	335	345	335	335	355	340	325	310	315	I295R	305
12	295	305	295	305	330	320	335	360	365	350	325	340	335	325	345	320H	345	360	350	305	295	295	295S	290S
13	295	300	295	315	320	320	345	360	345	325	345	350	355	330	340	350	350	350	355	295	295	290S	295S	300
14	285	280	290	300	325	305	355	345	325	330	290	310	295	310Z	330	325	I340R	350	300	275	295	290	305	265
15	275	295	310	275	290	310	340	340	345	325	330	340	330H	335	365	350	355	355	335	280	280	295	285	290
16	305	320	295	295	290	290	335	350	345	340	320	345	370	340	335	335	340	360	350	320	290	305	290	295
17	280	295	305	315	330	305	340	350	340	330	315	335	325	335	325	330	350	350	335	310	305	300	295	285
18	290	285	290	315	345	305	340	345	350	335	315H	350	320	335	345	325	345	345	345	310	300	305	305	305
19	295	280	295	310	335	290	340	350	345	345	350	325	330	330	340	340	330	335	320	300	290	305	295	290
20	275	285S	305S	325	295	285	325	340	I345R	340	300	345	340	325	325	325	345	345	325	325	295	290	285	285
21	285	280	275	295	325	300	345	350	335	345	320	330	320	325	340	340	345	335	330	305	290	300	295	295
22	300S	300	295	310	335	305	340	340	345	335	315H	310	315	325	335	305	315	340	345	320	295	300	300	290
23	280	285	295	305	315	290	330	345	330	315	335R	335R	320	325	320	320	325	345	350S	300	275	260S	265S	270S
24	FS	FS	F	I270R	270	285	355	325	350	330	335	335	310	325	350	345	340	345	350	305	I285R	280S	FS	FS
25	300F	FS	325F	340F	F	F	325	340	335	335	305	330	350	330	340	325	335	335	340	340	310	295	285	285
26	290S	280	280	310	335	290F	335	355	340	330	335	320	325	315	335	360	350	350	335	325	295	285	270	265
27	275	275	320	340	275	285	345	345	330	340	340	320	325	340	335	345	350	340	340	325	300	285	290	280
28	285	290	305	335	270	305	350	355	305	345	305	320	340S	335	320	345	350	345	340	290	280	285	285S	295S
29	285	295	290	280	285	275	285	290	275	295	330	340	330	325	335	335	345	355	335	295	FS	FS	FS	FS
30	FS	FS	FS	315F	F	F	335	355	340	335	315	320	335	330	320	345	335	350	355	350	295	275	270	285
31	300	285F	295F	300F	F	300F	355	360	345	340	325	340	340	330	315	335	335	325	330	325	305	290	275F	285
No.	29	28	29	30	28	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	29
Median	295	295	300	305	320	305	340	350	345	340	325	335	330	330	340	340	345	350	340	315	300	300	295	295
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 7

IONOSPHERIC DATA

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

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

Mar. 1966

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	395	415	L	380L	375	390L	L							
2								LH	LH	400L	430	375L	L	L	365L	395	405							
3								L	L	405	LH	L	370L	LH	L	L	L							
4								L	L	L	390	370	385	370	380	390L	L							
5								L	L	L	380L	385L	380L	365L	375	385	395L							
6								L	L	410L	395L	375L	375	370	380	390L	L	425						
7								L	L	L	375	390L	370L	L	370	385L	L							
8								L	L	385L	365	365L	395	375L	LH	385	L							
9								LH	L	LH	395	365	380	375	365	L	L							
10								L	L	405L	385L	375	360	370	390L	L								
11								L	L	405L	375	365L	375	385L	LH	L	L							
12							430	L	L	395L	380L	LH	360	365L	380L	L	395L							
13								L	L	395	370	375L	385	370	LH	385L	L							
14								LH	LH	L	LH	375	390	L	365L	380L	L							
15								L	L	L	385	L	LH	375	LH	380L	L							
16								L	L	410L	385L	365L	370L	385	385L	L	L	L						
17							410	L	L	390	375L	405	360L	LH	385L	410L	L							
18								L	L	395L	405L	390	385L	390L	375	370L	395L	L						
19								L	L	395L	390L	380	375	370L	I365B	375L	L							
20								L	L	405L	405	395	L	385	385L	375L	L	390L	L					
21								L	L	405L	LH	365	395	375L	365L	375L	L							
22								L	L	385L	400	390	365L	L	L	L	385L							
23								L	L	400L	L	415H	395L	370L	365	385L	L	L						
24								L	L	400	380	375	L	365L	L	L	L	L						
25								L	L	375	375L	I390B	375	390L	365	395L	L							
26								L	L	410L	385L	380L	355L	380L	365	LH	L							
27								L	L	370L	380	375	380	375L	370L	L	385L	L						
28								L	L	365	390	380	365	L	380L	LH	LH							
29							335	I350A	I370H	LH	355L	365	380	365	370	L	L							
30								L	L	390L	385	365	385	360L	365	385L	L							
31								L	L	375L	375	L	370H	385	375L	L	L							
No.							3	10	22	28	26	27	24	24	24	17	7	1						
Median							410	400L	390L	380	375	375	375	375	375L	385L	390L	425						
U. Q.																								
L. Q.																								
Q. R.																								



Mar. 1966

h'F2

km

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

Akita

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								225	230	235	270	285	285	260	275	250	245							
2									240	235	250	280	270	260	275	255	245							
3									235	240	300	265	275	295	270	265	245							
4									225	240	285	270	280	270	255	260	250							
5									250	250	280	250	280	275	270	245	240							
6									245	245	250	280	270	255	250	245	225	220						
7									245	260	275	250	280	270	270	270	240							
8									250	255	275	255	265	260	265	270	245							
9								220	235	250	280	280	275	265	255	250	240							
10									250	260	255	285	280	265	260	270								
11									245	260	290	280	260	255	255	280	255							
12								225	235	245	280	270	275	300	250	245	245							
13									240	255	270	260	250	300	265	255	245							
14									255	250	285	280	290	285	260	265	245							
15									250	250	270	255	255	270	245	255	250							
16									255	250	260	260	250	255	260	245	260	235						
17								240	255	285	275	270	285	245	260	255	250							
18									245	245	250H	260	265	280	270	250	245							
19									250	260	250	275	285	275	255	260	260							
20									240	255	260H	260	270	260	280	265	250	250						
21									245	250	295	265	275	285	270	245	245							
22									245	250	265	295	270	260	260	255	280							
23								245	255	240	295	255	290	285	275	265	270	250						
24								255	250	280	285	290	280	280	260	255	240	240						
25									255	270	295	280	245	275	260	260	255							
26									255	265	260	290	285	275	275	245	245							
27									260	270	280	290	285	255	280	255	250	245						
28									255	265	265	285	265	270	290	260	250							
29								320	420	365	290	285	290	290	290	275	240							
30									260	270	290	285	260	270	280	275	255							
31									250	265	290	275	250	280	290	275	260							
No.								8	31	31	31	31	31	31	31	31	30	6						
Median								240	250	255	275	275	270	270	265	255	245	240						
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

A 9

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G. M. T. + 9h)

km  $f^oF_2$

Mar. 1966

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	285	270	260	245	255	225	220	215	200H	195	190	180	240	230	230	240	230	225	205	240	230	265	290
2	285	285	280	295	245	245	235	220	220	215	195	240	210	250R	220	215	230	235	210	215	220	255	285	280
3	255	265	255	280	260	255	210	205	205	200	200	195	230	220	250	245	245	225	210	215	235	270	260	255
4	240	260	270	285	285	285	235	225	220	220	190	195	200	245	215	190H	240	230	220	245	235	240	280	285
5	295	260	275	280	245	245	205	215	185H	235	205	200	195H	220	230	240	235	215	220	240	245	255	280	280
6	285	265	245	220	200	245	230	225	225	200	190H	245H	240	245	235	225	220	200	215	220	255	245	275	285
7	275	285	270	245	215	240	240	230	220H	195	190	250	230	235	225	230	240	225	205	220	245	270	295	270
8	245	255	245	245	220	220	230	230	205	225	220	245	210	205	200	205	240	230	205	235	245	245	280	270
9	260	275	280	255	240	245	230	190H	220	200	195	190H	190H	200	230	220	220H	240	215	220	265	270	295	285
10	285	285	260	270	245	240	235	225	225	220	205H	200H	230	220	200H	200H	245	240	220	225	245	255	275	270
11	275	305	290	260	210	230	235	235	190H	220	205	200	210	195H	205	205	230	230	220	220	245	250	275	265
12	280	260	280	260	230	235	235	190	205	195H	195H	190	200	200	235	220	235	235	205	235	265	280	290	290
13	290	270	275	260	240	235	230	230	205	200	195H	230	210	200	195	200H	240	240	215	245	265	290	290	280
14	290	290	290	275	240	265	210	220	210	230	240	240	215	220	215H	235	245	240	250	1300A	260	275	245	320
15	310	295A	245	275	280	255	240	245	240	225	240	185H	190H	220	240	220	240	240	215	230	295	280	290	290
16	270	245	290A	I280A	245	285	235	235	230	205H	200	215H	230	220	205	235	245	245	210	215	270	260	270	290
17	295	270	260	240	215	250	230	200	200	200	200	200	185	180H	215	205H	235	240	215	230	255	260	285	285
18	285	295	290	255	210	245	235	240	220	210H	210	205	195	215	220	240	240	245	230	230	260	260	240	260
19	280	290	280	245	220	260	240	240	240	230	220	210	205	I220B	235	240	250	245	220	235	275	250	280	280
20	290	275	265	230	235	285	250	245	225	205	205	195	215	210	195	235	240	245	230	225	225	260	285	295
21	295	295	270	270	220	245	240	245	230	210	200	200	205	235	210	240	240	250	230	220	240	265	280	275
22	290	280	270	245	215	250	220	240	245	230	200H	200	190	185H	240	210	240	240	215	205	265	270	270	280
23	300	290	280	260	230	270	240	235	220	205	200	205	200	240	215	240	245	245	225	245	290	280	335	315
24	320	285	270	335	335	305	240	245	240	240	215	205H	I245A	210	210H	240	240	240	235	235	280	290	275	295
25	270	250	235	215	205	255	240	240	210	205	205	I210B	240	200	215	210	245	245	230	230	245	270	290	290
26	295	305	285	255	220	285	240	240	205	200H	205	200	220	230	220	220H	240	240	235	230	245	295	310	330
27	310	305	245	230	E305E	310	235	240	220	220	230	220	220	240	220	210	240	245	230	220	245	285	290	295
28	295	285	270	235	E240E	270	240	240	235	230	225	205H	200H	210	230	210H	195H	240	230	245	290	295	280	285
29	285	290	290	285	290	305	260	280	I250A	240H	225	240	245	230	235	230	240	240	240	240	255	285	305	295
30	280	245	240	230	260	270	240	240	240	240	220	200	200	225	230	235	245	240	225	205	220	305	315	295
31	290	300	280	265	235	260	230	235	225	230	220	I235A	200	215	220	235	245	250	240	225	230	265	295	275
No.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	285	285	270	260	240	255	235	235	220	215	205	205	210	220	220	225	240	240	220	230	245	270	280	285
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.6 Mc to 16.0Mc in 20 sec in automatic operation

$f^oF_2$

The Radio Research Laboratories, Japan

A 10

Mar. 1966

RES

km

135° E Mean Time (G. M. T. +9h)

Akita

Lat. 39° 43.5'N  
Long. 140° 08.2'E

IONOSPHERIC DATA

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	G	G	G	G	G	G	G	G	E155G	145	120	115	E	105	E	105	E
2	E	E	E	E	105	E	E	155	G	G	G	110	G	115	110	E155G	130	125	105	E	E	E	E	E
3	E	E	E	E	E	E	E	145	G	160	130	G	145	135	135	G	135	120	E	E	E	E	E	E
4	E	E	E	E	E	E	E	160	G	E170G	G	G	G	G	G	G	155	140	125	E	120	E	E	E
5	E	E	E	E	E	E	E	155	G	E155G	E160G	105	G	G	105	165	140	120	E	E	E	E	E	E
6	E	E	E	E	E	E	E	145	G	G	G	170	170	155	145	140	G	100	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	G	G	G	G	G	E165G	E170G	G	145	130	E	E	E	E	E	E
8	E	E	E	E	E	E	E	170	G	155	140	140	140	145	G	G	120	110	110	E	105	E	E	E
9	E	E	E	E	E	E	E	E	G	110	G	G	G	G	G	G	G	G	E	E	E	E	E	E
10	E	E	E	E	E	E	E	145	G	G	G	G	G	G	G	G	160	145	E	E	E	E	E	E
11	E	E	E	E	E	E	E	G	G	115	160	155	G	G	G	G	G	135	E	E	E	E	E	E
12	E	E	105	E	E	E	E	110	110	115	G	110	G	G	105	G	170	145	100	105	E	E	E	E
13	E	110	110	110	E	E	E	G	G	G	G	G	G	G	G	130	105	105	105	100	E	E	E	E
14	E	E	E	E	E	E	E	G	110	G	130	G	110	110	G	105	145	130	130	120	E	E	E	E
15	120	110	110	115	E	E	E	150	G	155	125	145	G	G	G	125	140	135	E	E	E	E	E	E
16	E	E	110	105	E	E	E	110	G	130	G	G	G	115	110	110	100	100	100	E	E	E	E	E
17	E	E	E	E	E	E	E	E	G	125	115	110	G	105	100	G	135	130	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	G	165	E145G	G	105	105	G	100	100	100	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	160	E155G	140	120	G	G	G	G	G	150	125	E	E	E	E	E
20	E	E	E	E	E	E	E	E	G	120	115	110	G	105	G	G	G	G	E	E	E	E	E	E
21	E	E	E	E	E	E	E	150	145	140	120	G	G	G	G	G	G	135	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	155	G	130	G	G	G	G	G	160	135	120	E	E	E	E	E
23	E	E	E	E	E	E	E	150	165	145	115	G	125	130	145	130	125	G	100	100	E	E	E	E
24	E	E	E	E	E	E	E	145	150	140	130	120	110	G	105	135	100	140	120	E	E	E	E	E
25	E	E	E	E	E	E	E	E	G	140	135	B	130	G	125	130	120	120	110	115	110	E	E	E
26	E	E	E	E	E	E	E	E	G	155	140	125	G	105	135	G	130	120	155	100	E	100	E	E
27	110	E	105	E	E	E	E	E	G	155	125	120	115	G	G	G	G	145	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	150	140	135	130	G	G	G	G	100	150	145	E	E	E	E	E
29	E	E	E	E	E	E	E	E	145	135	125	115	115	G	G	105	105	105	105	105	105	E	E	E
30	E	E	E	E	105	E	E	G	140	140	125	115	110	G	105	105	G	120	165	130	105	105	E	E
31	E	E	E	E	E	E	E	155	E170G	G	120	120	110	115	G	105	105	140	E	E	E	E	E	E
No.	2	2	5	4	1			6	19	14	23	18	14	11	13	11	15	24	28	17	7	6	2	3
Median	115	110	110	110	105			150	150	140	130	120	110	115	110	130	130	130	110	105	105	100	110	
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.6 Mc to 16.0 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

RES

A 11

Lat. 39° 43.5'N  
Long. 140° 08.2'E

Akita

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

Mar. 1966

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					f2			h2			e2			c	l	h	h	e2	f3						
3								e2		h	h		h	h	h2	h	h12	h	f					f	
4								h2		h															
5								h		h	h1	l2 h			l	h12	h2	e3	f2		f				
6								h		h		h	h2		h	h	l								
7								h		h		h	h		h	h2	h2								
8								h		h		h12	h		h	e4	e3	f			f2				
9									l2																
10								h2	h							l2	h								
11										h		h					c								
12								l2	l2	e2		l2		l		h2 l	h2	f		f					
13								f2							h	l	l2 h	f		f					
14									l3		h		l2	l2	h2	e3	f5 f		f3 f						
15								f2		h	h	h			h	h	h2								
16								l2		h		h		c	l2	l2	l2	h	f					f2	
17										c	e2		l2	l		h1	c								
18									h	h	h	l2	l	l	l2	l	l h2								
19									h	h	h					h2	h2	f2							
20									h	h	c			l											
21								h2	h	h	h						e2								
22								h	h	h						h	h3	f							
23								h2	h	h	c		h	h	h	h	h	f2		f2					
24								h	h2	h	h2	h	l	l	h e	l2	h2 l	f3						f2	
25								h	h	h	h	h	h	h	h	h2	h2	e3	f	f4		f3			
26									h	h	h	h	l2	h12	h	h	h2	h12	f			f			
27									h	h	h	e2			h	h	h								
28								h2	h2	h	h	h			l	h1	f								
29								h2	h1	h3	h	c			l2	l4	f2		f2		f2				
30								h	h	h	c	c	l	l2	h	e2	h	f		f		f2			
31								h2	h	h	h2	c	c		l	l	h2								
No.																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

The Radio Research Laboratories, Japan

Sweep 1.6 Mc to 16.0Mc in 20 sec in automatic operation

Types of Es

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 1 3.5° E Mean Time (G.M.T. +9h)

foF2

Mar. 1966

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	036	035	034	033	034	034	043	064	10620	063	073	10800	075	074	C	065	062	058	054	045	035	032	031	031
2	031	033	034	032	030	031	034	059	071	064	058	062	071	070	065	070	060	063	057	040	032	028	030	032
3	033	032	032	031	0298	031	30408	051	058	064	054	30725	072	068	065	070	071	061	048	038	041	30368	0378	039
4	0408	031	033	034	033	032	10408	059	062	058	060	073	0778	073	067	068	064	062	056	042	044	037	035	037
5	037	037	037	036	037	035	046	054	059	068	080	094	092	089	085	082	074	062	059	054	3043F	040	039	040
6	040	039	044	046	030R	027	038	054	071	082	071	082	089	111	100	070	060	055	044	040	040	F	040	038
7	038	038	039	039	I046C	C	C	C	C	C	C	088	080	079	080	072	072	064	050	036	035	034	037	037
8	30398	037	039	039	038	028	3039R	054	065	073	069	081	081	074	070	067	073	069	051	043	039	039	040	040
9	040	037	039	040	039	037	044	061	061	065	068	083	095	087	093	082	057	056	057	033	033	033	034	034
10	0348	034	033	033	033	031	038	056	067	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	070	078	088	097	094	067	072	074	10738	056	046	045	3044R	10408	10408
12	10408	040	040	040	037	033	043	061	065	063	061	074	092	088	080	068	072	10728	049	040	039	30398	30398	039
13	039	039	038	039	036	032	042	055	064	063	075	090	078	071	073	066	068	C	C	C	C	F	040	042
14	040	F	039	040	040	032	045	055	066	3078R	081	3103R	3102R	3104R	101R	097	090	30748	058	064	068	064	059	30418
15	048	051	052	036	035	034	049	071	096	094	089	094	095	087	083	069	070	066	054	039	30408	043	30438	1044C
16	045	044	039	039	032	035	051	061	0748	080	081	103	3101R	085V	071	076	30808	30798	066	051	045	046	10458	044
17	044	044	044	046	C	C	C	C	C	074	087	099	3101R	095	074	072	076	069	060	045	045	043	040	0428
18	3040R	040	040	3042R	037	026	045	065	10798	070	074	087	080	082	081	072	071	072	069	057	049	050	047	043
19	043	0398	041	042	034	030	048	066	075	3074R	077	3077R	084	086	073	072	073	10798	10748	051	046	051	048	044
20	044	046	044	044	037	038	053	S	3097R	068R	3074R	087	089	087	069	073	083	069	071	059	044	044	043	043
21	042	042	043	041	036	029	044	066	075	072	085	089	093	092	091	079	070	070	066	057	048	048	049	048
22	044	045	046	046	038	037	051	066	089	087	073	094	106	101	088	0788	076	10948	083	051	038	0408	039	038
23	0368	037	038	037	032	029	047	065	10758	070	078	0938	082	086	080	083	092	0918	10718	058	S	S	S	S
24	S	S	0548	10408	0378	10428	10648	066	067	065	067	085	101	095	10988	10758	10728	10765	066	0618	044	036	F	1045F
25	F	10208	0518	035	1024F	F	046	059	068	082	084	3101R	112	096	3079R	069	068	10768	10718	055	037	10368	037	10408
26	037	037	037	040	029	027	047	066	065	071	070	080	098	10998	087	082	070	063	1068A	050	039	0398	10378	036
27	037	037	043	030	022	024	047	057	059	071	079	090	093	086	073	074	068	067	065	048	0418	041	10398	
28	0438	042	044	041	028	025	047	061	065	068	078	086	104	095	086	074	070	072	058	052	050	050	049	
29	050	047	044	045	039	035	039	047	053	062	087	081	1076R	077R	085	086	0728	061	058	047	043	0428	1044F	F
30	10418	044	038	029	022	024	046	060	065	079	078	093	110	0978	091	090	087	091	0738	A	A	0338	033	035
31	0328	10338	0328	033	025	027	047	0608	061	068	071	091	091	072	068	0748	10738	0728	10758	10668	055	050	0508	049F
Count	28	28	30	30	28	27	28	27	28	29	29	30	30	30	29	30	30	29	29	28	27	26	28	28
Median	040	039	039	040	034	031	046	060	066	070	075	088	092	086	080	072	072	069	058	046	041	040	040	040
U. Q.	043	044	044	042	037	035	047	065	074	076	080	094	101	095	088	078	074	074	070	054	045	046	044	044
L. Q.	037	037	037	034	030	027	041	055	062	064	070	080	080	077	070	070	068	062	054	041	038	036	037	038
Q. R.	006	007	007	008	007	008	006	010	012	012	010	014	021	018	018	008	006	012	016	013	007	010	007	006

foF2

K 1

# IONOSPHERIC DATA

Lat. 35° 42' 4" N  
Long. 139° 29' 3" E

Kokubunji Tokyo

0.01 Mc **foF1** 135° E Mean Time (G.M.T. +9h)

**foF1**

**Mar. 1966**

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									C	U420L	430L	C	L	L	C	L	L							
2									L	L	U480L	U480L	440	L	L	L	L							
3									L	L	440	U450L	450	U450L	L	A	A							
4									L	400L	L	L	U450L	U450L	L									
5									L	L	U460L	450	450L	440L	U440L	380L	L							
6									L	L	430L	430L	L	L	U440L	L	L	L						
7									C	C	C	460L	460L	450L	L	L	L							
8									L	430L	L	450	U450L	L	L	L	L							
9									L	L	U430L	U450L	440	440	430L	L	L	L						
10									C	C	C	C	C	C	C	C	C							
11									C	L	460L	U460L	460L	450	L	L	L							
12									L	L	L	U480L	U460L	L	420	L	L							
13									L	L	440	420	450L	460L	U440L	L	L							
14									L	L	460L	470L	U470L	U450L	L	U420L	L							
15									L	L	L	450L	L	460L	460L	410L	L							
16									L	L	L	470L	U450L	U450L	430L	410L	L							
17									C	C	L	L	480L	480L	L	L	L							
18									L	L	L	L	480L	U490L	U430L	L	L							
19									L	U420L	L	U470L	480L	B	L	L	L							
20									L	L	L	460L	450L	U460L	470L	420	L	L						
21									L	L	L	450L	440	470L	480L	U470L	L	L						
22									L	L	L	440L	L	L	L	L	L							
23									L	L	L	430L	480L	L	470L	A	440L	L						
24									L	U410L	A	450L	L	470L	430L	L	A							
25									L	430L	450L	B	470L	460	450L	A	L	L						
26									L	L	420L	450L	460L	470L	460L	440L	L	A						
27									L	460L	450L	450L	450L	470L	450L	L	420L	L	L					
28									L	440L	460L	470	480	L	U440L	U400L	L							
29									A	A	A	L	470L	L	460L	L	L							
30									L	L	430L	440L	A	L	470L	460L	420L	A	L					
31									L	L	450L	470L	450L	A	440L	430L	430L	L	L					
Count									11	17	24	22	21	18	9									
Median									430L	450L	460L	460L	460L	440L	420L									
U. Q.																								
L. Q.																								
G. R.																								

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

The Radio Research Laboratories, Japan

**foF1**

K 2

Mar. 1966

f<sub>o</sub>E

0.01 Mc

135° E Mean Time (G.M.T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4'N  
Long. 139° 28.3'E

# IONOSPHERIC DATA

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							215	I2500	295	320	I330C	335	325	I310C	280	240	A							
2							210	270	300	I320R	I330A	335	350	330	290	250	200							
3							205	260	290	310	330	325	330	310	285	A	A							
4							170	255	290	315	325	325	315	310	270	250	175							
5							180	250	290	305	320	330	330	315	280	240	A							
6							175	260	300	310	325	335	325	315	280	255	195							
7							G	C	C	C	335	335	330	315	290	260	170							
8							190	255	300	320	325	330	325	315	290	250	A							
9							215	270	300	320	325	330	330	310	280	250	190							
10							210	260	C	C	C	C	C	C	C	C	C							
11							C	C	280	310	I330R	330R	325	310	290	260	180							
12							B	205	260	290	315	325	330	315	290	260	190							
13							E	200	275	295	315	330	A	A	320	300	255	C						
14							120	220	270	I300A	I325A	335	335	A	A	290	260	205						
15							S	205	I270A	I300A	I320R	330	I330A	325	320	300	270	A	B					
16							E	A	A	290	A	330	340	335	330	305	A	A	B					
17							C	C	C	R	A	I330A	I340A	I340A	335	310	265	215	S					
18							170	230	290	310	I330A	340	350	340	335	310	275	210	B					
19							220	225	300	305	A	A	A	B	350	A	A	230	B					
20							180	240	275	310	A	R	R	A	A	A	305	210	B					
21							A	235	285	310	325	335	I325A	335	325	305	270	210	E					
22							B	250	310	320	I335R	I330R	325	I330A	330	I310R	I260A	215	B					
23							A	A	270	I310R	325	I340R	350	350	I330A	310	270	A	B					
24							A	200	240	315	A	A	B	R	A	310	I270A	A	B					
25							A	220	R	A	I310R	B	B	355	330	310	A	A	B					
26							A	220	R	R	I315R	320	320	340	320	A	A	A	A					
27							A	215	280	290	A	A	350	I345R	330	305	265R	210	B					
28							A	240	275	310	315	330	I330A	340	335	310	275	205	B					
29							A	240	290	310	320	A	B	R	335	310	275	230	B					
30							B	250	300	320	R	A	A	A	A	A	A	A	A					
31							175	245	285	315	320	A	A	330	325	305	260	A	B					
Count							7	26	25	26	22	22	22	23	26	26	24	17	1					
Median							170	215	270	300	320	330	330	330	320	300	260	205	E					
U. Q.																								
L. Q.																								
Q. R.																								

f<sub>o</sub>E

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 1 3.5° E Mean Time (G. M. T. +9h)

foEs

Mar. 1966

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	E0138	E0148	J018	E	J015	E012B	E011B	g	C	g	g	C	g	J042	C	036	031	J038	E	024	J023S	J023	J025	J020
2	E0138	E	E011B	E	J018	J018	J023	g	g	g	g	J034	038	038	036	031	g	019G	J018	J023	E011B	021	021	019
3	E	E011B	E	E	E	E	E011B	g	g	g	036	037	039	037	J043	J043	J038	J037	J024	021M	E013B	E	E013B	021M
4	E0158	E	E	E	E	E	E013B	g	g	g	g	g	J029G	g	g	g	g	023	J019	E0158	E015S	E013B	E	E011B
5	E011B	E0148	E	E	J015	J018	E015S	g	g	g	031	g	039	038	g	023G	026	J031	J025	J023	E	E013B	E	E011B
6	E	E012B	E	E	E	E013B	E013B	g	g	g	g	g	040	J044	g	032	g	g	J033	J029	J021	J035	E015S	E011B
7	E011B	E013B	E	C	C	C	C	C	C	C	C	C	039	040	g	032	g	033	J029	J021	J035	J031	E011B	E014S
8	019	J018	E	E	E	E	E015S	g	g	034	036	039	036	036	035	J049	031	J027	J021	J035	J016	E014B	E012B	
9	E0158	E011B	E	E	E	E013B	J015	g	022G	g	J029G	025G	g	020G	g	g	g	g	E011B	J016	E014B	E012B	E013B	
10	E0158	E013B	E011B	J014	E011B	J017	E013B	J024	g	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	034M	034	g	g	g	J031G	026G	J021G	021	J019	E013B	E015S	E015S	J033	021M
12	E0158	E0148	E011B	E	J019	E011B	E011B	g	g	J028G	g	g	032G	g	022G	J022G	016G	021	J016	E014S	E013B	E011B	018M	E015S
13	E0158	019M	E	J015	E	J018	E	g	g	J031	J029G	g	035	034	025G	021G	019G	C	C	C	C	C	020M	J035
14	J025	J021	J013	E	J017	J018	J015S	020G	J026G	J030	035M	036	J036	J051	034	017G	030	J025	J025	J022	J020	E015S	E	018
15	023M	019	021	J036	J018	J015	E016S	J025	J028	J031	J029G	035	J030G	030G	g	035	031	J030	J023	J021	J034	J029	J023	C
16	J021	E	E	E	E	E	J018	J019	J038	J029	J031	034	033	g	g	g	J030	J038	J029	020	E	E015S	018M	J028
17	024M	018M	E	E	E	C	C	C	C	J029	J047	036	036	J035	022G	020G	032	027	J025	J015	017M	E	E015S	E016S
18	E0158	E011B	E	E	J015	J017	E013B	J024	J027G	J029G	031G	030G	029G	025G	g	019G	032	028	J020	018	021M	E014S	E011B	
19	E0158	E012B	E	E	J019	E012B	E012B	029	033	034	J036	J037	J034	E014B	g	033	J031	019G	J026	J024	J025	J063	E0158	E016S
20	E012B	E	J015	E	E	E011B	E013B	g	J027G	030G	J036	032B	034G	J035	J034	J033	g	024	J024	E011B	E011B	E013B	E013B	
21	E012B	E013B	E	J013	E	J022	021	028	034	033	030G	030G	J038	g	g	g	029	025	019	E014S	E012B	E015S	E012B	
22	E	E013B	E013B	E012B	E	E	E014B	g	028G	g	g	g	039	J036	g	g	030	026	E013B	E012B	E013B	E014B	E011B	
23	E013B	E011B	E0148	E	E011B	E012B	J020	027	J031	J039	038	042	J043	038	J056	g	033	J026	E012B	E015S	E014B	E0158	021	
24	022	E011B	E	E	E011B	E012B	023	J036	032	034	J044	J044	E039B	036	J034	g	J051	J043	J044	023	021	E014B	E011B	
25	J022	020	E	E	E	E	022	021	g	033	034	E035B	E040B	g	039	J043	J039	J030	J022	J024	J030	E	E0158	
26	E013B	023	J024	E013B	E	E	022	g	g	g	036	034	g	g	036	J044	J040	J042	J068	024	018	E011B	019	
27	E013B	E011B	E011B	021	020	022	019	025	030	036	036	036	J030G	g	037	g	g	027	J024	022	020	022	E0158	
28	E0158	E	E	E	E012B	020	023	029	030	034	036	038	J042	043	g	020G	019G	027	021	J016	J022	E012B	E011B	
29	021	E	J028	J022	019M	E011B	J021	034	J058	J055	J054	043	E038B	045	029G	025G	g	g	016	E016S	024	J019	020	
30	E016S	020	019	020	020	020	022	030	g	g	044	J059	J040	J051	J035	J036	066	034	J044	J051	J054	J062	J025	
31	J025	J028	J019	015	019	E	g	029	032	036	038	J042	J052	g	g	022G	022G	025	J024	018	E013B	E012B	E014B	
Count	30	30	30	29	28	28	28	28	27	29	29	29	30	30	30	30	30	30	29	29	29	30	30	29
Median	E015	E013	E	E	E011	E013	E016	g	g	030	034	034	035	034	g	g	030	026	022	020	017	E015	E014	
U. Q.	021	018	E014	014	018	018	021	028	030	034	036	038	039	038	035	033	032	033	025	023	024	021	019	
L. Q.	E013	E011	E	E	E	E011	E013	g	g	g	g	g	g	g	g	g	g	022	017	E015	E012	E011		
Q. R.	D008	D007	D007	D008	D007	D007	D008											011	008	D008	D012	D009		

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

The Radio Research Laboratories, Japan

foEs

K 4



Mar. 1966

fbEs

0.1 Mc 13.5° E Mean Time (G.M.T. +9h)

Kokubunji Tokyo

Lat. 35° 42.4'N  
Long. 139° 29.3'E

IONOSPHERIC DATA

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	B	B	E	E	B	B	B	C					033	C	034	029	035		018	E	E	E	E	
2	B	B	B	E	E	E	E	E	033	038	035	031		038	035	031		017G	E	E	B	E	E	E	
3	B	B	B	E	E	B	B	B	034	037	036	041	040	036	041	040	037	034	022	013	B		B	016	
4	S	B	B	E	E	B	B	B										021	017	S	B	S	B		
5	B	S	S	E	E	S	S	S	026								025	021	014	E	E	B	B	B	
6	B	B	B	E	E	B	B	B									030	017G	B	B		S	B	B	
7	B	B	B	E	E	C	C	C	C	C	C	C					033	023	016	024	020	B	B	B	
8	B	B	B	E	E	S	S	S	034	036	038	035	040	036	040	030	030	027	018	022	018	B	B	B	
9	S	B	B	E	E	B	B	B	021G										B	E	B	B	B	S	
10	S	B	B	E	E	B	B	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	E	E	C	C	C	C	033	026						017G	021	E	B	S	S	016	E	
12	S	B	B	E	E	B	B	B									016G	021	E	S	B	B	E	S	
13	S	B	B	E	E	E	E	E	027	026G							018G	G	C	C	C	E	021	E	
14	016	B	B	E	E	B	B	B	025G	030R	034	027					029	023	019	020	E	S		E	
15	017	014	E	E	E	S	S	016	028	031	026G	G					030	019	015	E	016	020	020	C	
16	E					E	018	035	029	017	034	032					028	026	014	E		S	E	021	
17	019	E				C	C	C	C	025R	044	036					030	023	G	E	E	S	S	S	
18	S	B	B	E	E	B	B	B	026G	026G	031R	027G					031	028	017	016	E	S	B	B	
19	S	B	B	E	E	B	B	B	032	034	035	037					025	018G	023	019	022	029	S	S	
20	B	B	B	E	E	B	B	B	025G	028G	033	032R	035	034	030			023	G	B	B	B	B	S	
21	B	B	B	E	E	B	B	B	033	033	029G	028G					028	024	016	S	B	S	B	B	
22	B	B	B	E	E	B	B	B	027G								029	023	B	B	B	B	B	B	
23	B	B	B	E	E	B	B	B	029	033	037	040					028	021	B	S	S	S	E	E	
24	E	B	B	E	E	B	B	B	031	033	042	036					040	040	039	E	E	B	B	B	
25	015	E				E	020		033	033	B	B					032	025	0022R	012	014	015		S	
26	B	B	B	E	E	B	B	B									040	040	A	016	E	B	E	B	
27	B	B	B	E	E	B	B	B	028	034	035	036					023	021	E	E	E	S	S	S	
28	S					B	B	B	029	034	035	036					017G	026	020	E	020	B	B	016	
29	E					B	B	B	044	054	052	041							016	S	E	015	E	016	
30	S	E	E	E	E	B	B	B	038	038	055	040					035	026	040	043	A	025	016	015	
31	016	015	011	011	E	E	E	027	031	036	034	040					022G	025	023	E	B	B	B	B	
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

fbEs

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

The Radio Research Laboratories, Japan

K 5

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

0.1 Mc 1.35° E Mean Time (G. M. T. +9h)

f<sub>min</sub>

Mar. 1966

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	013	014	011	010	010	012	011	012	C	015	015	C	015	015	C	013	012	013	010	014s	013	013	015s	011
2	013	010	011	010	010	011	015s	011	014	015	015	015	017	025	016	014	012	013	014s	010	011	015s	015s	011
3	010	011	010	010	010	010	011	013	013	014	015	015	015	015	016	014	014	013	013	011	013	010	013	015s
4	015s	010	E	010	010	010	013	013	011	013	015	016	015	016	014	015	014	014	013	011	015s	011	015s	010
5	011	014s	010	010	010	010	015s	011	013	014	015	016	015	015	014	014	017	012	010	013	010	013	010	011
6	010	012	010	010	010	013	013	013	014	015	016	016	017	017	016	015	014	014	014	014	010	015s	011	011
7	011	013	010	C	C	C	C	C	C	C	C	C	015	018	015	013	014	013	011	010	013	015s	011	011
8	015s	011	010	010	010	010	015s	013	014	014	015	015	015	015	014	013	013	012	013	011	014s	011	014s	011
9	015s	011	010	010	010	013	013	015	014	016	016	015	016	015	016	016	015	013	011	013	014	012	013	015s
10	015s	013	011	010	011	011	013	013	014	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	015	015	015	016	016	016	015	014	012	013	013	015s	015s	015s	015s
12	015s	014	011	010	010	011	011	013	014	015	016	016	016	016	016	014	014	012	015s	014s	013	011	015s	015s
13	015s	016	010	010	010	011	010	014	013	014	015	016	015	015	014	015	011	C	C	C	C	C	015s	015s
14	013	013	010	010	010	011	010	014	013	015	014	015	016	015	015	014	015	011	010	010	011	014s	015s	015s
15	015s	013	011	010	011	011	015s	014	014	014	015	015	015	015	016	016	014	011	011	015s	015s	015s	015s	C
16	015s	010	010	010	010	010	010	012	014	014	016	016	021	016	016	015	014	012	013	015s	010	015s	013	014s
17	014s	012	010	010	010	C	C	C	C	015	016	019	016	018	016	015	016	014	015s	010	010	010	015s	016s
18	015s	011	010	010	010	010	013	011	014	014	015	016	017	014	022	014	015	013	012	010	013	014s	011	011
19	015s	012	010	010	010	010	012	013	014	016	016	016	016	016	021	017	015	014	013	013	013	012	013	015s
20	012	010	011	010	010	011	013	013	014	015	016	016	021	016	015	015	014	013	015	011	011	011	013	015s
21	012	013	010	010	010	010	012	014	015	016	017	016	016	016	016	015	014	013	010	014s	012	015s	012	013
22	010	013	013	012	010	010	012	014	017	012	016	017	016	017	016	015	015	014	013	012	012	013	014	011
23	013	011	014	010	011	012	012	013	013	015	015	017	016	016	017	016	014	014	013	012	015s	014	015s	012
24	011	011	010	010	011	012	012	012	014	017	014	017	039	017	017	015	014	014	014	014	014	014	011	013
25	011	011	010	E	010	011	011	013	014	015	019	055	040	018	017	015	014	014	012	011	012	012	010	015s
26	013	011	011	013	010	010	011	012	013	014	026	013	017	017	016	014	014	013	011	011	012	011	015s	013
27	013	011	011	011	010	014	013	013	014	015	018	016	017	017	016	016	015	014	013	014	012	012	015s	015s
28	015s	E	010	E	012	012	014	013	015	016	017	016	015	026	027	014	013	014	013	011	011	012	011	011
29	011	010	011	010	011	011	012	013	014	018	025	026	038	027	018	016	017	014	012	016s	015s	011	014	015s
30	016s	014	013	011	014	011	016	014	015	015	017	023	017	022	017	016	016	014	012	011	011	014	015s	014
31	012	012	010	E	011	010	014	013	014	018	017	022	018	017	018	015	014	014	014	014	014	013	012	011
Count	30	30	30	29	28	28	28	28	27	29	29	29	30	30	29	30	30	29	29	29	29	30	30	29
Median	013	011	010	010	010	011	012	013	014	015	016	016	016	016	016	015	014	013	012	012	012	012	012	012
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

f<sub>min</sub>

# IONOSPHERIC DATA

**Mar. 1966**

**M(3000)F2**

0.01

**135° E Mean Time (G. M. T. +9h)**

Kokubunji Tokyo

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	290	285	285	305	320	320	340	355	I359C	330	320	I310C	325	340	C	340	340	345	365	335	330	295	295	290	
2	290	295	295	295	300	325	320	355	365	345	345	305	325	325	335	340	335	345	355	350	310	305	285	300	
3	305	305	315	305	295S	320	J355S	360	345	340	350	J315S	335	340	310	340	350	360	340	300	310	J305S	310S	305	
4	335S	290	295	295	290	295	U330S	345	355	345S	330	315	335S	330	340	310	340	335	345	310	300	315	285	290	
5	295	290	295	305	305	315	345	365	340	320	300	320	325	325	340	330	355	340	355	310	J295F	315	280	285	
6	285	300	320	350	335R	285	315	350	340	340	330	280	310	335	340	345	330	360	320	305	295	F	285	285	
7	285	280	280	I340C	C	C	C	C	C	C	C	C	325	315	325	335	350	345	335	310	290	295	270	280	
8	J310S	300	305	315	335	345	J330R	345	350	340	315	315	325	335	335	330	340	360	350	325	305	295	295	295	
9	295	295	290	305	320	295	335	360	345	345	295	315	330	320	335	335	340	340	355	330	290	290	285	295	
10	295S	295	300	300	305	325	330	350	345	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	G	G	G	G	G	G	G	G	G	325	310	310	315	330	335	330	330	S	340	315	290	J300R	I280S	I290S	
12	U290S	295	300	320	325	305	335	350	350	335	325	300	325	320	340	330	335	U360S	345	305	285	J285S	J275S	280	
13	280	295	290	305	310	315	335	355	340	335	335	350	335	335	330	335	325	C	C	C	C	F	295	285	
14	270	F	285	295	330	290	350	345	315	J320R	300	J200R	J305R	J310R	305R	320	335	J340S	315	265	280	290	315	J270S	
15	275	295	325	280	275	295	310	335	345	325	315	320	330	345	325	350	335	350	330	340	295	J270S	J285S	I280C	
16	310	330	295	305	280	270	330	330	325S	340	310	310	J335R	330V	315	340	J325S	J340S	345	315	260	300	I295S	285	
17	275	295	295	335	C	C	C	C	C	325	320	325	J315R	325	340	335	330	345	350	310	290	290	295	280S	
18	J290R	290	280	J305R	355	310	330	335	U330S	325	310	320	325	320	330	330	335	320	330	320	300	300	305	280	
19	280	280S	295	310	325	285	330	335	335	J335R	335	J325R	310	335	315	330	315	U315S	U325S	315	285	290	300	290	
20	270	285	300	320	275	285	315	S	J350R	340E	J330R	310	325	330	320	315	335	330	340	330	285	285	270	270	
21	275	280	295	295	320	285	325	335	345	320	315	305	325	320	320	330	340	330	330	320	290	270	285	275	
22	270	290	300	325	285	295	340	320	345	340	315	305	325	310	310	305S	330	U355S	350	320	305	290S	290	290	
23	280S	285	305	310	305	295	325	335	U340S	325	305	325S	315	310	320	310	320	335S	U350S	295	S	S	S	S	
24	S	S	315S	I270S	270S	U285S	U355S	325	340	330	295	305	345	315	U335S	U340S	U340S	335	340S	310	285	F	F	U290F	
25	F	U310S	330S	345	U270F	F	330	330	330	320	315	U315R	315	335	J340R	335	315	U330S	U340S	335	295	U280S	280	U275S	
26	285	275	275	300	330	280	315	330	335	330	310	305	325	U335S	330	340	340	340	I340A	330	290	275S	U270S	245	
27	260	270	315	335	265	280	345	320	330	320	320	320	330	320	335	335	345	335	335	335	280S	280S	280	U275S	
28	280S	290	310	340	250	305	335	340	340	325	320	290	330	325	330	330	330	345	345	295	285	280	280	280	
29	295	275	280	285	270	260	295	310	285	300	315	350	U330R	315R	325	350	340S	345	335	325	280	285S	U260F	F	
30	U295S	310	325	335	265	280	335	335	330	330	310	310	315	330S	315	320	315	340	350S	A	A	250S	270	265	
31	280S	U275S	290S	305	280	285	340	345S	345	340	315	320	330	330	310	325S	U320S	350S	U350S	U350S	310	280	280S	265F	
Count	28	28	30	30	28	27	28	27	28	29	29	30	30	30	29	30	30	28	29	28	27	26	26	28	28
Median	285	290	295	305	300	295	330	340	340	330	315	315	325	330	330	335	335	340	340	315	290	290	285	280	
U. Q.																									
L. Q.																									
Q. R.																									

**M(3000)F2**

Lat. 35° 42. 4'N  
Long. 139° 29. 3'E

Kokubunji Tokyo

IONOSPHERIC DATA

M(3000)F1 0.01 135° E Mean Time (G. M. T. +9h)

Mar. 1966

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									C	U380L	390L	C	L	L	C	L	L							
2									L	L	L	U375L	390	L	L	L	L							
3									L	L	L	370	U360L	375	L	A	A							
4									L	380L	L	L	U355L	U375L	L									
5									L	L	U350L	370	375L	365L	U355L	395L	L							
6									L	L	390L	400L	L	L	U360L	L	L	L						
7									C	C	C	360L	350L	370L	370L	L	L							
8									L	370L	L	360	375	U355L	L	L	L							
9									L	L	U390L	U375L	380	370	370L	L	L	L						
10									C	C	C	C	C	C	C	C	C	C						
11									C	L	350L	U365L	365L	350	L	L	L	L						
12									L	L	L	U355L	U390L	L	380	L	L	L						
13									L	L	L	380	405	375L	370L	U365L	L	L						
14									L	L	L	345L	355L	U360L	U360L	L	U355L	L						
15									L	L	L	L	375L	L	350L	365L	L	L						
16									L	L	L	L	360L	U375L	U390L	390L	385L	L						
17									C	C	L	L	350L	370L	L	L	L	L						
18									L	L	L	L	360L	U370L	U350L	U370L	L	L						
19									L	U400L	L	U380L	370L	L	L	L	L	L						
20									L	L	L	370L	400L	U370L	360L	390	L	L						
21									L	L	L	380L	385	380L	355L	U340L	L	L						
22									L	L	L	410L	L	L	L	L	L	L						
23									L	L	L	385L	350L	L	340L	A	360L	L						
24									L	U375L	A	355L	L	345L	370L	L	A							
25									L	365L	375L	B	390L	360	365L	A	L	L						
26									L	L	370L	385L	360L	355L	360L	365L	L	A						
27									L	L	340L	355L	370L	360L	360L	L	415L	L	L					
28									L	365L	365L	365	390	L	U365L	U395L	L							
29									A	A	A	L	390L	L	390L	L	L							
30									L	365L	375L	A	L	355L	390L	360L	A	L						
31									L	L	350L	355L	370L	A	360L	370L	365L	L	L					
Count										11	17	24	22	21	18	9								
Median										370L	375L	370L	370L	360L	365L	365L								
U. Q.																								
L. Q.																								
Q. R.																								

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

The Radio Research Laboratories, Japan

K 8

M(3000)F1

# IONOSPHERIC DATA

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

**135° E Mean Time (G.M.T. +9h)**

**km** h'F2

**Mar. 1966**

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									I2300	260	275	I2700	260	260	I2600	255	230								
2									240	240	240	330	280	280	270	260	240								
3									230	250	250	300	260	260	300	260	250								
4									230	250	250	300	255	270	260										
5									250	280	300	275	275	270	255	250	230								
6									260	245	250	280	280	250	250	240	240	225							
7									G	G	G	260	260	280	260	250	240								
8									250	260	275	290	260	275	270		250								
9									240	255	270	300	270	280	260	240	240								
10									G	G	G	G	G	G	G	G	G								
11									G	275	290	290	270	255	260	270	255								
12									240	245	275	320	280	270	255	250	255								
13									250	260	275	250	250	275	275	260	250								
14									260	255	305	300	290	265	290	255	250								
15									250	230	255	280	270	260	280	250	250								
16									255	240	290	290	250	255	255	260	250								
17									G	275	265	260	260	280	250	250	260								
18									250	250	300	290	260	290	260	255	260								
19									250	260	255	280	300	260	270	275	260								
20									250	245	250	280	300	260	270	255	270								
21									250	250	280	280	280	295	275	250	250								
22									255	250	270	290	265	270	255	275	270								
23									250	245	295	270	275	300	270	280	265								
24									250	245	260	280	270	265	265	250	230								
25									255	275	265	285	270	260	260	255	270								
26									250	265	255	300	280	270	265	260	250								
27									245	300	280	270	275	270	275	270	255								
28									260	280	280	315	290	260	275	260	260								
29									360	340	260	260	285	300	280	250	250								
30									250	275	275	285	275	270	275	275	260								
31									250	265	300	275	260	270	285	275	265								
Count									6	26	29	28	30	30	30	28	29								
Median									250	255	275	285	270	270	265	260	250								
U. Q.																									
L. Q.																									
Q. R.																									

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

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

**h'F2**

IONOSPHERIC DATA

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

Mar. 1966

f<sub>o</sub>F

1 3.5° E Mean Time (G. M. T. +9h)

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	290	260	250	225	230	220	220	1210C	200	195	1180C	250	225	1230C	230	220	220	210	225	220	245	280	290
2	300	260	245	255	220	230	240	230	210	210	195	195	200	270	230	230	220	230	210	210	225	250	290	260
3	290	290	290	290	295	290	210	220	200H	205	210	210	250	220	1260A	A	A	220	220	240	230	260	255	250
4	220	255	270	255	275	290	240	225	220	205	225	200H	230	205	260	250	250	225	220	225	225	250	290	275
5	250	270	255	255	245	225	225	220	225	210	205	200	210	210	210H	220	220	220	210	230	245	245	300	290
6	290	255	245	205	190	260	240	225	210H	220	210	200H	255	250H	240	225	200	220	210	230	250	255	275	295
7	275	290	275	1225C	C	C	C	C	C	C	C	C	250	260	240	210	230	225	210	250	290A	290	300	300
8	290	290	230	225	205	210	230	225	245	230	230	230	220	225	205	260A	220	230	205	250	260	250	260	260
9	275	260	275	290	225	230	240	225	220	200	195	200	200	205	195H	200	220	230	220	210	280	275	290	290
10	290	280	250	250	245	230	230	230	245	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	220	205	205	195	205	220	230	230	230	205	210	255	250	290	260
12	270	275	260	240	210	240	230	230	200	195	200	200	180H	230	205	220	230	230	205	230	270	260	295	300
13	290	255	255	255	230	220	230	220	230	205	205	190	205	295H	180	225	205	C	C	C	C	230	305	290
14	305	290	285	255	210	250	220	230	230	230	210	230	200	250	220	220	245	240	240	300	260	260	240	275
15	310	240	230	260	280	250	250	250	245	230	225	205	195H	200	205	225	220	225	210	250	310	300	300A	1290C
16	260	230	250	245	240	300	240	250	225	205	200	205	195	200	225	220	240	240	210	210	255	260	260	300
17	305	275	290	225	C	C	C	C	C	195	1260A	200	195	195	230	205	220	230	210	205	245	250	295	300
18	290	275	290	290	200	230	230	230	210	205	210	205	205	200	230	230	245	245	240A	220	240	250	250	255
19	280	290	260	230	200	275	245	245	240	220	225	210	205	B	225	225	230	250	220	220	300	290	250	260
20	295	270	290	225	225	280	250	230	240	210	205	200	200	205	205	225	245	240	230	210	245	260	290	300
21	300	290	255	245	200	280	230	245	240	210	195	200	205	205	205	225	240	245	220	220	225	290	290	295
22	300	280	255	230	205	250	230	240	245	210	185H	180H	250	250	245	230	250	255	215	210	230	275	285	280
23	300	285	290	250	215	280	290	230	225	220	210	230	215H	215	1240A	230	220H	250	215	250	280	300	330	325
24	310	275	290	345	330	300	230	250	230	220	1225A	210	230	245	220	230	1240A	230	230	220	270	315	310	305
25	275	250	225	200	285	275	230	245	200H	200	210	B	260	220	220	1240A	255	230	230	215	230	285	300	295
26	290	300	300	255	205	275	240	245	220	220	210	260H	260H	240	215	250	1240A	250	1290A	225	245	295	330	330
27	320	310	230	210	340	330	230	230	225	230	225	225	205	215	245	215	250	230	230	215	260	295	305	300
28	290	270	240	215	295	255	230	250	230	220	220	205	220	255	225	205H	200H	245	230	240	300	305	275	290
29	260	275	275	290	280	305	270	260	1255A	1290A	1255A	265	255	275	230	225	230	245	240	230	255	275	335	310
30	275	290	230	220	345	260	230	230	230	230	225	1260A	225H	245	225	235	1245A	250	225	225	A	405A	325	315
31	310	315	260	245	300	260	225	245	230	230	225	225	1210A	200	230	230	245	250	235	220	225	260	290	300
Count	30	30	30	31	28	28	28	28	28	29	29	29	30	29	30	29	29	29	29	29	28	30	30	30
Median	290	275	255	250	230	260	230	230	230	210	210	205	210	220	225	225	230	230	220	225	250	260	290	290
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation The Radio Research Laboratories, Japan K 10

f<sub>o</sub>F

Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

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

Mar. 1966

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	B	100	E	130	B	B	G	C	G	G	C	G	115	C	130	125	110	E	110	105	105	105	105	
2	B	E	B	E	100	115	100	G	G	G	G	110	170	150	140	150	G	110	105	105	B	100	100	100	
3	E	B	E	E	E	E	B	G	G	G	125	155	150	140	125	125	115	115	110	105	B	E	B	100	
4	S	E	E	E	E	E	B	G	G	G	G	G	G	G	G	G	G	135	125	S	B	S	B	E	
5	B	S	E	E	110	110	S	G	G	G	105	G	100	100	100	100	130	100	100	100	E	B	E	B	
6	E	B	B	E	E	B	B	G	G	G	G	G	155	155	G	155	110	G	B	B	E	S	B	B	
7	B	B	E	C	C	C	C	C	C	C	C	180	175	G	150	G	G	125	115	115	105	105	105	B	B
8	105	105	E	E	E	E	S	G	G	160	170	145	140	130	115	115	115	110	110	110	105	B	S	B	B
9	S	B	E	E	E	B	105	G	105	G	105	105	G	100	G	G	G	G	B	120	B	B	B	S	S
10	S	B	B	100	B	105	B	105	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	110	110	G	G	G	105	105	105	120	100	B	S	S	100	110	
12	S	B	B	E	115	B	B	G	G	105	G	G	105	G	105	100	100	140	100	S	B	B	115	S	
13	S	100	E	105	E	100	E	G	G	110	105	G	120	115	105	105	100	C	C	C	C	110	110	110	
14	100	100	100	E	110	105	110	110	110	110	105	105	110	105	115	100	145	100	100	120	100	S	E	130	
15	115	115	110	105	105	S	110	110	110	110	105	145	105	110	G	130	130	120	110	100	105	105	105	C	
16	110	E	E	E	E	110	110	105	110	G	110	G	G	G	100	100	100	100	100	110	E	S	110	110	
17	105	105	E	E	C	C	C	C	C	110	105	105	105	100*	100	100	130	155	115	100	100	E	S	S	
18	S	B	E	E	110	110	B	110	105	105	105	105	100	100	G	100	130	120	115	115	115	S	B	B	
19	S	B	E	E	105	B	B	150	150	140	105	110	110	B	G	115	115	110	115	110	105	105	S	S	
20	B	E	110	E	E	B	B	G	110	105	105	105	105	105	105	105	G	130	100	B	B	B	B	S	
21	B	B	E	B	E	150	150	155	145	130	105	105	100	G	G	G	155	120	110	S	B	S	B	B	
22	E	B	B	B	E	E	B	G	110	G	G	G	160	115	G	G	160	130	B	B	B	B	B	B	
23	B	B	B	E	B	B	150	175	115	110	165	140	130	135	115	G	125	115	B	S	S	B	S	130	
24	145	B	E	E	B	B	140	150	150	150	125	110	B	120	105	G	115	115	115	120	115	B	B	B	
25	110	100	E	E	E	110	155	G	G	145	130	B	B	G	130	120	110	115	115	110	110	110	E	S	
26	B	105	105	B	E	E	150	G	G	125	130	B	G	125	100	100	100	115	105	100	100	B	100	B	
27	B	B	E	B	110	110	150	110	145	125	110	110	105	G	170	G	G	130	120	100	100	100	S	S	
28	S	E	E	E	B	155	150	150	140	130	125	120	110	120	G	100	100	160	135	145	125	B	B	115	
29	105	E	105	105	110	B	140	130	125	125	120	115	B	135	110	105	G	G	130	S	115	115	110	110	
30	S	110	115	110	115	160	150	145	G	G	120	110	110	110	110	105	110	110	110	105	100	100	100	125	
31	110	110	110	110	125	E	G	165	135	125	120	110	110	G	100	100	100	130	120	100	B	B	B	B	
Count	9	9	8	7	12	13	13	14	15	19	23	21	21	19	17	23	23	26	24	20	15	10	10	11	
Median	110	105	110	105	110	110	150	140	115	110	110	110	110	115	110	105	115	120	110	110	105	105	105	110	
U. Q.																									
L. Q.																									
Q. R.																									

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

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

The Radio Research Laboratories, Japan  
K 11

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

135° E Mean Time (G.M.T. +9h)

Types of Es

Mar. 1966

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												b2	14		f2	f	f	f	f	
2					f	f2	f2				1	h	h	h	h1	h	e3	c4	f4	f2		f2	f	f	
3										h	h	h	h2	h	h2			b2	f2					f	
4											1		1		12	12	h	13	f2						
5					f	f							h	h			1								
6												h	h	h											
7									h	h1	h1	h2	h2	h12	h2	e212	e21	h2	f4	f2	f4	f3			
8	f2	f							h	h1	h1	h2	h2	h12	h2	e212	e21	h2	f2	f3	f3				
9						f			12	1	1	1		1						f					
10				f		f	1																		
11								1h	1		1	12	1	1	12	12	12	e2	f			f3	f2		
12					f			1	1		1	12	1	1	12	1	h212	1			f	f			
13		f		f		f		1	1	1	1	e	e	e	12	1	12				f	f4	f2		
14	f3	f2	f		f	f2	1	1	1	13	1	1	13	e1	1	h21	12h2	f2f	ff	f2				f	
15	f3	f	f	f5	f2	f	12	12	12	12	1	h1	1	1	h2	h212	e21	1	f3	f2	f3				
16	f2					f2	12	13	12	1	12	1			12	13	13	1	1			f		f3	
17	f3	f2							1	12	12	12	12	12	1	1	h2	h	1	f					
18					f	f		12	12	1	1	12	1	1	1	h2	h2	e2	13	f2	f2				
19					f		h2	h21	h12	12	12	1	1	e	12	12	12	12	13	f2	f3				
20			f				1	12	12	12	12	1	12	12	13			e21	1						
21				f		f	h1	h	h	h	1	1	12			h	e2	12							
22								1				h	h	1		h1	h								
23						h3	h12	12	12	h	h	h	h	h	12	h2	12							f	
24	f					h3	h212	h	h	c	12			h	13	c	12	12	15	f					
25	f2	f				f	h4		h1	h				h2	e	12	12	12	12	f	f2	f3			
26							h2			h	h			h2	13	14	e12	14	f		f				
27				f		f	h2	1	h1	h2	1	12	12	h			h2	14	f	f					
28						f	h4	h3	h	h	h	c	1	h	1	1	h	h2	f	f3					
29	f2			f3	f3	f	h3	h	h3	h2	e2	e		h1	1	1	1	h	h	f2	f2	f	f	f2	
30	f	f		f	f	f	h2		c	12	1	1	12	1	12	12	13	13	16	f2	f5	f4	f3	f2f2	
31	f2	f2	f2	f2	f		h2		h	h	e2	1	13		1	12	12	h12	112	f					
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

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

The Radio Research Laboratories, Japan

Types of Es

K 12



Lat. 35° 42.4' N  
Long. 139° 29.3' E

Kokubunji Tokyo

IONOSPHERIC DATA

1 35° E Mean Time (G. M. T. +9h)

km

fpF2

Mar. 1966

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	330	350	345	310	290	305	260	250	I290C	275	295	I300C	270	260	C	265	260	250	260	260	275	325	325	325	330
2	350	330	305	320	310	290	295	250	250	250	350	350	300	300	290	260	260	250	250	250	300	300	340	310	
3	305	310	300	310	310S	300	J250S	250	260	255	250	J305S	270	270	300	280	255	250	250	310	300	J320S	335S	320	
4	260S	320	320	325	350	340	U270S	250	250	260H	270	305	270S	290	280	300	265	260	260	300	300	305	350	345	
5	320	340	320	320	305	300	255	240	260	300	320	300	300	300	275	255	250	260	250	300	J330F	300	360	350	
6	350	320	300	240	240R	340	290	250	285	255	265	345	305	285	265	255	250	250	270	305	320	F	350	350	
7	345	350	340	1270C	C	C	C	C	C	C	C	C	300	290	300	260	250	250	270	305	330	330	360	355	
8	J300S	310	305	290	255	300	J270R	250	260	280	300	300	290	295	280	290	255	250	250	280	315	320	330	345	
9	340	340	340	300	280	310	270	250	260	255	325	310	295	300	290	250	250	260	250	260	335	330	345	330	
10	330S	335	320	310	305	290	275	250	260	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	300	305	305	300	280	280	295	280	8	250	300	325	J310R	I360S	I325S	
12	U340S	320	320	300	260	300	260	250	250	255	300	330	300	300	270	255	275	U250S	260	300	330	J350S	J350S	340	
13	330	320	330	305	300	290	265	250	260	290	290	260	260	295	290	285	285	C	C	C	C	F	350	345	
14	390	F	350	330	280	325	250	250	300	J290R	330	J330R	J325R	J310R	310R	295	275	J260S	310	390	355	345	305	J380S	
15	385	340	280	325	355	320	300	295	270	290	300	300	300	270	305	255	280	250	250	325	J380S	350	J350S	I350C	
16	315	290	320	310	350	360	280	270	300S	265	305	310	J270R	280V	290	280	J285S	J260S	250	290	350	320	I325S	355	
17	365	325	320	260	C	C	C	C	C	300	300	295	J295R	295	260	280	280	290	250	250	300	325	340	350S	
18	J350R	345	350	J310R	240	290	270	270	U265S	280	310	300	295	300	290	280	290	290	295	300	325	320	340	350S	
19	345	345S	340	300	275	340	280	265	275	J285R	280	J300R	310	270	300	290	280	290	295	275	300	325	320	340	
20	360	350	320	300	330	345	300	S	J250R	265H	J290R	320	290	295	290	305	260	280	300	U300S	290	340	330	340	
21	365	350	340	320	275	330	270	270	260	290	300	310	300	305	300	270	260	270	260	300	320	375	350	355	
22	380	340	325	300	320	325	270	300	260	270	310	325	285	310	295	315S	280	U275S	255	280	325	330S	340	335	
23	345S	340	335	305	280	335	280	260	U270S	275	315	290S	310	310	290	315	290	275S	U245S	325	S	S	S	S	
24	S	S	305S	I360S	385S	U345S	U245S	285	270	265	315	305	305	290	U285S	U260S	U265S	275	265S	285	335	F	F	U350F	
25	F	U295S	275S	225	U330F	F	270	270	280	285	295	U310R	285	280	J275R	270	300	U275S	U270S	255	310	U370S	335	U335S	
26	350	355	365	300	255	330	285	275	265	275	285	320	305	U280S	280	275	265	260	1265A	270	330	355S	U370S	395	
27	375	370	275	235	375	375	265	250	255	315	305	290	295	290	285	275	270	275	265	270	340S	350S	355	U345S	
28	335S	325	295	245	385	300	265	260	265	300	295	340	300	285	290	290	285	250	260	320	355	390	345	355	
29	325	350	350	330	360	390	320	310	360	A	295	260	U300R	305R	285	265	260S	265	275	280	345	330S	U425F	F	
30	U330S	285	270	250	385	325	260	275	275	275	310	320	290	295S	300	295	285	270	250S	A	420S	375	370		
31	340S	U355S	325S	285	325	310	295	265S	260	270	310	300	280	280	320	305S	U280S	275S	U270S	U275S	295	335	355S	390F	
Count	28	28	30	30	28	27	28	27	28	28	29	30	30	30	29	30	30	28	29	28	27	26	26	28	28
Median	340	340	320	300	310	325	270	260	260	275	300	305	295	295	290	280	270	260	260	295	330	330	350	350	
U. Q.																									
L. Q.																									
G. R.																									

Lat. 35° 42.4'N  
Long. 139° 29.3'E

Kokubunji Tokyo

IONOSPHERIC DATA

1 35° E Mean Time (G.M. T. +9h)

km  
ypF2

Mar. 1966

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	070	050	060	060	060	045	050	050	I040C	055	I090C	060	045	C	040	050	050	050	050	050	040	075	055	065
2	050	065	065	060	070	060	055	050	020	055	040	040	020	045	020	030	070	050	045	050	050	050	060	060
3	040	045	050	060	075	045	J045S	050	040	050	070	J060S	060	040	060	050	050	030	055	065	050	J070S	045S	070
4	050S	075	055	065	070	055	I055S	050	030	075H	080	045	050S	040	035	070	040	070	040	055	060	050	060	055
5	070	060	070	070	050	050	050	050	050	050	080	055	050	050	040	045	050	045	050	060	J070F	050	065	055
6	055	050	045	055	065R	070	060	050	035	055	080	060	070	020	045	055	050	030	055	060	070	F	060	055
7	055	070	060	1055C	C	C	C	C	C	C	C	C	C	C	C	060	045	050	060	055	070	065	080	060
8	J050S	080	055	060	045	055	J050R	055	040	040	060	050	050	020	060	050	045	040	050	050	045	060	060	045
9	060	060	060	055	060	085	030	045	050	045	085	050	035	050	040	050	050	050	040	060	065	070	060	065
10	065S	070	040	045	050	050	050	050	045	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	045	065	075	055	050	040	045	050	S	055	050	070	J060R	I065S	I070S
12	I060S	080	070	050	065	060	060	050	045	060	055	065	045	055	050	050	045	I040S	050	060	070	J050S	J055S	065
13	070	075	070	055	055	060	050	045	045	050	035	060	060	045	035	045	060	C	C	C	C	F	050	055
14	060	F	050	070	050	075	050	050	060	J060R	065	J080R	J070R	J090R	060R	050	055	J050S	075	065	085	065	050	J070S
15	060	060	065	100	065	100	055	025	050	050	060	060	020	040	040	045	050	050	070	070	J065S	075	J065S	I065C
16	040	030	080	045	065	090	060	060	045S	060	055	050	J050R	045V	060	045	J045S	J055S	050	060	075	060	I050S	055
17	080	070	075	055	C	C	C	C	C	050	050	055	J030R	035	050	045	040	050	055	050	075	080	060	070S
18	J050R	055	075	J065R	055	060	050	050	I075S	060	045	050	055	050	040	060	055	055	045	055	070	060	075	070
19	070	060S	055	050	065	070	050	055	055	J035R	050	J050R	055	060	055	040	055	I055S	I065S	060	070	070	075	060
20	080	070	075	050	100	055	055	S	J055R	055H	040R	075	060	040	060	060	050	050	050	080	065	070	085	060
21	085	090	060	075	070	070	075	050	045	070	070	080	055	050	050	055	060	045	060	060	085	075	065	065
22	060	055	055	040	100	075	060	090	040	025	035	045	060	090	065	045	045	I050S	050	060	060	065S	045	060
23	060S	065	065	045	065	050	050	055	I055S	050	060	060S	040	045	060	055	055	050S	I055S	050	S	S	S	S
24	S	S	050S	I060S	045S	I065S	I050S	045	045	050	070	045	040	060	I060S	I055S	I040S	040	040S	055	065	F	F	I050F
25	F	I060S	050S	070	I070F	F	055	050	035	045	065	I060R	070	055	J050R	050	050	I055S	I035S	055	055	I060S	085	I070S
26	075	075	060	075	085	065	060	050	030	050	055	065	060	I070S	055	050	050	045	I040A	050	055	065S	I055S	060
27	055	055	035	050	070	055	035	050	040	035	060	055	050	060	045	055	045	045	040	045	060S	070S	055	I070S
28	065S	070	045	060	095	050	045	045	040	045	045	060	050	065	045	040	040	050	050	080	065	070	060	065
29	075	095	065	065	085	070	080	045	090	A	045	045	I045R	055R	065	035	045S	040	045	045	055	065S	I045F	F
30	I070S	065	045	050	055	070	045	040	045	060	055	060	065	055S	050	055	065	035	045S	A	A	045S	070	055
31	060S	I080S	055S	050	055	055	050	040S	090	055	045	050	045	055	050	040S	I045S	055S	I050S	I050S	050	070	055S	060F
Count	28	28	30	30	28	27	28	27	28	28	29	30	30	30	29	30	30	28	29	28	27	26	28	28
Median	060	065	060	060	065	060	050	050	045	050	055	060	050	050	050	050	050	050	050	055	065	065	060	060
U. Q.																								
L. Q.																								
G. R.																								

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

The Radio Research Laboratories, Japan

ypF2

K 14

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 1 3.5° E Mean Time (G. M. T. +9h)

foF2

Mar. 1966

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	033	033S	033S	031	1033S	1032S	030S	047	056	J064S	077	093S	J098S	099	094S	071	069	061	057	I048S	047S	031	033S	036
2	1038S	038S	036	1034S	034S	029	028	047S	1068S	064	066	064S	072S	084	077S	072	063	068	056	055	043S	031	031S	1030S
3	1031S	031	028	029	027S	029	048	054	056	068	068	062H	090	086	075S	072	067	069	1062S	053	039S	U035S	1037S	035S
4	J031S	029	026	030	031	030	030	047	063	069	065	094	082	082	068	077S	071S	066	1065S	051	038	038	035S	1036S
5	036S	1035S	1035S	1034S	034	032	024	050	062	072	088	086	090	099S	J097S	080	066	061	063	U040S	1041S	1038S	036S	1037S
6	037S	1038S	1045S	035	025	018	021	044	065	085	098S	086	093S	121	114	084	070	056	050	039S	039	1039S	038S	1038S
7	039S	1042S	045S	1051S	1036S	024	024S	047	062	079	092S	079	088	104	107	100	078	070	053	042	1035S	036	1036S	1035S
8	036S	1038S	036	038	034	025	025	043	056	066	066	068	095S	087	082	070S	069	071	063	050	1038S	033S	1034S	033
9	1035S	036S	034	035	040	032	029	046	056	063	073	087	101	116	124	100S	100S	073S	062	047	034S	034S	1035S	1035S
10	1035S	S	035S	1034S	034S	030	025	049	059	059	080	081	095S	103	109	J097S	072S	J079S	085S	054S	041	034S	033	S
11	S	S	035S	042	S	021S	024	045S	056	067	076	075	091	099	083	076S	089	078S	069S	051	1040S	1038S	1035S	034S
12	1036S	037	1038S	1035S	032S	031S	029	051	060	068	062S	066	087	106	J099S	078	073S	071S	063S	047S	1041S	S	S	043S
13	1039S	037S	038S	036S	037S	033S	029S	050	062S	068	069	084	090S	080	077	071	068	067	066S	059S	053S	1045S	1042S	041S
14	041S	042S	041S	040S	043S	031	030	053	062S	076S	070S	J094S	103	106	J098S	101S	090	073S	064S	063S	1068S	1067S	1062S	1057S
15	056	058	058	046	044S	041S	1039S	054S	088S	103S	1096S	097S	J098S	102S	092S	085	068	067	063S	050	044S	1046S	1048S	049
16	047	048	031	032	031	030	032	060	079S	079	078	J097S	108	096S	087	089S	J076S	J072S	087S	069S	U041S	043S	1044S	1042S
17	1040S	J040S	042	043	030	023	J027S	054	066	078S	086	092	106	111	101	079S	078S	069S	J080S	U063S	049S	J041S	1040S	J036S
18	J039S	038S	037S	041S	040S	021	026	052	1072S	077	070	081	095S	090	093S	072	073S	J076S	J077S	069	058	040	J040S	040S
19	1040S	040S	039	038	036	024	028	056	J063S	078	077	077	087	094R	088	083	076S	J076S	086S	062S	1049S	1049S	090S	046S
20	044S	1046S	J047S	037	030	032S	032	065S	U078S	070	068	076	095	094	081	077	082	080	080	1067S	049	041S	046	046S
21	047	1047S	046	046	035	024	028	054	072	080	084	073	J097S	J096S	098	081	079	070	S	1063S	044S	042S	S	S
22	S	043S	J043S	041	035	030	033S	059	076	089	072	087	J101S	108	105	100	J101S	100S	1095S	1077S	046	1038S	U099S	042
23	046S	048	051	059	053S	S	034S	060	060	071	075S	084	097S	108	105	106	097S	087	086	1072S	061S	060S	059	058
24	060	S	S	S	S	047	1054S	058	077	073	061	095	113	121	113	101	089S	J077S	1073S	062	049	1045S	1045S	S
25	S	S	056S	1044S	024S	1022S	027S	054	068	083	085	J098R	112	116	106	090	091	087	093	076S	049	036	038	1039S
26	1038S	1037S	035S	1040S	032	023	032S	056	067	067	069	083	107	116	113	087	070	069	1068S	064S	037	1034S	1034S	1035S
27	1036S	1036S	040S	027	020	022	030S	055	058	060	076	089	100	J097S	094	079	071	069	069	057	J044S	035S	S	S
28	S	1047S	040	038	030	026	035S	060	065	084	080	078	097	116	111	087	072S	073S	068S	J064S	059	090	1051S	1051S
29	051	U046S	1047S	045	038S	034S	1039S	053	064S	080	085	090	109	109	106	089	J074S	062S	1071S	065S	057	046	1046S	046S
30	1046S	047S	1048S	039S	027	023	036S	055	072S	079	080	088	111	114	121	114	105	104	080	054	042	036	1035S	1035S
31	037S	1034S	1033S	037S	024	021	031S	056	068	068	067	084	086	082	079	077	077S	071	1077S	081S	1067S	1048S	1043S	1042S
Count	27	27	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	28	27
Median	039S	038S	038S	038	034	028	029	053	064	072	076	084	095	102	098	083	074	071	068S	059S	044S	038S	U038S	039S
U. Q.	046	046	045	042	036	032	032	056	072	079	084	089	101	111	107	097	089	078	080	065	049	045	046	046
L. Q.	036	036	035	034	030	023	027	047	060	067	069	076	090	094	083	077	070	068	063	050	040	035	035	035
G. R.	010	010	010	008	006	009	005	009	012	012	015	013	011	017	024	020	019	010	017	015	009	010	011	011

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

0.01 Mc **foF1** 135° E Mean Time (G.M.T. +9h)

foF1

Mar. 1966

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	460	460	440	450	440	L	L	180					
2							L			L	420L	430	440	460	450	430	L	L						
3										360	440L	450	440	460L	450	430	400	L	L					
4										L	450L	450	440	450H	480L	L	L	L	L					
5							L			L	450L	440	450	450	440	L	L	L						
6										L	L	450	440	450	450	430L	L	L						
7										L	450L	450	450	450	450	430	400	340L						
8										L	440	450	460	460	450	440	400L	L						
9										L	450H	450	470	460	420	L	L	L						
10										L	450	460	460	470	450	450L	410L	L						
11										L	450L	460	460	460	450	440L	L	L						
12										L	450L	480	470	470	450	440	400L	L	L					
13										L	450L	470	460	460	L	430L	410		L					
14										L	L	470	460	470	460	450L	L	A						
15							L			L	L	480	470L	L	L	L	A	L						
16										L	440	480H	490	LH	450	440	L							
17							L			L	L	500	470H	480L	470L	L	L	L						
18										L	450	L	470	480	470	L	L	A						
19										L	460	440	470	4480B	470	450	440L	L						
20							L			L	L	420L	L	460	L	L	L	L						
21										L	L	460	L	470	460	L	L	L						
22										L	440	L	470	L	470L	460	L	L						
23										L	470L	470	470R	480	470	B	L	L						
24										L	L	490	4490B	480	A	A	L							
25							L			C	L	B	480	470	460	450	L	A						
26										L	450	L	480	450	470	L	370							
27										L	460	460	470	470	460	440	L	L						
28							L			L	440	450	460	470	4460B	440	420L	L						
29							L			A	A	A	LH	480	470	430L	400							
30							L			L	450L	470	480	A	460	4450A	L	L						
31							L			L	L	460	460	L	460	450	L	L						
Count										4	22	24	30	25	27	21	10	1	1					
Median										440L	450	460	460	470	460	440	400L	340L	180					
U. Q.																								
L. Q.																								
Q. R.																								

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 2

foF1

# IONOSPHERIC DATA

Mar. 1966

foE

0.01 Mc **135° E Mean Time** (G.M.T. +9h)

Yamagawa

Lat. 31° 12.1' N  
Long. 130° 37.1' E

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							S	230	280	280	310	330	I330R	340	335	310	280	230	S						
2							S	250	280	280	300	I320R	I335R	I335B	330	315	280	A	S						
3							S	220	280	280	305	320	330	330R	305	275	220	S							
4							S	235	280	280	305	I310R	I320R	I320R	310	270	230	S							
5							S	230	280	280	305	R	R	R	330	310	270	220	S						
6							S	220	280	280	310	325	I330R	330	320	305	280	230H	S						
7							160	240	285	285	310	320R	I320R	I335R	335	I305R	285	240	S						
8							S	220	270	270	I300R	I310R	I325R	330R	315	300	265	A	S						
9							S	250	290	290	310	330	I325R	320	310	I300R	280	230	S						
10							S	230	270	270	300	I315R	330R	R	R	310	280	240	S						
11							S	220	270	270	305	R	R	R	R	R	280	220	S						
12							S	240	270	270	300	I315R	R	R	R	300	285	240	160						
13							S	230	280	280	310	330	I330R	I330R	330	I310R	290	250	S						
14							S	230	280	280	I315R	320	330R	330R	R	R	290	250	S						
15							S	240	I290R	315	I330S	I330R	330	I330R	305R	290	240	S							
16							S	A	A	A	310	R	R	R	R	295	290	260	160						
17							180	250H	290	290	310R	R	R	A	345R	I330R	I310R	250H	S						
18							S	240	290	290	315R	R	R	R	B	310	300	260	170						
19							180	250	290	290	I315R	330	I330R	B	B	R	310	265	180						
20							175	240	280	280	R	A	A	R	R	R	I295R	255	170						
21							170	260	295	295	310	R	R	R	R	R	290	260	175						
22							190	270	295	295	R	R	B	R	I335R	320	300	260	S						
23							180	260	300	300	I325R	330	I340R	350	345	I320B	290	250	S						
24							S	250	290	290	315	330	B	B	R	I325R	295	250	S						
25							170	260	I295G	I325B	B	B	B	R	R	R	285	230	S						
26							190H	250H	280	280	B	R	R	R	I330R	I315A	290	250H	170						
27							A	I250R	I285R	310	310	R	R	A	A	R	300	250	170						
28							200H	265	300	300	A	A	R	B	B	R	280	240	170						
29							220	270	300	300	B	B	B	B	A	A	300	250H	S						
30							210	265	300	300	320	320	I320R	B	A	A	310	A	A						
31							210H	270	305	305	320R	I325B	A	A	R	R	300	260	190						
Count							13	30	30	26	19	15	13	15	21	31	28	10							
Median							180	245	285	310	320	I330R	330	330	310	290	250	170							
U. Q.																									
L. Q.																									
Q. R.																									

foE

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 3

Lat. 31° 12' 1"N  
Long. 130° 37' 1"E

Yamagawa

IONOSPHERIC DATA

0.1 Mc 135° E Mean Time (G.M.T. +9h)

foEs

Mar. 1966

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	E015S	E015S	E015B	E015B	E015B	E015B	E015S	E015S	G	G	G	G	G	G	G	G	G	G	E015S	E015S	E015S	E015S	E015S	E015S
2	E016S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	G	G	G	E040B	E039	E036	E031	E026	J021	E015S	E015S	E015S	E015S	E015S
3	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	E030	E024G	E036	E033	E040	E036	E034	E040	E030	E017S	E015S	E015S	E020M	E015S	E015S
4	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	E027G	E026G	G	G	E040	E038	E040	E030	E025	J020	E015S	E015S	E015S	E015S
5	E015S	E016S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	G	G	G	E025G	E036	E034	E040	E033	E020	E015S	E015S	E015S	E015S	E015S
6	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	G	G	G	G	E038	E033	E030	E025	E015S	E015S	E015S	E015S	E015S	E015S
7	E015S	E015S	E015B	E015B	E015B	E015S	E015S	G	G	G	G	G	G	G	E040	E037	E035	E031	G	E015S	E015S	E015S	E015S	E015S
8	E015S	E020M	E013B	E013B	E013B	E015S	E015S	E015S	G	E032	E025G	E024G	E033	E026G	E037	E035	E033	E026	E015S	E015S	E015S	E021M	E015S	E015S
9	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	E024G	G	G	E029G	E024G	E033	G	G	G	E015S	E015S	E015S	E015S	E015S	E015S
10	E015S	E015S	E015B	E015B	E015B	E	E015S	E015S	G	E022G	E026G	E038	E039	E038	E037	E020G	G	G	E019	E020M	E015S	E015S	E015S	E015S
11	E015S	E015S	E015S	E	E015B	E015S	E015S	E015S	E015S	E019G	J037	G	E029G	E030G	G	E028G	E029G	E024	E018	E019M	E015S	E015S	E015S	E015S
12	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	G	G	G	E028G	E025G	E020G	G	E027	E018	E015S	E015S	E015S	E015S	E015S
13	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	G	G	G	G	G	G	E039	E035	E021	J025	E015S	E015S	E015S	E022
14	J023	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	G	G	G	E037	E040	G	G	E021G	E034	E022	E020M	E015S	E015S	E015S	E015S
15	E021	E018M	J022	E033M	J030	J035	J018	E023	G	G	G	G	G	G	G	E040	E043	E032	E021	E017B	E015S	E015S	E015S	E015S
16	E021M	J024	E022	J018	J024	E021	E020M	E015S	E024	E029	E029G	E031G	E033G	E028G	E025G	G	G	G	G	E015S	E015S	E015S	E015S	E015S
17	E015S	E015S	E015S	E	E	E015S	E015S	G	G	G	G	G	E030G	E035	E037	E028G	E030G	E018G	E015S	E015S	E015S	E015S	E015S	E015S
18	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	E022G	E026G	G	G	E025G	E037B	E021G	E023G	E037	E045	J041	E024	E018M	E018	E015S
19	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E015S	G	E030	G	G	G	E054B	E041	E036	G	E024G	E027	J022	J051	J024	J061	E031M
20	E023	E023	E018	E014B	E014B	E015B	E015S	E015S	G	G	E027G	E033	E035	E033G	E027G	E027G	E026G	E031	E033	J037	E030	E021	J040	E021
21	E015S	E015S	E015B	E014B	E014B	E015S	E015S	E015S	E030	G	G	G	E026G	E027G	E024G	E021G	E017G	E028	E021	E022M	E015S	E016S	E015S	E015S
22	E015S	E016S	E015S	E015B	E014B	E015S	E016S	G	G	G	E042B	G	G	G	G	E021G	G	E028	E026	E019M	E015S	E015S	E015S	E015S
23	E016S	E015S	E015B	E015B	E014B	E015S	E015S	G	G	G	G	E037	E043	E038	E037	E048B	E034	G	E027	E015S	E016S	E015S	E015S	J024
24	E021	E015S	E015B	E015B	E015B	E015S	E015S	E015S	E037	E036	E036	E041	E050B	E039	E048	E055	E031	E031	E030	E015S	E015S	E015S	E015S	J024
25	J029	J022	E	E015B	E015B	E015S	E015S	E015S	E028	E050G	E040B	E065B	E041B	G	G	E038	J041	J037	E033	E015S	E015S	E030M	J024	E019M
26	J027	J033	J020	E020	E018	E015S	E018M	G	G	E023G	E041B	G	E027G	E041	E037	E051	E033	E028	E029	J021	J020	E019M	E020	E015S
27	E015S	E015S	E015B	E015B	E014B	E015S	E015S	E017	E029	E032	E036	E040	E035	E043	E036	E024G	E029G	G	E023	E030	E035	E018	E015S	E019M
28	E020M	E021M	E015B	E015B	E015B	E015S	E015S	E024	E029	E033	E036	E035	E028G	E038B	E047B	G	G	G	E021	E025	J024	J020	E018M	J023
29	E020	E019M	E015S	E015S	E015B	E015S	E015S	E027	E036	E073	J084	E082M	E040B	E042B	E040	E035	G	G	E022	J036	J023	J018	J020	E018M
30	E015S	J024	J022	E019M	E018M	E021M	J014S	E023	G	E032	E039	E038	E036	J059	E037	E037	E033	J032	J064	E047M	J025	E020M	E018S	E020M
31	E020M	J019	J024	E015B	E014B	E015S	E015S	E026	G	G	E035	E040	E036	G	G	E029G	G	E024G	G	E017	J019	E015S	E015S	E015S
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E015S	E015S	E015B	E015B	E015B	E015S	E015S	E016S	G	G	G	G	E037G	E036	E037G	E033G	G	E026	E021	E018	E015S	E016S	E015S	E015S
U. Q.	E020	E020	E015	E015	E015	E015	E016	E017	E024	E031	G	E036	E038	E039	E037	E037	E033	E031	E027	E022	E022	E020	E018	E019
L. Q.	E015	E015	E015	E015	E014	E015	E015	E015	G	G	G	G	G	G	G	G	G	G	G	E015	E015	E015	E015	E015
G. R.	D005	D005				D001	D002	D002												D007	D007	D005	D003	D004

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

foEs

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

Yamagawa

Lat. 31° 12.1'N  
Long. 130° 37.1'E

0.1 Mc **135° E Mean Time** (G. M. T. +9h)

**fbEs**

**Mar. 1966**

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	B	B	B	B	S	S					038	037	038	038	031		S	S	S	S	S	S	
2	S	S	B	B	B	B	S	S					040	B	039	036	031	025	019	S	S	S	S	S	
3	S	S	B	B	B	B	S	S	030	024G	035		035	039	035	033	030	029	S	S	S	S	S	S	
4	S	S	B	B	B	B	S	S		026G	025G			038	038	038	039	029	022	019	S	S	S	S	
5	S	S	B	B	B	B	E	E					025G	024G	036	034	035	032	019	S	S	S	S	S	
6	S	S	S	B	B	B	S	S						037	036	033	030	025	S	S	S	S	S	S	
7	S	S	S	B	B	B	S	S					040	037	035	033	031		018	S	S	S	S	S	
8	S	E	B	B	017		S	S	G	024G	024G		025G	037	035	033	E029R	024	S	S	S	S	S	S	
9	E	E	S	B	B	B	S	S	024G				E029R	024G	033				S	S	S	S	S	S	
10	S	S	S	B	B	B	S	S	022G	026G	037		039	038	037	020G			S	S	S	S	S	S	
11	S	S	S			B	E	S	018G	024			E031R	E030R		E028R	023G	G	018	E	S	S	S	S	
12	S	S	B	B	B	B	S	S					E028R	025G	020G			G	018	S	S	S	S	S	
13	S	S	B	B	B	B	S	E									038	032	E021R	025	017	020	023	E	
14	E	S	B	B	B	B	S	E					037	037			020G	034	022	E	S	S	S	020	
15	E	E	017	027	020	031	E	G								039	042	031	020	B	S	E	S	S	
16	E	019	016	E	021	E	E	S	024	E029R	029G	E031R	E033R	E028R	E025R					S	S	S	S	S	
17	S	S	S			S	S	S					E030R	E035R	E037R	E028R	E030R	018G	S	E	S	S	S	S	
18	S	S	B	B	B	B	S	E		022G	026G			E025R	B	021G	022G	036	045	039	E	E	E	S	
19	S	S	B	B	B	B	S	S	G					B	041	036		022G	026	021	023	E024S	037	031	
20	E	E	E	B	B	B	B	S					E027R	E032R	027G	026G	026G	030	033	029	027	019	022	E	
21	S	S	B	B	B	B	S	G	029				E032R	E027R	E024R	021G	017G	028	G	E	S	S	S	S	
22	S	S	S	B	B	B	S	S					B			021G		027	E026R	E019S	S	S	S	S	
23	S	S	B	B	B	B	S	S					E037R	043	E038R	037	B	034	020	S	S	S	S	022	
24	E	S	B	B	B	B	S	S	036	036	041		B	038	047	054	031	031	030	S	021	021	020	019	
25	020	016		B	B	B	E	024	G	G	B	B		B		035	033	035	032	S	S	E	E	E	
26	023	021	016	E	E	S	E			023G	B		027G	040	036	036	031	G	029	E021S	018	E	018	S	
27	S	S	B	B	B	B	S	E017R	029	G	035	035	E035R	038	E035R	024G	023G		022	026	023	E	S	E	
28	E	E	B	B	B	B	S	S	029	E033R	035	E035R	E028R	B	B				021	017	020	017	E	020	
29	E	E	S	B	B	B	S	S	032	069	083	080	B	B	040	035			021	034	E	E	020	018	
30	S	020	019	E	E	E	S	G		E032R	038	037	E036R	058	E037R	051	E033R	031	060	043	022	016	S	E	
31	E	018	020	B	B	B	S	G		E035R	038	036				E023S		022G	E	017	S	S	S	S	
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

IONOSPHERIC DATA

f - min 0.1 Mc 1 3.5° E Mean Time (G.M.T. +9h)

Mar. 1966

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	E01.5S	E01.5S	01.5	01.5	01.5	01.5	E01.5S	E01.5S	01.5	01.5	01.7	01.9	01.6	01.5	01.7	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
2	E01.6S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.7	02.0	04.0	02.1	01.7	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
3	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.7	01.6	01.6	01.5	01.6	01.5	01.5	E01.7S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
4	E01.5S	E01.5S	01.5	01.5	01.5	E01.6S	E01.5S	E01.6S	01.5	01.5	01.5	01.7	01.8	02.1	01.6	01.6	01.6	01.5	E01.5S	E01.5S	E01.6S	E01.5S	E01.5S	E01.5S
5	E01.5S	E01.6S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.8	01.5	01.7	01.5	01.5	01.5	01.5	E01.5S	E01.5S	E01.6S	E01.5S	E01.5S	E01.5S
6	E01.5S	E01.5S	E01.5S	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.4	01.6	01.7	02.1	02.0	01.7	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
7	E01.5S	E01.5S	E01.5S	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.7	01.6	01.8	01.7	01.6	01.8	01.6	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.6S
8	E01.5S	E01.5S	01.3	E	E	E01.5S	E01.5S	E01.5S	01.5	01.5	01.6	01.7	01.8	01.7	01.9	01.5	01.5	01.4	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
9	E01.5S	E01.5S	E01.5S	01.5	01.4	E01.3S	E01.5S	E01.5S	01.6	01.5	01.5	01.7	02.0	01.8	01.6	01.6	01.8	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
10	E01.5S	E01.5S	E01.5S	01.4	01.3	E	E01.5S	E01.5S	01.5	01.5	01.5	01.5	01.6	01.6	02.0	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
11	E01.5S	E01.5S	E01.5S	E	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.8	01.6	01.6	01.9	01.8	01.6	01.5	01.5	E01.4S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
12	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.6	01.9	01.8	01.9	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
13	E01.5S	E01.5S	01.4	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.7	01.8	01.9	01.9	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
14	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.8	01.7	01.9	01.6	01.7	01.5	01.3	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
15	E01.5S	E01.5S	E01.5S	01.5	E	E01.5S	E01.5S	E01.5S	01.5	01.5	01.6	01.6	01.9	02.0	02.0	01.7	01.5	01.5	E01.5S	E01.5S	01.7	E01.5S	E01.5S	E01.5S
16	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.7	02.1	02.0	02.0	02.0	01.6	01.6	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
17	E01.5S	E01.5S	E01.5S	E	E	E01.5S	E01.5S	E01.5S	01.4	01.5	01.7	02.2	02.0	02.3	02.2	02.0	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
18	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.5	01.9	02.1	02.1	03.7	01.6	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
19	E01.5S	E01.5S	01.3	01.5	01.4	E01.5S	E01.5S	E01.5S	01.5	01.5	01.6	01.6	01.9	05.4	03.6	02.1	01.6	01.6	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
20	E01.6S	E01.5S	E01.5S	01.4	01.4	01.5	E01.5S	E01.5S	01.5	01.4	01.7	02.1	03.1	02.1	01.9	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
21	E01.5S	E01.5S	01.5	01.4	01.5	E01.5S	E01.5S	E01.5S	01.5	01.6	01.9	01.9	02.2	02.2	02.0	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.6S	E01.5S	E01.5S
22	E01.5S	E01.6S	E01.5S	01.5	01.4	E01.5S	E01.6S	E01.5S	02.0	01.6	02.2	02.1	04.2	02.4	02.5	01.5	01.6	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
23	E01.6S	E01.5S	01.5	01.5	01.4	E01.5S	E01.5S	E01.5S	01.5	01.5	02.1	02.0	02.1	02.0	02.0	04.8	01.6	01.5	E01.5S	E01.5S	E01.6S	E01.5S	E01.5S	E01.5S
24	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.7	01.8	05.0	03.5	02.2	01.9	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
25	E01.6S	E01.5S	E	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	E05.0C	04.0	06.5	04.1	02.2	02.1	02.0	01.6	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
26	E01.5S	E01.5S	E01.5S	01.5	E	E01.5S	E01.5S	E01.5S	01.5	01.6	04.1	02.2	01.5	02.3	02.2	01.5	01.7	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
27	E01.5S	E01.5S	01.5	01.5	01.4	E01.5S	E01.5S	E01.5S	01.5	01.6	01.7	01.8	01.9	02.6	02.1	02.1	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
28	E01.5S	E01.5S	01.5	01.6	01.5	E01.5S	E01.5S	E01.5S	01.4	01.7	01.9	02.1	02.2	03.8	04.7	02.1	02.1	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
29	E01.5S	E01.4S	E01.5S	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.8	03.2	03.6	04.0	04.2	02.6	02.2	01.9	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
30	E01.6S	E01.5S	E01.5S	01.4	01.4	E01.4S	E01.5S	E01.5S	01.5	01.5	01.9	02.3	02.3	03.3	02.0	01.8	01.6	01.4	E01.5S	E01.5S	E01.5S	E01.5S	E01.6S	E01.5S
31	E01.5S	E01.4S	01.5	01.5	01.4	E01.5S	E01.5S	E01.5S	01.5	01.6	02.2	03.3	03.1	02.4	02.2	01.6	01.8	01.4	E01.4S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
Count	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	E01.5S	E01.5S	01.5	01.5	01.5	E01.5S	E01.5S	E01.5S	01.5	01.5	01.7	01.8	02.0	02.1	02.0	01.6	01.5	01.5	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S	E01.5S
U. Q.																								
L. Q.																								
Q. R.																								



Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

135° E Mean Time (G. M. T. +9h)

M(3000) F2 0.01

Mar. 1966

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	305	305S	310S	305	1325S	1330S	325S	360	340	J330S	315	310S	J305S	335	315S	340	350	350	350	1335S	345S	325	305S	310	
2	1300S	310S	305	1305S	325S	315	320	365S	1360S	350	340	325S	305S	325	325S	335	335	355	355	345	330S	320	305S	1310S	
3	1325S	325	320	305	310	300S	315	360	370	340	340	305H	315	335	325S	335	335	350	1350S	340	325S	U300S	1320S	315S	
4	J325S	315	305	305	300	325	305	365	350	330	335	310	325	330	315	330S	345S	340	1350S	345	320	305	285S	1290S	
5	290S	1300S	1310S	1310S	340	345	305	360	345	310	325	325	320	335S	J335S	340	355	330	350	U340S	1300S	1300S	305S	1295S	
6	285S	U315S	1330S	345	360	280	285	335	325	330	340S	300	290S	325	330	345	345	350	360	310S	285	1300S	305S	1295S	
7	290S	1290S	310S	1345S	1360S	295	310S	340	340	335	325S	290	300	315	325	350	355	360	350	310	1325S	290	1285S	1275S	
8	310S	1305S	310	330	335	320	290	365	335	340	340	310	340S	325	340	330S	350	350	350	350	1320S	290	1285S	280	
9	1280S	305S	295	330	330	345	315	350	355	330	320	310	305	320	340	335S	350S	340S	345	345	305S	295S	1290S	1285S	
10	1290S	S	290S	1300S	325S	335	300	365	345	320	320	320	310S	315	325	J340S	345S	J325S	355S	345S	315	290S	295	S	
11	S	S	290S	335	S	275S	295	360S	340	330	315	305	310	330	330	315S	335	335S	355S	335	1310S	1290S	1295S	295S	
12	1295S	295	1310S	1320S	310S	325S	315	355	350	340	340S	290	295	325	J345S	335	320S	350S	340S	320S	1300S	S	S	295S	
13	1300S	300S	295S	290S	320S	330S	295S	350	355S	345	335	325	335S	330	340	325	340	345	335S	330S	330S	1285S	1285S	305S	
14	295S	285S	280S	290S	330S	305	300	340	335S	330S	285S	J300S	320	310	J310S	325S	335	330S	320S	270S	1295S	1300S	1310S	1290S	
15	285	305	310	285	270S	280S	1310S	300S	330S	1330S	1330S	315S	J325S	315S	320S	340	370	345	340S	320	280S	1285S	1290S	305	
16	320	335	325	315	300	285	315	350	345S	340	320	J325S	325	325S	330	335S	J345S	J335S	345S	340S	U305S	285S	1300S	1295S	
17	1285S	J315S	330	345	345	305	J305S	370	340	325S	330	315	320	335	330	315S	310S	335S	J350S	U325S	335S	J290S	1310S	J305S	
18	J295S	305S	290S	315S	375S	340	310	345	1345S	345	330	295	315S	320	330S	330	330S	J325S	330S	330	305	J295S	285S	290S	
19	1300S	300S	295	320	335	295	315	355	J355S	340	340	315	320	320R	320	325	320S	J330S	J330S	325S	1305S	1295S	310S	285S	
20	275S	1295S	J340S	330	305	280S	295	340S	U345S	345	340	290	315	320	310	325	320	325	325	1330S	325	250S	285	270S	
21	285	1300S	305	325	315	300	305	345	345	335	340	290	J305S	J315S	320	315	335	320	S	1330S	300S	285S	S	S	
22	S	280S	J290S	300	345	305	310S	340	340	350	320	295	J305S	305	305	320	J300S	320S	1325S	1330S	350	1265S	U285S	295	
23	285S	290	295	325	340S	S	325S	365	360	325	320S	300	295S	315	305	310	325S	330	335	1330S	285S	275S	265	260	
24	270	S	S	S	S	275	1320S	345	345	355	320	295	320	315	325	325	335S	J325S	1335S	325	310	1280S	1280S	S	
25	S	S	330S	1365S	295S	1290S	305S	335	330	340	320	J305R	320	330	330	315	325	320	330	345	330S	295	275	1280S	
26	1290S	1280S	290S	1330S	375	285	315S	350	350	345	320	290	310	330	330	335	330	335	1335S	335S	325	1270S	1270S	1270S	
27	1285S	1300S	350S	375	265	265	300S	365	345	335	320	315	320	J315S	335	330	340	340	335	J315S	295S	S	S	S	
28	S	1300S	300	325	305	290	290S	350	340	345	345	310	315	325	335	335	335S	330S	J330S	315	310	1290S	1300S	1300S	
29	295	U305S	1295S	315	285S	295S	1300S	320	320S	330	335	320	300	310	325	340	J340S	1335S	330S	325S	330	295	1285S	285S	
30	1290S	300S	1330S	330S	330	270	305S	345	330S	340	315	310	315	310	325	320	330	335	365	335	305	295	1280S	1290S	
31	295S	1290S	1300S	320S	355	290	325S	355	355	355	310	335	320	325	320	325	325S	325	1330S	335S	1340S	1320C	1285S	1270S	
Count	27	27	30	30	29	30	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	30	28	27
Median	290S	300S	305S	320	325	300	305	350	345	340	325	310	315	325	325	330	335	335	340S	330S	315S	290S	U290S	290S	290S
U. Q.																									
L. Q.																									
Q. R.																									

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

Y 7

M(3000) F2

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

1 35° E Mean Time (G.M.T. +9h)

0.01

M(3000) F1

Mar. 1966

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 350	355	365	355	360	L	L	L	395						
2							L	380L	395	375	380	350L	375	380	350L	370	L	L	L						
3										L 405	365L	375	385	375H	355L	L	L	L	L						
4									L	360L	370	385	375H	355L	L	L	L	L	L						
5									L	320L	365	365	360	370	L	L	L	L	L						
6										L	L	375	395	360	355	350L	L	L	L						
7										L	355L	380	380	A	370	370	365	370L	L						
8										L	365	360	360	355	360	365	375L	L							
9										L	360H	375	360	370	405	L	L	L	L						
10										L	360	390	360	350	360	355L	365L	L							
11										L	350L	365	370	360	360	360L	L	L	L						
12										L	365L	355	360	360	355	365	375L	L							
13										L	360L	360	375	370	L	370L	A		L						
14										L	L	340	350	350	350	340L	L	A							
15									L	L	L	355	365L	L	L	L	A	L							
16										L	380	355H	355	LH	375	365	L								
17										L	L	360	395H	360L	380L	L	L	L							
18										L	L	375	L	375	355	360	L	L	A						
19										L	370	390	380	I360B	360	355	360L	L							
20									L	L	385L	L	395	L	L	350	L	L							
21										L	L	370	L	355	360	L	L	L							
22										L	385	L	360	L	345L	350	L	L							
23										L	L	370L	380	365R	355	360	B	L	L						
24										L	L	345	B	355	A	A	L	L							
25									L	C	L	B	340	360	360	360	L	A							
26										L	B	L	350	365	360	L	430								
27										L	350	370	365	365	370	385	L	L							
28									L	L	385	380	375	360	I355B	365	355L	L							
29									L	A	A	A	LH	345	385	375L	410								
30									L	355L	355	355	A	380	A	A	L	L							
31									L	L	L	365	385	L	355	355	L	L							
Count									4	21	24	29	24	27	20	9	1	1							
Median									370L	365	365	365	360	360	360	375L	370L	395							
U. Q.																									
L. Q.																									
Q. R.																									

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

M(3000) F1

Y 8

# IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

135° E Mean Time (G.M.T. +9h)

km

h'F2

Mar. 1966

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										280	280	280	280	270	265	270	240	225						
2									235	240	265	275	305	280	280	265	255	240						
3										250	270	280	295	255	275	265	260	240	235					
4										250	275	280	275	250	320	275	250	245						
5									250	275	275	255	285	270	260	250	240							
6										270	245	270	325H	275	250	245	240	230						
7										265	270	260H	305	290	275	250	245	230						
8										260	270	295	280	280	260	265	245	235						
9										275	290	295	285	275	260	240	240	240						
10										260	280	280	295	285	275	250	260	255						
11										275	280	290	300	275	255	280	260	240						
12										255	265	340	305	275	255	255	260	240	225					
13										250	270	280	270	270	260	275	245							
14										250	330	325	270	275	280	265	255	240						
15									275	255	245	290	280	275	275	255	240	235						
16										245	275	290	275	270	260	255	255							
17									250	255	270	280	270	260	260	255	290	250						
18										255	255	285	260	275	275	255	270	255						
19										255	260	270H	280	280	280	270	270	260						
20										225	240	255	L	275	275	275	280	250						
21									260	250	270	300	295	280	270	265	270							
22										245	260	295	285	295	275	275	280	255						
23										260	295	285	295	285	280	280	255	250						
24										235	250	320	280	295	270	255	250							
25									260	260	275	295	285	265	255	270	270	250						
26										250	260	320	300	260	270	250	255							
27										260L	285	290	280	280	260	270	255	240						
28									265	255	270	290	300	275	260	260	270	250						
29									290	300	300	E350A	275	285	270	250	250							
30									270	260	290	290	285	280	275	280	255	240						
31									250	245	300	280	290	280	290	275	275	260						
Count								11	30	31	30	31	31	31	31	31	31	24	3					
Median								260	255	270	290	285	275	270	265	255	240	225						
U. Q.																								
L. Q.																								
Q. R.																								

h'F2

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

1 35° E Mean Time (G. M. T. +9h)

f<sub>o</sub>F

Mar. 1966

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	280	255	260	250	245	245	215	200H	195H	250	245	250	230	250	250	230	220	200	225	215	220	275	260	
2	275	270	250	255	240	245	265	240	230	210	200	250	250	265	250	245	230	240	225	220	220	250	250	280	
3	250	250	250	275	270	265	250	225	225	200	230	215	195H	255	225	230	225	240	230	215	220	280	250	245	
4	245	240	300	280	255	265	280	230	210H	220	200H	200H	220	200	210	1230A	1240A	245	230	220	245	275	260	285	
5	290	280	250	275	245	215	E290S	230	240	225	210	200	200	240	230	230	240	240	230	220	250	270	255	300	
6	305	275	225	215	205	E355S	E315S	250	245H	230	240	210	200	245	225	215	225	215	215	220	250	275	250	300	
7	305	285	255	230	200	E280S	285	240	245	245	245	205H	245	1270A	245	225	205	215	210	215	240	275	265	310	
8	280	260	255	245	200	20	E290S	230	230	240	220	200H	230	225H	210	215H	225	210H	225	200	220	290	290	300	
9	285	280	290	275	240	220	245	215	225H	210H	195H	225	240	210	200	190	230	240	225	210	250	275	275	300	
10	305	250	255	270	250	205	260	230	235	205H	230	225	240	225	225	225	225	235	230	200	225	270	280	295	
11	325	310	290	225	200	E300S	280	220	230	210H	225	210	200	205	215	215	225H	230	225	205	240	250	270	295	
12	290	275	250	250	230	245	225	220	220H	210	210	200	195H	230	240	235	220	240	240	220	240	300	280	275	
13	280	275	255	280	250	230	270	230	230H	225	220	210	195	205	180H	235	1240A	245	240	240	230	255	310	280	
14	290	290	290	280	230	210	270	225	230	225	215	225	210	245	230	235	235	1245A	235	290	280	260	250	275	
15	285	260	260	E300A	E305A	E320A	260	245	250H	240	230	225	235	240	250	E250A	1240A	235	230	230	285	335	290	255	
16	250	230	250	275	E300A	300	275	240	240	225	200	200H	225	225	200	205	225	230H	240H	205	205	290	260	280	
17	290	275	245	220	195H	E295S	280	225	230	220H	195H	200	180H	205H	220	230	225	230H	225	200	210	260	280	300	
18	290	275	295	255	200	E240S	290	230	225H	225	210	200	210	210	215	225	240	1250A	250	245	215	240	295	290	
19	300	280	275	245	200	E260S	275	230	230H	230	215	205	190H	1215B	250	245	240	250	240	220	250	1290A	300	300	
20	300	280	230	230	240	300	300	245	225	220	210	205H	200	210	240	220	240	245	245	230	240	280	305	325	
21	295	275	250	240	210	270	280	240	245	225	200	200	205H	210	240	225	235	235H	245	215	225	280	300	295	
22	295	295	275	250	225	250	275	235	240H	220	200	200H	260	230	250	225	240	250	230	205	200	290	300	290	
23	300	295	275	250	230	250	225	225	215H	205H	230	250	250	265	230	1210B	250	235	240	230	240	300	325	345	
24	300	280	240	320	290	310	250	230	240	235	225	250	1255B	240	1220A	1235A	230	245	225	245	240	300	305	320	
25	300	275	240	205	300	E340S	280	240	240	1230C	230	1215B	230	220	245	205	230	1250A	240	205	205	275	320	300	
26	325	325	300	245	195	E310S	270	230	230H	220H	E245B	200H	230	240	250	240	210	240H	245	230	200	310	350	340	
27	315	290	230	210	E360S	E380S	280	225	240	225H	240	220	210	205	225H	235	225H	240	240	230	250	275	300	320	
28	295	260	265	245	275	275	255	245	240	250	225	220	225	220	1240B	220	220	250	250	240	245	235	290	300	
29	275	270	265	250	250	270	285	250	250	A	A	A	250	260	210	225	225H	250	250	250	230	245	300	300	
30	325	280	240	225	230	E335S	280	240	245	240	220	215	230	1230A	220	1225A	250	240	240	225	250	250	325	310	
31	295	300	300	245	200	E320S	260	235	250	240	210H	230	210	200H	245	225	225	250	250	240	225	220	290	300	
Count	31	31	31	31	31	31	31	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
Median	295	275	255	250	235	U245	270	230	230	225	220	210	225	225	230	225	230	240	240	220	240	275	290	300	300
U. Q.																									
L. Q.																									
Q. R.																									

The Radio Research Laboratories, Japan

Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

f<sub>o</sub>F

Y 10

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

IONOSPHERIC DATA

km

1 35° E Mean Time (G.M.T. +9h)

f'Es

Mar. 1966

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	B	B	B	S	S	S	G	G	G	G	160	150	150	140	130	G	S	S	S	S	S	S
2	S	S	B	B	B	S	S	S	G	G	G	G	155	B	145	145	125	110	105	S	S	S	S	S
3	S	S	B	B	B	S	S	S	G	145	100	140	165	135	140	140	140	120	S	S	S	100	S	S
4	S	S	B	B	B	S	S	S	G	G	105	105	G	G	130	160	145	130	125	120	S	S	S	S
5	S	S	B	B	B	110	105	S	G	G	G	G	100	100	170	150	130	125	120	S	S	S	S	S
6	S	S	S	B	B	S	S	S	G	G	G	G	G	160	150	150	150	130	S	S	S	S	S	S
7	S	S	S	B	B	S	S	G	G	G	G	G	G	155	150	150	150	G	125	S	S	S	S	S
8	S	115	B	105	E	S	S	S	G	175	105	105	105	135	130	125	125	115	S	S	S	S	S	S
9	120	115	S	B	B	S	S	S	G	110	G	G	G	110	105	125	G	G	S	S	S	110	S	S
10	S	S	S	B	B	E	S	S	G	105	105	160	150	140	135	100	G	G	100	100	S	S	S	S
11	S	S	S	E	B	105	S	S	G	105	G	G	105	105	G	105	100	125	120	100	S	S	S	S
12	S	S	B	B	B	S	S	S	G	G	G	G	G	G	100	100	G	130	130	S	S	S	S	S
13	S	S	B	B	B	S	105	S	G	G	G	G	G	G	G	G	140	125	125	120	120	115	110	110
14	110	S	B	B	B	S	105	S	G	G	G	G	135	125	G	G	G	100	130	125	100	S	S	110
15	105	105	105	105	105	105	110	S	G	G	G	G	G	G	G	145	130	120	115	B	S	115	S	S
16	105	100	105	105	105	110	S	S	G	105	105	105	105	105	105	G	G	G	G	S	S	S	S	S
17	S	S	S	E	E	S	S	G	G	G	G	G	110	105	160	105	100	100	S	100	S	S	S	S
18	S	S	B	B	B	S	105	S	G	105	105	G	G	100	B	100	100	140	120	115	115	115	105	S
19	S	S	B	B	B	S	S	G	150	G	G	G	G	B	125	130	G	105	125	120	110	110	110	110
20	105	105	105	B	B	B	S	G	G	G	105	105	110	100	105	105	100	130	120	115	110	110	110	110
21	S	S	B	B	B	S	S	150	150	G	G	G	110	105	100	100	100	150	125	125	S	S	S	S
22	S	S	S	B	B	S	S	G	G	G	G	G	B	G	G	100	G	150	130	125	S	S	S	S
23	S	S	B	B	B	S	S	G	G	G	G	130	150	140	140	B	125	G	110	S	S	S	S	120
24	115	S	B	B	B	S	S	S	140	140	135	130	B	130	125	115	135	125	115	S	115	110	105	110
25	110	110	E	B	B	S	150	150	150	C	B	B	B	G	G	120	120	115	105	S	S	115	105	110
26	105	105	100	105	105	S	110	G	G	105	B	G	105	150	170	120	125	160	120	100	115	120	110	S
27	S	S	B	B	B	S	S	110	155	145	125	115	120	110	105	105	100	G	130	120	110	110	S	100
28	110	105	B	B	B	S	S	150	130	125	110	105	105	B	B	G	G	G	145	125	110	105	100	105
29	105	105	S	B	B	S	S	145	135	120	115	115	B	B	105	115	G	G	140	115	110	110	100	100
30	S	110	110	105	115	110	S	155	G	135	115	115	120	110	110	110	125	105	100	100	100	100	S	115
31	100	100	110	B	B	S	S	150	G	G	G	125	110	120	G	100	G	100	G	125	120	S	S	S
Count	11	11	6	5	4	5	8	8	9	13	12	14	19	22	22	25	22	22	23	17	11	14	9	11
Median	105	105	105	105	105	105	105	150	140	120	105	115	110	115	130	115	125	125	120	115	110	110	105	110
U. Q.																								
L. Q.																								
Q. R.																								

f'Es

IONOSPHERIC DATA

Lat. 31° 12.1'N  
Long. 130° 37.1'E

Yamagawa

1 35° E Mean Time (G.M. T. +9h)

Types of Es

Mar. 1966

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	b								
2													h	h	h	h	h	13	1						
3									h	1	h 1	h 1	h 1	h	h	h	h	e2			f				
4									1	1	1	1	1	1	h 1	h 1	h 1	e2	e2	f2					
5						f	f2						1	1	h 1	h 1	b2	e2	e						
6													h	h	h	h 1	b 1	h							
7													h	h	h	h	h	e							
8		f							h	1	1	1	1	h	h	h	h	e2							
9	f	f2							1	1	1	1	1	1	h	h					f				
10									1	1	1	h	h 1	h 1	h 1	1			12	f					
11						f			1	1	1	1	1	1	1	1	1	e 12	e	f					
12													1	1	1	1		h	e						
13							f										b21	b31	e	f2	f	f2	f4	f	
14	f2						f						h	h			1	b312	e	f				f4	
15	f3	f	f3	f2	f2	f2	f2	1					h	h	h	h	h	e2	e		f				
16	f2	f2	f3	f2	f3	f	f		12	1	1	1	1	1	1	1	1	1	1						
17										1	1	1	1	1	h 1	1	1	1	1	f					
18										1	1					1	12	b2	e3	f5	f	f	f		
19									h					h	h	h		12	e3	f	f3	f3	f2	f3	
20	f	f4	f							1	1	1	1	1	1	1	1	h 1	e	f4	f2	f2	f3	f2	
21									h				1	1	1	1	1	h	e	f					
22																1	1	h	e2	f					
23												e	h	h	h	h	h	12						f5	
24	f								h	h	h	h	h	h	h	e21	h 1	h	e2		f3	f4	f	f2	
25	f3	f2							h	h	h	h	h	h	e	e	e	e2	14		f	f4	f		
26	f6	f6	f2	f2	f				1	1	1	1	1	h e	h	e	h	e3	f2	f	f	f	f		
27									1	h 12	h 1	h	e	1	1	1	1	h 1	f3f	f	f	f	f		
28	f	f							h	h	h	e	1	1	1	1	1	h		f	f2	f	f	f3	
29	f	f							h	e2	e3	e2			1	1	1	h		f2	f	f	f	f	
30	f2	f2	f3	f	f	f			h	e	e	e	e2	e2	e 1	e 1	e 1	12	13	f3	f3	f2	f2		
31	f2	f2	f3						h	1	1	1	1	1	1	1	1	1	1	f	f	f	f		
Count																									
Median																									
U. Q.																									
L. Q.																									
Q. R.																									

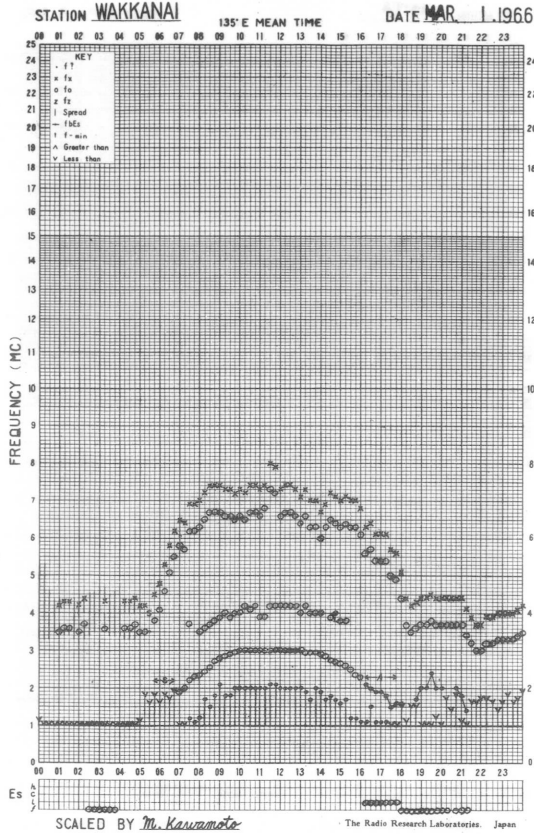
Sweep 1.0 Mc to 19.5 Mc in 20 sec in automatic operation

The Radio Research Laboratories, Japan

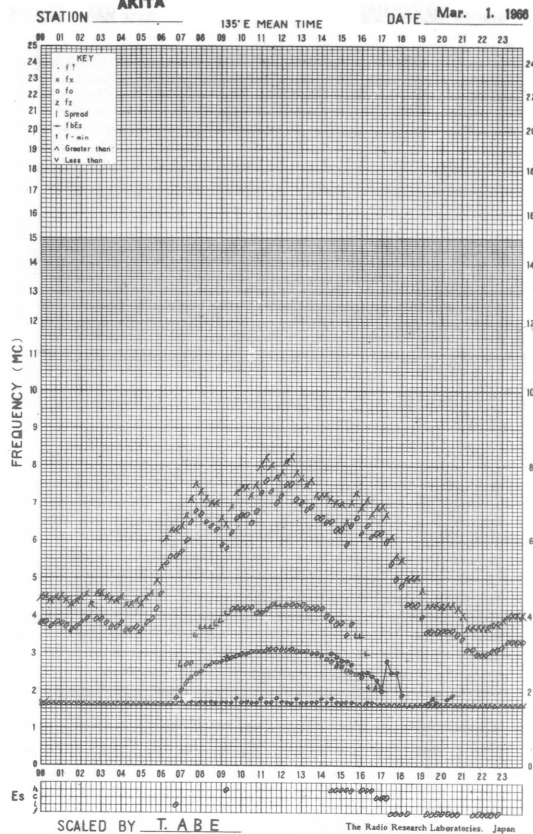
Types of Es

Y 12

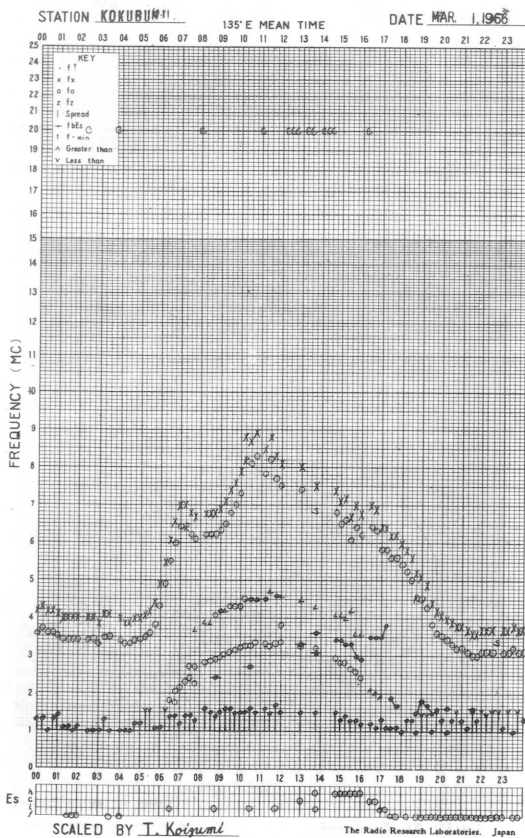
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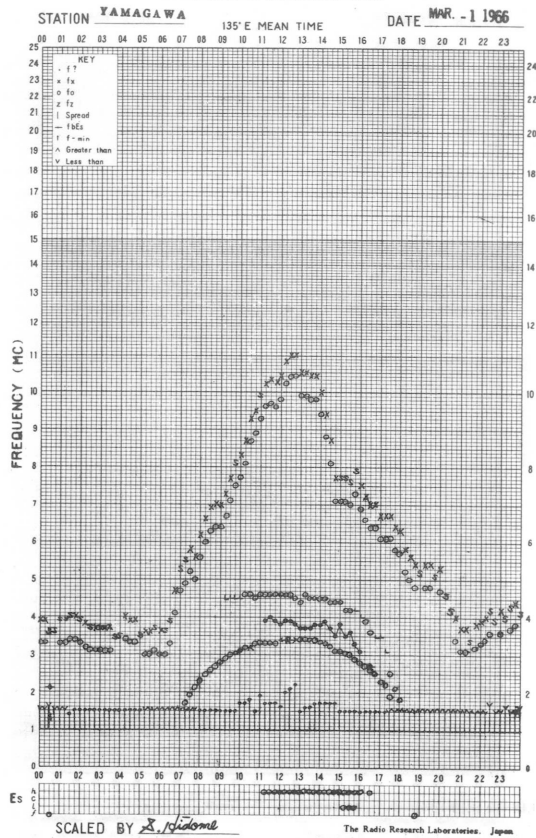
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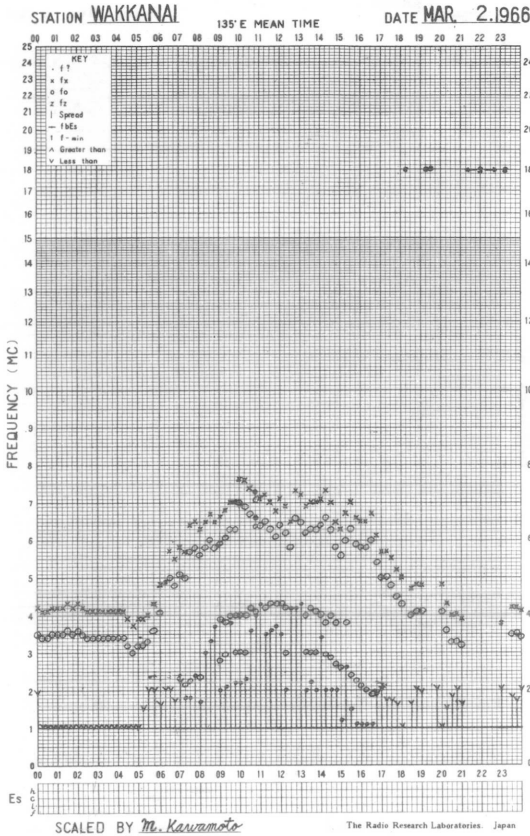
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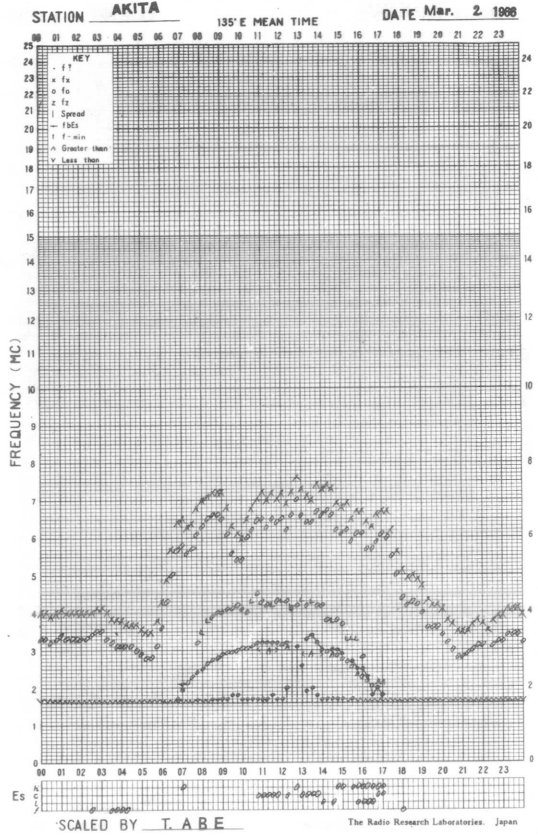
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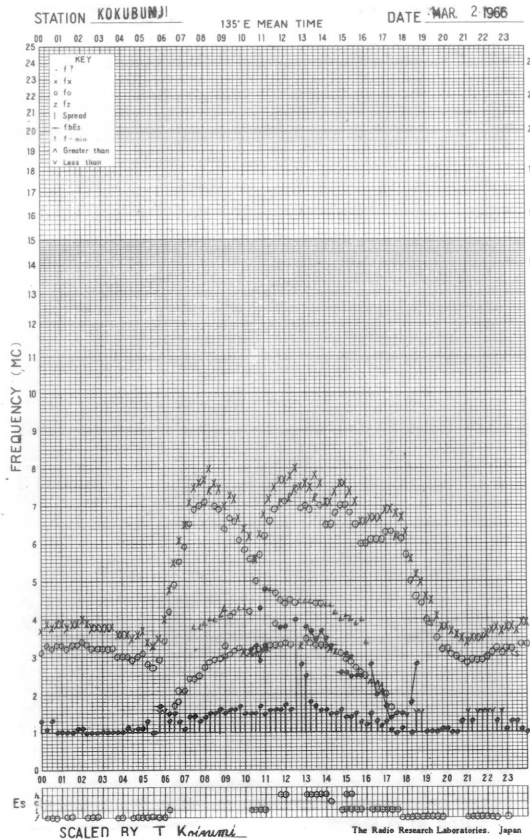
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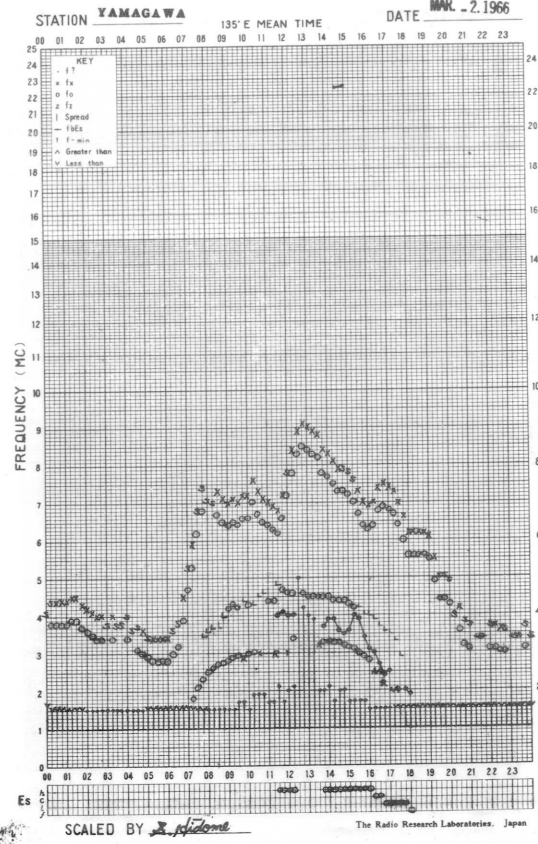
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f-PLOT OF IONOSPHERIC DATA

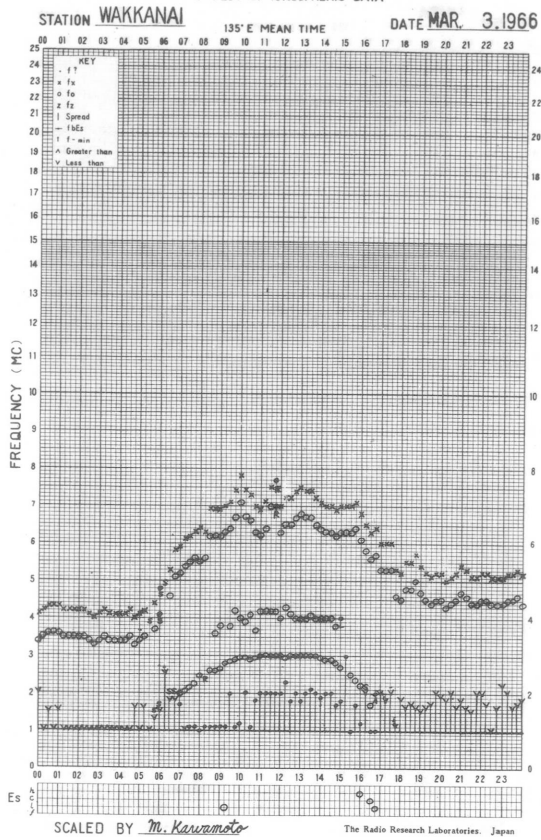


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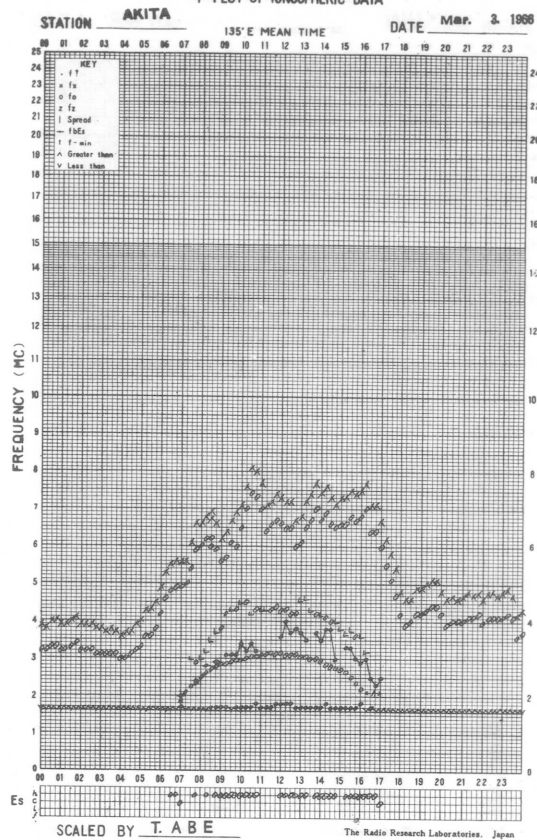




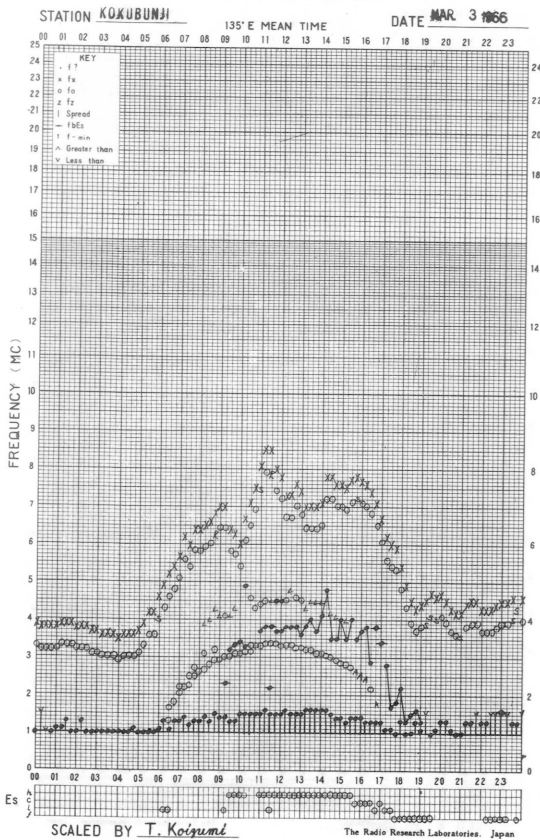
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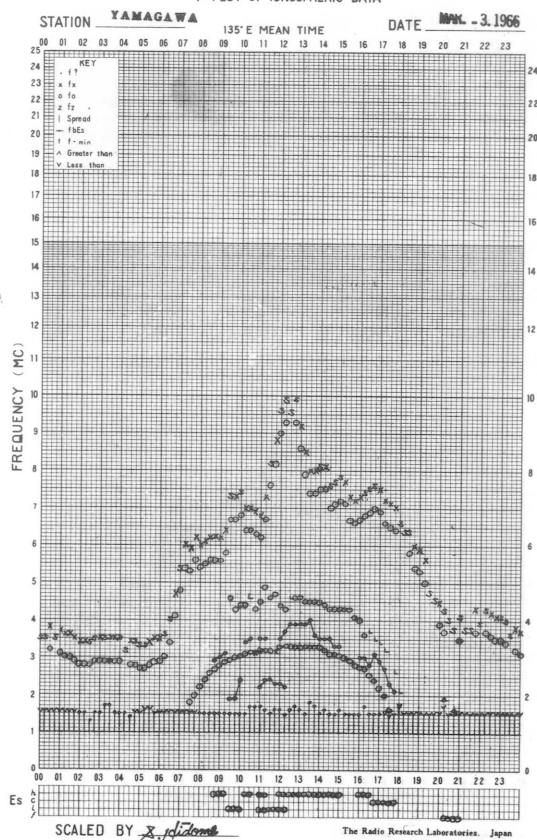
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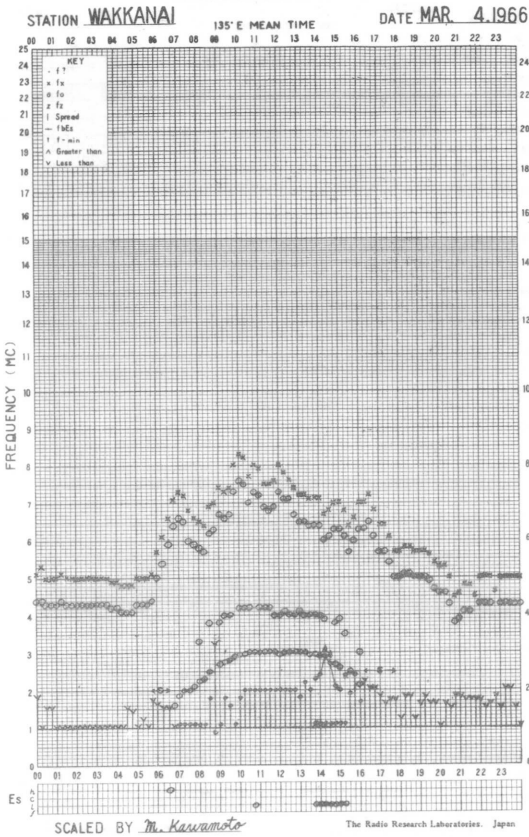
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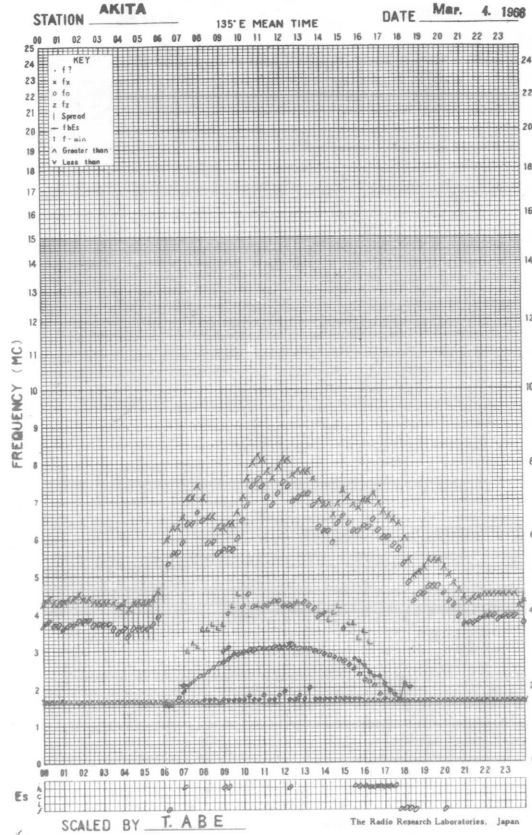
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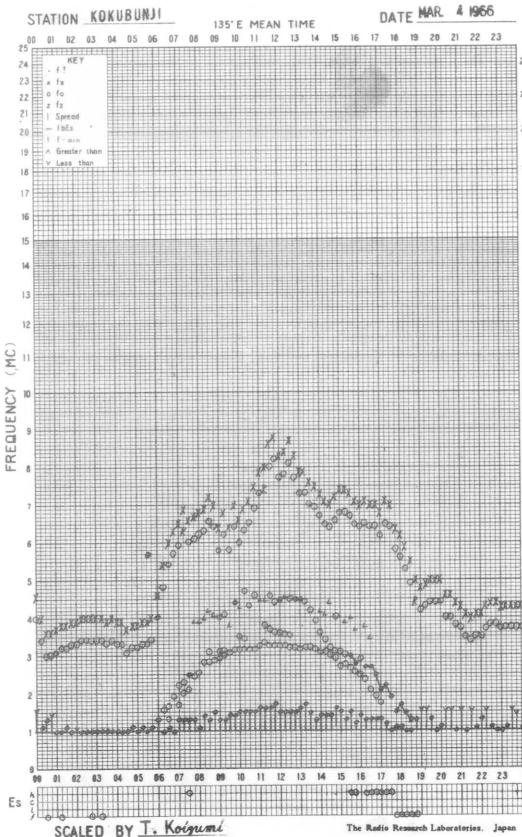
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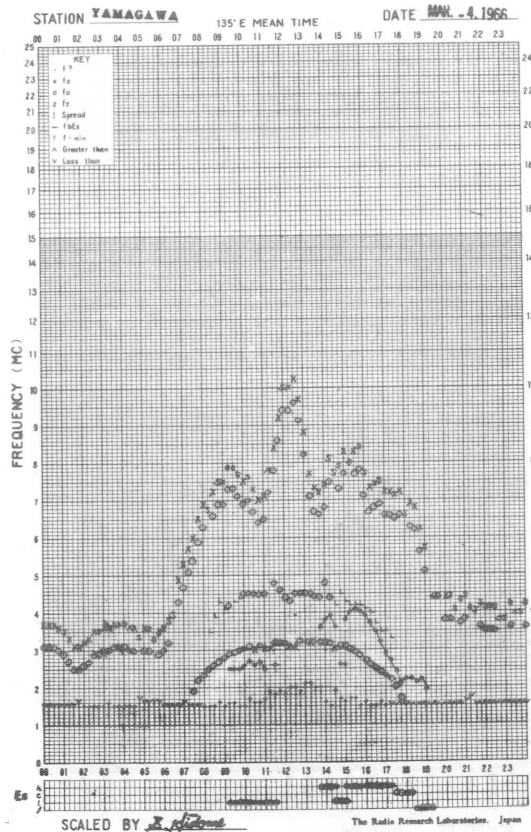
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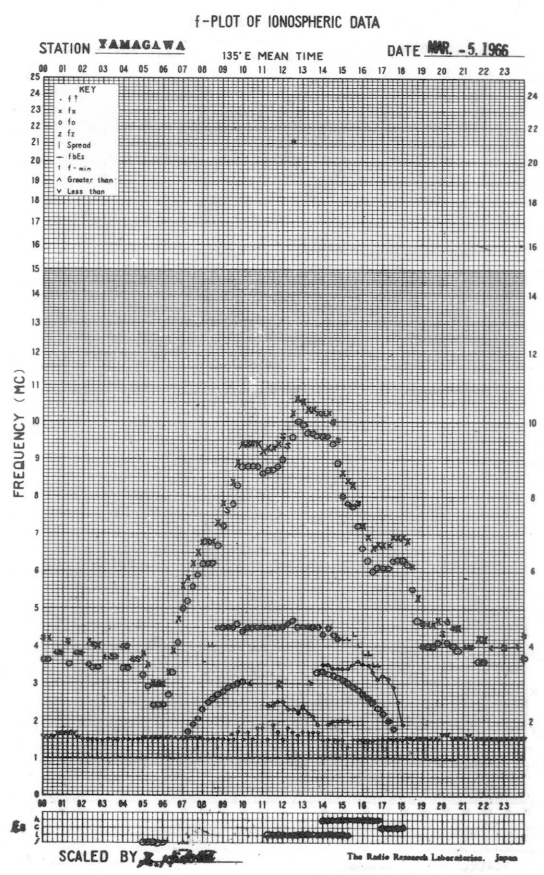
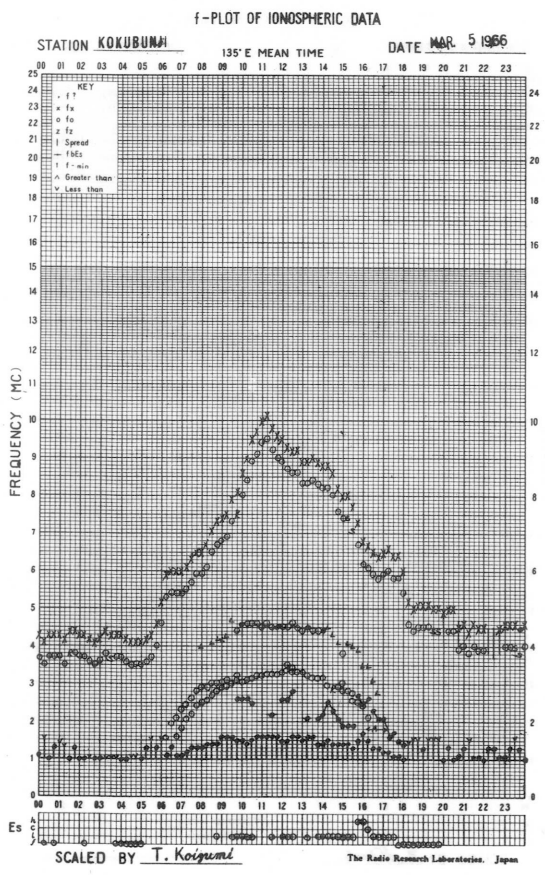
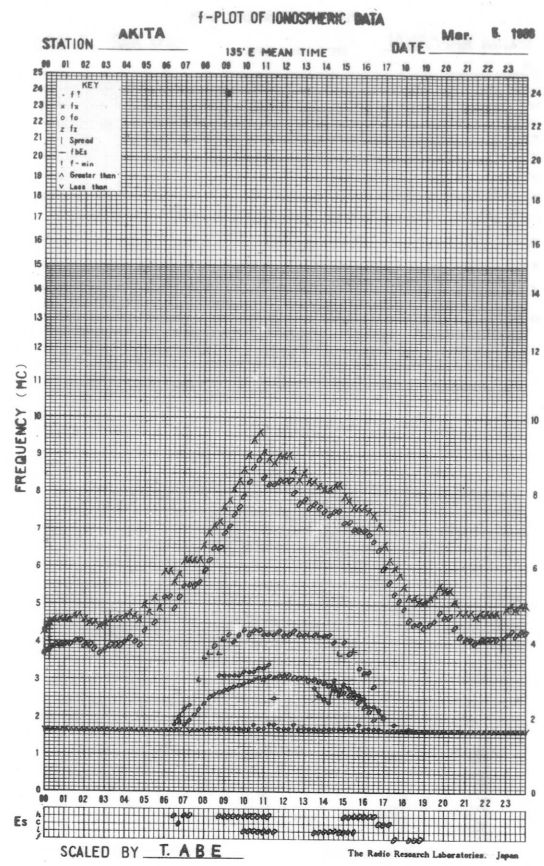
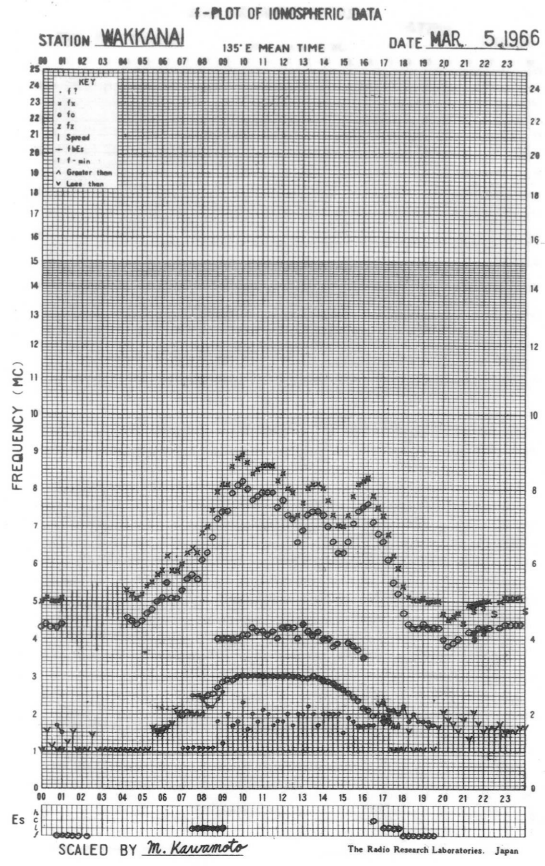


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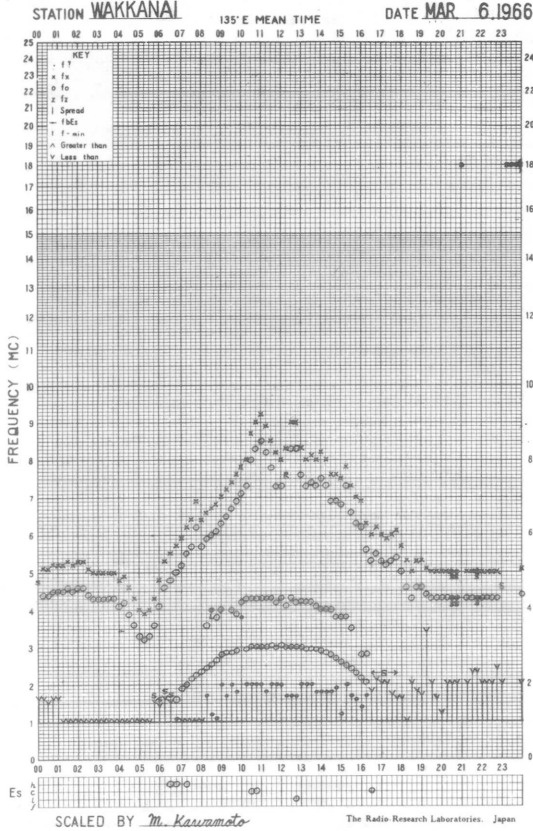


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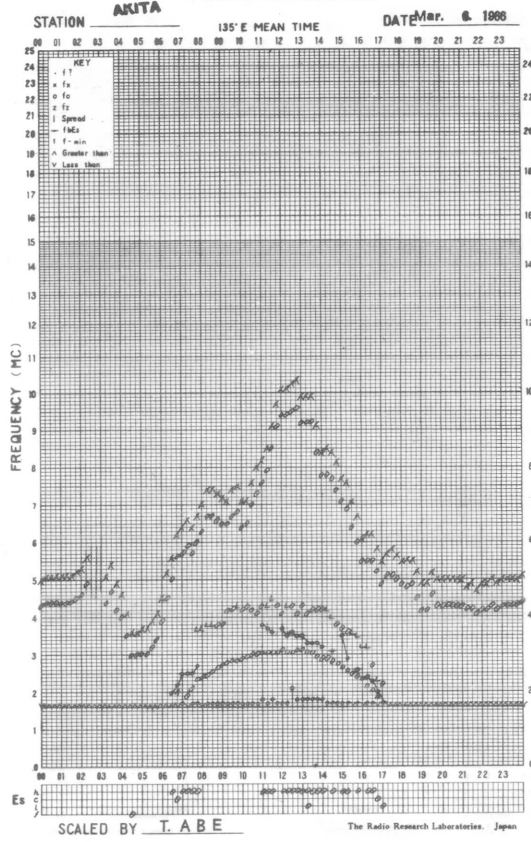




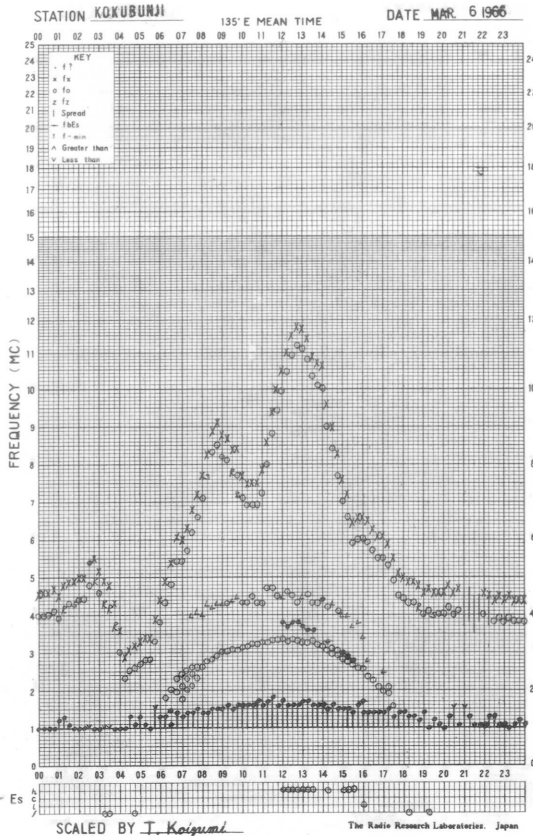
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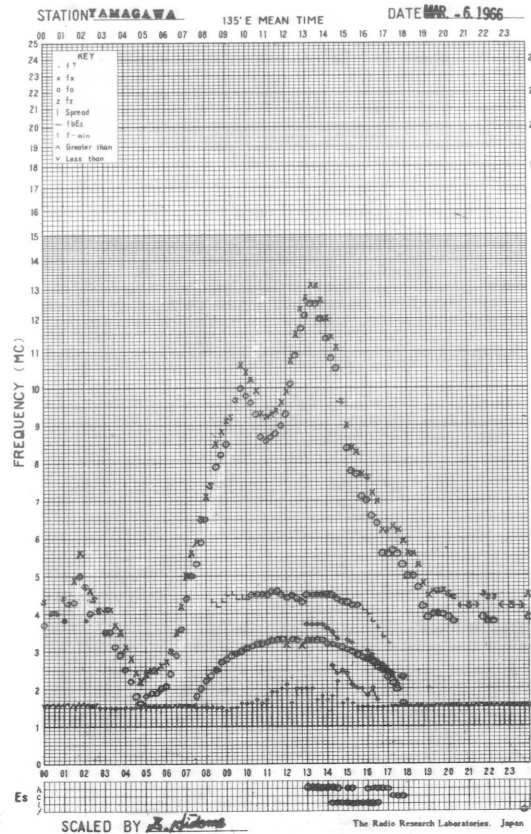
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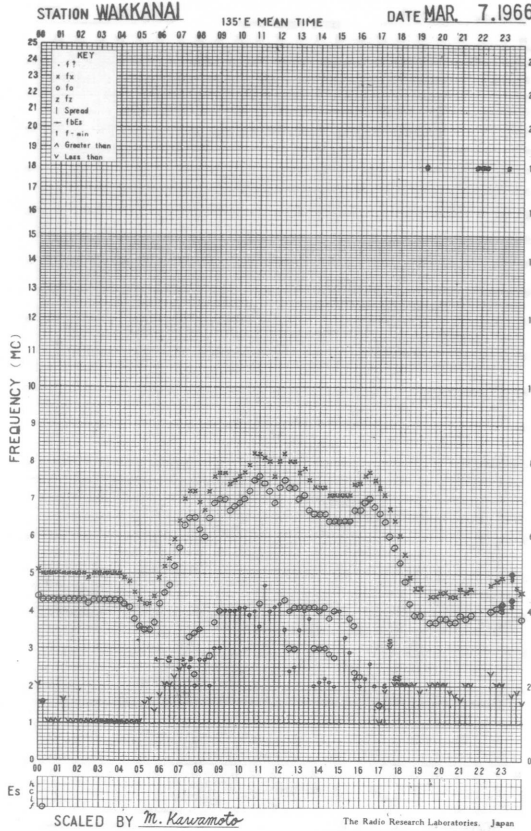
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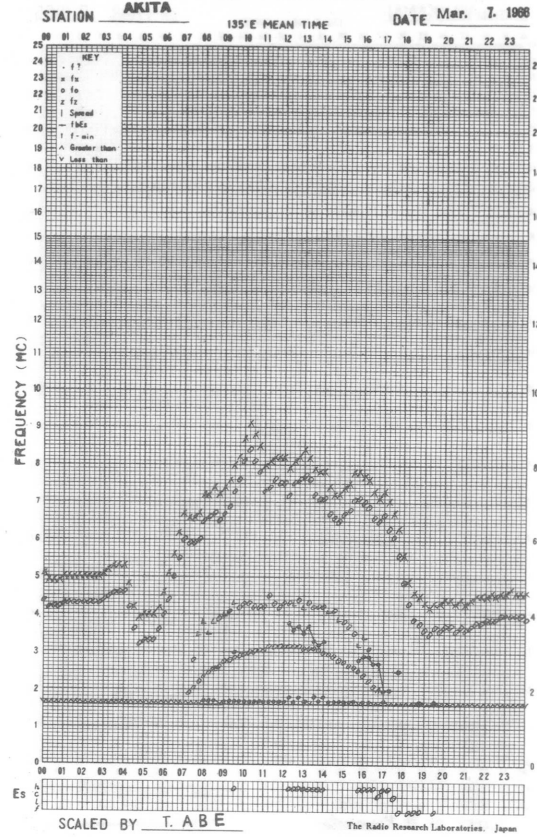
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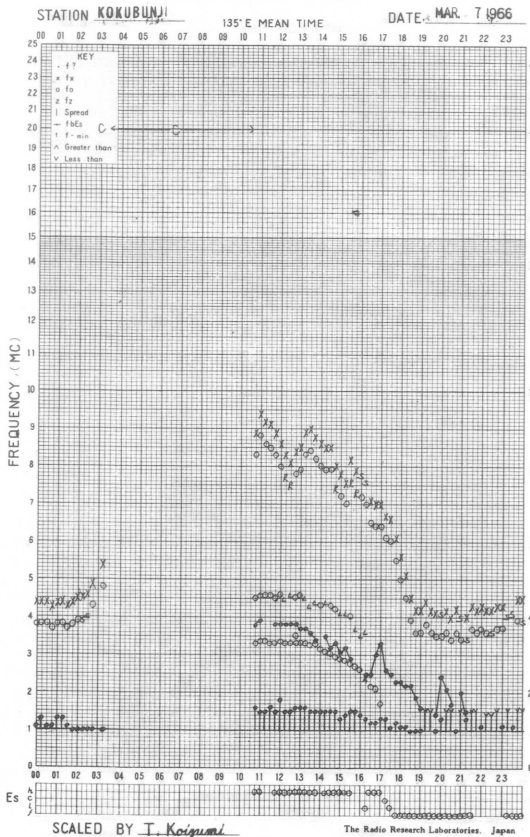
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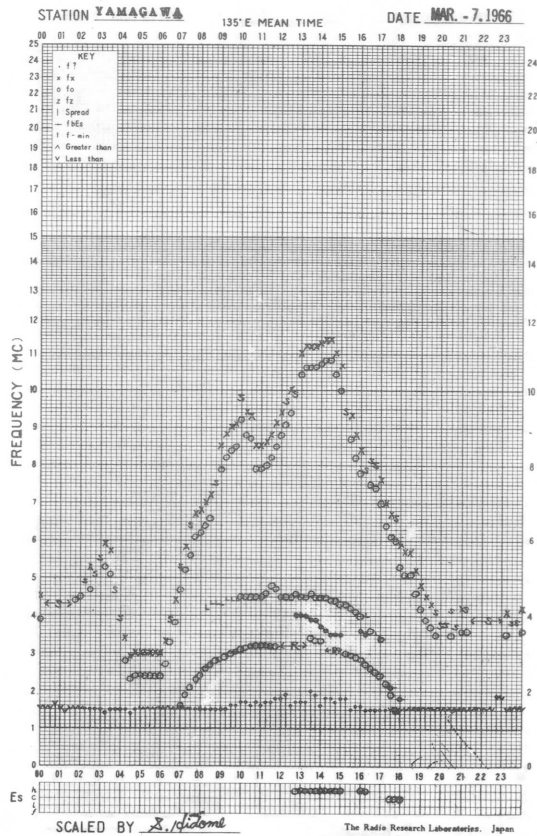
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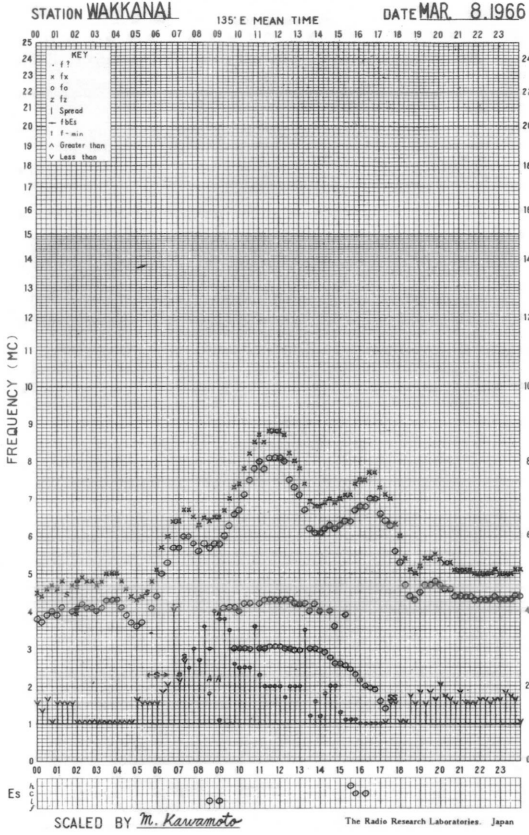
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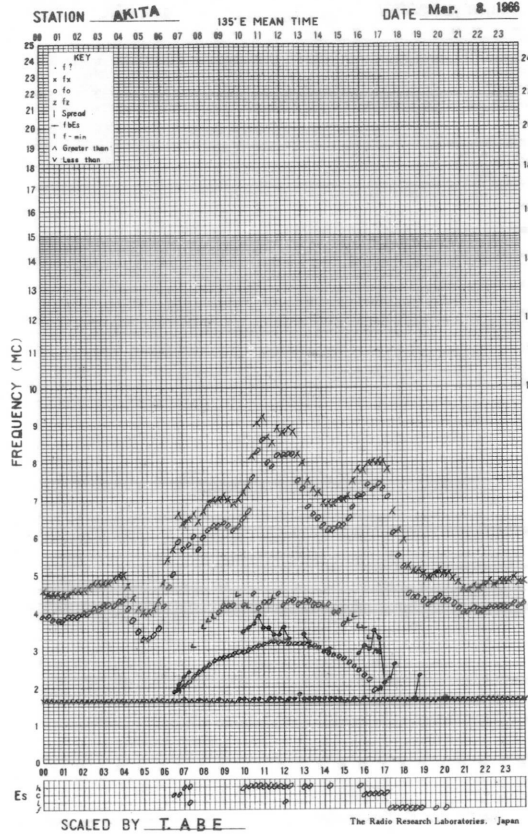
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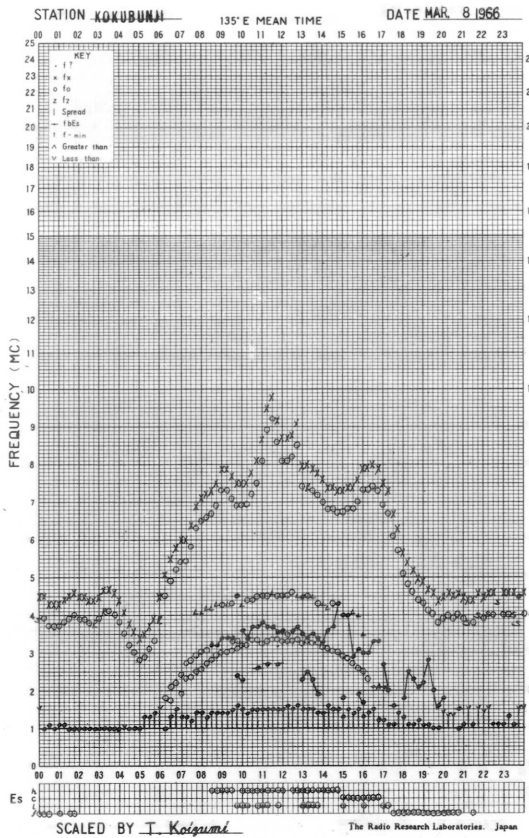
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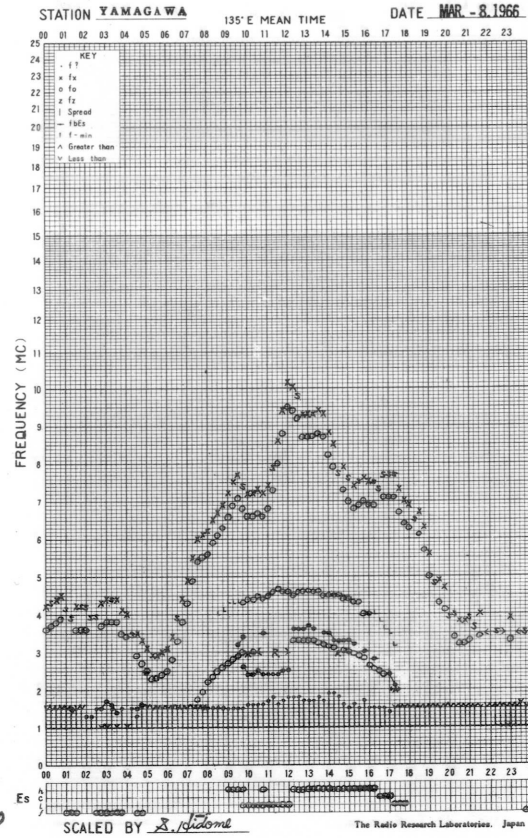
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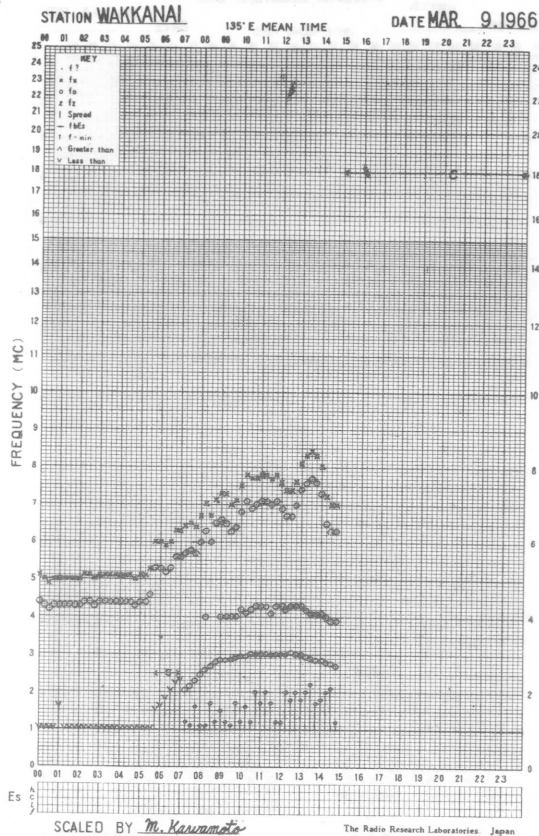
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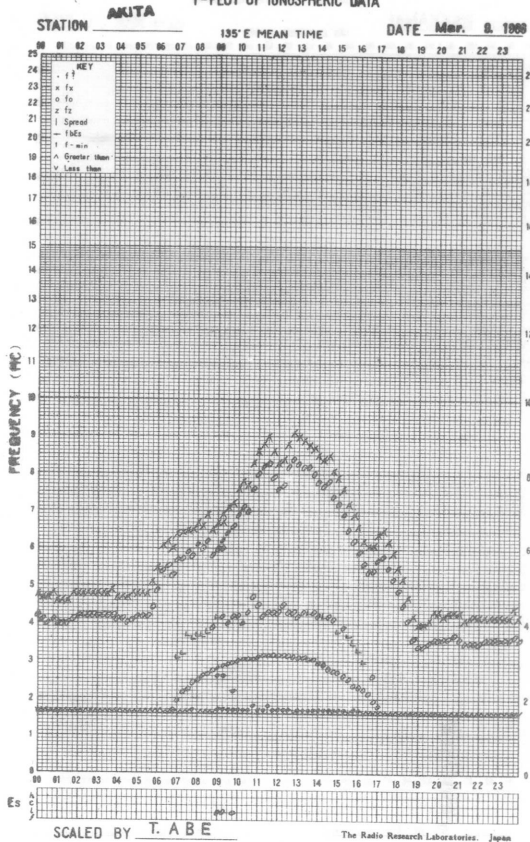
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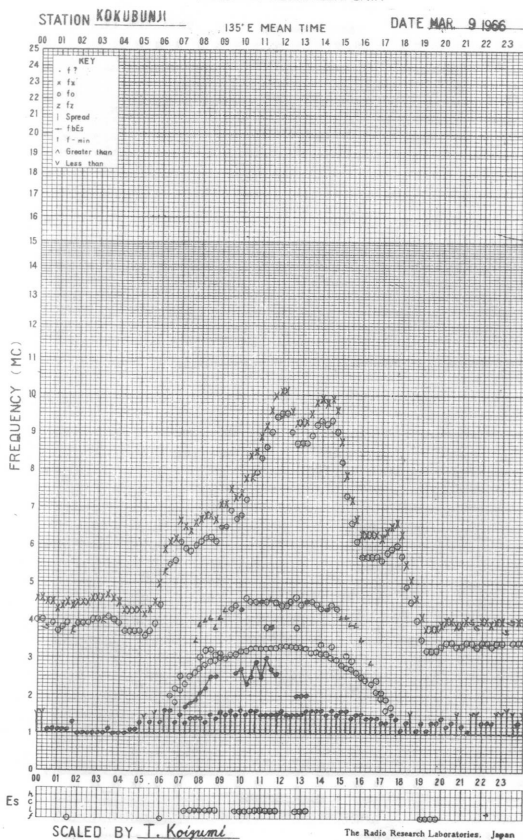
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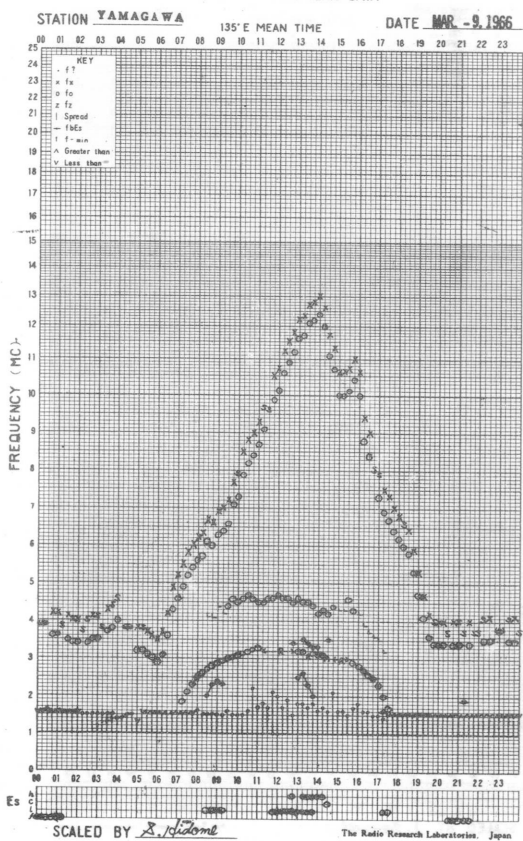
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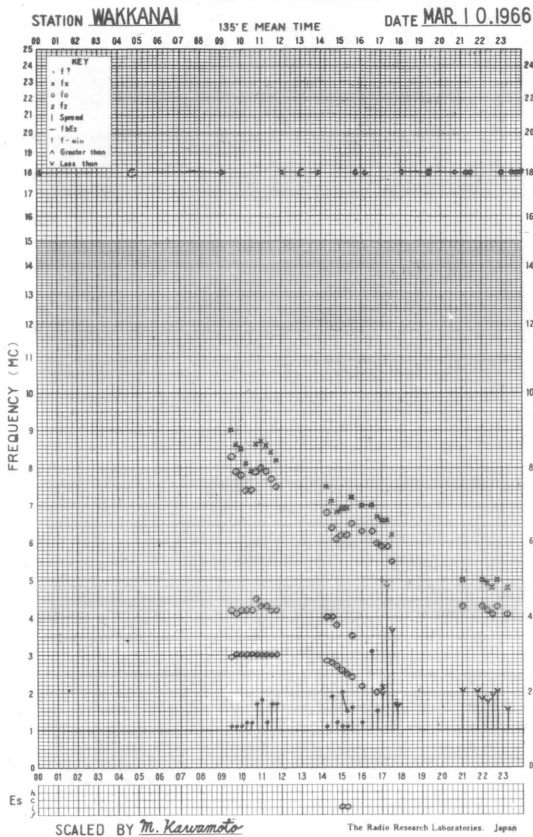
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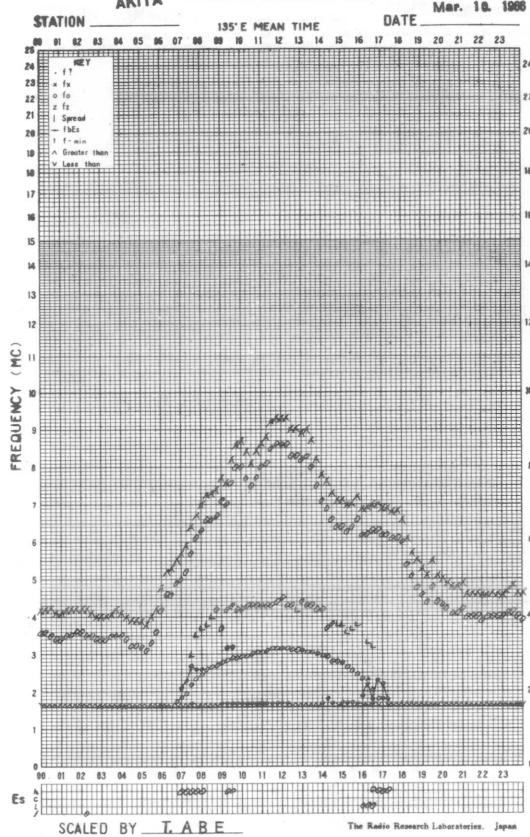
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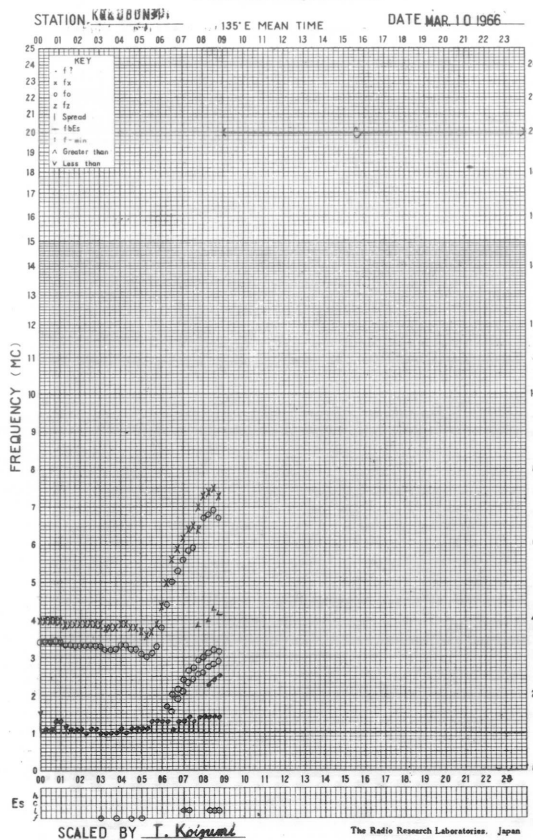
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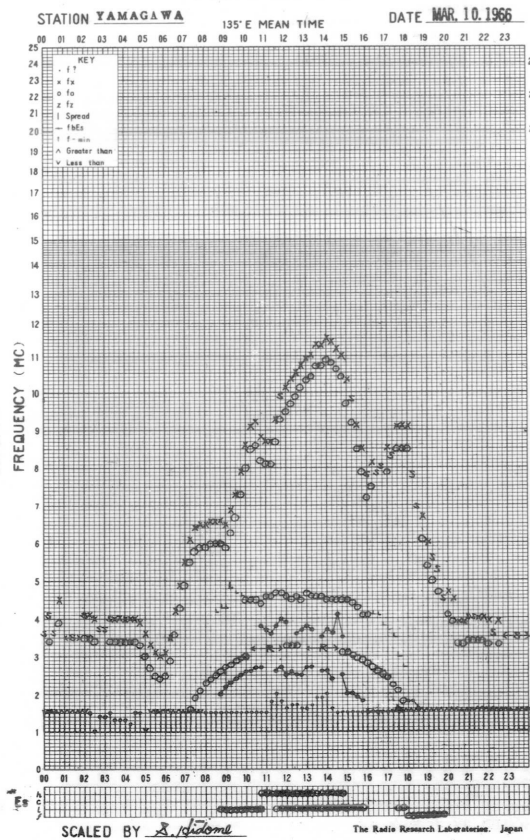
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f-PLOT OF IONOSPHERIC DATA

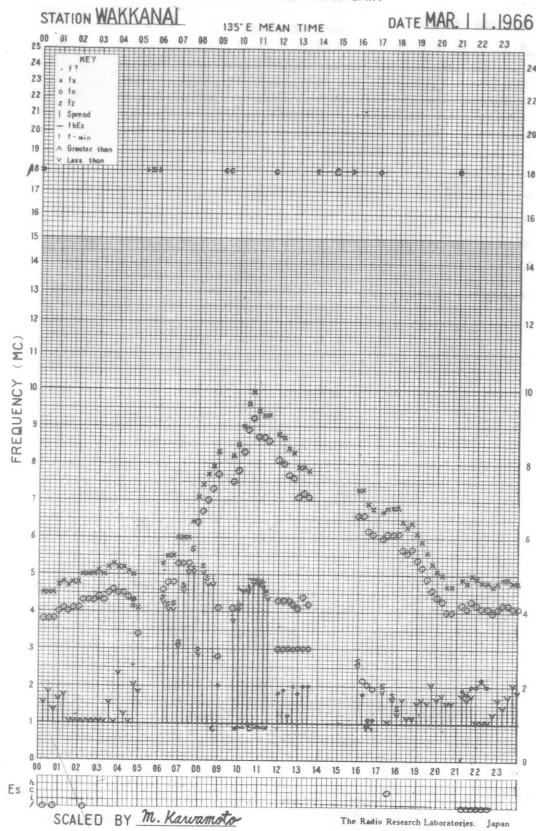


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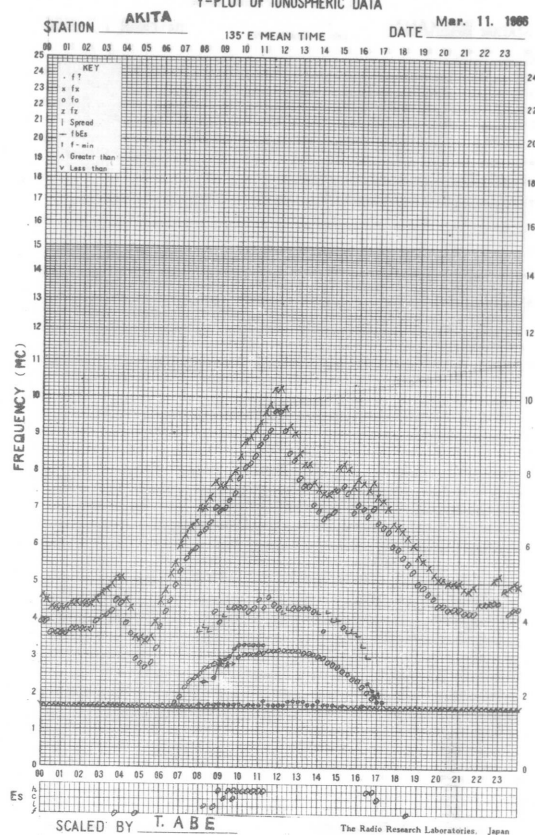




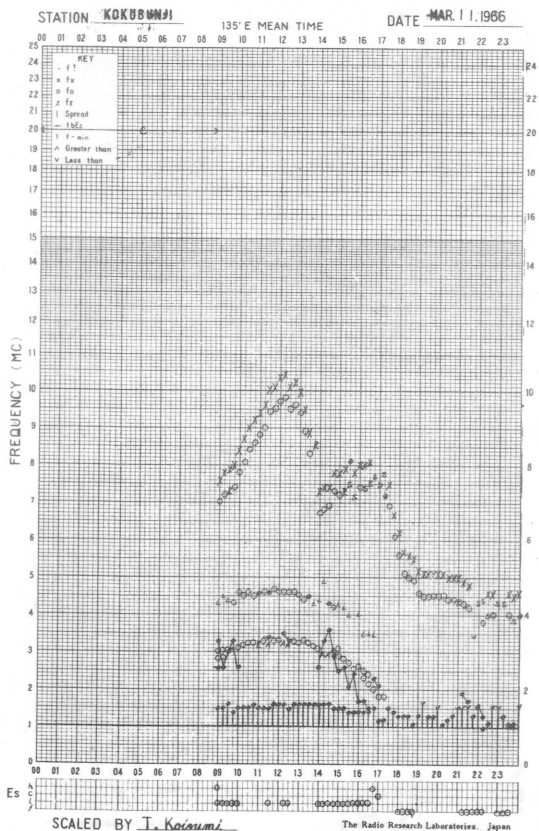
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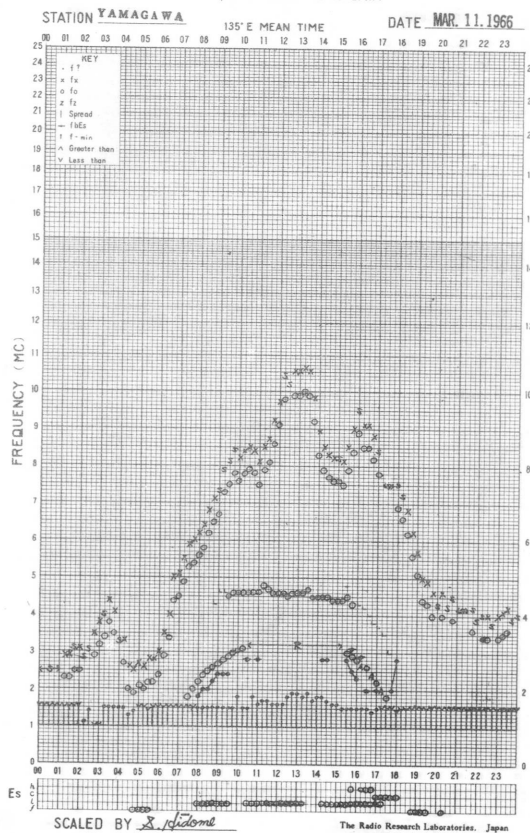
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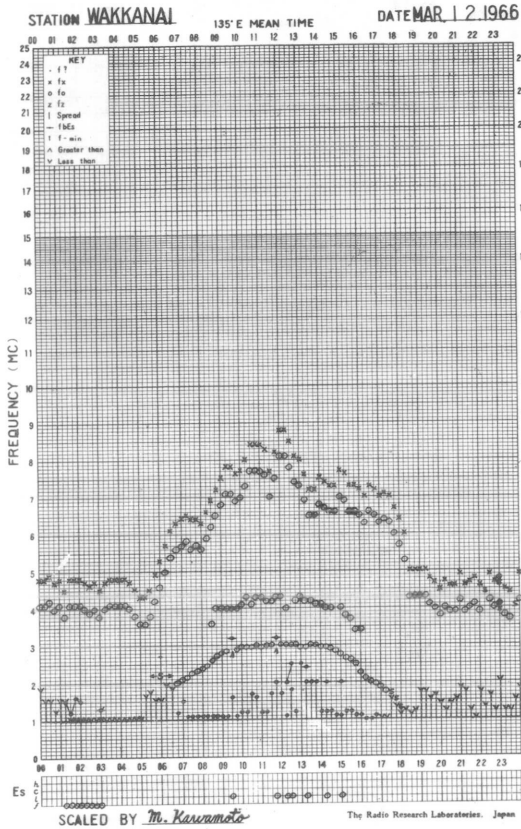
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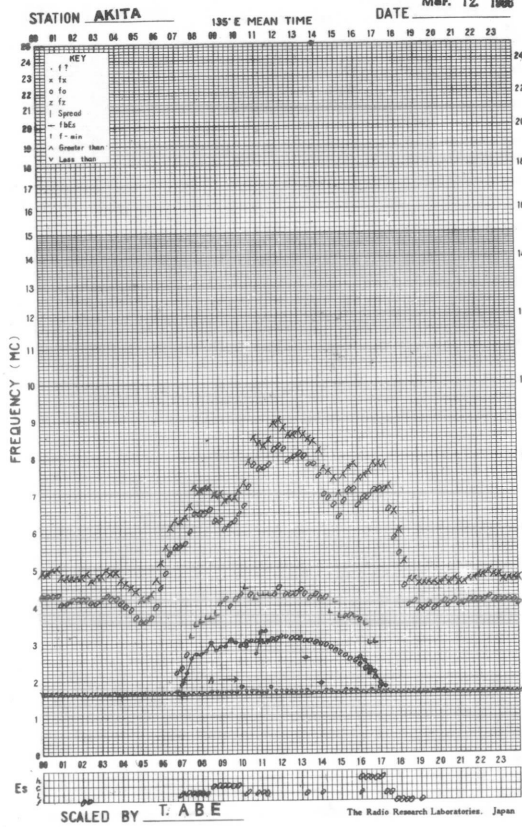
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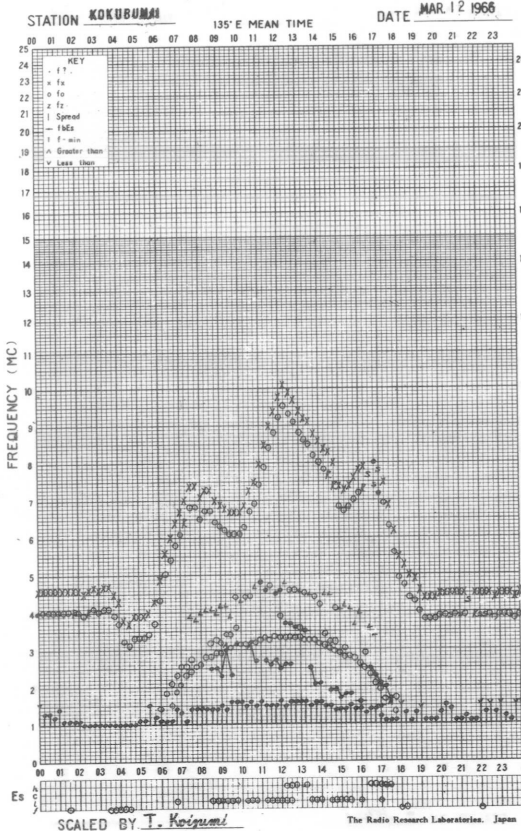
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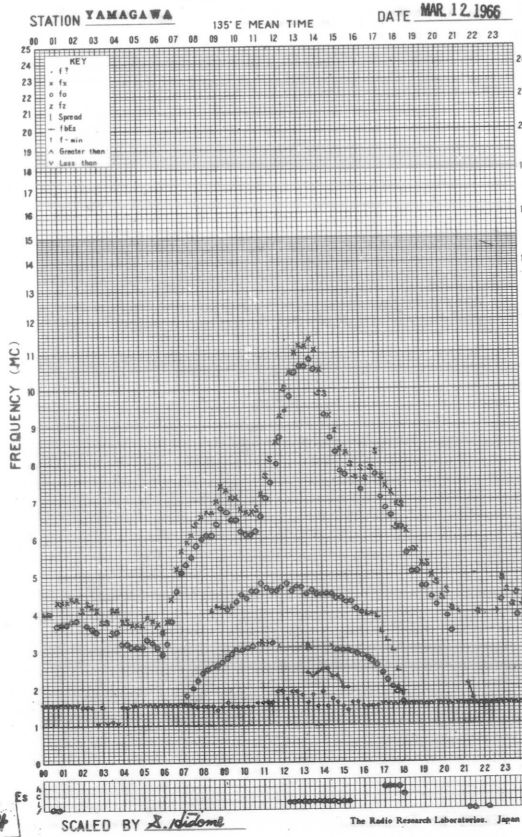
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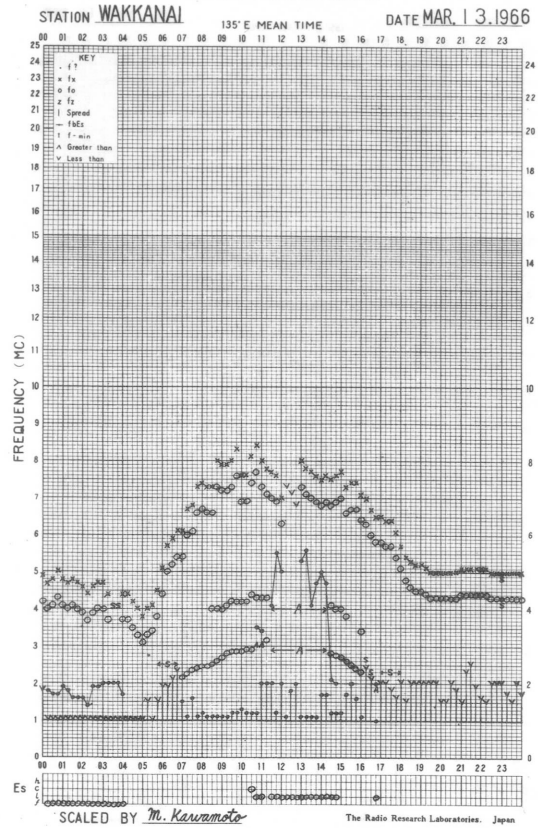
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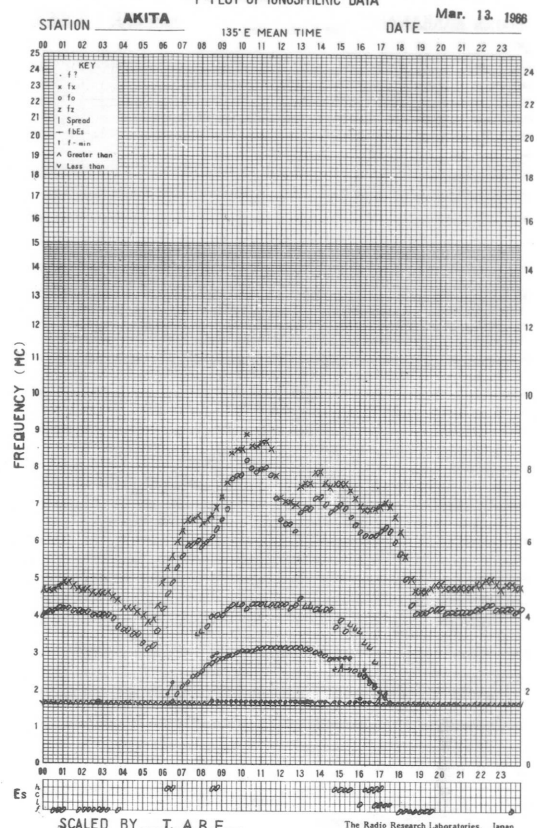
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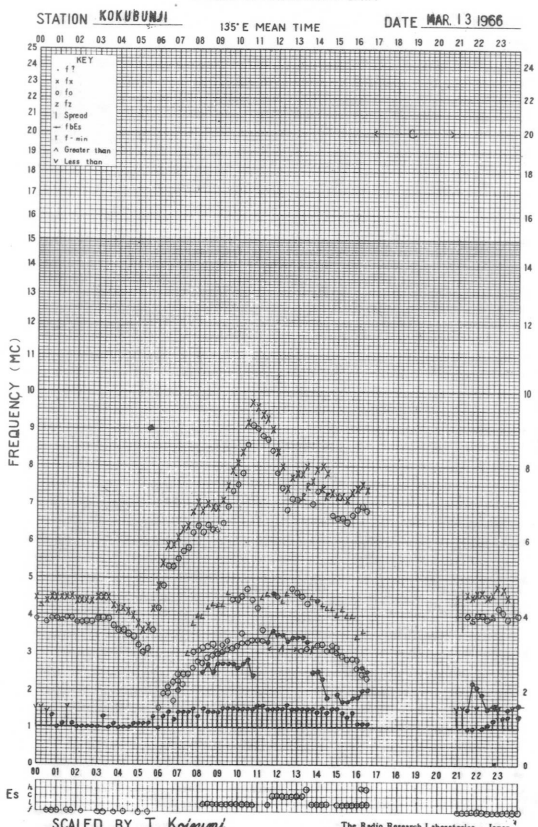
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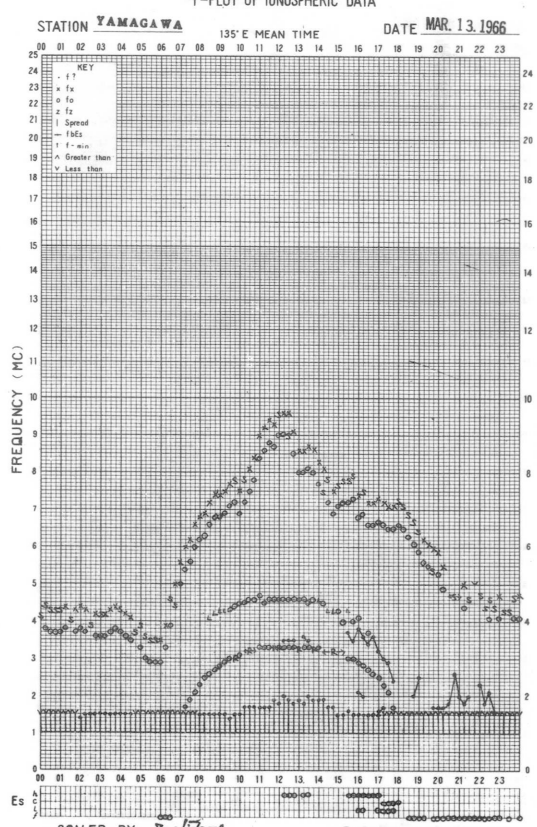
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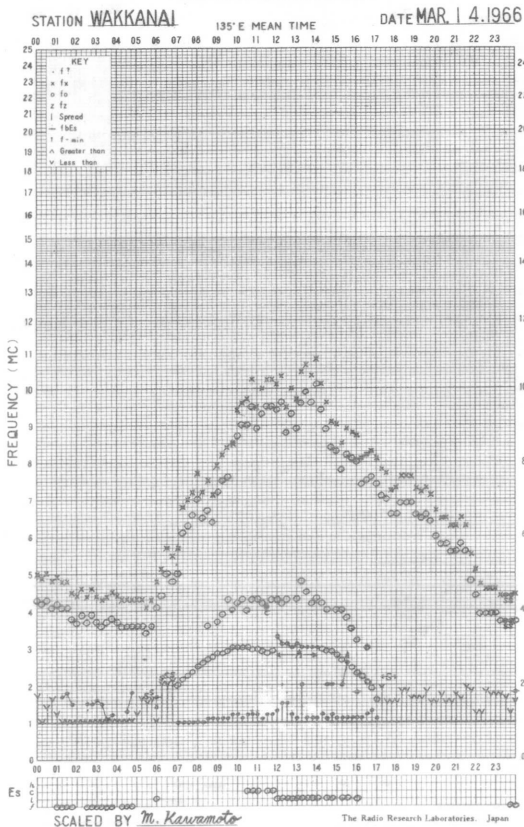
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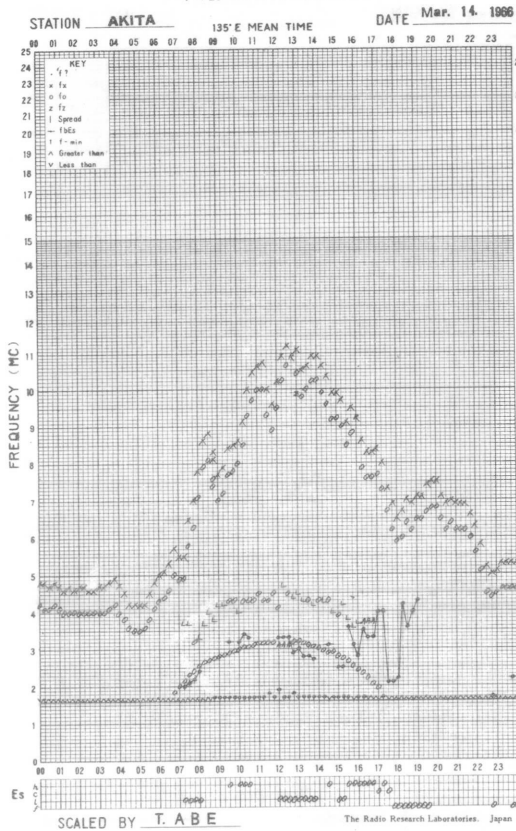
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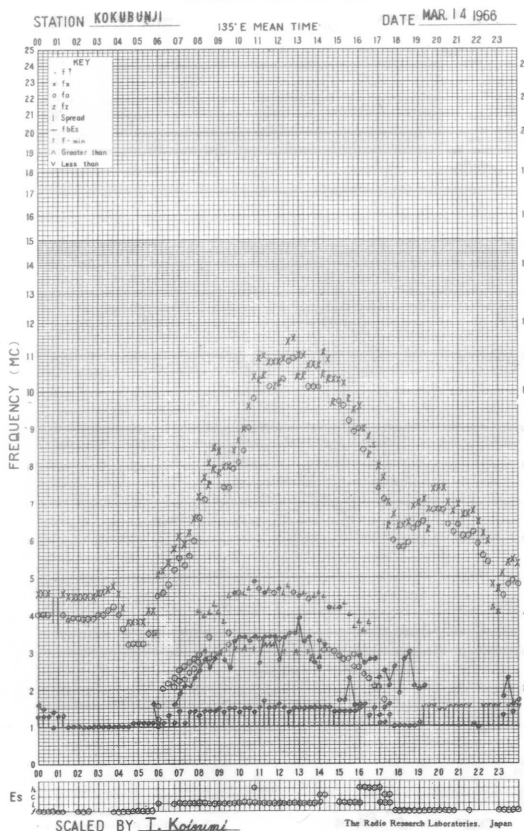
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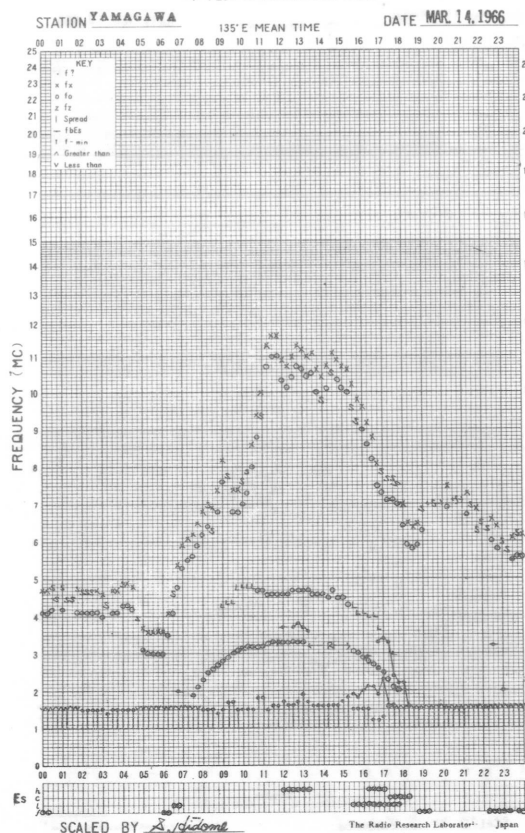
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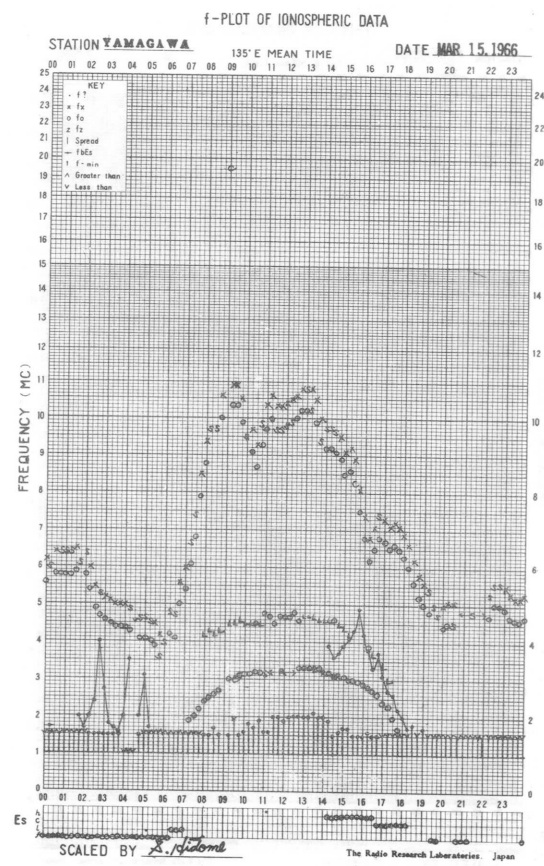
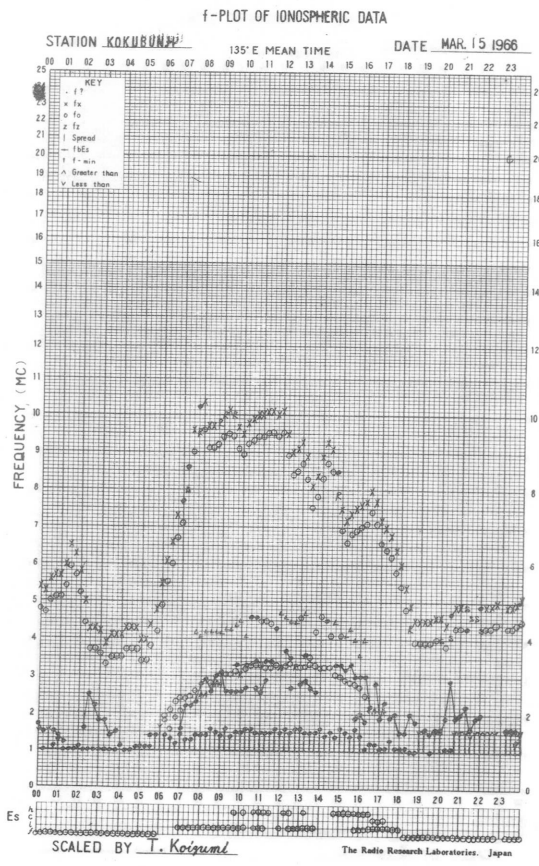
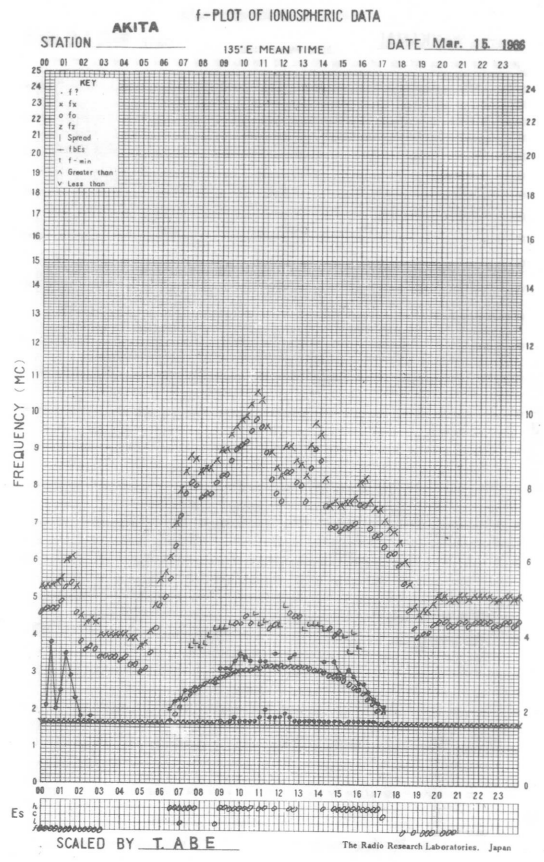
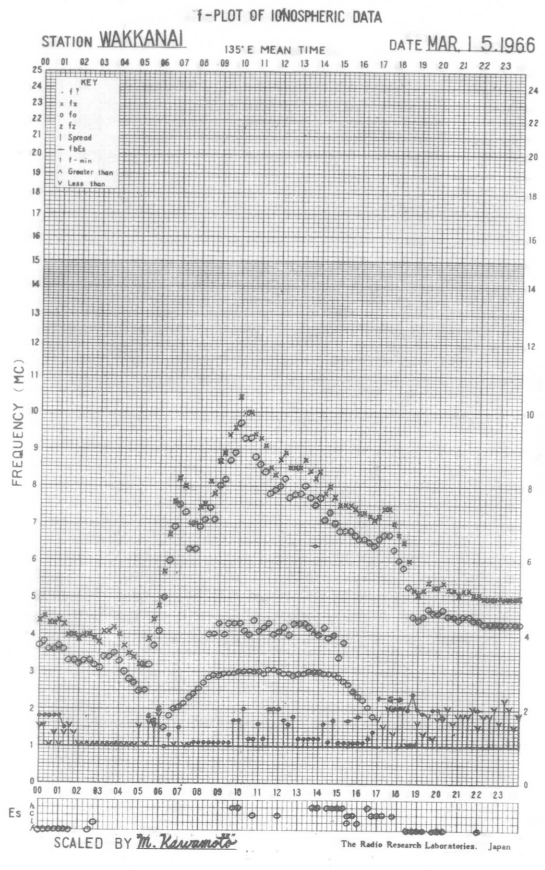


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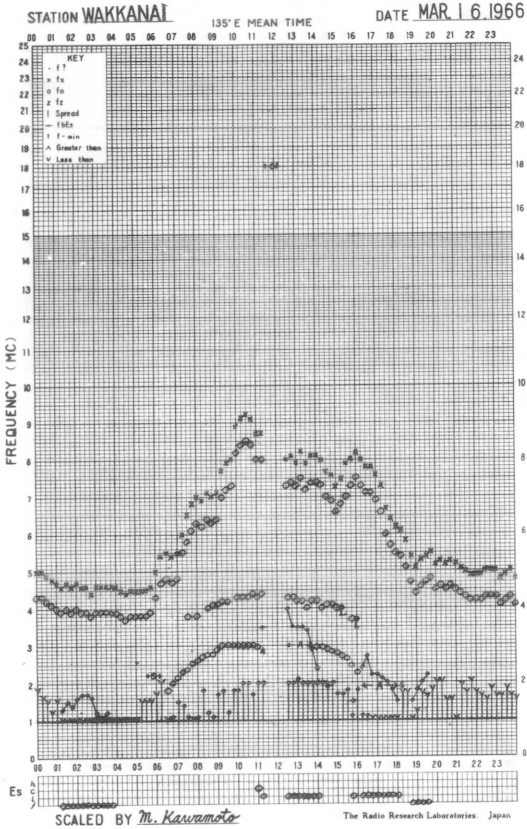


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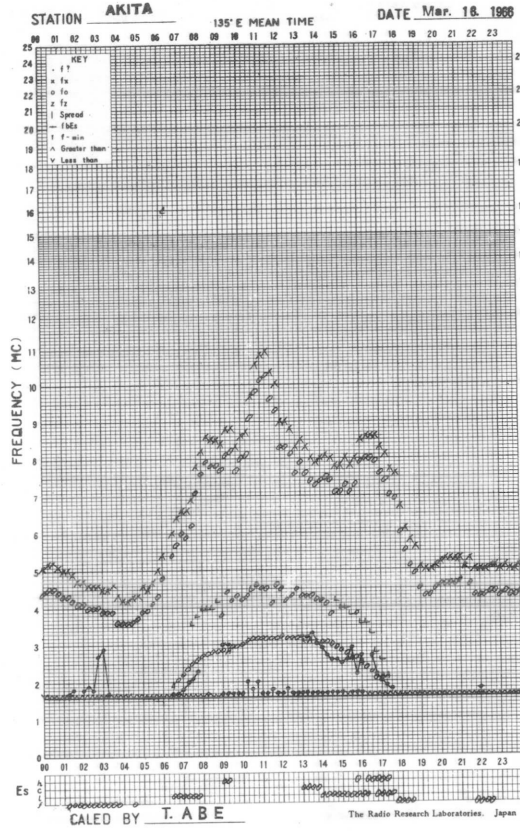




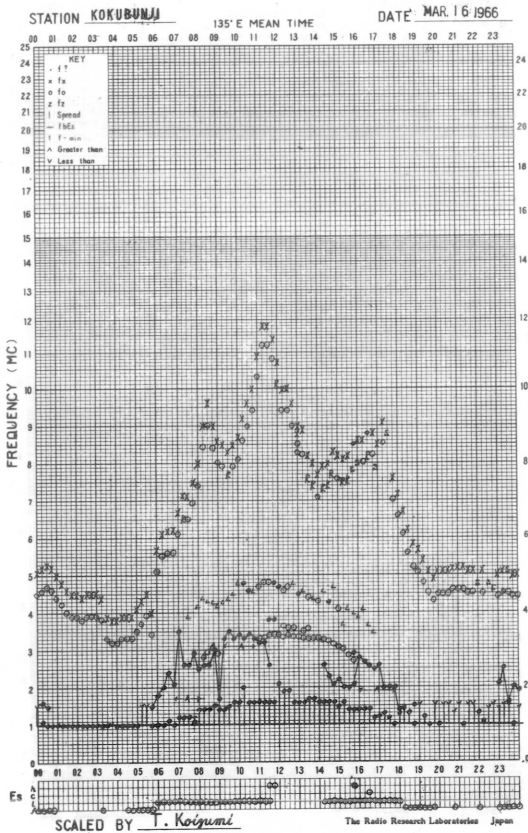
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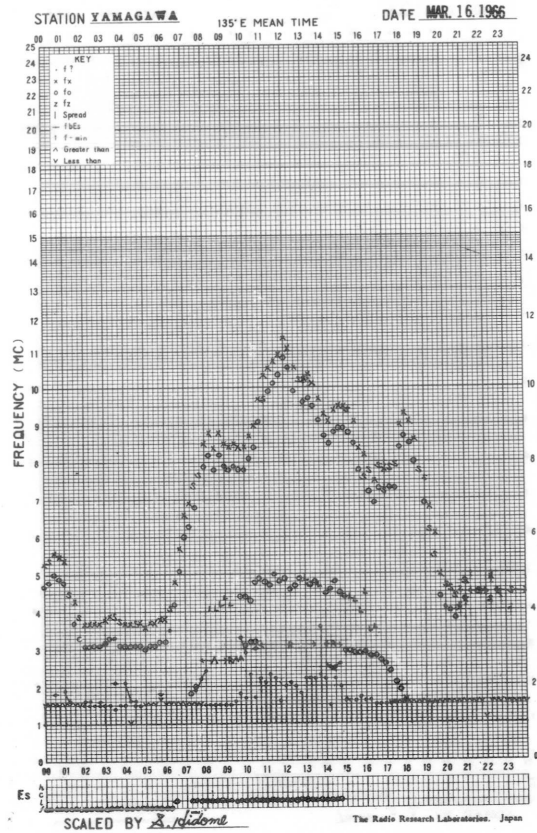
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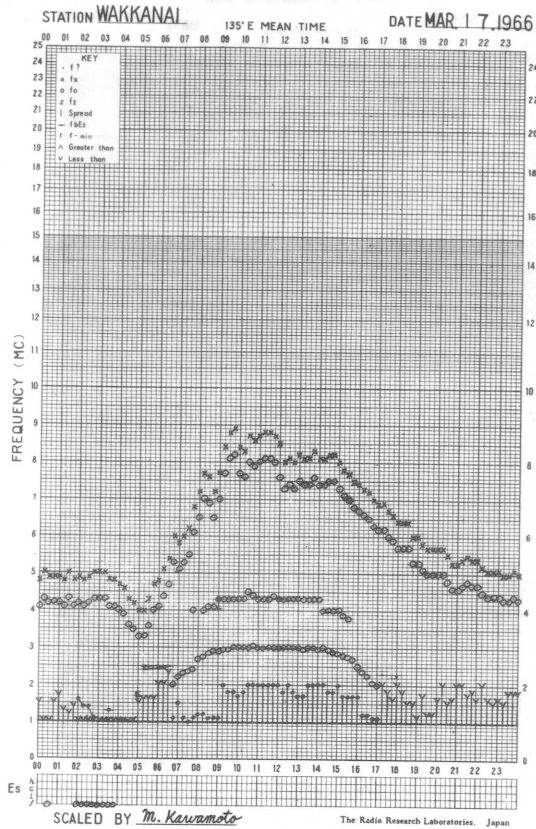
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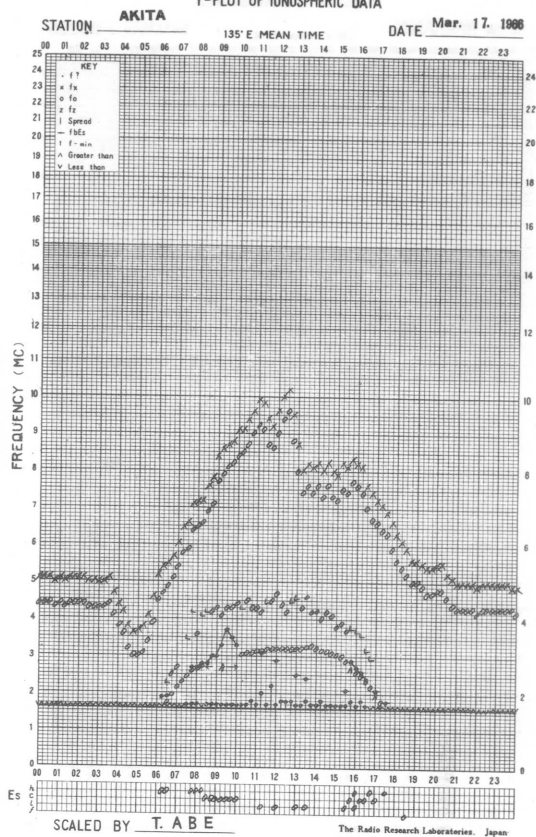
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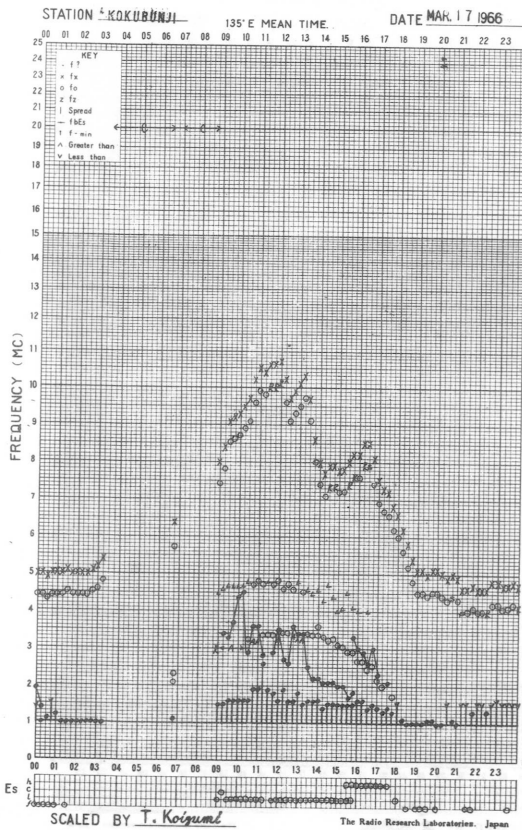
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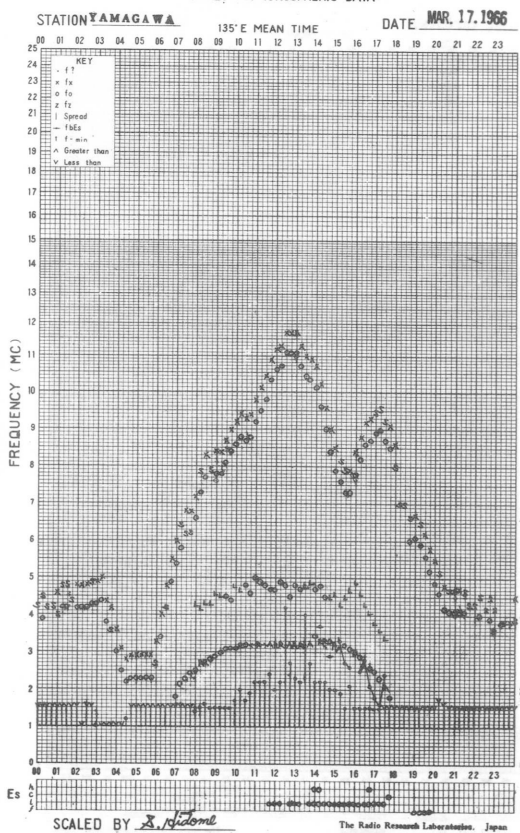
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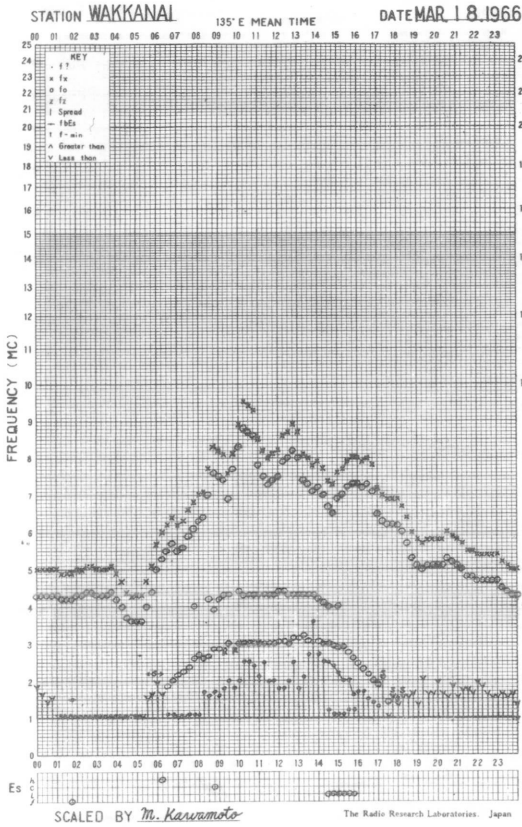
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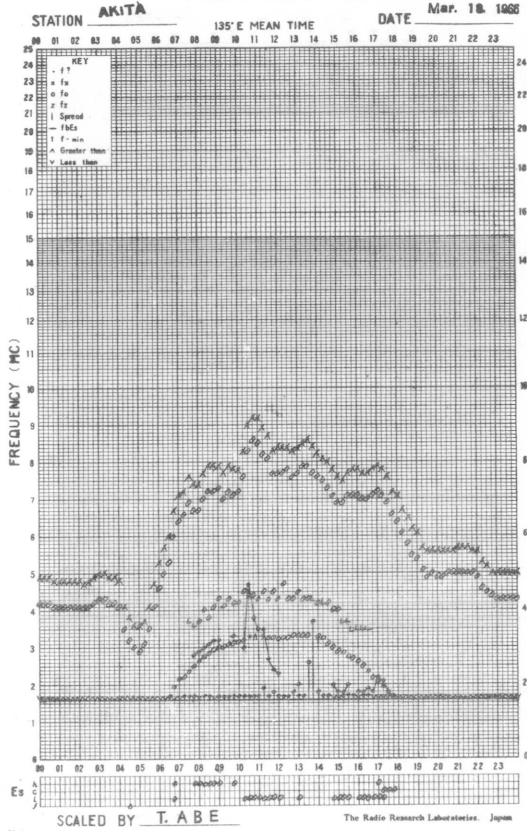
f-PLOT OF IONOSPHERIC DATA



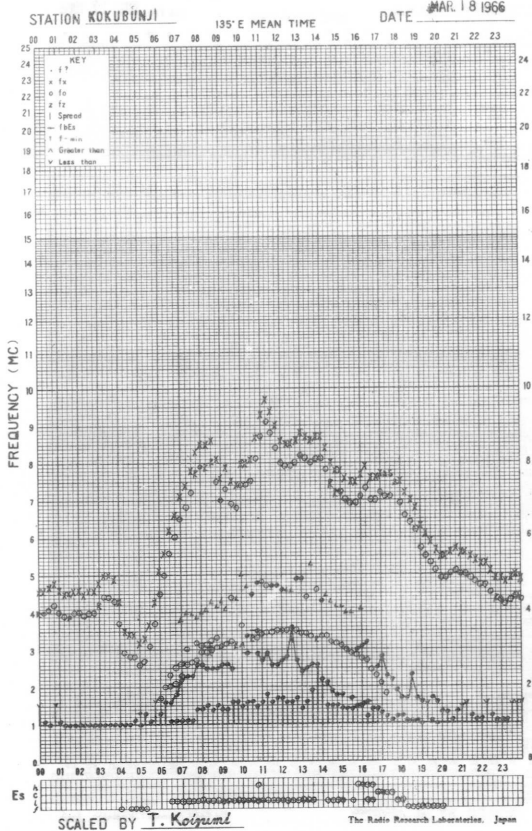
f-PLOT OF IONOSPHERIC DATA



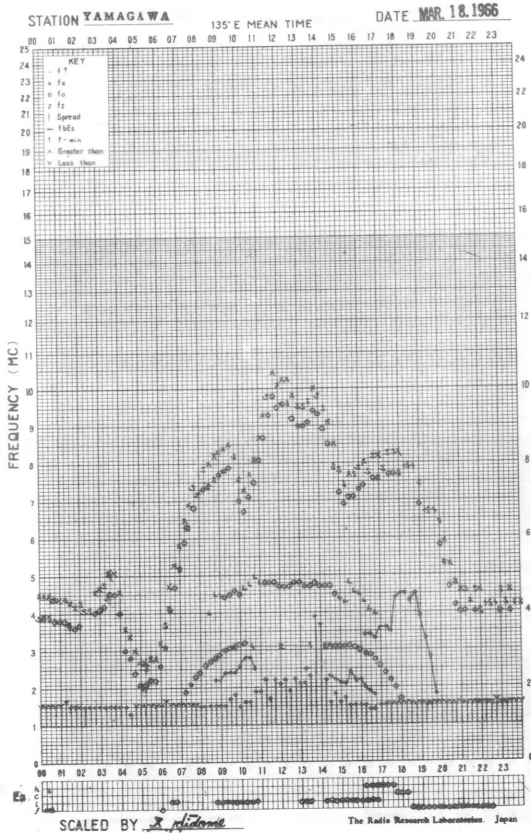
f-PLOT OF IONOSPHERIC DATA



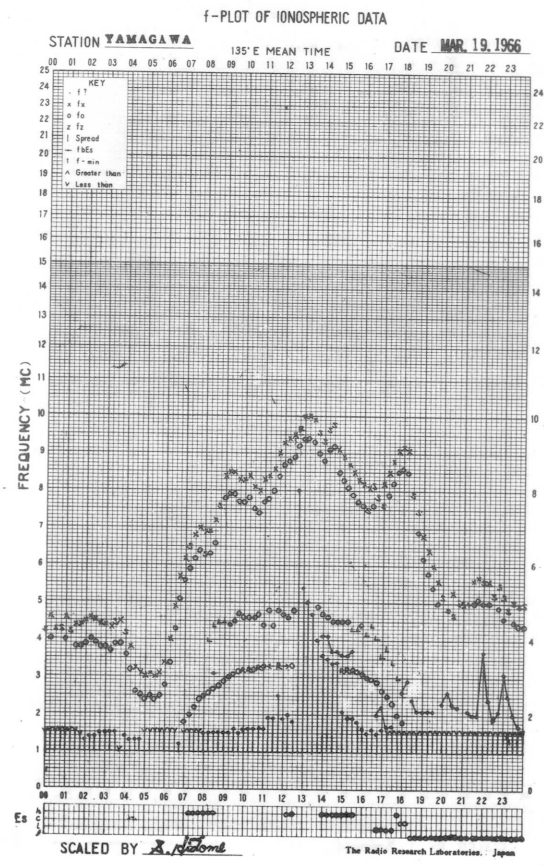
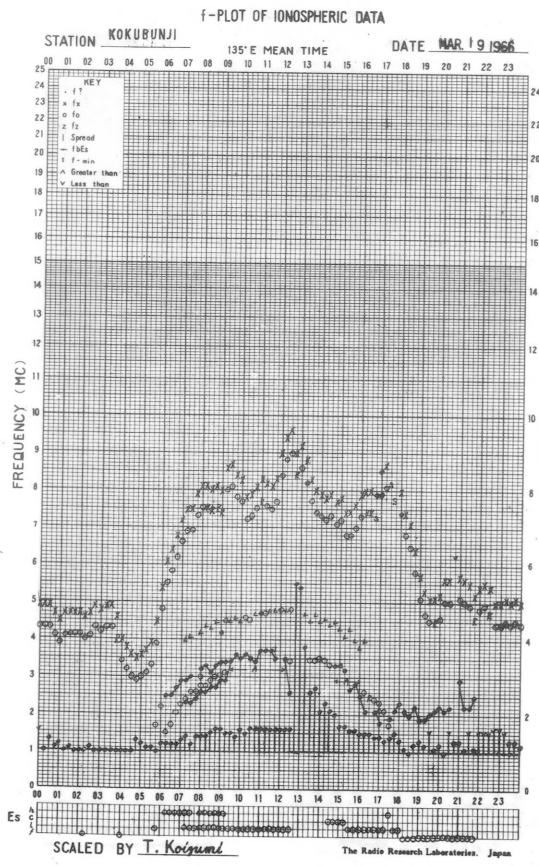
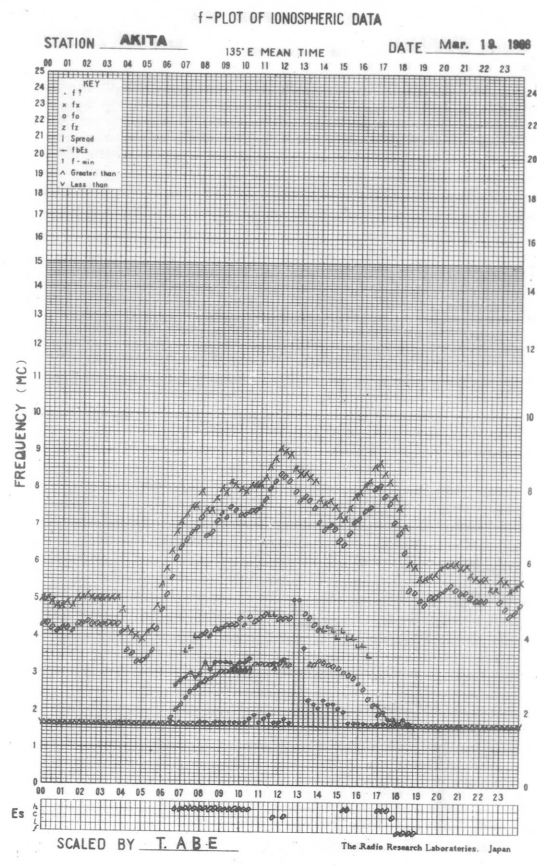
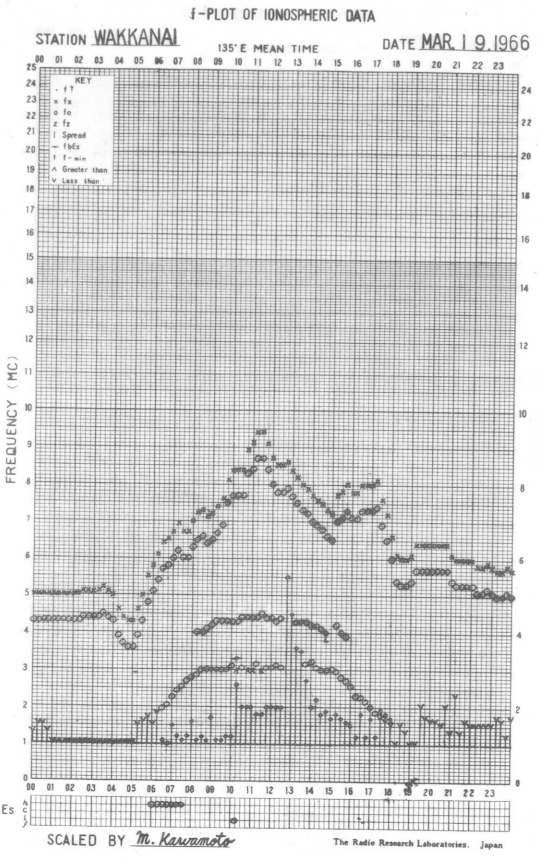
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f-PLOT OF IONOSPHERIC DATA

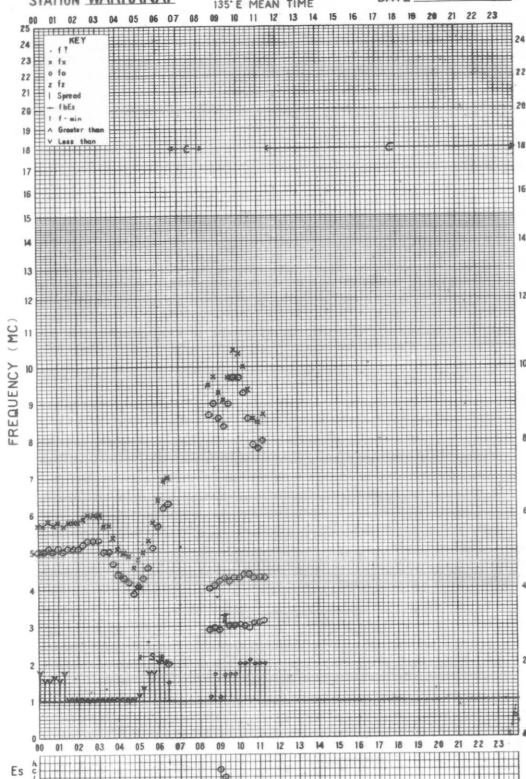






f-PLOT OF IONOSPHERIC DATA

STATION **WAKKANAI** 135°E MEAN TIME DATE **MAR 20 1966**

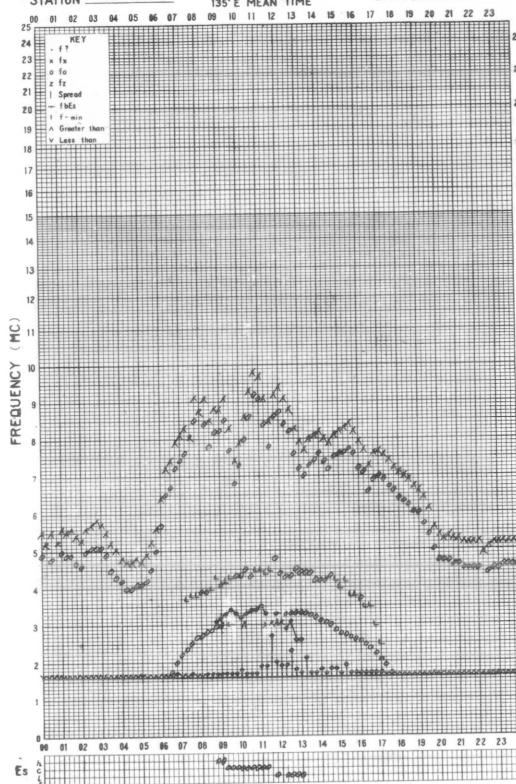


SCALED BY M. Kawamoto

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION **AKITA** 135°E MEAN TIME DATE **Mar. 20 1966**

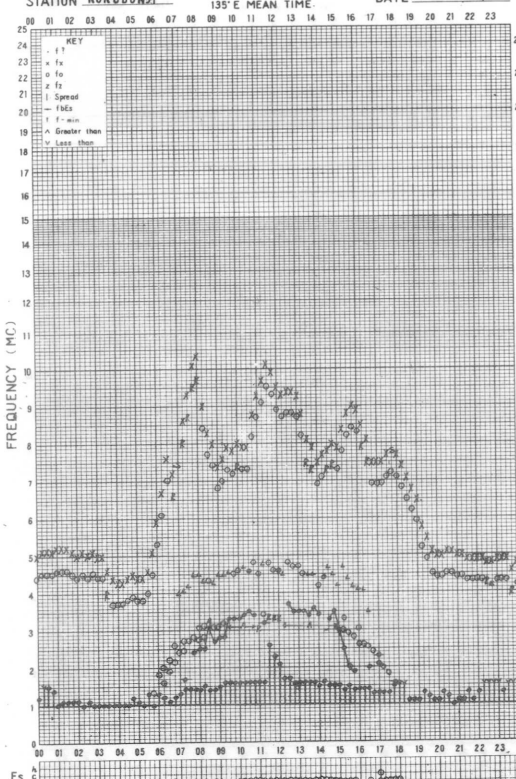


SCALED BY T. ABE

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION **KOKUBUNJI** 135°E MEAN TIME DATE **MAR 20 1966**

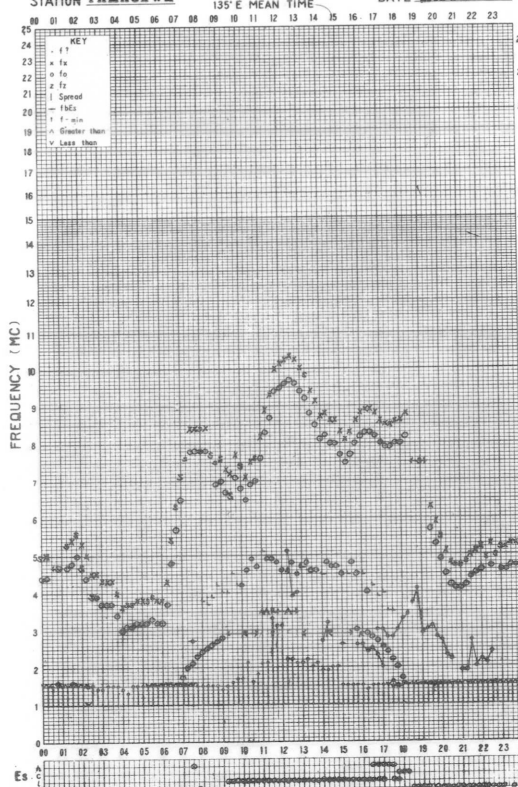


SCALED BY T. Koizumi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

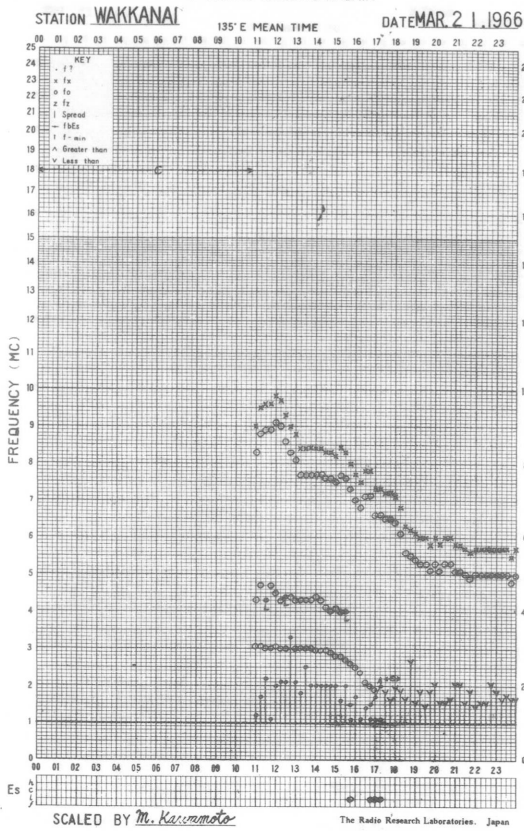
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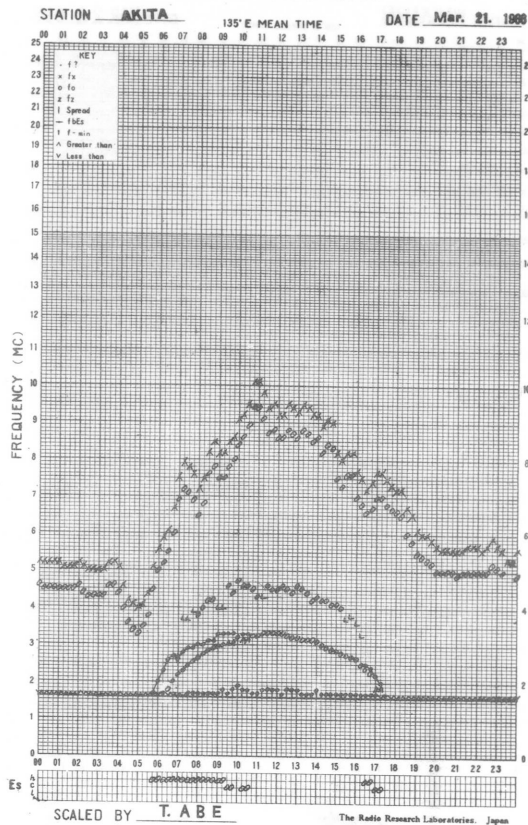
SCALED BY S. Nishimura

The Radio Research Laboratories, Japan

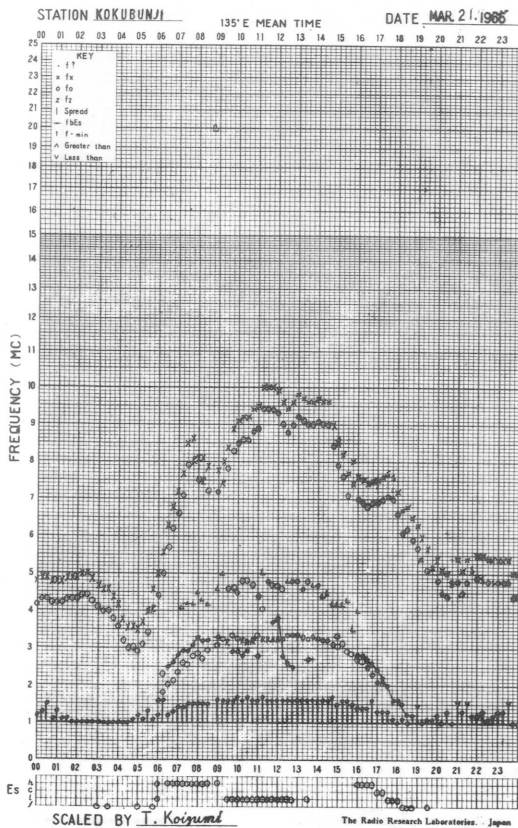
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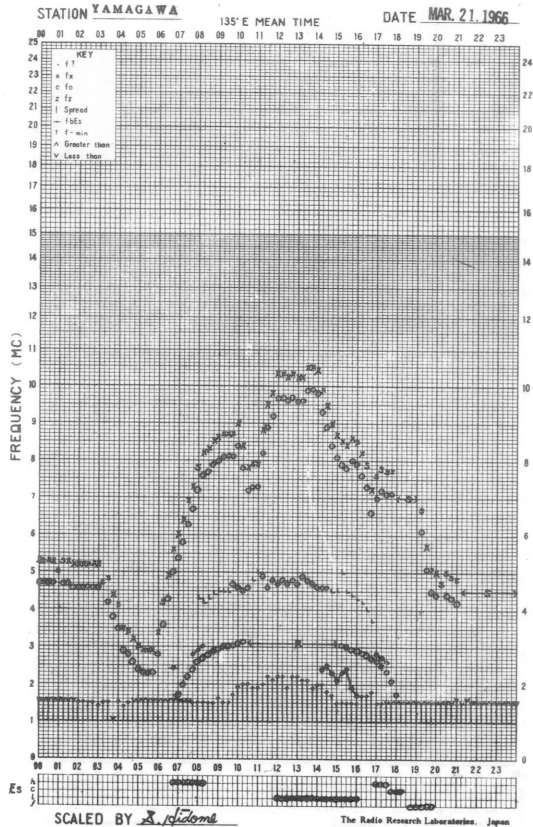
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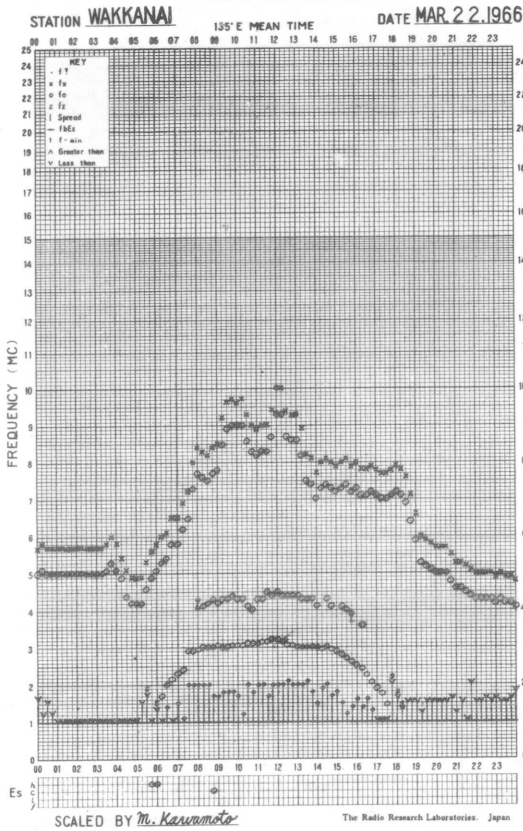
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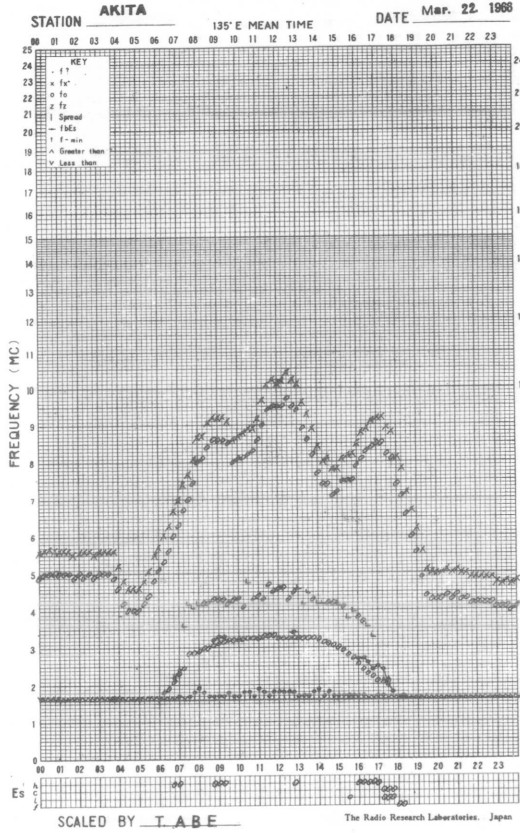
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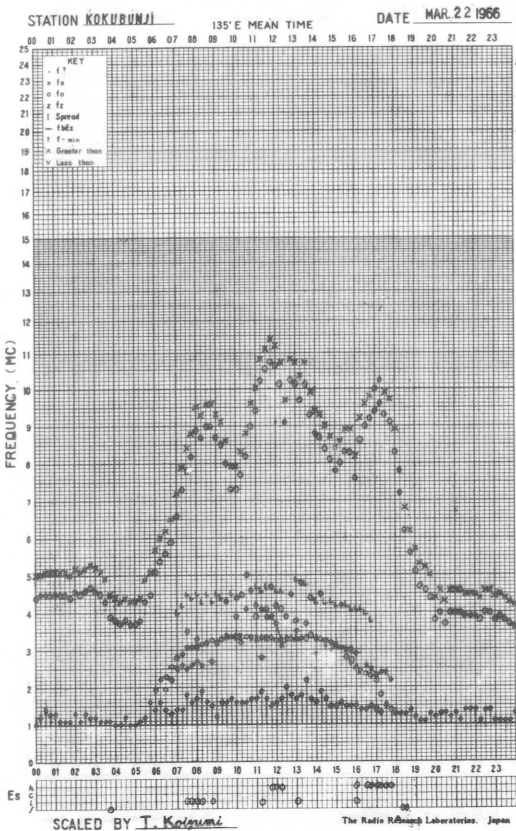
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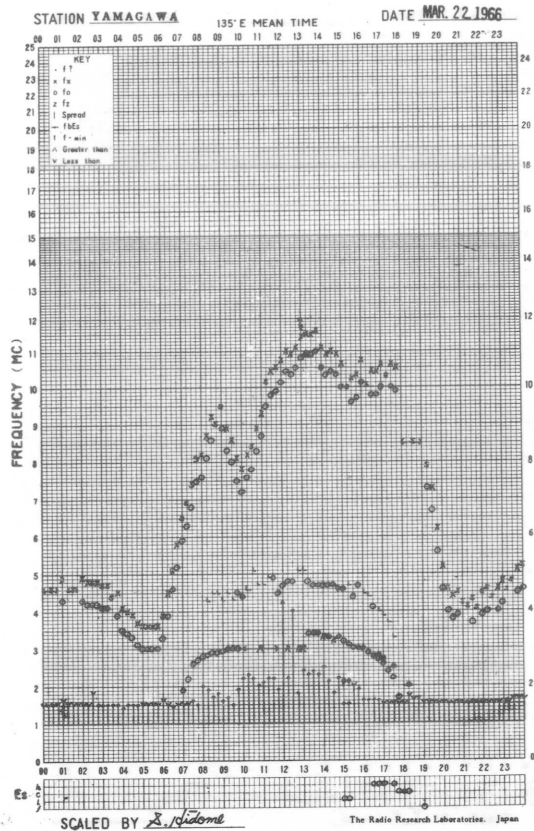
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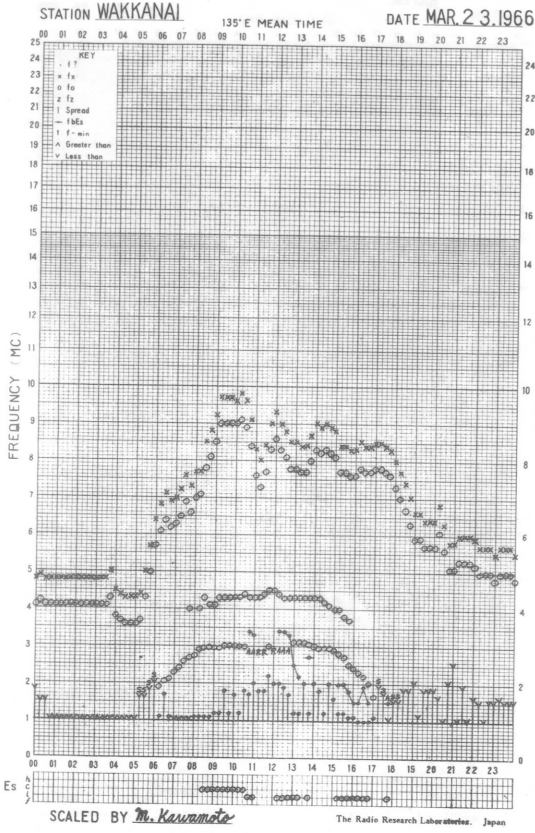
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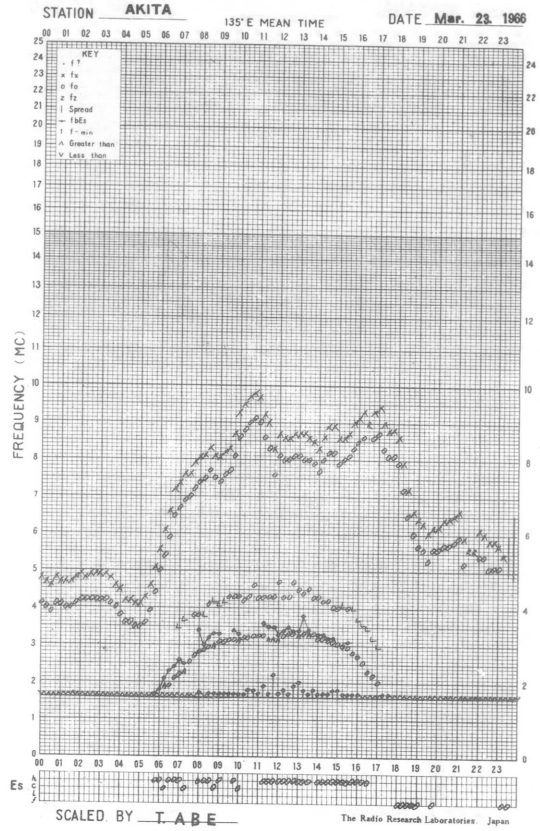
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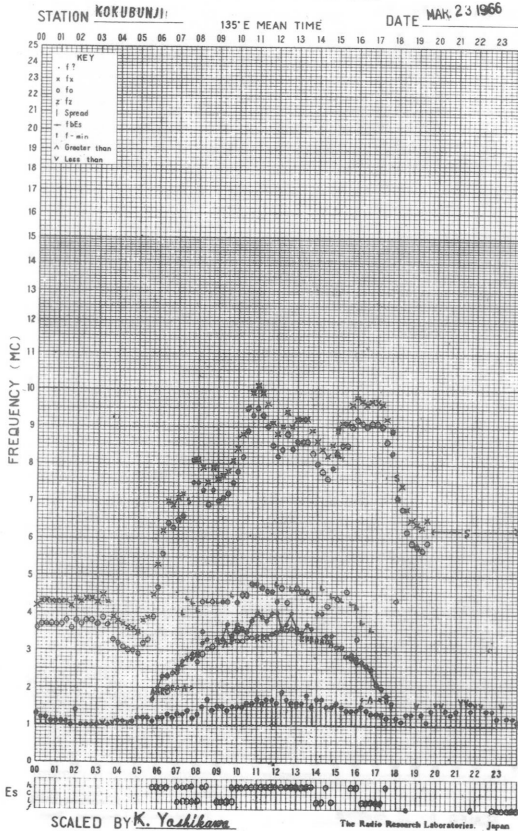
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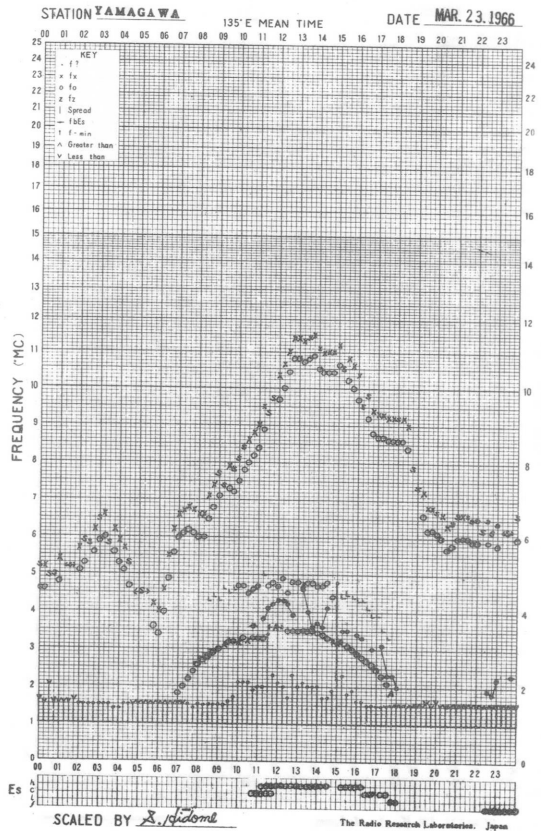
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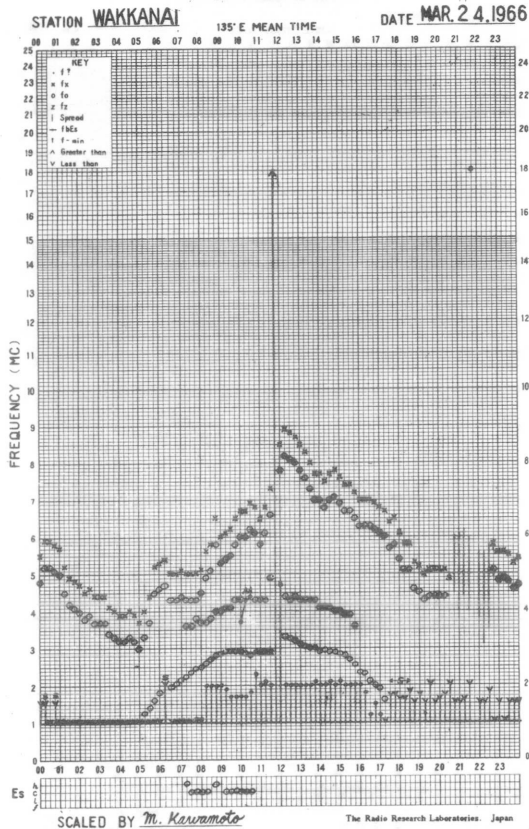
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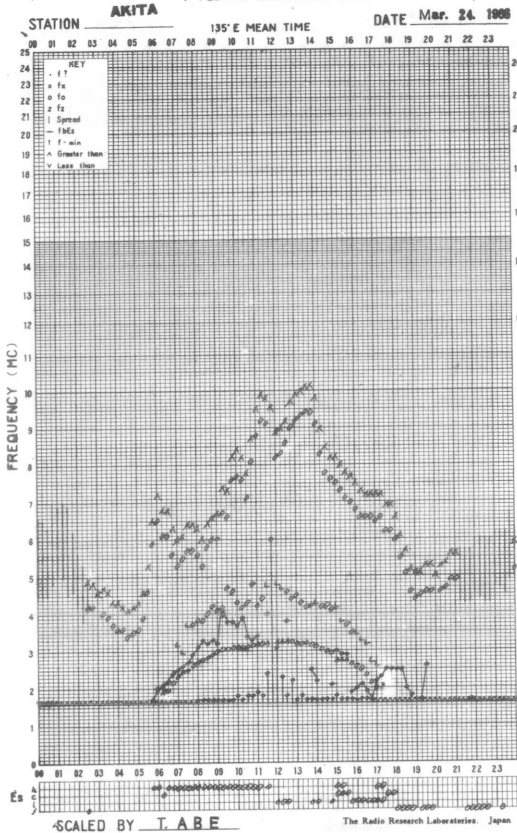
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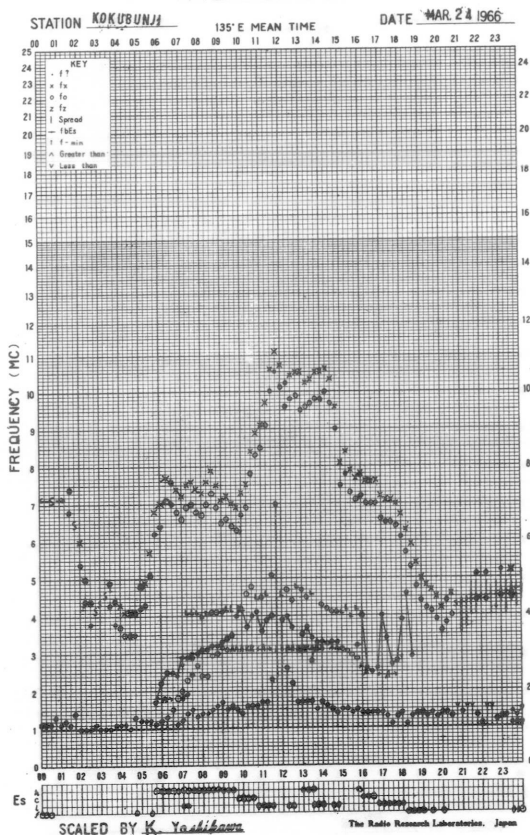
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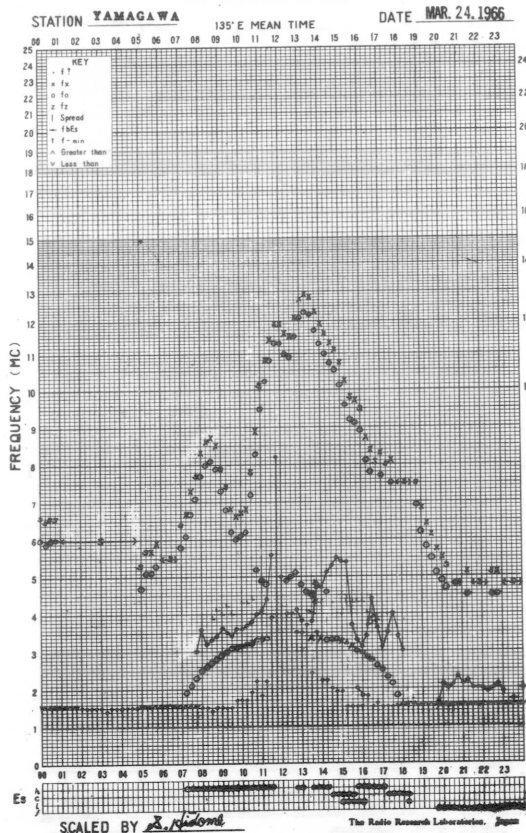
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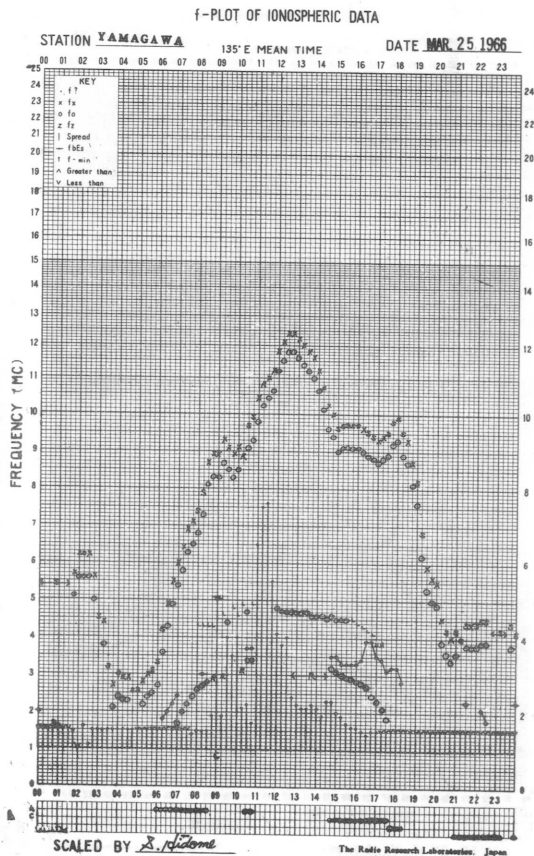
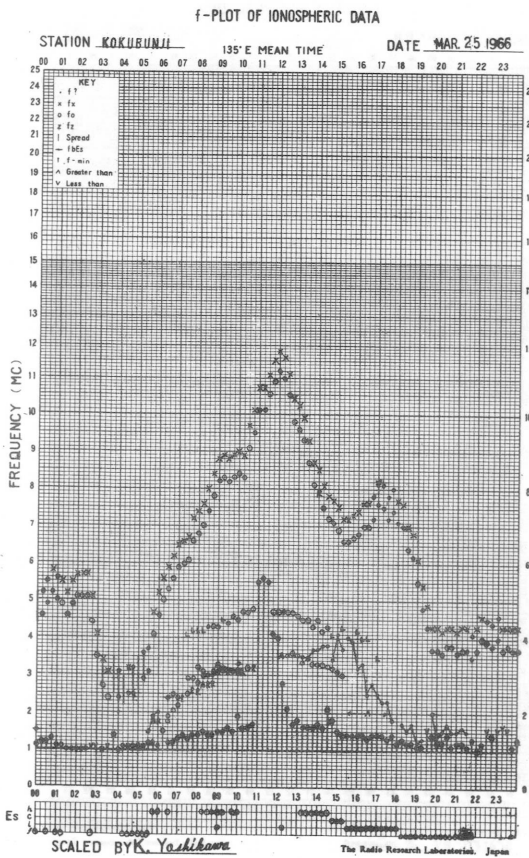
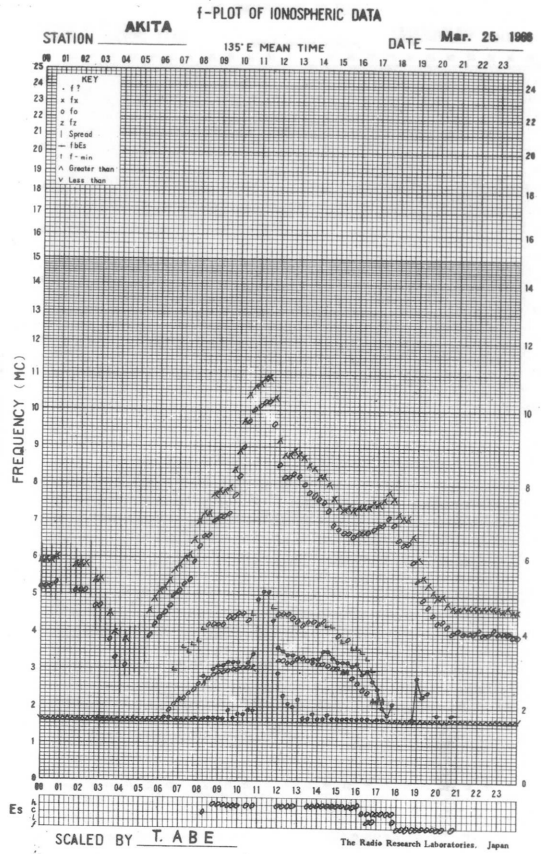
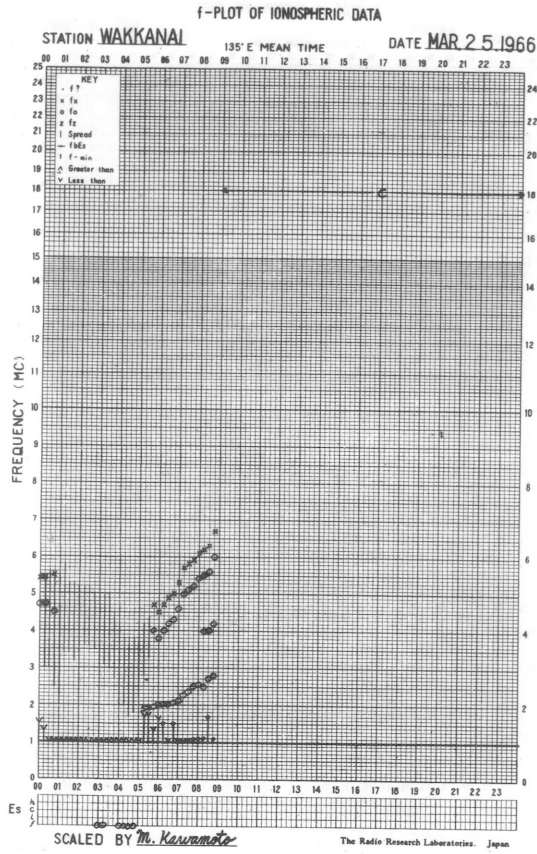


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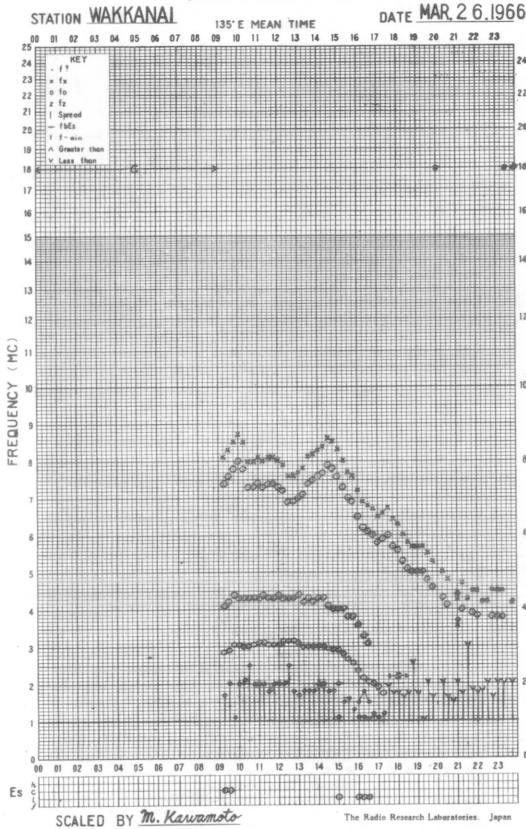


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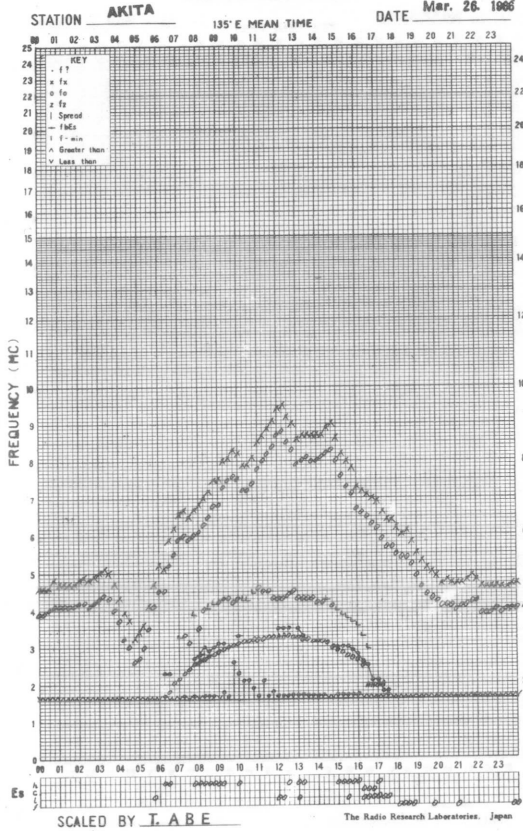




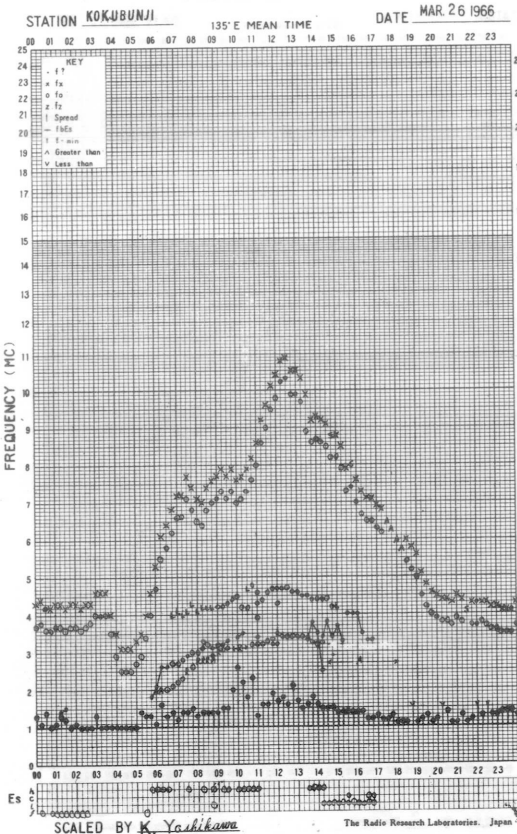
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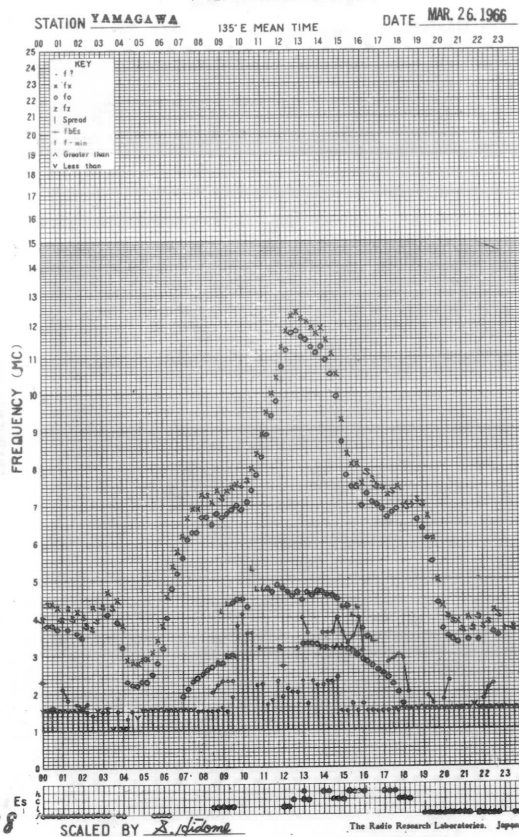
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f-PLOT OF IONOSPHERIC DATA

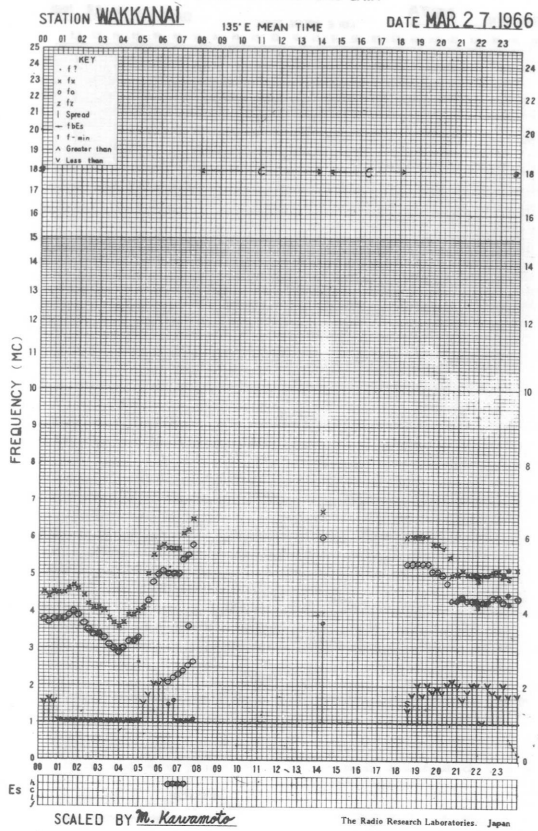


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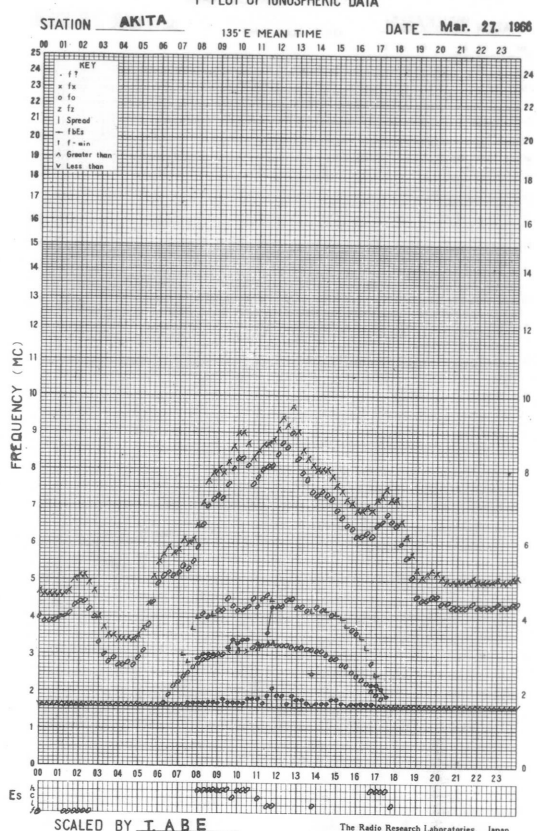




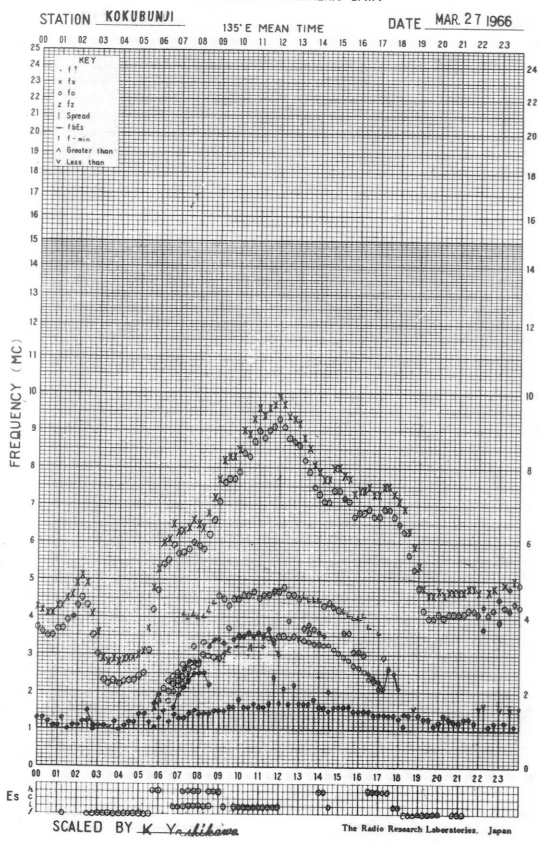
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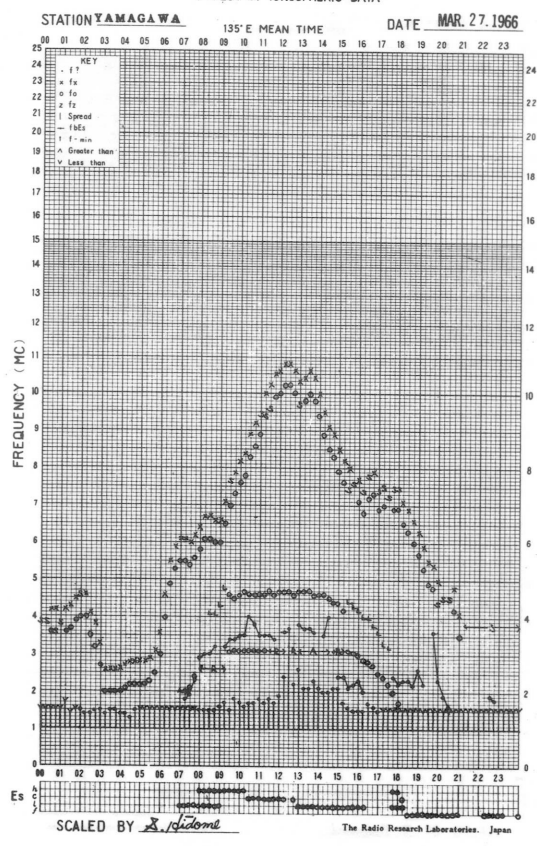
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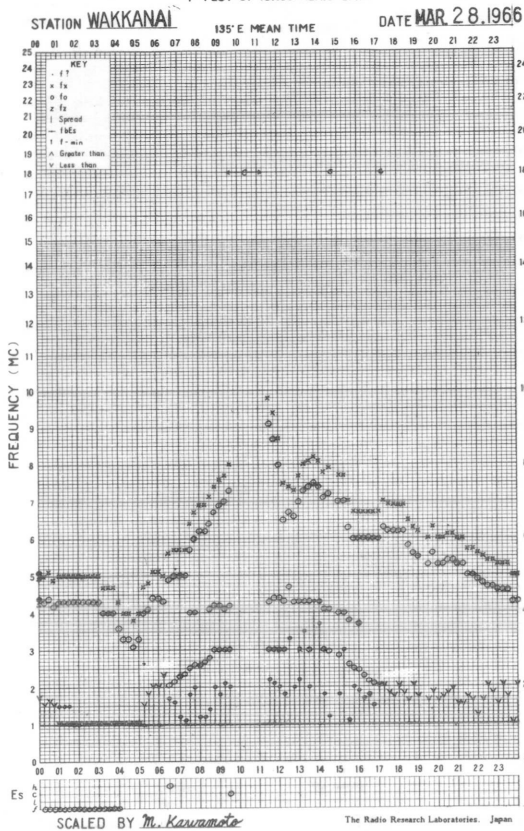
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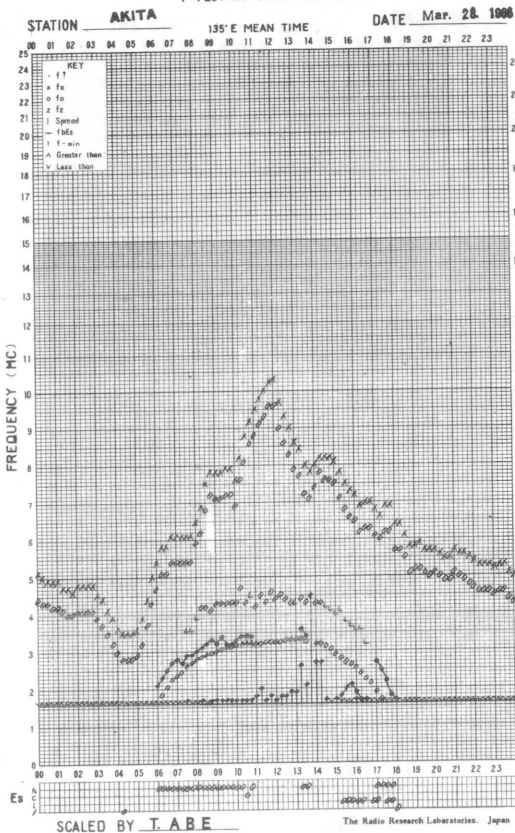
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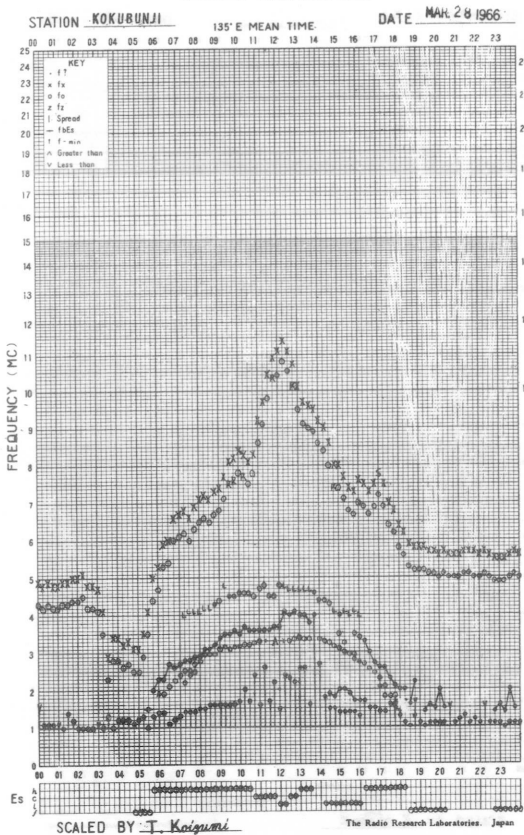
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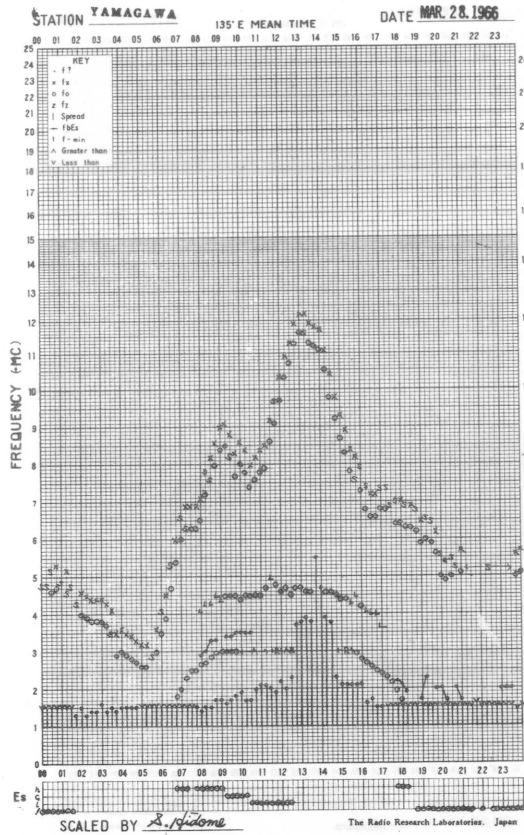
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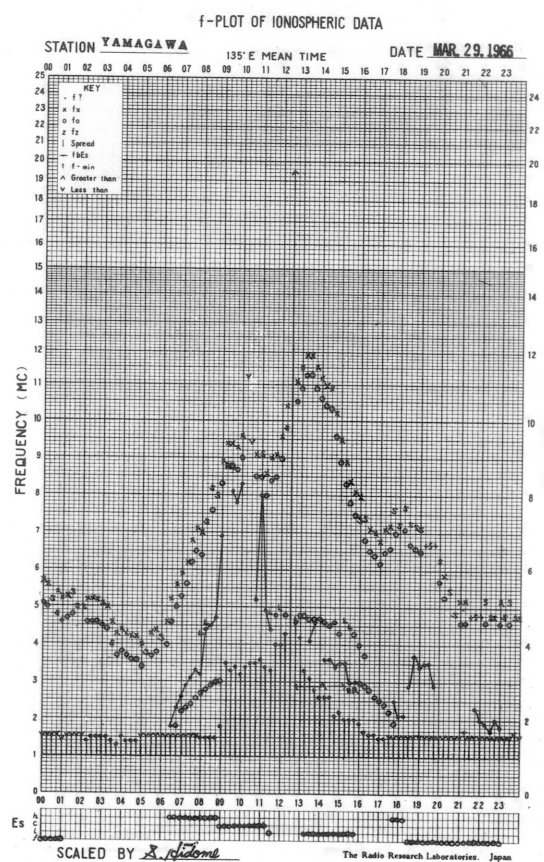
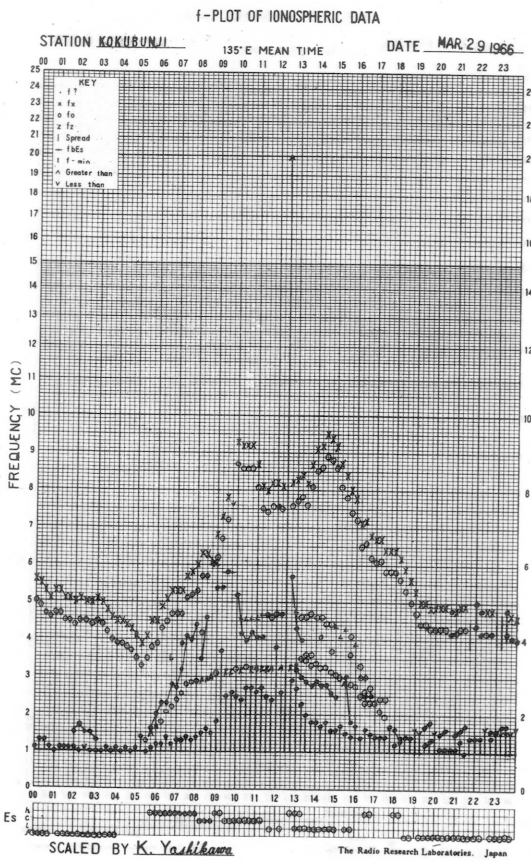
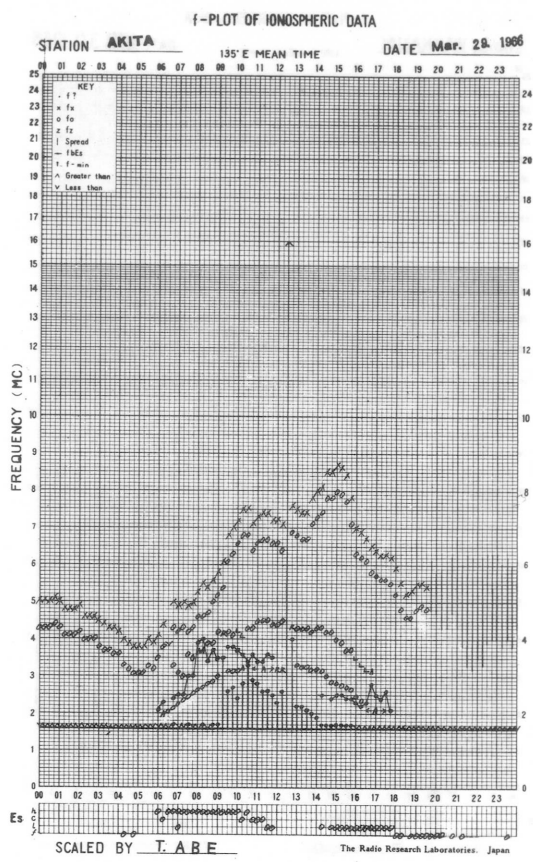
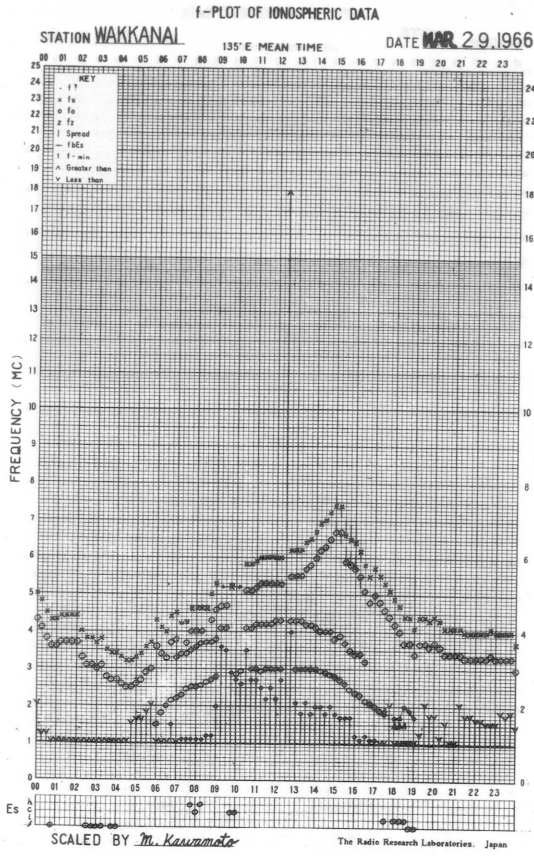


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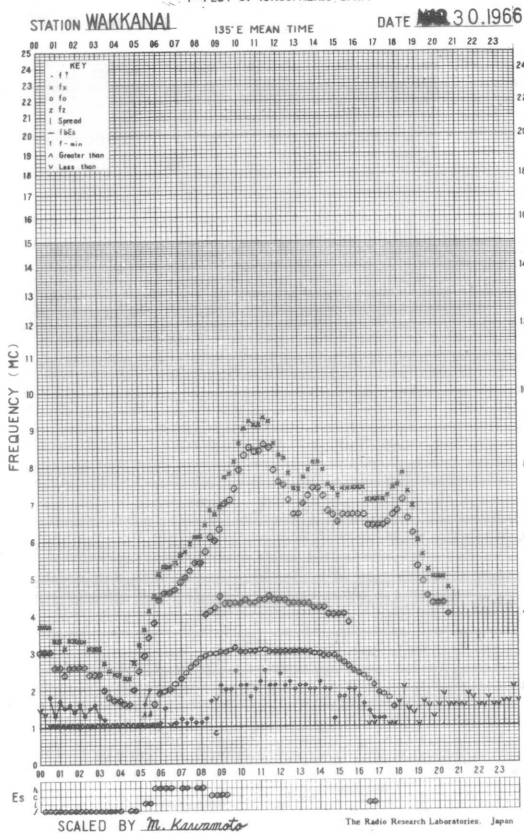


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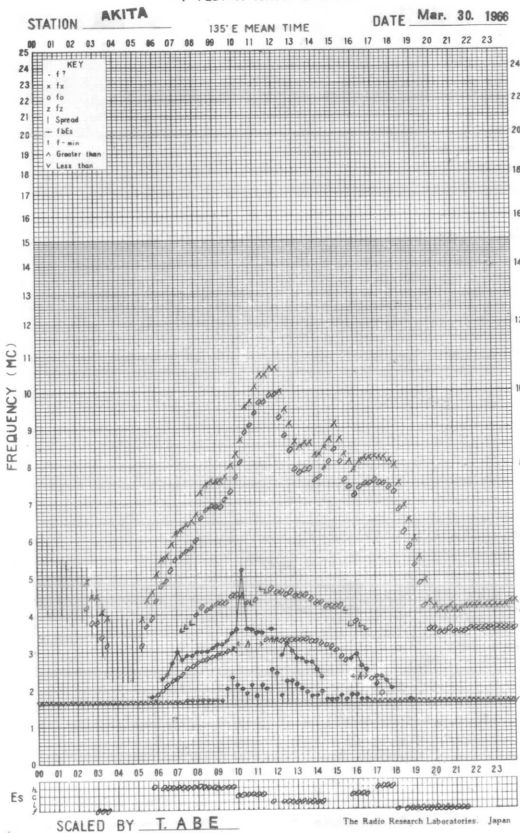




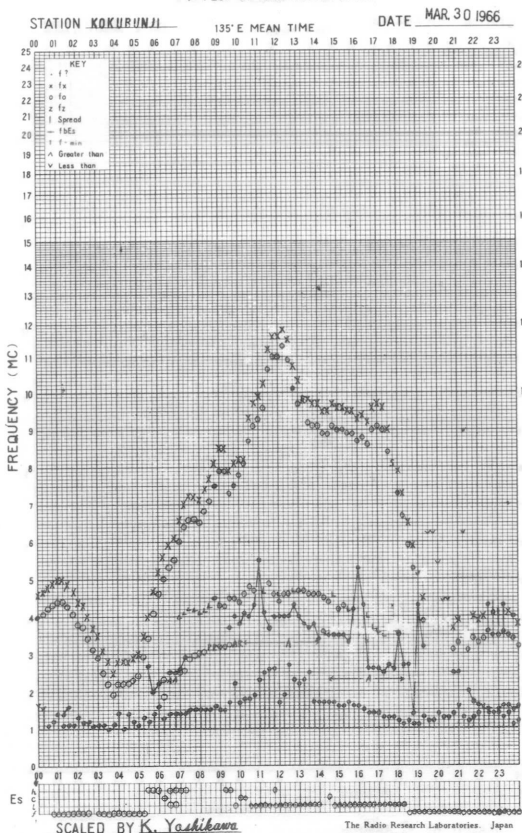
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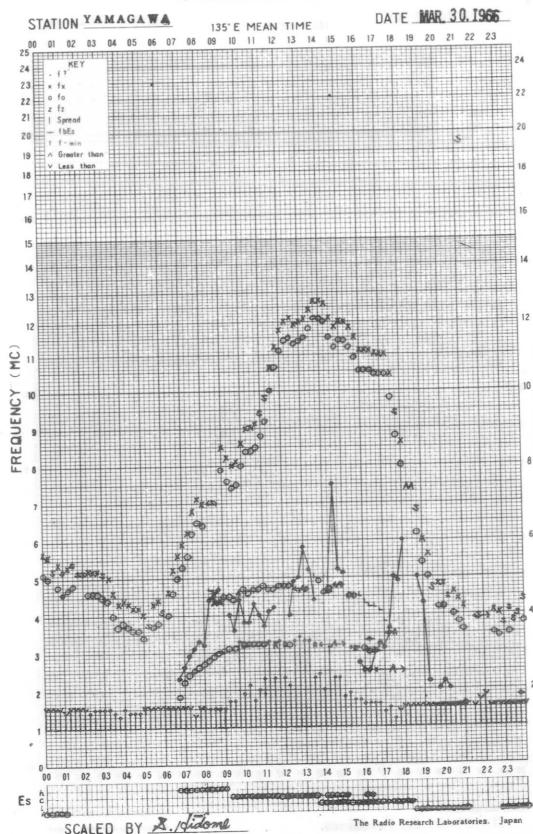
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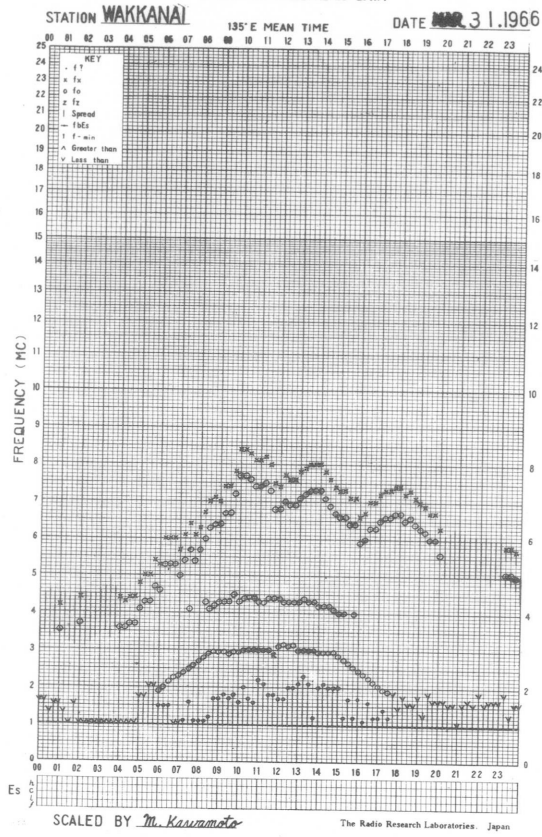
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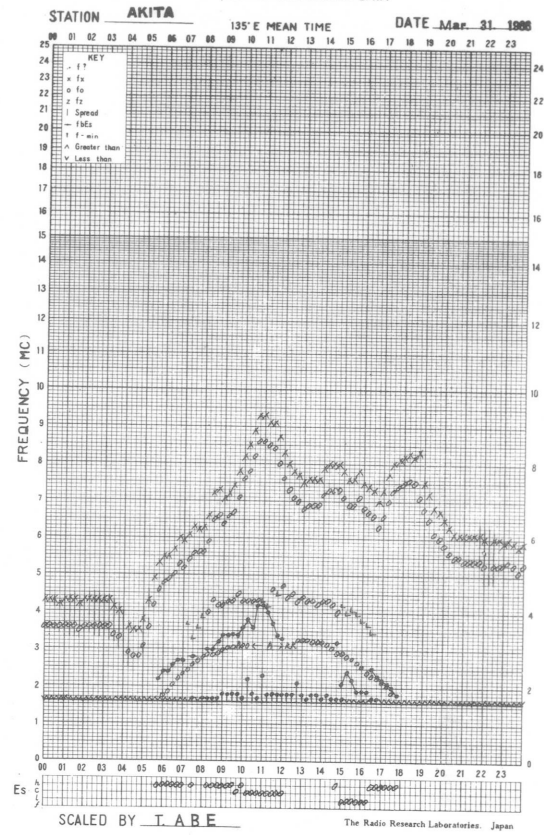
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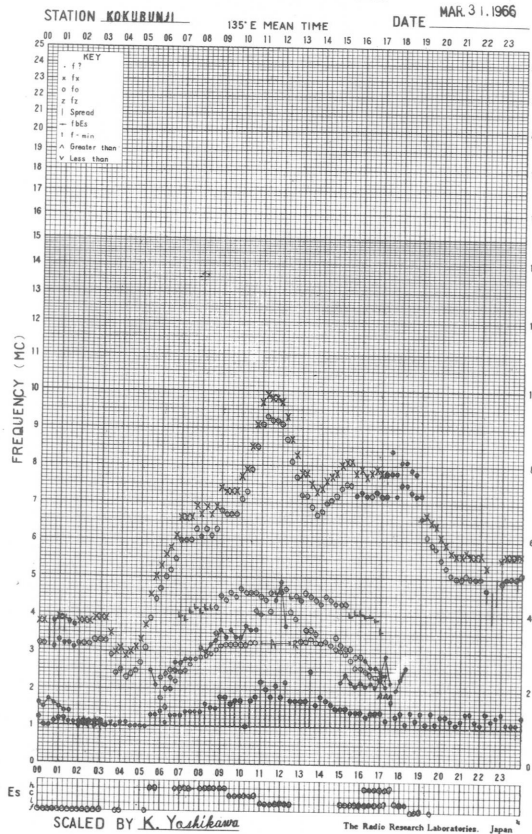
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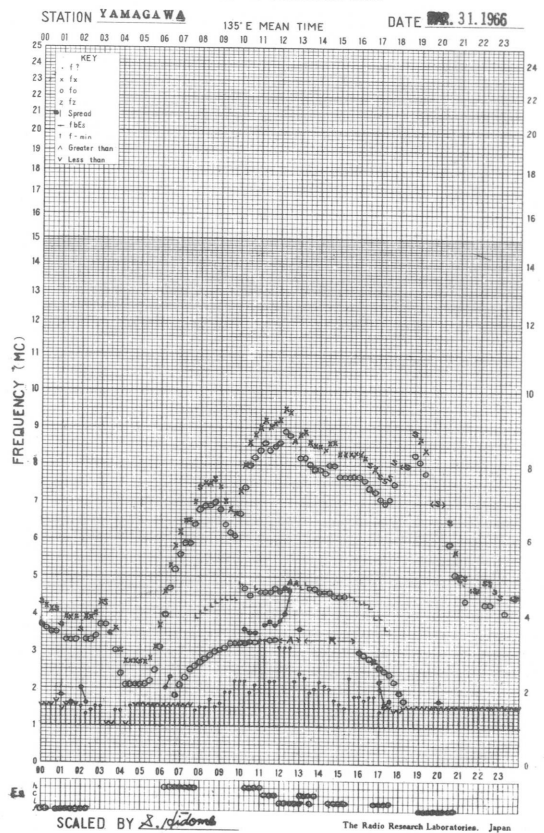
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



## SOLAR RADIO EMISSION

Flux Density and Variability										
Month: March 1966						Frequency: 200 Mc/s				
Observing station: Hiraïso										
Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$						Variability 0 to 3				
UT Date	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	6	6	5	7	6	0	0	0	0	0
2	6	7	6	6	7	0	0	0	0	0
3	5	6	6	5	6	0	0	0	0	0
4	6	6	5	5	6	0	0	0	0	0
5	5	5	5	6	5	0	0	0	0	0
6	6	7	7	5	6	0	0	0	0	0
7	5	5	5	7	5	0	0	0	0	0
8	7	5	5	6	6	0	0	0	0	0
9	6	6	6	-	6	0	0	0	-	0
10	6	6	6	6	6	0	0	0	0	0
11	6	7	6	6	6	0	0	0	0	0
12	6	6	5	7	6	0	0	0	0	0
13	6	5	5	5	6	0	0	0	0	0
14	5	5	5	5	5	0	0	0	0	0
15	q	q	q	q	q	0	0	0	0	0
16	q	q	q	-	q	0	0	0	-	0
17	9	9	10	q	9	1	1	0	1	1
18	11	16	-	-	13	1	2	-	-	1
19	8	9	11	12	9	0	0	0	1	0
20	13	19	18	19	16	1	2	2	2	2
21	19	21	38	42	24	2	2	2	2	2
22	42	37	54	35	44	1	1	2	2	2
23	34	38	35	99	36	2	1	1	2	2
24	92	55	66	33	77	2	2	3	2	2
25	29	58	77	-	48	1	2	3	-	2
26	12	15	9	10	12	1	1	0	0	1
27	8	8	7	8	8	0	0	0	0	0
28	8	7	6	6	7	1	1	0	0	1
29	6	6	6	5	6	0	0	0	0	0
30	5	6	7	7	6	0	0	0	0	0
31	7	9	11	15	8	0	0	1	1	0

Note No observations during the following periods:

9th 2050- 2400      25th 2050- 2400  
 16th 2050- 2400      31st 2320- 2400  
 18th 0600- 2400

q : means quiet level, when receiver is insensitive

## SOLAR RADIO EMISSION

Flux Density					
Month: March 1966					
Observing station: Hiraiso			Frequency: 500 Mc/s		
Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	26	25	24	25	25
2	25	25	25	25	25
3	26	26	26	24	26
4	26	25	24	24	25
5	26	27	27	24	26
6	25	25	24	23	25
7	25	26	25	25	25
8	26	26	25	24	26
9	25	25	25	24	25
10	25	26	26	24	25
11	26	26	24	27	25
12	26	26	25	25	26
13	26	26	25	25	26
14	26	26	26	26	26
15	27	28	26	30	27
16	29	30	28	28	30
17	31	32	28	25	30
18	29	31	31	25	29
19	28	30	30	28	29
20	31	33	30	28	31
21	32	30	29	26	30
22	32	37	37	27	33
23	31	33	27	28	30
24	28	29	32	26	29
25	28	27	28	24	27
26	29	29	26	25	27
27	25	26	24	25	25
28	26	27	29	26	27
29	28	29	29	28	28
30	29	32	28	27	31
31	28	29	30	27	28

Note No observations during the following periods:

11th 0400-

0500

Distinctive Events

(single-frequency observations)

Month: March 1966

Observing station: Hiraiso

Normal observing period: 2050 - 0840 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density		Remarks
	Mc/s	UT	UT	minutes		$10^{-22} W_m^{-2} (c/s)^{-1}$		
						peak	mean	
14	500	2205	2205.3	1	C	17	3	
	200	2204.9	2205	0.5	C	220	80	
	500	2209	2209	1	C	19	7	
	200	2208.8	2208.9	0.3	C	340	150	
16	500	0607	0608.5	2	C	156	15	
		2255	2256	4.5	RF	4	3	
	200	2255.5	2259	3	C	740	170	
17	200	0037	0037.5	3	F	>1800	10	
	500	0052.5	0053	2.5	C	13	3	
	200	0051	0052.5	3.5	C	900	40	
	500	0057	0057	1	C	13	3	
	200	0055.5	0056.5	1.5	C	320	40	
	500	0308	0309	1	C	47	19	
	200	0307.5	0308.2	2.5	C	>1800	380	
	500	0424.5	0425	1	C	77	10	
	200	0433	0435.3	4	C	>1800	380	
		0516.5	0518.7	4.5	F	>1800	15	
	500	0559	0559	0.5	C	105	12	
	200	0558.5	0558.8	2	C	1500	260	
	500	2148.5	2149.5	2.5	C	90	18	
	200	2145	2149.5	5.5	C	1000	20	
	2151.5	2151.5	0.5	C	250	40		
18	200	0204	0205	3	C	240	10	
	500	0645	0649.5	22	C	53	10	
		2343	2349	7.5	C	330	40	
		2351.5	2354	4	C	250	55	
19	500	0340.3	0342	29.7	C	880	15	
	200	2131.5	2132	3	C	760	130	
		2140	2143.5	5	C	540	20	
		2150	2150	2	C	260	20	
		2156	2157.5	2.5	C	900	30	
		2206.5	2206.5	5.6	C	480	20	
20	200	0010?	0014	10.5?	F	460	-	
	500	0223.5	0225	5.5	C	160	9	
	500	2308	2310.5	4	C	700	30	
	200	2307	2309.5	4.5	C	950	100	



Distinctive Events  
(single-frequency observations)

Month: March 1966

Observing station: Hiraiso

Normal observing period: 2050 - 0840 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22} W_m^{-2} (c/s)^{-1}$		Remarks	
	Mc/s	UT	UT	minutes		peak	mean		
21	500	0109	0119	11.3	C	820	-		
		2127.5	2128.3	2.5	C	34	7		
		2151	2158.6	11	C	276	34		
	200	2150.5	2151.2	6	C	2200	120		
		2157.5	2157.8	3.5	C	1310	110		
	500	2243	-	24	RF	-	3		SWF?
		2247	2248.3	1.5	C	190	14		SWF?
	200	2242	2257.5	27	C	630	150		
	500	2346.5	2347.6	5	C	6	2		
	22	500	0437	0454.8	27.5	C	110		5
2325			2332	15.5	C	16	8		
200		2325	2337	13	C	360	50		
23	500	0111	0112.5	4	C	20	12		
	200	0110	0111.3	5	C	210	50		
	500	2319.5	2319.8	1	C	88	16		
	200	2326	2328	3.5	C	1970	330		
24	500	0147.5	0147.6	1.5	C	210	15		
		0228.5	0231.6	11.5	C	570	40	SWF	
	200	0232.6	0234.5	4.9	C	2090	470	SWF	
	500	0303	0307.6	10.5	C	40	8		
25	500	0036.5	0038.2	14	C	40	4	SWF?	
		0141.5	0141.5	4	C	300	3		
		0153	0153.6	5.5	C	70	4	SWF	
	200	0156	0158.5	4	C	480	100	SWF	
	500	0511.5	0518	28.5	C	380	4	SWF	
26	500	0022	0023.2	2.5	C	70	20		
	200	0019	0022.5	5	C	200	50		
		0025	0025.5	1.5	C	190	40		
	500	0510	0512.2	3	C	15	3		
	200	0509.5	0511.6	4	C	630	60		
29	500	0000	0004.8	12	C	59	13	SWF	
	200	0004	0006	~8	C	~680	~100	SWF	
	500	0015	0023	18	C	13	4		
	500	0322	0328.4	13	C	560	35	SWF	
	200	0328.8	-	4	C	>1520	>540	SWF	

Measurement of H.F. Field Strength  
 Frequency: 15 Mc/s, Bandwidth: ±40 c/s,  
 (Upper Side-band of WWV)  
 Receiving Antenna: Rod (4.5 m) Measured at Hiraosa

UT Date	0015	0115	0215	0315	0415	0515	0615	0715	0815	0915	1015	1115	1215	1315	1415	1515	1615	1715	1815	1915	2015	2115	2215	2315	
1	-3	-4	-17	<20s	<21s	<17s	<18s	<24s	<16s	<30s	<26s	<34s	<20s	<34s	<33s	<30s	<31s	<32s	<32s	<32s	<30	<17	<8	<6	
2	-3	-4	<17s	<21s	<17s	<18s	<20s	<29s	<26s	<17s	<30s	<34s	<19	<5	<19	<11	<33s	<33s	<33s	<32s	<26	<4	<0	<0	
3	-2	-2	<18s	<30s	<19s	S	S	<18s	<15s	<17s	<22s	<31s	<19	<5	<19	<11	<33s	<33s	<33s	<32s	<32	<6	<3	<8	
4	-8	-5	<16s	<22s	<13s	<14s	<19s	<18s	<17s	<13s	<18s	<34s	<20s	<31	<20	<34	<34s	<34s	<30	<25	<10	<2	<14	<15	
5	-10	-16	<24s	<19s	<11s	<8s	<23s	<18s	<17s	<14	<28s	<34s	<30s	<30s	<34s	<33s	<33s	<20	<13	<32	<32	<2	<4	<2	
6	-8	-13	<22s	<27s	<15s	<9s	<16s	<17s	<14s	<19s	<24s	<33s	<32s	<33s	<33s	<33s	<33s	<33s	<10s	<31	<23	<7	<3	<5	
7	6	-4	<6s	<26s	<10s	<5s	<16s	<13s	<10s	<13s	<18s	<30s	<31s	<31s	<31s	<31s	<31s	<31s	<30	<1	<15	<0	<1	<4	
8	8	1	<9s	<16s	<12s	<9	<14s	<14s	<10s	<15s	<18s	<30s	<28	<31s	<31s	<31s	<16	<10	<5	<4	<6	<3	<2	<4	
9	1	1	<16s	<13s	6	<10s	S	<12	<15s	<20s	<32s	<32s	<13s	<31	<33s	<31	<32s	<32	<8	<27	<5	<7	<0	<0	
10	-7	C	C	C	C	C	C	<13s	<31s	<10s	<19s	<32s	<31s	<31s	<31s	<31s	<31s	<31s	<26s	<8	<14	<2	<1	<2	
11	0	<8s	<8s	<10s	<6s	<12s	<15s	<15s	<12s	<14s	<15s	<28s	<31s	<31s	<31s	<31s	<31s	<31s	<32s	<22	<14	<0	<1	<1	
12	-11	-2	<13s	<17s	<7s	<13s	S	<15s	<12s	S	<23s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	<26	<26	<0	<4	<2	
13	-1	-1	<17s	<28	<16s	<16s	S	<17s	<13s	<15s	<20s	<32s	<31s	<31s	<32s	<33s	<33s	<33s	<27	<20	<20	<1	<2	<2	
14	-18	-22	<16	<25	<9s	<14s	<23s	<24s	<25s	<27s	<26s	<34s	<22s	<21s	<24s	<20s	<29s	<35s	<31s	<34s	<16	<30s	<30s	<11s	
15	C	C	C	<26s	<10s	<11	S	<20	<19s	<17s	<22s	<34s	<33s	<32s	<33s	<16s	<29s	<34s	<34s	<34s	<34s	<16	<17	<10s	
16	-14	-17	<18s	<22s	<12	<12	<33s	<22	<21	<10s	<25s	<25s	<29	<35s	<35s	<35s	<35s	<35s	<27s	<20	<20	<6	<7	<10	
17	-9	-6	<20s	<23s	<13	<17s	S	<20s	<20s	<15s	<24s	<32s	<35s	<35s	<35s	<34s	<34s	<34s	<6	<18	<13	<5	<6	<6	
18	<15s	-19	<11	<31s	<11s	<12s	S	<20s	<20s	<16s	<18s	<24s	<17	<21	<20	<35s	<35s	<35s	<23	<20	<20	<5	<7	<6	
19	-7	-3	<11	<28s	<29s	<22s	S	<23s	<17s	<17s	<21s	<18s	<14s	<20	<23	<22s	<27	<8	<34s	<35s	<28	<13	<8	<8	
20	-1	3	<23s	<20s	<24s	<23s	<29s	<25s	<24s	<21s	<24s	<32s	<31	<34s	<33s	<32s	<33s	<33s	<33s	<33s	<27	<10s	<9s	<10	
21	-14	-11	<18	<22	<12s	<3s	S	<27s	<25	<18s	<5s	<24s	<14	<19	<21	<21	<19	<10	<29	<20	<5	<1	<10	<10	
22	-13	-16	<10	<9	<11s	<8s	S	<15s	<11s	<8s	<6s	<34s	<17s	<21s	<36s	<36s	<36s	<35s	<19	<17	<6	<3	<9	<9	
23	-6	-8	<8	<17	<14s	<10s	S	<15s	<13s	<9s	<14s	<32s	<11s	<32s	<24s	<16s	<26s	<24s	<10s	<27s	<17	<6	<3	<9	
24	<28s	<16s	<19s	<31s	<14s	<15s	S	<21s	<21s	<14s	<25s	<35s	<26s	<36s	<34s	<20s	<25s	<25s	<25s	<34s	<34s	<5s	<20s	<18s	
25	-4	-12	<35s	<21s	<9s	<23s	<21s	<21s	<19s	<9s	<10s	<20s	<32s	<32s	<32s	<32s	<32s	<32s	<29s	<31s	<23	<1	<2	<4	
26	-4	-4	<9s	<18s	<11s	<11s	<13s	<17s	<16s	<14s	<19s	<33s	<33s	<33s	<33s	<34s	<35s	<29	<34s	<30	<15s	<20	<16	<16	
27	-10	-7	<14	<25s	<9s	<14s	<6s	<13s	<10s	<9s	<21s	<19s	<35s	<35s	<35s	<35s	<35s	<34s	<27	<31s	<13s	<6	<6	<6	
28	-10	0	<9	<29	<15s	<13s	<19s	<22s	<18s	<14s	<16s	<30s	<15s	<12s	<15s	<31s	<31s	<34s	<9s	<17s	<33	<31	<13	<13s	
29	C	<20s	8	<22s	<5s	6s	C	C	<28s	<18s	<26s	<28s	<30s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	<15	<10	<6	
30	<9s	<2	<9	<22s	<7s	<13s	S	<19s	<18s	<18s	<19s	<24	<33s	<34s	<34s	<34s	<34s	<34s	<34s	<16	<7	<5	<15	<15	
31	<12s	-10	<11	<34s	<16s	<11s	<19	<20s	<20s	<18s	<1s	<17s	<25s	<20	<7	<31s	<31	<28	<8	<28s	<8	<2	<4	<5	
Median	-8	<8s	<15s	<23s	<12s	<13s	<19s	<19s	<17s	<15s	<20s	<32s	<30s	<31s	<33s	<32s	<33s	<33s	<29s	<23s	<23	<5s	<5	<6	
Med. Count	29	29	28	30	30	30	16	30	31	30	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31
Upper decile	1	0	<8s	<13s	<10s	<5s	<13s	<13s	<10s	<9s	<6s	<19s	<14s	<19s	<19s	<16s	<22s	<20	<8	<8	<10	<5	<4	<4	
Lower decile	<15s	<19s	<23s	<31s	<27s	<22s	<29s	<25s	<26s	<27s	<28s	<34s	<34s	<34s	<35s	<35s	<35s	<35s	<35s	<34s	<23s	<23s	<20s	<15s	

Measurement of H.F. Field Strength. (Upper Side-band of WWVH).  
 Receiving Antenna: Rod (4.5 m) Measured at Hiraio

Mar. 1966 Frequency: 15 Mc/s, Bandwidth: ±40 c/s, 1245 1345 1445 1545 1645 1745 1845 1945 2045 2145 2245 2345

UT * Date	0045	0145	0245	0345	0445	0545	0645	0745	0845	0945	1045	1145	1245	1345	1445	1545	1645	1745	1845	1945	2045	2145	2245	2345	
1	1	0	4	7	11	15	10	-11	-16	-22	-30	<34s	<34s	<33s	<33s	<33s	<31s	<32s	<32s	<32s	-1	3	1	3	
2	-3	2	7	-9	9	14	-9	-15	(-17s)	<30s	<32s	<33s	<26s	<34s	<34s	<34s	<34s	<31s	<31s	<28	-1	5	1	3	
3	3	4	8	6	16	16	-4	<16s	<13s	<18s	<18s	<32s	<31s	-23	<33s	<33s	<33s	<33s	<33s	<32s	-2	11	11	1	
4	3	5	6	7	16	16	-8	<12s	-11	<21s	<20s	<20s	<27s	<34s	<35s	<34s	<34s	<34s	-12	-2	4	4	2	0	
5	4	2	9	15	14	15	15	<11s	-15	<21s	<23s	<34s	<24s	<33s	<34s	<33s	<33s	<33s	<32s	<32s	-1	12	1	8	
6	5	3	7	15	10	16	-11	-12	<16s	<19s	<32s	-21	<25s	<33s	<33s	<33s	<33s	<33s	<33s	<31s	-7	4	10	1	
7	13	3	10	13	16	11	-6	-6	<7s	<11s	<26s	<30s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	-2	6	2	5	
8	5	0	4	11	15	1	-7	-8	-14	-12s	<30s	<21s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	-2	9	2	<3s	
9	2	0	6	10	3	10	-3	-10	-14	-22	-32	<32s	<16s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	4	7	0	2	
10	4	0	C	C	C	C	<16s	-10	-12	<10s	<16s	<32s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	<31s	0	2	8	6	
11	2	5	8	10	9	6	-9	-10	<14s	<18s	<18s	<28s	-28	<31s	<31s	<31s	<32s	<32s	<32s	<31	-22	0	4	2	
12	4	5	7	15	14	-4	-9	-9	8	<14s	<32s	<32s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	-1	4	5	2	
13	-2	2	6	19	10	6	-11	-7	-14	<16s	<17s	<24s	<32s	<32s	<32s	<32s	<32s	<32s	<32s	<32s	-10	6	2	1	
14	-1	0	6	7	10	15	16	18	24	14	24	20	20	-12	<22s	<20s	<34s	<29	-29	-6	-1	3	6	C	
15	C	C	C	10	9	15	-15	-13	-14	<17s	<28s	<34s	<32s	<32s	<33s	<33s	<34s	<34s	<34s	<34s	-2	7	1	2	
16	-5	-1	4	7	13	1	-6	-10	-7	<11s	<22s	-30	<27s	<34s	<35s	<35s	<32s	<32s	<32s	<32s	0	(20)s	4	2	
17	1	-3	5	9	12	8	-3	-9	-11	<16s	<22s	-32	<31	<33s	<34s	<34s	<34s	<34s	<34s	<34s	0	1	2	1	
18	-6	-1	2	4	2	18	-1	-11	-10	-10	-17	<18s	<22s	<26s	<33s	<35s	<35s	<35s	<35s	<35s	-6	5	2	4	
19	-2	-3	0	1	C	2	13	-1	-10	<16s	<21s	<18s	-16	<17s	<34s	<31s	<29s	-9	-22	0	-1	2	-3	0	
20	-7	0	-3	4	10	18	-12	-11	-8	-8	-24	-28	-31	<34s	<35s	<32s	<33s	<33s	<33s	<33s	0	1	-3	4	
21	-1	-4	2	10	17	10	1	-13	-14	<18s	<18s	-24	<35s	<34s	<34s	<34s	<27	-26	<17s	0	1	5	<12s	-8	
22	-3	0	3	7	13	7	-11	-6	<6s	<6s	<21s	<17s	<16s	<35s	<30s	<35s	<35s	<35s	<35s	<35s	-2	1	0	4	
23	-5	-2	2	15	12	10	-7	-7	14	18	-15	9s	<13s	<33s	<24s	<16s	<30s	<34s	<23s	<23s	3	7	7	4	
24	0	-6	-35	1	9	9	7	-15	-16	<18s	<30s	<28s	<28s	<34s	<25s	<25s	<26s	<26s	<26s	<24s	-7	8	0	-1	
25	-4	-3	-20	9	10	5	-12	-12	-12	-12	<16s	<32s	<32s	<32s	<32s	<32s	<32s	<32s	<32s	<32s	-8	6	6	2	
26	-14	-1	1	7	16	15	15	-11	-11	<16s	<19s	<19s	<33s	<33s	<33s	<34s	<29	<34s	<35s	<30	4	3	5	<3s	
27	3	1	7	8	12	7	-6	-5	<10s	<18s	<18s	<34s	<35s	<35s	<35s	<35s	<35s	<35s	<35s	<35s	-4	4	-1	3	
28	-15	(-10)s	6	6	-6	10	-12	-11	<12s	<9s	<9s	<26s	<9s	<12s	<15s	<33s	<34s	<34s	<33s	<27s	-5	0	4	3	
29	-3	<17s	-7	(-26)	(13)s	(16)s	(11)s	-22	<19s	<24s	<25s	<34s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	<33s	-3	6	0	(-9)s	
30	<17s	-5	0	6	17	16	10	-10	-11	<15s	<21s	31	<33s	<34s	<34s	<34s	<34s	<34s	<34s	<34s	-10	1	-5	8	
31	-7	-7	-1	6	13	16	14	8	-9	<11s	<6s	<25s	<20s	<35s	<20s	<31s	-24	<28	<28s	<28s	-3	-10	-4	5	
Median	-2	0	4	9	13	10	-9	-11	(-12s)	(-16s)	(-21s)	(-20s)	(-31s)	(-33s)	(-33s)	(-31s)	(-33s)	(-33s)	(-33s)	(-33s)	-16	3	1	(0)s	
Med. Count	30	29	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28
Upper decile	5	5	8	15	16	16	15	-5	<6s	<6s	<9s	<17s	<13s	<17s	<22s	<20s	<27s	<27s	<27s	<27s	0	4	11	8	5
Lower decile	-14	-6	-7	-13	-8	-8	-13	<15s	<10s	<22s	<32s	<34s	<34s	<35s	<35s	<35s	<35s	<35s	<35s	<35s	-7	-6	-5	<6s	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO		Time in U.T.																					
Mar. 1966	Whole Day Index	H B			W W V				S F				W W V H				Warning				Principal magnetic storms		
		06 12 18 24	06 12 18 24	06 12 18 24	00 06 12 18	06 12 18 24	00 06 12 18	06 12 18 24	00 06 12 18	06 12 18 24	00 06 12 18	06 12 18 24	00 06 12 18	06 12 18 24	00 06 12 18	06 12 18 24	Start	End	ΔH				
1	4o	4	4	4	4	-	-	4	4	4	4	4	4	4	4	N	N	N	N				
2	4+	4	4	5	4	-	-	5	4	4	4	5	4	4	-	4	N	N	N	N			
3	4+	5	(4)	4	4	-	(4)	4	5	4	4	4	4	4	-	4	N	N	N	N			
4	4o	(4)	4	4	4	-	-	4	4	4	(4)	4	4	4	-	5	N	N	N	N			
5	4+	5	4	4	4	-	-	5	5	4	4	5	4	4	-	4	N	N	N	N			
6	4+	5	(4)	4	4	-	-	5	4	4	4	5	4	5	-	4	N	N	N	N			
7	4+	4	4	5	4	-	-	5	5	4	4	5	5	5	-	4	N	N	N	N			
8	4+	4	4	5	4	-	-	5	5	4	4	4	4	4	-	4	N	N	N	N			
9	4o	4	3	4	4	-	-	5	4	4	3	4	4	4	-	4	N	N	N	N			
10	4o	5	3	4	(5)	-	-	4	C	4	4	4	C	4	-	4	N	N	N	N			
11	4o	4	4	4	4	-	-	5	4	4	4	4	4	4	-	4	N	N	N	N			
12	4o	4	4	4	4	-	-	5	4	4	4	4	4	4	(5)	4	N	N	N	N			
13	4o	5	4	C	4	-	-	4	4	4	4	4	4	4	-	4	N	N	N	N			
14*	3o	3	2	3	3	-	-	1	4	4	3	3	4	5	(5)	4	N	N	U	U	13.5	---	
(15)	3+	4	(4)	4	C	-	-	3	3	3	3	4	(4)	4	-	4	U	N	N	N	---	20xx	
(16)	4o	4	4	4	3	-	-	4	4	4	(4)	4	4	4	-	4	N	N	N	N			
(17)	4o	4	4	4	4	-	-	4	4	4	4	3	4	4	-	4	N	N	N	N			
18	4+	4	4	4	4	-	-	4	5	5	4	4	4	4	(4)	4	N	N	N	N			
19	4o	5	4	(4)	4	-	-	3	4	4	4	5	4	5	(5)	4	N	N	N	N			
20	4o	4	4	5	4	-	-	4	4	4	4	4	4	5	(5)	4	N	N	N	N			
21	4+	4	5	(4)	4	-	(5)	4	4	4	4	4	4	4	4	4	N	N	N	N			
22	4+	4	4	4	5	-	-	5	5	5	4	(4)	4	4	4	4	N	N	N	N			
23	3+	4	3	(3)	4	-	-	1	4	4	3	3	4	5	3	3	N	N	U	U	11.8	---	
24	3-	3	3	3	1	-	-	3	2	(3)	(3)	3	4	4	4	4	U	U	U	U	---	24xx	
25	4o	5	4	4	3	-	-	4	3	4	4	4	4	4	4	4	U	N	N	N			
26	4o	4	3	4	4	-	-	3	4	5	4	4	4	4	4	4	N	N	N	U			
27	4-	3	3	(4)	4	-	-	4	4	4	4	4	4	4	4	4	U	N	N	N			
28	3+	3	4	4	4	-	(2)		4	4	3	3	4	4	(4)	3	N	N	N	U	19.6	----	
29	3o	3	3	3	(1)	-	(4)		3	4	(4)	3	3	4	(4)	3	U	U	U	U	---	24xx	
30	4-	3	(3)	4	4	-	-	4	3	5	(4)	4	4	4	(4)	3	U	N	N	N			
31	4o	4	4	4	4	-	-	4	3	5	4	3	4	4	3	4	N	N	N	N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

- \* = MAGSTORM
- = MAGCALME
- = COSMIC EVENT

- ( ) = Regular World Day
- = impossible to evaluate
- ( ) = inaccurate
- C = artificial accident
- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES  
(S.I.D.)

HIRAISO

Time in U.T.

Mar. 1966	S W F						Correspondence						
	Drop-out Intensities (db)						Start-time	Duration	Type	Imp.	Flare	Solar Noise	Mag.
WS	SF	HA	FO	HB	SH								
2		21	17			24'	03.14	51	S	2	x	x	
15		<u>30</u>	-				19.22	20	Slow	2			
16	5	<u>15</u>	-		-		01.08	12	S	1	x		
18		-	<u>10</u>		-		04.40	20	Slow	1+	x	x	
⚡		<u>9</u>	-				23.50	14	Slow	1-			
19		> <u>47</u>	-				03.40	40	S	3+	x	x	x
20		<u>17</u>	-				02.22	9	S	1	x		
⚡					<u>32</u>	32	09.55	25	S	3-	x		
21					<u>16</u>	-	09.34	26	Slow	1+			
⚡	18	<u>21</u>	20	-	-		22.27	90	S	1+	x	x	
24		36	<u>35</u>	-	-	37	02.29	50	S	3+	x	x	x
25		20	-	-	-		00.26	24	G	1+	x		
⚡		35	<u>30</u>	-			01.54	58	Slow	3	x	x	x
⚡		<u>30</u>	-		22	20	05.16	14	S	2	x	x	
26	-	<u>24</u>	-		-		00.40	62	Slow	2-			
28		<u>44</u>	35	-	-		23.59	130	S	3	x	x	
29		<u>50</u>	35	-	-	-	03.26	34	S	3+	x	x	x
30		<u>13</u>	-				00.36	24	G	1			
⚡		<u>10</u>	<u>10</u>				19.56	44	G	1+	x		
31		<u>35</u>	-				19.03	67	S	2+	x		

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IONOSPHERIC DATA IN JAPAN FOR MARCH 1966

第 18 卷 第 3 号

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1966年6月25日 發行 (不許複製非売品)

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發 行 所

東京都小金井市貫井北町4の573

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