

F-262

# IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

## CONTENTS

	Page
Site of the Radio Wave Observatories and Hiraiso branch .....	2
Symbols and Terminology .....	2
Graphs of Ionospheric Data .....	10
Tables of Ionospheric Data at Wakkanai .....	11
Tables of Ionospheric Data at Akita .....	23
Tables of Ionospheric Data at Kokubunji .....	35
Tables of Ionospheric Data at Yamagawa .....	49
<i>f</i> -plot of Ionospheric Data .....	61
Data on Solar Radio Emission .....	93
Radio Propagation Conditions .....	96



## SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAIISO BRANCH

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 Sumiyoshi-cho, Akita-shi, Akita-ken
Kokubunji	35°42.4'N.	139°29.3'E.	Nukui-Kitamachi, 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 Branch and Inubo Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0'N.	140°37.5'E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken
Inubo	35°42.2'N.	140°51.5'E.	9912 Tennodai, Choshi-shi, Chiba-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.
$f_oF1$		
$f_oE$		
$f_oEs$		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$f_bEs$		The lowest ordinary wave frequency at which the $Es$ 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.
$h'Es$		The lowest virtual height of the trace used to give the $f_oEs$ .
$hpF2$		The virtual height of the $F2$ layer measured on the ordinary

$ypF2$  wave component 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. Definitions of the CNT, MED, UQ and LQ

*Median count* (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

*Median* (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

*Upper quartile* (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the *lower quartile* (LQ) is the median value of the lower half.

### d. Description of Standard Types of *Es*

The eight standard types of *Es* are identified by corresponding capital letters: *F*, *L*, *C*, *H*, *Q*, *R*, *A*, *S*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. The letter 'N' is used to designate any *Es* trace that does not correspond to any of the eight types.

*F* An *Es* 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 *Es* traces observed in the daytime are classified according to their virtual height: *H* or *L*.

*L* A flat *Es* 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 *Es* trace showing a relatively symmetrical cusp at or below  $f_oE$ . 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 *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above  $f_oE$ . The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

*Q* An *Es* 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 *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation but which is nonblanketing 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 *Es* 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 *Es* trace which rises steadily with frequency and usually emerges from another type *Es* 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 *Es* trace such as *Es-L*, or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine  $f_oEs$  and  $hEs$ . The slant trace is sometimes observed to start at  $f_oE$  without echoes clearly identifiable as *Es* echoes being seen.

*N* The designation '*N*' is used to denote an *Es* 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.

#### e. Multiple Reflections from *Es*

When the ionogram shows the presence of multiple reflections from *Es* 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 MHz at Hiraiso Branch. Antennas are two parabolic reflectors: 10 meter for 200 MHz and 5 meter for 500 MHz, 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  $10^{-22} \text{ W} \cdot \text{m}^{-2} \text{ Hz}^{-1}$  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 MHz 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. Bracket means that observation time does not exceed one third of the period.

### 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 Strengths of WWV and WWVH

Field Strengths observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraio Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 Hz is picked up by the use of a narrow band pass filter with

$\pm 40$  Hz bandwidth.

The *tabulated field strength* 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	Fort Collins, Colorado Long. 105°02'W Lat. 40°41'N	Maui, Hawaii Long. 156°28'W Lat. 20°46'N
Power	3 kW for the upper side-band	0.5 kW* for the upper side-band
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	9150 km	6270 km

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

#### Receiver

Antenna	4.5 m vertical rod
Bandwidth	$\pm 40$ Hz for the upper side-band
Calibration	every half an hour

The meaning of *Descriptive symbols* is 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 effects.
- U : Inaccurate measurement influenced by interferences, atmospheric effects, or non-propagational reasons.
- E : 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 (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), Lima (commercial circuit) and WWVH (10 and 15 MHz frequencies broadcast from Hawaii), which are received at Hiraio Branch.

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

N = normal  
 U = unstable  
 W = disturbed

The letter W expresses HF propagation disturbances which are expected to occur during the following 12 hours after issue. The letter U and N also means unstable and normal conditions, respectively.

Whole day radio quality indices stand for the averages of the 6-hourly indices of the circuits of Hamburg, WWV and Lima.

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

### c. Sudden Ionospheric Disturbances (S.I.D's.)

#### (i) SWF

The data of short wave fade-out (SWF) are prepared from the records of field intensities at Hiraiso, of the following circuits. Start-time, Duration, Type and Importance are obtained from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10, 15 and 20 MHz are indicated by ('), (none), and ("), respectively. Characteristics of the phenomenon are classified as follows.

#### *Circuits and Drop-out intensities*

CO ..... WWV 20, 15 and 10 MHz (Fort Collins, Colorado)  
 LM ..... Various frequencies of commercial circuit (Lima)  
 HA ..... WWVH 15 and 10 MHz (Hawaii)  
 TO ..... JJY 15 and 10 MHz (Tokyo)  
 SH ..... BPV 15 and 10 MHz (Shanghai)  
 HB ..... Various frequencies of commercial circuit (Hamburg)

#### *Start-time and Duration*

#### *Types*

S : sudden drop-out and gradual recovery  
 Slow : slow drop-out taking 5 to 15 minutes and gradual recovery  
 G : gradual disturbances; irregular change 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 of phenomena associated with 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 of IUWDS or measurements at Hiraiso.

#### (ii) SPA

The data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio wave propagation received at Inubo Radio Wave Observa-

tory. Characteristics of the VLF radio wave propagation are as the following table. In the last column, a spherical earth with a radius of 6371.2 km is assumed.

Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22'N 001°11'W	GBR	16.0	40	9550
Fort Collins	40°41'N 105°03'W	WWVL	20.0	1.8	9190
Cutler	44°39'N 067°17'W	NAA	17.8	1000	10640
North West Cape	21°49'S 114°10'E	NWC	22.3	1000	6990
Lualualei	21°26'N 158°09'W	NPM	23.4	300	6070
Jim Creek	48°12'N 121°55'W	NPG	18.6	250	7620
Haiku	21°24'N 157°50'W	HA0 HA2 HA3	10.2 12.2 13.6	2	6100
Aldra	66°25'N 013°09'E	AL0 AL2 AL3	10.2 12.2 13.6	4	7820

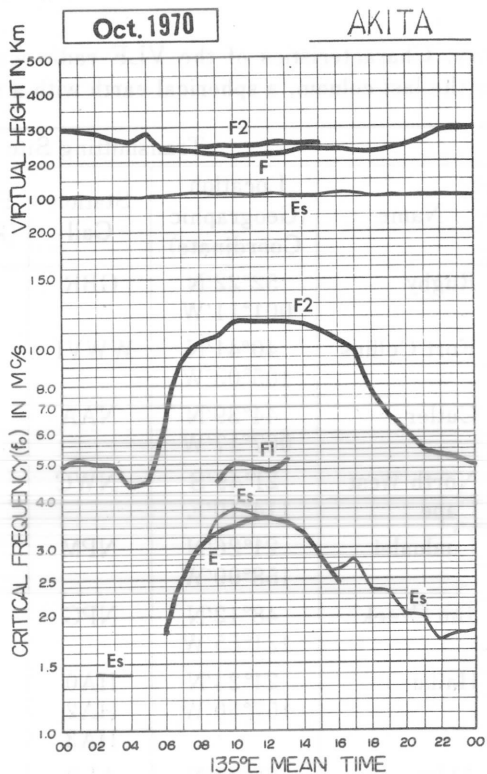
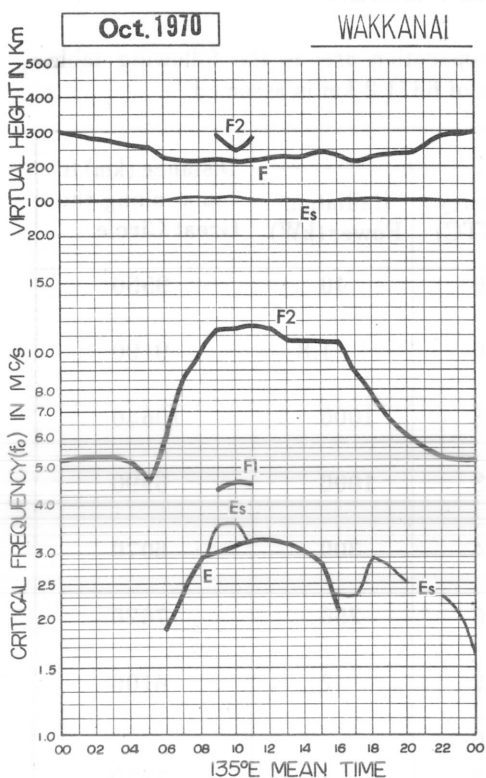
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

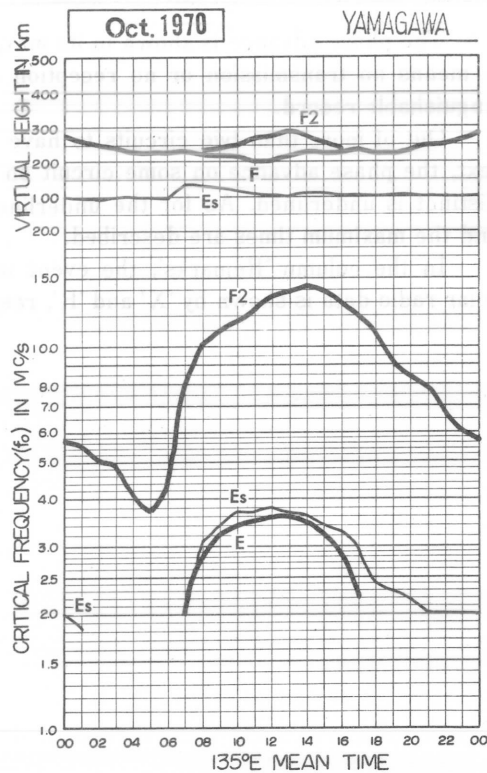
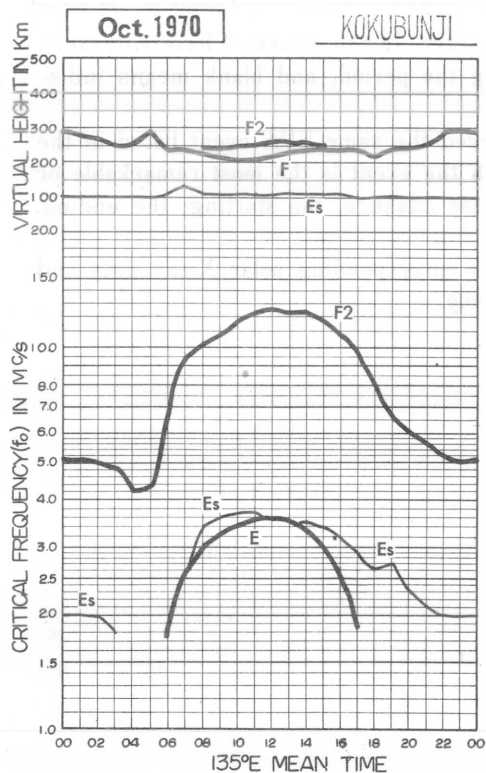
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



# IONOSPHERIC DATA

OCT. 1970

FOF2 (0.1 MHz)

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

Station **WAKKANAI** Lat. **45 23.6 N.** Long. **141 41.1 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	69	67	65	64	63	65	87	91	103	113	108	102	98	103	98	103	105	105	93	77	63	61	60	59	
2	57	55	58	57	54	53	76	81	98	109	103	97	97	110	107	100	97	90	84	73	70	69	69	63	
3	62	57	59	60	F <sub>57</sub>	F	78	84	93	109	105	107	108	100	110	108	113	94	76	59	58	61	F <sub>61</sub>	65	
4	64	63	60	63	60	63	71	78	87	107	116	113	107	116	106	118	114	99	77	67	65	63	63	60	
5	61	62	59	53	45	48	67	88	109	116	117	114	124	115	112	113	108	96	83	74	59	58	57	56	
6	57	56	57	57	56	53	68	85	99	114	C	108	109	108	101	103	106	103	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	120	116	111	105	100	100	103	98	77	69	63	60	60	
8	63	F	F	F	F <sub>64</sub>	67	85	94	97	110	108	113	109	98	109	113	113	103	86	72	63	58	56	55	
9	54	54	54	57	58	54	65	81	93	100	106	116	113	112	113	116	104	94	75	73	68	58	57	59	
10	58	59	60	59	59	F <sub>60</sub>	80	96	98	115	105	113	118	121	114	113	104	88	76	78	67	64	56	59	
11	57	57	58	57	60	C	C	96	99	106	114	129	124	122	121	117	111	103	95	87	79	72	73	60	
12	F <sub>61</sub>	F <sub>58</sub>	58	55	C	C	C	C	C	77	95	103	109	109	108	101	96	88	70	56	56	56	53	53	
13	48	49	48	47	42	42	68	93	108	125	136	127	123	117	113	106	103	95	81	74	67	50	47	46	
14	47	48	43	44	43	43	63	94	111	123	124	124	117	107	106	105	93	87	71	69	64	60	54	51	
15	52	53	52	53	52	53	69	93	98	114	118	118	121	107	103	95	97	86	73	73	70	63	54	53	
16	50	50	53	53	54	50	73	90	104	123	121	112	113	105	98	98	94	90	63	63	63	54	49	44	
17	48	37	28	30	28	28	37	48	57	63	74	79	85	82	79	79	76	66	59	54	50	44	49	49	
18	49	46	43	40	36	36	40	35	44	R	A	R	R	49	52	55	54	53	45	54	F	F	F	F	
19	F	F <sub>30</sub>	F <sub>25</sub>	F	F <sub>22</sub>	F <sub>22</sub>	F <sub>51</sub>	68	83	94	90	98	103	93	93	96	97	83	F <sub>69</sub>	F <sub>65</sub>	57	52	50	F <sub>48</sub>	
20	50	48	49	48	F <sub>44</sub>	F	58	85	97	101	111	118	116	106	108	103	99	79	67	60	55	40	40	39	
21	40	40	39	40	38	36	56	79	110	118	118	117	114	97	97	103	105	83	65	63	54	44	43	43	
22	41	41	41	42	42	43	59	84	90	107	109	123	114	108	103	108	115	90	79	63	54	49	45	46	
23	46	46	44	44	43	40	61	97	101	105	99	117	121	122	113	106	101	103	88	68	64	60	58	61	
24	58	57	F	F	F	24	40	56	70	76	68	68	70	76	73	82	75	74	65	50	43	46	48	51	
25	52	53	53	50	43	41	59	82	C	C	C	C	C	C	C	C	C	C	C	C	57	50	43	43	45
26	46	48	F	F	F	F	54	86	96	114	114	123	122	123	106	96	109	83	69	54	A	36	38	38	
27	40	41	41	43	F <sub>43</sub>	F <sub>43</sub>	F <sub>64</sub>	F <sub>94</sub>	112	113	128	135	126	113	103	106	104	83	71	59	51	A	A	47	
28	F	F <sub>50</sub>	F <sub>50</sub>	F <sub>53</sub>	F <sub>54</sub>	53	62	83	105	121	137	128	116	122	106	113	113	86	84	79	63	F <sub>55</sub>	F	F	
29	F <sub>50</sub>	51	54	53	52	47	59	98	131	139	138	C	C	C	120	116	103	89	83	72	53	50	53	52	
30	53	57	55	52	52	46	59	113	117	138	130	153	136	125	120	126	113	81	75	64	53	F <sub>53</sub>	53	53	
31	53	53	50	50	50	46	60	93	118	130	134	138	127	114	107	114	107	76	76	53	46	46	46	45	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	27	26	27	25	28	29	28	28	28	28	28	29	30	30	30	30	29	30	28	28	27	28	
MED	52	53	53	53	52	46	62	86	98	113	114	116	114	108	106	106	104	88	76	66	61	56	53	52	
UQ	58	57	58	57	56	53	70	94	108	120	122	124	122	116	112	113	109	96	83	73	64	60	58	59	
LQ	48	48	44	44	43	41	58	81	93	106	105	108	108	103	100	100	97	83	69	59	54	48	48	46	

OCT. 1970

FOF2 (0.1 MHz)

# IONOSPHERIC DATA

OCT. 1970

FOF1 (0.01 MHz)

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

Station **WAKKANAI** Lat. **45 23.6 N** Long. **141 41.1 E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour 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													
2																								
3																								
4										450	440													
5																								
6											C													
7									C	C			440	460										
8									400	430	420													
9																								
10											450													
11																								
12									C															
13																								
14											L													
15																								
16																								
17									420	450	500	500												
18									380	420	A	440	430	460	440									
19											450													
20																								
21																								
22																								
23																								
24										440	480	500	460	460										
25									C	C	C	C	C	C	C	C								
26																								
27																								
28																								
29												C	C	C										
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	5	4	5	3	2	2									
MED									400	440	465	450	440	460	450									
UQ									410	450	490	500	450											
LQ									390	430	435	440	435											

OCT. 1970

FOF1 (0.01 MHz)

FORM 1-61 (REV. 1-64)

# IONOSPHERIC DATA

OCT. 1970

FOE (0.01 MHz)

135° E Mean Time (G. M. T. + 9 h)

Station **WAKKANAI** Lat. **45 23.6 N** Long. **141 41.1 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	255	300	315	330	330	330	325	315	290	245								
2							A	245	300	310	320	330	330	I A 330	320	300	240	150							
3							A	245	295	300		A A	330	A	A	A	230		S						
4							S	240	295	305	315	305	R	R	305	290	230		S						
5							190	250	295	310	320	325	300	A	A	A	225		S						
6							S	A	A	A	C	R	R	A	A	A	A	A							
7							C	C	C	C		320	A	A	A		285	235		S					
8							S	A	A	300	300	I R 315	300	A	A		295	235		A					
9							A	250	300	315	325	335	340	330	305	290	220		S						
10							165	250	300	315	320	330	335	330	310	290	215		S						
11							C	250	300	320	330	340	330	300	305	300		A	S						
12							C	C	C		305	315	320	300	300	300		A	A	A					
13							190	250	300	310	320	325	325	A	A	A		A	A						
14							S	245	295	300		A	R	325	320	300	290	205		S					
15							S	225	290	300	315	325	330	320	305	295	210		S						
16							A	240	295	305	I R 315	325	325	315	290	270	205		S						
17							190	235	285	300	305	320	325	315	305	280	205		A						
18							S	210	245	290	300	280	290	I A 290	300	270	210		S						
19							180	230	280	295	I A 300	325	325	315	300	265		A	A						
20							S	220	280	295		A A	A	325	I A 295	270	195								
21							S	215	285	300	320	330	335	325	300	280	200								
22							S	230	280	300	315	330	330	315	300	280	205								
23							S	225	250	270		A A	320	310	300	280	185								
24							S	230	290	295	305		A A	310	305		A A								
25							S	A	C	C	C	C	C	C	C	C									
26							S	235	I A 275	A	A	A	A	A	320	280		A							
27							S	230	300	305	310	305	300		A A	A A									
28							A	A	290	300	310	315	320	310	300		A A								
29							S	I A 230	285	295	I A 310		C	C	C	300	275		A						
30							S	210	290	300	315	320	330	320	300		A	S							
31							S	A	I A 280	310	325	330	I A 325	320	300		A	A							
Hour 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	
CNT							6	24	26	27	24	21	23	20	23	20	18	1							
MED							190	235	290	300	315	325	325	318	300	282	212	150							
UQ							190	248	300	310	320	330	330	325	305	290	230								
LQ							180	228	280	300	310	320	320	310	300	278	205								

The Radio Research Laboratories, Japan

OCT. 1970

FOE (0.01 MHz)

IONOSPHERIC DATA

OCT. 1970

FOES (0.1 MHZ)

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

Station	WAKKANAI				Lat	45 23.6 N		Long	141 41.1 E		Sweep	1 MHz to 20 MHz		in 20 sec		in automatic		operation							
Hour 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 <sub>15</sub>	E	E	E	E	E	30	G	G	39	40	G	G	G	G	G	31	25	E	E <sub>15</sub>	J <sub>33</sub>	J <sub>20</sub>	24	23	
2	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E	J <sub>23</sub>	21	G	G	21	34	G	G	40	41	G	G	G	E	E	J <sub>23</sub>	J <sub>31</sub>	J <sub>23</sub>	E <sub>16</sub>	
3	E <sub>16</sub>	E <sub>14</sub>	E	E	E	E	28	G	G	24	G	40	42	G	38	43	J <sub>53</sub>	G	23	32	39	31	E <sub>18</sub>	E <sub>15</sub>	23
4	23	E <sub>16</sub>	E	E	16	E	E <sub>19</sub>	18	G	G	36	30	36	G	G	27	G	20	G <sub>33</sub>	J <sub>33</sub>	J <sub>27</sub>	E <sub>15</sub>	E <sub>17</sub>	J <sub>26</sub>	J <sub>33</sub>
5	J <sub>24</sub>	J <sub>26</sub>	18	J <sub>28</sub>	J <sub>23</sub>	E	G	G	41	40	39	46	38	41	44	40	G	J <sub>33</sub>	J <sub>35</sub>	J <sub>23</sub>	J <sub>35</sub>	E <sub>15</sub>	J <sub>24</sub>	E <sub>16</sub>	
6	E <sub>15</sub>	E <sub>15</sub>	E	E	E	E	E <sub>21</sub>	J <sub>33</sub>	32	40	C	G	G	40	43	J <sub>41</sub>	J <sub>58</sub>	42	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	G	41	42	J <sub>40</sub>	40	38	40	E <sub>15</sub>	32	38	33	E	20	30
8	25	30	30	J <sub>23</sub>	22	E	E <sub>19</sub>	38	33	35	36	G	31	38	J <sub>61</sub>	G	25	34	J <sub>41</sub>	40	26	24	27	23	
9	E <sub>16</sub>	E <sub>15</sub>	E	E	J <sub>23</sub>	J <sub>25</sub>	29	15	20	23	G	G	G	G	G	G	G	E <sub>16</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>	E	E	
10	E <sub>16</sub>	E <sub>16</sub>	E	E	E	34	G	G	G	G	G	G	G	G	G	G	G	E <sub>17</sub>	E	E	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	
11	E	E	E	E	15	C	C	G	G	G	40	G	44	J <sub>53</sub>	G	G	25	E <sub>16</sub>	E	E <sub>15</sub>	E	E	J <sub>23</sub>	21	
12	J <sub>30</sub>	J <sub>35</sub>	J <sub>40</sub>	J <sub>31</sub>	C	C	C	C	C	C	42	40	43	39	G	G	34	27	30	J <sub>50</sub>	J <sub>45</sub>	J <sub>31</sub>	E	E	21
13	E	J <sub>63</sub>	17	19	E	E	G	G	G	38	38	36	G	34	36	29	24	23	E	E	E	E	E <sub>15</sub>	E <sub>15</sub>	
14	E	E	E	E	E	E	E <sub>17</sub>	30	G	41	42	G	G	G	G	26	G	E <sub>14</sub>	E	E	E	15	E <sub>16</sub>	E	
15	26	E	E	E	E	J <sub>30</sub>	E <sub>16</sub>	29	38	34	30	G	G	G	G	G	G	E <sub>15</sub>	E	E	E <sub>15</sub>	E	E	E	
16	J <sub>53</sub>	J <sub>23</sub>	25	27	29	26	28	19	G	G	G	G	G	G	G	G	G	E <sub>15</sub>	E	E <sub>14</sub>	E	E <sub>16</sub>	E	E	
17	E <sub>15</sub>	15	19	E	E	E	G	G	34	36	35	G	29	38	22	40	30	15	E	30	29	29	23	18	
18	E <sub>16</sub>	E	E	19	16	E	21	31	34	34	54	J <sub>45</sub>	34	40	G	G	31	34	J <sub>30</sub>	32	E	E	36	24	
19	E	E	E	E	E	E	G	29	G	38	35	30	25	G	G	28	G	30	33	29	30	23	E	20	27
20	J <sub>24</sub>	24	E	31	E	E	22	43	J <sub>58</sub>	J <sub>80</sub>	J <sub>95</sub>	54	51	G	40	G	G	J <sub>33</sub>	J <sub>61</sub>	J <sub>51</sub>	J <sub>41</sub>	28	32	30	
21	30	E	26	E	E	E	E <sub>18</sub>	J <sub>33</sub>	G	G	G	G	24	G	G	G	18	21	24	J <sub>68</sub>	J <sub>35</sub>	38	J <sub>40</sub>	J <sub>50</sub>	
22	40	E	40	J <sub>23</sub>	29	19	E <sub>18</sub>	G	G	G	G	40	40	50	20	29	G	103	100	39	17	J <sub>25</sub>	J <sub>63</sub>	J <sub>28</sub>	
23	29	E	E	17	17	E	E <sub>17</sub>	G	J <sub>44</sub>	J <sub>62</sub>	J <sub>57</sub>	37	G	G	G	G	21	J <sub>53</sub>	44	J <sub>30</sub>	E	E	E	E <sub>16</sub>	
24	E	E	18	E	E	E	26	34	36	36	39	J <sub>63</sub>	46	G	G	42	46	41	33	36	30	E	E <sub>15</sub>	29	
25	30	E	E	E	E	E	E <sub>17</sub>	37	C	C	C	C	C	C	C	C	C	C	C	C	24	24	18	30	48
26	48	J <sub>44</sub>	18	E	E	E	E <sub>16</sub>	G	38	53	J <sub>63</sub>	J <sub>63</sub>	46	40	30	J <sub>33</sub>	23	22	24	J <sub>22</sub>	60	J <sub>26</sub>	J <sub>23</sub>	22	
27	E	E	E	E	E	E	E <sub>16</sub>	G	G	G	39	J <sub>53</sub>	35	J <sub>46</sub>	41	33	58	E <sub>15</sub>	E	21	J <sub>30</sub>	J <sub>63</sub>	111	20	
28	E	J <sub>25</sub>	J <sub>25</sub>	E	16	22	21	25	G	G	G	30	30	G	G	29	34	38	32	31	E <sub>16</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E
29	E <sub>15</sub>	E	E	E	E	J <sub>28</sub>	G	26	G	G	36	C	C	C	G	G	23	21	25	27	100	J <sub>50</sub>	J <sub>33</sub>	28	
30	E <sub>15</sub>	J <sub>23</sub>	J <sub>25</sub>	20	19	E	22	G	23	26	40	40	41	26	G	27	E <sub>20</sub>	E <sub>17</sub>	33	J <sub>53</sub>	J <sub>90</sub>	J <sub>40</sub>	J <sub>30</sub>	20	
31	28	J <sub>23</sub>	E	E	E	E	E <sub>17</sub>	J <sub>63</sub>	J <sub>33</sub>	40	28	26	48	24	25	J <sub>34</sub>	34	37	31	31	29	E <sub>15</sub>	E <sub>16</sub>	21	
CNT	30	30	30	30	29	28	28	29	28	29	29	29	29	29	30	30	30	30	30	29	30	30	30	30	30
MED	16	E <sub>13</sub>	E	E	E	E	E <sub>18</sub>	18	20	35	36	30	30	G	26	G	24	23	23	29	27	25	E <sub>16</sub>	23	21
UQ	28	J <sub>23</sub>	19	19	16	20	22	31	34	40	40	42	40	40	36	34	31	33	33	38	J <sub>33</sub>	26	J <sub>30</sub>	28	
LQ	E <sub>15</sub>	E	E	E	E	E	E <sub>16</sub>	G	G	G	G	G	G	G	G	G	G	E <sub>16</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	

OCT. 1970

FOES (0.1 MHZ)

The Radio Research Laboratories, Japan



# IONOSPHERIC DATA

OCT. 1970

FBES (0.1 MHz)

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

Station	WAKKANAI																								Lat. 45 23.6 N	Long. 141 41.1 E	Sweep 1	MHz to 20	MHz in 20	sec in automatic	operation
Hour 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 <sub>15</sub>	E	E	E	E	E	17	G	G	G	G	G	G	G	G	G	G	23	E	E <sub>15</sub>	20	18	E	E							
2	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E	16	21	G	21	21	G	G	30	33	G	26	G	G	E	E	19	28	17	E <sub>16</sub>							
3	E <sub>16</sub>	E <sub>14</sub>	E	E	E	E	20	G	23	G	35	35	G	36	35	30	G	G	20	26	20	E <sub>18</sub>	E <sub>15</sub>	E							
4	E	E <sub>16</sub>	E	E	E	E	E <sub>19</sub>	G	G	20	23	G	G	G	G	26	G	G	27	25	E <sub>15</sub>	E <sub>17</sub>	20	28							
5	20	26	E	20	19	E	G	G	G	G	G	44	G	34	34	30	G	21	17	15	20	E <sub>15</sub>	E	E <sub>16</sub>							
6	E <sub>15</sub>	E <sub>15</sub>	E	E	E	E	E <sub>21</sub>	26	31	31	C	G	G	33	34	32	50	27	C	C	C	C	C	C							
7	C	C	C	C	C	C	C	C	C	C	G	36	35	35	33	20	G	E <sub>15</sub>	E	E	E	E	E	E							
8	E	16	E	15	E	E	E <sub>19</sub>	26	31	G	G	G	30	38	44	G	G	17	30	28	E	E	E	E							
9	E <sub>16</sub>	E <sub>12</sub>	E	E	E	19	20	15	G	19	21	G	G	G	G	G	G	E <sub>16</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>	E	E							
10	E <sub>16</sub>	E <sub>16</sub>	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E <sub>17</sub>	E	E	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>							
11	E	E	E	E	E	C	C	G	G	G	G	G	44	40	G	G	25	E <sub>16</sub>	E	E <sub>15</sub>	E	E	E	E							
12	20	20	E	20	C	C	C	C	C	41	G	G	G	G	G	30	24	21	26	28	17	E	E	E							
13	E	20	12	E	E	E	G	G	G	G	G	G	G	33	35	28	24	15	E	E	E	E	E <sub>15</sub>	E							
14	E	E	E	E	E	E	E <sub>17</sub>	G	G	G	34	G	G	G	G	26	22	G	E <sub>14</sub>	E	E	E	E	E <sub>16</sub>	E						
15	E	E	E	E	E	E	E <sub>16</sub>	G	G	G	30	G	G	G	G	G	G	E <sub>15</sub>	E	E	E <sub>15</sub>	E	E	E							
16	12	19	17	18	19	17	19	17	G	G	G	G	G	G	G	G	G	E <sub>15</sub>	E	E <sub>14</sub>	E	E <sub>16</sub>	E	E							
17	E <sub>15</sub>	15	17	E	E	E	G	G	G	G	G	G	27	29	21	20	18	15	E	E	16	E	E	15							
18	E <sub>16</sub>	E	E	E	E	E	G	G	G	G	A	G	G	33	G	G	29	23	24	18	E	E	16	E							
19	E	E	E	E	E	E	G	G	G	G	32	28	25	G	G	21	29	25	24	16	E	E	E	E							
20	E	16	E	E	E	E	19	30	55	80	40	38	40	G	30	G	G	17	18	21	30	15	24	17							
21	E	E	E	E	E	E	E <sub>18</sub>	18	G	21	G	G	24	20	G	18	G	17	16	E	19	25	18	18	E						
22	20	E	20	17	15	12	E <sub>18</sub>	G	G	G	G	26	27	25	20	20	G	46	54	20	16	16	12	17							
23	E	E	E	E	E	E	E <sub>17</sub>	G	42	50	41	33	G	G	G	G	G	20	29	24	E	E	E	E <sub>16</sub>							
24	E	E	E	E	E	E	24	G	G	G	45	37	G	G	31	30	26	20	20	19	E	E <sub>15</sub>	E	E							
25	E	E	E	E	E	E	E <sub>17</sub>	27	C	C	C	C	C	C	C	C	C	C	C	C	22	E	16	E	30						
26	30	27	12	E	E	E	E <sub>16</sub>	G	30	40	35	40	37	33	26	25	21	15	20	19	A	18	16	E							
27	E	E	E	E	E	E	E <sub>16</sub>	G	G	G	G	G	G	32	32	30	21	E <sub>15</sub>	E	20	19	A	A	16							
28	E	16	16	E	E	15	17	25	G	G	G	28	29	25	26	27	21	18	21	E <sub>16</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E							
29	E <sub>15</sub>	E	E	E	E	E	G	25	G	G	34	C	C	C	G	G	21	17	E	E	27	28	18	E							
30	E <sub>15</sub>	E	16	15	16	E	16	G	G	22	25	29	29	28	24	G	27	E <sub>20</sub>	E <sub>17</sub>	21	50	20	17	22	E						
31	E	E	E	E	E	E	E <sub>17</sub>	48	27	28	27	25	37	23	23	30	23	20	E	22	20	E <sub>15</sub>	E <sub>16</sub>	E							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT	30	30	30	30	29	28	28	29	28	29	29	29	29	29	30	30	30	30	29	30	30	30	30	30							
MED	E <sub>12</sub>	E	E	E	E	E	E <sub>17</sub>	G	G	G	G	G	G	G	G	G	G	17	15	17	16	E <sub>15</sub>	E <sub>15</sub>	E							
UQ	E <sub>16</sub>	16	E <sub>12</sub>	E	E	E	18	18	27	21	32	29	30	33	30	28	23	21	21	22	20	16	16	16							
LQ	E	E	E	E	E	E	E <sub>16</sub>	G	G	G	G	G	G	G	G	G	G	E <sub>15</sub>	E	E	E	E	E	E							

OCT. 1970

FBES (0.1 MHz)

# IONOSPHERIC DATA

OCT. 1970

F-MIN (0.1 MHZ)

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

Station **WAKKANAI** Lat. **45 23.6 N** Long. **141 41.1 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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 <sub>15</sub>	E	E	E	E	E	E	E	11	12	12	18	18	18	17	18	11	11	E	E	E <sub>15</sub>	E	E	E <sub>15</sub>	E <sub>13</sub>
2	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E	E	E	11	12	11	12	20	12	11	19	17	13	12	11	E	E	E	E	E <sub>15</sub>	E <sub>18</sub>
3	E <sub>16</sub>	E <sub>14</sub>	E	E	E	E	E	E	E	16	16	13	13	16	12	12	11	16	E <sub>12</sub>	E <sub>15</sub>	E	E <sub>18</sub>	E <sub>18</sub>	E <sub>15</sub>	E <sub>16</sub>
4	E <sub>16</sub>	E <sub>16</sub>	E	E	E	E	E <sub>19</sub>	11	12	11	11	16	28	21	12	11	11	E <sub>16</sub>	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>17</sub>	E	E <sub>15</sub>	
5	E	E	E	E	E	E	E	12	15	15	18	18	18	20	19	20	16	15	E <sub>14</sub>	E	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>
6	E <sub>15</sub>	E <sub>15</sub>	E	E	E	E	E <sub>21</sub>	15	12	20	C	18	18	19	17	11	E	E	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	20	18	19	15	13	12	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	E	
8	E	E	E <sub>14</sub>	E	E	E	E <sub>19</sub>	15	16	15	18	19	20	17	16	15	12	11	E	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
9	E <sub>16</sub>	E <sub>12</sub>	E	E	E	E	E	11	11	12	20	20	19	18	17	14	11	E <sub>16</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>	E	E	
10	E <sub>16</sub>	E <sub>16</sub>	E	E	E	E	E	11	17	16	17	20	20	20	20	19	13	E <sub>17</sub>	E	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
11	E	E	E	E	E	C	C	11	14	15	17	17	12	17	15	16	11	E <sub>16</sub>	E	E <sub>15</sub>	E	E	E	E	
12	E	E	E	E	C	C	C	C	C	19	16	15	17	16	16	11	12	E	E	E	E	E	E	E	
13	E	E	E	E	E	E	E	15	12	17	17	17	17	16	12	12	12	11	E	E	E	E	E <sub>15</sub>	E	
14	E	E	E	E	E	E	E <sub>17</sub>	12	15	16	17	18	19	19	13	12	12	E <sub>14</sub>	E	E	E	E	E <sub>16</sub>	E	
15	E	E	E	E	E	E	E <sub>18</sub>	11	11	13	17	16	15	20	19	13	12	E <sub>15</sub>	E	E	E <sub>15</sub>	E	E	E	
16	E	E	E	E	E	E	E	11	11	11	20	16	17	16	14	11	12	E <sub>15</sub>	E	E <sub>14</sub>	E	E <sub>16</sub>	E	E	
17	E <sub>15</sub>	E	E	E	E	E	E	11	11	19	11	11	12	17	16	12	12	11	E	E	E	E <sub>15</sub>	E	E <sub>15</sub>	E
18	E <sub>16</sub>	E	E	E	E	E	E <sub>19</sub>	11	11	11	15	15	16	16	12	12	12	E <sub>12</sub>	E	E	E	E	E	E	
19	E	E	E	E	E	E	E	16	11	12	12	17	16	16	16	12	E	E	E <sub>16</sub>	E	E	E	E <sub>15</sub>	E <sub>15</sub>	
20	E	E	E	E	E	E	E <sub>19</sub>	12	11	11	17	19	19	17	12	11	11	E	E	E	E	E	E	E	
21	E <sub>15</sub>	E	E	E	E	E	E <sub>18</sub>	E	12	15	15	16	16	13	12	12	E	E	E	E	E	E	E	E	
22	E	E	E	E	E	E	E <sub>18</sub>	12	11	16	17	16	12	11	12	12	14	E	E	E	E	E	E	E	
23	E	E	E	E	E	E	E <sub>17</sub>	11	17	17	17	18	16	17	13	13	15	E	E	E	E	E	E	E <sub>16</sub>	
24	E	E	E	E	E	E	E <sub>14</sub>	16	16	17	17	16	27	19	18	20	11	E	E	E	E	E	E <sub>15</sub>	E <sub>15</sub>	
25	E <sub>15</sub>	E	E	E	E	E	E <sub>17</sub>	11	C	C	C	C	C	C	C	C	C	C	C	C	E	E <sub>16</sub>	E	E <sub>16</sub>	E
26	E	E	E	E	E	E	E <sub>16</sub>	11	12	16	17	17	23	17	20	12	E	E	E	E	E	E	E	E <sub>15</sub>	
27	E	E	E	E	E	E	E <sub>16</sub>	12	11	12	13	13	13	15	E	E	E	E <sub>15</sub>	E	E	E	E	E	E	E
28	E	E	E	E	E	E	E	16	16	16	16	17	17	14	12	11	E	E	E	E <sub>16</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E <sub>15</sub>	
29	E <sub>13</sub>	E	E	E	E	E	E <sub>12</sub>	14	13	16	18	C	C	C	18	17	12	E	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	
30	E <sub>15</sub>	E	E	E	E	E	E <sub>15</sub>	15	16	16	17	16	17	17	20	16	E <sub>20</sub>	E <sub>17</sub>	E	E	E	E	E	E	E
31	E <sub>16</sub>	E	E	E	E	E	E <sub>17</sub>	14	15	17	18	19	19	17	16	11	E	E <sub>15</sub>	E	E	E	E	E <sub>15</sub>	E <sub>12</sub>	E <sub>18</sub>
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	29	28	28	29	28	29	29	29	29	29	29	30	30	30	30	29	30	30	30	30	30
MED	E	E	E	E	E	E	E <sub>14</sub>	12	12	16	17	17	17	17	16	12	12	E <sub>11</sub>	E	E	E	E	E	E	E
UQ	E <sub>15</sub>	E	E	E	E	E	E <sub>17</sub>	15	16	16	18	18	19	19	18	14	12	E <sub>15</sub>	E	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
LQ	E	E	E	E	E	E	E	11	11	12	16	16	16	16	12	11	11	E	E	E	E	E	E	E	E

OCT. 1970

F-MIN (0.1 MHZ)

(FORM 1-5) 23071 0171 1730

IONOSPHERIC DATA

OCT. 1970

M(3000)F2 (0.01)

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

Station WAKKANAI Lat. 45 23.6 N. Long. 141 41.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	275	275	265	270	270	270	330	335	325	325	320	315	300	310	305	310	315	325	315	320	285	285	270	280	
2	260	260	270	280	285	290	335	335	325	335	330	310	300	310	300	320	320	310	315	305	285	275	285	295	
3	275	265	270	275	270 <sup>F</sup>	F	320	335	325	330	325	320	315	300	310	315	335	320	330	295	265	280	265 <sup>F</sup>	275	
4	275	265	265	265	275	300	340	335	335	320	315	320	300	300	290	300	310	320	315	275	270	265	270	265	
5	280	285	290	300	270	280	330	335	330	330	315	300	305	305	310	320	325	325	315	310	295	285	280	270	
6	280	270	280	285	305	300	335	340	345	315	C	295	315	310	305	305	310	330	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	310	310	270	305	320	310	330	325	315	305	295	300	285	270
8	275	F	F	F	280 <sup>F</sup>	300	335	340	330	330	315	300	310	305	305	310	320	315	315	305	295	290	285	280	
9	280	275	280	285	310	310	340	345	335	350	310	310	310	305	305	330	335	320	310	310	325	280	280	270	
10	275	285	285	295	290	285 <sup>F</sup>	330	355	330	330	315	300	295	305	300	310	310	320	305	310	285	290	285	285	
11	260	270	275	270	285	C	C	335	345	305	305	310	305	305	305	310	310	300	285	290	300	275	290	280	
12	245 <sup>F</sup>	260 <sup>F</sup>	250	255	C	C	C	C	C	300	305	300	310	310	310	320	315	315	315	285	260	275	265	270	
13	270	280	280	300	265	280	315	345	320	320	325	315	300	310	320	310	310	315	295	310	315	285	275	255	
14	250	265	255	270	265	280	300	330	325	320	325	310	320	320	320	330	320	315	315	285	300	295	280	275	
15	280	270	270	275	260	280	335	345	330	335	320	320	315	320	295	320	330	315	290	305	310	300	295	275	
16	270	265	270	285	295	285	330	335	335	325	320	305	310	315	305	315	320	330	305	280	295	270	235	230	
17	275	325	250	255	320	240	230	265	280	270	270	295	300	310	315	325	315	305	305	295	265	250	260	255	
18	255	260	265	245	245	245	275	315	225	R	A	R	R	220	285	290	300	280	270	270	F	F	F	F	
19	F	255 <sup>F</sup>	250 <sup>F</sup>	F	255 <sup>F</sup>	300 <sup>F</sup>	315 <sup>F</sup>	325	325	330	275	330	335	325	320	335	330	325	290	300	300	290	270	270 <sup>I</sup>	
20	260	270	265	275	280 <sup>F</sup>	F	315	340	330	330	315	315	295	320	335	310	335	265	295	305	315	265	265	260	
21	265	275	275	275	290	285	315	335	330	335	330	320	335	320	320	330	345	315	305	315	325	310	285	285	
22	285	290	275	270	280	290	320	350	335	330	330	325	300	310	310	315	330	325	320	310	290	265	270	265	
23	250	255	255	255	255	255	305	295	345	325	270	310	315	315	295	315	330	315	305	295	290	285	275	265	
24	265	265	F	F	F	290	290	270	275	285	285	280	285	315	305	315	310	325	325	335	270	270	270	255	
25	270	270	285	300	295	290	310	330	C	C	C	C	C	C	C	C	C	C	C	C	310	310	300	275	270
26	270	270	F	F	F	F	315	325	345	335	320	315	305	315	325	335	330	320	320	325	A	280	260	265	
27	260	270	285	295	270 <sup>F</sup>	285 <sup>F</sup>	315 <sup>U</sup>	325 <sup>S</sup>	340	325	325	330	315	305	310	320	335	320	315	315	310	A	A	265	
28	F	270 <sup>F</sup>	280 <sup>F</sup>	285 <sup>F</sup>	300 <sup>F</sup>	285	310	325	330	315	325	310	310	305	300	295	310	310	295	315	315	275 <sup>E</sup>	F	F	
29	280 <sup>F</sup>	255	265	245	250	255	280	305	320	320	315	C	C	C	310	310	320	305	305	310	305	260	265	245	
30	250	265	275	260	260	275	275	325	290	320	300	300	310	305	300	310	320	295	300	295	265	270 <sup>F</sup>	270	270	
31	270	270	265	255	250	275	300	315	330	305	305	315	305	305	300	305	320	295	315	320	265	285	280	275	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	27	26	27	25	28	29	28	28	28	28	28	29	30	30	30	30	29	30	28	28	27	28	
MED	270	270	270	275	275	285	315	335	330	325	315	310	308	310	305	315	320	315	310	305	295	280	275	270	
UQ	275	275	280	285	290	290	330	340	335	330	325	318	315	315	315	320	330	325	315	310	310	290	282	275	
LQ	260	265	265	260	262	275	302	325	325	318	305	300	300	305	300	310	310	310	300	295	278	270	268	265	

OCT. 1970

M(3000)F2 (0.01)



# IONOSPHERIC DATA

OCT. 1970

M(3000)F1 (0.01)

135° E Mean Time (G. M. T. + 9 h)

Station **WAKKANAI** Lat. **45 23.6 N** Long. **141 41.1 E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour 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													
2																								
3																								
4										380		390												
5																								
6												C												
7									C	C			385		370									
8									415	420	405													
9																								
10												420												
11																								
12									C															
13																								
14											L													
15																								
16																								
17									335	335	340	360												
18									320	315	A	345	345	325	335									
19											420													
20																								
21																								
22																								
23																								
24										340	345	I A	350	370										
25									C	C	C	C	C	C	C	C								
26																								
27																								
28																								
29												C	C	C										
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	5	4	5	3	2	2									
MED									335	340	375	360	350	348	352									
UQ									375	380	412	390	368											
LQ									328	335	342	345	348											

OCT. 1970

M(3000)F1 (0.01)

# IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>F<sub>2</sub> (KM)

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N Long. 141° 41.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											245													
2																								
3																								
4										250	250													
5																								
6											C													
7									C	C			235		260									
8									225	245	245													
9																								
10												230												
11																								
12									C															
13																								
14											230													
15																								
16																								
17									375	350	350	305												
18									600	R	A	R	R	660	350									
19											230													
20																								
21																								
22																								
23																								
24										310	305	305	300	285										
25									C	C	C	C	C	C	C	C								
26																								
27																								
28																								
29												C	C	C										
30																								
31																								
Hour 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
CNT									3	4	6	4	2	2	2									
MED									375	280	245	278	268	472	305									
UQ									488	330	305	305												
LQ									300	248	230	240												

OCT. 1970

H<sup>o</sup>F<sub>2</sub> (KM)

IONOSPHERIC DATA

OCT. 1970

H'F (KM)

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

Station WAKKANAI Lat. 45 23.6 N. Long. 141 41.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	265	260	260	275	280	275	220	220	215	220	215	215	210	215	230	235	250	230	220	215	235	260	280	270	
2	300	300	280	260	250	250	220	220	220	220	215	210	210	220	220	245	240	225	220	230	260	295	260	245	
3	275	285	280	270	265	270	225	215	215	220	215	220	205	215	225	245	245	220	210	250	290	295	280	275	
4	280	280	300	295	260	250	210	215	225	230	235	205	225	225	225	245	230	220	225	275	275	300	320	300	
5	300	275	255	250	260	300	215	220	235	235	220	I <sub>2</sub> A <sub>2</sub> 225	225	235	240	240	245	220	230	215	230	265	280	295	
6	285	300	270	260	250	225	210	210	210	215	C	200	215	230	220	240	A	215	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	C	215	215	205	225	225	230	240	220	210	225	230	240	260	275
8	280	260	260	260	240	245	225	215	210	200	200	220	200	240	260	240	240	225	220	245	230	245	275	270	
9	275	275	275	260	240	245	210	215	200	205	200	200	205	220	235	245	230	215	215	240	220	240	260	295	
10	295	275	260	250	240	250	210	220	215	215	215	195	210	225	225	240	225	210	230	235	225	230	260	270	
11	300	300	275	270	260	C	C	215	220	220	225	230	245	235	230	230	240	215	235	215	215	250	250	230	
12	310	300	300	320	C	C	C	C	C	C	250	225	235	225	225	225	225	215	220	300	295	260	250	270	
13	255	295	250	250	240	265	220	225	215	215	225	210	220	210	235	225	220	220	215	225	220	220	260	315	
14	315	300	300	275	260	250	225	220	215	225	210	210	210	225	230	240	220	225	220	250	230	240	250	250	
15	260	260	260	265	285	275	225	220	220	215	210	220	220	210	215	225	225	220	225	245	230	230	230	250	
16	290	305	285	250	240	260	225	210	220	210	205	210	215	225	225	230	230	215	205	270	240	320	350	380	
17	290	215	300	350	440	410	320	260	225	205	245	225	225	235	230	245	230	230	240	250	260	300	300	315	
18	300	300	310	310	345	310	310	290	265	270	A	230	255	260	235	250	260	255	315	300	260	260	260	260	
19	290	310	325	235	295	265	245	215	205	230	205	200	200	215	210	230	220	215	225	235	240	250	275	300	
20	300	280	270	275	265	275	245	225	I <sub>2</sub> A <sub>2</sub> 225	I <sub>2</sub> A <sub>2</sub> 225	225	210	240	220	230	225	220	200	240	245	250	280	325	310	
21	330	295	295	265	250	230	225	215	225	225	215	215	225	220	225	240	225	200	220	225	245	250	295	270	
22	300	275	305	310	280	250	220	220	215	220	225	215	225	230	230	245	230	A	A	240	245	280	305	320	
23	335	305	310	300	300	280	230	220	240	I <sub>2</sub> A <sub>2</sub> 220	230	220	225	230	225	230	230	235	245	225	240	265	265	300	
24	290	295	315	270	300	300	275	290	275	260	230	I <sub>2</sub> A <sub>2</sub> 255	250	235	245	250	230	230	220	220	275	295	300	310	
25	300	275	250	225	215	230	245	225	C	C	C	C	C	C	C	C	C	C	C	C	225	225	245	305	350
26	350	325	275	245	245	215	220	215	210	215	215	215	225	230	225	230	225	205	220	215	A	300	310	315	
27	300	290	275	260	250	250	225	210	215	210	210	225	205	220	235	230	220	205	210	215	230	A	A	305	
28	300	300	275	255	240	240	225	210	215	200	225	210	225	220	225	245	215	210	240	215	220	260	275	280	
29	290	275	280	305	275	300	260	225	220	220	220	C	C	C	230	225	220	215	225	220	240	320	300	320	
30	320	275	255	275	295	270	270	230	230	215	225	215	220	215	225	230	240	210	195	250	I <sub>2</sub> A <sub>2</sub> 260	285	300	300	275
31	295	275	275	275	275	275	250	I <sub>2</sub> A <sub>2</sub> 225	225	220	210	235	230	220	225	240	220	210	240	220	275	275	300	275	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	29	28	28	29	28	29	28	29	29	29	30	30	29	29	28	30	29	29	29	30	
MED	298	288	275	268	260	262	225	220	218	220	215	215	220	225	228	240	230	215	222	232	240	260	280	288	
UQ	300	300	300	275	280	275	245	225	225	225	225	225	225	230	230	245	240	225	238	250	260	295	300	310	
LQ	285	275	260	255	245	248	225	215	215	215	210	210	210	220	225	230	220	210	220	220	230	245	260	270	

OCT. 1970

H'F (KM)

IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>ES (KM)

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

Station WAKKANAI Lat. 45 23.6 N. Long. 141 41.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S	E	E	E	E	E	100	G	G	115	115	G	G	G	G	G	125	115	E	S	100	100	100	100	
2	S	E	S	S	E	100	100	G	100	115	G	G	100	105	G	110	G	G	E	E	100	100	100	S	
3	S	S	E	E	E	E	100	G	100	G	100	100	G	105	100	100	G	140	110	100	100	S	S	100	
4	100	S	E	E	100	E	S	105	G	120	100	110	G	G	100	G	100	115	100	110	S	S	105	105	
5	105	100	100	100	100	E	G	G	115	115	115	110	110	105	105	105	G	110	110	110	105	S	100	S	
6	S	S	E	E	E	E	S	105	110	105	C	G	G	105	100	100	105	100	C	C	C	C	C	C	
7	C	C	C	C	C	C	C	C	C	C	G	105	100	100	100	100	115	S	105	105	105	E	100	105	
8	100	100	100	100	100	E	S	110	110	110	110	G	105	100	100	G	125	105	100	100	100	100	100	100	
9	S	S	E	E	100	100	100	100	100	100	G	G	G	G	G	G	G	S	S	S	S	S	S	E	E
10	S	S	E	E	E	100	G	G	G	G	G	G	G	G	G	G	G	S	E	E	S	E	S	S	
11	E	E	E	E	110	C	C	G	G	G	125	G	110	100	G	G	110	S	E	S	E	E	125	110	
12	110	105	105	105	C	C	C	C	C	115	115	110	110	G	G	110	105	105	100	100	100	E	E	E	
13	E	105	105	105	E	E	G	G	G	120	115	115	G	110	105	105	105	105	E	E	E	E	S	E	
14	E	E	E	E	E	E	S	115	G	110	105	G	G	G	105	105	G	S	E	E	E	105	S	E	
15	100	E	E	E	E	100	S	110	110	110	100	G	G	G	G	G	G	S	E	E	S	E	E	E	
16	100	100	100	100	100	100	100	100	G	G	G	G	G	G	G	G	G	S	E	S	E	S	E	E	
17	S	105	100	E	E	E	G	G	115	115	115	G	105	100	100	100	105	105	E	105	105	105	100	105	
18	S	E	E	125	125	E	125	120	110	125	110	110	110	105	G	G	115	110	105	105	E	E	100	100	
19	E	E	E	E	E	E	G	125	G	110	105	105	100	G	100	100	100	100	110	110	110	E	105	100	
20	100	100	E	105	E	E	125	115	110	110	110	100	100	G	100	G	G	105	105	105	105	100	100	100	
21	100	E	100	E	E	E	S	110	G	100	G	G	100	100	G	100	100	110	110	105	105	105	100	105	
22	100	E	100	100	100	110	S	G	G	G	G	105	100	100	100	100	G	105	105	100	105	105	100	100	
23	100	E	E	105	100	E	S	G	110	110	105	105	G	G	G	G	115	100	100	100	E	E	E	S	
24	E	E	100	E	E	E	125	125	120	120	110	105	105	G	G	100	100	100	100	100	100	E	S	100	
25	100	E	E	E	E	E	S	100	C	C	C	C	C	C	C	C	C	C	C	C	105	110	105	105	105
26	100	100	100	E	E	E	S	G	105	105	105	105	105	100	100	100	100	100	100	100	105	105	105	105	
27	E	E	E	E	E	E	S	G	G	G	110	110	110	105	105	105	100	S	E	105	100	105	105	100	
28	E	100	100	E	100	100	100	110	G	G	G	100	100	100	100	100	100	100	100	S	S	E	S	E	
29	S	E	E	E	E	105	G	110	G	G	105	C	C	C	G	G	100	100	105	105	105	100	100	100	
30	S	100	100	100	100	E	110	G	105	105	105	100	100	100	G	100	S	S	110	105	105	105	100	105	
31	100	100	E	E	E	E	S	105	105	105	105	105	100	100	100	100	100	100	100	100	100	S	S	100	
CNT	13	11	12	10	11	8	10	16	15	21	21	17	18	17	16	18	19	20	18	20	19	13	18	19	
MED	100	100	100	102	100	100	100	110	110	110	110	105	102	100	100	100	105	105	105	105	105	105	100	100	
UQ	100	102	100	105	100	102	125	115	110	115	115	110	110	105	102	105	112	110	110	105	105	105	105	105	
LQ	100	100	100	100	100	100	100	105	105	105	105	105	100	100	100	100	100	100	100	100	100	100	100	100	

OCT. 1970

H<sup>o</sup>ES (KM)

# IONOSPHERIC DATA

OCT. 1970

TYPES OF ES

135° E Mean Time (G. M. T. + 9 h)

Station **WAKKANAI** Lat. **45 23.6 N** Long. **141 41.1 E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							f			f	f						f	f			f	f	f	f
2						f	f		f	f			f	f	f						f	f	f	
3							f		f		f			f	f	f		f	f	f	f			f
4	f				f			f		f	f	f			f		f	f	f	f			f	f
5	f	f	f	f	f				f	f	f	f	f	f	f	f		f	f	f	f	f		f
6								f	f	f				f	f	f		f	f					
7												f	f	f	f	f			f	f	f	f	f	f
8	f	f	f	f	f			f	f	f	f		f	f	f		f	f	f	f	f	f	f	f
9					f	f	f	f	f	f														
10						f																		
11					f					f	f	f	f	f			f						f	f
12	f	f	f	f						f	f	f	f			f	f	f	f	f	f	f		
13		f	f	f						f	f	f		f	f	f								
14								f		f	f	f			f	f							f	
15	f					f		f	f	f	f	f												
16	f	f	f	f	f	f	f	f													f	f	f	f
17		f	f						f	f	f	f	f	f	f	f	f	f		f	f	f	f	f
18				f	f		f	f	f	f	f	f	f	f			f	f	f	f			f	f
19								f		f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
20	f	f		f		f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
21	f		f					f		f			f	f	f	f	f	f	f	f	f	f	f	f
22	f		f	f	f	f						f	f	f	f	f	f	f	f	f	f	f	f	f
23	f			f	f				f	f	f	f					f	f	f	f				
24			f			f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f		f
25	f							f													f	f	f	f
26	f	f	f						f	f	f	f	f	f	f	f	f	f	f	f	f	f	f	f
27										f	f	f	f	f	f	f			f	f	f	f	f	f
28		f	f		f	f	f	f				f	f	f	f	f	f	f	f	f	f	f	f	f
29						f											f	f	f	f	f	f	f	f
30		f	f	f	f				f	f	f	f	f	f	f	f			f	f	f	f	f	f
31	f	f						f	f	f	f	f	f	f	f	f	f	f	f	f	f	f		f
Hour 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
CNT																								
MED																								
UQ																								
LQ																								

OCT. 1970

TYPES OF ES



# IONOSPHERIC DATA

OCT. 1970

FOF2 (0.1 MHz)

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

Station	AKITA																							Lat. 39 43.5 N.	Long. 140 08.2 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation	
Hour 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	66	66	63	61	59	62	91	I <sup>R</sup> <sub>98</sub>	99	107	102	111	116	108	111	112	116	113	99	74	61	56	54	56			
2	53	54	52	53	50	51	73	94	96	101	100	101	104	106	105	105	104	99	90	68	64	67	68	62			
3	59	59	59	59	59	59	87	I <sup>R</sup> <sub>100</sub>	102	93	106	106	111	114	114	121	114	105	86	51	51	55	59	59			
4	57	57	52	56	57	56	I <sup>R</sup> <sub>76</sub>	87	92	106	122	116	109	116	113	121	123	111	89	61	64	61	64	67			
5	64	62	56	51	44	45	I <sup>R</sup> <sub>72</sub>	98	113	114	114	116	123	124	121	119	122	114	85	66	62	I <sup>R</sup> <sub>58</sub>	55	56			
6	56	56	56	56	54	46	75	94	94	108	120	119	112	111	116	112	112	108	87	70	60	51	52	52			
7	51	55	57	56	44	44	I <sup>R</sup> <sub>69</sub>	89	97	104	119	119	117	116	112	108	103	99	89	66	62	61	61	61			
8	61	64	65	64	64	64	91	I <sup>R</sup> <sub>104</sub>	104	101	106	116	118	106	113	117	119	112	99	71	63	54	56	57			
9	56	52	51	53	52	46	70	84	96	100	108	109	115	114	119	123	117	101	72	68	64	52	50	51			
10	52	52	53	54	54	46	69	83	99	99	122	114	116	121	124	119	114	101	66	67	66	63	55	52			
11	49	51	C	C	C	C	C	C	C	C	C	C	132	131	123	126	125	113	109	95	91	84	67	66	68		
12	56	59	I <sup>B</sup> <sub>55</sub>	51	55	56	67	I <sup>B</sup> <sub>92</sub>	94	108	123	126	126	123	117	116	101	97	79	54	54	56	57	53			
13	54	49	54	50	42	41	65	94	109	123	131	133	126	124	116	106	102	102	87	78	64	52	46	46			
14	46	51	46	44	43	45	63	I <sup>R</sup> <sub>100</sub>	118	114	135	117	117	113	112	115	104	87	76	66	64	56	51	49			
15	49	47	45	45	43	44	74	I <sup>B</sup> <sub>102</sub>	102	105	121	126	114	117	111	101	89	98	79	70	68	58	52	47			
16	49	47	49	52	47	41	68	101	118	103	115	I <sup>B</sup> <sub>116</sub>	109	111	106	93	91	90	69	53	58	52	47	45			
17	47	47	32	31	26	26	40	54	69	81	95	102	106	103	94	91	89	77	65	51	47	47	49	47			
18	47	46	45	39	37	39	45	I <sup>R</sup> <sub>47</sub>	45	48	A	I <sup>B</sup> <sub>52</sub>	A	52	58	60	60	59	I <sup>A</sup> <sub>52</sub>	56	61	55	52	48			
19	49	50	F <sub>48</sub>	F	F	F	52	68	83	96	I <sup>B</sup> <sub>113</sub>	I <sup>B</sup> <sub>112</sub>	112	105	103	106	102	90	65	56	52	50	46	45			
20	F <sub>44</sub>	42	41	41	39	35	58	87	I <sup>R</sup> <sub>106</sub>	117	111	115	119	112	117	111	98	91	69	64	54	41	I <sup>A</sup> <sub>40</sub>	40			
21	40	42	40	41	41	41	I <sup>R</sup> <sub>58</sub>	89	99	106	116	124	116	107	103	104	I <sup>C</sup> <sub>103</sub>	89	72	67	67	43	41	I <sup>A</sup> <sub>40</sub>			
22	41	39	41	40	41	41	63	90	104	96	111	122	117	109	117	102	108	I <sup>R</sup> <sub>108</sub>	77	62	50	48	47	46			
23	45	46	45	45	43	40	65	94	104	112	104	124	124	124	124	112	102	101	94	74	61	54	55	54			
24	55	52	49	51	47	47	54	56	67	74	83	94	94	97	100	96	101	87	72	56	37	46	48	51			
25	52	51	49	46	37	35	56	I <sup>R</sup> <sub>92</sub>	104	108	113	116	119	121	114	110	99	85	66	57	51	45	38	39			
26	41	I <sup>A</sup> <sub>42</sub>	43	44	36	41	S I <sup>R</sup> <sub>60</sub>	89	118	101	120	131	121	123	128	110	93	98	68	57	43	36	39	41			
27	41	41	42	39	36	36	57	95	I <sup>R</sup> <sub>107</sub>	114	116	112	I <sup>R</sup> <sub>128</sub>	121	115	99	102	89	67	61	47	C	C	C			
28	42	44	47	47	46	F	58	87	I <sup>R</sup> <sub>104</sub>	115	119	131	123	117	120	106	115	90	80	72	61	51	50	51			
29	48	51	50	46	49	49	61	I <sup>R</sup> <sub>98</sub>	I <sup>R</sup> <sub>128</sub>	141	129	129	114	119	119	116	111	86	82	83	57	46	47	46			
30	I <sup>R</sup> <sub>47</sub>	51	53	50	43	46	55	114	144	125	139	137	141	132	119	117	123	91	64	71	I <sup>A</sup> <sub>58</sub>	56	58	57			
31	56	57	51	47	44	46	64	I <sup>B</sup> <sub>110</sub>	124	126	127	136	126	121	117	107	I <sup>R</sup> <sub>106</sub>	84	71	67	47	47	48	44			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	31	31	30	29	29	28	30	30	30	30	29	31	30	31	31	31	31	31	31	31	31	30	30	30			
MED	49	51	50	50	44	45	64	93	103	106	116	116	117	116	115	110	104	98	77	66	61	53	52	51			
UQ	56	56	54	53	52	48	72	98	109	114	122	126	123	121	119	116	114	104	87	70	64	56	56	56			
LQ	46	46	45	44	41	41	58	87	96	100	108	112	112	108	111	104	101	89	68	57	52	47	47	46			

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OCT. 1970

FOF2 (0.1 MHz)

# IONOSPHERIC DATA

OCT. 1970

FOF1 (0.01 MHZ)

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

Station **AKITA** Lat. **39 43.5 N** Long. **140 08.2 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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									450	L	510	550	L	L	L									
2									450	L	L	500	L	L	L									
3									L	L	L	500	510	520	L	A								
4									L	520	500	L	440	L	L	L								
5									L	L	L	L	L	L	L									
6									L	L	500	L	L	550	450	L								
7									L	L	530	L	L	L	L	L								
8									L	450	500	L	L	L	L									
9									L	480	L	490	500	L	L									
10									L	500	450	L	520	L	L									
11									C	C	L	L	L	L	L									
12									L	L	L	L	L	L	L									
13									L	420	L	440	500	L										
14									L	L	L	L	L	400	L									
15									L	L	L	500	L	L	L									
16									L	L	L	L	L	L	L									
17									L	560	L	L	L	L	L	L								
18									400	390	A	A	460	I A	460	450	400	L						
19									L	L	L	L	L	A	L									
20									L	L	L	A	L	L	A									
21									L	L	480	L	L	L										
22									L	410	L	L	L	L										
23									400	U L	540	A	470	L	L	L								
24									L	L	510	490	A	A	A									
25									L	L	A	L	L	L										
26									L	L	L	L	L	L										
27									L	L	L	L	L	L										
28									L	L	L	L	L	L										
29									L	L	L	L	L	L										
30									L	U L	480	410	L	L	L									
31									L	L	L	L	L											
CNT									1	1	5	11	9	8	6	3								
MED									400	390	450	500	490	480	510	400								
UQ										520	505	500	505	520	425									
LQ										450	465	460	450	500	400									

OCT. 1970

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1970

FOE (0.01 MHZ)

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

Station AKITA Lat. 39 43.5 N. Long. 140 08.2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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							205	265	305	340	355	360	365	360	335	310	280	A						
2							205	255	300	340	355	365	360	350	335	315	270	185	S					
3							190	265	305	330	345	355	360	360	A	A	A	A	S					
4							205	270	305	A	A	A	360	355	340	305	260	A	S					
5							205	275	310	335	345	A	A	A	A	A	250	A	S					
6							200	250	305	340	355	365	365	355	335	310	265	A	S					
7							190	270	310	340	350	360	365	360	345	315	A	A	S					
8							190	A	A	A	A	360	360	355	340	A	A	A	S					
9							175	260	305	340	350	355	360	355	340	310	260	190	S					
10							175	260	305	340	350	355	365	355	345	300	240	A	S					
11							C	C	C	C	C	355	360	355	340	315	240	S						
12							180	265	305	335	345	355	360	A	A	A	A	170						
13							A	A	305	340	350	360	355	355	330	290	250	A						
14							175	260	310	A	A	A	360	345	325	300	250	160						
15							170	255	295	335	340	350	355	350	330	305	250	A						
16							180	265	305	310	330	335	325	340	310	270	225	S						
17							S	245	280	310	330	330	335	330	310	275	210	S						
18							B	230	270	310	320	330	330	325	310	285	A	S						
19							B	230	275	A	A	A	A	A	A	280	235	S						
20							S	225	275	A	A	A	A	A	A	A	220	A						
21							S	250	295	320	340	350	355	340	320	290	225	S						
22							160	240	295	325	335	A	A	355	335	295	A	S						
23							B	240	285	A	A	A	A	A	330	295	A	S						
24							170	240	310	325	A	A	A	A	310	275	A	A						
25							170	245	300	330	A	A	A	345	320	290	240	S						
26							B	250	A	A	A	A	355	345	320	285	245	S						
27							165	260	305	A	A	A	A	A	A	275	235	A						
28							S	235	300	315	335	340	350	345	330	290	A	S						
29							165	260	300	320	330	345	355	345	315	275	A	S						
30							B	240	295	315	335	350	355	330	310	280	225	S						
31							S	235	A	A	350	355	360	350	325	A	A	S						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							19	28	27	21	20	20	23	24	25	25	20	4						
MED							180	252	305	330	345	355	360	350	330	290	242	178						
UQ							195	262	305	340	350	360	360	355	335	305	255	188						
LQ							170	240	295	320	335	348	355	345	320	280	230	165						

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OCT. 1970

FOE (0.01 MHZ)



# IONOSPHERIC DATA

OCT. 1970

FOES (0.1 MHz)

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

Station **AKITA** Lat. **39 43.5 N** Long. **140 08.2 E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour 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 <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	21	30	G	36	38	G	38	38	G	G	30	24	J <sub>23</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	
2	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	29	J <sub>40</sub> <sup>X</sup>	G	G	G	G	G	G	G	29	21	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	
3	J <sub>19</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	38	37	G	G	J <sub>39</sub> <sup>X</sup>	J <sub>46</sub> <sup>X</sup>	J <sub>49</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>39</sub> <sup>X</sup>	J <sub>17</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	
4	J <sub>18</sub> <sup>X</sup>	M <sub>20</sub>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>20</sub> <sup>X</sup>	G	G	36	38	38	37	G	G	G	G	J <sub>28</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	
5	J <sub>23</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>75</sub> <sup>X</sup>	J <sub>48</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	G	G	J <sub>50</sub> <sup>X</sup>	42	38	44	J <sub>43</sub> <sup>X</sup>	J <sub>45</sub> <sup>X</sup>	J <sub>46</sub> <sup>X</sup>	J <sub>39</sub> <sup>X</sup>	33	J <sub>38</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>44</sub> <sup>X</sup>	J <sub>59</sub> <sup>X</sup>	J <sub>58</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>22</sub> <sup>X</sup>	
6	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	G	J <sub>25</sub> <sup>X</sup>	G	36	G	G	G	J <sub>44</sub> <sup>X</sup>	J <sub>45</sub> <sup>X</sup>	J <sub>40</sub> <sup>X</sup>	G	23	J <sub>30</sub> <sup>X</sup>	J <sub>30</sub> <sup>X</sup>	J <sub>27</sub> <sup>X</sup>	J <sub>27</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
7	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>26</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	G	G	G	G	G	G	J <sub>27</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	G	G	J <sub>29</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>34</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>34</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	
8	J <sub>20</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	E	E	G	J <sub>28</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	34	38	G	G	G	G	G	33	33	J <sub>37</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	
9	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>18</sub> <sup>X</sup>	G	G	G	35	G	G	G	G	G	G	G	G	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
10	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	36	G	G	G	G	G	J <sub>33</sub> <sup>X</sup>	G	J <sub>20</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>16</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
11	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	C	C	C	C	C	C	C	C	C	C	38	37	G	G	G	26	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>34</sub> <sup>X</sup>	J <sub>39</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>
12	J <sub>22</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>73</sub> <sup>X</sup>	J <sub>81</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	G	G	33	41	45	38	38	42	39	J <sub>38</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
13	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>26</sub> <sup>X</sup>	G	38	G	G	G	G	34	G	22	J <sub>40</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	34	37	39	G	G	G	G	G	G	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
15	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	29	32	G	J <sub>38</sub> <sup>X</sup>	G	G	G	G	G	19	F <sub>14</sub> <sup>S</sup>	J <sub>16</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>		
16	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	G	G	G	G	G	G	G	G	M <sub>20</sub>	M <sub>19</sub>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>18</sub> <sup>S</sup>	
17	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E	J <sub>15</sub> <sup>X</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	28	34	J <sub>43</sub> <sup>X</sup>	42	37	G	G	G	G	G	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
18	E <sub>13</sub> <sup>S</sup>	E	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>18</sub> <sup>S</sup>	26	35	J <sub>46</sub> <sup>X</sup>	J <sub>65</sub> <sup>X</sup>	39	J <sub>50</sub> <sup>X</sup>	37	36	41	J <sub>49</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>96</sub> <sup>X</sup>	J <sub>78</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	M <sub>21</sub>	
19	E <sub>18</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	J <sub>24</sub> <sup>X</sup>	J <sub>26</sub> <sup>X</sup>	M <sub>20</sub>	E <sub>18</sub> <sup>S</sup>	26	J <sub>39</sub> <sup>X</sup>	J <sub>46</sub> <sup>X</sup>	J <sub>42</sub> <sup>X</sup>	J <sub>40</sub> <sup>X</sup>	J <sub>42</sub> <sup>X</sup>	J <sub>53</sub> <sup>X</sup>	35	G	G	20	J <sub>23</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	
20	J <sub>26</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	26	33	J <sub>45</sub> <sup>X</sup>	J <sub>49</sub> <sup>X</sup>	J <sub>64</sub> <sup>X</sup>	J <sub>57</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>50</sub> <sup>X</sup>	J <sub>44</sub> <sup>X</sup>	G	J <sub>28</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>12</sub> <sup>S</sup>	J <sub>49</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	
21	J <sub>20</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G	G	G	G	G	G	G	G	C	J <sub>20</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	J <sub>42</sub> <sup>X</sup>	J <sub>50</sub> <sup>X</sup>	
22	J <sub>33</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>30</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	G	J <sub>28</sub> <sup>X</sup>	J <sub>26</sub> <sup>X</sup>	J <sub>39</sub> <sup>X</sup>	J <sub>39</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	G	G	G	28	J <sub>68</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>46</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	
23	J <sub>25</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>16</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>18</sub> <sup>S</sup>	G	32	34	J <sub>44</sub> <sup>X</sup>	J <sub>77</sub> <sup>X</sup>	J <sub>58</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
24	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	35	38	40	37	J <sub>64</sub> <sup>X</sup>	J <sub>62</sub> <sup>X</sup>	J <sub>48</sub> <sup>X</sup>	J <sub>39</sub> <sup>X</sup>	26	J <sub>32</sub> <sup>X</sup>	J <sub>34</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
25	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E	E <sub>14</sub> <sup>S</sup>	G	G	G	G	37	J <sub>75</sub> <sup>X</sup>	J <sub>41</sub> <sup>X</sup>	G	38	G	26	E <sub>16</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>34</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
26	J <sub>26</sub> <sup>X</sup>	J <sub>54</sub> <sup>X</sup>	J <sub>41</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>17</sub> <sup>S</sup>	G	J <sub>34</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>40</sub> <sup>X</sup>	J <sub>69</sub> <sup>X</sup>	G	J <sub>44</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	25	J <sub>20</sub> <sup>X</sup>	J <sub>26</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	
27	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	J <sub>32</sub> <sup>X</sup>	36	38	37	J <sub>38</sub> <sup>X</sup>	J <sub>45</sub> <sup>X</sup>	J <sub>64</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>53</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>43</sub> <sup>X</sup>	J <sub>45</sub> <sup>X</sup>	C	C	C	
28	J <sub>44</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	27	G	35	37	J <sub>44</sub> <sup>X</sup>	G	J <sub>40</sub> <sup>X</sup>	J <sub>30</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	J <sub>28</sub> <sup>X</sup>	J <sub>46</sub> <sup>X</sup>	J <sub>31</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
29	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	35	J <sub>39</sub> <sup>X</sup>	G	G	G	G	G	25	J <sub>38</sub> <sup>X</sup>	J <sub>40</sub> <sup>X</sup>	J <sub>26</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	J <sub>31</sub> <sup>X</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>25</sub> <sup>X</sup>	
30	J <sub>29</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	E <sub>16</sub> <sup>S</sup>	G	J <sub>29</sub> <sup>X</sup>	J <sub>44</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>41</sub> <sup>X</sup>	G	G	33	32	G	J <sub>43</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	J <sub>46</sub> <sup>X</sup>	J <sub>65</sub> <sup>X</sup>	J <sub>33</sub> <sup>X</sup>	J <sub>63</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	
31	J <sub>28</sub> <sup>X</sup>	J <sub>26</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>24</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>55</sub> <sup>X</sup>	J <sub>66</sub> <sup>X</sup>	G	G	G	J <sub>29</sub> <sup>X</sup>	G	J <sub>35</sub> <sup>X</sup>	J <sub>35</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	J <sub>18</sub> <sup>X</sup>	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	30	30	30	30	30	30	30	30	30	31	31	31	31	31	30	31	31	31	31	30	30	30	
MED	J <sub>18</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	28	36	38	37	G	G	G	G	26	J <sub>28</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	17	18	
UQ	J <sub>22</sub> <sup>X</sup>	J <sub>22</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	J <sub>21</sub> <sup>X</sup>	J <sub>19</sub> <sup>X</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>18</sub> <sup>S</sup>	26	J <sub>34</sub> <sup>X</sup>	J <sub>42</sub> <sup>X</sup>	J <sub>40</sub> <sup>X</sup>	40	J <sub>38</sub> <sup>X</sup>	J <sub>41</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>36</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>38</sub> <sup>X</sup>	J <sub>32</sub> <sup>X</sup>	J <sub>30</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>31</sub> <sup>X</sup>	J <sub>29</sub> <sup>X</sup>	J <sub>23</sub> <sup>X</sup>	
LQ	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	34	G	G	G	G	G	G	20	J <sub>20</sub> <sup>X</sup>	J <sub>20</sub> <sup>X</sup>	15	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	

The Radio Research Laboratories, Japan

OCT. 1970

FOES (0.1 MHz)

# IONOSPHERIC DATA

OCT. 1970

FBES (0.1 MHz)

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

Station **AKITA** Lat. **39 43.5 N** Long. **140 08.2 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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 <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	16	29	G	36	37	G	38	38	G	G	29	23	20	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
2	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	29	34	G	G	G	G	G	G	G	29	21	E <sub>14</sub> S <sub>14</sub>	26	18	E	E			
3	18	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	37	37	G	G	G <sub>31</sub>	34	45	33	25	32	E	23	E	E	21		
4	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	17	G	G	35	36	38	36	G	G	G	G	25	21	18	32	30	E	E		
5	19	17	21	26	25	18	G	G	40	41	38	43	40	44	45	32	32	24	20	20	E	19	19	E	
6	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	15	E <sub>14</sub> S <sub>14</sub>	G	27	G	35	G	G	G	25	35	13	G	19	24	24	18	20	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
7	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	20	E <sub>14</sub> S <sub>14</sub>	E	15	G	G	G	G	27	26	24	G	G	28	19	19	18	E	19	18	18	
8	19	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	E	G	28	31	34	35	G	G	G	G	33	29	28	E	18	E	18	E	18	
9	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	E	G	G	G	35	G	G	G	G	G	G	G	G	16	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
10	E <sub>15</sub> S <sub>15</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	G	14	G	35	G	G	G	G	G	32	G	19	20	25	19	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
11	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	C	C	C	C	C	C	C	C	C	C	38	37	G	G	G	26	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	29	28	E <sub>14</sub> S <sub>14</sub>
12	19	23	19	34	23	14	14	G	33	40	44	37	37	39	35	33	28	14	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
13	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	24	26	G	35	G	G	G	G	31	G	20	18	17	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
14	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	20	E	E <sub>14</sub> S <sub>14</sub>	G	G	G	34	37	37	G	G	G	G	G	G	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
15	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	21	31	G	37	G	G	G	G	G	G	19	E <sub>14</sub> S <sub>14</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
16	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	G	G	G	16	E	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>18</sub> S <sub>18</sub>	
17	E <sub>13</sub> S <sub>13</sub>	E <sub>13</sub> S <sub>13</sub>	E	15	E <sub>13</sub> S <sub>13</sub>	E <sub>13</sub> S <sub>13</sub>	17	26	32	39	36	36	G	G	G	G	G	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
18	E <sub>13</sub> S <sub>13</sub>	E	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>18</sub> S <sub>18</sub>	G	33	42	A	35	A	36	33	30	34	30	A	32	30	27	25	E	
19	E <sub>18</sub> S <sub>18</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	18	E	E <sub>18</sub> S <sub>18</sub>	25	32	40	42	38	42	52	32	G	G	19	21	20	25	22	20	E	
20	22	16	16	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>15</sub> S <sub>15</sub>	24	32	35	41	54	40	35	46	34	G	23	16	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	A	25	
21	18	18	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>15</sub> S <sub>15</sub>	G	G	G	G	G	G	G	G	G	G	C	E	E	18	18	24	E	A	
22	E	19	18	18	E	E <sub>14</sub> S <sub>14</sub>	G	26	24	34	35	39	37	G	G	G	25	28	E	22	18	22	20	E	
23	20	18	E	16	14	E <sub>14</sub> S <sub>14</sub>	E <sub>18</sub> S <sub>18</sub>	G	31	34	35	55	42	38	34	26	28	26	26	23	19	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
24	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	19	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	38	36	57	42	43	34	26	21	25	25	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
25	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	E	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	36	68	38	G	36	G	26	E <sub>16</sub> S <sub>16</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	28	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
26	18	A	31	18	E	E <sub>14</sub> S <sub>14</sub>	E <sub>17</sub> S <sub>17</sub>	G	31	39	36	40	G	36	38	30	20	20	E	26	23	E	21	E	
27	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	32	36	36	36	37	36	33	24	18	25	25	18	22	C	C	C	
28	24	E	18	18	15	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	26	G	35	35	37	G	28	28	30	27	24	31	19	20	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
29	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	G	G	G	34	36	G	G	G	G	G	23	30	17	19	18	25	23	20	
30	26	19	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	B	G	G	26	34	35	33	G	G	29	30	G	19	E	34	26	26	21	
31	20	18	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	18	20	44	34	G	G	G	G	26	G	32	30	24	21	E	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E
CNT	31	31	30	30	30	30	29	30	30	30	30	31	31	31	31	31	30	31	31	31	31	30	30	30	30
MED	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	14	14	14	E <sub>14</sub> S <sub>14</sub>	G	G	E <sub>24</sub> S <sub>24</sub>	35	36	35	G	G	G	G	24	20	17	18	14	14	14	E <sub>14</sub> S <sub>14</sub>	
UQ	18	18	E <sub>14</sub> S <sub>14</sub>	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>17</sub> S <sub>17</sub>	26	32	36	37	38	38	36	34	31	28	24	21	21	21	22	20	E	18
LQ	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E	E <sub>13</sub> S <sub>13</sub>	G	G	G	34	G	G	G	G	G	G	G	18	E <sub>14</sub> S <sub>14</sub>	14	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	

The Radio Research Laboratories, Japan

OCT. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

OCT. 1970

F-MIN (0.1 MHz)

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

Station AKITA Lat. 39 43.5 N Long. 140 08.2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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 <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	16	19	16	18	18	15	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	
2	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	16	16	14	14	19	16	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
3	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	16	16	20	16	14	13	13	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
4	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	16	15	16	14	19	17	16	14	13	13	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
5	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	15	16	18	16	18	15	23	14	15	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
6	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	17	24	19	19	16	16	13	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
7	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	14	15	16	19	15	14	14	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	
8	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	15	19	19	18	19	17	15	14	13	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
9	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	15	16	14	15	15	16	14	14	15	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
10	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	16	18	19	21	21	19	15	15	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
11	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	C	C	C	C	C	C	C	C	C	C	18	19	16	19	14	14	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
12	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	16	17	16	16	19	18	15	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
13	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	14	19	18	23	18	16	18	13	13	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	15	16	18	19	18	16	18	15	13	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
15	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	16	18	17	16	19	19	16	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
16	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	16	15	19	15	19	18	18	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	
17	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	16	19	19	18	15	15	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
18	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	18	15	15	17	17	16	19	19	17	16	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
19	E <sub>18</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	18	14	15	16	19	17	23	16	16	16	16	16	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
20	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	15	15	18	16	16	16	16	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
21	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	14	15	15	15	18	18	15	15	15	C	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
22	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	14	18	15	18	16	15	15	15	15	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
23	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	18	15	16	14	16	16	16	16	15	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
24	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	16	15	16	17	18	24	18	20	18	14	14	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
25	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	16	14	16	18	16	14	14	15	15	E <sub>16</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
26	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	17	15	14	19	15	18	20	16	16	14	15	15	E <sub>16</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
27	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	17	16	15	18	18	16	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	C	C	C
28	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	15	16	15	16	18	16	14	15	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
29	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>16</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	15	14	18	17	18	14	14	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
30	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	16	15	15	15	16	18	17	16	15	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
31	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	16	15	18	18	18	16	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
00																									
CNT	31	31	30	30	30	30	30	30	30	30	30	31	31	31	31	31	30	31	31	31	31	30	30	30	30
MED	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	16	16	18	18	16	16	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
UQ	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	15	15	16	18	18	19	18	17	15	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
LQ	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	15	16	16	16	16	15	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	

The Radio Research Laboratories, Japan

OCT. 1970

F-MIN (0.1 MHz)

IONOSPHERIC DATA

OCT. 1970

M(3000)F2 (0.01)

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

Station	AKITA				Lat.	39 43.5 N				Long.	140 08.2 E				Sweep	1 MHz to 20 MHz in 20 sec				in automatic operation					
Hour 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	275	270	270	275	270	265	330	I <sup>R</sup> 330	335	325	300	300	305	290	290	295	305	310	325	325	280	270	270	275	
2	265	270	270	285	285	280	320	340	335	325	310	305	300	290	305	305	310	320	315	300	275	285	280	280	
3	270	270	270	285	290	280	335	I <sup>R</sup> 340	335	310	310	310	305	300	295	305	315	315	325	280	270	275	265	285	
4	280	280	260	270	275	285	I <sup>R</sup> 320	335	330	310	310	310	295	295	290	290	305	310	310	280	270	260	255	275	
5	280	295	285	295	270	260	I <sup>R</sup> 315	325	325	315	310	300	290	295	300	300	305	320	320	295	285	I <sup>R</sup> 275	275	275	
6	280	275	285	300	300	290	320	335	320	315	310	310	305	305	310	305	310	320	320	310	300	290	285	290	
7	290	285	315	310	280	280	I <sup>R</sup> 325	325	330	320	310	305	310	310	315	325	315	325	320	310	290	280	280	280	
8	270	290	290	300	290	300	335	I <sup>R</sup> 340	325	320	320	310	305	300	305	310	310	320	325	310	290	280	280	280	
9	290	275	285	295	305	325	315	335	325	330	315	310	305	290	300	310	320	335	310	295	300	295	280	280	
10	280	280	290	290	295	285	325	340	345	310	315	300	295	300	300	310	315	325	305	300	290	295	290	275	
11	280	275	C	C	C	C	C	C	C	C	C	300	300	290	295	300	300	310	305	300	300	275	290	300	
12	250	265	I <sup>R</sup> 260	255	260	260	290	I <sup>R</sup> 330	310	320	305	310	300	300	305	310	320	320	320	280	265	275	290	280	
13	280	280	280	295	285	270	315	320	320	310	310	300	300	305	300	310	315	315	310	310	320	295	275	265	
14	265	290	285	275	265	275	305	I <sup>R</sup> 320	330	310	315	305	305	300	305	315	325	310	300	295	295	310	280	280	
15	275	300	280	280	275	270	315	I <sup>R</sup> 340	335	320	305	315	295	305	310	315	310	315	320	300	305	295	290	280	
16	280	270	280	295	305	275	315	330	335	330	I <sup>R</sup> 315	310	305	305	315	320	320	320	315	275	270	275	245	235	
17	260	315	290	235	220	235	280	300	295	280	290	290	295	310	315	325	315	315	300	285	265	250	255	255	
18	260	260	265	245	230	245	265	I <sup>R</sup> 245	220	235	A	I <sup>R</sup> 220	A	245	275	300	315	295	I <sup>A</sup> 270	260	280	290	295	275	
19	280	270	265	F	F	F	F	335	335	320	330	335	315	320	315	310	320	325	320	320	290	290	290	285	280
20	265	280	255	260	290	275	305	330	I <sup>R</sup> 320	335	310	310	310	300	305	320	315	310	310	305	315	280	I <sup>R</sup> 270	265	
21	255	270	275	275	275	285	I <sup>R</sup> 310	335	330	320	305	320	310	320	310	315	I <sup>R</sup> 320	320	315	300	315	295	285	I <sup>R</sup> 275	
22	280	280	275	275	270	290	320	330	340	320	305	315	310	295	305	310	305	I <sup>R</sup> 315	315	315	280	280	275	255	
23	255	260	260	260	255	275	310	320	325	315	310	300	300	295	300	305	305	305	300	300	280	265	285	280	
24	285	270	265	270	280	255	295	305	290	300	290	305	315	315	320	310	315	325	315	305	290	265	270	260	
25	275	275	300	305	325	275	305	I <sup>R</sup> 330	315	330	310	310	300	305	305	315	325	320	305	305	300	295	280	255	
26	265	I <sup>A</sup> 265	275	300	325	275	I <sup>R</sup> 310	335	330	305	300	305	295	295	310	325	300	325	325	315	300	305	255	260	
27	270	285	270	280	285	280	300	325	I <sup>R</sup> 325	320	310	320	I <sup>R</sup> 300	300	310	315	315	320	300	300	305	C	C	C	
28	275	265	280	300	300	F	310	340	I <sup>R</sup> 325	320	310	305	295	290	300	300	315	300	300	290	310	280	280	260	
29	280	280	270	255	270	265	280	I <sup>R</sup> 300	I <sup>R</sup> 320	325	305	300	300	290	295	300	310	300	290	310	305	285	280	255	
30	I <sup>R</sup> 260	270	285	295	270	265	290	315	320	300	305	285	300	295	300	295	310	305	280	285	I <sup>A</sup> 290	265	275	290	
31	280	300	295	280	270	270	300	I <sup>R</sup> 330	320	325	310	310	320	300	305	305	I <sup>R</sup> 310	315	290	310	275	280	290	300	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	30	29	29	28	30	30	30	30	29	31	30	31	31	31	31	31	31	31	31	30	30	30	
MED	275	275	278	280	280	275	312	330	325	320	310	305	300	300	305	310	315	315	310	300	290	280	280	275	
UQ	280	282	285	295	290	282	320	335	330	325	310	310	305	305	310	315	315	320	320	310	300	295	285	280	
LQ	265	270	270	270	270	265	300	320	320	310	305	300	300	295	300	302	310	310	300	290	280	275	270	260	

OCT. 1970

M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1970

M(3000)F1 (0.01)

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

Station AKITA Lat. 39 43.5' N. Long. 140 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										390	L	360	365	L	L	L									
2										380	L	L	365	L	L	L									
3										L	L	L	360	360	365	L	A								
4										L	350	365	L	410	L	L	L								
5										L	L	L	L	L	L	L									
6										L	L	380	L	L	350	365	L								
7										L	L	360	L	L	L	L									
8										L	385	365	L	L	L	L									
9										L	375	L	370	360	L	L									
10										L	365	380	L	350	L	L									
11										C	C	L	L	L	L	L									
12										L	L	L	L	L	L	L									
13										L	405	L	400	360	L										
14										L	L	L	L	L	380	L									
15										L	L	L	360	L	L	L									
16										L	L	L	L	L	L	L									
17										L	320	L	L	L	L	L									
18									285	290	A	A	330	350	360	370	L								
19										L	L	L	L	L	A	L									
20										L	L	L	A	L	L	A									
21										L	L	375	L	L	L										
22										L	415	L	L	L	L										
23										380	U	370	A	385	L	L	L								
24										L	L	355	350	L	A	A	A								
25										L	L	A	L	L	L										
26										L	L	L	L	L	L										
27										L	L	L	L	L	L										
28										L	L	L	L	L	L										
29										L	L	L	L	L	L										
30										L	U	375	385	L	L	L									
31										L	L	L	L	L											
CNT									1	1	5	11	9	8	6	3									
MED									285	290	380	375	360	368	360	370									
UQ										380	382	375	392	360	375										
LQ										350	365	360	362	350	368										

OCT. 1970

M(3000)F1 (0.01)



# IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>F<sub>2</sub> (KM)

135° E Mean Time (G. M. T. + 9 h)

Station **AKITA** Lat. **39° 43.5' N** Long. **140° 08.2' E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour 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			
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UQ																																																																																																
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OCT. 1970

H<sup>o</sup>F<sub>2</sub> (KM)

IONOSPHERIC DATA

OCT. 1970

H<sup>F</sup> (KM)

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

Station AKITA Lat. 39 43.5 N. Long. 140 08.2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	275	270	275	295	295	230	225	230	215	215	205	210	235	230	245	255	240	220	215	210	270	285	275	
2	305	295	295	255	240	250	235	225	235	205	215	230	220	230	235	245	250	240	235	230	270	280	270	240	
3	245	280	295	285	265	290	230	230	220	215	230	200	225	225	210	250	240	235	230	205	310	290	305	295	
4	270	270	320	310	280	265	225	230	235	225	230	230	195	245	245	245	245	235	230	230	310	330	310	285	
5	280	245	250	270	320	330	235	235	240	235	230	230	235	I <sup>A</sup> 245	245	245	245	230	220	255	245	275	290	305	
6	290	290	280	260	235	225	220	220	210	210	205	190	230	220	230	240	240	230	220	235	235	260	295	280	
7	290	280	255	240	210	255	235	225	210	220	205	210	230	230	235	230	235	230	220	230	245	260	270	270	
8	285	265	245	245	245	245	230	225	225	215	215	200	235	230	250	245	245	235	215	220	240	255	290	290	
9	265	275	280	260	240	240	225	230	230	210	205	210	205	200	230	245	245	230	215	245	245	230	280	300	
10	295	295	265	255	240	250	220	225	230	205	200	200	220	230	240	240	240	225	215	280	250	240	255	285	
11	300	305	C	C	C	C	C	C	C	C	C	C	245	230	230	245	240	245	240	240	240	240	275	290	250
12	290	310	320	I <sup>A</sup> 350	340	295	250	245	230	240	240	230	230	230	230	230	235	230	215	250	285	285	270	275	
13	260	275	255	245	240	255	240	240	235	225	200	220	200	230	240	245	230	230	230	235	220	245	255	340	
14	330	280	265	300	285	295	235	240	230	230	230	225	215	230	215	245	235	230	225	245	255	240	245	280	
15	270	255	255	270	245	305	245	230	225	225	220	215	215	220	230	235	235	245	225	250	245	240	250	270	
16	280	300	290	245	225	280	240	230	230	220	220	200	230	240	240	240	240	240	220	255	270	290	355	375	
17	320	235	245	420	E <sub>480</sub> E <sub>440</sub>	300	250	245	255	240	205	230	230	240	240	240	240	235	240	245	270	290	335	310	
18	320	300	290	280	355	370	295	260	A	A	A	240	I <sup>A</sup> 240	250	235	270	270	255	I <sup>A</sup> 270	I <sup>A</sup> 285	290	255	265	255	
19	275	295	290	325	A 320	280	245	230	235	I <sup>A</sup> 230	I <sup>A</sup> 220	220	235	I <sup>A</sup> 230	230	240	235	215	220	250	275	265	270	290	
20	A 330	295	320	295	250	270	240	230	220	230	A	A	A	215	I <sup>A</sup> 230	240	225	230	210	245	235	265	A	A 355	
21	320	295	290	290	265	255	240	225	230	220	210	210	230	230	240	235	240	215	225	245	235	260	250	I <sup>A</sup> 305	
22	295	300	300	300	300	280	240	230	235	220	195	240	230	235	240	240	245	220	210	235	270	295	305	315	
23	340	335	320	305	325	290	250	225	235	215	225	I <sup>A</sup> 235	210	240	240	240	235	245	245	230	250	280	290	290	
24	290	325	325	300	255	320	255	250	260	245	240	230	I <sup>A</sup> 230	I <sup>A</sup> 210	I <sup>A</sup> 240	250	240	230	230	240	245	295	300	310	
25	300	275	245	240	220	295	245	240	230	230	220	I <sup>A</sup> 220	240	230	I <sup>A</sup> 230	235	230	235	220	240	245	280	260	355	
26	335	A	A	265	225	260	235	225	240	I <sup>A</sup> 235	215	240	245	240	255	240	235	235	205	240	245	245	345	320	
27	300	285	260	265	260	290	245	230	230	230	215	210	245	230	235	240	235	225	240	235	245	C	C	C	
28	300	305	290	265	245	270	235	225	230	230	240	230	235	245	240	240	245	230	255	240	230	245	290	290	
29	290	270	300	300	315	305	275	240	240	235	I <sup>H</sup> 210	230	235	225	245	245	235	240	245	240	220	310	315	355	
30	340	315	255	260	290	295	290	240	235	230	210	205	225	240	240	240	245	205	240	290	I <sup>A</sup> 295	330	315	265	
31	295	275	250	260	290	300	255	230	240	230	220	220	240	230	240	240	240	225	245	240	250	290	270	255	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	30	29	30	30	30	30	30	29	29	28	30	30	31	31	31	31	31	31	31	31	31	30	29	30
MED	295	288	280	270	260	282	240	230	230	225	215	220	230	230	240	240	240	230	225	240	245	272	290	290	
UQ	312	300	295	300	298	295	250	240	235	230	228	230	235	240	240	245	245	238	240	248	270	290	305	310	
LQ	280	275	255	260	240	255	235	225	230	215	208	205	220	230	230	240	235	230	220	235	240	255	270	275	

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OCT. 1970

H<sup>F</sup> (KM)

# IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>ES (KM)

135° E Mean Time (G. M. T. + 9 h)

Station **AKITA** Lat. 39° 43.5' N. Long. 140° 08.2' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	S	110	S	110	160	G	130	130	G	115	115	G	G	140	120	100	100	100	S	S	S
2	105	S	E	S	E	S	G	150	105	G	G	G	G	G	G	G	150	140	120	S	105	100	100	100
3	100	100	100	S	S	S	G	G	G	115	115	G	G	105	120	110	110	100	100	105	110	110	105	105
4	105	105	S	S	105	S	110	G	G	130	120	110	105	G	G	G	G	100	100	115	115	110	110	110
5	110	105	105	105	105	105	G	G	130	120	120	115	115	115	115	115	140	120	110	105	110	110	105	105
6	S	S	S	S	100	S	G	110	G	115	G	G	G	105	100	105	G	120	110	105	110	105	S	S
7	110	S	S	105	S	105	105	G	G	G	G	100	100	100	G	G	115	110	110	105	105	105	105	100
8	105	105	S	105	E	E	G	110	110	115	115	G	G	G	G	130	120	105	110	105	105	105	100	100
9	S	S	S	105	105	105	G	G	G	115	G	G	G	G	G	G	G	G	100	S	S	S	S	S
10	S	S	S	S	S	S	G	100	G	120	G	G	G	G	G	115	G	110	105	105	105	105	S	S
11	S	S	C	C	C	C	C	C	C	C	C	C	145	150	G	G	G	115	100	S	S	S	105	105
12	110	105	110	105	105	105	105	G	140	130	115	120	130	115	115	110	110	110	105	S	S	S	S	S
13	S	S	S	S	S	100	105	100	G	120	G	G	G	G	120	G	110	110	105	S	S	S	S	S
14	S	S	S	100	105	S	G	G	G	120	120	115	G	G	G	G	G	G	S	S	S	S	S	S
15	105	S	S	S	S	S	G	115	115	G	105	G	G	G	G	G	G	145	S	105	105	S	S	S
16	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	G	100	100	S	S	S	S	B
17	S	S	E	105	S	S	140	135	140	120	115	120	G	G	G	G	G	S	S	110	S	S	S	S
18	S	E	S	S	S	S	B	140	130	115	115	120	115	135	135	140	120	120	110	115	110	105	105	110
19	B	S	E	100	100	105	B	150	120	110	110	110	105	105	100	G	G	110	110	110	105	105	105	105
20	100	100	100	100	S	S	S	130	125	110	105	105	105	110	105	105	G	105	105	105	S	S	105	105
21	100	100	100	S	S	S	S	G	G	G	G	G	G	G	G	G	C	110	105	100	100	105	105	105
22	105	100	100	100	100	S	G	110	105	105	105	105	105	G	G	G	115	110	110	105	105	105	105	105
23	105	105	105	105	105	S	B	G	150	115	110	105	105	105	105	105	105	100	100	100	100	S	S	S
24	S	S	105	105	S	S	G	G	125	125	120	110	105	105	105	105	140	105	100	110	S	S	S	S
25	S	S	E	E	E	S	G	G	G	G	115	110	110	G	110	G	130	S	S	S	105	105	S	S
26	105	105	105	105	100	S	B	G	115	115	105	105	G	105	105	100	105	100	100	100	105	105	105	100
27	105	S	S	S	S	S	G	G	115	115	115	115	110	110	105	100	100	110	110	110	105	C	C	C
28	105	105	100	100	100	S	S	115	G	110	110	105	G	100	100	100	100	100	100	100	100	S	S	S
29	S	S	S	100	100	S	G	G	G	115	110	G	G	G	G	G	110	105	105	100	105	105	105	110
30	100	100	100	S	S	110	B	G	110	110	105	105	G	G	100	125	G	110	110	105	105	105	105	105
31	100	100	105	S	S	S	105	110	105	110	G	G	G	100	G	100	100	100	100	100	S	100	S	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	13	12	15	13	7	7	14	16	24	21	18	14	15	15	15	19	27	26	23	21	18	15	15
MED	105	105	102	105	105	105	105	115	118	115	115	110	108	105	105	105	115	110	105	105	105	105	105	105
UQ	105	105	105	105	105	105	110	140	130	120	115	115	115	112	115	115	125	110	110	108	105	105	105	105
LQ	100	100	100	100	100	105	105	110	110	112	110	105	105	105	102	102	108	100	100	100	105	105	105	100

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OCT. 1970

H<sup>o</sup>ES (KM)



# IONOSPHERIC DATA

OCT, 1970

TYPES OF ES

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

Station **AKITA** Lat. **39 43.5 N** Long. **140 08.2 E** Sweep **1** MHz to **20** MHz in **20** sec in automatic operation

Hour 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		h	H		H	H		F	F			H	S	E	E	F			
2	F							H		h							H	H	F		S	E	F	F
3	F	F	F							F	F			h	F	h	h	h	F	F	S	F	F	F
4	F	F			F		h			H	F	S	F				h	h	F	F	S	F	F	F
5	F	F	F	F	F	F			H	S	F	F	F	F	S	F	H	S	h	E	F	F	F	F
6					F			h		F				F	h	F	S	h	S	F	F	F	F	F
7	F			F		F	F					h	h	F			S	h	h	F	F	F	F	F
8	F	F		F				h	F	F						H	S	h	F	F	F	F	F	F
9				F	F	F				F									F					
10								h		F						S		h	h	S	S	F		
11												H	H				S	F				F	F	
12	F	F	F	F	F	F	F		H	H	S	F	H	S	S	h	h	F	F					
13					F	h	h			F					F		h	F	F					
14				F	F					F	S	S												
15	F							h	S		F							h		F	F			
16																		F	F					
17				F			H	H	H	S	F	F								F				
18							H	H	H	S	S	H	S	H	H	H	S	S	F	F	F	F	F	F
19				F	F	F		H	S	S	S	S	h	h	h			S	F	F	F	F	F	F
20	F	F	F	F				H	H	h	h	h	h	F	h	h		h	F	F			F	F
21	F	F	F															h	F	F	F	F	F	F
22	F	F	F	F	F			h	F	h	F	h	F				S	h	F	F	F	F	F	F
23	F	F	F	F	F				H	F	F	h	h	h	h	h	h	h	F	F	F			
24			F	F					F	H	S	F	h	h	h	F	H	h	F	F				
25										F	h	h	h		h		H				F	F		
26	F	F	F	F	F				S	S	F	F		F	F	F	F	h	F	F	F	F	F	F
27	F								S	F	S	F	h	F	h	F	F	h	F	F	F	F		
28	F	F	F	F	F			S		F	F	F		F	F	F	h	F	F	F	F			
29				F	F					F	F						h	h	F	F	F	F	F	F
30	F	F	F			F			h	F	h	F				F	H		h	F	F	F	F	F
31	F	F	F				h	F	h	F				F		h	h	h	h	F	F	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

OCT, 1970

TYPES OF ES

# IONOSPHERIC DATA

OCT. 1970

FOF2 (0.1 MHz)

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

Station **KOKUBUNJI TOKYO** Lat. **35° 42.4' N** Long. **139° 29.3' E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour 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	61	61	59	56	53	55	86	99	96	96	101	116	129	121	121	124	125	118	Y0R1	78	65	56	56	56		
2	55	55	51	55	44	46	72	96	J0R2	91	96	103	108	111	112	108	105	105	91	70	61	61	61	59		
3	56	58	58	60	61	59	83	99	97	88	102	119	118	118	126	128	123	110	93	58	53	55	58	58		
4	58	56	51	51	53	53	71	89	106	99	120	124	108	121	124	126	126	119	97	69	66	61	63	69		
5	65	64	49	47	41	43	69	J0R1	107	108	116	124	125	130	131	130	129	120	83	66	63	61	59	60		
6	61	60	61	60	52	46	73	96	96	103	113	128	125	119	125	118	116	109	97	66	61	52	51	55		
7	51	53	56	50	38	38	73	91	98	97	111	119	129	119	120	117	103	96	88	61	58	60	60	60		
8	60	59	61	F	F	F	R	J0R2	113	95	106	118	122	120	126	123	119	116	106R	71	61	60	60	61		
9	57	51	50	50	46	42	66	88	95	93	103	113	112	112	124	126	117	107	77	64	64	58	52	51		
10	51	51	51	52	48	40	66	82	99	96	111	122	124	124	128	126	118	99	74	66	70	64	57	49		
11	51	51	49	51	49	46	66	80	99	113	123	133	134	122	129	126	115	116	99	94	85	67	69	70		
12	56	59	56	53	51	51	67	J0R2	115	121	129	136	130	129	126	118	111	101	81	59	56	59	61	54		
13	56	51	54	50	41	39	61	90	116	126	127	137	134	126	125	114	106	101	95	J0R75	62	55	49	49		
14	49	51	51	41	41	44	68	96	119	113	126	131	121	119	121	118	107	91	80	62	60	59	49	48		
15	49	46	41	41	39	39	69	110	116	106	116	121	118	119	116	106	96	99	88	69	65	52	49	50		
16	49	46	46	51	38	35	62	98	116	112	111	120	126	128	119	105	91	88	J0R75	51	J0R59	52	51	49		
17	47	56	36	32	30	30	52	67	79	100	116	124	129	120	107	101	96	91	66	51	51	51	53	52		
18	51	50	49	40	41	43	55	64	64	70	69	62	66	67	74	75	68	63	51	55	59	57	52	46		
19	47	48	49	48	48	51	58	85	97	108	118	119	119	111	113	111	107	99	71	59	56	51	51	49		
20	45	43	43	41	42	39	58	90	108	118	119	123	129	126	126	120	110	99	84	66	58	49	45	40		
21	41	41	40	40	36	39	64	92	98	101	110	126	119	116	112	109	96	96	76	70	62	46	41	41		
22	43	39	40	40	41	40	J0R67	90	J0R2	106	105	120	119	120	120	112	98	112	86	61	51	51	50	49		
23	46	46	46	44	43	44	66	96	J0R4	99	111	126	121	J0R23	126	115	106	101	94	J0R80	61	56	59	58		
24	59	51	52	51	46	46	62	86	99	116	116	119	126	118	117	108	107	95	75	58	47	49	51	53		
25	I C 56	C	C	C	C	C	C	C	C	C	C	C	113	121	126	124	124	119	105	90	72	58	51	48	40	40
26	41	41	44	46	34	31	59	90	99	118	123	136	135	134	136	121	96	95	80	59	50	40	36	I A 38		
27	41	46	44	44	41	41	61	99	112	118	118	121	126	I C 132	120	105	99	91	66	61	51	45	41	I A 41		
28	41	42	46	49	39	36	59	91	99	111	116	134	126	126	123	110	111	J0R2	76	71	66	59	51	50		
29	49	48	46	41	44	46	60	100	128	131	126	125	126	124	124	120	110	91	81	86	62	50	49	50		
30	51	51	59	56	45	47	61	116	145	123	131	140	138	141	123	116	116	104	58	65	65	61	59	60		
31	58	57	52	47	42	43	64	108	116	129	130	132	134	125	128	110	100	97	73	74	62	56	52	48		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	31	30	30	29	29	29	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	51	51	50	49	42	43	66	94	102	107	116	123	126	121	124	117	107	99	81	66	61	56	52	50		
UQ	56	56	54	51	48	46	69	99	115	118	122	130	129	126	126	122	116	108	92	70	64	60	59	58		
LQ	47	46	46	41	41	39	61	89	98	97	110	119	119	119	120	110	100	95	74	59	56	51	49	48		

OCT. 1970

FOF2 (0.1 MHz)

# IONOSPHERIC DATA

OCT. 1970

FOF1 (0.01 MHz)

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

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	L							
2									L	A	L	L	L	L	L	L	L							
3								L	L		L	L	L	L	A	L								
4									L	L	U 500 460	L	L	L	L	L								
5									L	L	L	L	L	L	L	L								
6									L	L	L	L	L	L	L	L	L							
7									L	L	L	L	L	L	L	L								
8								L	L	L	L	L	L	L	L	L	L							
9									L	L	L	L	L	L	L	L								
10									L	L	L	L	L	L	L	L								
11									L	L	L	L	L	L	L	L								
12									L	L	L	L	L	L	L	L								
13									L	L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L								
15									L	L	L	L	L	L	L	L								
16									L	L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18								L	470 460	A	A	500 470	L	L										
19									L	A	L	L	L	L	L	L								
20									L	L	L	L	L	L	L									
21									L	L	L	L	L	L	L									
22									L	L	A	L	L	L	L									
23									L	L	L		L		L									
24									L	L	L	L	L		A		A							
25							C	C	C	C	L	L	L	L	L	L								
26									L	L	L	L	L	L	L									
27									L	L	L	L	C	L	L									
28									L	L	L	L	L	L	L									
29									L	L	L	L	L	L	L									
30									L	L	L	L	L	L		L								
31									L	L	L	L	L											
Hour 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
CNT									1	1	1	1	1	1										
MED									470 460	U 500 460	500 470													
UQ																								
LQ																								

The Radio Research Laboratories, Japan

OCT. 1970

FOF1 (0.01 MHz)

IONOSPHERIC DATA

OCT. 1970

FOE (0.01 MHZ)

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	I A	I R			I A	I R	R	R	I A	I A	A	A					
2							210	A	I A	A	A	I R	I R	R	R	A	A	A	A					
3							175	265	300	330	I A	I A	I R	R	R	I A	I A	A	A					
4							175	270	290	A	A	355	365	350	340	310	265	190						
5							170	270	310	330	340	350	350	365	345	I R	I R	A	A	A				
6							190	A	A	A	B	B	A	A	I R	I R	A	A	A					
7							170	A	310	R	A	I R	I R	350	A	A	A	A	A					
8							A	A	A	A	A	R	R	B	345	A	A	190	A					
9							170	260	A	315	320	I A	I A	365	355	340	I A	I A	260	180				
10							175	270	305	325	I A	I A	I R	R	R	A	A	A	A					
11							B	235	310	335	I R	I R	I R	I R	I A	I A	A	A	A					
12							A	A	I R	I R	335	340	355	I A	I A	A	A	A	A					
13							B	R	A	A	R	I R	I R	360	350	I R	I R	300	250	B				
14							190	260	R	R	R	A	350	350	340	R	R	A	B					
15							B	R	A	A	R	I R	I R	355	355	I R	I R	305	R	R				
16							R	265	R	R	I R	I R	345	355	R	R	R	A	R	A				
17							190	A	A	325	340	A	A	I A	I A	320	295	245	180					
18							B	255	280	315	320	325	330	355	325	280	A	B						
19							175	250	A	A	A	A	355	I R	I R	330	A	A	A					
20							B	A	A	A	R	R	R	340	335	I A	I A	A	A					
21							A	240	295	325	350	355	350	355	I R	I R	300	240	A					
22							180	R	A	A	A	A	365	360	I R	I A	A	A						
23							175	250	R	A	A	A	A	A	A	A	A	A	B					
24							175	245	R	325	345	360	I R	I R	355	A	A	A	A					
25							C	C	C	C	R	I R	I R	345	350	355	350	330	300	225	B			
26							175	250	A	A	A	A	A	365	A	A	A	A	A					
27							175	250	A	A	A	A	A	C	A	R	A	A						
28							175	A	305	R	A	A	A	A	R	A	A	A						
29							175	R	R	A	A	A	R	A	R	A	A	A						
30							B	I A	A	A	355	355	365	350	330	A	A	A						
31							A	245	305	A	355	365	375	355	330	A	A	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							18	18	13	11	15	19	21	21	21	15	8	4						
MED							175	258	305	325	345	355	360	355	335	305	255	185						
UQ							180	265	310	332	350	360	365	355	340	310	268	190						
LQ							175	250	300	325	335	U	350	350	350	330	300	242	180					

OCT. 1970

FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1970

FOES (0.1 MHz)

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

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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 <sub>15</sub>	E <sub>13</sub>	26	E <sub>13</sub>	E <sub>13</sub>	20	24	32	33	36	38	J <sub>45</sub>	G	43	40	36	36	J <sub>29</sub>	J <sub>29</sub>	J <sub>27</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
2	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	25	30	34	J <sub>55</sub>	43	34	G	G	37	37	32	26	23	J <sub>31</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	20	
3	21	E <sub>15</sub>	E <sub>15</sub>	19	19	E <sub>13</sub>	22	29	38	39	37	J <sub>41</sub>	41	45	J <sub>48</sub>	36	J <sub>37</sub>	J <sub>39</sub>	J <sub>36</sub>	J <sub>30</sub>	J <sub>18</sub>	24	E <sub>15</sub>	E <sub>13</sub>	
4	J <sub>27</sub>	J <sub>23</sub>	M <sub>21</sub>	21	J <sub>16</sub>	E <sub>12</sub>	27	G	33	J <sub>34</sub>	37	G	G	G	20	G	19	G	J <sub>18</sub>	J <sub>20</sub>	J <sub>18</sub>	J <sub>42</sub>	J <sub>29</sub>	21	
5	J <sub>20</sub>	J <sub>40</sub>	J <sub>28</sub>	J <sub>18</sub>	J <sub>24</sub>	J <sub>24</sub>	J <sub>30</sub>	28	J <sub>54</sub>	J <sub>42</sub>	38	J <sub>42</sub>	42	42	J <sub>49</sub>	J <sub>29</sub>	35	J <sub>35</sub>	J <sub>25</sub>	J <sub>51</sub>	J <sub>21</sub>	J <sub>29</sub>	J <sub>22</sub>	22	
6	J <sub>25</sub>	J <sub>24</sub>	E <sub>13</sub>	E <sub>15</sub>	J <sub>24</sub>	E <sub>15</sub>	G	31	J <sub>35</sub>	37	37	E <sub>40</sub>	42	J <sub>39</sub>	G	J <sub>26</sub>	J <sub>41</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>29</sub>	23	J <sub>25</sub>	J <sub>25</sub>	20	
7	E <sub>18</sub>	E <sub>15</sub>	20	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	19	35	G	26	38	G	G	G	38	36	35	J <sub>41</sub>	J <sub>57</sub>	J <sub>29</sub>	J <sub>28</sub>	J <sub>21</sub>	20	E <sub>15</sub>	
8	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	19	J <sub>29</sub>	35	36	J <sub>40</sub>	G	G	E <sub>40</sub>	G	34	32	G	J <sub>29</sub>	J <sub>39</sub>	J <sub>25</sub>	J <sub>24</sub>	24	24	
9	23	20	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	G	G	35	36	37	37	20	G	G	J <sub>32</sub>	G	J <sub>30</sub>	19	19	J <sub>23</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>15</sub>	
10	E <sub>15</sub>	E <sub>13</sub>	M <sub>19</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	36	38	37	24	G	G	35	36	34	28	J <sub>30</sub>	J <sub>26</sub>	J <sub>49</sub>	J <sub>46</sub>	J <sub>30</sub>	24	E <sub>14</sub>
11	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>16</sub>	G	J <sub>29</sub>	36	G	G	G	G	38	35	J <sub>35</sub>	J <sub>24</sub>	E <sub>14</sub>	20	J <sub>35</sub>	E <sub>15</sub>	E <sub>13</sub>	J <sub>25</sub>	
12	J <sub>21</sub>	J <sub>25</sub>	22	18	E <sub>13</sub>	20	J <sub>33</sub>	J <sub>27</sub>	G	36	J <sub>48</sub>	J <sub>52</sub>	J <sub>51</sub>	39	39	35	J <sub>47</sub>	J <sub>29</sub>	21	E <sub>13</sub>	E <sub>15</sub>	E <sub>14</sub>	23	E <sub>15</sub>	
13	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	20	E <sub>13</sub>	E <sub>13</sub>	G	G	33	J <sub>48</sub>	G	G	G	G	33	30	E <sub>18</sub>	E <sub>14</sub>	E <sub>15</sub>	J <sub>24</sub>	J <sub>21</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	
14	E <sub>15</sub>	E <sub>15</sub>	20	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	G	G	G	G	G	42	G	G	G	G	G	21	E <sub>13</sub>	22	20	E <sub>15</sub>	J <sub>23</sub>	E <sub>15</sub>	
15	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	20	E <sub>18</sub>	G	J <sub>34</sub>	36	G	G	G	G	G	G	G	G	20	J <sub>24</sub>	E <sub>15</sub>	21	20	20	
16	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	20	E <sub>13</sub>	G	G	G	G	G	G	G	G	G	35	G	23	20	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
17	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	J <sub>19</sub>	J <sub>21</sub>	E <sub>15</sub>	G	35	J <sub>54</sub>	J <sub>72</sub>	J <sub>54</sub>	37	41	36	J <sub>50</sub>	G	G	G	J <sub>19</sub>	J <sub>15</sub>	M <sub>19</sub>	J <sub>17</sub>	J <sub>17</sub>	E <sub>13</sub>	
18	E <sub>13</sub>	M <sub>18</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>17</sub>	29	36	J <sub>46</sub>	J <sub>53</sub>	J <sub>63</sub>	38	43	J <sub>40</sub>	41	J <sub>65</sub>	J <sub>43</sub>	J <sub>80</sub>	J <sub>42</sub>	J <sub>36</sub>	J <sub>55</sub>	J <sub>53</sub>	J <sub>29</sub>	
19	J <sub>18</sub>	M <sub>19</sub>	M <sub>21</sub>	M <sub>21</sub>	19	J <sub>16</sub>	19	G	36	J <sub>44</sub>	J <sub>39</sub>	38	J <sub>37</sub>	G	G	35	30	J <sub>31</sub>	J <sub>29</sub>	J <sub>29</sub>	23	J <sub>22</sub>	20	23	
20	23	23	23	20	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	28	34	J <sub>37</sub>	G	G	G	37	J <sub>31</sub>	J <sub>37</sub>	35	J <sub>25</sub>	J <sub>21</sub>	J <sub>19</sub>	J <sub>19</sub>	20	22	19	
21	J <sub>24</sub>	20	J <sub>24</sub>	J <sub>24</sub>	E <sub>13</sub>	E <sub>15</sub>	J <sub>24</sub>	G	G	G	G	G	G	G	G	G	G	J <sub>29</sub>	J <sub>21</sub>	J <sub>32</sub>	J <sub>30</sub>	J <sub>36</sub>	22	J <sub>41</sub>	
22	J <sub>21</sub>	J <sub>29</sub>	J <sub>27</sub>	J <sub>24</sub>	J <sub>23</sub>	22	G	G	J <sub>36</sub>	J <sub>41</sub>	J <sub>50</sub>	J <sub>40</sub>	J <sub>27</sub>	G	G	38	J <sub>32</sub>	J <sub>54</sub>	J <sub>52</sub>	J <sub>29</sub>	J <sub>24</sub>	J <sub>21</sub>	J <sub>21</sub>	J <sub>21</sub>	
23	20	20	20	22	E <sub>15</sub>	E <sub>15</sub>	G	G	G	35	J <sub>39</sub>	J <sub>59</sub>	J <sub>39</sub>	J <sub>99</sub>	J <sub>43</sub>	J <sub>45</sub>	J <sub>29</sub>	20	J <sub>36</sub>	21	23	20	E <sub>16</sub>	22	
24	22	E <sub>15</sub>	19	23	20	E <sub>15</sub>	G	G	G	36	36	39	G	39	J <sub>12</sub>	J <sub>41</sub>	J <sub>103</sub>	J <sub>41</sub>	J <sub>30</sub>	23	E <sub>14</sub>	J <sub>39</sub>	18	E <sub>15</sub>	
25	C	C	C	C	C	C	C	C	C	C	C	G	G	31	31	29	35	32	35	J <sub>26</sub>	J <sub>29</sub>	J <sub>22</sub>	J <sub>25</sub>	J <sub>30</sub>	E <sub>15</sub>
26	J <sub>18</sub>	J <sub>30</sub>	36	J <sub>25</sub>	M <sub>23</sub>	20	20	G	32	38	J <sub>42</sub>	J <sub>42</sub>	42	35	J <sub>57</sub>	J <sub>54</sub>	J <sub>44</sub>	J <sub>39</sub>	J <sub>44</sub>	J <sub>29</sub>	J <sub>21</sub>	J <sub>19</sub>	E <sub>16</sub>	J <sub>51</sub>	
27	J <sub>39</sub>	J <sub>21</sub>	21	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	38	36	J <sub>36</sub>	J <sub>41</sub>	J <sub>41</sub>	C	36	G	29	J <sub>41</sub>	J <sub>25</sub>	21	J <sub>64</sub>	J <sub>29</sub>	J <sub>22</sub>	J <sub>69</sub>	
28	J <sub>43</sub>	J <sub>29</sub>	J <sub>25</sub>	24	J <sub>23</sub>	J <sub>18</sub>	G	26	G	G	39	42	J <sub>44</sub>	J <sub>41</sub>	G	J <sub>36</sub>	J <sub>44</sub>	J <sub>41</sub>	J <sub>47</sub>	J <sub>35</sub>	J <sub>28</sub>	E <sub>15</sub>	J <sub>29</sub>	20	
29	J <sub>19</sub>	J <sub>24</sub>	19	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	38	J <sub>41</sub>	J <sub>41</sub>	G	J <sub>39</sub>	35	J <sub>29</sub>	J <sub>41</sub>	J <sub>29</sub>	J <sub>30</sub>	J <sub>29</sub>	24	J <sub>21</sub>	J <sub>24</sub>	J <sub>29</sub>	
30	J <sub>35</sub>	J <sub>29</sub>	J <sub>25</sub>	21	E <sub>15</sub>	20	20	J <sub>29</sub>	35	37	31	31	J <sub>36</sub>	28	36	32	J <sub>30</sub>	J <sub>30</sub>	J <sub>27</sub>	J <sub>30</sub>	J <sub>30</sub>	22	J <sub>55</sub>	J <sub>54</sub>	
31	J <sub>30</sub>	J <sub>30</sub>	J <sub>26</sub>	21	E <sub>14</sub>	E <sub>13</sub>	J <sub>34</sub>	27	J <sub>36</sub>	J <sub>42</sub>	J <sub>58</sub>	J <sub>25</sub>	G	20	G	20	J <sub>34</sub>	J <sub>30</sub>	J <sub>24</sub>	J <sub>25</sub>	J <sub>23</sub>	J <sub>20</sub>	M <sub>22</sub>	18	J <sub>17</sub>
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	20	20	20	18	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	G	34	36	37	37	G	U <sub>27</sub>	30	35	34	32	J <sub>29</sub>	J <sub>26</sub>	J <sub>27</sub>	J <sub>23</sub>	J <sub>21</sub>	20	20
UQ	J <sub>23</sub>	J <sub>24</sub>	24	21	20	18	22	29	36	J <sub>41</sub>	J <sub>40</sub>	J <sub>42</sub>	40	39	40	36	J <sub>36</sub>	J <sub>37</sub>	J <sub>30</sub>	J <sub>30</sub>	J <sub>26</sub>	J <sub>27</sub>	J <sub>24</sub>	24	
LQ	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	G	G	G	36	E <sub>31</sub>	G	G	G	G	29	28	24	20	20	20	18	16	E <sub>16</sub>	E <sub>15</sub>

The Radio Research Laboratories, Japan

OCT. 1970

FOES (0.1 MHz)



# IONOSPHERIC DATA

OCT. 1970

FBES (0.1 MHz)

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

Station KOKUBUNJI TOKYO Lat. 35 42.4 N Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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 <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E	23	28	33	36	38	44	G	42	40	35	34	25	20	20	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
2	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	23	28	33	46	40	32	G	G	36	31	30	20	16	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E	
3	E	E <sub>15</sub>	E <sub>15</sub>	E	E	E <sub>13</sub>	20	29	33	35	37	40	40	40	45	35	36	32	28	20	E	16	E <sub>13</sub>	E <sub>13</sub>	
4	E	16	19	16	E	E <sub>13</sub>	25	G	33	34	37	G	G	G	20	17	G	G	16	16	16	29	16	E	
5	15	15	20	E	19	E	24	G	34	40	38	42	42	40	48	26	29	25	G	25	E	E	E	E	
6	E	23	E <sub>13</sub>	E <sub>13</sub>	E	E <sub>13</sub>	G	30	31	36	37	E <sub>40</sub>	40	38	G	29	29	25	25	E	E	20	20	E	
7	E <sub>18</sub>	E <sub>15</sub>	17	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	15	25	G	E <sub>26</sub>	38	G	G	G	37	34	28	37	25	25	17	E	E	E <sub>15</sub>	
8	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	19	29	34	35	38	G	G	E <sub>40</sub>	G	33	26	G	25	25	E	E	E	E	
9	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	G	G	33	35	37	37	G	E <sub>19</sub>	G	32	16	16	E	E	E	E <sub>13</sub>	E <sub>14</sub>	E <sub>15</sub>	
10	E <sub>15</sub>	E <sub>13</sub>	E	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	33	37	37	E <sub>24</sub>	G	E <sub>36</sub>	36	33	26	25	19	40	18	26	16	E <sub>14</sub>	
11	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>16</sub>	G	G	28	36	G	G	G	36	35	25	18	E <sub>14</sub>	E	E	E <sub>15</sub>	E <sub>13</sub>	E	
12	20	E	E	E	E <sub>13</sub>	E	30	26	G	35	46	52	49	36	36	31	35	E	G	E <sub>13</sub>	E <sub>15</sub>	E <sub>14</sub>	E	E <sub>15</sub>	
13	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>13</sub>	E <sub>13</sub>	G	G	32	38	G	G	G	G	G	32	27	E <sub>18</sub>	E <sub>14</sub>	E <sub>15</sub>	E	E	E <sub>16</sub>	E <sub>15</sub>	
14	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	G	G	G	38	G	G	G	G	G	16	E <sub>13</sub>	E	E	E <sub>15</sub>	16	E <sub>15</sub>	
15	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>18</sub>	G	28	36	G	G	G	G	G	G	G	E	20	E <sub>15</sub>	E	E	E	E	
16	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E	E <sub>15</sub>	G	G	G	G	G	G	G	G	G	32	G	15	G	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
17	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	16	15	E <sub>15</sub>	G	28	34	34	48	37	37	35	40	G	G	G	18	E	E	E	16	E <sub>13</sub>	
18	E <sub>13</sub>	E	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>17</sub>	26	33	44	50	59	37	48	38	39	41	17	25	25	18	40	29	23	
19	E	E	E	E	E	E	G	G	33	42	38	30	28	G	G	30	26	29	25	20	E	19	E	E	
20	E	E	E	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	26	32	34	G	G	G	G	37	29	35	27	18	16	15	19	E	16	E
21	E	E	E	17	E <sub>13</sub>	E <sub>15</sub>	G	G	G	G	G	G	G	G	G	G	G	G	E	E	30	20	E	27	
22	21	26	22	16	E	E	G	G	34	40	48	40	G	G	G	34	30	17	24	E	E	21	16	16	
23	E	E	E	E	E <sub>15</sub>	E <sub>15</sub>	G	G	G	34	37	49	38	71	34	45	27	18	25	E	E	E	E <sub>16</sub>	16	
24	E	E <sub>15</sub>	E	E	E	E <sub>15</sub>	G	G	G	35	36	38	E <sub>34</sub>	39	67	40	68	40	26	E	E <sub>14</sub>	25	E	E <sub>15</sub>	
25	C	C	C	C	C	C	C	C	C	C	C	G	31	31	24	35	32	25	22	26	E	17	29	E	E <sub>15</sub>
26	E	27	23	E	16	E	G	G	32	36	38	39	40	G	41	45	30	34	34	25	18	E	E <sub>16</sub>	A	
27	25	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	32	35	36	32	40	C	34	G	26	29	E	E	E	E	E	A	
28	26	26	25	16	E	15	G	25	G	G	38	40	43	40	G	34	39	35	36	25	23	E <sub>15</sub>	29	E	
29	16	19	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	35	39	40	E <sub>35</sub>	38	26	29	35	20	20	24	16	E	22	16	
30	25	25	19	E	E <sub>15</sub>	E	17	25	32	34	29	30	G	30	G	35	31	26	28	24	24	24	E	48	26
31	23	20	16	E	E <sub>14</sub>	E <sub>13</sub>	17	27	24	35	33	25	G	G	E <sub>20</sub>	E <sub>20</sub>	30	27	20	22	19	E	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	E <sub>15</sub>	15	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	G	G	32	35	37	32	E <sub>26</sub>	G	26	34	32	27	20	20	16	E <sub>14</sub>	15	E <sub>15</sub>	15
UQ	16	16	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	18	26	33	36	38	40	38	38	36	34	30	26	25	24	17	20	16	16	
LQ	E	E	E	E	E	E	G	G	G	34	E <sub>29</sub>	G	G	G	G	28	25	16	14	E	E	E	E	E	

OCT. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

OCT. 1970

F-MIN (0.1 MHZ)

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

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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 <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	13	13	E <sub>15</sub> <sup>S</sup>	15	15	15	18	15	15	25	15	15	15	14	14	13	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
2	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	13	13	13	14	13	15	19	15	15	19	15	15	14	13	13	15	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	
3	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	13	13	13	14	15	15	15	16	15	16	15	14	15	14	14	13	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	13	
4	12	13	E <sub>15</sub> <sup>S</sup>	13	14	12	14	14	14	15	15	15	24	15	15	14	14	14	14	13	13	13	E <sub>15</sub> <sup>S</sup>	13	
5	E <sub>15</sub> <sup>S</sup>	12	13	14	13	12	15	15	15	15	15	19	15	19	16	15	15	15	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
6	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	15	15	34	40	21	15	15	15	14	13	14	14	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
7	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	13	E <sub>15</sub> <sup>S</sup>	13	15	15	15	15	15	16	15	15	15	15	15	15	13	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
8	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	14	13	14	15	15	15	15	28	15	40	15	15	15	15	15	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
9	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	13	15	14	15	18	16	19	14	16	16	15	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	14	E <sub>15</sub> <sup>S</sup>	
10	E <sub>15</sub> <sup>S</sup>	13	13	13	14	14	14	15	15	15	16	20	18	21	16	15	14	14	13	E <sub>15</sub> <sup>S</sup>	14	13	E <sub>15</sub> <sup>S</sup>	14	
11	14	14	13	14	13	14	16	14	14	15	15	24	25	18	16	15	15	15	14	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	13	13	
12	E <sub>15</sub> <sup>S</sup>	13	12	14	13	E <sub>15</sub> <sup>S</sup>	14	13	15	15	26	19	25	23	16	15	14	14	12	13	E <sub>15</sub> <sup>S</sup>	14	13	E <sub>15</sub> <sup>S</sup>	
13	E <sub>15</sub> <sup>S</sup>	14	14	13	13	13	14	14	14	15	16	15	15	14	14	15	15	18	14	E <sub>15</sub> <sup>S</sup>	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	15	15	15	15	25	16	18	19	14	15	15	15	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	
15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	18	14	15	15	15	15	18	26	19	16	15	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	
16	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	13	13	14	13	15	15	19	15	27	15	14	15	15	13	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
17	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	12	12	E <sub>15</sub> <sup>S</sup>	15	14	14	15	15	15	25	15	15	15	13	14	13	14	14	E <sub>15</sub> <sup>S</sup>	13	13	
18	13	13	13	14	14	13	17	14	14	14	14	15	15	15	15	15	14	14	14	14	13	12	E <sub>15</sub> <sup>S</sup>	12	
19	14	13	13	13	13	13	14	15	15	15	16	15	15	15	14	15	15	15	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
20	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	15	15	15	15	15	15	15	25	15	14	15	14	14	14	13	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	
21	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	13	E <sub>15</sub> <sup>S</sup>	17	15	15	14	14	15	19	19	15	15	15	15	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	14
22	14	13	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	15	14	15	15	15	15	15	20	15	15	15	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	13	13	
23	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	15	15	15	25	15	16	15	15	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	
24	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	15	19	15	16	16	26	18	26	22	14	15	12	E <sub>15</sub> <sup>S</sup>	14	13	14	E <sub>15</sub> <sup>S</sup>	
25	C	C	C	C	C	C	C	C	C	C	15	16	15	16	26	14	14	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
26	13	13	13	14	13	14	14	15	16	22	25	25	28	20	25	15	15	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	
27	13	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	14	16	15	15	15	21	C	16	15	15	15	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	14	
28	14	12	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	13	15	15	15	15	19	15	23	15	16	14	15	14	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	
29	14	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	15	14	15	15	15	18	22	15	15	15	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	12	
30	E <sub>15</sub> <sup>S</sup>	13	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	15	16	18	23	15	15	15	15	15	14	14	13	14	E <sub>15</sub> <sup>S</sup>	13	13	
31	14	E <sub>15</sub> <sup>S</sup>	14	14	14	13	13	15	14	15	15	15	27	15	15	14	14	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31	31	
MED	E <sub>15</sub> <sup>S</sup>	13	13	14	14	13	14	14	15	15	15	15	18	16	15	15	15	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
UQ	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	15	15	16	19	24	19	16	15	15	15	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
LQ	14	13	13	13	13	13	14	14	14	15	15	15	15	15	15	15	14	14	14	14	14	13	14	13	

OCT. 1970

F-MIN (0.1 MHZ)

# IONOSPHERIC DATA

OCT. 1970

M(3000)F2 (0.01)

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

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	285	295	290	270	265	275	335	345	345	325	290	285	295	290	295	290	305	325	J <sup>R</sup> B	325	305	290	275	270	280	
2	275	280	275	325	295	285	330	350	J <sup>R</sup> B	345	330	315	300	290	290	295	315	315	325	325	315	295	295	290	290	
3	270	290	285	295	300	290	340	335	345	325	300	300	295	295	300	310	315	325	345	285	275	275	280	285		
4	295	290	275	275	285	290	335	335	360	315	315	315	285	290	290	300	305	320	320	300	280	270	265	285		
5	305	320	310	300	280	275	325	J <sup>R</sup> B	345	290	305	300	290	285	285	290	300	315	340	325	290	300	295	275	270	
6	280	285	295	300	310	285	335	335	335	320	310	310	305	295	305	305	320	330	320	315	295	295	290	280		
7	295	290	305	340	300	295	320	355	345	330	315	310	320	305	310	315	330	325	340	310	285	290	275	285		
8	285	290	335	F	F	F	R	J <sup>R</sup> B	325	325	310	295	305	300	295	310	325	320	305	310	285	285	290	295		
9	305	300	300	305	310	320	340	345	340	325	310	315	295	290	300	315	325	335	320	305	305	310	290	285		
10	290	285	305	320	335	300	335	350	355	325	295	315	300	290	305	310	320	330	315	275	305	305	310	285		
11	280	275	290	295	310	295	340	340	320	310	300	305	315	285	300	300	295	305	295	310	295	290	275	290		
12	275	260	270	265	275	275	315	J <sup>R</sup> B	325	320	315	310	310	305	300	310	315	315	315	310	305	270	270	280	295	
13	285	280	295	305	295	280	330	320	320	330	305	305	305	300	305	305	320	315	325	J <sup>R</sup> B	305	295	295	265	260	
14	265	310	320	275	290	275	310	325	320	320	295	315	300	295	305	315	325	330	320	305	300	310	290	275		
15	290	285	300	295	280	275	320	345	345	320	310	300	305	295	310	290	290	315	325	305	315	295	290	280		
16	280	285	290	315	340	265	315	330	335	320	305	305	300	305	295	315	320	325	J <sup>R</sup> B	320	300	J <sup>R</sup> B	275	255	255	
17	255	305	315	245	230	225	310	310	285	300	295	300	310	300	325	325	335	340	330	285	275	275	255	270		
18	265	275	275	295	245	235	270	270	255	255	275	A	280	285	295	315	330	315	275	275	290	300	315	290		
19	290	280	290	270	270	285	320	335	340	315	310	325	310	290	315	320	335	335	325	305	285	300	295	275		
20	270	280	280	270	295	280	330	320	330	325	315	300	305	300	315	310	320	315	320	305	300	310	265	285		
21	280	295	280	300	290	295	330	335	335	315	310	315	315	300	315	320	315	315	290	315	340	320	300	280		
22	280	280	300	285	290	280	J <sup>R</sup> B	325	340	J <sup>R</sup> B	335	340	300	305	310	300	310	320	300	325	335	305	280	275	280	265
23	275	275	270	275	260	275	305	325	J <sup>R</sup> B	335	305	320	295	300	J <sup>R</sup> B	275	310	320	310	305	300	J <sup>R</sup> B	290	295	270	280
24	280	275	270	265	275	260	295	325	300	320	310	310	325	310	315	315	330	325	335	305	290	280	280	275		
25	C	C	C	C	C	C	C	C	C	C	C	C	320	315	310	300	305	320	325	320	320	310	300	315	285	285
26	245	285	305	315	340	285	325	340	325	320	300	325	300	305	300	325	315	325	330	305	300	290	260	I <sup>A</sup>	280	
27	300	290	295	305	290	285	300	320	350	325	305	305	295	I <sup>A</sup>	310	310	320	315	320	320	330	315	285	300	I <sup>A</sup>	270
28	270	280	290	315	320	265	310	340	335	325	305	295	295	295	295	300	305	J <sup>R</sup> B	315	295	295	305	285	280	290	
29	290	295	270	270	255	260	285	310	330	330	315	295	300	300	290	300	320	310	295	315	325	280	265	260		
30	270	275	300	310	265	270	295	310	315	315	310	305	295	310	295	300	300	335	300	285	295	285	I <sup>A</sup>	290	295	
31	290	295	310	285	280	280	315	340	335	330	325	305	300	290	305	315	310	320	305	310	310	290	300	290		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	29	29	29	29	30	30	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	280	285	292	295	290	280	320	335	335	320	310	305	300	295	305	315	315	325	320	305	295	290	280	280		
UQ	290	295	305	305	300	285	330	340	345	325	312	315	308	300	310	318	325	328	325	310	302	298	290	288		
LQ	270	280	280	275	275	275	310	325	320	315	300	300	295	290	295	302	310	315	305	298	288	280	270	275		

OCT. 1970

M(3000)F2 (0.01)



OCT. 1970

M(3000)F1 (0.01)

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

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	L							
2									L	A	L	L	L	L	L	L	L							
3								L	L		L	L	L	L	A	L								
4									L	L	U 380	445	L	L	L	L								
5										L	L	L	L	L	L	L								
6									L	L	L	L	L	L	L	L	L							
7									L	L	L	L	L	L	L									
8								L	L	L	L	L	L	L	L	L	L							
9									L	L	L	L	L	L	L	L								
10									L	L	L	L	L	L	L	L								
11									L	L	L	L	L	L	L	L								
12									L	L	L	L	L	L	L	L								
13									L	L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L								
15									L	L	L	L	L	L	L	L								
16									L	L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18								L	345	A	A	A	350	360	L	L								
19									L	A	L	L	L	L	L	L								
20									L	L	L	L	L	L	L									
21									L	L	L	L	L	L	L									
22									L	L	A	L	L	L	L									
23									L	L	L		L		L									
24									L	L	L	L	L		A		A							
25								C	C	C	C	L	L	L	L	L								
26										L	L	L	L	L	L									
27										L	L	L	L	C	L	L								
28										L	L	L	L	L	L	L								
29										L	L	L	L	L	L	L								
30										L	L	L	L	L	L		L							
31										L	L	L	L	L										
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1		1	1	1	1										
MED									345		U 380	445	350	360										
UQ																								
LQ																								

OCT. 1970

M(3000)F1 (0.01)

## IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>F2 (KM)

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									250	245	245	250	270	250	290	260	255							
2									250	245	255	260	260	260	255	265	260							
3								245	240		280	270	260	280	280	260								
4									230	245	265	250	280	260	260	270								
5									245	250	260	260	260	260	295	260								
6									245	240	240	270	260	250	270	250	250							
7									240	240	240	250	270	260	260									
8								240	250	245	250	270	260	260	275	250	245							
9									240	240	250	250	245	260	275	260								
10									230	240	270	260	260	275	275	255								
11									230	245	260	260	250	255	265	245								
12									250	245	255	255	260	250	255	250								
13									250	245	250	255	240	250	255	250								
14									250	245	255	250	250	250	260	250								
15									245	240	250	250	250	250	240	240								
16									250	240	240	250	285	255	250	250								
17									280	290	270	260	255	230	230									
18								310	455	410	375	355 <sup>A</sup>	375	350	300	275								
19									230	245	250	240	250	250	250	250								
20									230	245	250	250	250	250	255									
21									240	240	250	255	250	250	250									
22									245	245	240	255	250	270	255									
23									240	245	260		260		260									
24									260	255	240	260	250		260 <sup>A</sup>		250 <sup>A</sup>							
25								C	C	C	C	240	255	255	250	240	230							
26									245	245	255	270	270	260										
27									250	240	250	260	270 <sup>I</sup>	250	250									
28									240	250	245	250	280	255	265									
29									240	245	245	250	245	280	255									
30									250	230	260	260	300	270		230								
31									255	245	240	280	260											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	26	29	31	30	31	28	29	21	5							
MED								245	245	245	250	255	260	258	260	250	250							
UQ								278	250	245	258	260	265	270	270	260	255							
LQ								242	240	240	242	250	250	250	255	250	250							

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OCT. 1970

H<sup>o</sup>F2 (KM)

# IONOSPHERIC DATA

OCT. 1970

H'F (KM)

135° E Mean Time (G. M. T. + 9 h)

Station **KOKUBUNJI TOKYO** Lat. **35 42.4 N**, Long. **139 29.3 E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour 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	270	250	250	290	290	240	240	240	205	200	240	200	235	240	240	245	240	220	210	210	255	290	290	
2	295	290	290	250	205	260	235	240	240	215 <sup>A</sup>	200	200	210	210	240	240	240	245	230	230	260	270	265	270	
3	290	270	300	270	250	275	240	240	230	220	205 <sup>H</sup>	200 <sup>H</sup>	220	220	230 <sup>B</sup>	245	235	220	220	220	280	290	285	275	
4	270	260	300	310	275	245	220	230	225	220	220	185	220	210	220	240	240	240	220	210	270	310	315	275	
5	250	240	210	245	275	310	225	240	230	240	210	230	230	240	260	240	245	240	205	240	250	260	290	300	
6	295	290	265	245	240	245	240	240	240	210	200	240	240	240	240	240	240	240	240	210	240	260	300	280	
7	280	285	250	220	240	250	245	240	230	210	200	190 <sup>H</sup>	210	240	240	245	240	215	240	210	245	270	290	280	
8	290	260	245	240	240	250	240	230	230	210	200	240	210	210	230	240	240	240	210	200	245	265	285	270	
9	255	270	260	250	240	245	230	240	210	210	205 <sup>H</sup>	200 <sup>H</sup>	205	210	230	230	240	230	205	210	240	220	270	290	
10	280	280	245	245	230	245	220	215	225	210	200	200	205	225	230	240	240	220	210	230 <sup>B</sup>	260	245	245	260	
11	295	305	280	270	245	260	210	210	220	215	240	240	240	240	240	240	240	240	240	240	240	245	260	250	
12	270	300	290	280	290	300	240	240	240	240	250	245	240	215	240	240	240	240	210	240	290	265	255	250	
13	265	250	250	240	240	260	240	240	240	210	220	200	200	210	240	240	240	235	230	215	210	240	260	340	
14	310	260	240	290	300	290	240	240	240	230	210	210	240	210	220	240	240	240	230	240	240	250	245	290	
15	260	245	250	260	290	310	250	240	240	210	240	205	200	240	210	245	245	240	240	240	240	245	240	260	
16	285	285	290	240	205	275	240	240	240	220	200	210	210	215	240	240	240	240	235	240	250	300	340	360	
17	345	245	240	440	460	450	260	240	240	220	270	220	210	220	245	220	235	220	220	250	270	300	320	285	
18	315	290	280	250	340	395	295	260	230	A	A	A	250	250	250 <sup>A</sup>	270 <sup>A</sup>	250 <sup>A</sup>	240	270	300	270	300 <sup>A</sup>	250	280	
19	260	270	270	270	295	260	230	220	220	215 <sup>A</sup>	200	200	240	240	240	240	240	230	215	250	265	260	260	290	
20	280	300	295	290	250	260	240	240	200	200	210	210	240	240	240	250	240	230	210	230	240	240	290	305	
21	315	290	280	290	250	275	245	230	220	210	200	240	240	240	240	245	240	240	220	240	240	245	250	320 <sup>A</sup>	
22	300	340	420	290	300	300	240	220	220	215	235 <sup>A</sup>	240	220	240	240	250	245	240	210	210	260	300	290	290	
23	290	300	300	290	305	300	240	210	230	240	240	255	210	290	240	245	240	240	240	220	245	290	290	290	
24	290	310	290	290	240	350	270	230	240	230	230	220	240	235	240 <sup>A</sup>	245	235 <sup>A</sup>	230	220	230	225	300 <sup>A</sup>	290	300	
25	275 <sup>C</sup>	C	C	C	C	C	C	C	C	C	C	205 <sup>H</sup>	205 <sup>H</sup>	200 <sup>H</sup>	230	225	225	230	220	225	230	230	260	245	300
26	350	340 <sup>A</sup>	275	250	220	300	230	230	225	245	220	240	240	240	250	240	220	240	210	240	240	250	300	A	
27	305	260	250	250	245	290	250	240	245	240	220	210	240	240 <sup>B</sup>	240	240	240	240	210	240	240	250	260	320 <sup>A</sup>	
28	350 <sup>A</sup>	350	290	245	235	295	245	240	220	205 <sup>H</sup>	200	240	240	240	240	240	245	235	255	250	250	240	295	285	
29	285	260	300	290	310	305	275	235	240	220	240	210	240	235	240	240	220	215	250	250	215	275	310	300	
30	350	350	255	230	250	300	270	250	240	205	230	225	230	220	220	225	240	210	220	285	270	260	295 <sup>A</sup>	290	
31	270	260	240	245	255	295	260	235	220	225	225	200	205	240 <sup>H</sup>	235	230	225	225	220	240	225	260	250	245	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	30	30	30	30	30	30	30	30	29	30	30	31	31	31	31	31	31	31	31	31	31	31	30	
MED	290	282	272	250	250	290	240	240	230	215	210	210	220	235	240	240	240	240	220	240	245	260	285	290	
UQ	302	300	290	290	290	300	250	240	240	225	230	240	240	240	240	245	240	240	238	240	260	282	292	300	
LQ	272	260	250	245	240	260	235	230	220	210	200	200	210	218	230	240	240	228	210	218	240	248	258	270	

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OCT. 1970

H'F (KM)

FORM 1730

IONOSPHERIC DATA

OCT. 1970

H<sup>+</sup>ES (KM)

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	B	100	B	B	100	150	150	145	130	130	115	G	195	195	155	140	110	110	100	B	S	S	S
2	S	S	B	B	B	B	150	140	130	110	110	100	G	G	180	110	140	140	115	110	S	S	B	100
3	100	S	S	100	100	B	150	145	120	130	110	105	130	120	115	115	120	100	110	110	100	105	S	B
4	100	100	100	100	100	B	155	G	120	110	105	G	G	G	100	100	100	G	125	120	110	110	110	110
5	105	105	105	100	100	100	100	150	105	115	130	110	115	115	110	100	140	110	105	100	100	100	100	100
6	100	100	B	S	100	S	G	110	110	110	110	B	100	100	G	100	100	100	100	100	100	100	100	100
7	S	S	100	B	B	S	100	100	G	100	100	G	G	G	140	120	110	105	105	100	100	100	100	S
8	S	S	B	B	B	B	110	110	110	110	110	G	G	B	G	130	110	G	100	100	100	100	100	100
9	100	100	S	S	B	B	G	G	120	115	110	110	100	100	G	110	100	100	100	95	105	B	B	S
10	S	B	100	B	B	B	G	G	115	115	110	100	G	110	110	110	115	100	100	100	100	100	105	B
11	B	B	B	B	B	B	B	G	105	150	G	G	G	G	130	110	110	110	B	100	100	S	B	105
12	100	100	100	100	B	100	100	100	G	140	120	110	110	120	115	110	105	100	110	B	S	B	100	S
13	S	B	B	100	B	B	G	G	140	110	G	G	G	G	G	160	140	B	B	S	100	100	S	S
14	S	S	100	S	S	B	G	G	G	G	G	110	G	G	G	G	G	140	B	100	100	S	100	S
15	S	S	B	S	S	100	B	G	110	110	G	G	G	G	G	G	G	G	100	100	S	100	100	100
16	S	S	S	B	100	B	G	G	G	G	G	G	G	G	G	110	G	100	100	S	S	S	S	S
17	S	B	S	100	100	S	G	140	110	115	115	110	115	110	115	G	G	G	115	105	105	100	100	B
18	B	130	B	B	B	B	B	155	125	115	115	110	130	125	125	130	115	110	110	105	105	100	100	100
19	100	105	100	100	100	100	100	G	110	110	100	100	100	G	G	110	105	100	100	100	100	100	100	100
20	100	100	100	100	B	S	B	130	120	110	G	G	G	180	110	100	100	100	100	100	100	100	100	100
21	100	100	100	100	B	S	110	G	G	G	G	G	G	G	G	G	G	100	100	100	100	100	100	100
22	100	100	100	100	100	100	G	G	100	100	100	100	100	G	G	120	110	100	100	100	100	100	100	100
23	100	100	100	100	S	S	G	G	G	110	100	105	105	100	100	100	100	100	100	100	100	100	S	100
24	100	S	100	100	100	S	G	G	G	130	160	145	110	130	100	100	100	100	100	100	B	105	100	S
25	C	C	C	C	C	C	C	C	C	C	G	100	105	105	180	180	150	110	105	105	105	105	105	S
26	100	100	100	100	100	100	100	G	115	110	110	110	100	100	100	100	100	100	100	100	100	110	S	100
27	100	100	100	S	S	B	G	G	110	110	110	110	110	C	105	G	140	110	110	110	110	100	100	100
28	100	100	100	100	100	100	G	115	G	G	110	110	100	100	G	100	100	100	100	100	100	S	100	100
29	100	100	100	S	S	S	G	G	110	110	110	100	100	100	105	100	100	100	100	100	100	100	100	100
30	100	100	100	100	S	100	110	100	115	105	105	100	100	100	140	125	105	105	105	100	100	100	100	100
31	100	100	100	100	B	B	110	155	105	105	100	100	G	100	100	100	100	100	100	100	100	100	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	17	19	16	11	9	13	14	21	26	23	21	17	18	20	26	26	26	28	28	25	23	22	19
MED	100	100	100	100	100	100	110	135	115	110	110	110	105	108	112	110	108	100	100	100	100	100	100	100
UQ	100	100	100	100	100	100	150	150	120	115	112	110	110	120	135	120	120	110	110	102	100	100	100	100
LQ	100	100	100	100	100	100	100	110	110	110	105	100	100	100	102	100	100	100	100	100	100	100	100	100

OCT. 1970

H<sup>+</sup>ES (KM)

# IONOSPHERIC DATA

OCT. 1970

TYPES OF ES

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

Station **KOKUBUNJI TOKYO** Lat: **35 42.4 N** Long: **139 29.3 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	H	H	H	H	H	S		H	H	H	H	S	S	S				
2							H	H	H	S	F	F			H	F	H	H	F	F				F
3	F			F	F		H	H	H	H <sub>2</sub>	S	S	H	H	S <sub>2</sub>	S <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F	F		
4	F	F	F	F	F		H		H	S	F			F	F	F		F	F	F	F	F	F	F
5	F	F	F	F	F	F	H	H	H	F	H	F	F	F	S	F	H	S	F	F	F	F	F	F
6	F	F			F			F	F	F			F	F		F	F	F	F	F	F	F	F	F
7			F				F	F		F	F				H	H	F	F	F	F	F	F	F	F
8							F	S	F	F	F				H	F		F	F	F	F	F	F	F
9	F	F							H	F	F	F	F	F		F	F	F	F	F	F			
10			F						F	S	F	F		F	F	S <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>
11									F	H <sub>1</sub>					H	F	F	F	F	F	F	F		F
12	F	F	F	F		F	F	F		H	H	S	S	H	F	F	F	F	F	F				F
13				F					H	F					H	H					F	F		
14			F									F					H			F	F		F	
15						F			F	F									F	F		F	F	F
16					F											F		F	F					
17				F	F			H	F	F	S	F	F	F	S				F	F	F	F	F	F
18		F						H	H	S	S	S	H	H	H	H	S	S	S	S	F	F	F	F
19	F	F	F	F	F	F	F	F	S	S	S	F	F			F	F	F	F	F	F	F	F	F
20	F	F	F	F			H	H	F					H	F	F	F	F	F	F	F	F	F	F
21	F	F	F	F			F											F	F	F	F	F	F	F
22	F	F	F	F	F	F			F	F	F	F	F		H	S	F	F	F	F	F	F	F	F
23	F	F	F	F					F	S	S	F	F	F	F		F	F	F	F	F	F	F	F
24	F		F	F	F				H	H	H <sub>2</sub>	F	H <sub>2</sub>	F	F	F	F	F	F	F	F	F	F	F
25												F	F	F	H <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	F	F	F	F	F	F	F
26	F	F	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
27	F	F	F						F	F	F	F	F		F		H	F	F	F	F	F	F	F
28	F	F	F	F	F	F		F			F	F	F	F	F	F	F	F	F	F	F	F	F	F
29	F	F	F						F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
30	F	F	F	F		F	F	F	F	F	F	F	F	F	H <sub>1</sub>	H <sub>2</sub>	F	F	F	F	F	F	F	F
31	F	F	F	F		F	H	F	F	F	F	F		F	F	F	F	F	F	F	F	F	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

OCT. 1970

TYPES OF ES



# IONOSPHERIC DATA

OCT. 1970

HPF2 (KM)

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

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	390	350	350	350	400	380	280	260	260	300	360	380	350	350	340	340	315	300	308	300	340	350	380	360		
2	390	360	390	300	340	380	390	250	J <sup>R</sup> 270	260	300	350	350	340	340	320	310	290	280	300	350	350	350	360		
3	390	390	380	350	325	360	275	260	250	270	325	310	320	330	320	305	285	290	255	320	380	375	370	355		
4	330	340	375	390	355	340	270	275	255	300	300	290	350	350	350	330	305	295	295	300	360	390	400	360		
5	310	295	285	310	360	380	280	J <sup>R</sup> 260	260	310	330	350	380	360	350	340	300	270	300	370	350	350	390	400		
6	350	360	360	340	300	330	270	260	270	300	330	330	310	350	320	340	300	290	300	300	320	360	370	390		
7	360	350	310	260	300	350	280	250	270	290	320	310	310	350	330	300	290	300	280	310	350	360	360	360		
8	360	360	290	F	F	F	R	J <sup>R</sup> 290	280	300	300	350	310	350	350	330	300	300	318	300	350	350	350	360		
9	340	360	350	300	310	300	280	260	280	285	305	300	330	350	315	300	290	280	285	300	320	300	350	360		
10	350	350	310	300	270	310	270	250	250	290	325	300	310	340	310	300	300	275	290	380	310	310	300	350		
11	370	380	350	330	300	330	250	260	300	340	350	350	320	365	350	360	350	340	350	340	350	360	400	360		
12	390	400	400	400	390	400	340	J <sup>R</sup> 300	300	300	330	330	340	330	330	320	300	300	300	340	400	390	350	360		
13	350	350	340	300	315	390	290	290	300	290	340	350	350	350	350	340	300	300	J <sup>R</sup> 308	350	340	380	400			
14	400	350	300	370	370	385	310	300	300	300	350	300	350	360	330	310	300	290	300	340	310	300	350	380		
15	350	350	320	350	360	390	300	260	260	300	310	320	350	350	340	320	320	310	290	340	300	350	350	350		
16	350	360	350	300	265	380	340	290	290	300	320	340	350	340	350	300	300	300	J <sup>R</sup> 308	350	J <sup>R</sup> 350	400	410	450		
17	400	320	300	550	590	550	330	300	340	320	320	315	305	310	290	290	280	260	275	345	370	380	410	380		
18	400	395	370	310	450	480	380	350	455	410	375	A	375	350	340	300	270	300	350	375	350	320	295	320		
19	315	350	350	375	400	355	270	260	270	300	310	290	300	330	340	310	290	290	290	290	350	360	275	370		
20	380	380	390	380	350	380	290	290	300	290	300	340	340	350	320	310	300	320	300	310	350	300	380	380		
21	400	360	350	340	350	350	290	270	290	340	310	340	320	350	310	300	300	300	300	300	260	300	300	370		
22	360	390	350	360	380	390	J <sup>R</sup> 300	270	J <sup>R</sup> 280	280	350	340	310	335	320	300	350	300	290	340	390	380	380	390		
23	390	390	390	390	385	380	340	300	J <sup>R</sup> 290	350	300	360	340	J <sup>R</sup> 378	350	300	310	350	340	J <sup>R</sup> 318	350	360	390	370		
24	390	410	390	390	390	450	350	290	310	295	300	300	285	305	300	295	285	280	265	290	300	345	370	370		
25	C	C	C	C	C	C	C	C	C	C	C	C	295	300	310	320	305	300	285	290	290	300	305	295	335	370
26	430	370	310	300	250	360	270	255	285	300	340	300	330	350	350	300	300	300	275	300	325	350	380	J <sup>A</sup> 380		
27	360	310	340	300	350	370	340	300	280	300	340	325	350	J <sup>C</sup> 330	300	300	300	300	300	290	300	350	350	J <sup>A</sup> 400		
28	400	390	350	300	290	360	300	280	285	290	340	350	350	350	340	330	310	J <sup>R</sup> 300	350	350	340	350	390	360		
29	360	350	390	395	400	400	360	300	290	300	300	360	350	350	350	350	300	300	350	300	300	360	400	390		
30	395	400	350	290	380	380	360	335	300	295	305	310	350	310	325	320	320	260	300	350	345	355	J <sup>A</sup> 350	340		
31	330	320	300	340	350	365	300	260	290	295	290	310	330	345	310	295	300	290	305	305	300	345	320	330		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	29	29	29	29	30	30	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31		
MED	365	360	350	340	350	380	300	272	285	300	320	328	340	350	330	310	300	300	300	310	350	350	370	370		
UQ	390	380	375	375	385	390	340	300	300	300	340	350	350	350	350	330	308	300	300	340	350	360	385	380		
LQ	350	350	310	300	310	355	280	260	270	290	300	300	310	332	318	300	295	290	290	300	310	342	350	360		

OCT. 1970

HPF2 (KM)



IONOSPHERIC DATA

OCT. 1970

YPF2 (KM)

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

Station KOKUBUNJI TOKYO Lat. 35 42.4 N Long. 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	100	100	100	80	80	90	100	90	100	100	100	100	100	85	100	Y <sup>B</sup> 100	100	110	100	90	90
2	100	90	100	100	100	110	100	110	J <sup>R</sup> 90	110	100	100	100	100	100	110	100	100	100	90	100	100	100	100
3	100	90	100	90	85	90	65	90	100	90	85	85	90	80	80	70	85	70	55	130	70	80	85	70
4	80	110	100	60	90	80	50	70	45	100	95	90	100	100	95	80	90	80	60	115	110	110	100	90
5	95	75	110	100	85	80	70	J <sup>R</sup> 55	60	90	110	90	100	100	100	110	100	100	90	110	100	100	100	100
6	100	90	90	100	100	100	110	90	80	100	110	80	90	100	90	100	100	110	100	100	90	120	120	100
7	100	100	90	120	100	100	100	100	80	110	80	90	90	90	100	100	100	100	100	100	100	90	90	90
8	100	90	100	F	F	F	R	J <sup>R</sup> 90	100	90	100	100	90	100	100	80	100	100	R	90	100	100	100	90
9	110	90	100	100	100	100	100	110	100	70	80	80	80	95	85	70	65	60	70	105	80	110	70	90
10	65	95	90	60	50	100	75	55	55	60	90	85	90	70	85	70	60	70	75	115	90	90	70	100
11	80	70	75	70	75	80	55	60	50	110	100	100	110	95	100	90	100	110	100	100	100	100	90	90
12	100	90	100	100	110	100	100	J <sup>B</sup> 100	100	100	110	110	100	120	110	120	100	100	100	100	90	100	100	120
13	100	100	110	100	95	100	110	110	100	110	100	100	90	100	90	100	110	100	100	J <sup>B</sup> 100	100	110	110	100
14	90	100	90	90	110	105	100	100	100	100	100	100	90	90	80	100	100	90	100	100	100	100	100	100
15	100	100	90	90	90	100	110	90	110	80	90	90	100	100	100	80	90	90	110	100	100	100	100	100
16	100	90	100	100	95	100	100	90	90	90	90	100	100	110	100	110	100	100	Y <sup>B</sup> 100	100	J <sup>R</sup> 100	100	90	110
17	100	100	100	90	110	130	110	100	110	95	90	85	90	90	65	65	70	55	80	105	90	75	95	90
18	100	115	130	140	100	70	120	70	45	140	85	A	100	110	70	100	80	95	100	75	95	90	75	90
19	85	100	95	120	90	90	90	85	50	100	100	120	100	120	100	100	110	100	100	120	100	90	100	90
20	100	110	100	100	100	100	110	100	80	100	100	100	110	100	110	100	100	110	110	100	100	100	100	110
21	100	100	100	100	100	100	100	90	90	90	100	100	90	100	110	110	90	100	100	100	110	100	110	80
22	90	100	110	100	110	100	J <sup>R</sup> 80	90	J <sup>R</sup> 100	100	90	100	100	105	100	100	100	100	90	110	90	100	100	100
23	100	100	100	100	105	100	100	90	J <sup>B</sup> 90	90	100	90	100	J <sup>B</sup> 90	90	100	100	90	100	J <sup>B</sup> 110	100	120	100	90
24	100	90	100	100	100	110	100	90	100	100	95	95	65	75	70	85	65	70	60	80	110	75	80	75
25	C	C	C	C	C	C	C	C	C	C	65	75	70	85	90	55	65	70	70	95	100	105	115	80
26	100	80	75	60	55	85	80	50	70	100	90	100	80	90	90	100	100	100	105	100	105	100	90	I <sup>A</sup> 95
27	100	100	100	100	100	100	110	100	90	100	100	85	110	I <sup>C</sup> 95	100	100	100	100	100	100	110	100	100	I <sup>A</sup> 90
28	90	110	100	100	100	90	100	100	95	90	100	100	100	100	100	110	100	Y <sup>B</sup> 100	100	100	110	100	100	100
29	100	90	100	95	100	100	100	100	90	100	100	100	90	100	100	90	110	100	90	100	100	100	100	100
30	95	100	100	100	100	100	90	105	100	80	95	90	65	90	100	100	100	90	120	100	75	100	I <sup>A</sup> 80	80
31	85	90	75	105	100	85	75	50	60	50	70	85	75	75	90	105	95	70	100	95	105	100	85	115
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	29	29	29	30	30	30	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	100	100	100	100	100	100	100	90	90	100	95	98	90	100	100	100	100	100	100	100	100	100	100	90
UQ	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	108	100	100	100	100
LQ	90	90	90	90	90	90	80	80	70	90	90	85	90	90	90	82	88	85	90	100	92	100	90	90

OCT. 1970

YPF2 (KM)

# IONOSPHERIC DATA

OCT. 1970

FOF2 (0.1 MHz)

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

Station	YAMAGAWA				Lat.	31	12.1	N.	Long.	130	37.1	E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation														
Hour 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	J75	J75	66	65	57	51	58	84	93	101	107	126	142	154	155	152	141	S	129	118	J06	I99	U92	81	79		
2	79	J75	66	65	47	37	46	S	90	I96	91	91	105	123	127	126	119	111	112	113	87	58	57	U57	58		
3	52	53	49	53	55	44	56	84	J93	94	99	116	136	138	142	145	141	138	121	S	106	78	74	73	71		
4	66	S	60	53	51	54	43	50	78	106	112	108	121	119	140	148	S	139	147	149	133	112	S	84	72	66	67
5	77	S	67	44	43	35	37	45	80	91	103	108	U124	U136	145	U153	151	U152	146	112	U85	J76	69	64	I60		
6	61	U60	60	J62	47	41	I48	79	94	103	102	119	S	139	140	141	143	143	143	133	U102	U86	83	J75	69		
7	67	J65	56	55	41	33	42	78	I96	94	97	S	116	127	125	132	132	116	S	113	Y01	70	65	J63	J63	58	
8	53	53	49	47	U37	36	U45	U74	Y04	97	93	97	117	126	134	138	131	131	Y22	I96	I87	I86	82	I76	58		
9	70	J61	55	49	38	36	41	72	94	102	97	110	U120	117	128	136	129	126	113	86	83	J86	75	60	60		
10	55	54	55	51	40	35	39	75	91	98	100	U120	135	137	135	135	133	Y21	108	85	82	82	72	J61	60		
11	57	55	56	54	51	43	48	J76	96	109	111	127	135	126	131	135	126	Y21	Y23	109	91	83	77	65	65		
12	62	59	58	58	50	47	U51	J86	U120	118	126	142	136	135	141	135	122	115	S	107	89	63	68	67	53		
13	53	55	53	43	32	32	40	78	110	134	132	138	147	150	144	142	129	117	117	103	77	74	58	57	57		
14	57	61	62	37	39	38	42	C	C	123	121	132	147	156	155	144	133	U20	104	89	78	78	65	52	52		
15	50	50	46	38	32	33	38	83	110	127	112	114	133	139	137	127	121	I20	105	84	64	60	55	52	52		
16	52	S	48	46	53	46	24	33	82	116	129	Y27	135	170	U92	I95	U90	Y68	Y29	110	S	J86	J82	J89	F	65	
17	S	63	43	30	32	32	J37	61	J98	127	142	145	151	155	155	140	123	108	81	64	63	63	61	65	65		
18	59	S	50	48	J40	40	S	94	Y01	111	122	108	111	99	104	102	95	85	80	C	C	C	C	C	C		
19	C	C	C	C	C	C	C	C	C	C	C	C	132	142	144	155	158	146	137	S	S	S	93	I87	I81	65	
20	76	S	56	51	50	43	39	I43	78	102	109	116	124	135	154	153	146	132	129	Y26	I09	I95	94	69	57	57	
21	53	46	43	42	41	40	44	S	78	92	94	118	128	129	138	136	123	111	S	108	106	84	72	74	60	49	
22	39	41	39	40	39	39	44	78	Y01	104	112	113	130	140	140	135	126	119	124	J96	85	86	75	64	64		
23	53	48	47	48	43	43	50	S	93	93	92	115	Y25	128	Y20	136	132	118	I09	107	83	69	68	69	67	67	
24	63	S	55	55	49	47	41	47	J87	105	126	131	138	141	150	146	135	Y23	114	101	66	65	65	63	56	56	
25	54	S	55	47	42	34	32	38	S	86	115	110	116	123	131	145	148	144	131	124	108	84	78	81	63	47	47
26	47	47	50	50	35	30	35	81	S	98	112	128	133	130	139	144	149	136	115	104	J93	J92	79	66	45	45	
27	I46	44	43	50	38	30	35	78	100	115	124	134	126	141	140	127	S	111	I00	S	71	70	J65	58	56	56	
28	49	45	44	S	43	30	34	77	101	104	Y23	128	131	134	144	137	Y24	119	104	S	89	90	82	68	65	65	
29	64	55	47	S	42	42	43	87	117	125	122	113	128	139	142	139	121	114	107	Y05	I93	75	65	63	63	63	
30	57	53	59	59	32	37	43	S	88	127	120	125	148	147	164	157	147	138	146	U114	86	I90	J94	77	72	72	
31	67	59	54	48	38	34	39	S	90	117	130	132	139	141	148	Y57	145	125	117	107	S	94	98	82	67	60	60
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	29	30	30	30	30	30	30	29	29	30	30	31	31	31	31	31	31	31	31	30	28	29	30	30	29	29	
MED	57	55	50	49	40	37	43	80	101	110	116	124	135	140	142	139	129	120	108	89	82	78	67	60	60	60	
UQ	66	S	60	56	53	47	41	S	86	110	121	125	134	141	149	153	145	137	129	118	102	S	90	83	75	67	67
LQ	53	50	46	43	37	33	39	78	S	94	101	107	116	128	134	136	135	122	114	104	84	70	68	63	56	56	

The Radio Research Laboratories, Japan

OCT. 1970

FOF2 (0.1 MHz)

IONOSPHERIC DATA

OCT. 1970

FOF1 (0.01 MHZ)

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

Station YAMAGAWA Lat. 31 12.1 N Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1									L	L	L	L	L	U	L	L	L	L							
2									L	L	L	L	L	L	L	L	L	L	A						
3									L	L	L	550	540	L	L	A	A								
4									L	L	500	470	L	L	L	L	L	L							
5									L	L	L	L	L	L	L	L	L	L							
6									L	360	L	L	L	L	L	L	L	L							
7									L	L	U	L	560	L	L	L	L	L							
8									L	L	440	L	L	L	L	L	L	L							
9									L	L	L	L	L	U	L	L	L	L							
10									L	L	L	L	L	L	L	L	L	L							
11									L	L	L	L	L	L	L	L	L	L							
12										L	A	A	L	L	L	L	L	L							
13									L	L	U	470	480	550	L	L	L	L							
14									C	L	L	L	L	L	L	L	L	L							
15										L	L	L	L	L	L	L	L	L							
16									L	L	L	L	L	L	L	L	L	L							
17										L	L	L	L	L	L	L	L	L							
18										L	L	L	L	L	430	L	L	L							
19									C	C	C	L	L	L	L	L	L	L							
20									L	L	L	500	570	L	L	L	L	L							
21										L	L	L	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	L	L	A						
23											L	L	L	L	L	L	L	L							
24										L	L	L	A	L	L	A	A	A							
25										L	L	500	510	570	U	480	420								
26										L	450	L	L	600	L	L	L	L							
27										L	L	510	L	550	L	L	L	L							
28									L	L	L	L	L	L	490	L	L	A							
29										L	L	L	L	L	L	L	L	L							
30										L	L	L	L	L	L	L	L	L							
31										L	L	L	L	L	L	L	A								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT										1	4	7	4	4	4	1									
MED										360	460	500	545	560	485	420									
UQ										485	530	560	585	520											
LQ										445	490	525	545	455											

OCT. 1970

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1970

FOE (0.01 MHZ)

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

Station YAMAGAWA Lat. 31 12.1 N Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	210	290	330	350	355 <sup>B</sup>	360 <sup>B</sup>	360 <sup>B</sup>	340	300	240		A						
2							S	220 <sup>H</sup>	280	310	340 <sup>I</sup>	355	360	350	340 <sup>R</sup>	330	290	240		A					
3							S	210	280	310	330	340	355 <sup>H</sup>	370	355	325	290	230		S					
4							S	200	280	310	320	340 <sup>I</sup>	360	360	350	330	300	240 <sup>H</sup>		S					
5							S	220	290	320	335	345 <sup>I</sup>	365 <sup>I</sup>	370	340	325	300	230		S					
6							S	210	280	320	370	370	370	365	340	325	290	230		A					
7							S	205	275	315	335	345	350 <sup>I</sup>	355	360	330		A	A	S					
8							S	200	290	320	340	365	370	365	355	330	280		A	S					
9							S	240 <sup>H</sup>	290	320	340	350	340	345 <sup>I</sup>	340 <sup>I</sup>	330	300	230		S					
10							S	210	290	325	335	350	345	345	340 <sup>I</sup>	325 <sup>I</sup>	290	210		S					
11							S	190	285	325	350	345	365	365	360	325	275		A	B					
12							S	185	285	320	345	360	360	350	335 <sup>I</sup>	315 <sup>I</sup>	275 <sup>I</sup>	210		S					
13							S	180	270	320 <sup>H</sup>	340	350	370	370	350	330	280 <sup>H</sup>	220		S					
14							S	C	C	C	330	350	365	370 <sup>H</sup>	370	350	325	290	220		S				
15							S	190	280 <sup>H</sup>	320	335	345 <sup>I</sup>	360	365	350	320	280	200		S					
16							S	210	280	310	325	350	360	350	340	330	290	230		A					
17							S	190	270	320	340	345	350	350	335	310	280	220		S					
18							S	210	270	310	340	350	355	350	340	320	290	200		B					
19							C	C	C	C	C	A	A	A	350 <sup>R</sup>	335 <sup>I</sup>	315 <sup>I</sup>	280	210		S				
20							S	200	280	300		A	A	A	350	340	310 <sup>I</sup>	270 <sup>I</sup>	A	S					
21							S	190	280	310	335 <sup>I</sup>	350	360	360	340	320	280	200		S					
22							S	200	270 <sup>H</sup>	315	340 <sup>H</sup>	350	360	365	355	330	280		A	S					
23							S	200 <sup>H</sup>	280	310	340		A	355	350 <sup>I</sup>	335	315 <sup>H</sup>	265 <sup>I</sup>	C	A					
24							S	210	290	310	325	335 <sup>I</sup>	355 <sup>I</sup>		A	R	A	A	A	S					
25							S	200	280	310	335	345 <sup>I</sup>	350	360	345	320		A	A	S					
26							S	200 <sup>H</sup>	270	310 <sup>H</sup>	350	360	360	360	370	340	290	210		S					
27							S	200 <sup>H</sup>	280 <sup>H</sup>	320	335	360		R	R	A	A	290	A	S					
28							S	200	280	A	A	A	A	A	A	A	A	A	A	S					
29							S	180	270	320	330	340		A	A	360 <sup>I</sup>	325 <sup>I</sup>	280	210		S				
30							S	170	270	315	340	360	370		A	A	320	280	A	S					
31							S	200 <sup>H</sup>	280	320	345	360	370	370	350		A	A	210	S					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								29	29	29	28	27	26	26	27	27	26	20							
MED								200	280	320	340	350	360	360	345	325	285	220							
UQ								210	285	320	342	360	365	365	355	330	290	230							
LQ								190	275	310	335	345	355	350	340	320	280	210							

OCT. 1970

FOE (0.01 MHZ)

IONOSPHERIC DATA

OCT. 1970

FOES (0.1 MHZ)

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

Station YAMAGAWA Lat. 31 12.1 N Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	J <sub>24</sub>	F <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>11</sub>	J <sub>21</sub>	G	G	G	G	G <sub>29</sub>	G <sub>30</sub>	G <sub>29</sub>	G <sub>28</sub>	40	40	J <sub>42</sub>	J <sub>32</sub>	J <sub>41</sub>	20	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>
2	E <sub>15</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>11</sub>	E	E <sub>11</sub>	E <sub>15</sub>	27	37	J <sub>61</sub>	35	52	G <sub>33</sub>	G <sub>35</sub>	J <sub>26</sub>	41	J <sub>46</sub>	J <sub>52</sub>	J <sub>53</sub>	J <sub>38</sub>	J <sub>33</sub>	22	E <sub>15</sub>	E <sub>15</sub>
3	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>15</sub>	G	31	37	41	43	43	59	J <sub>50</sub>	J <sub>69</sub>	J <sub>47</sub>	26	22	32	J <sub>85</sub>	J <sub>34</sub>	20	25
4	J <sub>21</sub>	E <sub>14</sub>	15	E <sub>15</sub>	19	25	J <sub>24</sub>	J <sub>30</sub>	35	J <sub>46</sub>	39	36	G <sub>26</sub>	G	J <sub>24</sub>	G	G	G	E <sub>15</sub>	J <sub>24</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
5	E <sub>15</sub>	J <sub>21</sub>	E <sub>11</sub>	E <sub>11</sub>	E	J <sub>22</sub>	J <sub>15</sub>	27	34	39	43	J <sub>55</sub>	J <sub>65</sub>	38	38	G	G	J <sub>35</sub>	22	J <sub>24</sub>	J <sub>29</sub>	J <sub>25</sub>	J <sub>25</sub>	J <sub>19</sub>
6	25	21	18	19	19	17	E <sub>15</sub>	E <sub>15</sub>	G	G <sub>31</sub>	G <sub>32</sub>	J <sub>31</sub>	G <sub>31</sub>	G <sub>29</sub>	G	G	31	28	J <sub>29</sub>	21	J <sub>29</sub>	J <sub>37</sub>	J <sub>31</sub>	J <sub>26</sub>
7	J <sub>21</sub>	19	25	24	22	E <sub>15</sub>	E <sub>15</sub>	25	31	33	36	38	38	42	39	38	J <sub>51</sub>	J <sub>64</sub>	J <sub>50</sub>	J <sub>41</sub>	J <sub>29</sub>	J <sub>31</sub>	J <sub>25</sub>	23
8	20	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	25	32	J <sub>35</sub>	25	40	44	J <sub>45</sub>	41	35	37	J <sub>35</sub>	J <sub>30</sub>	J <sub>43</sub>	J <sub>31</sub>	J <sub>29</sub>	J <sub>33</sub>	J <sub>29</sub>
9	J <sub>25</sub>	J <sub>19</sub>	J <sub>23</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>14</sub>	E <sub>15</sub>	G	30	35	38	39	38	37	37	G	J <sub>21</sub>	26	J <sub>24</sub>	J <sub>19</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
10	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>11</sub>	E	E	E <sub>15</sub>	G	31	39	42	41	39	38	38	34	32	25	J <sub>31</sub>	J <sub>24</sub>	J <sub>23</sub>	J <sub>23</sub>	J <sub>24</sub>	J <sub>33</sub>
11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>	G	G	37	38	38	43	38	37	35	30	J <sub>27</sub>	J <sub>22</sub>	23	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
12	E <sub>15</sub>	J <sub>29</sub>	24	J <sub>18</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	G	30	41	J <sub>75</sub>	J <sub>92</sub>	49	42	49	41	J <sub>34</sub>	J <sub>31</sub>	J <sub>29</sub>	J <sub>34</sub>	J <sub>44</sub>	J <sub>34</sub>	J <sub>22</sub>	J <sub>23</sub>
13	E <sub>15</sub>	J <sub>26</sub>	J <sub>23</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>13</sub>	E <sub>15</sub>	G	31	34	20	19	J <sub>24</sub>	J <sub>24</sub>	G	19	G	J <sub>21</sub>	J <sub>22</sub>	21	J <sub>34</sub>	27	J <sub>21</sub>	J <sub>18</sub>
14	24	E <sub>15</sub>	E <sub>11</sub>	E	E <sub>15</sub>	E <sub>11</sub>	E <sub>15</sub>	C	C	G <sub>33</sub>	G <sub>34</sub>	G	G <sub>23</sub>	G <sub>36</sub>	G <sub>35</sub>	G <sub>32</sub>	G	16	26	24	E <sub>12</sub>	E <sub>14</sub>	E <sub>11</sub>	E <sub>15</sub>
15	J <sub>23</sub>	E <sub>15</sub>	19	E <sub>14</sub>	E	E <sub>11</sub>	E <sub>15</sub>	25	34	39	36	35	G <sub>30</sub>	G	G	G <sub>31</sub>	G <sub>25</sub>	25	15	E <sub>15</sub>	24	J <sub>22</sub>	J <sub>21</sub>	E <sub>14</sub>
16	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	E	E	E <sub>11</sub>	E <sub>11</sub>	26	31	34	37	37	G <sub>34</sub>	G <sub>38</sub>	G <sub>38</sub>	G <sub>20</sub>	G <sub>22</sub>	G <sub>21</sub>	J <sub>19</sub>	J <sub>19</sub>	18	E <sub>15</sub>	E <sub>15</sub>	20
17	E <sub>15</sub>	E <sub>11</sub>	E <sub>11</sub>	E	J <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	28	J <sub>45</sub>	J <sub>74</sub>	J <sub>50</sub>	44	40	39	36	G	31	G	E <sub>15</sub>	17	20	J <sub>21</sub>	J <sub>19</sub>	J <sub>19</sub>
18	J <sub>20</sub>	18	E <sub>14</sub>	J <sub>17</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	30	J <sub>49</sub>	J <sub>64</sub>	J <sub>53</sub>	45	44	37	G	36	36	J <sub>30</sub>	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	37	36	G <sub>21</sub>	42	34	J <sub>49</sub>	J <sub>28</sub>	J <sub>17</sub>	J <sub>21</sub>	19	J <sub>18</sub>	J <sub>22</sub>
20	J <sub>19</sub>	J <sub>21</sub>	E <sub>11</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	G <sub>20</sub>	G	G	39	36	J <sub>43</sub>	J <sub>32</sub>	G <sub>32</sub>	G <sub>32</sub>	33	J <sub>53</sub>	J <sub>26</sub>	17	J <sub>23</sub>	E <sub>15</sub>	J <sub>25</sub>	M <sub>25</sub>
21	J <sub>25</sub>	J <sub>19</sub>	J <sub>27</sub>	J <sub>21</sub>	J <sub>21</sub>	J <sub>19</sub>	E <sub>15</sub>	G	G	G <sub>30</sub>	34	G <sub>35</sub>	G	G <sub>32</sub>	G	34	33	J <sub>38</sub>	14	J <sub>26</sub>	J <sub>20</sub>	J <sub>29</sub>	J <sub>30</sub>	J <sub>28</sub>
22	20	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	J <sub>21</sub>	J <sub>19</sub>	E <sub>15</sub>	24	30	37	G <sub>31</sub>	G	J <sub>20</sub>	G	G	38	J <sub>41</sub>	29	J <sub>24</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>19</sub>	J <sub>39</sub>	J <sub>30</sub>
23	J <sub>22</sub>	J <sub>28</sub>	J <sub>25</sub>	J <sub>24</sub>	E <sub>11</sub>	E <sub>13</sub>	E <sub>15</sub>	G	G	G	37	35	37	39	G <sub>31</sub>	34	32	C	J <sub>29</sub>	M <sub>30</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>28</sub>
24	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	12	13	E <sub>11</sub>	E <sub>15</sub>	25	40	36	37	44	J <sub>70</sub>	J <sub>64</sub>	G <sub>32</sub>	J <sub>61</sub>	J <sub>59</sub>	J <sub>61</sub>	J <sub>42</sub>	J <sub>25</sub>	20	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>
25	E <sub>15</sub>	E <sub>15</sub>	E <sub>11</sub>	13	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G <sub>26</sub>	G <sub>33</sub>	38	39	G <sub>26</sub>	G <sub>35</sub>	J <sub>33</sub>	J <sub>33</sub>	J <sub>34</sub>	J <sub>44</sub>	J <sub>31</sub>	17	E <sub>15</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>14</sub>
26	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	J <sub>26</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	23	30	37	G <sub>31</sub>	J <sub>30</sub>	39	G <sub>28</sub>	G <sub>27</sub>	J <sub>34</sub>	J <sub>26</sub>	J <sub>30</sub>	J <sub>23</sub>	J <sub>21</sub>	E <sub>11</sub>	E <sub>13</sub>	E <sub>11</sub>	E <sub>14</sub>
27	J <sub>68</sub>	J <sub>43</sub>	J <sub>27</sub>	J <sub>20</sub>	J <sub>22</sub>	E <sub>11</sub>	E <sub>15</sub>	G	G	34	36	G <sub>25</sub>	G <sub>36</sub>	G <sub>36</sub>	G <sub>36</sub>	J <sub>48</sub>	J <sub>35</sub>	J <sub>34</sub>	J <sub>29</sub>	J <sub>23</sub>	J <sub>21</sub>	19	J <sub>21</sub>	E <sub>15</sub>
28	J <sub>29</sub>	J <sub>42</sub>	J <sub>39</sub>	J <sub>39</sub>	J <sub>29</sub>	J <sub>27</sub>	25	G <sub>18</sub>	31	34	40	J <sub>44</sub>	J <sub>49</sub>	J <sub>60</sub>	J <sub>64</sub>	J <sub>50</sub>	J <sub>61</sub>	M <sub>45</sub>	E <sub>15</sub>	J <sub>51</sub>	J <sub>23</sub>	J <sub>37</sub>	J <sub>50</sub>	J <sub>30</sub>
29	26	J <sub>21</sub>	J <sub>24</sub>	J <sub>21</sub>	J <sub>20</sub>	J <sub>19</sub>	J <sub>17</sub>	25	33	34	38	40	44	J <sub>49</sub>	J <sub>60</sub>	J <sub>37</sub>	J <sub>30</sub>	J <sub>28</sub>	17	J <sub>20</sub>	J <sub>22</sub>	J <sub>22</sub>	J <sub>25</sub>	J <sub>22</sub>
30	J <sub>26</sub>	J <sub>25</sub>	J <sub>25</sub>	J <sub>19</sub>	E <sub>12</sub>	E <sub>15</sub>	J <sub>18</sub>	22	J <sub>38</sub>	33	28	G <sub>29</sub>	G <sub>36</sub>	42	J <sub>44</sub>	34	35	26	J <sub>25</sub>	J <sub>22</sub>	J <sub>22</sub>	J <sub>18</sub>	J <sub>19</sub>	J <sub>34</sub>
31	J <sub>24</sub>	J <sub>22</sub>	J <sub>20</sub>	J <sub>21</sub>	E <sub>12</sub>	E <sub>15</sub>	J <sub>23</sub>	24	31	G <sub>30</sub>	36	J <sub>30</sub>	J <sub>38</sub>	J <sub>30</sub>	J <sub>39</sub>	J <sub>39</sub>	J <sub>40</sub>	J <sub>30</sub>	J <sub>34</sub>	J <sub>31</sub>	J <sub>27</sub>	25	20	E <sub>15</sub>
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	29	29	30	30	31	31	31	31	31	31	31	30	31	30	30	30	30
MED	20	16	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>15</sub>	20	31	34	37	37	38	37	36	34	33	J <sub>30</sub>	J <sub>24</sub>	J <sub>23</sub>	J <sub>22</sub>	20	J <sub>20</sub>	20
UQ	J <sub>24</sub>	J <sub>21</sub>	J <sub>24</sub>	J <sub>20</sub>	19	E <sub>15</sub>	E <sub>15</sub>	25	33	39	39	42	43	42	39	38	J <sub>40</sub>	J <sub>38</sub>	J <sub>30</sub>	J <sub>31</sub>	J <sub>29</sub>	J <sub>27</sub>	J <sub>25</sub>	J <sub>25</sub>
LQ	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E	E <sub>11</sub>	E <sub>15</sub>	G	G <sub>26</sub>	G <sub>33</sub>	G <sub>34</sub>	G <sub>30</sub>	G <sub>30</sub>	G <sub>30</sub>	G <sub>28</sub>	G <sub>26</sub>	28	26	20	19	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>

OCT. 1970

FOES (0.1 MHZ)



IONOSPHERIC DATA

OCT. 1970

FBES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31 12.1 N Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour/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 <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>11</sub>	S	G	G	G	G	G <sub>29</sub>	G <sub>29</sub>	G <sub>29</sub>	G <sub>28</sub>	G <sub>39</sub>	G <sub>38</sub>	G <sub>32</sub>	G <sub>29</sub>	G <sub>32</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
2	E <sub>15</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>15</sub>	S	G	33	34	35	40	G <sub>33</sub>	G <sub>32</sub>	G <sub>29</sub>	G <sub>40</sub>	G <sub>40</sub>	G <sub>50</sub>	G <sub>52</sub>	E <sub>38</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>	
3	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>15</sub>	G	G	35	40	42	42	57	46	67	46	G	21	17	52	19	E	E	
4	19	E <sub>14</sub>	15	E <sub>15</sub>	E	E	S	15	G	43	36	E <sub>36</sub>	G <sub>26</sub>	G	G <sub>20</sub>	G	G	G	E <sub>15</sub>	21	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
5	E <sub>15</sub>	E	E <sub>11</sub>	E <sub>11</sub>	E	E	S	G	G	36	42	41	47	35	38	G	G	33	20	E	24	21	22	E	
6	E	E	E	E	E	E	E <sub>15</sub>	E <sub>15</sub>	G	G <sub>30</sub>	G <sub>32</sub>	G <sub>30</sub>	G <sub>31</sub>	G <sub>29</sub>	G	G	G	26	24	E	23	33	29	26	
7	17	16	E	E	E	E <sub>15</sub>	E <sub>15</sub>	22	29	G	G	37	38	42	39	35	40	33	21	19	20	23	20	16	
8	17	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	G	G	30	G <sub>24</sub>	39	44	41	39	E <sub>35</sub>	34	26	E <sub>30</sub>	40	23	E	23	22	
9	21	E	E	E <sub>12</sub>	E <sub>11</sub>	E <sub>14</sub>	E <sub>15</sub>	G	G	34	37	38	G	37	36	G	G <sub>16</sub>	20	15	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
10	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>11</sub>	E	E	E <sub>15</sub>	G	G	37	41	41	38	38	37	33	28	19	19	E	E	15	E	23	
11	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>	G	G	35	37	E <sub>38</sub>	42	38	G	34	29	23	19	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
12	E <sub>15</sub>	27	15	15	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	40	73	83	48	42	49	40	28	19	S	18	31	24	E	E	
13	E <sub>15</sub>	16	15	E <sub>11</sub>	E <sub>11</sub>	E <sub>13</sub>	E <sub>15</sub>	G	G	G	G <sub>20</sub>	G <sub>19</sub>	G <sub>22</sub>	G <sub>21</sub>	G	G <sub>19</sub>	G <sub>15</sub>	G <sub>18</sub>	19	E	18	E	E	15	
14	E	E <sub>15</sub>	E <sub>11</sub>	E	E	E <sub>11</sub>	E <sub>15</sub>	C	C	G	G	G	G <sub>23</sub>	G <sub>35</sub>	G <sub>34</sub>	G <sub>32</sub>	G <sub>16</sub>	G	23	E <sub>12</sub>	E <sub>14</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	
15	E	E <sub>15</sub>	E	E <sub>14</sub>	E	E <sub>11</sub>	E <sub>15</sub>	G	G	37	G	E <sub>35</sub>	G <sub>30</sub>	G	G	G	G <sub>31</sub>	G <sub>25</sub>	G	15	E <sub>15</sub>	E	15	E	E <sub>14</sub>
16	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	E	E	E <sub>11</sub>	E <sub>11</sub>	G	G	G	G	G	G <sub>30</sub>	G	G	G	G <sub>20</sub>	G <sub>20</sub>	G <sub>19</sub>	16	15	E	E <sub>15</sub>	E <sub>15</sub>	E
17	E <sub>15</sub>	E <sub>11</sub>	E <sub>11</sub>	E	15	E <sub>15</sub>	E <sub>15</sub>	23	36	35	46	41	40	38	G	G	31	G	E <sub>15</sub>	E	19	E	E	E	
18	16	E	E <sub>14</sub>	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	39	54	48	40	42	G	G	G	35	23	C	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	36	36	21	40	32	23	16	14	19	E	17	17	19
20	16	E	E <sub>11</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	G	G	G	35	35	37	G <sub>32</sub>	G <sub>32</sub>	31	33	22	22	15	17	E <sub>15</sub>	E	E	
21	16	15	15	20	16	E	E <sub>15</sub>	G	G	G <sub>30</sub>	34	G <sub>32</sub>	G	G <sub>30</sub>	G	G	31	31	13	15	17	19	25	22	
22	E	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	14	E	E <sub>15</sub>	G	G	G	G <sub>31</sub>	G	G <sub>20</sub>	G	G	36	34	23	14	E <sub>15</sub>	E <sub>15</sub>	E	22	19	
23	E	19	17	16	E <sub>11</sub>	E <sub>13</sub>	E <sub>15</sub>	G	G	G	G	35	G	37	G <sub>31</sub>	G	30	C	20	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	
24	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	12	11	E <sub>11</sub>	E <sub>15</sub>	G	35	G	G	40	68	44	E <sub>32</sub>	60	50	49	42	21	E	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	
25	E <sub>15</sub>	E <sub>15</sub>	E <sub>11</sub>	12	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G <sub>26</sub>	G	37	35	G <sub>26</sub>	G <sub>32</sub>	G <sub>28</sub>	23	30	27	24	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	
26	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	35	G <sub>30</sub>	G <sub>29</sub>	E <sub>39</sub>	G <sub>28</sub>	G <sub>27</sub>	G <sub>26</sub>	G <sub>20</sub>	17	20	16	E <sub>11</sub>	E <sub>13</sub>	E <sub>11</sub>	E <sub>14</sub>	
27	A	36	16	12	14	E <sub>11</sub>	E <sub>15</sub>	G	G	G	G	G <sub>25</sub>	E <sub>36</sub>	E <sub>36</sub>	36	32	23	20	23	20	17	16	E	E <sub>15</sub>	
28	20	26	26	28	26	20	E	G	26	33	38	40	42	42	45	39	48	33	E <sub>15</sub>	39	16	19	26	16	
29	16	19	20	16	E	E	S	G	G	G	37	40	40	40	33	33	22	16	15	15	19	E	20	20	
30	20	25	19	15	E <sub>12</sub>	E <sub>15</sub>	S	G	24	G	28	G <sub>29</sub>	G <sub>36</sub>	39	41	G	32	24	19	18	E	15	15	24	
31	22	22	19	E	E <sub>12</sub>	E <sub>11</sub>	S	G	G	G	28	G	27	30	G <sub>30</sub>	32	35	32	16	21	19	19	17	E	E <sub>15</sub>
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	24	29	29	30	30	31	31	31	31	31	31	30	30	30	30	30	30	30	
MED	15	15	E <sub>12</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>15</sub>	G	G	G <sub>30</sub>	34	36	34	35	G <sub>32</sub>	32	29	21	20	16	15	15	15	15	
UQ	17	16	15	13	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	35	37	40	40	40	38	35	34	31	23	19	19	17	20	19	
LQ	E <sub>15</sub>	E <sub>11</sub>	E <sub>11</sub>	E	E	E <sub>11</sub>	E <sub>15</sub>	G	G	G	G	G	G <sub>29</sub>	G <sub>28</sub>	G	G	G <sub>20</sub>	16	15	E	E	E <sub>11</sub>	E	E <sub>14</sub>	

OCT. 1970

FBES (0.1 MHz)



# IONOSPHERIC DATA

OCT. 1970

F-MIN (0.1 MHz)

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

Station **YAMAGAWA** Lat. **31 12.1 N** Long. **130 37.1 E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour 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 <sub>15</sub>	E <sub>15</sub>	12	11	11	11	E <sub>12</sub>	E <sub>15</sub>	15	15	15	17	20	20	16	15	15	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
2	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	E	11	E <sub>15</sub>	E <sub>15</sub>	11	15	15	15	17	16	15	11	11	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
3	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	14	11	11	E <sub>15</sub>	E <sub>15</sub>	11	11	16	17	18	16	14	15	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
4	E <sub>15</sub>	E <sub>15</sub>	E	15	14	E <sub>15</sub>	E <sub>15</sub>	11	11	15	15	16	20	17	15	16	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
5	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	15	16	19	19	16	20	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
6	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	12	12	11	E <sub>15</sub>	E <sub>15</sub>	15	16	23	18	19	17	19	17	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
7	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	15	15	16	17	16	16	15	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
8	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	14	16	20	22	16	15	15	15	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
9	E <sub>15</sub>	E <sub>15</sub>	12	12	11	14	E <sub>15</sub>	E <sub>15</sub>	11	15	17	18	19	18	15	15	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
10	E <sub>15</sub>	E <sub>15</sub>	11	11	E	E	E <sub>15</sub>	E <sub>15</sub>	11	15	16	17	20	20	17	15	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
11	E <sub>15</sub>	E <sub>15</sub>	12	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	12	16	15	18	15	15	15	11	E <sub>15</sub>	16	18	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
12	E <sub>15</sub>	11	11	E	13	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	E <sub>25</sub>	16	20	20	21	19	20	14	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
13	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	11	13	E <sub>15</sub>	11	11	13	16	15	15	15	20	15	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11
14	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	C	C	14	16	20	19	20	16	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	11	E <sub>15</sub>	E <sub>15</sub>	11	19	15	16	19	20	22	16	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
16	E <sub>15</sub>	11	12	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	15	17	16	20	19	16	15	14	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
17	E <sub>15</sub>	E <sub>15</sub>	11	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	15	11	15	15	16	17	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
18	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	11	15	16	15	19	15	15	14	E <sub>15</sub>	11	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	16	17	15	15	15	12	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
20	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	12	E	11	E <sub>15</sub>	E <sub>15</sub>	11	15	15	16	16	16	16	15	15	E <sub>15</sub>	E <sub>15</sub>	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
21	12	11	E	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	E <sub>25</sub>	15	15	19	16	19	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
22	E <sub>15</sub>	E <sub>15</sub>	12	11	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	15	15	16	16	20	19	15	14	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
23	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	12	16	16	16	20	16	16	12	C	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
24	E <sub>15</sub>	12	E <sub>15</sub>	E	E	11	E <sub>15</sub>	E <sub>15</sub>	14	15	16	19	30	19	23	27	14	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
25	E <sub>15</sub>	E <sub>15</sub>	11	E	12	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	15	16	16	20	20	19	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
26	E <sub>15</sub>	E <sub>15</sub>	12	E	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	17	19	20	24	20	24	15	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	E <sub>15</sub>	11	E <sub>15</sub>
27	E <sub>15</sub>	E <sub>15</sub>	15	E	E	11	E <sub>15</sub>	14	14	15	15	15	20	20	19	15	15	E <sub>15</sub>	E <sub>15</sub>	12	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
28	11	E <sub>15</sub>	12	14	12	E	E <sub>15</sub>	15	15	12	15	15	19	16	15	15	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	E <sub>15</sub>
29	E	11	11	12	E <sub>15</sub>	13	E <sub>15</sub>	E <sub>15</sub>	11	15	16	16	17	20	16	16	15	E <sub>15</sub>	E <sub>15</sub>	11	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
30	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	11	12	E <sub>15</sub>	E <sub>15</sub>	11	15	16	19	22	19	16	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	12	E <sub>15</sub>	E <sub>15</sub>
31	E <sub>15</sub>	E	11	15	12	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	19	15	16	15	16	15	15	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	11	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	29	29	30	30	31	31	31	31	31	31	30	31	30	30	30	30	30
MED	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	11	E <sub>11</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	11	15	16	16	19	18	16	15	14	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
UQ	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	12	12	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	15	15	16	18	20	20	19	15	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
LQ	E <sub>15</sub>	E <sub>11</sub>	11	E	E	11	E <sub>15</sub>	E <sub>14</sub>	11	15	15	16	16	16	15	15	11	E <sub>14</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>14</sub>

The Radio Research Laboratories, Japan

OCT. 1970

F-MIN (0.1 MHz)

IONOSPHERIC DATA

OCT. 1970

M(3000)F2 (0.01)

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

Station YAMAGAWA Lat. 31 12.1 N Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	295	295	300	305	295	305	350	315	305	285	280	285	285	290	290	295	310	315	305	290	295	260	265
2	280	280	275	260	320	275	285	345	340	330	320	285	290	290	285	295	305	310	325	335	295	270	270	295
3	275	290	270	290	325	315	305	345	320	330	300	285	295	285	285	295	295	310	310	295	275	265	265	275
4	290	290	280	265	295	280	285	335	330	335	305	305	295	280	285	285	295	300	315	295	270	270	265	270
5	300	330	340	280	270	255	290	350	325	320	300	295	295	290	295	295	300	315	325	315	295	285	280	280
6	285	290	300	315	340	315	320	350	335	330	300	290	300	300	295	300	300	315	325	310	290	290	295	285
7	295	295	325	335	330	320	295	350	345	350	310	305	305	300	300	305	305	325	340	315	285	285	295	290
8	275	290	315	335	335	295	305	330	325	335	345	305	295	300	300	310	305	320	335	310	285	270	285	295
9	305	320	305	310	310	305	305	345	340	345	310	305	310	295	290	305	310	320	295	315	285	300	315	285
10	285	285	315	340	315	320	305	340	335	325	310	305	300	295	295	300	305	310	315	300	290	310	305	285
11	290	280	295	305	320	270	290	325	330	315	300	300	300	290	285	295	295	295	305	300	295	295	300	285
12	275	280	285	285	270	265	305	300	335	320	310	295	300	285	295	295	305	310	315	325	255	270	300	295
13	285	290	315	330	300	265	275	320	320	320	310	295	295	295	290	295	305	305	310	320	285	295	285	265
14	275	295	320	270	255	260	285	C	C	320	315	290	290	285	285	295	300	305	315	315	285	285	275	270
15	280	305	310	315	285	255	275	325	325	320	310	300	295	290	285	290	295	310	315	315	280	280	275	275
16	280	280	280	305	350	270	280	305	320	320	305	285	290	285	295	295	285	300	305	S	275	270	255	F
17	S	305	340	235	235	230	340	305	305	305	305	305	295	285	290	300	310	325	310	285	255	270	245	270
18	255	275	270	290	235	230	250	300	285	280	295	315	305	285	305	315	325	320	300	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	305	305	285	290	300	300	305	S	S	S	290	290
20	290	245	265	275	280	280	275	325	325	330	310	305	285	300	295	300	295	310	310	300	295	285	285	265
21	265	280	275	285	290	275	305	335	345	320	315	305	300	300	300	310	315	315	325	310	290	290	300	295
22	265	275	280	275	280	275	285	335	335	325	310	295	290	290	290	295	300	295	315	290	270	245	275	285
23	265	270	265	275	260	265	260	315	335	305	310	295	305	280	300	295	300	300	305	315	275	280	275	295
24	285	270	275	275	265	215	255	335	315	315	305	305	295	300	300	310	310	310	330	305	290	290	290	285
25	260	300	305	310	295	265	275	315	345	335	320	310	295	295	305	300	305	315	325	310	280	295	305	275
26	265	280	320	300	350	265	285	335	330	310	320	310	300	285	295	305	305	315	305	280	275	290	265	275
27	275	295	280	300	340	270	285	325	330	320	305	315	285	290	300	300	305	310	310	295	300	295	285	285
28	265	275	295	300	335	250	280	325	335	315	305	295	290	275	285	290	285	300	300	285	290	295	280	275
29	280	295	265	270	260	260	260	315	335	320	315	290	280	290	285	295	300	300	300	285	310	280	260	270
30	280	285	305	340	310	245	265	315	330	315	290	295	285	310	280	285	285	310	315	260	295	295	295	295
31	310	305	315	315	325	270	285	335	340	325	320	295	285	290	285	290	295	300	300	295	295	300	300	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	29	29	30	30	31	31	31	31	31	31	31	30	28	29	30	30	29
MED	280	290	295	300	302	270	285	330	330	320	310	300	295	290	290	295	300	310	315	305	285	285	285	285
UQ	285	295	315	315	325	280	305	340	335	330	315	305	300	295	298	300	305	315	325	315	295	295	295	290
LQ	275	280	275	275	270	260	275	315	325	315	305	295	290	285	285	295	295	302	305	295	275	270	270	275

OCT. 1970

M(3000)F2 (0.01)

IONOSPHERIC DATA

OCT. 1970

M(3000)F1 (0.01)

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

Station YAMAGAWA Lat. 31 12.1 N. Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	U 345	L	L							
2									L	L	L	L	L	L	L	L	L	A						
3									L	L	L	365	350	L	L	A	A							
4									L	L	370	400	L	L	L	L	L							
5									L	L	L	L	L	L	L	L	L							
6									L	445	L	L	L	L	L	L	L							
7									L	L	U 370	L	L	L	L	L	L							
8									L	L	410	L	L	L	L	L	L							
9									L	L	L	L	L	L	U 360	L	L	L						
10									L	L	L	L	L	L	L	L	L							
11									L	L	L	L	L	L	L	L	L							
12									L	A	A	L	L	L	L	L	L							
13									L	L	U 400	395	375	L	L	L	L							
14									C	L	L	L	L	L	L	L	L							
15									L	L	L	L	L	L	L	L	L							
16									L	L	L	L	L	L	L	L	L							
17									L	L	L	L	L	L	L	L	L							
18									L	L	L	L	L	L	385	L	L							
19									C	C	C	L	L	L	L	L	L							
20									L	L	L	360	370	L	L	L	L							
21									L	L	L	L	L	L	L	L	L							
22									L	L	L	L	L	L	L	L	L	A						
23									L	L	L	L	L	L	L	L	L							
24									L	L	L	A	L	L	A	A	A							
25									L	L	395	U 390	U 350	U 375	385									
26									L	390	L	L	335	L	L	L	L							
27									L	L	350	L	345	L	L	L	L							
28									L	L	L	L	L	L	380	L	A							
29									L	L	L	L	L	L	L	L	L							
30									L	L	L	L	L	L	L	L	L							
31									L	L	L	L	L	L	L	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	4	7	4	4	4	1							
MED											445	395	370	372	345	375	385							
UQ											405	395	382	U 355	382									
LQ											380	362	360	340	U 360									

OCT. 1970

M(3000)F1 (0.01)

# IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>F<sub>2</sub> (KM)

135° E Mean Time (G. M. T. + 9 h)

Station **YAMAGAWA** Lat. **31 12.1 N** Long. **130 37.1 E** Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour 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	235	305	305	305	300	290	275	270								
2									220	230	240	275	275	275	295	275	260	250							
3									225	230	250	295	285	285	290	280	250								
4									245	245	255	250	270	305	285	295	270								
5										245	250	285	290	295	300	280	255								
6									220	230	250	290	280	270	280	270	255								
7										230	290	290	275	270	275	255									
8									225	240	240	275	295	280	295	275	250								
9									235	240	250	255	260	275	295	270	250								
10									225	235	245	280	270	275	275	270	255								
11									235	250	250	275	255	255	290	255	240								
12										240	275	280	250	275	275	275	250								
13									240	250	245	245	265	280	270	265	250								
14									C	245	250	290	255	280	270	265	245								
15										240	250	250	280	275	275	275	245								
16									250	250	235	300	295	300	275	250	240								
17										255	260	250	270	245	250	240	235								
18										280	275	270	290	275	265	255	240								
19									C	C	C	230	255	240	270	250	230								
20									230	240	250	250	290	280	250	245	230								
21										225	260	270	250	280	260	245									
22									230	230	245	275	275	275	275	250	230								
23											270	300	270	300	275	250									
24										240	245	260	255	270	270	245	240								
25										230	245	245	270	280	255	250									
26										250	250	250	250	295	260	265	235								
27										250	245	255	275	290	275	245	240								
28									235	240	270	250	280	295	280	255	245								
29										240	240	240	300	290	275	250									
30										230	240	280	280	260	250	245									
31										235	240	275	265	275	280	230									
Hour 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	
CNT									14	29	30	31	31	31	31	31	24	1							
MED									230	240	250	275	275	280	275	255	245	250							
UQ									235	245	260	282	282	290	282	272	252								
LQ									225	230	245	250	262	275	270	250	240								

OCT. 1970

H<sup>o</sup>F<sub>2</sub> (KM)

# IONOSPHERIC DATA

OCT. 1970

H<sup>o</sup>F (KM)

135° E Mean Time (G. M. T. + 9 h)

Station **YAMAGAWA** Lat. **31 12.1 N** Long. **130 37.1 E** Sweep **1 MHz** to **20 MHz** in **20 sec** in automatic operation

Hour 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	275	255	240	245	225	245	250	220	210	220	205	200	195	200	180	245	250	250	225	225	205	225	250	280
2	260	265	260	230	200	245	270	235	225	210	200	220	205	210	245	250	245	245	225	215	275	275	260	
3	270	275	300	270	230	245	250	220	220	225	220	215	220	A	E <sub>300</sub>	A	A	240	225	225	E <sub>300</sub>	290	280	275
4	270	250	270	300	245	220	250	225	225	I <sub>25</sub>	205	200	200	200	200	220	240	240	230	215	205	250	290	300
5	255	230	200	235	230	320	275	220	225	220	220	210	E <sub>25</sub>	A	200	225	225	235	240	215	210	240	260	280
6	300	255	265	240	200	230	240	220	215	195	210	205	215	220	220	225	225	250	220	200	230	270	270	285
7	265	260	225	225	225	230	250	225	220	215	205	195	200	215	240	225	240	240	220	220	250	270	265	255
8	300	265	225	225	210	240	260	220	220	200	210	200	200	200	220	245	240	240	220	220	240	250	260	265
9	250	235	230	220	205	245	250	215	225	225	210	200	205	205	205	220	235	240	215	205	230	240	225	260
10	275	275	250	220	220	240	255	220	225	220	210	200	200	220	225	220	230	230	215	220	245	245	230	255
11	270	290	265	250	240	265	275	215	220	230	220	225	225	225	220	230	225	250	235	225	225	230	245	
12	280	310	270	270	250	275	280	230	225	225	A	A	A	220	250	240	225	230	225	220	E <sub>300</sub>	290	245	230
13	295	275	245	220	215	280	290	240	230	225	220	195	200	190	200	205	225	230	230	220	240	240	245	295
14	300	250	220	225	285	275	290	C	C	220	215	195	210	220	225	220	240	235	225	205	225	225	230	255
15	275	250	230	230	240	310	290	240	230	235	225	205	200	210	220	220	240	240	225	220	205	245	245	255
16	275	270	280	240	200	255	295	240	230	225	225	200	195	190	190	225	230	225	220	205	200	270	300	330
17	295	230	210	250	390	445	300	215	230	220	I <sub>23</sub>	220	210	225	225	220	225	225	210	230	250	275	300	295
18	300	270	270	245	250	395	330	250	240	240	A	I <sub>25</sub>	225	235	230	230	235	240	230	C	C	C	C	
19	C	C	C	C	C	C	C	C	C	C	C	C	190	180	180	225	225	225	200	210	205	245	245	250
20	250	280	275	275	230	235	250	230	225	220	215	200	205	195	240	225	225	230	210	205	230	225	235	275
21	295	265	255	290	245	270	250	225	225	210	200	215	220	200	230	225	230	230	220	210	230	240	250	255
22	255	290	290	270	265	285	255	225	225	220	210	200	200	230	230	230	I <sub>23</sub>	230	225	200	240	250	265	250
23	275	300	300	290	250	295	260	230	220	230	230	230	210	205	250	230	235	I <sub>24</sub>	240	210	245	250	290	250
24	260	290	285	245	235	295	320	230	230	225	225	225	A	E <sub>24</sub>	245	A	A	240	225	220	250	245	250	270
25	295	255	230	225	210	E <sub>29</sub>	295	250	230	225	220	210	200	185	230	225	225	230	220	205	250	225	220	250
26	300	290	240	250	200	E <sub>30</sub>	275	240	225	225	200	230	230	220	250	225	235	225	205	205	210	215	235	270
27	A	E <sub>30</sub>	250	245	210	275	275	235	230	225	225	210	200	215	220	240	230	E <sub>23</sub>	225	230	240	225	245	250
28	275	E <sub>32</sub>	295	280	240	A	E <sub>30</sub>	240	230	200	230	205	E <sub>24</sub>	240	E <sub>25</sub>	A	A	235	215	250	240	240	275	275
29	250	250	300	275	E <sub>30</sub>	300	320	250	230	225	230	220	200	225	230	230	230	230	220	240	230	230	250	270
30	290	295	250	230	225	325	290	250	230	225	220	215	220	215	E <sub>24</sub>	230	225	240	200	250	260	245	245	250
31	250	250	250	245	220	275	280	245	235	225	225	200	195	240	230	I <sub>23</sub>	230	225	225	230	230	225	225	245
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	29	30	29	29	30	28	30	29	30	31	28	28	31	31	30	30	30	30	30
MED	275	266	252	245	229	272	275	230	225	225	220	205	200	214	228	225	230	235	220	220	232	245	250	260
UQ	295	285	275	270	245	295	290	240	230	225	225	220	215	222	235	230	238	240	225	225	242	260	270	275
LQ	260	250	230	230	210	245	250	220	225	220	210	200	200	200	220	222	225	230	215	205	225	225	235	250

The Radio Research Laboratories, Japan

OCT. 1970

H<sup>o</sup>F (KM)



IONOSPHERIC DATA

OCT. 1970

H<sup>1</sup>ES (KM)

135° E Mean Time (G. M. T. + 9 h)

Station	YAMAGAWA																								Lat.	31 12.1 N.		Long.	130 37.1 E		Sweep	1 MHz to 20 MHz		in 20 sec		in automatic		operation	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23															
1	100	S	B	B	B	B	100	G	G	G	G	100	100	100	100	150	140	125	120	105	100	S	S	S															
2	S	S	S	B	E	B	S	145	125	115	100	120	100	100	100	145	135	125	115	110	105	105	S	S															
3	S	S	S	B	B	B	S	G	150	130	120	115	115	120	120	110	110	120	125	105	100	100	100	100															
4	100	S	100	B	100	100	100	100	130	120	115	115	100	G	100	G	G	G	S	115	S	S	S	S															
5	S	100	S	B	E	100	150	150	130	125	115	105	105	100	115	G	G		120	110	115	105	100	100															
6	105	105	100	100	100	100	S	S	G	105	105	100	100	100	G	G	150	120	105	105	100	100	100	95															
7	95	95	100	125	100	S	S	115	115	120	120	115	120	115	120	150	105	100	100	100	100	100	100	100															
8	100	S	S	S	E	S	S	150	160	105	100	125	115	115	115	125	110	110	105	100	100	100	95																
9	95	95	100	B	B	B	S	G	160	130	125	120	115	120	115	G	100	110	100	95	S	S	S	S															
10	S	S	B	B	E	E	S	G	140	115	115	115	120	120	115	115	100	105	100	100	100	100	105	100															
11	S	S	B	E	E	S	S	G	G	140	140	115	115	120	125	120	110	105	100	100	S	S	S	S															
12	S	100	100	100	B	S	S	G	145	125	115	110	110	115	110	110	100	105	100	100	100	95	100	100															
13	S	95	95	B	B	B	S	G	150	135	100	100	100	100	G	100	100	95	95	95	100	100	100	100															
14	100	S	S	E	S	S	S	C	C	100	100	G	100	105	105	110	100	150	125	S	S	S	S	S															
15	100	S	95	S	E	B	S	130	125	120	125	110	105	G	G	105	105	155	100	S	100	100	100	S															
16	S	B	B	E	E	S	S	140	150	125	115	120	100	125	120	100	100	100	100	100	100	S	S	100															
17	S	S	B	E	100	S	S	125	120	120	110	110	115	110	125	G	130	G	S	120	110	100	100	100															
18	100	100	S	100	S	S	S	G	150	125	115	115	120	115	120	G	130	120	105	C	C	C	C	C															
19	C	C	C	C	C	C	C	C	C	C	C	C	105	115	100	105	105	100	100	100	100	100	100	95															
20	100	100	S	B	E	B	S	115	G	G	110	110	105	100	100	100	105	105	100	100	100	S	100	100															
21	100	100	95	100	100	95	S	G	G	C	110	100	100	G	100	G	150	130	115	110	105	100	100	100															
22	100	S	B	B	100	100	S	150	150	140	100	G	100	G	G	130	115	100	105	S	S	100	100	100															
23	100	100	95	95	B	S	S	G	G	G	140	100	145	100	100	160	150	C	115	130	S	S	S	105															
24	S	B	S	100	100	B	S	145	125	125	120	110	100	100	100	100	95	95	95	95	95	S	S	S															
25	S	S	B	100	B	S	S	G	105	130	120	110	100	100	100	100	100	95	95	95	S	S	S	S															
26	S	S	B	100	B	S	S	155	130	105	100	100	125	100	100	100	100	100	100	100	B	S	B	S															
27	100	100	95	95	100	B	S	G	G	150	140	100	105	100	115	105	105	105	100	100	100	100	100	S															
28	100	95	95	95	95	95	100	100	105	105	100	100	100	100	100	95	95	95	S	100	100	100	100	100															
29	100	100	95	100	100	100	100	140	150	130	125	120	110	100	100	105	105	100	105	100	100	100	100	100															
30	100	95	95	95	B	S	100	145	105	150	100	100	110	105	105	150	125	110	100	100	100	100	100	95															
31	95	95	95	95	B	S	100	155	150	100	150	100	100	100	100	100	100	100	100	100	105	100	100	S															
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23															
CNT	18	15	14	14	10	7	7	16	22	27	29	29	30	28	26	25	29	28	28	27	22	19	19	18															
MED	100	100	95	100	100	100	100	142	135	125	115	110	105	100	105	110	105	105	100	100	100	100	100	100															
UQ	100	100	100	100	100	100	100	150	150	130	120	115	115	115	115	130	125	120	108	105	100	100	100	100															
LQ	100	95	95	95	100	98	100	120	125	112	100	100	100	100	100	100	100	100	100	100	100	100	100	100															

OCT. 1970

H<sup>1</sup>ES (KM)



# IONOSPHERIC DATA

OCT. 1970

TYPES OF ES

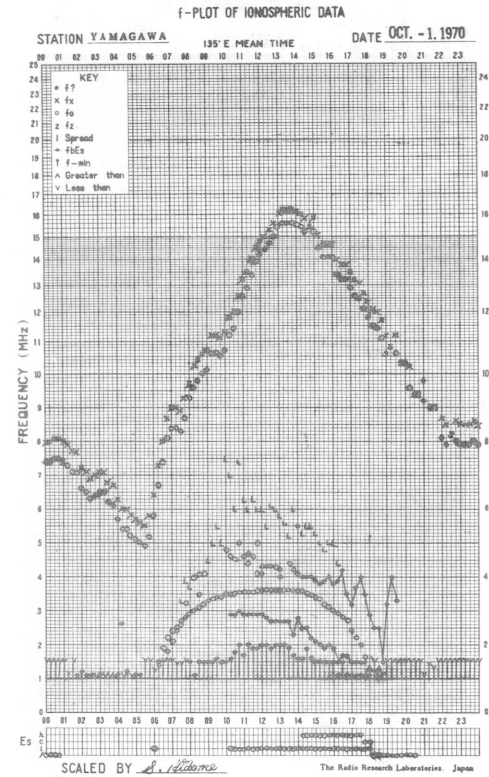
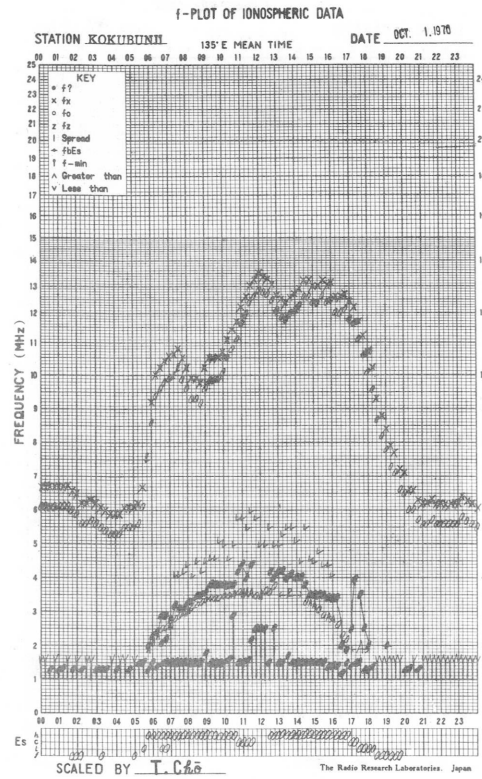
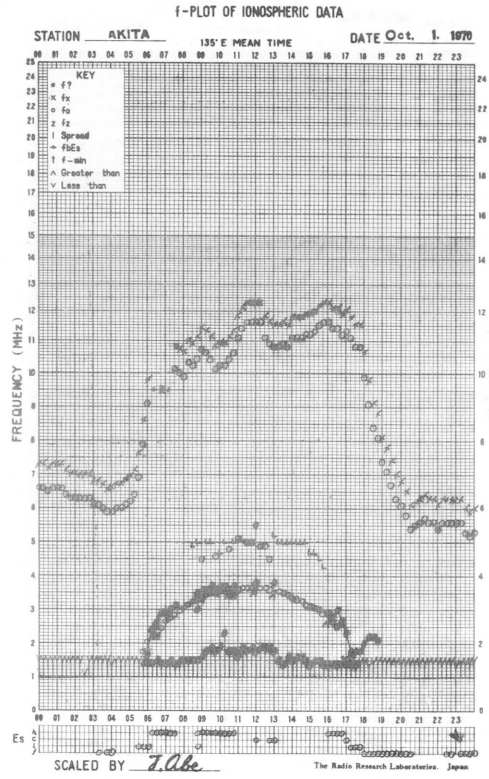
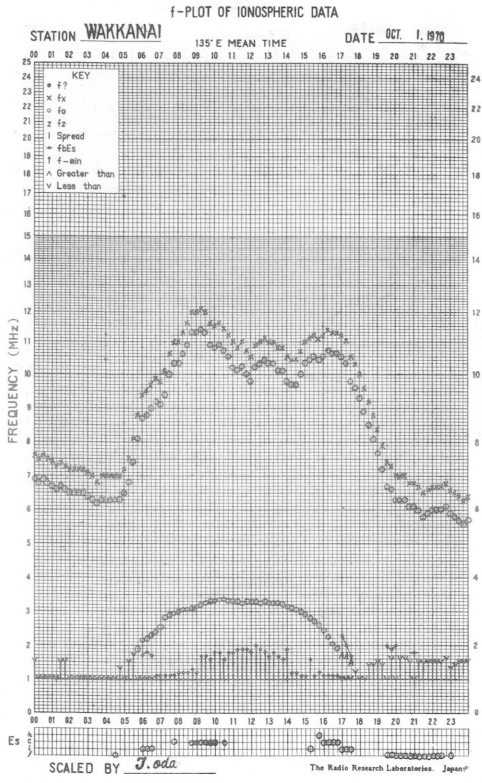
135 E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31 12.1 N. Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

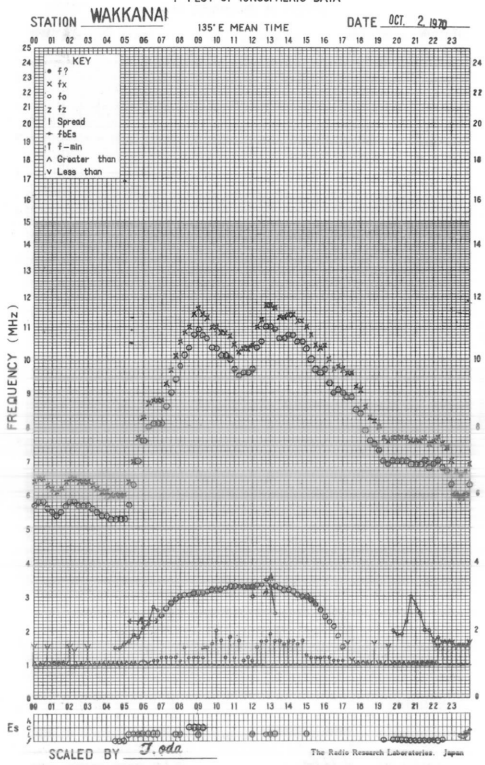
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F						T					T	T	L	HL	HL	HL	CL	FF	F					
2							H	H <sub>2</sub>	HL	L	HL	T	T	L	HL	HL	HL	CL	FF	FF	F				
3									H	HL	HL	CL	CL	CL	CL	CL	CL	CL	H	FF	F	F	F	F	
4	F		F		F	F	T	HL	HL	C	CL	CL	T							F					
5		F				F	H	H	H	H	C	T	L	T	T			C	C	F	F	F	F	F	
6	F	F	F	F	F	F				L	T	T	T	T			H	C	L	F	F	F	F	F	
7	F	F	F	FF	F			C	C	CL	CL	C	C	CL	C	H	L	L	L	F	F	F	F	F	
8	F							HL	HL	L	T	H	CL	CL	CL	HL	CL	L	L	F	F	F	F	F	
9	F	F	F						H	H	H	CL	C	CL	C			L	L	L	F				
10									H	C	C	C	C	C	CL	L	L	L	L	F	F	F	F	F	
11									H	HL	CL	CL	CL	CL	HL	CL	CL	L	T	F					
12		F	F	F					H	H	CL	C	C	C	C	C	L	L	L	F	F	F	F	F	
13		F	F						HL	H	T	T	T	T		T	T	L	L	F	FF	F	F	F	
14	F									T	T		T	T	HL	HL	T	H	H						
15	F		F					H	H	C	HL	HL	T			T	L	HL	T		F	F	F	F	
16								H	H	H	C	C	T	HL	CL	L	L	L	LH	F	F			F	
17					F			H	C	C	C	CL	CL	CL	H		H			F	FF	F	F	F	
18	F	F		F					H	H	C	C	C	C	C		H	H	L						
19												C	CL	T	C	L	L	L	T	F	F	F	F	F	
20	F	F						L			CL	CL	C	T	T	L	L	L	L	F	F	F	F	F	
21	F	F	F	F	F	F				T	T	T		T		H	H	C	T	F	F	F	F	F	
22	F				F	F		H	H	HL	T		T			H	C	L	T			F	F	F	
23	F	F	F	F						H	T	HL	L	T	HL	HL			CL	FF				F	
24				F	F			H	C	H	C	C	L	L	L	L	L	L	L	F	F				
25				F					HL	HL	CL	CL	T	T	T	T	L	L	L	F					
26				F				H	H	L	T	T	HL	T	T	T	T	L	L	F					
27	F	F	F	F	F					HL	HL	T	HL	T	C	L	L	HL	L	L	F	F	F	F	
28	F	F	F	F	F	F	L	L	HL	HL	L	L	L	L	L	L	L	L	L	F	F	F	F	F	
29	F	F	F	F	F	F	L	H	HL	H	C	C	C	L	L	L	L	L	L	F	F	F	F	F	
30	F	F	F	F			T	H	L	HL	L	L	HL	L	L	HL	H	L	L	F	F	F	F	F	
31	F	F	F	F			T	H	H	L	HL	T	T	T	L	L	L	L	L	F	FF	F	F	F	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
UQ																									
LQ																									

OCT. 1970

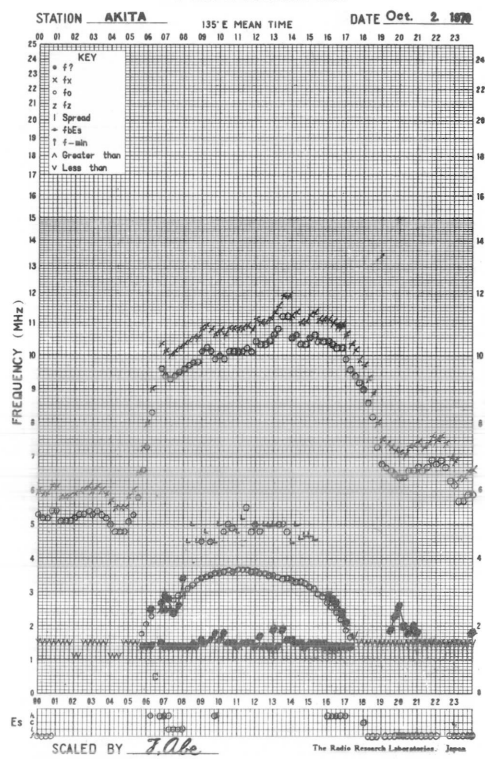
TYPES OF ES



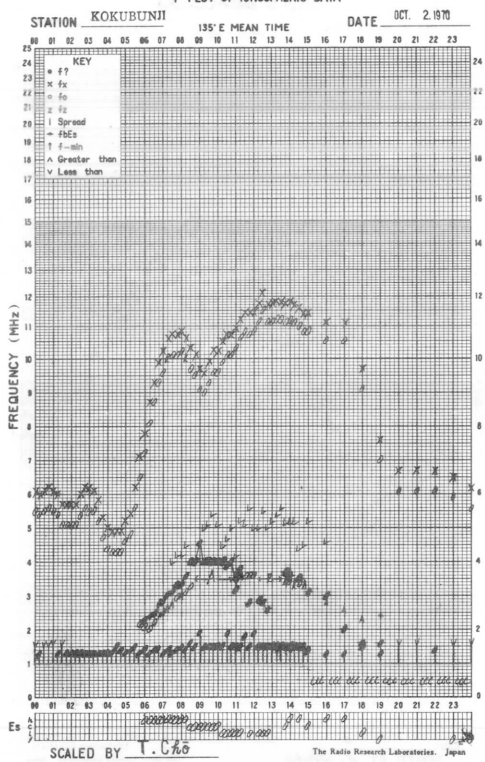
f-PLOT OF IONOSPHERIC DATA



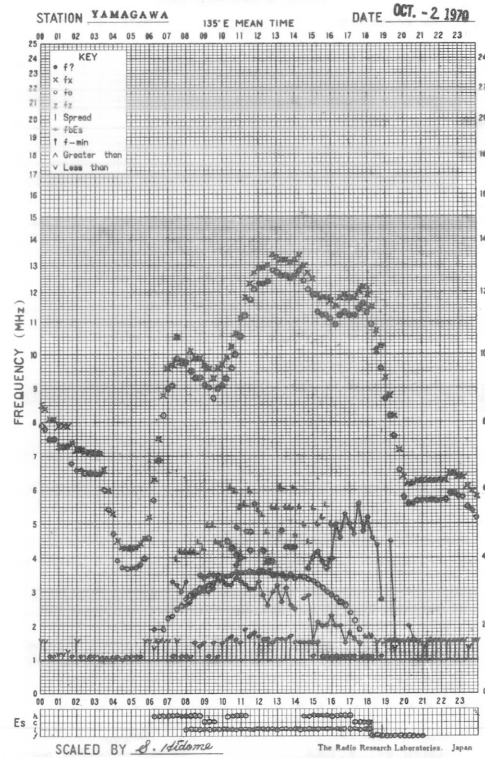
f-PLOT OF IONOSPHERIC DATA

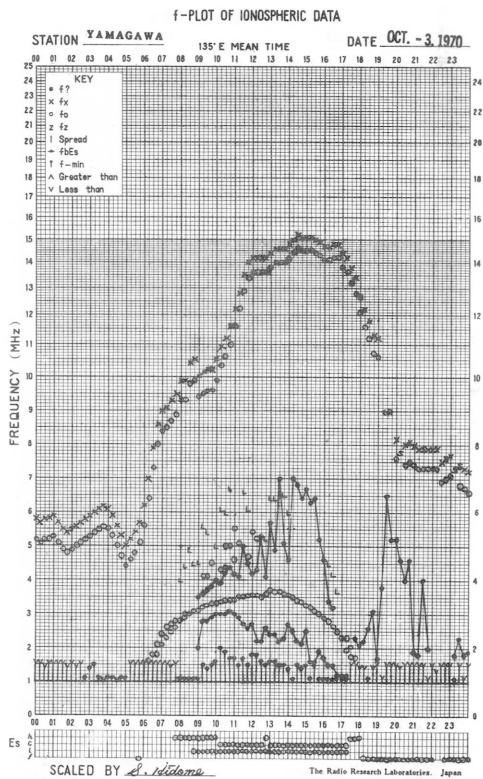
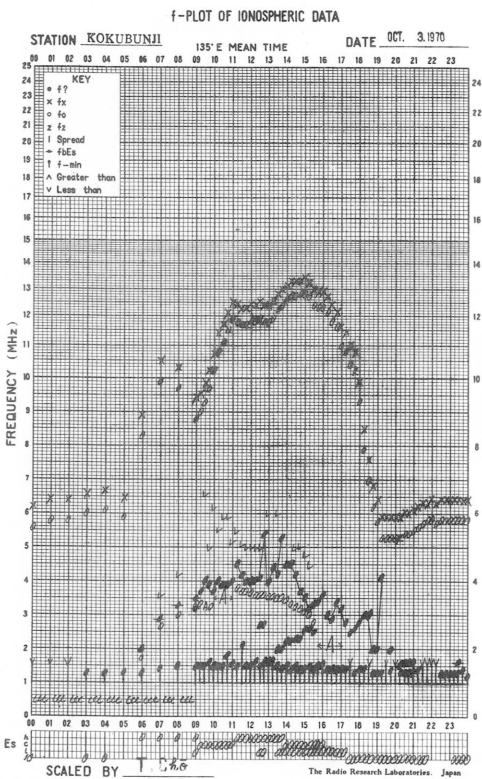
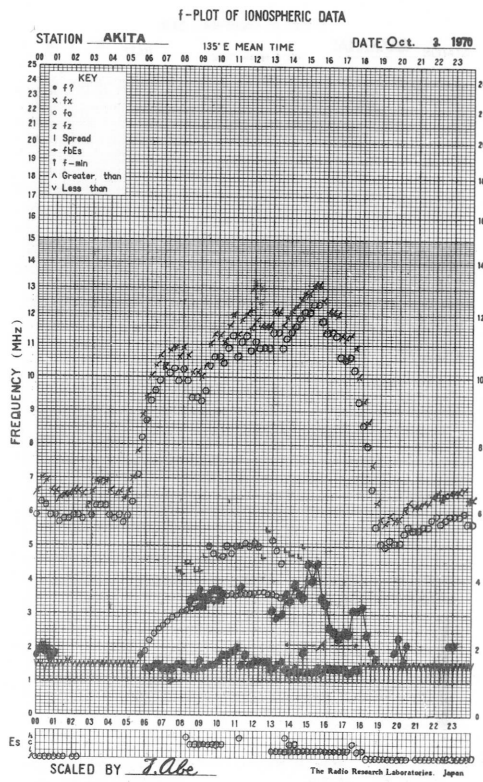
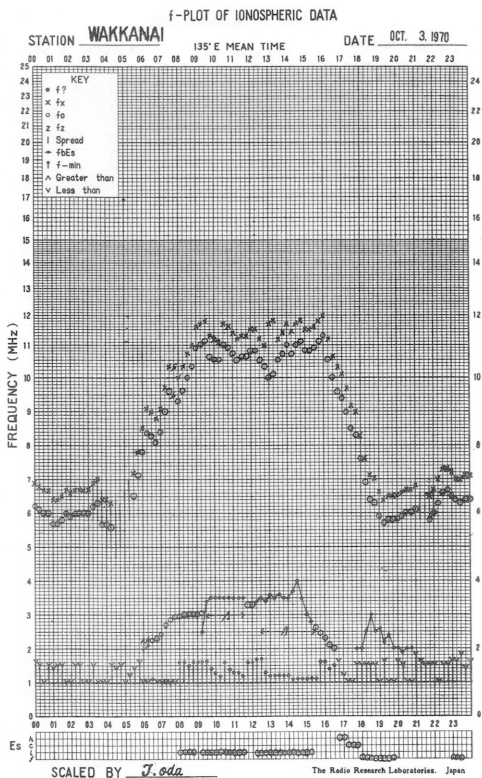


f-PLOT OF IONOSPHERIC DATA



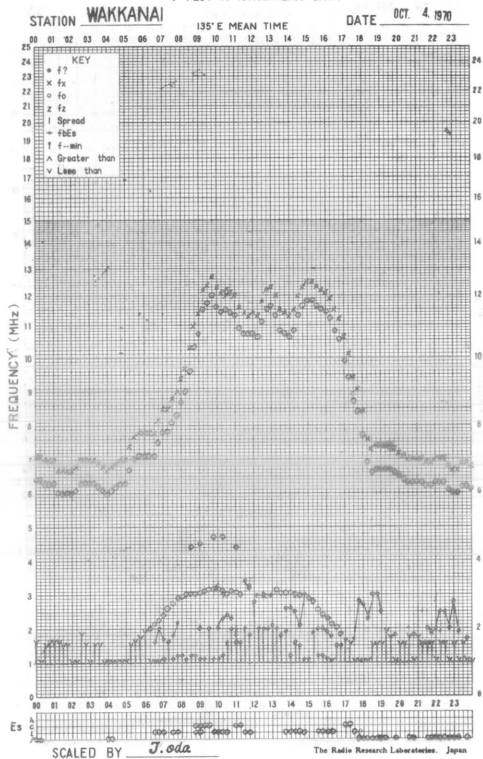
f-PLOT OF IONOSPHERIC DATA



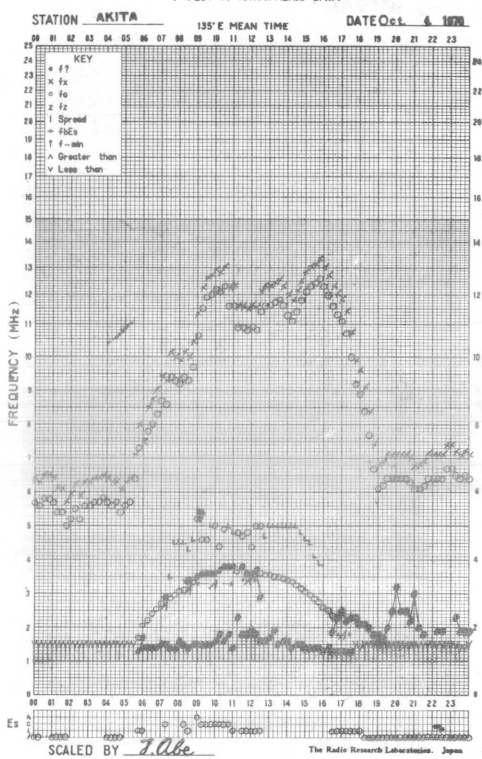




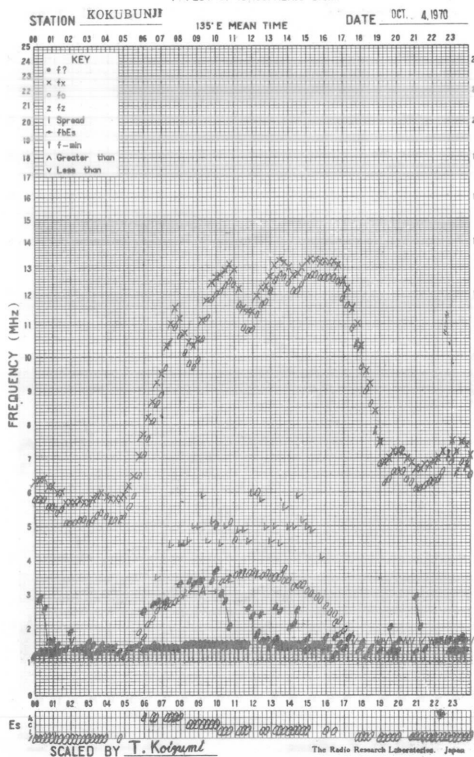
f-PLOT OF IONOSPHERIC DATA



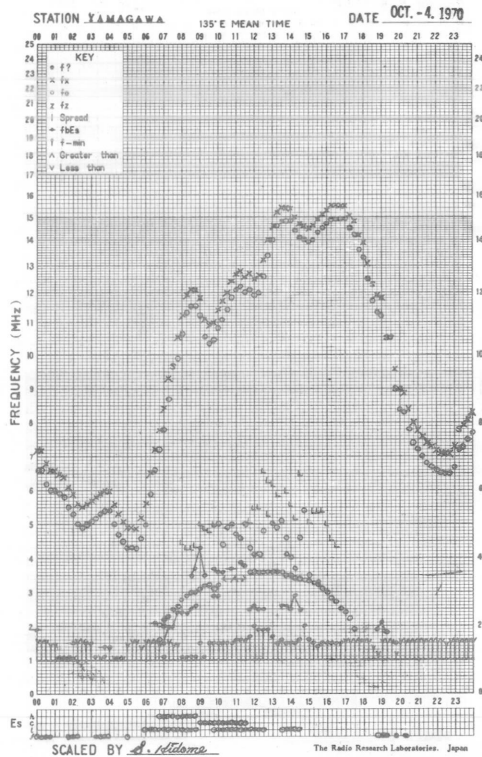
f-PLOT OF IONOSPHERIC DATA

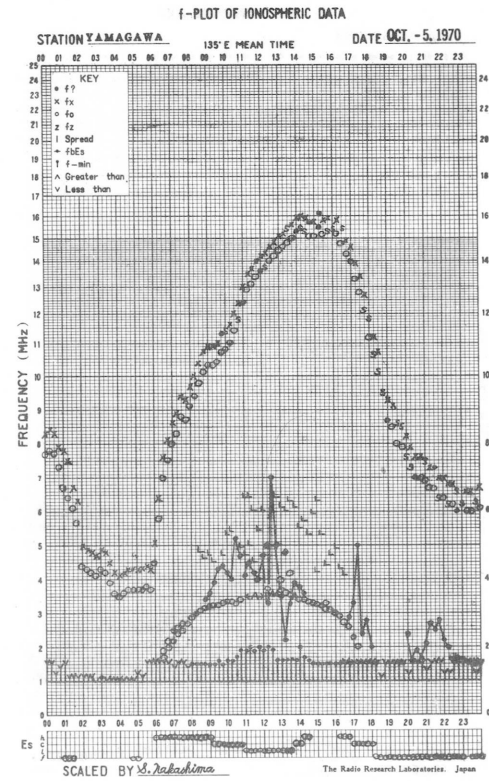
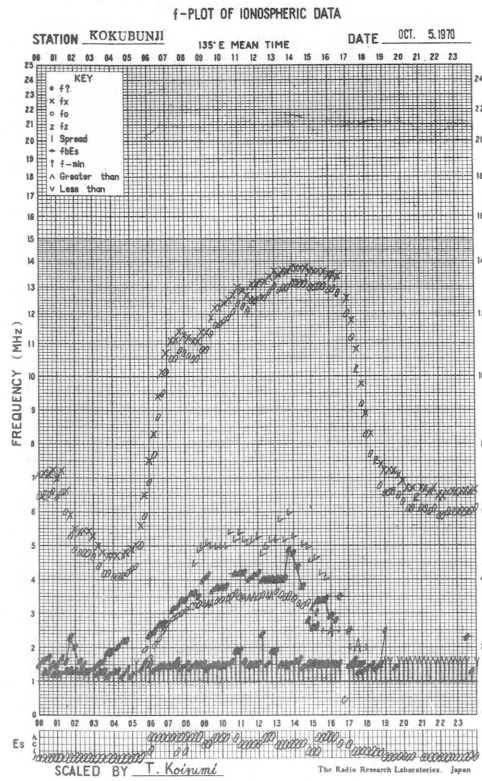
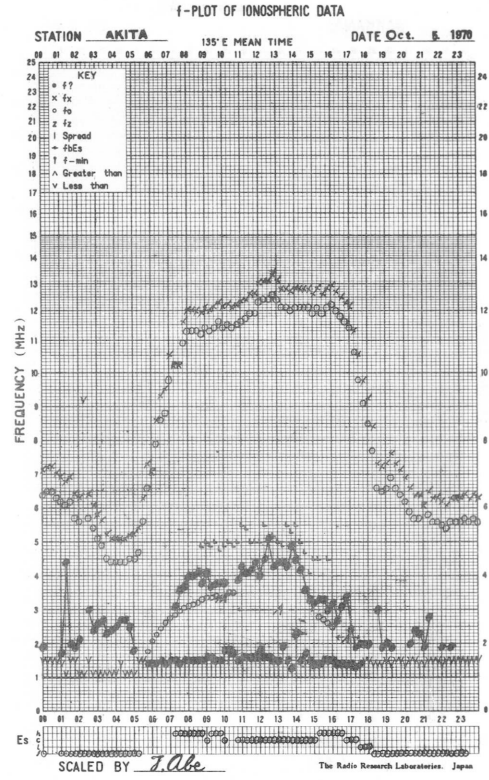
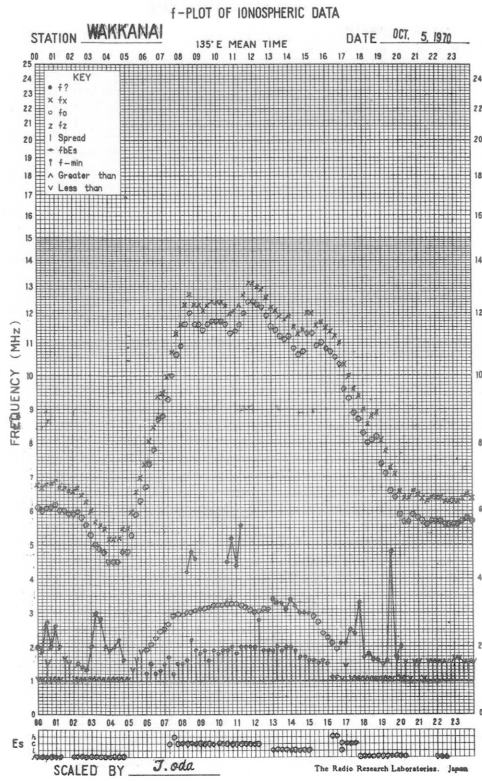


f-PLOT OF IONOSPHERIC DATA



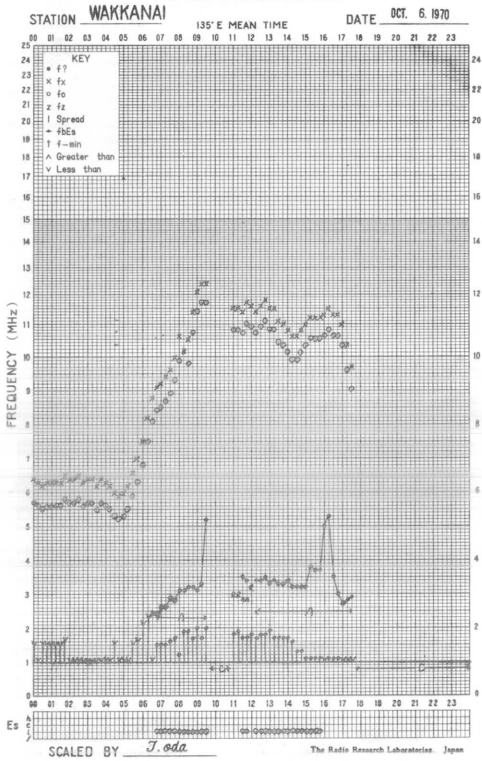
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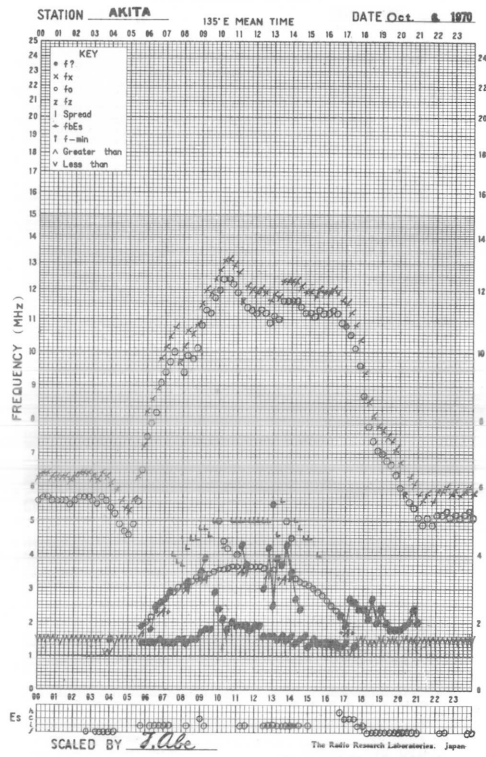




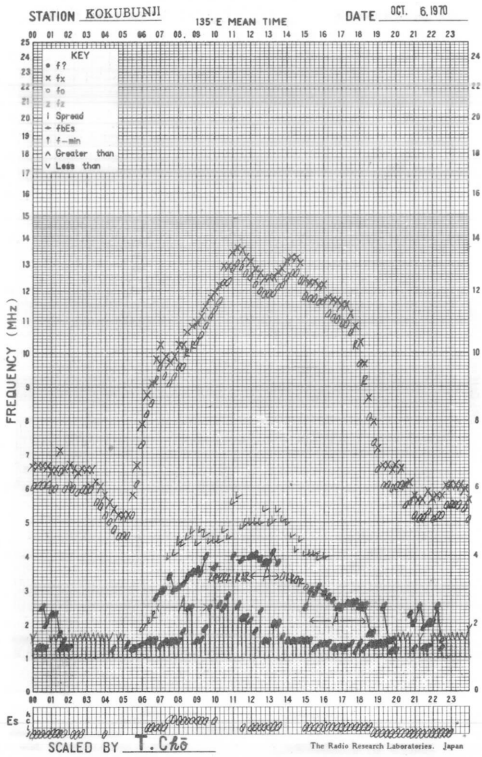
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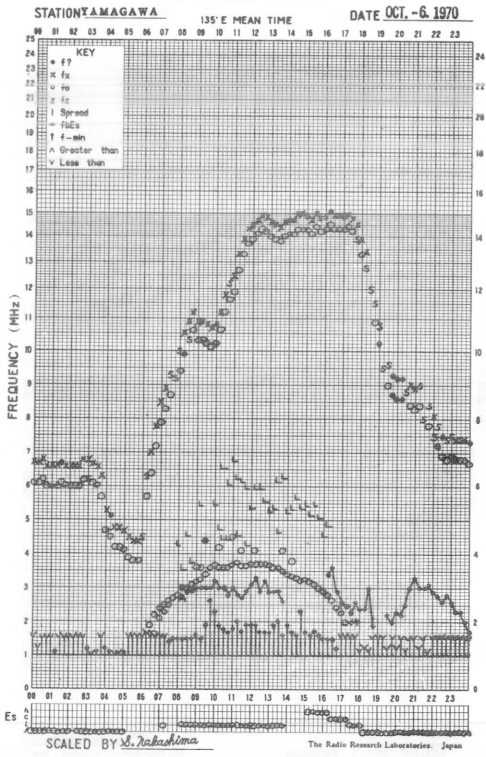
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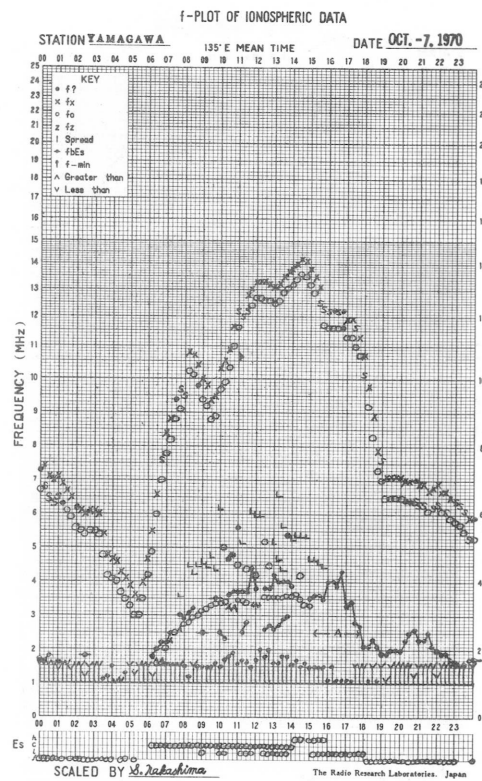
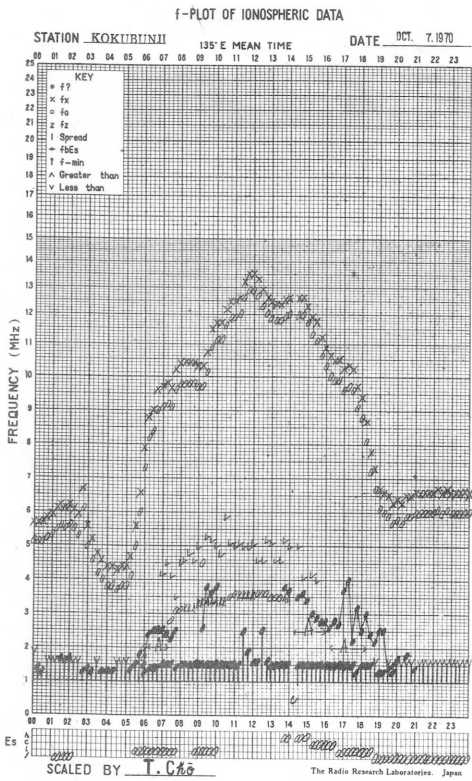
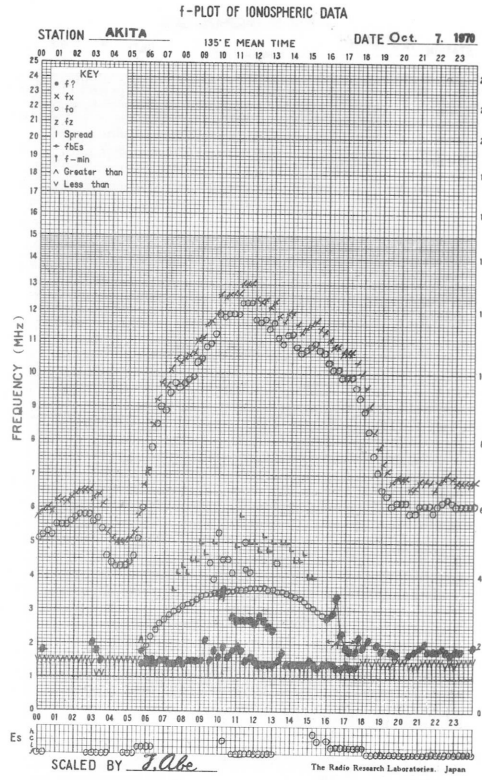
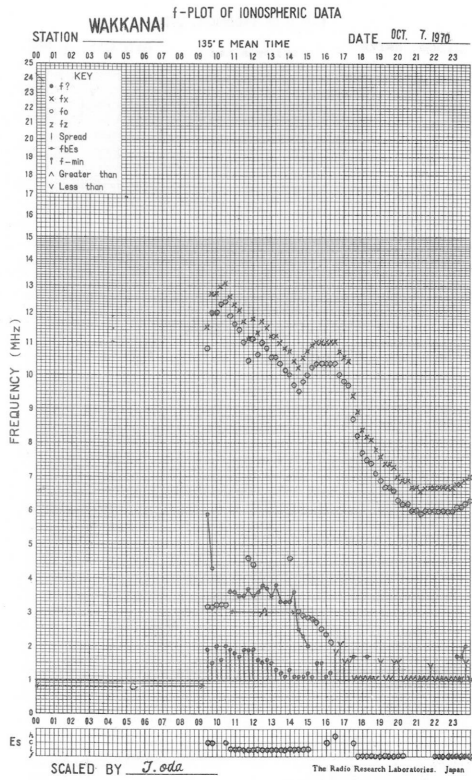


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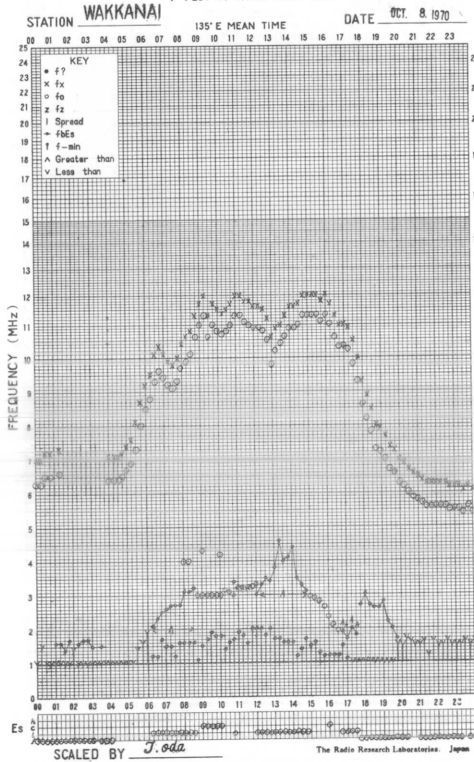


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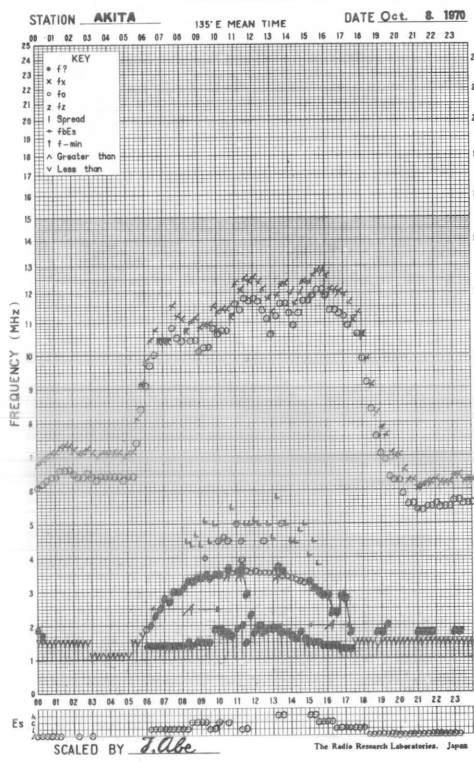




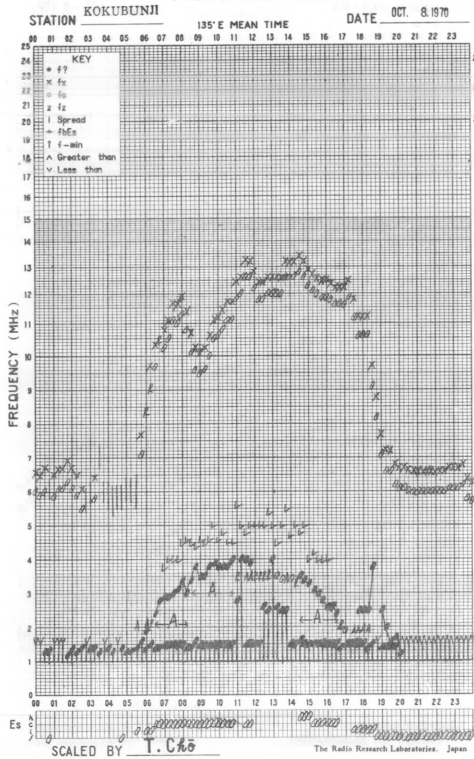
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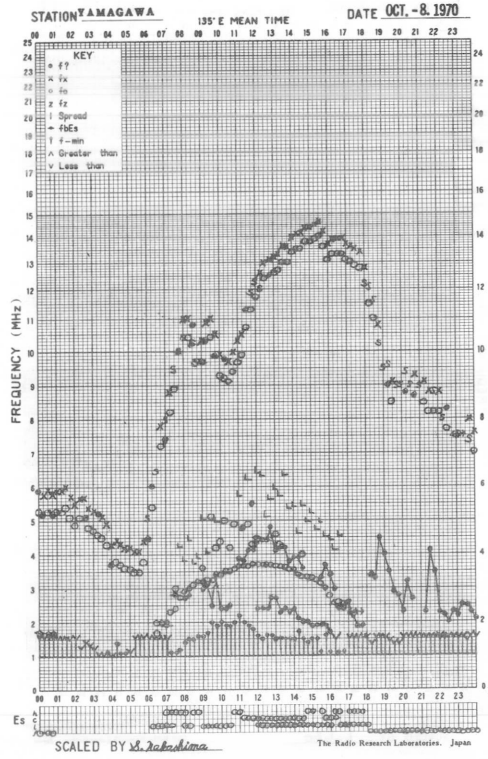
f-PLOT OF IONOSPHERIC DATA



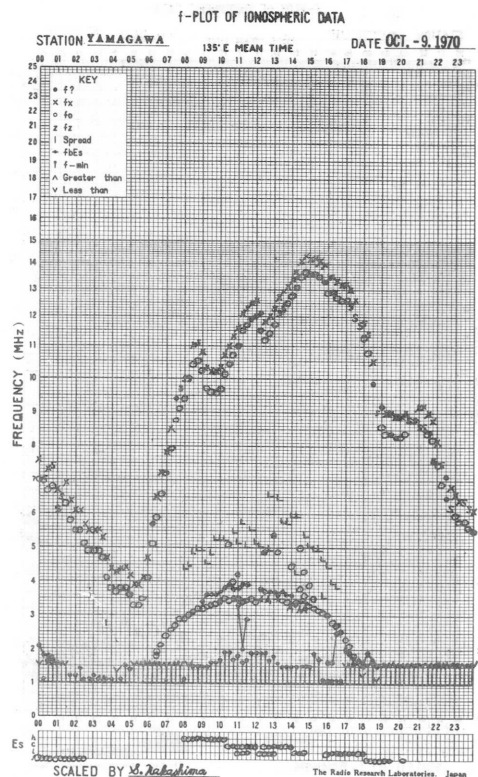
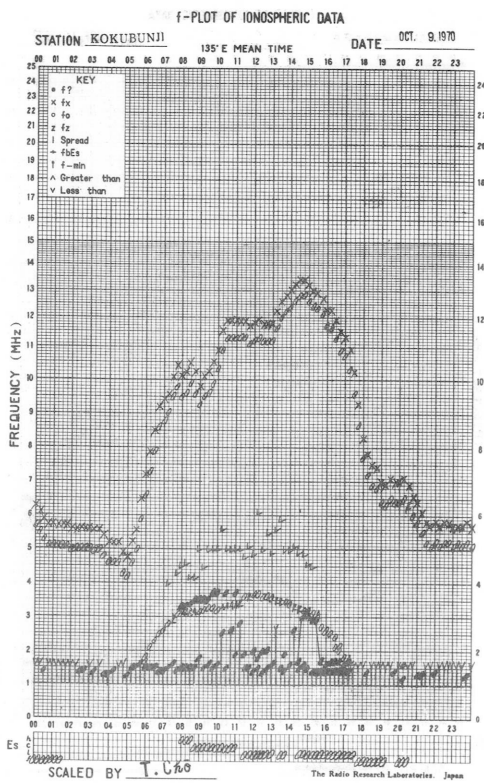
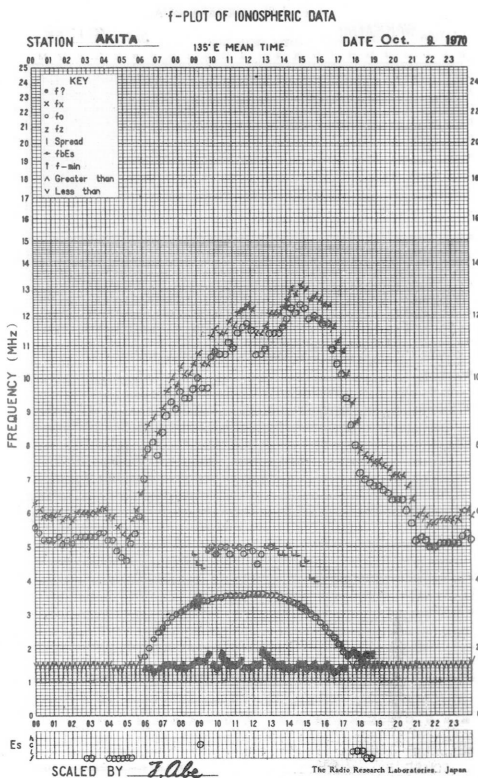
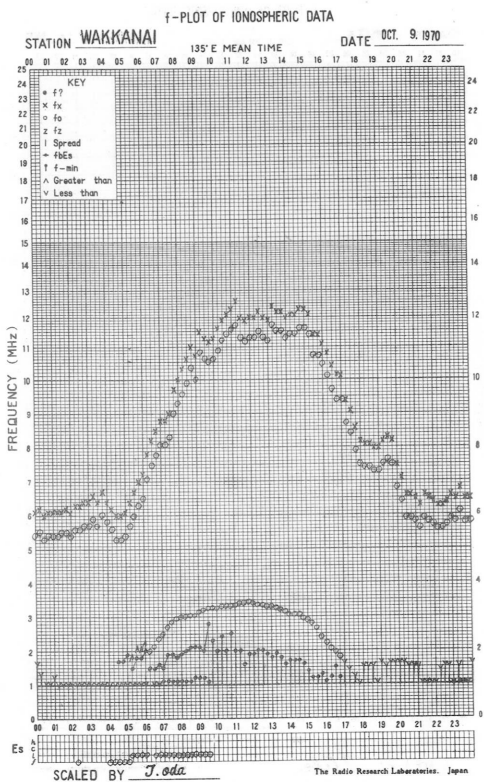
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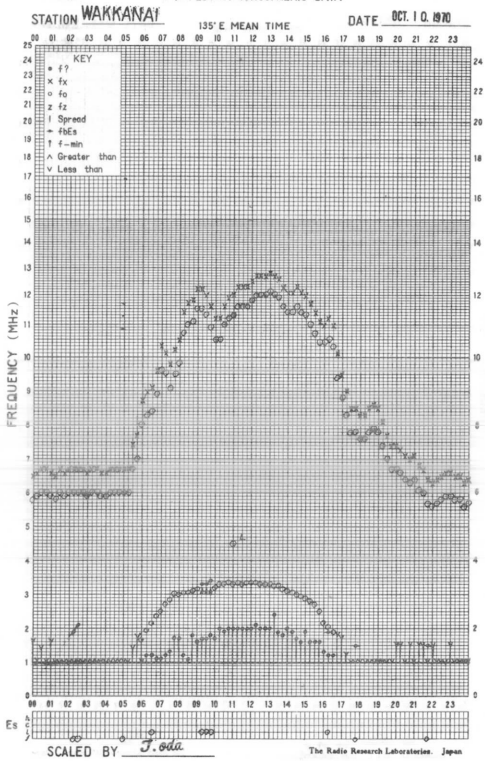
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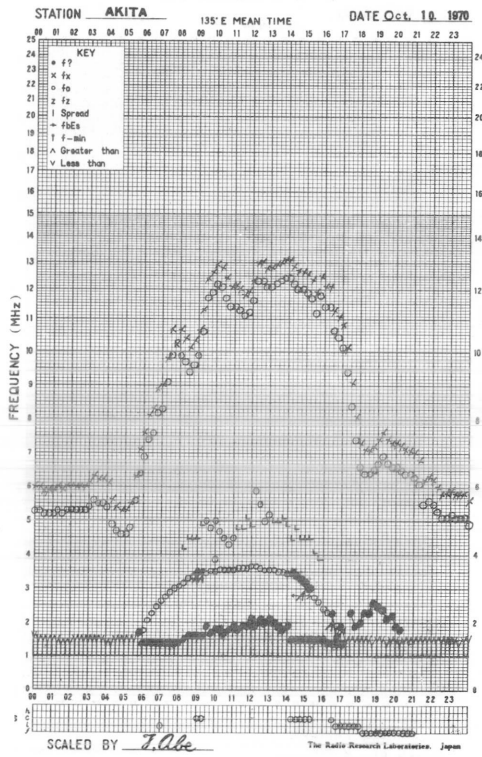




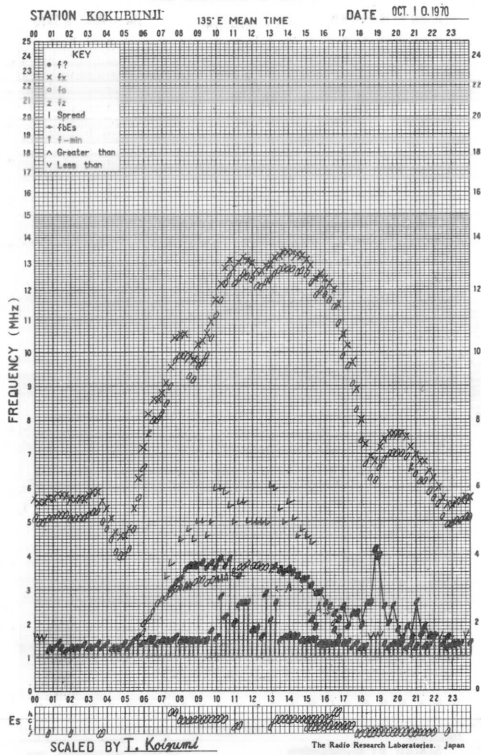
f-PLOT OF IONOSPHERIC DATA



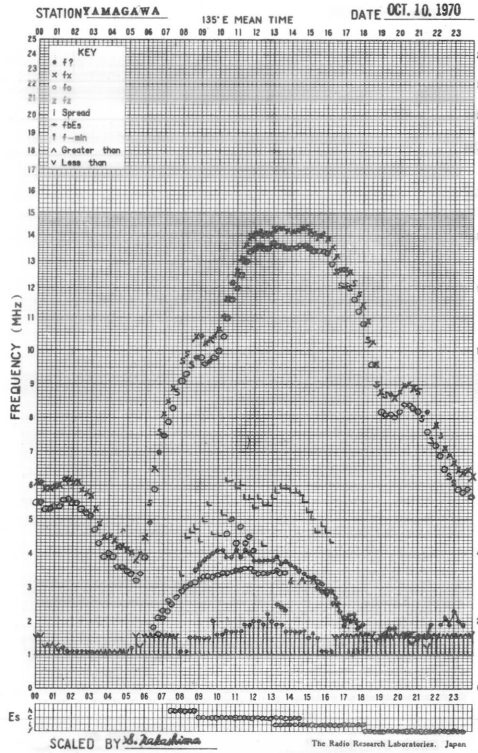
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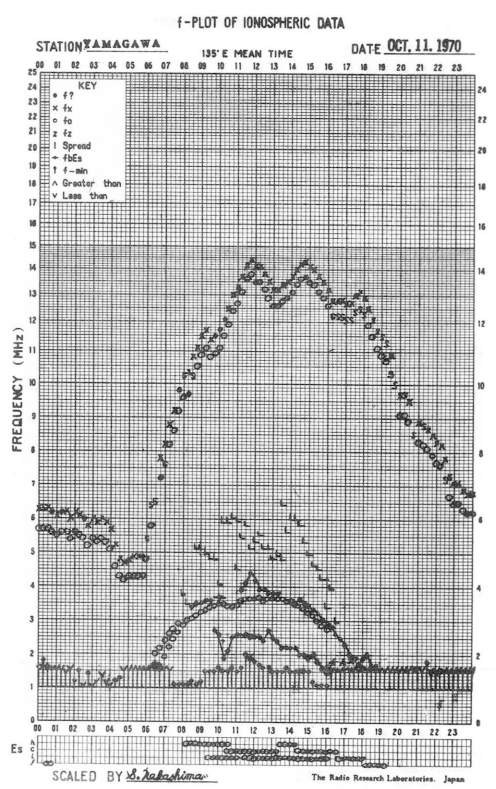
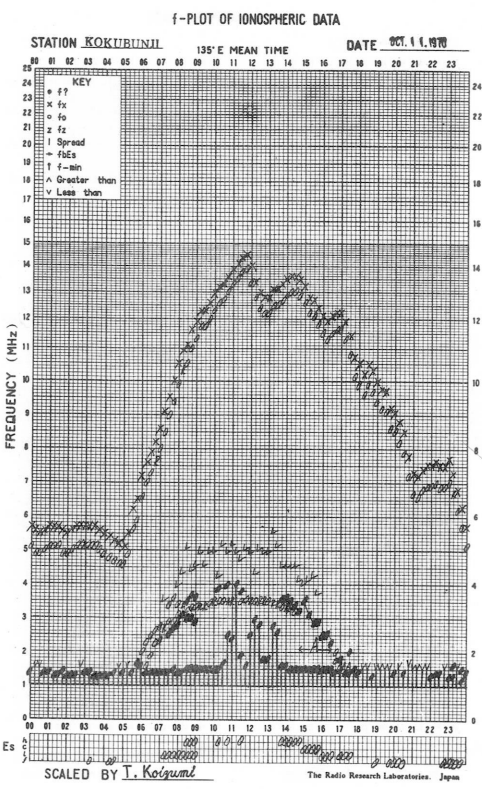
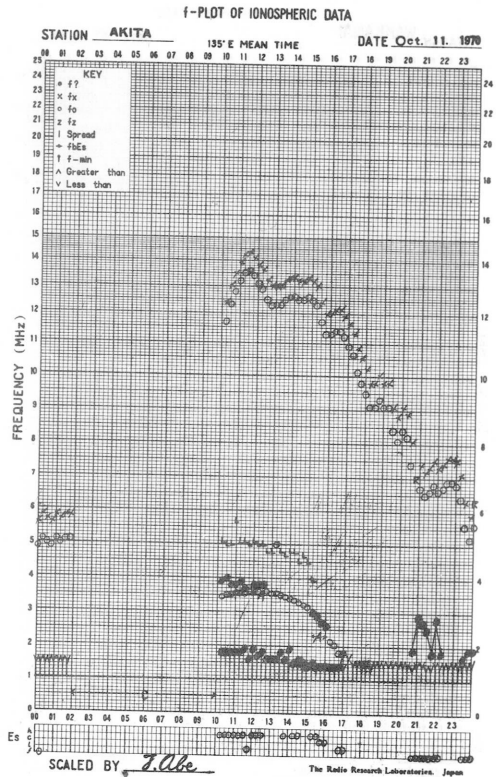
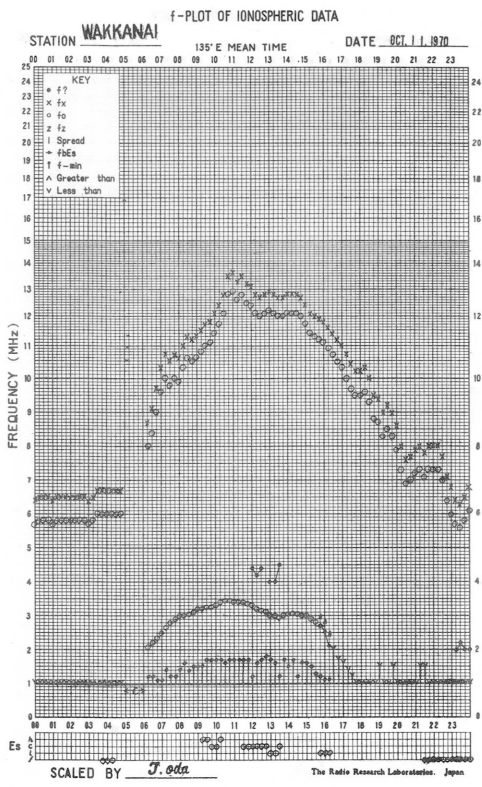
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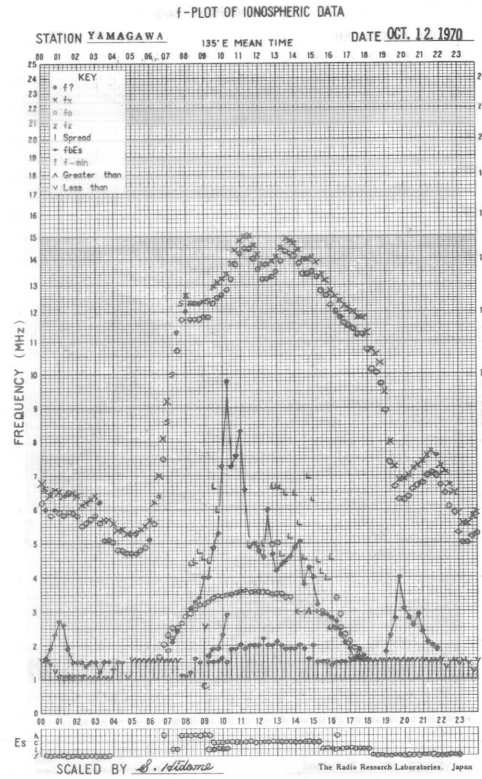
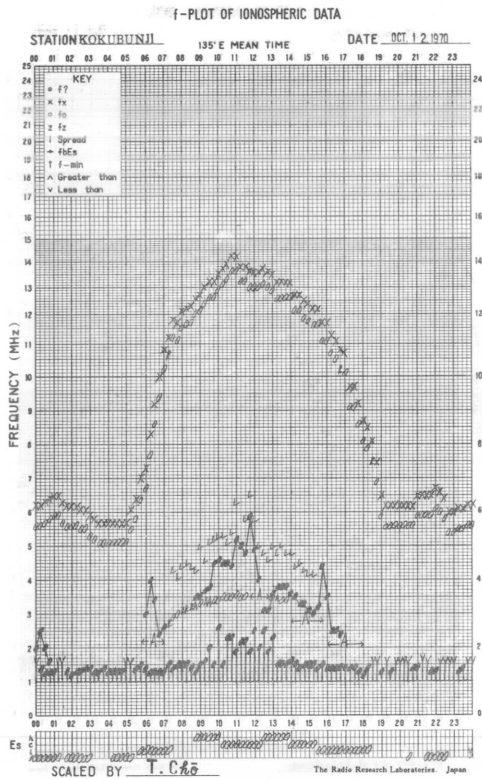
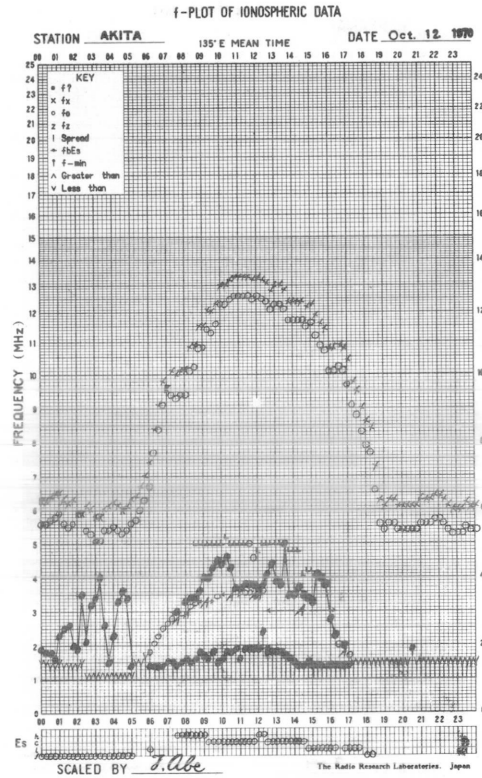
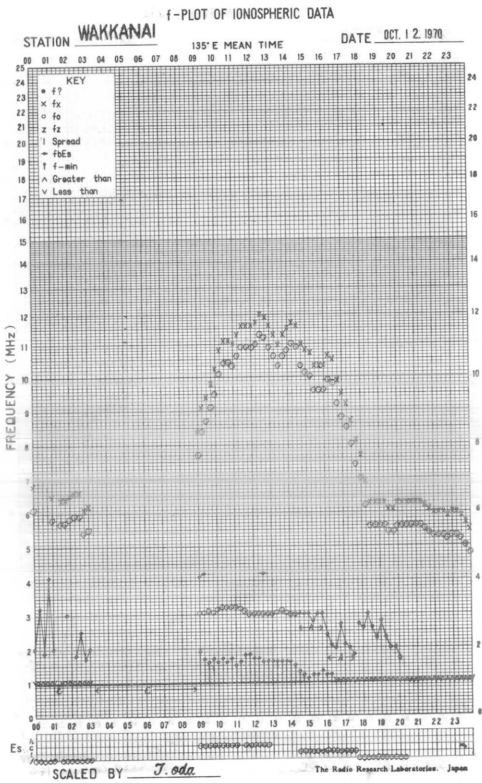


f-PLOT OF IONOSPHERIC DATA

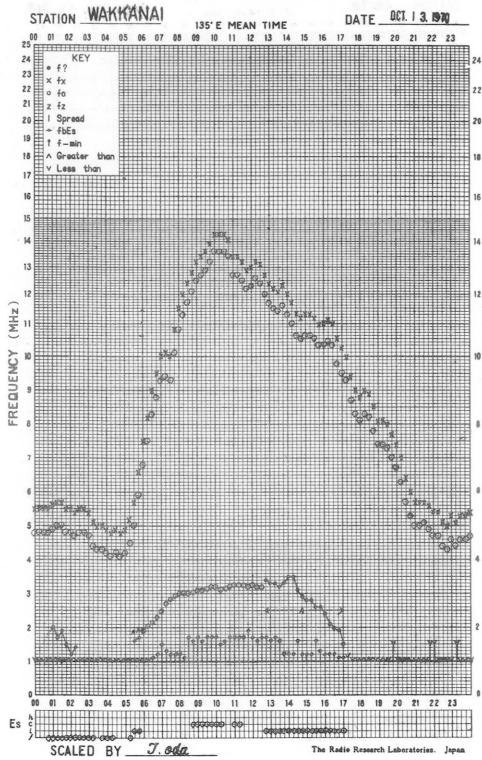




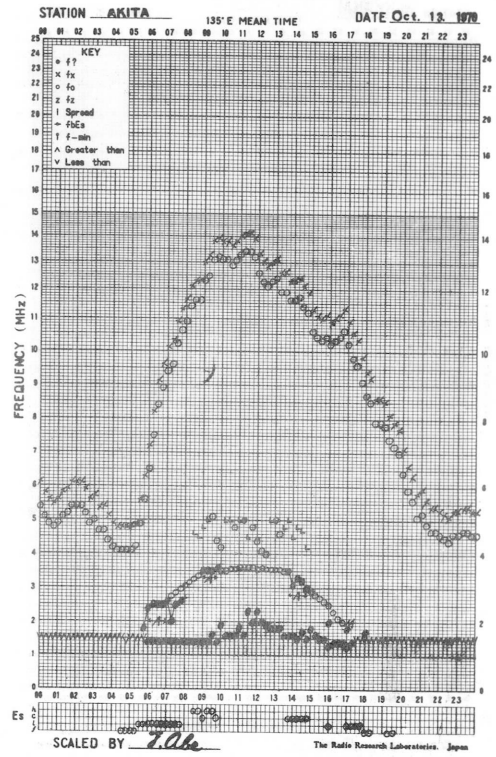




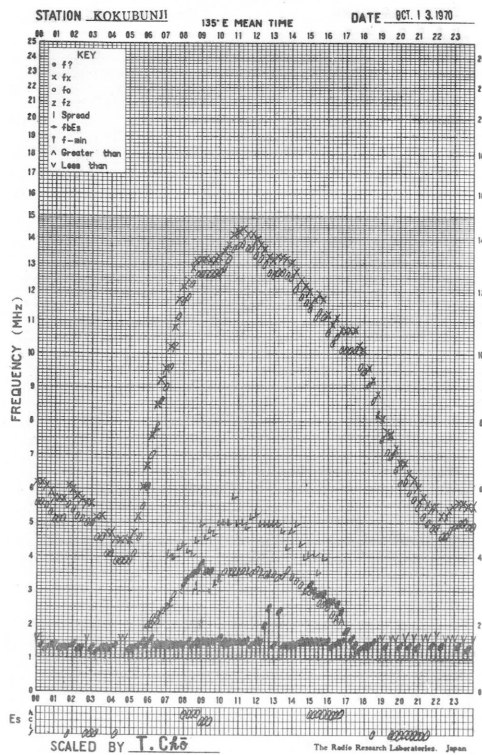
f-PLOT OF IONOSPHERIC DATA



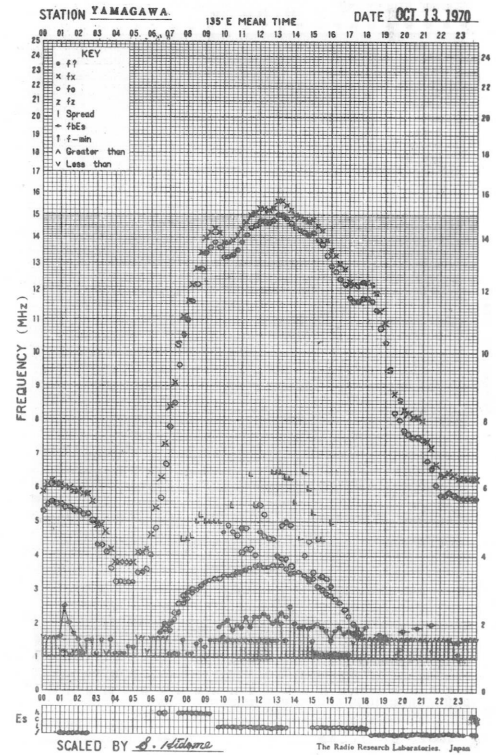
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

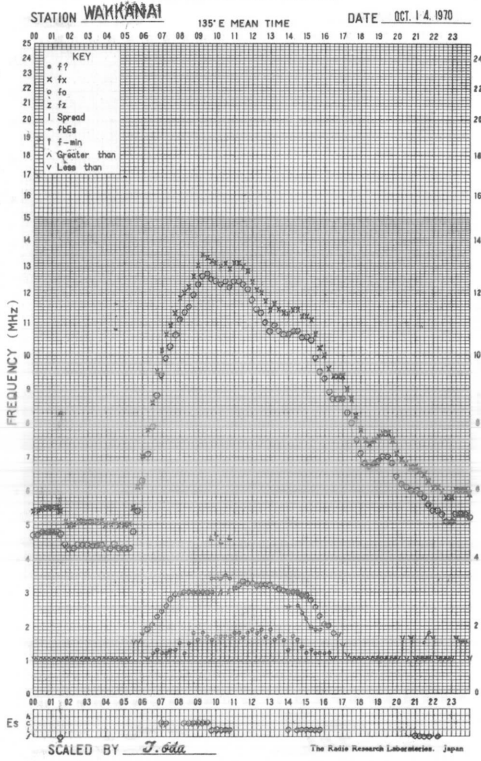


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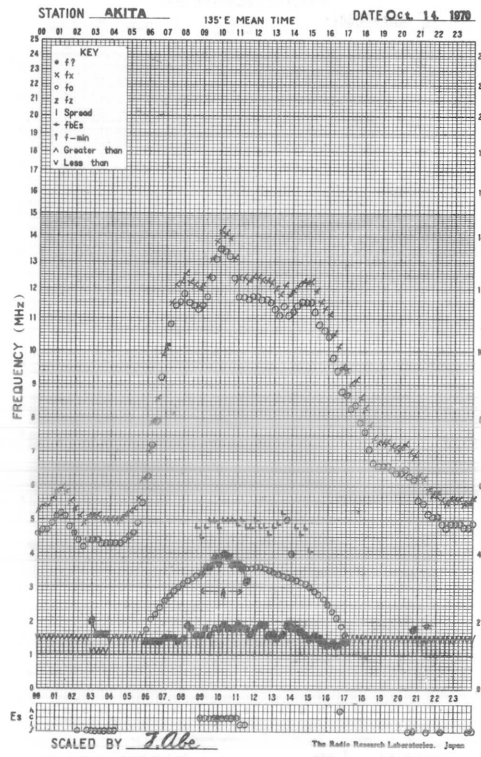




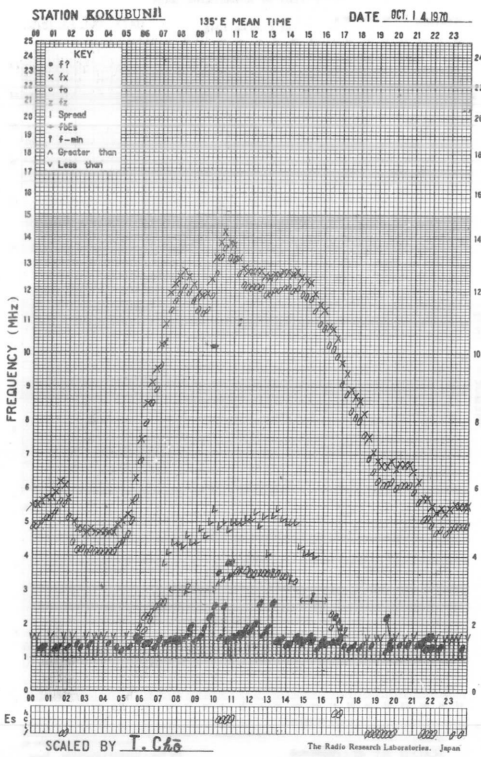
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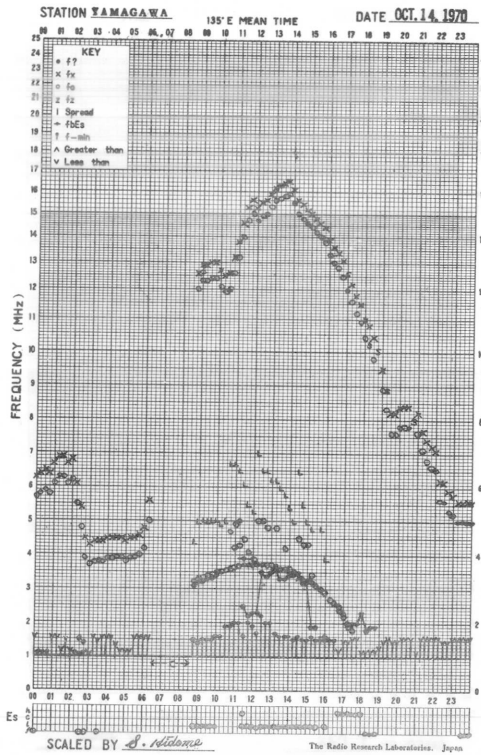
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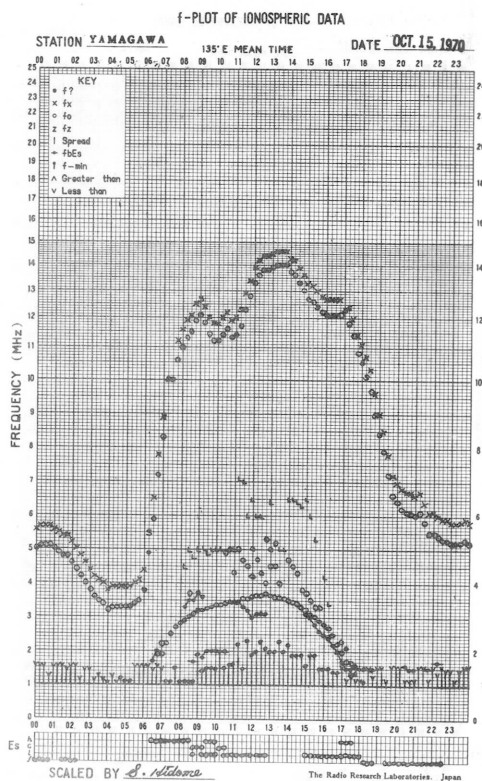
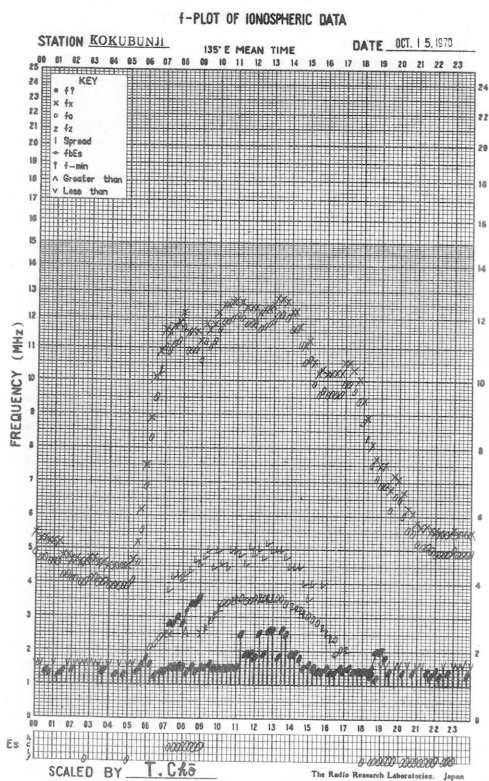
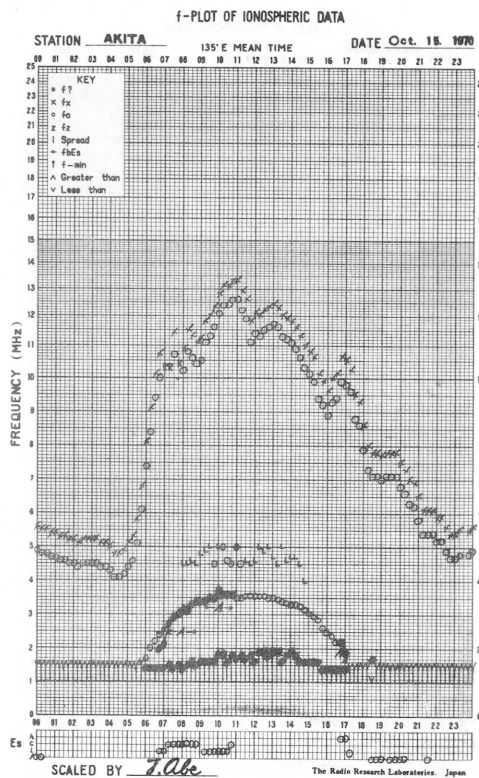
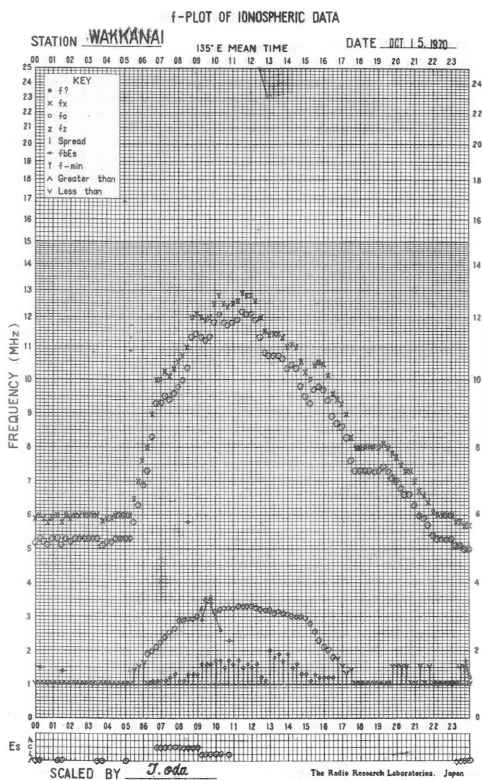


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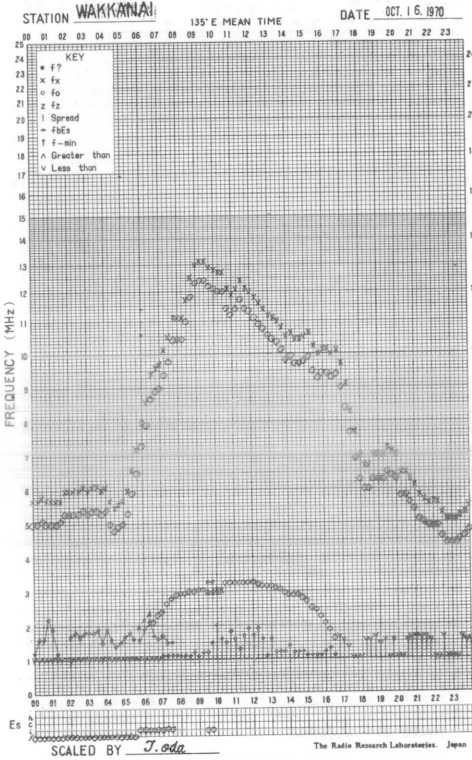
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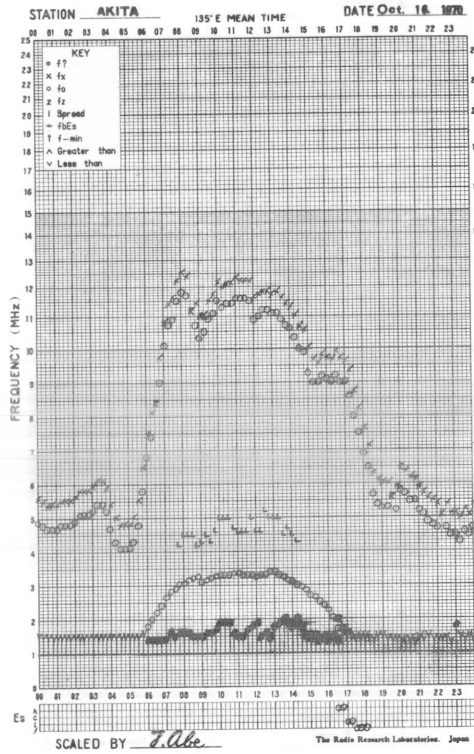




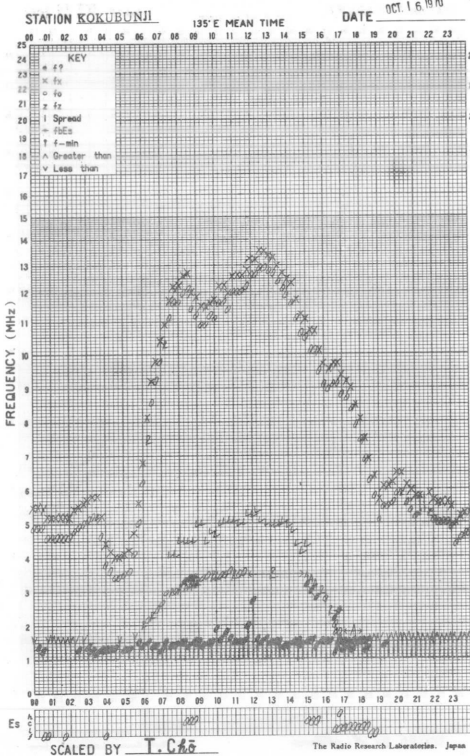
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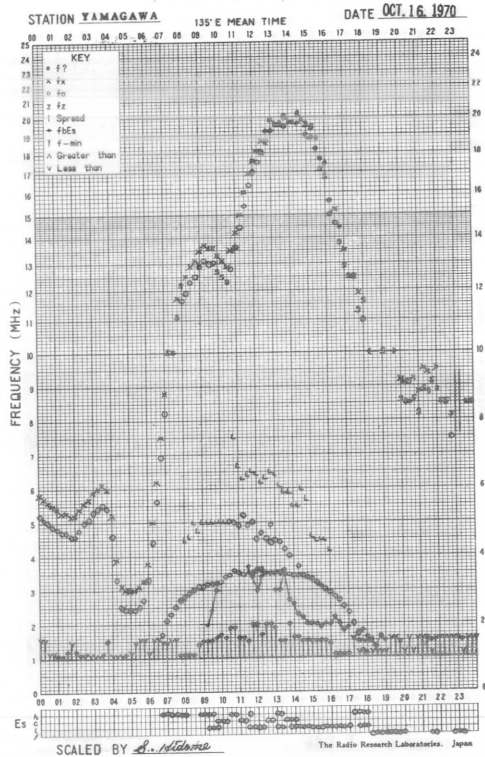
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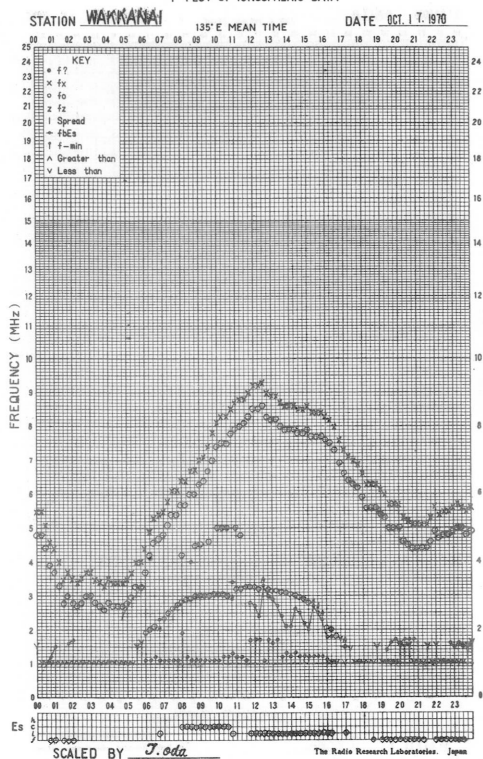
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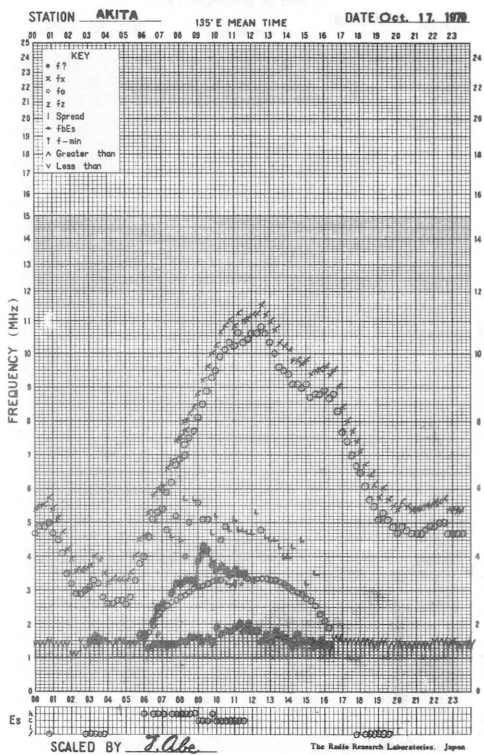
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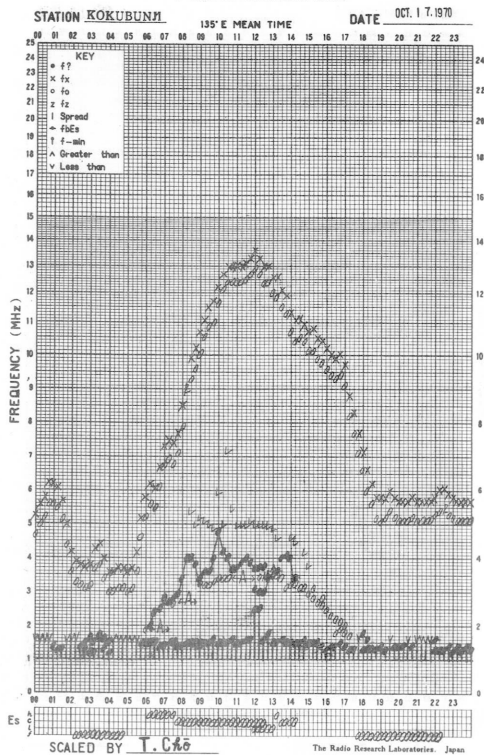
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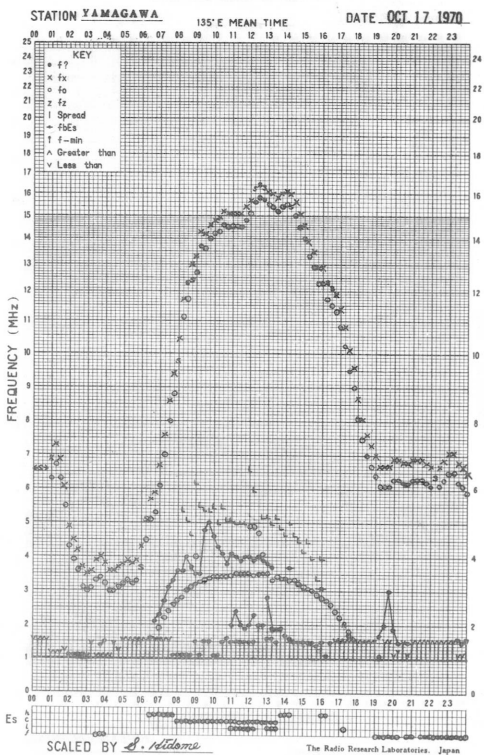
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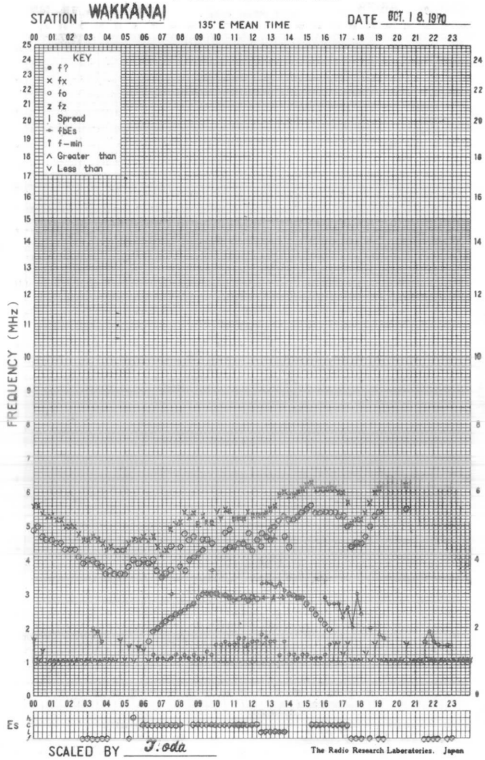
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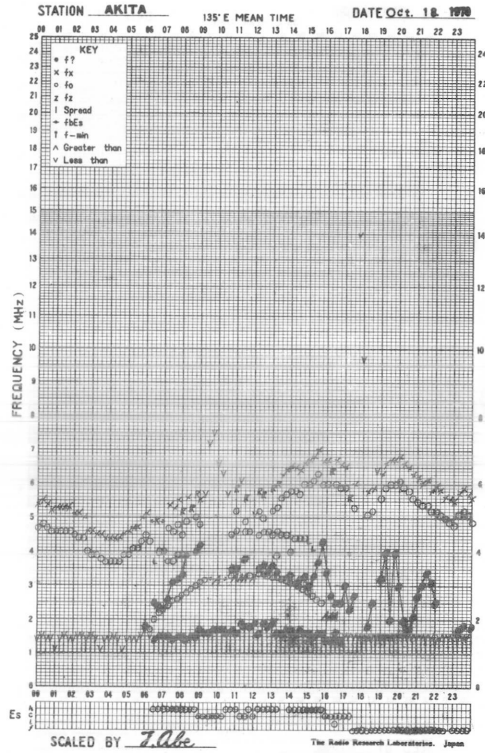
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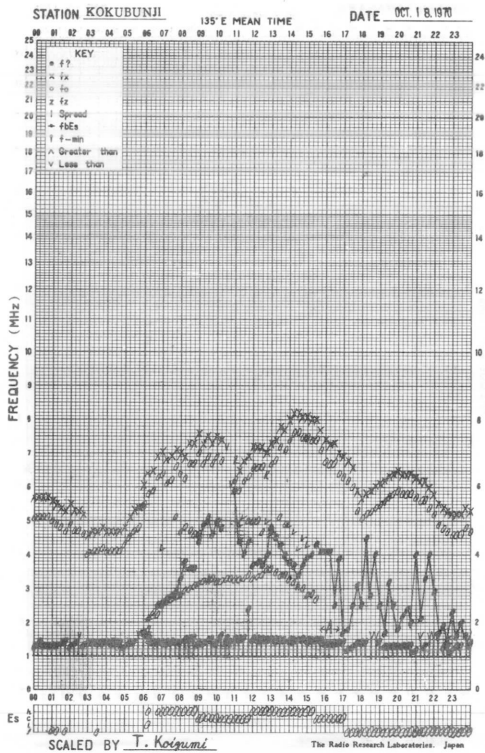
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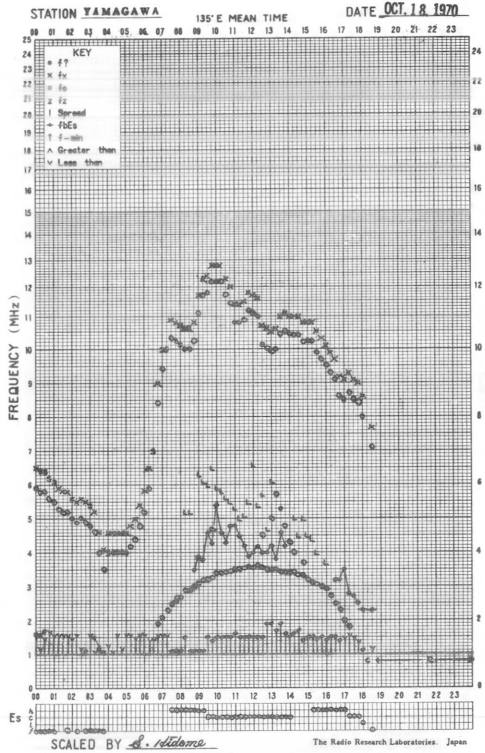
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

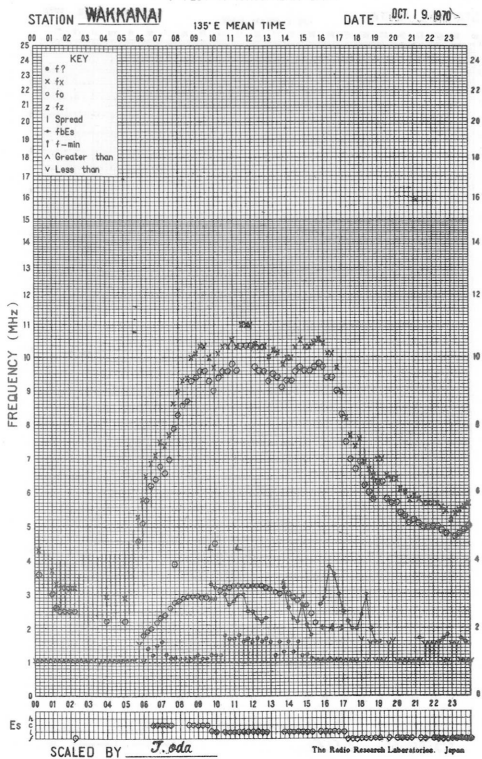


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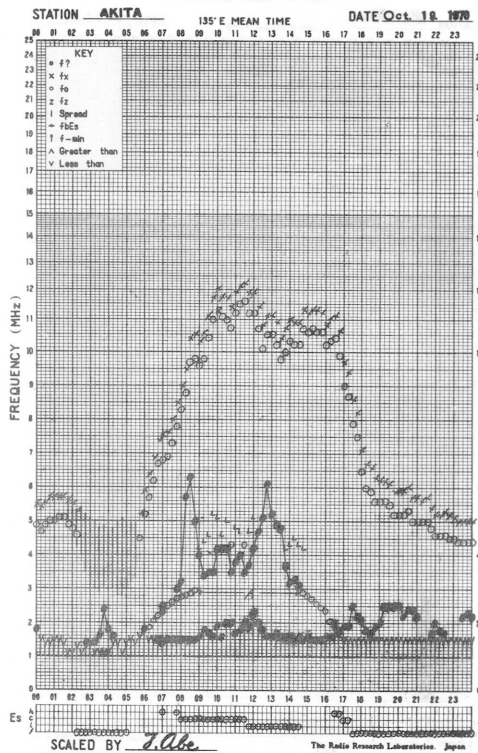




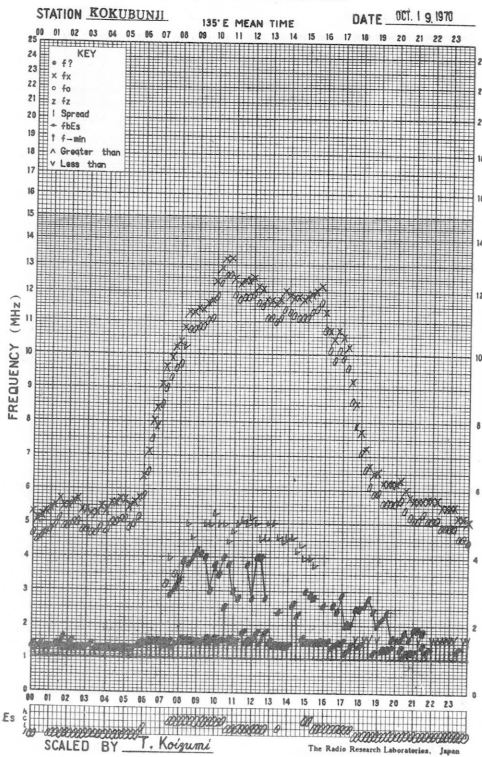
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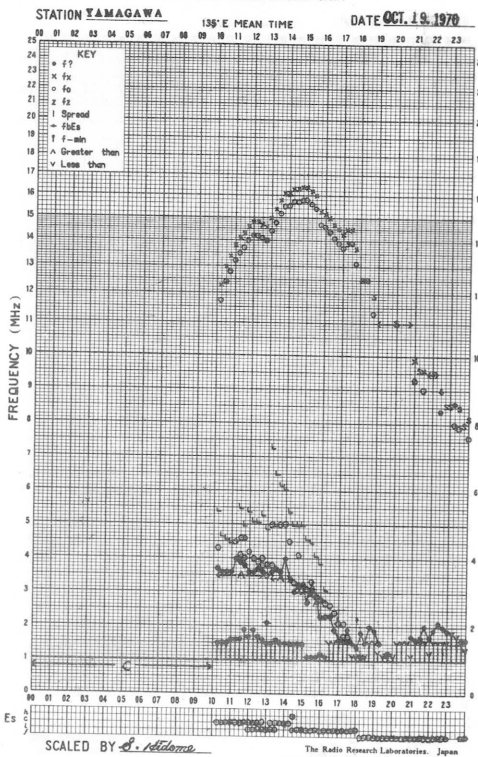
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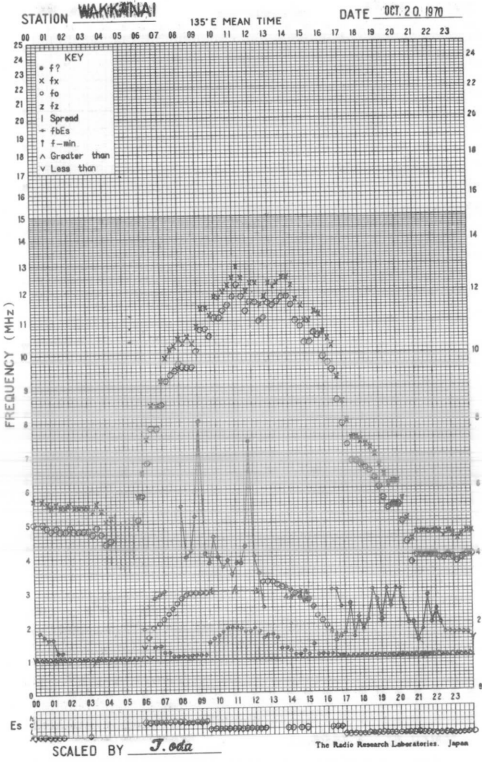
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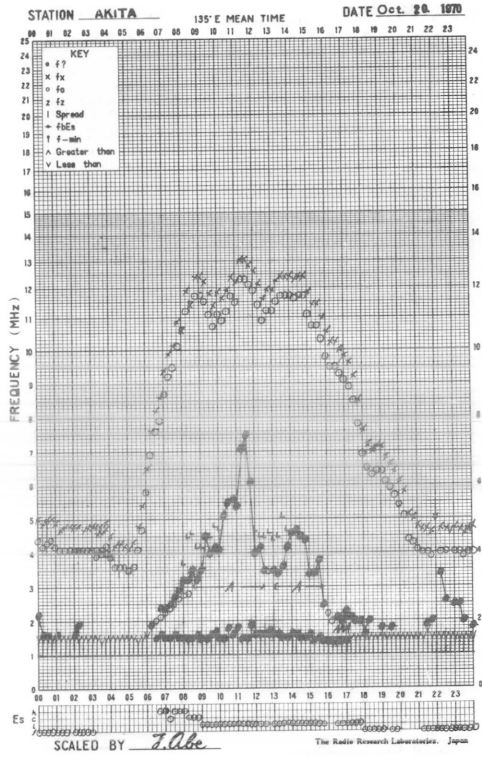
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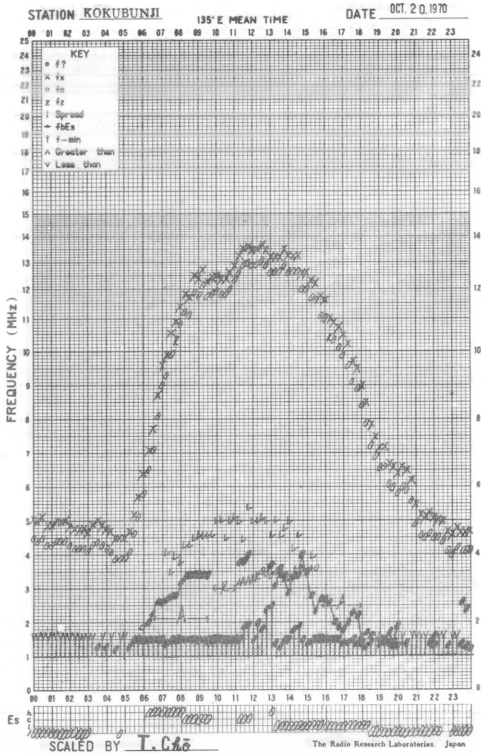
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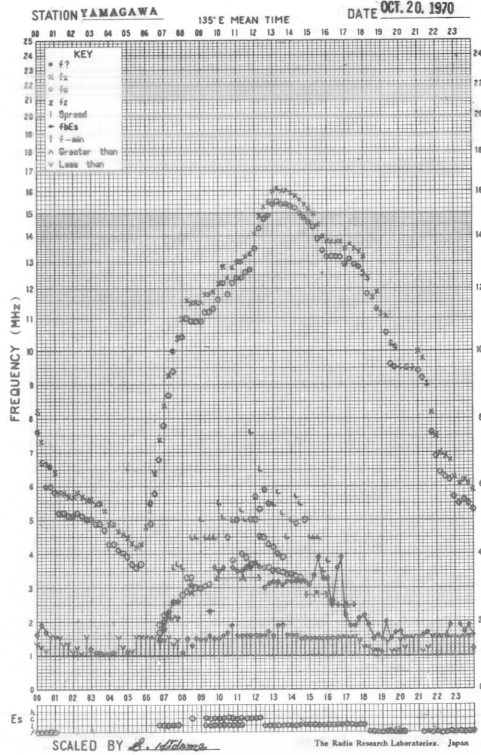
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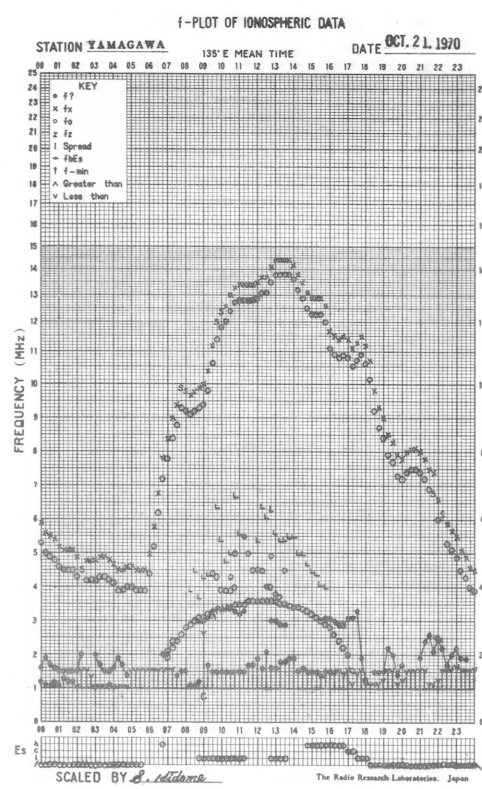
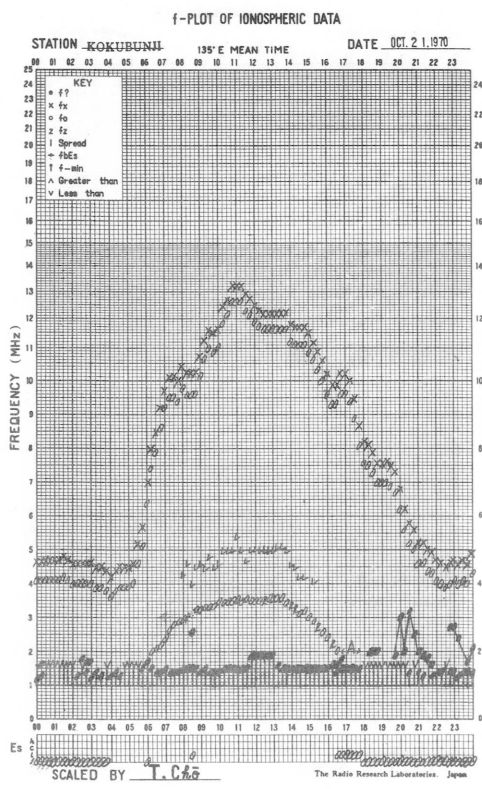
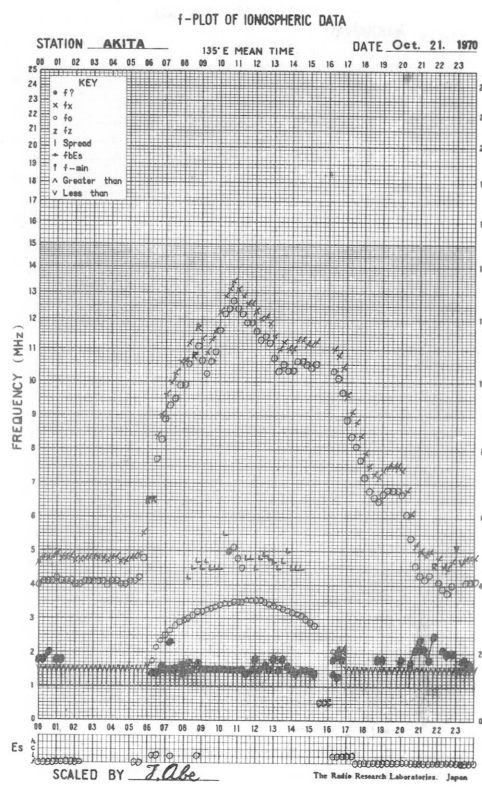
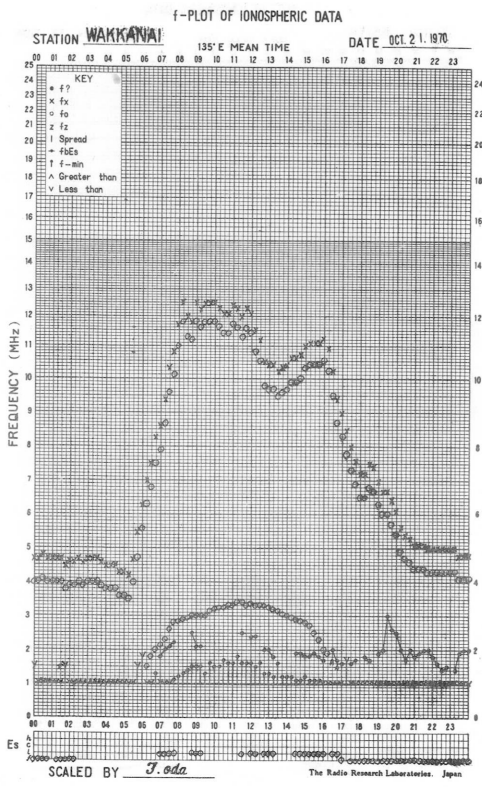
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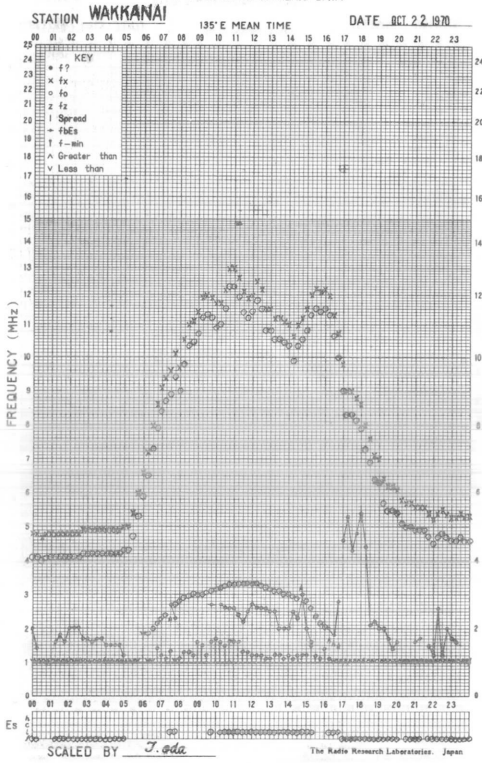
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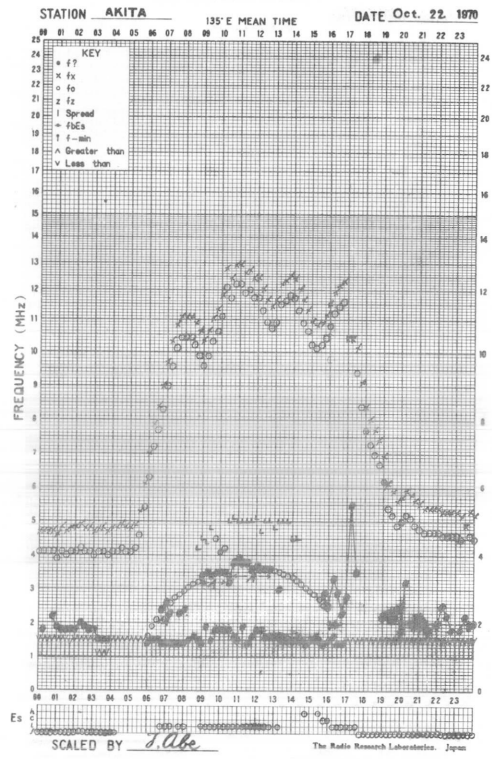




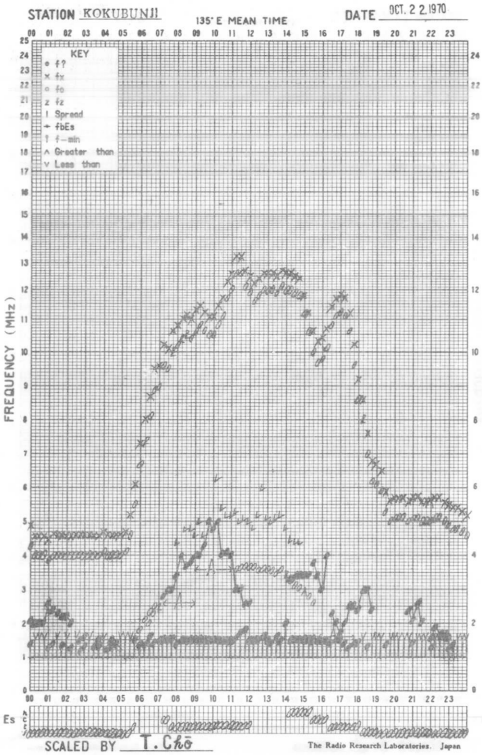
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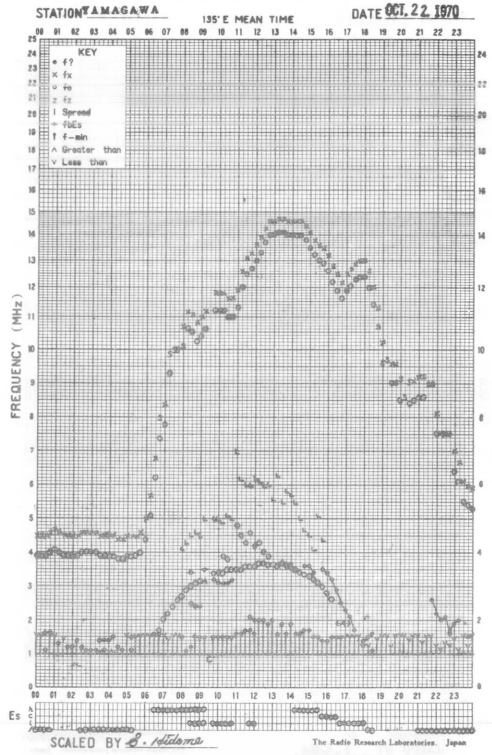
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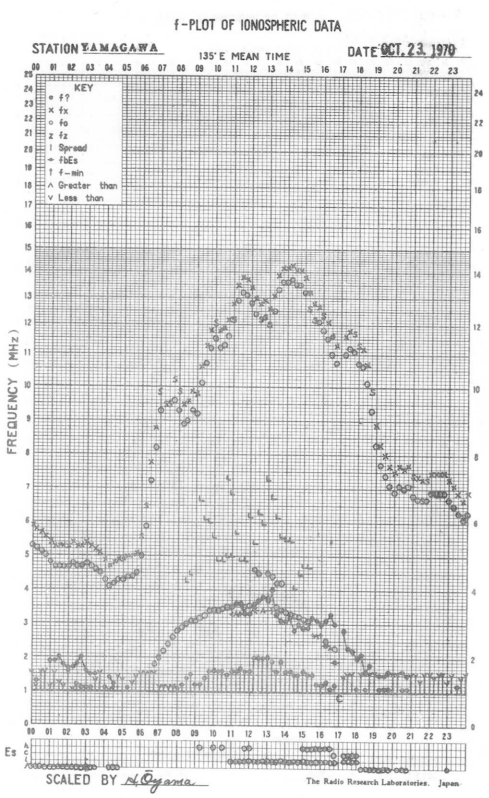
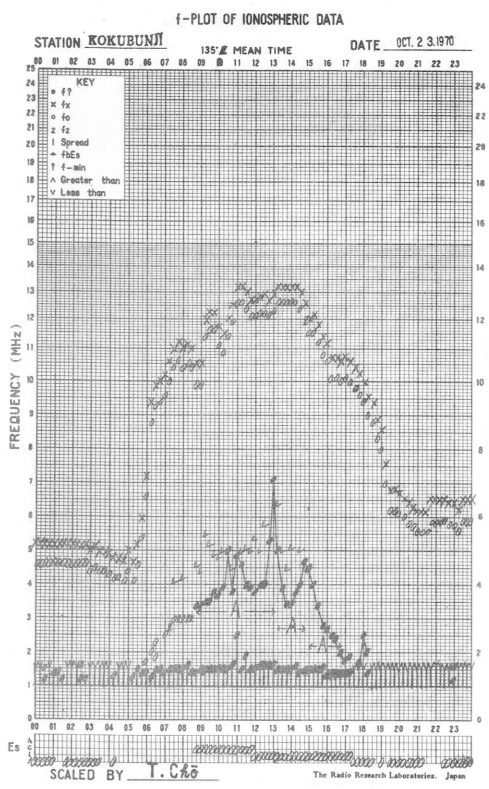
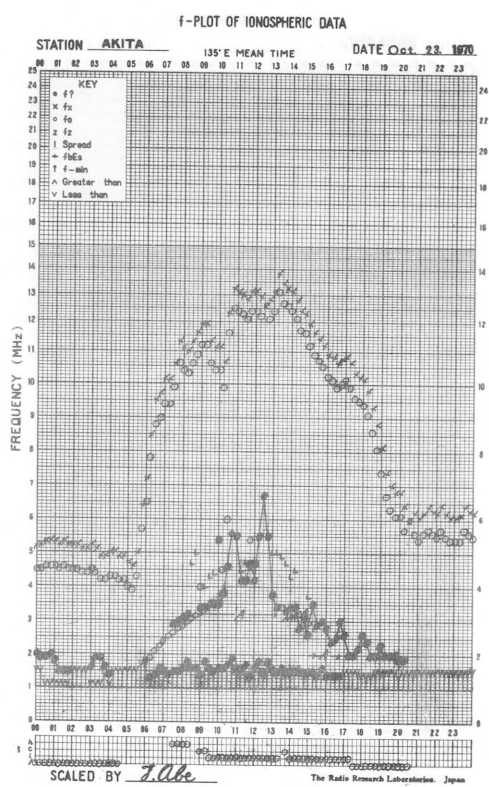
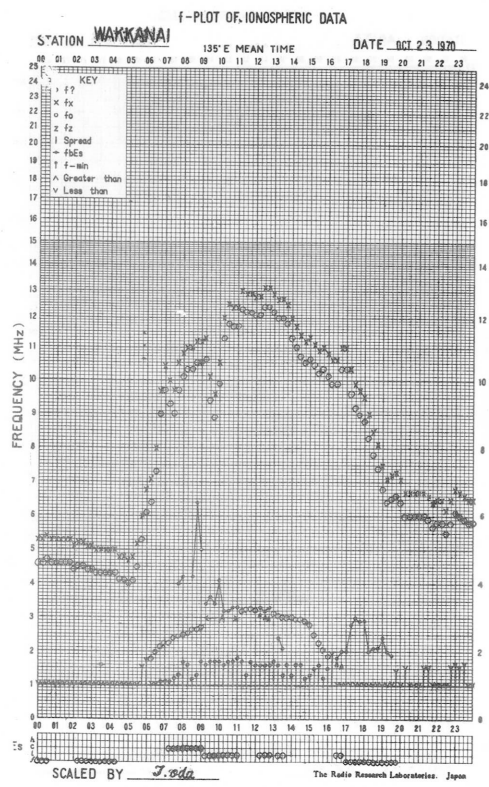


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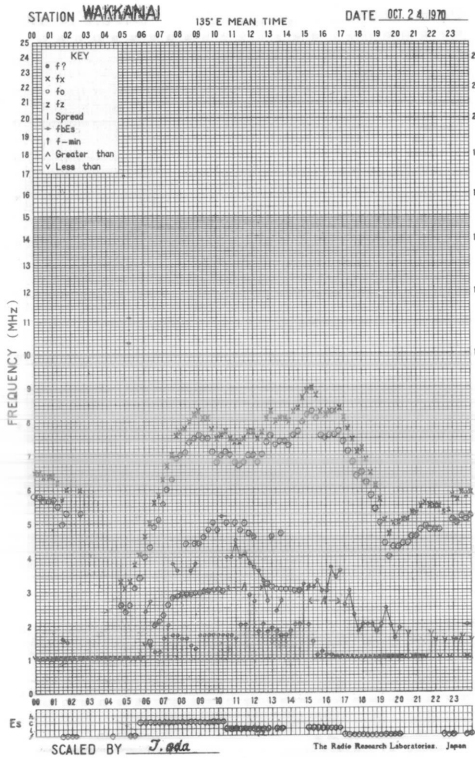
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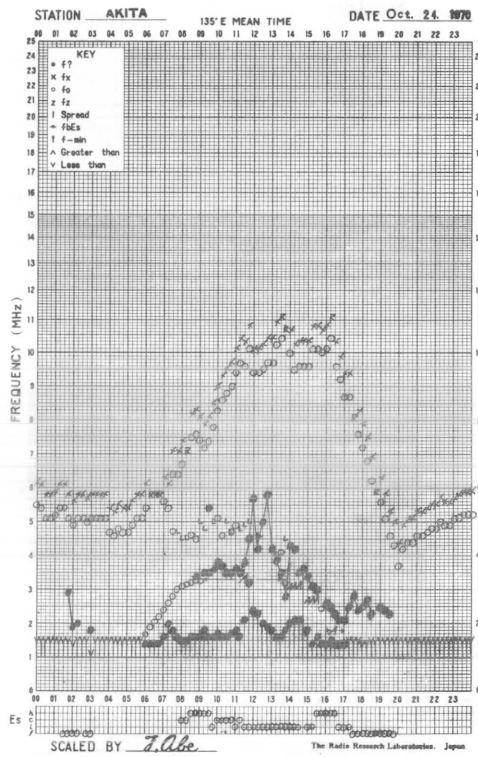




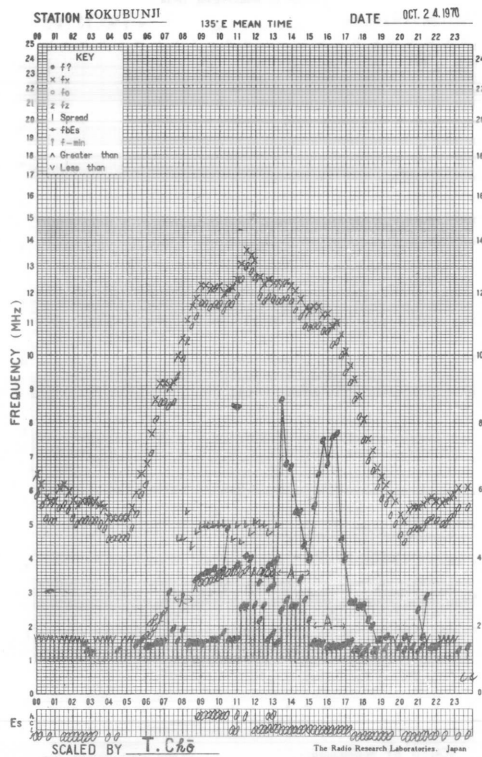
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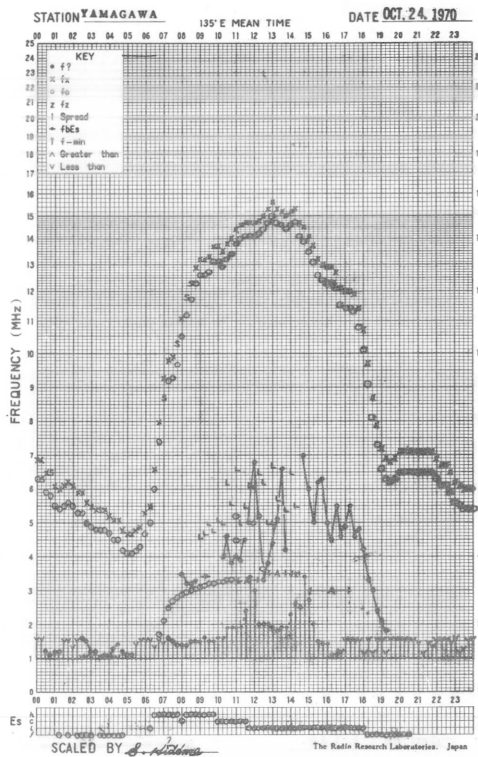
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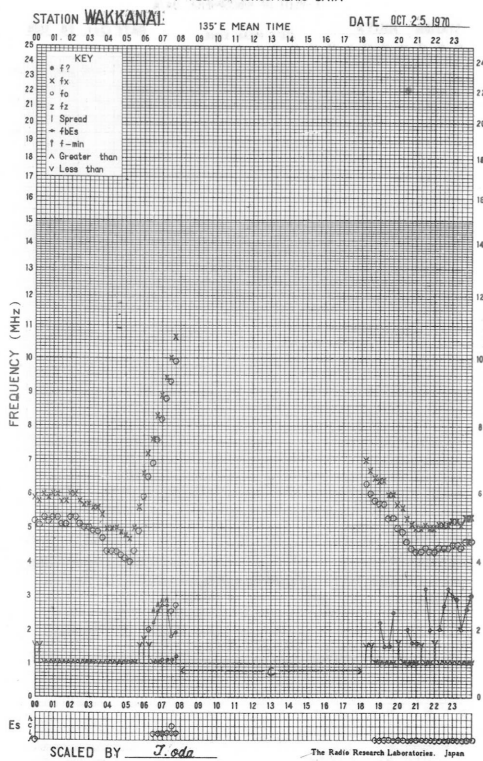
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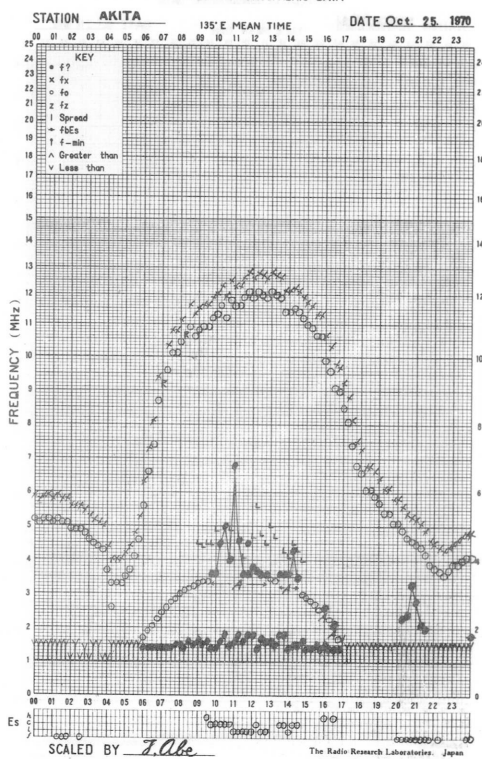
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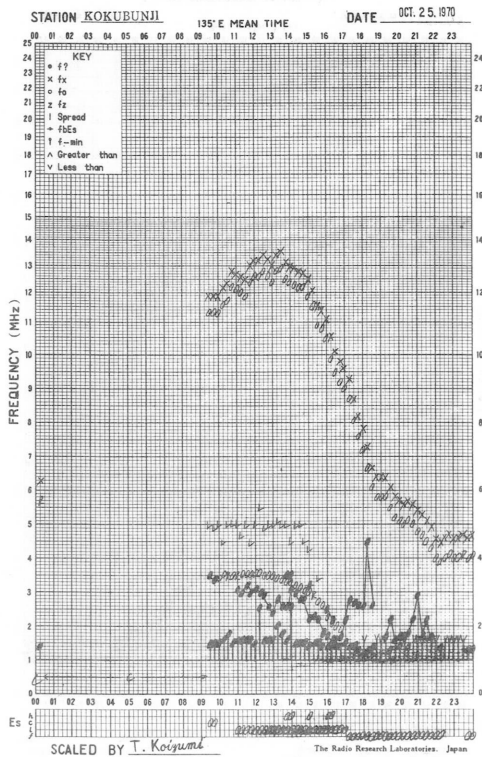
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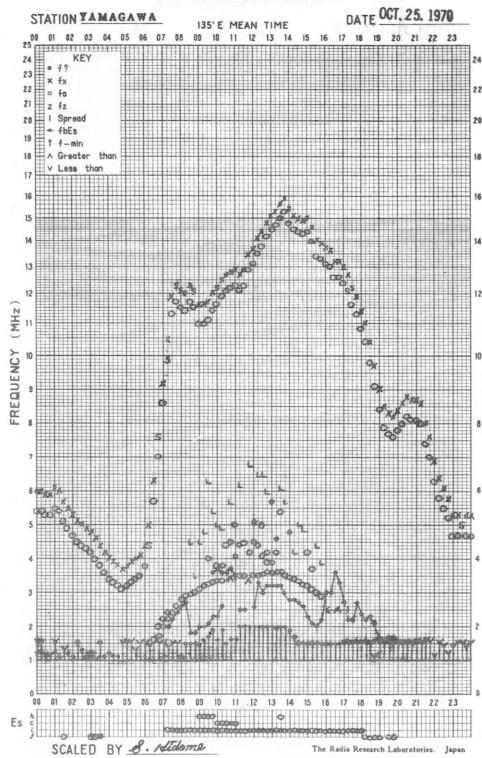
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

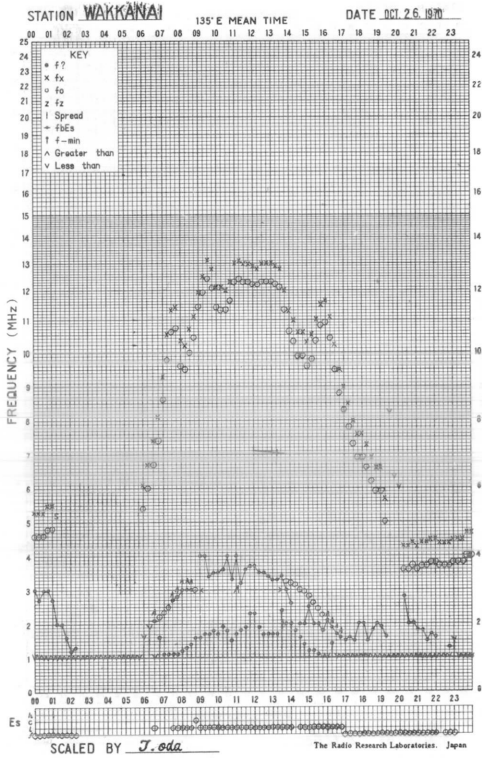


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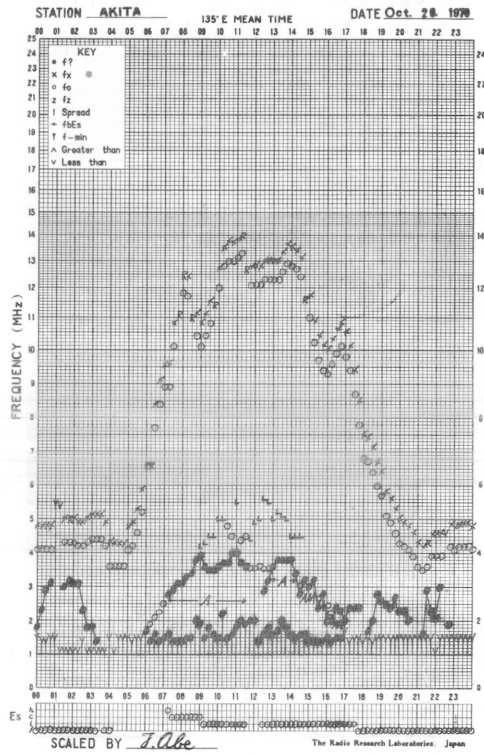




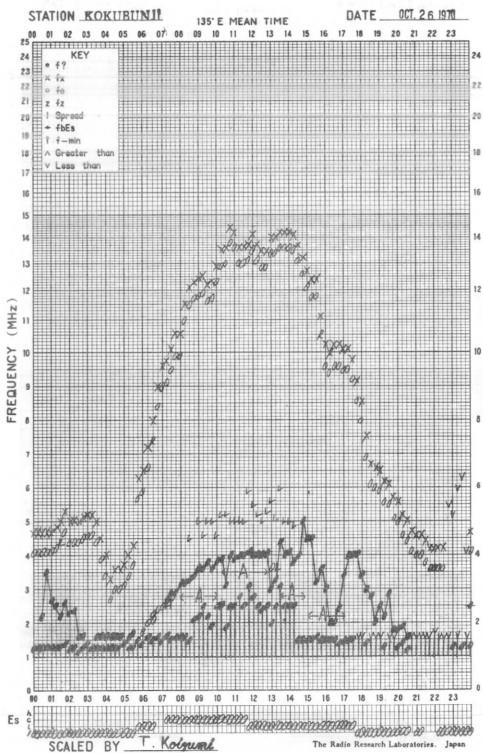
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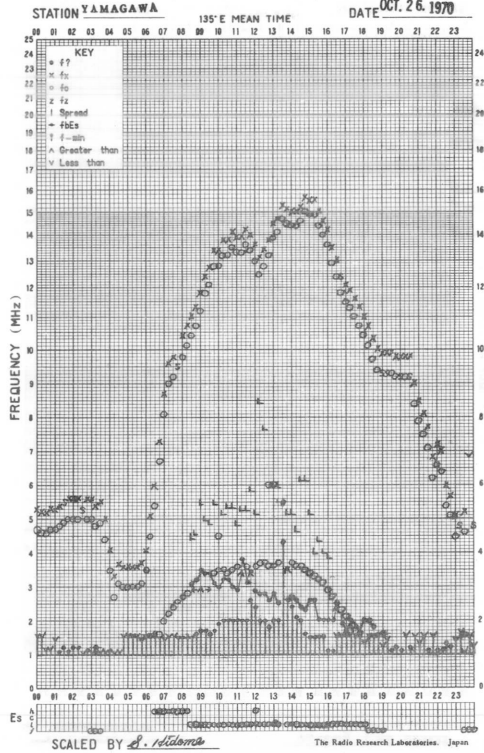
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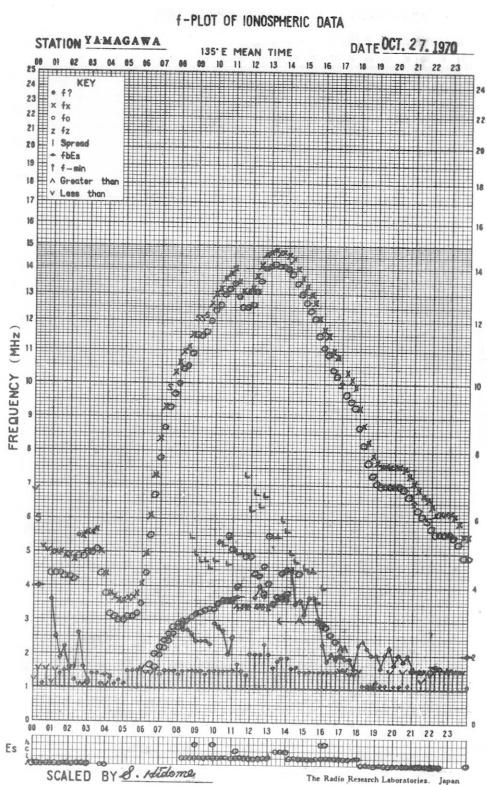
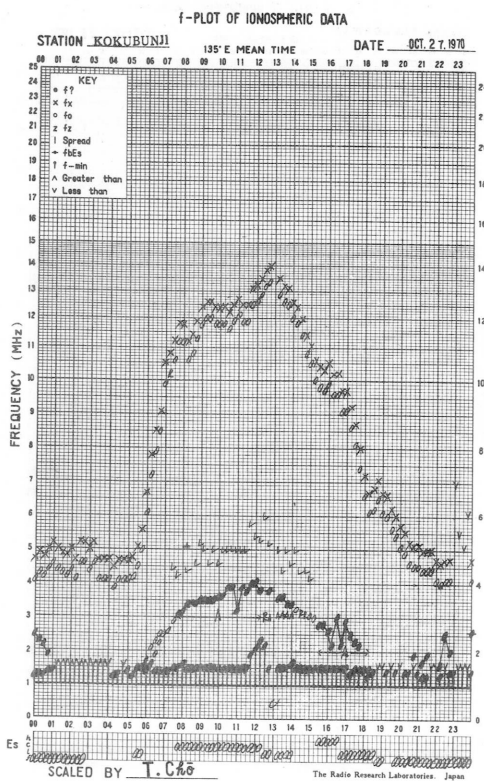
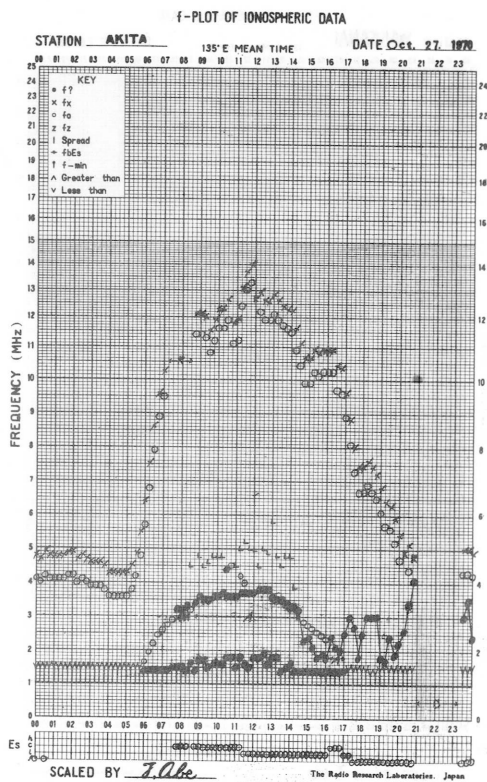
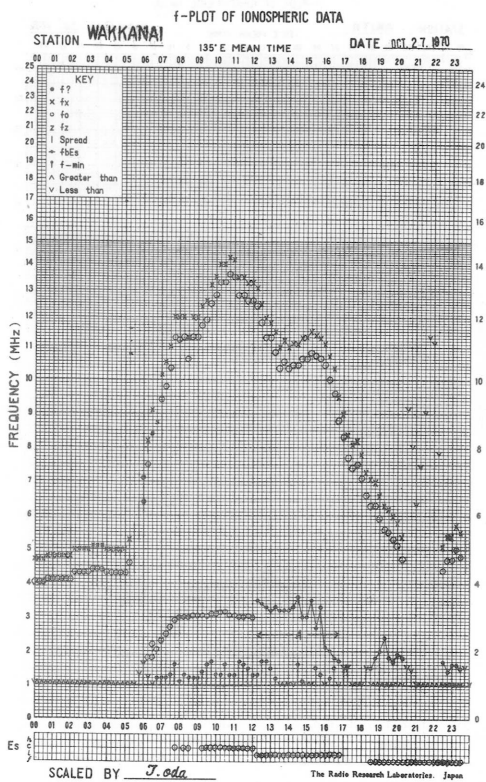


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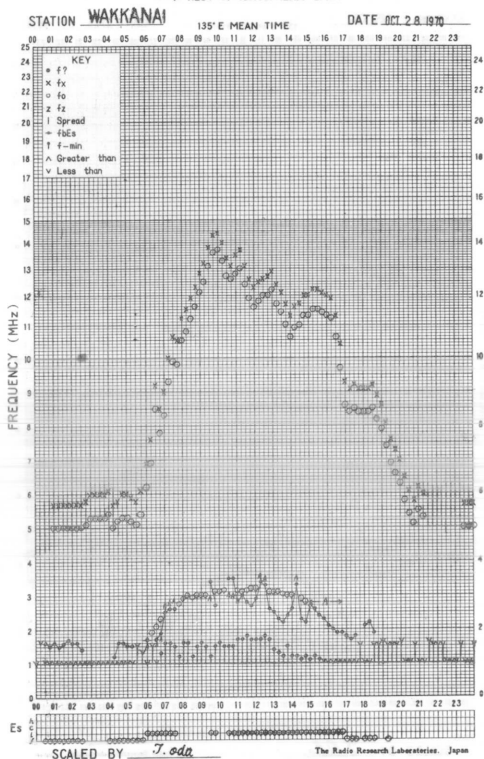


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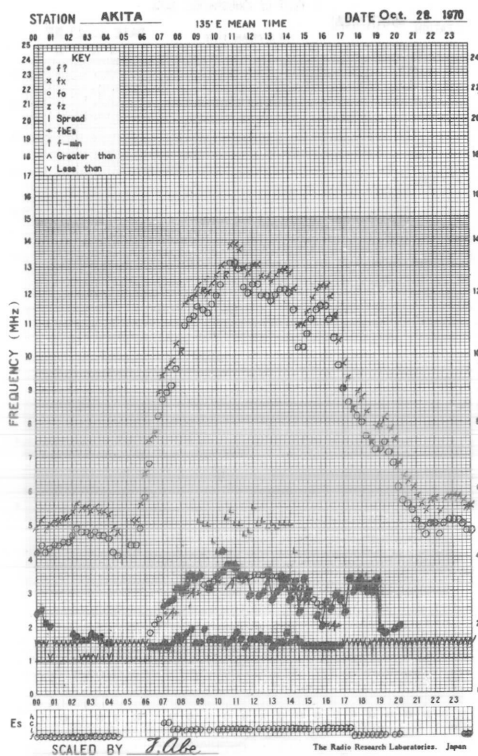




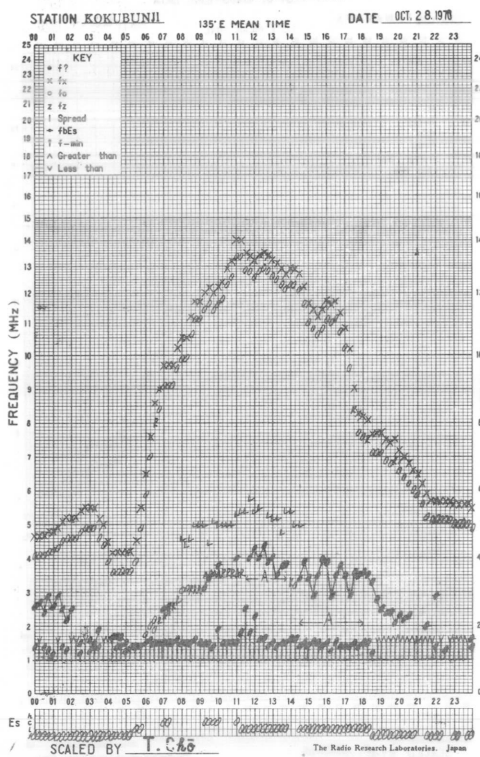
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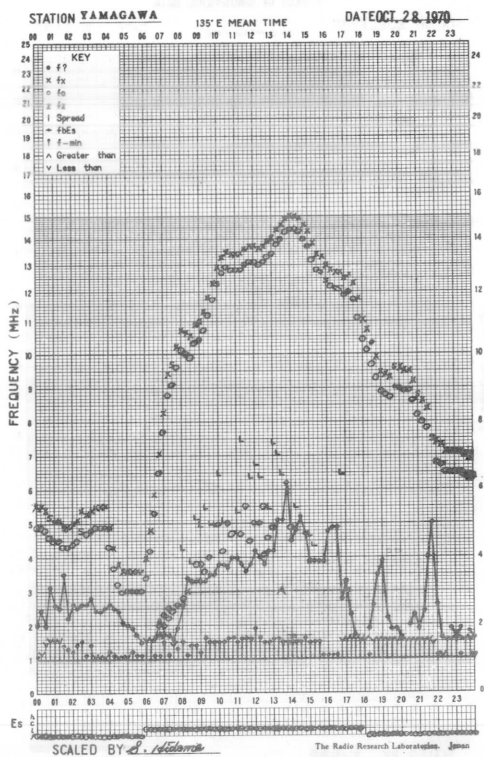
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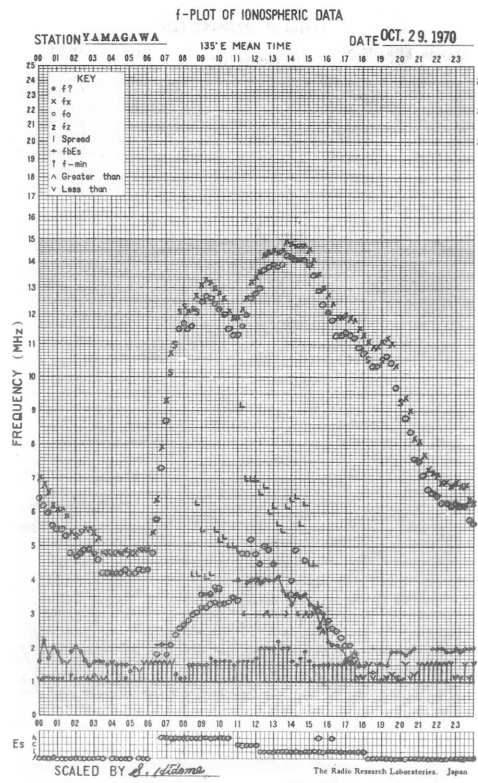
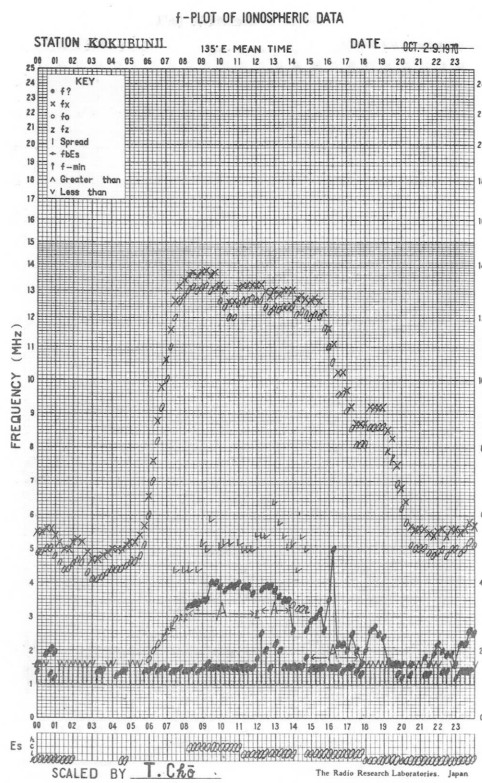
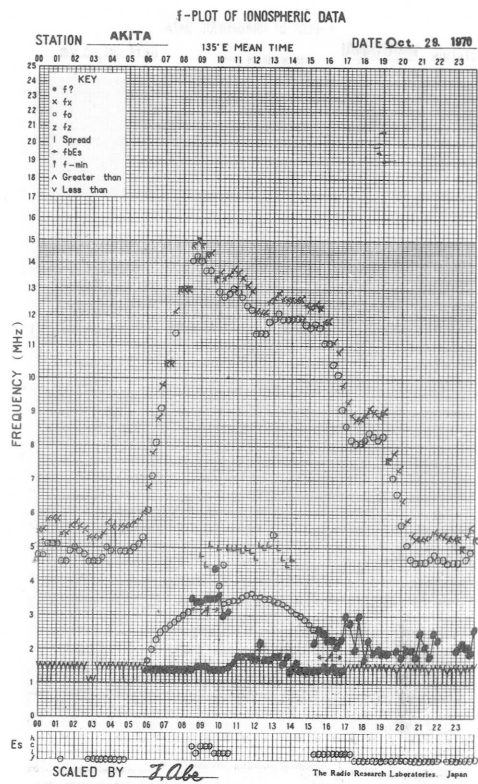
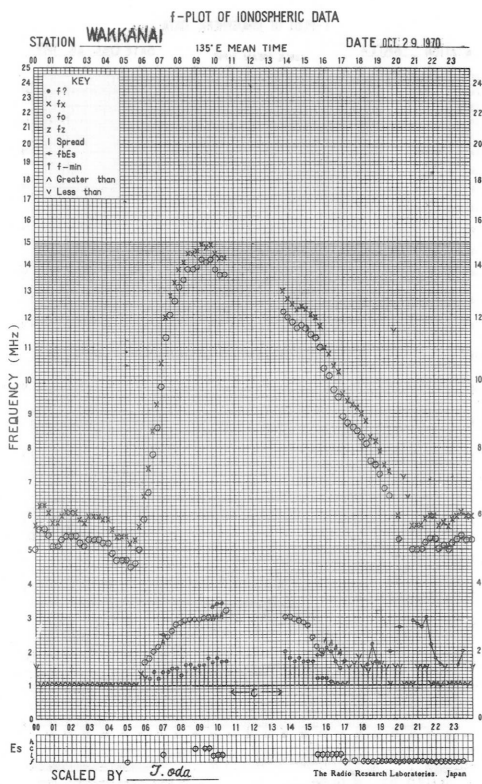
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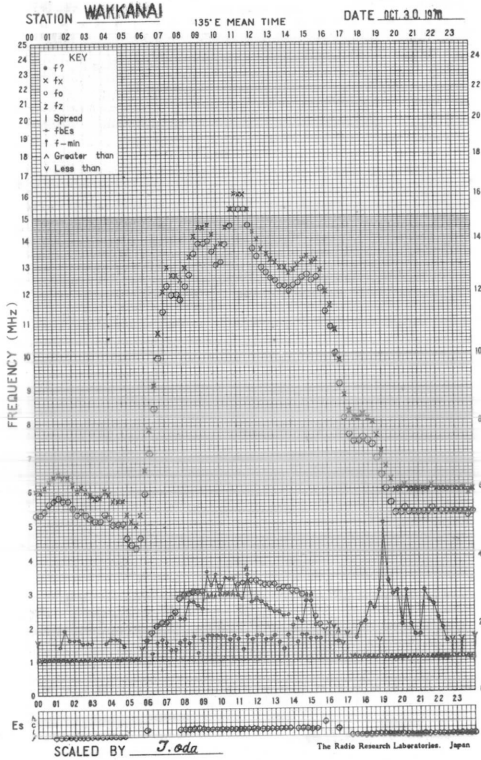
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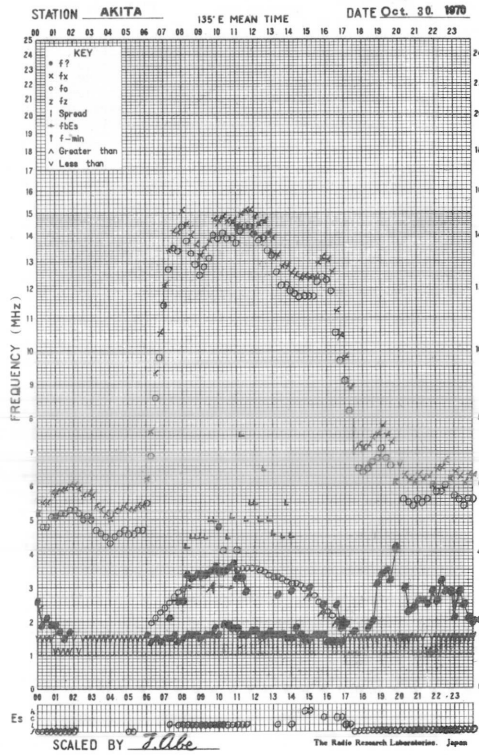




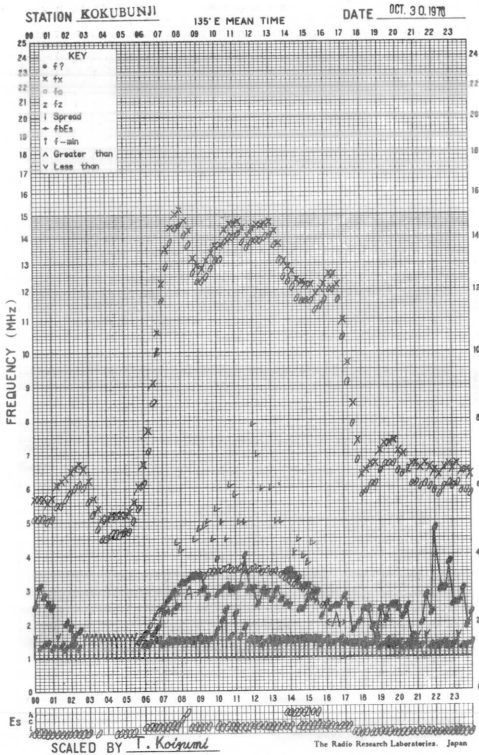
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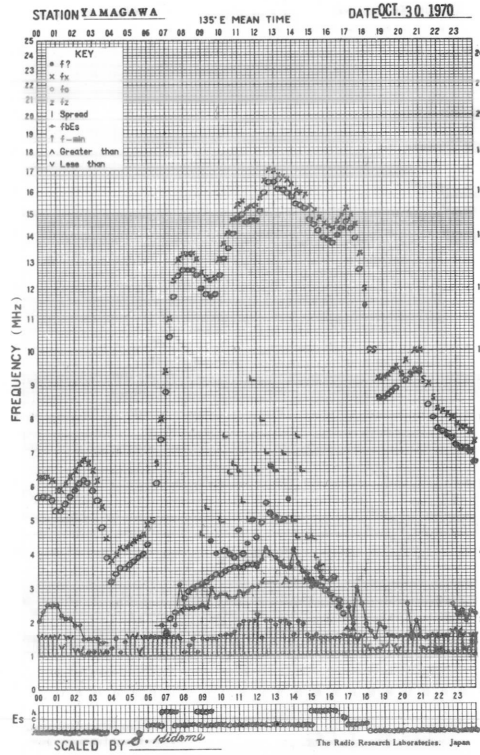
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f-PLOT OF IONOSPHERIC DATA

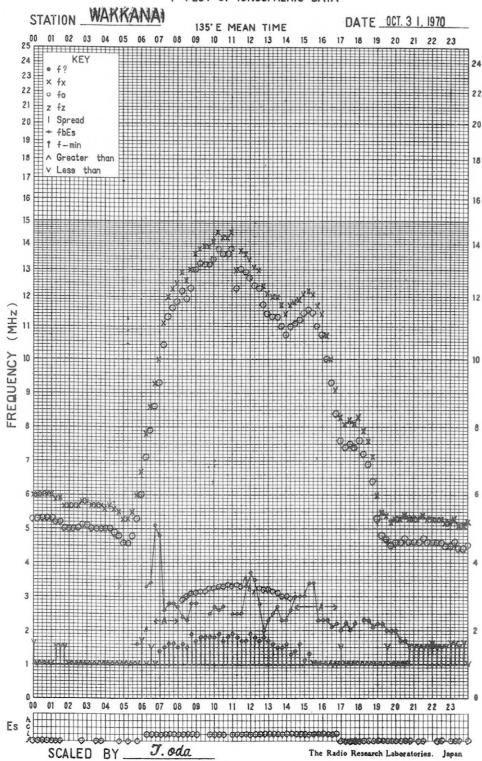


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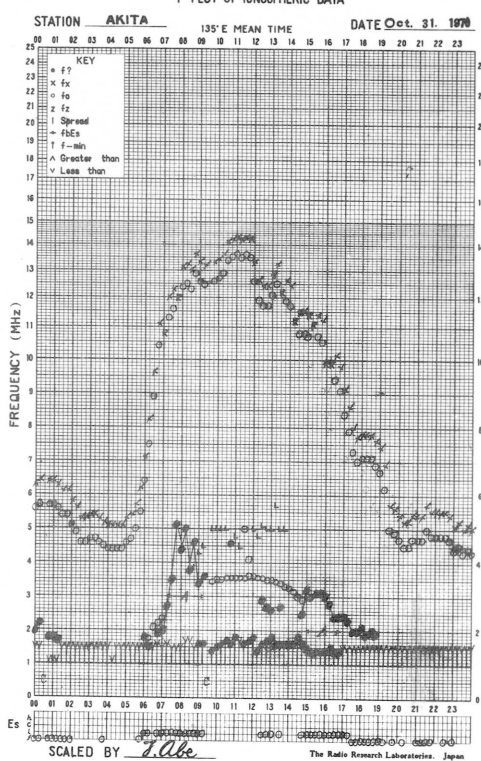




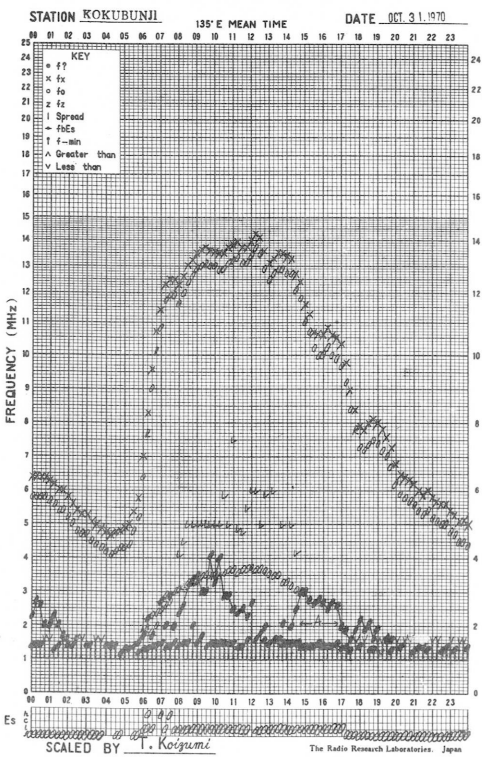
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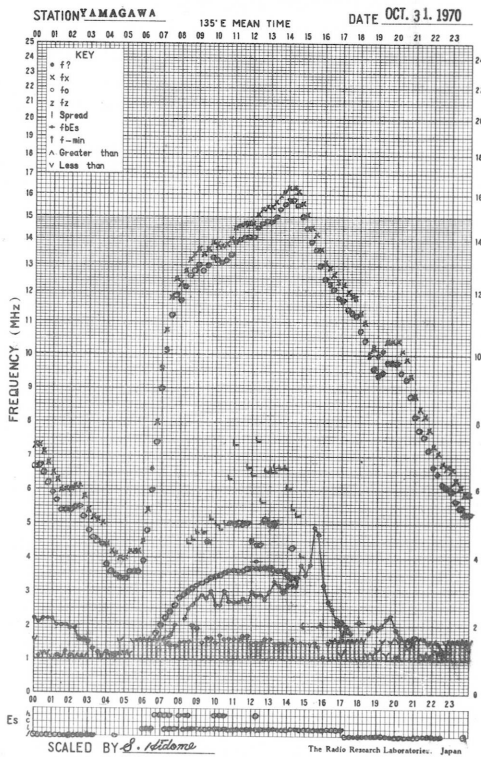
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: October 1970						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-
29	(56)	47	(49)	64	(49)	(1)	1	(1)	1	(1)
30	57	41	(30)	22	50	1	1	(1)	1	1
31	12	14	(15)	10	15	1	1	(1)	(0)	1

Note No observations during the following periods:

1st 2050- 29th 0200  
31st 0130- 0315

## SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: October 1970					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} \text{ Wm}^{-2} (\text{Hz})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	26	26	24	27	26
2	26	26	25	-	26
3	25	24	24	26	24
4	25	25	26	29	25
5	27	26	26	-	27
6	31	29	28	25	30
7	25	23	24	26	24
8	25	25	25	27	25
9	27	27	26	29	27
10	29	28	27	31	28
11	31	29	27	28	30
12	28	27	27	27	28
13	26	24	24	27	25
14	28	28	27	26	28
15	26	27	27	27	27
16	27	28	29	27	28
17	27	28	27	27	27
18	27	26	27	26	26
19	28	28	27	27	27
20	28	27	27	26	27
21	28	27	26	27	27
22	28	27	28	27	27
23	27	28	27	29	27
24	29	29	28	28	29
25	29	27	27	25	28
26	-	-	-	-	(25)
27	-	-	-	-	-
28	-	-	-	-	-
29	-	-	-	-	-
30	-	-	-	-	-
31	-	-	-	-	-

Note No observations during the following periods:

2nd	2050-	2400	6th	0330-	0435
3rd	0230-	0435	15th	0430-	0535
4th	0230-	0335	16th	0330-	0435
5th	2050-	2400	26th	0000-	31st 2400

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: October 1970								
Observing station: Hiraiso								
Normal observing period: 2050 - 0810 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density		Remarks
	MHz	UT	UT	minutes		$10^{-22} \text{ Wm}^{-2} (\text{Hz})^{-1}$	peak	
3	500	2059.2	2059.5	0.8	C	(410)	(250)	* 2100-01
11	500	0217.5	0222.8	7.0	C	45	10	

\*: Interrupted by calibration.

MEASUREMENT OF H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

OCT 1970 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISSO

UT DAY	00H 15M	01H 15M	02H 15M	03H 15M	04H 15M	05H 15M	06H 15M	07H 15M	08H 15M	09H 15M	10H 15M	11H 15M	12H 15M	13H 15M	14H 15M	15H 15M	16H 15M	17H 15M	18H 15M	19H 15M	20H 15M	21H 15M	22H 15M	23H 15M	
1	-1	1	7	14	15	10	-9	4	-8	-7	-5	ES 2	ES -17	ES -13	-5	0	ES -26	-1	-2	-3	1	-1	2	1	
2	3	1	7	9	14	19	12	ES -9	ES -8	ES -12	ES -10	ES -2	ES -15	ES -8	1	-6	8	6	3	-12	-2	1	0	1	
3	1	3	4	9	12	14	-1	1	-14	ES -14	ES -12	ES -2	ES -14	ES -12	-6	-10	5	5	2	-6	4	2	1	1	
4	1	2	9	9	0	-16	ES -16	-2	-10	ES -9	-8	ES 5	ES -16	ES -8	-1	1	-1	8	-15	-18	1	6	5	1	
5	3	8	5	10	ES -9	ES -14	ES -14	ES -11	ES -9	ES -12	ES -13	ES -4	ES -13	ES -11	0	1	0	6	3	-2	3	0	1	2	
6	3	-2	5	11	11	2	-5	ES -11	-9	ES -13	ES -13	ES -1	ES -8	ES -12	-3	1	1	7	7	-9	2	2	2	7	
7	-1	0	7	C	C	-3	ES -16	ES -10	ES -7	-8	ES -12	ES -3	ES -14	ES -10	-12	-7	5	12	0	-1	-1	5	-6	2	
8	-2	0	7	9	10	-12	-11	-11	ES -12	ES -13	ES -11	ES -2	ES -17	ES -6	-5	0	-11	7	8	-2	0	0	1	2	
9	C	C	3	8	11	0	ES -17	ES -8	ES -5	-5	ES -11	ES 5	ES -11	-8	3	0	1	4	1	1	0	-2	0	1	
10	1	1	6	7	7	-1	-2	-10	ES -8	-10	ES -10	ES 2	ES -12	ES -7	4	7	5	11	6	2	-2	2	3	1	
11	1	3	4	10	11	21	7	-10	-10	ES -13	ES -10	ES 8	-3	0	1	ES -8	-1	11	4	-3	5	7	5	3	
12	7	5	14	12	12	-7	-7	ES -9	ES -9	ES -8	ES -11	ES -1	ES -3	ES -8	ES -27	ES -27	ES -27	-7	-1	ES -27	-2	1	5	5	
13	2	5	11	11	6	ES -13	ES -1	ES -11	ES -4	ES -4	ES -13	ES 2	ES -16	ES -12	ES -25	ES -25	ES -25	ES -25	ES -25	ES -25	ES -25	-1	5	7	1
14	2	5	9	ES 6	10	ES -16	ES -16	ES -14	ES -8	ES -16	ES -13	ES 4	ES -4	ES -10	C	C	C	C	C	C	C	C	C	C	
15	3	3	7	7	5	ES -15	-11	ES -11	ES -5	ES -11	ES -11	ES 4	ES -12	ES -12	-2	ES -27	ES -27	7	1	-18	1	4	4	1	
16	3	0	8	8	-4	-11	ES -13	ES -9	ES -5	-8	ES -8	ES -4	ES -7	ES -21	C	C	C	C	C	C	C	C	C	C	
17	ES -25	10	14	19	12	-10	-8	-8	-6	-8	-22	ES 2	ES -12	ES -18	-11	-16	-27	ES -31	ES -31	ES -31	ES -31	2	3	ES 2	
18	-7	-1	-6	-15	ES -15	-17	-11	ES -12	ES -11	ES -12	ES -15	ES -1	ES -7	ES -16	-5	-14	ES -29	ES -29	ES -29	ES -29	-3	1	2	1	
19	ES 1	1	11	9	13	ES 6	-9	ES -7	ES -7	ES -9	ES -12	ES 2	ES 6	ES 8	-11	-20	ES -32	ES -32	ES -32	ES -32	-5	-1	0	ES 2	
20	3	6	16	5	-6	ES -10	-6	ES -6	ES -8	ES -11	ES -22	ES 1	ES -6	ES -16	-16	ES -11	ES -31	ES -31	ES -31	ES -16	1	15	10	7	
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
25	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C	
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
28	C	C	24	24	23	-1	14	-14	9	ES 1	-2	ES 4	-13	ES -31	-4	-11	ES -31	ES -31	ES -31	ES -31	-6	16	11	9	
29	8	8	14	24	21	5	-7	ES -16	ES -16	ES -10	ES 2	ES 2	ES -32	ES -17	-10	-16	14	12	ES -31	ES -31	2	6	10	10	
30	7	9	17	22	24	19	20	2	ES -11	ES -17	ES -9	ES 3	ES -6	ES 5	3	4	-1	-12	-11	ES -32	1	10	14	11	
31	9	13	18	17	23	-7	-8	-10	ES -11	ES -16	ES -7	ES 3	ES -8	ES 2	-11	-12	ES -32	ES -32	ES -32	ES -32	7	14	15	11	
CNT	22	22	24	23	23	24	24	24	24	24	24	24	24	24	22	22	22	22	22	22	22	22	22	22	
MED	2	3	8	9	11	US -6	US -8	ES -10	ES -8	ES -10	ES -11	ES 2	ES -12	ES -10	-5	US -8	-6	4	-2	US -17	0	2	3	US 2	
UD	8	10	18	24	23	19	14	2	ES -4	ES -4	ES -2	ES 5	ES -3	ES 0	3	4	8	12	7	1	5	15	14	11	
LD	ES -7	-1	3	ES 5	ES -9	ES -16	ES -16	ES -14	ES -14	ES -16	ES -22	ES -2	ES -17	ES -21	ES -25	ES -27	ES -32	ES -32	ES -32	ES -32	-6	-1	0	ES 1	



MEASUREMENT OF H.F. FIELD STRENGTH ( UPPER SIDE-BAND OF WWVH )

OCT 1970 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	-8	-6	0	4	13	16	21	7	10	12	12	ES -1	ES -8	ES -17	ES -9	ES -12	ES -28	11	9	-1	2	1	-8	-5
2	-10	-6	3	5	10	19	15	17	6	10	ES -4	ES -2	ES -4	-9	ES -27	ES -27	ES -27	6	10	-4	1	-3	-2	-6
3	-2	-2	1	8	16	16	18	7	-3	2	-5	ES -2	ES -5	-12	ES -13	ES -16	ES -18	ES -18	ES -27	-2	2	1	-5	-6
4	-8	-4	-2	7	9	17	16	21	17	17	6	19	7	9	-8	ES -16	ES -9	ES -18	-5	-3	1	-4	-4	-7
5	-2	-2	0	10	11	15	15	15	-3	2	0	-5	ES -5	ES -15	ES -11	ES -14	ES -11	8	5	2	2	1	-2	0
6	ES -17	-5	6	5	15	17	19	18	18	10	5	ES -3	ES -6	-12	ES -12	ES -15	ES -24	21	4	1	2	1	-1	-2
7	-4	-3	C	C	16	19	19	16	14	2	-7	ES -5	ES -6	ES -15	ES -13	ES -13	ES -15	11	2	-1	5	-2	-2	-3
8	-7	0	2	5	10	16	16	21	25	18	ES -4	ES -2	ES -5	ES -11	ES -5	ES -15	ES -15	20	ES -15	-2	2	0	-5	C
9	C	C	1	9	11	15	25	24	10	-5	0	ES -8	ES -5	ES -13	ES -28	ES -25	ES -16	6	6	-6	-4	1	-4	-3
10	-4	1	-1	6	10	16	8	16	2	7	ES -1	ES -1	ES -2	ES -16	ES -12	ES -25	ES -9	11	-3	-8	5	-4	-5	-4
11	-6	0	0	8	10	16	22	18	21	17	11	15	7	7	-6	ES -11	ES -24	9	ES -5	4	6	-1	0	-3
12	ES -15	2	4	7	12	19	14	20	5	ES -8	ES -6	ES -1	ES -2	ES -2	ES -27	ES -27	ES -27	14	-7	-1	2	-3	-1	-2
13	-9	-1	-4	4	10	11	14	14	12	6	-1	ES -3	ES -6	ES -16	ES -25	ES -10	ES -25	ES -25	ES -25	-4	1	1	-4	-1
14	-7	-3	-4	3	11	17	12	14	20	-3	ES -1	ES -3	ES -1	ES -6	C	C	C	C	C	C	C	C	C	-12
15	-7	-1	0	7	14	20	4	22	13	18	12	2	ES -5	ES -3	ES -27	ES -27	ES -27	ES -18	ES -14	3	4	1	-4	-2
16	-8	-3	0	8	14	16	10	19	2	9	10	ES -6	ES -7	C	C	C	C	C	C	C	C	C	C	C
17	-10	0	5	10	17	21	24	23	23	0	-3	ES -7	-11	-10	-12	-14	-14	-11	ES -31	-11	5	-7	-5	-1
18	-7	0	4	10	10	18	-2	3	ES -3	ES -12	ES -0	ES -5	ES -3	ES -4	ES -31	ES -29	ES -29	ES -29	ES -29	-6	6	3	-3	-2
19	ES -1	1	2	9	17	19	21	18	7	ES -7	ES -1	ES -0	ES -6	-15	-17	ES -32	-23	-9	ES -32	1	4	1	-5	2
20	-5	1	6	13	17	18	21	38	16	14	11	ES -0	ES -0	ES -4	-9	ES -10	-31	ES -31	ES -31	-1	5	9	-5	-2
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	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	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	13	20	23	22	27	26	25	20	22	ES -1	-6	ES -1	-27	ES -31	ES -31	-16	ES -31	1	9	4	5	4
29	-2	3	11	14	21	25	24	26	22	26	27	ES -4	ES -1	ES -3	-15	ES -31	-11	14	ES -31	-6	5	7	1	2
30	5	12	7	16	17	22	26	23	24	17	12	ES -9	ES -13	ES -13	-6	ES -10	-14	-17	ES -32	-1	9	5	9	-1
31	3	5	5	13	11	35	24	30	21	18	ES -7	ES -1	ES -1	ES -5	ES -32	ES -32	ES -32	ES -32	ES -32	4	21	4	4	4
CNT	22	22	23	23	24	24	24	24	24	24	24	24	24	23	22	22	22	22	22	22	22	22	22	22
MED	US -7	0	2	8	12	18	18	18	14	10	ES -1	ES -1	ES -5	ES -9	ES -13	ES -16	ES -24	-2	ES -14	-1	4	1	-4	-2
UD	3	5	11	16	21	25	26	30	25	20	22	15	ES -7	ES -9	ES -6	ES -10	ES -9	20	9	4	9	7	5	4
LD	ES -15	-6	-4	4	10	15	4	7	ES -3	ES -8	ES -6	ES -5	ES -8	ES -16	ES -31	ES -32	ES -31	ES -31	ES -32	-8	1	-4	-5	-7

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Oct. 1970	Whole Day Index	W W V				L M				W W V H				Warning				Principal magnetic storms						
		00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	06	12	18	24	Start	End	ΔH
1	4°			5	(4)	3	5		3	4	-	4		4	4	(4)	5	N	N	N	N			
2	5-			5	(4)	5	5		4	-	-	4		4	4	(3)	5	N	N	N	N			
3	4°			5	(4)	4	4		4	4	-	4		4	3	(4)	3	N	N	N	N			
4	4-			4	(4)	4	3		4	-	-	-		3	5	(5)	3	N	U	U	U			
5	4°			(3)	(3)	5	5		4	4	-	4		4	3	(4)	5	N	N	N	N			
6	4°			3	(4)	5	4		3	4	-	4		4	4	(5)	5	N	N	N	N			
7	4+			5	(4)	4	5		4	4	-	4		4	3	(4)	5	N	N	N	N			
8	4°			4	(3)	4	5		4	4	-	4		4	4	(5)	5	N	N	N	N			
9	4+			5	(4)	5	4		4	3	-	4		4	4	(4)	4	N	N	N	N			
10	4+			4	(4)	5	5		4	(3)	-	C		4	3	(5)	4	N	N	N	N	23.3	---	89 <sup>Y</sup>
11	5-			5	(5)	5	4		4	-	-	-		4	5	(5)	5	N	N	N	N	---	21xx	
12	4-			4	(4)	(2)	3		4	4	-	4		4	3	(4)	5	N	N	N	N			
13	3+			(3)	(4)	(1)	4		4	3	-	4		3	3	(3)	3	N	N	N	N			
14	4°			(4)	(4)	C	4		4	(4)	-	4		4	3	C	C	N	N	N	N			
15	4°			4	(4)	(3)	4		4	5	-	4		4	4	(3)	4	N	N	N	N			
16*	3+			4	(4)	C	1		4	4	-	(3)		4	3	C	C	N	N	U	U	09.18	---	141 <sup>Y</sup>
17	3°			2	(4)	(1)	1		5	5	-	-		4	4	(4)	3	U	U	N	N	---	---	
18	2+			1	(4)	(1)	3		C	-	-	-		4	2	(2)	3	N	U	U	U	---	20xx	
19	4-			(4)	(4)	(1)	(3)		5	4	-	4		4	3	(3)	3	N	N	N	N			
20	4°			4	(4)	(1)	4		4	(5)	-	5		5	5	(4)	3	N	N	N	N			
21	4+			(4)	C	C	4		5	(4)	-	4		C	C	C	C	N	N	N	N			
22	4+			(4)	C	C	5		4	5	-	4		C	C	C	C	N	N	N	N			
23	4-			(4)	C	C	1		5	5	-	-		C	C	C	C	N	N	N	N			
24	3+			(1)	C	C	4		5	4	-	-		C	C	C	C	N	N	N	N			
25	4-			(3)	C	C	4		4	-	-	-		C	C	C	C	N	N	N	N			
26	4-			(3)	C	C	4		4	3	-	4		C	C	C	C	N	N	N	N			
27	4-			(5)	C	C	(3)		4	3	-	4		C	C	C	CN	N	N	N	N			
28	4°			4	(5)	(1)	(4)		4	5	-	4		5	5	(3)	4	N	N	N	N			
29	4-			5	(3)	3	(4)		C	4	-	4		5	5	(5)	4	N	N	N	N			
30	4+			5	(5)	4	4		5	4	-	4		5	5	(5)	4	N	N	N	N			
31	4-			5	(4)	(2)	4		4	3	-	-		5	5	(2)	4	N	N	N	N			

GEOALERT

- " = PROTON FLARE
- \* = MAGSTORM
- ° = MAGCALME
- ' = COSMIC EVENT

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

Errata

Please replace 'Warning' between 8th and 11th, and on 27th in the table of RADIO PROPAGATION QUALITY FIGURES in Vol.22, No.3 as the following tables:

Mar. 1970	Warning			
	00	06	12	18
	06	12	18	24
8*'	N	U	U	W
9*'	W	U	U	U
10	U	U	U	U
11	U	N	N	N

Mar. 1970	Warning			
	00	06	12	18
	06	12	18	24
27*	N	N	U	U

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAI SO

Time in U.T.

Oct. 1970	Drop-out Intensities (db)					S W F				Correspondence		
	CO	LM	HA	TO	SH	Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
6	12	×	<u>20</u>			00.20	65	G	2+			
7						22.08	34	S	1-			
23			>20			21.45	80	G	1-			
24	18					02.25	50	G	2+			
24			12'			04.38	47	G	1+	×		
26			×			02.42	28	G	×	×	×	
26	×					04.18	42	G	×	×	×	
30		13				23.34	×	G	1		×	

## I N U B O

1970	S P A								Remarks
Oct.	Phase Advance(degrees)					Time (U.T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
1	39					1904	1932	1910	
5	-		24			0224	0328	0244	
5	-			32		0453	0600	0501	
5	-	-	33			0632	0748	0643	
6	-			<u>60</u>	53	0027	0156	0047	X
6				16		0530	0608	0543	X
7	-		22		-	0426	0528	0430	
7	-		36		-	0704	0802	0707	
8	-			12	-	0148	0226	0158	X
8	-			16	-	0337	0413	0345	X
8	-			8	-	0503	0532	0507	
9	-			20	-	0059	0143	0107	X
9	60				-	1820	1926	1825	
10		-		44	-	0303	0546	0415	X
10				30	-	0418	0534	0432	
11			32		-	0634	0728	0653	
12		-	24		-	0340	0455	0351	
13			24		-	0725	0806	0733	
14			22		-	0405	0446	0417	
14				20	-	0607	0650	0613	X
15		-		32	-	0302	0344	0308	X
15				16	-	0503	0545	0508	
16				36	-	0043	0140	0056	
16		-		16*	-	0240	0331	0252	
17				12	-	0226	0304	0237	

1970	S P A								Remarks
Oct.	Phase Advance(degrees)					Time (U.T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
18			26		-	0733	0800	0737	
19			<u>15</u>	4	-	0514	0540	0521	
20				6	-	0655	0732	0658	
23			19		-	0402	0438	0408	
23			19		-	0520	0612	0532	
23	48		-		-	1648	1754	1702	
23		<u>61</u>	31	32	-	2204	2300	2229	
24		- 41	22	<u>88</u>	-	0218	0424	0246	X
24			22		-	0349	0448	0403	
24			38	<u>96</u>	-	0448	0718	0549	
25				4	-	0003	0022	0008	X
25			12	<u>16</u>	-	0212	0300	0218	X
25			28		-	0257	0350	0314	
25			<u>28</u>	20	-	0405	0527	0430	
26		- <u>22</u>	19	-	-	0102	0138	0120	
26	42	<u>65</u>	32	-	-	0241	0349	0300	
26		27	32	<u>70</u>	-	0414	0544	0433	X
26			<u>16</u>	16	-	2220	2253	2229	
27		18	10	<u>40</u>	-	0317	0418	0330	X
27	<u>37</u>			10	-	0829	0852	0835	X
27		-	6	<u>20</u>	-	2245	2334	2302	
28				12	-	0008	0030	0018	X
28			20		-	0250	0353	0310	
28	20		<u>23</u>		-	2325	0004	2333	
29	15	24	12	<u>52</u>	-	0304	0415	0314	X



1970	S P A								Remarks
Oct.	Phase Advance(degrees)					Time (U.T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
29				4		0545	0610	0553	X
29	58		19*			1832	1938	1841	
30	18		26	48		2334	0050	2343	
31			6	12		0350	0442	0358	

- NOTES (1) : The letter E or D attached to a time shows that the pertinent time is earlier or more delayed than the given time, respectively.
- (2) : The mark \* shows a multi-peak event.
- (3) : The mark \*\* shows a time on the day before the pertinent day.

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IONOSPHERIC DATA IN JAPAN FOR OCTOBER 1970

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