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# IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

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## 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

$f_oF2$ $f_oF1$ $f_oE$	}	The ordinary wave critical frequency for the $F2$ , $F1$ and $E$ layers, respectively.
$f_oEs$		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
$fbEs$		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.
$hF2$		The minimum virtual height, $hF2$ , refers to the highest, most stable stratification observed in the $F$ region and can only be scaled when such stratification is present.
$hF$		The natural and most significant $F$ region virtual height parameter is that for lowest $F$ region stratification. This will be denoted by $hF$ . Thus $hF$ is identical with the current $hF2$ when $F$ region stratification is absent, e.g., at night, and with the current $hF1$ when $F1$ stratification is present.
$hEs$		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  $0.834f_oF2$ .  
 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  $0.969f_oF2$ ).

**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.

<i>F</i>	An <i>Es</i> 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 <i>Es</i> traces observed in the daytime are classified according to their virtual height: <i>H</i> or <i>L</i> .
<i>L</i>	A flat <i>Es</i> trace at or below the normal <i>E</i> layer minimum virtual height in the day or below the night <i>E</i> layer minimum virtual height at night.
<i>C</i>	An <i>Es</i> trace showing a relatively symmetrical cusp at or below $f_oE$ . This is usually continuous with the normal <i>E</i> trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)
<i>H</i>	An <i>Es</i> trace showing a discontinuity in height with the normal <i>E</i> layer trace at or above $f_oE$ . The cusp is not symmetrical, the low frequency end of the <i>Es</i> trace lying clearly above the high frequency end of the normal <i>E</i> trace. (Usually a daytime type.)
<i>Q</i>	An <i>Es</i> 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 Hiraïso 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 Hiraiso 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.
- U : Inaccurate measurement influenced by interferences, atmospheric, 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	10.2	2	6100
		HA2	12.2		
		HA3	13.6		
Aldra	66°25'N 013°09'E	AL0	10.2	4	7820
		AL2	12.2		
		AL3	13.6		

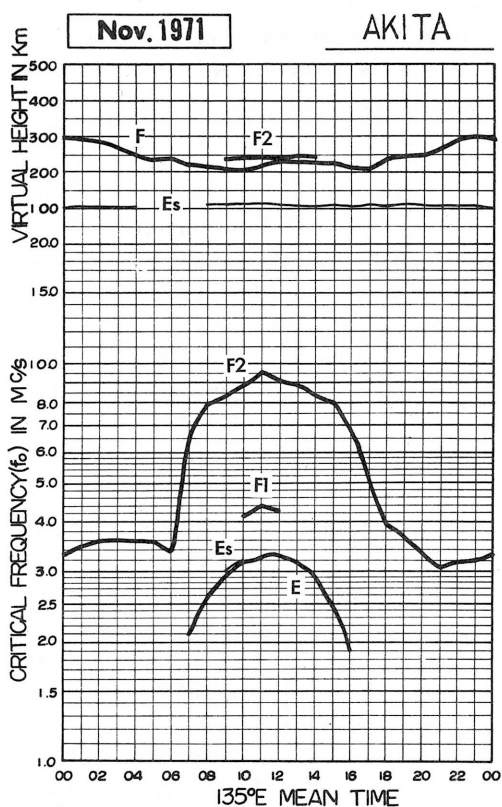
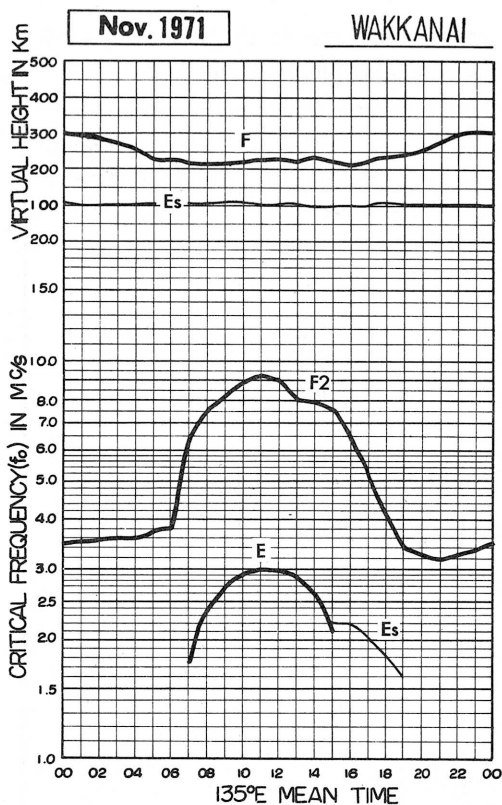
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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.

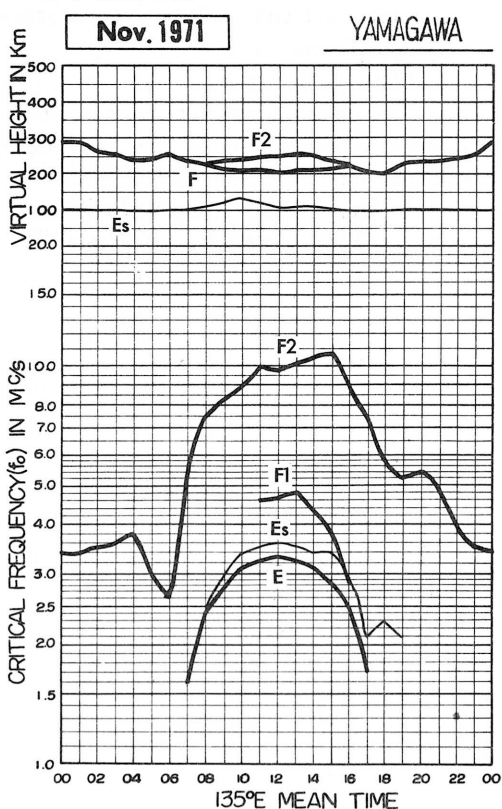
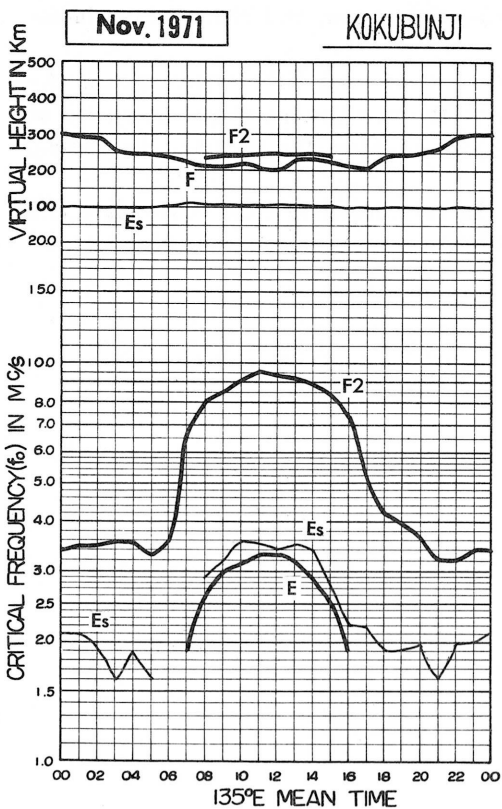
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA  
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

NOV. 1971

FOF2 (0.1 MHZ)

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

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	36	36	36	36	38	38	43	73	82	81	92	93	94	81	74	75	77	55	46	52	36	36	F	F <sub>41</sub>
2	F	F <sub>41</sub>	F <sub>40</sub>	38	43	41	43	77	93	84	95	91	93	82	81	78	76	51	46	43	33	32	33	34
3	35	40	F <sub>38</sub>	F <sub>35</sub>	F <sub>37</sub>	43	44	65	80	80	100	103	100	84	75	85	85	53	44	40	34	33	33	33
4	33	36	36	37	42	34	41	71	83	75	85	100	97	86	90	75	77	53	43	34	A	32	34	35
5	36	38	36	33	F <sub>36</sub>	35	40	66	87	86	95	101	98	90	85	85	78	53	46	38	34	34	36	35
6	37	38	39	39	37	33	43	72	86	82	103	114	105	81	84	80	68	61	47	47	46	47	45	43
7	46	47	F <sub>45</sub>	F	F	40	46	75	90	93	91	95	98	87	91	88	73	60	56	48	40	43	43	43
8	45	46	45	43	43	41	43	66	87	85	93	104	93	89	87	80	73	56	46	38	38	40	41	42
9	43	43	43	43	43	41	47	71	93	R <sub>96</sub>	98	93	93	84	84	81	74	57	42	40	38	40	I <sub>40</sub> S	40
10	42	40	40	F	F	F	F	65	76	78	93	93	81	76	75	74	61	48	33	31	31	33	F	F
11	F	F <sub>35</sub>	F	F <sub>38</sub>	38	40	38	58	78	78	83	93	95	85	91	97	75	43	29	32	35	37	38	38
12	F <sub>38</sub>	F <sub>41</sub>	F <sub>35</sub>	35	38	36	33	59	81	87	103	108	98	90	91	82	62	60	41	33	30	30	33	33
13	34	F	F <sub>47</sub>	F	F	F	43	67	87	95	87	101	90	76	79	90	64	53	48	38	34	34	A	F <sub>36</sub>
14	F <sub>33</sub>	F	F	F <sub>41</sub>	F	F	F	53	73	R	87	88	83	79	73	70	56	42	39	37	35	35	35	S <sub>34</sub>
15	F	F <sub>40</sub>	43	43	44	46	38	63	I <sub>74</sub> C	84	76	82	84	76	78	65	61	36	30	30	27	30	30	30
16	33	34	34	I <sub>31</sub> C	33	35	32	61	65	71	79	86	96	76	73	76	C	39	36	28	C	30	32	33
17	33	35	35	35	36	38	28	63	68	66	74	79	83	85	81	68	56	37	30	26	29	30	30	32
18	33	34	34	34	35	S <sub>38</sub>	34	65	65	83	76	H <sub>78</sub>	88	80	71	71	63	36	33	31	33	32	33	35
19	35	36	35	36	38	41	28	53	70	76	77	95	85	74	75	63	57	46	37	34	35	36	33	36
20	36	36	36	S <sub>38</sub>	40	U <sub>43</sub> S	33	63	59	74	87	101	85	67	C	C	54	36	38	31	33	32	33	36
21	37	36	37	36	33	34	S <sub>38</sub>	62	68	70	93	90	82	79	81	65	47	45	37	34	33	31	32	F <sub>33</sub>
22	33	36	36	36	32	28	27	63	77	83	81	80	90	69	85	76	58	48	48	35	C	34	31	32
23	32	32	31	32	36	30	S <sub>35</sub>	56	67	77	105	90	83	80	80	78	65	61	48	48	43	S	30	34
24	36	S	S	S	F <sub>25</sub>	C	C	C	C	78	108	108	81	75	86	76	70	45	43	30	F	F <sub>26</sub>	F	F <sub>35</sub>
25	F	F	F <sub>36</sub>	40	36	27	S	47	68	84	103	116	93	76	74	75	73	65	38	40	I <sub>24</sub> A	29	25	
26	31	S	C	S	C	C	C	C	75	85	89	108	93	74	80	79	63	54	33	23	25	23	27	28
27	30	32	32	33	31	31	33	C	C	67	77	95	89	83	74	60	59	44	41	30	24	I <sub>26</sub> C	27	C
28	30	I <sub>30</sub> C	30	30	30	C	30	C	C	C	70	85	78	76	78	C	55	C	36	C	27	C	29	30
29	32	33	33	28	30	29	C	55	63	66	73	80	78	76	70	71	55	35	36	I <sub>34</sub> A	30	I <sub>24</sub> C	I <sub>24</sub> A	28
30	A	C	31	31	C	C	C	S	71	C	C	C	C	C	C	C	C	C	25	25	23	22	25	26
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	25	24	26	25	24	23	23	25	27	27	29	29	29	29	28	27	28	28	30	29	26	28	26	28
MED	35	36	36	36	36	38	38	63	76	81	89	93	90	80	80	76	64	50	40	34	33	32	33	34
UQ	37	40	40	38	39	41	43	67	84	84	95	101	95	84	85	80	74	56	46	40	35	36	35	36
LQ	33	34	34	33	33	34	33	59	68	76	79	88	83	76	74	71	58	42	36	31	29	30	30	32

NOV. 1971

FOF2 (0.1 MHZ)

# IONOSPHERIC DATA

NOV. 1971

FOF1 (0.01 MHz)

135° E Mean Time (G. M. T. + 9h)

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																								
5																								
6																								
7																								
8												L												
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19												U <sub>L</sub> 420		400 <sup>L</sup>										
20												U <sub>L</sub> 410												
21												410	400 <sup>L</sup>											
22													400											
23																								
24																								
25																								
26												L												
27																								
28																								
29																								
30										C	C	C	C	C	C	C								
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	2	1										
MED												U <sub>L</sub> 410	400	400 <sup>L</sup>										
UQ												U <sub>L</sub> 415												
LQ												410												

NOV. 1971

FOF1 (0.01 MHz)

IONOSPHERIC DATA

NOV. 1971

FOE (0.01 MHz)

135° E Mean Time (G. M. T. + 9h)

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	A	A	A	A	A	A	A	A	A									
2							S	200	260	295	300	300	300	A	A	225	S								
3							S	165	A	A	A	300	I A 295	300	275	A	A								
4							S	A	A	A	295	300	300	300	I A 270	230	A								
5							S	190	245	280	295	300	300	290	265	225	A								
6							S	R	240	280	300	300	300	290	265	230	S								
7							E	190	250	A	300	300	300	290	255	225	S								
8							S	185	235	270	A	A	300	290	270	A	S								
9							S	S	240	A	300	300	300	295	265	205	A								
10							S	180	245	A	300	300	300	295	270	A	A								
11							S	170	240	290	295	A	A	A	A	A	R								
12							S	190	A	A	A	A	A	A	A	A	A								
13							E	A	A	A	A	300	A	290	A	A	A								
14							E	A	A	275	A	295	300	I A 290	270	225	S								
15								170	I C 240	280	290	300	300	300	270	215	S								
16								145	230	A	A	290	295	290	270	215	C								
17								175	A	A	280	290	295	A	260	A	A								
18							S	190	230	270	295	290	300	A	260	205	A								
19							S	225	240	270	A	300	290	A	A	A									
20								135	230	270	A	300	300	280	C	C	S								
21							S	160	A	270	290	295	290	275	240	185	S								
22								150	230	270	I A 290	290	295	290	255	210	S								
23							S	225	265	285	I A 290	295	290	290	250	205	A								
24							C	C	C	265	285	300	295	280	240	190	A								
25							S	R	A	A	A	A	A	270	230	S	A								
26							C	215	265	250	A	290	260	235	205	A									
27							S	C	245	I A 275	290	290	280	250	A	A									
28							C	C	C	290	300	305	C	C	200	S									
29							S	R	275	295	295	300	285	235	200	S									
30							S	215	C	C	C	C	C	C	C	C									
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							4	15	17	17	20	22	24	22	21	17									
MED							E	175	235	270	292	300	300	290	260	210									
UQ							E	190	240	280	298	300	300	290	270	225									
LQ							E	162	230	265	285	290	295	280	250	205									

The Radio Research Laboratories, Japan

NOV. 1971

FOE (0.01 MHz)

IONOSPHERIC DATA

NOV. 1971

FOES (0.1 MHZ)

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

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	J <sub>22</sub> X <sub>24</sub>	E	E	E	E	J <sub>31</sub> X <sub>31</sub>	E	25	J <sub>26</sub> X <sub>26</sub>	J <sub>50</sub> X <sub>50</sub>	J <sub>56</sub> X <sub>56</sub>	J <sub>33</sub> X <sub>33</sub>	J <sub>40</sub> X <sub>40</sub>	J <sub>56</sub> X <sub>56</sub>	J <sub>43</sub> X <sub>43</sub>	J <sub>30</sub> X <sub>30</sub>	23	J <sub>37</sub> X <sub>37</sub>	J <sub>50</sub> X <sub>50</sub>	J <sub>33</sub> X <sub>33</sub>	J <sub>43</sub> X <sub>43</sub>	J <sub>23</sub> X <sub>23</sub>	E <sub>17</sub> S <sub>17</sub>	J <sub>21</sub> X <sub>21</sub>		
2	J <sub>21</sub> X <sub>21</sub>	E	E	E	E	E	E	E <sub>15</sub> S <sub>15</sub>	G	17	G	G	G	J <sub>33</sub> X <sub>33</sub>	29	G	25	E	J <sub>31</sub> X <sub>31</sub>	30	J <sub>21</sub> X <sub>21</sub>	J <sub>20</sub> X <sub>20</sub>	J <sub>24</sub> X <sub>24</sub>	J <sub>21</sub> X <sub>21</sub>		
3	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E	E	E	E	E	E <sub>15</sub> S <sub>15</sub>	G	28	32	31	37	J <sub>38</sub> X <sub>38</sub>	G	20	J <sub>31</sub> X <sub>31</sub>	19	26	J <sub>30</sub> X <sub>30</sub>	E <sub>15</sub> S <sub>15</sub>	21	J <sub>31</sub> X <sub>31</sub>	E <sub>17</sub> S <sub>17</sub>	E <sub>16</sub> S <sub>16</sub>	
4	E <sub>15</sub> S <sub>15</sub>	20	E	E	E <sub>16</sub> S <sub>16</sub>	E	E <sub>15</sub> S <sub>15</sub>	21	32	J <sub>40</sub> X <sub>40</sub>	30	22	G	G	30	G	J <sub>31</sub> X <sub>31</sub>	J <sub>21</sub> X <sub>21</sub>	21	J <sub>21</sub> X <sub>21</sub>	J <sub>35</sub> X <sub>35</sub>	J <sub>25</sub> X <sub>25</sub>	J <sub>23</sub> X <sub>23</sub>	E <sub>13</sub> S <sub>13</sub>		
5	E <sub>15</sub> S <sub>15</sub>	E	E	E	E	E	E <sub>15</sub> S <sub>15</sub>	G	G	34	J <sub>33</sub> X <sub>33</sub>	G	G	34	23	29	29	J <sub>31</sub> X <sub>31</sub>	E <sub>15</sub> S <sub>15</sub>	J <sub>43</sub> X <sub>43</sub>	J <sub>33</sub> X <sub>33</sub>	J <sub>31</sub> X <sub>31</sub>	J <sub>24</sub> X <sub>24</sub>	24		
6	E <sub>16</sub> S <sub>16</sub>	E	E	23	20	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	G	G	21	G	G	G	G	G	18	G	20	J <sub>33</sub> X <sub>33</sub>	J <sub>23</sub> X <sub>23</sub>	22	J <sub>23</sub> X <sub>23</sub>	23	J <sub>25</sub> X <sub>25</sub>	J <sub>23</sub> X <sub>23</sub>	
7	E <sub>14</sub> S <sub>14</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E	19	E	G	G	24	J <sub>31</sub> X <sub>31</sub>	31	G	G	G	G	E <sub>17</sub> S <sub>17</sub>	J <sub>25</sub> X <sub>25</sub>	E <sub>17</sub> S <sub>17</sub>	J <sub>25</sub> X <sub>25</sub>	E <sub>16</sub> S <sub>16</sub>	J <sub>34</sub> X <sub>34</sub>	J <sub>31</sub> X <sub>31</sub>	E <sub>15</sub> S <sub>15</sub>		
8	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	E	E	E	E	E <sub>15</sub> S <sub>15</sub>	G	29	34	J <sub>41</sub> X <sub>41</sub>	J <sub>33</sub> X <sub>33</sub>	J <sub>33</sub> X <sub>33</sub>	G	G	J <sub>33</sub> X <sub>33</sub>	E <sub>17</sub> S <sub>17</sub>	28	J <sub>30</sub> X <sub>30</sub>	J <sub>40</sub> X <sub>40</sub>	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
9	E <sub>18</sub> S <sub>18</sub>	E <sub>15</sub> S <sub>15</sub>	E	20	J <sub>24</sub> X <sub>24</sub>	E	E <sub>15</sub> S <sub>15</sub>	21	21	J <sub>43</sub> X <sub>43</sub>	31	22	G	G	G	G	24	E <sub>16</sub> S <sub>16</sub>	E <sub>16</sub> S <sub>16</sub>	J <sub>21</sub> X <sub>21</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>17</sub> S <sub>17</sub>	E <sub>15</sub> S <sub>15</sub>		
10	E <sub>14</sub> S <sub>14</sub>	J <sub>23</sub> X <sub>23</sub>	J <sub>31</sub> X <sub>31</sub>	18	19	18	E <sub>15</sub> S <sub>15</sub>	G	G	30	25	G	G	G	G	J <sub>28</sub> X <sub>28</sub>	J <sub>28</sub> X <sub>28</sub>	25	J <sub>26</sub> X <sub>26</sub>	J <sub>23</sub> X <sub>23</sub>	E <sub>15</sub> S <sub>15</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>16</sub> S <sub>16</sub>	
11	E	23	E	E	E	E	20	G	G	G	26	J <sub>33</sub> X <sub>33</sub>	32	33	30	25	G	J <sub>21</sub> X <sub>21</sub>	J <sub>23</sub> X <sub>23</sub>	J <sub>83</sub> X <sub>83</sub>	J <sub>93</sub> X <sub>93</sub>	J <sub>60</sub> X <sub>60</sub>	29	J <sub>33</sub> X <sub>33</sub>		
12	19	E	E	E	E	E	E <sub>16</sub> S <sub>16</sub>	G	J <sub>28</sub> X <sub>28</sub>	J <sub>32</sub> X <sub>32</sub>	31	J <sub>41</sub> X <sub>41</sub>	J <sub>35</sub> X <sub>35</sub>	J <sub>34</sub> X <sub>34</sub>	J <sub>33</sub> X <sub>33</sub>	J <sub>53</sub> X <sub>53</sub>	J <sub>44</sub> X <sub>44</sub>	20	E <sub>15</sub> S <sub>15</sub>	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	J <sub>23</sub> X <sub>23</sub>	E	E		
13	E <sub>15</sub> S <sub>15</sub>	18	E	E	E	E	E	20	J <sub>31</sub> X <sub>31</sub>	J <sub>95</sub> X <sub>95</sub>	J <sub>43</sub> X <sub>43</sub>	J <sub>35</sub> X <sub>35</sub>	J <sub>45</sub> X <sub>45</sub>	J <sub>34</sub> X <sub>34</sub>	J <sub>40</sub> X <sub>40</sub>	J <sub>33</sub> X <sub>33</sub>	J <sub>34</sub> X <sub>34</sub>	J <sub>63</sub> X <sub>63</sub>	J <sub>63</sub> X <sub>63</sub>	J <sub>40</sub> X <sub>40</sub>	J <sub>31</sub> X <sub>31</sub>	J <sub>23</sub> X <sub>23</sub>	J <sub>62</sub> X <sub>62</sub>	J <sub>24</sub> X <sub>24</sub>		
14	J <sub>24</sub> X <sub>24</sub>	23	21	J <sub>23</sub> X <sub>23</sub>	E	E	E	21	J <sub>50</sub> X <sub>50</sub>	34	J <sub>33</sub> X <sub>33</sub>	28	26	J <sub>33</sub> X <sub>33</sub>	29	J <sub>33</sub> X <sub>33</sub>	20	21	E <sub>15</sub> S <sub>15</sub>	E	E <sub>17</sub> S <sub>17</sub>	J <sub>63</sub> X <sub>63</sub>	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>		
15	E <sub>15</sub> S <sub>15</sub>	20	20	E	J <sub>23</sub> X <sub>23</sub>	E	E <sub>17</sub> S <sub>17</sub>	G	C	G	33	G	G	G	G	G	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>16</sub> S <sub>16</sub>	J <sub>21</sub> X <sub>21</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	E		
16	E <sub>16</sub> S <sub>16</sub>	E	E <sub>15</sub> S <sub>15</sub>	C	E	E	E	G	G	30	34	G	G	G	21	28	C	E	E <sub>15</sub> S <sub>15</sub>	E <sub>16</sub> S <sub>16</sub>	C	J <sub>30</sub> X <sub>30</sub>	J <sub>28</sub> X <sub>28</sub>	J <sub>28</sub> X <sub>28</sub>		
17	J <sub>25</sub> X <sub>25</sub>	J <sub>25</sub> X <sub>25</sub>	J <sub>23</sub> X <sub>23</sub>	J <sub>23</sub> X <sub>23</sub>	E	E	E <sub>15</sub> S <sub>15</sub>	G	J <sub>31</sub> X <sub>31</sub>	31	36	33	J <sub>36</sub> X <sub>36</sub>	J <sub>32</sub> X <sub>32</sub>	J <sub>28</sub> X <sub>28</sub>	23	J <sub>28</sub> X <sub>28</sub>	J <sub>26</sub> X <sub>26</sub>	20	25	E <sub>17</sub> S <sub>17</sub>	J <sub>21</sub> X <sub>21</sub>	21	E <sub>16</sub> S <sub>16</sub>		
18	E <sub>16</sub> S <sub>16</sub>	E	E <sub>15</sub> S <sub>15</sub>	E	E	22	E <sub>16</sub> S <sub>16</sub>	G	G	G	34	G	J <sub>34</sub> X <sub>34</sub>	J <sub>33</sub> X <sub>33</sub>	20	G	J <sub>30</sub> X <sub>30</sub>	20	E <sub>16</sub> S <sub>16</sub>	E <sub>16</sub> S <sub>16</sub>	E	E	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>		
19	E <sub>14</sub> S <sub>14</sub>	E	E	E	E	E	E	G	29	J <sub>53</sub> X <sub>53</sub>	J <sub>60</sub> X <sub>60</sub>	J <sub>33</sub> X <sub>33</sub>	33	J <sub>33</sub> X <sub>33</sub>	J <sub>40</sub> X <sub>40</sub>	J <sub>30</sub> X <sub>30</sub>	J <sub>28</sub> X <sub>28</sub>	18	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	22	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>		
20	26	J <sub>23</sub> X <sub>23</sub>	18	14	E	E	E <sub>15</sub> S <sub>15</sub>	21	G	35	34	G	33	G	C	C	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	E	E <sub>15</sub> S <sub>15</sub>	E	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>		
21	E	E	E <sub>15</sub> S <sub>15</sub>	E	E	E	E <sub>15</sub> S <sub>15</sub>	G	25	G	25	G	G	G	G	G	E <sub>12</sub> S <sub>12</sub>	E	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	J <sub>43</sub> X <sub>43</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>		
22	E <sub>15</sub> S <sub>15</sub>	E	E	E	16	E <sub>15</sub> S <sub>15</sub>	E	G	26	G	32	32	32	G	G	G	E <sub>16</sub> S <sub>16</sub>	E	E	E <sub>15</sub> S <sub>15</sub>	C	E	E <sub>15</sub> S <sub>15</sub>	22		
23	24	20	E <sub>15</sub> S <sub>15</sub>	E	E <sub>15</sub> S <sub>15</sub>	E	E <sub>16</sub> S <sub>16</sub>	E <sub>18</sub> S <sub>18</sub>	18	33	G	J <sub>53</sub> X <sub>53</sub>	J <sub>31</sub> X <sub>31</sub>	G	G	G	J <sub>23</sub> X <sub>23</sub>	E <sub>15</sub> S <sub>15</sub>	22	E <sub>15</sub> S <sub>15</sub>	E	E <sub>16</sub> S <sub>16</sub>	E <sub>18</sub> S <sub>18</sub>	E		
24	E <sub>15</sub> S <sub>15</sub>	E	E <sub>16</sub> S <sub>16</sub>	E	E	C	C	C	C	32	23	G	G	G	G	G	18	23	J <sub>21</sub> X <sub>21</sub>	E	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>16</sub> S <sub>16</sub>		
25	E <sub>15</sub> S <sub>15</sub>	E	E	E	E	E <sub>15</sub> S <sub>15</sub>	E <sub>16</sub> S <sub>16</sub>	E <sub>16</sub> S <sub>16</sub>	G	29	J <sub>38</sub> X <sub>38</sub>	33	33	G	G	E <sub>21</sub> S <sub>21</sub>	J <sub>23</sub> X <sub>23</sub>	E	E	E <sub>15</sub> S <sub>15</sub>	J <sub>21</sub> X <sub>21</sub>	J <sub>29</sub> X <sub>29</sub>	22	E <sub>15</sub> S <sub>15</sub>		
26	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	C	E <sub>15</sub> S <sub>15</sub>	C	C	C	C	G	G	33	33	23	G	G	G	20	20	J <sub>28</sub> X <sub>28</sub>	E <sub>16</sub> S <sub>16</sub>	E	30	J <sub>25</sub> X <sub>25</sub>	J <sub>21</sub> X <sub>21</sub>		
27	J <sub>21</sub> X <sub>21</sub>	22	E <sub>14</sub> S <sub>14</sub>	E	E	E	E <sub>16</sub> S <sub>16</sub>	E <sub>20</sub> S <sub>20</sub>	E <sub>26</sub> S <sub>26</sub>	23	J <sub>44</sub> X <sub>44</sub>	28	20	G	G	J <sub>23</sub> X <sub>23</sub>	J <sub>23</sub> X <sub>23</sub>	J <sub>25</sub> X <sub>25</sub>	E <sub>15</sub> S <sub>15</sub>	E	E <sub>15</sub> S <sub>15</sub>	C	E <sub>16</sub> S <sub>16</sub>	C		
28	E <sub>15</sub> S <sub>15</sub>	C	E	E	E <sub>14</sub> S <sub>14</sub>	C	E <sub>15</sub> S <sub>15</sub>	C	C	C	G	G	G	E	C	E <sub>31</sub> S <sub>31</sub>	E <sub>43</sub> S <sub>43</sub>	25	E <sub>16</sub> S <sub>16</sub>	C	E <sub>17</sub> S <sub>17</sub>	C	J <sub>21</sub> X <sub>21</sub>	C	J <sub>21</sub> X <sub>21</sub>	E
29	E <sub>16</sub> S <sub>16</sub>	E	E	E	E	E	C	E <sub>16</sub> S <sub>16</sub>	G	32	G	39	G	33	G	G	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	J <sub>53</sub> X <sub>53</sub>	J <sub>41</sub> X <sub>41</sub>	21	C	33	J <sub>24</sub> X <sub>24</sub>		
30	J <sub>40</sub> X <sub>40</sub>	C	E	E <sub>14</sub> S <sub>14</sub>	C	25	C	G	G	C	C	C	C	C	C	C	C	C	C	J <sub>25</sub> X <sub>25</sub>	E <sub>15</sub> S <sub>15</sub>	E	E	E <sub>13</sub> S <sub>13</sub>	E <sub>15</sub> S <sub>15</sub>	
31																										
CNT	30	28	29	29	28	27	26	27	27	28	29	29	29	29	28	28	28	28	28	30	29	28	27	30	29	
MED	E <sub>16</sub> S <sub>16</sub>	15	E	E	E	E	E <sub>15</sub> S <sub>15</sub>	G	22	32	31	28	23	24	20	22	22	20	18	16	E <sub>16</sub> S <sub>16</sub>	J <sub>23</sub> X <sub>23</sub>	E <sub>17</sub> S <sub>17</sub>	E <sub>15</sub> S <sub>15</sub>		
UQ	21	21	E <sub>15</sub> S <sub>15</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	15	E <sub>16</sub> S <sub>16</sub>	18	28	34	J <sub>34</sub> X <sub>34</sub>	33	J <sub>33</sub> X <sub>33</sub>	J <sub>33</sub> X <sub>33</sub>	30	J <sub>30</sub> X <sub>30</sub>	J <sub>28</sub> X <sub>28</sub>	J <sub>26</sub> X <sub>26</sub>	J <sub>26</sub> X <sub>26</sub>	J <sub>25</sub> X <sub>25</sub>	J <sub>22</sub> X <sub>22</sub>	J <sub>30</sub> X <sub>30</sub>	J <sub>24</sub> X <sub>24</sub>	J <sub>21</sub> X <sub>21</sub>		
LQ	E <sub>15</sub> S <sub>15</sub>	E	E	E	E	E	E	G	G	E <sub>23</sub> S <sub>23</sub>	G	G	G	G	G	G	E <sub>16</sub> S <sub>16</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>	E <sub>15</sub> S <sub>15</sub>		

NOV. 1971

FOES (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1971

FBES (0.1 MHZ)

135° E Mean Time (G. M. T. + 9h)

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	12	E	E	E	17	E	25	24	40	35	33	32	43	32	24	20	36	40	22	20	16	E	17	20											
2	E	E	E	E	E	E	E	15	G	23	25	G	G	29	28	G	G	E	17	E	E	17	E	17												
3	E	S	E	E	E	E	E	15	G	28	28	31	28	35	20	20	17	22	E	E	E	E	E	S	E	16										
4	E	S	E	E	E	S	E	15	20	20	30	25	22	G	G	29	G	20	18	19	20	A	20	19	E	S	13									
5	E	S	E	E	E	E	E	15	G	G	G	23	G	20	24	20	24	23	E	15	27	E	21	E	E											
6	E	S	E	E	E	E	S	15	G	G	G	G	G	G	G	G	G	19	E	19	22	E	18	E												
7	E	S	E	E	E	17	E	G	G	23	29	23	G	G	G	G	E	17	20	E	17	E	16	18	E	E	S	15								
8	E	S	E	E	E	E	E	S	G	G	G	40	33	27	G	G	E	S	18	E	20	E	S	16	E	S	14	E	S	14						
9	E	S	E	E	E	15	E	E	S	G	20	31	22	22	G	G	16	E	S	16	E	15	E	S	15	E	S	17	E	S	15					
10	E	S	17	24	16	15	E	E	S	G	G	30	24	G	G	G	23	25	19	22	20	E	S	15	E	S	14	E	S	16						
11	E	E	E	E	E	E	E	G	G	G	G	25	24	30	30	29	23	G	17	18	E	20	22	17	18											
12	16	E	E	E	E	E	S	G	26	31	31	33	31	30	20	23	38	18	E	S	E	S	15	E	E	E										
13	E	S	16	E	E	E	E	20	25	60	34	25	35	26	32	23	26	20	36	20	19	15	A	15												
14	E	E	E	E	E	E	E	21	26	23	30	27	G	29	20	18	17	E	E	15	E	17	17	E	S	16	E	S	15							
15	E	S	16	E	E	E	E	S	G	C	G	G	G	20	G	G	E	S	15	E	S	16	17	E	S	14	E	S	16	E	S	15				
16	E	S	E	E	S	C	E	E	F	G	G	27	33	G	G	G	C	E	E	S	15	E	S	16	C	16	16	18								
17	18	17	16	15	E	E	E	S	G	24	27	G	G	24	30	20	22	26	23	E	E	E	S	E	E	E	S	16								
18	E	S	E	E	S	E	E	E	S	G	G	G	G	25	28	18	G	17	15	E	S	E	S	E	E	E	S	15	E	S	15					
19	E	S	E	E	E	E	E	E	G	G	G	G	30	24	20	25	21	16	E	S	E	S	E	E	S	15	E	S	15	E	S	15				
20	E	14	E	E	E	E	E	S	G	G	G	30	G	24	G	C	C	E	S	16	E	S	15	E	E	E	S	16	E	S	15	E	S	15		
21	E	E	E	S	E	E	E	S	G	24	G	G	G	G	G	G	E	S	14	E	E	S	E	S	E	S	E	S	15	E	S	15	E	S	15	
22	E	S	E	E	E	E	S	F	G	G	G	30	23	25	20	G	G	E	S	16	E	E	E	S	C	E	E	S	E	S	15	E	S	15		
23	E	E	E	S	E	E	S	E	S	17	G	G	30	20	19	G	G	E	S	15	E	E	S	E	E	S	16	E	S	18	E	S	15			
24	E	S	E	E	S	E	E	C	C	C	C	22	20	G	G	G	16	E	E	E	E	S	15	E	S	15	E	S	14	E	S	16	E	S	15	
25	E	S	E	E	E	E	E	S	E	S	16	E	16	G	27	29	33	29	G	G	E	S	17	E	E	E	S	15	15	A	E	E	S	15		
26	E	S	E	S	C	E	S	C	C	C	C	G	G	G	30	22	G	G	G	19	18	20	E	S	16	E	E	E	E	E	E	E	E	E		
27	E	E	E	S	E	E	E	S	E	S	E	C	26	G	22	32	26	G	20	G	21	21	15	17	E	S	15	E	S	15	C	F	S	C		
28	E	S	C	E	E	E	S	C	C	C	C	G	G	G	E	C	E	C	31	E	C	43	G	E	S	16	C	E	S	17	C	20	C	E	E	
29	E	S	E	E	E	E	E	E	E	S	16	G	G	G	G	G	G	E	S	15	E	S	18	A	15	C	A	18								
30	A	C	E	E	S	C	E	C	G	G	C	C	C	C	C	C	C	C	C	20	E	S	15	E	E	E	S	13	E	S	15	E	S	15		
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	30	28	29	29	28	27	26	27	27	28	29	29	29	29	28	28	28	28	30	29	28	27	30	29												
MED	E	S	E	E	E	E	E	S	G	E	G	17	G	24	22	G	20	G	18	G	17	16	E	S	E	S	15	E	S	15	E	S	15	E	S	15
UQ	E	S	15	E	E	E	E	E	S	E	G	16	24	28	30	28	25	27	22	22	20	19	18	19	17	16	E	S	17	E	S	16	E	S	16	
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

NOV. 1971

FBES (0.1 MHZ)



# IONOSPHERIC DATA

NOV. 1971

F-MIN (0.1 MHZ)

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

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	E	E	E	E	E	E	E	E	12	11	13	12	15	12	E	11	E	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>17</sub>	E <sub>15</sub>
2	E <sub>15</sub>	E	E	E	E	E	E <sub>15</sub>	E	11	11	16	16	16	17	15	11	E <sub>13</sub>	E	E	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	E	E	E	E <sub>15</sub>	E	13	15	15	16	17	12	E	E	E	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>
4	E <sub>15</sub>	E	E	E	E <sub>16</sub>	E	E <sub>15</sub>	E	11	15	12	17	13	16	17	12	E	E <sub>15</sub>	E	E <sub>15</sub>	E	E	E <sub>15</sub>	E <sub>13</sub>
5	E <sub>16</sub>	E	E	E	E	E	E	E	11	15	15	15	11	E	12	E	12	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E <sub>15</sub>
6	E <sub>16</sub>	E	E	E	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	12	13	17	17	17	16	12	11	15	E <sub>15</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>
7	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	E	E	16	17	17	17	18	18	11	17	E <sub>17</sub>	E <sub>16</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
8	E <sub>16</sub>	E <sub>15</sub>	E	E	E	E	E <sub>15</sub>	E	16	17	16	21	18	17	16	12	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>
9	E <sub>18</sub>	E <sub>15</sub>	E	E	E	E	E <sub>15</sub>	E <sub>19</sub>	15	12	17	16	17	15	16	16	E	E <sub>16</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>17</sub>	E <sub>15</sub>
10	E <sub>14</sub>	E	E	E	E	E	E <sub>15</sub>	15	17	20	12	19	17	17	17	18	E	E <sub>16</sub>	E	E	E <sub>15</sub>	E	E <sub>14</sub>	E <sub>16</sub>
11	E	E <sub>14</sub>	E	E	E	E	E <sub>15</sub>	E	12	16	17	17	16	18	17	14	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	E	E
12	E	E	E	E	E	E	E <sub>18</sub>	E	E	11	16	17	17	16	11	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>16</sub>	E	E
13	E <sub>15</sub>	E	E	E	E	E	E	E	11	15	17	17	16	16	11	E	E	E	E <sub>16</sub>	E <sub>16</sub>	E	E	E <sub>15</sub>	E
14	E	E	E	E	E	E	E	E	E	15	15	19	17	16	12	12	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>17</sub>	E	E <sub>16</sub>	E <sub>15</sub>
15	E <sub>15</sub>	E	E	E	E	E	E <sub>17</sub>	E	C	16	17	17	17	20	16	17	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E	E <sub>14</sub>	E <sub>16</sub>	E <sub>15</sub>	E
16	E <sub>16</sub>	E	E <sub>15</sub>	C	E	E	E	E	11	14	16	17	17	18	16	13	C	E	E <sub>15</sub>	E <sub>16</sub>	C	E	E	E <sub>15</sub>
17	E <sub>11</sub>	E	E	E	E	E	E <sub>15</sub>	E	16	11	12	17	12	16	11	E	E	E	E <sub>15</sub>	E <sub>16</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>16</sub>
18	E <sub>16</sub>	E	E <sub>15</sub>	E	E	E	E <sub>16</sub>	E	11	11	12	16	17	17	11	11	E	E	E <sub>16</sub>	E <sub>16</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>
19	E <sub>14</sub>	E	E	E	E	E	E	E <sub>16</sub>	17	12	15	17	13	11	11	E	E	E	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	E	E	E	E	E <sub>15</sub>	E	11	11	12	13	11	12	C	C	E <sub>16</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>
21	E	E	E <sub>15</sub>	E	E	E	E <sub>15</sub>	E	12	11	11	13	12	15	15	15	E <sub>14</sub>	E	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	E	E	E	E <sub>15</sub>	E	E	11	18	17	11	16	12	12	14	E <sub>16</sub>	E	E	E <sub>15</sub>	C	E	E <sub>15</sub>	E <sub>16</sub>
23	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E	E <sub>16</sub>	E <sub>18</sub>	11	11	11	15	11	11	15	15	E	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E	E <sub>16</sub>	E <sub>18</sub>	E
24	E <sub>15</sub>	E	E <sub>16</sub>	E	E	C	C	C	C	16	17	17	17	18	17	12	E	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>16</sub>
25	E <sub>15</sub>	E	E	E	E	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	16	17	17	20	20	18	16	E <sub>21</sub>	E	E	E	E <sub>15</sub>	E	E	E <sub>16</sub>	E <sub>15</sub>
26	E <sub>15</sub>	E <sub>15</sub>	C	E <sub>15</sub>	C	C	C	C	16	19	19	17	18	20	18	17	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>16</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
27	E	E	E <sub>14</sub>	E	E	E	E <sub>16</sub>	E <sub>20</sub>	E <sub>26</sub>	18	20	19	17	20	16	15	E	E	E <sub>15</sub>	E	E <sub>15</sub>	C	E <sub>16</sub>	C
28	E <sub>15</sub>	C	E	E	E <sub>14</sub>	C	E <sub>15</sub>	C	C	C	18	20	29	E <sub>31</sub>	E <sub>43</sub>	17	E <sub>16</sub>	C	E <sub>17</sub>	C	E <sub>15</sub>	C	E <sub>17</sub>	E
29	E <sub>16</sub>	E	E	E	E	E	C	E <sub>16</sub>	16	17	18	18	20	20	17	15	E <sub>15</sub>	E <sub>15</sub>	E	E	E	C	E <sub>14</sub>	E <sub>16</sub>
30	E	C	E	E <sub>14</sub>	C	E <sub>15</sub>	C	E <sub>13</sub>	16	C	C	C	C	C	C	C	C	C	E	E <sub>15</sub>	E	E	E <sub>13</sub>	E <sub>15</sub>
31																								
CNT	30	28	29	29	28	27	26	27	27	28	29	29	29	29	28	28	28	28	30	29	28	27	30	29
MED	E <sub>15</sub>	E	E	E	E	E	E <sub>15</sub>	E	12	15	16	17	17	16	15	13	E	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>
UQ	E <sub>15</sub>	E <sub>14</sub>	E	E	E	E	E <sub>15</sub>	E <sub>14</sub>	16	17	17	17	17	18	16	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>
LQ	E <sub>11</sub>	E	E	E	E	E	E	E	11	12	12	16	13	15	11	E <sub>11</sub>	E	E	E	E <sub>15</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>

NOV. 1971

F-MIN (0.1 MHZ)

# IONOSPHERIC DATA

NOV. 1971

M(3000)F2 (0.01)

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

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	305	305	280	300	295	315	350	375	365	345	330	335	360	325	340	355	360	345	320	330	325	280	F	305 <sup>F</sup>		
2	F	295 <sup>F</sup>	300 <sup>F</sup>	315	305	310	350	350	365	345	340	335	345	320	360	345	355	325	360	330	310	315	290	295		
3	305	300	290 <sup>F</sup>	285 <sup>F</sup>	305 <sup>F</sup>	325	325	360	365	350	340	340	340	340	345	330	355	340	325	325	325	295	280	305		
4	280	280	305	305	330	330	340	375	360	355	325	340	360	335	335	345	340	340	325	340	A	290	295	285		
5	280	315	295	295	305 <sup>F</sup>	345	325	365	370	350	340	335	345	335	335	345	350	340	325	335	305	290	280	285		
6	280	290	285	305	305	320	330	350	365	340	330	340	340	335	350	350	345	335	310	320	305	310	320	300		
7	300	300	280 <sup>F</sup>	F	F	320	325	360	380	375	355	340	330	335	325	345	355	310	340	335	305	300	300	295		
8	290	285	290	300	300	300	335	360	370	345	355	355	340	335	325	350	355	320	325	325	310	300	300	295		
9	290	290	285	280	295	295	320	350	365	355 <sup>R</sup>	355	350	365	325	345	345	350	340	310	320	310	320	315 <sup>S</sup>	310		
10	285	300	290	F	F	F	F	355	360	345	345	365	345	360	355	350	345	350	335	325	325	305	F	F		
11	F	290 <sup>F</sup>	F	295 <sup>F</sup>	315	350	335	360	370	345	335	345	340	325	310	350	360	330	285	275	280	305	310	290		
12	290 <sup>F</sup>	280 <sup>F</sup>	270 <sup>F</sup>	270	290	355	315	340	345	345	330	335	340	310	345	360	315	335	305	325	305	305	275	290		
13	305	F	275 <sup>F</sup>	F	F	F	295	375	370	360	345	365	340	340	345	345	345	310	335	330	305	305	A	280 <sup>F</sup>		
14	295 <sup>F</sup>	F	F	295 <sup>F</sup>	F	F	F	340	360	R	335	340	325	340	330	370	340	310	315	325	320	285	305	275 <sup>S</sup>		
15	F	300 <sup>F</sup>	295	300	315	325	320	325	355 <sup>I</sup>	355	345	340	350	340	350	355	345	350	305	315	305	300	300	295		
16	280	295	320	300 <sup>I</sup>	290	335	315	355	360	365	330	350	325	340	335	355	C	320	335	305	C	315	295	290		
17	290	290	290	310	305	340	335	335	370	365	350	340	350	360	370	355	355	340	325	310	310	300	300	280		
18	290	295	305	305	305	315 <sup>S</sup>	325	370	355	360	330	310 <sup>H</sup>	350	345	350	350	350	340	295	295	295	295	285	285		
19	290	295	285	285	290	315	330	335	355	360	325	360	345	340	360	305	335	335	325	325	295	335	295	295		
20	285	285	300	290 <sup>S</sup>	300	305 <sup>U</sup>	335	355	360	340	350	365	355	315	C	C	335	335	325	300	300	305	280	285		
21	305	310	305	315	295	320	330 <sup>S</sup>	360	370	315	340	365	330	330	345	355	370	310	325	310	305	285	265	275 <sup>F</sup>		
22	275	290	315	310	330	330	295	345	365	350	360	330	350	360	340	360	345	290	350	315	C	320	290	285		
23	315	280	285	280	325	340	335 <sup>S</sup>	340	320	340	335	355	325	340	340	360	305	305	315	335	300	S	270	280		
24	280	S	S	S	360 <sup>F</sup>	C	C	C	C	335	315	345	350	325	340	340	315	315	340	310	F	290 <sup>F</sup>	F	285 <sup>F</sup>		
25	F	F	260 <sup>F</sup>	320	340 <sup>U</sup>	335	S	350	325	320	330	345	355	330	335	335	330	355	315	340	280	I <sup>A</sup>	265 <sup>A</sup>	290	300	
26	270	S	C	S	C	C	C	C	335	330	330	345	365	340	340	365	330	360	340	315	290	270	285	295		
27	295	280	285	285	290	300	335	C	C	345	350	350	345	360	340	335	360	330	315	335	305	I <sup>I</sup>	310	295	C	
28	285	I <sup>C</sup>	290	300	310	C	325	C	C	C	345	355	350	345	350	C	340	C	335	C	315	C	285	285		
29	280	295	305	320	300	315	C	345	365	365	350	325	325	345	345	365	345	320	315	I <sup>A</sup>	335	I <sup>C</sup>	300	I <sup>A</sup>	285	
30	A	C	300	310	C	C	C	S	365	C	C	C	C	C	C	C	C	C	C	310	345	330	320	280	290	
31																										
CNT	25	24	26	25	24	23	23	25	27	27	29	29	29	29	28	27	28	28	30	29	26	28	26	28		
MED	290	292	290	300	305	320	330	355	365	345	340	345	345	340	342	350	345	335	325	325	305	300	290	290		
UQ	295	300	300	310	315	335	335	360	368	358	350	355	350	340	350	355	355	340	335	335	315	310	300	295		
LQ	280	288	285	290	295	315	322	345	358	342	330	340	340	330	335	345	338	318	315	315	300	290	280	285		

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M(3000)F2 (0.01)



### IONOSPHERIC DATA

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M(3000)F1 (0.01)

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

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																								
5																								
6																								
7																								
8												L												
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19												U L		375										
20												U L												
21												390		375										
22														400										
23																								
24																								
25																								
26												L												
27																								
28																								
29																								
30											C	C	C	C	C	C	C							
31																								
CNT													3	2	1									
MED												U L	390	388	375									
UQ												390												
LQ												385												

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M(3000)F1 (0.01)

# IONOSPHERIC DATA

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

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

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													240											
2																								
3																								
4																								
5																								
6																								
7																								
8												250												
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19												250	225											
20												240												
21												245	250											
22													230											
23																								
24																								
25																								
26												240												
27																								
28																								
29																								
30										C	C	C	C	C	C	C								
31																								
CNT												5	3	1										
MED												245	240	225										
UQ												250	245											
LQ												240	235											

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

### IONOSPHERIC DATA

NOV. 1971

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

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

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	290	290	275	275	250	215	210	220	220	225	235	225	240	220	225	215	235	A	240	250	295	280	270	
2	270	270	270	270	260	210	220	225	220	215	205	215	210	225	230	225	215	200	215	230	245	275	280	300	
3	290	275	270	270	265	215	215	210	215	200	190	230	225	220	220	230	215	210	230	230	240	280	300	295	
4	300	305	270	260	245	200	230	215	215	210	210	230	225	205	245	225	220	205	230	240	A	320	290	300	
5	305	260	260	290	270	210	225	215	215	215	195	225	220	220	230	225	210	215	220	250	260	305	310	300	
6	305	290	275	265	270	200	235	210	220	210	205	225	205	225	230	220	210	205	210	240	265	250	245	250	
7	270	275	295	285	270	225	220	210	210	210	200	190	215	210	230	220	210	220	215	225	250	265	250	270	
8	285	280	260	275	260	250	220	210	210	210	225	195	220	225	225	215	215	225	225	250	260	275	255	260	
9	285	280	290	300	270	250	205	215	210	215	215	220	225	220	225	220	210	210	215	245	260	250	245	275	
10	270	250	290	265	260	215	220	200	210	210	200	230	225	225	235	225	210	215	250	255	240	270	270	310	
11	300	285	280	275	250	220	225	215	210	210	205	240	200	240	240	220	205	205	300	300	335	300	265	305	
12	300	285	300	325	275	205	240	205	220	225	230	245	225	220	225	220	245	A	210	220	230	250	260	295	310
13	280	275	270	260	225	200	225	210	220	A	210	230	225	215	235	230	205	220	A	230	250	260	A	300	
14	300	290	275	305	260	205	190	205	220	205	215	205	200	220	215	225	215	200	225	220	225	250	290	295	300
15	300	290	260	250	250	220	220	205	I <sup>C</sup> 205	I <sup>C</sup> 225	210	200	225	225	230	220	205	200	250	250	270	295	300	300	
16	295	275	250	I <sup>C</sup> 255	270	230	250	220	220	205	240	215	225	230	230	220	C	220	245	250	C	265	275	290	
17	315	295	295	275	270	215	240	205	205	210	220	220	200	230	225	220	215	225	250	250	275	280	275	310	
18	300	290	275	275	260	235	245	220	210	225	220	220	235	225	220	205	215	220	260	260	255	275	300	300	
19	285	280	290	285	275	220	215	220	215	210	225	205	225	215	230	210	215	215	225	240	270	245	265	310	
20	290	305	275	295	270	230	225	215	220	230	240	240	230	210	C	C	205	220	235	250	250	265	325	305	
21	275	270	290	250	300	260	225	205	210	195	235	200	225	240	235	215	200	250	240	245	250	275	360	320	
22	325	280	250	235	220	250	270	220	220	225	220	215	210	210	245	220	210	220	225	245	C	250	290	295	
23	270	305	320	305	250	225	205	245	220	225	225	225	220	220	230	220	225	220	230	240	230	205	300	315	
24	325	310	285	220	220	C	C	C	C	220	215	225	220	205	235	220	225	210	215	225	260	295	315	310	
25	275	300	300	250	205	225	220	215	220	220	210	230	220	210	225	230	225	205	220	225	315	I <sup>A</sup> 360	310	300	
26	345	300	C	270	C	C	C	C	235	220	230	225	225	210	245	220	220	210	225	250	265	370	315	305	
27	300	300	300	285	280	260	240	220	215	210	220	240	230	220	230	210	210	230	240	230	300	I <sup>C</sup> 275	300	C	
28	320	I <sup>C</sup> 290	280	295	265	C	245	C	C	C	215	230	225	235	E <sup>C</sup> 250	220	205	C	225	C	290	C	310	325	
29	305	270	245	255	250	245	C	210	210	220	220	245	225	225	220	215	205	245	260	I <sup>A</sup> 260	250	I <sup>C</sup> 275	I <sup>A</sup> 325	340	
30	A	C	280	275	C	230	C	220	210	C	C	C	C	C	C	C	C	C	C	300	250	235	270	325	325
31																									
CNT	29	29	29	30	28	27	26	27	28	27	29	29	29	29	28	28	28	28	28	28	29	27	29	29	29
MED	300	285	280	275	262	225	225	215	215	215	215	225	225	220	230	220	210	218	228	245	255	275	295	300	
UQ	305	295	290	285	270	240	240	220	220	220	225	230	225	225	235	225	215	222	248	250	268	295	310	310	
LQ	280	275	270	260	250	212	220	210	210	210	205	215	220	215	225	218	205	210	220	230	250	265	275	295	

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

IONOSPHERIC DATA

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

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

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	100	100	E	110	E	110	E	110	110	105	105	100	100	100	100	105	105	110	110	110	105	S	100																										
2	100	E	E	E	E	E	S	100	105	110	G	110	G	105	105	G	120	E	105	105	105	100	100	105																									
3	S	S	E	E	E	E	S	G	110	110	105	105	100	100	100	100	100	100	110	S	100	105	S	S																									
4	S	100	E	E	S	E	S	110	110	105	105	105	G	G	100	G	100	100	105	110	105	110	100	S																									
5	S	E	E	E	E	E	S	G	G	115	105	G	100	100	100	100	100	100	S	110	105	105	105	100																									
6	S	E	E	100	100	S	S	G	105	G	G	G	G	G	105	G	125	110	110	110	105	105	105	105																									
7	S	S	S	S	E	100	E	G	110	105	105	G	G	G	G	G	S	100	S	105	S	100	100	S																									
8	S	S	E	E	E	E	S	G	115	120	110	105	105	105	G	100	S	115	115	110	S	S	S	S																									
9	S	S	E	100	100	E	S	170	105	100	100	100	100	G	G	G	105	S	S	105	S	S	S	S																									
10	S	100	100	100	100	100	S	G	G	110	110	G	G	G	G	100	100	100	100	100	S	E	S	S																									
11	E	100	E	E	E	E	100	G	G	G	105	105	105	105	105	105	G	110	105	115	110	105	100	100																									
12	100	E	E	E	E	E	S	G	105	105	105	105	100	100	100	100	100	100	S	S	S	105	E	E																									
13	S	105	E	E	E	E	E	110	110	105	105	100	100	100	100	100	100	110	110	105	105	105	100	110																									
14	105	100	100	100	E	E	E	105	105	110	105	105	105	100	105	100	115	110	S	E	S	110	S	S																									
15	S	100	105	E	100	E	S	G	C	G	120	G	100	G	G	G	S	S	S	105	S	S	S	S																									
16	S	E	S	C	E	E	E	G	G	110	110	G	G	105	110	145	C	E	S	S	C	105	105	105																									
17	105	105	100	100	E	E	S	G	110	110	115	120	110	110	105	105	100	100	100	100	S	115	100	S																									
18	S	E	S	E	E	105	S	G	G	G	G	120	110	110	100	G	105	105	S	S	E	E	S	S																									
19	S	E	E	E	E	E	E	G	120	120	110	110	110	105	100	100	110	100	S	S	100	S	S	S																									
20	105	105	100	100	E	E	S	145	G	125	115	G	105	G	C	C	S	S	E	S	E	S	S	S																									
21	E	E	S	E	E	E	S	G	115	G	110	G	G	G	G	G	S	E	S	S	S	120	S	S																									
22	S	E	E	E	105	S	E	G	115	G	110	110	110	105	G	G	S	E	E	S	C	E	S	105																									
23	100	100	S	E	S	E	S	S	110	135	G	105	100	100	G	G	100	S	100	S	E	S	S	E																									
24	S	E	S	E	E	C	C	C	C	110	110	G	G	G	G	G	105	100	100	E	S	S	S	S																									
25	S	E	E	E	E	S	S	S	G	110	110	105	105	G	G	S	105	E	E	S	110	110	110	S																									
26	S	S	C	S	C	C	C	C	G	G	115	105	105	G	G	G	100	115	115	S	E	105	105	105																									
27	105	105	S	E	E	E	S	S	C	105	105	105	105	G	105	105	100	100	S	E	S	C	S	S																									
28	S	C	E	E	S	C	S	C	C	C	G	G	G	C	C	135	S	C	S	C	100	C	100	E																									
29	S	E	E	E	E	E	C	S	G	150	G	140	G	120	G	G	S	S	105	105	105	C	120	105																									
30	105	C	E	S	C	105	C	G	G	C	C	C	C	C	C	C	C	C	105	S	E	E	S	S																									
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	9	11	5	7	5	5	1	7	16	21	23	19	19	16	15	14	19	18	15	14	12	16	13	10																									
MED	105	100	100	100	100	105	100	110	110	110	110	105	105	105	100	100	100	100	105	105	105	105	100	105																									
UQ	105	105	100	100	100	105		128	112	115	110	110	105	105	105	105	105	110	110	110	108	110	105	105																									
LQ	100	100	100	100	100	100		108	105	105	105	105	100	100	100	100	100	100	102	105	102	105	100	100																									

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

### IONOSPHERIC DATA

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TYPES OF ES

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

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 <sub>1</sub>	F <sub>1</sub>		F <sub>1</sub>		F <sub>2</sub>		F <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>	F <sub>3</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>		F <sub>1</sub>			
2	F <sub>1</sub>							F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>		F <sub>1</sub>		F <sub>2</sub>	F <sub>2</sub>		F <sub>1</sub>		F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>		
3								F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>		F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>		F <sub>1</sub>	F <sub>1</sub>					
4		F <sub>1</sub>						F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>			F <sub>2</sub>		F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>4</sub>	F <sub>2</sub>	F <sub>2</sub>			
5									F <sub>1</sub>	F <sub>1</sub>			F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>		F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>		
6				F <sub>1</sub>				F <sub>1</sub>							F <sub>1</sub>		F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>		
7						F <sub>1</sub>		F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>								F <sub>1</sub>		F <sub>1</sub>		F <sub>2</sub>	F <sub>2</sub>			
8								F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>							
9				F <sub>1</sub>	F <sub>1</sub>			H	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>		F <sub>1</sub>	F <sub>1</sub>						
10		F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>	F <sub>1</sub>					F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>						
11		F <sub>1</sub>					F <sub>1</sub>			F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>		
12	F <sub>1</sub>							F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>3</sub>	F <sub>1</sub>				F <sub>1</sub>				
13		F <sub>1</sub>						F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>		
14	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>2</sub>				
15		F <sub>1</sub>	F <sub>1</sub>		F <sub>1</sub>						F <sub>1</sub>		F <sub>1</sub>								F <sub>2</sub>					
16									F <sub>1</sub>	F <sub>1</sub>			F <sub>1</sub>	F <sub>1</sub>	H								F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	
17	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>3</sub>	F <sub>1</sub>	F <sub>1</sub>			F <sub>1</sub>	F <sub>1</sub>			
18						F <sub>1</sub>						F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>			F <sub>2</sub>	F <sub>1</sub>								
19									F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>					
20	F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>			H		F <sub>1</sub>	F <sub>1</sub>		F <sub>1</sub>														
21									F <sub>1</sub>		F <sub>1</sub>												F <sub>1</sub>			
22					F <sub>1</sub>				F <sub>1</sub>		F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>										F <sub>1</sub>		
23	F <sub>1</sub>	F <sub>1</sub>						F <sub>1</sub>	H		F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>		F <sub>1</sub>							
24									F <sub>1</sub>	F <sub>1</sub>							F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>							
25									F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>					F <sub>1</sub>					F <sub>1</sub>	F <sub>3</sub>	F <sub>1</sub>		
26										F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>					F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>				F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	
27	F <sub>1</sub>	F <sub>1</sub>							F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>			F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>								
28																H						F <sub>1</sub>		F <sub>1</sub>		
29									H		H			F <sub>1</sub>					F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>		F <sub>3</sub>	F <sub>1</sub>		
30	F <sub>2</sub>					F <sub>1</sub>														F <sub>2</sub>						
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																										
MED																										
UQ																										
LQ																										

NOV. 1971

TYPES OF ES

# IONOSPHERIC DATA

NOV. 1971

FOF2 (0.1 MHz)

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

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	35	37	38	37	36	35	46	71	79	83	84	99	107	81	83	83	78	60	48	46	39	I <sub>A</sub> <sup>37</sup>	36	36		
2	35	36	36	37	39	38	47	71	89	94	84	101	91	86	83	87	79	62	42	37	35	33	34	33		
3	35	36	37	37	37	37	46	70	83	76	87	106	103	97	80	74	84	67	39	40	33	28	30	32		
4	33	33	35	35	37	33	41	70	83	84	88	97	105	99	92	88	78	61	41	I <sub>A</sub> <sup>35</sup>	27	31	33	35		
5	35	37	37	33	36	38	39	71	91	88	91	101	101	96	91	87	81	I <sub>A</sub> <sup>59</sup>	43	42	33	33	36	35		
6	36	38	39	38	37	37	43	78	89	88	96	103	102	100	89	82	74	67	52	43	43	46	42	39		
7	41	43	42	42	39	39	48	78	89	90	88	99	90	94	87	93	78	56	57	50	37	37	41	38		
8	38	40	41	39	42	39	47	72	87	97	89	96	91	96	90	91	70	50	47	44	43	41	39	37		
9	36	38	37	37	41	36	49	73	97	86	93	90	95	89	86	85	72	63	39	41	37	38	38	38		
10	37	36	38	39	41	45	40	67	69	78	79	97	92	90	74	83	65	47	38	33	33	31	32	33		
11	33	34	35	34	36	38	39	69	71	84	91	81	85	89	98	101	73	43	34	36	36	39	43	41		
12	36	38	39	38	41	38	36	70	76	90	104	96	101	104	92	80	65	50	48	43	32	33	33	32		
13	33	36	36	40	44	33	35	70	89	88	I <sub>R</sub> <sup>95</sup>	96	H <sub>86</sub>	86	86	83	84	50	47	37	32	I <sub>A</sub> <sup>30</sup>	31	31		
14	31	32	33	33	36	36	33	58	68	96	93	87	75	86	85	80	71	39	36	37	33	28	30	32		
15	33	33	35	35	37	36	36	64	74	76	93	78	73	89	78	74	64	43	30	30	33	28	31	32		
16	32	35	34	32	32	29	33	57	79	73	73	79	86	93	82	76	57	41	35	33	31	I <sub>R</sub> <sup>34</sup>	33	34		
17	33	34	35	37	39	36	33	63	87	80	77	78	85	94	87	78	68	35	34	32	29	31	I <sub>R</sub> <sup>31</sup>	32		
18	31	35	36	36	38	34	34	64	78	74	81	85	77	102	82	70	67	45	28	33	37	35	34	33		
19	35	35	36	36	38	38	33	58	72	75	83	84	H <sub>84</sub>	90	86	72	56	46	38	39	33	37	33	35		
20	36	35	38	37	42	42	33	57	76	73	86	103	87	74	81	80	61	39	38	35	33	34	32	34		
21	37	37	37	37	36	35	41	63	68	72	88	103	81	83	78	74	63	36	37	41	39	27	29	28		
22	31	33	35	33	28	26	31	68	83	82	87	91	85	85	H <sub>78</sub>	H <sub>74</sub>	66	45	51	48	34	32	29	31		
23	31	30	31	31	34	28	31	H <sub>51</sub>	81	84	104	112	H <sub>85</sub>	83	80	81	65	57	46	45	49	31	24	28		
24	32	32	35	36	21	21	27	60	85	89	89	119	R <sub>97</sub>	76	76	77	66	62	41	27	28	25	29	30		
25	31	32	33	32	35	S <sub>19</sub>	25	62	79	94	96	105	102	88	80	76	84	57	46	34	29	24	27	29		
26	29	30	31	36	21	24	29	71	87	104	95	104	104	89	79	82	76	57	38	29	24	26	27	30		
27	31	32	31	31	32	32	34	65	75	81	84	88	89	96	88	68	62	43	42	46	30	28	28	30		
28	31	33	33	31	36	32	30	64	65	83	82	80	90	H <sub>85</sub>	93	92	58	37	35	39	31	26	27	29		
29	32	34	32	30	28	26	31	66	67	63	83	83	79	78	89	I <sub>C</sub> <sup>70</sup>	C	C	C	C	31	26	26	27		
30	29	31	31	33	30	29	29	57	74	77	88	R <sub>95</sub>	R <sub>93</sub>	88	H <sub>76</sub>	78	64	35	33	28	28	26	26	27		
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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	30	30		
MED	33	35	36	36	36	36	34	66	79	84	88	96	90	89	84	80	68	50	39	37	33	31	32	32		
UQ	36	37	37	37	39	38	41	71	87	89	93	103	101	96	89	85	78	59	46	43	37	35	34	35		
LQ	31	33	33	33	34	29	31	62	74	76	84	85	85	85	80	74	64	43	36	33	31	28	29	30		

The Radio Research Laboratories, Japan

NOV. 1971

FOF2 (0.1 MHz)



### IONOSPHERIC DATA

NOV. 1971

FOF1 (0.01 MHz)

135° E Mean Time (G. M. T. + 9h)

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									L	L	U L 410 440		L	L	L									
2									L	L	L	410	L	L	L									
3										L	L	L	450	U L 440	L									
4										L	L	H 490	L	L	L									
5										L	L	440	L	L	A									
6										L	400	440	L	L	L									
7										L	L	L	L	L	L									
8										L	L	U L 460	L	410	L									
9										L	L	L	L	L	L									
10										L	L	450	L	L	L									
11										L	L	L	L	L	L									
12										L	440	L	L	L	L									
13									L	L	L	L	L	L	U L 450									
14										400	L	L	L	L	L									
15										L	L	L	L	L	L									
16										L	L	420	410	L	L									
17										L	U L 410	430	440	L	L									
18										L	L	L	L	A	L									
19										L	410	L	410	L	L									
20										L	U L 460	410	L	L	H 430									
21										L	U L 450	L	L	L	L									
22											330	360	L	L	L									
23												L	410	L										
24											360	L	L	L	L	320								
25										L	L	350	L	L	380									
26										L	L	L	H 440	L	L									
27										L	L	L	L	L										
28										L	L	L	L	L	L									
29										L	L	L	L	L	L									
30											L	L	L	L										
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	9	10	6	3	3									
MED										360	410	440	425	410	430									
UQ										380	U L 440	450	440	425	440									
LQ										345	400	420	410	395	375									

NOV. 1971

FOF1 (0.01 MHz)

IONOSPHERIC DATA

NOV. 1971

FOE (0.01 MHz)

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

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	A	I <sup>A</sup> <sub>265</sub>	A	A	A	I <sup>A</sup> <sub>315</sub>	A	A	A									
2							S		215	265	I <sup>A</sup> <sub>295</sub>	A	A	320	325	330	320	A	A	A					
3							S		215	I <sup>A</sup> <sub>270</sub>	I <sup>A</sup> <sub>300</sub>	A	A	315	325	A	A	A	A	A					
4							S		220	265	300	315	325	330	325	300	260	195							
5							S		220	270	310	315	325	335	325	I <sup>A</sup> <sub>290</sub>	I <sup>A</sup> <sub>250</sub>	A							
6							S	I <sup>A</sup> <sub>215</sub>	I <sup>A</sup> <sub>265</sub>	300	315	320	330	330	295	250	195								
7							S		215	265	305	315	320	330	325	A	A	A							
8							S		215	265	300	I <sup>A</sup> <sub>315</sub>	I <sup>A</sup> <sub>320</sub>	330	330	305	265	195							
9							S		215	A	A	A	A	A	A	295	245	A							
10							S		215	270	I <sup>B</sup> <sub>300</sub>	320	325	330	325	295	250	A							
11									210	265	305	315	325	335 <sup>R</sup>	320	I <sup>A</sup> <sub>300</sub>	260	190							
12							S		205	A	A	A	320	330	320	290	250	A							
13									205	A	A	320	325	330	315	I <sup>A</sup> <sub>290</sub>	250	185							
14									220	265	I <sup>A</sup> <sub>300</sub>	I <sup>A</sup> <sub>315</sub>	I <sup>A</sup> <sub>320</sub>	330	315	285	A	A							
15									210	265	300	315	325	I <sup>A</sup> <sub>330</sub>	325	300	245	B							
16									210	260	300	315	325	I <sup>A</sup> <sub>330</sub>	315	A	A	A							
17									205	A	A	A	A	A	A	A	240	A							
18									200	I <sup>A</sup> <sub>260</sub>	A	A	A	A	A	285	245	A							
19									205	260	295	I <sup>A</sup> <sub>310</sub>	I <sup>A</sup> <sub>320</sub>	325	305	280	230	B							
20									195	255	295	310	320	330	310	270	235	A							
21									205	265	295	315	325	330	310	275	235	165							
22									200	255	290	300	305	310	295	265	240	B							
23									170	235	280	300	315	I <sup>A</sup> <sub>315</sub>	300	275	250	185							
24									195	245	275	300	305	315	290	260	210	S							
25									210	250	I <sup>A</sup> <sub>275</sub>	290	305	310	285	260	210	B							
26								B		230	290	300	310	315	315	290	245	A							
27									185	I <sup>A</sup> <sub>250</sub>	290	305	315	325	315	285	240	170							
28									195	250	290	I <sup>A</sup> <sub>305</sub>	320	325	320	300	260	B							
29								B		250	295	310	I <sup>A</sup> <sub>320</sub>	C	A	305	I <sup>C</sup> <sub>250</sub>	C							
30									200	260	290	305	320	I <sup>A</sup> <sub>325</sub>	320	300	260	200							
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								27	26	25	25	26	24	25	25	25	9								
MED								210	262	295	315	320	330	315	290	250	190								
UQ								215	265	300	315	325	330	325	300	250	195								
LQ								200	250	290	305	320	325	310	280	240	185								

The Radio Research Laboratories, Japan

NOV. 1971

FOE (0.01 MHz)



IONOSPHERIC DATA

NOV. 1971

FOES (0.1 MHz)

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

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	J <sub>22</sub>	J <sub>18</sub>	J <sub>20</sub>	E <sub>14</sub>	J <sub>24</sub>	J <sub>26</sub>	J <sub>34</sub>	J <sub>38</sub>	J <sub>28</sub>	J <sub>28</sub>	J <sub>36</sub>	J <sub>44</sub>	J <sub>35</sub>	J <sub>34</sub>	J <sub>28</sub>	27	23	J <sub>20</sub>	J <sub>26</sub>	J <sub>44</sub>	J <sub>44</sub>	J <sub>60</sub>	J <sub>46</sub>	J <sub>54</sub>
2	J <sub>29</sub>	J <sub>43</sub>	J <sub>23</sub>	E <sub>14</sub>	J <sub>17</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	J <sub>33</sub>	G	G	G	G	J <sub>31</sub>	J <sub>26</sub>	J <sub>24</sub>	J <sub>36</sub>	E <sub>14</sub>	E <sub>13</sub>	J <sub>18</sub>	J <sub>18</sub>	J <sub>18</sub>	J <sub>27</sub>
3	J <sub>24</sub>	J <sub>20</sub>	E <sub>14</sub>	J <sub>18</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	G	J <sub>28</sub>	35	J <sub>27</sub>	J <sub>31</sub>	J <sub>39</sub>	J <sub>62</sub>	J <sub>39</sub>	J <sub>35</sub>	J <sub>28</sub>	J <sub>39</sub>	J <sub>39</sub>	J <sub>43</sub>	J <sub>23</sub>	J <sub>18</sub>	E <sub>12</sub>	J <sub>19</sub>
4	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	J <sub>28</sub>	G	J <sub>28</sub>	G	G	G	J <sub>29</sub>	G	G	E <sub>14</sub>	J <sub>26</sub>	J <sub>49</sub>	J <sub>40</sub>	J <sub>28</sub>	J <sub>28</sub>	J <sub>23</sub>
5	J <sub>26</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	J <sub>28</sub>	J <sub>33</sub>	J <sub>30</sub>	G	G	J <sub>28</sub>	J <sub>54</sub>	J <sub>37</sub>	J <sub>30</sub>	J <sub>74</sub>	J <sub>64</sub>	J <sub>29</sub>	J <sub>44</sub>	J <sub>53</sub>	J <sub>41</sub>	J <sub>34</sub>
6	J <sub>25</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>14</sub>	J <sub>25</sub>	J <sub>33</sub>	G	G	G	G	G	G	J <sub>27</sub>	G	E <sub>14</sub>	E <sub>14</sub>	J <sub>28</sub>	J <sub>26</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>30</sub>
7	J <sub>29</sub>	J <sub>23</sub>	J <sub>23</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	G	30	G	J <sub>38</sub>	G	G	J <sub>37</sub>	J <sub>36</sub>	J <sub>40</sub>	J <sub>38</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
8	J <sub>23</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	36	32	33	J <sub>46</sub>	G	G	G	G	23	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
9	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	28	33	33	36	J <sub>57</sub>	J <sub>44</sub>	G	G	23	J <sub>28</sub>	J <sub>28</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
10	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	G	G	E <sub>33</sub>	G	G	J <sub>27</sub>	J <sub>40</sub>	G	G	23	J <sub>40</sub>	J <sub>19</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
11	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	G	G	G	G	G	34	G	G	J <sub>25</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
12	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>24</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	28	J <sub>31</sub>	J <sub>34</sub>	29	G	G	G	30	J <sub>36</sub>	J <sub>28</sub>	E <sub>14</sub>	J <sub>38</sub>	J <sub>25</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>26</sub>
13	J <sub>19</sub>	J <sub>28</sub>	J <sub>23</sub>	J <sub>14</sub>	J <sub>18</sub>	E <sub>14</sub>	E <sub>12</sub>	G	J <sub>39</sub>	37	J <sub>32</sub>	J <sub>29</sub>	G	J <sub>38</sub>	J <sub>43</sub>	J <sub>26</sub>	J <sub>23</sub>	E <sub>14</sub>	J <sub>36</sub>	J <sub>24</sub>	J <sub>37</sub>	J <sub>40</sub>	J <sub>39</sub>	E <sub>12</sub>
14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	J <sub>28</sub>	J <sub>44</sub>	J <sub>41</sub>	J <sub>46</sub>	36	37	33	34	J <sub>37</sub>	J <sub>28</sub>	J <sub>24</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
15	J <sub>25</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	G	G	G	34	G	34	G	G	G	E <sub>19</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
16	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	G	G	G	35	36	34	J <sub>26</sub>	J <sub>24</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	J <sub>24</sub>	J <sub>29</sub>	J <sub>26</sub>	J <sub>18</sub>
17	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>25</sub>	J <sub>17</sub>	E <sub>14</sub>	E <sub>12</sub>	G	33	32	J <sub>40</sub>	J <sub>43</sub>	J <sub>45</sub>	J <sub>37</sub>	J <sub>38</sub>	27	27	J <sub>36</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>26</sub>	J <sub>20</sub>
18	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	28	J <sub>32</sub>	J <sub>36</sub>	36	J <sub>39</sub>	J <sub>58</sub>	J <sub>39</sub>	J <sub>29</sub>	J <sub>20</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
19	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	39	J <sub>58</sub>	34	J <sub>38</sub>	G	G	28	E <sub>18</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>
20	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>12</sub>	G	G	G	33	G	G	G	G	J <sub>26</sub>	J <sub>19</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>
21	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	G	G	G	G	G	G	G	G	G	G	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
22	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E	E	E	E <sub>15</sub>	G	27	30	G	34	G	G	G	G	E <sub>19</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
23	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	G	38	35	J <sub>43</sub>	J <sub>29</sub>	G	G	G	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>
24	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	M <sub>17</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	G	G	28	G	G	J <sub>35</sub>	G	G	22	J <sub>24</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>21</sub>	E <sub>13</sub>
25	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	30	29	G	J <sub>31</sub>	J <sub>28</sub>	G	G	E <sub>17</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>17</sub>	E <sub>18</sub>	J <sub>28</sub>
26	J <sub>24</sub>	J <sub>18</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>18</sub>	G	G	33	G	G	G	31	G	J <sub>35</sub>	J <sub>29</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>30</sub>
27	J <sub>18</sub>	J <sub>26</sub>	J <sub>28</sub>	M <sub>20</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	G	J <sub>40</sub>	G	G	G	G	35	G	G	G	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>14</sub>	J <sub>20</sub>	E <sub>14</sub>	E <sub>14</sub>
28	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E	E <sub>13</sub>	E <sub>14</sub>	G	G	G	34	36	37	34	G	G	E <sub>19</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
29	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>18</sub>	G	32	35	44	J <sub>48</sub>	J <sub>42</sub>	G	C	C	C	C	C	J <sub>24</sub>	J <sub>19</sub>	J <sub>24</sub>	J <sub>26</sub>
30	J <sub>19</sub>	J <sub>18</sub>	J <sub>18</sub>	E <sub>14</sub>	J <sub>18</sub>	E <sub>14</sub>	J <sub>18</sub>	G	G	G	34	34	34	G	G	G	G	J <sub>18</sub>	E <sub>14</sub>	E <sub>14</sub>	J <sub>23</sub>	J <sub>18</sub>	E <sub>14</sub>	E <sub>14</sub>
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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	30	30	30
MED	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	30	32	29	29	E <sub>28</sub>	G	22	23	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
UQ	J <sub>23</sub>	J <sub>18</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	J <sub>28</sub>	33	34	36	J <sub>37</sub>	J <sub>37</sub>	J <sub>34</sub>	J <sub>27</sub>	J <sub>24</sub>	J <sub>28</sub>	J <sub>19</sub>	E <sub>14</sub>	J <sub>24</sub>	J <sub>18</sub>	J <sub>21</sub>	J <sub>23</sub>
LQ	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	G	G	G	G	G	G	G	G	G	E <sub>17</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>

NOV. 1971

FOES (0.1 MHz)

IONOSPHERIC DATA

NOV. 1971

FBES (0.1 MHZ)

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

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	20	E	19	E <sub>14</sub> <sup>S</sup>	E	20	33	35	28	25	32	37	35	33	25	27	22	E	21	21	23	A	29	27
2	20	30	21	E <sub>14</sub> <sup>S</sup>	15	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	32	G	G	G	G	31	26	24	22	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	18	E	E	20
3	20	18	E <sub>14</sub> <sup>S</sup>	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	28	31	25	30	35	35	31	29	21	36	20	24	19	E	E <sub>14</sub> <sup>S</sup>	19
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>	E <sub>14</sub> <sup>S</sup>	G	21	G	23	G	G	G	24	G	G	E <sub>14</sub> <sup>S</sup>	19	A	21	E	19	18
5	E	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	25	27	26	G	G	25	45	32	30	A	30	21	20	30	20	22
6	E	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>	24	31	G	G	G	G	G	G	23	G	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	20	19	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	19
7	23	20	20	19	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	29	G	G	G	30	29	31	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>
8	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>	G	32	32	33	36	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>	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>	E <sub>14</sub> <sup>S</sup>	G	28	32	33	36	44	40	G	G	20	18	18	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>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>	G	G	E <sub>33</sub>	G	G	21	24	G	G	21	26	18	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>	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	32	G	G	24	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>
12	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	28	31	34	29	G	G	G	27	29	21	E <sub>14</sub> <sup>S</sup>	20	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E
13	E	21	19	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	29	32	28	28	G	25	31	20	17	E <sub>14</sub> <sup>S</sup>	18	E	25	A	24	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>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	21	31	34	37	36	36	31	32	29	19	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>
15	E	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	34	G	G	G	E <sub>19</sub>	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	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>	E <sub>14</sub> <sup>S</sup>	G	G	G	G	G	35	36	33	26	19	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	28	E	E
17	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	21	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	30	31	33	38	37	35	38	27	24	24	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
18	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>	G	28	31	33	34	36	58	G	20	19	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>
19	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>	G	G	37	32	33	29	G	G	27	E <sub>18</sub>	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>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>
20	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>	E <sub>14</sub> <sup>S</sup>	G	G	G	33	G	G	G	G	21	19	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>	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>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>	G	G	G	G	G	G	G	G	G	G	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>	E <sub>14</sub> <sup>S</sup>
22	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E	E	E	E <sub>15</sub> <sup>S</sup>	G	G	30	G	U <sub>34</sub>	G	G	G	G	E <sub>19</sub>	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>
23	E <sub>14</sub> <sup>S</sup>	E	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	38	35	33	29	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>15</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>14</sub> <sup>S</sup>	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	G	G	G	G	G	30	G	G	19	19	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	E <sub>13</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>	E <sub>14</sub> <sup>S</sup>	G	G	29	27	G	26	24	G	G	E <sub>17</sub>	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>17</sub>	E <sub>18</sub>	E
26	19	E	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>18</sub>	G	G	31	G	G	G	30	G	25	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>	19
27	E	19	20	E	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	G	27	G	G	G	G	35	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>	19	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>
28	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>	E	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	G	33	35	36	34	G	G	E <sub>19</sub>	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>
29	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>18</sub>	G	32	35	39	42	39	G	C	C	C	C	C	E	E	19	18
30	E	E	16	E <sub>14</sub> <sup>S</sup>	18	E <sub>14</sub> <sup>S</sup>	E	G	G	G	34	34	34	G	G	G	G	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>
31																								
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	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>	E <sub>14</sub> <sup>S</sup>	G	G	26	30	28	24	E <sub>24</sub>	G	G	19	19	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>	E <sub>14</sub> <sup>S</sup>	G	28	31	33	35	35	35	31	27	22	22	18	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>18</sub>	18
LQ	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>	E <sub>14</sub> <sup>S</sup>	G	G	G	G	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>	E <sub>14</sub> <sup>S</sup>

The Radio Research Laboratories, Japan

NOV. 1971

FBES (0.1 MHZ)

# IONOSPHERIC DATA

NOV. 1971

F-MIN (0.1 MHZ)

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

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>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	15	14	17	14	15	15	14	15	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
2	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	14	15	14	14	18	16	16	17	18	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
3	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	17	18	14	18	17	14	14	13	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
4	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	14	14	14	14	14	17	17	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
5	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	16	18	18	18	14	14	14	14	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
6	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	17	15	17	18	16	14	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>
7	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	15	16	15	18	18	18	19	14	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
8	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	15	17	18	18	18	18	17	16	16	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
9	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	17	18	20	16	20	18	19	15	14	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
10	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	16	33	19	21	19	19	18	19	16	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
11	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	15	17	19	19	18	18	20	17	15	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
12	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	17	17	18	18	18	18	16	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
13	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	15	15	17	18	15	14	15	14	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	14	17	15	18	18	15	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
15	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	16	16	18	20	19	19	17	19	17	19	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
16	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	17	15	15	16	17	19	18	16	14	14	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
17	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	17	14	18	18	18	16	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
18	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	15	17	16	18	19	16	14	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
19	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	16	15	14	18	18	18	15	16	14	18	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>
20	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	14	17	15	15	14	17	14	15	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>
21	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	15	15	14	18	15	18	14	15	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
22	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E	E	E	E <sub>13</sub>	17	15	18	17	21	19	20	18	16	19	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
23	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	16	15	16	17	16	18	15	17	19	15	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>
24	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	17	15	16	17	18	18	18	18	17	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>
25	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	17	16	19	18	19	20	18	16	17	17	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	17	18	E <sub>14</sub>
26	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	18	18	14	18	18	19	18	18	14	13	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
27	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	14	14	17	19	19	18	18	18	16	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
28	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	E	E <sub>13</sub>	E <sub>14</sub>	17	14	18	18	18	19	20	18	14	19	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
29	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>	18	15	18	18	18	E <sub>40</sub>	17	18	C	C	C	C	C	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
30	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	18	19	20	24	19	18	16	14	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	30	30	30
MED	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	15	17	18	18	18	18	16	15	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
UQ	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	16	16	18	18	18	19	18	18	17	15	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>
LQ	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	14	14	15	16	17	18	15	15	14	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>

NOV. 1971

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1971

M(3000)F2 (0.01)

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

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	290	290	295	290	305	315	340	355	350	350	335	340	330	335	325	330	345	340	325	315	335	310	290	305
2	300	305	295	305	315	315	340	345	345	350	330	330	345	330	325	345	345	345	320	330	350	305	300	290
3	285	290	300	315	310	325	330	345	340	350	325	320	330	340	325	330	330	345	320	325	320	285	300	285
4	290	290	305	315	325	330	325	345	345	330	330	320	325	330	325	330	335	345	335	315	295	290	275	290
5	290	315	320	295	300	325	325	345	350	355	335	340	320	300	335	345	340	350	325	320	335	305	300	290
6	290	295	300	300	305	320	325	345	350	340	330	320	325	330	325	330	340	335	325	305	305	320	310	310
7	300	295	285	300	305	310	335	350	360	355	330	340	320	335	320	335	350	320	320	330	340	290	300	310
8	310	285	295	290	300	300	335	340	355	355	350	335	335	340	340	335	345	335	325	315	295	300	305	305
9	300	310	280	285	295	300	340	350	360	335	340	335	350	335	340	330	350	340	320	310	320	315	315	315
10	320	315	310	305	305	355	330	345	350	330	340	340	340	335	320	350	355	335	325	320	310	305	295	305
11	295	300	280	285	305	340	325	360	350	325	350	310	335	325	335	345	340	325	310	290	285	305	305	305
12	290	300	290	285	310	340	325	345	340	335	330	325	335	325	325	340	345	310	325	320	305	315	305	280
13	290	290	290	305	335	335	330	345	355	335	340	335	325	315	320	330	340	325	325	330	315	300	295	290
14	290	295	290	290	320	330	345	355	340	345	335	335	330	320	345	340	350	335	310	340	305	310	295	305
15	285	285	300	315	325	305	310	345	355	330	345	345	340	335	350	350	350	350	305	305	305	305	300	280
16	295	315	310	305	305	320	315	340	355	335	355	340	335	335	345	355	360	320	325	305	305	310	315	325
17	295	295	290	305	325	350	320	345	350	365	350	335	335	350	345	355	370	340	325	330	310	315	300	295
18	295	295	310	315	315	325	325	335	360	330	335	345	325	355	335	330	345	335	295	305	300	315	295	305
19	295	290	290	300	320	340	310	350	350	335	335	335	310	335	340	340	340	335	315	320	320	310	305	290
20	290	275	305	295	300	335	310	350	345	335	320	340	345	330	325	350	340	310	315	320	310	315	280	290
21	305	305	305	315	310	305	320	325	345	335	320	340	325	330	350	340	335	305	320	320	345	295	280	285
22	275	290	315	340	320	290	305	340	360	360	330	345	315	330	325	350	365	335	310	325	330	310	295	295
23	305	280	280	295	315	325	315	345	360	320	360	345	330	345	325	340	355	325	305	305	355	360	260	270
24	265	290	315	335	360	265	295	335	330	345	305	345	350	330	325	345	320	345	325	335	315	285	280	315
25	305	290	290	310	375	320	290	350	345	340	330	335	340	335	345	345	340	345	335	305	325	275	270	280
26	260	290	275	330	345	285	295	340	325	335	340	340	345	355	335	345	355	335	340	325	300	280	290	295
27	295	295	300	290	285	315	325	355	360	345	340	350	330	350	360	355	345	320	320	320	325	305	295	285
28	295	305	295	295	310	325	330	350	355	330	330	340	355	330	345	360	360	340	305	335	335	280	295	290
29	290	305	305	325	330	290	315	350	355	355	340	345	340	330	355	350	C	C	C	C	305	295	290	290
30	295	305	295	310	320	310	320	340	340	345	350	335	335	370	340	350	365	350	335	320	325	300	290	290
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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	30	30
MED	295	295	295	305	312	320	325	345	350	338	335	340	335	335	335	345	345	335	320	320	315	305	295	290
UQ	300	305	305	315	325	330	330	350	355	350	340	340	340	340	345	350	355	345	325	325	330	310	300	305
LQ	290	290	290	295	305	305	315	340	345	335	330	335	325	330	325	335	340	325	315	310	305	295	290	290

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M(3000)F2 (0.01)

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M(3000)F1 (0.01)

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

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									L	L	U 400	385	L	L	L										
2									L	L	L	390	L	L	L										
3										L	L	L	375	U 370	L										
4										L	L	H 360	L	L	L										
5										L	L	365	L	L	A										
6										L	395	365	L	L	L										
7										L	L	L	L	L	L										
8										L	L	U 370	L	375	L										
9										L	L	L	L	L	L										
10										L	L	355	L	L	L										
11										L	L	L	L	L	L										
12										L	370	L	L	L	L										
13									L	L	L	L	L	L	U 355										
14										360	L	L	L	L	L										
15										L	L	L	L	L	L										
16										L	L	380	385	L	L										
17										L	U 390	375	365	L	L										
18										L	L	L	L	A	L										
19										L	L	L	L	L	L										
20										L	U 370	390	L	L	H 355										
21										L	U 335	L	L	L	L										
22										420	420	L	L	L											
23												L	405	L											
24										410	L	L	L	L	415										
25										L	400	L	L	405											
26										L	L	L	H 365	L	L										
27										L	L	L	L	L											
28										L	L	L	L	L	L										
29										L	L	L	L	L	L										
30											L	L	L	L											
31											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											3	9	10	6	3	3									
MED											410	390	372	380	375	355									
UQ											415	400	385	390	390	385									
LQ											385	U 370	365	365	372	355									

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M(3000)F1 (0.01)



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

135° E Mean Time (G. M. T. + 9h)

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									220	230	235	250	250	240	250									
2									225	230	230	250	235	250	255									
3										215	255	255	250	250	245									
4										230	245	280	260	245	240									
5										225	255	250	245	250	240									
6										240	245	250	250	250	240									
7										225	230	240	235	255	250									
8										240	230	250	250	250	250									
9										220	245	235	235	250	240									
10										220	235	255	250	250	230									
11										230	245	240	235	270	255									
12										250	255	240	255	240	250									
13										225	225	225	240	215	230	250								
14										250	230	230	215	255	240									
15										235	250	230	235	255	240									
16										220	225	250	250	230	240									
17										235	240	250	260	255	240									
18										225	240	245	250	240	240									
19										235	245	225	235	255	255									
20										235	255	245	220	250	270									
21										230	270	245	240	250	240									
22										230	235	250	240	245										
23												240	240	240										
24										240	245	250	235	235	235									
25										240	240	240	245	250										
26										245	230	240	250	230	225									
27										225	230	250	250	250										
28										250	250	240	240	245	250									
29										215	250	235	240	245	235									
30											235	260	230	235										
31																								
CNT										3	28	29	30	30	30	25								
MED										225	230	240	245	240	250	240								
UQ										225	240	250	250	250	250	250								
LQ										222	225	230	240	235	240	240								

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

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

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

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	295	295	290	285	290	255	235	210	200	210	200	200	240	230	225	235	225	215	245	250	220	A	I <sub>305</sub> <sup>A</sup>	I <sub>305</sub> <sup>A</sup>	
2	300	I <sub>305</sub> <sup>A</sup>	310	265	250	245	205	210	225	225	210	200	210	230	230	240	225	215	220	205	245	275	290	I <sub>300</sub> <sup>A</sup>	
3	310	305	290	250	265	230	235	215	220	200	H <sub>185</sub>	H <sub>190</sub>	230	215	220	230	230	215	245	245	235	295	300	305	
4	295	295	255	250	245	220	235	220	230	200	210	H <sub>200</sub>	230	215	230	230	230	205	215	A	A	300	345	300	
5	300	260	250	260	280	245	210	215	230	210	H <sub>200</sub>	200	230	235	I <sub>235</sub> <sup>A</sup>	235	220	I <sub>225</sub> <sup>A</sup>	I <sub>240</sub> <sup>A</sup>	245	245	I <sub>300</sub> <sup>A</sup>	310	320	
6	305	295	270	255	260	245	245	225	225	230	200	200	235	230	235	230	215	215	215	245	250	245	245	250	
7	290	295	295	300	285	255	225	205	215	215	200	230	240	235	230	235	215	240	240	230	225	290	285	265	
8	300	295	290	295	265	255	230	205	215	230	215	215	240	205	215	235	205	200	240	245	245	250	255	260	
9	280	280	300	310	290	240	215	210	215	200	H <sub>200</sub>	225	I <sub>230</sub> <sup>A</sup>	I <sub>230</sub> <sup>A</sup>	220	225	205	205	220	240	240	250	255	240	
10	250	270	255	260	260	210	205	210	205	I <sub>220</sub> <sup>B</sup>	210	200	240	235	215	235	205	235	240	240	255	250	270	285	
11	295	290	305	305	295	225	215	205	210	210	230	215	225	245	245	230	205	215	255	285	300	280	255	250	
12	260	295	300	305	260	210	240	215	230	235	215	H <sub>190</sub>	240	240	235	230	215	215	235	250	245	250	255	300	
13	335	300	290	270	230	205	220	220	215	215	220	215	215	210	215	230	215	205	230	215	A	A	A	295	
14	310	300	300	290	255	220	215	210	215	205	230	220	200	240	235	240	210	200	260	225	240	270	300	265	
15	305	290	280	245	250	230	245	215	220	215	245	225	220	240	240	235	215	200	240	255	250	270	295	315	
16	290	255	250	255	250	240	240	215	225	205	H <sub>195</sub>	215	I <sub>230</sub> <sup>A</sup>	I <sub>230</sub> <sup>A</sup>	240	225	200	205	225	245	255	I <sub>250</sub> <sup>A</sup>	265	245	
17	270	295	290	290	240	205	240	210	210	230	205	I <sub>200</sub> <sup>A</sup>	I <sub>225</sub> <sup>A</sup>	245	I <sub>230</sub> <sup>A</sup>	225	205	240	245	235	260	250	I <sub>290</sub> <sup>B</sup>	295	
18	295	295	270	270	270	225	235	225	210	210	210	230	230	I <sub>225</sub> <sup>A</sup>	I <sub>230</sub> <sup>A</sup>	235	215	200	245	290	270	265	280	290	
19	280	295	290	295	250	205	245	215	220	I <sub>210</sub> <sup>A</sup>	205	215	195	H <sub>190</sub>	245	230	215	200	245	235	220	250	250	280	
20	290	305	275	300	265	220	240	215	220	215	220	200	220	230	H <sub>205</sub>	230	210	220	245	250	245	250	305	305	
21	280	270	280	250	290	270	240	205	210	215	215	220	220	235	215	225	210	200	245	245	220	295	350	345	
22	330	300	265	205	245	280	260	225	220	210	190	240	H <sub>190</sub>	230	230	240	215	225	255	230	220	260	275	280	
23	270	290	320	295	255	220	240	H <sub>225</sub>	230	230	235	240	220	220	230	235	215	245	225	245	220	220	E <sub>400</sub> <sup>S</sup>	335	
24	335	310	270	230	230	E <sub>290</sub> <sup>B</sup>	290	245	235	210	H <sub>205</sub>	H <sub>200</sub>	230	230	220	225	220	210	220	220	255	270	335	290	
25	280	290	290	275	200	E <sub>280</sub> <sup>B</sup>	250	250	240	235	205	230	240	190	230	235	240	195	210	255	205	E <sub>370</sub> <sup>B</sup>	E <sub>360</sub> <sup>B</sup>	300	
26	I <sub>330</sub> <sup>A</sup>	280	320	245	230	290	290	250	240	235	225	H <sub>200</sub>	H <sub>195</sub>	230	215	225	215	225	215	240	295	315	340	305	
27	280	295	300	310	300	255	240	215	215	215	210	230	230	245	230	220	200	205	230	230	245	300	290	305	
28	300	275	280	280	250	210	235	220	205	230	230	230	235	245	230	230	200	205	270	235	215	290	330	325	
29	300	265	245	240	235	270	255	225	205	205	245	I <sub>235</sub> <sup>A</sup>	I <sub>235</sub> <sup>A</sup>	I <sub>230</sub> <sup>A</sup>	230	I <sub>215</sub> <sup>C</sup>	C	C	C	C	245	260	335	335	
30	320	295	300	255	250	260	255	215	210	225	230	H <sub>200</sub>	225	H <sub>195</sub>	245	235	205	190	235	250	255	245	315	330	
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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	28	29	30	
MED	295	295	290	270	255	235	240	215	218	215	210	215	230	230	230	230	215	210	240	245	245	265	292	300	
UQ	305	295	300	295	270	255	245	225	225	230	225	230	235	235	235	235	215	220	245	250	255	291	320	305	
LQ	280	280	270	250	245	220	225	210	210	210	200	200	220	220	220	225	205	200	225	232	222	250	270	280	

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

# IONOSPHERIC DATA

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

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

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	100	105	100	S	110	110	110	110	110	110	110	105	105	100	105	140	120	110	105	105	105	105	105	100																					
2	100	100	100	S	100	S	S	G	G	110	G	G	G	G	110	115	100	110	S	S	105	105	100	100																					
3	100	100	S	100	S	S	S	G	110	110	100	100	100	100	100	100	100	110	110	110	105	105	S	100																					
4	S	S	S	S	S	S	S	G	105	G	100	G	G	G	100	G	G	S	105	105	105	105	105	105																					
5	105	S	S	S	S	S	S	G	110	105	105	G	G	100	100	100	115	115	110	110	105	105	105	105																					
6	100	S	S	S	S	S	S	110	105	G	G	G	G	G	G	100	G	S	S	100	105	S	S	105																					
7	100	100	100	100	S	S	S	G	G	G	105	110	G	G	100	100	100	100	S	S	S	S	S	S																					
8	100	S	S	S	S	S	S	G	140	140	115	110	G	G	G	G	140	S	S	S	S	S	S	S																					
9	S	S	S	S	S	S	S	G	115	115	115	115	115	110	G	G	110	105	100	S	S	S	S	S																					
10	S	S	S	S	S	S	S	G	G	B	G	G	105	105	G	G	105	105	100	S	S	S	S	S																					
11	S	S	S	S	S	S	S	G	G	G	G	G	G	G	125	G	G	110	S	S	S	S	S	S																					
12	S	S	S	105	S	S	S	G	115	115	110	110	G	G	G	140	100	100	S	110	110	S	S	105																					
13	105	105	100	100	100	S	S	G	115	110	110	110	G	100	100	100	105	S	110	110	105	100	105	S																					
14	S	S	S	S	S	S	S	G	105	105	105	110	150	160	145	140	120	100	100	S	S	S	S	S																					
15	115	S	S	S	S	S	S	G	G	G	140	G	120	G	G	G	B	S	S	S	S	S	S	S																					
16	S	S	S	S	S	S	S	G	G	G	G	G	155	145	140	110	110	S	S	S	110	110	110	105																					
17	S	S	S	100	100	S	S	G	120	120	115	115	110	110	105	155	125	120	S	S	S	S	115	110																					
18	S	S	S	S	S	S	S	G	120	115	115	115	115	110	120	110	105	S	S	S	S	S	S	S																					
19	S	S	S	S	S	S	S	G	G	120	115	120	110	G	G	140	B	S	S	S	S	S	S	S																					
20	S	S	S	S	S	S	S	G	G	G	140	G	G	G	G	100	100	S	S	S	S	S	S	S																					
21	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S	S																					
22	S	S	S	E	E	E	S	G	140	120	G	140	G	G	G	G	B	S	S	S	S	S	S	S																					
23	S	100	S	S	S	S	S	G	G	G	120	135	110	105	G	G	G	S	S	S	S	S	S	S																					
24	S	S	S	105	S	S	S	G	G	120	G	G	110	G	G	105	105	S	S	S	S	S	110	S																					
25	S	S	S	S	S	S	S	G	G	155	110	G	105	105	G	G	B	S	S	S	S	S	B	115																					
26	110	110	S	S	S	S	S	B	G	G	120	G	G	G	150	G	130	115	S	S	S	S	S	105																					
27	100	100	100	100	S	S	S	G	105	G	G	G	G	145	G	G	G	S	S	S	S	110	S	S																					
28	S	S	S	S	E	S	S	G	G	G	165	140	140	150	G	G	B	S	S	S	S	S	S	S																					
29	S	S	S	E	E	S	S	B	G	155	145	130	125	125	G	C	C	C	C	C	110	110	105	105																					
30	105	100	100	S	100	S	100	G	G	G	155	140	155	G	G	G	G	110	S	S	105	105	S	S																					
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	12	9	6	7	5	1	2	2	14	16	21	16	16	15	13	15	17	13	8	7	11	10	9	12																					
MED	100	100	100	100	100	110	105	110	112	115	115	115	112	110	105	110	105	110	105	110	105	105	105	105																					
UQ	105	105	100	102	100				120	120	120	132	132	135	125	140	120	110	110	110	108	110	110	105																					
LQ	100	100	100	100	100				105	110	110	110	108	102	100	100	100	105	100	105	105	105	105	104																					

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



IONOSPHERIC DATA

NOV. 1971

TYPES OF ES

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

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	F	F		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
2	F	F	F		F																	F	F	F	F
3	F	F		F																		F	F	F	F
4																						F	F	F	F
5	F																					F	F	F	F
6	F																					F	F		F
7	F	F	F	F																					
8	F																								
9																									
10																									
11																									
12				F																					F
13	F	F	F	F	F																				
14																									
15	F																								
16																									
17			F	F																					
18																									
19																									
20																									
21																									
22																									
23		F																							
24				F																					F
25																									F
26	F	F																							F
27	F	F	F	F																					F
28																									
29																									F
30	F	F	F		F		F																		F
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																									
MED																									
UQ																									
LQ																									

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TYPES OF ES

IONOSPHERIC DATA

NOV. 1971

FOF2 (0.1 MHz)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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 <sub>34</sub> I <sub>A</sub> <sub>36</sub>	A <sub>37</sub>	S <sub>38</sub>	36	35	49	69	R	79	C	100	103	99	86	87	83	60	50	45	39	30	35	I <sub>A</sub> <sub>35</sub>		
2	I <sub>A</sub> <sub>36</sub>	35	36	37	39	37	50	66	94	96	91	100	93	90	88	95	C	65	36	41	35	35	36	36	
3	36	36	37	42	39	35	46	R <sub>73</sub>	81	85	78	J <sub>R</sub> <sub>104</sub>	105	103	95	77	75	75	51	40	35	30	31	35	
4	35	35	35	36	37	29	43	71	81	89	97	91	111	121	105	91	82	65	43	35	30	31	35	36	
5	36	39	36	35	35	36	45	J <sub>R</sub> <sub>80</sub>	75	91	93	95	106	106	106	89	81	65	41	40	37	33	35	36	
6	36	38	40	37	35	38	45	J <sub>R</sub> <sub>75</sub>	86	97	98	99	100	107	94	89	77	63	50	44	45	46	43	37	
7	38	40	41	41	39	40	52	J <sub>R</sub> <sub>84</sub>	J <sub>R</sub> <sub>85</sub>	83	95	97	83	97	J <sub>O</sub> <sub>R</sub> <sub>101</sub>	94	81	58	54	51	40	34	38	38	
8	37	37	40	39	40	39	50	J <sub>R</sub> <sub>79</sub>	90	91	95	86	93	107	103	96	80	51	43	47	46	40	40	36	
9	36	37	36	36	40	36	46	J <sub>R</sub> <sub>89</sub>	J <sub>R</sub> <sub>89</sub>	85	101	101	95	95	98	89	75	61	47	45	45	36	38	36	
10	36	36	38	37	40	41	46	69	J <sub>R</sub> <sub>73</sub>	80	83	88	93	96	90	71	J <sub>R</sub> <sub>79</sub>	49	40	39	33	31	30	34	
11	33	35	33	33	35	36	39	63	J <sub>R</sub> <sub>75</sub>	80	91	91	83	86	103	101	71	48	37	40	39	41	43	39	
12	36	36	36	37	40	36	R <sub>38</sub>	66	81	93	96	J <sub>O</sub> <sub>R</sub> <sub>105</sub>	106	120	93	83	75	50	47	47	38	33	32	32	
13	31	35	35	41	41	28	37	70	R <sub>93</sub>	96	J <sub>O</sub> <sub>R</sub> <sub>103</sub>	94	90	90	90	85	87	65	42	J <sub>R</sub> <sub>39</sub>	32	30	32	32	
14	31	32	32	34	36	29	35	J <sub>R</sub> <sub>62</sub>	J <sub>R</sub> <sub>74</sub>	81	J <sub>O</sub> <sub>R</sub> <sub>104</sub>	109	70	86	91	75	69	47	35	37	36	30	30	31	
15	32	33	34	35	35	32	37	66	J <sub>R</sub> <sub>76</sub>	J <sub>R</sub> <sub>78</sub>	93	91	81	83	88	77	63	46	30	35	36	32	33	33	
16	33	36	33	33	34	29	35	61	73	81	81	R <sub>79</sub>	81	93	83	75	55	46	35	35	36	37	35	35	
17	34	35	36	39	43	33	33	62	66	J <sub>R</sub> <sub>86</sub>	J <sub>R</sub> <sub>86</sub>	77	82	87	87	79	69	43	36	35	33	31	30	I <sub>R</sub> <sub>31</sub>	
18	31	33	35	35	41	33	35	65	J <sub>R</sub> <sub>79</sub>	75	89	87	72	85	96	J <sub>R</sub> <sub>79</sub>	67	53	27	35	40	39	35	36	
19	37	35	36	J <sub>R</sub> <sub>39</sub>	R	31	35	61	68	70	90	86	77	80	83	86	60	48	38	43	37	33	35	36	
20	36	37	J <sub>R</sub> <sub>39</sub>	J <sub>R</sub> <sub>39</sub>	43	35	35	60	J <sub>R</sub> <sub>79</sub>	87	J <sub>O</sub> <sub>R</sub> <sub>103</sub>	99	83	90	77	90	68	42	37	33	37	36	34	35	
21	36	37	37	39	37	36	41	70	67	J <sub>R</sub> <sub>76</sub>	82	107	90	87	86	87	70	47	39	42	42	42	27	U <sub>S</sub> <sub>30</sub>	
22	30	32	35	39	25	24	34	69	85	72	74	96	96	90	78	J <sub>R</sub> <sub>79</sub>	76	51	47	56	51	31	31	31	
23	33	32	33	35	36	26	33	58	J <sub>R</sub> <sub>83</sub>	89	88	J <sub>O</sub> <sub>R</sub> <sub>105</sub>	J <sub>O</sub> <sub>R</sub> <sub>102</sub>	95	82	88	65	50	49	51	J <sub>R</sub> <sub>53</sub>	J <sub>R</sub> <sub>25</sub>	22	27	
24	31	31	35	36	20	20	30	65	J <sub>R</sub> <sub>88</sub>	80	85	115	115	95	J <sub>R</sub> <sub>82</sub>	J <sub>R</sub> <sub>89</sub>	80	70	46	31	25	27	29	31	
25	34	33	34	35	40	R	28	60	96	95	95	91	113	116	96	83	83	73	55	43	51	29	31	33	
26	31	35	32	38	25	28	36	71	J <sub>O</sub> <sub>R</sub> <sub>103</sub>	103	J <sub>O</sub> <sub>R</sub> <sub>113</sub>	J <sub>O</sub> <sub>R</sub> <sub>103</sub>	88	99	86	75	77	53	43	36	26	30	30	32	
27	35	34	31	30	31	32	32	70	85	S <sub>97</sub>	90	97	94	89	98	J <sub>R</sub> <sub>78</sub>	67	50	47	52	38	30	30	31	
28	33	33	34	34	36	34	30	58	73	80	94	88	J <sub>R</sub> <sub>80</sub>	85	87	76	61	43	34	40	35	32	31	31	
29	35	34	33	30	27	25	33	S <sub>66</sub>	71	72	75	90	82	86	85	71	62	51	40	40	35	35	26	27	
30	30	30	31	35	31	28	33	J <sub>R</sub> <sub>68</sub>	75	85	J <sub>R</sub> <sub>83</sub>	100	101	87	72	77	77	45	33	33	29	30	30	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	30	30	30	30	29	29	30	30	29	30	29	30	30	30	30	30	29	30	30	30	30	30	30	30	30
MED	34	35	35	36	36	33	36	67	81	85	91	96	93	92	89	84	75	51	42	40	37	32	32	34	
UQ	36	36	37	39	40	36	45	71	86	91	96	101	102	99	96	89	80	63	47	45	40	36	35	36	
LQ	32	33	33	35	35	29	33	62	74	80	85	90	82	87	85	77	67	47	36	35	35	30	30	31	

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FOF2 (0.1 MHz)

IONOSPHERIC DATA

NOV. 1971

FOF1 (0.01 MHZ)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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	C	L	L	A	A									
2									L	L	L	L	L	L	L	L								
3									L	L	L	L	L	L	L	L								
4									L	L	L	L	L	L	L	L								
5									L	L	L	L	L	L	L	L								
6									L	L	U L 480	L	L	L	L	A								
7							L		L	L	L	L	L	L	L	L								
8									L	L	L	L	L	L	L									
9									L	L	L	L	L	A										
10									L	L	L	L	L	L	L									
11									L	L	L	L	L	L	L									
12									L	L	L	L	L		L									
13									L	L	L	L	L	L	L									
14										L	L	L	L	U L 450	L									
15									L	L	L	L	L	L	L									
16										L	L	L	L	L	L									
17									L	L	L	L	L	L	L									
18									L	L	L	L	L	U L 460	L	L								
19										L	L	L	L	L	L									
20									L	L	U L 450	L	L	L	L	L								
21									L	L	L	L	L	L	L	L								
22										L	L	L	L	L	L									
23										L	L	L	L	L	L									
24										L	L	L	L	L	L	L								
25									L	L	L	L	L	L	L									
26									L	L	L	L	L	L	L									
27									L	L	A	L	L	L	L	L								
28									L	L	L	U L 500	L	L	L	H 300								
29									L	L	L	L	L	L	L	L								
30									L	L	L	L	L			L								
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											2	1		2		1								
MED											465	U L 500		U L 455		H 300								
UQ																								
LQ																								

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FOF1 (0.01 MHZ)

# IONOSPHERIC DATA

NOV. 1971

FOE (0.01 MHz)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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								B A	A A	C A	A A	A A	A A	A A	A A	A A	A B								
2								B 210	A A	A A	A A	A A	A A	A A	A A	A C	A B								
3								B 220	A A	315 340	335 320	300 270	A A	A A	A A	A B									
4								A 210	260 305	320 330	330 330	300 300	A A	A A	A B	B B									
5								B 220	270 300	325 335	340 A	A A	255 A	A A	A B										
6								B 200	260 300	330 330	330 310	A A	200 B												
7								B 205	270 300	320 325	325 315	300 255	205 B												
8								B 170	275 305	R A	325 315	290 250	200 B												
9								B A	A A	305 330	A A	A A	A 190	A A											
10								B A	A 310	320 330	325 320	300 260	185 B												
11								B 190	A A	315 325	320 320	300 250	190 A												
12								B 190	260 290	310 320	330 310	290 260	A A												
13								B A	A 315	330 330	330 330	325 300	250 200	B B											
14								B 210	270 300	325 320	330 320	305 270	190 B												
15								B 200	270 300	315 330	A A	A A	250 190	A A											
16								B 170	260 A	A 320	330 325	290 245	175 B												
17								B 190	250 290	320 330	320 310	280 240	200 B												
18								B R	A A	A 320	A A	300 240	B B												
19								B 190	A A	310 A	A A	A 300	230 200	A A											
20								B 210	275 285	300 325	325 320	285 245	195 B												
21								B 185	265 300	310 330	330 320	290 250	180 B												
22								B 185	255 R	A A	330 300	290 255	190 B												
23								I 200	275 290	300 315	320 310	290 270	230 B												
24								170	260 A	A A	A A	320 290	250 190	B B											
25								180	A A	A 320	I 320	R 310	275 240	A B											
26								170	260 275	300 300	A A	A A	A A	B B											
27								180	250 A	A 330	330 320	285 250	190 B												
28								200	260 300	320 330	330 310	290 240	175 B												
29								175	255 290	300 315	320 300	A R	B B												
30								B 240	R R	320	330 330	290 260	190 B												
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								24	20	17	20	24	22	22	22	23	20								
MED								190	260	300	315	328	330	320	290	250	190								
UQ								208	270	300	320	330	330	320	300	258	200								
LQ								180	258	290	308	320	325	310	290	245	190								

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FOE (0.01 MHz)

IONOSPHERIC DATA

NOV. 1971

FOES (0.1 MHZ)

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

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	J <sub>36</sub>	J <sub>48</sub>	J <sub>28</sub>	J <sub>16</sub>	M <sub>18</sub>	M <sub>20</sub>	J <sub>36</sub>	42	J <sub>43</sub>	J <sub>64</sub>	C	J <sub>59</sub>	J <sub>55</sub>	J <sub>64</sub>	J <sub>61</sub>	J <sub>50</sub>	J <sub>45</sub>	J <sub>34</sub>	J <sub>24</sub>	J <sub>24</sub>	J <sub>25</sub>	J <sub>41</sub>	J <sub>54</sub>	J <sub>54</sub>	
2	J <sub>44</sub>	J <sub>25</sub>	25	J <sub>24</sub>	21	23	J <sub>29</sub>	J <sub>23</sub>	32	J <sub>35</sub>	J <sub>40</sub>	37	J <sub>35</sub>	36	J <sub>31</sub>	35	J <sub>35</sub>	J <sub>54</sub>	J <sub>19</sub>	J <sub>23</sub>	J <sub>20</sub>	J <sub>19</sub>	22	J <sub>23</sub>	
3	20	J <sub>26</sub>	J <sub>29</sub>	J <sub>21</sub>	22	20	E <sub>13</sub>	G	J <sub>26</sub>	35	J <sub>29</sub>	J <sub>41</sub>	G	36	J <sub>39</sub>	35	J <sub>38</sub>	J <sub>29</sub>	J <sub>41</sub>	J <sub>30</sub>	J <sub>41</sub>	J <sub>24</sub>	22	J <sub>19</sub>	
4	21	22	E <sub>13</sub>	E <sub>13</sub>	20	22	22	G	J <sub>26</sub>	G	J <sub>42</sub>	J <sub>31</sub>	J <sub>24</sub>	J <sub>29</sub>	G	35	J <sub>29</sub>	21	J <sub>30</sub>	J <sub>29</sub>	24	J <sub>29</sub>	J <sub>29</sub>	22	
5	J <sub>22</sub>	J <sub>29</sub>	24	22	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	G	G	J <sub>28</sub>	J <sub>21</sub>	J <sub>26</sub>	J <sub>30</sub>	J <sub>42</sub>	J <sub>34</sub>	30	J <sub>29</sub>	J <sub>22</sub>	J <sub>29</sub>	J <sub>44</sub>	J <sub>31</sub>	J <sub>31</sub>	J <sub>44</sub>	J <sub>30</sub>	
6	J <sub>25</sub>	J <sub>24</sub>	22	J <sub>24</sub>	J <sub>19</sub>	22	E <sub>15</sub>	J <sub>25</sub>	J <sub>36</sub>	36	J <sub>37</sub>	G	J <sub>29</sub>	J <sub>35</sub>	35	J <sub>63</sub>	J <sub>30</sub>	J <sub>30</sub>	J <sub>30</sub>	J <sub>24</sub>	J <sub>17</sub>	J <sub>17</sub>	J <sub>15</sub>	J <sub>25</sub>	
7	J <sub>24</sub>	J <sub>25</sub>	J <sub>30</sub>	J <sub>28</sub>	J <sub>28</sub>	J <sub>17</sub>	J <sub>17</sub>	G	G	29	J <sub>26</sub>	J <sub>30</sub>	22	J <sub>29</sub>	J <sub>29</sub>	G	G	J <sub>24</sub>	E <sub>13</sub>	J <sub>17</sub>	J <sub>26</sub>	J <sub>25</sub>	24	J <sub>26</sub>	
8	J <sub>24</sub>	J <sub>25</sub>	23	J <sub>17</sub>	M <sub>19</sub>	E <sub>13</sub>	E <sub>14</sub>	G	30	G	G	35	G	36	34	J <sub>41</sub>	29	J <sub>24</sub>	J <sub>31</sub>	J <sub>21</sub>	J <sub>22</sub>	J <sub>25</sub>	21	20	
9	21	20	21	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	21	30	30	J <sub>33</sub>	G	G	36	J <sub>50</sub>	J <sub>41</sub>	J <sub>21</sub>	G	J <sub>29</sub>	J <sub>35</sub>	J <sub>21</sub>	J <sub>21</sub>	J <sub>31</sub>	21	21	
10	19	20	G	E <sub>13</sub>	E <sub>13</sub>	21	E <sub>13</sub>	23	30	G	J <sub>31</sub>	J <sub>21</sub>	29	J <sub>29</sub>	35	G	G	E <sub>13</sub>	21	J <sub>19</sub>	J <sub>19</sub>	20	E <sub>13</sub>	E <sub>13</sub>	
11	22	20	J <sub>19</sub>	J <sub>19</sub>	J <sub>29</sub>	E <sub>12</sub>	J <sub>21</sub>	J <sub>25</sub>	J <sub>30</sub>	35	J <sub>29</sub>	G	G	G	G	28	G	J <sub>18</sub>	E <sub>15</sub>	E <sub>16</sub>	20	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
12	E <sub>15</sub>	25	E <sub>13</sub>	E <sub>13</sub>	20	J <sub>29</sub>	E <sub>15</sub>	G	32	G	36	33	G	36	36	31	J <sub>30</sub>	J <sub>25</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>40</sub>	J <sub>26</sub>	J <sub>25</sub>	20	
13	21	19	21	21	22	E <sub>13</sub>	E <sub>15</sub>	30	35	G	G	G	J <sub>50</sub>	G	25	J <sub>25</sub>	J <sub>25</sub>	J <sub>22</sub>	J <sub>18</sub>	J <sub>22</sub>	J <sub>28</sub>	E <sub>14</sub>	E <sub>15</sub>	M <sub>17</sub>	
14	24	J <sub>27</sub>	J <sub>28</sub>	J <sub>25</sub>	J <sub>28</sub>	J <sub>18</sub>	J <sub>16</sub>	19	32	32	J <sub>26</sub>	38	40	J <sub>40</sub>	J <sub>37</sub>	J <sub>41</sub>	J <sub>27</sub>	J <sub>54</sub>	J <sub>16</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	20	E <sub>15</sub>	
15	J <sub>16</sub>	E <sub>12</sub>	J <sub>16</sub>	J <sub>22</sub>	E <sub>13</sub>	E <sub>13</sub>	J <sub>15</sub>	G	J <sub>29</sub>	G	J <sub>39</sub>	37	J <sub>36</sub>	33	J <sub>35</sub>	18	16	J <sub>25</sub>	J <sub>23</sub>	21	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
16	E <sub>15</sub>	22	E <sub>13</sub>	E <sub>13</sub>	J <sub>24</sub>	E <sub>13</sub>	E <sub>13</sub>	G	G	35	35	38	37	36	38	J <sub>40</sub>	19	E <sub>15</sub>	J <sub>19</sub>	21	E <sub>15</sub>	22	J <sub>25</sub>	E <sub>13</sub>	
17	E <sub>16</sub>	J <sub>21</sub>	12	21	E <sub>13</sub>	21	E <sub>13</sub>	G	30	G	J <sub>39</sub>	36	J <sub>40</sub>	37	36	32	J <sub>23</sub>	G	J <sub>19</sub>	J <sub>19</sub>	E <sub>13</sub>	21	23	J <sub>28</sub>	
18	J <sub>25</sub>	21	21	21	E <sub>13</sub>	22	22	G	J <sub>29</sub>	35	J <sub>38</sub>	37	J <sub>54</sub>	J <sub>40</sub>	G	G	22	20	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>16</sub>	
19	E <sub>13</sub>	20	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	G	31	J <sub>36</sub>	39	J <sub>31</sub>	J <sub>48</sub>	34	35	29	J <sub>25</sub>	23	20	E <sub>15</sub>	18	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
20	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	21	E <sub>13</sub>	18	G	31	35	J <sub>34</sub>	G	G	G	G	J <sub>29</sub>	21	E <sub>12</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	
21	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>13</sub>	G	G	31	37	35	J <sub>29</sub>	G	G	G	G	E <sub>13</sub>	E <sub>15</sub>	J <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	
22	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	G	J <sub>34</sub>	36	35	G	31	G	G	21	18	E <sub>16</sub>	22	22	20	19	
23	E <sub>13</sub>	20	E <sub>13</sub>	20	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	23	G	G	36	37	G	35	G	G	J <sub>20</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	20	
24	E <sub>15</sub>	24	E <sub>13</sub>	19	20	E <sub>13</sub>	E <sub>15</sub>	G	G	35	J <sub>38</sub>	37	37	J <sub>28</sub>	J <sub>28</sub>	21	19	J <sub>21</sub>	21	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>28</sub>	
25	21	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	21	21	E <sub>15</sub>	G	33	35	35	G	G	J <sub>29</sub>	G	28	J <sub>25</sub>	J <sub>24</sub>	J <sub>19</sub>	22	26	E <sub>15</sub>	J <sub>26</sub>	15	
26	20	E <sub>13</sub>	J <sub>21</sub>	E <sub>13</sub>	J <sub>19</sub>	E <sub>13</sub>	E <sub>13</sub>	G	29	32	38	35	36	34	34	32	J <sub>25</sub>	J <sub>29</sub>	J <sub>25</sub>	21	J <sub>29</sub>	E <sub>15</sub>	20	J <sub>25</sub>	
27	J <sub>29</sub>	J <sub>29</sub>	22	20	22	22	20	G	G	J <sub>40</sub>	J <sub>60</sub>	J <sub>40</sub>	35	35	32	G	G	E <sub>14</sub>	E <sub>15</sub>	J <sub>19</sub>	17	E <sub>15</sub>	E <sub>15</sub>	J <sub>16</sub>	
28	22	J <sub>15</sub>	M	E <sub>13</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>13</sub>	G	G	31	36	35	34	35	32	22	18	E <sub>14</sub>	J <sub>16</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	
29	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>13</sub>	23	G	G	39	47	36	35	34	G	G	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	20	21	21	22	
30	25	22	J <sub>22</sub>	E <sub>13</sub>	21	J <sub>25</sub>	J <sub>21</sub>	E <sub>15</sub>	G	G	G	G	G	38	33	J <sub>26</sub>	G	J <sub>25</sub>	J <sub>29</sub>	E <sub>15</sub>	21	E <sub>15</sub>	20	20	
31																									
CNT	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	21	21	20	16	19	16	E <sub>15</sub>	G	29	31	J <sub>36</sub>	35	34	35	34	27	22	J <sub>22</sub>	J <sub>19</sub>	19	20	16	20	20	
UQ	J <sub>24</sub>	J <sub>25</sub>	22	J <sub>21</sub>	21	21	20	23	31	35	J <sub>38</sub>	37	37	36	35	35	J <sub>29</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>22</sub>	J <sub>25</sub>	J <sub>24</sub>	23	J <sub>23</sub>	
LQ	E <sub>15</sub>	15	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	G	G	G	G	G	G	G	G	G	G	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>	

NOV. 1971

FOES (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1971

FBES (0.1 MHZ)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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	26	A	26	16	16	E	35	38	43	40	C	38	30	45	55	50	40	25	15	19	19	19	23	A	
2	A	21	E	16	16	15	16	19	30	33	32	32	32	33	30	28	C	35	18	15	16	17	E	15	
3	E	15	25	15	E	E	E <sub>13</sub>	G	28	31	G <sub>26</sub>	40	G	35	35	28	35	27	25	E	25	23	15	16	
4	E	E	E <sub>13</sub>	E <sub>13</sub>	E	E	G	G	G <sub>22</sub>	G	35	G <sub>26</sub>	G <sub>21</sub>	G <sub>28</sub>	G	G	25	15	25	24	E	19	17	E	
5	E	19	E	E	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	G	G	G <sub>26</sub>	G <sub>26</sub>	G <sub>29</sub>	35	35	34	28	25	18	28	18	17	E	18	16	
6	15	16	E	15	16	E	E <sub>15</sub>	G	28	27	28	G <sub>29</sub>	G <sub>34</sub>	31	45	17	20	22	E	E	E	E	E	E	
7	E	E	24	16	21	E	G	G	G <sub>27</sub>	G <sub>25</sub>	G <sub>29</sub>	G <sub>21</sub>	G <sub>27</sub>	G <sub>26</sub>	G	G	15	E <sub>13</sub>	E	19	E	15	E		
8	17	17	E	E	E	E <sub>13</sub>	E <sub>14</sub>	G	30	G	G	35	G	35	33	40	25	17	25	17	17	15	17	E	
9	E	E	E	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	G	23	29	31	G	G	35	45	38	20	G	18	15	16	20	16	E	E	
10	E	E	G	E <sub>13</sub>	E <sub>13</sub>	E	E <sub>13</sub>	21	28	G	G <sub>28</sub>	G <sub>29</sub>	G <sub>26</sub>	G <sub>29</sub>	30	G	G	E <sub>13</sub>	E	E	18	E	E <sub>13</sub>	E <sub>13</sub>	
11	E	E	15	15	19	E <sub>12</sub>	15	16	28	33	G <sub>28</sub>	G	G	G	G	26	G	15	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
12	E <sub>15</sub>	E	E <sub>13</sub>	E <sub>13</sub>	E	E	E <sub>15</sub>	G	G <sub>29</sub>	G	32	32	G	35	34	30	25	22	22	E	20	18	E	E	
13	E	E	E	E	E	E <sub>13</sub>	E <sub>15</sub>	23	29	G	G	G	42	G	G <sub>22</sub>	25	15	16	15	16	E	E <sub>14</sub>	E <sub>15</sub>	E	
14	E	15	20	17	15	E	G	18	32	32	G <sub>25</sub>	37	40	26	27	23	17	G <sub>15</sub>	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	
15	E	E <sub>12</sub>	E	E	E <sub>13</sub>	E <sub>13</sub>	G	G	G	G	34	35	34	32	32	G <sub>16</sub>	G <sub>15</sub>	17	18	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
16	E <sub>15</sub>	E	E <sub>13</sub>	E <sub>13</sub>	E	E <sub>13</sub>	E <sub>13</sub>	G	G	32	32	38	35	35	34	35	19	E <sub>15</sub>	15	E	E <sub>15</sub>	E	15	E <sub>13</sub>	
17	E <sub>16</sub>	15	E	E	E <sub>13</sub>	E	E <sub>13</sub>	G	27	G	26	34	32	35	35	30	16	G	17	17	E <sub>13</sub>	E	E	23	
18	E	E	E	E	E <sub>13</sub>	E	G	G	27	31	35	35	40	33	G	G	G	G	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>16</sub>	
19	E <sub>13</sub>	E	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	G	27	31	33	30	32	30	29	29	G	G	E	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
20	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E	E <sub>13</sub>	G <sub>17</sub>	G	30	34	33	G	G	G	G	15	G	E <sub>12</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	
21	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>13</sub>	G	G	25	36	35	G <sub>27</sub>	G	G	G	G	E <sub>13</sub>	E <sub>15</sub>	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
22	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	G	33	33	32	G	31	G	G	E	E	E <sub>15</sub>	19	E	E	E	
23	E <sub>13</sub>	15	E <sub>13</sub>	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	34	37	G	32	G	G	G	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E	
24	E <sub>15</sub>	E	E <sub>13</sub>	E	E	E <sub>13</sub>	E <sub>15</sub>	G	G	29	32	37	34	G <sub>25</sub>	G <sub>25</sub>	G <sub>17</sub>	15	G	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	17	
25	E	E <sub>13</sub>	E <sub>13</sub>	E <sub>13</sub>	E	E	E <sub>15</sub>	G	28	30	31	G	G	G <sub>28</sub>	G	28	25	25	15	E	E	E <sub>15</sub>	E	E	
26	E	E <sub>13</sub>	15	E <sub>13</sub>	E	E <sub>13</sub>	E <sub>13</sub>	G	27	30	36	34	34	32	31	G	23	25	20	E	16	E <sub>15</sub>	E	17	
27	16	25	E	E	15	E	E	G	G	30	51	37	35	34	31	G	G	E <sub>14</sub>	E <sub>15</sub>	17	E	E <sub>15</sub>	E <sub>15</sub>	E	
28	E	E	E	E <sub>13</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>13</sub>	G	G	30	34	34	34	35	32	R <sub>22</sub>	15	E <sub>14</sub>	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	
29	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>14</sub>	E <sub>13</sub>	23	G	G	31	39	34	33	31	G	G	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	E	E	
30	E	E	E	E <sub>13</sub>	E	15	E	E <sub>15</sub>	G	G	G	G	G	37	32	25	G	G	25	E <sub>15</sub>	E	E <sub>15</sub>	E	E	
31																									
CNT	30	30	30	30	30	30	30	30	30	30	29	30	29	30	30	30	29	30	30	30	30	30	30	30	
MED	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	13	E <sub>13</sub>	E <sub>12</sub>	E <sub>13</sub>	G	27	28	32	34	32	32	31	21	15	15	15	E <sub>15</sub>	E <sub>15</sub>	15	E <sub>14</sub>	E <sub>14</sub>
UQ	E <sub>15</sub>	15	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	17	28	31	34	37	34	35	33	28	25	18	20	16	17	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
LQ	E	E	E	E	E	E	E	G	G	G	G <sub>28</sub>	G <sub>26</sub>	G <sub>21</sub>	G <sub>26</sub>	G <sub>22</sub>	G	G	E <sub>15</sub>	E	E	E	E	E	E	

The Radio Research Laboratories, Japan

NOV. 1971

FBES (0.1 MHZ)



# IONOSPHERIC DATA

NOV. 1971

F-MIN (0.1 MHz)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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

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F-MIN (0.1 MHz)

## IONOSPHERIC DATA

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M(3000)F2 (0.01)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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 305	I A 290	285	295	S 295	290	335	355	R 315	C 320	320	335	325	335	350	335	325	320	310	275	265	I A 290		
2	I A 290	295	300	300	315	305	345	365	330	345	330	320	250	310	330	330	C 340	355	320	285	285	290	295	
3	285	300	290	300	330	310	325	340	350	340	310	325	335	320	355	340	335	340	335	335	315	265	285	270
4	285	295	305	330	320	310	330	325	335	325	330	320	315	330	325	340	345	340	335	305	275	295	260	280
5	295	290	310	290	280	330	320	J R 340	335	330	340	305	325	320	330	335	345	340	310	305	300	280	270	285
6	270	300	280	305	290	290	335	J R 345	335	350	355	330	310	330	330	345	330	340	320	305	305	325	325	305
7	285	295	290	295	290	300	335	J R 360	J R 350	350	340	330	300	320	J R 330	330	345	310	315	335	315	295	310	290
8	290	285	285	285	320	290	310	J R 345	335	350	340	325	315	325	320	345	350	335	300	300	310	305	295	310
9	300	295	280	280	280	310	310	J R 350	J R 340	325	325	335	295	315	330	350	365	345	320	305	310	285	290	305
10	285	295	300	305	310	335	300	335	J R 345	315	325	330	325	325	335	325	J R 355	320	305	315	325	325	290	290
11	280	280	295	280	285	310	310	350	J R 335	330	335	345	315	300	325	340	350	290	305	285	290	295	285	315
12	285	280	285	290	300	335	315	340	320	320	345	J R 330	315	335	335	340	335	335	320	320	290	305	285	285
13	270	265	290	315	365	290	305	330	345	345	J R 340	335	310	325	335	300	340	350	310	J R 325	285	285	290	280
14	285	280	285	295	330	295	330	J R 335	J R 340	315	J R 340	360	345	340	330	330	345	360	295	315	315	285	270	285
15	280	290	295	315	335	330	315	350	J R 335	J R 320	335	350	335	315	340	340	365	335	305	295	295	290	290	310
16	285	335	305	305	295	315	315	355	355	335	345	345	335	345	330	345	345	335	335	295	295	305	275	290
17	285	275	285	300	340	305	310	340	340	J R 350	350	325	320	310	350	330	350	335	310	335	310	295	275	I R 290
18	265	275	295	295	315	295	295	345	J R 330	335	320	355	320	305	325	J R 335	345	340	325	275	295	305	290	285
19	290	275	295	J R 285	R 330	315	335	355	345	345	325	310	325	335	360	350	320	310	325	340	305	295	285	
20	295	275	J R 275	J R 275	330	335	310	340	J R 315	335	J R 350	345	300	335	335	350	360	335	315	290	305	295	280	285
21	305	300	300	310	300	280	320	355	340	J R 340	325	335	330	320	320	335	350	345	285	315	345	310	265	U S 255
22	270	280	315	350	315	280	305	350	355	325	310	325	325	335	320	J R 340	360	335	300	320	355	290	270	295
23	280	280	270	295	330	310	305	360	J R 325	335	310	J R 330	325	340	330	340	340	285	305	300	J R 335	J R 330	260	265
24	275	295	310	335	360	275	270	325	J R 340	340	320	315	325	335	J R 315	J R 315	330	330	325	360	275	265	270	295
25	285	275	280	290	350	R 285	320	335	325	325	320	310	335	345	335	325	350	325	305	315	250	260	285	
26	260	285	275	315	300	285	295	310	J R 330	325	J R 345	J R 320	320	325	215	325	355	340	325	340	280	270	275	290
27	290	295	295	275	305	290	345	345	355	350	355	350	330	310	345	J R 360	335	340	310	325	345	295	295	275
28	275	300	295	280	330	330	305	340	340	340	340	340	J R 330	340	340	355	365	330	270	325	330	285	270	285
29	290	310	315	335	335	280	300	340	S 360	345	340	340	330	350	340	350	325	315	325	325	285	310	275	280
30	270	285	295	295	325	295	285	J R 330	335	320	J R 335	330	345	360	335	330	355	350	305	310	315	295	290	270
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	30	30	30	30	29	29	30	30	29	30	29	30	30	30	30	30	29	30	30	30	30	30	30	30
MED	285	290	295	295	315	305	310	340	340	335	340	330	320	325	330	340	345	335	312	315	310	295	282	285
UQ	290	295	300	310	330	315	325	350	345	345	345	340	330	335	335	345	355	340	325	325	315	305	290	295
LQ	275	280	285	290	300	290	305	335	335	325	325	325	310	320	325	330	340	330	305	305	290	285	270	280

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M(3000)F2 (0.01)



IONOSPHERIC DATA

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M(3000)F1 (0.01)

135° E Mean Time (G. M. T. + 9<sup>h</sup>)

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	C	L	L	A	A										
2									L	L	L	L	L	L	L	L									
3									L	L	L	L	L	L	L	L									
4									L	L	L	L	L	L	L	L									
5									L	L	L	L	L	L	L	L									
6									L	L	U L 400	L	L	L	L	A									
7							L		L	L	L	L	L	L	L	L									
8									L	L	L	L	L	L	L										
9									L	L	L	L	L	A											
10									L	L	L	L	L	L	L										
11									L	L	L	L	L	L	L										
12									L	L	L	L	L		L										
13									L	L	L	L	L	L	L										
14										L	L	L	L	U L 360	L										
15									L	L	L	L	L	L	L										
16										L	L	L	L	L	L										
17									L	L	L	L	L	L	L										
18									L	L	L	L	L	U L 350	L	L									
19										L	L	L	L	L	L										
20									L	L	U L 370	L	L	L	L	L									
21									L	L	L	L	L	L	L	L									
22										L	L	L	L	L	L										
23										L	L		L	L	L										
24										L	L	L	L	L	L	L									
25									L	L	L	L	L	L	L										
26									L	L	L	L	L	L	L										
27									L	L	A	L	L	L	L	L									
28									L	L	L	U L 380	L	L	L	L	H 400								
29									L	L	L	L	L	L	L	L									
30									L	L	L	L	L			L									
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											2	1			2										
MED											385	380			U L 355		400								
UQ																									
LQ																									

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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H\*F2 (KM)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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										245	C	255	255	255	260									
2									240	240	240	255	255	250	245	250								
3									230	240	255	260	260	260	255	240								
4									240	245	250	255	285	255	255	245								
5									210	250	245	250	265	255	250	240								
6									250	230	240	255	255	255	240	240								
7								220	225	220	240	240	230	270	255	240								
8									240	240	245	295	255	260										
9									245	240	250	250	250	250										
10									230	245	250	260	250	260	250									
11									240	240	250	250	255	250	260									
12									240	260	240	250	285		240									
13									245	240	245	240	260	245	245									
14									225	245	240	230	265	260										
15									245	245	250	255	250	265	260									
16									265	240	250	250	255	240										
17									230	250	240	250	265	250	250									
18									235	240	255	250	250	290	250	240								
19									240	240	250	240	250	250										
20									250	245	250	245	225	240	240	235								
21									220	240	260	245	240	255	240	240								
22									245	230	285	260	250	245										
23									250	230		260	250	250										
24									240	250	275	250	250	245	250									
25									250	250	230	250	270	250	250									
26									255	250	245	245	230	240	240									
27									230	245	230	240	255	245	240	225								
28									225	235	250	275	225	240	240	220								
29									210	240	250	250	250	240	250	240								
30									230	245	245	265	250			230								
31																								
CNT								1	22	30	29	29	30	28	28	14								
MED								220	238	242	245	250	252	250	250	240								
UQ									245	245	250	255	260	255	255	240								
LQ									230	240	240	245	250	250	240	235								

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H\*F2 (KM)

IONOSPHERIC DATA

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H'F (KM)

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

Station Hour Day	KOKUBUNJI TOKYO				Lat. 35 42' 4" N				Long. 139 29' 3" E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	270	270	270	250	215	220	220	C	230	200	A	A	245	230	220	210	230	240	300	300	I <sup>A</sup> 300
2	I <sup>A</sup> 300	330	290	290	245	255	230	210	210	210	210	200	200	230	210	240	C	240	200	240	255	290	290	290
3	300	300	320	255	230	250	225	215	205	200	200	250	210	240	240	230	235	210	210	240	280	340	330	340
4	290	290	265	240	230	240	225	215	235	220	220	200	200	240	240	240	215	205	235	285	280	310	315	310
5	300	290	255	250	290	250	235	215	210	190 <sup>H</sup>	205	200	200 <sup>H</sup>	240	220	220	220	205	250	240	240	300	340	300
6	305	290	260	255	260	265	220	225	210	230	205	195	190	240	225	I <sup>A</sup> 230	210	210	220	220	245	240	230	245
7	260	280	320	270	300 <sup>A</sup>	270	240	210	220 <sup>H</sup>	210	205	205	200	220	220	210	210	200	225	220	230	270	270	270
8	300	310	290	280	250	255	225	210	220	210	210	210	200 <sup>H</sup>	250	240	245	215	200	290	255	250	255	265	260
9	295	290	300	310	290	230	245	230	210	200	190	200	230	I <sup>A</sup> 240	250	240	230	200	210	250	250	250	270	290
10	285	260	280	280	250	205	210	210	200	240	230	200	200	205	240	230	210	200	240	240	250	250	300	310
11	290	290	290	290	300	240	210	210	210	220	210	200 <sup>H</sup>	200	230	240	240	205	200	250	260	255	275	255	240
12	250	290	310	300	260	205	240	210	230	230	190 <sup>H</sup>	200	240	260	240	235	210	215	255	250	250	255	250	290
13	315	330	265	255	205	250	240	240	240	220	205	200	240	225	205 <sup>H</sup>	225	225	205	240	225	220	260	270	275
14	300	305	315	280	250	225	230	210	225	220	200 <sup>H</sup>	240	210	205	255	220	220	200	240	240	240	270	300	300
15	300	280	260	245	225	220	245	220	205 <sup>H</sup>	205	220	210	215	240	240	235	210	205	250	250	250	255	290	250
16	290	250	250	250	255	245	250	230	230	210	200	250	240	220	220	230	205	215	240	240	250	250	260	250
17	290	290	290	260	230	250	200	240	210	210	240	220	200	240	240	230	205	205	260	230	240	260	300	310
18	310	300	290	250	240	250	260	220	210	205	220	230	245	200	220	230	225	205	205	300	290	250	245	290
19	265	300	290	285	245	235	230	215	230	210	240	240	200	210	240	230	205	205	235	250	250	250	270	290
20	300	310	305	290	245	210	230	240	240	195 <sup>H</sup>	220	205	205	195	230	245	210	205	230	240	245	255	255	300
21	260	260	260	250	260	285	250	210	200	240	230	245	220	205	230	240	210	200	255	255	205	260	E <sup>S</sup> 325	350
22	320	320	250	220	240	300	250	225	230	210	200	230	200	240	220	235	220	200	260	240	210	250	300	300
23	260	305	330	290	230	225	275	210	240	240	220	250	225	240	200	230	205	230	230	250	205	250	400	350
24	350	300	270	240	200	350	300	245	230	230	220	200	230	240	210	240	220	220	210	200	300	290	325	300
25	300	300	290	260	205	190	300	230	240	210	210	200	200 <sup>H</sup>	240	240	240	230	200	250	215	230	270	330	300
26	340	290	300	240	300	300	260	330	245	240	220	210	200	220	230	225	230	210	230	230	290	280	330	300
27	250	290	260	300	300	290	250	235	210	180 <sup>H</sup>	I <sup>A</sup> 225	222	220	225	220	225	205	195	260	220	210	250	290	305
28	305	260	290	290	245	220	230	220	205 <sup>H</sup>	230	220 <sup>H</sup>	205	205 <sup>H</sup>	220	230	170 <sup>H</sup>	200	200	245	250	230	255	305	305
29	275	245	230	220	220	295	255	210	205	180	240	240	230	210	200	220	230	205	225	250	240	240	260	305
30	330	305	290	210	240	290	270	230	210	230	230	240	240	240	230	205	215	200	230	240	220	260	300	340
31																								
CNT	29	29	29	30	30	30	30	30	30	30	29	30	30	29	29	30	29	30	30	30	30	30	30	30
MED	300	290	290	260	245	250	240	218	215	210	220	210	205	230	230	230	215	205	238	240	245	258	292	300
UQ	305	305	300	290	260	270	250	230	230	230	220	240	230	240	240	240	225	210	250	250	250	275	310	305
LQ	285	290	260	250	230	225	230	210	210	205	205	200	200	220	220	225	210	200	225	230	230	250	265	290

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H'F (KM)

# IONOSPHERIC DATA

NOV. 1971

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

135° E Mean Time (G. M. T. + 9<sup>h</sup>)

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	110	100	110	110	110	105	C	100	100	100	100	100	100	100	100	100	100	100	100	100	
2		100	100	100	100	100	100	100	100	110	105	105	105	105	105	105	125	C	100	105	100	100	100	100	100	
3		100	100	100	100	100	105	B	G	105	105	100	100	G	150	100	120	110	105	100	100	100	100	100	100	
4		100	100	B	B	100	100	115	G	105	G	100	100	100	100	G	135	100	115	100	105	100	100	100	100	
5		100	100	100	100	S	B	B	G	G	105	100	100	100	100	105	140	115	115	110	105	100	100	100	100	
6		100	100	100	100	100	100	B	110	105	100	100	G	100	100	100	100	100	100	100	100	100	100	95	100	
7		115	100	100	100	100	100	100	G	G	100	100	100	100	100	100	G	G	110	B	105	100	105	100	100	
8		100	100	100	100	100	B	B	G	E	G	G	G	120	G	175	140	140	140	100	100	100	100	100	100	
9		100	100	100	B	B	B	100	125	115	120	G	G	130	110	110	110	G	110	100	100	100	100	100	100	
10		100	100	G	B	B	105	B	150	125	G	105	105	100	105	110	G	G	B	100	100	100	100	B	B	
11		100	100	100	100	100	B	100	100	110	110	110	G	G	G	G	140	G	105	S	S	100	S	S	S	
12		S	100	B	B	100	100	B	G	105	G	110	110	G	150	140	140	140	110	110	110	105	105	100	100	
13		100	100	115	100	100	B	B	115	115	G	G	G	100	G	100	100	100	100	100	100	100	100	B	S	100
14		100	100	100	100	100	100	100	110	175	170	100	155	150	100	100	100	100	120	100	B	S	S	100	S	
15		100	B	100	100	B	B	105	G	100	G	110	120	115	115	115	100	100	100	100	100	S	S	S	S	
16		S	100	B	B	100	B	B	G	G	115	110	160	160	150	135	120	160	B	100	100	S	110	105	B	
17		S	100	100	110	B	100	B	G	145	G	100	115	110	170	150	140	100	G	100	100	B	100	110	110	
18		110	115	100	100	B	100	105	G	110	110	115	115	110	110	G	G	120	100	B	S	S	B	B	S	
19		B	115	B	B	S	B	B	G	130	125	115	110	110	110	105	150	100	100	100	S	115	S	S	S	
20		B	S	B	B	B	105	B	115	G	125	115	105	G	G	G	G	110	F	100	B	B	B	B	S	
21		B	B	B	B	B	B	B	G	G	110	160	150	105	G	G	G	G	B	S	110	B	S	S	S	
22		B	S	B	B	B	S	B	G	G	G	115	110	115	G	160	G	G	100	100	S	100	100	100	100	
23		B	100	B	100	B	S	S	150	G	G	140	120	G	130	G	100	100	B	B	S	S	S	S	100	
24		S	100	B	100	100	B	S	G	G	115	110	110	110	100	100	100	100	100	100	B	S	S	S	100	
25		100	B	B	B	100	100	S	G	115	110	110	G	G	105	G	100	100	100	100	100	100	S	115	100	
26		115	B	100	B	110	B	B	G	120	120	110	115	110	110	150	100	100	120	110	100	100	S	100	100	
27		100	100	100	100	100	100	100	G	G	105	100	100	195	155	150	G	G	B	S	130	110	S	S	100	
28		100	100	100	B	B	B	B	G	G	115	155	115	115	145	125	105	105	B	100	B	S	B	B	S	
29		S	B	B	B	B	B	B	155	G	G	150	140	140	140	130	G	G	B	S	S	115	115	110	105	
30		100	100	100	B	100	100	100	B	G	G	G	G	G	160	180	100	G	110	105	S	110	S	115	100	
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		20	23	18	16	17	15	11	11	18	19	25	24	22	25	23	22	20	22	22	19	20	15	18	20	
MED		100	100	100	100	100	100	100	115	111	110	110	110	110	110	110	108	100	100	100	100	100	100	100	100	
UQ		100	100	100	100	100	100	105	138	122	118	115	120	115	150	140	140	112	110	100	105	102	102	105	100	
LQ		100	100	100	100	100	100	100	110	105	105	100	102	100	100	100	100	100	100	100	100	100	100	100	100	

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

IONOSPHERIC DATA

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TYPES OF ES

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

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	F	F	F	F	S	S	C	S		L	L	L	L	L	L	L	L	F	F	F	F	F	
2	F	F	F	F	F	F	L	L	C	S	C	C	C	C	H		L	L	L	F	F	F	F	F	
3	F	F	F	F	F	F			L	C	L	L		H	L	H	L	L	L	F	F	F	F	F	
4	F	F			F	F	L		L		L	L	L	L		H	L	L	L	F	F	F	F	F	
5	F	F	F	F					C	L	L	L	L	L	L	H	C	L	L	F	F	F	F	F	
6	F	F	F	F	F	F		H	C	L	L		L	L	L	L	L	L	F	F	F	F	F	F	
7	F	F	F	F	F	F	L		L	L	L	L	L	L				L	F	F	F	F	F	F	
8	F	F	F	F	F				H		H		H	L	H	H	H	F	F	F	F	F	F	F	
9	F	F	F			L	H	C	H		L	L	L	L	C	C		L	F	F	F	F	F	F	
10	F	F			F		H	H	H		L	L	L	L	C				F	F	F	F			
11	F	F	F	F	F		L	L	C	C	C					H		L				F			
12		F			F	F			H		S	C		H	L	H	H	H	C	F	F	F	F	F	
13	F	F	F	F	F			C	C				L		L	L	L	L	F	F	F			F	
14	F	F	F	F	F	F	L	L	H	H	L	H	H	L	L	L	L	L	L	F				F	
15	F		F	F			L		L		C	H	C	C	C	L	L	L	F	F	F				
16		F			F				C	C	H	H	H	H	H	H	H		F	F		F	F		
17		F	F	F		F			H		L	C	C	H	H	H	L		F	F		F	F	F	
18	F	F	F	F	F	L			C	C	C	C	C	C			C	L							
19		F							H	H	C	C	C	C	L	H	H	L	F		F				
20					F		C		H	S	L						L	L							
21									C	H	H	L								F					
22									C	C	C							L	F		F	F	F	F	
23		F					H		H	H			H		L	L								F	
24		F		F	F				C	C	C	C	L	L	L	L	L	L	F					F	
25	F				F				C	C	C		L		L	L	L	L	F	F	F		F	F	
26	F		F		F				H	H	C	C	C	C	H	H	L	C	F	F	F	F	F	F	
27	F	F	F	F	F	F			L	L	L	H	H	H					F	F				F	
28	F	F	F						S	H	C	L	L	H	H	L	L		F						
29							H			H	H	H	H	H	H						F	F	F	F	
30	F	F	F		F	F	F						H	H	L		L	F		F		F	F	F	
31																									
CNT																									
MED																									
UQ																									
LQ																									

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TYPES OF ES

IONOSPHERIC DATA

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HPF2 (KM)

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

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	330 <sup>S</sup>	320 <sup>I A</sup>	325	340 <sup>S</sup>	315	315	250	240	R	300	C	300	300	285	290	280	260	280	280	290	300	380	390	370 <sup>A</sup>
2	350 <sup>I A</sup>	360	350	350	290	300	265	240	290	260	290	300	300	300	290	285	C	255	255	280	350	355	355	355
3	360	350	370	350	290	330	290	250 <sup>R</sup>	255	280	300	300 <sup>R</sup>	290	300	260	255	290	255	255	290	300	400 <sup>I A</sup>	380	390
4	350	355	340	290	280	330	290	260	265	290	290	300	300	290	290	280	270	255	280	300	355	360	380	390
5	360	350	300	350	355	280	280	250 <sup>R</sup>	290	290	280	300	290	290	285	290	260	250	290	300	290	350	390	350
6	390	350	350	340	355	355	290	250 <sup>R</sup>	290	255	250	280	300	285	280	260	260	250	280	300	305	295	270	310
7	345	345	350	320	345	320	260	245 <sup>R</sup>	245 <sup>R</sup>	250	260	280	300	300	285 <sup>R</sup>	270	250	290	300	270	270	330	320	320
8	350	360	360	350	300	325	300	240 <sup>R</sup>	270	260	280	290	310	290	300	270	255	280	350	300	300	300	350	330
9	350	360	380	390	370	300	290	255 <sup>R</sup>	250 <sup>R</sup>	290	290	290	310	300	290	250	250	270	290	340	300	340	350	310
10	350	350	350	340	320	250	290	250	250 <sup>R</sup>	310	280	290	300	300	290	280	250 <sup>R</sup>	280	300	290	290	300	355	370
11	350	350	350	355	355	290	290	250	260 <sup>R</sup>	290	280	255	290	330	290	280	255	300	340	350	355	340	350	290
12	350	355	390	350	340	280	300 <sup>R</sup>	250	300	300	270	290 <sup>R</sup>	300	290	290	280	265	255	300	290	350	300	330	350
13	390	390	350	300	250	300	300	290	265 <sup>R</sup>	265	265 <sup>R</sup>	260	300	290	275	280	260	250	305	280 <sup>R</sup>	320	320	315	335
14	355	350	350	320	290	300	270	280 <sup>R</sup>	260 <sup>R</sup>	290	260 <sup>R</sup>	250	255	270	285	285	250	240	300	290	280	330	355	350
15	350	330	315	300	280	255	300	250	270 <sup>R</sup>	265 <sup>R</sup>	275	265	290	300	280	255	255	255	300	300	350	350	360	300
16	350	290	300	300	300	290	300	265	255	265	255	250 <sup>R</sup>	290	270	285	250	250	290	290	300	315	290	350	320
17	355	350	355	350	265	300	290	260	280	260 <sup>R</sup>	250 <sup>R</sup>	290	300	295	255	290	250	280	300	285	300	300	350	360 <sup>I R</sup>
18	360	360	350	300	285	350	320	255	265 <sup>R</sup>	265	290	265	300	310	295	260 <sup>R</sup>	260	260	285	380	355	340	355	360
19	355	360	350	360 <sup>J R</sup>	R	285	300	290	250	250	265	290	305	290	290	250	250	290	330	295	270	340	350	350
20	350	360	390 <sup>J R</sup>	355 <sup>J R</sup>	290	255	330	250	300 <sup>R</sup>	260	260 <sup>R</sup>	255	300	260	260	255	250	250	300	330	305	320	345	350
21	315	310	320	305	320	350	300	240	250	260 <sup>R</sup>	290	270	280	290	280	270	240	250	320	300	250	290	375	400 <sup>U S</sup>
22	370	370	300	250	290	350	300	250	255	285	290	300	300	290	290	260 <sup>R</sup>	250	290	350	290	255	350	360	360
23	350	390	390	360	285	300	340	250	290 <sup>R</sup>	290	290	290 <sup>R</sup>	300 <sup>R</sup>	265	290	280	255	350	310	350	290 <sup>R</sup>	290 <sup>R</sup>	450	400
24	400	360	330	280	230	410	380	290	255 <sup>R</sup>	255	290	315	300	280	300 <sup>R</sup>	300 <sup>R</sup>	290	290	290	250	390	360	390	350
25	350	360	355	350	255	R	355	290	290	300	260	300	300	290	270	280	290	255	300	340	300	390	400	380
26	400	350	360	290	350	355	350	290	265 <sup>R</sup>	290	260 <sup>R</sup>	300 <sup>R</sup>	300	260	310	290	260	280	290	280	340	350	390	360
27	350	300	300	390	340	350	270	260	250	255	255	255	280	300	260	240 <sup>R</sup>	250	250	305	260	245 <sup>V</sup>	325 <sup>S</sup>	320	355
28	350	320	340	350	285	270	305	250	250	250	265	280	325 <sup>R</sup>	255	260	250	220	265	360	290	285	320	360	365
29	320	300	290	275	260	330	305	250 <sup>S</sup>	240	270	280	280	280	255	280	255	300	290	300	300	350	290	350	390
30	390	360	350	300	290	340	340	290 <sup>J R</sup>	265	300	260 <sup>R</sup>	290	270	250	290	300	260	250	300	290	290	350	370	390
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	30	30	30	30	29	29	30	30	29	30	29	30	30	30	30	30	29	30	30	30	30	30	30	30
MED	350	350	350	340	290	300	300	250	265	268	275	290	300	290	288	275	255	262	300	292	300	335	355	355
UQ	360	360	355	350	340	340	305	265	280	290	290	300	300	300	290	280	260	290	305	300	350	350	380	370
LQ	350	345	325	300	285	290	290	250	250	260	260	265	290	270	280	255	250	250	290	290	290	300	350	335

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HPF2 (KM)



IONOSPHERIC DATA

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YPF2 (KM)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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	70 <sup>S</sup>	80 <sup>I</sup>	90	60 <sup>S</sup>	85	80	75	60	R	80	C	90	90	95	100	110	100	100	100	90	90	100	100	100 <sup>I</sup>
2	100 <sup>I</sup>	90	100	100	100	90	85	80	100	90	100	90	90	90	100	95	C	85	95	100	90	85	95	95
3	90	100	110	100	90	110	100	100 <sup>R</sup>	85	100	90	J <sup>R</sup> 90	100	90	100	95	100	85	95	100	90	100 <sup>I</sup>	110	100
4	100	95	100	100	100	110	90	100	95	100	90	90	100	100	100	90	90	95	110	90	95	130	110	90
5	90	100	90	90	95	110	110	J <sup>R</sup> 90	90	100	90	90	90	100	95	100	90	100	100	90	90	90	90	90
6	100	90	90	100	85	85	100	J <sup>R</sup> 85	90	45	50	50	85	70	75	45	85	55	80	100	90	55	55	85
7	105	75	65	80	65	80	50	J <sup>R</sup> 55	J <sup>R</sup> 55	50	55	60	90	55	J <sup>R</sup> 75	65	55	100	100	75	70	85	85	125
8	95	90	90	95	70	95	100	J <sup>R</sup> 65	60	90	100	90	80	100	90	110	95	100	110	100	90	100	100	100
9	100	90	100	100	80	100	100	J <sup>R</sup> 85	J <sup>R</sup> 100	90	90	100	90	90	90	100	100	90	100	100	90	100	100	90
10	100	100	100	100	90	100	100	90	J <sup>R</sup> 100	100	100	100	90	90	90	110	J <sup>R</sup> 80	100	90	100	100	90	95	120
11	100	90	100	95	95	100	100	100	J <sup>R</sup> 90	90	100	95	100	100	90	100	85	90	100	100	105	100	100	100
12	90	95	90	100	100	100	100 <sup>R</sup>	90	90	90	80	J <sup>R</sup> 90	90	100	90	100	85	105	100	100	90	100	110	100
13	100	100	100	90	90	100	90	90	J <sup>R</sup> 95	45	J <sup>R</sup> 55	60	85	60	55	90	60	55	75	J <sup>R</sup> 75	85	125	85	110
14	65	95	55	80	60	100	75	J <sup>R</sup> 40	J <sup>R</sup> 45	65	J <sup>R</sup> 60	50	100	60	60	60	50	60	110	80	80	115	100	95
15	90	70	85	55	70	70	65	50	J <sup>R</sup> 50	J <sup>R</sup> 95	85	95	100	90	110	85	85	95	90	90	90	90	90	100
16	100	100	90	90	90	100	90	85	95	85	95	90 <sup>R</sup>	90	100	95	90	100	70	90	100	95	100	90	110
17	95	100	95	90	95	90	100	100	100	J <sup>R</sup> 90	100 <sup>R</sup>	90	60	95	95	100	90	100	100	95	90	90	100	100 <sup>I</sup>
18	100	100	100	90	105	90	120	95	J <sup>R</sup> 95	85	100	95	90	90	95	100	100	100	95	110	105	100	95	100
19	105	100	110	J <sup>R</sup> 100	R	105	100	100	90	100	95	100	105	100	100	90	100	90	110	95	100	100	90	100
20	100	100	J <sup>R</sup> 90	J <sup>R</sup> 105	100	95	90	90	J <sup>R</sup> 90	65	J <sup>R</sup> 45	50	95	95	85	45	40	65	55	115	95	90	100	95
21	85	90	80	80	85	95	55	60	60	J <sup>R</sup> 45	60	85	75	65	75	50	60	50	100	55	50	70	80	100 <sup>U</sup>
22	90	75	55	50	65	100	60	50	45	105	100	90	90	100	100	100 <sup>R</sup>	90	100	90	100	95	100	90	100
23	100	100	100	90	105	90	100	90	J <sup>R</sup> 100	100	100	J <sup>R</sup> 90	90 <sup>R</sup>	125	100	100	95	100	90	100	J <sup>R</sup> 90	J <sup>R</sup> 110	100	90
24	90	110	110	110	90	110	100	90	J <sup>R</sup> 85	95	100	95	90	100	J <sup>R</sup> 90	J <sup>R</sup> 90	90	100	100	90	100	80	100	100
25	100	90	95	90	85	R	95	100	100	90	80	90	90	100	100	100	100	95	90	100	90	90	90	100
26	90	90	100	90	90	95	100	100	J <sup>R</sup> 85	100	J <sup>R</sup> 90	J <sup>R</sup> 90	100	100	90	90	90	100	100	110	100	100	100	100
27	100	90	90	90	110	90	120	90	90	50 <sup>S</sup>	100	45	65	100	45	J <sup>R</sup> 60	90	110	90	60	70	80	95	90
28	95	85	80	95	70	80	95	50	65	50	50	40	J <sup>R</sup> 75	60	50	50	70	100	125	65	75	95	90	80
29	80	95	80	70	55	110	95	55	55	90	100	110	100	105	110	95	90	100	90	90	90	100	90	100
30	100	100	100	100	100	100	100	J <sup>R</sup> 100	85	90	J <sup>R</sup> 100	100	110	90	100	90	80	90	90	100	90	110	90	100
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	30	30	30	30	29	29	30	30	29	30	29	30	30	30	30	30	29	30	30	30	30	30	30	30
MED	100	95	92	90	90	100	100	90	90	90	90	90	90	95	92	92	90	98	98	100	90	100	90	100
UQ	100	100	100	100	100	100	100	100	95	100	100	95	100	100	100	100	95	100	100	100	95	100	100	100
LQ	90	90	90	90	80	90	90	60	65	65	80	85	90	90	85	85	80	85	90	90	90	90	90	90

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YPF2 (KM)



IONOSPHERIC DATA

NOV. 1971

FOF2 (0.1 MHz)

135 E Mean Time (G. M. T.+ 9<sup>h</sup>)

Station	YAMAGAWA				Lat. 31	12.1 N	Long. 130	37.1 E	Sweep 1	1 MHz to 20	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	38	36	37	39	39	31	34	70	70	79	86	105	J <sub>99</sub>	108	114	98	82	82	J <sub>75</sub>	J <sub>56</sub>	52	J <sub>49</sub>	J <sub>40</sub>	38	
2	37	36	36	38	40	33	33	61	78	J <sub>89</sub>	102	J <sub>98</sub>	90	97	113	110	97	74	55	46	58	J <sub>48</sub>	45	45	
3	I <sub>43</sub>	C	I <sub>41</sub>	42	C	C	C	C	C	C	81	83	86	C	C	C	C	C	C	C	C	C	C	38	C
4	C	C	C	C	C	C	C	C	C	C	102	105	107	120	C	116	I <sub>95</sub>	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	88	103	100	112	124	114	98	78	60	52	54	40	35	37	
6	38	38	37	39	39	33	38	61	83	U <sub>96</sub>	108	107	U <sub>99</sub>	U <sub>112</sub>	128	114	89	75	64	J <sub>57</sub>	51	49	48	37	
7	36	36	35	37	39	37	I <sub>45</sub>	70	J <sub>83</sub>	85	86	I <sub>100</sub>	98	107	131	125	99	78	63	55	53	45	39	39	
8	39	37	37	37	39	37	36	67	86	93	I <sub>104</sub>	104	96	113	126	114	97	J <sub>74</sub>	56	56	J <sub>65</sub>	J <sub>48</sub>	38	35	
9	J <sub>36</sub>	I <sub>35</sub>	J <sub>35</sub>	I <sub>35</sub>	I <sub>35</sub>	U <sub>38</sub>	C	C	C	79	90	91	86	93	104	107	C	75	69	U <sub>49</sub>	50	U <sub>49</sub>	39	34	
10	33	33	35	35	37	34	34	57	72	74	88	U <sub>94</sub>	102	I <sub>112</sub>	134	105	102	82	J <sub>66</sub>	50	J <sub>52</sub>	44	31	29	
11	33	32	32	33	31	I <sub>30</sub>	31	50	J <sub>77</sub>	74	73	90	80	88	113	113	83	59	56	44	47	48	38	38	
12	34	34	35	36	U <sub>40</sub>	33	31	62	86	89	92	C	C	C	C	C	100	70	59	63	54	45	36	33	
13	31	31	33	39	47	23	22	55	83	100	101	116	95	115	139	I <sub>124</sub>	123	113	101	71	78	70	68	62	
14	60	J <sub>53</sub>	44	H <sub>46</sub>	46	28	24	53	74	80	84	108	H <sub>82</sub>	84	105	95	84	68	52	40	51	53	45	37	
15	36	35	36	36	38	25	23	55	81	63	92	93	100	93	88	I <sub>100</sub>	70	68	51	42	J <sub>54</sub>	U <sub>57</sub>	44	40	
16	38	37	27	30	33	25	25	50	70	85	81	81	H <sub>77</sub>	H <sub>76</sub>	101	91	68	57	53	45	48	43	32	31	
17	31	32	32	35	42	34	23	49	64	77	81	85	80	86	86	86	85	U <sub>67</sub>	49	49	46	38	28	28	
18	31	31	32	36	I <sub>40</sub>	26	27	U <sub>50</sub>	73	74	85	101	102	86	103	U <sub>109</sub>	88	70	45	39	48	J <sub>52</sub>	43	35	
19	35	U <sub>34</sub>	34	37	I <sub>46</sub>	32	26	J <sub>51</sub>	I <sub>61</sub>	78	79	102	76	84	96	101	67	59	46	43	51	40	34	35	
20	33	34	34	37	44	V <sub>27</sub>	26	52	73	85	110	115	99	102	113	S	85	71	48	45	47	48	45	30	
21	32	35	37	37	38	32	34	57	70	79	87	112	107	115	144	143	132	J <sub>91</sub>	H <sub>59</sub>	J <sub>65</sub>	61	48	34	31	
22	32	33	36	36	28	23	25	54	71	80	80	92	87	97	93	92	84	78	J <sub>64</sub>	72	77	48	44	36	
23	32	31	32	33	38	H <sub>21</sub>	21	55	71	89	81	92	109	107	98	97	79	61	57	63	74	J <sub>32</sub>	22	24	
24	27	32	30	26	18	17	16	53	70	82	U <sub>98</sub>	112	129	103	93	107	100	I <sub>91</sub>	70	55	36	33	31	31	
25	32	34	35	39	46	J <sub>18</sub>	18	48	84	107	92	94	108	136	126	117	I <sub>108</sub>	I <sub>90</sub>	I <sub>68</sub>	J <sub>62</sub>	70	40	29	32	
26	32	34	36	40	23	26	26	55	U <sub>95</sub>	110	108	109	93	108	90	86	89	75	63	58	54	52	42	38	
27	38	33	30	31	32	32	31	J <sub>60</sub>	79	98	108	108	109	I <sub>108</sub>	U <sub>103</sub>	J <sub>106</sub>	95	69	53	57	J <sub>78</sub>	51	34	34	
28	34	33	33	32	38	33	23	50	70	94	90	86	95	92	86	89	80	69	52	J <sub>51</sub>	J <sub>58</sub>	59	47	42	
29	46	42	42	40	27	25	26	52	J <sub>76</sub>	74	74	92	92	91	92	93	93	84	59	J <sub>49</sub>	56	J <sub>52</sub>	38	27	
30	28	32	35	36	36	30	29	45	78	99	94	92	92	92	H <sub>78</sub>	79	89	65	46	45	43	40	36	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	28	28	28	28	27	27	26	26	26	28	30	29	28	28	27	27	28	28	28	28	28	28	29	28	
MED	34	34	35	36	38	30	26	54	75	84	89	100	97	102	104	106	89	74	58	52	54	48	38	35	
UQ	38	36	36	39	40	33	33	60	83	94	101	106	102	112	125	114	98	80	64	58	60	52	44	38	
LQ	32	32	32	35	34	25	23	50	70	78	83	92	88	92	93	94	84	68	52	45	49	42	34	31	

NOV. 1971

FOF2 (0.1 MHz)

IONOSPHERIC DATA

NOV. 1971

FOF1 (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									L	L	L	L	460	L	L	L								
2											L	L	L	L	L	L	L							
3									C	L	410	450	C	C	C	C	C							
4									C	C	L	L	440	530	C	L	330							
5									C	C	L	L	L	490	L	L	A							
6									L	L	L	460	L	L	L	L	L							
7									L	L	L	C	L	L	L	L	A							
8									L	L	L	L	L	500	L	L	L							
9									C	L	L	U L 470	U L 460	U L 480	L	L	C							
10										L	L	L	470	L	L	L	290	220						
11											L	L	470	470	470	L								
12										L	L	C	C	C	C	C	L	230						
13									290	L	L	L	L	L	L	L	L	310	L					
14										L	L	L	L	L	L	L	L							
15									L	L	L	450	L	L	L	L								
16										L	L	L	450	460	L	L	L							
17										L	L	L	L	L	L	A								
18										L	L	U 470	480	U 480	440	L	L							
19									280	L	L	L	L	L	L	L								
20									L	L	L	L	L	L	L	400	280							
21										L	L	L	460	L	460	L								
22											L	L	L	L	L	L								
23										L	L	L	L	L	L	L								
24										L	L	L	L	L	U 430	320	L							
25										L	L	400	L	L	390	L	L							
26										L	L	L	500	L	A	400	280							
27									280	340	L	L	L	480	L	L	310							
28									270		L	L	L	L	410	370								
29										340	L	L	L	A	420	L	270							
30										340	390	U 460	510	L	L	L	270							
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									4	3	2	7	10	8	7	4	8	2						
MED									280	340	400	460	465	480	430	385	285	225						
UQ									285	340		U 465	480	495	450	400	310							
LQ									275	340		450	460	475	415	345	275							

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NOV. 1971

FOF1 (0.01 MHz)

IONOSPHERIC DATA

NOV. 1971

FOE (0.01 MHZ)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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									160	250	290 <sup>H</sup>	315 <sup>I</sup>	330 <sup>S</sup>	340	335 <sup>I</sup>	330 <sup>A</sup>	A	A	A						
2									A	255	A	320	340	340	A	A	A	A	A						
3									C	C	C	320	330	330	C	C	C	C	C						
4									C	C	C	310	320	320	320	320	290 <sup>C</sup>	260	C						
5									C	C	C	320	A	A	330	320	300	255	A						
6									165	250 <sup>I</sup>	290	325	335	340	330	320	300 <sup>H</sup>	250	A						
7									160	250	290	315	330 <sup>I</sup>	330	330	325	295	250	A						
8									180	250 <sup>H</sup>	280	310	325 <sup>H</sup>	330	A	310 <sup>H</sup>	285	250	170						
9									C	C	A	310	330	330	330	320	300	230 <sup>I</sup>	180						
10									180	255 <sup>H</sup>	310	320	325 <sup>I</sup>	330 <sup>I</sup>	330 <sup>I</sup>	320	295	A	A						
11									S	250	290	A	A	A	A	A	290	240	S						
12									S	260	280	315	C	C	C	C	C	250	170						
13									S	230 <sup>I</sup>	300	320	335 <sup>I</sup>	340	335 <sup>I</sup>	320	290	250 <sup>H</sup>	150						
14									160	240 <sup>H</sup>	285 <sup>H</sup>	310 <sup>H</sup>	330	340	335	320 <sup>H</sup>	290	250	A						
15									S	250 <sup>H</sup>	280	310	325	330	320	A	A	A	S						
16									S	230	A	305	320	320	320	300 <sup>I</sup>	280	215	S						
17									S	240	285 <sup>I</sup>	305	330	325	315	310	285	225 <sup>I</sup>	S						
18									S	230	280	300	325	325	325	300	285	225	S						
19									S	230 <sup>F</sup>	280	310	335 <sup>I</sup>	325 <sup>I</sup>	315 <sup>I</sup>	295	280 <sup>H</sup>	250 <sup>H</sup>	160						
20									S	230	280 <sup>H</sup>	300	A	A	A	320	280	250	A						
21									S	230 <sup>H</sup>	280	300	325 <sup>I</sup>	335 <sup>I</sup>	330	310	280	230	S						
22									S	240 <sup>H</sup>	280	310	320	320	310	300	290	250	A						
23									S	230	290	305	320	320	315	310	300	255 <sup>I</sup>	S						
24									160	245	285	A	A	A	325	310	285	245	A						
25									S	A	A	A	A	315	305 <sup>I</sup>	300 <sup>I</sup>	285	220	A						
26									S	240	270	300	320 <sup>R</sup>	325 <sup>R</sup>	320	310 <sup>H</sup>	290 <sup>H</sup>	245	A						
27									S	230	270	290	320	320	320	310	285	250	B						
28									S	A	A	310	330	330	330	315 <sup>I</sup>	285 <sup>I</sup>	A	B						
29									S	230	285	305	320	330	325	310	280	220	S						
30									S	230	275	300	320	335	315	305	280	235	S						
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								7	24	22	27	24	25	24	25	25	24	5							
MED								160	240	282	310	325	330	325	310	285	250	170							
UQ								172	250	290	315	330	335	330	320	290	250	170							
LQ								160	230	280	305	320	325	318	310	285	230	160							

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NOV. 1971

FOE (0.01 MHZ)

IONOSPHERIC DATA

NOV. 1971

FOES (0.1 MHZ)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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>14</sub>	J <sub>26</sub>	J <sub>25</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	E <sub>34</sub>	J <sub>33</sub>	39	37	35	J <sub>63</sub>	J <sub>51</sub>	J <sub>40</sub>	J <sub>51</sub>	J <sub>22</sub>	J <sub>22</sub>	J <sub>19</sub>	J <sub>16</sub>	J <sub>16</sub>
2	J <sub>19</sub>	J <sub>26</sub>	J <sub>21</sub>	J <sub>32</sub>	J <sub>22</sub>	J <sub>20</sub>	J <sub>19</sub>	J <sub>26</sub>	27	30	J <sub>34</sub>	G	J <sub>35</sub>	36	J <sub>39</sub>	J <sub>35</sub>	J <sub>53</sub>	J <sub>51</sub>	J <sub>27</sub>	J <sub>29</sub>	J <sub>37</sub>	J <sub>32</sub>	23	J <sub>19</sub>
3	C	E <sub>15</sub>	C	C	C	C	C	C	C	E <sub>38</sub>	34	43	36	C	C	C	C	C	C	C	C	C	J <sub>27</sub>	C
4	C	C	C	C	C	C	C	C	C	C	34	J <sub>32</sub>	G	40	G	30	G	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	32	37	35	35	G	35	36	J <sub>33</sub>	40	J <sub>52</sub>	J <sub>41</sub>	25	J <sub>22</sub>	J <sub>33</sub>
6	J <sub>29</sub>	J <sub>31</sub>	J <sub>23</sub>	J <sub>23</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	J <sub>29</sub>	J <sub>47</sub>	J <sub>53</sub>	27	J <sub>34</sub>	J <sub>34</sub>	J <sub>31</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>34</sub>	J <sub>49</sub>	J <sub>44</sub>	E <sub>15</sub>	J <sub>22</sub>	E <sub>15</sub>	E <sub>15</sub>
7	E <sub>15</sub>	23	E <sub>15</sub>	E <sub>15</sub>	J <sub>24</sub>	J <sub>21</sub>	J <sub>26</sub>	J <sub>21</sub>	20	24	28	C	30	35	30	33	41	J <sub>32</sub>	E <sub>15</sub>	J <sub>29</sub>	J <sub>22</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>	17	J <sub>24</sub>	19	22	25	G	32	32	G	G	33	36	31	G	G	J <sub>27</sub>	J <sub>16</sub>	E <sub>15</sub>	15	J <sub>19</sub>	E <sub>15</sub>
9	E <sub>13</sub>	C	E <sub>15</sub>	C	C	E <sub>15</sub>	C	C	C	33	33	J <sub>29</sub>	J <sub>27</sub>	J <sub>47</sub>	35	J <sub>35</sub>	C	23	J <sub>29</sub>	J <sub>28</sub>	J <sub>18</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>19</sub>
10	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	27	J <sub>17</sub>	23	J <sub>21</sub>	G	G	J <sub>24</sub>	34	36	35	36	30	31	18	J <sub>44</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>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	C	E <sub>15</sub>	E <sub>15</sub>	G	32	34	34	35	33	43	35	23	19	J <sub>21</sub>	23	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>
12	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E	E <sub>14</sub>	19	25	30	36	38	C	C	C	C	C	G	G	23	E <sub>14</sub>	19	J <sub>33</sub>	E <sub>15</sub>	E <sub>15</sub>
13	J <sub>22</sub>	J <sub>21</sub>	E <sub>14</sub>	J <sub>26</sub>	E <sub>15</sub>	E <sub>14</sub>	J <sub>21</sub>	E <sub>15</sub>	J <sub>34</sub>	26	J <sub>34</sub>	39	G	35	J <sub>54</sub>	J <sub>38</sub>	23	16	24	J <sub>31</sub>	E <sub>15</sub>	19	E <sub>15</sub>	E <sub>15</sub>
14	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	28	G	22	42	39	37	35	36	32	26	J <sub>23</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>
15	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>24</sub>	22	17	21	J <sub>29</sub>	30	33	39	43	42	33	J <sub>35</sub>	J <sub>40</sub>	J <sub>41</sub>	J <sub>29</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>
16	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>	18	22	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	J <sub>28</sub>	27	34	39	40	36	35	34	34	J <sub>21</sub>	J <sub>20</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	24	E <sub>14</sub>
17	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>18</sub>	E <sub>13</sub>	E <sub>15</sub>	J <sub>28</sub>	23	E <sub>40</sub>	35	35	44	42	35	41	32	18	J <sub>19</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
18	18	22	17	E <sub>14</sub>	E <sub>15</sub>	20	20	E <sub>15</sub>	25	29	31	35	37	36	32	J <sub>22</sub>	J <sub>20</sub>	J <sub>16</sub>	J <sub>22</sub>	J <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>
19	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>	J <sub>32</sub>	26	39	36	38	35	34	26	34	27	G	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>
20	E <sub>15</sub>	E <sub>15</sub>	16	E <sub>15</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	18	G	32	40	36	35	32	19	J <sub>28</sub>	23	J <sub>24</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
21	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	29	33	40	J <sub>58</sub>	J <sub>37</sub>	33	G	21	G	E <sub>11</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>
22	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E	J <sub>20</sub>	E <sub>15</sub>	16	G	33	G	G	34	35	33	29	G	16	23	22	20	21	19	E <sub>15</sub>
23	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>	G	G	34	G	35	37	34	29	J <sub>34</sub>	E <sub>15</sub>	E <sub>14</sub>	23	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
24	22	19	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	16	E <sub>15</sub>	G	27	J <sub>31</sub>	39	J <sub>50</sub>	J <sub>36</sub>	34	J <sub>39</sub>	J <sub>36</sub>	J <sub>31</sub>	J <sub>29</sub>	J <sub>19</sub>	23	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>
25	25	J <sub>31</sub>	J <sub>30</sub>	J <sub>18</sub>	E <sub>14</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>26</sub>	J <sub>32</sub>	34	35	J <sub>36</sub>	J <sub>48</sub>	J <sub>44</sub>	J <sub>47</sub>	J <sub>30</sub>	J <sub>60</sub>	J <sub>52</sub>	J <sub>33</sub>	J <sub>30</sub>	22	21	19
26	18	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	22	17	E <sub>14</sub>	E <sub>15</sub>	26	31	39	36	23	20	49	33	29	21	J <sub>23</sub>	J <sub>29</sub>	J <sub>55</sub>	J <sub>34</sub>	24	E <sub>14</sub>
27	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	G	G	32	39	37	38	J <sub>25</sub>	J <sub>35</sub>	J <sub>22</sub>	E <sub>16</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>
28	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	24	J <sub>34</sub>	35	35	36	G	33	31	J <sub>31</sub>	J <sub>28</sub>	19	20	17	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
29	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>14</sub>	17	G	35	40	42	J <sub>50</sub>	J <sub>47</sub>	G	17	J <sub>21</sub>	J <sub>20</sub>	22	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
30	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	27	G	28	G	31	G	G	26	17	E <sub>15</sub>	E <sub>15</sub>	19	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
31																								
CNT	27	27	27	26	26	26	26	26	26	28	30	28	29	28	28	28	28	28	28	28	28	28	29	28
MED	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>	24	30	34	35	36	35	34	34	29	21	J <sub>23</sub>	21	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
UQ	16	20	E <sub>15</sub>	E <sub>15</sub>	22	17	19	21	28	32	35	39	37	38	38	J <sub>35</sub>	J <sub>33</sub>	J <sub>30</sub>	J <sub>28</sub>	J <sub>28</sub>	20	20	19	E <sub>15</sub>
LQ	E <sub>14</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	G	24	32	30	34	34	30	30	20	16	19	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>

NOV. 1971

FOES (0.1 MHZ)

IONOSPHERIC DATA

NOV. 1971

FBES (0.1 MHz)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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>14</sub> <sup>S</sup>	E <sub>15</sub>	E <sub>14</sub> <sup>S</sup>	E <sub>12</sub> <sup>B</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G	G <sub>23</sub>	E <sub>34</sub> <sup>S</sup>	G <sub>31</sub>	37	37	G	38	26	22	26	21	16	17	E	E		
2	17	19	16	21	19	15	E	22	G	30	30	G	32	34	35	31	29	51	16	22	31	30	E	16	
3	C	E <sub>15</sub> <sup>S</sup>	C	C	C	C	C	C	C	E <sub>38</sub> <sup>C</sup>	34	37	36	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	G	G <sub>22</sub>	G	38	G	G	G	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	G	G <sub>30</sub>	36	34	35	G	32	35	27	30	22	25	E	16	20
6	16	18	E	20	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	27	27	26	27	G <sub>30</sub>	28	G <sub>26</sub>	G <sub>21</sub>	18	20	35	20	E <sub>15</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
7	E <sub>15</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	17	22	18	G	G <sub>24</sub>	G <sub>26</sub>	C	G <sub>26</sub>	G	G <sub>30</sub>	G	38	28	E <sub>15</sub> <sup>S</sup>	E	E	E <sub>15</sub> <sup>B</sup>	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>	E <sub>15</sub> <sup>S</sup>	E	E	E	E	G	G	G	G	G	E <sub>33</sub> <sup>R</sup>	34	G	G	G	E	E	E <sub>15</sub> <sup>S</sup>	E	E	E <sub>15</sub> <sup>S</sup>	E	
9	E <sub>13</sub> <sup>S</sup>	C	E <sub>15</sub> <sup>S</sup>	C	C	E <sub>15</sub> <sup>S</sup>	C	C	C	32	G	G <sub>26</sub>	G <sub>26</sub>	29	G	19	C	21	20	17	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	
10	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>	16	E	E	G	G	G	G <sub>21</sub>	34	34	34	35	28	25	18	40	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>	
11	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>	C	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G	34	34	34	E <sub>33</sub> <sup>R</sup>	40	34	G	E <sub>19</sub> <sup>R</sup>	18	19	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
12	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>14</sub> <sup>S</sup>	E	21	29	31	35	C	C	C	C	C	C	G	E	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
13	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	24	24	30	38	G	34	28	25	G	G	E	21	E <sub>15</sub> <sup>S</sup>	E	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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>11</sub> <sup>B</sup>	E <sub>15</sub> <sup>B</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	28	G	G <sub>22</sub>	41	G	37	G	35	31	23	E	E <sub>15</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>	E <sub>15</sub> <sup>S</sup>	
15	E <sub>14</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>	19	E	E	20	21	G	E <sub>33</sub> <sup>R</sup>	38	41	39	33	29	25	15	E	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>	
16	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>B</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	27	33	37	39	36	35	33	26	G	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	
17	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	E	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G <sub>22</sub>	E <sub>40</sub> <sup>C</sup>	G	G	37	41	34	40	26	S	16	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>	
18	E	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	E	E <sub>15</sub> <sup>S</sup>	G	29	31	35	36	35	31	G	G <sub>15</sub>	15	E	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
19	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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	32	35	38	34	33	26	G	G	G	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
20	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>12</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	G	G	E <sub>32</sub> <sup>R</sup>	34	33	33	30	G	G <sub>19</sub>	22	21	21	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>	
21	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	32	37	41	34	30	G	G <sub>21</sub>	G	E <sub>11</sub> <sup>S</sup>	E <sub>15</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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
22	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>B</sup>	E	16	E <sub>15</sub> <sup>S</sup>	15	G	G	G	G	E <sub>34</sub> <sup>R</sup>	34	32	26	G	15	E	E	E	E	E	E <sub>15</sub> <sup>S</sup>	
23	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	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G	33	G	G	36	30	29	27	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
24	E	E	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	G	G	G	37	34	34	G	21	20	16	26	16	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>16</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
25	E	16	E	15	E <sub>14</sub> <sup>S</sup>	E <sub>16</sub> <sup>B</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	24	31	32	33	29	38	31	26	21	24	52	29	25	E	E	E	
26	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G	34	G	G <sub>23</sub>	G <sub>20</sub>	E <sub>49</sub> <sup>R</sup>	32	G	20	15	E	21	20	E	E <sub>14</sub> <sup>S</sup>	
27	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>B</sup>	E <sub>14</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	G	G	E <sub>32</sub> <sup>R</sup>	38	G	G	G <sub>21</sub>	22	G	E <sub>16</sub> <sup>B</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>	E <sub>15</sub> <sup>S</sup>	
28	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>12</sub> <sup>B</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	23	31	33	G	35	G	33	30	28	26	16	E	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</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>12</sub> <sup>B</sup>	E <sub>11</sub> <sup>B</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	G	G	35	38	38	48	G	G	G	S	E	E	E <sub>14</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>	
30	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>13</sub> <sup>B</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	G	G	G <sub>21</sub>	G <sub>21</sub>	G <sub>29</sub>	G <sub>29</sub>	G <sub>27</sub>	31	G	E <sub>17</sub> <sup>R</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
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	27	27	27	26	26	26	26	26	26	28	30	28	29	28	28	28	28	26	28	28	28	28	29	28	
MED	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>13</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>	G	G <sub>22</sub>	31	34	34	34	30	27	19	17	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>	
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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	22	30	34	38	35	36	34	32	26	23	19	18	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	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	E	E	G	G	G	G	E <sub>22</sub> <sup>G</sup>	G <sub>24</sub>	G <sub>26</sub>	E <sub>21</sub> <sup>G</sup>	G <sub>20</sub>	G	E <sub>15</sub> <sup>S</sup>	E	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>

NOV. 1971

FBES (0.1 MHz)



IONOSPHERIC DATA

NOV. 1971

F-MIN (0.1 MHZ)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	E <sub>34</sub> <sup>S</sup>	14	15	14	15	15	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	
2	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>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	15	16	15	14	20	18	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
3	C	E <sub>15</sub> <sup>S</sup>	C	E <sub>35</sub> <sup>S</sup>	C	C	C	C	C	E <sub>38</sub> <sup>S</sup>	12	15	12	C	C	C	C	C	C	C	C	C	E <sub>15</sub> <sup>S</sup>	C	
4	C	C	C	C	C	C	C	C	C	C	15	14	14	15	21	15	E <sub>14</sub> <sup>S</sup>	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	14	14	21	21	21	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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
6	E <sub>14</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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	15	15	20	18	15	15	150	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>	E <sub>15</sub> <sup>S</sup>	
7	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	14	C	21	14	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>	15	E <sub>15</sub> <sup>S</sup>	
8	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	14	15	15	15	14	14	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
9	E <sub>13</sub> <sup>S</sup>	C	E <sub>15</sub> <sup>S</sup>	C	C	E <sub>15</sub> <sup>S</sup>	C	C	C	15	16	15	16	16	15	15	C	E <sub>15</sub> <sup>S</sup>	E <sub>16</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>	
10	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	21	15	15	15	21	21	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
11	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>	C	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	14	14	14	19	14	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>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
12	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E	E	E <sub>14</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	15	C	C	C	C	15	14	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	
13	E <sub>15</sub> <sup>S</sup>	15	14	12	E <sub>15</sub> <sup>S</sup>	14	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	14	14	15	15	15	14	13	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>	E <sub>15</sub> <sup>S</sup>	
14	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	11	15	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	15	15	21	22	22	20	13	13	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</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>	E <sub>15</sub> <sup>S</sup>	
15	E <sub>14</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	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>16</sub> <sup>S</sup>	14	14	14	14	14	14	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</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>	E <sub>14</sub> <sup>S</sup>	
16	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>13</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	15	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	15	12	15	E <sub>14</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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
17	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>14</sub> <sup>S</sup>	E <sub>13</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>40</sub> <sup>S</sup>	14	13	14	14	14	14	E <sub>14</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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
18	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	13	15	14	14	15	15	15	14	11	E <sub>13</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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
19	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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	20	16	19	14	14	13	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>12</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	15	14	15	15	15	14	14	14	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	
21	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	14	15	14	21	16	14	13	14	E <sub>11</sub> <sup>S</sup>	E <sub>15</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>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
22	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	13	14	16	15	15	14	14	12	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	12	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
23	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	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>	14	14	15	15	15	21	15	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	
24	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>13</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>	14	14	15	12	15	15	E <sub>14</sub> <sup>S</sup>	E <sub>14</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>16</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
25	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	16	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	14	14	14	13	E <sub>13</sub> <sup>S</sup>	E <sub>13</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>	
26	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</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>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	14	19	15	17	14	14	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	
27	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	E <sub>14</sub> <sup>S</sup>	E	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	14	13	13	14	15	15	14	14	14	16	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>	
28	E <sub>14</sub> <sup>S</sup>	14	E <sub>15</sub> <sup>S</sup>	12	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	15	14	16	20	21	21	21	20	13	13	E <sub>14</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>	
29	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	12	11	E <sub>13</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	14	14	15	15	18	15	20	16	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>14</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>	
30	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	13	E <sub>15</sub> <sup>S</sup>	E <sub>14</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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	16	15	19	15	E <sub>14</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>	E <sub>15</sub> <sup>S</sup>	
31																									
CNT	27	27	27	27	26	26	26	26	26	28	30	28	29	28	28	28	28	28	28	28	28	28	28	29	28
MED	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>14</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	14	14	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>	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	15	15	15	15	19	17	18	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>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	
LQ	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>11</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>	14	14	14	14	15	14	14	14	14	E <sub>13</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>14</sub> <sup>S</sup>	E <sub>15</sub> <sup>S</sup>	E <sub>13</sub> <sup>S</sup>	

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F-MIN (0.1 MHZ)

# IONOSPHERIC DATA

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M(3000)F2 (0.01)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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	290	290 <sup>S</sup>	295	300	335	290	310	360	370 <sup>S</sup>	330	325	335	315	315 <sup>S</sup>	325	345	345	340	345	305	305	295	270	285	
2	285	290	285	295	320	325	305	355	350	335	330	345	325	310	325	325	350	365	325	305	300	270	290	295	
3	280 <sup>C</sup>	275	290	310	C	C	C	C	C	345	345	315	C	C	C	C	C	C	C	C	C	C	285	C	
4	C	C	C	C	C	C	C	C	C	C	315	330	310	310	C	325	C	C	C	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	315	325	305	310	315	315	335	320	305	305	300	285	285	275	
6	265	275	295	295	310	280	305	335	350	335	320	325	325	305	305	335	345	335	330	300	315	305	300	290	
7	275	265	270	275	295	295	285	355	375	365	325	340	315	310	320	330	335	335	315	295	310	270	270	280	
8	285	285	285	290	305	305	305	345	350	345	325	315	325	310	320	300	350	325	310	305	310	310	290	285	
9	285	290	280	275	280	290	C	C	C	345	340	330	330	320	325	335	C	330	345	285	300	325	325	305	
10	280	290	310	300	310	325	340	350	345	335	335	320	335	310	325	315	345	345	270	285	300	325	320	295	
11	300	285	285	305	290	295	320	340	350	335	315	335	270	275	300	305	335	315	295	295	275	280	295	295	
12	295	280	270	270	285	310	280	320	335	335	345	C	C	C	C	C	340	270	310	295	300	290	305	275	
13	285	270	275	285	360	315	275	310	325	340	310	355	305	300	310	305	310	325	285	295	285	315	290	275	
14	245	245	275	260	325	340	270	320	340	335	315	350	310	300	325	335	340	345	310	265	290	300	265	270	
15	275	270	290	300	340	320	285	330	345	335	335	320	350	335	315	350	355	345	340	275	295	300	300	300	
16	300	325	310	300	335	295	290	330	360	365	345	325	325	330	355	365	355	335	325	300	310	315	315	325	
17	305	305	300	295	320	380	295	345	360	335	350	335	330	315	335	350	345	350	300	345	310	350	330	295	
18	280	275	300	330	335	325	290	330	365	350	335	330	345	320	320	345	345	360	335	300	280	310	315	295	
19	290	300	290	295	330	350	315	360	360	315	330	335	320	315	325	350	355	360	310	280	295	325	275	295	
20	280	265	260	285	330	275	270	310	330	320	330	340	325	305	300	305	340	330	315	275	285	290	290	280	
21	270	280	295	295	290	265	275	340	345	330	300	320	305	305	295	315	320	295	305	245	305	275	285	255	
22	260	270	290	320	320	270	290	335	340	360	335	345	310	335	320	345	335	335	305	300	330	300	295	275	
23	280	265	260	275	340	225	255	345	355	360	330	340	330	325	330	330	355	335	305	315	345	360	330	260	
24	275	305	325	335	335	250	270	350	365	335	320	335	345	360	320	335	330	330	335	330	310	280	295	285	
25	280	290	295	310	385	R	265	315	345	360	390	370	320	335	325	320	330	340	325	285	325	365	270	270	
26	270	290	315	335	295	275	280	325	335	335	330	350	335	340	325	325	335	325	295	300	280	255	270	260	
27	290	300	285	275	290	280	290	315	345	325	315	340	330	320	310	340	345	350	305	290	320	315	275	265	
28	275	285	290	285	295	365	260	300	335	340	335	340	330	325	350	335	350	340	290	290	280	305	290	265	
29	280	285	295	325	295	285	280	320	330	365	350	345	340	345	345	340	340	345	345	275	330	325	355	280	
30	285	275	310	325	355	290	290	315	325	360	360	330	345	325	380	350	365	380	320	315	300	305	335	290	
31																									
CNT	28	28	28	28	27	26	26	26	26	28	30	29	28	28	27	27	27	28	28	28	28	28	29	28	
MED	280	285	290	295	320	295	288	332	345	335	330	335	325	315	325	335	345	335	310	295	300	305	290	282	
UQ	288	290	298	310	335	325	305	345	360	355	340	340	332	328	325	345	350	345	328	305	310	320	315	295	
LQ	275	272	282	285	295	280	275	320	335	335	320	325	312	310	315	322	335	328	305	285	292	288	285	272	

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M(3000)F2 (0.01)



# IONOSPHERIC DATA

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M(3000)F1 (0.01)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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	L									
2													L	L	L	L	L							
3									C	L	415	400	C	C	C	C	C							
4									C	C	L	L	410	340	C	L	410							
5									C	C	L	L	L	360	L	L	A							
6									L	L	L	390	L	L	L	L	L							
7									L	L	L	C	L	L	L	L	A							
8									L	L	L	L	L	370	L	L	L							
9									C	L	L	U	380	U	385	U	365	L	L	C				
10										L	L	L	L	385	L	L	L	440	435					
11											L	L	L	385	365	A	L							
12										L	L	C	C	C	C	C	L	415						
13									430	L	L	L	L	L	L	L	L	435	L					
14										L	L	L	L	L	L	L	L							
15									L	L	L	385	L	L	L	L								
16										L	L	L	400	390	L	L	L							
17										L	L	L	L	L	L	A								
18										L	L	U	370	390	U	365	400	L	L					
19									430	L	L	L	L	L	L	L								
20									L	L	L	L	L	L	L	L	L	430						
21										L	L	L	390	L	350	L								
22											L	L	L	L	L	L								
23										L	L	L	L	L	L	L								
24										L	L	L	L	L	U	395	435	L						
25										L	L	425	L	L	395	L	L							
26										L	L	L	400	L	A	400	410							
27									430	325	L	L	L	385	L	L	430							
28									445	L	L	L	L	L	400	405								
29										440	L	L	L	A	385	L	465							
30										410	405	U	390	355	L	L	L	390						
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									4	3	2	7	10	8	6	4	8	2						
MED									430	410	410	390	390	365	395	402	430	425						
UQ									438	425		395	400	378	400	420	438							
LQ									430	368		U	382	385	362	385	388	410						

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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H\*F2 (KM)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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									210	235	250	250	250	280	255	235										
2										245	250	250	240	285	270	245	230									
3									C	250	240	245	C	C	C	C	C									
4									C	C	255	255	260	285	C	240	225									
5									C	C	270	255	275	260	255	235	225									
6									240	230	235	245	250	280	255	235	225									
7									220	230	240	C	250	265	270	230	220									
8									220	245	250	250	245	275	255	235	230									
9									C	240	250	250	250	270	260	250	C									
10										250	250	250	240	280	250	245	235	210								
11										240	240	240	255	270	250											
12										240	240	C	C	C	C	C	230	200								
13									225	240	235	245	255	285	245	230	230	210								
14										240	240	230	300	255	255	245	230									
15									220	250	255	255	230	260	275	240										
16										250	250	250	240	255	250	235	215									
17										250	245	255	240	250	250	230										
18										245	250	255	245	265	285	245	225									
19									200	250	240	245	250	275	255	230										
20									225	250	245	245	220	250	245	230	220									
21										250	280	245	250	255	250	250										
22										260	250	255	250	230	245											
23										225	225	240	285	265	230	240										
24										240	250	250	250	225	250	245	225									
25										230	220	230	275	250	235	250	220									
26										240	235	240	245	245	230	230	220									
27										225	225	230	240	230	235	250	225	225								
28										220	250	240	255	230	240	240										
29										220	225	270	240	245	250	240	230									
30										240	245	245	265	265	225	250	225									
31																										
CNT									10	25	30	28	28	28	27	28	19	3								
MED									220	240	245	248	250	260	250	240	225	210								
UQ									225	250	250	250	255	275	255	245	230	210								
LQ									220	230	240	242	240	250	245	232	222	205								

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H\*F2 (KM)

IONOSPHERIC DATA

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H·F (KM)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

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	280	265	255	235	245	250	225	205	195	200 <sup>H</sup>	220	220	210	235	225 <sup>I A</sup>	230	210	210	200	240	240	275	280
2	285	300	290	290	255	235	240	215	210	215	205	205	200	200 <sup>H</sup>	230	225 <sup>I A</sup>	230	200	250	255	280	260	260	
3	265 <sup>I C</sup>	290	C	C	C	C	C	C	C	C	C	230	200 <sup>C</sup>	205	C	C	C	C	C	C	C	C	295 <sup>C</sup>	C
4	C	C	C	C	C	C	C	C	C	C	C	230 <sup>C</sup>	205	180	215	C	220	215	C	C	C	C	C	C
5	C	C	C	235 <sup>I C</sup>	235 <sup>I C</sup>	235 <sup>I C</sup>	235 <sup>I C</sup>	235 <sup>I C</sup>	235 <sup>I C</sup>	235 <sup>I C</sup>	235 <sup>I C</sup>	200 <sup>H</sup>	200 <sup>H</sup>	200 <sup>H</sup>	215	220	225 <sup>I A</sup>	205	215	245	225	250	300	300
6	300	295	255	255	240	255	230	210	205 <sup>H</sup>	200	210	200 <sup>H</sup>	195 <sup>H</sup>	190 <sup>H</sup>	220	220	225	215	240	250	215	240	230	245
7	250	300	300	295	260	265	260	215	220	200 <sup>H</sup>	200 <sup>H</sup>	195 <sup>I C</sup>	200 <sup>H</sup>	200 <sup>H</sup>	210 <sup>H</sup>	230	220 <sup>I A</sup>	220	200	240	225	225	280	265
8	255	255	280	265	250	245	250	230	225	210	190 <sup>H</sup>	195 <sup>H</sup>	175 <sup>H</sup>	220	225	235	210	200	205	230	240	210	250	275
9	270	270 <sup>I C</sup>	290	300 <sup>I C</sup>	290 <sup>I C</sup>	250	C	C	C	215	190 <sup>H</sup>	200	200	190 <sup>H</sup>	220	210 <sup>H</sup>	210 <sup>I C</sup>	210	210	210	245	220	230	255
10	300	285	255	290	255	250	230	220	220	210 <sup>H</sup>	200 <sup>H</sup>	205	200	195 <sup>H</sup>	245	210	205	200	250 <sup>E A</sup>	245	245	220	250	260 <sup>E S</sup>
11	275	290	290	270	250 <sup>E S</sup>	250 <sup>I C</sup>	245	210	235	230	220	205	200	195	A	240	220	205	215	240	270	255	230	250
12	245	280	285	325	245	215	250	240	225	220 <sup>H</sup>	225	C	C	C	C	C	225	205	215	225	225	240	245	275
13	295	305	300	255	210	200	255 <sup>E S</sup>	225	200	235	225	240	200 <sup>H</sup>	200 <sup>H</sup>	240 <sup>H</sup>	210 <sup>H</sup>	200 <sup>H</sup>	225	200	205	215	225	230	245
14	270 <sup>H</sup>	265	250	250	230	195	275	220	225 <sup>H</sup>	215 <sup>H</sup>	200 <sup>H</sup>	230	200 <sup>H</sup>	230	240	240	235	205	195	220	245	235	240	265
15	270	275	260	250	210	210	280 <sup>E S</sup>	240	220	230	210	225	A	230	215	230	220	205	200	225	250	230	230	250
16	250	225	245	255	230	255 <sup>E S</sup>	280 <sup>E S</sup>	240	215	175 <sup>H</sup>	205	220	220	210	210 <sup>H</sup>	240	200	210	220	210	240	225	245	245
17	260	265	280	280	235	195	270	215	220	240 <sup>E C</sup>	225	220	220	250 <sup>E S</sup>	205 <sup>I A</sup>	220	230	205 <sup>H</sup>	205	205	230	215	235	295
18	305	305	290	240	220	215	285 <sup>E S</sup>	235	220	195 <sup>H</sup>	185 <sup>H</sup>	215	225	205	190 <sup>H</sup>	245	215	200	195	230	290	245	235	250
19	285	265	300	285	240	210	210	220	205	195 <sup>H</sup>	225	255	200 <sup>H</sup>	190 <sup>H</sup>	175 <sup>H</sup>	240	220	205	200	240	245	225	275	250
20	260	310	320	260	225	200 <sup>H</sup>	320	230	230	205 <sup>H</sup>	230	200	200 <sup>H</sup>	200 <sup>H</sup>	200 <sup>H</sup>	210 <sup>H</sup>	220	210	205	245	250	250	225	250
21	295	285	250	250	250	295	265	220	225	230	235 <sup>H</sup>	225	200	205	205	195 <sup>H</sup>	220	210	230	220	225	210	250	340 <sup>E S</sup>
22	325	300	250	220	240	300 <sup>E S</sup>	275	230	225	230	190 <sup>H</sup>	200 <sup>H</sup>	240	215	225	210	225	195 <sup>H</sup>	200	240	210	200	245	250
23	295	310 <sup>E S</sup>	350	305	230	S	360 <sup>E S</sup>	235	235	225 <sup>H</sup>	210	230	210	230	215	230	220	200 <sup>H</sup>	250	235	210	195	295	385
24	340	270	245	230	250	475	450 <sup>E S</sup>	245	220	230	240 <sup>E A</sup>	205 <sup>H</sup>	210	225	205	200	225	225	205	210	220	250	260	300
25	315	305	285	255	200	S	400 <sup>E S</sup>	250	245	235	220	180 <sup>H</sup>	180 <sup>H</sup>	250 <sup>E A</sup>	205	220	230	205	300 <sup>E S</sup>	260	235	215	350	325
26	335	305	255	230	260	345	300	250	240	225	225	215	200 <sup>H</sup>	265	A	215	225	210	200	240	260	250	250	275
27	250	250	250	290	265	275	275	225	200	190 <sup>H</sup>	215	230	215	220	200 <sup>H</sup>	200 <sup>H</sup>	215	200	200	250	220	200	250	295
28	290	260	255	260	250	200	315 <sup>E S</sup>	240	200	225	225 <sup>H</sup>	215	200 <sup>H</sup>	195 <sup>H</sup>	200	200	225	210	200	225	240	230	250	270
29	265	240	235	220	205	250 <sup>E S</sup>	295 <sup>E S</sup>	240	215	200	220	225	220	220 <sup>I A</sup>	205	200 <sup>H</sup>	175	220	190	220	220	235	215	300
30	345	310	260	250	230	265	300	255	225	210	200 <sup>H</sup>	215	200	190 <sup>H</sup>	195 <sup>H</sup>	210	230	200	190	210	235	250	240	270
31																								
CNT	28	28	27	28	28	26	27	27	27	29	30	29	27	28	25	28	29	28	28	28	28	28	29	28
MED	280	284	265	255	239	242	258 <sup>U</sup>	230	220	215	210	215	200	208	210	220	220	205	202	230	238	230	250	266
UQ	300	301	290	288	250	260	298 <sup>E S</sup>	240	225	230	225	225	212	221	225	230	225	210	214	242	245	248	260	292
LQ	262	265	252	250	230	210	249	220	212	200 <sup>H</sup>	200 <sup>H</sup>	200	200 <sup>H</sup>	198 <sup>H</sup>	205 <sup>H</sup>	210	215	202	200	215	222	218	235	250

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H·F (KM)

IONOSPHERIC DATA

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H\*ES (KM)

135 E Mean Time (G. M. T. + 9<sup>h</sup>)

Station	YAMAGAWA				Lat.	31 12.1 N				Long.	303 71.E 1				Sweep 2 MHz to		02 MHz in		0 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	100	100	S	B	S	S	G	G	100	S	100	180	175	175	105	110	100	100	100	100	100	100	
2	100	95	95	95	95	95	95	95	150	125	105	G	105	105	110	105	105	100	100	100	100	100	95	
3	C	S	C	C	C	C	C	C	C	C	C	150	130	130	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	170	100	G	145	G	150	G	C	C	C	C	C	
5	C	C	C	C	C	C	C	C	C	C	C	105	105	110	120	G	140	120	110	105	100	100	100	
6	100	100	100	100	S	S	S	G	105	100	100	100	100	100	100	100	95	95	105	105	S	100	S	
7	S	100	S	S	100	95	95	100	100	100	100	C	100	145	105	150	120	110	S	100	100	B	S	
8	S	S	S	100	95	95	95	95	G	130	130	G	G	105	150	155	G	G	100	100	S	120	100	
9	S	C	S	C	C	S	C	C	C	155	160	105	100	105	155	100	C	110	95	90	100	S	S	
10	S	S	S	S	100	100	100	100	G	G	100	100	105	110	160	105	95	105	100	S	S	S	S	
11	S	S	S	S	S	C	S	S	G	160	150	100	115	115	150	150	100	135	95	90	S	S	S	
12	S	S	S	E	E	S	165	170	155	145	150	C	C	C	C	C	G	G	100	S	105	100	S	
13	100	100	B	100	S	B	100	S	105	100	100	170	G	100	100	100	100	100	100	100	S	100	S	
14	S	S	S	S	B	B	S	S	175	G	100	145	150	150	165	145	130	120	95	S	S	S	S	
15	S	S	S	S	100	100	100	100	100	130	130	150	140	135	120	105	100	110	100	S	S	S	S	
16	S	B	S	100	100	S	S	S	100	100	155	150	140	150	155	135	145	100	100	S	S	S	105	
17	S	S	S	S	100	S	S	100	110	C	140	165	125	115	120	115	120	100	100	S	S	S	S	
18	100	100	105	S	S	100	105	S	150	130	140	170	145	130	120	100	100	100	95	95	S	S	S	
19	S	S	S	S	S	S	S	100	155	115	160	170	105	100	100	150	150	G	S	S	S	S	S	
20	S	S	100	S	S	S	S	S	110	G	130	110	110	105	105	105	100	100	100	S	S	S	S	
21	S	S	S	S	S	S	S	S	165	150	135	105	100	100	G	100	G	S	S	S	S	S	S	
22	S	S	S	B	E	100	S	155	G	150	G	G	120	110	110	100	G	100	100	145	125	100	100	
23	S	S	S	S	E	S	S	S	G	G	170	G	125	110	105	110	105	S	S	100	100	S	S	
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26	110	S	S	S	105	110	S	S	150	150	140	170	100	100	130	135	125	120	100	105	105	105	105	
27	S	S	B	S	E	S	S	S	G	G	110	175	150	150	100	95	95	B	S	S	S	S	S	
28	S	B	S	B	S	S	S	S	115	105	160	155	155	G	105	125	100	100	100	100	95	S	S	
29	S	S	S	B	B	S	S	S	100	G	170	140	130	125	105	G	100	100	95	95	S	S	S	
30	S	S	B	S	S	S	S	S	G	105	105	105	105	105	105	160	150	145	S	S	140	S	S	
31																								
CNT	7	8	6	6	8	9	8	9	18	20	28	24	26	27	25	27	23	22	22	17	12	10	9	
MED	100	100	100	100	100	100	100	100	115	128	132	120	112	110	110	105	100	100	100	100	100	100	100	
UQ	102	100	100	100	100	100	102	100	150	148	152	160	140	140	150	142	120	110	100	100	105	100	100	
LQ	100	100	100	100	98	95	95	100	105	102	105	105	105	105	105	100	100	100	100	95	100	100	95	

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H\*ES (KM)

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135 E Mean Time (G. M. T. + 9<sup>h</sup>)

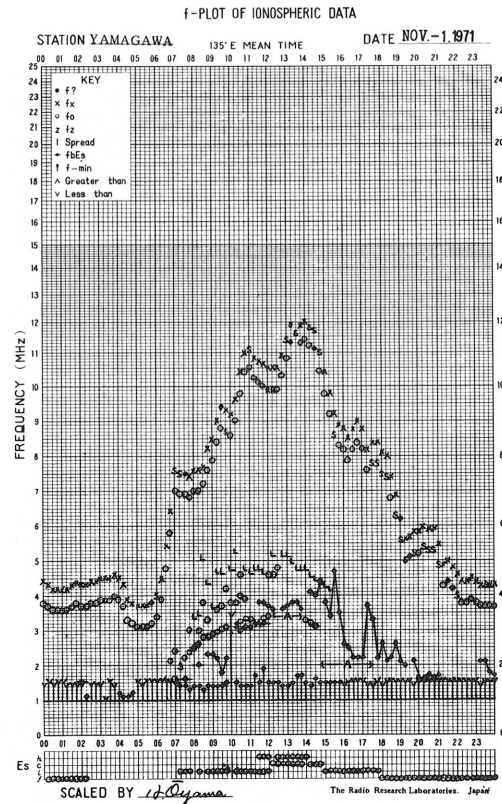
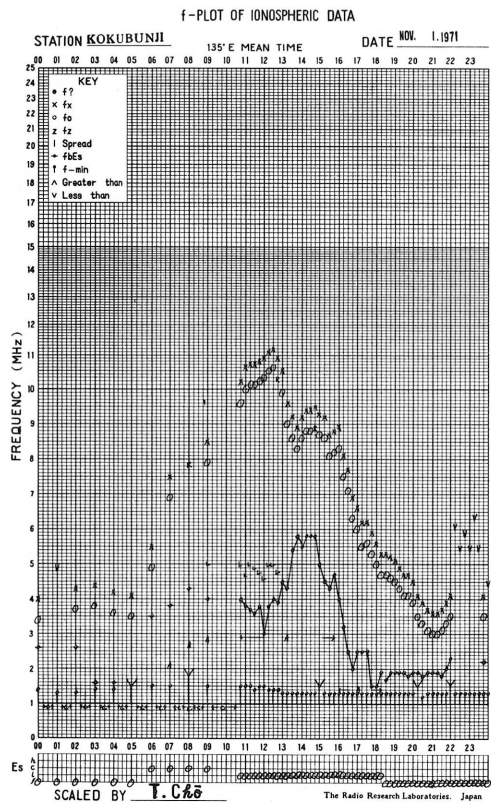
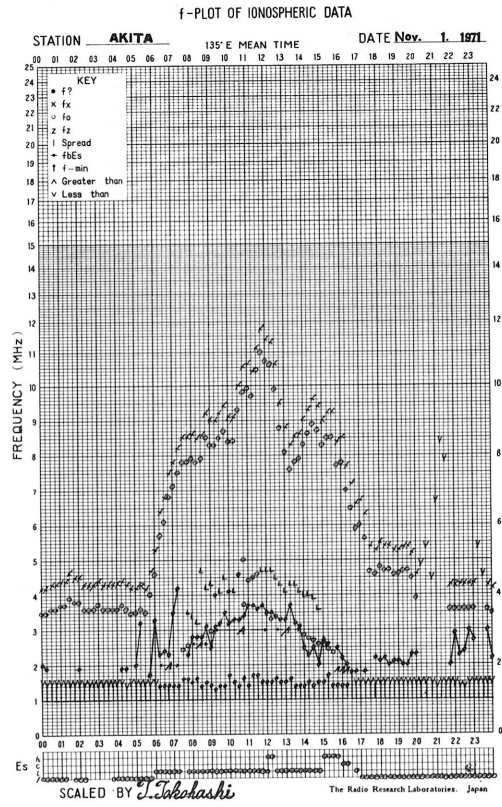
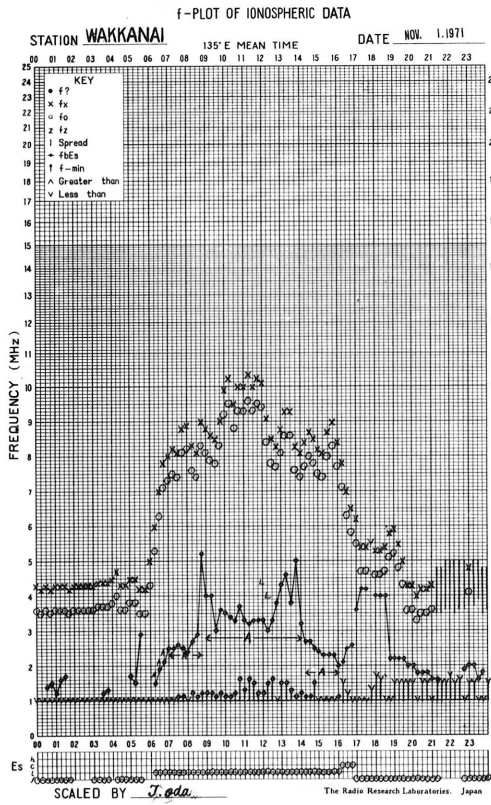
Station YAMAGAWA Lat. 31 12.1 N Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

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 <sub>1</sub>	F <sub>1</sub>						L <sub>1</sub>		L <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>		
2	F <sub>2</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>3</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	L <sub>3</sub>	H <sub>1</sub>	F <sub>1</sub>	L <sub>1</sub>		L <sub>1</sub>	L <sub>1</sub>	CH <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>3</sub>	F <sub>1</sub>	F <sub>4</sub>	F <sub>3</sub>	F <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	
3											H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>											F <sub>2</sub>	
4											H <sub>1</sub>	L <sub>1</sub>		H <sub>1</sub>		H <sub>1</sub>									
5											H <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>		H <sub>1</sub>	S <sub>3</sub>	S <sub>3</sub>	FF <sub>1</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>2</sub>	
6	F <sub>2</sub>	F <sub>3</sub>	FF <sub>1</sub>	F <sub>2</sub>					L <sub>3</sub>	L <sub>2</sub>	H <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>2</sub>	L <sub>2</sub>	L <sub>2</sub>	LC <sub>1</sub>	FF <sub>1</sub>	F <sub>2</sub>		F <sub>2</sub>			
7		F <sub>1</sub>			F <sub>3</sub>	F <sub>2</sub>	F <sub>3</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>		L <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	H <sub>2</sub>	C <sub>4</sub>	C <sub>6</sub>		F <sub>3</sub>	F <sub>1</sub>				
8				F <sub>1</sub>	F <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	L <sub>1</sub>	H <sub>2</sub>	H <sub>1</sub>			L <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>			F <sub>2</sub>	F <sub>1</sub>		F <sub>1</sub>	F <sub>1</sub>		
9									H <sub>2</sub>	H <sub>1</sub>	L <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	H <sub>1</sub>	L <sub>1</sub>	H <sub>1</sub>		C <sub>2</sub>	F <sub>4</sub>	F <sub>2</sub>	F <sub>1</sub>			F <sub>1</sub>	
10				F <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>	L <sub>1</sub>			L <sub>1</sub>	L <sub>1</sub>	S <sub>2</sub>	F <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	FF <sub>1</sub>					F <sub>1</sub>	
11									H <sub>2</sub>	H <sub>1</sub>	L <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	H <sub>1</sub>	FF <sub>1</sub>	FF <sub>2</sub>					
12						F <sub>1</sub>	H <sub>3</sub>		H <sub>2</sub>	H <sub>1</sub>	H <sub>1</sub>									F <sub>1</sub>		F <sub>1</sub>	F <sub>2</sub>		
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14									H <sub>1</sub>	L <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	C <sub>4</sub>	F <sub>1</sub>						
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16				F <sub>1</sub>	F <sub>1</sub>				L <sub>1</sub>	L <sub>3</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	L <sub>1</sub>	F <sub>1</sub>			F <sub>1</sub>	
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19								L <sub>1</sub>	H <sub>1</sub>	S <sub>2</sub>	H <sub>1</sub>	H <sub>1</sub>	F <sub>1</sub>	L <sub>2</sub>	L <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>								
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23											H <sub>1</sub>		H <sub>1</sub>	S <sub>2</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>			F <sub>1</sub>	F <sub>1</sub>				
24	F <sub>1</sub>	F <sub>1</sub>			F <sub>1</sub>				H <sub>1</sub>	H <sub>1</sub>	S <sub>2</sub>	S <sub>2</sub>	F <sub>1</sub>	H <sub>1</sub>	L <sub>2</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>2</sub>	F <sub>1</sub>	F <sub>1</sub>					
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28									S <sub>2</sub>	L <sub>2</sub>	H <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>		L <sub>2</sub>	H <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	F <sub>1</sub>	F <sub>1</sub>	F <sub>1</sub>				
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30									L <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>1</sub>	H <sub>1</sub>	H <sub>1</sub>	F <sub>1</sub>				F <sub>1</sub>				
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																									
MED																									
UQ																									
LQ																									

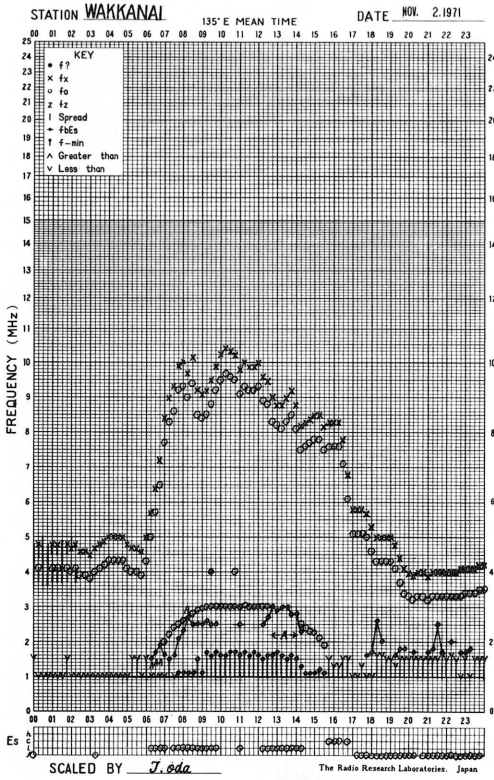
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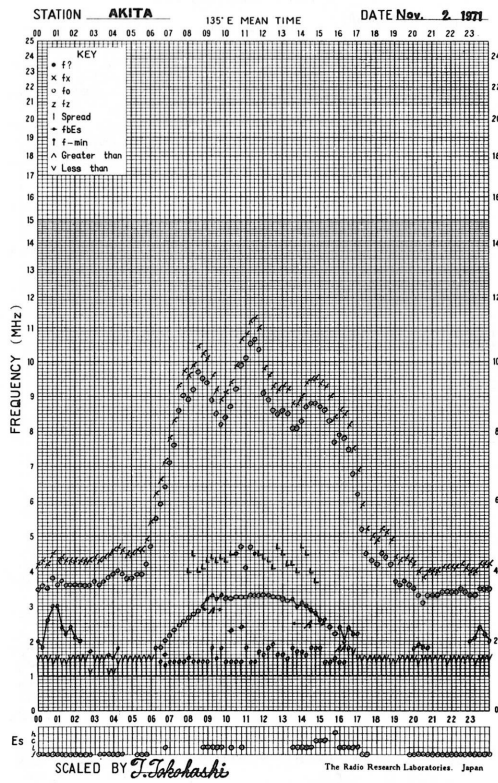




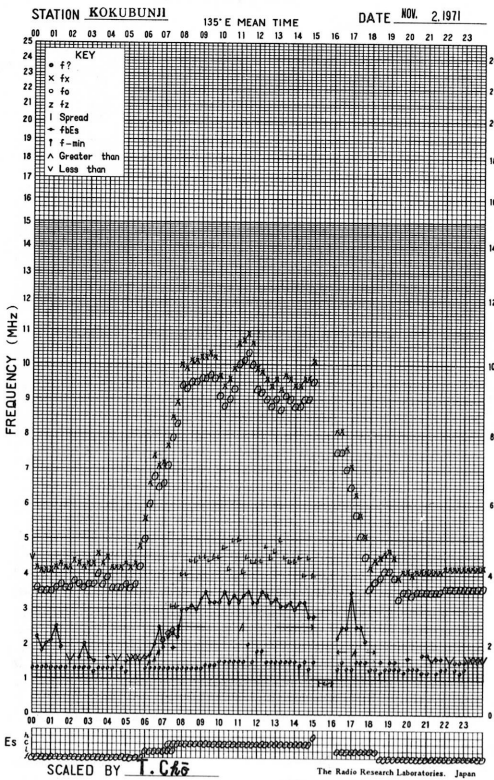
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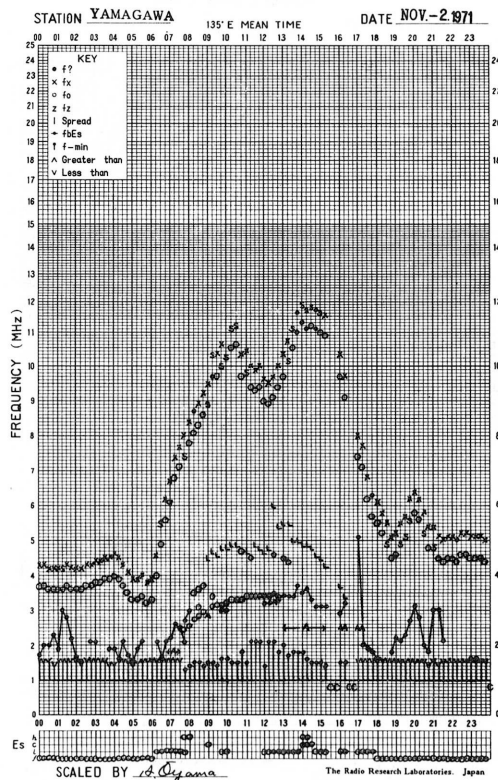
f- PLOT OF IONOSPHERIC DATA



f- PLOT OF IONOSPHERIC DATA

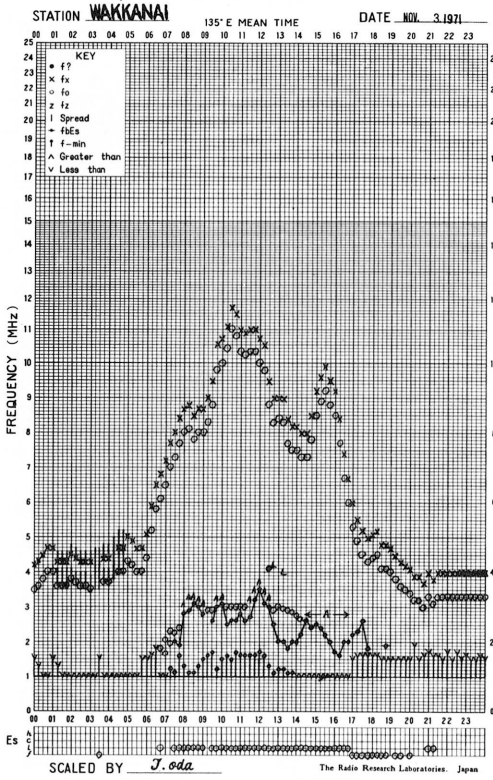


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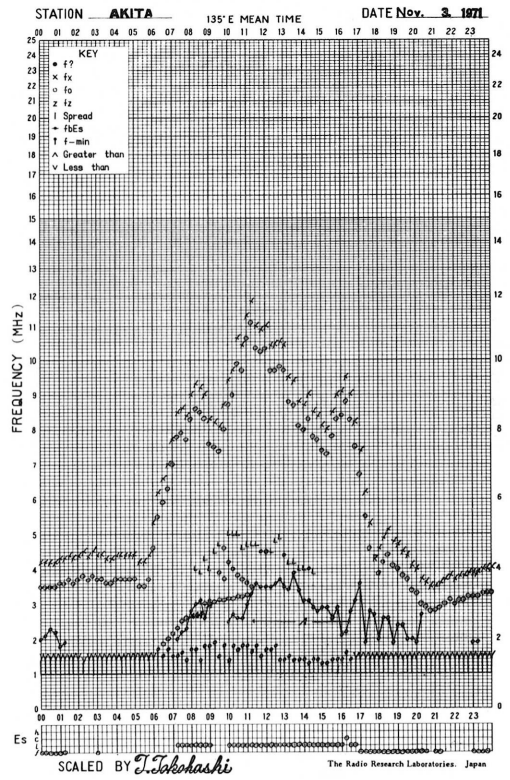




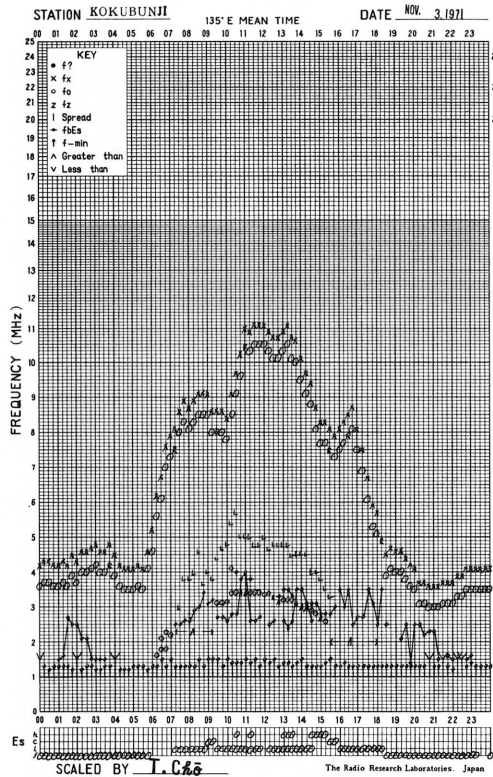
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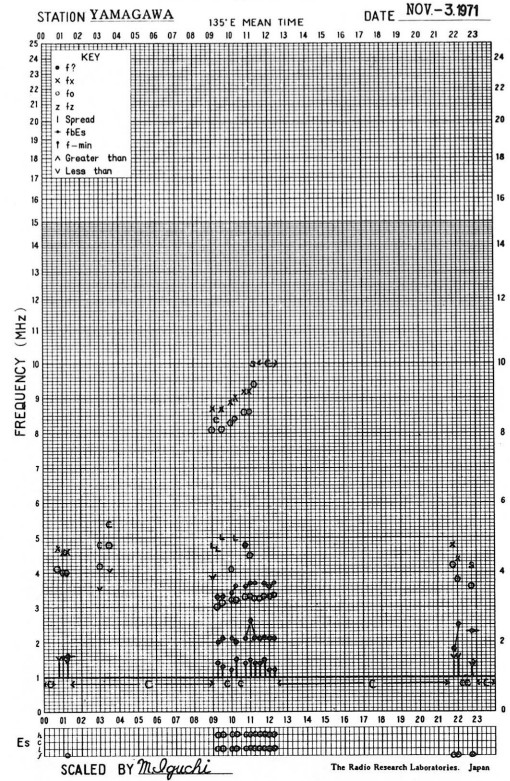
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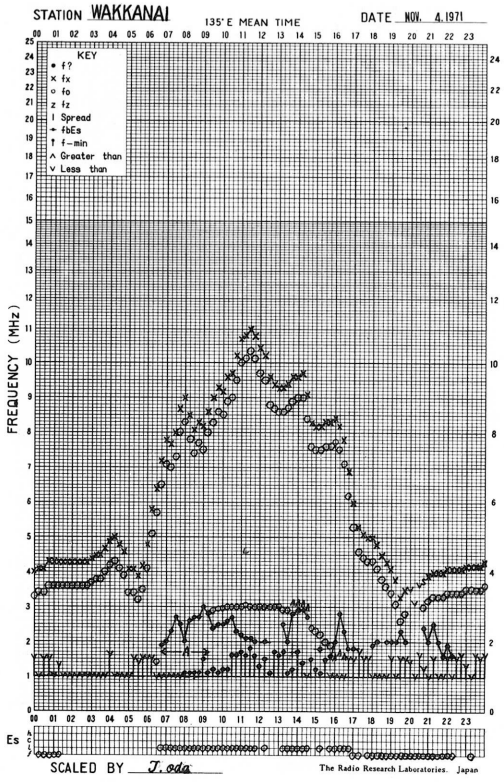
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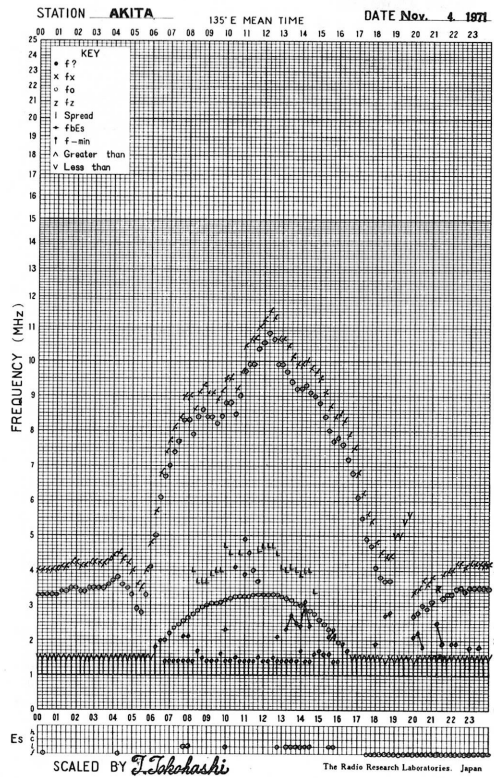
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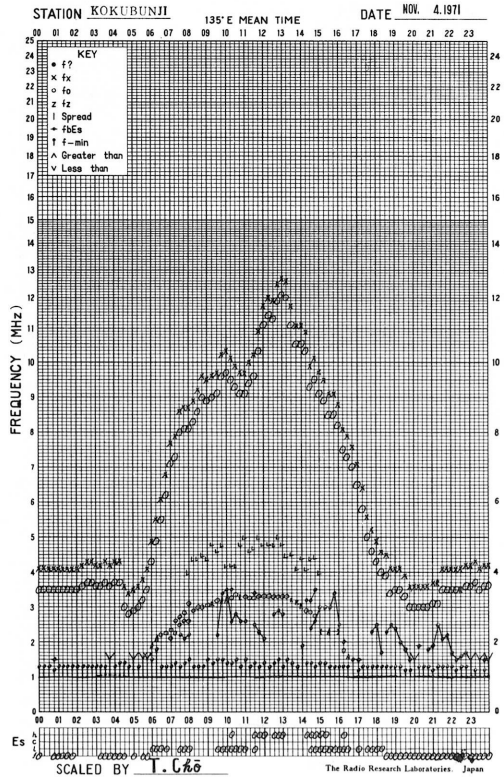
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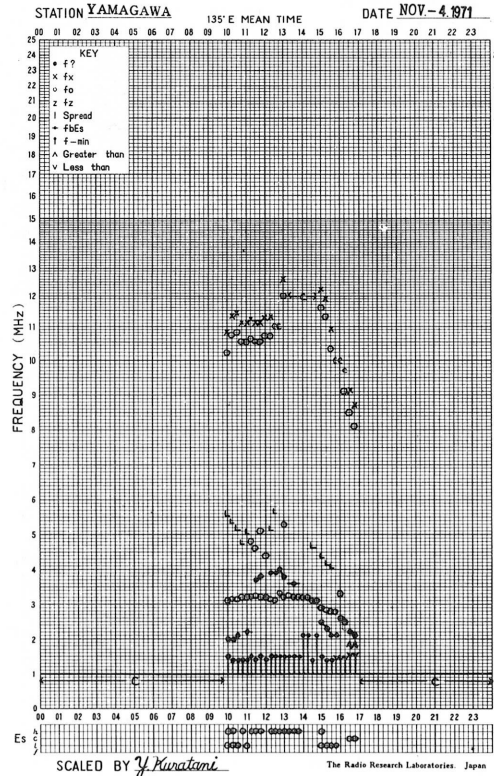
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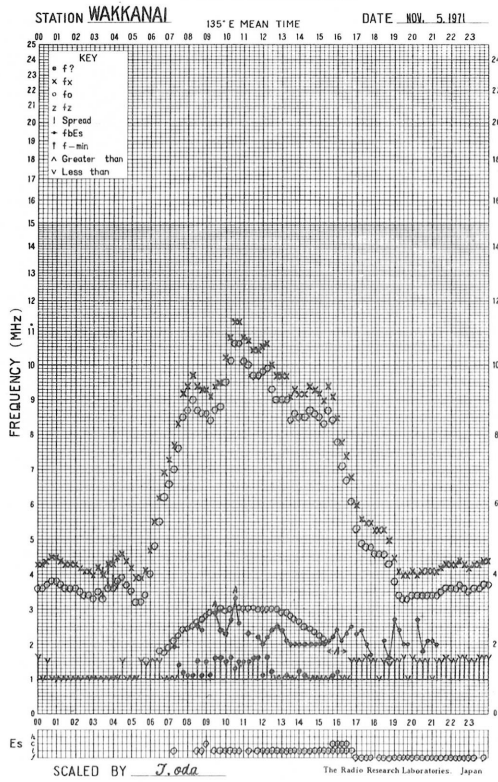
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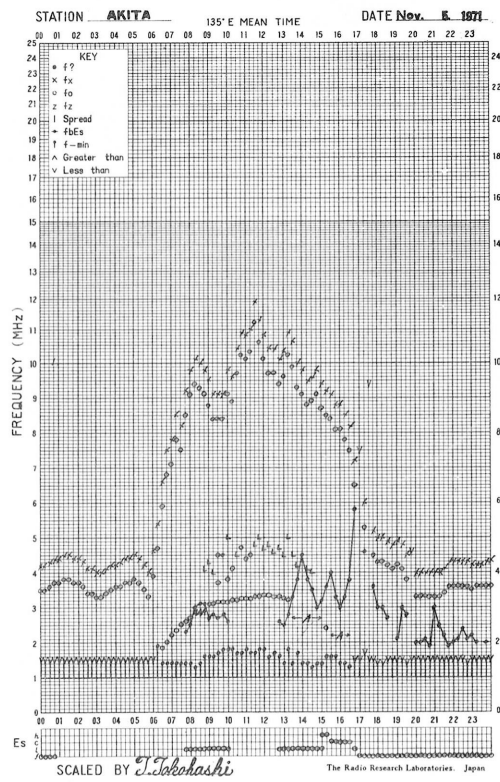
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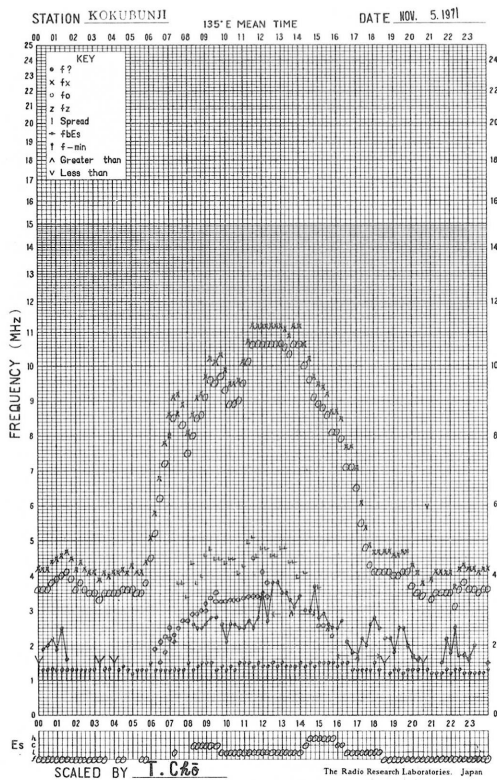
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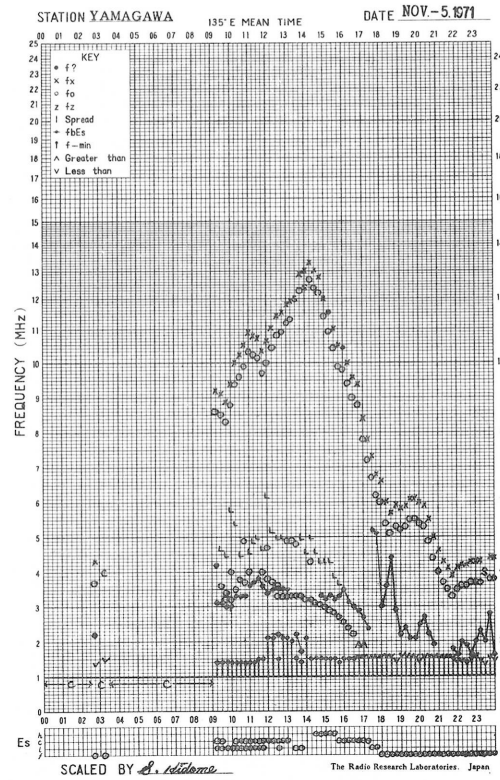
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f-PLOT OF IONOSPHERIC DATA

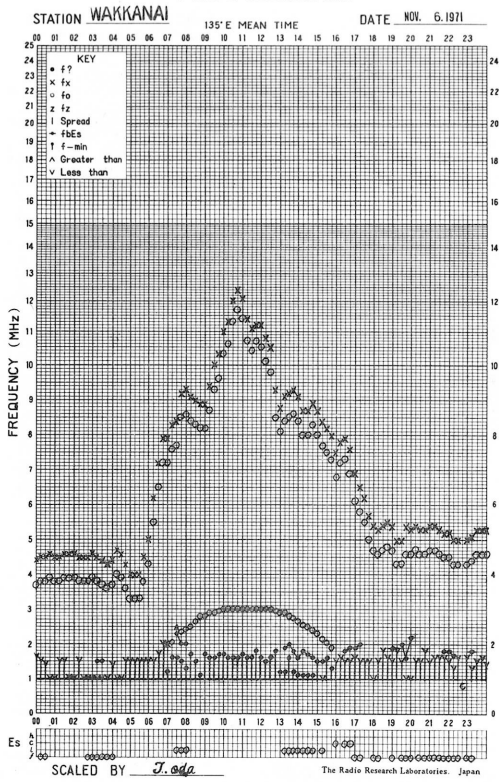


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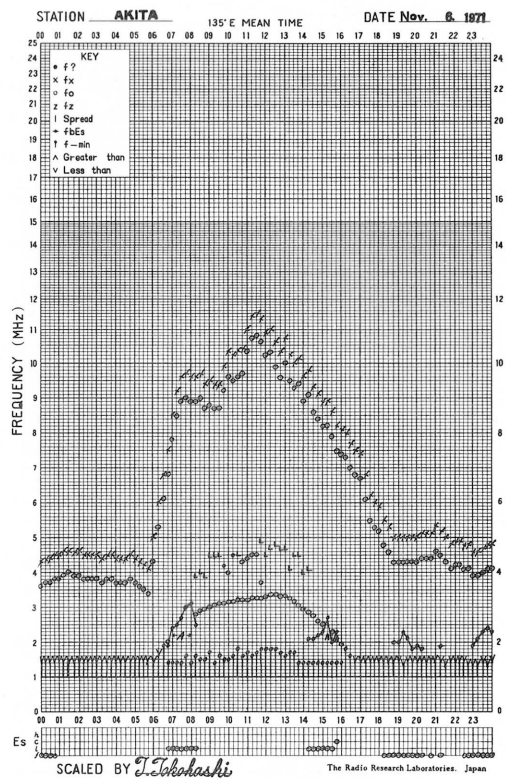




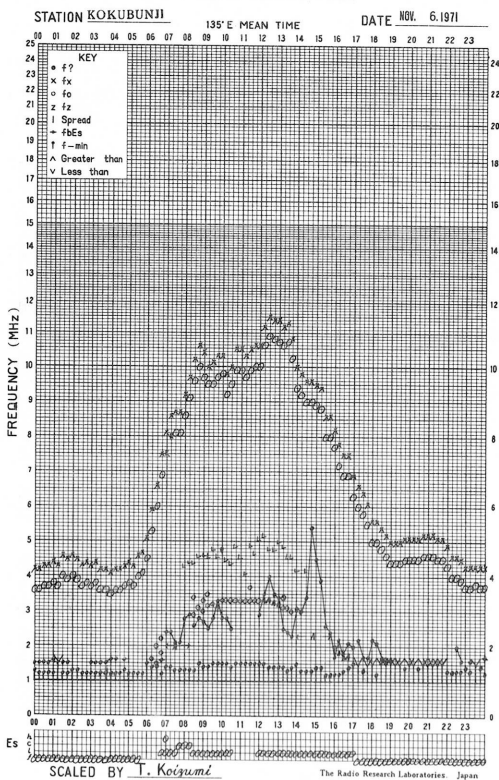
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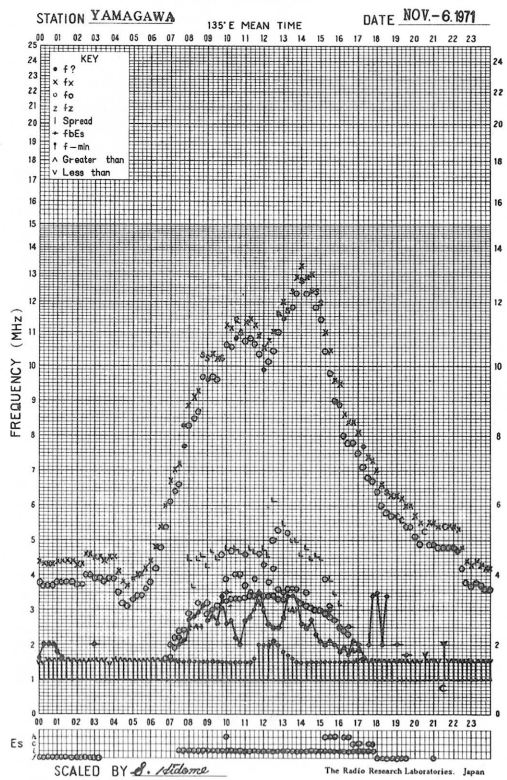
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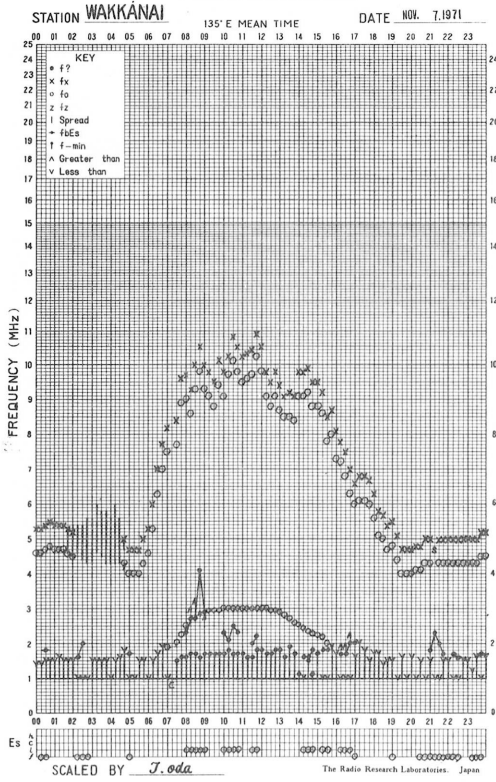
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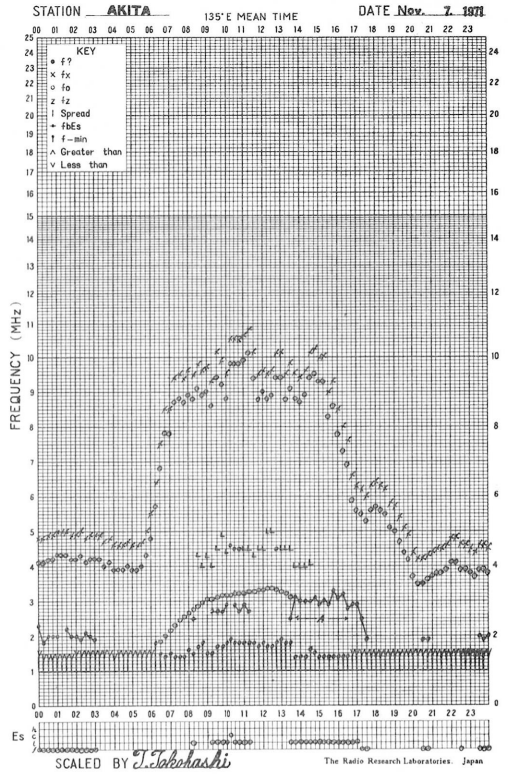
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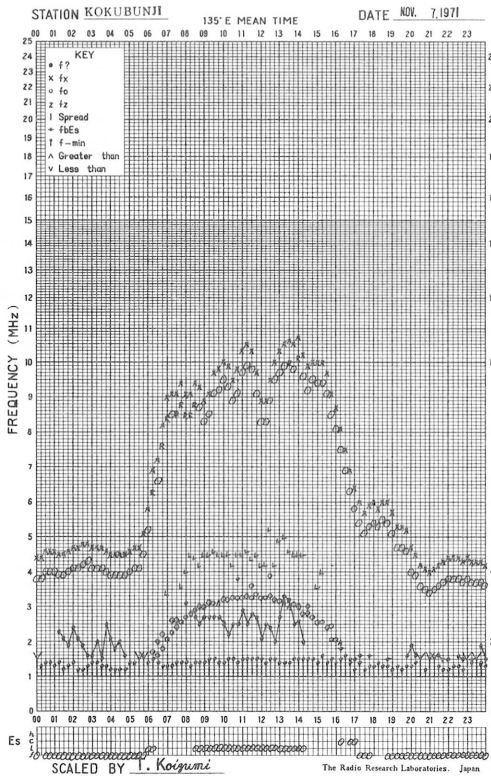
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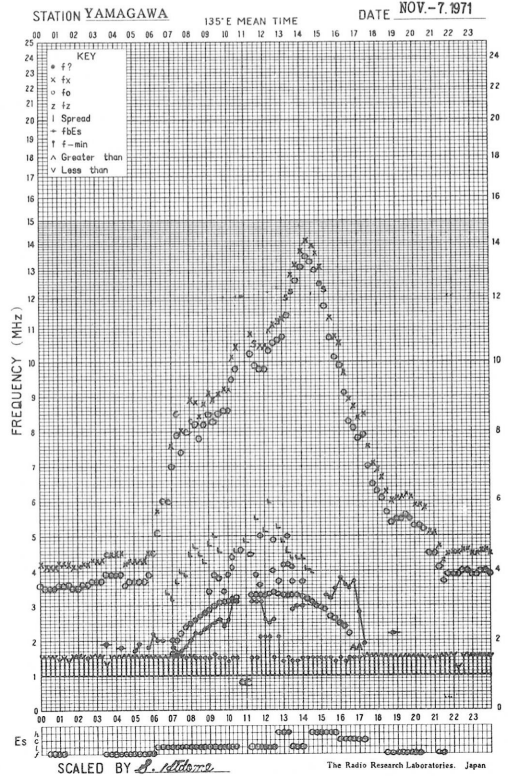
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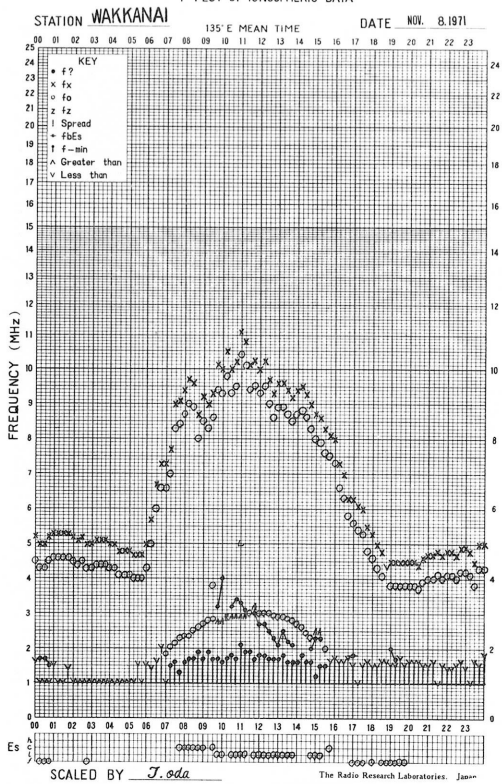
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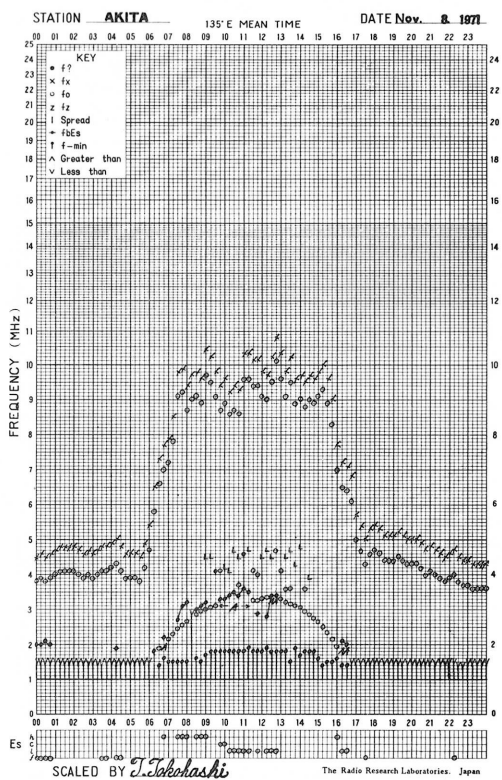
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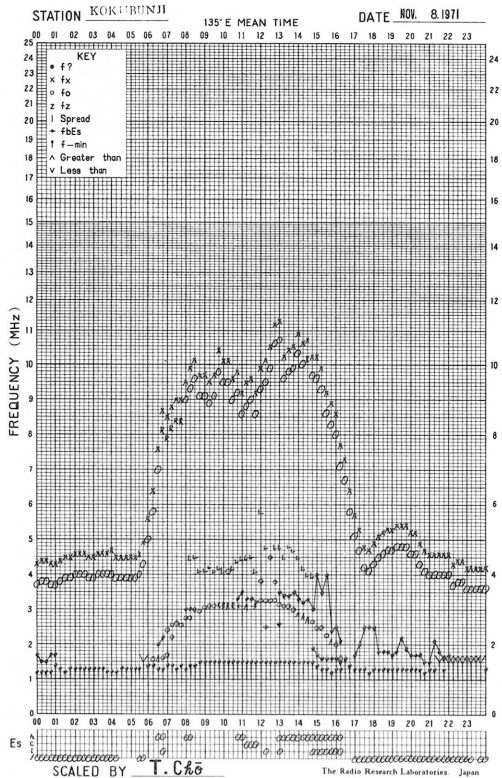
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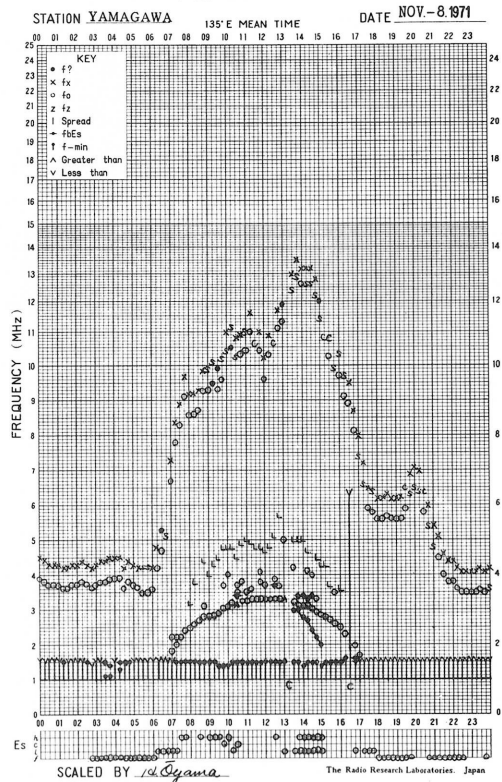
f-PLOT OF IONOSPHERIC DATA



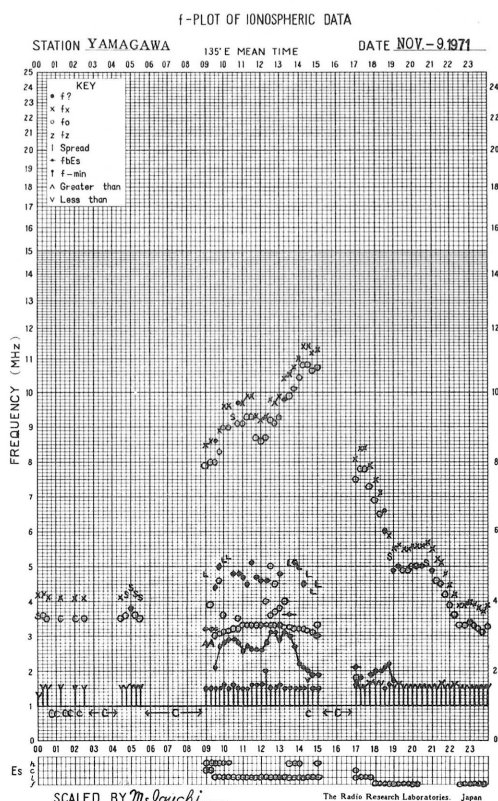
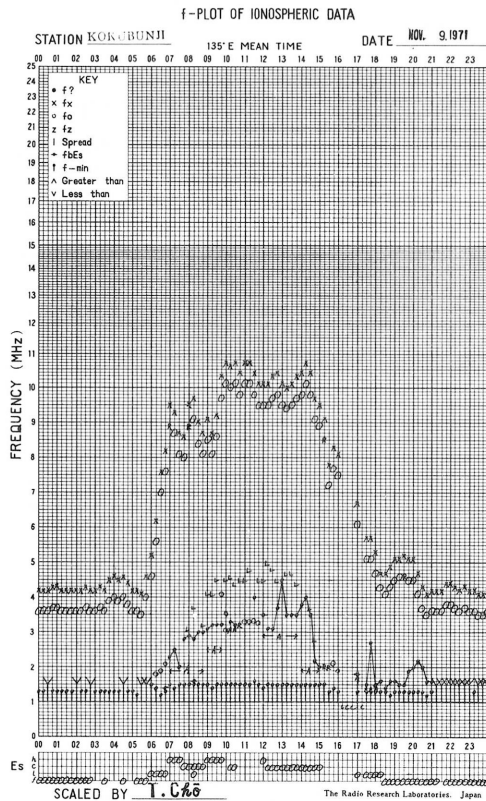
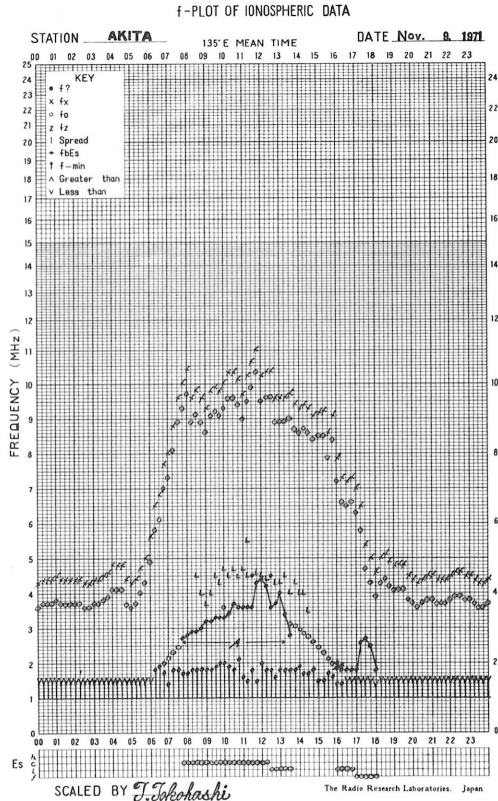
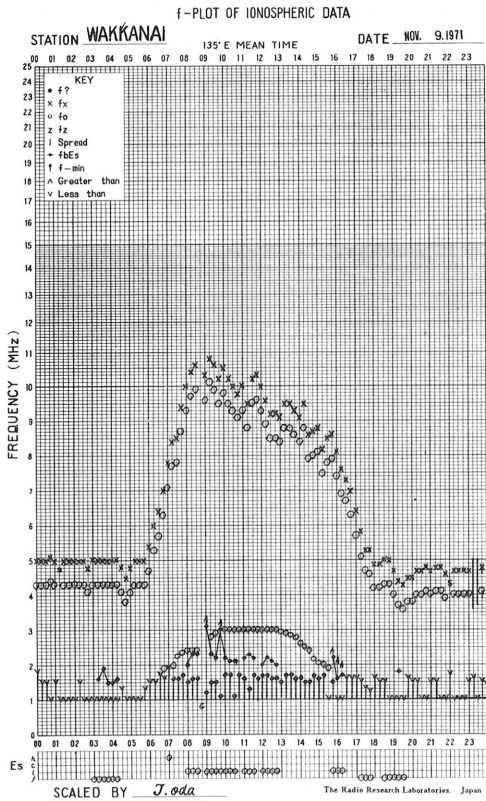
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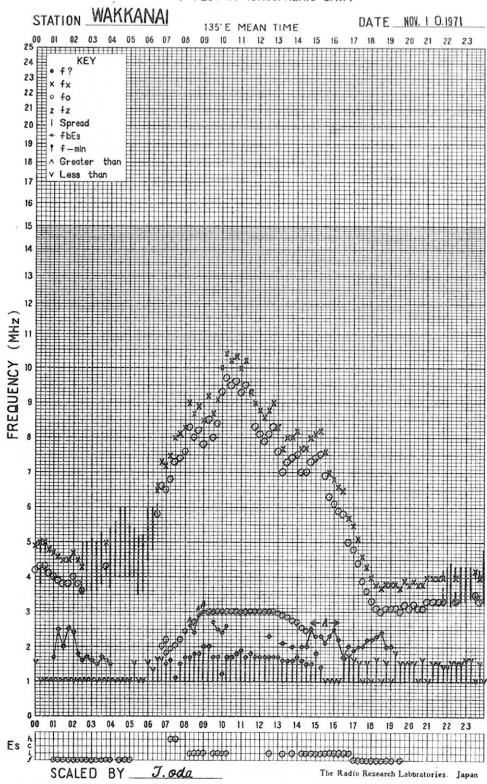
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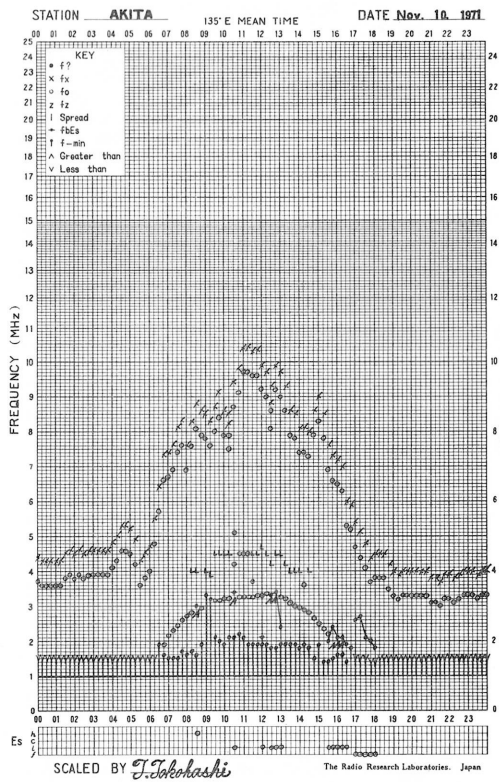




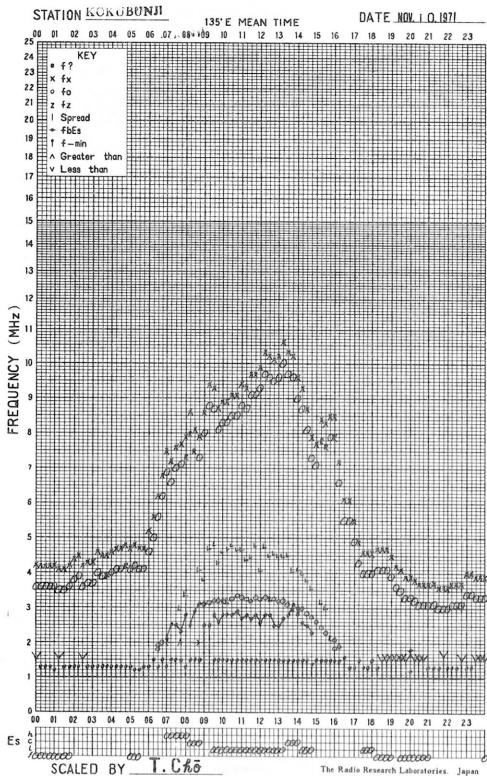
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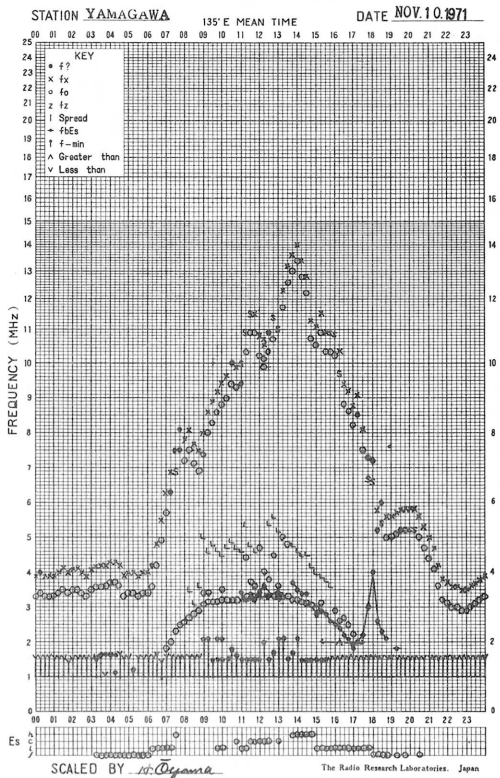
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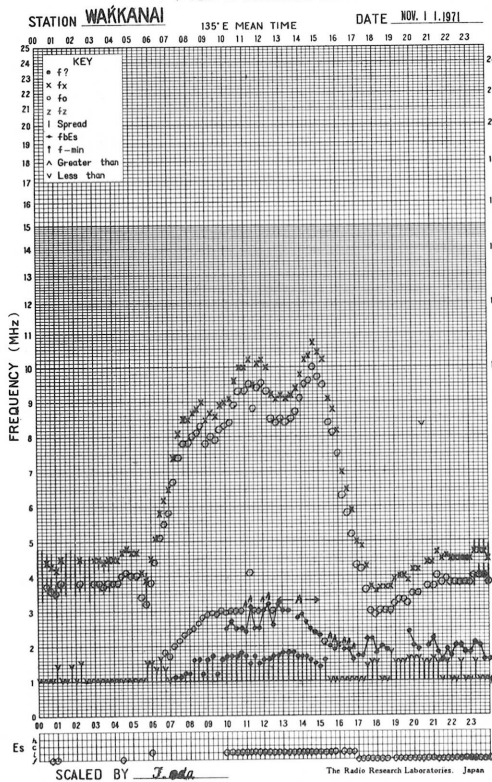
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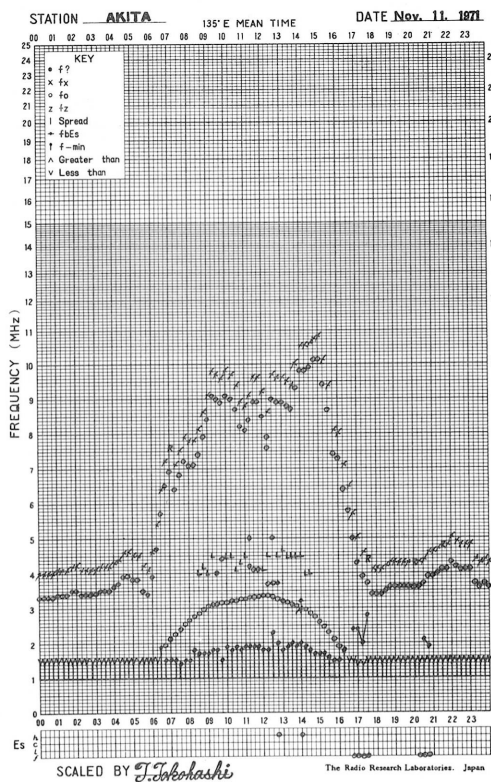
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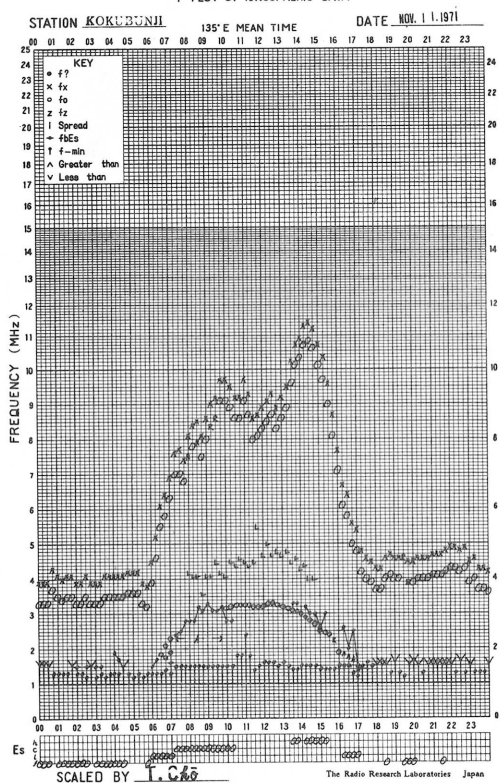
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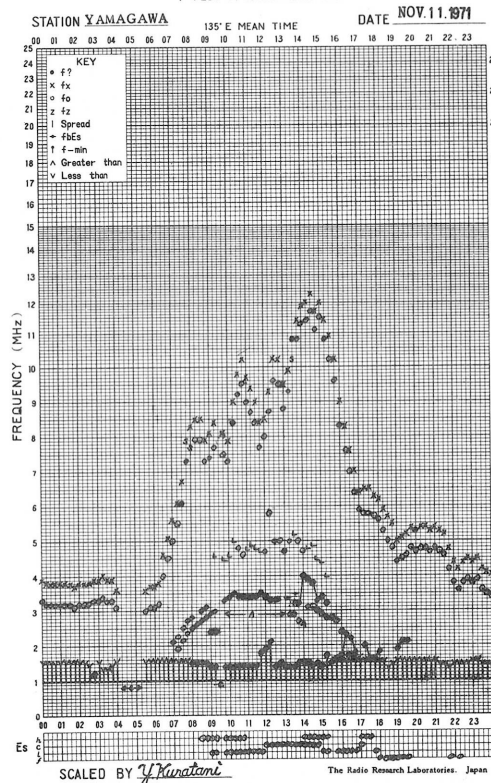
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f-PLOT OF IONOSPHERIC DATA



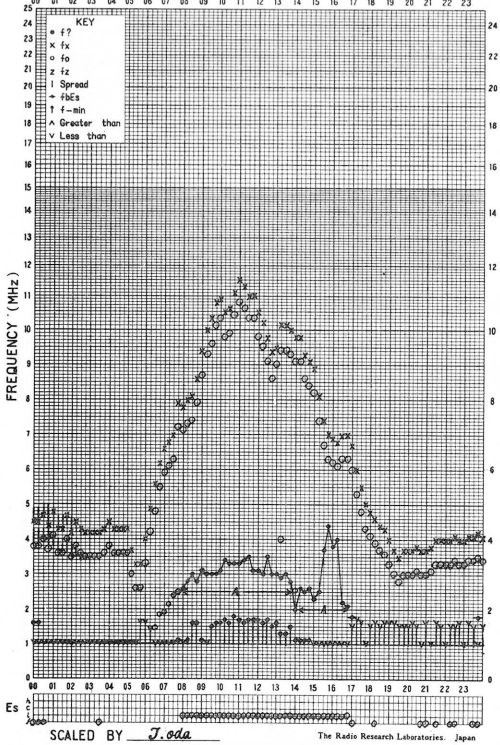
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f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE NOV. 12, 1971

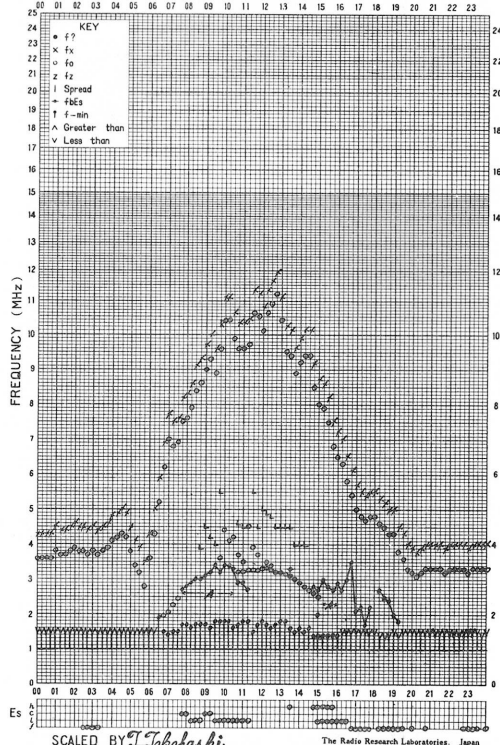


SCALED BY J. Oda

The Radio Research Laboratories, Japan

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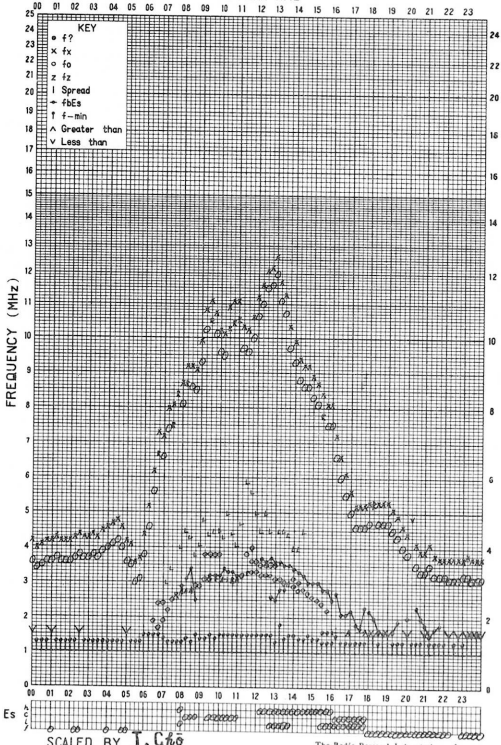


SCALED BY T. Takahashi

The Radio Research Laboratories, Japan

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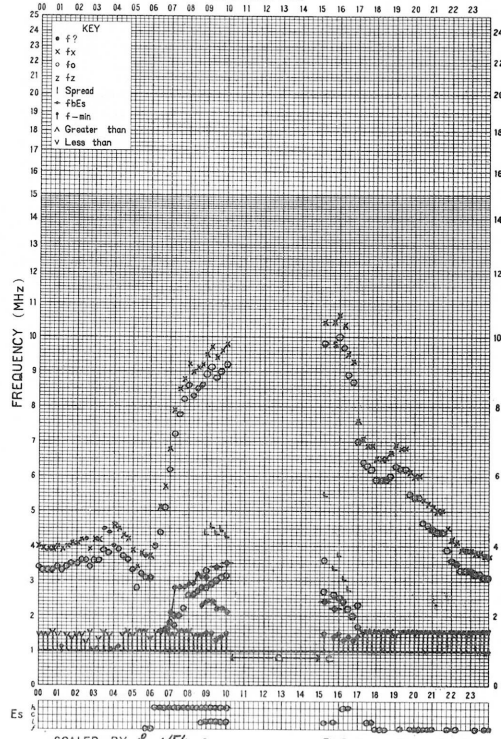


SCALED BY I. C. & Co.

The Radio Research Laboratories, Japan

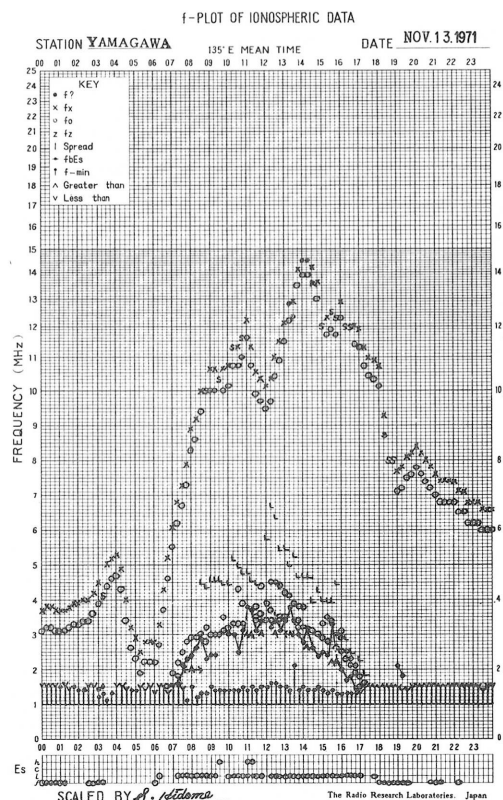
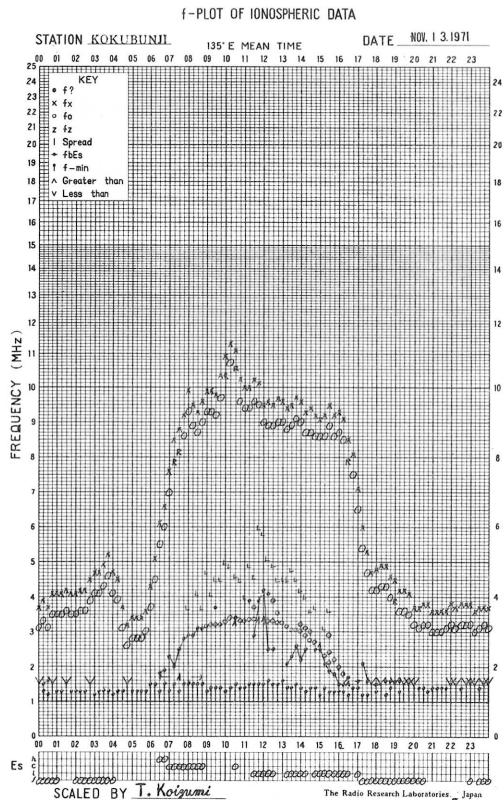
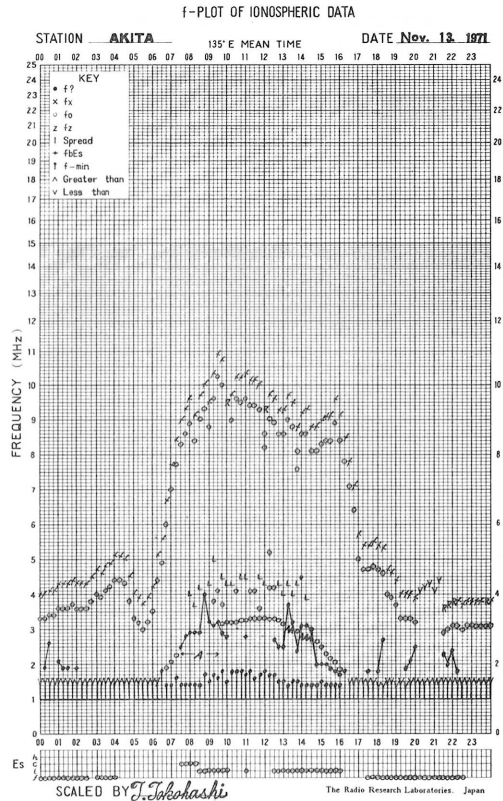
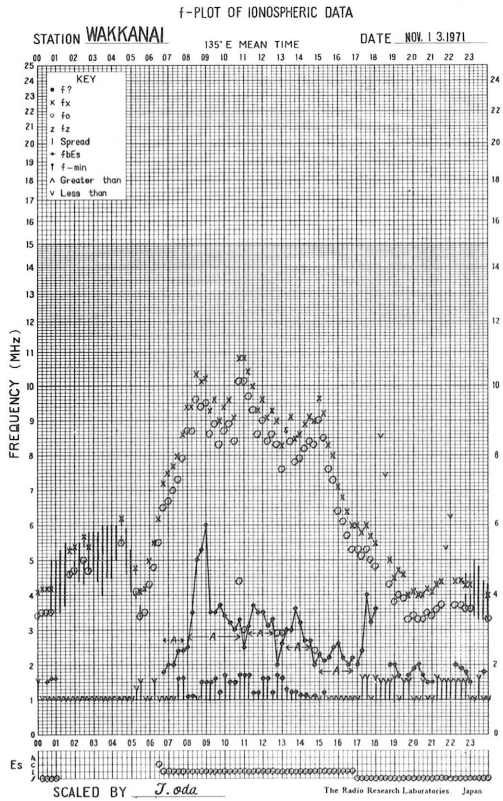
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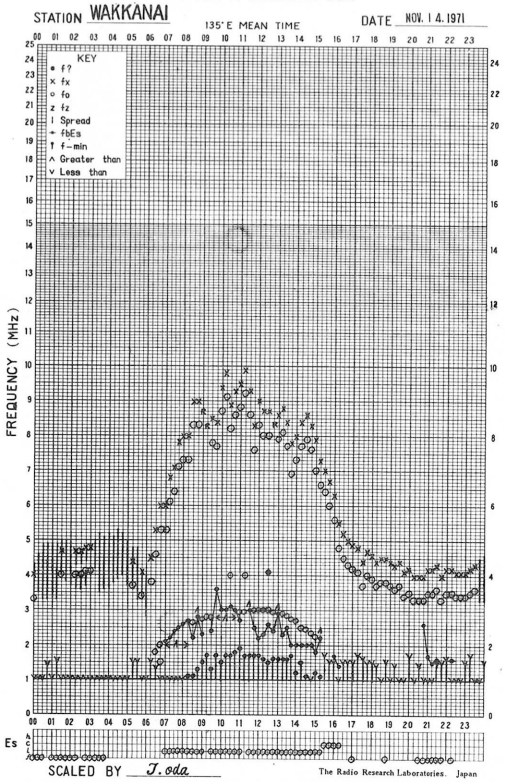


SCALED BY S. Nishimura

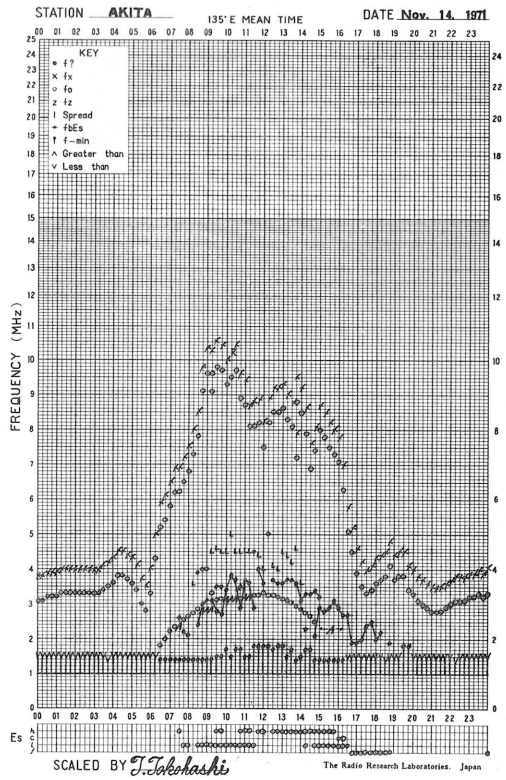
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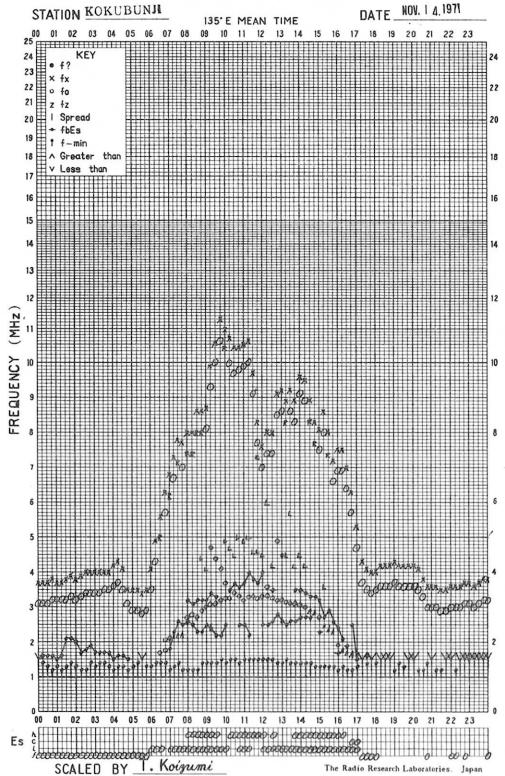
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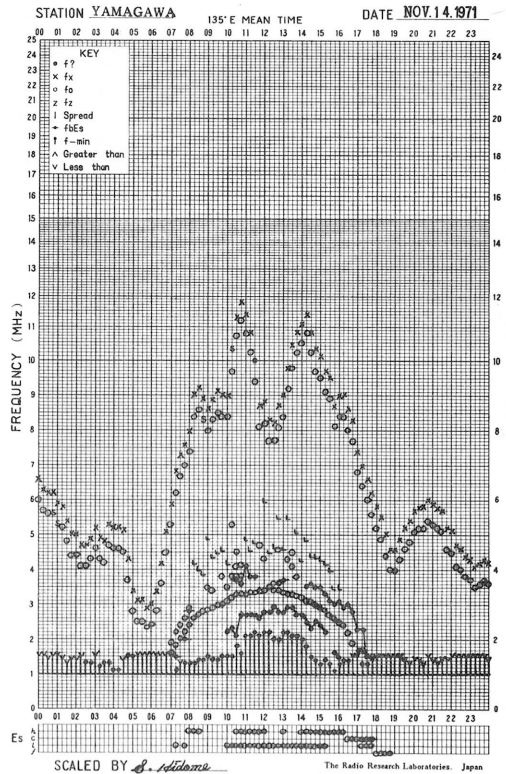
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f-PLOT OF IONOSPHERIC DATA

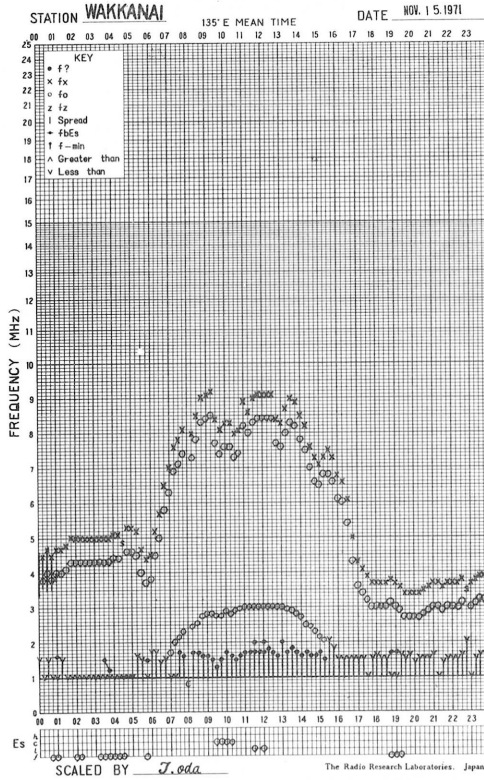


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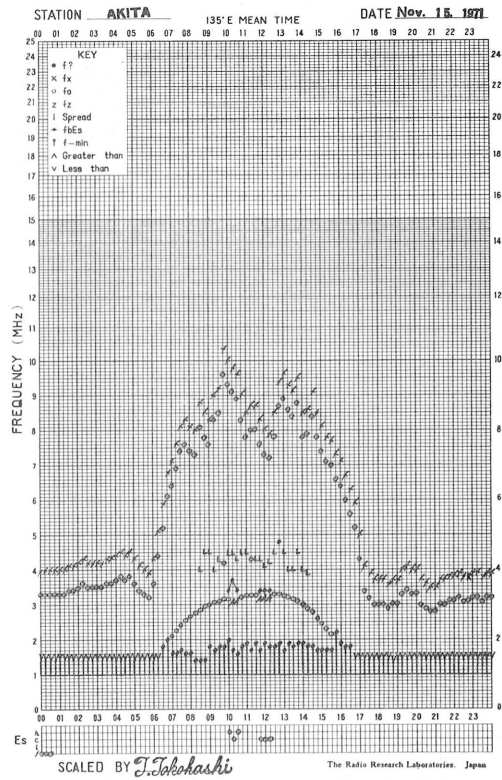




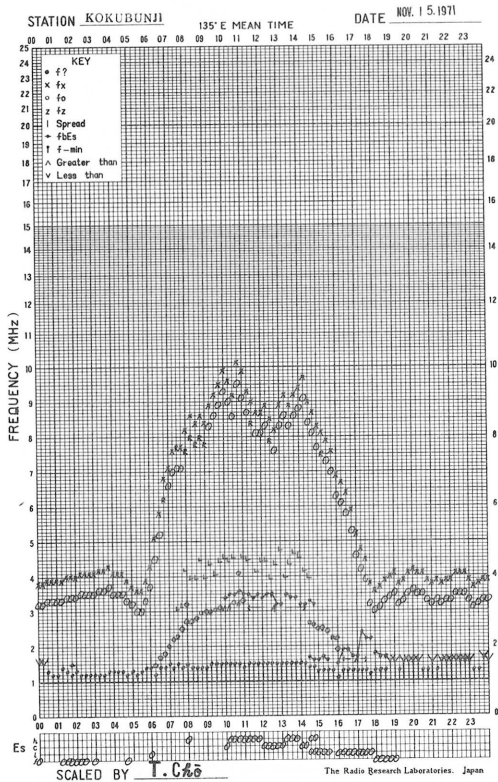
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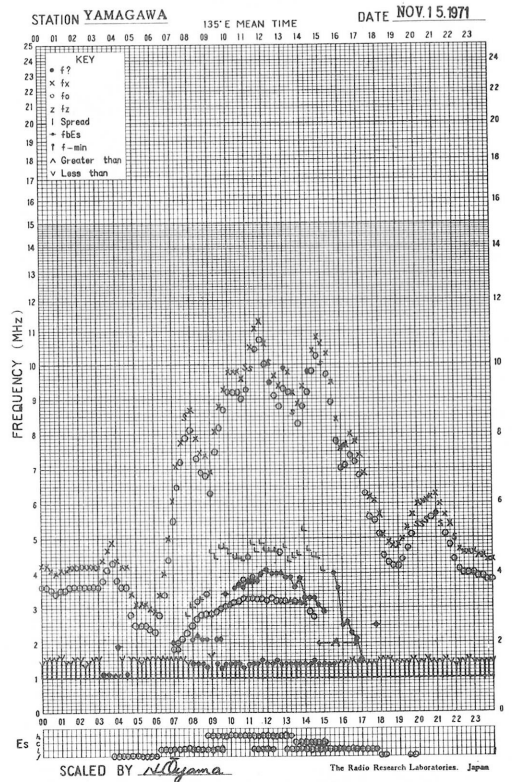
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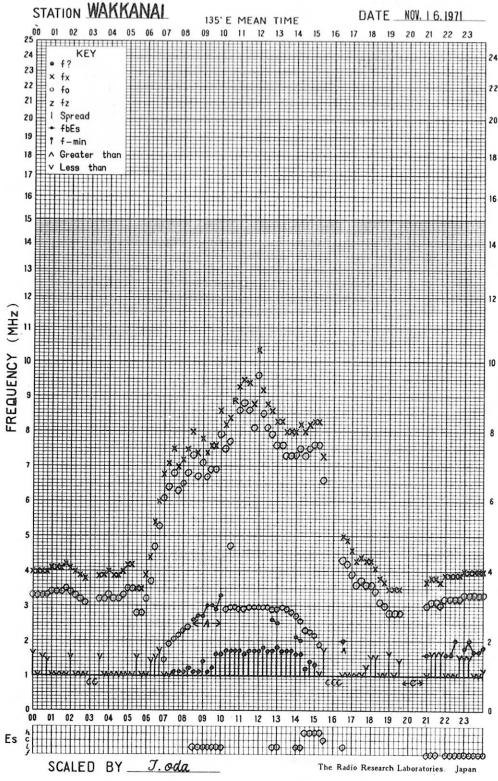
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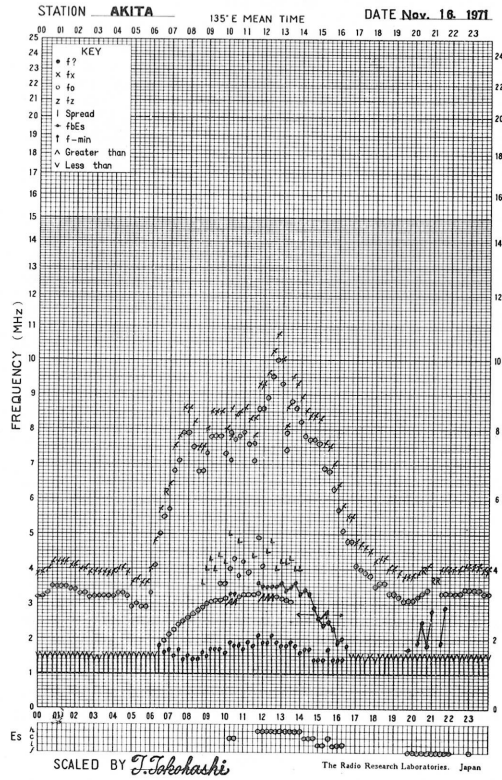
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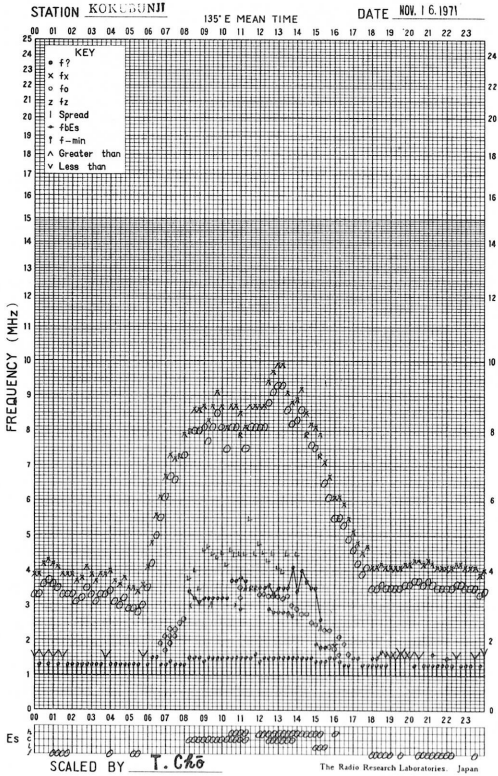
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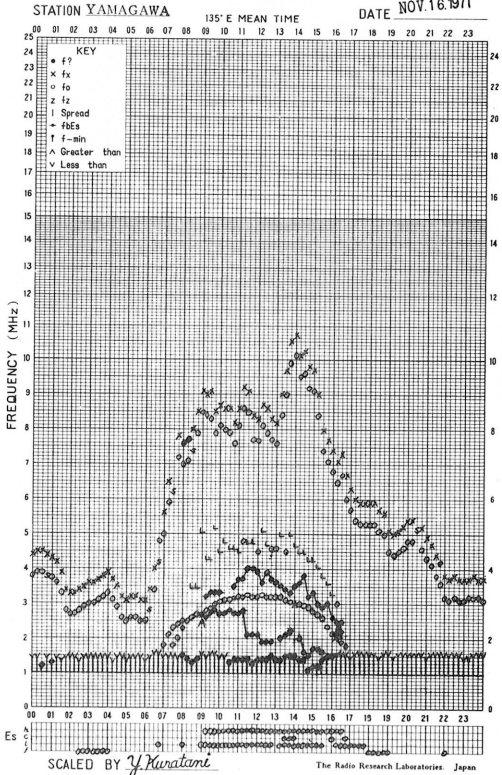
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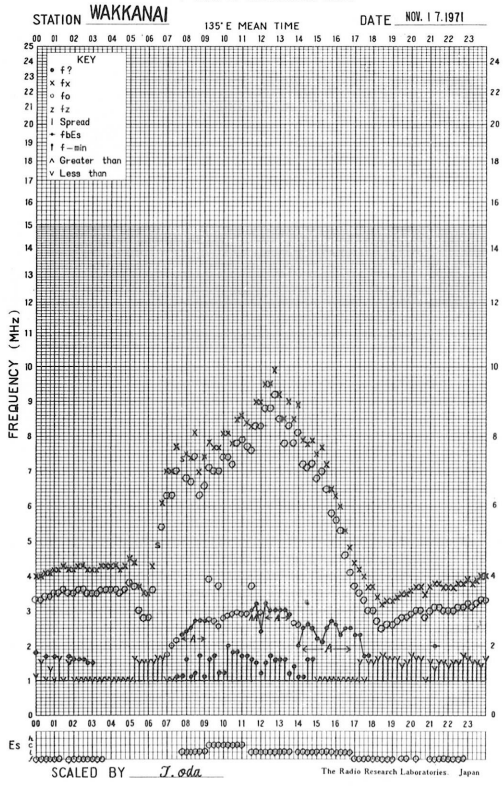
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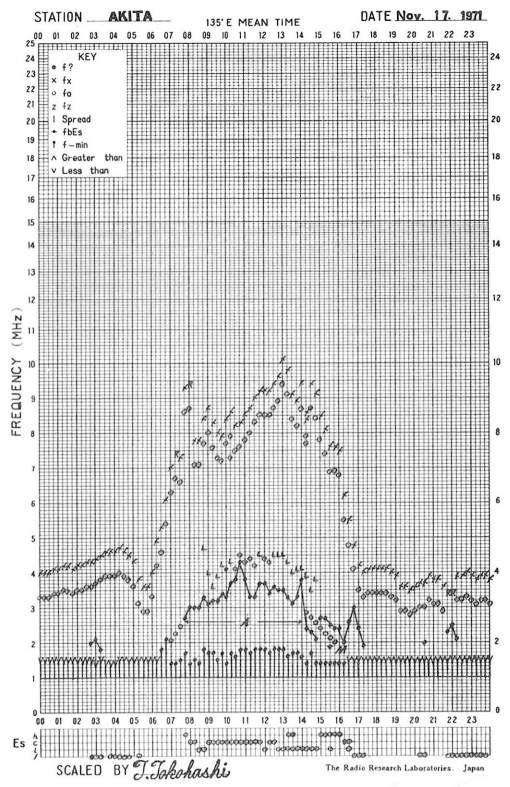
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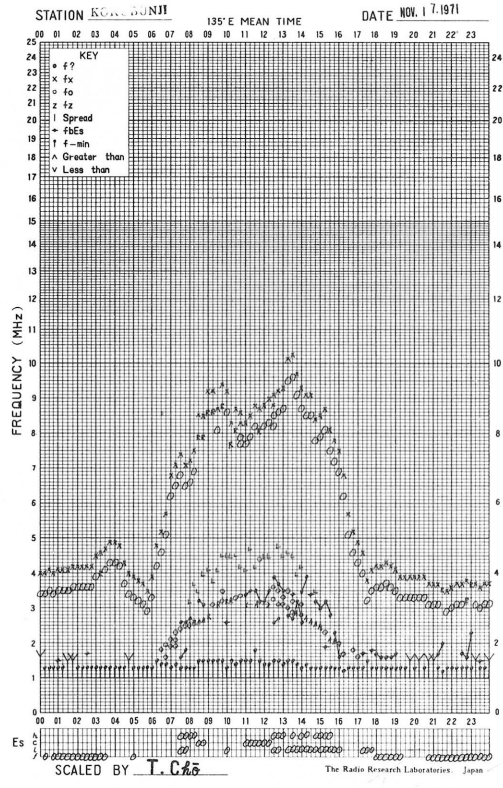
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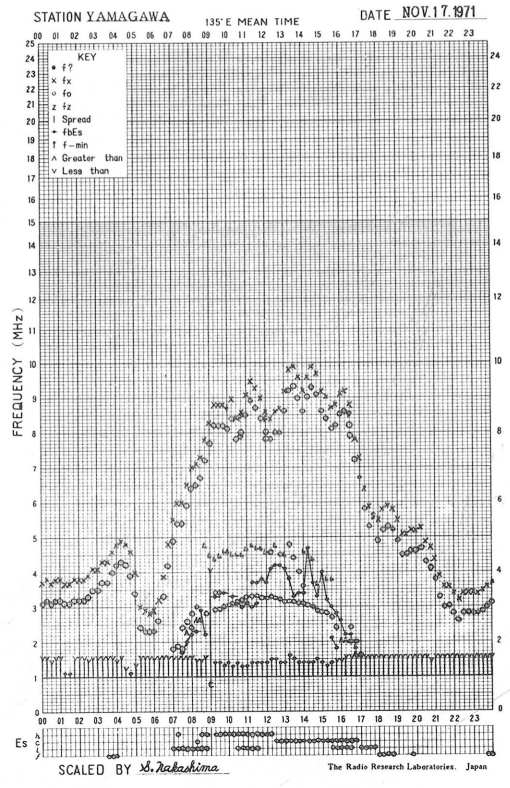
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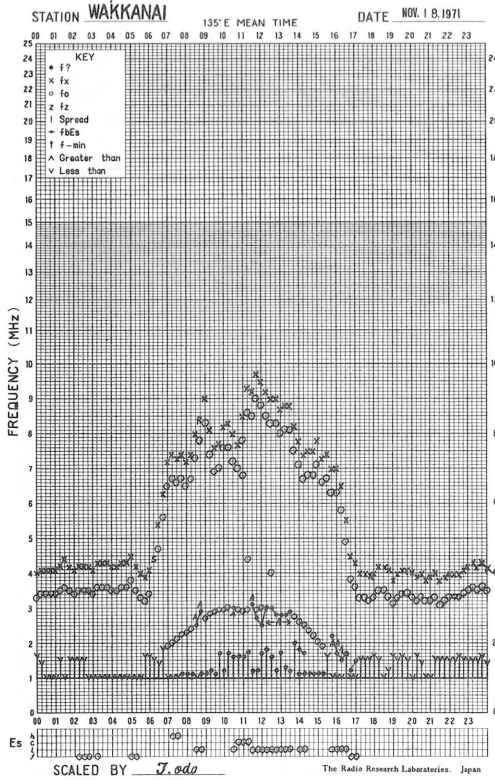


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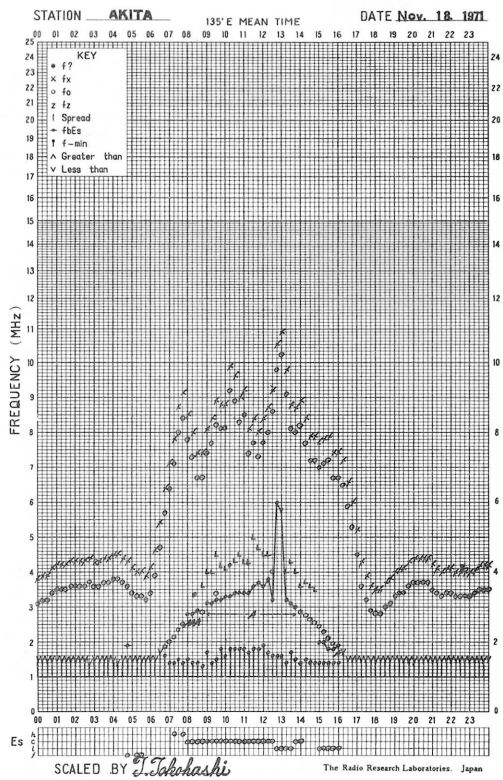




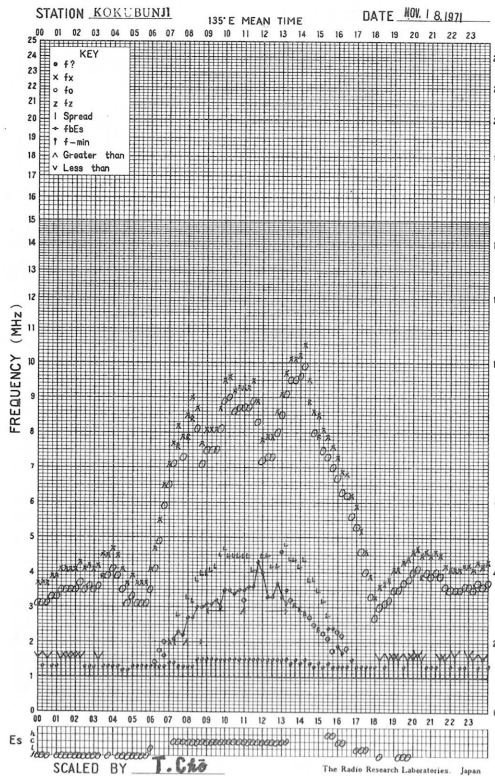
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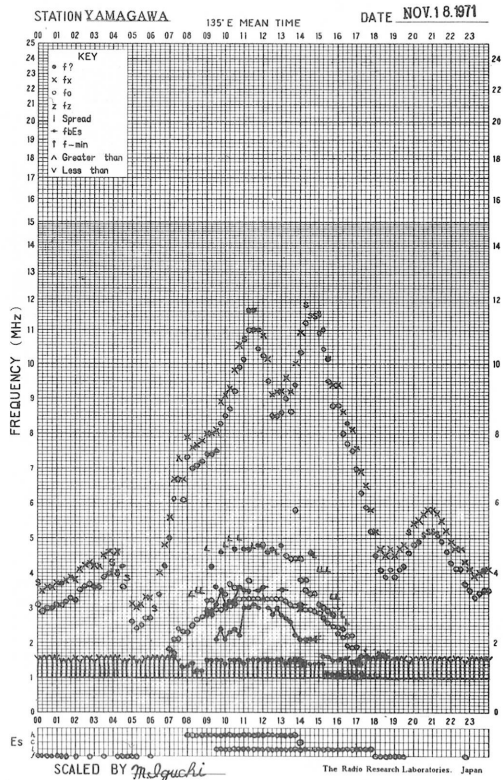
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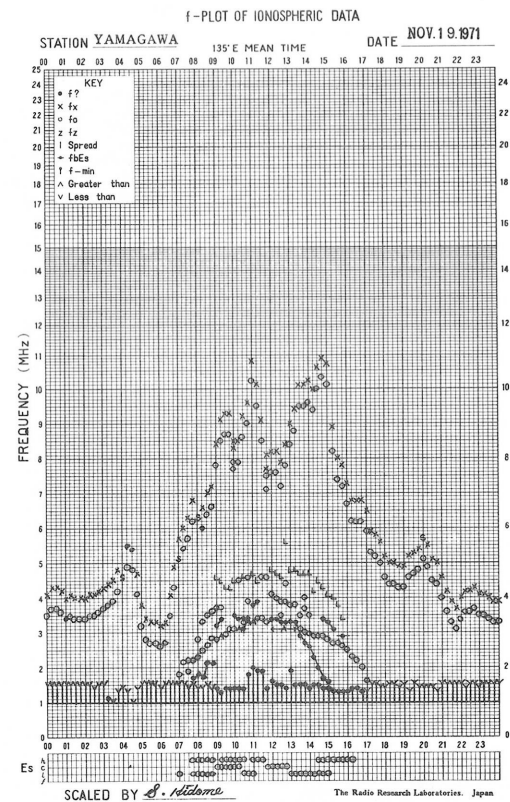
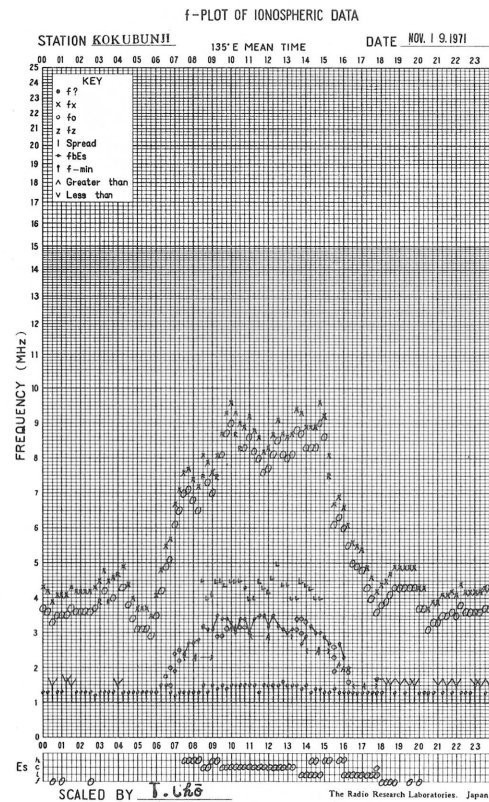
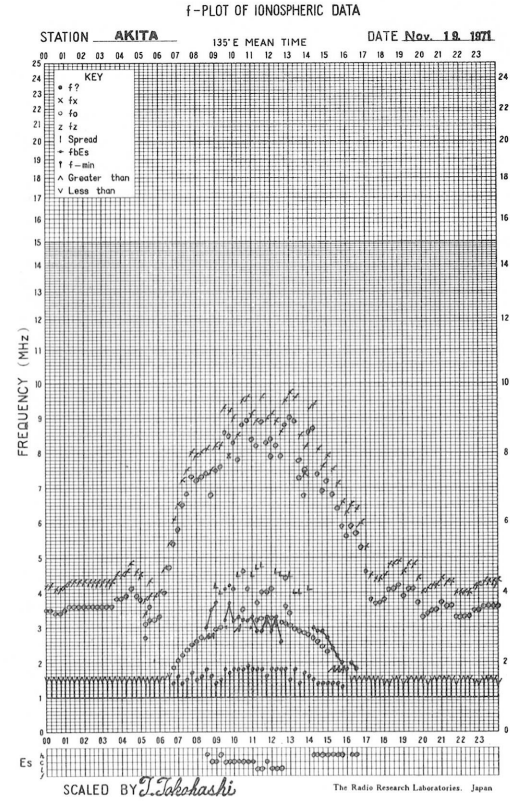
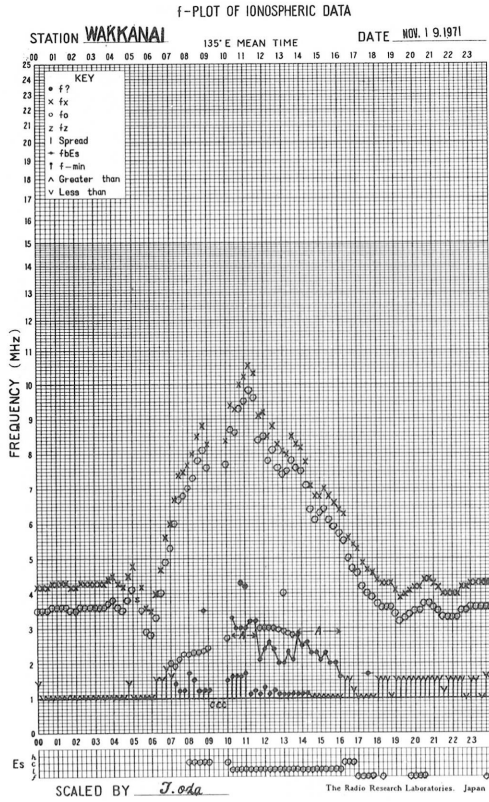


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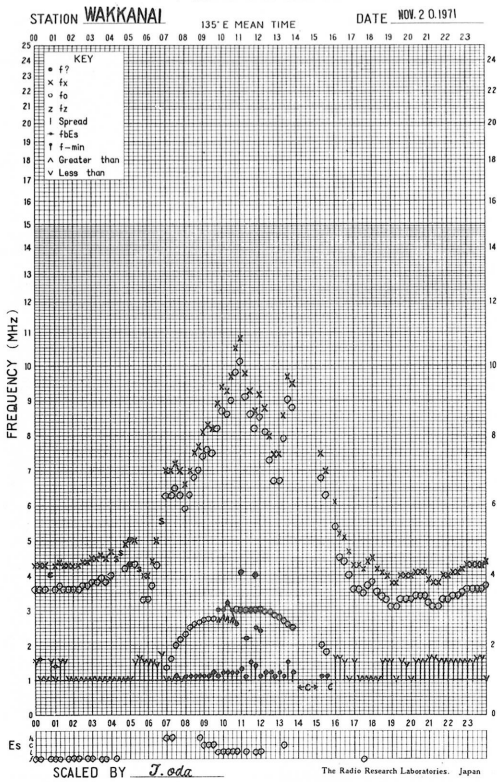


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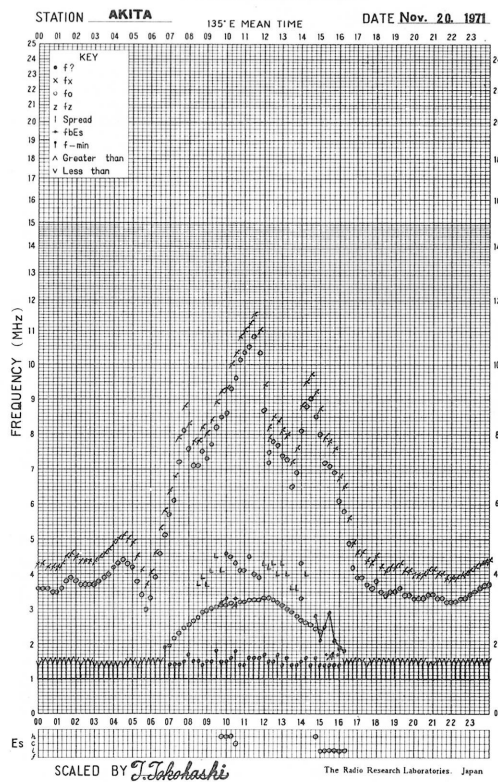




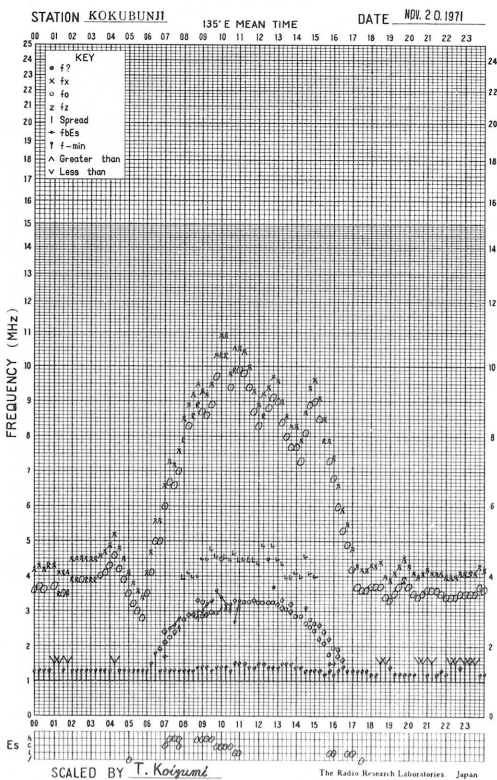
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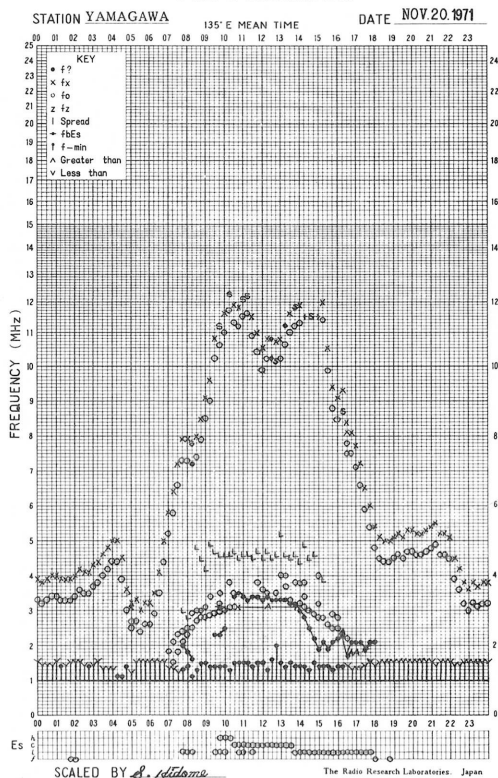
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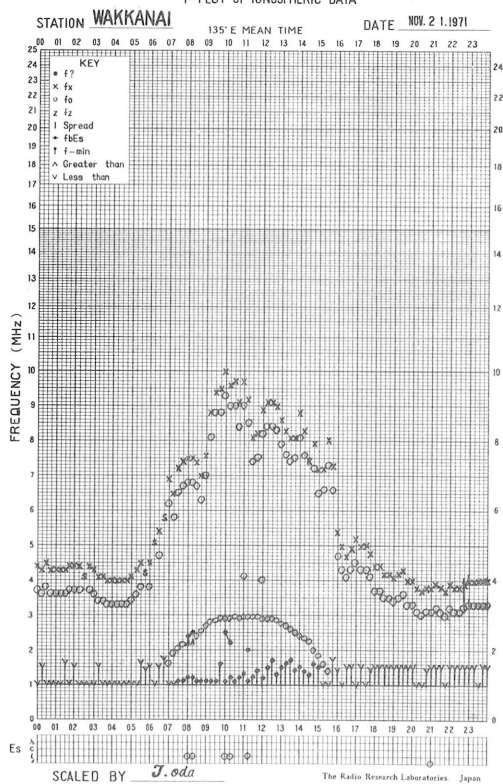


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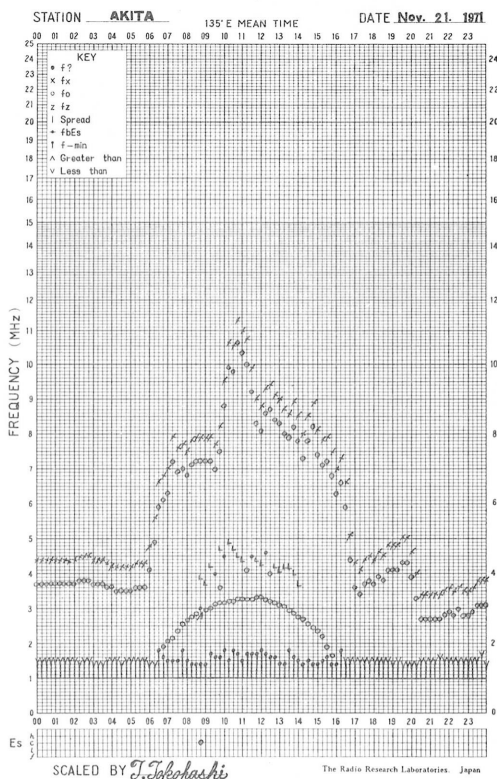




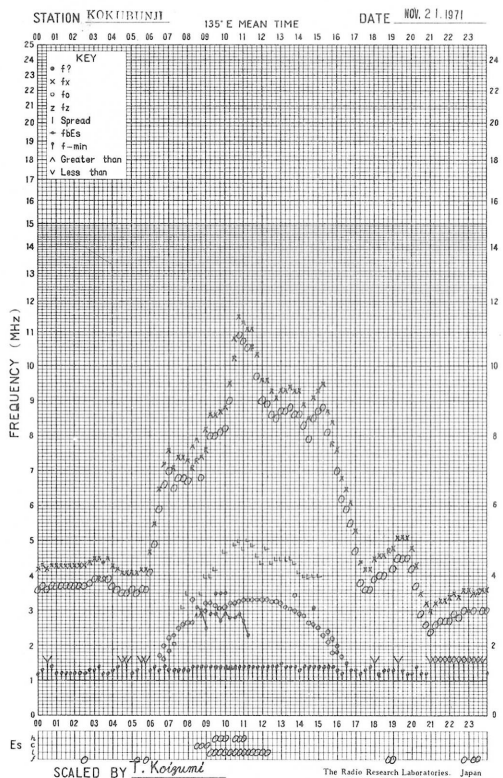
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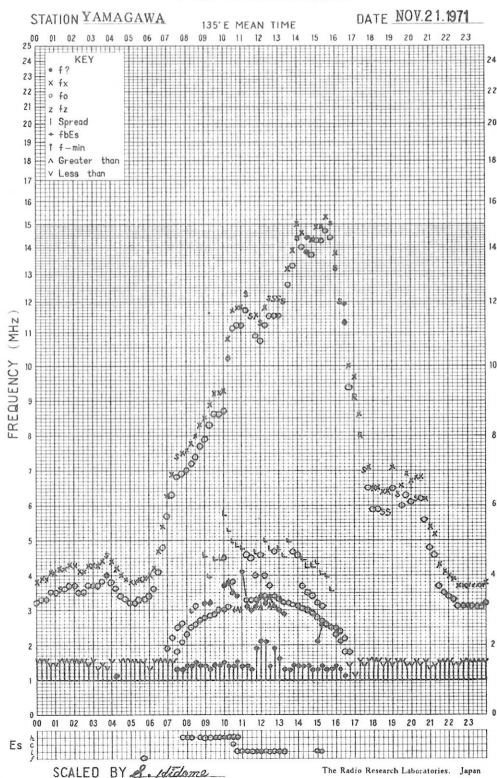
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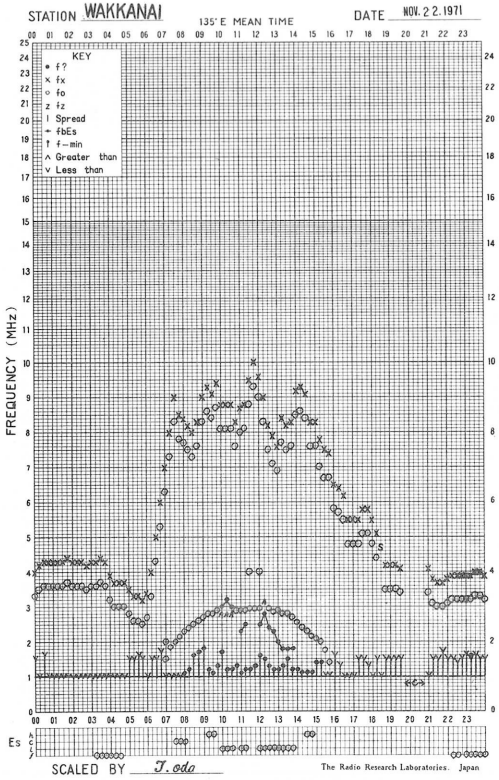
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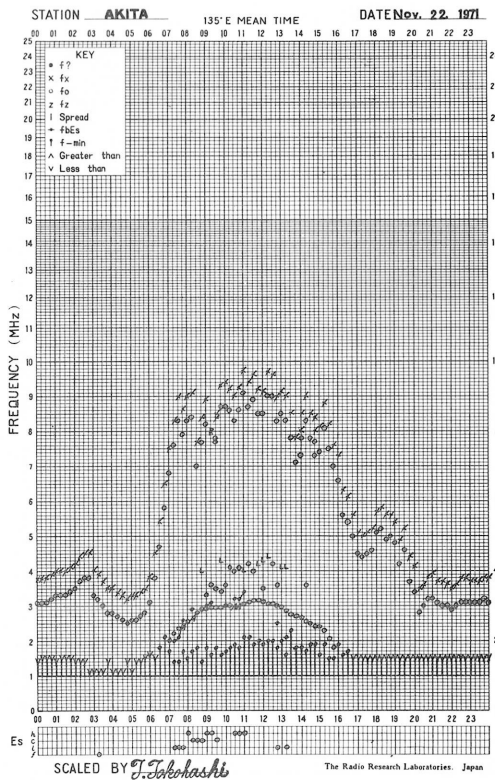
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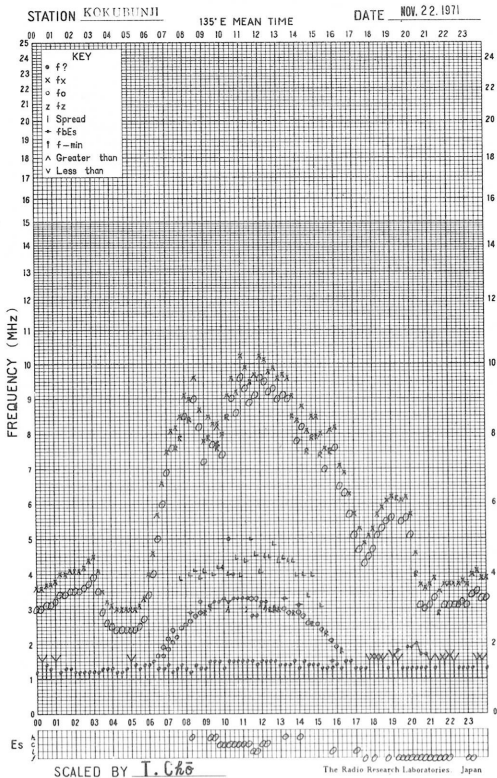
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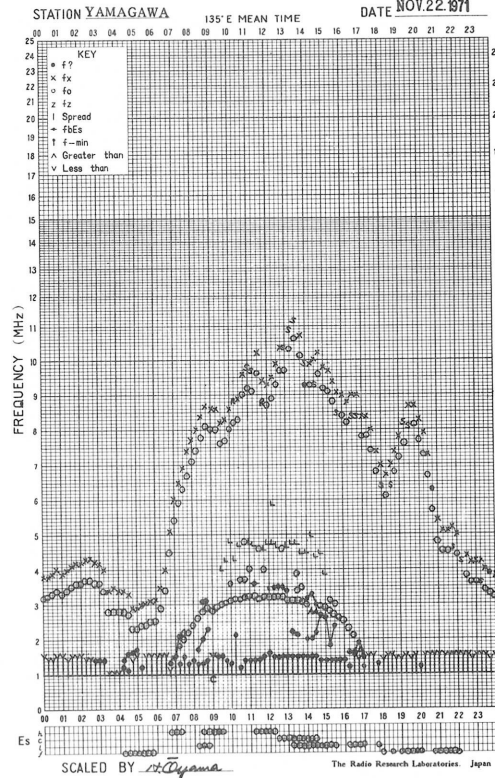
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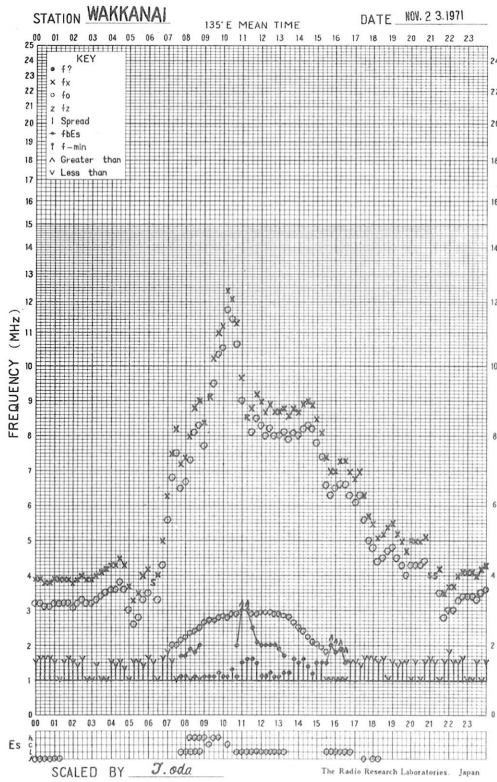
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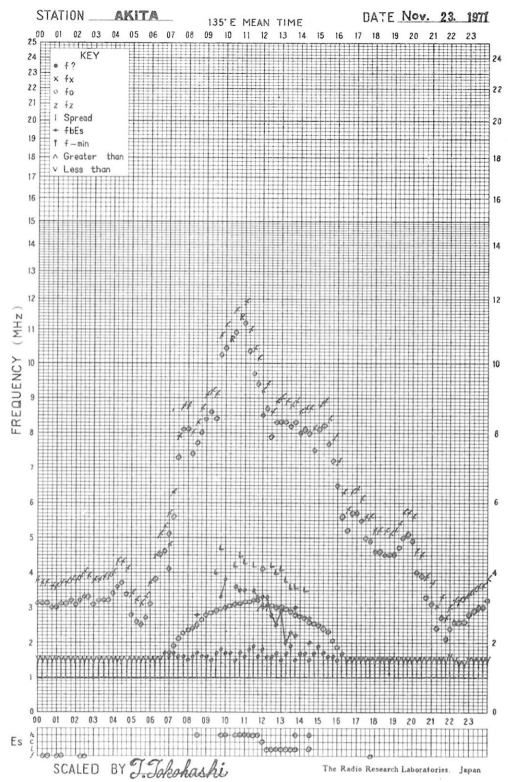
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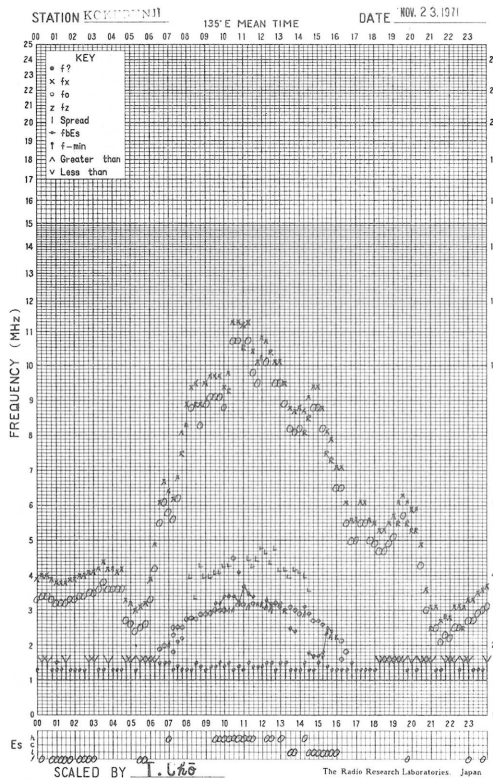
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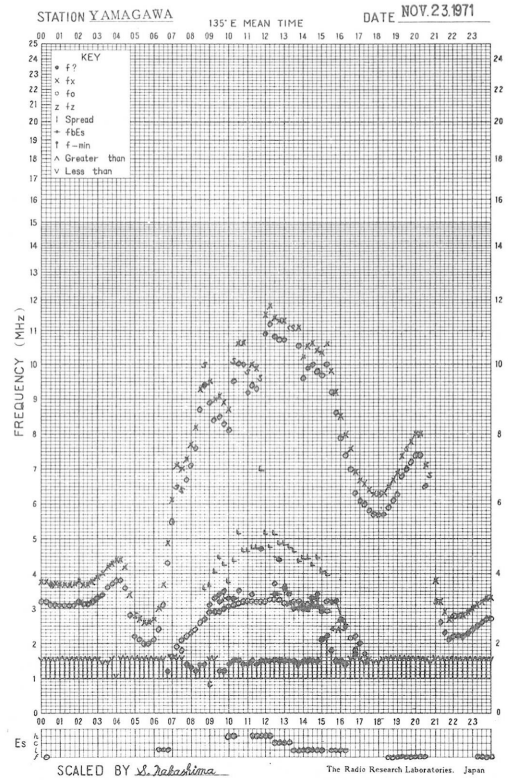
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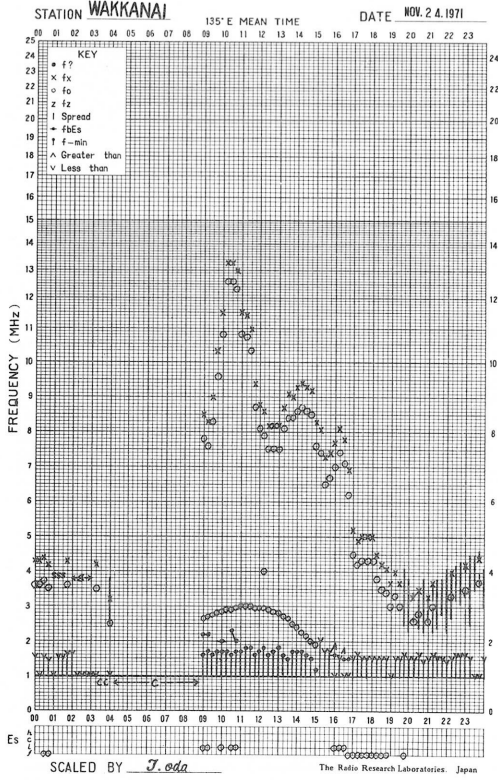


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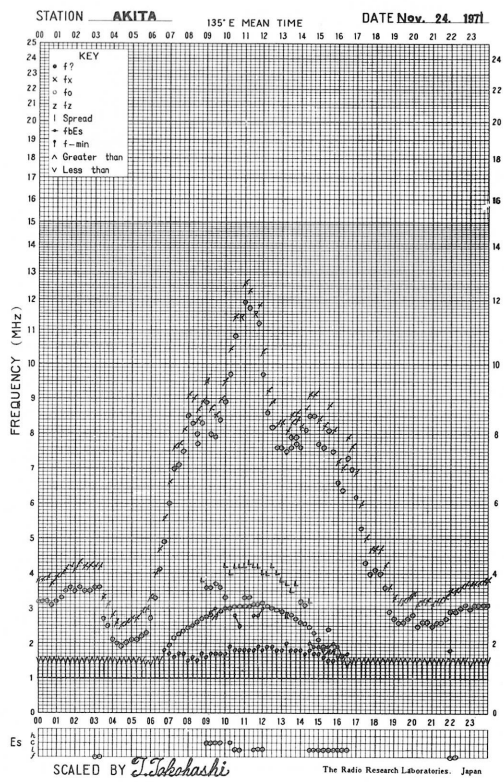




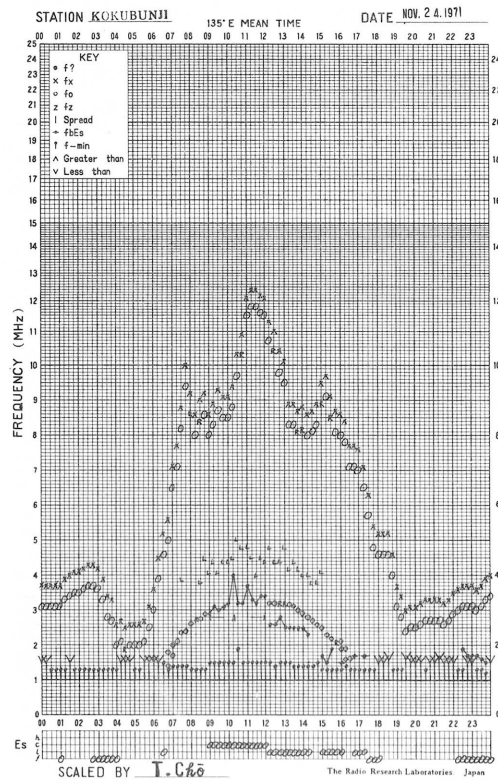
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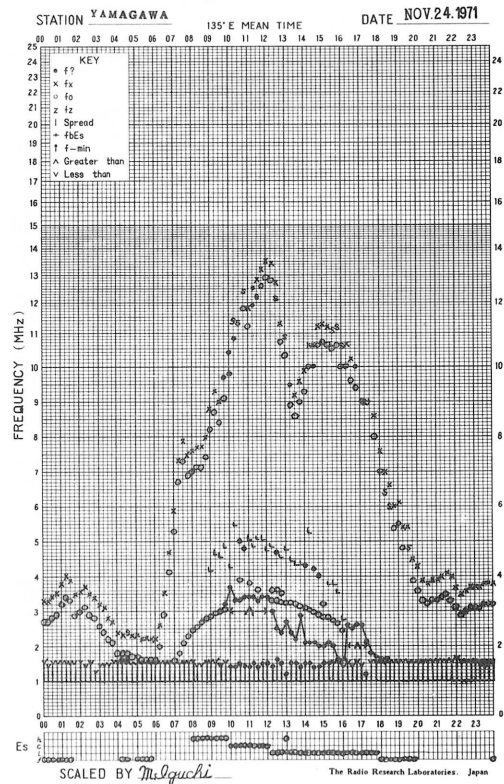
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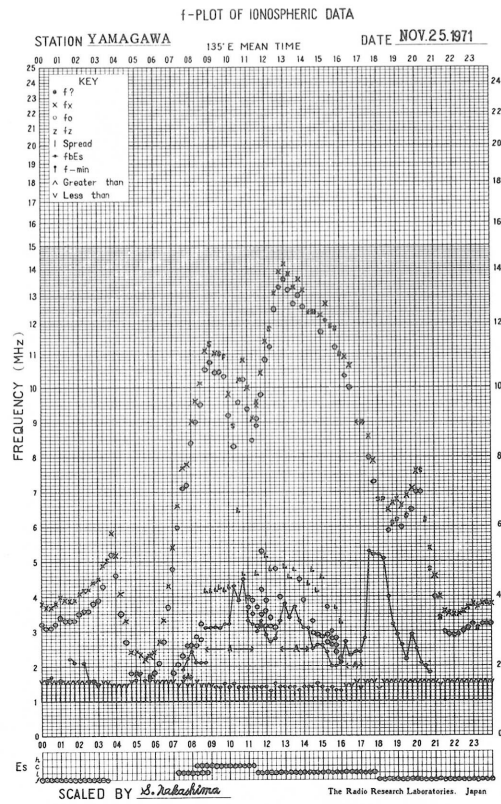
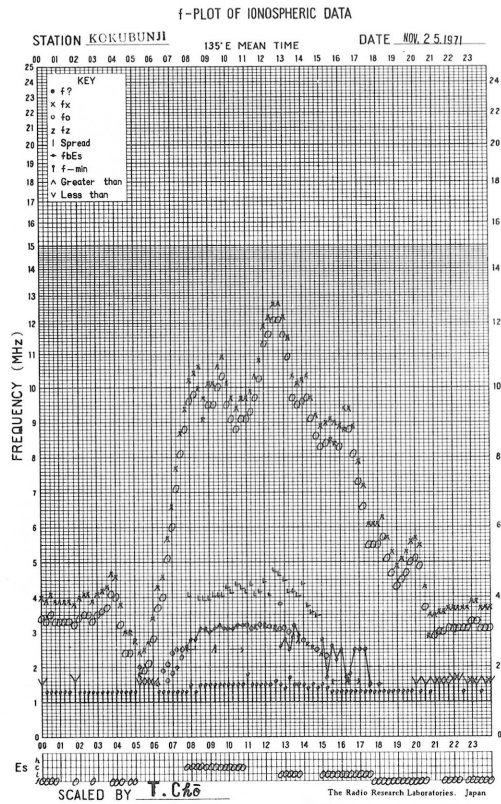
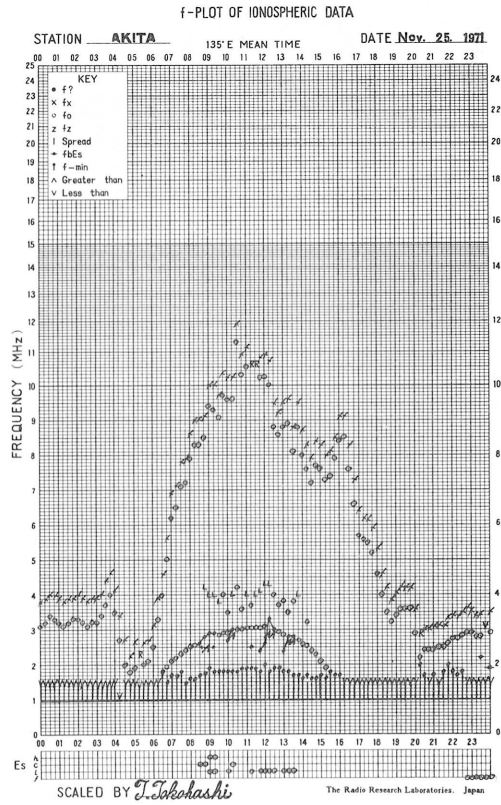
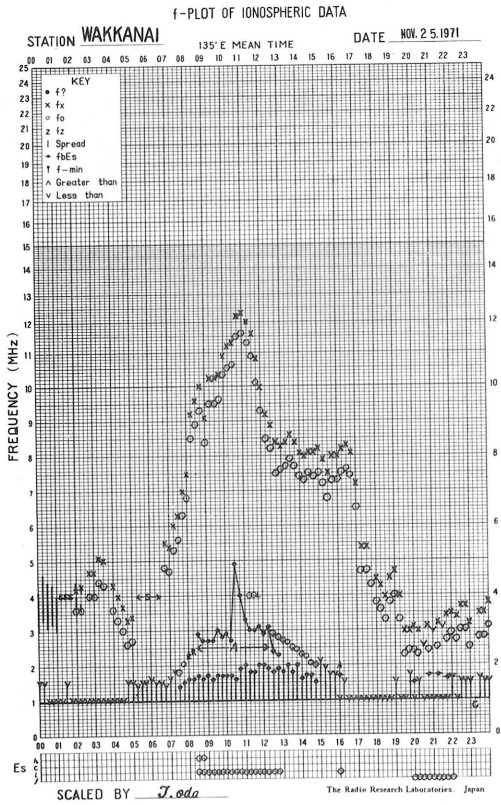


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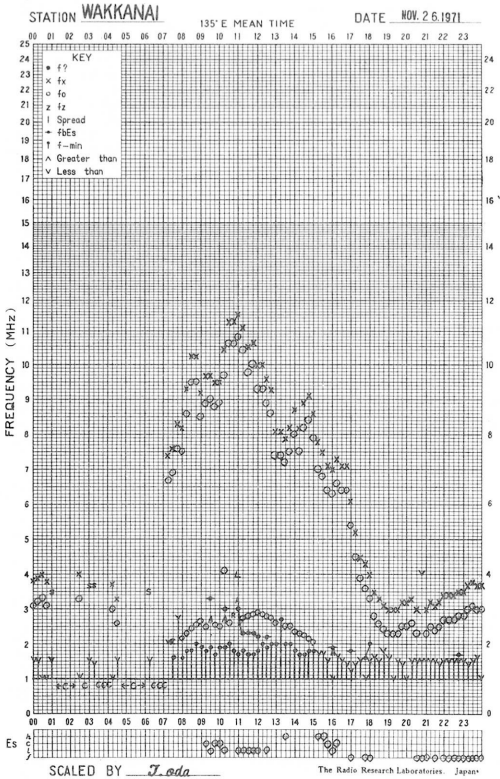


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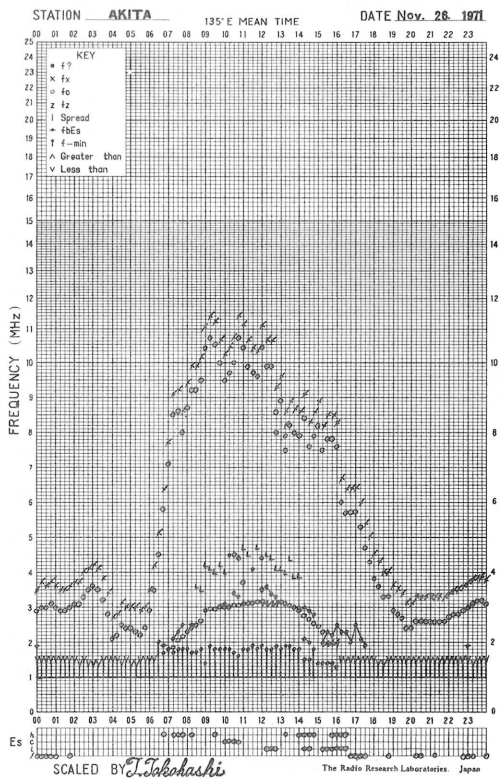




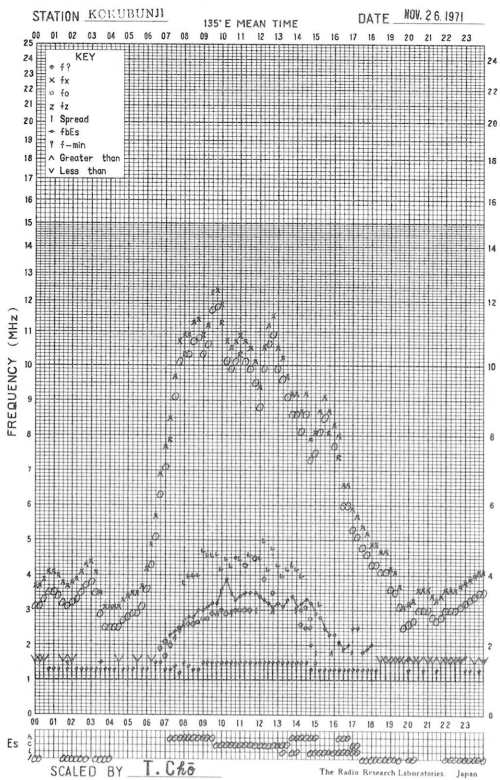
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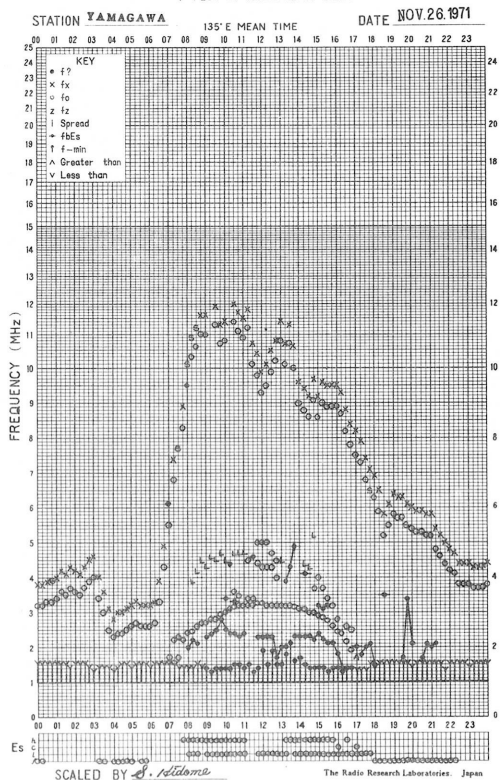
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f-PLOT OF IONOSPHERIC DATA

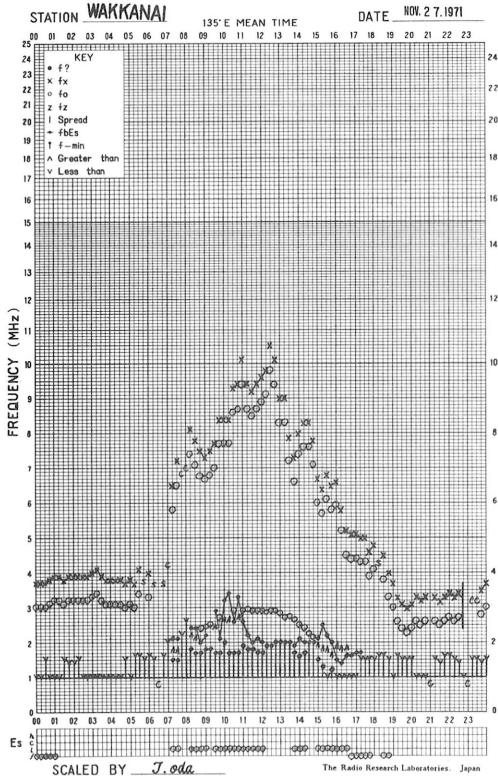


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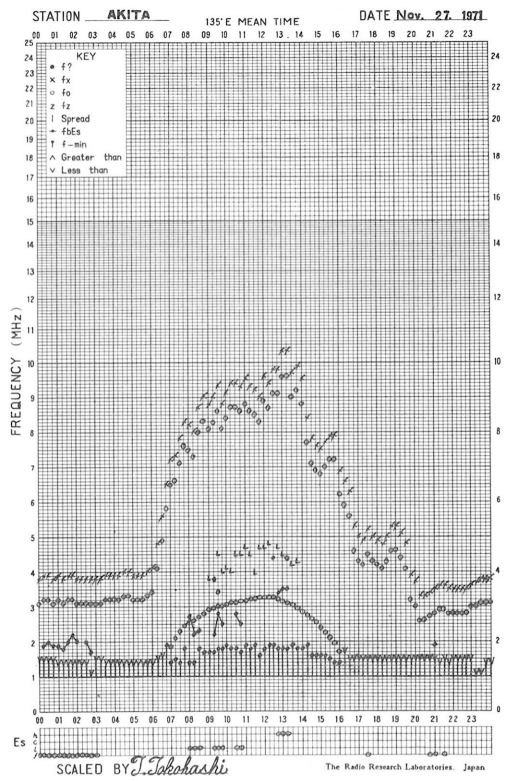




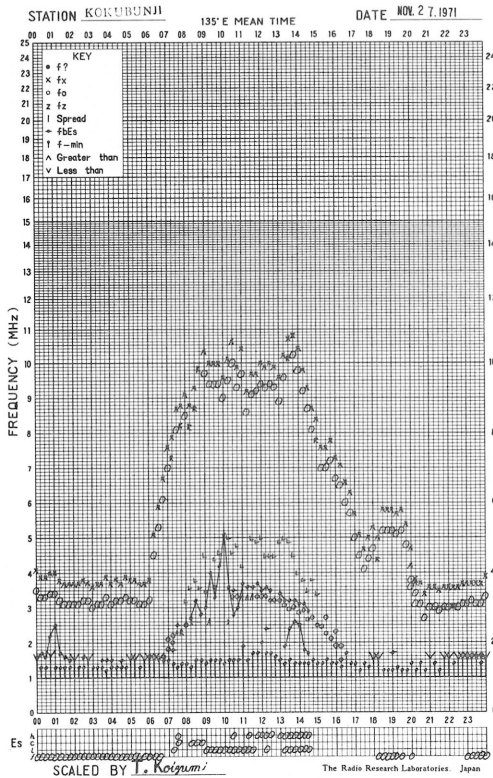
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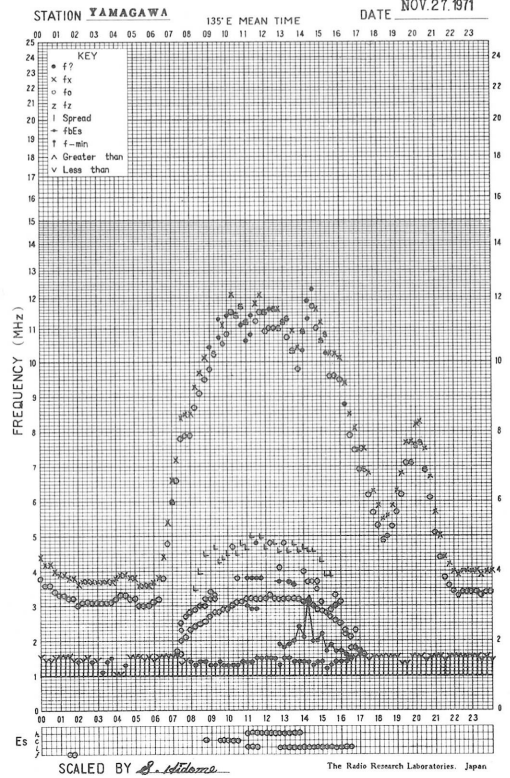
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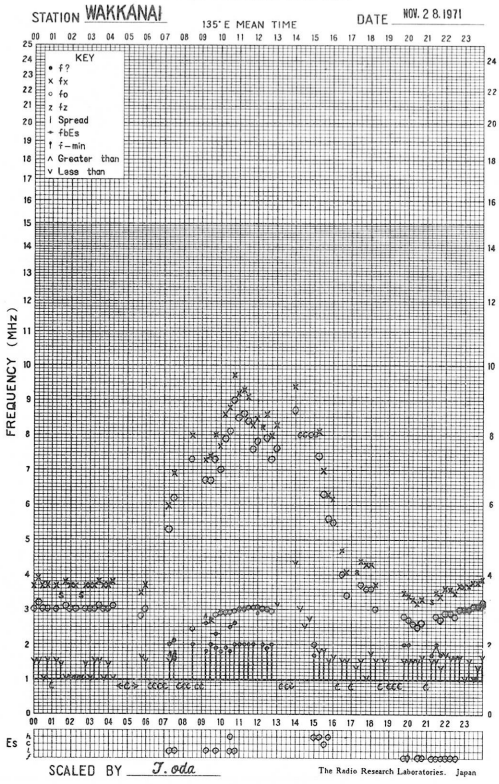
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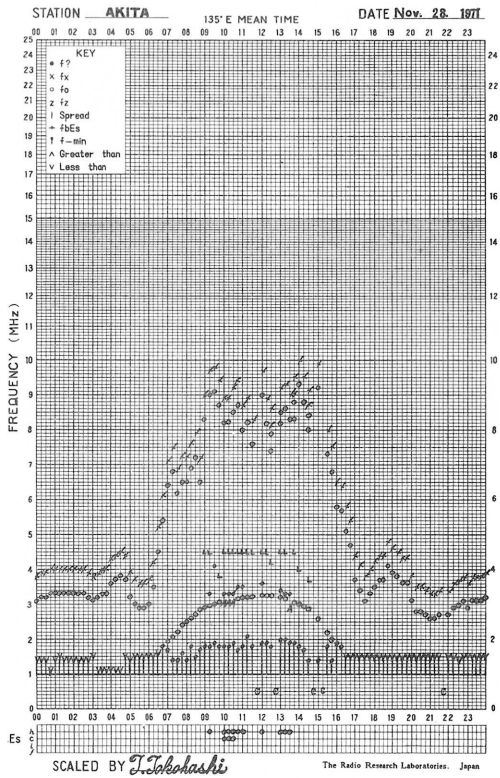
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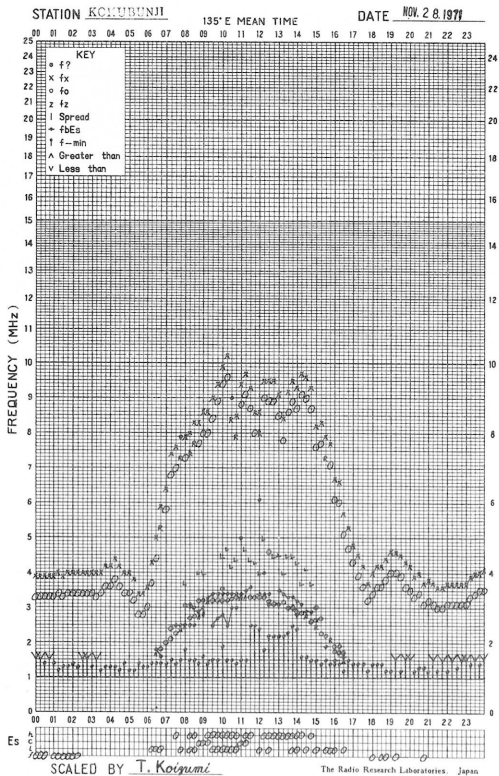
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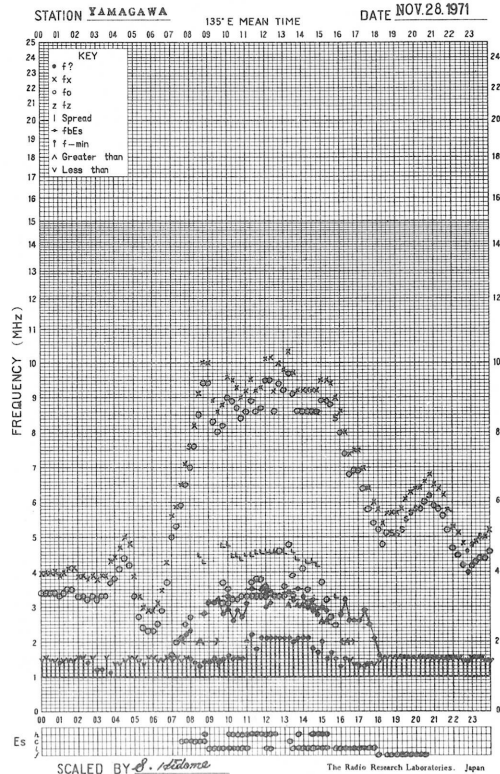
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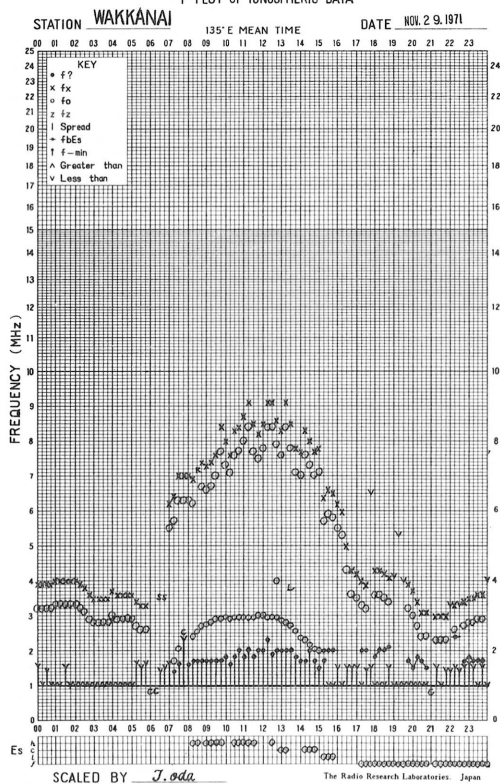
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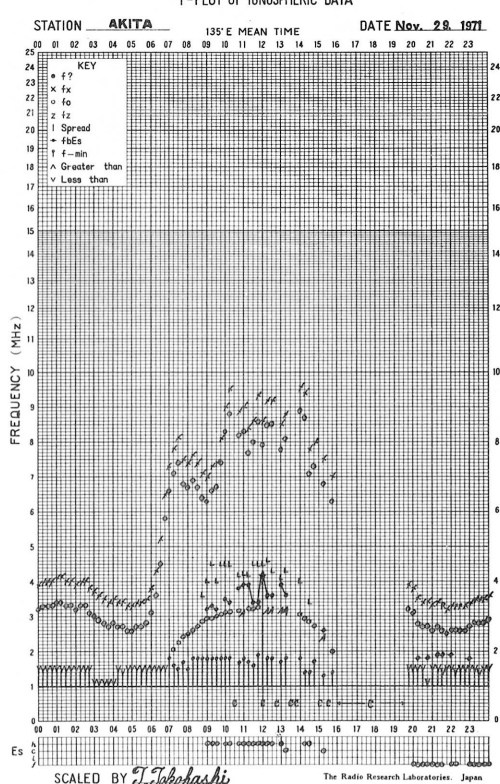
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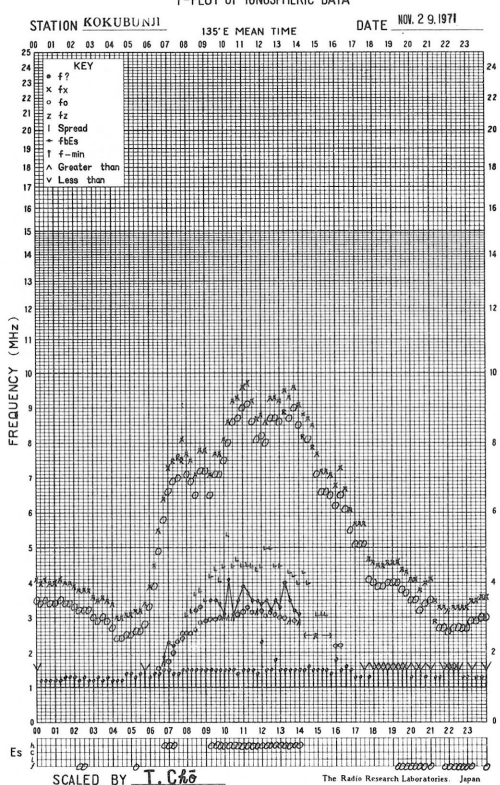
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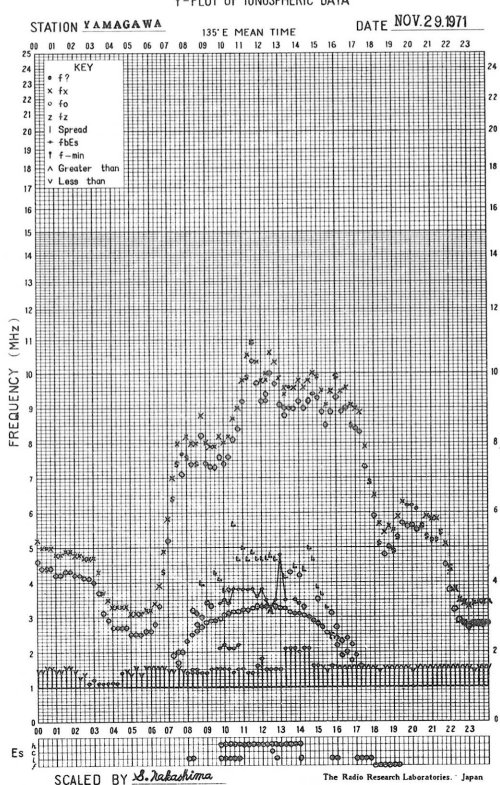
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f-PLOT OF IONOSPHERIC DATA

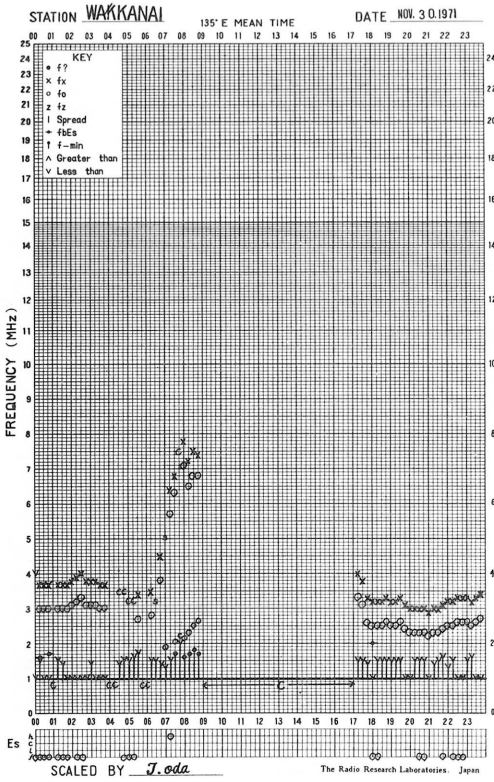


f-PLOT OF IONOSPHERIC DATA

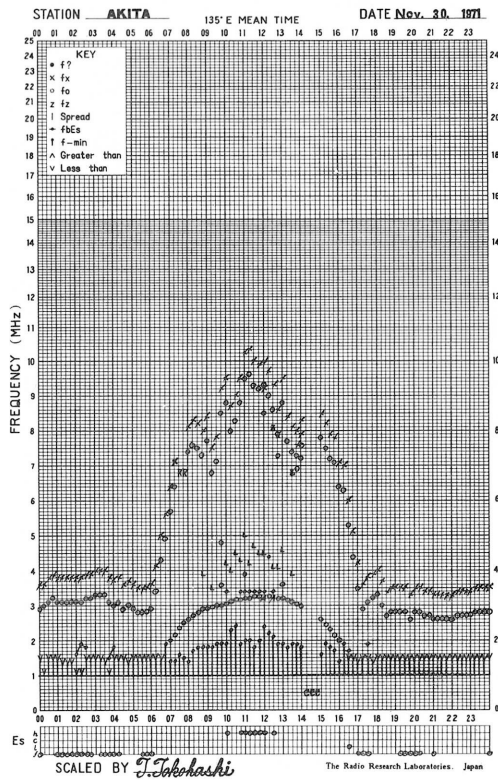




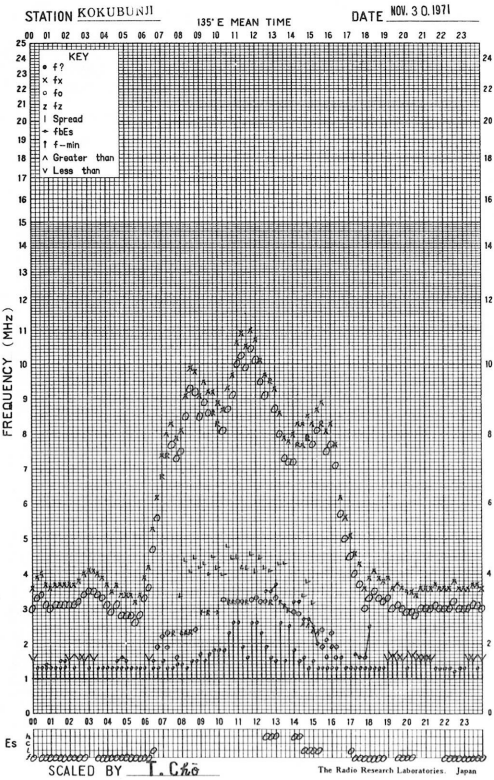
f-PLOT OF IONOSPHERIC DATA



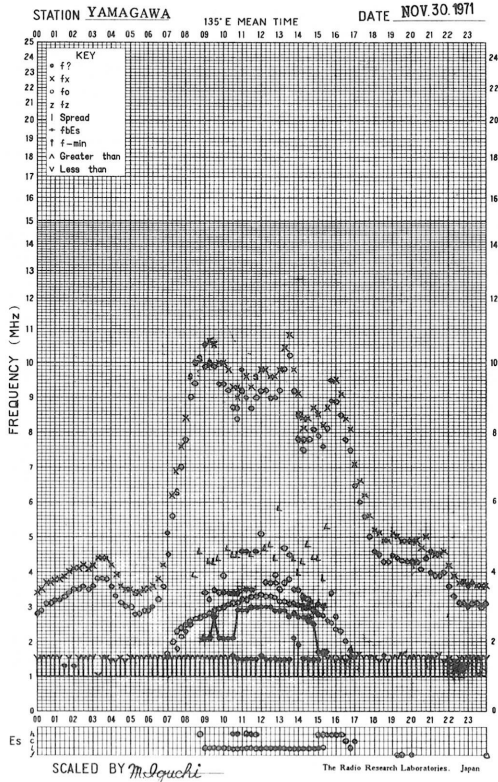
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



## SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: November 1971						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	13	10	(14)	10	11	1	0	(1)	1	1
2	9	10	(8)	7	9	0	0	(0)	0	0
3	7	7	(7)	7	7	0	0	(0)	0	0
4	8	8	(6)	8	8	0	0	(0)	1	0
5	9	8	(7)	8	9	1	1	(1)	0	1
6	8	6	(6)	6	7	0	0	(0)	0	0
7	6	5	(5)	6	5	0	0	(0)	0	0
8	6	5	(6)	6	6	0	0	(0)	0	0
9	6	6	(6)	6	6	0	0	(0)	0	0
10	6	6	(8)	6	6	0	0	(1)	0	0
11	7	8	(7)	7	7	1	0	(1)	1	0
12	15	19	(12)	6	14	1	1	(1)	0	1
13	6	6	(6)	6	6	0	0	(0)	1	0
14	7	7	(6)	20	7	0	0	(0)	2	0
15	14	8	(7)	5	13	1	0	(0)	0	1
16	6	8	(13)	8	7	0	1	(0)	0	0
17	10	11	(9)	52	10	1	0	(0)	1	0
18	33	10	(11)	16	27	1	1	(1)	1	1
19	15	18	(21)	9	17	1	1	(0)	1	1
20	8	7	(6)	7	8	0	0	(0)	0	0
21	8	8	(7)	7	7	0	0	(0)	0	0
22	7	8	(9)	7	8	0	0	(0)	0	0
23	7	7	(8)	7	7	0	0	(0)	0	0
24	7	7	(7)	7	7	0	0	(0)	0	0
25	7	6	(6)	6	7	0	0	(0)	0	0
26	7	7	(7)	7	6	0	0	(0)	0	0
27	7	7	(7)	6	7	0	0	(0)	0	0
28	6	6	(5)	6	6	0	0	(0)	0	0
29	(6)	-	-	-	(6)	(0)	-	-	-	(0)
30	-	-	-	-	-	-	-	-	-	-

Note No observations during the following periods:

10th 0135- 0235  
29th 0030- 30th 2400



## SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: November 1971					
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	24	(25)	27	25
2	27	27	(26)	28	27
3	26	25	(25)	25	26
4	25	25	(24)	25	25
5	25	26	(25)	25	26
6	25	25	(24)	28	25
7	26	24	(23)	28	26
8	29	28	(26)	29	28
9	27	28	(25)	28	27
10	27	26	(25)	27	26
11	27	29	(28)	30	28
12	28	27	(26)	29	28
13	28	26	(25)	27	27
14	29	28	(26)	28	28
15	27	27	(27)	28	28
16	29	30	(30)	29	29
17	30	30	(29)	31	29
18	30	29	(27)	32	29
19	33	33	(34)	28	33
20	29	29	(27)	28	29
21	28	27	(26)	29	28
22	29	27	(26)	26	28
23	26	26	(25)	26	26
24	27	27	(25)	27	27
25	26	27	(27)	25	27
26	27	26	(25)	28	26
27	28	27	(25)	(26)	27
28	26	27	(25)	25	26
29	26	28	(27)	25	26
30	25	25	(24)	26	25

Note No observations during the following periods:

27th 2255- 2400

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: November 1971								
Observing station: Hiraiso								
Normal observing period: 2120 - 0730 (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	
1	100	0420	0423	190	RF	40	20	* 0200.5-1.5
		2224.7	2225.0	1.0	C	1000	500	
4	200	0458.0	0458.2	1.5	C	180	20	
	100	0458.1	0458.3	0.5	C	110	50	
11	200	(0200)	(0200.2)	(0.5)	C	(520)	(130)	
		0231.0	0232.5	1.7	C	830	150	
	100	0232.0	0232.1	0.5	C	65	25	
	200	0607.8	0608.0	1.5	C	670	70	
	100	0607.8	0608.0	0.5	C	120	40	
15	100	0035	0145	170	RF	140	20	
	200	0350.0	0353.0	4.5	C	340	15	
	100	0349.0	0351.0	5.3	C	160	30	
16	500	0611.5	0611.5	0.7	C	70	20	
	100	0614.1	0615.5	3.0	C	85	25	
17	100	0204.3	0204.7	1.0	C	140	40	
		2121	0132	540	RF	80	30	
18	100	2247	2257	115	RF	150	25	
20	100	0501.8	0502.2	1.7	C	150	50	
		0513.3	0522.1	11.7	C	70	10	
		0532	0552	80	RF	15	8	
23	500	0545.0	0551.0	20.0	C	15	5	
	200	0546.0	0559.5	28.0	C	760	10	
	100	0546.0	0558.0	20.0	C	180	50	
24	100	0452.0	0452.3	1.5	C	70	10	
28	200	0225.0	0225.5	1.0	C	120	40	

\*: interrupted by calibration.

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

NOV 1971	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	7	4	-4	-11	ES-2	ES-3	ES-4	ES-3	ES-0	ES-2	ES-10	ES-3	ES-3	-16	-25	-28	-28	-28	-28	-28	0	8	9	6	
2	6	7	1	-3	ES-4	ES-4	ES-1	ES-3	ES-2	ES-3	ES-3	ES-5	-28	-25	-25	-28	-28	-28	-19	-28	-10	7	7	7	
3	4	11	9	-12	ES-2	ES-12	-11	-12	ES-9	-12	-27	-24	-27	-27	-27	-27	-27	-27	-24	ES-7	-5	4	7	7	
4	8	6	8	-3	ES-0	ES-3	ES-2	ES-2	ES-2	ES-3	ES-9	ES-1	ES-1	-19	-19	-28	-28	-28	-28	-28	-7	11	9	5	
5	5	10	-1	-15	ES-2	ES-3	ES-2	ES-2	ES-3	ES-9	ES-10	ES-8	ES-0	-13	-28	-28	-28	-21	-15	-28	-4	6	3	3	
6	6	10	7	ES-5	ES-3	ES-0	ES-2	ES-3	ES-2	3	ES-1	ES-7	ES-3	ES-3	-17	-28	-28	-28	-28	-25	-6	6	6	5	
7	8	8	6	-12	ES-1	ES-1	ES-2	ES-3	ES-9	ES-3	ES-2	-2	ES-4	-6	-28	-28	-28	-28	-28	-28	-15	7	8	6	
8	5	9	11	ES-4	ES-3	ES-3	ES-2	ES-3	ES-1	ES-0	ES-8	-17	-19	-19	-19	-28	-22	-28	-28	-28	-3	8	9	9	
9	9	6	-2	ES-0	ES-2	ES-1	ES-1	ES-1	ES-1	ES-3	ES-3	-19	-13	-7	-28	-13	-28	-28	-21	-6	5	7	6	7	
10	-5	3	-12	-11	ES-2	ES-0	ES-2	ES-2	ES-4	-16	-19	-24	-28	-28	-28	-28	-27	-27	-27	-27	-4	8	8	8	
11	9	9	7	13	ES-0	-20	ES-8	-14	-19	-25	-28	-25	-27	-27	-18	-24	-27	-27	-27	-24	-8	10	10	11	
12	7	13	9	3	-11	-12	-12	-11	ES-8	-12	-17	-20	-28	-13	-28	-28	-21	-21	5	7	7	10	10	7	
13	7	8	-3	ES-6	ES-3	ES-0	ES-1	ES-1	ES-1	ES-2	-9	-25	-24	-11	-27	-27	-27	-27	-27	-4	-8	9	9	7	
14	8	6	-3	ES-9	ES-2	ES-3	ES-1	ES-2	ES-1	-1	ES-0	-19	-25	-28	-28	-28	-28	-4	6	1	-8	4	5	4	
15	4	-6	-1	-13	ES-7	ES-1	ES-1	ES-1	ES-4	-19	-19	-19	-19	-13	-13	-13	-28	-17	-23	ES-17	-13	3	4	4	
16	8	8	3	-4	-2	ES-2	ES-2	ES-2	-11	-26	-26	-21	-25	-14	-28	-28	-28	-28	-28	-25	-25	6	6	9	
17	4	3	-16	ES-16	ES-9	-16	-16	-21	-25	-25	-19	-25	-22	-28	-28	-28	-28	-28	-28	-28	-14	6	9	7	
18	4	5	0	-13	ES-6	ES-3	ES-2	ES-2	ES-2	-16	-14	-22	-28	-23	-31	-31	-31	-31	-31	-31	-31	1	6	9	
19	4	9	-16	ES-9	ES-2	ES-6	ES-3	ES-7	ES-1	ES-3	-19	-19	-28	-28	-28	-28	-28	-28	-28	-28	-19	4	8	8	
20	8	11	3	ES-7	ES-3	ES-0	ES-3	ES-3	ES-2	-10	-25	-26	-14	-28	-28	-28	-28	-28	-28	-28	-25	5	8	7	
21	8	9	ES-9	ES-2	ES-0	ES-3	ES-3	ES-3	ES-1	ES-3	-14	-14	-25	-28	-28	-28	-28	-28	-28	-19	-12	9	6	11	
22	12	14	4	ES-6	ES-4	ES-3	-10	ES-4	ES-1	-11	ES-9	-14	-28	-28	-28	-28	-28	-28	-28	-28	1	8	6		
23	9	9	10	ES-6	ES-10	ES-1	ES-2	ES-6	ES-2	ES-8	ES-9	-11	-22	-25	-28	-28	-28	-28	2	-25	-17	6	2	13	
24	10	13	12	ES-9	ES-8	ES-1	ES-4	ES-9	ES-9	ES-1	-3	-28	-22	-28	-28	-28	-28	-28	-28	-28	2	6	5		
25	3	7	5	ES-8	ES-8	ES-3	ES-4	ES-9	ES-3	ES-4	ES-10	-14	-15	-24	-24	-27	-27	-27	-27	-27	4	4	6		
26	9	2	ES-9	-10	ES-8	ES-8	ES-7	ES-4	ES-0	ES-7	-10	-27	-22	ES-3	-27	-27	-27	-27	-27	-27	1	-2	-3		
27	0	2	ES-11	ES-5	ES-5	ES-1	ES-1	ES-0	ES-1	ES-2	-13	-18	-27	-27	-27	-27	-27	-27	-27	-27	-4	-6	-5		
28	-2	-3	ES-14	ES-4	ES-0	ES-2	ES-0	ES-1	ES-7	-24	-21	-21	-28	-28	-28	-28	-28	-28	-28	-28	-4	-7	-6		
29	-1	2	ES-15	ES-7	ES-1	ES-3	ES-7	ES-8	ES-2	-20	-16	-24	-24	-27	-27	-27	-27	-27	-27	-18	-18	-27	-9	-3	-5
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	
MED	7	8	0	ES-6	ES-3	ES-1	ES-1	ES-2	ES-1	ES-3	-10	-19	-24	-25	-28	-28	-28	-28	-27	-27	-14	6	6	7	
UD	9	13	10	ES-5	ES-2	ES-3	ES-4	ES-8	ES-6	ES-3	ES-9	ES-3	ES-0	ES-6	-18	-24	-27	-21	2	-4	0	10	9	11	
LD	-1	2	ES-15	ES-13	ES-9	ES-12	ES-11	ES-12	ES-11	ES-25	-26	-26	-28	-28	-28	-28	-28	-28	-28	-28	-4	-3	-5		

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

NOV 1971	FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M																							MEASURED AT HIRAI SO			
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	11	12	13	-6	ES-2	7	-1	-14	ES-9	-25	-16	-19	-17	-28	-28	-28	-17	-6	10	11	6	5			
2	6	7	16	17	14	5	ES-7	-8	ES-8	-19	ES-9	-13	-28	-21	-28	-28	-28	-28	-19	-14	10	7	7	12			
3	4	8	12	13	14	4	-8	-7	-10	-15	-21	ES-7	ES-7	ES-7	ES-7	ES-7	ES-7	-14	ES-24	-15	10	11	15	8			
4	8	13	11	18	22	12	ES-3	ES-2	ES-4	-18	ES-2	ES-27	-14	-26	-28	-28	-28	-28	-28	-22	-5	21	11	7	5		
5	7	12	7	12	15	7	ES-4	ES-7	ES-1	-19	ES-10	-28	-13	-28	-20	-28	-28	-28	-28	-10	6	6	6	2			
6	4	11	8	12	12	9	ES-3	ES-7	ES-2	-22	ES-5	-25	ES-13	ES-9	-28	-28	-28	-28	-28	-15	7	4	6	6			
7	4	6	8	15	8	ES-4	ES-0	ES-2	ES-4	-16	ES-3	-28	ES-4	-19	-28	-28	-28	-28	-28	-7	7	8	6	5			
8	7	8	13	16	13	0	ES-2	-3	ES-2	-20	-10	ES-23	-19	-19	-19	-15	-28	-28	-28	4	15	10	7	11			
9	13	11	13	16	15	-6	ES-0	ES-4	ES-0	-19	-12	-20	-28	-21	-28	-28	-28	-21	-28	-4	8	11	6	8			
10	7	10	14	12	6	10	2	-6	ES-9	-24	ES-21	-27	-28	-28	-28	ES-27	-27	-24	ES-27	-14	5	15	16	9			
11	9	7	5	9	12	16	ES-9	ES-13	ES-22	-28	-28	-25	-22	-21	-12	ES-27	ES-27	ES-27	-20	-8	8	11	10	9			
12	11	12	11	12	15	3	-10	ES-13	ES-11	-16	-17	-20	ES-28	ES-13	ES-28	ES-28	ES-28	ES-25	ES-23	-4	10	12	10	7			
13	9	4	13	11	18	ES-7	ES-1	11	ES-0	-27	-18	-25	-19	-27	-27	-27	-27	-21	ES-24	-7	14	13	11	8			
14	7	7	10	11	13	9	ES-4	3	ES-8	-28	ES-8	ES-23	ES-25	ES-28	ES-28	ES-28	ES-28	ES-19	ES-25	ES-25	14	12	12	8			
15	7	13	16	10	11	-5	ES-0	ES-11	-16	-26	-26	-21	ES-15	ES-13	ES-13	ES-9	ES-15	ES-28	ES-12	ES-17	12	12	9	16			
16	11	12	14	14	13	-7	ES-2	-12	ES-28	-26	-21	ES-28	ES-28	ES-14	ES-28	ES-28	ES-28	ES-28	ES-28	7	11	12	4				
17	7	10	11	16	11	-12	ES-23	-17	-19	-25	-28	-19	-28	-28	-28	-28	-28	-28	-28	2	7	6	10				
18	13	7	13	15	9	-2	ES-1	ES-9	ES-16	-28	ES-25	-22	-23	-31	-31	-31	-31	-31	-31	-22	13	17	10	10			
19	15	10	16	22	6	-13	ES-3	ES-13	ES-7	-19	-21	-21	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	-7	9	12	9	11			
20	11	10	13	16	11	ES-11	-2	ES-12	ES-19	-19	ES-26	ES-26	ES-25	ES-28	ES-28	ES-28	ES-28	ES-22	ES-28	ES-28	3	14	12	11			
21	10	15	9	18	10	ES-10	ES-2	-11	ES-4	-18	-18	-18	ES-25	ES-28	ES-28	ES-28	ES-28	-19	ES-28	ES-16	12	13	13	11			
22	14	16	14	19	14	ES-13	-3	-7	ES-11	-13	ES-15	ES-28	ES-23	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	14	8	13	12			
23	12	12	12	14	13	1	ES-4	ES-27	ES-3	ES-16	ES-2	ES-18	ES-19	ES-25	ES-28	ES-28	ES-28	ES-28	ES-25	ES-25	9	7	9	10			
24	6	10	16	19	21	12	4	-11	ES-1	-19	ES-15	ES-25	ES-22	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	11	6	6	5			
25	10	11	13	16	15	3	ES-2	3	4	-12	-8	-18	ES-24	ES-24	ES-21	ES-27	ES-27	ES-27	ES-27	ES-27	3	15	10	12			
26	7	8	12	17	13	-2	2	-7	ES-3	-19	ES-12	ES-24	ES-11	ES-24	ES-27	ES-27	ES-27	ES-27	ES-27	ES-27	11	11	9	8			
27	11	12	9	18	10	ES-3	4	ES-13	ES-11	-16	-18	-24	ES-27	ES-27	ES-27	ES-27	ES-27	ES-27	ES-27	ES-27	10	14	8	7			
28	8	7	14	12	8	11	ES-3	ES-18	ES-20	-20	ES-21	ES-21	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	9	13	6	6			
29	4	10	12	13	17	2	ES-4	-12	ES-10	-18	-22	ES-27	ES-19	ES-27	ES-27	ES-27	ES-27	ES-27	ES-14	ES-27	3	10	7	3			
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29			
MED	8	10	12	15	13	0	ES-2	ES-7	ES-8	ES-19	ES-17	ES-24	ES-23	ES-27	ES-28	ES-28	ES-28	ES-28	ES-27	ES-16	10	11	9	8			
UD	13	13	16	19	18	12	2	ES-7	ES-1	-14	ES-2	ES-18	ES-13	ES-13	ES-17	ES-27	ES-27	ES-19	ES-19	-4	14	15	13	12			
LD	4	6	8	11	8	ES-12	ES-9	ES-17	ES-20	ES-28	ES-26	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	ES-28	3	6	6	4			

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Nov. 1971	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	Start	End	ΔH
		06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4°	(4)	-	-	4	4	4	(4)	4	4	(5)	-	4	N	N	N	N			
2	4°	(4)	-	-	4	4	4	(4)	4	4	(4)	-	4	N	N	N	N			
3	4°	(4)	-	-	4	3	5	(4)	4	4	(4)	-	4	N	N	N	N			
4	4-	(4)	-	-	4	4	4	(3)	4	4	-	-	4	N	N	N	N			
5	4-	(4)	-	-	4	(3)	4	(4)	4	4	-	-	4	N	N	N	N			
6	4+	(4)	-	-	4	4	4	(5)	-	4	(4)	-	4	N	N	N	N			
7	4-	(4)	-	-	4	3	-	-	-	4	-	-	4	N	N	N	N			
8	4+	(4)	-	-	5	4	4	(5)	4	4	(4)	-	4	N	N	N	N			
9	5-	(4)	-	-	4	5	5	(5)	4	4	-	-	4	N	N	N	N			
10	4-	(3)	-	-	4	3	4	(5)	4	4	(4)	-	4	N	N	N	N			
11	4°	(4)	-	-	4	4	4	(5)	4	4	(3)	(4)	4	N	N	N	N			
12	4+	(4)	-	-	5	4	5	(4)	4	4	(4)	-	4	N	N	N	N			
13	4°	(4)	-	-	4	4	4	(4)	-	4	(4)	-	4	N	N	N	N			
14	4°	(4)	-	-	4	4	-	-	-	4	(4)	-	4	N	N	N	N			
15	4-	(4)	-	-	4	3	4	(4)	4	4	-	-	4	N	N	N	N			
[16]	4-	(4)	-	-	3	(4)	4	(4)	3	4	(3)	-	4	N	N	N	N			
[17]	3+	(3)	-	-	3	(3)	4	-	4	4	(3)	-	4	N	N	N	N			
[18]	4-	(4)	-	-	4	4	4	(4)	3	4	(4)	-	4	N	N	N	N			
19	4-	(4)	-	-	3	4	4	(4)	4	4	(4)	-	4	N	N	N	N			
20	4+	(4)	-	-	4	5	4	(4)	-	4	(4)	-	4	N	N	N	N			
21	3+	(4)	-	-	4	(2)	-	-	-	4	(4)	-	4	N	N	N	N			
22	4°	(4)	-	-	4	4	4	(4)	4	4	(4)	-	4	N	N	N	N	04.51	---	85 <sup>Y</sup>
23*	4°	(4)	-	-	4	5	5	(4)	3	4	-	-	4	N	U	U	U	---	---	
24*	4°	(4)	-	-	4	5	4	(3)	4	4	(4)	-	4	U	U	U	U	---	19.0	
25*	4-	(4)	-	-	3	5	4	(2)	4	4	(5)	-	4	U	U	U	U	02.7	20.0	68 <sup>Y</sup>
26*	3+	(3)	-	-	2	5	4	(3)	3	4	(4)	-	4	U	U	U	U			
27	3-	(3)	-	-	3	3	3	(2)	-	4	(4)	-	4	U	N	N	N			
28	3+	(3)	-	-	3	(4)	-	-	-	4	-	-	4	N	N	N	N			
29	3°	(2)	-	-	2	3	4	(4)	3	4	(3)	-	3	N	N	N	N			
30	3-	(2)	-	-	3	3	3	-	-	C	C	C	C	N	N	N	N			

GEOALERT

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

- [ ] = Regular World Day
- = impossible to evaluate
- ( ) = inaccurate

- C = artificial accident
- = continuing magnetic storm



## SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Nov. 1971	S W F							Correspondence			
	Drop-out Intensities (db)					Start- time	Dura- tion	Type	Imp.	Flare	Solar Noise
CO	LM	HA	TO	SH							
9	20	<u>30</u>	17		23.52	68	G	2			

## I N U B O

1971	S P A									Remarks
Nov.	Phase Advance (degrees)						Time (U.T.)			
DATE	GBR	WWVL	NAA	NPG	NWC	HA2	Start	End	Maximum	
4			10	9	<u>48</u>	18	0458	0615	0506	X
9	30	76	44	80	72	<u>111</u>	2352	0230	0008	X
10			40				0238	0408	0250	
10					16		0645	0716	0655	X
12						7	2347	0004	2353	
16					<u>14</u>	5	0423	0457	0430	
20					44		0718	0821	0726	X
23					88		0547	0758	0610	X
24				12		<u>22</u>	2235	2357	2252	X
28	—					7	2340	0002	2351	
29				3		<u>7</u>	2218	2231	2222	
30				6	<u>8</u>	7	0023	0037	0025	
30					<u>16</u>	9	0138	0212	0049	
30					18		0441	0547	0446	
30			8	<u>14</u>	10	14	2344	0039	2352	

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 NOVEMBER 1971

第 23 卷 第 11 号

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