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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.
$f_bEs$		The lowest ordinary wave frequency at which the $Es$ layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
$f$ -min		The frequency below which no echoes are observed.
$M(3000)F2$		The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$		The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$hF2$		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  $0.834f_0F2$ .  
 The semi-thickness of the  $F2$  layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed  $h'f$  trace. (The difference between  $hpF2$  and the virtual height at  $0.969f_0F2$ ).

#### a. Descriptive Letters

The following letters are entered after or used to replace a numerical value on the monthly tabulation sheets.

- |   |  |
|---|--|
| A | Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example $E_s$ .                               |
| B | Measurement influenced by, or impossible because of, absorption in the vicinity of $f$ -min.   |
| C | Measurement influenced by, or impossible because of, any non-ionospheric reason.   |
| D | Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below. |
| E | Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below. |
| F | Measurement influenced by, or impossible because of, the presence of spread echoes.  |
| G | Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.          |
| H | Measurement influenced by, or impossible because of, the presence of a stratification.   |
| L | Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.                                   |
| M | Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.                      |
| N | Conditions are such that the measurement cannot be interpreted.  |
| O | Measurement refers to the ordinary component.  |
| R | Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.                                  |
| S | Measurement influenced by, or impossible because of, interference or atmospherics.   |
| T | Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.                                     |
| V | Forked trace which may influence the measurement.  |
| W | Measurement influenced or impossible because the echo lies outside the height range recorded.  |
| X | Measurement refers to the extraordinary component.   |
| Y | Intermittent trace.  |
| Z | Third magneto-ionic component present.   |

#### b. Qualifying Letters

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

the monthly tabulation sheets.

D	greater than.
E	less than.
I	Missing value has been replaced by an interpolated value.
J	Ordinary component characteristic deduced from the extra-ordinary component.
O	Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)
T	Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U	Uncertain or doubtful numerical value.
Z	Measurement deduced from the third magneto-ionic component.

### c. Definitions of the CNT, MED, UQ and LQ

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

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

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

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

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

- F* An *Es* trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat *Es* traces observed in the daytime are classified according to their virtual height: *H* or *L*.
- L* A flat *Es* trace at or below the normal *E* layer minimum virtual height in the day or below the night *E* layer minimum virtual height at night.
- C* An *Es* trace showing a relatively symmetrical cusp at or below  $f_oE$ . This is usually continuous with the normal *E* trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)
- H* An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above  $f_oE$ . The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
- Q* An *Es* trace which is diffuse and non-blanketing over a wide

frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

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

*A* An *Es* having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes extend over several hundred kilometers of virtual height.

*S* A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace. The rising trace alone is classified as 'S'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal *Es* trace such as *Es-L*, or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine  $f_oEs$  and  $hEs$ . The slant trace is sometimes observed to start at  $f_oE$  without echoes clearly identifiable as *Es* echoes being seen.

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

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

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

## B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 200 and 500 MHz at Hiraiso Branch. Antennas are two parabolic reflectors: 10 meter for 200 MHz and 5 meter for 500 MHz, each having the total power receiver. Observations are feasible almost from sunrise to sunset.

#### a. Time and Unit

The time is expressed as U.T.

The unit is  $10^{-22} \text{W} \cdot \text{m}^{-2} \text{Hz}^{-1}$  for both components of polarization.

#### b. Daily Data

*Flux density*

The three-hourly and daily mean values are given.

### Variability

The three-hourly and daily mean values are given at 200 MHz only.

Variability is expressed in the following four grades:

- 0 = Quiet or no burst,
- 1 = A few bursts,
- 2 = Many bursts,
- 3 = Very many bursts.

The number of bursts exceeding the flux level is counted. Bracket means that observation time does not exceed one third of the period.

### c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

*Descriptive type* is denoted by the following symbols:

- S = Simple rise and fall of intensity;
- C = Complex variation of intensity,
- C+ = Prolonged broad-band enhancement of radiation, generally of spectral type IV;
- F = Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;
- RF = More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;
- e = Sudden beginning of burst with steep rise of intensity;
- E = Steep rise of intensity of continuum background;
- p.i. = post-burst increase;
- onset storm = clear-cut beginning of a noise storm.

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

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

## C. RADIO PROPAGATION CONDITIONS

### a. Field Strengths of WWV and WWVH

Field Strengths observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at 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 Hiraiso 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.

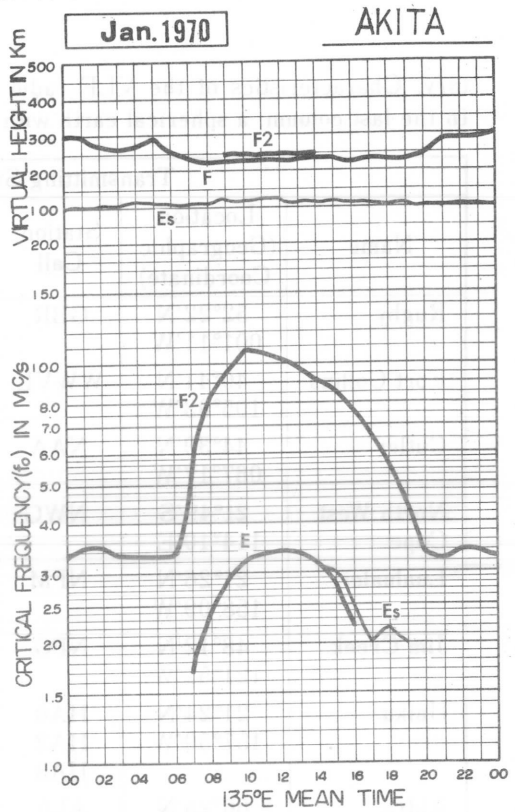
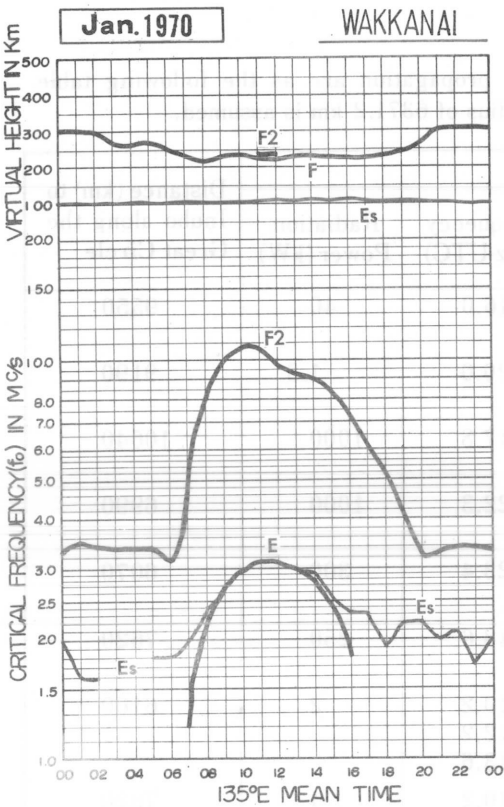
Name	Transmitting Site				Distance (km) to Inubo along the Great Circle
	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22'N 001°11'W	GBR	16.0	40	9550
Fort Collins	40°41'N 105°03'W	WWVL	20.0	1.8	9190
Cutler	44°39'N 067°17'W	NAA	17.8	1000	10640
North West 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.

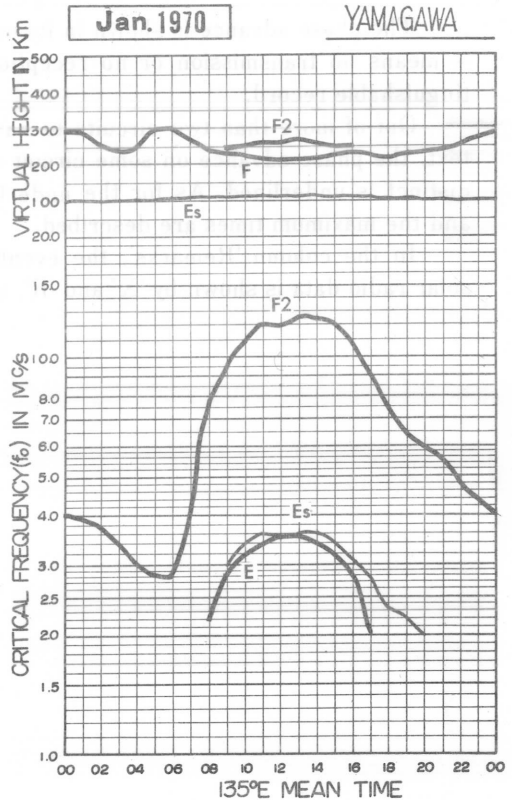
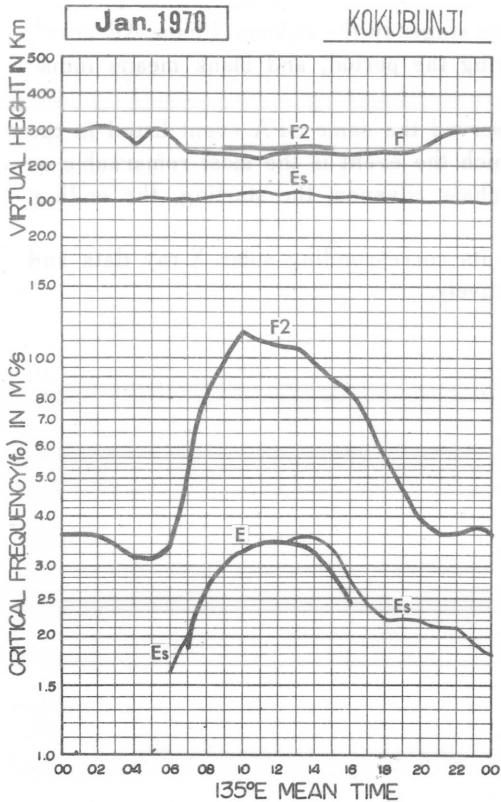
Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

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

JAN. 1970

FOF2 (0.1 MHz)

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

Station	WAKKANAI							Lat. 45 23 .6 N	Long. 141 41 .1 E	Sweep 1	MHz to 20		MHz in 20		sec		in automatic		operation					
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	34	35	34	35	36	35	30	46	96	112	96	98	94	88	78	71	67	58	37	27	23	27	29	30
2	28	30	30	I C 30	33	28	F 29	F 47	77	104	98	120	95	102	87	80	90	63	35	27	28	33	F	F
3	F	F	F	F 30	F	F	F 20	43	84	103	110	92	87	83	79	71	77	56	41	A	A	S 33	F	F
4	F	F	U F 30	F 33	F 37	F 27	A	40	79	114	133	93	79	82	73	66	55	48	39	23	26	28	30	33
5	33	32	33	31	31	23	23	41	71	86	108	105	83	77	74	74	64	48	29	21	22	26	F 28	31
6	F 33	F 33	F 36	F 33	26	23	24	43	78	86	101	87	86	78	72	65	60	47	38	F 30	F 27	L 29	F 30	F 30
7	F 30	F	40	37	F 23	26	25	43	81	91	97	80	79	82	80	70	63	51	A	29	28	F 31	F 28	F 33
8	33	34	F 38	38	41	33	28	50	76	86	90	96	95	98	89	83	68	51	42	34	36	I A 34	F 33	34
9	F 33	A	35	F 36	F 31	36	37	52	88	100	101	107	100	106	92	83	78	C	C	C	34	34	34	33
10	F 33	31	33	34	F 33	F 38	38	43	77	102	106	120	116	106	101	80	75	A	49	30	32	31	F 33	33
11	29	30	30	30	33	32	30	50	86	99	96	94	84	83	79	78	64	55	A	A	A	33	35	35
12	34	F 35	32	31	U 30	31	31	50	83	96	103	104	87	86	92	74	70	57	43	29	28	33	33	F 32
13	33	F 34	F 33	F 33	33	35	25	43	73	97	113	108	99	93	88	89	73	58	41	31	27	31	31	29
14	30	30	30	33	29	23	24	C	C	C	C	90	86	92	90	83	70	C	C	C	C	C	C	C
15	C	U F 30	C	C	31	C	C	C	C	C	C	C	96	91	80	75	72	66	57	39	32	33	35	36
16	36	38	37	35	S 37	37	S 35	52	74	94	113	105	95	94	90	80	70	70	60	43	32	36	32	32
17	32	33	33	34	32	33	36	60	S 94	109	110	109	109	103	88	82	80	68	72	46	39	38	43	39
18	37	F 37	36	F 37	39	36	37	53	80	105	123	112	100	95	94	86	67	67	50	38	30	32	33	31
19	33	34	34	33	35	U 35	27	48	75	97	107	121	116	109	96	94	69	69	52	41	33	36	F 39	F 40
20	U F 37	F 39	F 38	F 37	38	36	29	54	75	102	110	104	93	98	102	88	72	60	66	49	30	F 33	F 38	35
21	F 34	F 35	F 37	39	35	A	U 37	56	99	122	126	106	105	99	104	103	87	70	74	F 53	32	33	34	34
22	33	33	34	35	U 33	33	31	55	95	113	127	123	117	110	116	106	90	60	59	U 43	A	S 34	36	38
23	38	39	39	39	40	41	U 41	61	87	100	114	120	107	110	106	93	77	59	53	51	35	39	38	40
24	40	43	J 44	U 43	37	36	31	54	80	97	103	111	97	92	103	93	69	63	61	46	33	34	35	34
25	36	36	36	34	36	38	40	59	88	106	116	123	104	100	90	93	75	64	54	35	33	36	35	35
26	36	37	36	36	36	36	28	51	74	91	108	110	101	80	99	87	75	62	55	44	31	33	34	36
27	36	35	35	35	38	40	35	61	81	93	103	113	99	85	83	78	77	60	44	50	33	36	34	36
28	35	35	34	34	35	34	33	56	96	108	96	99	97	92	88	87	77	73	52	47	23	30	30	32
29	33	35	34	34	35	34	35	55	82	93	100	114	109	101	90	85	76	75	53	47	33	33	36	34
30	33	35	36	36	33	33	29	56	C	C	86	96	98	105	86	80	80	63	69	48	25	27	31	33
31	F 33	F 31	33	31	33	32	S 34	54	75	99	H 114	123	115	110	101	96	88	67	64	44	36	38	37	37
	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	27	29	30	30	28	29	29	28	28	29	30	31	31	31	31	31	28	27	27	27	30	28	28
MED	33	35	34	34	34	34	31	52	80	100	107	106	97	94	90	83	73	61	52	41	32	33	34	34
UQ	36	36	36	36	37	36	35	55	88	106	113	114	104	102	98	88	77	67	60	46	33	34	36	36
LQ	33	32	33	33	32	32	28	46	76	94	100	96	90	86	82	76	68	56	42	30	28	31	31	32

The Radio Research Laboratories, Japan

JAN. 1970

FOF2 (0.1 MHz)



IONOSPHERIC DATA

JAN. 1970

FOF1 (0.01 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2												400	400											
3											U L 410	L												
4																								
5												L	L											
6												L												
7																								
8																								
9																								
10																								
11												410												
12												U L 400	380											
13													U L 400											
14									C	C	C	400												
15									C	C	C	C												
16																	U L 400							
17												L					L							
18											L	L	L											
19																								
20																		U L 440						
21																								
22																								
23											L													
24																								
25												L												
26																								
27												U L 450	L											
28																								
29																								
30									C	C										L				
31												L												
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT											1	5	3	1	1									
MED											U L 410	L 400	400	U L 400	U L 440									
UQ											L 410	400												
LQ												400	390											

JAN. 1970

FOF1 (0.01 MHz)

## IONOSPHERIC DATA

JAN. 1970

FOE (0.01 MHZ)

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

Station	WAKKANAI							Lat. 45 23 6 N	Long. 141 41 1 E	Sweep 1	MHz to 20	MHz in 20	sec	in automatic	operation									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	210	260	300	305	300	300	280	225	A							
2								A	225	280	300	305	300	300	260	220	125							
3								S	215	260	295	300	300	290	255	210	135							
4								S	210	260	290	290	295	295	250	A	A							
5								E	205	260	295	300	300	300	275	210	115							
6								115	215	250	285	300	290	275	250	210	130							
7								S	215	255	285	295	290	280	240	205	S							
8								125	225	255	290	295	290	260	A	A	A							
9								145	215	255	290	300	280	275	270	210	120							
10								A	250	270	290	300	300	300	250	A	A							
11								A	A	285	A	315	305	300	270	240	A							
12								E	220	285	310	320	305	300	260	235	S							
13								S	225	285	305	315	305	300	280	215	165							
14								C	C	C	C	325	315	300	290	230	A							
15								C	C	C	C	C	320	310	285	235	140							
16								E	220	270	305	310	315	305	280	240	A							
17								A	A	275	300	315	315	310	280	255	A							
18								A	225	270	300	305	300	300	265	235	200							
19								A	205	260	295	310	310	310	290	255	A							
20								A	200	270	300	315	320	300	280	A	185							
21								A	245	285	305	315	310	A	290	A	A							
22								A	245	280	305	325	335	310	285	A	210							
23								A	230	270	300	315	315	310	A	A	A	A						
24								180	220	275	300	310	320	310	290	240	180	S						
25								140	240	270	300	310	310	300	290	250	A	A						
26								S	225	275	300	320	320	320	300	250	190	A						
27								A	230	270	295	310	320	305	290	265	190	E						
28								S	225	290	305	310	320	305	300	250	200	E						
29								A	235	300	305	315	320	315	295	250	195	E						
30								A	C	C	300	315	310	310	295	260	190	E						
31								A	A	280	305	315	320	310	295	265	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								8	25	28	28	30	31	30	29	24	16	4						
MED								120	225	270	300	310	310	300	280	238	182	E						
UQ								142	230	280	305	315	320	310	290	250	192	E						
LQ								E	215	260	295	300	300	300	265	218	132	E						

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FOE (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1970

FOES (0.1 MHZ)

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

Station WAKKANAI Lat. 45 23 6 N Long. 141 41 1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	E	E	20	E	E	J X 21	J X 35	18	28	G	G	G	G	G	G	J X 63	J X 40	J X 23	E	E	E	E	E	S 15				
2	E	E	14	C	J X 21	J X 21	F	20	G	G	G	G	G	G	G	G	E	E	E	S 16	S 16	18	J X 21	E				
3	E	E	E	E	16	18	E	S 13	G	G	G	G	G	G	G	G	21	J X 33	E	J X 63	J X 85	J X 23	E	J X 30				
4	J X 24	J X 23	J X 24	20	E	J X 23	J X 42	J X 23	G	G	G	33	G	G	29	30	J X 35	J X 43	E	E	E	S 16	S 16	J X 24	J X 29			
5	J X 20	E	E	E	18	E	E	S 15	16	30	G	G	J X 25	J X 32	G	G	35	26	G	E	E	E	18	E	E	E		
6	E	E	E	E	E	E	E	G	G	31	32	G	G	G	25	24	E	E	E	E	J X 24	E	E	E				
7	E	16	15	E	20	E	E	S 15	25	30	35	34	35	J X 40	G	G	E	S 15	E	J X 88	J X 23	J X 28	J X 20	J X 19				
8	E	J X 21	J X 24	18	E	E	E	G	G	30	40	35	J X 61	J X 55	J X 44	J X 44	J X 51	J X 60	J X 24	J X 20	J X 23	J X 35	J X 25	24				
9	J X 30	J X 36	J X 24	20	20	E	16	G	G	G	34	40	J X 60	J X 50	G	G	21	C	C	C	J X 48	J X 30	J X 30	21				
10	J X 21	E	J X 30	J X 50	J X 30	J X 23	J X 30	20	26	G	G	G	34	G	30	26	J X 53	J X 113	J X 33	J X 30	J X 25	J X 23	E	S 15				
11	E	E	E	J X 25	E	J X 41	J X 30	J X 35	J X 43	J X 34	J X 37	39	G	G	G	G	20	J X 25	J X 41	J X 64	J X 61	J X 40	J X 23	J X 30				
12	J X 23	J X 20	E	E	E	S 16	21	J X 23	J X 24	J X 24	29	40	G	G	G	G	24	24	24	E	S 16	J X 31	J X 39	21	E			
13	J X 32	J X 22	22	E	E	20	23	26	J X 25	G	G	G	G	G	G	G	14	22	J X 20	J X 31	J X 27	24	22	E	S 16			
14	E	E	S 16	20	E	E	17	J X 28	C	C	C	C	G	G	G	34	28	28	C	C	C	C	C	C	C			
15	C	E	S 16	C	C	E	C	C	C	C	C	C	C	G	G	32	25	J X 25	J X 23	J X 22	E	S 16	24	J X 24	J X 21	E	S 16	
16	J X 23	J X 24	24	26	18	25	J X 21	22	24	G	G	G	32	J X 53	G	J X 19	J X 24	J X 26	J X 24	22	J X 28	24	22	J X 24	J X 21			
17	J X 21	J X 22	25	20	23	20	18	J X 19	J X 41	J X 45	J X 53	J X 33	J X 43	J X 32	J X 29	29	20	J X 23	E	S 12	22	J X 28	J X 24	J X 35	J X 23			
18	J X 28	J X 23	21	E	22	20	24	J X 20	J X 33	G	26	G	24	G	29	J X 24	22	J X 28	18	24	J X 21	J X 19	25	J X 23				
19	J X 22	23	J X 19	J X 19	J X 28	J X 19	18	24	G	G	G	21	G	36	33	J X 30	J X 29	20	18	E	E	S 17	22	J X 24	22	E	S 16	
20	24	21	20	20	E	23	J X 19	22	21	G	G	19	34	34	J X 38	J X 38	J X 31	G	E	S 16	E	S 12	E	S 16	E	S 16	E	S 12
21	E	E	17	20	J X 29	J X 64	J X 31	J X 33	J X 62	J X 42	34	44	J X 49	47	32	J X 37	J X 52	J X 63	J X 79	J X 54	40	J X 28	28	J X 28	28			
22	22	22	E	S 15	E	E	21	J X 23	J X 35	30	G	G	G	38	39	31	31	33	J X 53	J X 53	J X 53	41	J X 35	J X 24	J X 23			
23	25	E	E	J X 28	30	J X 25	J X 35	J X 31	J X 43	27	G	G	34	J X 43	J X 33	J X 35	22	23	19	18	J X 21	E	E	E	J X 25			
24	E	S 15	20	E	E	14	E	18	G	26	G	G	G	G	G	32	29	G	E	S 12	E	J X 21	18	18	E	E		
25	E	J X 23	J X 25	19	18	E	E	E	G	G	G	G	G	G	G	G	J X 34	J X 30	E	J X 30	J X 21	16	21	E	S 17			
26	E	S 15	E	E	E	E	E	G	G	G	G	34	G	G	G	G	G	18	J X 43	J X 30	E	E	E	E	J X 25			
27	J X 24	J X 21	17	E	E	E	20	21	G	G	G	G	G	G	G	G	23	23	E	23	19	E	S 17	E	S 16			
28	E	E	E	S 16	E	E	E	E	E	S 14	G	G	G	G	G	G	23	21	E	E	E	S 17	18	E	S 15	E		
29	E	E	E	E	E	E	E	18	G	G	G	G	G	G	G	30	26	17	E	E	E	E	E	E	E			
30	19	E	E	E	E	E	E	J X 40	C	C	33	G	G	G	39	35	J X 33	J X 43	J X 25	J X 23	22	J X 31	J X 25	J X 20				
31	21	16	E	E	E	15	18	J X 34	J X 54	G	G	33	G	G	34	J X 60	J X 113	J X 34	J X 63	J X 30	E	E	S 12	J X 19	17			
CNT	30	31	30	29	31	30	30	29	28	28	29	30	31	31	31	31	31	29	29	29	29	30	30	30	30			
MED	20	16	16	E	E	18	18	20	24	G	G	G	G	G	29	25	23	J X 23	19	22	22	20	21	17				
UQ	J X 23	J X 22	22	20	20	J X 21	J X 24	J X 24	J X 30	28	33	33	34	36	32	30	J X 33	J X 34	J X 25	J X 30	J X 28	J X 24	J X 24	J X 23				
LQ	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	20	18	E	E	E	S 16	E	S 17	E	S 12		

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FOES (0.1 MHZ)

# IONOSPHERIC DATA

JAN. 1970

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	E	12	E	E	18	18	15	16	G	G	G <sub>22</sub>	G	G	G	G	18	16	15	E	E	E	E	E	S <sub>15</sub>				
2	E	E	E	C	17	13	E	16	G <sub>17</sub>	G <sub>15</sub>	G <sub>18</sub>	G	G	G	G	G	E	E	E	S <sub>16</sub>	S <sub>16</sub>	13	E	E					
3	E	E	E	E	E	E	E	S <sub>13</sub>	G	G	G	G <sub>20</sub>	G	G	G	G	E	E	A	A	15	E	E						
4	16	15	E	E	E	E	A	S <sub>15</sub>	G	G	G	G	G	G	G	23	25	30	E	E	S <sub>16</sub>	S <sub>16</sub>	16	20					
5	E	E	E	E	E	E	S <sub>15</sub>	G	G	G	G <sub>21</sub>	G	G	G	G	G	E	E	E	E	15	E	E	E					
6	E	E	E	E	E	E	E	G	G	G	G	G <sub>23</sub>	G	G <sub>21</sub>	G	15	G	E	E	E	E	E	E	E					
7	E	E	E	E	E	E	E	S <sub>15</sub>	G	G	G	G	G	G	G	G	E	S <sub>15</sub>	E	A	16	17	15	16	16				
8	E	17	16	12	E	E	E	G	G	G	G	G	52	53	29	44	47	30	E	E	16	A	18	E					
9	25	A	18	16	15	E	14	G	G	G	G	G	52	36	G	G	G	C	C	C	16	19	E	E					
10	E	E	21	16	17	15	17	20	20	G	G	G	G	G	G	25	32	A	19	17	18	15	E	S <sub>15</sub>					
11	E	E	E	E	E	15	17	20	24	24	30	30	G <sub>27</sub>	G	G	G	18	15	A	A	A	25	14	20					
12	E	E	E	E	E	S <sub>16</sub>	E	20	27	20	19	20	G <sub>22</sub>	G	G	G	G	E	E	E	S <sub>16</sub>	18	19	E	E				
13	18	15	16	E	E	E	E	E	16	G	G	G	G	G	G	G	G	14	14	E	18	17	E	E	S <sub>16</sub>				
14	E	S <sub>16</sub>	16	E	E	16	17	C	C	C	C	G	G	G	G	G	19	C	C	C	C	C	C	C	C				
15	C	S <sub>16</sub>	C	C	E	C	C	C	C	C	C	C	G	G	G	G	G	23	20	E	S <sub>16</sub>	E	E	16	S <sub>16</sub>				
16	17	17	16	15	16	E	E	15	G	G	18	G <sub>20</sub>	27	32	19	G <sub>22</sub>	17	17	E	24	E	E	E	E					
17	18	16	12	E	E	E	16	17	25	18	21	24	G <sub>27</sub>	29	26	19	20	15	E	S <sub>12</sub>	E	E	E	E	18				
18	E	18	12	E	15	14	16	15	19	G <sub>20</sub>	G <sub>25</sub>	G <sub>22</sub>	G <sub>28</sub>	G <sub>26</sub>	G <sub>21</sub>	20	18	20	15	E	16	17	19	E					
19	16	E	17	16	20	19	15	16	G	G	G	G	35	26	24	20	16	15	E	S <sub>17</sub>	E	22	E	S <sub>16</sub>					
20	15	E	E	E	E	E	16	E	16	G	19	G <sub>20</sub>	G <sub>26</sub>	27	24	20	G	E	S <sub>16</sub>	E	S <sub>12</sub>	E	S <sub>16</sub>	E	S <sub>15</sub>	E	S <sub>16</sub>	E	S <sub>12</sub>
21	E	E	14	E	21	A	25	16	20	21	24	G <sub>25</sub>	49	30	G	37	44	39	36	28	15	16	E	20					
22	E	16	S <sub>15</sub>	E	E	16	15	17	19	G <sub>22</sub>	G	G	37	38	G	31	18	29	25	36	A	24	20	16					
23	E	E	E	16	E	16	21	19	21	18	G	G	G	G	30	26	21	13	14	12	E	E	E	E					
24	S <sub>15</sub>	E	E	E	E	E	E	G	G	G	G	G	G	G	G	27	G	E	S <sub>12</sub>	E	16	E	15	E	E				
25	E	16	18	16	E	E	E	G	G	G	G	G	G	G	G	G	30	13	E	12	17	14	E	S <sub>17</sub>					
26	S <sub>15</sub>	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	11	16	16	E	E	E	15					
27	16	15	15	E	E	E	16	17	G	G	G	G	G	G	G	G	G	G	E	E	15	E	S <sub>17</sub>	E	S <sub>16</sub>				
28	E	E	S <sub>16</sub>	E	E	E	E	S <sub>14</sub>	G	G	G	G	G	G	G	G	G	G	E	E	E	S <sub>17</sub>	15	E	S <sub>15</sub>	E			
29	E	E	E	E	E	E	E	17	G	G	G	G	G	G	G	G	G	15	E	E	E	E	E	E	E				
30	15	E	E	E	E	E	E	36	C	C	26	G	G	G	G	G	G	40	23	17	E	17	23	E					
31	E	14	E	E	E	E	E	30	34	G	G	21	G <sub>20</sub>	G <sub>20</sub>	22	45	44	16	30	17	E	E	S <sub>12</sub>	E	15				
CNT	30	31	30	29	31	30	30	29	28	28	29	30	31	31	31	31	31	29	29	29	30	30	30	30	30				
MED	E	E	E	E	E	E	E	S <sub>14</sub>	15	G	G	G	G	G	G	G	15	15	E	E	S <sub>16</sub>	E	S <sub>15</sub>	14	E	E	S <sub>14</sub>		
UQ	15	16	16	E	E	S <sub>15</sub>	15	17	17	20	G <sub>16</sub>	G <sub>20</sub>	G <sub>21</sub>	G <sub>27</sub>	26	16	G	22	20	20	19	17	17	17	16	16			
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E			

JAN. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

JAN. 1970

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

JAN. 1970

F=MIN (0.1 MHZ)



# IONOSPHERIC DATA

JAN. 1970

M(3000)F2 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	270	295	280	305	315	300	310	335	340	355	345	320	330	335	340	330	335	320	340	270	285	260	275
2	270	280	305	L <sub>1</sub> C <sub>270</sub>	280	270	310	300	330	335	325	350	305	335	305	305	310	290	320	295	265	275	F	F
3	F	F	F	F <sub>300</sub>	F	F	250	280	320	340	355	345	335	330	340	310	325	320	315	A	A	S <sub>295</sub>	F	F
4	F	F	U <sub>265</sub>	F <sub>295</sub>	295	325	A	300	330	325	355	355	325	330	330	350	340	340	335	295	270	295	275	275
5	275	280	305	295	315	340	300	300	335	315	340	350	355	350	350	335	340	345	335	335	250	280	275	270
6	260	275	305	350	310	280	285	310	345	330	355	335	325	340	345	340	320	320	335	F <sub>300</sub>	295	280	295	265
7	265	F	325	350	305	290	280	300	335	345	360	340	335	325	340	350	340	340	A	310	305	290	285	275
8	275	265	290	295	295	350	285	325	365	345	340	355	330	345	350	350	340	320	330	330	280	L <sub>1</sub> A <sub>275</sub>	275	280
9	280	A	275	310	290	305	325	335	365	350	345	345	320	340	335	320	345	C	C	C	300	305	320	275
10	275	270	270	280	290	315	340	315	350	345	330	335	320	330	355	340	340	A	345	325	280	290	295	290
11	275	275	295	275	280	300	310	315	350	365	355	360	335	325	325	345	335	335	A	A	A	305	295	260
12	295	280	300	295	U <sub>300</sub>	305	330	320	335	355	350	350	345	315	330	340	315	320	325	325	280	290	320	280
13	295	285	280	295	275	315	310	330	340	330	345	340	315	325	330	330	330	320	320	320	275	290	280	295
14	265	275	280	300	350	270	330	C	C	C	C	340	325	315	325	320	330	C	C	C	C	C	C	C
15	C	U <sub>265</sub>	C	C	315	C	C	C	C	C	C	C	325	325	325	305	305	305	315	315	300	275	275	265
16	270	260	280	265	260	285	320	335	350	320	335	325	305	320	310	325	310	315	315	330	290	280	265	275
17	260	250	250	265	260	270	280	315	320	335	315	305	310	320	320	315	320	285	330	305	310	285	285	280
18	280	275	280	280	285	295	315	330	335	325	325	325	330	315	320	315	315	300	295	310	300	270	285	275
19	265	275	280	265	275	285	350	315	335	330	320	325	315	330	315	330	285	320	335	330	305	265	270	270
20	U <sub>260</sub>	255	255	255	280	310	310	315	345	325	320	325	325	315	310	315	305	300	325	355	275	250	265	295
21	260	255	270	285	320	A	U <sub>285</sub>	295	325	330	325	340	310	315	305	320	320	300	325	325	300	270	270	270
22	260	275	280	300	U <sub>305</sub>	285	290	320	340	335	330	325	315	310	320	340	330	305	305	U <sub>305</sub>	A	270	275	290
23	290	280	285	280	275	280	U <sub>300</sub>	320	320	350	335	320	320	320	320	325	340	285	305	335	295	280	270	275
24	275	280	280	285	290	295	300	315	335	340	330	325	320	315	300	325	345	280	315	310	285	275	280	270
25	280	285	285	275	280	285	310	325	340	335	330	335	325	310	320	320	340	315	335	315	275	290	290	255
26	280	280	280	290	300	290	310	335	350	335	335	325	340	290	325	320	320	310	310	335	300	270	275	285
27	285	275	275	275	280	275	305	330	335	345	330	335	345	330	325	335	330	325	285	325	320	280	290	280
28	285	285	290	275	280	275	305	320	350	335	330	345	310	325	330	330	340	305	315	345	260	285	275	280
29	280	290	295	290	290	270	305	325	335	350	300	315	330	315	320	330	315	325	310	325	280	290	305	275
30	275	275	280	305	300	275	315	325	C	C	315	325	310	325	330	320	325	295	320	355	315	265	270	290
31	265	285	275	275	275	280	310	325	330	325	305	315	315	310	315	335	330	330	305	330	290	290	295	295
	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	27	29	30	30	28	29	29	28	28	29	30	31	31	31	31	31	28	27	27	27	30	28	28
MED	275	275	280	285	290	288	310	320	335	335	330	335	325	325	325	330	330	318	320	325	290	280	278	275
UQ	280	280	295	295	305	308	315	325	348	345	345	345	330	330	332	340	340	325	330	332	300	290	292	282
LQ	265	270	275	275	280	278	300	310	332	330	325	325	315	315	320	320	318	300	312	310	275	275	272	270

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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 h)

Station **WAKKANAI** Lat. 45° 23' 6" N Long. 141° 41' 1" E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2												375	405											
3											U	L												
4											390													
5												L	L											
6												L												
7																								
8																								
9																								
10																								
11												410												
12												U	L	420										
13												420	420											
14									C	C	C	415												
15									C	C	C	C												
16																	U	L						
17												L					L							
18											L	L	L											
19																								
20																	U	L						
21																	395							
22																								
23												L												
24																								
25												L												
26																								
27												U	L	L										
28												390												
29																								
30									C	C														
31												L												
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	5	3	1	1									
MED											U	L	410	420	U	L	U	L						
UQ												415	420											
LQ												L	390	412										

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M(3000)F1 (0.01)

# IONOSPHERIC DATA

JAN. 1970

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

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23' 6" N Long. 141° 41' 1" E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1																								
2												245	220											
3											230	230												
4																								
5												240	230											
6												240												
7																								
8																								
9																								
10																								
11												215												
12												235	230											
13													230											
14									C	C	C	225												
15									C	C	C	C												
16														240										
17												230	240											
18											240	235	235											
19																								
20															255									
21																								
22																								
23											245													
24																								
25												240												
26																								
27												240	230											
28																								
29																								
30									C	C					260									
31												250												
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	12	6	3	1										
MED										240	238	230	240	255										
UQ										242	240	230	250											
LQ										235	230	230	240											

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

IONOSPHERIC DATA

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

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270	295	270	275	255	245	250	240	245	230	210	225	220	240	225	225	215	210	230	215	320	300	325	325
2	325	295	260	300	295	270	265	245	225	235	215	210	215	220	225	225	240	200	225	295	380	290	310	280
3	350	325	305	215	270	300	325	270	245	235	230	220	220	210	210	220	235	210	230	A	A	270	250	370
4	305	310	295	270	245	210	A	260	235	245	235	215	215	235	235	230	250	250	225	240	315	295	310	325
5	300	300	260	250	230	215	300	250	225	225	250	240	230	230	230	225	215	210	215	250	350	300	350	345
6	340	300	250	200	215	290	300	245	230	230	235	220	225	240	230	225	220	225	220	240	260	290	275	310
7	340	300	250	205	210	270	250	245	225	220	230	225	230	250	240	220	215	215	A	250	300	300	300	300
8	300	320	300	260	260	200	300	220	210	215	225	230	230	235	225	225	250	250	225	220	305	325	315	300
9	360	A	325	265	250	260	240	220	215	220	225	235	245	225	225	210	220	C	C	C	260	285	265	310
10	325	325	350	305	300	250	205	245	215	230	225	230	225	230	225	215	220	A	235	225	310	300	280	255
11	265	300	300	280	270	270	240	250	215	225	220	210	210	225	220	220	215	215	A	A	A	300	250	335
12	270	290	250	265	290	265	250	240	210	220	230	225	220	235	235	215	220	225	220	250	315	305	245	285
13	300	300	300	250	295	245	250	215	215	230	235	230	215	225	235	235	210	205	225	260	315	295	300	295
14	300	335	325	255	200	370	280	C	C	C	C	220	215	240	235	230	220	C	C	C	C	C	C	C
15	C	310	C	C	245	C	C	C	C	C	C	C	225	230	220	225	235	235	220	245	260	320	310	305
16	330	330	305	305	340	280	220	215	205	230	240	235	225	225	230	225	235	240	230	240	280	300	320	315
17	370	360	335	320	320	305	285	235	235	220	230	220	230	235	230	230	235	230	230	240	265	295	285	260
18	275	300	300	265	260	265	255	225	220	230	230	225	230	220	240	220	210	220	220	235	265	315	305	295
19	345	315	305	335	325	280	220	220	215	225	220	240	235	235	230	230	205	235	220	245	245	315	325	300
20	305	300	300	290	280	250	250	230	215	235	235	230	230	250	230	225	205	215	240	210	305	345	310	250
21	310	310	300	265	255	A	320	265	220	230	225	225	235	235	240	240	240	265	265	220	260	330	305	340
22	345	345	295	250	235	290	295	235	220	220	225	225	235	235	230	230	220	230	250	270	A	350	330	290
23	275	270	285	305	260	300	260	235	210	225	235	230	225	235	235	220	215	220	240	230	250	300	300	300
24	300	300	270	250	240	250	225	230	215	230	230	245	225	225	250	225	210	225	225	240	245	300	280	300
25	295	290	300	305	300	280	220	220	215	220	225	225	225	230	240	230	215	210	220	200	300	270	275	320
26	300	275	280	265	250	240	205	210	210	220	225	230	235	220	250	230	225	215	250	220	245	310	300	290
27	270	300	305	300	290	275	245	225	215	220	230	220	205	230	215	225	240	210	250	240	225	300	290	295
28	290	275	275	275	275	290	250	215	215	230	225	230	235	235	245	235	215	240	215	220	290	310	300	315
29	300	270	265	270	250	320	235	220	215	220	225	240	245	240	240	245	240	240	225	225	260	290	270	300
30	325	300	275	250	245	265	220	245	C	C	230	245	245	245	225	230	240	220	245	210	250	350	375	290
31	320	300	300	270	300	275	245	220	225	225	230	230	225	230	230	245	250	220	265	215	250	270	275	280
	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	31	29	29	29	28	28	29	30	31	31	31	31	31	28	27	27	27	30	30	30
MED	302	300	300	268	260	270	250	235	215	225	230	228	225	235	230	225	220	220	225	240	265	300	300	300
UQ	330	315	305	300	292	290	280	245	225	230	230	230	232	235	238	230	238	235	240	245	308	315	310	315
LQ	295	295	270	250	245	250	235	220	215	220	225	220	220	225	225	222	215	212	220	220	255	295	275	290

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

# IONOSPHERIC DATA

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H'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	E	E	100	E	E	105	105	105	160	G	100	100	G	G	G	G	110	105	105	E	E	E	E	S
2	E	E	105	C	110	105	E	105	100	105	100	G	G	G	G	G	G	E	E	S	S	105	110	E
3	E	E	E	E	110	110	E	S	G	G	100	100	G	G	G	G	135	145	E	105	100	105	E	100
4	100	100	100	105	E	110	105	100	G	G	G	125	G	G	115	110	105	105	E	E	S	S	100	100
5	100	E	E	E	115	E	S	150	145	G	105	100	G	G	120	120	G	E	E	E	105	E	E	E
6	E	E	E	E	E	E	E	G	G	145	140	110	G	100	G	100	100	E	E	E	135	E	E	E
7	E	100	100	E	110	E	E	S	140	145	125	120	115	115	G	G	S	E	105	105	100	100	100	105
8	E	110	110	110	E	E	E	G	G	125	115	115	110	110	110	105	105	105	105	105	105	100	100	100
9	115	110	115	115	110	E	160	G	G	G	140	120	110	110	G	G	160	C	C	C	100	100	100	110
10	100	E	110	110	110	110	105	100	105	G	G	G	120	G	120	115	110	105	100	100	100	105	E	S
11	E	E	E	100	E	110	105	100	100	100	100	100	100	G	G	G	110	105	105	100	100	100	100	100
12	100	100	E	E	S	100	105	100	100	100	110	100	G	G	105	G	125	125	110	S	105	105	100	E
13	100	100	100	E	E	125	115	105	105	G	G	G	G	G	G	G	115	105	110	105	105	100	100	S
14	E	S	100	E	E	110	110	C	C	C	C	G	G	G	130	115	100	C	C	C	C	C	C	C
15	C	S	C	C	E	C	C	C	C	C	C	C	G	G	115	145	115	110	105	S	105	105	105	S
16	100	100	100	100	100	100	115	110	185	G	105	100	100	100	100	100	100	100	100	110	100	100	105	105
17	100	100	100	105	105	105	110	110	105	115	105	105	110	100	100	100	115	115	S	110	105	100	100	100
18	100	100	100	E	100	100	100	100	105	105	105	105	105	105	140	105	105	105	105	105	105	105	105	105
19	105	105	105	105	105	105	105	105	G	G	105	G	125	135	100	100	100	110	E	S	100	100	100	S
20	105	105	100	100	E	105	105	105	105	G	105	140	140	100	100	100	G	S	S	S	S	S	S	S
21	E	E	110	110	105	105	105	105	115	105	140	110	120	105	120	110	110	110	110	115	120	105	110	100
22	100	100	S	E	E	110	105	105	105	105	G	G	125	125	145	110	120	105	105	100	100	100	100	100
23	100	E	E	105	115	110	105	105	105	105	G	G	135	120	110	110	110	110	110	105	110	E	E	100
24	S	100	E	E	105	E	100	G	180	G	G	G	G	G	125	110	G	S	E	100	100	100	E	E
25	E	100	100	100	100	E	E	G	G	G	G	G	G	G	G	G	110	110	E	105	100	100	100	S
26	S	E	E	E	E	E	E	G	G	G	G	145	G	G	G	G	G	105	105	105	E	E	E	100
27	100	100	100	E	E	E	110	105	G	G	G	G	G	G	G	G	160	110	E	105	105	S	E	S
28	E	E	S	E	E	E	E	S	G	G	G	G	G	G	G	G	125	115	E	E	S	100	S	E
29	E	E	E	E	E	E	E	105	G	G	G	G	G	G	G	145	125	115	E	E	E	E	E	E
30	100	E	E	E	E	E	E	105	C	C	100	G	G	G	125	125	115	105	105	105	105	105	100	105
31	100	100	E	E	E	105	105	105	100	G	G	105	100	100	100	120	110	105	105	100	E	S	105	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	16	17	12	14	18	19	20	17	11	17	17	14	13	18	19	25	23	16	19	23	20	18	15
MED	100	100	100	105	108	105	105	105	105	105	105	105	112	105	115	110	110	105	105	105	105	100	100	100
UQ	100	102	105	110	110	110	110	105	140	120	115	120	125	115	125	118	120	110	108	105	105	105	105	105
LQ	100	100	100	100	105	105	105	102	105	105	100	100	105	100	100	102	105	105	105	100	100	100	100	100

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H'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			F1			F2	F2	F1	H1		F1	F1					F1	F1	F1						
2			F1		F2	F2		F2	F1	F1	F1											F1	F1		
3					F1	F1					F1	F1					F1	F1	F3	F4	F1		F1		
4	F1	F1	F1	F1		F1	F3	F1				F1			F1	F1	F3	F3					F2	F2	
5	F1				F1			H1	H1		F1	F1			F1	F1						F1			
6									H1	H1	F1			F1		F1						F1			
7		F1	F1		F1				H1	H1	F1	F1	F1	F1				F6	F2	F2	F2	F1	F1		
8		F2	F1	F2					F1	F1	F1	F2	F3	F2	F2	F2	F4	F1	F1	F2	F3	F2	F1	F1	
9	F2	F4	F2	F1	F1		F1				H1	F1	F2	F2			H1				F1	F1	F1	F1	
10	F1		F2	F2	F2	F2	F1	F1					F1		F1	F1	F2	F1	F1	F1	F1	F1			
11				F1		F2	F1	F1	F2	F1	F1	F1	F1				F1	F1	F2	F3	F3	F2	F1	F2	
12	F1	F1				FF11	F3	F3	F2	F1	F1	F1			F1		F1	F1	F1		F2	F2	F1		
13	F2	F1	F1			F1	F1	F1	F1								F1	F1	F1	F2	F2	F1	F1		
14			F1			F1	F2								HC11	F1	HC11								
15															F1	H1	F2	F3	F3			F1	F1	F1	
16	F1	F2	F1	F1	F1	F1	F1	F1	H1		F1	F1	F2	F2	F2	F2	F1	F1	FF31	F1	F1	F2	F1		
17	F2	F1	F1	F1	F1	F1	F1	F2	F3	CL2	F2	F2	CL2	F2	F2	F2	F1	F2		F1	F2	F1	F2	F2	
18	F1	F2	F1		F2	F1	F1	F2	F2	F1	F1	F1	F1	F1	H1	F3	F1	F1	F1	F1	F1	F1	F2	F2	
19	F1	F1	F1	F2	F3	F2	F1	F1			F1		F1	H1	F1	F1	F1				F1	F1	F1		
20	F1	F1	F1	F1		FF11	F2	F1	F1		F1	H1	H1	H1	F2	F2	F2								
21			F2	F1	F5	F5	F4	F5	CL2	F2	H1	H1	F2	F2	F1	F2	F5	F4	F3	FF31	FF21	F2	F1	F2	
22	F1	F1				F1	F2	F3	F1	F1			F1	F1	H1	F1	CL1	F2	F2	F4	F4	F2	F2	F1	
23	F1			F2	F1	F2	F3	F3	F3	F1			H1	F1	F1	F1	F1	F1	F1	F1	F1			F1	
24		F1			F1		F1		H1						F1	F1					F1	F1	F1		
25		F1	F2	F2	F1												F2	F1		F1	F1	F1	F1		
26												H1						F1	F2	F1				F2	
27	F1	F1	F1				F1	F1									H1	F1		F1	F1				
28																		F1	F1				F1		
29								F1								H1	F1	F1							
30	F1							F2			F1					F1	F2	F3	F2	F1	F1	F2	F2	F1	
31	F2	F1				F1	F1	F3	F2			F1	F1	F1	F1	F3	F2	F1	F2	F2	F2		F1	F1	
	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																									

JAN. 1970

TYPES OF ES



# IONOSPHERIC DATA

JAN. 1970

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	33	33	33	32	34	31	31	57	76	I <sup>R</sup> <sub>108</sub>	114	101	96	93	86	77	67	62	42	27	26	26	32	33																									
2	31	I <sup>R</sup> <sub>34</sub>	33	26	31	28	28	54	74	102	127	C	C	C	C	C	C	C	C	C	C	C	C	C																									
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C																									
4	C	C	C	C	C	C	C	C	C	C	C	91	87	87	76	H	76	64	47	43	34	I <sup>A</sup> <sub>28</sub>	30	32	32																								
5	32	33	33	27	27	23	24	47	70	100	I <sup>R</sup> <sub>106</sub>	105	91	78	77	73	68	52	33	25	23	26	31	33																									
6	34	34	35	26	21	28	26	46	84	86	106	83	88	81	72	66	64	56	46	29	27	S <sub>32</sub>	S <sub>32</sub>	31																									
7	31	S <sub>34</sub>	44	36	22	23	24	47	71	92	104	86	76	83	85	82	I <sup>C</sup> <sub>68</sub>	R	A	A	27	I <sup>A</sup> <sub>26</sub>	F	31																									
8	31	32	36	38	36	36	27	51	76	92	108	102	92	94	92	81	69	I <sup>A</sup> <sub>56</sub>	48	A	A	R	C	35																									
9	33	35	36	34	29	34	29	52	87	101	121	108	98	108	89	78	79	75	52	46	28	36	34	32																									
10	33	36	34	33	38	37	23	55	80	96	107	118	115	113	99	83	67	64	C	C	C	A	A	A																									
11	33	33	32	31	30	S <sub>30</sub>	33	50	96	102	106	103	96	83	81	82	69	64	43	35	27	33	33	32																									
12	35	36	38	32	33	33	35	I <sup>R</sup> <sub>53</sub>	87	106	108	108	104	92	86	85	65	61	56	34	29	32	37	34																									
13	31	32	35	33	33	33	36	51	I <sup>R</sup> <sub>76</sub>	91	116	105	97	96	91	83	79	64	49	36	29	31	32	33																									
14	32	33	33	31	29	26	26	54	89	107	112	96	94	91	90	92	76	72	54	33	I <sup>A</sup> <sub>30</sub>	I <sup>A</sup> <sub>29</sub>	A	A																									
15	32	R <sub>28</sub>	31	31	33	28	28	47	76	99	109	105	102	90	87	76	74	71	59	39	34	I <sup>A</sup> <sub>35</sub>	36	38																									
16	36	36	37	35	35	38	43	56	79	87	105	107	102	98	88	86	74	74	72	59	36	38	35	I <sup>R</sup> <sub>34</sub>																									
17	36	35	34	38	36	36	39	S <sub>67</sub>	91	117	110	113	101	97	84	82	81	71	64	54	43	43	44	41																									
18	34	33	35	31	F	F	34	S <sub>64</sub>	84	96	122	118	113	103	96	89	78	60	59	48	41	31	33	33																									
19	33	34	34	32	33	33	36	54	77	92	108	107	116	107	99	89	76	65	67	54	37	32	35	36																									
20	37	38	38	37	40	40	34	61	84	92	107	107	99	92	98	94	84	58	56	44	36	33	35	37																									
21	34	36	36	37	33	33	33	58	96	114	121	114	101	107	97	106	101	74	57	61	44	36	37	37																									
22	36	36	43	44	29	30	29	57	97	I <sup>R</sup> <sub>115</sub>	121	117	114	114	104	106	91	72	52	52	44	33	33	36																									
23	35	36	37	36	36	36	41	63	89	102	114	117	109	105	106	94	82	64	52	48	43	35	38	40																									
24	37	42	44	42	34	36	38	S <sub>60</sub>	81	87	99	99	106	94	86	102	84	57	58	54	36	31	31	34																									
25	33	35	34	33	36	37	39	59	87	97	124	123	109	89	92	91	86	73	55	35	33	33	36	34																									
26	36	37	41	40	34	35	36	54	77	89	98	100	111	96	91	103	83	68	46	49	38	32	33	36																									
27	35	36	36	33	34	35	35	S <sub>61</sub>	96	86	104	114	96	88	83	82	76	70	55	43	43	I <sup>R</sup> <sub>40</sub>	42	39																									
28	36	35	35	33	34	34	33	58	85	99	104	92	96	98	89	82	84	72	64	47	26	S <sub>28</sub>	S <sub>32</sub>	29																									
29	33	35	38	41	33	33	35	S <sub>72</sub>	84	81	86	106	113	112	94	94	76	69	72	I <sup>R</sup> <sub>49</sub>	32	31	34	33																									
30	I <sup>R</sup> <sub>32</sub>	35	37	36	36	27	32	I <sup>R</sup> <sub>61</sub>	72	82	92	92	101	114	97	93	84	I <sup>R</sup> <sub>72</sub>	61	54	I <sup>R</sup> <sub>32</sub>	I <sup>R</sup> <sub>26</sub>	28	31																									
31	S <sub>31</sub>	33	34	33	31	34	41	I <sup>R</sup> <sub>59</sub>	71	96	123	123	I <sup>R</sup> <sub>111</sub>	111	106	99	84	74	57	60	34	37	42	37																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																									
CNT	29	29	29	29	28	28	29	29	29	29	29	29	29	29	29	29	29	29	28	27	26	27	27	25	27																								
MED	33	35	35	33	33	33	33	56	84	96	108	106	101	96	90	85	76	66	55	46	33	32	34	34																									
UQ	35	36	37	37	36	36	36	60	87	102	116	114	109	107	97	94	84	72	59	54	38	35	36	36																									
LQ	32	33	34	32	30	29	28	52	76	91	105	100	96	90	86	82	69	60	48	35	28	30	32	32																									

JAN. 1970

FOF2 (0.1 MHz)



### IONOSPHERIC DATA

JAN. 1970

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	L	470	L	L									
2										L	L	C	C	C	C									
3										C	C	C	C	C	C									
4										C	C	L	L	L										
5										L	L	L	L	L	L									
6											L	L	L	L	L									
7										L	L	L	L	L	L									
8										L	L	L	L	L	L									
9										L	L	L	L	L	L									
10											L	L	L	L										
11										L	L	U 440	L	U 400										
12											L	L	L	L										
13											L	L	L	L	L									
14										L	L	L	430	L	L									
15										L	L	L	L	L	L									
16											U 500	400	L	L	L									
17											L	L	L	L										
18										L	L	L	L	450										
19										L	L	L	L	L	L									
20										L	L	L	L	L	L									
21										L	L	L	L	L	L									
22											L	L	L	L										
23										L	L	L	L	L	L									
24											L	L	L	L										
25											L	L	L	L	L									
26											L	L	500	L										
27											L	U 450	L	410	L									
28										L	440	L	500	L	L									
29											L	L	L	L										
30											420	L	L	430	L									
31											L	L	L	460	420	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	3	5	5										
MED											440	440	470	420										
UQ											470	445	500	430										
LQ											430	420	460	410										

JAN. 1970

FOF1 (0.01 MHZ)

# IONOSPHERIC DATA

JAN. 1970

FDE (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								B	255	295	320	330	335	330	305	I A 260	A													
2								A	250	305	325		C	C	C	C	C													
3								C	C	C	C	C	C	C	C	C														
4								C	C	C	C		325	330	335		A	A												
5								B	260	295	315	325	330	330	305	260		A	S											
6								S	250	295	310	325	R 330	I A 330	I A 290	250	180		S											
7									A	A	A	A	A	A	A	A		C	E											
8								155	235	A	A	A	A	A	A	A		A	S											
9								A	250	I A 290	310	I A 320		A	A	A	250	215		S										
10								A	250	290	310	325	I A 330	340		A	A		A	B										
11								165	245	295	320	340	335	330	315	270	215		S											
12								A	230	I A 290	310	330	335	330	310	275	220		S											
13								A	245	295	315	325	340	335	310	275	210		S											
14								A	I A 245	295	320	335	345	345	325		A	A	S											
15								A	250	I A 300	320	335	345	345	320	295	225		S											
16									170	255	300	320	340	345	330	315	275	220		B										
17									170	240	I A 280	310	325	340	340	320	285	235		A										
18									160	245	300	315	330	340	340	315	275	220		S										
19									170	250	300	315	330	345		A	285	230		S										
20									A	245	295	315	330	340	335		A	A		A	S									
21									B	250	300	320	340	350	345	325		A	A	S										
22									B	245	295	320	340	345	350	330		A	A	S										
23									S	250	300	320	330	345	335	315		A	A	A										
24									175	250	295	310	325	335	335	320	I A 280	225		S										
25									165	240	295	315	330	335	345	335	310		A	B										
26									190	255		B	B	B	B	B	A	A	220		S									
27									S	245	295	315	I B 330	345	340	325	290	230		S										
28									165	250	295	315	335	345	350		A	A		A	A									
29									180	250	295	315	335	345	335	310	285	I A 220		A										
30									A	245	300	320	335	340	340	325	I A 290		A	A										
31									175	245	290	I A 310		A	A	A	A	280		A	S									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
CNT								13	28	26	26	25	24	23	19	18	14	1												
MED								170	250	295	315	330	340	335	315	278	220		E											
UQ								175	250	300	320	335	345	342	325	285	225													
LQ								165	245	295	310	325	335	332	310	270	215													

JAN. 1970

FDE (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1970

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>23</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>17</sub> B	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>18</sub> B	J <sub>46</sub> X	G	G	G	G	G	G	33	J <sub>29</sub> X	J <sub>33</sub> X	J <sub>25</sub> X	J <sub>20</sub> X	J <sub>21</sub> X	E <sub>14</sub> S	J <sub>21</sub> X	J <sub>21</sub> X	
2	E <sub>14</sub> S	J <sub>18</sub> X	E <sub>14</sub> S	E	J <sub>20</sub> X	J <sub>26</sub> X	J <sub>33</sub> X	J <sub>27</sub> X	G	34	G	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	G	G	G	J <sub>33</sub> X	J <sub>37</sub> X	J <sub>38</sub> X	J <sub>20</sub> X	J <sub>36</sub> X	J <sub>39</sub> X	J <sub>32</sub> X	J <sub>26</sub> X	J <sub>20</sub> X	E <sub>14</sub> S	
5	E <sub>14</sub> S	J <sub>18</sub> X	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>13</sub> S	E <sub>14</sub> S	E <sub>18</sub> B	G	G	G	G	38	G	G	G	26	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
6	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	J <sub>34</sub> X	J <sub>31</sub> X	G	G	E <sub>14</sub> S	J <sub>18</sub> X	E <sub>14</sub> S	E <sub>13</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
7	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	G	27	34	36	36	39	J <sub>46</sub> X	J <sub>46</sub> X	J <sub>48</sub> X	C	J <sub>48</sub> X	J <sub>83</sub> X	J <sub>63</sub> X	J <sub>25</sub> X	J <sub>80</sub> X	J <sub>20</sub> X	E <sub>14</sub> S	
8	E <sub>13</sub> S	J <sub>29</sub> X	J <sub>27</sub> X	J <sub>23</sub> X	J <sub>21</sub> X	J <sub>20</sub> X	J <sub>23</sub> X	G	G	32	36	36	J <sub>50</sub> X	J <sub>57</sub> X	J <sub>54</sub> X	J <sub>46</sub> X	J <sub>30</sub> X	J <sub>69</sub> X	J <sub>48</sub> X	J <sub>59</sub> X	J <sub>90</sub> X	J <sub>43</sub> X	C	E <sub>14</sub> S	
9	E <sub>14</sub> S	J <sub>17</sub> X	J <sub>32</sub> X	J <sub>43</sub> X	J <sub>26</sub> X	J <sub>24</sub> X	E <sub>14</sub> S	21	G	33	33	J <sub>50</sub> X	J <sub>35</sub> X	37	J <sub>36</sub> X	J <sub>25</sub> X	G	E <sub>13</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>20</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	
10	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>29</sub> X	J <sub>68</sub> X	J <sub>36</sub> X	J <sub>34</sub> X	J <sub>30</sub> X	G	G	G	G	26	36	G	J <sub>56</sub> X	J <sub>63</sub> X	J <sub>33</sub> X	C	C	C	J <sub>43</sub> X	J <sub>43</sub> X	J <sub>40</sub> X	
11	J <sub>33</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	G	G	G	24	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
12	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	J <sub>18</sub> X	J <sub>30</sub> X	J <sub>24</sub> X	J <sub>48</sub> X	G	G	G	G	G	G	G	E <sub>13</sub> S	E <sub>14</sub> S	J <sub>18</sub> X	E <sub>14</sub> S	J <sub>20</sub> X	J <sub>22</sub> X	E <sub>14</sub> S	
13	E <sub>14</sub> S	J <sub>20</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>20</sub> X	J <sub>25</sub> X	J <sub>19</sub> X	J <sub>33</sub> X	G	G	G	G	G	G	G	E <sub>14</sub> S	J <sub>19</sub> X	J <sub>20</sub> X	E <sub>14</sub> S	J <sub>20</sub> X	J <sub>24</sub> X	E <sub>14</sub> S	
14	J <sub>20</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>26</sub> X	J <sub>30</sub> X	G	G	G	G	G	35	32	23	E <sub>14</sub> S	J <sub>33</sub> X	J <sub>30</sub> X	J <sub>44</sub> X	J <sub>37</sub> X	J <sub>34</sub> X	J <sub>32</sub> X	
15	J <sub>32</sub> X	J <sub>24</sub> X	J <sub>19</sub> X	J <sub>19</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>26</sub> X	J <sub>24</sub> X	J <sub>51</sub> X	J <sub>38</sub> X	G	G	J <sub>34</sub> X	J <sub>28</sub> X	G	G	J <sub>20</sub> X	J <sub>28</sub> X	J <sub>28</sub> X	J <sub>45</sub> X	J <sub>40</sub> X	J <sub>24</sub> X	J <sub>20</sub> X	
16	J <sub>24</sub> X	J <sub>26</sub> X	J <sub>16</sub> X	M	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	J <sub>29</sub> X	G	G	G	G	G	G	E <sub>17</sub> B	E	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>37</sub> X	E <sub>14</sub> S	J <sub>29</sub> X	
17	J <sub>24</sub> X	J <sub>18</sub> X	J <sub>18</sub> X	J <sub>23</sub> X	J <sub>21</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	G	G	32	J <sub>34</sub> X	G	G	G	G	30	G	J <sub>29</sub> X	J <sub>33</sub> X	J <sub>24</sub> X	J <sub>24</sub> X	J <sub>23</sub> X	J <sub>21</sub> X	J <sub>18</sub> X	
18	J <sub>20</sub> X	E <sub>14</sub> S	E <sub>13</sub> S	E <sub>14</sub> S	E <sub>13</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	G	G	G	G	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>30</sub> X	J <sub>24</sub> X	J <sub>20</sub> X	E <sub>14</sub> S	
19	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>18</sub> X	J <sub>21</sub> X	J <sub>20</sub> X	E <sub>14</sub> S	G	G	G	G	J <sub>30</sub> X	J <sub>38</sub> X	J <sub>34</sub> X	G	G	J <sub>23</sub> X	J <sub>24</sub> X	J <sub>20</sub> X	J <sub>16</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
20	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>18</sub> X	J <sub>24</sub> X	J <sub>30</sub> X	G	35	38	36	39	35	30	J <sub>26</sub> X	J <sub>18</sub> X	J <sub>29</sub> X	J <sub>29</sub> X	E <sub>14</sub> S	J <sub>20</sub> X	J <sub>18</sub> X	E <sub>14</sub> S	
21	E <sub>14</sub> S	J <sub>24</sub> X	J <sub>18</sub> X	E	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>18</sub> B	G	G	G	G	G	G	J <sub>30</sub> X	32	J <sub>29</sub> X	J <sub>28</sub> X	J <sub>42</sub> X	J <sub>38</sub> X	J <sub>28</sub> X	J <sub>30</sub> X	J <sub>18</sub> X	J <sub>16</sub> X	
22	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>18</sub> B	G	G	G	38	39	G	35	100	J <sub>133</sub> X	J <sub>34</sub> X	J <sub>44</sub> X	J <sub>24</sub> X	J <sub>25</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
23	J <sub>33</sub> X	J <sub>20</sub> X	J <sub>20</sub> X	E	E	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	35	G	G	33	J <sub>52</sub> X	J <sub>45</sub> X	J <sub>29</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
24	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	34	36	37	G	G	33	G	J <sub>19</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
25	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	G	G	G	27	E <sub>17</sub> B	J <sub>30</sub> X	J <sub>25</sub> X	E <sub>14</sub> S	J <sub>24</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	
26	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	E	E	E <sub>14</sub> S	G	G	E <sub>34</sub> B	E <sub>38</sub> B	E <sub>37</sub> B	37	43	36	30	G	E <sub>14</sub> S	J <sub>18</sub> X	J <sub>18</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
27	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>21</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>23</sub> X	G	G	G	E <sub>36</sub> B	G	G	G	G	G	E <sub>15</sub> S	E <sub>14</sub> S	J <sub>23</sub> X	E <sub>14</sub> S	E <sub>18</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
28	E <sub>14</sub> S	J <sub>18</sub> X	J <sub>19</sub> X	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	G	35	33	27	J <sub>25</sub> X	J <sub>73</sub> X	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
29	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	G	G	G	26	20	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	
30	E <sub>16</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	20	G	G	G	G	37	36	J <sub>40</sub> X	J <sub>60</sub> X	J <sub>103</sub> X	J <sub>70</sub> X	J <sub>58</sub> X	J <sub>39</sub> X	J <sub>25</sub> X	J <sub>28</sub> X	J <sub>28</sub> X	E <sub>14</sub> S	
31	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	G	J <sub>23</sub> X	34	J <sub>70</sub> X	J <sub>73</sub> X	J <sub>48</sub> X	J <sub>54</sub> X	43	J <sub>44</sub> X	J <sub>90</sub> X	J <sub>20</sub> X	J <sub>29</sub> X	J <sub>24</sub> X	E <sub>14</sub> S	J <sub>37</sub> X	J <sub>33</sub> X	E <sub>14</sub> S	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	28	28	28	29	28	29	
MED	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	14	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	31	30	25	J <sub>20</sub> X	J <sub>22</sub> X	J <sub>20</sub> X	E <sub>14</sub> S	J <sub>20</sub> X	16	E <sub>14</sub> S	
UQ	J <sub>20</sub> X	J <sub>18</sub> X	J <sub>16</sub> X	E <sub>17</sub> B	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	J <sub>23</sub> X	G	19	32	34	36	37	36	J <sub>35</sub> X	J <sub>37</sub> X	J <sub>30</sub> X	J <sub>29</sub> X	J <sub>34</sub> X	J <sub>28</sub> X	J <sub>25</sub> X	J <sub>30</sub> X	J <sub>22</sub> X	E <sub>14</sub> S
LQ	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E	E <sub>14</sub> S	E <sub>14</sub> S	G	G	G	G	G	G	G	G	G	G	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	E <sub>14</sub> S	

The Radio Research Laboratories, Japan

JAN. 1970

FOES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1970

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	19	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>17</sub> B <sub>17</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>18</sub> B <sub>18</sub>	19	G	G	G	G	G	G	31	25	25	E	E	17	E <sub>14</sub> S <sub>14</sub>	18	16		
2	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	18	17	16	20	G	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C		
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
4	C	C	C	C	C	C	C	C	C	C	C	G	G	G	33	30	20	16	31	23	A	17	19	E <sub>14</sub> S <sub>14</sub>		
5	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>18</sub> B <sub>18</sub>	G	G	G	G	36	G	G	G	22	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
6	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	34	30	G	G	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
7	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	27	31	34	34	35	40	36	39	C	25	A	A	17	A	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
8	E <sub>13</sub> S <sub>13</sub>	18	18	16	15	E	15	G	G	31	34	35	41	34	30	30	28	A	33	A	A	E	C	E <sub>14</sub> S <sub>14</sub>		
9	E <sub>14</sub> S <sub>14</sub>	E	27	19	15	E	E <sub>14</sub> S <sub>14</sub>	20	G	32	G	34	34	37	34	G	G	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
10	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	25	16	25	16	20	G	G	G	G	24	35	G	49	46	43	24	C	C	C	A	A		
11	20	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	G	24	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
12	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E	21	19	34	G	G	G	G	G	G	G	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
13	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	20	G	18	22	G	G	G	G	G	G	E <sub>14</sub> S <sub>14</sub>	18	E	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
14	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	19	26	G	G	G	G	G	34	31	22	E <sub>14</sub> S <sub>14</sub>	E	E	A	A	A	A		
15	20	E	19	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	18	18	34	29	G	G	G	26	24	G	G	19	24	19	20	A	19	E	
16	19	17	15	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	25	G	G	G	21	G	G	E <sub>17</sub> B <sub>17</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	18		
17	18	E	E	18	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	32	29	G	G	G	G	G	G	18	18	18	E	17	E	E		
18	E	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>13</sub> S <sub>13</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	G	G	G	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	18	18	E <sub>14</sub> S <sub>14</sub>		
19	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	15	18	15	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	29	35	33	G	G	19	19	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
20	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	20	20	G	35	38	36	38	34	30	24	E	24	17	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
21	E <sub>14</sub> S <sub>14</sub>	E	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>18</sub> B <sub>18</sub>	G	G	G	G	G	G	G	28	30	28	18	25	24	22	19	E	E		
22	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>18</sub> B <sub>18</sub>	G	G	G	36	39	G	G	G	30	41	19	E	19	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
23	18	14	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	35	G	G	G	34	35	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
24	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	34	36	37	G	G	32	G	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
25	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	G	27	E <sub>17</sub> B <sub>17</sub>	E	19	E <sub>14</sub> S <sub>14</sub>	15	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
26	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	G	G	E <sub>34</sub> B <sub>34</sub>	E <sub>38</sub> B <sub>38</sub>	E <sub>37</sub> B <sub>37</sub>	37	42	36	30	G	E <sub>14</sub> S <sub>14</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
27	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	19	G	G	G	E <sub>36</sub> B <sub>36</sub>	G	G	G	G	G	E <sub>15</sub> S <sub>15</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>18</sub> B <sub>18</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
28	E <sub>14</sub> S <sub>14</sub>	E	15	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	35	32	27	20	29	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
29	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	G	25	18	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>		
30	E <sub>16</sub> S <sub>16</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	19	G	G	G	G	36	36	38	38	66	56	38	23	18	E	E	E <sub>14</sub> S <sub>14</sub>		
31	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	18	32	40	40	38	35	38	G	34	E	19	18	E <sub>14</sub> S <sub>14</sub>	E	23	E <sub>14</sub> S <sub>14</sub>	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	28	28	28	29	28	29		
MED	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	14	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	24	23	22	17	14	14	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	
UQ	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	19	G	U	26	U	27	34	36	34	34	31	28	19	24	19	18	17	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>
LQ	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	G	G	G	G	G	G	G	G	G	G	E <sub>14</sub> S <sub>14</sub>	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	E	E	E <sub>14</sub> S <sub>14</sub>	E <sub>14</sub> S <sub>14</sub>	

JAN. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

JAN. 1970

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>	18	16	19	19	24	25	25	19	19	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
2	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E	E	E	E <sub>15</sub>	16	16	19	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	23	19	20	18	18	14	E	E <sub>13</sub>	E <sub>14</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>
5	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	18	17	18	16	18	20	18	16	15	14	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</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>	16	15	18	18	18	19	15	16	14	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>	E <sub>14</sub>
7	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>16</sub>	14	16	17	18	18	18	16	17	16	C	E	E	E	E	E	E <sub>16</sub>	E <sub>14</sub>
8	E <sub>13</sub>	E	E	E	E	E <sub>14</sub>	E	14	15	19	19	21	16	18	18	17	13	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	C	E <sub>14</sub>
9	E <sub>14</sub>	E	E	E	E	E <sub>14</sub>	E <sub>14</sub>	13	15	17	17	19	20	17	17	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>
10	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E	E	E	14	16	17	19	16	20	26	20	17	16	E <sub>14</sub>	C	C	C	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	E <sub>14</sub>	E <sub>14</sub>	14	15	18	19	19	23	21	15	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>
12	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	15	15	18	17	17	13	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>
13	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>	14	15	E	15	18	19	23	18	16	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>
14	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	14	15	15	19	16	18	18	16	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>
15	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	16	15	16	15	18	19	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>
16	E <sub>14</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	18	15	16	16	19	16	14	17	15	17	E	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>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	14	15	15	16	18	17	20	18	17	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>
18	E <sub>14</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>14</sub>	14	15	17	16	18	18	20	16	16	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>
19	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E	E	E <sub>14</sub>	15	17	18	18	18	19	16	16	14	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>
20	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	13	15	14	14	16	16	16	14	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>
21	E <sub>14</sub>	E	E	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	18	15	15	18	18	18	19	16	15	13	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>
22	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>	18	15	19	21	18	22	24	18	19	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>
23	E <sub>14</sub>	E	E <sub>14</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	15	14	14	16	15	15	13	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>
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>14</sub>	14	16	19	23	23	29	23	20	24	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>
25	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	16	16	19	18	24	22	20	18	15	17	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>
26	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	E	E	E <sub>14</sub>	14	19	34	38	37	35	35	26	19	18	E <sub>15</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>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	16	14	25	36	30	27	22	20	15	E <sub>15</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	18	E <sub>14</sub>	E <sub>14</sub>
28	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	14	17	18	20	18	19	24	19	19	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>
29	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	13	16	14	17	18	18	19	16	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>
30	E <sub>16</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	14	15	18	23	21	26	20	22	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>
31	E <sub>14</sub>	E <sub>14</sub>	E	E <sub>14</sub>	E	E <sub>14</sub>	E <sub>14</sub>	14	14	17	16	18	14	16	18	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>
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	28	28	28	29	28	29
MED	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	17	18	18	19	19	18	17	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>	14	16	18	19	19	22	23	19	18	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>13</sub>	E	E	E <sub>14</sub>	E <sub>14</sub>	14	15	15	16	18	17	17	16	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>

The Radio Research Laboratories, Japan

JAN. 1970

F=MIN (0.1 MHZ)

135° E Mean Time (G. M. T. + 9h)



IONOSPHERIC DATA

JAN. 1970

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 Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	285	280	295	285	295	300	305	335	335	I R 335	335	335	335	335	320	330	330	325	325	310	305	290	270	270	
2	285	I R 290	295	275	290	290	295	320	335	325	335	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	335	325	320	330	330	345	325	320	325	I A 290	300	305	285
5	285	295	310	320	305	300	300	325	320	335	I R 330	340	340	340	340	330	340	325	325	320	290	285	280	275	
6	290	295	335	310	290	290	290	305	340	325	340	330	330	330	330	335	330	340	325	335	290	300	290	290	
7	280	290	S 325	335	320	295	305	320	340	325	345	345	315	325	335	340	I C 350	R	A	A	315	I A 310	F	265	
8	280	280	285	315	305	335	305	325	335	325	340	335	325	320	330	335	335	I A 340	355	A	A	A	R	C 280	
9	285	285	285	310	285	305	325	320	335	340	330	330	325	335	330	330	330	330	325	320	285	295	310	285	
10	275	265	280	285	300	325	305	330	340	335	325	330	320	325	335	345	330	335	C	C	C	A	A	A	
11	295	295	285	290	280	S 280	335	320	340	340	340	330	335	325	325	330	350	335	325	335	295	280	305	290	
12	285	300	315	285	295	295	315	I R 330	330	340	330	340	320	320	320	325	340	320	325	325	305	280	290	300	
13	290	285	310	300	290	280	335	335	I R 340	310	325	330	315	320	320	315	330	315	320	325	315	295	290	280	
14	280	275	285	310	315	290	295	315	340	345	330	320	310	320	300	325	320	310	320	300	I A 295	I A 280	A	A	
15	305	R 290	295	295	310	300	310	340	340	335	330	330	325	315	320	315	310	310	320	315	300	I A 285	290	290	
16	285	285	290	275	275	285	315	340	340	320	315	325	315	325	305	315	310	315	315	340	290	280	285	I R 290	
17	260	270	285	275	280	270	280	S 330	315	330	310	320	310	320	310	300	310	315	305	310	290	290	290	295	
18	300	290	300	290	F	F	315	S 330	335	325	320	315	315	315	320	315	325	315	325	315	315	285	275	275	
19	270	290	295	285	280	285	330	315	340	330	330	325	320	320	325	320	315	305	320	320	325	295	275	290	
20	290	285	285	290	310	300	300	320	335	330	320	330	315	310	315	310	325	315	310	300	300	310	270	300	
21	275	270	270	300	285	275	280	310	350	325	325	320	305	290	300	310	330	310	300	315	310	280	300	300	
22	280	285	290	320	290	285	290	320	330	I R 340	320	320	315	310	315	310	320	300	290	310	300	295	285	280	
23	285	285	290	280	280	270	300	335	340	325	325	315	320	315	320	320	320	320	295	325	315	285	280	290	
24	285	290	310	315	315	285	315	S 335	340	335	325	315	310	320	300	325	340	320	305	320	305	290	290	300	
25	285	290	295	280	285	290	320	335	340	320	320	325	330	315	320	320	325	330	345	315	300	310	310	290	
26	280	290	305	315	305	290	325	320	340	340	335	325	320	310	300	315	325	340	320	315	320	280	290	300	
27	295	300	300	275	280	285	310	S 340	355	335	330	335	315	330	315	315	320	315	330	305	305	I R 290	305	310	
28	300	290	300	295	300	295	305	330	325	330	335	320	310	310	315	330	320	335	320	330	315	S 270	S 285	S 300	
29	285	300	315	305	300	270	290	S 335	345	325	315	300	310	310	325	320	320	310	330	I R 325	300	290	295	300	
30	I R 280	290	305	315	325	280	300	I R 330	335	320	340	325	310	315	320	335	320	I R 325	325	315	I R 310	I R 275	285	295	
31	S 295	280	290	285	290	290	310	I R 340	325	325	320	315	I R 315	305	320	330	320	325	320	335	290	300	295	315	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	29	29	29	28	28	29	29	29	29	29	29	29	29	29	29	29	29	28	27	26	27	27	25	27
MED	285	290	295	295	292	290	305	330	340	330	330	325	315	320	320	325	325	320	320	320	300	290	290	290	
UQ	290	290	305	310	305	298	315	335	340	335	335	330	325	325	325	330	330	330	325	325	312	295	295	300	
LQ	280	285	285	285	285	282	300	320	335	325	320	320	315	315	315	315	320	315	318	315	292	280	285	282	

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M(3000)F2 (0.01)

# IONOSPHERIC DATA

JAN. 1970

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	L	365	L	L									
2										L	L	C	C	C										
3										C	C	C	C	C	C									
4										C	C	L	L	L										
5										L	L	L	L	L	L									
6											L	L	L	L	L									
7										L	L	L	L	L	L									
8										L	L	L	L	L	L									
9										L	L	L	L	L	L									
10											L	L	L	L	L									
11										L	L	U 380	L	U 390										
12											L	L	L	L										
13											L	L	L	L	L									
14											L	L	L	390	L	L								
15											L	L	L	L	L	L								
16											U 360	410	L	L	L									
17											L	L	L	L	L									
18										L	L	L	L	360										
19											L	L	L	L	L									
20											L	L	L	L	L									
21										L	L	L	L	L	L									
22											L	L	L	L	L									
23										L	L	L	L	L	L									
24											L	L	L	L	L									
25											L	L	L	L	L									
26											L	L	L	350	L									
27											L	U 370	L	390	L									
28										L	370	L	355	L	L									
29											L	L	L	L										
30											360	L	L	360	L									
31										L	L	L	370	380	L									
Hour	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	3	5	5										
MED											360	U 380	365	380										
UQ											365	395	370	390										
LQ											360	U 375	355	360										

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M(3000)F1 (0.01)

# IONOSPHERIC DATA

JAN. 1970

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											245	250	240	250	245	250								
2											250	240	C	C	C	C								
3											C	C	C	C	C	C								
4											C	C	225	240	250									
5											255	240	230	250	240	240								
6											245	235	255	240	245									
7											245	235	230	250	255	250								
8											250	245	245	245	250	250								
9											235	250	230	235	255	230								
10											250	240	250	250										
11											230	235	240	235	235									
12											250	245	245	250										
13											250	250	250	250	250									
14											240	250	235	245	250	250								
15											250	250	250	255	250	250								
16											260	245	255	260	245									
17											250	255	250	250										
18											230	250	235	250	250									
19											245	240	255	250	250									
20											250	250	250	250	265									
21											230	245	245	245	255	255								
22											240	235	275	260										
23											245	250	255	250	250	255								
24											250	255	260	250										
25											260	240	250	235	260									
26											245	240	275	250										
27											250	245	250	245	245									
28											230	245	245	275	260	250								
29											250	280	265	265										
30											240	260	270	270	245									
31											250	265	260	260	250	250								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											14	29	29	29	29	19								
MED											245	250	245	250	250	250								
UQ											250	250	250	255	255	250								
LQ											230	245	235	250	250	245								

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



IONOSPHERIC DATA

JAN. 1970

H·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	30Y	290	270	270	265	295	260	235	230	235	230	230	220	235	230	240	215	235	210	245	245	345	340	350	
2	295	295	250	260	305	295	295	240	230	235	235	C	C	C	C	C	C	C	C	C	C	C	C	C	
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
4	C	C	C	C	C	C	C	C	C	C	C	C	205	210	235	230	235	220	205	250	245	A	295	285	280Y
5	270	285	255	220	245	275	270	235	240	245	230	225	230	225	230	220	220	210	215	240	300	325	320	305	
6	300	290	230	220	320	260	280	255	235	225	230	225	240	230	235	235	230	215	225	215	245	280	245	290	
7	310	300	245	215	220	305	290	245	220	230	235	225	235	A	A	240	I <sub>C</sub> 215	245	A	A	245	I <sub>A</sub> 275	I <sub>C</sub> 320	320	
8	310	340	295	245	250	210	255	235	220	235	235	230	I <sub>A</sub> 230	230	240	225	220	I <sub>A</sub> 235	230	A	A	295	I <sub>C</sub> 295	300	
9	295	300	I <sub>A</sub> 315	245	245	255	210	230	225	235	225	230	230	245	I <sub>A</sub> 240	230	230	230	210	220	215	270	250	310	
10	320	320	305	I <sub>A</sub> 330	280	265	I <sub>A</sub> 240	225	220	230	220	230	230	235	240	220	245	220	C	C	C	A	A	A	
11	A	295	280	290	290	295	235	220	235	230	220	205	215	210	230	235	220	220	215	215	245	280	250	265	
12	290	270	245	270	280	290	245	215	225	235	235	225	225	225	240	230	220	230	220	220	250	300	290	245	
13	270	300	270	250	270	295	215	230	215	240	240	230	230	230	230	225	225	215	230	235	250	295	295	295	
14	310	320	300	250	255	280	260	225	240	235	230	220	240	245	240	245	225	230	210	210	A	A	A	A	
15	280	295	300	295	245	245	250	220	220	230	235	235	230	225	235	235	240	245	240	235	270	I <sub>A</sub> 295	295	275	
16	300	300	280	300	330	295	230	215	220	230	205	210	230	240	230	240	240	235	235	215	240	280	290	300	
17	335	330	295	320	310	315	295	220	230	235	220	230	245	230	240	230	245	225	245	230	250	265	280	250	
18	255	270	260	300	290	260	270	230	220	220	230	230	220	205	240	230	220	210	230	235	240	290	300	305	
19	310	295	290	300	295	305	215	210	220	225	230	230	235	235	230	235	220	235	245	220	230	290	300	290	
20	300	305	300	250	245	255	250	240	230	235	235	240	240	240	230	245	220	220	240	225	250	295	320	280	
21	315	315	295	265	240	300	300	260	215	225	230	225	230	235	230	245	235	230	250	245	240	300	290	270	
22	305	310	265	230	210	300	295	215	225	235	230	220	220	230	245	235	245	235	205	250	245	255	290	290	
23	295	290	270	270	280	310	250	225	220	230	225	230	240	240	235	230	225	230	245	230	230	290	315	255	
24	300	285	255	235	240	270	240	225	215	225	235	230	240	240	230	245	220	210	245	225	250	280	300	260	
25	290	270	280	290	295	285	240	225	225	235	235	230	235	225	240	230	230	220	210	240	245	240	245	280	
26	320	280	265	245	240	265	235	205	225	225	230	230	230	245	240	255	225	220	200	245	240	290	315	275	
27	270	280	280	280	320	295	230	215	225	215	230	230	220	220	220	245	240	225	210	245	245	265	255	250	
28	280	270	270	280	280	280	250	220	215	220	220	220	245	245	240	245	235	215	255	210	220	340	290	285	
29	290	260	250	240	250	310	270	215	215	225	230	240	245	230	240	245	220	240	220	220	220	290	275	290	
30	315	295	265	245	225	300	265	230	215	235	220	230	235	235	245	245	I <sub>A</sub> 235	I <sub>A</sub> 230	240	235	240	300	340	320	
31	290	295	280	285	295	290	245	220	215	235	240	250	240	220	245	245	235	230	220	230	235	240	270	255	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	26	25	27	27	27	
MED	300	295	270	265	270	290	250	225	220	230	230	230	230	235	240	235	225	230	230	230	245	290	290	285	
UQ	310	300	295	290	295	300	270	235	230	235	235	230	235	240	240	245	235	235	242	240	250	295	308	300	
LQ	290	285	260	245	245	265	240	220	220	225	225	225	220	225	230	230	220	220	212	220	240	278	278	268	

The Radio Research Laboratories, Japan

JAN. 1970

H·F (KM)

# IONOSPHERIC DATA

JAN. 1970

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	S	S	B	S	S	S	B	100	G	G	G	G	G	G	120	110	105	105	110	105	S	105	105
2	S	105	S	E	110	110	110	105	G	140	G	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	G	G	G	110	110	110	105	105	105	100	100	100	S
5	S	100	S	E	S	S	S	B	G	G	G	G	140	G	G	G	120	S	S	S	S	S	S	S
6	S	S	S	S	S	S	S	S	G	G	G	G	G	110	110	G	G	S	105	S	S	S	S	S
7	S	S	S	S	E	S	S	G	125	120	120	120	120	115	110	110	C	105	100	100	100	100	100	S
8	S	105	105	105	110	115	110	G	G	130	120	120	115	110	110	110	110	105	105	100	100	100	C	S
9	S	110	110	110	110	120	S	160	G	150	140	115	120	115	110	110	G	S	S	S	S	100	S	S
10	S	S	S	110	110	110	110	105	G	G	G	100	120	G	120	115	110	110	C	C	C	105	100	100
11	100	S	S	S	E	S	S	G	G	G	G	G	G	G	G	G	155	S	S	S	S	S	S	S
12	S	S	S	S	E	S	110	105	110	100	G	G	G	G	G	G	G	S	S	105	S	105	115	S
13	S	105	S	S	S	S	110	105	105	100	G	G	G	G	G	G	G	S	105	100	S	100	100	S
14	105	S	S	S	E	S	S	110	105	G	G	G	G	G	140	140	120	S	110	105	100	100	100	100
15	100	100	100	100	S	S	S	110	105	105	100	G	G	100	100	G	G	100	110	105	105	100	100	100
16	100	100	100	100	S	S	S	G	G	G	100	G	G	G	100	G	G	B	E	S	S	110	S	110
17	100	105	105	100	105	S	S	G	G	120	110	G	G	G	G	125	G	105	105	105	100	105	105	100
18	100	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	S	S	S	105	105	110	S
19	S	S	S	105	105	100	S	G	G	G	G	G	105	105	105	G	105	100	110	100	S	S	S	S
20	S	S	S	E	S	S	105	100	105	G	155	140	140	140	120	115	110	100	105	100	S	100	100	S
21	S	105	110	E	S	S	S	B	G	G	G	G	G	G	110	125	120	110	110	105	105	100	100	100
22	S	S	S	S	E	S	S	B	G	G	G	140	125	G	130	110	105	110	105	100	100	S	S	S
23	105	105	105	E	E	S	S	S	G	G	G	150	G	G	155	115	110	115	S	S	S	S	S	S
24	S	S	S	S	S	S	S	G	G	G	165	150	150	G	G	115	G	110	S	S	S	S	S	S
25	S	S	S	S	E	S	S	G	G	G	G	G	G	G	G	G	150	B	105	105	S	105	S	S
26	S	E	S	S	E	E	S	G	G	B	B	B	140	130	120	115	G	S	100	100	S	S	S	S
27	S	S	S	S	100	S	S	105	G	G	G	B	G	G	G	G	G	S	S	105	S	B	S	S
28	S	100	100	S	E	S	S	G	G	G	G	G	G	G	150	140	140	110	110	S	S	S	S	S
29	S	S	S	E	S	S	S	G	G	G	G	G	G	G	G	G	120	120	S	S	S	S	S	S
30	S	S	S	S	E	S	S	140	G	G	G	G	155	155	130	120	115	110	105	105	105	105	100	S
31	S	S	E	S	E	S	S	G	105	150	100	100	100	100	140	130	120	115	110	105	S	105	100	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	11	8	7	7	7	6	10	8	9	9	9	12	10	18	17	17	17	18	18	11	17	14	7
MED	100	105	105	105	110	110	110	105	105	120	120	120	122	112	115	115	115	110	105	105	100	100	100	100
UQ	102	105	108	108	110	110	110	110	108	140	140	140	140	130	130	125	120	110	110	105	105	105	105	100
LQ	100	100	100	100	105	110	110	105	105	105	100	115	118	105	110	110	110	105	105	100	100	100	100	100

JAN. 1970

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

# IONOSPHERIC DATA

JAN. 1970

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

JAN. 1970

TYPES OF ES

IONOSPHERIC DATA

JAN. 1970

FOF2 (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	42	42	37	33	31	31	31	60	83	108	117	110	115	111	109	89	69	62	57	36	29	25	32	41
2	U <sub>44</sub>	42	40	27	30	30	28	54	79	100	135	112	102	128	113	90	76	90	40	35	34	36	40	36
3	F <sub>34</sub>	J <sub>38</sub>	38	39	29	23	24	53	84	113	J <sub>104</sub>	94	98	89	76	77	75	78	48	35	37	38	38	40
4	31	34	35	34	31	32	31	58	75	113	127	102	92	85	87	73	71	53	38	39	29	33	39	35
5	33	36	30	26	23	25	25	J <sub>54</sub>	65	98	121	101	103	82	77	76	66	48	37	29	R	28	30	33
6	36	40	36	23	21	28	26	49	86	101	113	89	86	91	R <sub>78</sub>	68	64	59	44	40	30	33	35	31
7	33	33	39	31	21	24	25	51	J <sub>78</sub>	86	J <sub>119</sub>	96	84	81	89	79	65	56	I <sub>46</sub>	35	I <sub>30</sub>	I <sub>29</sub>	29	30
8	31	31	36	36	35	I <sub>32</sub>	25	53	70	93	121	J <sub>104</sub>	90	86	98	78	73	60	49	39	30	J <sub>33</sub>	36	45
9	41	45	46	39	31	33	29	53	81	R <sub>105</sub>	123	126	114	111	97	86	70	J <sub>80</sub>	70	R <sub>52</sub>	31	34	32	32
10	33	35	35	36	41	34	30	68	91	89	J <sub>103</sub>	121	116	106	91	89	71	71	57	45	30	33	34	38
11	41	J <sub>40</sub>	36	31	30	29	33	59	88	114	117	109	107	92	84	77	78	60	57	42	28	34	33	33
12	34	36	36	28	30	30	36	63	90	108	118	120	128	105	95	85	70	63	61	46	31	33	39	I <sub>40</sub>
13	33	34	34	33	31	30	36	52	J <sub>79</sub>	96	120	106	106	107	96	87	82	67	53	41	31	35	34	35
14	34	36	39	31	28	30	30	56	97	109	122	106	100	98	94	90	86	71	61	41	35	34	36	36
15	35	30	30	F <sub>28</sub>	31	30	31	58	80	89	112	118	109	105	99	87	75	72	63	49	37	39	39	38
16	36	39	35	35	34	37	44	60	76	96	J <sub>107</sub>	116	110	106	96	93	83	76	58	71	51	47	J <sub>43</sub>	41
17	41	41	40	40	40	39	41	J <sub>75</sub>	89	126	117	111	111	101	88	86	80	76	62	61	51	56	48	44
18	36	34	35	29	28	31	33	70	95	102	125	131	120	119	101	95	83	66	59	56	53	36	33	35
19	35	36	36	33	31	31	33	62	85	90	110	111	107	108	101	90	83	65	66	66	50	41	41	41
20	41	39	36	39	31	31	32	65	89	95	J <sub>107</sub>	I <sub>114</sub>	J <sub>105</sub>	J <sub>104</sub>	91	94	99	65	46	51	44	39	36	R <sub>39</sub>
21	37	36	J <sub>40</sub>	39	34	34	34	J <sub>67</sub>	110	110	123	111	107	J <sub>107</sub>	106	107	104	75	54	64	59	44	45	42
22	42	43	49	43	30	31	33	69	J <sub>102</sub>	106	120	112	117	118	112	101	102	79	56	55	59	42	36	35
23	35	40	39	35	34	35	36	69	81	96	114	110	117	108	103	101	86	70	45	57	51	45	43	44
24	41	44	43	41	35	33	35	62	84	81	93	100	104	106	99	102	111	66	49	54	49	41	39	38
25	34	35	35	32	32	J <sub>35</sub>	39	66	77	91	132	136	113	J <sub>107</sub>	96	102	R	87	82	51	38	39	35	B <sub>33</sub>
26	36	38	46	41	31	34	35	59	78	90	101	J <sub>104</sub>	101	108	110	106	J <sub>108</sub>	83	53	43	45	38	39	41
27	37	41	37	36	35	J <sub>37</sub>	38	J <sub>69</sub>	80	96	101	J <sub>102</sub>	101	88	85	86	86	74	53	43	50	46	50	J <sub>49</sub>
28	37	36	36	34	35	36	36	J <sub>69</sub>	80	101	J <sub>105</sub>	101	J <sub>108</sub>	104	105	89	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	86	99	117	124	113	94	89	68	J <sub>75</sub>	53	45	34	35	35
30	35	37	39	38	30	26	30	66	81	90	J <sub>93</sub>	96	110	113	119	94	82	80	I <sub>63</sub>	53	42	A	29	33
31	35	34	36	34	30	34	39	74	72	94	121	126	114	116	112	101	85	J <sub>80</sub>	69	56	44	45	50	44
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	30	30	30	30	29	29	30	30
MED	36	36	36	34	31	31	33	61	81	97	117	110	107	106	97	89	82	70	55	46	39	36	36	38
UQ	41	40	39	39	34	34	36	68	89	108	121	115	114	110	106	94	86	78	61	55	50	41	40	41
LQ	34	35	35	31	30	30	30	54	78	91	106	102	101	95	90	86	71	63	48	39	31	33	34	35

JAN. 1970

FOF2 (0.1 MHz)

# IONOSPHERIC DATA

JAN. 1970

FOF1 (0.01 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										L	L	L	L	L	L	L								
2										L	L	L	U 520	L	L	L								
3										L	L	L	L	L	L	L								
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L								
6										L	L	L	L	L	L	L								
7										L	L	L	L	L	L	L								
8										L	L	L	L	L	L	L								
9										L	L	L	L	L	L	L								
10										L	L	L	L	L	L	L								
11										L	L	L	L	L	L	L								
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18										L	L	L	L	L	L	L								
19										L	L	L	L	L	L	L								
20										L	C	L	L	L	L	L								
21								L	L	L	L	L	L	L	L	L								
22										L	L	L	L	L	L	L	A							
23										L	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	L	L	L	L	L								
28										L	L	L	L	L	L	L	C	C						
29								C	C	C	L	L	L	L	L	L								
30										L	L	L	L	L	L	L								
31										L	L	L	L	L	L	L								
CNT													1											
MED													U 520											
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JAN. 1970

FOF1 (0.01 MHz)

IONOSPHERIC DATA

JAN. 1970

FOE (0.01 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								170	250	295	I 320	A 330	340	340	310	290	A	B							
2								A	250	305	320	335	330	320	290	270	210	B							
3								A	245	295	330	I 330	330	330	300	260	190	B							
4								160	255	300	325	I 335	340	A	A	A	A	B							
5								190	280	290	I 325	R 330	R	A	A	A	A	B							
6								B	R	A	A	A	A	A	A	A	A	B							
7								175	A	A	A	A	A	A	A	A	A	B							
8								B	R	A	A	A	A	A	A	A	A	B							
9								B	260	A	A	A	A	A	A	A	200	B							
10								A	A	300	I 330	R 340	I 340	A 335	R	A	A	B							
11								185	260	300	330	340	345	330	320	280	230	B							
12								A	A	300	320	I 330	340	340	325	A	260	B							
13								A	I 260	A 300	330	340	350	340	I 325	A	A	B							
14								A	A	305	325	I 345	350	340	325	290	A	B							
15								A	250	310	340	350	I 355	A 345	325	295	A	B							
16								B	250	A	A	345	345	I 345	R	R	R	B							
17								175	A	305	I 315	A R	345	A	A	310	A	A							
18								A	A	A	A	340	345	340	325	290	A	B							
19								A	260	300	I 315	A 335	I 340	I 340	I 325	I 310	250	A							
20								A	A	310	325	I 330	C 345	340	I 330	A	A	A							
21								210	260	300	330	350	I 355	R 335	320	290	250	B							
22								170	250	310	330	350	350	355	340	A	A	B							
23								190	260	290	330	340	340	340	330	290	250	B							
24								B	I 250	R 290	330	345	355	340	315	A	I 230	B							
25								B	250	285	315	I 340	R 340	I 335	325	290	240	A							
26								185	I 270	R 310	I 330	340	I 340	345	A	A	A	A							
27								A	280	305	320	I 340	350	I 340	I 335	310	250	A							
28								A	280	310	I 340	340	A	A	A	A	C	C							
29								C	C	C	325	340	345	345	I 315	300	R	B							
30								R	260	300	320	340	355	340	320	300	240	B							
31								200	250	290	325	335	I 345	A	A	A	A	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT								11	21	24	25	26	25	22	19	15	12								
MED								185	260	300	325	340	345	340	325	290	240								
UQ								190	260	305	330	340	350	340	325	300	250								
LQ								172	250	295	320	335	340	335	318	290	220								

JAN. 1970

FOE (0.01 MHZ)



IONOSPHERIC DATA

JAN. 1970

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	21	J <sub>17</sub>	E <sub>12</sub>	E <sub>14</sub>	21	20	J <sub>17</sub>	20	G	G	35	35	G	G	G	G	J <sub>32</sub>	J <sub>62</sub>	J <sub>55</sub>	J <sub>41</sub>	J <sub>29</sub>	19	J <sub>28</sub>	J <sub>28</sub>	
2	22	21	E <sub>11</sub>	E	18	J <sub>30</sub>	J <sub>26</sub>	J <sub>41</sub>	26	G	G	G	G	G	G	31	25	E <sub>15</sub>	19	E <sub>15</sub>	J <sub>24</sub>	21	E <sub>15</sub>	E <sub>12</sub>	
3	E <sub>11</sub>	E	24	21	17	18	18	19	G	G	G	35	35	18	G	G	G	E <sub>14</sub>	J <sub>17</sub>	M <sub>21</sub>	J <sub>30</sub>	J <sub>21</sub>	19	17	
4	J <sub>14</sub>	20	M <sub>24</sub>	22	M <sub>21</sub>	J <sub>19</sub>	J <sub>15</sub>	21	G	G	G	G	G	J <sub>39</sub>	J <sub>36</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>20</sub>	21	21	21	21	21	
5	20	E <sub>14</sub>	E <sub>12</sub>	E	E <sub>12</sub>	E	E <sub>11</sub>	G	G	G	G	38	G	35	35	35	25	24	J <sub>25</sub>	J <sub>24</sub>	J <sub>24</sub>	21	21	E <sub>16</sub>	
6	E <sub>16</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	20	21	E <sub>16</sub>	E <sub>15</sub>	G	34	J <sub>36</sub>	35	J <sub>47</sub>	J <sub>41</sub>	J <sub>41</sub>	35	J <sub>29</sub>	21	21	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
7	E <sub>12</sub>	E <sub>15</sub>	19	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>13</sub>	G	J <sub>31</sub>	J <sub>38</sub>	J <sub>42</sub>	37	36	36	J <sub>39</sub>	J <sub>78</sub>	30	J <sub>22</sub>	J <sub>61</sub>	J <sub>41</sub>	J <sub>41</sub>	39	J <sub>29</sub>	21	
8	E <sub>15</sub>	E <sub>15</sub>	J <sub>29</sub>	J <sub>41</sub>	J <sub>25</sub>	J <sub>24</sub>	J <sub>24</sub>	E <sub>15</sub>	G	34	J <sub>37</sub>	J <sub>41</sub>	J <sub>39</sub>	36	J <sub>41</sub>	J <sub>30</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>24</sub>	22	23	21	E <sub>16</sub>	E <sub>15</sub>	
9	E <sub>15</sub>	E <sub>15</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>24</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>19</sub>	28	35	36	J <sub>36</sub>	J <sub>37</sub>	J <sub>36</sub>	35	J <sub>27</sub>	G	J <sub>25</sub>	22	22	21	22	22	23	
10	20	E <sub>13</sub>	E <sub>15</sub>	21	E <sub>13</sub>	21	J <sub>24</sub>	J <sub>29</sub>	J <sub>32</sub>	G	G	G	38	G	G	35	J <sub>29</sub>	J <sub>24</sub>	J <sub>36</sub>	J <sub>24</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>41</sub>	J <sub>29</sub>	
11	21	21	20	E <sub>15</sub>	20	E <sub>12</sub>	21	G	G	G	G	G	G	G	G	G	G	E <sub>13</sub>	J <sub>29</sub>	J <sub>41</sub>	J <sub>29</sub>	21	J <sub>24</sub>	21	
12	20	20	21	E <sub>11</sub>	E <sub>12</sub>	E <sub>13</sub>	20	23	J <sub>27</sub>	G	J <sub>29</sub>	J <sub>42</sub>	J <sub>29</sub>	J <sub>28</sub>	G	35	G	E <sub>15</sub>	J <sub>29</sub>	J <sub>57</sub>	J <sub>31</sub>	J <sub>29</sub>	J <sub>27</sub>	J <sub>43</sub>	
13	J <sub>25</sub>	20	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	20	J <sub>27</sub>	J <sub>32</sub>	31	G	G	G	G	G	35	J <sub>26</sub>	J <sub>29</sub>	22	21	20	20	J <sub>24</sub>	J <sub>24</sub>	
14	J <sub>25</sub>	22	20	20	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	J <sub>24</sub>	J <sub>36</sub>	21	25	J <sub>36</sub>	J <sub>37</sub>	G	J <sub>27</sub>	31	29	20	17	J <sub>28</sub>	J <sub>29</sub>	J <sub>25</sub>	J <sub>23</sub>	J <sub>29</sub>	
15	J <sub>26</sub>	J <sub>25</sub>	J <sub>25</sub>	E	E	E	J <sub>18</sub>	23	G	19	18	18	J <sub>29</sub>	J <sub>43</sub>	35	J <sub>29</sub>	36	J <sub>36</sub>	20	J <sub>36</sub>	J <sub>62</sub>	J <sub>26</sub>	J <sub>24</sub>	J <sub>23</sub>	22
16	21	E <sub>12</sub>	E <sub>14</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	20	G	36	35	G	J <sub>29</sub>	G	J <sub>28</sub>	20	G	G	20	E <sub>15</sub>	22	J <sub>25</sub>	J <sub>39</sub>	22	
17	19	20	20	E <sub>13</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	G	J <sub>29</sub>	G	35	G	G	38	37	G	J <sub>39</sub>	J <sub>41</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>61</sub>	J <sub>24</sub>	23	E <sub>12</sub>	
18	E <sub>13</sub>	E <sub>15</sub>	E <sub>12</sub>	20	20	E <sub>12</sub>	E <sub>15</sub>	21	J <sub>29</sub>	35	35	G	G	G	G	G	29	J <sub>29</sub>	22	21	J <sub>24</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	
19	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	21	E <sub>11</sub>	E <sub>12</sub>	E <sub>12</sub>	J <sub>37</sub>	G	G	36	G	36	40	35	35	G	J <sub>25</sub>	23	21	21	20	E <sub>15</sub>	E <sub>15</sub>	
20	E <sub>14</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	25	32	G	36	C	43	36	G	J <sub>38</sub>	J <sub>27</sub>	J <sub>26</sub>	23	J <sub>41</sub>	J <sub>21</sub>	J <sub>27</sub>	J <sub>24</sub>	E <sub>15</sub>	
21	J <sub>29</sub>	J <sub>31</sub>	21	22	20	21	G	G	G	G	G	G	G	G	G	G	J <sub>24</sub>	J <sub>22</sub>	J <sub>38</sub>	J <sub>33</sub>	J <sub>26</sub>	21	21	21	
22	19	E <sub>13</sub>	20	E	E	E <sub>14</sub>	E <sub>15</sub>	20	G	J <sub>42</sub>	35	38	G	42	39	60	J <sub>53</sub>	J <sub>84</sub>	J <sub>27</sub>	21	20	20	18	E <sub>14</sub>	
23	J <sub>28</sub>	J <sub>26</sub>	20	E <sub>13</sub>	E	E <sub>15</sub>	18	20	G	G	G	G	G	40	36	33	G	21	21	20	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
24	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	G	G	36	37	40	42	42	J <sub>39</sub>	27	22	J <sub>16</sub>	J <sub>15</sub>	J <sub>18</sub>	21	E <sub>16</sub>	E <sub>14</sub>	
25	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	18	E	E	E <sub>15</sub>	18	G	G	G	G	G	G	G	G	G	J <sub>29</sub>	20	J <sub>27</sub>	J <sub>24</sub>	22	23	21	
26	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E	E <sub>12</sub>	E <sub>15</sub>	G	G	G	41	G	J <sub>42</sub>	J <sub>41</sub>	35	J <sub>37</sub>	J <sub>24</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>	
27	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	23	21	21	G	G	G	G	G	G	G	G	G	22	21	E <sub>15</sub>	E <sub>15</sub>	J <sub>24</sub>	24	E <sub>15</sub>	
28	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	20	19	25	G	G	G	G	39	36	35	31	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	G	G	G	G	35	G	G	E <sub>18</sub>	21	19	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
30	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	34	40	41	48	48	J <sub>50</sub>	54	47	J <sub>107</sub>	J <sub>64</sub>	J <sub>27</sub>	J <sub>36</sub>	19	24	
31	24	21	E <sub>11</sub>	E <sub>15</sub>	E	E <sub>15</sub>	24	20	J <sub>26</sub>	G	J <sub>29</sub>	40	44	44	44	J <sub>64</sub>	J <sub>42</sub>	J <sub>54</sub>	J <sub>54</sub>	20	21	E <sub>15</sub>	E <sub>15</sub>	21	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	30	31	31	31	31	30	30	30	30	30	30	30	30	
MED	18	E <sub>15</sub>	E <sub>15</sub>	15	E <sub>13</sub>	E <sub>15</sub>	16	20	G	G	G	G	G	35	35	33	27	J <sub>24</sub>	J <sub>22</sub>	J <sub>22</sub>	J <sub>22</sub>	21	21	19	
UQ	21	20	20	20	20	20	20	23	J <sub>28</sub>	31	36	37	38	40	38	36	J <sub>30</sub>	J <sub>29</sub>	J <sub>29</sub>	J <sub>33</sub>	J <sub>27</sub>	J <sub>24</sub>	J <sub>24</sub>	22	
LQ	E <sub>15</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	G	G	G	G	G	G	G	20	20	20	20	19	E <sub>15</sub>	E <sub>15</sub>	

The Radio Research Laboratories, Japan

JAN. 1970

FOES (0.1 MHZ)

# IONOSPHERIC DATA

JAN. 1970

FBES (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	E	E	E <sub>12</sub>	E <sub>14</sub>	E	E	16	G	G	G	34	34	G	G	G	G	25	42	26	25	25	E	17	20	
2	E	E	E <sub>11</sub>	E	E	20	16	31	20	G	G	G	G	G	G	30	25	E <sub>15</sub>	E <sub>15</sub>	15	E	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	
3	E <sub>11</sub>	E	16	15	E	E	E	17	G	G	G	33	34	G <sub>18</sub>	G	G	G	E <sub>14</sub>	18	E	19	15	E	E	
4	E	E	E	E	E	15	E	G	G	G	G	G	G	38	34	28	25	24	16	15	E	E	E	E	
5	E	E <sub>14</sub>	E <sub>12</sub>	E	E <sub>12</sub>	E	E <sub>11</sub>	G	G	G	G	37	G	33	28	29	21	15	E	19	20	E	E	E <sub>16</sub>	
6	E <sub>16</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	E <sub>16</sub>	E <sub>15</sub>	G	29	33	34	44	37	34	29	26	G	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	
7	E <sub>12</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>13</sub>	G	26	35	34	36	35	32	38	39	25	20	A	26	A	A	23	E	
8	E <sub>15</sub>	E <sub>15</sub>	19	25	15	E	16	E <sub>15</sub>	G	32	35	40	38	32	31	28	25	17	16	E	E	E	E <sub>16</sub>	E <sub>15</sub>	
9	E <sub>15</sub>	E <sub>15</sub>	19	18	15	E <sub>15</sub>	E <sub>15</sub>	E <sub>19</sub>	27	31	33	34	33	33	31	28	G	16	E	E	E	E	E	18	
10	E	E <sub>13</sub>	E <sub>15</sub>	E	E <sub>13</sub>	E	E	20	27	G	G	G	34	G	G	31	25	16	25	16	E <sub>15</sub>	E <sub>15</sub>	E	19	
11	E	E	E	E <sub>15</sub>	E	E <sub>12</sub>	E	G	G	G	G	G	G	G	G	G	G	E <sub>13</sub>	29	22	E	E	E	E	
12	E	E	E	E <sub>11</sub>	E <sub>12</sub>	E <sub>13</sub>	E	G	25	G	26	36	26	G	G	29	G	E <sub>15</sub>	26	35	25	26	E	18	
13	16	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E	22	25	22	G	G	G	G	G	31	25	23	16	E	E	E	E	16	
14	24	E	E	E	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	19	30	20	24	36	30	G	G	31	28	17	15	16	15	19	15	19	
15	16	16	E	E	E	E	15	17	G <sub>15</sub>	G <sub>18</sub>	G <sub>18</sub>	G <sub>29</sub>	38	27	G <sub>25</sub>	G <sub>26</sub>	27	G	26	E	16	E	19	15	
16	E	E <sub>12</sub>	E <sub>14</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	G	G	31	33	G	G <sub>20</sub>	G	G <sub>26</sub>	E <sub>20</sub>	G	G	E	E <sub>15</sub>	15	25	18	E	
17	E	E	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	G	26	G	34	G	G	37	37	G	25	19	17	15	E	E	E	E <sub>12</sub>	
18	E <sub>13</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E	E <sub>12</sub>	E <sub>15</sub>	16	25	31	34	G	G	G	G	G	27	28	15	E	15	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	
19	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>12</sub>	E <sub>12</sub>	20	G	G	34	G	36	40	33	30	G	25	E	E	E	E	E <sub>15</sub>	E <sub>15</sub>	
20	E <sub>14</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	19	28	G	36	C	42	36	G	37	26	17	15	31	E	20	E	E <sub>15</sub>	
21	15	15	19	E	E	E	E	G	G	G	G	G	G	G	G	G	G <sub>19</sub>	20	35	25	22	16	E	E	
22	E	E <sub>13</sub>	E	E	E	E <sub>14</sub>	E <sub>15</sub>	G	G	G	35	37	G	42	37	56	26	37	17	14	E	E	E	E <sub>14</sub>	
23	16	E	E	E <sub>13</sub>	E	E <sub>15</sub>	E	G	G	G	G	G	G	39	35	32	G	G	E	E	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
24	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>14</sub>	G	G	36	37	40	41	42	33	25	15	16	15	15	E	E <sub>16</sub>	E <sub>14</sub>	
25	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E	E	E	E <sub>15</sub>	16	G <sub>21</sub>	G	G	G	G	G	G	G	G	27	E	16	E	E	E	E	
26	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E	E <sub>12</sub>	E <sub>15</sub>	G	G	G	39	G	G	40	40	33	37	18	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
27	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E	E	18	G	G	G	G	G	G	G	G	G	21	E	E <sub>15</sub>	E <sub>15</sub>	E	17	E <sub>15</sub>	
28	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	E	E	19	G	G	G	G	38	36	35	31	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	G	G	G	G	33	G	G	E <sub>18</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
30	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	33	37	40	42	48	50	49	44	A	29	16	A	E	E	
31	E	E	E <sub>11</sub>	E <sub>15</sub>	E	E <sub>15</sub>	13	16	19	G	G	G <sub>26</sub>	38	40	40	40	25	25	28	E	E	E <sub>15</sub>	E <sub>15</sub>	E	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	30	31	31	31	31	30	30	30	30	30	30	30	30	
MED	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	G	G	G	G	G	G	32	28	29	25	18	16	15	15	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>
UQ	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	19	25	G	20	34	36	37	38	35	32	26	24	26	19	16	15	E <sub>15</sub>	E <sub>15</sub>
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	15	E	E	E	E	E	E	

JAN. 1970

FBES (0.1 MHz)

# IONOSPHERIC DATA

JAN. 1970

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

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JAN. 1970

F-MIN (0.1 MHZ)

(135° E Mean Time)

# IONOSPHERIC DATA

JAN. 1970      M(3000)F2 (0.01)

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	295	295	305	285	290	290	275	315	340	315	325	315	315	310	320	335	320	315	335	310	295	280	260	275 <sup>F</sup>	
2	275 <sup>U</sup>	285 <sup>F</sup>	340	295	265	285	280	315	325	310	325	320	295	305	310	325	305	320	330	295	270	280	280	280	
3	280 <sup>F</sup>	275 <sup>F</sup>	275	310	295	280	260	310	345	335	335 <sup>R</sup>	315	320	325	315	320	320	320	335	305	285	310	285	300	
4	295	265	285	305	285	295	305	345	335	310	335	315	325	305	345	320	325	300	310	315	275	265	280	305	
5	295	285	340	300	275	280	280	330 <sup>JR</sup>	335	315	340	315	330	340	330	335	340	335	335	285	R	265	245	275	
6	280	285	335	295	280	280	280	310	340	340	320	335	315	340	325 <sup>R</sup>	340	335	325	320	325	290	275	295	285	
7	265	255	330	355	300	285	280	330	335 <sup>JR</sup>	335	335 <sup>JR</sup>	330	335	320	330	345	340	325	335 <sup>IA</sup>	315	290 <sup>IA</sup>	290 <sup>IA</sup>	305	270	
8	270	260	280	340	320	310 <sup>K</sup>	285	325	325	325	330	330 <sup>JR</sup>	335	315	335	345	340	350	310	305	285	265 <sup>JR</sup>	285	290	
9	285	260	325	305	290	310	345	325	325 <sup>K</sup>	320 <sup>JR</sup>	315	310	315	320	330	335	330	325 <sup>JR</sup>	345	360 <sup>R</sup>	285	295	335	290	
10	265	270	285	280	315	355	295	325	350	325	320 <sup>JR</sup>	325	330	320	340	350	350	340	350	340	280	305	265	270	
11	295	300 <sup>JR</sup>	330	285	270	270	280	340	340	350	340	320	320	335	320	330	335	320	355	355	280	295	305	285	
12	295	280	305	260	270	280	300	340	345	335	330	305	330	315	320	305	330	320	345	350	325	275	280	305 <sup>JR</sup>	
13	305	290	305	285	275	265	340	325	320 <sup>JR</sup>	325	315	320	330	315	315	310	320	320	325	320	290	285	275	270	
14	260	280	315	300	280	280	335	310	330	320	320	320	305	310	310	310	340	325	345	340	295	270	275	290	
15	310	285	305	280 <sup>F</sup>	305	285	325	345	325	315	315	315	305	305	315	290	315	320	320	340	290	290	280	300	
16	290	285	295	275	255	280	310	350	340	335	305 <sup>JR</sup>	310	305	305	315	300	315	315	350	330	300	295	290 <sup>JR</sup>	265	
17	250	270	280	275	270	265	275	315 <sup>JR</sup>	315	315	315	305	300	310	305	315	300	305	280	310	300	300	305	300	
18	315	275	320	275	265	270	305	320	330	305	305	305	305	315	310	320	315	310	295	320	320	330	265	270	
19	275	285	290	285	295	265	305	340	340	345	320	325	315	310	315	310	315	295	325	320	320	290	295	275	
20	290	275	285	310	315	275	275	310	340	335	305 <sup>JR</sup>	315 <sup>IC</sup>	310 <sup>JR</sup>	305 <sup>JR</sup>	300	300	325	330	320	295	330	330	295	275 <sup>R</sup>	
21	270	285	270 <sup>JR</sup>	305	275	270	275	320 <sup>JR</sup>	320	325	325	315	300	300 <sup>JR</sup>	300	305	325	335	300	305	340	320	290	285	
22	270	270	315	365	265	275	275	315	340 <sup>JR</sup>	330	330	320	310	315	305	300	320	315	330	300	320	300	280	270	
23	285	300	295	290	265	295	290	330	345	315	320	310	315	305	315	315	325	335	290	320	315	290	280	295	
24	290	270	320	320	310	275	295	340	345	330	325	310	310	310	310	300	335	335	310	315	310	275	280	275	
25	285	295	310	270	270 <sup>JR</sup>	285	320	335	340	305	320	335	310	305 <sup>JR</sup>	305	315 <sup>R</sup>	325	335	355	310	305	290	315 <sup>R</sup>	280	
26	285	290	335	315	270	275	325	340	345	330	325	310 <sup>JR</sup>	300	305	315	305	315 <sup>JR</sup>	335	325	280	320	310	270	295	
27	305	310	305	270	275	285 <sup>JR</sup>	320	325 <sup>JR</sup>	350	335	325	320 <sup>JR</sup>	325	310	300	315	335	330	320	285	300	305	305	320 <sup>JR</sup>	
28	315	300	285	295	275	280	305	315 <sup>JR</sup>	340	315	315 <sup>JR</sup>	325	310 <sup>JR</sup>	300	315	315	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	315	295	300	300	305	310	335	310	325 <sup>JR</sup>	325	320	290	285	285
30	290	295	310	320	335	280	275	335	330	335	325 <sup>JR</sup>	300	300	300	320	325	330	330	320 <sup>IA</sup>	320	315	A	260	260	
31	285	295	305	295	275	275	285	335 <sup>R</sup>	345	300	305	315	295	305	315	315	330	310 <sup>JR</sup>	315	305	300	285	295	320	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	30	30	30	30	29	29	30	30	
MED	285	285	305	295	275	280	292	325	340	325	320	315	310	310	315	315	325	322	325	315	300	290	282	285	
UQ	295	295	320	310	295	285	310	340	345	335	328	320	322	315	320	328	335	335	335	325	320	300	295	295	
LQ	275	270	285	280	270	275	280	315	330	315	315	310	305	305	310	308	320	315	315	305	290	280	275	275	

JAN. 1970      M(3000)F2 (0.01)

# IONOSPHERIC DATA

JAN. 1970

M(3000)F1 (0.01)

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										L	L	L	L	L	L	L								
2										L	L	L	U L 365	L	L	L								
3										L	L	L	L	L	L	L								
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L								
6										L	L	L	L	L	L	L								
7										L	L	L	L	L	L	L								
8										L	L	L	L	L	L	L								
9										L	L	L	L	L	L	L								
10										L	L	L	L	L	L	L								
11										L	L	L	L	L	L	L								
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L	L								
14									L	L	L	L	L	L	L	L								
15										L	L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18										L	L	L	L	L	L	L								
19										L	L	L	L	L	L	L								
20										L	L	L	L	L	L	L								
21									L	L	L	L	L	L	L	L								
22										L	L	L	L	L	L	L						A		
23										L	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	L	L	L	L	L								
28										L	L	L	L	L	L	L					C	C		
29									C	C	C	L	L	L	L	L								
30										L	L	L	L	L	L	L								
31										L	L	L	L	L	L	L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT													1											
MED													U L 365											
UQ																								
LQ																								

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M(3000)F1 (0.01)



# IONOSPHERIC DATA

JAN. 1970

H<sup>o</sup>F<sub>2</sub> (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										270	240	240	270	270	250	240									
2										260	260	240	300	290		240									
3										255	240	245	245	255	250										
4										275	250	260	285	290	250	250									
5										260	245	250	245	245	250	250									
6										245	285	250	275	285	260										
7										250	275	255	290	260	260										
8										260	250	250	250	250	250										
9										250	250	250	250	290	250										
10										240	250	245	260	290	250										
11										250	245	245	240	245	245	250									
12										250	245	250	250	290	250										
13										250	250	250	265	260	240	240									
14									245	245	245	250	250	290	240										
15										260	255	255	245	260											
16										250	250	250	250	275	250										
17										250	250	250	250	290	250	250									
18										245	250	250	290	280	250										
19											245	250	255	290	250										
20											250	250	250	250											
21									250		245	250	290	290	280										
22											245	240	260	270	250	240									
23										250	250	250	265	290	250	245									
24										230	250	260	260	255											
25										250	275	250	290	290	250	250									
26										250	250	270	290		250	260									
27										245	245	240	250	290	250										
28										250	250	250	280	290	255	250		C	C						
29									C	C	C	250	290	260	275	250	250								
30										245	260	250	290												
31										260				290											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									2	25	30	30	30	29	26	13									
MED									248	250	250	250	250	290	250	250									
UQ									255	250	250	250	265	270	250	250									
LQ									245	245	250	250	250	290	250	240									

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



IONOSPHERIC DATA

JAN. 1970

H<sup>o</sup>F (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	270	270	255	270	250	295	300	260	220	240	240	225	225	245	255	245	210	250	230	250	260	300	350	350	
2	320	275	240	280	340	I A 295	310	240	240	245	210	230	210	240	245	250	220	245	205	280	300	300	250	290	
3	310	300	320	250	240	300	340	270	250	245	240	205	210	240	245	220	250	240	245	240	300	280	300	240	
4	220	310	300	260	250	290	250	230	210	240	240	230	210	240	250	220	230	230	220	250	300	350	290	285	
5	290	290	225	230	300	290	300	240	230	240	240	240	210	210	220	220	240	210	240	290	320	320	390	320	
6	315	300	230	290	350	300	300	255	240	240	220	210	250	210	250	250	240	240	240	245	300	300	290	300	
7	310	330	250	230	240	320	300	280	230	240	240	230	230	210	250	250	230	210	A 275	A 300	A 300	320	320		
8	340	350	340	250	245	265	310	245	230	240	245	240	210	240	240	240	230	210	230	230	250	310	300	270	
9	300	300	290	240	250	255	210	230	240	240	230	230	210	220	240	245	230	240	205	210	280	290	240	295	
10	330	320	300	300	260	210	280	230	240	210	220	220	210	240	240	240	230	240	215	240	240	260	315	345	
11	290	270	250	295	300	330	250	240	240	240	210	220	210	200	200	230	230	210	230	210	275	290	260	280	
12	290	265	250	230	300	310	255	240	240	240	210	210	240	220	240	240	230	240	240	250	E A 300	E A 390	300	300	
13	275	290	260	270	270	240	230	240	240	240	240	220	240	240	220	200	240	230	210	200	270	270	295	310	
14	E A 380	305	250	240	240	280	245	245	240	230	220	205	200	225	225	240	220	220	205	205	250	310	300	300	
15	245	260	250	255	255	290	250	210	230	225	220	240	220	220	220	230	230	225	240	220	270	270	290	260	
16	270	260	260	295	345	300	230	210	220	240	220	210	200	210	230	245	240	240	220	240	220	290	275	310	
17	330	300	290	300	305	320	295	240	240	240	240	220	220	240	240	240	240	240	240	240	240	260	250	250	
18	250	290	250	260	295	300	290	245	230	220	230	220	210	205	200	240	230	240	240	240	240	240	300	310	
19	300	295	290	290	265	300	250	245	240	240	200	240	240	240	240	240	240	240	245	240	240	250	285	295	
20	295	300	300	250	205	250	300	240	240	240	240	I C 240	240	240	240	245	245	210	210	300	245	245	290	305	
21	300	315	300	245	250	305	300	255	230	225	210	200	220	205	210	245	230	210	260	A 270	240	245	260	270	
22	300	300	250	200	275	300	300	245	220	220	225	220	200	230	210	I A 225	230	220	220	250	230	240	280	305	
23	290	275	260	255	270	325	280	240	220	240	220	210	200	240	240	220	240	210	240	255	245	245	300	290	
24	295	260	250	240	245	295	250	240	230	220	220	215	230	245	245	240	240	210	210	240	230	230	290	275	
25	290	275	255	280	295	295	240	230	220	H 200	240	240	230	210	230	240	230	230	200	240	265	250	250	285	
26	300	300	250	240	210	290	245	240	210	240	240	220	240	250	240	240	245	210	210	260	245	250	300	280	
27	285	270	260	290	310	310	245	240	220	200	210	200	240	240	235	240	240	210	220	210	245	260	260	245	
28	250	270	290	250	300	300	280	245	230	200	210	240	240	250	250	240	C	C	C	C	C	C	C	C	
29	C	C	C	C	C	C	C	C	C	C	C	C	240	240	245	240	240	240	240	210	240	210	240	300	300
30	310	290	250	245	205	320	290	240	240	225	225	225	245	260	A 255	245	240	250	I A 250	230	240	A 345	355		
31	300	290	255	275	245	275	260	225	210	240	250	250	250	240	250	245	230	240	240	240	210	295	275	245	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	30	30	29	30	29	29	30	30	
MED	296	290	255	255	262	298	280	240	230	240	225	220	220	240	240	240	230	230	230	240	248	275	290	295	
UQ	310	300	290	280	300	305	300	245	240	240	240	240	240	240	245	245	240	240	240	250	272	300	300	310	
LQ	285	270	250	240	245	290	250	240	220	225	220	212	210	215	228	235	230	210	210	230	240	250	275	275	

The Radio Research Laboratories, Japan

JAN. 1970

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

# IONOSPHERIC DATA

JAN. 1970

H<sup>+</sup>ES (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	100	100	B	B	100	125	115	115	G	G	120	125	G	G	G	G	115	115	110	105	105	110	110	115
2	110	110	B	E	130	115	115	115	115	G	G	G	G	G	G	155	145	B	140	S	145	130	S	B
3	B	E	130	100	105	110	110	145	G	G	G	130	140	105	G	G	G	B	150	140	125	120	110	115
4	140	150	140	120	110	110	110	105	G	G	G	G	G	125	130	110	110	110	110	110	100	100	110	100
5	110	B	B	E	B	E	B	G	G	G	G	150	G	115	115	115	145	115	110	110	110	110	100	S
6	S	B	S	S	100	110	S	B	G	140	140	120	130	120	120	110	110	110	110	S	S	S	B	S
7	B	S	110	S	E	S	B	G	145	140	140	130	140	125	120	110	110	105	105	100	100	100	100	100
8	S	S	110	105	100	100	100	B	G	130	120	125	120	120	110	110	110	105	100	100	100	100	S	S
9	S	S	105	100	100	S	S	B	175	125	115	110	110	110	110	110	G	100	100	100	100	100	100	100
10	100	B	S	100	B	110	100	105	130	G	G	G	115	G	G	130	110	110	105	100	S	S	100	100
11	100	100	100	S	100	B	100	G	G	G	G	G	G	G	G	G	G	B	105	105	100	100	100	100
12	100	100	100	B	B	B	110	110	110	G	105	100	105	100	G	115	G	B	100	100	100	100	100	100
13	100	100	B	S	B	B	110	110	100	100	G	G	G	G	G	105	105	100	100	100	100	100	100	100
14	100	100	100	100	B	B	S	105	105	105	105	100	100	G	100	140	115	115	110	105	100	100	100	100
15	100	100	100	E	E	E	115	105	105	105	105	100	100	100	100	100	100	100	110	110	105	105	100	100
16	100	B	B	E	S	S	B	105	G	130	120	G	100	G	100	100	G	G	100	S	110	105	100	100
17	100	100	100	B	S	B	S	G	110	G	120	G	G	130	135	G	130	110	110	110	110	100	100	B
18	B	S	B	100	100	B	S	110	115	110	110	G	G	G	G	G	150	105	100	110	100	B	B	S
19	B	B	B	100	B	B	B	100	G	G	115	G	110	110	115	110	G	100	100	100	100	100	S	S
20	B	S	B	B	B	B	B	100	105	G	150	C	140	140	G	110	105	105	100	100	100	100	100	S
21	110	100	100	100	100	100	100	G	G	G	G	G	G	G	G	G	105	125	105	105	100	100	100	100
22	100	B	110	E	E	B	S	100	G	105	190	120	G	130	130	110	105	100	100	100	100	100	100	B
23	105	110	105	B	E	S	115	105	G	G	G	G	G	150	150	150	G	100	100	100	B	B	S	S
24	S	B	S	B	B	B	B	B	G	G	160	145	150	130	120	115	125	110	105	105	105	100	S	B
25	B	S	S	100	E	E	S	110	105	G	G	G	G	G	G	G	G	110	105	100	100	100	100	100
26	S	S	B	E	E	B	S	G	G	G	130	G	G	130	120	110	110	105	S	S	S	S	S	S
27	S	B	S	B	B	100	100	100	G	G	G	G	G	G	G	G	G	145	110	S	S	100	100	S
28	S	S	B	S	B	100	100	110	G	G	G	G	115	130	165	145	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	G	G	G	G	110	G	G	B	100	110	S	S	S	S
30	S	B	S	B	S	S	S	G	G	G	180	140	150	130	125	115	115	110	105	105	105	100	100	100
31	100	100	B	S	E	S	105	100	105	G	105	150	120	120	105	130	120	115	110	100	100	S	S	100
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	16	12	13	10	10	10	15	19	13	10	18	14	16	19	19	22	20	24	29	25	24	23	20	16
MED	100	100	105	100	100	110	110	105	110	118	120	125	118	125	120	110	110	110	105	105	100	100	100	100
UQ	108	105	110	100	105	110	112	110	115	130	140	140	140	130	128	130	122	112	110	110	105	102	100	100
LQ	100	100	100	100	100	100	100	102	105	105	110	110	108	112	110	110	108	102	100	100	100	100	100	100

JAN. 1970

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

# IONOSPHERIC DATA

JAN. 1970

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	F1	F1			F1	F1	F2	F1			C1	C1					S2	C4	F3	F3	F3	F1	F4	F3	
2	F2	F2			F1	F3	F2	C4	L2						H2	H1		F1		F1	F2				
3			F2	F2	F1	F1	F1	F1			H2	H1	L1					F2	F2	F2	F2	F2	F1		
4	F1	F1	F2	F2	F2	F2	F1	F1					H1	H2	L2	L2	L3	F2	F2	F1	F1	F2	F1		
5	F1										H1		C1	C1	C1	H1	L1	F2	F3	F1	F1	F1			
6					F1	F1				H1	H1	H1	H2	H2	H2	S2	S2	L1	F1						
7			F1						H1	H1	H1	H1	H1	H1	H2	S2	L2	L2	F3	F3	F3	F3	F3	F1	
8			F3	F2	F2	F2	F2		H1	H1	H1	H1	H1	C1	C1	L1	L1	F2	F2	F2	F1				
9			F2	F2	F2				H1	H1	C1	C1	C1	C1	C1	L1		L2	F1	F1	F1	F2	F1	F1	
10	F1			F1		F1	F2	L2	H1				C1			H1	S2	L2	F3	F2			F2	F2	
11	F1	F1	F1		F1		F1												F4	F4	F2	F1	F2	F1	
12	F1	F1	F1				F1	L1	L2		L1	L2	L1	L1		L1			F3	F3	F3	F4	F2	F2	
13	F2	F1					F1	L2	L3	L1					L2	L2	L3	F2	F1	F1	F1	F1	F1	F2	
14	F3	F1	F1	F1				L2	L2	L1	L2	L1	L1		L1	HL	C1	C2	F1	F1	F2	F3	F2	F3	
15	F2	F2	F2				F1	L1	L1	L1	L1	L2	L2	L1	L1	L1	L1	L1	F4	F2	F2	F1	F4	F2	
16	F1							L1	H1	H1			L1	L1	L1			F1		F1	F3	F3	F1		
17	F1	F1	F1						C1	H1	H1			H1	H1		H1	L1	F2	F2	F2	F2	F1		
18				F1	F1			L1	C1	C1	C1						H1	L2	F1	F1	F1				
19				F1				L3			C1		C1	L2	C1	C1		L3	F1	F1	F1	F1			
20								L1	L2	H1			H1	H1		S2	L2	L2	F1	F3	F1	F2	F1		
21	F2	F2	F2	F1	F1	F1	F1										L2	H3	F5	F5	F2	F2	F2	F2	
22	F1		F1					L1		L1	H1	C1		H1	H1	C3	L3	L3	F2	F1	F1	F1	F1		
23	F2	F1	F1				F1	L1						H1	H1	H1		L1	F1	F1					
24										H1	H1	H1	H1	H1	H2	C2	C1	L2	F1	F1	F2	F1			
25			F2					L1	L2									L3	F1	F2	F2	F1	F1	F2	
26										H1				H1	H1	C1	L2	L2		F1			F2	F2	
27						F2	F1	L1										H1	F1			F2	F2		
28						F1	F1	L1					C1	H1	HL	HL									
29																C1				F1	F1				
30											HL	H1	H1	H1	H1	H2	C2	S3	S3	F5	F3	F2	F4	F1	F2
31	F1	F1					F1	L1	L2		L1	H1	H1	H1	L2	H1	H1	C3	F3	F1	F1			F1	
	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																									

JAN. 1970

TYPES OF ES

IONOSPHERIC DATA

JAN. 1970

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	340	340	315	330	315	330	340	300	250	300	290	295	300	305	285	270	280	300	280	300	300	300	395	395		
2	U 400	F 350	280	315	400	350	320	295	280	310	295	290	340	310	300	290	305	300	260	320	350	350	350	350		
3	F 380	J 375	F 380	305	310	350	380	300	265	280	J 255	R 305	290	285	285	300	290	295	280	300	350	310	335	310		
4	300	395	350	310	315	315	310	255	250	300	280	300	300	300	280	300	280	300	300	290	380	400	380	300		
5	350	330	280	330	380	360	350	J 290	R 290	300	280	300	260	260	290	260	260	290	290	350	R 390	420	395			
6	380	380	260	360	400	360	380	300	280	285	300	290	300	280	300	R 270	290	290	310	300	350	410	320	370		
7	400	400	285	260	350	365	350	290	J 280	R 280	J 260	R 290	275	300	290	250	280	280	I 290	A 300	A 340	A 400	400			
8	400	400	390	280	300	I 330	R 350	290	300	300	280	J 270	280	290	280	250	270	260	280	310	380	J 400	R 390	380		
9	400	400	295	320	320	310	270	290	290	R 300	J 300	300	300	300	290	280	280	J 300	R 260	R 260	R 380	360	290	350		
10	400	400	380	385	300	240	350	290	250	300	J 300	R 290	295	300	280	260	250	270	250	270	400	330	400	400		
11	350	J 350	R 290	370	400	410	320	280	280	255	280	300	300	270	290	290	280	300	250	250	370	340	340	350		
12	350	340	300	380	400	400	320	280	250	280	290	310	290	300	300	290	290	300	260	260	300	400	380	I 320		
13	340	350	320	360	400	400	270	300	J 290	R 290	280	300	290	300	300	300	290	300	300	290	320	340	390	400		
14	400	360	300	310	340	350	290	300	280	290	290	290	305	300	305	300	260	290	260	260	310	370	370	345		
15	300	310	300	340	F 305	345	280	255	270	290	300	300	305	305	300	310	295	290	295	280	340	330	340	320		
16	340	340	320	360	405	370	295	250	255	270	J 300	R 300	310	300	300	320	300	300	330	280	330	350	J 350	400		
17	400	400	390	400	400	400	390	J 290	R 280	290	300	315	310	300	310	300	310	300	350	310	330	330	300	320		
18	300	380	290	350	380	390	350	290	280	300	310	310	310	300	300	300	300	300	350	300	300	300	400	390		
19	390	380	380	350	350	400	340	260	260	250	300	290	300	300	300	300	300	345	300	290	300	350	360	380		
20	375	400	390	310	300	380	360	300	270	290	J 300	R 295	I 310	C 310	J 310	J 310	310	300	290	290	300	350	290	280	360	400
21	390	380	J 400	R 350	380	390	390	J 300	290	280	290	300	305	J 330	R 320	305	290	260	315	320	270	300	340	345		
22	390	390	305	225	360	355	355	300	J 260	R 280	280	295	300	305	300	300	290	280	290	315	300	310	350	375		
23	355	320	315	325	360	400	340	265	255	300	300	300	300	310	300	300	290	260	350	310	310	380	390	360		
24	375	345	300	290	300	380	330	280	260	270	295	300	300	300	310	325	270	270	320	295	300	350	360	370		
25	350	320	305	355	360	J 350	R 290	270	250	300	300	280	300	J 300	R 300	300	290	280	260	240	330	330	340	R 380		
26	390	370	290	290	360	380	300	260	250	290	300	J 300	320	320	300	320	J 300	R 260	290	380	310	300	380	350		
27	350	320	310	400	390	J 390	R 300	J 280	250	270	290	J 300	280	300	340	300	270	270	300	340	350	330	340	J 300		
28	310	340	350	320	390	390	310	J 290	270	300	J 300	R 295	J 310	R 310	300	300	C	C	C	C	C	C	C	C		
29	C	C	C	C	C	C	C	C	C	C	C	300	350	340	310	310	300	280	300	J 290	R 290	300	350	350		
30	370	320	310	300	280	370	350	260	280	270	J 300	R 315	315	310	300	290	270	280	I 290	A 280	300	A 400	400			
31	350	340	305	330	350	355	320	255	R 250	250	310	300	300	315	300	300	280	J 300	R 295	300	300	390	360	300		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	30	30	30	30	28	28	30	30		
MED	372	352	308	330	360	368	335	290	270	290	300	300	300	300	300	300	285	290	290	300	315	350	360	365		
UQ	390	390	350	360	390	390	350	300	280	300	300	300	310	308	300	300	290	300	300	315	350	375	390	395		
LQ	350	340	295	310	315	350	300	265	250	280	285	292	298	300	290	290	280	270	280	280	300	330	340	345		

JAN. 1970

HPF2 (KM)

IONOSPHERIC DATA

JAN. 1970

YPF2 (KM)

135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYU 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	75	70	80	85	85	70	65	95	60	50	60	80	50	70	75	60	80	95	40	95	I A 70	100	70	F 75
2	U F 70	65	45	80	90	95	90	60	40	75	45	65	100	70	100	60	85	50	60	85	95	95	100	95
3	65	J F 95	70	50	70	95	90	50	65	35	J R 55	50	65	65	70	55	60	50	65	100	95	80	70	85
4	85	65	95	85	85	85	80	50	55	90	100	80	90	100	70	100	70	90	100	100	100	100	110	90
5	100	70	110	130	80	110	110	J R 90	100	100	80	90	120	100	90	120	90	110	90	100	R	110	110	95
6	110	100	100	80	90	80	110	100	100	105	90	90	90	60	I R 100	120	100	100	90	90	100	90	90	90
7	90	100	105	120	120	105	110	110	J R 100	70	J R 90	60	105	80	100	100	110	110	I A 110	90	A	A	110	100
8	100	100	100	110	100	I R 100	100	90	90	80	100	J R 110	80	100	100	100	110	90	110	130	100	J R 100	90	100
9	100	100	100	110	90	100	110	90	100	J R 80	80	80	100	100	70	80	110	J R 90	100	I R 100	110	120	100	100
10	100	100	110	105	90	100	100	100	80	80	J R 90	90	85	80	80	90	90	90	100	120	100	110	100	100
11	100	J R 100	110	90	100	100	120	100	100	85	70	100	100	90	100	100	80	100	90	130	110	100	100	100
12	100	100	100	90	100	100	80	110	90	70	100	110	90	90	90	100	100	100	110	120	100	100	110	I R 120
13	110	100	90	120	100	100	130	80	J R 100	90	80	80	70	90	100	100	100	90	90	90	90	100	100	90
14	100	90	100	90	120	90	100	100	80	65	60	80	90	70	90	90	60	70	55	95	90	90	90	65
15	95	90	50	F 75	90	55	70	95	75	70	65	60	90	135	80	130	75	80	80	65	110	80	80	75
16	105	65	80	90	95	75	90	50	55	100	J R 90	90	100	90	100	120	100	90	110	100	120	100	J R 100	100
17	100	100	110	100	100	100	100	J R 90	110	90	100	85	90	90	100	100	100	100	90	90	110	110	100	110
18	100	110	90	130	110	100	100	100	100	90	90	80	100	100	100	90	90	100	100	100	90	90	100	100
19	100	110	110	100	100	100	110	100	90	90	70	70	100	90	90	90	90	105	90	90	100	100	90	120
20	105	90	100	90	100	100	90	90	110	100	J R 90	I C 95	J R 80	J R 80	100	100	90	100	100	140	110	100	110	I R 100
21	100	120	J R 100	100	100	100	100	J R 90	70	55	50	60	95	J R 75	80	85	55	60	90	80	50	60	60	70
22	100	80	70	75	95	90	95	60	J R 45	60	60	55	95	75	95	95	55	75	65	80	70	100	100	75
23	85	75	80	75	110	100	75	80	55	90	90	90	90	80	90	90	90	100	100	80	80	110	100	130
24	105	95	90	100	90	110	100	100	80	60	55	55	70	95	60	75	65	85	70	90	95	120	90	80
25	95	75	95	90	90	J R 60	65	70	65	90	80	70	90	J R 90	100	R 90	110	90	110	110	80	100	I R 120	100
26	100	80	90	100	90	100	90	100	80	100	90	J R 80	80	100	100	80	J R 90	90	100	110	140	100	110	90
27	80	80	100	100	100	J R 100	90	I R 100	90	80	60	J R 80	100	100	90	90	80	90	90	110	100	110	110	J R 90
28	90	100	100	80	100	100	100	J R 100	110	90	J R 90	85	J R 100	90	90	100	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	90	90	80	100	100	100	100	90	J R 90	90	100	100	100
30	100	90	80	100	70	90	100	90	90	80	J R 50	110	80	90	50	60	50	65	I A 60	75	70	A	90	100
31	95	70	70	70	95	65	80	65	55	100	90	80	85	100	90	90	100	J R 80	95	90	110	110	90	90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	31	31	31	31	31	31	30	30	30	30	28	28	30	30
MED	100	92	98	90	95	100	100	90	85	82	80	80	90	90	90	90	90	90	90	95	100	100	100	98
UQ	100	100	100	100	100	100	100	100	100	90	90	90	100	100	100	100	100	100	100	110	110	110	110	100
LQ	90	75	80	80	90	90	90	80	65	70	60	70	80	80	80	88	75	80	80	90	90	98	90	90

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JAN. 1970

YPF2 (KM)



IONOSPHERIC DATA

JAN. 1970

FOF2 (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	S <sub>39</sub>	J <sub>41</sub> S <sub>38</sub>	S <sub>33</sub>	F <sub>29</sub>	F <sub>30</sub>	F <sub>30</sub>	F <sub>40</sub>	S <sub>85</sub>	S <sub>90</sub>	J <sub>123</sub>	J <sub>137</sub>	C <sub>149</sub>	J <sub>157</sub>	J <sub>157</sub>	J <sub>144</sub>	J <sub>106</sub>	79	68	72	J <sub>49</sub>	S <sub>37</sub>	S <sub>35</sub>	S <sub>32</sub>				
2	F	F	S <sub>50</sub>	F <sub>28</sub>	F <sub>22</sub>	F <sub>24</sub>	F	39	73	102	116	132	U <sub>139</sub>	Y <sub>149</sub>	153	142	110	I <sub>89</sub>	75	J <sub>64</sub>	54	54	50	41			
3	J <sub>40</sub>	J <sub>46</sub>	F <sub>36</sub>	F	F <sub>26</sub>	22	24	39	S <sub>85</sub>	93	J <sub>100</sub>	S <sub>104</sub>	107	106	91	J <sub>89</sub>	88	83	72	58	J <sub>45</sub>	S <sub>32</sub>	S <sub>35</sub>	S <sub>35</sub>			
4	31	28	31	27	F <sub>29</sub>	F <sub>30</sub>	31	J <sub>38</sub>	S <sub>83</sub>	104	119	134	S	I <sub>128</sub>	I <sub>126</sub>	I <sub>122</sub>	74	76	U <sub>64</sub>	54	J <sub>50</sub>	C <sub>41</sub>	C <sub>37</sub>	I <sub>39</sub>			
5	J <sub>43</sub>	I <sub>45</sub>	S <sub>33</sub>	22	22	21	24	32	71	I <sub>89</sub>	105	U <sub>118</sub>	106	104	89	97	74	67	52	I <sub>43</sub>	C <sub>41</sub>	39	I <sub>48</sub>	S <sub>50</sub>			
6	40	40	38	26	24	24	24	32	79	107	112	113	113	100	92	82	77	68	54	J <sub>50</sub>	J <sub>49</sub>	J <sub>49</sub>	I <sub>44</sub>	I <sub>48</sub>			
7	36	34	39	33	25	22	24	36	69	72	95	U <sub>121</sub>	114	U <sub>96</sub>	C	C	C	C	C	C	40	S <sub>36</sub>	42	37			
8	32	35	38	U <sub>40</sub>	I <sub>40</sub>	25	25	35	63	75	110	131	116	U <sub>87</sub>	86	96	81	66	65	J <sub>42</sub>	39	34	U <sub>37</sub>	U <sub>36</sub>			
9	31	F	S	J <sub>42</sub>	F	J <sub>31</sub>	J <sub>30</sub>	I <sub>46</sub>	82	107	133	Y <sub>146</sub>	157	140	Y <sub>145</sub>	I <sub>130</sub>	Y <sub>103</sub>	81	88	63	53	S <sub>39</sub>	S <sub>37</sub>	34			
10	29	30	32	32	39	21	26	42	S	I <sub>88</sub>	U <sub>113</sub>	I <sub>129</sub>	135	135	Y <sub>123</sub>	105	92	81	J <sub>66</sub>	72	U <sub>50</sub>	J <sub>54</sub>	53	40			
11	35	35	35	31	31	30	32	I <sub>46</sub>	S	80	87	104	129	142	Y <sub>147</sub>	S	J <sub>100</sub>	J <sub>91</sub>	U <sub>84</sub>	60	48	40	44	I <sub>40</sub>	S <sub>33</sub>		
12	33	33	34	33	26	F <sub>29</sub>	29	U <sub>42</sub>	I <sub>86</sub>	Y <sub>102</sub>	U <sub>117</sub>	124	Y <sub>147</sub>	149	144	129	I <sub>118</sub>	J <sub>82</sub>	71	J <sub>72</sub>	63	55	46	45			
13	42	36	35	27	F <sub>29</sub>	28	I <sub>27</sub>	42	J <sub>76</sub>	I <sub>95</sub>	U <sub>120</sub>	119	126	Y <sub>129</sub>	Y <sub>139</sub>	Y <sub>133</sub>	Y <sub>103</sub>	J <sub>90</sub>	69	53	53	J <sub>50</sub>	42	45			
14	43	39	F <sub>38</sub>	41	37	23	26	U <sub>40</sub>	U <sub>78</sub>	108	128	124	Y <sub>119</sub>	118	Y <sub>128</sub>	Y <sub>120</sub>	108	J <sub>90</sub>	80	63	55	U <sub>61</sub>	44	46			
15	J <sub>53</sub>	S <sub>50</sub>	I <sub>49</sub>	27	23	25	25	U <sub>45</sub>	S	I <sub>89</sub>	105	J <sub>121</sub>	131	Y <sub>141</sub>	U <sub>148</sub>	U <sub>146</sub>	U <sub>120</sub>	91	I <sub>77</sub>	U <sub>72</sub>	67	68	64	S <sub>50</sub>			
16	43	S <sub>36</sub>	31	29	28	30	33	46	S	80	90	Y <sub>100</sub>	125	114	Y <sub>124</sub>	Y <sub>123</sub>	Y <sub>127</sub>	Y <sub>131</sub>	U <sub>111</sub>	Y <sub>100</sub>	J <sub>89</sub>	I <sub>85</sub>	J <sub>78</sub>	J <sub>64</sub>	J <sub>49</sub>		
17	J <sub>46</sub>	43	40	35	33	36	U <sub>35</sub>	I <sub>50</sub>	I	S	91	95	127	121	S	126	117	109	96	90	U <sub>85</sub>	I <sub>73</sub>	71	J <sub>75</sub>	J <sub>76</sub>	S <sub>59</sub>	I <sub>47</sub>
18	36	30	31	26	27	28	31	I <sub>48</sub>	I	S	96	107	117	132	133	128	I <sub>123</sub>	120	110	S	105	84	J <sub>73</sub>	I <sub>80</sub>	70	I <sub>55</sub>	J <sub>50</sub>
19	J <sub>52</sub>	S <sub>52</sub>	J <sub>51</sub>	41	34	24	24	44	I	82	97	99	103	104	105	107	U <sub>101</sub>	Y <sub>103</sub>	81	68	72	76	70	I <sub>56</sub>	S <sub>46</sub>		
20	S <sub>41</sub>	S <sub>35</sub>	S <sub>33</sub>	34	34	24	I <sub>24</sub>	S	I	S	86	J <sub>99</sub>	105	114	U <sub>118</sub>	103	109	101	102	Y <sub>100</sub>	J <sub>75</sub>	55	J <sub>60</sub>	I <sub>58</sub>	I <sub>51</sub>	U <sub>41</sub>	
21	37	J <sub>43</sub>	I <sub>46</sub>	F <sub>35</sub>	29	29	28	U <sub>42</sub>	J	S	100	105	106	109	Y <sub>119</sub>	114	122	118	111	91	74	U <sub>61</sub>	64	U <sub>74</sub>	U <sub>60</sub>	44	
22	39	39	45	37	32	34	35	44	U	96	116	U <sub>117</sub>	123	118	S	123	132	131	Y <sub>140</sub>	U <sub>131</sub>	Y <sub>106</sub>	67	70	65	U <sub>49</sub>	38	
23	40	43	40	32	33	30	30	44	93	U	96	102	124	123	136	Y <sub>143</sub>	121	Y <sub>108</sub>	95	82	J <sub>52</sub>	J <sub>65</sub>	I <sub>74</sub>	J <sub>66</sub>	S <sub>58</sub>		
24	53	48	I <sub>48</sub>	I <sub>44</sub>	33	26	26	36	77	93	89	98	113	129	Y <sub>122</sub>	125	132	U <sub>129</sub>	107	U <sub>83</sub>	I <sub>94</sub>	C	S	J <sub>72</sub>			
25	J <sub>63</sub>	S <sub>56</sub>	S <sub>51</sub>	39	36	27	30	43	J	77	95	126	142	Y <sub>123</sub>	Y <sub>131</sub>	Y <sub>126</sub>	Y <sub>122</sub>	108	103	76	52	48	J <sub>42</sub>	J <sub>52</sub>	I <sub>39</sub>		
26	F <sub>31</sub>	J <sub>39</sub>	S	I <sub>49</sub>	S <sub>35</sub>	29	30	41	U	81	93	102	108	114	131	127	127	135	Y <sub>128</sub>	I <sub>95</sub>	J <sub>68</sub>	J <sub>63</sub>	62	I <sub>55</sub>	S <sub>51</sub>		
27	44	41	38	33	32	35	J <sub>38</sub>	J <sub>53</sub>	S	78	87	99	I <sub>109</sub>	I <sub>110</sub>	107	I <sub>109</sub>	106	107	105	J <sub>76</sub>	I <sub>56</sub>	J <sub>66</sub>	70	69	57		
28	44	S <sub>38</sub>	S <sub>36</sub>	35	34	35	U <sub>34</sub>	I <sub>48</sub>	J	75	I <sub>98</sub>	108	109	107	I <sub>114</sub>	Y <sub>117</sub>	I <sub>113</sub>	105	Y <sub>103</sub>	89	65	69	I <sub>59</sub>	42	J <sub>44</sub>		
29	S <sub>44</sub>	J <sub>44</sub>	43	34	25	27	24	I <sub>46</sub>	J	74	79	88	105	124	126	130	122	108	103	71	68	U <sub>78</sub>	U <sub>62</sub>	U <sub>47</sub>	S <sub>39</sub>		
30	36	39	U <sub>44</sub>	40	29	27	I <sub>33</sub>	43	J	79	105	105	109	U	117	127	126	113	104	U <sub>87</sub>	J <sub>92</sub>	63	60	59	U <sub>45</sub>	45	
31	48	45	47	U <sub>38</sub>	33	30	U <sub>28</sub>	U <sub>48</sub>	S	78	74	109	127	127	121	114	105	90	80	82	71	U <sub>62</sub>	J <sub>51</sub>	U <sub>49</sub>	U <sub>52</sub>		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	29	29	30	30	31	30	30	31	31	31	31	30	31	29	30	30	30	30	30	31	30	30	31			
MED	40	39	38	34	30	28	28	42	S	79	95	108	121	119	126	123	120	106	S	90	75	63	S	S	S	S	
UQ	S <sub>44</sub>	S <sub>44</sub>	S <sub>45</sub>	39	34	30	31	U <sub>46</sub>	S	85	103	117	129	131	133	132	127	110	S	103	84	72	S	S	S	S	
LQ	36	35	35	29	26	24	25	39	S	76	89	102	109	114	110	109	101	91	81	68	54	50	44	42	39		

The Radio Research Laboratories, Japan

JAN. 1970

FOF2 (0.1 MHZ)



# IONOSPHERIC DATA

JAN. 1970

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	L	L	L							
2										L	L	L	L	L	L	L								
3											L	L	L	L	L	L	320							
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L	L							
6										L	L	L	L	L	L	L								
7											L	L	L	L	C	C	C							
8									L	320	L	L	L	L	L	L								
9										L	L	L	A	L	470	L								
10											L	C	L	L	L	L	310							
11										L	L	L	L	L	L	L	L							
12										L	L	L	L	470	L	L								
13										L	L	L	530	L	L	L								
14										L	L	L	L	L	L	L								
15											L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L	L							
18											L	L	L	L	C	L	L							
19											L	L	L	L	L	L								
20											L	L	L	L	L	L	320							
21											L	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	U L 390							
23											L	L	L	L	L	L								
24												L	L	L	U L 430	L	L							
25										L	L	L	420	L	L	L	L							
26											L	L	L	L	L	L								
27										L	L	C	C	L	C	L								
28										C	L	L	L	L	L	L	460							
29										320	L	U L 520	L	L	L	L								
30										330	L	L	L	L	A	L								
31											L	L	L	L	A	L								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										3		2	2	1	2	1	4							
MED										320	465	475	470	450	460	320								
UQ										325							355							
LQ										320							315							

JAN. 1970

FOF1 (0.01 MHZ)

# IONOSPHERIC DATA

JAN. 1970

FOE (0.01 MHZ)

135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA

Lat. 31 12.1 N. Long. 130 37.1 E

Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								S	215	270	300	H I A 330	350	345	330	305	I A 255	B							
2								B	A	290	310	H 340	350	340	330	I A 295	I A 255	180							
3								S	190	270	305	330	H 340	H 340	320	300	230	S							
4								S	200	270	315	330	340	I A 340	325	305	265	A							
5								S	H 190	H 280	320	330	345	335	320	300	A	A							
6								S	190	270	300	330	A	A	A	A	250	A							
7								S	210	280	300	325	345	I A 340	C	C	C	C							
8								B	220	270	300	330	335	A	A	A	A	A							
9								S	180	270	I A 300	I A 320	335	I A 330	I A 315	300	260	170							
10								S	200	I A 260	I A 295	I A 320	340	350	340	310	270	190							
11								S	225	290	I A 325	345	350	350	330	320	275	A							
12								S	220	290	310	340	350	H 355	340	325	260	A							
13								S	A	285	320	345	360	I A 355	I A 340	320	A	A							
14								S	F 215	290	330	355	360	345	345	340	285	A							
15								S	225	290	335	I A 350	350	I A 350	345	320	280	210							
16								S	235	270	300	I A 335	360	345	I C 330	300	A	A							
17								S	210	270	320	340	360	355	340	315	280	195							
18								S	240	280	300	350	355	360	I C 345	320	280	H 210							
19								S	H 230	295	330	345	360	355	340	330	290	205							
20								S	225	295	330	345	355	345	I A 340	I A 320	280	A							
21								S	210	280	325	340	360	R 360	I A 345	I A 325	280	205							
22								S	230	295	325	350	355	365	345	I A 315	290	A							
23								S	230	I A 285	325	340	360	360	350	325	285	I A 205							
24								S	215	290	320	340	360	355	335	320	280	220							
25								S	220	280	320	340	350	360	335	315	H 280	220							
26								S	230	290	320	340	355	360	345	315	270	A							
27								S	225	280	320	I C 335	I C 345	360	I C 345	325	280	200							
28								S	230	I C 295	330	360	360	I A 355	350	330	300	A							
29								S	230	295	320	350	355	360	345	320	270	220							
30								S	H 225	290	320	H 335	355	355	345	325	290	A							
31								S	210	285	H 325	H 340	350	360	350	325	290	A							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									29	31	31	31	30	29	28	28	26	13							
MED									220	285	320	340	352	355	340	320	280	205							
UQ									230	290	325	345	360	360	345	325	285	210							
LQ									210	270	302	330	345	345	330	308	265	195							

JAN. 1970

FOE (0.01 MHZ)

# IONOSPHERIC DATA

JAN. 1970

FOES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	E <sub>16</sub>	E <sub>19</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	24	29	35	38	G	37	36	33	30	E <sub>16</sub>	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>16</sub>	J <sub>25</sub>	25			
2	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>17</sub>	E <sub>16</sub>	23	J <sub>X</sub> <sub>48</sub>	J <sub>X</sub> <sub>31</sub>	G	G	G	G	G	G	30	33	27	20	E <sub>12</sub>	E <sub>16</sub>	26	E <sub>16</sub>	E <sub>18</sub>	E <sub>16</sub>		
3	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	G	G	38	36	G	G	G	G	G	31	E <sub>18</sub>	J <sub>X</sub> <sub>21</sub>	E <sub>16</sub>	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>			
4	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	G	28	G	J <sub>G</sub> <sub>29</sub>	33	36	G	34	32	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>29</sub>	24	25	J <sub>X</sub> <sub>22</sub>	23	E <sub>16</sub>			
5	E <sub>15</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>16</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	31	G	32	34	37	39	36	33	28	23	J <sub>X</sub> <sub>21</sub>	24	23	E <sub>17</sub>	E <sub>17</sub>	E <sub>19</sub>		
6	E <sub>16</sub>	E <sub>15</sub>	E <sub>18</sub>	E <sub>18</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	G	30	36	G	35	36	39	48	G	J <sub>X</sub> <sub>25</sub>	J <sub>X</sub> <sub>30</sub>	J <sub>X</sub> <sub>22</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>19</sub>	E <sub>13</sub>			
7	E <sub>16</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>13</sub>	J <sub>X</sub> <sub>25</sub>	33	39	37	G	35	C	C	C	C	C	C	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>18</sub>			
8	E <sub>19</sub>	J <sub>X</sub> <sub>26</sub>	24	J <sub>X</sub> <sub>39</sub>	J <sub>X</sub> <sub>26</sub>	J <sub>X</sub> <sub>26</sub>	22	16	G	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>34</sub>	39	40	J <sub>X</sub> <sub>39</sub>	37	J <sub>X</sub> <sub>51</sub>	J <sub>X</sub> <sub>60</sub>	J <sub>X</sub> <sub>51</sub>	J <sub>X</sub> <sub>33</sub>	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>26</sub>	23	23	23			
9	20	E <sub>17</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	24	J <sub>X</sub> <sub>34</sub>	J <sub>X</sub> <sub>60</sub>	J <sub>X</sub> <sub>97</sub>	J <sub>X</sub> <sub>73</sub>	J <sub>X</sub> <sub>50</sub>	M <sub>67</sub>	J <sub>X</sub> <sub>36</sub>	J <sub>X</sub> <sub>27</sub>	J <sub>X</sub> <sub>24</sub>	23	23	J <sub>X</sub> <sub>25</sub>	J <sub>X</sub> <sub>26</sub>	24	23			
10	E <sub>17</sub>	E <sub>17</sub>	E <sub>17</sub>	J <sub>X</sub> <sub>34</sub>	22	E <sub>14</sub>	E <sub>15</sub>	22	G	J <sub>X</sub> <sub>48</sub>	J <sub>X</sub> <sub>51</sub>	C	G	G	G	G	G	G	E <sub>17</sub>	24	E <sub>15</sub>	E <sub>18</sub>	E <sub>16</sub>	E <sub>16</sub>			
11	E <sub>17</sub>	J <sub>X</sub> <sub>26</sub>	23	E <sub>19</sub>	E <sub>18</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	25	J <sub>X</sub> <sub>38</sub>	J <sub>X</sub> <sub>47</sub>	G	G	G	J <sub>X</sub> <sub>34</sub>	G	29	25	J <sub>X</sub> <sub>18</sub>	J <sub>X</sub> <sub>31</sub>	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>23</sub>	E <sub>18</sub>	E <sub>13</sub>			
12	E <sub>16</sub>	E <sub>14</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>11</sub>	E <sub>15</sub>	19	J <sub>X</sub> <sub>20</sub>	J <sub>X</sub> <sub>29</sub>	25	J <sub>G</sub> <sub>31</sub>	G	G	G	G	35	J <sub>X</sub> <sub>47</sub>	J <sub>X</sub> <sub>41</sub>	J <sub>X</sub> <sub>48</sub>	J <sub>X</sub> <sub>25</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>			
13	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	J <sub>X</sub> <sub>42</sub>	J <sub>X</sub> <sub>39</sub>	J <sub>X</sub> <sub>34</sub>	G	27	G	37	J <sub>X</sub> <sub>36</sub>	J <sub>X</sub> <sub>48</sub>	J <sub>X</sub> <sub>61</sub>	J <sub>X</sub> <sub>58</sub>	J <sub>X</sub> <sub>49</sub>	J <sub>X</sub> <sub>30</sub>	J <sub>X</sub> <sub>40</sub>	J <sub>X</sub> <sub>27</sub>	J <sub>X</sub> <sub>26</sub>	E <sub>15</sub>		
14	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E	E <sub>15</sub>	E <sub>15</sub>	24	25	J <sub>X</sub> <sub>31</sub>	G	23	J <sub>G</sub> <sub>31</sub>	21	J <sub>G</sub> <sub>30</sub>	J <sub>G</sub> <sub>28</sub>	38	J <sub>X</sub> <sub>31</sub>	23	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>25</sub>	E <sub>13</sub>	23	J <sub>X</sub> <sub>31</sub>			
15	25	E <sub>15</sub>	23	E <sub>12</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>15</sub>	23	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>31</sub>	36	37	41	41	40	J <sub>X</sub> <sub>50</sub>	32	J <sub>X</sub> <sub>27</sub>	J <sub>X</sub> <sub>25</sub>	J <sub>X</sub> <sub>18</sub>	J <sub>X</sub> <sub>24</sub>	24	E <sub>15</sub>	E <sub>15</sub>			
16	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>16</sub>	E <sub>15</sub>	18	J <sub>X</sub> <sub>25</sub>	36	34	34	J <sub>G</sub> <sub>28</sub>	G	24	C	37	29	24	J <sub>X</sub> <sub>25</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>		
17	E <sub>14</sub>	J <sub>X</sub> <sub>26</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>18</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	J <sub>X</sub> <sub>26</sub>	G	G	39	40	41	J <sub>X</sub> <sub>50</sub>	33	G	J <sub>X</sub> <sub>54</sub>	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>36</sub>	J <sub>X</sub> <sub>32</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>			
18	23	23	23	J <sub>X</sub> <sub>21</sub>	E	23	E <sub>15</sub>	E <sub>15</sub>	23	31	35	J <sub>X</sub> <sub>36</sub>	35	35	C	G	30	G	23	J <sub>X</sub> <sub>24</sub>	J <sub>X</sub> <sub>21</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>		
19	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	28	G	J <sub>X</sub> <sub>37</sub>	G	38	G	40	G	30	J <sub>X</sub> <sub>25</sub>	J <sub>X</sub> <sub>21</sub>	J <sub>X</sub> <sub>21</sub>	J <sub>X</sub> <sub>24</sub>	23	23	E <sub>15</sub>			
20	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>11</sub>	E	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	23	J <sub>G</sub> <sub>27</sub>	G	41	46	42	40	J <sub>X</sub> <sub>36</sub>	31	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>22</sub>	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>35</sub>	E <sub>15</sub>	23	22			
21	22	24	23	E <sub>13</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	J <sub>G</sub> <sub>34</sub>	G	G	J <sub>X</sub> <sub>38</sub>	J <sub>X</sub> <sub>38</sub>	J <sub>X</sub> <sub>37</sub>	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>24</sub>	E <sub>15</sub>	19	23	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>			
22	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	J <sub>G</sub> <sub>22</sub>	G	G	37	43	40	39	J <sub>X</sub> <sub>45</sub>	J <sub>X</sub> <sub>60</sub>	J <sub>X</sub> <sub>73</sub>	J <sub>X</sub> <sub>33</sub>	J <sub>X</sub> <sub>18</sub>	E <sub>15</sub>	24	23	J <sub>X</sub> <sub>23</sub>			
23	24	J <sub>X</sub> <sub>25</sub>	J <sub>X</sub> <sub>24</sub>	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>29</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	G	29	34	34	J <sub>X</sub> <sub>37</sub>	J <sub>G</sub> <sub>34</sub>	G	30	35	41	43	J <sub>X</sub> <sub>21</sub>	J <sub>X</sub> <sub>18</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>		
24	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	23	31	37	40	38	37	G	34	38	31	J <sub>X</sub> <sub>41</sub>	E <sub>11</sub>	31	E <sub>11</sub>	E <sub>15</sub>	23			
25	24	18	E	E <sub>13</sub>	E <sub>14</sub>	E <sub>15</sub>	22	E <sub>15</sub>	G	G	G	21	26	37	35	35	33	G	25	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>25</sub>	E <sub>15</sub>	E <sub>15</sub>	24	E <sub>15</sub>		
26	20	E <sub>12</sub>	E <sub>15</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>	J <sub>S</sub> <sub>15</sub>	G	J <sub>X</sub> <sub>32</sub>	G	37	37	46	44	39	34	27	19	18	18	J <sub>X</sub> <sub>18</sub>	E <sub>15</sub>	E <sub>14</sub>			
27	E <sub>14</sub>	E <sub>14</sub>	22	22	20	E <sub>15</sub>	18	23	J <sub>X</sub> <sub>28</sub>	G	G	30	C	C	G	32	C	28	34	26	17	J <sub>X</sub> <sub>42</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	
28	E <sub>15</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	20	E <sub>15</sub>	G	C	G	G	35	36	34	G	31	J <sub>X</sub> <sub>31</sub>	J <sub>X</sub> <sub>39</sub>	J <sub>X</sub> <sub>23</sub>	J <sub>X</sub> <sub>19</sub>	20	22	E <sub>15</sub>	E <sub>16</sub>		
29	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E <sub>15</sub>	E <sub>15</sub>	21	G	J <sub>X</sub> <sub>36</sub>	G	G	39	37	G	G	G	J <sub>X</sub> <sub>23</sub>	E <sub>15</sub>	E <sub>15</sub>	18	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>			
30	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	C	E <sub>15</sub>	G	J <sub>X</sub> <sub>31</sub>	G	38	G	41	48	42	39	J <sub>X</sub> <sub>43</sub>	J <sub>X</sub> <sub>24</sub>	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>36</sub>	J <sub>X</sub> <sub>27</sub>	E <sub>15</sub>	J <sub>X</sub> <sub>25</sub>			
31	J <sub>X</sub> <sub>25</sub>	J <sub>X</sub> <sub>26</sub>	25	21	21	E <sub>15</sub>	21	23	24	23	35	38	38	42	J <sub>X</sub> <sub>60</sub>	35	J <sub>X</sub> <sub>64</sub>	J <sub>X</sub> <sub>52</sub>	J <sub>X</sub> <sub>84</sub>	J <sub>X</sub> <sub>62</sub>	J <sub>X</sub> <sub>37</sub>	J <sub>X</sub> <sub>26</sub>	J <sub>X</sub> <sub>23</sub>	23			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	31	31	31	31	31	31	30	31	31	30	31	29	30	31	27	30	30	30	30	30	30	31	31	31	31		
MED	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	23	30	34	36	35	36	36	34	31	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>23</sub>	J <sub>X</sub> <sub>22</sub>	20	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>			
UQ	20	E <sub>18</sub>	20	E <sub>17</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	19	25	J <sub>X</sub> <sub>32</sub>	36	38	38	40	40	38	38	J <sub>X</sub> <sub>41</sub>	J <sub>X</sub> <sub>29</sub>	J <sub>X</sub> <sub>28</sub>	J <sub>X</sub> <sub>26</sub>	23	23	22			
LQ	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>11</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	E <sub>G</sub> <sub>23</sub>	G	G	G	G	G	G	G	G	G	24	19	18	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>

JAN. 1970

FOES (0.1 MHz)

IONOSPHERIC DATA

JAN. 1970

FBES (0.1 MHZ)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E <sub>16</sub>	E <sub>19</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	G	29	34	E <sub>38</sub>	G	37	35	33	29	E <sub>16</sub>	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>16</sub>	E	E
2	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>17</sub>	E <sub>16</sub>	E	16	22	G	G	G <sub>26</sub>	G	G	29	32	E <sub>27</sub>	19	E <sub>12</sub>	E <sub>16</sub>	E	E <sub>16</sub>	E <sub>18</sub>	E <sub>16</sub>
3	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>14</sub>	E <sub>15</sub>	G	G	35	G	G	G	G	G	G	G	E <sub>18</sub>	E	E <sub>16</sub>	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>
4	E <sub>17</sub>	E <sub>17</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	22	G <sub>22</sub>	G <sub>33</sub>	35	G	G	31	27	20	22	E	E	18	E <sub>16</sub>
5	E <sub>15</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>16</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G <sub>30</sub>	G	37	38	36	32	27	20	20	E	E	E <sub>17</sub>	E <sub>17</sub>	E <sub>19</sub>
6	E <sub>16</sub>	E <sub>15</sub>	E <sub>18</sub>	E <sub>18</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	G	G	35	G	35	37	35	31	G	23	28	20	E <sub>17</sub>	E <sub>16</sub>	E <sub>19</sub>	E <sub>13</sub>
7	E <sub>16</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	G	G	37	35	G	34	C	C	C	C	C	C	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>18</sub>
8	E <sub>19</sub>	18	18	20	A	19	E	16	G	G	29	36	38	35	36	40	53	21	19	E	22	E	18	E
9	E	E <sub>17</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	23	25	32	48	52	40	32	28	17	S	E	E	20	19	18	19
10	E <sub>17</sub>	E <sub>17</sub>	E <sub>17</sub>	19	E	E <sub>14</sub>	E <sub>15</sub>	S	G	42	32	C	G	G	G	G	G	G	E <sub>17</sub>	E	E <sub>15</sub>	E <sub>18</sub>	E <sub>16</sub>	E <sub>16</sub>
11	E <sub>17</sub>	17	E	E <sub>19</sub>	E <sub>18</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	18	27	35	G	G	G <sub>33</sub>	32	G <sub>28</sub>	G	24	E	30	22	20	E <sub>18</sub>	E <sub>13</sub>
12	E <sub>16</sub>	E <sub>14</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>11</sub>	E <sub>15</sub>	E	18	19	G <sub>23</sub>	G <sub>27</sub>	G	G	G	G	G	46	40	46	21	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>
13	E <sub>15</sub>	E <sub>12</sub>	E <sub>12</sub>	E	E <sub>11</sub>	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	25	26	28	G <sub>25</sub>	G <sub>25</sub>	36	35	28	36	24	20	21	29	17	18	E <sub>15</sub>
14	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>11</sub>	E	E <sub>15</sub>	E <sub>15</sub>	S	18	28	G <sub>23</sub>	G <sub>23</sub>	G <sub>25</sub>	G <sub>21</sub>	G <sub>26</sub>	G <sub>21</sub>	36	29	E	24	16	E <sub>13</sub>	E	25
15	E	E <sub>15</sub>	E	E <sub>12</sub>	E <sub>13</sub>	E <sub>14</sub>	E <sub>15</sub>	S	20	25	G	36	39	41	39	30	30	G	18	18	E	E	E <sub>15</sub>	E <sub>15</sub>
16	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>16</sub>	E <sub>15</sub>	S	G	31	34	34	G <sub>27</sub>	G <sub>20</sub>	C	37	28	22	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
17	E <sub>14</sub>	21	E <sub>15</sub>	E <sub>16</sub>	E <sub>18</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	G	G	G	37	39	41	44	G	G	32	27	27	21	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>
18	E	E	E	E	E	E	E <sub>15</sub>	E <sub>15</sub>	G	G	33	34	G <sub>35</sub>	G <sub>33</sub>	C	G <sub>30</sub>	G <sub>16</sub>	E <sub>24</sub>	18	E <sub>15</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>16</sub>	E <sub>15</sub>
19	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	G	G	G <sub>27</sub>	39	G	G	17	18	20	18	E	16	E <sub>15</sub>
20	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>11</sub>	E	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G <sub>20</sub>	G	41	44	42	39	34	G	20	19	25	28	E <sub>15</sub>	E	E
21	E	E	E	E <sub>13</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G	G <sub>31</sub>	G	G	35	34	25	16	15	E <sub>15</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>
22	E <sub>15</sub>	E <sub>15</sub>	E <sub>14</sub>	E <sub>12</sub>	E	E <sub>13</sub>	E <sub>15</sub>	E <sub>13</sub>	G	G	G	G	41	38	38	40	25	35	24	E	E <sub>15</sub>	E	E	E
23	17	18	16	17	18	E <sub>11</sub>	E <sub>15</sub>	E <sub>15</sub>	G	29	32	G <sub>33</sub>	31	G <sub>31</sub>	G <sub>27</sub>	G	40	30	19	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>16</sub>
24	E <sub>15</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>11</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	G	31	35	39	G	G	G	G	E <sub>38</sub>	30	27	E <sub>11</sub>	15	E <sub>11</sub>	E <sub>15</sub>	17
25	E	E	E	E <sub>13</sub>	E <sub>14</sub>	E <sub>15</sub>	E	E <sub>15</sub>	G	G <sub>21</sub>	G <sub>26</sub>	37	G <sub>31</sub>	G <sub>33</sub>	G <sub>33</sub>	G <sub>23</sub>	G	G	27	19	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>
26	E	E <sub>12</sub>	E <sub>15</sub>	E	E	E <sub>15</sub>	E <sub>15</sub>	S	G	G	G	E <sub>37</sub>	E <sub>37</sub>	43	41	39	33	27	E	16	16	E	E <sub>15</sub>	E <sub>14</sub>
27	E <sub>14</sub>	E <sub>14</sub>	E	E	E	E <sub>15</sub>	E	G	G	G	G <sub>25</sub>	C	C	G <sub>32</sub>	C	G <sub>28</sub>	33	G	17	36	E <sub>15</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>
28	E <sub>15</sub>	E <sub>13</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>12</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	C	G	G	G <sub>35</sub>	E <sub>36</sub>	G <sub>33</sub>	G <sub>30</sub>	26	28	20	16	E	E	E <sub>15</sub>	E <sub>16</sub>
29	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E	G	22	G	G	39	37	G	G	G	21	E <sub>15</sub>	E <sub>15</sub>	E	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
30	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>12</sub>	E <sub>13</sub>	E <sub>15</sub>	C	E <sub>15</sub>	G	G	G <sub>31</sub>	38	G	40	48	41	39	32	21	28	25	18	E <sub>15</sub>	E
31	18	17	E	E	E	E <sub>15</sub>	E	S	G	G	G	G	G	41	57	G	46	44	30	32	20	17	18	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	25	31	30	31	29	30	31	27	30	30	29	30	30	31	31	31	31
MED	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>13</sub>	E <sub>13</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	G	G <sub>27</sub>	G <sub>30</sub>	G <sub>28</sub>	34	35	G <sub>28</sub>	26	22	18	16	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>
LQ	E <sub>16</sub>	E <sub>17</sub>	E <sub>15</sub>	E <sub>16</sub>	E <sub>16</sub>	E <sub>15</sub>	E <sub>15</sub>	E <sub>15</sub>	G	26	32	36	37	38	38	33	34	29	21	22	19	E <sub>16</sub>	E <sub>18</sub>	E <sub>16</sub>
LQ	E <sub>14</sub>	E <sub>14</sub>	E <sub>12</sub>	E <sub>11</sub>	E	E <sub>14</sub>	E <sub>13</sub>	E <sub>15</sub>	G	G	G	G	G	G <sub>24</sub>	G <sub>26</sub>	G	G	17	E <sub>16</sub>	E <sub>11</sub>	15	E <sub>11</sub>	E <sub>15</sub>	E <sub>14</sub>

JAN. 1970

FBES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1970

F-MIN (0.1 MHZ)

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

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

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

The Radio Research Laboratories, Japan

JAN. 1970

F-MIN (0.1 MHZ)

FORM 1-01 (3/57)

REF ID: A66114



IONOSPHERIC DATA

JAN. 1970

M(3000)F2 (0,01)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	280 <sup>S</sup>	295 <sup>S</sup>	280 <sup>S</sup>	290	285	270	285	300	350 <sup>S</sup>	335 <sup>S</sup>	320 <sup>S</sup>	315	310 <sup>S</sup>	300 <sup>S</sup>	295 <sup>S</sup>	315 <sup>S</sup>	315 <sup>S</sup>	330	305	325	340 <sup>S</sup>	335	270	280	
2	F	F	340 <sup>S</sup>	345 <sup>S</sup>	250 <sup>F</sup>	265 <sup>F</sup>	F	295	325 <sup>S</sup>	285 <sup>S</sup>	315 <sup>S</sup>	310	295 <sup>S</sup>	300 <sup>S</sup>	295 <sup>S</sup>	305 <sup>S</sup>	310 <sup>S</sup>	315 <sup>S</sup>	300	315 <sup>S</sup>	285	290	295	285 <sup>S</sup>	
3	265 <sup>S</sup>	315 <sup>S</sup>	305 <sup>S</sup>	F	275 <sup>F</sup>	260	275	285	335 <sup>S</sup>	355 <sup>S</sup>	330 <sup>S</sup>	320 <sup>S</sup>	320	320	315	315 <sup>S</sup>	320	325	320	320	330 <sup>S</sup>	265	285	305	
4	305	285	290	260	275 <sup>F</sup>	300 <sup>F</sup>	320 <sup>S</sup>	295 <sup>S</sup>	335 <sup>S</sup>	325	330	320 <sup>C</sup>	S	290 <sup>S</sup>	300 <sup>S</sup>	325 <sup>S</sup>	330	325 <sup>S</sup>	345 <sup>S</sup>	340 <sup>S</sup>	330 <sup>S</sup>	315 <sup>S</sup>	280	290 <sup>S</sup>	
5	315 <sup>S</sup>	330 <sup>S</sup>	365	295	295	265	290	300	325	340 <sup>S</sup>	320	330 <sup>S</sup>	325	335 <sup>S</sup>	325	335 <sup>S</sup>	355	345	345	315 <sup>S</sup>	315 <sup>S</sup>	285	260 <sup>S</sup>	305 <sup>S</sup>	
6	305 <sup>S</sup>	305 <sup>S</sup>	330	360	265	290	285	295	335 <sup>S</sup>	330	340 <sup>S</sup>	325 <sup>S</sup>	320	320	325 <sup>S</sup>	315 <sup>S</sup>	350	340	335	325 <sup>S</sup>	290 <sup>S</sup>	315	300 <sup>S</sup>	295 <sup>S</sup>	
7	295	275	295	365	310	280	290 <sup>S</sup>	305	345	345	320 <sup>S</sup>	320 <sup>S</sup>	330	300 <sup>S</sup>	C	C	C	C	C	C	C	340 <sup>S</sup>	280 <sup>S</sup>	295	275
8	265	280	305	320 <sup>S</sup>	345 <sup>A</sup>	275	300	305	345 <sup>S</sup>	315	310	320	325	315 <sup>S</sup>	310	320 <sup>S</sup>	345	340	340	340 <sup>S</sup>	335	280	265 <sup>S</sup>	290 <sup>S</sup>	
9	290	F	S	335 <sup>S</sup>	F	275 <sup>S</sup>	300 <sup>S</sup>	300 <sup>S</sup>	325	315 <sup>S</sup>	315	305 <sup>S</sup>	305	295	305 <sup>S</sup>	305 <sup>S</sup>	315 <sup>S</sup>	315	335	315	320	270 <sup>S</sup>	305	310	
10	270	265	295	295	335	355	290	325	330 <sup>S</sup>	320 <sup>S</sup>	310 <sup>S</sup>	310 <sup>S</sup>	315	295 <sup>S</sup>	305 <sup>S</sup>	315 <sup>S</sup>	335	335 <sup>S</sup>	320 <sup>S</sup>	335 <sup>S</sup>	300 <sup>S</sup>	275	305	315	
11	270	275	290	285	295	285	315	330 <sup>S</sup>	350 <sup>S</sup>	355	315	350	315	295 <sup>S</sup>	S	310 <sup>S</sup>	305 <sup>S</sup>	335 <sup>S</sup>	330 <sup>S</sup>	345	300 <sup>S</sup>	305 <sup>S</sup>	290 <sup>S</sup>	285 <sup>F</sup>	
12	290	290	305	320	290	270	280	295 <sup>S</sup>	330 <sup>S</sup>	335 <sup>S</sup>	330 <sup>S</sup>	310	315 <sup>S</sup>	305 <sup>S</sup>	300 <sup>S</sup>	305	305 <sup>S</sup>	320 <sup>S</sup>	310	320 <sup>S</sup>	305 <sup>S</sup>	285	275	305 <sup>S</sup>	
13	295	305	330	290	275 <sup>F</sup>	265	290 <sup>S</sup>	290 <sup>S</sup>	340 <sup>S</sup>	320 <sup>S</sup>	325 <sup>S</sup>	315	310	290 <sup>S</sup>	280 <sup>S</sup>	280 <sup>S</sup>	305 <sup>S</sup>	325 <sup>S</sup>	325	310	330	315	285	290 <sup>S</sup>	
14	300	275	270 <sup>F</sup>	315	360	265	290 <sup>S</sup>	300 <sup>S</sup>	335 <sup>S</sup>	315 <sup>S</sup>	330	320	300 <sup>S</sup>	305 <sup>S</sup>	300 <sup>S</sup>	315	315	315 <sup>S</sup>	325	310	290	300 <sup>S</sup>	290	260	
15	290 <sup>S</sup>	300 <sup>S</sup>	330 <sup>S</sup>	310	300	270	300 <sup>S</sup>	300 <sup>S</sup>	345 <sup>S</sup>	330 <sup>S</sup>	315	305 <sup>S</sup>	300	285 <sup>S</sup>	275 <sup>S</sup>	275 <sup>S</sup>	275 <sup>S</sup>	310	310	310 <sup>S</sup>	290	300	300 <sup>S</sup>	290 <sup>S</sup>	
16	290	300 <sup>S</sup>	305	285	295	260	290	320 <sup>S</sup>	345 <sup>S</sup>	335 <sup>S</sup>	310 <sup>S</sup>	320	300	290 <sup>S</sup>	270 <sup>S</sup>	275 <sup>S</sup>	280 <sup>S</sup>	315 <sup>S</sup>	300 <sup>S</sup>	305 <sup>S</sup>	305 <sup>S</sup>	300 <sup>S</sup>	280	275 <sup>S</sup>	255 <sup>S</sup>
17	290 <sup>S</sup>	280	280	270	260 <sup>S</sup>	250	255 <sup>S</sup>	290 <sup>S</sup>	330 <sup>S</sup>	305 <sup>S</sup>	305	295 <sup>S</sup>	300	290	300	295 <sup>S</sup>	295	305 <sup>S</sup>	300 <sup>S</sup>	290 <sup>S</sup>	300 <sup>S</sup>	320 <sup>S</sup>	320 <sup>S</sup>	310 <sup>S</sup>	
18	305	255	315	300	255	265	290	300 <sup>S</sup>	330 <sup>S</sup>	325	315	310	295	290	295 <sup>S</sup>	300 <sup>S</sup>	290 <sup>S</sup>	305 <sup>S</sup>	305 <sup>S</sup>	305 <sup>S</sup>	310 <sup>S</sup>	310	250 <sup>S</sup>	265 <sup>S</sup>	
19	275 <sup>S</sup>	290 <sup>S</sup>	300 <sup>S</sup>	305	315	260 <sup>H</sup>	270	295	340 <sup>S</sup>	350	330 <sup>S</sup>	315	315	295	300	295 <sup>S</sup>	315 <sup>S</sup>	310	315	290 <sup>S</sup>	310	325 <sup>S</sup>	290 <sup>S</sup>	290 <sup>S</sup>	
20	280 <sup>S</sup>	280	270	290	315	275	265 <sup>S</sup>	S	330 <sup>S</sup>	330 <sup>S</sup>	315	300	305 <sup>S</sup>	295	300	295 <sup>S</sup>	300	320 <sup>S</sup>	330 <sup>S</sup>	265	300 <sup>S</sup>	300 <sup>S</sup>	305 <sup>S</sup>	275 <sup>S</sup>	
21	255 <sup>S</sup>	250 <sup>S</sup>	290 <sup>S</sup>	315 <sup>F</sup>	270	260	280	275 <sup>S</sup>	330 <sup>S</sup>	330	325	310	300 <sup>S</sup>	285	285	295	310 <sup>S</sup>	320	310	280 <sup>S</sup>	285	305 <sup>S</sup>	275 <sup>S</sup>	280 <sup>S</sup>	
22	275	270	300	310	265	275	270	285 <sup>S</sup>	335 <sup>S</sup>	335 <sup>S</sup>	330 <sup>S</sup>	315	300 <sup>S</sup>	285	295	290	285 <sup>S</sup>	305 <sup>S</sup>	300 <sup>S</sup>	270	290	300	310 <sup>S</sup>	275	
23	280 <sup>S</sup>	300	310	295	285	275	265	300 <sup>S</sup>	345	325 <sup>S</sup>	305 <sup>S</sup>	315	295 <sup>S</sup>	290	295 <sup>S</sup>	295	290 <sup>S</sup>	315	330	265 <sup>S</sup>	270 <sup>S</sup>	280 <sup>S</sup>	285 <sup>S</sup>	270 <sup>S</sup>	
24	290	295	310 <sup>S</sup>	325 <sup>S</sup>	360	290	275 <sup>S</sup>	325 <sup>S</sup>	335	345	325	295	300	300	295 <sup>S</sup>	305	305	310 <sup>S</sup>	320 <sup>S</sup>	300 <sup>S</sup>	290 <sup>S</sup>	C	S	280 <sup>S</sup>	
25	260 <sup>S</sup>	285 <sup>S</sup>	310 <sup>S</sup>	295	305	275 <sup>H</sup>	285	295 <sup>S</sup>	325 <sup>S</sup>	315	310	315	305 <sup>S</sup>	290 <sup>S</sup>	290 <sup>S</sup>	290 <sup>S</sup>	305	340	320	275 <sup>S</sup>	270	285 <sup>S</sup>	255 <sup>S</sup>	290 <sup>S</sup>	
26	320 <sup>F</sup>	290 <sup>S</sup>	S	295 <sup>S</sup>	310 <sup>S</sup>	270	285	310	335 <sup>S</sup>	335 <sup>S</sup>	325	315	305	300	300	295	305	330 <sup>S</sup>	315 <sup>S</sup>	310 <sup>S</sup>	280 <sup>S</sup>	265 <sup>S</sup>	290 <sup>S</sup>	290 <sup>S</sup>	
27	300	300 <sup>S</sup>	320	270	260	270	290 <sup>S</sup>	315 <sup>S</sup>	335 <sup>S</sup>	335 <sup>S</sup>	335	320 <sup>C</sup>	305 <sup>S</sup>	300	300 <sup>S</sup>	305	310	335 <sup>S</sup>	330 <sup>S</sup>	300 <sup>S</sup>	275 <sup>S</sup>	300	290	315	
28	320	275 <sup>S</sup>	280 <sup>S</sup>	290	285	285	270 <sup>S</sup>	290 <sup>S</sup>	345 <sup>S</sup>	325 <sup>S</sup>	325	310	285	295 <sup>S</sup>	300 <sup>S</sup>	305 <sup>S</sup>	310	315 <sup>S</sup>	340	285 <sup>S</sup>	340	280 <sup>S</sup>	260 <sup>S</sup>	255 <sup>S</sup>	
29	280 <sup>S</sup>	285 <sup>S</sup>	325	350	290	260	250 <sup>S</sup>	305 <sup>S</sup>	350 <sup>S</sup>	335	320	295	300	295	295 <sup>S</sup>	305	305	315 <sup>S</sup>	325 <sup>S</sup>	300 <sup>S</sup>	320 <sup>S</sup>	305 <sup>S</sup>	295 <sup>S</sup>	270 <sup>S</sup>	
30	285	275	305 <sup>S</sup>	340	325	275	285 <sup>S</sup>	300 <sup>S</sup>	330 <sup>S</sup>	330	320	305	300 <sup>S</sup>	300	310	315	315	305 <sup>S</sup>	315 <sup>S</sup>	325 <sup>S</sup>	295 <sup>S</sup>	305 <sup>S</sup>	280 <sup>S</sup>	270 <sup>S</sup>	
31	270 <sup>S</sup>	280 <sup>S</sup>	310	290 <sup>S</sup>	305	285	275 <sup>S</sup>	310 <sup>S</sup>	345	315	305	315	310	305	305 <sup>S</sup>	315	315	320	310	335 <sup>S</sup>	300 <sup>S</sup>	280 <sup>S</sup>	280 <sup>S</sup>	315 <sup>S</sup>	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	29	29	30	30	31	30	30	31	31	31	31	30	31	29	30	30	30	30	30	31	30	30	31	
MED	288	285	305	298	290	270	285	300 <sup>S</sup>	335 <sup>S</sup>	330 <sup>S</sup>	320	315	305	295	300	305 <sup>S</sup>	310	320 <sup>S</sup>	320	310 <sup>S</sup>	300 <sup>S</sup>	300 <sup>S</sup>	288	290 <sup>S</sup>	
UQ	300	300 <sup>S</sup>	315	320	310	278	290	305 <sup>S</sup>	345 <sup>S</sup>	335 <sup>S</sup>	328	320	315	300	305	315	315	330 <sup>S</sup>	330	325	320	305 <sup>S</sup>	295 <sup>S</sup>	300 <sup>S</sup>	
LQ	270 <sup>S</sup>	275	290	290	270	265	275	295 <sup>S</sup>	330 <sup>S</sup>	320	315	310	300	290	295 <sup>S</sup>	295 <sup>S</sup>	305 <sup>S</sup>	315 <sup>S</sup>	310 <sup>S</sup>	290 <sup>S</sup>	290 <sup>S</sup>	280 <sup>S</sup>	275 <sup>S</sup>	275 <sup>S</sup>	

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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 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	L	L								
3											L	L	L	L	L	L	405							
4										L	L	L	L	L	L	L								
5										L	L	L	L	L	L	L	L							
6										L	L	L	L	L	L	L								
7											L	L	L	L	C	C	C							
8									L	420	L	L	L	L	L	L								
9										L	L	L	A	L	L	360	L							
10											L	C	L	L	L	L	440							
11										L	L	L	L	L	L	L	L							
12										L	L	L	L	395	L	L								
13										L	L	L	360	L	L	L								
14										L	L	L	L	L	L	L								
15											L	L	L	L	L	L								
16										L	L	L	L	L	L	L								
17											L	390	L	L	L	L	L							
18											L	L	L	L	C	L	L							
19											L	L	L	L	L	L								
20											L	L	L	L	L	L	405							
21											L	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	U I 400							
23											L	L	L	L	L	L								
24											L	L	L	L	U I 395	L	L							
25										L	L	L	405	L	L	L	L							
26											L	L	L	L	L	L								
27										L	L	C	C	L	C	L								
28											C	L	L	L	L	L	375							
29										425	L	U I 355	L	L	L	L								
30										410	L	L	L	L	A	L								
31											L	L	L	L	A	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		2	2	1	2	1	4							
MED										420		372	382	395	378	375	405							
UQ										422							422							
LQ										415							402							

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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H<sup>1</sup>F<sub>2</sub> (κM)

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											260	265	260	270	255	245	230								
2										250	250	275	255	280	275	255									
3											250	250	250	250	250	250	245								
4										230	250	240	225	265	275	250									
5										240	250	255	250	255	255	250	220								
6										245	240	250	270	250	255	250									
7											260	270	255	250	C	C	C								
8									230	240	285	255	250	240	270	250									
9										270	250	255	255	250	260	230									
10											275	I <sub>C</sub> 270	270	260	250	260	240								
11										225	255	255	260	250	250	250	240								
12										240	245	260	260	245	255	255									
13										260	260	250	270	260	260	245									
14										250	255	250	250	280	275	265									
15											255	270	275	270	250	255									
16										240	255	270	250	I <sub>C</sub> 270	I <sub>C</sub> 275	290									
17											270	260	265	275	260	300	250								
18											250	255	260	250	I <sub>C</sub> 265	250	280								
19											235	245	250	300	255	250									
20											250	285	260	300	250	250	245								
21											235	250	255	300	285	260	255								
22										250	235	255	250	290	270	275	260								
23											235	265	250	290	280	245									
24												250	275	290	260	280	270								
25										250	275	255	250	275	U <sub>C</sub> 240	260	270								
26											250	280	270	280	250	270									
27											235	250	I <sub>C</sub> 270	I <sub>C</sub> 260	250	I <sub>C</sub> 250	250								
28										C	250	280	250	270	275	260									
29											225	250	290	285	270	270	255								
30											240	255	260	280	270	260	250								
31												270	260	260	270	260	240								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									1	16	30	31	31	31	30	30	12								
MED									230	240	250	260	260	270	260	250	248								
UQ									250	260	270	268	280	270	260	265									
LQ									238	250	252	250	250	250	250	240									

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H<sup>1</sup>F<sub>2</sub> (κM)

IONOSPHERIC DATA

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

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	305	290	270	250	280	305	300	280	245	235	240	240	215 <sup>H</sup>	230	240	240	225	210	230 <sup>H</sup>	210	215	220	290	310
2	350	300	240	230	400 <sup>C</sup>	350	300	280	240	240	235	220	220	220 <sup>H</sup>	240 <sup>H</sup>	250	245	210	180 <sup>H</sup>	225	240 <sup>H</sup>	270	245	280
3	340	255	250	300	230 <sup>H</sup>	350	330	290	240	230	225	225	200 <sup>H</sup>	250	230	225	215	240	210	240	220	250 <sup>C</sup>	290	285
4	250	290	260	305 <sup>C</sup>	300	275	260	280	250	225	215	200 <sup>H</sup>	215	200 <sup>H</sup>	190 <sup>H</sup>	240	225	230	220	225	220	250	275	325
5	260	240	215	300	300 <sup>C</sup>	375 <sup>C</sup>	300	280	250	235	225	220	230	225	220	220	225	210	200	235	240	260	300	270
6	275	265	250	215	350 <sup>C</sup>	280	330	290	250	235	225	210	225	215	210	235	235	225	230	240	240	245	260	275
7	260	310	255	210	250	330	300	270	230	225	230	230	220	220	C	C	C	C	C	C	200	250	265	300
8	350	320	275	250	245 <sup>A</sup>	340 <sup>A</sup>	275	265	225	205	200 <sup>H</sup>	220	230	205	215	250	230	215	220	215	235	255	325	280
9	300	360	255	205	230	275	275	260	240	230	220	250 <sup>A</sup>	A	230	200	220	220	220	220	210	240	250	270	260
10	320	355	300	300 <sup>A</sup>	235	215	300	250	230	245	220	215 <sup>C</sup>	225	215	240	225 <sup>H</sup>	210	220	205	230	205	250	245	245
11	295	300	280	305 <sup>C</sup>	270	305	255	240	235	225	225	220	215	215	205	200 <sup>H</sup>	225	220	205	235	220	260	255	275
12	290	270	270	240	250	345	315	270	250	225	225	220	230	225	230	225 <sup>H</sup>	240	220	270 <sup>A</sup>	230	225	245	250	260
13	250	250	235	220	300	330	300 <sup>S</sup>	245	245	240	225	220	215	215	230	230	240	230	225	235	250	225	275	275
14	260	300	300	240	220	360 <sup>S</sup>	300	265	240	225	225	230	215	210 <sup>H</sup>	210 <sup>H</sup>	240	240	215	220	225	245	230	255	340
15	270	250	230	225	270	300	300	255	225	235	235	225	225	220	220	240	230	225	215	250	215	235	240	245
16	255	250	255	300	330	350	290	235	235	230	205 <sup>H</sup>	205 <sup>H</sup>	210	200 <sup>H</sup>	230 <sup>C</sup>	230	240	235	205	235	225	230	220	300
17	305	300	285	300 <sup>B</sup>	350 <sup>B</sup>	340	335	285	245	230	220 <sup>H</sup>	220	225	225	250 <sup>A</sup>	235	240	230	250	260	255	230	230	235
18	240	270	255	260	300	325	290	270	240	235	230	220	220	210	230 <sup>I</sup>	235	220	225	205	240	230	210	255 <sup>H</sup>	300
19	290	255	250	250	245	235 <sup>H</sup>	345 <sup>S</sup>	270	230	230	230	220	220	215 <sup>H</sup>	220	225	245	215	220	265	230	225	240	260
20	270	300	325	275	225	215	355	300	240	245	230	220	255	225	225	220	225	230	220	300	250	250	220	280
21	345	315	265	220	315 <sup>B</sup>	350 <sup>B</sup>	340	300	250	235	230	220	225	210 <sup>H</sup>	210 <sup>H</sup>	225	240	225	205	245	255	240	220	250
22	285	315	275	210	255	295	320	300	240	235	230	215	220	220 <sup>H</sup>	225	250 <sup>A</sup>	220	250	210	220	250	230	230	260
23	305	270	255	275	300	275	315	280	250	235	225	210 <sup>H</sup>	200 <sup>H</sup>	220 <sup>H</sup>	220	235	245	230	220	240	270	230	245	270
24	260	255	250	240	210	290	320 <sup>S</sup>	280	225	240	230	230	225	220	210	225	255	235	210	205	215	220	240	250
25	250	275	240	250	250	250 <sup>S</sup>	300	255	240	230	250	240	220	210 <sup>H</sup>	220 <sup>C</sup>	210 <sup>H</sup>	220	235	220	210	245	240	275	225
26	275	270	250	215	210	310	300	250	240	225	225	220	210	250	225	240	255	225	205	200	230	250	250	250
27	250	250	245	290 <sup>S</sup>	295	325	290	250	235	230	220 <sup>H</sup>	220 <sup>I</sup>	210 <sup>C</sup>	210 <sup>H</sup>	210 <sup>C</sup>	190 <sup>H</sup>	245	250	205	255 <sup>A</sup>	270	240	250	240
28	240	285	285	270	270	290	315	265	235	230	225	200	200 <sup>H</sup>	235	225	205	235	230	210	210	225	225	270	300
29	280	260	250	220	250 <sup>E</sup>	340	380 <sup>S</sup>	250	225	210	220	215 <sup>H</sup>	240	225 <sup>H</sup>	220	225	230	240	205	230	225	205	245	300
30	300	300	255	215	230	300 <sup>S</sup>	C	280	240	200	240	225	225	240	A	250 <sup>A</sup>	250	225	225	215	260	240	255	305
31	300	280	250	260	250	255	325	250	240	225	235	225	225	235	A	225	255	250	250	230	240	225	275	260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	30	31	28	30	30	30	30	30	31	31	31	31
MED	280	280	255	240	250	298	300	270	240	230	225	220	220	220	220	226	235	225	215	230	235	240	255	275
UQ	302	300	272	268 <sup>U</sup>	285	334	320	280	245	235	230	225	225	225	230	238	245	235	220	240	248	250	272	300
LQ	260	258	250	220	236	276	300 <sup>S</sup>	252	235	225	222	218	215	212 <sup>H</sup>	210	225	225	220	205	215	222	228	242	255

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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 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	C	C	C	C	C	C	S	S	150	135	110	110	G	125	120	115	105	B	C	C	C	C	100	95	
2	C	C	C	B	C	C	110	110	110	G	G	100	G	G	105	110	110	135	B	C	100	C	C	C	
3	C	C	C	C	C	C	S	S	G	G	120	120	G	G	G	G	G	125	C	110	C	C	C	C	
4	C	C	C	C	C	C	S	S	G	140	110	105	110	110	G	150	140	105	105	105	100	100	100	C	
5	C	C	C	C	C	C	S	S	G	160	115	140	130	120	115	115	115	110	100	100	100	C	C	C	
6	C	C	C	C	C	C	S	S	G	150	145	G	110	110	105	105	G	100	100	100	C	C	C	C	
7	C	C	C	C	C	C	C	S	110	125	120	125	G	120	C	C	C	C	C	C	S	S	S	C	
8	C	110	110	110	105	105	120	115	G	120	110	120	120	115	110	110	105	105	100	100	100	100	100	100	
9	100	C	B	E	B	C	S	S	125	110	110	110	115	115	120	110	105	105	105	100	100	95	95	95	
10	C	C	C	115	115	C	S	105	G	110	110	C	G	G	G	G	G	G	C	100	C	C	C	C	
11	C	100	100	C	C	C	S	S	110	110	110	G	G	110	110	105	G	130	110	105	105	105	C	C	
12	C	B	C	C	B	C	120	110	105	105	105	G	G	G	G	130	105	100	100	100	S	B	S	S	
13	S	B	B	E	B	B	S	S	110	105	105	105	105	105	115	105	105	105	105	105	100	100	100	S	
14	S	S	B	B	E	S	S	115	110	110	105	100	100	100	100	100	125	120	105	105	105	S	105	100	
15	100	B	100	B	B	B	S	120	110	110	130	120	115	115	120	100	115	100	100	110	105	105	S	S	
16	S	B	B	B	B	B	S	105	125	115	110	100	100	100	C	110	110	110	120	S	S	S	S	S	
17	S	100	B	B	B	B	S	S	100	G	G	140	125	120	115	130	G	120	115	110	110	S	S	S	
18	105	105	105	105	E	100	S	S	100	130	115	105	105	105	C	105	100	100	105	S	S	B	B	S	
19	S	B	B	B	B	B	S	S	170	G	105	G	165	105	125	G	115	100	100	100	100	95	95	S	
20	S	S	B	B	E	B	S	S	100	100	G	125	120	120	115	105	125	100	100	105	105	S	105	110	
21	105	105	105	B	B	B	S	S	G	G	G	105	G	G	105	105	105	105	105	S	105	100	S	S	
22	S	S	B	B	E	B	S	S	100	G	G	140	120	125	120	105	105	100	100	110	S	105	105	100	
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CNT	8	8	8	6	5	2	7	10	18	23	23	23	21	26	21	26	23	28	25	23	19	13	11	9	
MED	100	102	102	102	105	102	110	108	110	110	110	120	115	115	115	110	110	110	105	105	100	100	100	100	
UQ	102	105	105	110	105		120	115	110	128	116	140	125	125	120	125	118	120	105	105	105	100	102	100	
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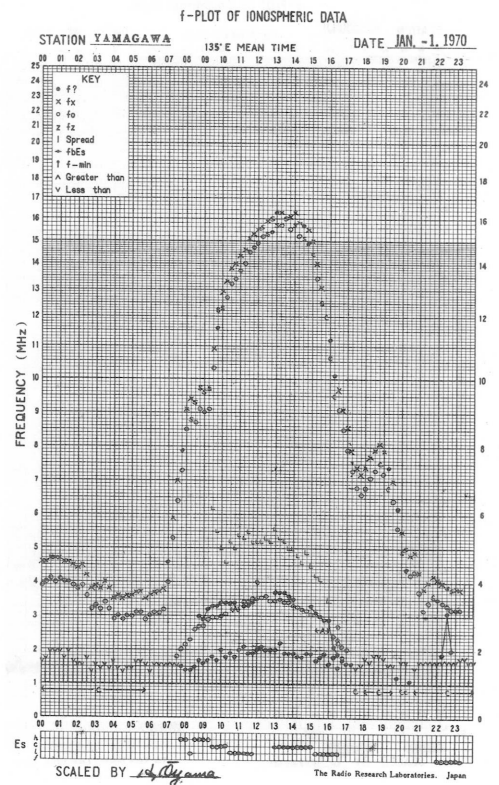
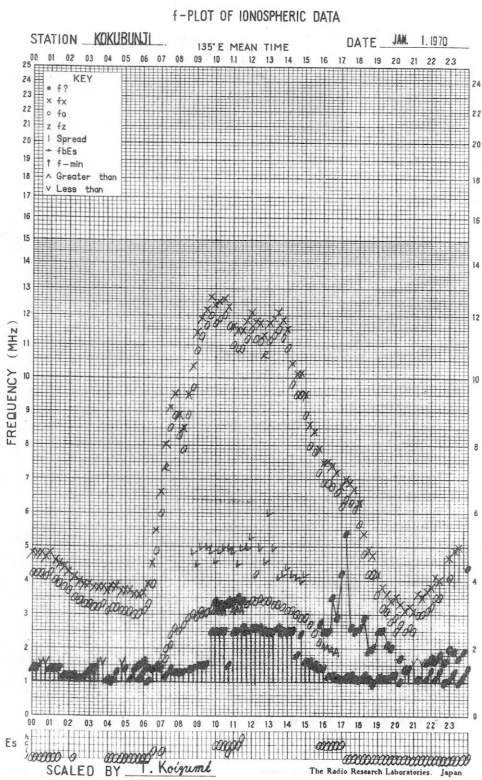
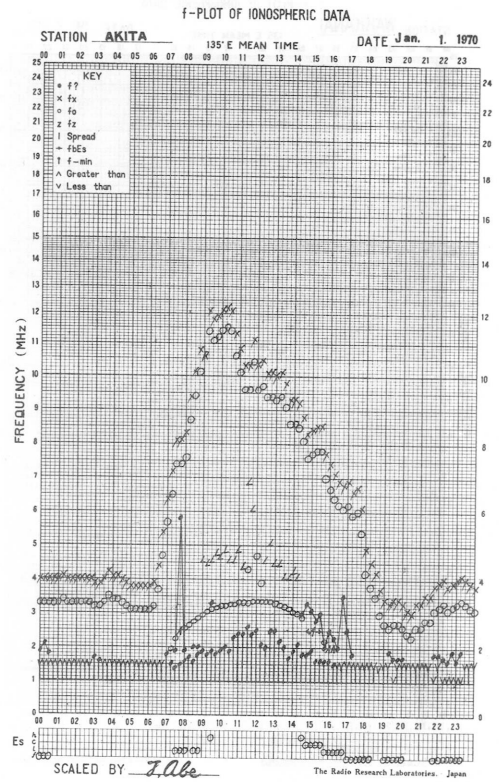
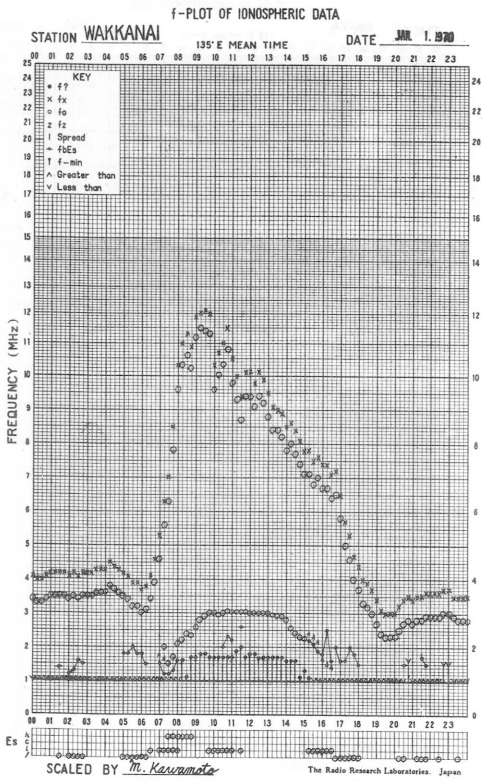
JAN. 1970

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

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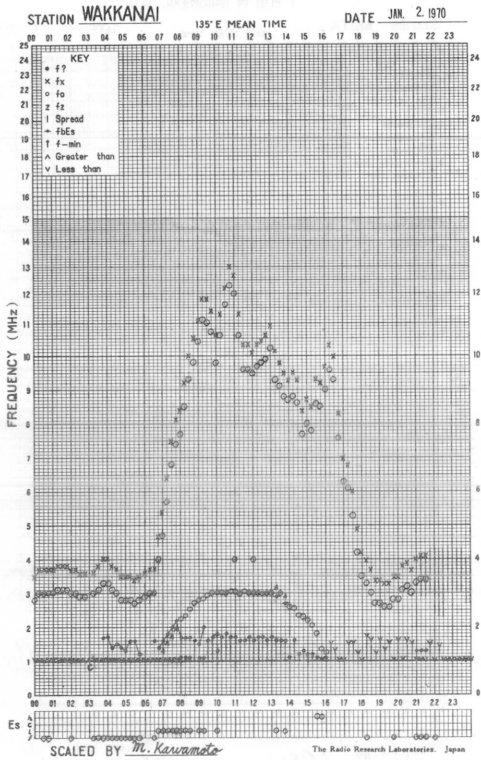
JAN. 1970				TYPES OF ES				135° E Mean Time (G. M. T. + 9h)																			
Station	YAMAGAWA				Lat.	31 12.1 N.				Long.	130 37.1 E				Sweep	1 MHz to 20 MHz				in 20 sec in automatic operation							
Hour (D <sub>ST</sub> )	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1									H <sub>1</sub>	H <sub>2</sub>	C <sub>1</sub>	L <sub>2</sub>		C <sub>1</sub>	C <sub>1</sub>	C <sub>1</sub>	L <sub>1</sub>						F <sub>2</sub>	F <sub>1</sub>			
2							F <sub>2</sub>	L <sub>3</sub>	L <sub>1</sub>			L <sub>1</sub>			L <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	H <sub>1</sub>			F <sub>1</sub>						
3											C <sub>2</sub>	C <sub>1</sub>					C <sub>2</sub>		F <sub>1</sub>								
4									H <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>		H <sub>1</sub>	H <sub>1</sub>	L <sub>3</sub>	F <sub>2</sub>	FF <sub>12</sub>	F <sub>2</sub>	F <sub>2</sub>	F <sub>1</sub>					
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	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																											



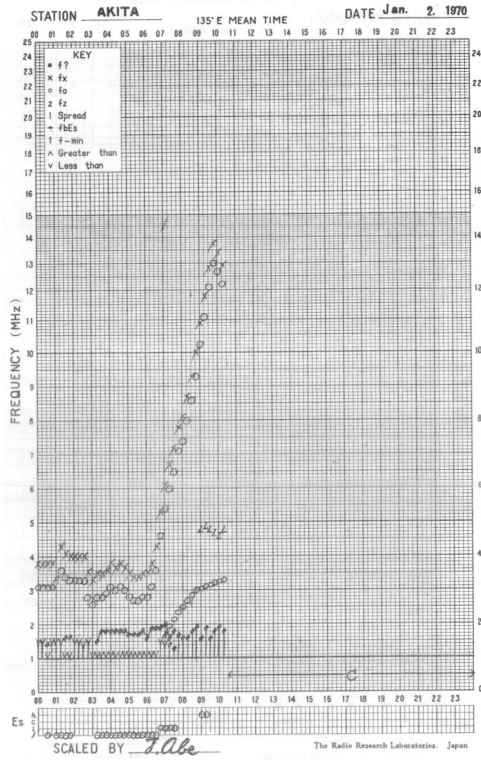




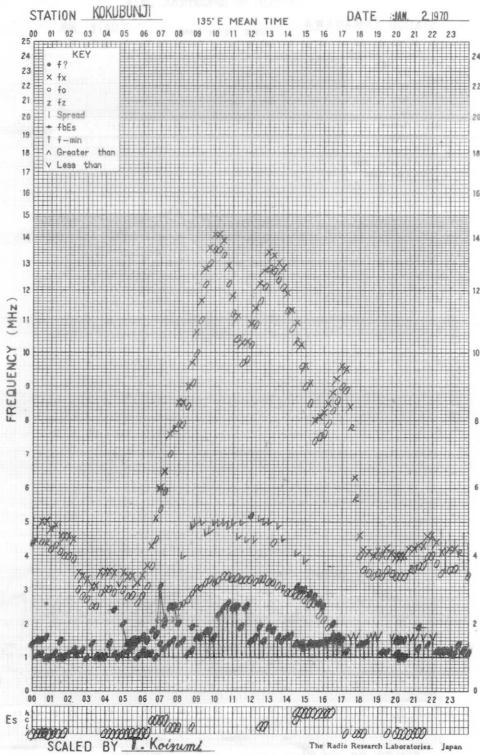
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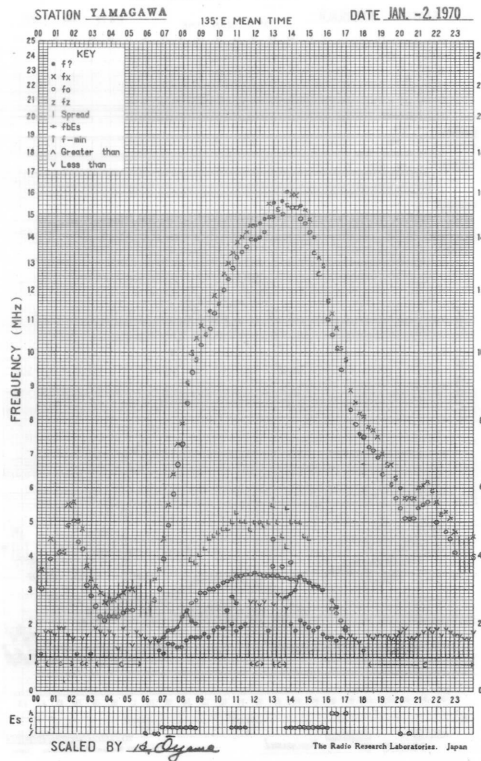
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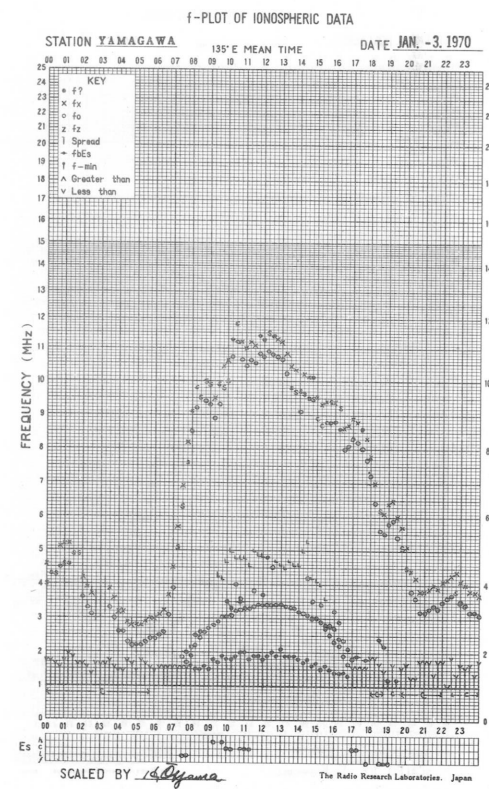
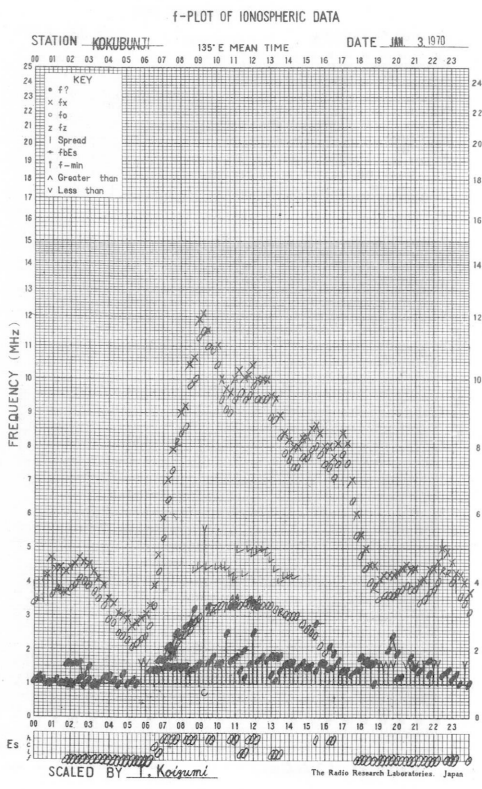
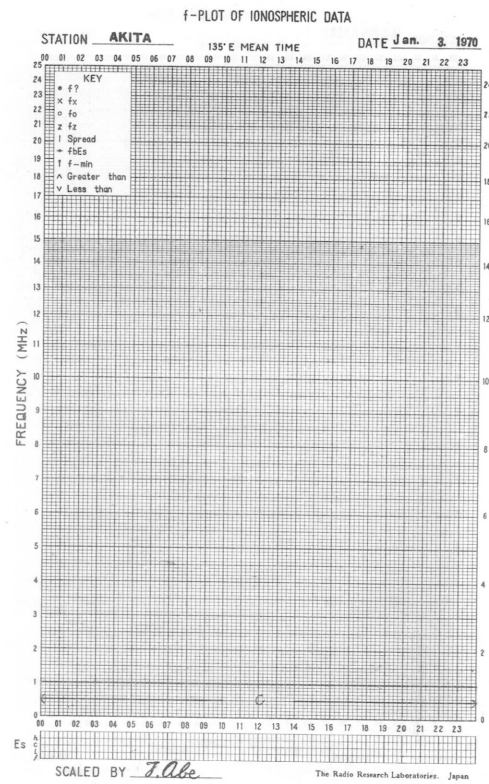
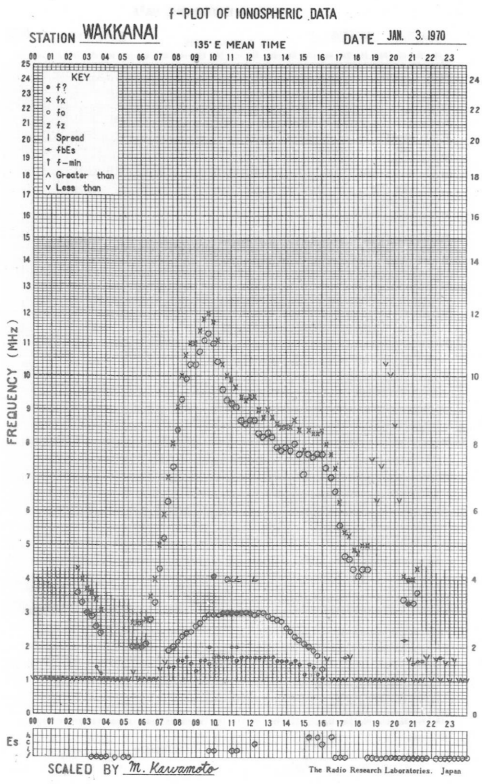


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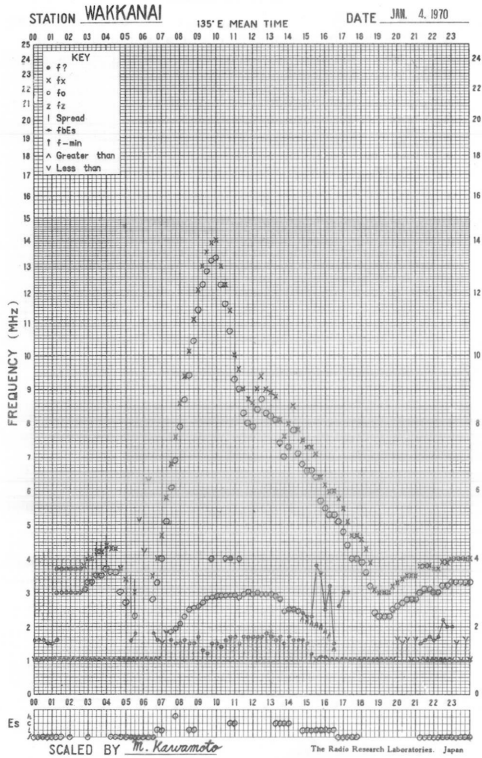


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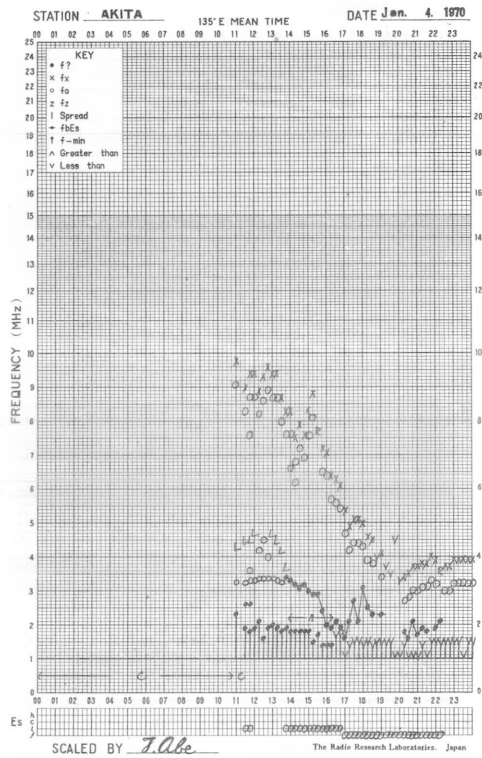




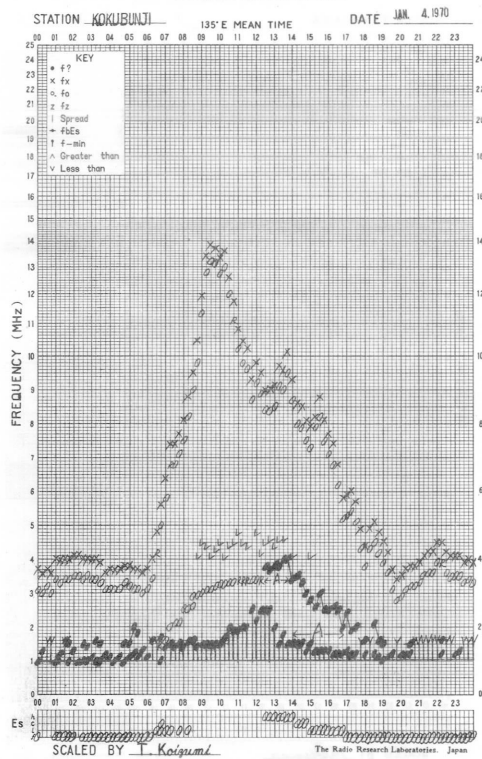
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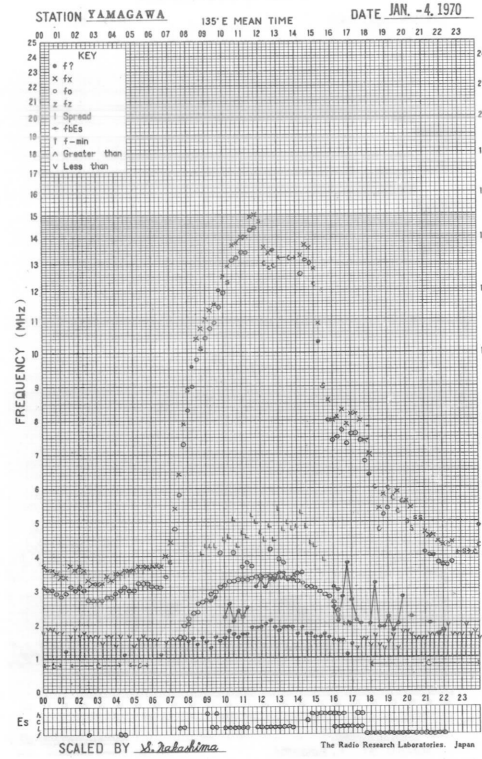
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f- PLOT OF IONOSPHERIC DATA

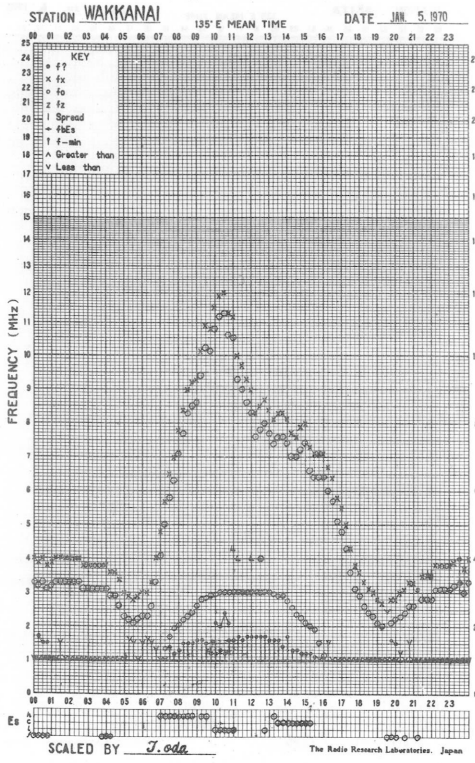


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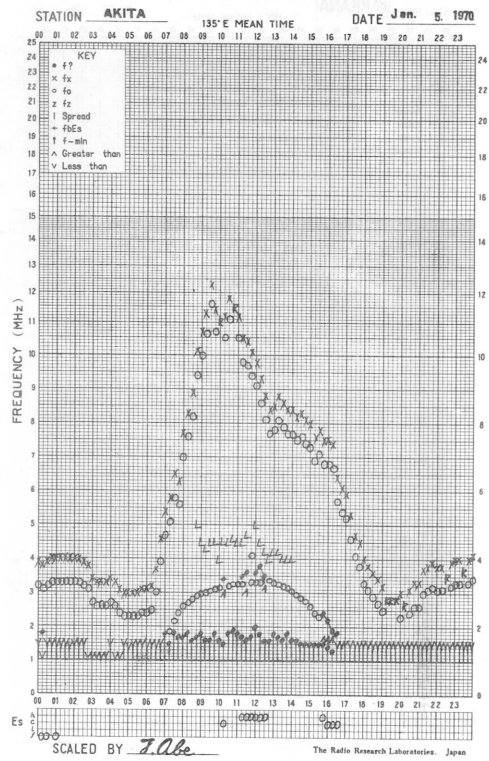




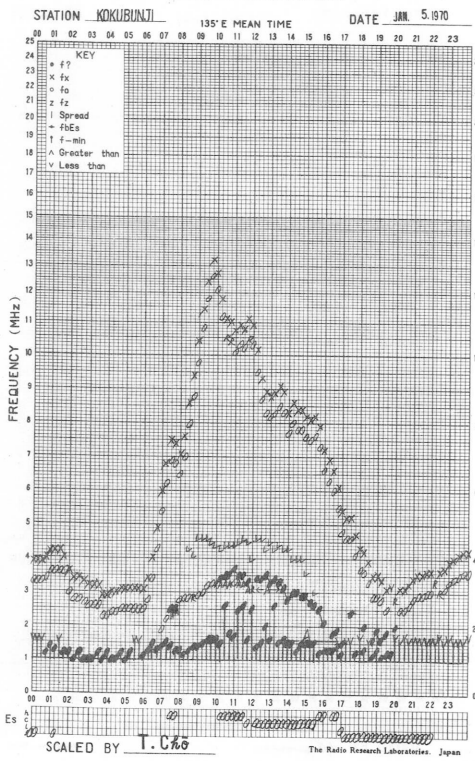
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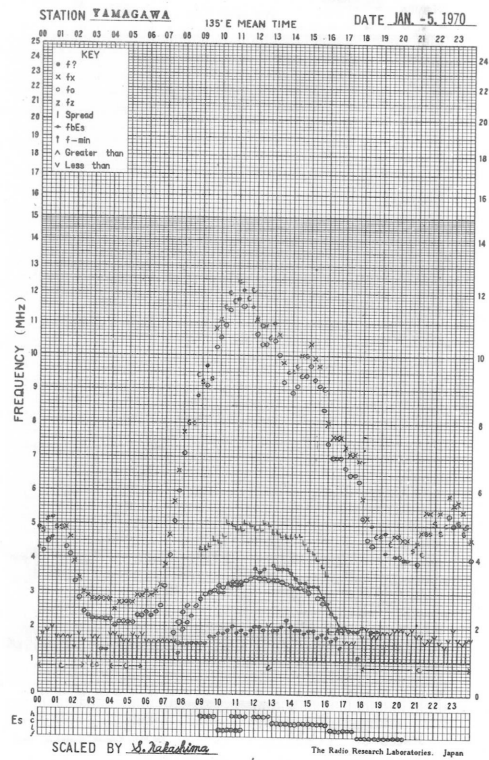
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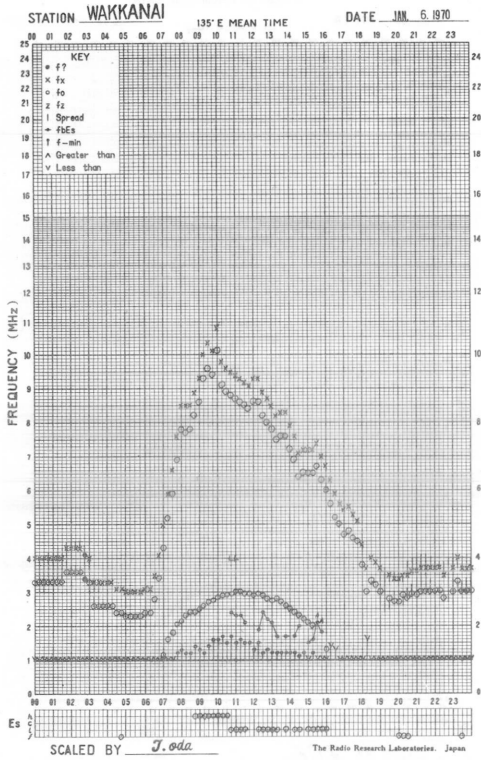
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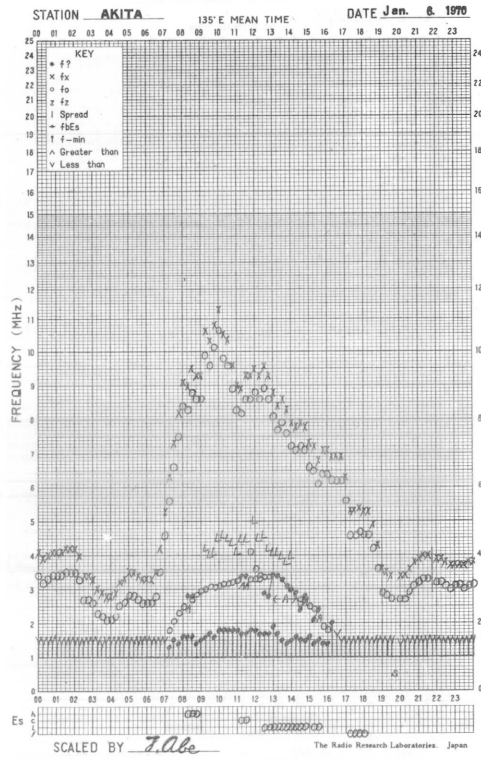
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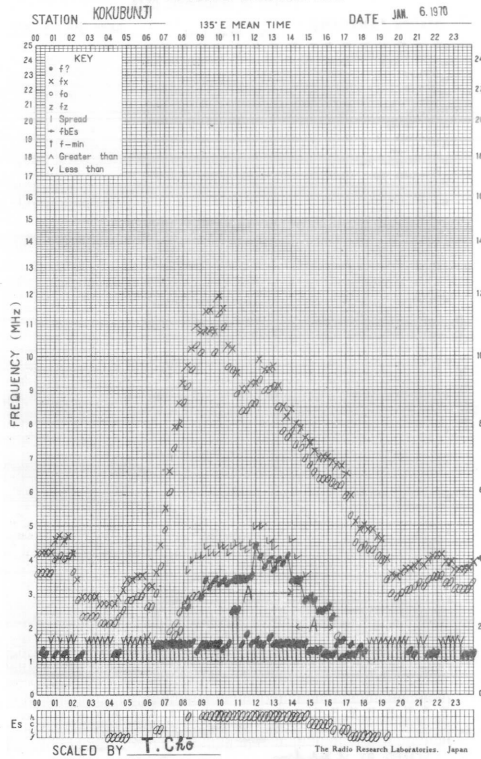
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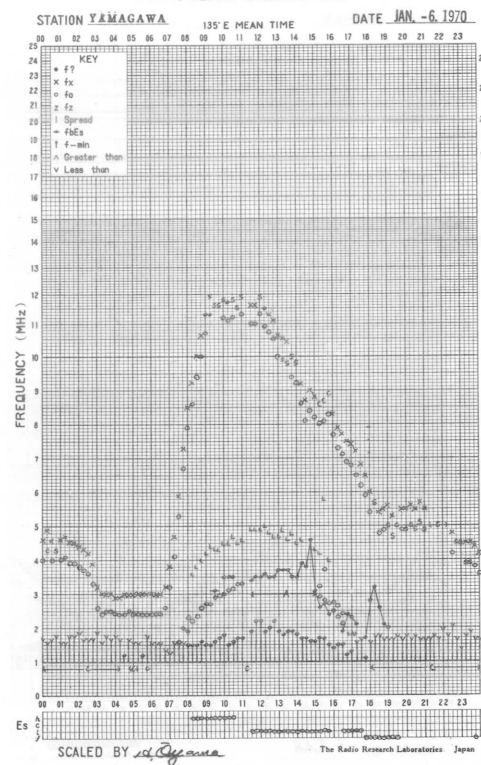
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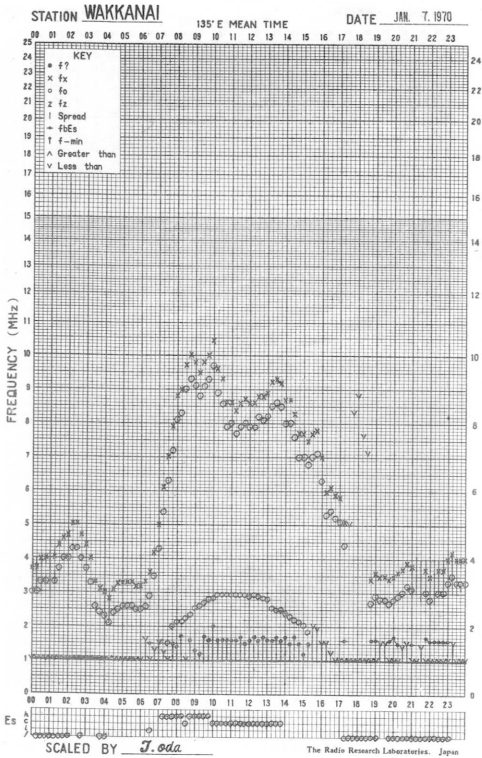
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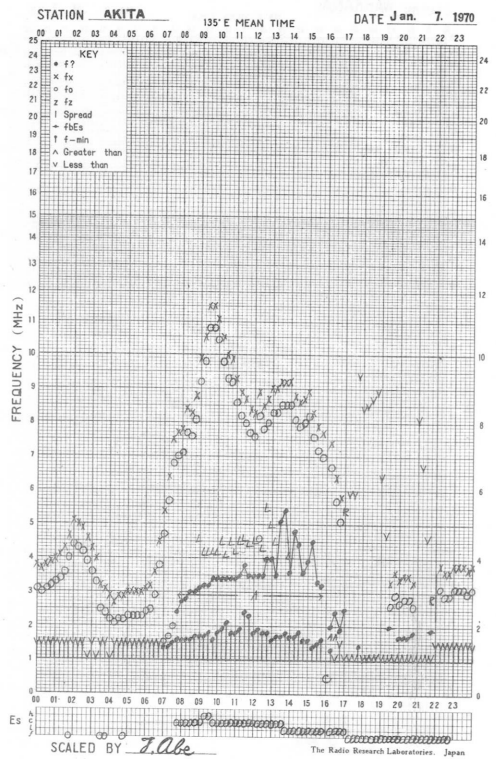
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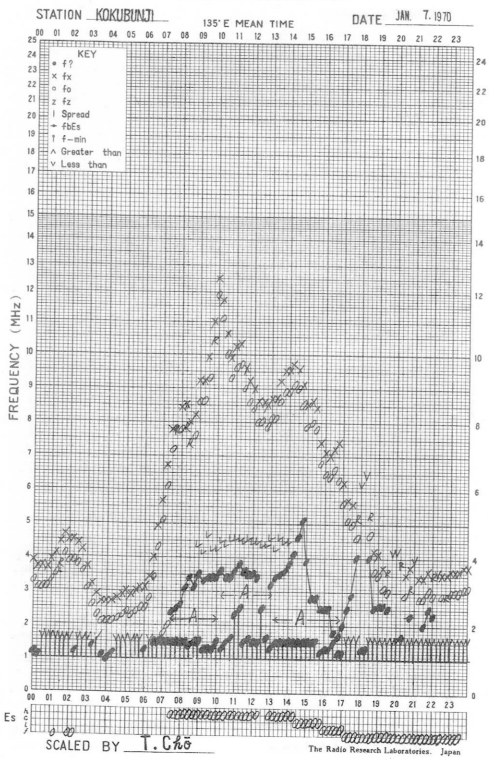
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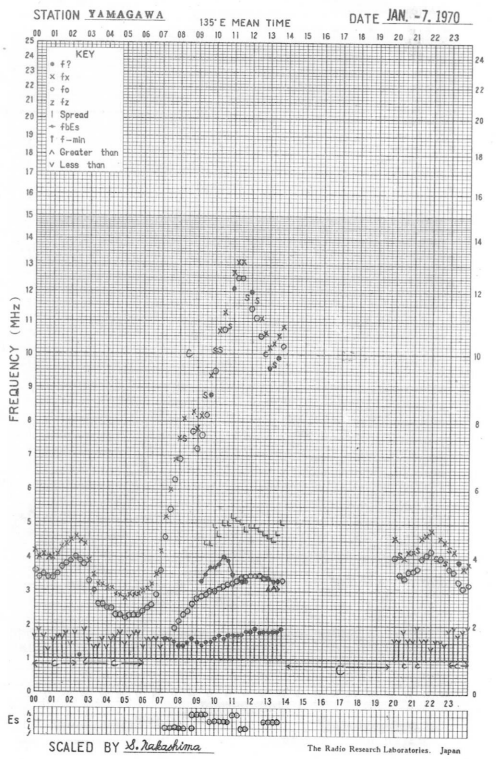
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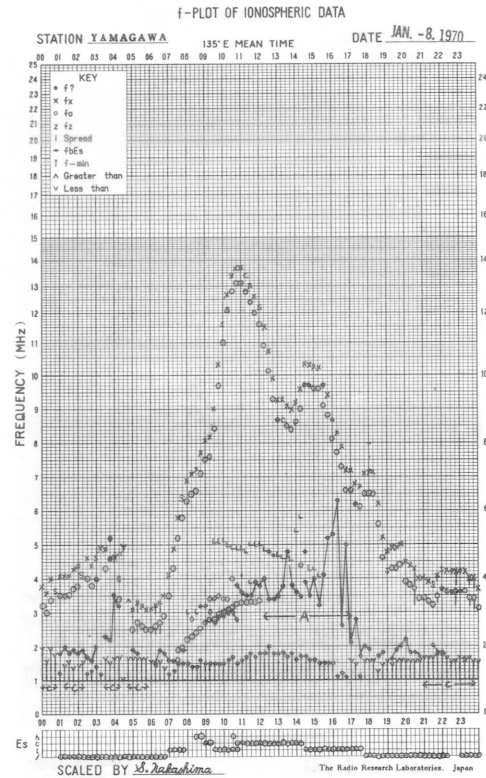
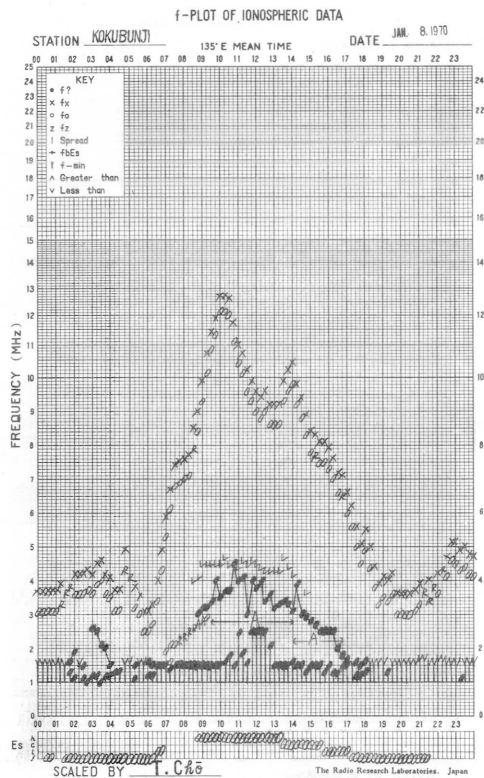
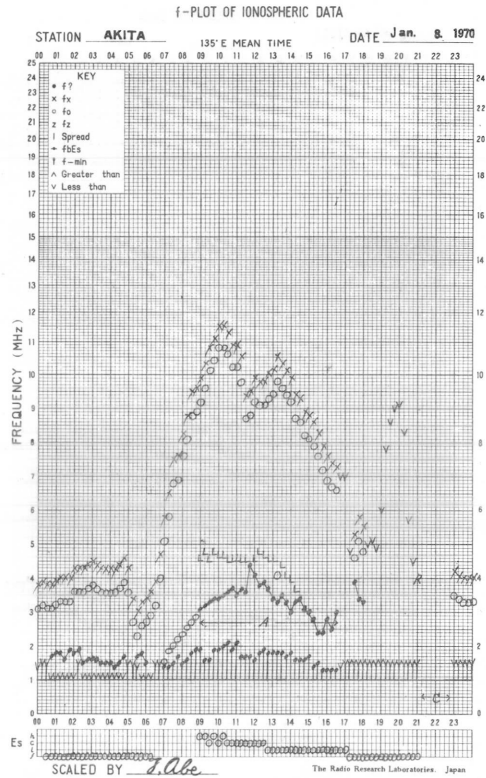
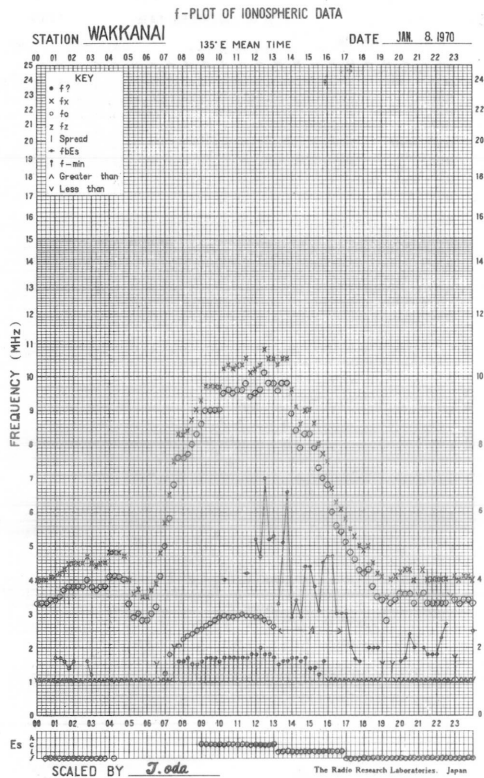
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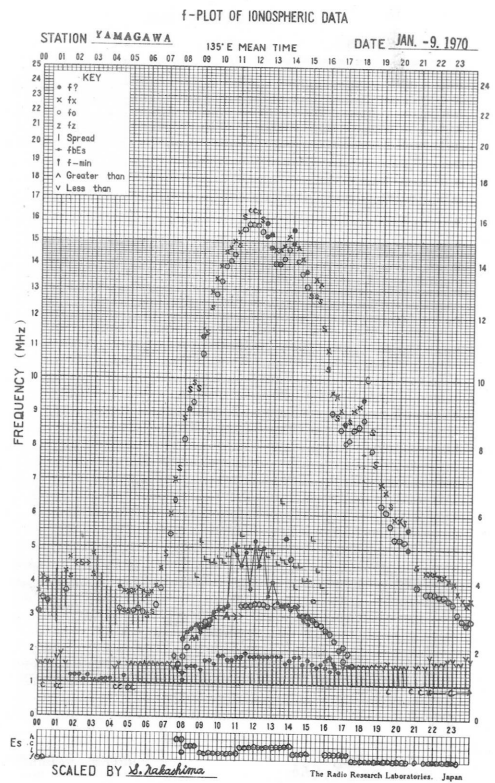
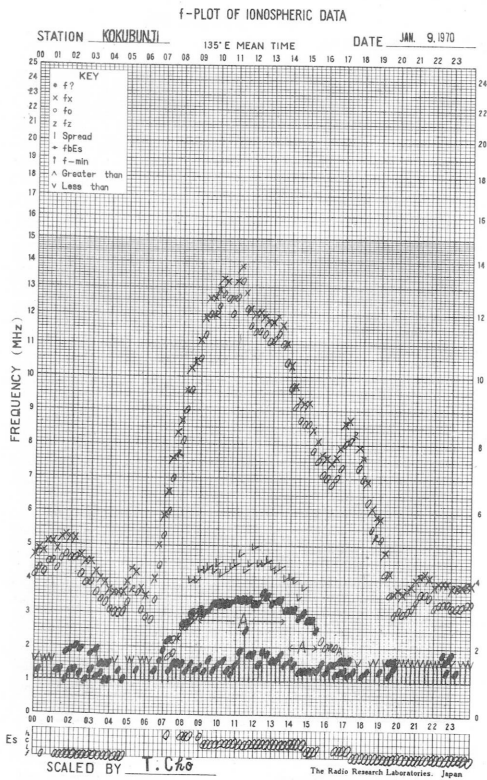
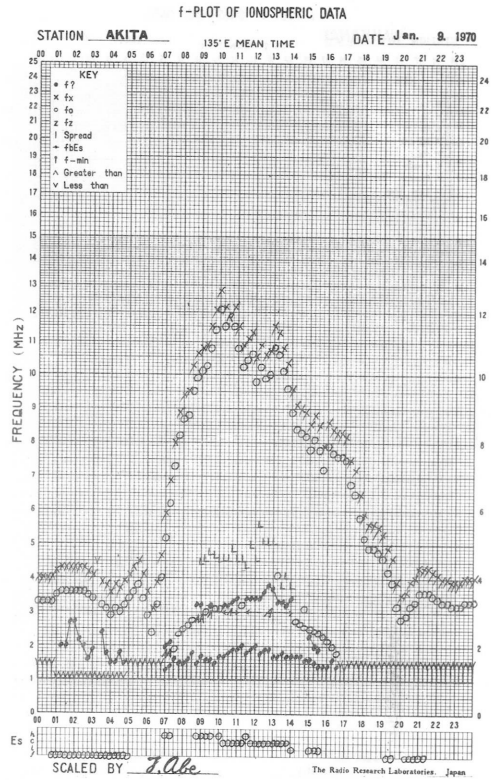
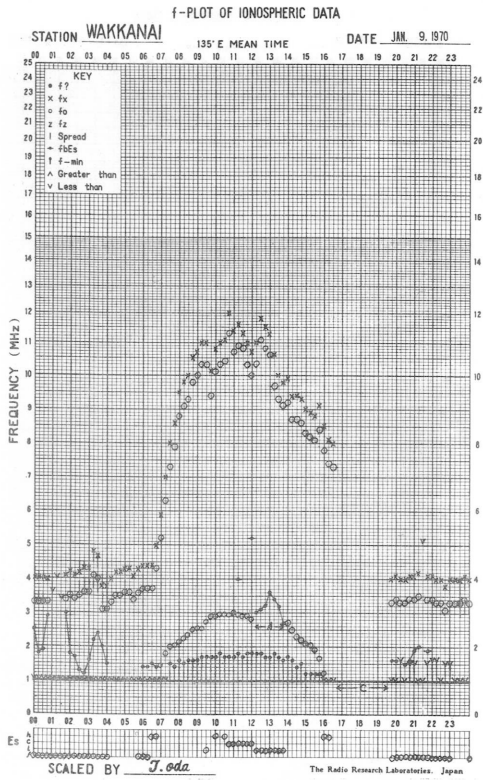


f-PLOT OF IONOSPHERIC DATA

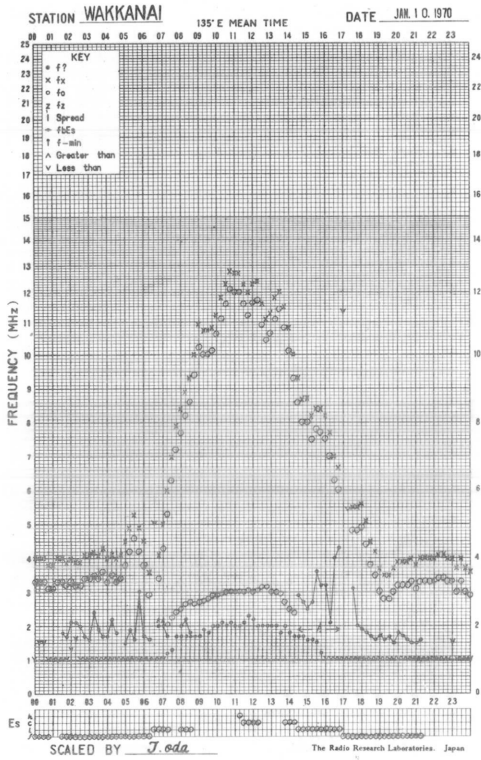




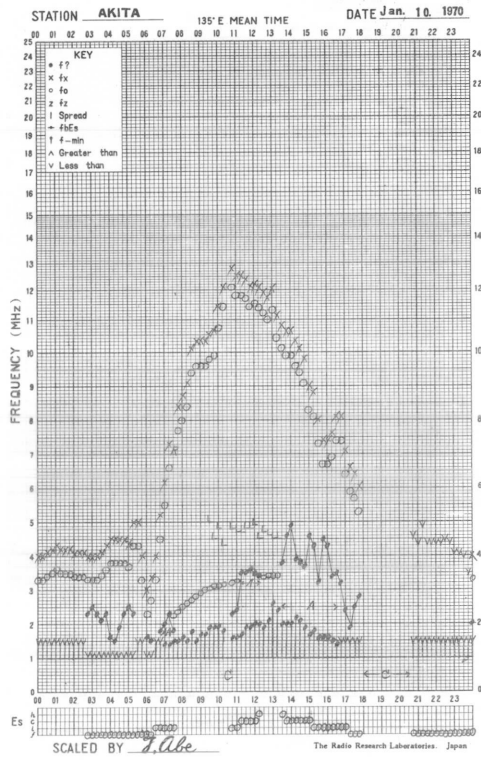




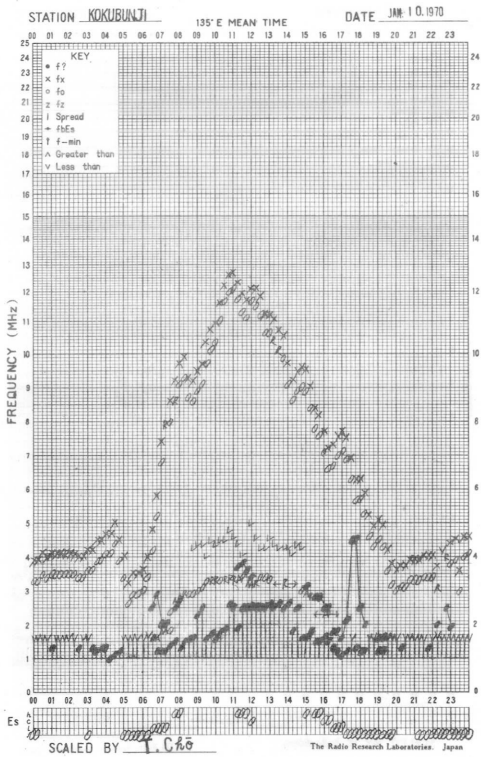
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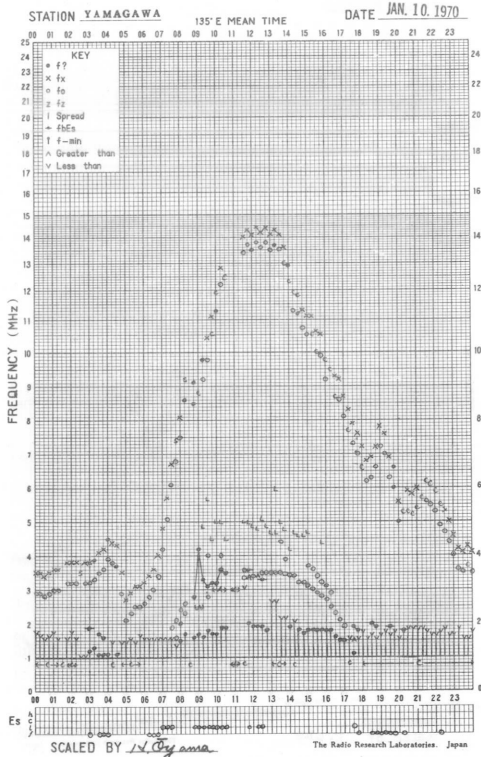
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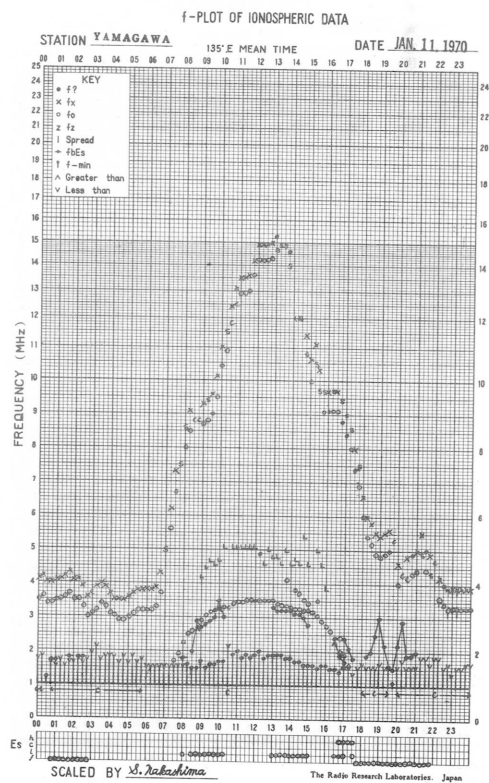
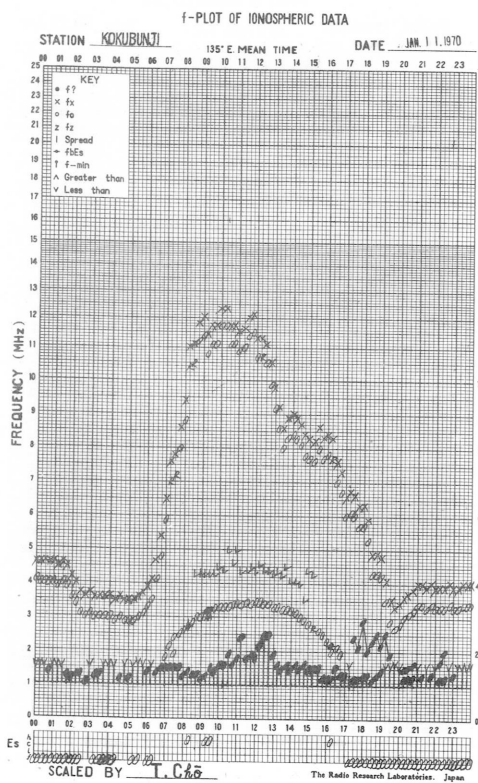
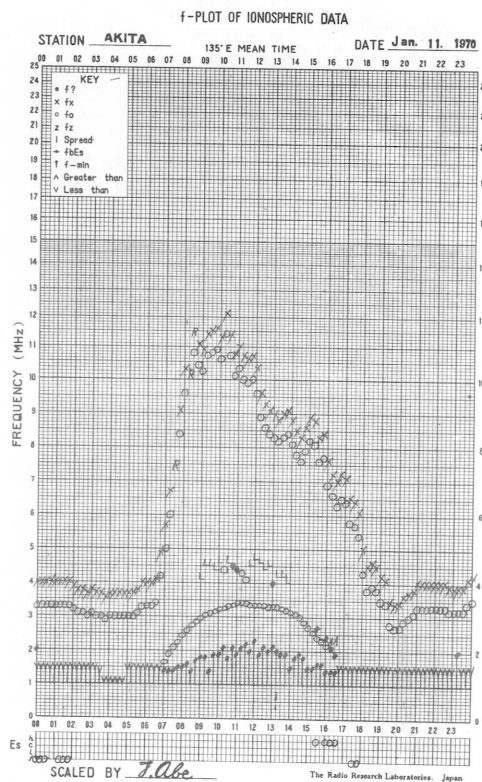
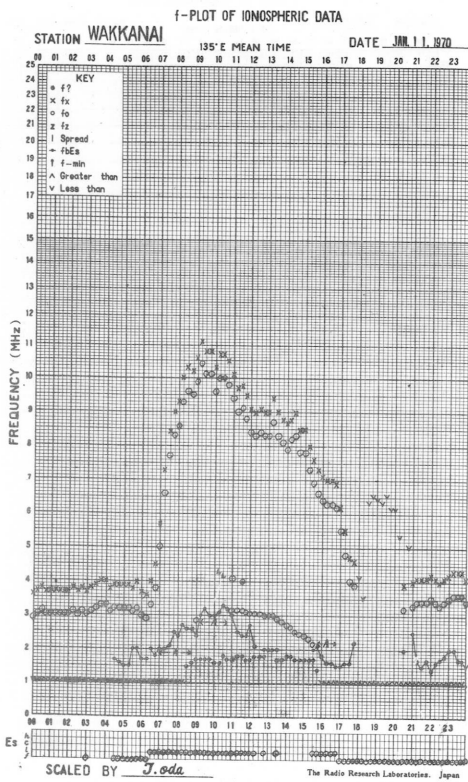
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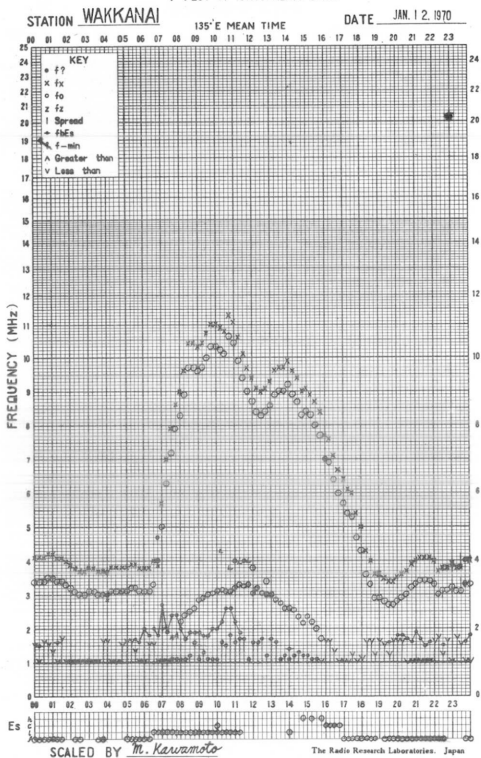
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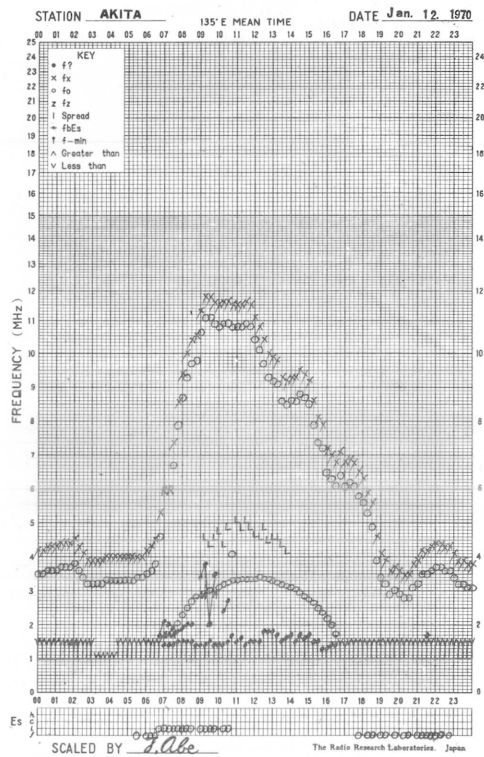




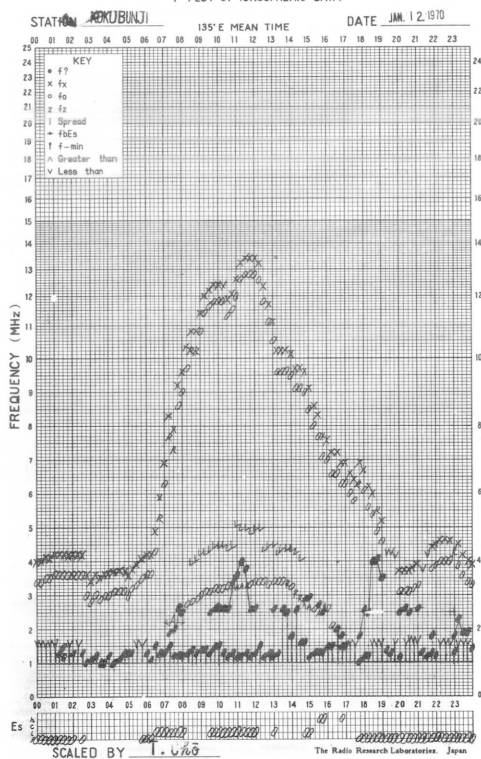
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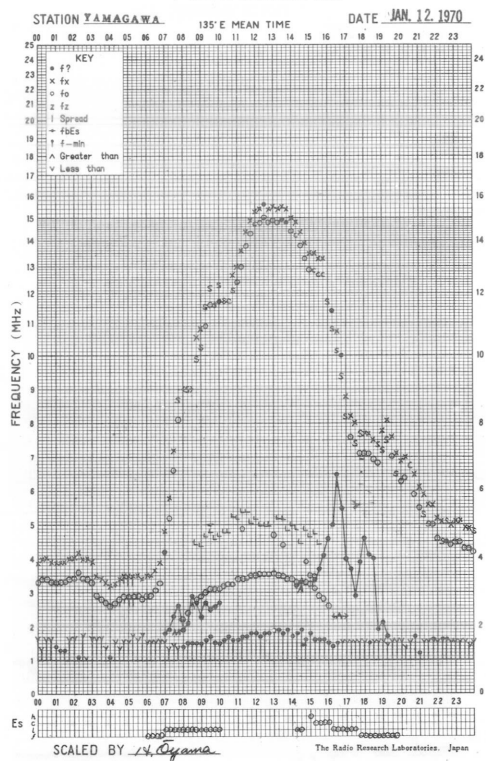
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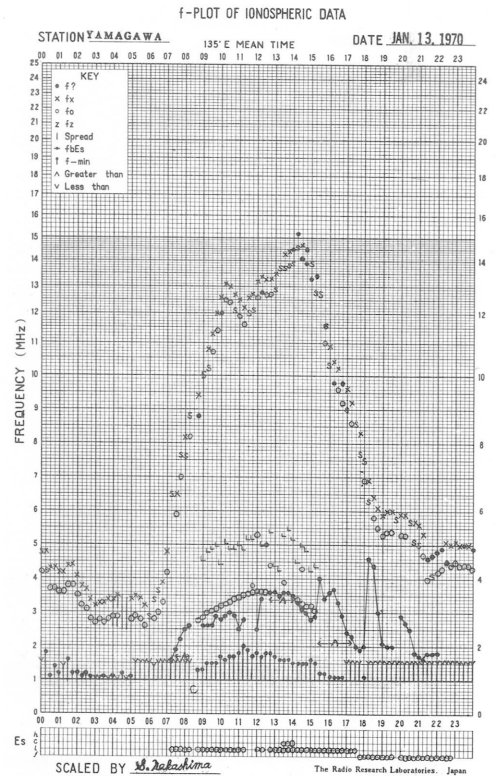
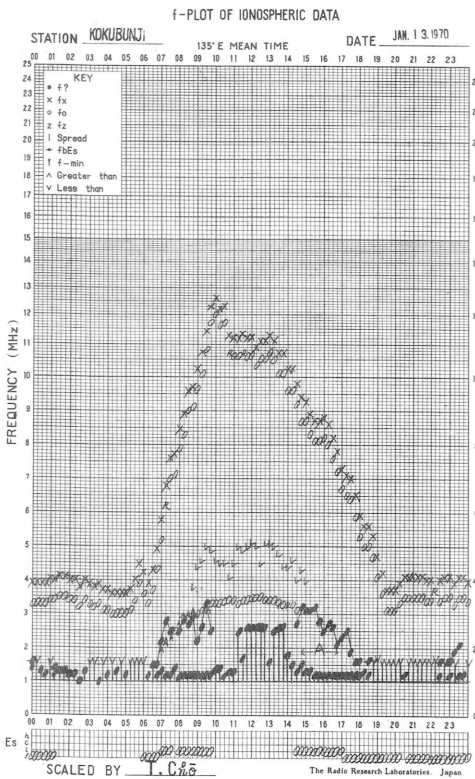
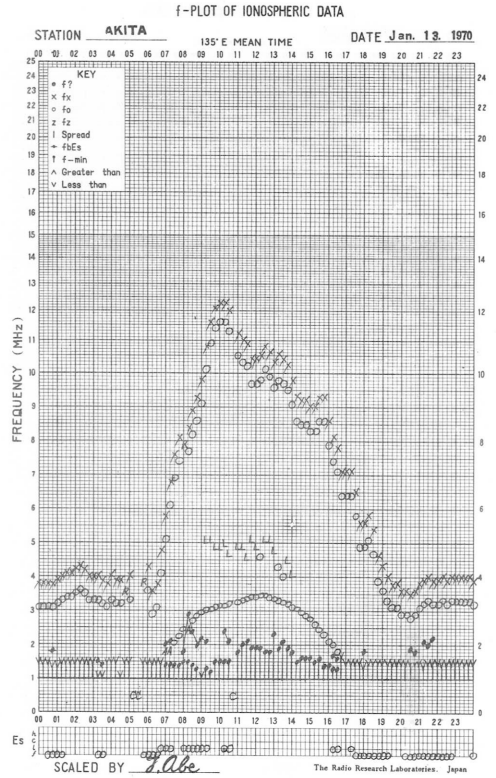
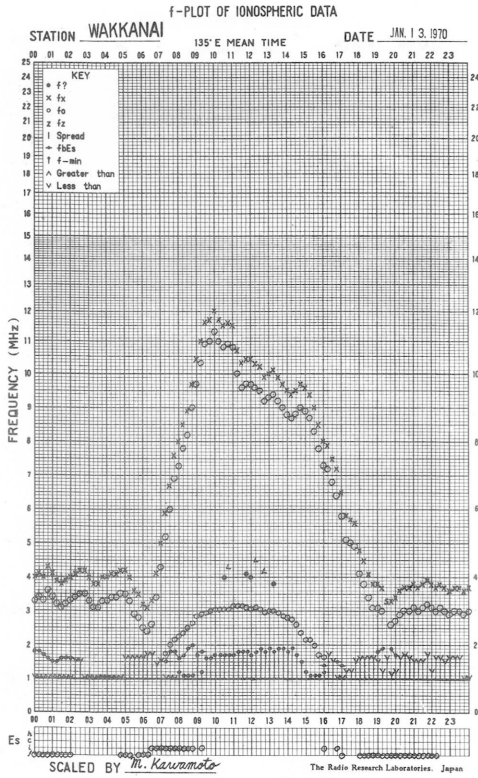


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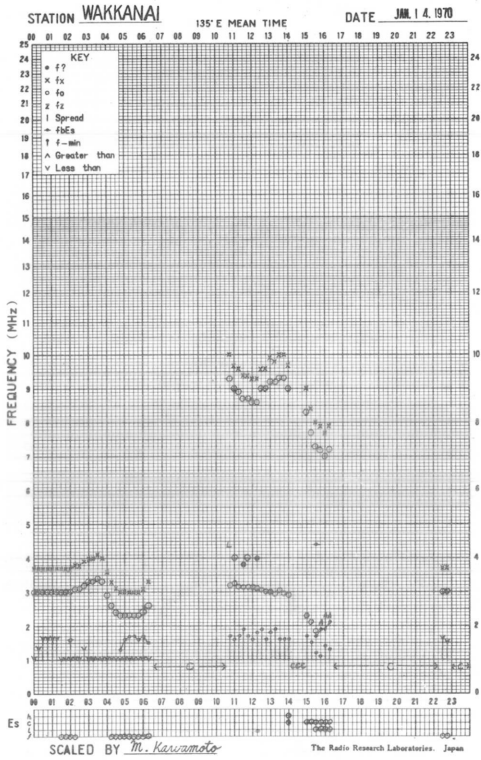
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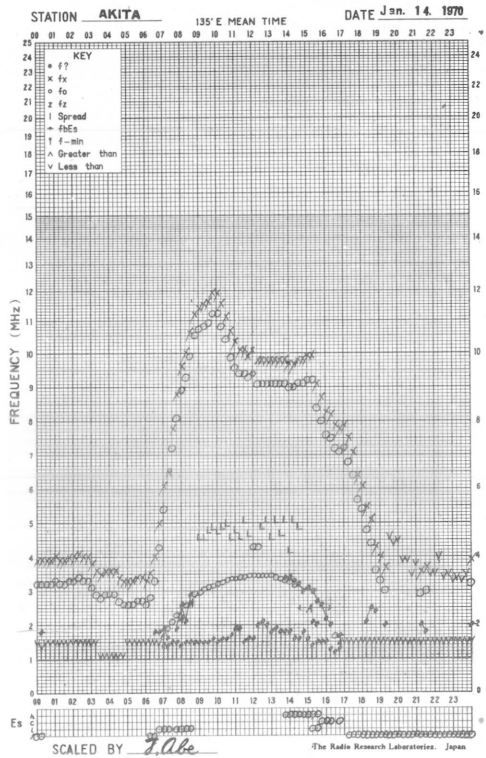




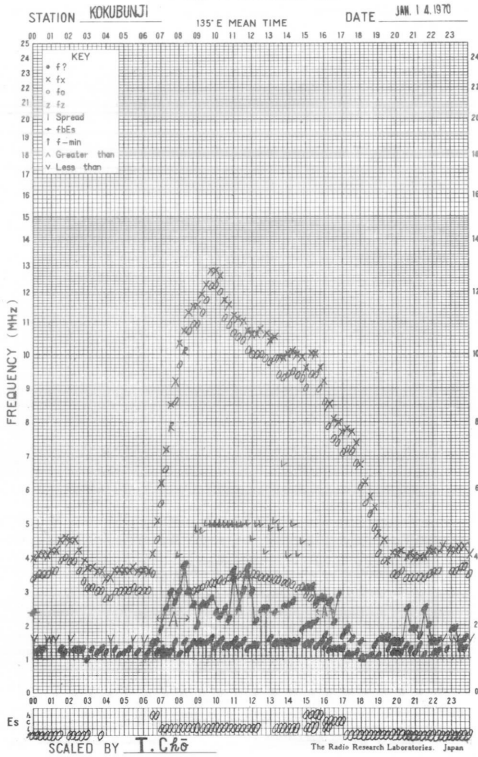
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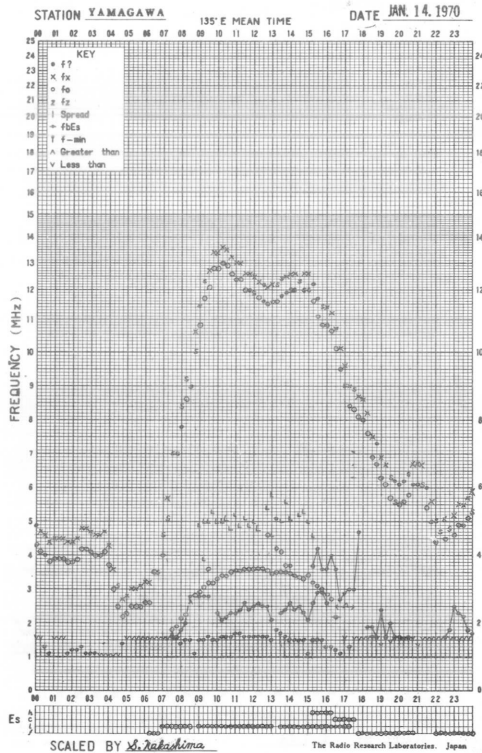
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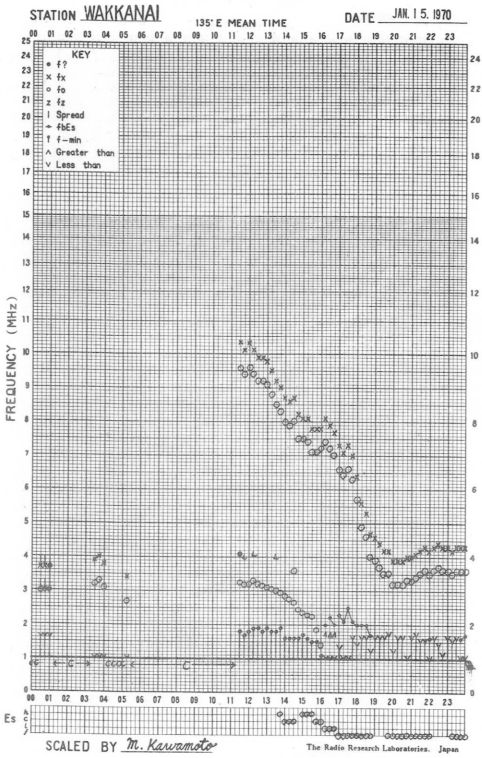
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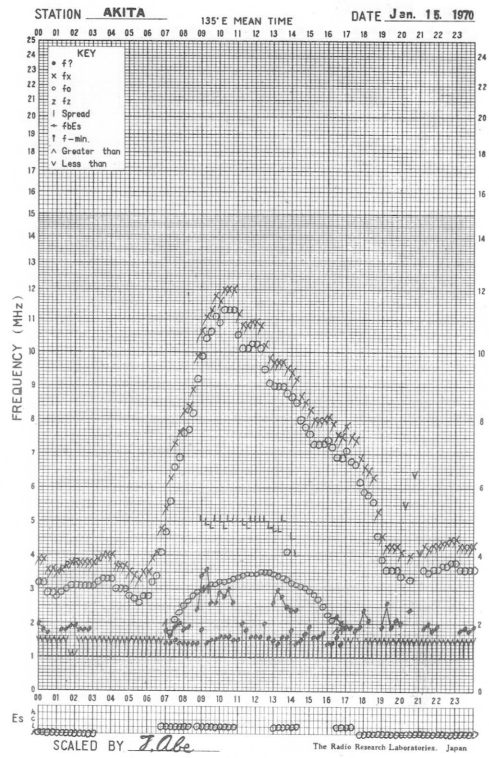
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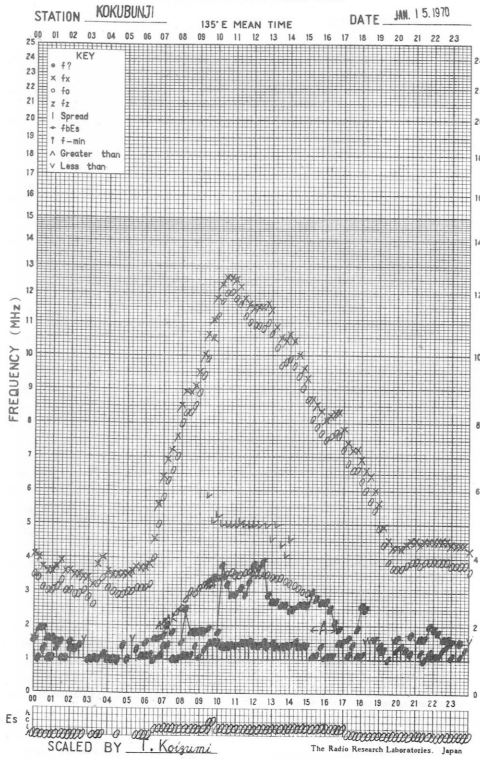
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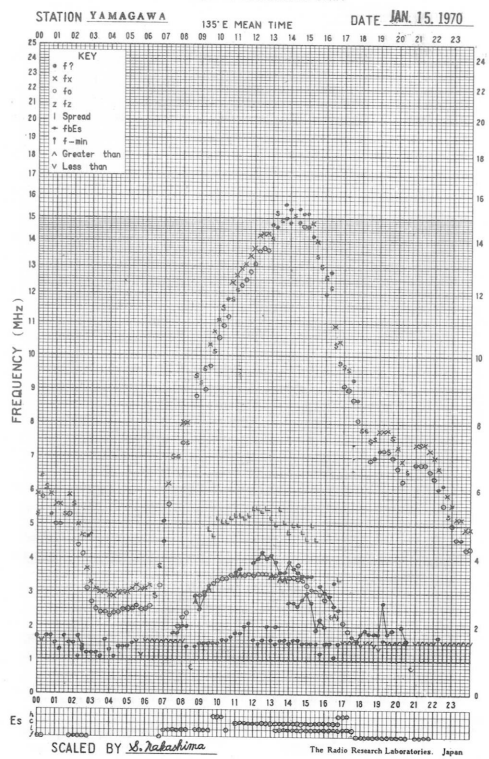
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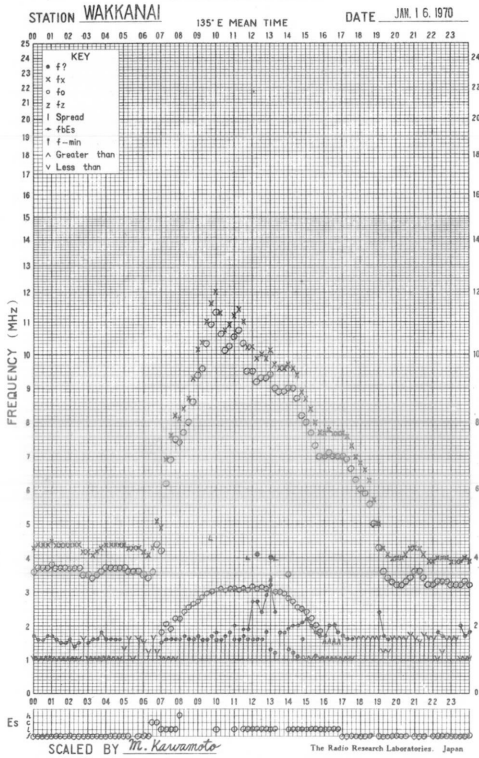
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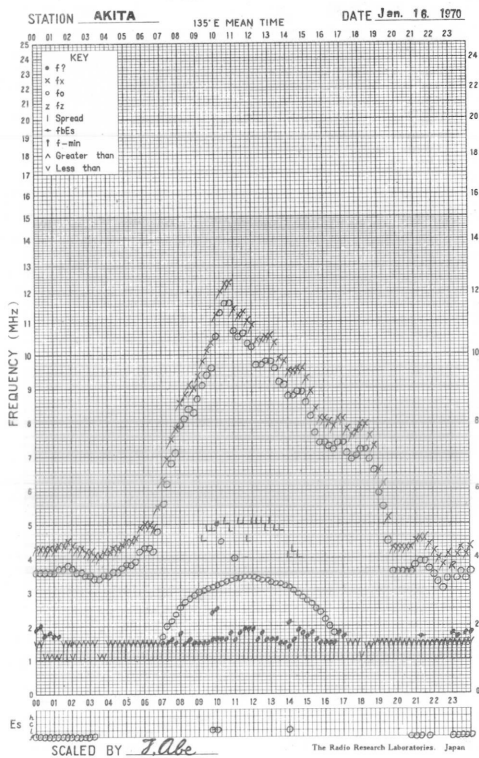
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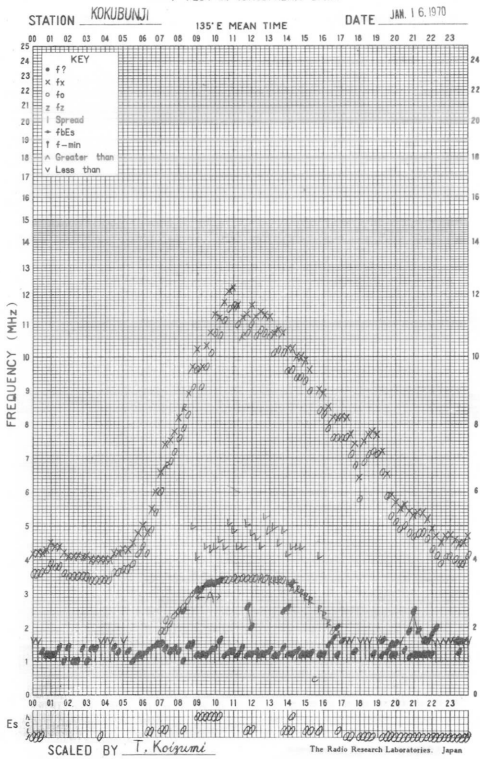
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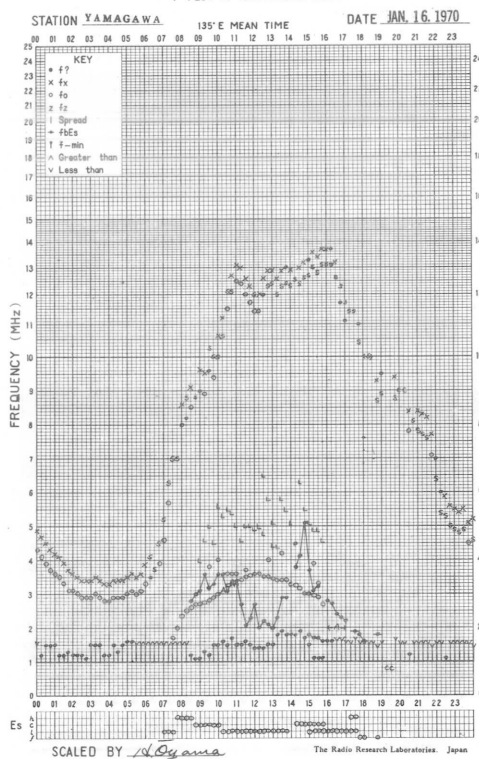
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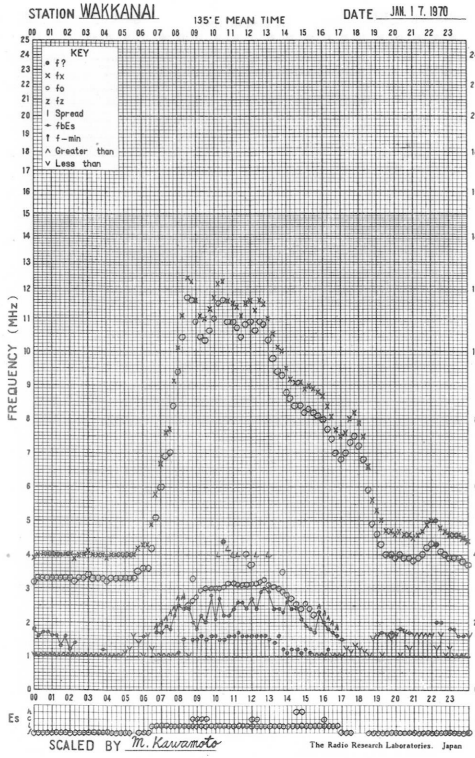
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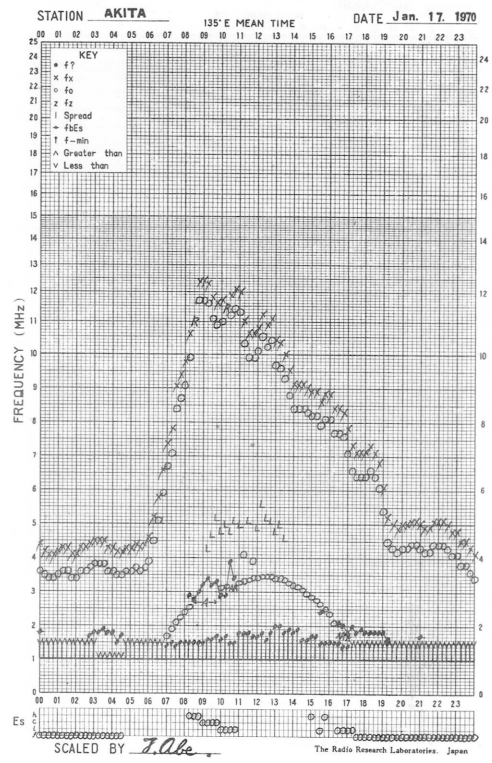
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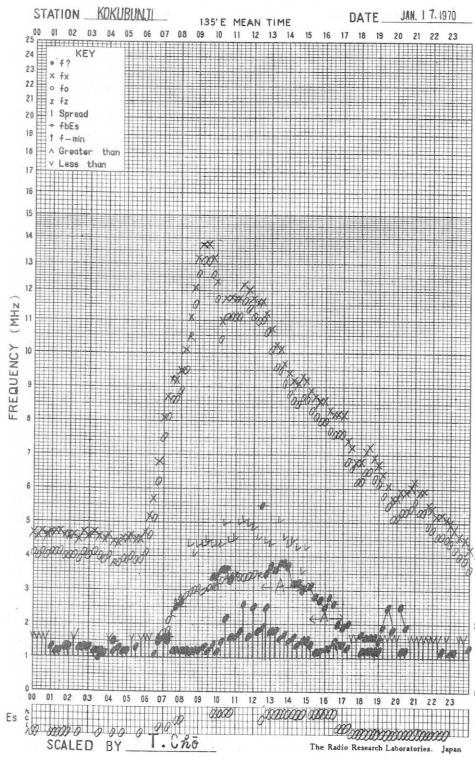
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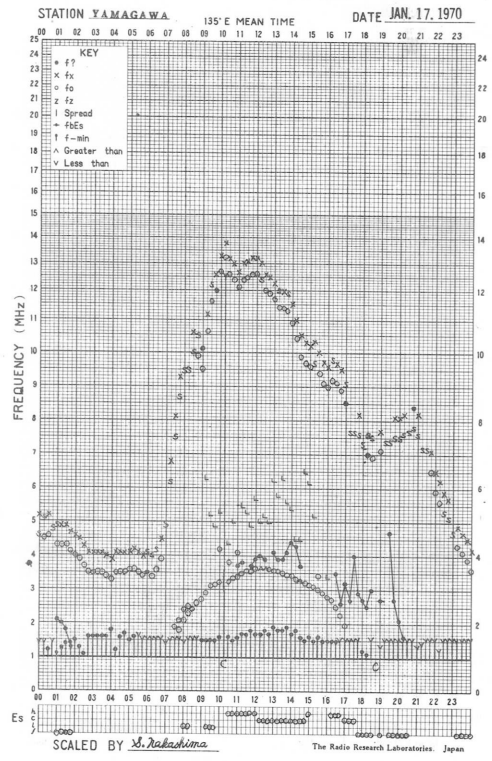
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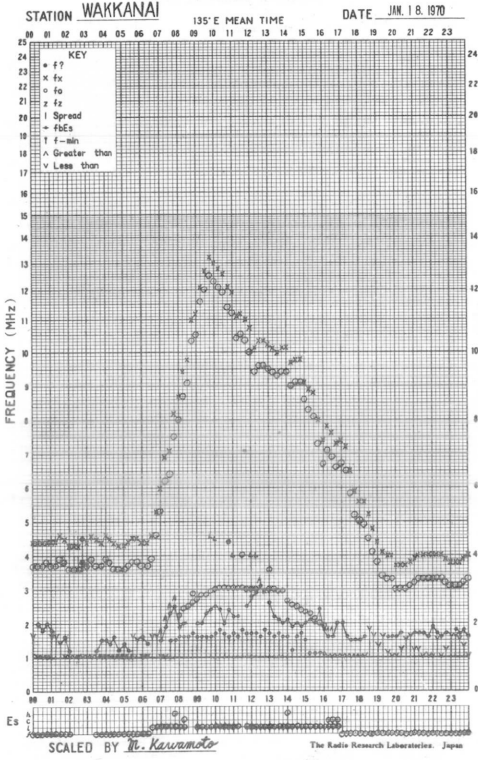


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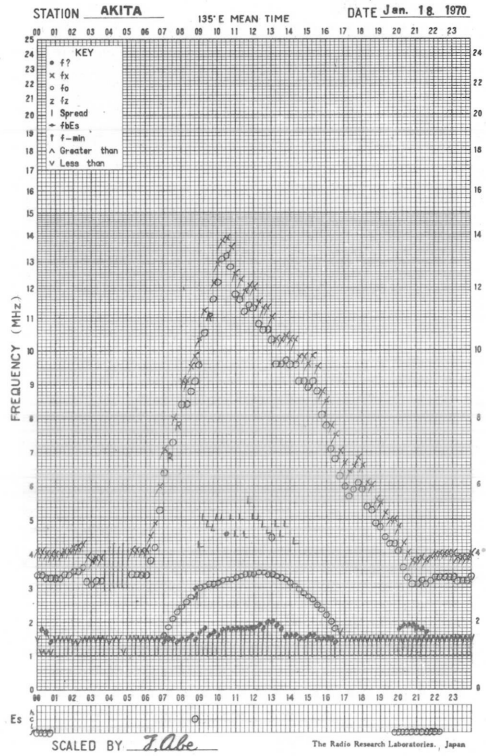




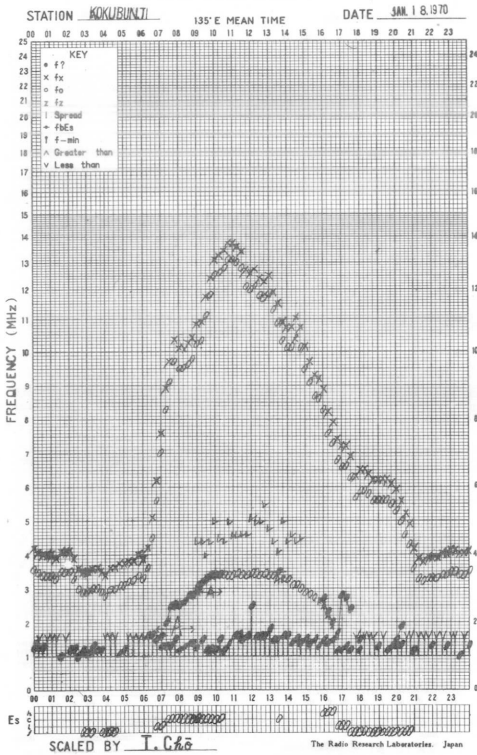
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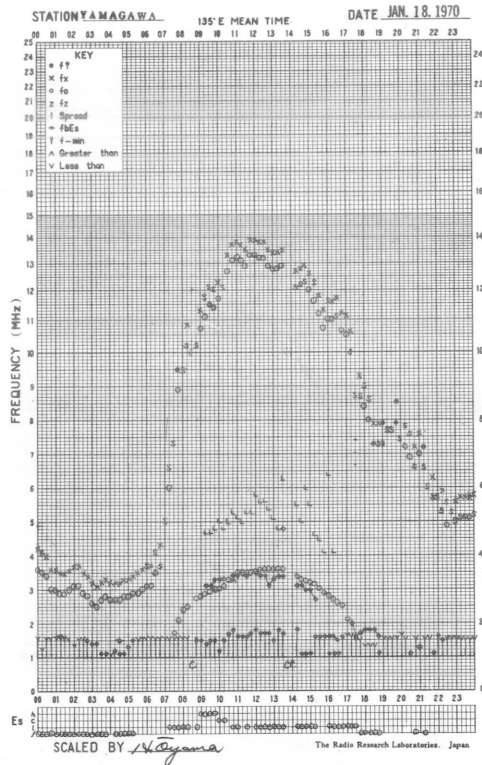
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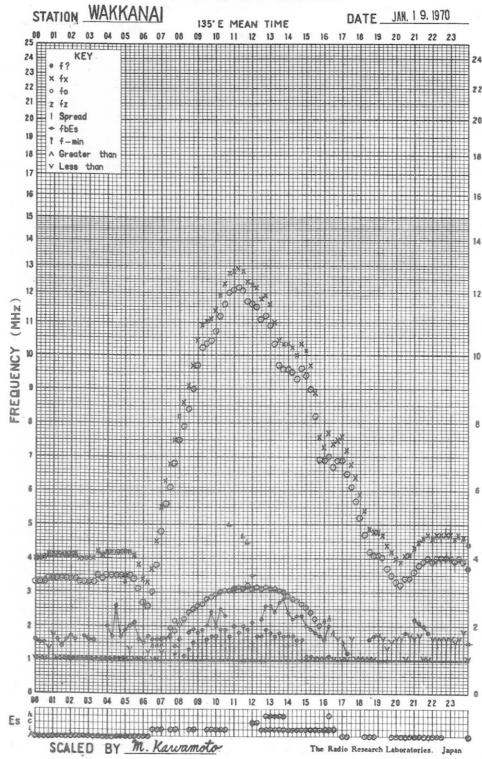


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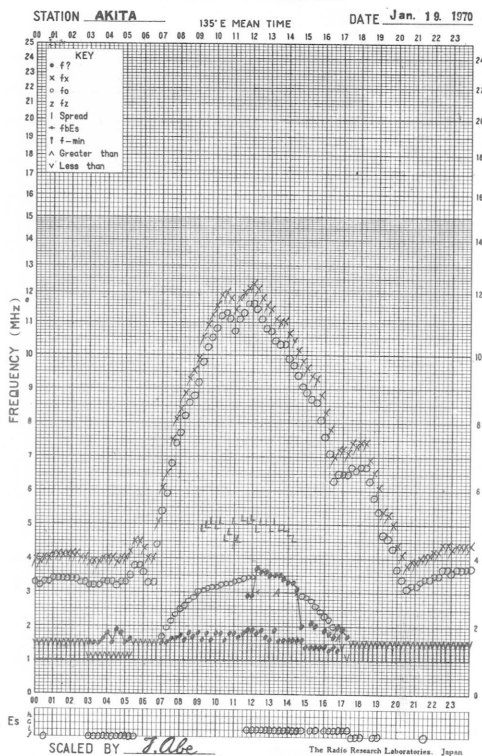




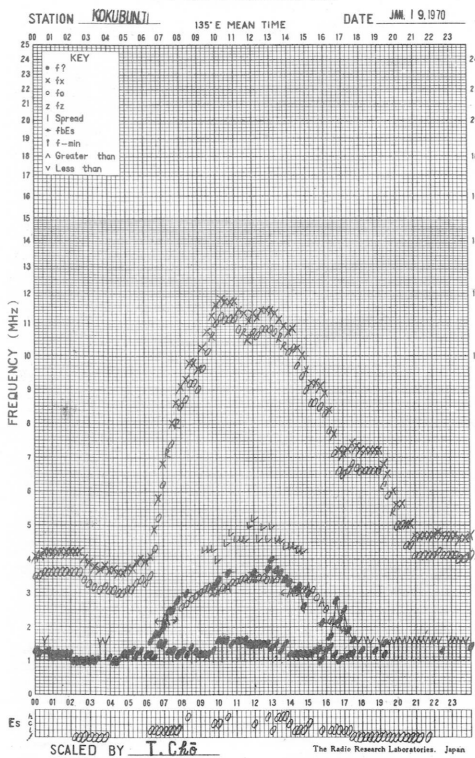
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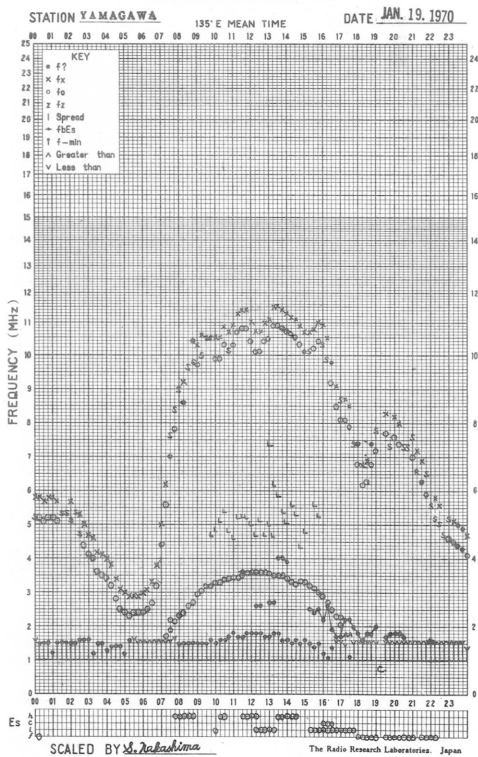
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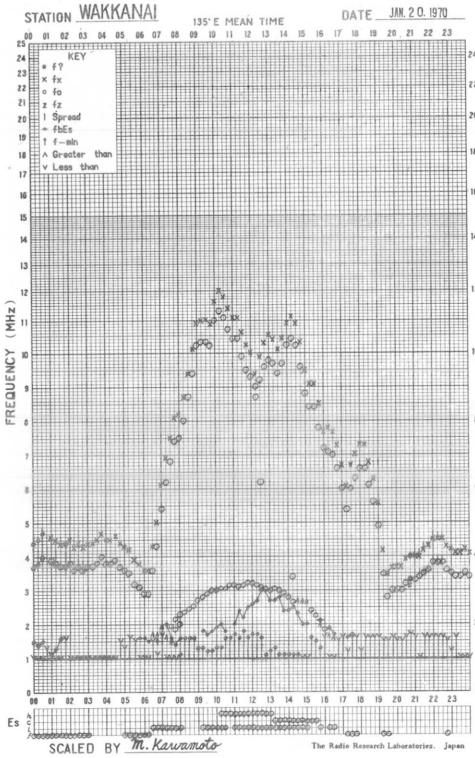
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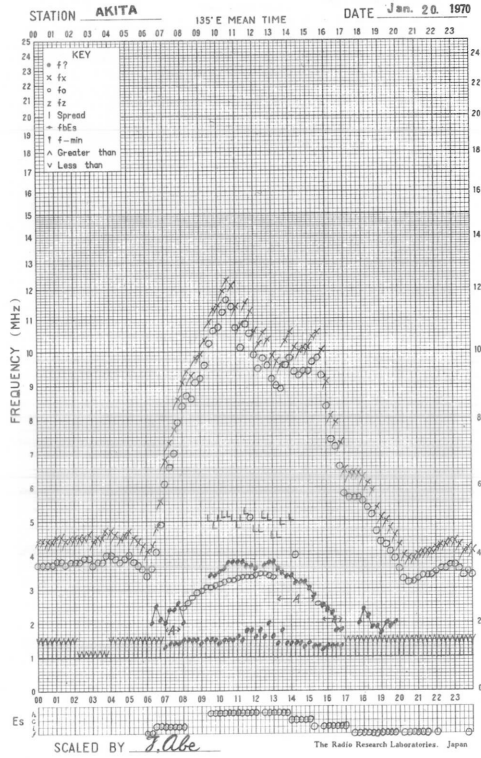
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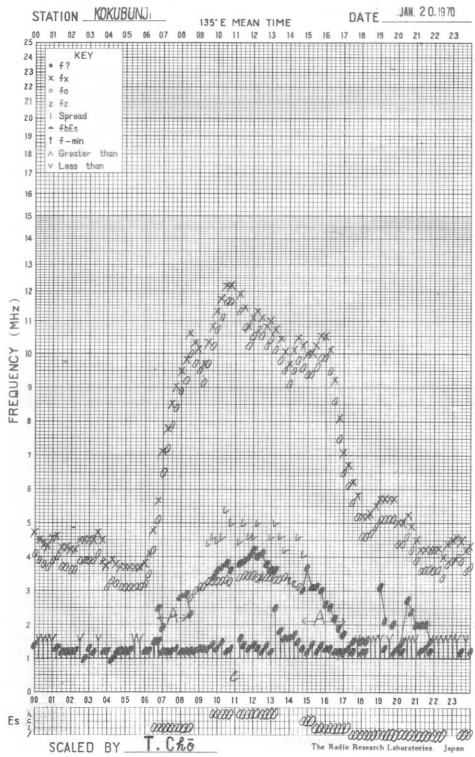
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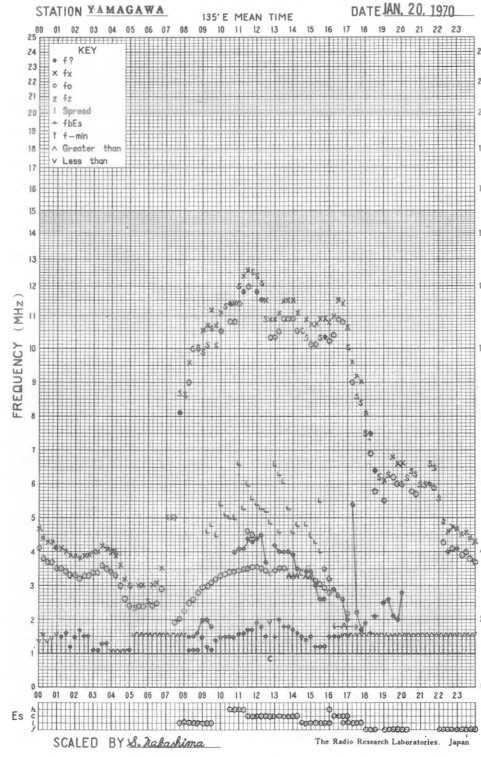
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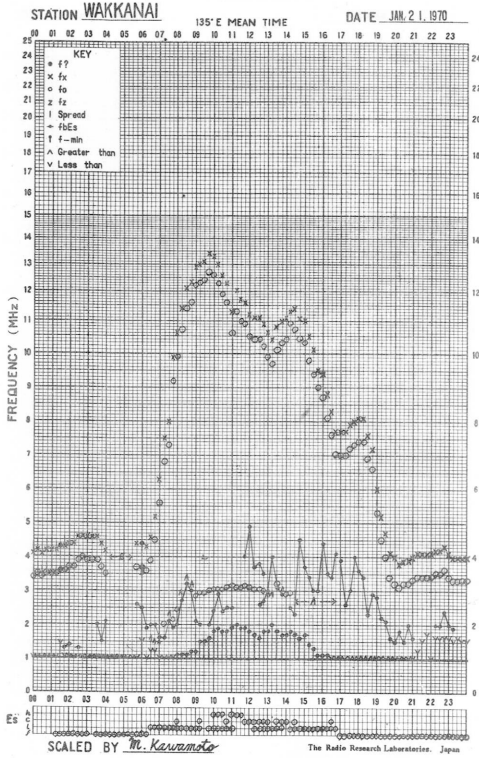
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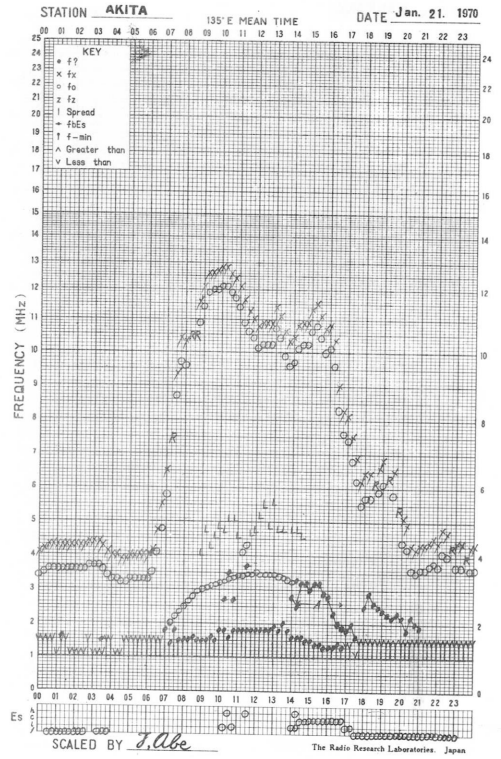
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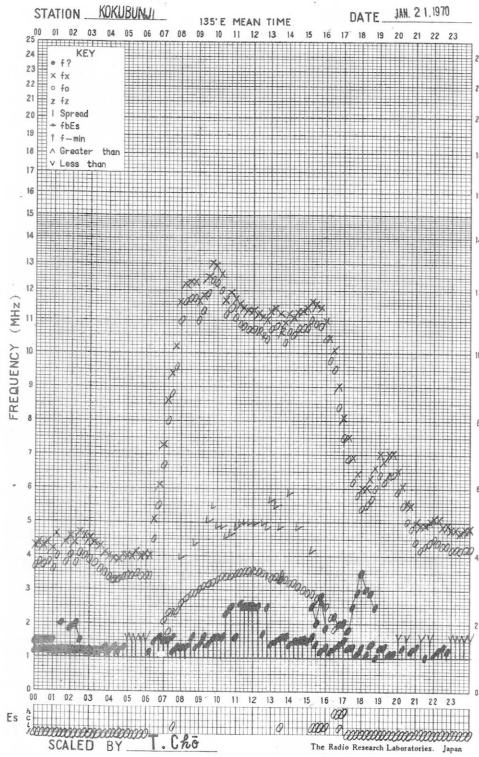
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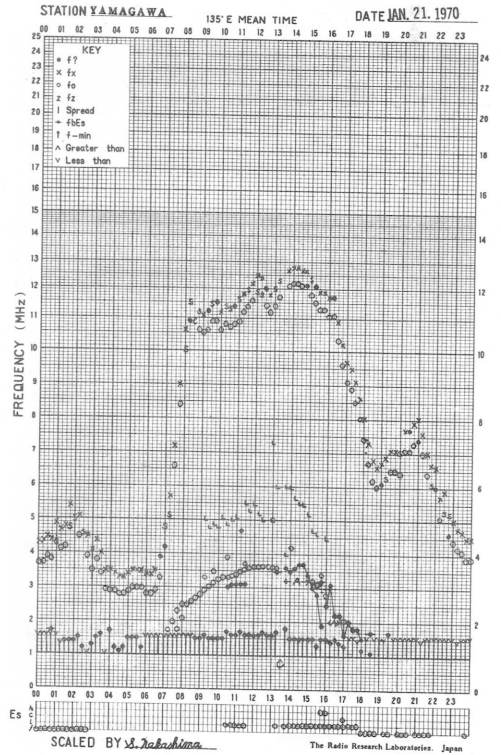
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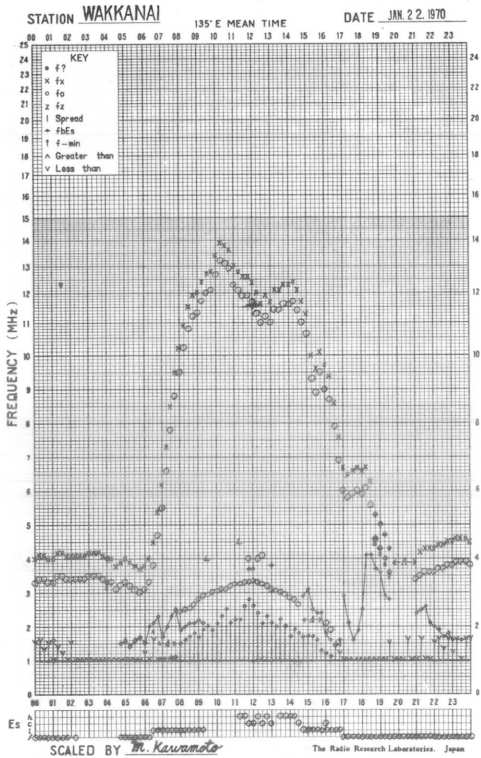
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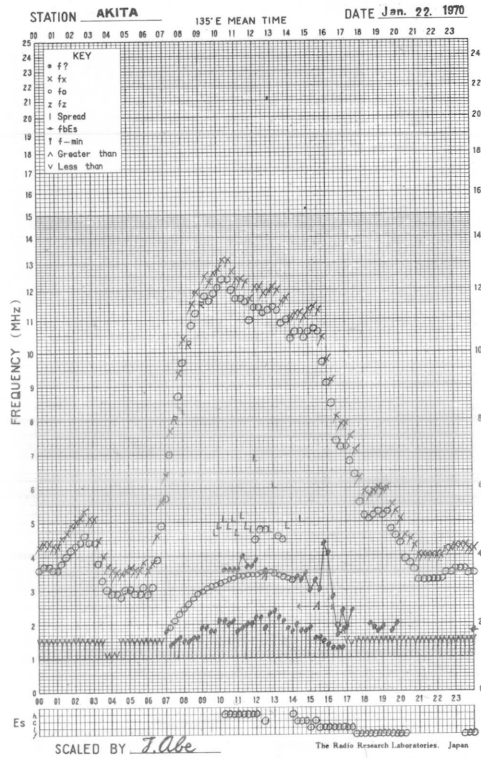
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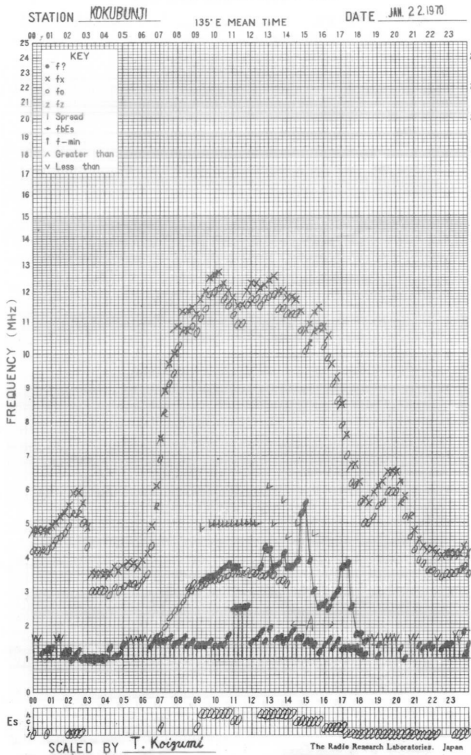
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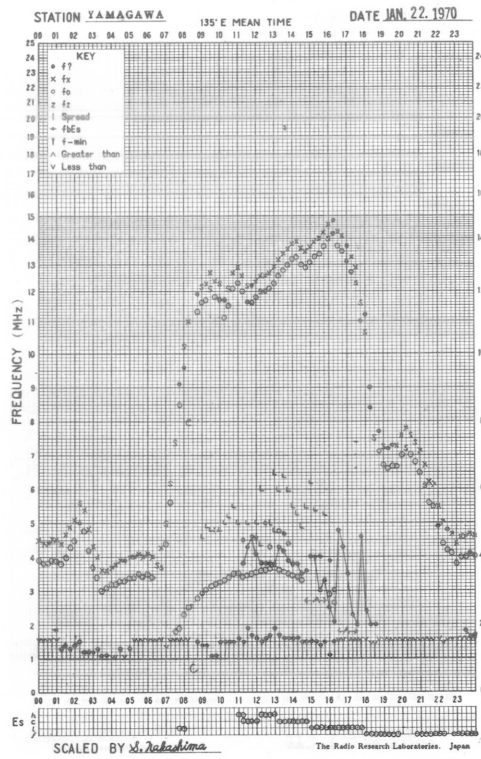
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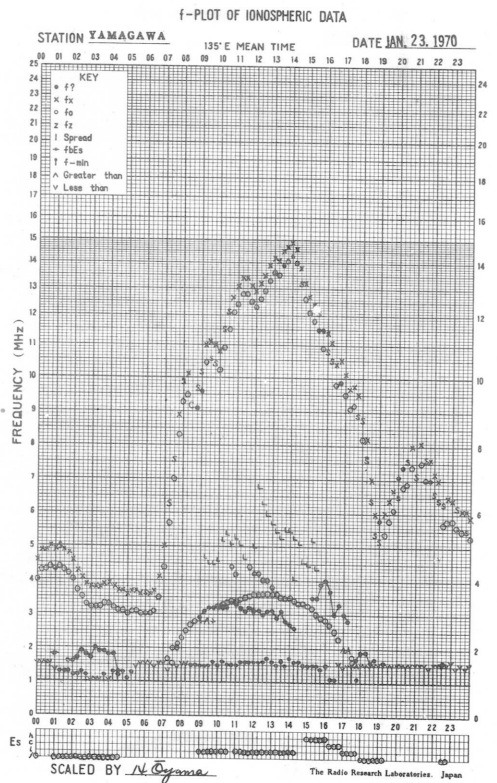
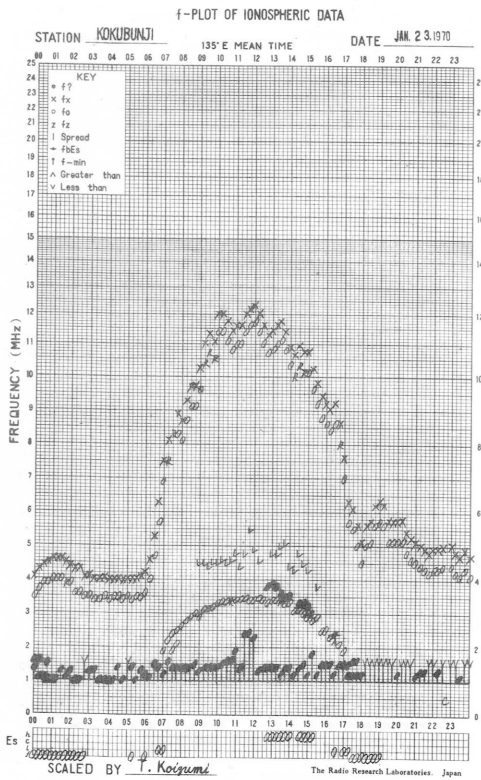
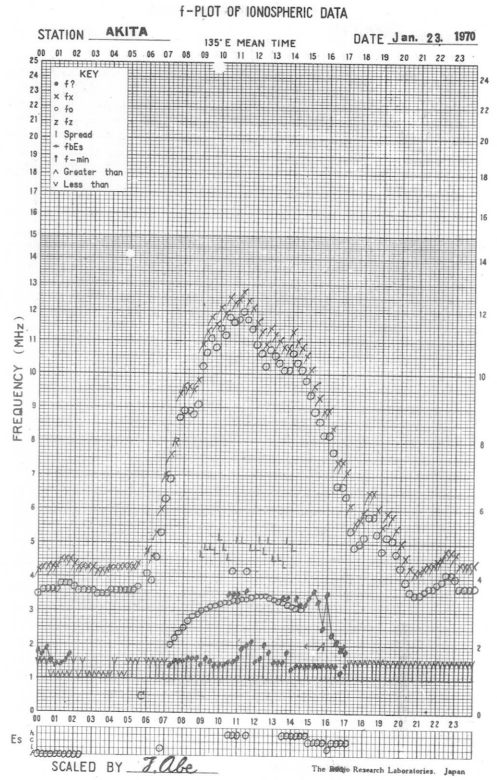
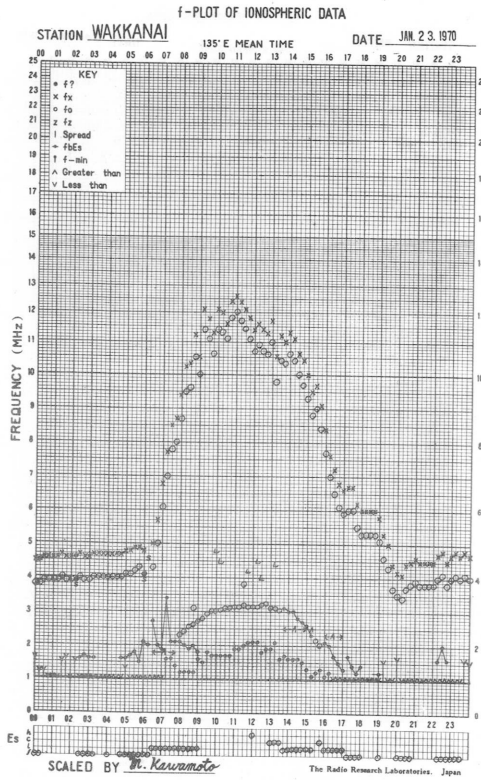
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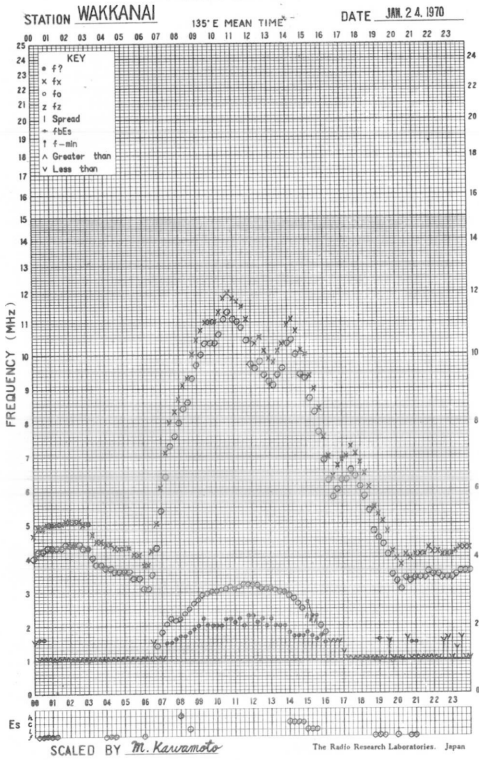




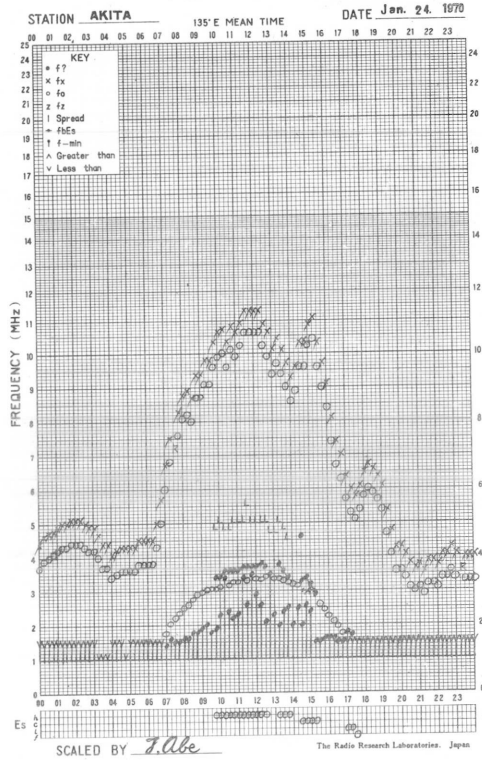




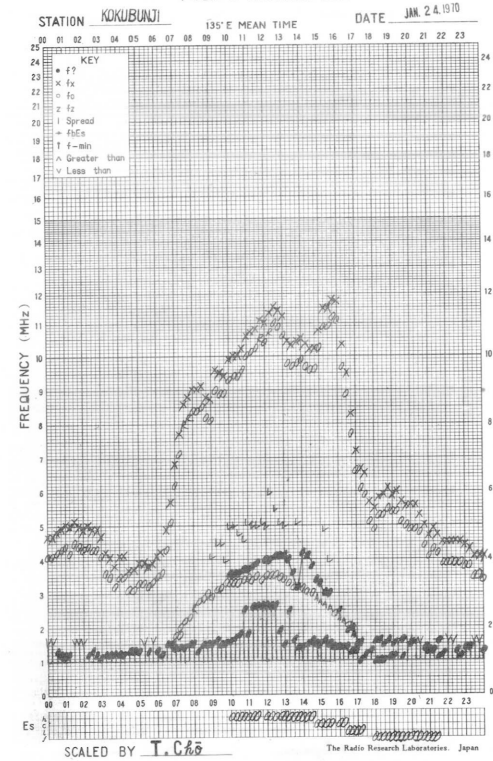
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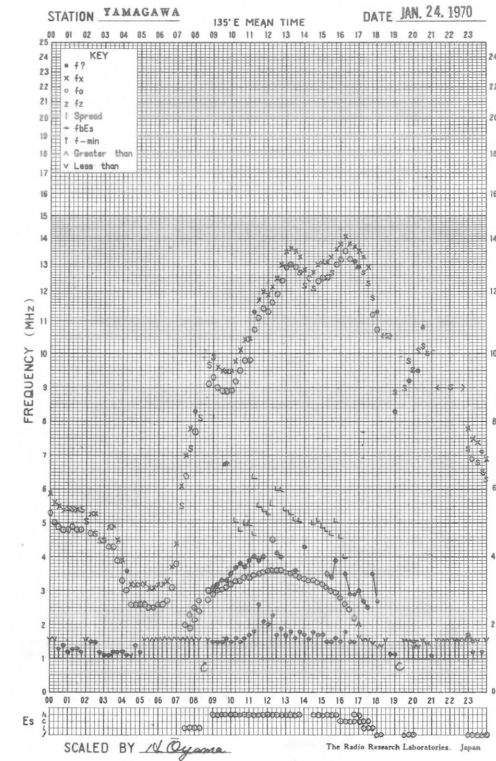
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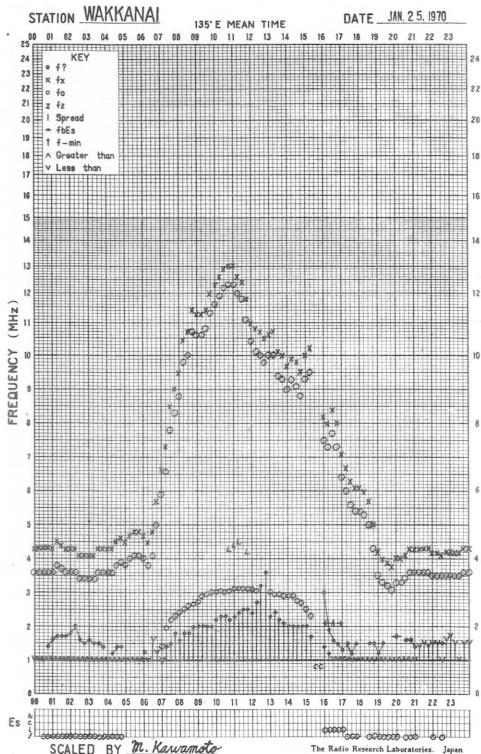
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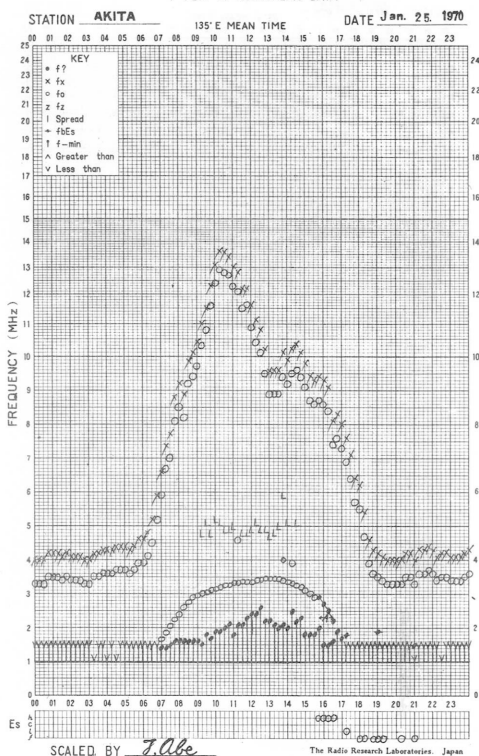
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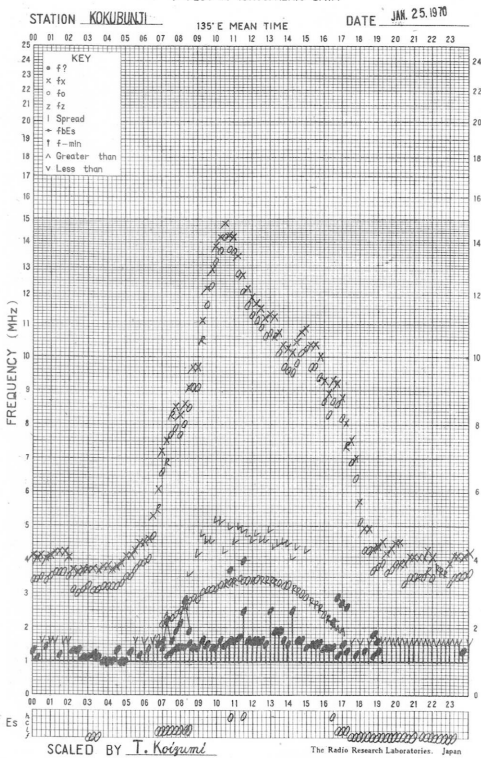
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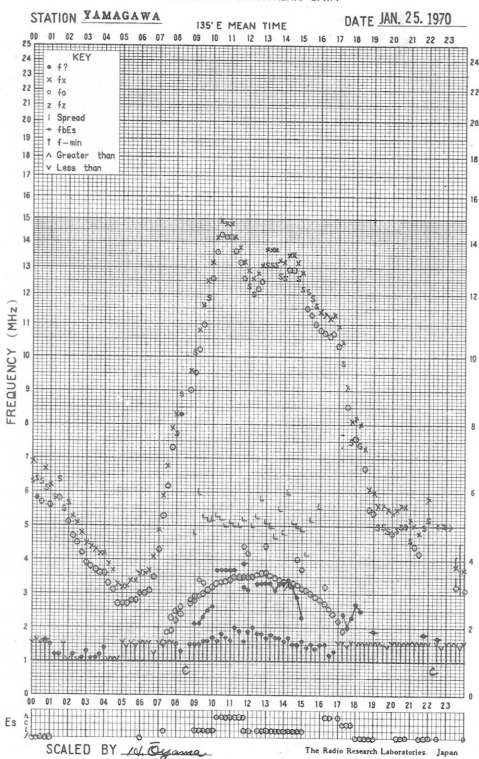
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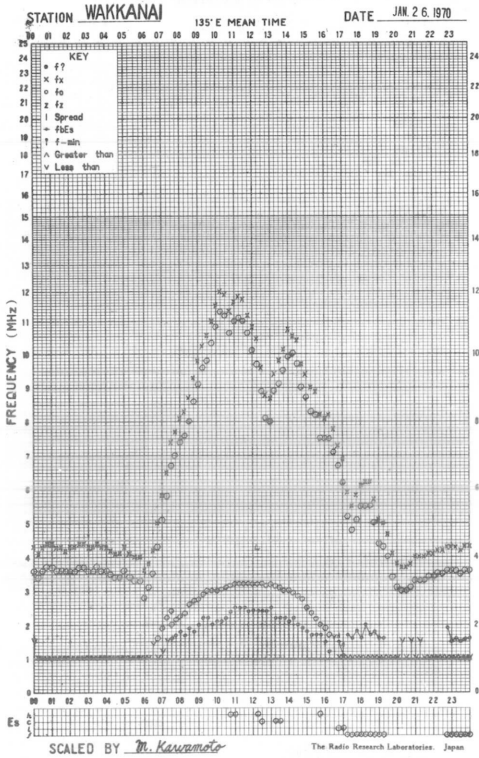
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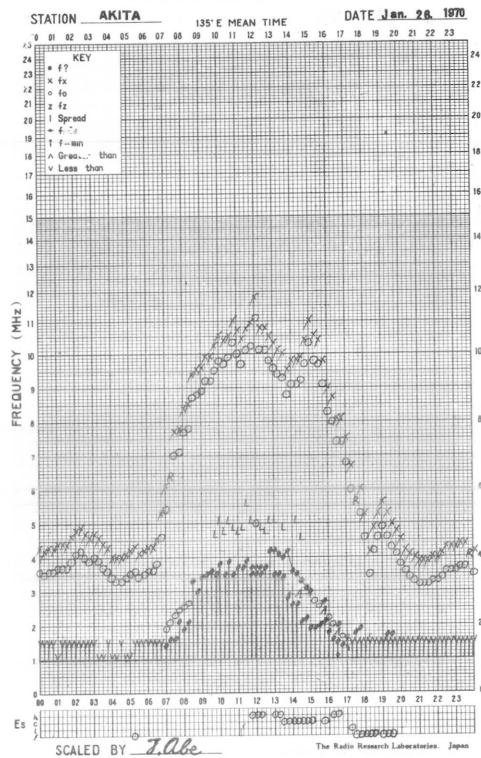
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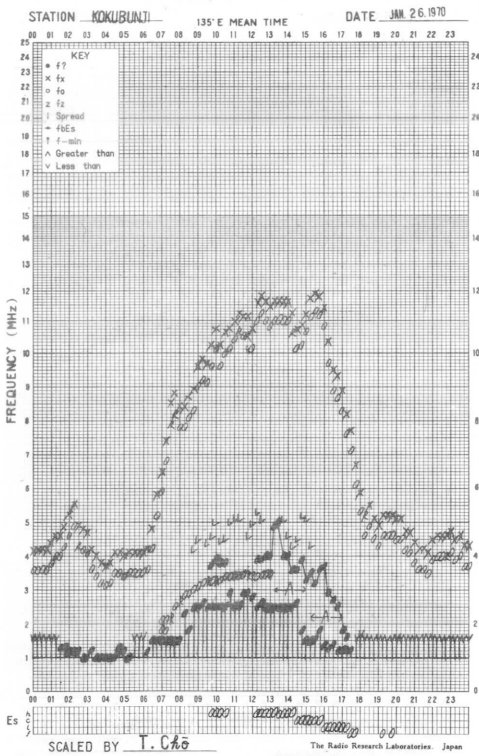
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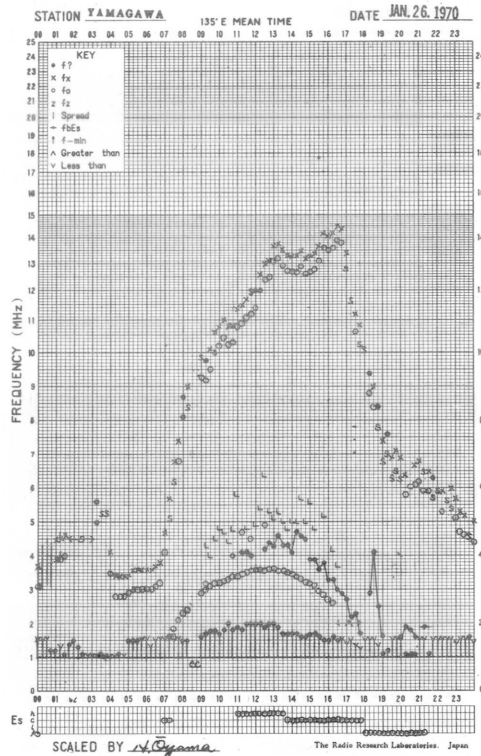
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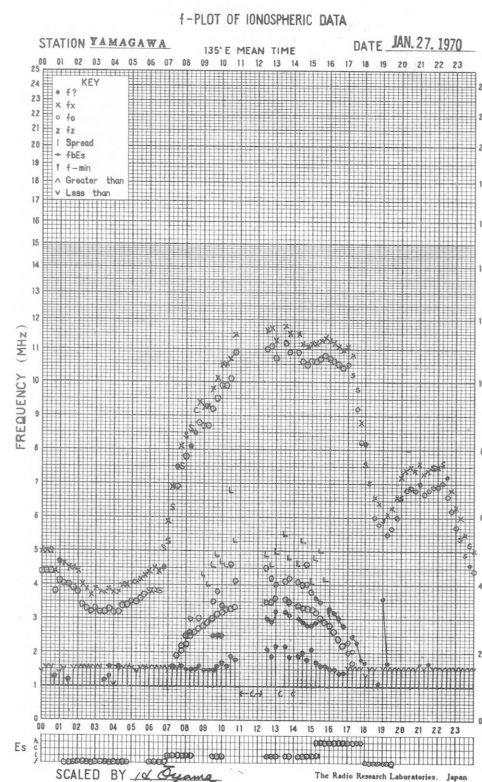
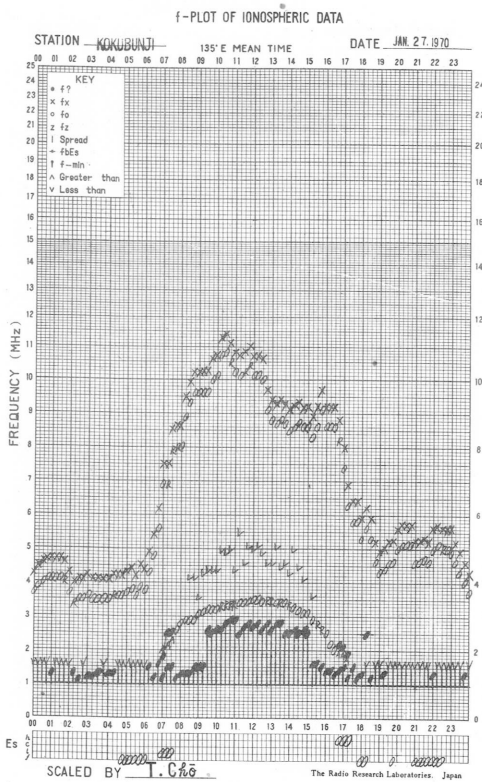
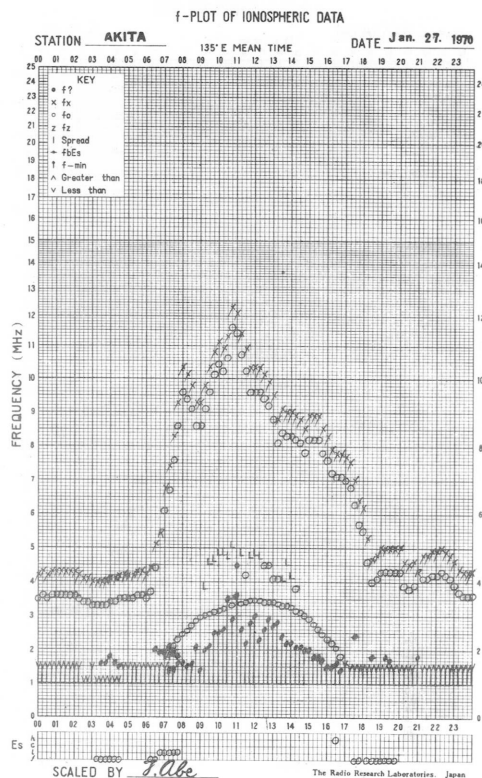
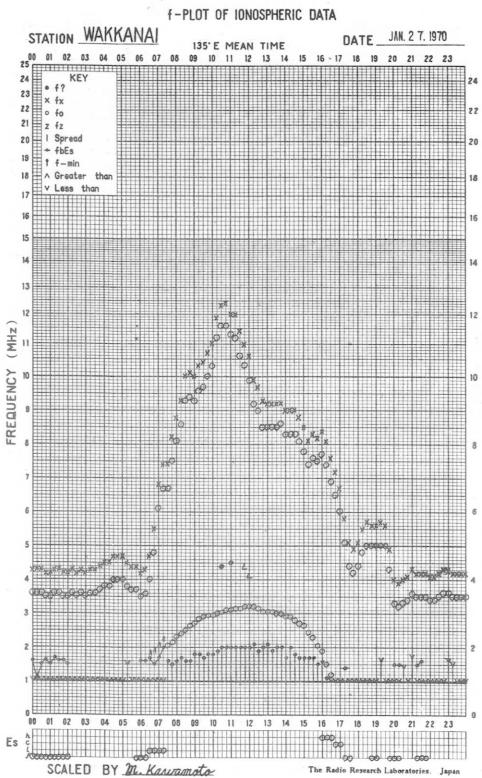


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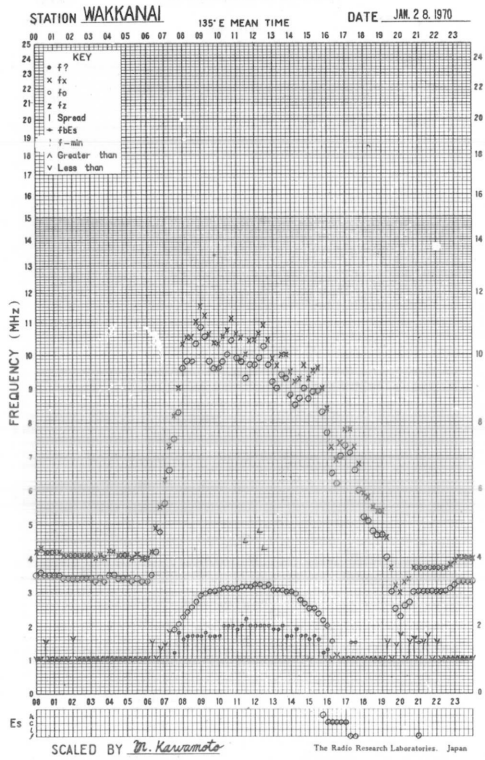
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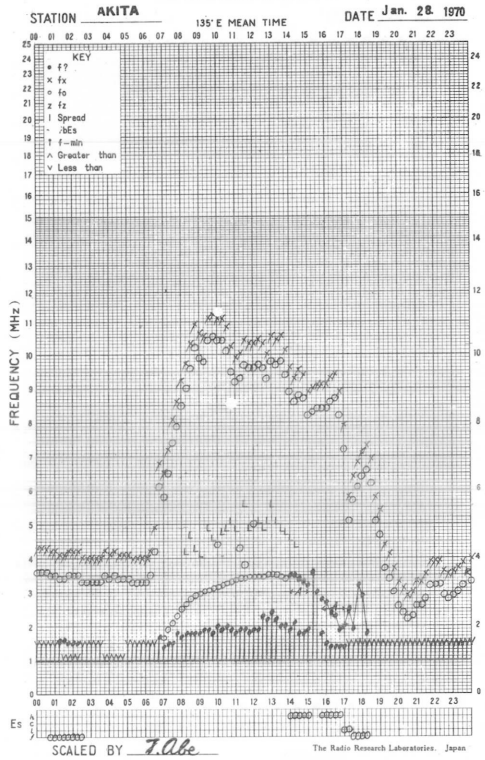




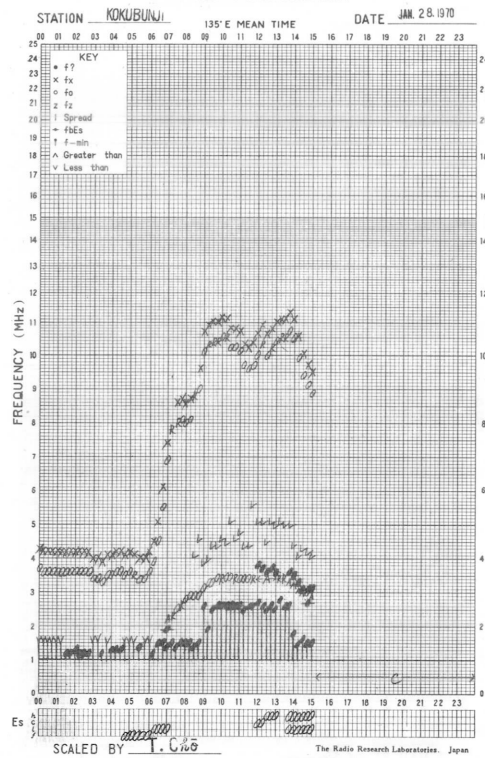
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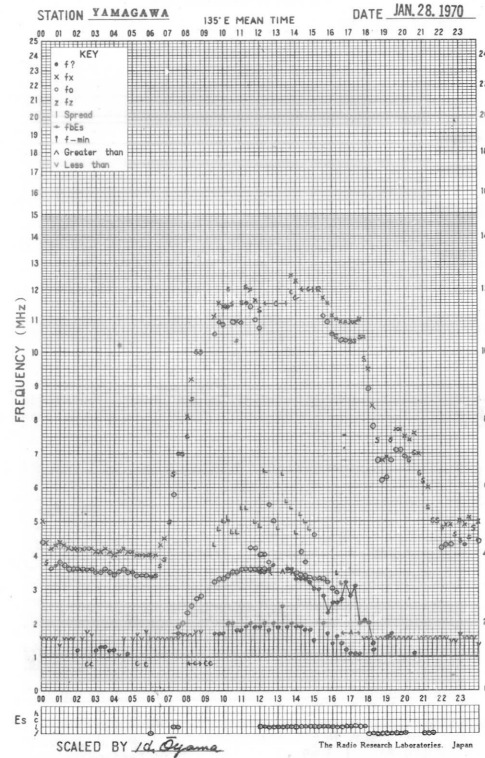
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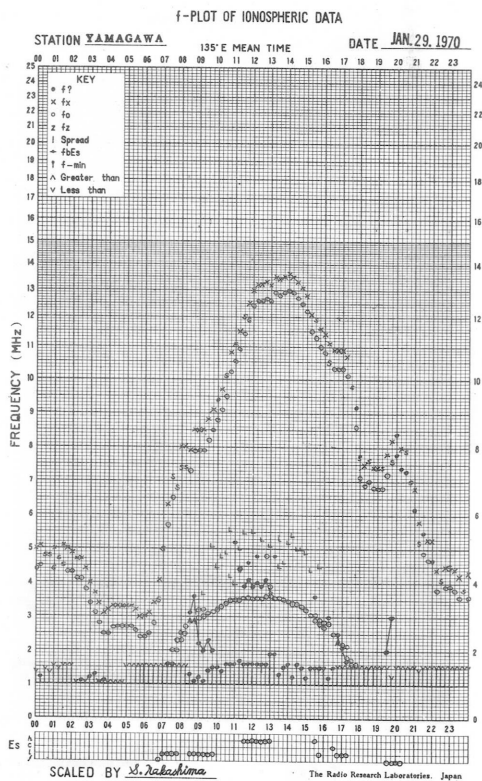
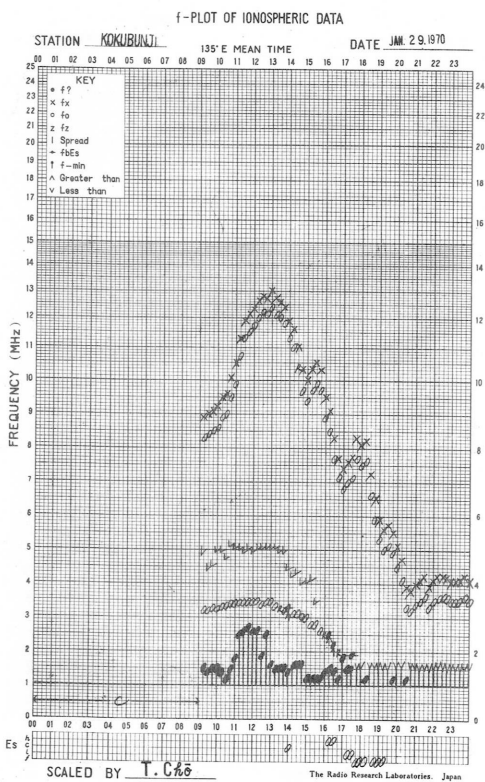
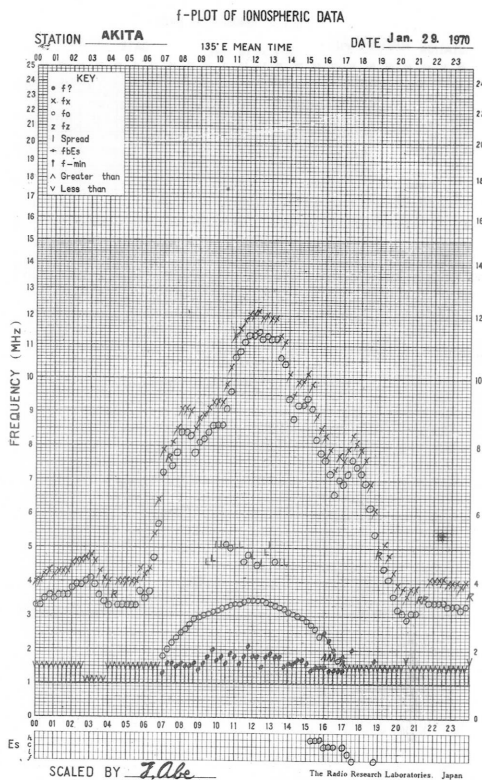
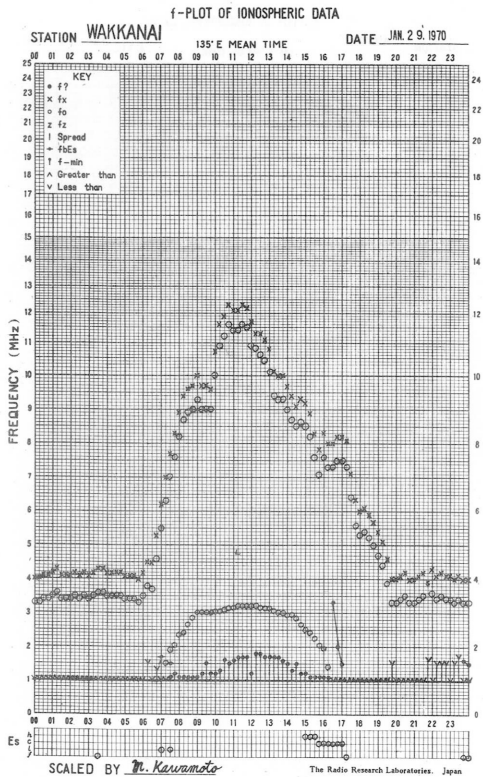
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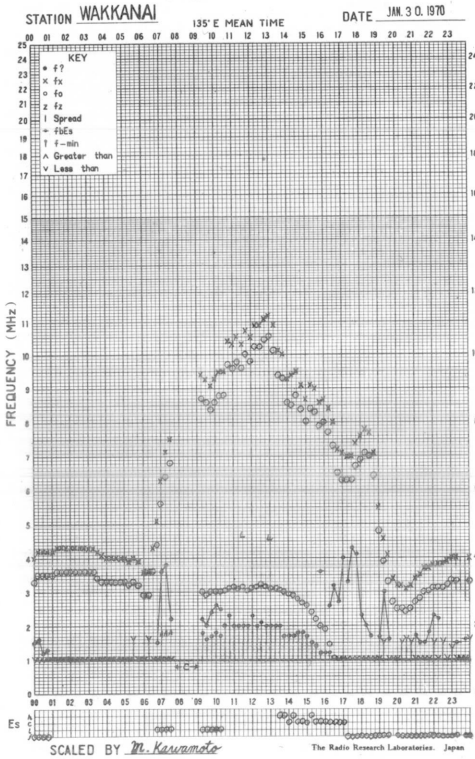
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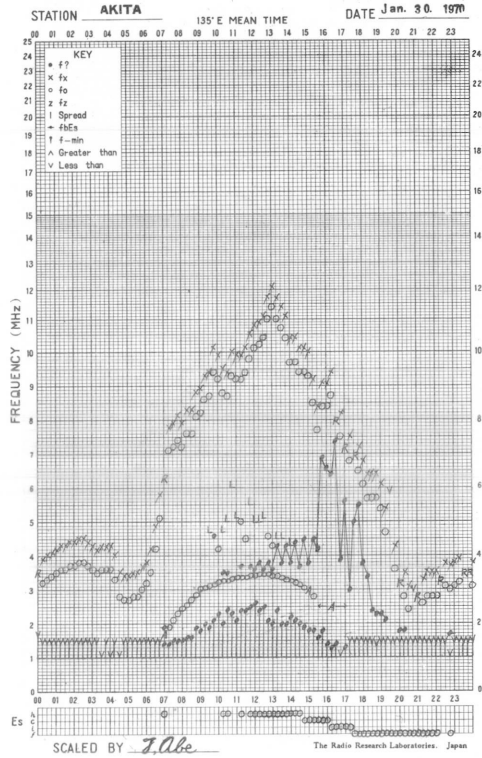




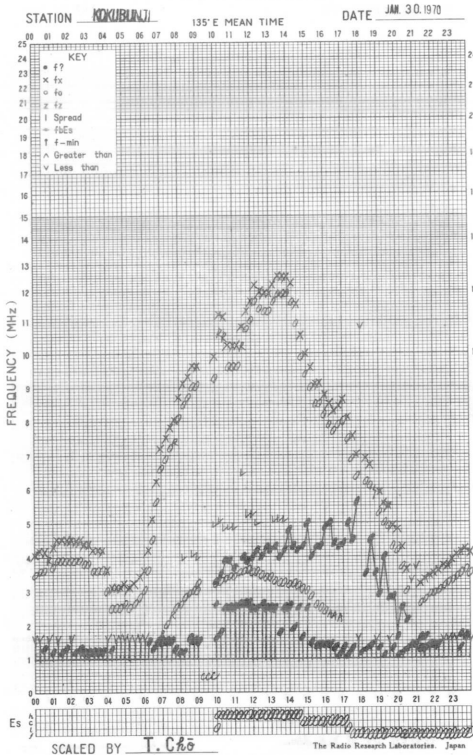
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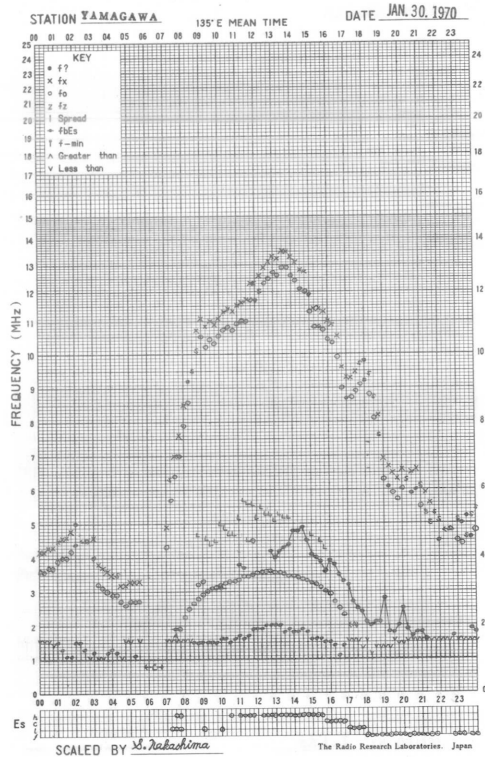
f-PLOT OF IONOSPHERIC DATA

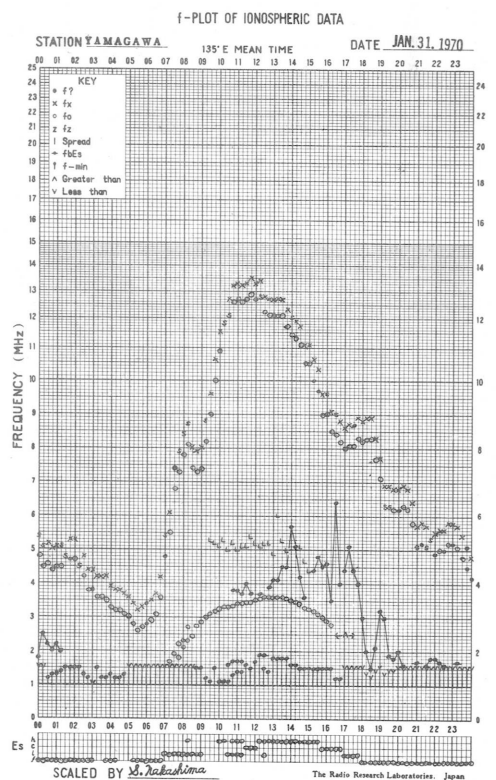
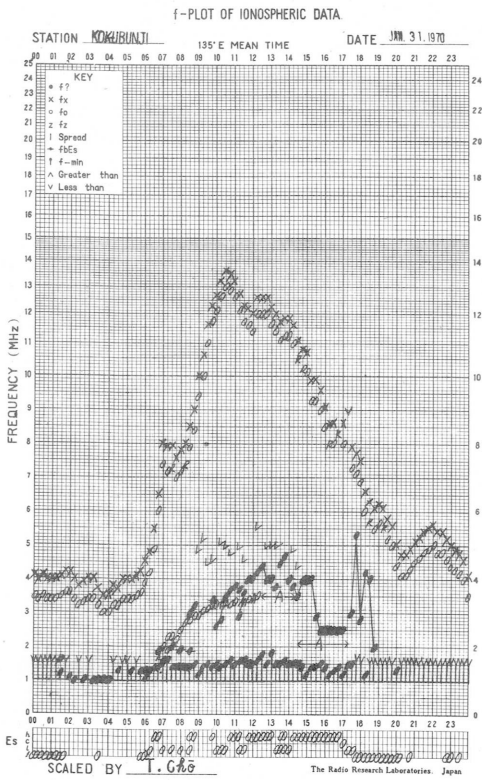
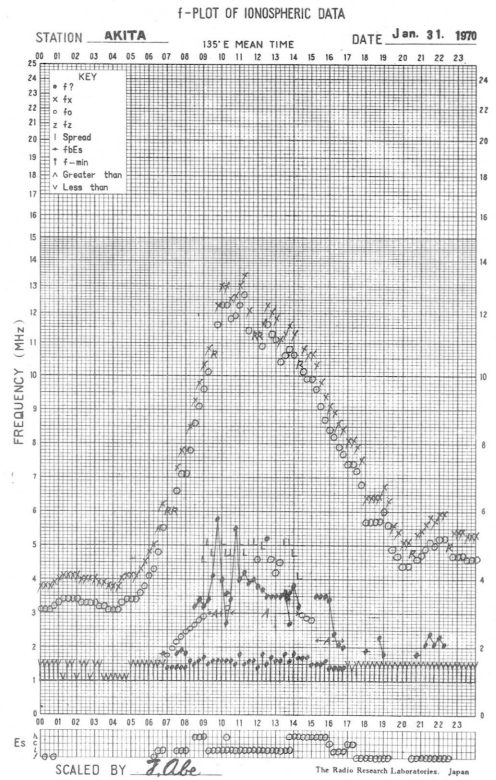
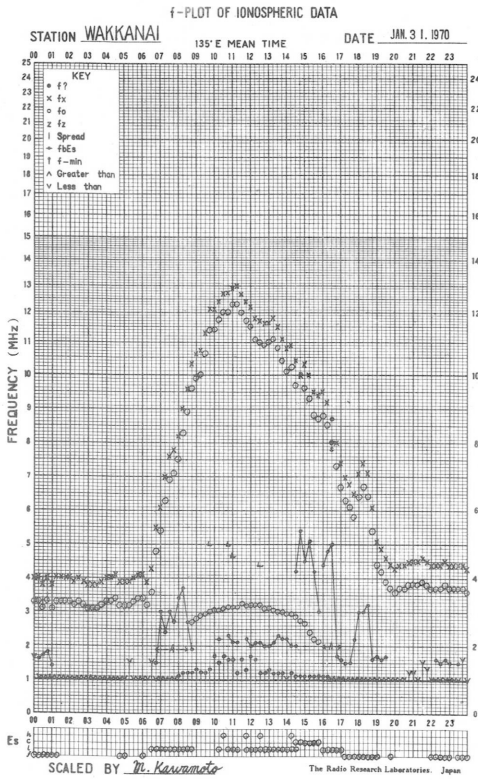


f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA





## SOLAR RADIO EMISSION

Flux Density and Variability										
Month: January 1970						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	6	6	(7)	7	6	0	0	(0)	0	0
2	6	6	(7)	-	7	0	0	(1)	-	0
3	6	6	(6)	46	6	1	0	(0)	1	0
4	40	37	(53)	24	42	1	1	(0)	0	1
5	22	21	(13)	8	21	0	0	(0)	1	0
6	7	7	(7)	5	7	0	1	(0)	0	1
7	5	5	(6)	5	5	0	0	(0)	0	0
8	5	6	(5)	5	5	0	0	(0)	0	0
9	(5)	-	-	(5)	(5)	(0)	-	-	(0)	(0)
10	7	8	(9)	18	8	0	0	(0)	1	0
11	17	25	(20)	11	20	0	0	(0)	0	0
12	16	17	(17)	15	15	1	1	(1)	1	1
13	15	14	(15)	12	14	1	1	(1)	1	1
14	9	10	(10)	9	10	1	0	(0)	0	0
15	10	10	(10)	6	10	1	1	(1)	0	1
16	5	6	(6)	(5)	6	0	0	(0)	(1)	0
17	6	6	(6)	5	6	1	0	(0)	0	1
18	6	5	(5)	7	5	0	0	(0)	1	0
19	6	6	(6)	7	6	0	0	(0)	1	0
20	7	6	(6)	6	7	0	1	(1)	1	0
21	8	7	(7)	6	7	1	1	(1)	1	1
22	7	5	(5)	11	6	1	0	(0)	2	0
23	11	7	(5)	5	9	1	1	(0)	0	1
24	5	5	(5)	5	5	0	0	(0)	0	0
25	5	5	(5)	6	5	0	0	(0)	1	0
26	6	6	(5)	14	6	1	1	(0)	1	1
27	15	19	(19)	6	16	1	1	(1)	1	1
28	6	5	(5)	5	5	1	0	(0)	0	0
29	5	5	(5)	7	5	0	0	(0)	1	0
30	7	7	(7)	6	7	1	1	(1)	*	1
31	5	5	(5)	7	6	1	1	(0)	1	1

Note No observations during the following periods:

2nd 2150- 3rd 0030  
 9th 0035- 0735  
 9th 2300- 2400  
 16th 2305- 17th 0020

\*: interference by atmospherics.

## SOLAR RADIO EMISSION

Flux Density					
Month: January 1970					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	36	34	(32)	32	34
2	33	33	(30)	33	32
3	34	34	(31)	30	33
4	(34)	33	(34)	31	33
5	33	33	(34)	31	33
6	31	31	(31)	29	31
7	31	32	(31)	31	31
8	32	32	(31)	32	32
9	-	-	-	32	(32)
10	34	34	(33)	33	33
11	35	34	(34)	37	34
12	38	37	(37)	35	37
13	38	37	(35)	35	37
14	36	36	(34)	33	35
15	36	36	(36)	33	35
16	34	35	(34)	38	34
17	42	39	(35)	37	39
18	39	38	(38)	41	38
19	41	40	(35)	41	40
20	41	40	(40)	40	41
21	41	40	(39)	-	40
22	38	36	(36)	35	37
23	35	34	(34)	30	35
24	32	31	(30)	29	31
25	31	30	(30)	30	30
26	32	32	(32)	33	31
27	36	34	(32)	30	34
28	31	29	(30)	30	30
29	30	28	(29)	33	29
30	33	34	(34)	29	33
31	29	30	(29)	36	29

Note No observations during the following periods:

31st	2145-	1st	0040	21st	0655-	0700
4th	0000-		0135	21st	2150-	2400
9th	0034-		0620			



<u>Distinctive Events</u>								
(single-frequency observations)								
Month: January 1970								
Observing station: Hiraiso								
Normal observing period: 2150 - 0750 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density		Remarks
	MHz	UT	UT	minutes		$10^{-22} \text{ W m}^{-2} (\text{Hz})^{-1}$	peak	
22	200	0407.5	0409.0	4.0	C	90	20	
	100	0407.5	0408.5	3.0	C	> 300	> 15	
31	200	0551.0	0551.5	2.5	C	265	40	
	100	0551.0	0551.0	3.0	C	160	10	



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

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

MEASURED AT HIRAISO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M	
1	1	4	6	14	12	12	8	-3	ES 4	-8	-9	ES -27	-20	-17	-23	-28	ES -20	ES -33	-28	-2	3	6	4	1	
2	4	11	10	9	16	22	5	ES -1	2	-6	-6	-10	-1	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-1	3	4	0	
3	2	8	6	10	16	16	6	ES -6	ES 6	ES -9	ES -9	-11	-18	-22	ES -33	ES -33	ES -33	ES -33	-28	-6	4	4	4	6	
4	2	6	8	12	16	22	4	ES -1	ES -1	ES -1	ES -16	-7	-16	-16	-28	ES -33	ES -33	ES -33	ES -33	ES -33	3	5	5	3	
5	3	4	12	10	19	13	16	ES -6	ES -4	ES -18	-22	-23	-28	-23	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-6	4	3	1	
6	-2	0	3	10	15	5	2	ES -15	ES -7	ES -10	-23	-8	-11	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-5	9	5	3	
7	1	4	10	13	16	15	13	5	-14	ES -8	ES -16	-18	-22	ES -34	ES -34	ES -34	ES -34	2	1	-15	1	4	C	2	
8	-1	6	10	17	16	15	14	0	ES 2	ES -15	ES -9	ES -17	-22	-18	ES -33	ES -34	ES -34	ES -34	ES -11	C	C	C	7	2	
9	C	C	C	11	11	24	15	1	ES 6	ES -10	ES -19	ES -32	C	C	C	C	C	C	C	9	8	12	8	6	
10	1	2	10	12	7	16	16	ES 0	ES 5	ES -10	ES -6	ES -25	-18	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	2	8	3	4	
11	0	1	6	10	16	16	15	8	ES 1	ES -10	ES -9	ES -10	-16	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	4	3	-1	-2	
12	-2	3	7	10	13	15	13	7	4	ES -7	ES -8	-16	-16	-16	-23	ES -34	ES -34	ES -34	ES -33	ES -33	-5	5	0	2	
13	4	8	7	13	9	17	18	10	ES 2	ES -5	ES -12	ES -27	-22	-25	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-1	4	1	2	
14	0	0	7	11	21	19	19	18	18	-3	-5	-1	-10	-19	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	0	0	0	-7	
15	-13	-1	2	7	12	18	24	17	10	-13	ES -3	ES -12	-12	-26	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	-1	5	2	1	
16	-4	2	4	8	14	16	14	20	13	ES -1	ES -7	ES -10	-11	-28	ES -33	-16	ES -33	ES -33	ES -33	ES -33	-1	4	2	-1	
17	-2	3	7	S	16	18	8	15	14	11	ES -7	-11	ES -10	ES -16	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	3	6	2	-1	
18	-2	1	5	12	18	14	22	21	5	ES 9	-6	-7	-5	-20	-20	ES -34	ES -34	ES -34	ES -34	ES -34	1	6	-1	-1	
19	0	0	8	12	19	18	16	15	14	6	-8	-12	-13	-22	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-5	-2	-1	-4	
20	-4	1	6	12	13	14	20	11	14	-3	-1	-8	-12	-22	ES -33	ES -33	ES -33	-25	-23	ES -33	-3	4	3	1	
21	1	2	5	10	21	15	18	16	18	9	10	ES -10	ES -9	ES -20	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	-3	1	0	-7	
22	-2	0	7	10	16	4	8	12	8	9	-3	-8	-14	-24	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-22	-2	6	6	-3
23	0	2	6	ES 19	18	6	8	21	8	ES -11	ES -3	ES -11	-11	-21	ES -24	ES -29	ES -29	ES -32	ES -32	ES -32	-2	5	-2	-2	
24	ES 3	0	2	12	14	15	16	21	-3	4	2	-7	-11	-18	ES -28	ES -33	ES -33	ES -33	ES -33	ES -33	-11	-3	-4	-4	
25	-3	1	4	8	12	5	0	15	19	ES -1	-6	-10	-12	-22	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-1	4	-2	-2	
26	-4	3	3	12	15	2	13	13	3	ES -2	ES -3	-13	-15	-29	ES -29	ES -32	ES -32	ES -32	ES -32	ES -32	-3	4	-2	-3	
27	-4	-2	3	13	14	11	20	2	0	ES -8	4	-6	-6	-13	ES -29	ES -32	ES -32	ES -32	ES -32	ES -32	3	2	-3	-1	
28	-2	0	3	8	17	16	13	6	ES -2	ES 0	ES -3	ES -15	-19	ES -33	ES -33	ES -30	ES -30	ES -33	ES -33	ES -33	-25	-5	0	-4	
29	-6	-3	2	8	14	16	13	17	6	ES 3	10	ES -24	-18	-22	-27	ES -30	ES -30	ES -33	ES -33	ES -33	-10	2	-2	-2	
30	-6	-1	3	14	15	8	-2	16	8	ES 3	ES 4	ES -23	ES -23	ES -29	-23	-20	-20	-26	ES -32	ES -17	1	7	3	-1	
31	3	3	8	14	19	21	13	-1	ES 0	ES 4	ES -3	ES -5	ES -3	ES -10	ES -24	ES -18	ES -18	ES -18	ES -18	ES -18	5	4	2	0	
CNT	30	30	30	30	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30	30	30	31	
MED	US 0	2	6	US 12	16	15	13	10	ES 5	ES -3	ES -6	ES -11	ES -14	ES -22	ES -33	ES -33	ES -33	ES -33	ES -33	ES -33	-1	4	2	-1	
UD	3	8	10	ES 14	19	22	20	21	18	9	4	ES -8	ES -5	ES -16	-23	-20	-20	ES -25	ES -18	ES -6	4	8	6	4	
LD	ES -6	-1	2	ES 8	11	5	2	ES -6	ES -4	ES -13	ES -16	ES -27	ES -22	ES -33	ES -34	ES -34	ES -34	ES -34	ES -34	ES -34	-10	-2	-2	-4	

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jan. 1970	Whole Day Index	H B			W W V			L M			W W V H			Warning			Principal magnetic storms						
		06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4o	4	4	4	4	-	3	4	4	4	-	4	4	4	-	4	N	N	N	N			
2	5-	(4)	(4)	4	5	(5)	5	5	5	5	-	4	4	5	-	4	N	N	N	N			
3*	4o	4	5	4	4	-	3	4	4	5	-	-	4	4	-	4	N	N	N	N			
4	4o	4	4	(4)	4	-	5	4	(4)	-	-	-	4	4	-	4	N	N	N	N			
5	4o	3	4	4	4	-	4	4	4	4	-	4	4	4	-	4	N	N	N	N			
6	4o	3	4	4	4	(4)	4	4	4	4	-	4	4	3	-	4	N	N	N	N			
7	4o	5	4	4	4	-	5	4	3	4	-	4	4	4	-	(4)	N	N	N	N			
8	4o	5	4	4	4	-	4	(4)	4	4	-	4	4	3	-	C	N	N	N	N			
9	4o	(4)	(3)	(4)	(4)	(4)	(4)	5	(4)	3	-	(4)	(4)	4	-	5	N	N	N	N			
10	4o	4	4	4	4	-	4	4	4	4	-	-	4	3	-	4	N	N	N	N			
11	4-	4	4	4	4	-	3	(4)	(3)	-	-	-	4	4	-	4	N	N	N	N			
12	4o	3	4	4	4	-	4	4	4	4	-	(4)	4	4	-	4	N	N	N	N			
{13}	4o	4	4	4	4	-	3	4	5	4	-	5	4	4	-	4	N	N	N	N			
{14}	4-	3	4	3	4	(4)	4	4	3	4	-	4	5	4	-	4	N	N	N	N			
{15}	4o	4	4	5	4	-	4	4	4	4	-	4	4	4	-	4	N	N	N	N			
16	4+	4	4	4	4	-	4	4	4	5	-	5	4	4	-	4	N	N	N	N			
17	4o	4	4	3	5	(5)	4	4	4	4	-	-	4	5	-	4	N	N	N	N			
18	4o	4	4	(4)	4	-	5	4	(4)	-	-	-	4	4	-	4	N	N	N	N			
19	4-	4	4	4	4	-	3	4	3	3	-	4	4	4	-	4	N	N	N	N			
20	4o	5	4	4	4	-	4	4	4	4	-	4	4	5	-	4	N	N	N	N			
21	4+	5	5	4	4	-	4	4	4	4	-	4	4	5	-	4	N	N	N	N			
22	4+	5	4	4	5	-	5	4	4	4	-	4	4	4	-	4	N	N	N	N			
23	4+	5	4	4	4	-	5	4	4	4	-	4	4	4	-	4	N	N	N	N			
24	4o	4	4	4	4	-	4	4	5	4	-	-	4	3	-	3	N	N	N	N			
25	4o	4	5	(4)	4	-	4	3	(4)	-	-	-	(3)	(2)	-	(3)	N	N	N	N			
26	4o	4	4	4	3	-	4	4	(4)	4	-	4	(3)	(2)	-	(3)	N	N	N	N			
27	4o	4	4	4	4	-	4	4	3	4	-	4	4	4	-	(4)	N	N	N	N			
28	4o	4	4	4	4	-	4	4	4	4	-	4	4	4	-	3	N	N	N	N			
29	4+	4	4	5	5	-	4	4	4	4	-	4	4	5	-	4	N	N	N	N			
30 <sup>Δ</sup>	4o	4	4	4	4	(4)	3	4	5	4	-	4	4	4	-	4	N	N	N	N			
31*	4+	4	5	5	4	(4)	4	4	5	4	-	-	4	4	-	4	N	N	N	N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

\* = MAGSTORM

o = MAGCALME

Δ = 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.

Jan. 1970	S W F						Start- time	Dura- tion	Type	Imp.	Correspondence		
	Drop-out Intensities (db)										Flare	Solar Noise	Mag.
	CO	LM	HA	TO	HB	SH							
28		-		-'		18	06.07	20	S	1+	x		



## I N U B O

1970	S P A									Remarks
Jan.	Phase Advance (degrees)					Time (U. T. )				
DATE	GBR	WWVL	NAA	NWC	HA3	Start	End	Maximum		
10	25	32	29	<u>80</u>	-	0349	0545	0410	X	
11			11	<u>44</u>	27	0126	0231	0138	X	
11			13	<u>36</u>	22	0316	0415	0345		
13			15	<u>32</u>	34	0056	0130	0101	X	
13			12	<u>24</u>	25	0207	0238	0218	X	
15				8		0053	0119	0058		
17			13	<u>22</u>	17	0403	0448	0414		
24				16	<u>25</u>	0214	0400	0230	X	
24				28		0523	0623	0540	X	
24				96		0700	0836	0716	X	
26				8	<u>51</u>	2217	2340	2248	X	
27				<u>20</u>	17	0123	0204	0127	X	
27				8		0317	0334	0322		
27				<u>40</u>	25	0358	0514	0406	X	
27				28		0547	0628	0554	X	
27				16		0638	0707	0645		
28			13	-	<u>39</u>	0105	0222	0114	X	
28		<u>25</u>	10	-	20	0406	0448	0416	X	
28	<u>65</u>	13	28	-		0607	0642	0617	X	
28				28		0711	0800	0720		
28					27	2214	2247	2228	X	
28			11	20	<u>27</u>	2322	2353	2330	X	
28					20	2354	0106	0031		
29			8	<u>20</u>		0018	0049	0027	X	
29				8	<u>15</u>	0112	0152	0124		
29				14	<u>20</u>	0200	0219	0214		
29					7	0234		0237		
29				<u>12</u>	10	0315	0342	0329	X	
29				16		0717	0743	0720	X	
30	22		12	<u>60</u>		0523	0639	0530		
30			21			0615	0702	0627		
30				12		0733	0802	0738	X	

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IONOSPHERIC DATA IN JAPAN FOR JANUARY 1970

第 22 卷 第 1 号

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1970年5月20日 印 刷  
1970年5月25日 發 行 (不許複製非売品)

編 集 兼  
發 行 人

今 野 清 恒

東京都小金井市貫井北町4丁目2-1

發 行 所

郵 政 省 電 波 研 究 所

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