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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	}	The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oF1		
f_oE		
f_oEs		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_bEs		The lowest ordinary wave frequency at which the Es layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min		The frequency below which no echoes are observed.
$M(3000)F2$		The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$		The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$		The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$		The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'Es$		The lowest virtual height of the trace used to give the f_oEs .
$hpF2$		The virtual height of the $F2$ layer measured on the ordinary

$ypF2$ wave component at a frequency equal to $0.834 f_o F2$.
 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 $0.969 f_o F2$).

a. Descriptive Letters

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

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

b. Qualifying Letters

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

the monthly tabulation sheets.

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

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

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

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

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

d. Description of Standard Types of *Es*

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

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

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

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

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

S A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace. The rising trace alone is classified as 'S'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal *Es* trace such as *Es-L*, or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine f_oEs and $h'Es$. 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

± 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	± 40 Hz for the upper side-band
Calibration	every half an hour

The meaning of *Descriptive symbols* is as follows:

- C : Measurement influenced by, or impossible because of, any non-propagational reasons.
- S : Measurement influenced by, or impossible because of, interferences or atmospheric.
- U : Inaccurate measurement influenced by interferences, atmospheric, or non-propagational reasons.
- E : Less than the following figure.

b. Radio Propagation Quality Figures

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

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

The tabulated circuits contain Hamburg (commercial circuit), WWV (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), Lima (commercial circuit) and WWVH (10 and 15 MHz frequencies broadcast from Hawaii), which are received at Hiraio Branch.

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

N = normal
 U = unstable
 W = disturbed

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

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

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

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

(i) SWF

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

Circuits and Drop-out intensities

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

Start-time and Duration

Types

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

Importances

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

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

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

(ii) SPA

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

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

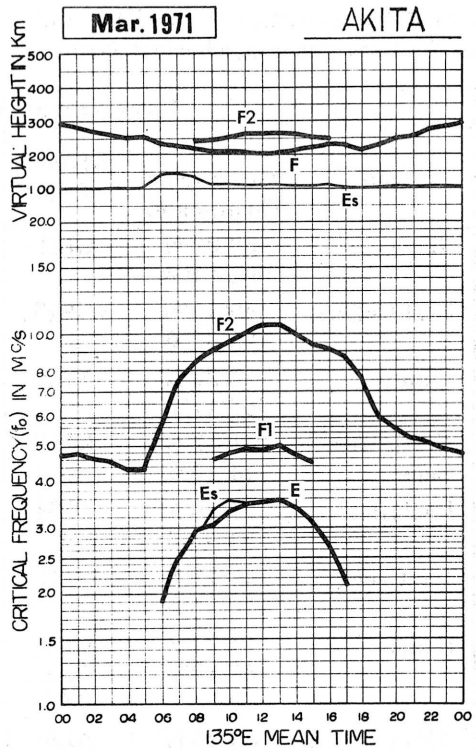
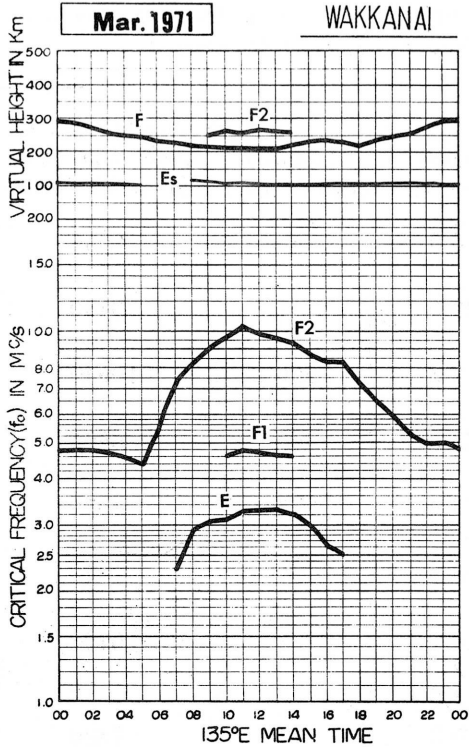
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22'N 001°11'W	GBR	16.0	40	9550
Fort Collins	40°41'N 105°03'W	WWVL	20.0	1.8	9190
Cutler	44°39'N 067°17'W	NAA	17.8	1000	10640
North West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

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

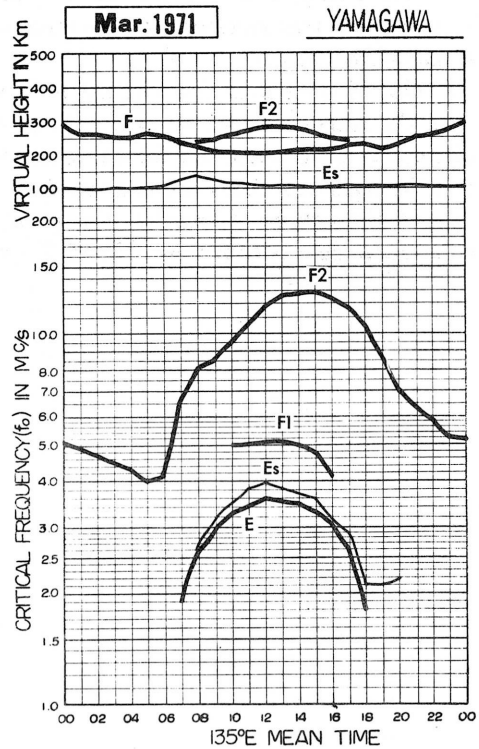
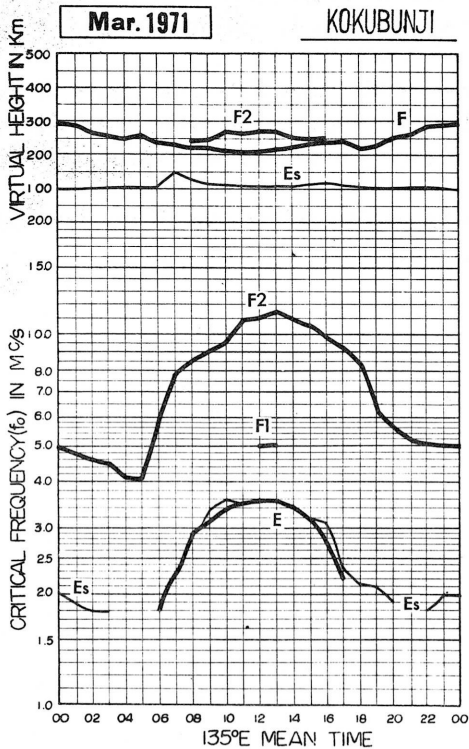
Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

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

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

MAR. 1971

FOF2 (0.1 MHz)

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

Station	WAKKANAI				Lat. 45 23.6 N	Long 141 41.1 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	46	46	45	45	45	43	50	73	82	86	93	102	113	113	103	90	93	97	76	57	49	48	48	48
2	47	47	46	46	47	45	54	70	87	93	87	104	103	94	85	87	97	81	69	60	60	47	44	46
3	48	48	50	49	50	46	53	74	89	90	93	113	105	90	94	94	83	83	76	69	60	50	47	47
4	48	48	47	49	51	45	50	78	84	105	106	106	108	108	98	91	86	69	71	65	50	50	48	46
5	43	43	43	41	37	37	53	V 69	86	98	110	104	R 102	102	92	83	83	76	70	59	51	48	44	44
6	44	43	43	43	44	41	53	64	81	91	105	98	112	108	94	85	88	84	67	51	52	47	47	48
7	47	46	45	43	43	43	53	65	77	80	94	98	108	90	89	90	94	90	74	65	59	48	48	U 48
8	S 50	F 55	F	F	F	F	F	73	82	90	101	104	116	118	96	89	101	75	65	53	48	49	49	40
9	47	47	43	40	40	41	45	71	101	98	98	113	117	107	85	84	96	85	71	56	43	42	43	43
10	43	43	43	44	43	40	53	66	83	95	103	103	95	91	84	86	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	90	98	93	83	83	81	74	67	50	49	49	44	43
12	44	43	43	40	43	41	49	65	71	81	88	93	93	96	87	74	77	80	68	C	C	C	C	C
13	C	C	C	C	C	C	C	C	64	67	69	76	84	85	93	89	80	79	80	72	62	60	I 60	55
14	53	54	49	47	46	43	54	73	76	90	88	116	108	97	104	90	87	80	74	69	72	59	56	I 56
15	57	53	52	42	40	38	I 42	50	59	71	78	93	101	I 98	C	C	C	82	67	61	58	51	F	F
16	F	F	F	F	43	43	56	79	C	C	93	C	C	106	96	C	C	C	82	60	C	54	C	C
17	51	C	47	C	C	41	54	I 70	78	103	106	102	95	107	94	86	84	83	70	57	56	51	50	51
18	F 48	E 47	F 49	48	42	41	50	68	78	93	108	104	96	94	95	87	83	83	72	59	53	52	53	53
19	53	C	C	C	C	44	60	74	77	82	C	C	C	99	98	C	C	94	74	C	C	48	46	44
20	43	43	43	43	43	42	61	68	87	82	93	97	100	99	98	95	100	89	79	68	63	56	53	53
21	53	52	50	50	47	45	65	74	81	109	106	107	R	99	90	82	89	90	73	66	70	67	57	50
22	51	52	51	51	52	49	61	73	82	98	107	101	93	91	92	90	88	83	76	67	65	58	57	55
23	54	54	55	54	53	53	64	73	86	92	96	93	94	86	88	85	83	83	73	67	65	60	63	62
24	62	60	62	58	57	56	71	78	93	100	95	90	92	93	96	89	89	83	71	70	69	66	66	63
25	64	63	62	58	53	50	69	88	103	113	113	107	100	89	81	83	85	74	69	73	74	73	69	54
26	54	56	57	57	53	49	60	78	85	92	100	97	99	97	94	87	84	76	81	78	75	60	50	51
27	48	48	48	48	47	47	55	74	76	83	97	107	113	105	94	82	81	76	73	66	63	62	60	54
28	54	52	F 51	51	36	38	56	65	75	89	103	104	94	96	97	86	80	84	79	73	59	50	48	49
29	47	47	46	44	41	45	58	69	76	86	86	93	93	88	90	88	83	83	81	70	63	56	50	50
30	50	50	48	47	48	47	66	70	75	76	84	90	86	87	85	83	83	86	82	68	63	60	58	55
31	53	53	52	52	51	50	60	73	92	91	88	91	95	95	95	103	I 82	80	73	67	70	68	64	64
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	27	26	26	28	28	29	29	29	29	29	27	31	30	28	27	29	30	28	27	29	27	27
MED	48	48	48	47	46	44	54	73	82	91	96	102	99	96	94	87	84	83	73	66	60	52	50	50
UQ	53	53	52	51	51	47	60	74	86	98	105	104	108	104	96	90	89	84	76	69	65	60	58	54
LQ	47	46	45	43	43	41	53	68	76	83	88	93	94	91	88	84	83	79	70	59	52	49	48	46

The Radio Research Laboratories, Japan

MAR. 1971

FOF2 (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

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											400	410												
2											L	L	L											
3										400	430	420	U	L	L									
4										L	A	L			L	U	L							
5									420		L	440			L									
6												500			L									
7											420				L									
8												460	U	L		U	L							
9										L			L	L	L									
10										L	L	L	L	L										
11									C	C	C	490	L	L										
12										L					440									
13									420	L	L		L	L	L	L								
14										L		L	470	L	L	L								
15										L	L	460	U	L	C	C	C							
16									C	C	L	C	C	L	L	C								
17										L	L	480	L											
18									L	480	480	470			L									
19										C	C	C			L	C								
20										L	460		490	L										
21										L	L	L												
22										490	L	480	U	500										
23										L	L	480	480	U	480	U	440	430						
24										L	460			500	480									
25										U	480	490	480	480	U	460								
26										L	490	480	460	L	L									
27									L	L	460	490	L		L									
28										L	L	480	470	L	470									
29										L		U	490	480	L	L								
30											480			L	L									
31										L	460		L	L	L	L								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	4	11	16	13	5	6	1								
MED									420	450	460	480	470	U	460	460	430							
UQ									470	485	490	480	U	480	470									
LQ									420	445	460	470	U	450	U	440								

MAR. 1971

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAR. 1971

FOE (0.01 MHz)

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

Station	wAKKANAI				Lat. 45 23.6 N	Long. 141 41.1 E	Sweep 1	MHz to 20	MHz in 20	sec	in automatic	operation												
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	205	270	295	310	325	330	335	325	300	260	190		E				
2							S	205	270	300	320	330	340	335	325	300	245		S					
3							S	205	280	305	315	320	330	330	320	300	265	185		S				
4							E	220	290	305	300	330	335	325	310		A	A	170		S			
5							S	200	270	300		A	A		A	330	315	295	250	185		S		
6							S	210	285	300		A	330	330	330	315	295	235	180		E			
7							S	215	285	300	300		A	340	335	320	300	255	200		A			
8							E	220	285	300	310	330	340	330	305	290	250	190		S				
9							S	225	280	300	310	325	330	325	305	285	225		A	E				
10							S	225	270	305		A	A		A	A	A	C	C	C				
11						C	C	C	C	C	C	325	320	310	305	300	245		S	S				
12							115	225	290	300	310	330	340	330	320	295	245		A	A				
13						C	C	C	270	300	305	305		A	A	A	A	245	200		A			
14							S	230	275	300	310	320	I A 330	I A 330	330	320	300	240	185		S			
15							C	225	280	300	315	320		A	C	C	C	C	200		E			
16							S	225		C	C	305	C	C	330	310	C	C	C	S				
17							S	I C 220	285	305	320	330	310	I R 315	305		A	A	195		S			
18							A	230	280	300	305	R	R	340	325	300	265	200		A				
19							S	235	290	310		C	C	C	A	A	C	C	A	S				
20							S	230	290	305		R	325	325	325	I A 315	300	A	200		A			
21							I S 170	250	295	300	310	330		A	R	320	300	265	190		S			
22							S	240	290	305	310	350	350	340	320	300	260		A	E				
23							S	240	300	305	325	345	I B 350	340	330	305	270	195		S				
24							S	260	300	320	340	335	330	315	320	315	280	210		A				
25							190	260	295	315	335	330	I A 340	330	325	310	270	205		S				
26							200	265	300	315	320	325		R	A	R	305	280	205		S			
27						S	S	250	295	300	305		A	R	A	315	295		A	A	A			
28							190	250	290	305	305	I A 320	325	330	325	300	270	200		S				
29							E	190	250	295	305	315		R	A	320	310	I A 305		A	R	A		
30							E	185	255	290	305	I A 320	320	335	335	325	305	285	210		S			
31							E	205	265	295	310	315	330	I A 325	325	325	300	I C 270	200		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						3	10	29	29	29	25	23	20	24	26	24	22	21	5					
MED						E	188	230	290	305	310	330	330	330	320	300	260	200		E				
UQ						E	190	250	295	305	320	330	340	335	325	302	270	200		E				
LQ						E	115	220	280	300	305	322	328	325	310	298	245	190		E				

The Radio Research Laboratories, Japan

MAR. 1971

FOE (0.01 MHz)

IONOSPHERIC DATA

MAR. 1971

FOES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

Station		WAKKANAI							Lat 45 23 '6 N		Long 141 41 '1 E		Sweep 1, MHz to 20 MHz in 20 sec in automatic operation													
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		E S 17	E	E	E	E	E	E S 12	G	G	G	G	G 24	G 28	G 30	G	G	G	E	E S 15	E S 15	E S 15	E S 16	E S 15		
2		E S 15	E	E	E	E	E	E S 13	G	G	G	35	G	G	G	G	G	G	E	J X 63	J X 25	E S 16	E S 16	E		
3		E	E	E	E	E	E	E S 15	25	G	G	G	G	G	G	G	G	G	E S 14	E	E S 14	E	J X 35	E		
4		E S 15	E	E	E	E	E	G	G	G	40	J X 48	G	G	G	G	27	31	J X 32	G E S 13	E	20	E	E S 15		
5		E	E	J X 23	J X 25	J X 30	J X 30	E S 15	G	G	38	43	J X 55	J X 41	J X 40	G	G	G	G E S 13	E S 14	E	E	E S 15	E S 15		
6		E S 15	E	E S 15	E	E	J X 23	E S 16	G	G	37	J X 50	G	G 26	G 18	G	G 20	G	E	E S 15	E S 16	E S 15	E	E		
7		E	E	E	E	E	E	E S 15	G	G	G	G	40	G 29	G	G	G	G	26	J X 27	E S 15	30	J X 25	J X 25	E S 16	
8		E S 15	E S 15	E	E	E	E	G	G	G	37	J X 43	G	G	G	G	G	G	E S 15	E	E	E S 16	E	E		
9		E	E	E	E	E	E S 15	E S 15	G	G	35	40	G	G	G	G	G	G	21	23	16	E S 15	E	E S 15	J X 34	
10		J X 21	J X 20	E	E	E	E	E S 16	G	G	G	J X 41	J X 41	37	J X 43	J X 40	40	C	C	C	C	C	C	C		
11		C	C	C	C	C	C	C	C	C	C	C	G	G	G 25	G	G	G	22	E S 14	21	20	E S 15	E S 15	E S 15	
12		20	16	17	18	E	E	G	G	G	G	G	G	G 25	G 26	G	G 20	G	21	J X 21	C	C	C	C	C	
13		C	C	C	C	C	C	C	C	C	32	38	36	G	36	34	44	31	G	G	E S 15	E S 15	E	E	20	
14		19	J X 19	14	15	E	E	E S 18	G	34	34	37	40	36	32	30	23	G	G	E S 15	E S 16	E S 16	E S 15	J X 21	J X 23	
15		J X 25	J X 23	18	E	15	E	C	G	G	37	G	G	41	C	C	C	C	G	E	E	E S 15	E	E S 14	17	
16		E	E	E	E	E	E	G	G	C	C	37	C	C	G	G	C	C	C	E S 17	J X 21	C	J X 25	C	C	
17		J X 22	C	E	C	C	J X 22	G	C	G	41	G	40	38	G	G	J X 31	29	G	25	J X 24	E S 16	J X 25	J X 28	23	
18		J X 24	18	E	E	E	J X 22	J X 24	30	31	33	36	G	G	G 30	G	G	G	G	J X 25	J X 20	J X 24	24	J X 23	20	
19		E S 15	C	C	C	C	23	G	G	21	G	C	C	C	J X 48	34	C	C	22	25	C	C	23	E	E S 17	
20		E	22	E	16	16	E	G	G	33	38	G	G	G	G 28	J X 33	24	36	G	21	E S 16	15	J X 21	E S 15	E S 15	
21		E S 15	E	E	E	E	E S 15	G	G	G	35	G	G	41	G	G	G	G	G	E S 14	J X 23	E S 15	E S 15	J X 23	E	
22		E	E	E	18	E	E	G	G	G	G	G	G	G	G	G	G	G	21	30	J X 23	E S 17	E S 16	E S 15	E S 20	E
23		E	E S 15	E	E	E	E	G	G	G	G	36	G	E B 36	G	G	G	G	G	E S 15	E	E S 15	E	E	E S 16	
24		E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	23	J X 23	24	E S 16	E S 16	E S 15	E S 15	
25		E	E	E	E	E	E S 15	G	G	G	36	36	39	40	G	G	42	G	G	E S 15	E S 15	E	E	E S 12	E S 16	
26		E S 15	18	J X 24	14	E	E	G	G	34	G	39	38	G	35	30	G 26	G 22	G	E S 15	E	E	E	15	E S 15	
27		E S 11	18	J X 21	J X 23	15	E S 13	G	29	33	34	G	35	G	36	G 25	G 23	34	24	21	15	E S 14	E S 17	E	E	
28		J X 26	24	15	E	E	E	G	G	G	G	34	35	G	G	G	G	G	G	E S 15	E	E	E S 15	E S 15	E	
29		E	E	E	E	E	E	G	G	G	G	G	G	34	G	G	31	28	G	30	E S 15	E S 14	E S 15	E S 16	E	
30		E S 15	E S 15	E S 16	E	E	E	G	G	G	G	36	G	G	G	G	G	G	G	20	19	E S 16	E S 15	J X 28	J X 25	
31		J X 23	18	23	E	E	E	G	G	G	41	G	G	38	G	G	G	C	G	E S 16	E	E S 15	E S 15	E S 15	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		29	27	28	27	27	29	28	28	29	29	29	29	29	30	30	28	26	29	30	28	27	29	28	28	
MED		E	E	E	E	E	E	G	G	G	G	34	G	E G 25	G	G	G	G	G	E	F 16	E	E S 15	E S 15	E S 15	
UQ		19	18	16	E 14	E	15	E S 15	G	G	37	37	35	36	30	G 25	31	21	21	23	20	16	E S 16	21	17	
LQ		E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E S 14	E	E S 14	E	E S 13	E	

The Radio Research Laboratories, Japan

MAR. 1971

FOES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

FBES (0.1 MHz)

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

Station	WAKKANAI				Lat. 45 23.6 N				Long. 141 41.1 E				Sweep 1	MHz to 20		MHz in 20		sec in automatic		operation					
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₇	E	E	E	E	E	E ₁₄	G	G	G	G	G ₂₄	G ₂₅	G ₂₇	G	G	G	G	E	E ₁₅	E ₁₅	E ₁₅	E ₁₆	E ₁₅	
2	E ₁₅	E	E	E	E	E	E ₁₃	G	G	G	27	G	G	G	G	G	G	E	25	20	E ₁₆	E ₁₆	E		
3	E	E	E	E	E	E	E ₁₅	G	G	G	G	G	G	G	33	G	G	E	E ₁₄	E	E ₁₄	E	18	E	
4	E ₁₅	E	E	E	E	E	G	G	G	48	G	G	G	G	25	30	30	G	E ₁₃	E	16	E	E ₁₅	E ₁₅	
5	E	E	12	20	20	15	E ₁₅	G	G	G	34	35	37	20	G	G	G	G	E ₁₃	E ₁₄	E	E	E ₁₅	E	
6	E ₁₅	E	E ₁₅	E	E	17	E ₁₆	G	G	G	33	G	G ₂₅	G	G ₁₈	G	G ₁₉	G	E	E ₁₅	E ₁₆	E	E ₁₅	E	
7	E	E	E	E	E	E	E ₁₅	G	G	G	G	35	G ₂₅	G	G	G	G	G	16	E ₁₅	E	20	20	E ₁₆	
8	E ₁₅	E ₁₅	E	E	E	E	G	G	G	G	36	G	G	G	G	G	G	E	E ₁₅	E	E	E ₁₆	E	E	
9	E	E	E	E	E	E ₁₅	E ₁₅	G	G	G	G	G	G	G	G	G	G	20	G	E	E ₁₅	E	E ₁₅	17	
10	E	17	E	E	E	E	E ₁₆	G	G	G	41	40	36	36	37	29	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	G	G	G ₂₄	G	G	G	19	E ₁₄	18	E	E ₁₅	E ₁₅	E ₁₅	
12	17	E	17	E	E	E	G	G	G	G	G	G	G ₂₄	G ₂₄	G	G	G	21	18	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	G	G	G	G	35	33	43	30	G	G	16	E ₁₅	E ₁₅	E	E	18	
14	15	17	E	E	E	E	E ₁₈	G	G	G	G	35	34	30	G	G	G	G	E ₁₅	E ₁₆	E ₁₆	E ₁₅	E	20	
15	23	19	E	E	E	E	C	G	G	G	G	G	35	C	C	C	C	G	E	E	E ₁₅	E	E ₁₄	12	
16	E	E	E	E	E	E	G	G	C	C	G	C	C	G	G	C	C	C	E ₁₇	18	C	22	C	C	
17	15	C	E	C	C	19	G	C	G	G	G	G	G	G	30	27	G	16	20	E ₁₆	24	25	E	E	
18	27	E	E	E	E	17	19	G	G	G	35	G	G	G	G	G	G	G	20	16	22	E	17	E	
19	E ₁₅	C	C	C	C	E	G	G	G	G	C	C	C	40	33	C	C	21	E ₁₅	C	C	E	E	E ₁₇	
20	E	E	E	E	E	E	G	G	G	G	G	G	G	G ₂₇	32	24	27	G	20	E ₁₆	E	20	E ₁₅	E ₁₅	
21	E ₁₅	E	E	E	E	E ₁₅	G	G	G	G	G	G	36	G	G	G	G	G	E ₁₄	17	E ₁₅	E ₁₅	E	E	
22	E	E	E	16	E	E	G	G	G	G	G	G	G	G	G	G	G	21	23	22	E ₁₇	E ₁₆	E ₁₅	E ₂₀	E
23	E	E ₁₅	E	E	E	E	G	G	G	G	36	G	E ₃₆	G	G	G	G	G	E ₁₅	E	E ₁₅	E	E	E ₁₆	
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	18	18	E	E ₁₆	E ₁₆	E ₁₅	E ₁₅	
25	E	E	E	E	E	E ₁₅	G	G	G	G	G	G	36	G	G	G	G	G	E ₁₅	E ₁₅	E	E	E ₁₂	E ₁₆	
26	E ₁₅	E	20	E	E	E	G	G	G	G	G	G	G	34	G ₂₉	G ₂₅	G ₂₀	G	E ₁₅	E	E	E	E	E ₁₅	
27	E ₁₁	14	17	16	12	E ₁₃	G	G	G	G	G	34	G	36	G ₂₅	G ₂₂	27	23	19	E	E ₁₄	E ₁₇	E	E	
28	26	E	E	E	E	E	G	G	G	G	G	36	G	G	G	G	G	G	E ₁₅	E	E	E ₁₅	E ₁₅	E	
29	E	E	E	E	E	E	G	G	G	G	G	G	34	G	G	34	28	G	20	E ₁₅	E ₁₄	E ₁₅	E	E ₁₆	
30	E ₁₅	E ₁₅	E ₁₆	E	E	E	G	G	G	G	36	G	G	G	G	G	G	G	18	E ₁₆	E ₁₅	17	25	E	
31	17	18	15	E	E	E	G	G	G	G	G	G	38	G	G	G	C	G	E ₁₆	E	E ₁₅	E ₁₅	E ₁₅	E	
CNT	29	27	28	27	27	29	28	28	29	29	29	29	29	30	30	28	26	29	30	28	27	29	28	28	
MED	E ₁₅	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
UQ	E ₁₅	E ₁₄	E ₁₂	E	E	E ₁₃	E ₁₅	G	G	G	33	24	34	G	G	G	G	G	17	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	
LQ	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₃	E	E	E	E	E	

MAR. 1971

FBES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

F-MIN (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₇	E	E	E	E	E	E ₁₄	16	16	15	17	18	20	17	20	18	16	15	E ₁₃	E	E ₁₃	E ₁₃	E ₁₆	E ₁₅	
2	E ₁₅	E	E	E	E	E	E ₁₃	12	12	17	17	17	17	18	16	18	15	E ₁₆	E	E	E	E ₁₆	E ₁₆	E	
3	E	E	E	E	E	E	E ₁₅	18	16	17	18	17	19	20	17	17	12	12	E ₁₄	E	E ₁₄	E	E	E	
4	E ₁₅	E	E	E	E	E	E	11	17	12	18	17	17	20	18	17	11	12	E ₁₃	E	E	E ₁₅	E ₁₅	E	
5	E	E	E	E	E	E	E ₁₅	11	12	16	17	16	18	17	20	19	11	12	E ₁₃	E ₁₄	E	E ₁₅	E ₁₅	E	
6	E ₁₅	E ₁₅	E	E	E	E	E ₁₆	16	12	13	16	17	17	16	11	16	11	11	E ₁₅	E ₁₅	E ₁₆	E ₁₅	E	E	
7	E	E	E	E	E	E	E ₁₅	15	13	14	18	20	17	16	17	17	16	15	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₆	E	
8	E ₁₅	E ₁₅	E	E	E	E	E	15	11	17	17	20	19	17	17	17	11	12	E ₁₅	E	E	E ₁₆	E	E	
9	E	E	E	E	E	E ₁₅	E ₁₅	11	15	14	18	18	20	19	19	17	15	11	E	E	E ₁₅	E ₁₅	E	E	
10	E	E	E	E	E	E	E ₁₆	11	11	17	18	20	20	18	17	17	C	C	C	C	C	C	C	C	
11	C	C	C	C	C	C	C	C	C	C	C	19	18	18	17	17	17	E ₁₆	E ₁₄	E ₁₅	E ₁₆	E ₁₅	E ₁₅	E ₁₅	
12	E	E	E	E	E	E	E	16	16	16	20	20	20	20	17	17	12	11	E	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	16	16	20	20	19	21	20	16	12	11	E	E ₁₅	E ₁₅	E	E	E	
14	E	E	E	E	E	E	E ₁₈	12	12	22	17	17	18	15	15	15	12	12	E ₁₅	E ₁₆	E ₁₆	E ₁₅	E ₁₅	E	
15	E	E	E	E	E	E	C	E	12	15	19	20	15	C	C	C	C	11	E	E	E ₁₅	E ₁₄	E	E	
16	E	E	E	E	E	E	E ₁₂	11	C	C	19	C	C	18	20	C	C	C	E ₁₇	E	C	E	C	C	
17	E	C	E	C	C	E	E ₁₃	C	11	18	16	18	20	16	18	11	17	16	E ₁₅	E ₁₅	E ₁₆	E	E	E ₁₅	
18	E	E	E	E	E	E	E	18	17	20	23	25	20	20	20	20	17	15	E	E	E ₁₅	E ₁₇	E	E	
19	E ₁₅	C	C	C	C	E ₁₃	E ₁₅	17	17	19	C	C	C	20	16	C	C	11	E ₁₅	C	C	E	E	E ₁₇	
20	E	E	E	E	E	E	E ₁₆	16	15	15	20	24	20	17	15	17	14	11	E	E ₁₆	E	E	E ₁₅	E ₁₅	
21	E ₁₅	E	E	E	E	E ₁₅	E ₁₇	16	13	18	20	17	17	18	18	19	17	12	E ₁₄	E	E ₁₅	E ₁₅	E	E	
22	E	E	E	E	E	E	E ₁₅	12	16	16	27	23	22	18	20	16	15	11	E	E ₁₇	E ₁₆	E ₁₅	E ₂₀	E	
23	E	E ₁₅	E	E	E	E	E ₁₅	15	17	17	20	24	36	27	23	19	16	16	E ₁₅	E	E ₁₅	E	E	E ₁₆	
24	E	E	E	E	E	E	E ₁₅	16	17	19	20	21	22	25	20	20	18	11	E	E ₁₈	E ₁₆	E ₁₆	E ₁₅	E ₁₅	
25	E	E	E	E	E	E	E ₁₅	E	12	15	18	21	23	20	20	20	11	15	E ₁₅	E ₁₅	E	E	E ₁₂	E ₁₆	
26	E ₁₅	E	E	E	E	E	E	11	17	11	24	25	20	18	18	17	13	11	E ₁₅	E	E	E	E	E ₁₅	
27	E ₁₁	E	E	E	E	E ₁₃	E ₁₅	12	12	17	17	17	22	19	19	12	11	13	12	E	E ₁₄	E ₁₇	E	E	
28	E	E	E	E	E	E	E	16	12	15	20	20	18	17	23	19	18	11	15	E ₁₅	E	E ₁₅	E ₁₅	E	
29	E	E	E	E	E	E	E	11	12	13	18	18	20	23	20	17	17	12	11	15	E ₁₅	E ₁₄	E ₁₅	E	E ₁₆
30	E ₁₅	E ₁₅	E ₁₆	E	E	E	E	16	17	16	17	18	23	23	15	19	20	12	E ₁₂	E	E ₁₆	E ₁₅	E	E	
31	E	E	E	E	E	E	E	12	12	17	19	20	17	24	20	18	12	C	11	E ₁₆	E	E ₁₅	E ₁₅	E ₁₅	E
CNT	29	27	28	27	27	29	28	28	29	29	29	29	29	29	30	30	28	26	29	30	28	27	29	28	28
MED	E	E	E	E	E	E	E ₁₅	12	15	17	18	19	20	18	18	17	14	12	E ₁₃	E	E ₁₅	E ₁₅	E ₁₂	E ₁₅	
UQ	E ₁₅	E	E	E	E	E	E ₁₅	16	17	18	20	20	20	20	20	18	16	14	E ₁₅	E ₁₅	E ₁₆	E ₁₅	E ₁₅	E ₁₅	E
LQ	E	E	E	E	E	E	E ₁₁	12	12	15	17	17	18	17	17	16	12	11	E	E	E	E	E	E	E

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MAR. 1971

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

MAR. 1971

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	300	280	280	290	290	285	340	355	355	345	335	315	320	320	310	320	315	345	330	310	285	275	280	285			
2	275	275	275	285	275	290	315	315	340	320	335	335	300 ^R	340	320	320	330	335	325	290	300	300	285	265			
3	275	280	285	275	290	295	310	355	335	345	335	325	320	335	320	340	325	325	305	290	315	300	285	265			
4	275	270	275	285	290	290	310	345	325	320	325	300	315	320	320	325	320	325	310	320	285	270	265	250			
5	255	260	255	285	270	270	310	320 ^V	340	340	355 ^R	320	^R	335	325	325	330	330	330	305	290	290	285	275			
6	275	275	270	285	295	300	320	335	335	325	305 ^B	315	315	325	320	320	310	340	320	315	290	275	275	270			
7	270	285	285	285	285	290	335	325	350	330	320	300	305	320	310	320	340	335	325	310	315	300	280	275 ^{U.S}			
8	S	F			290	280	F	F	F	F	350	315	320	300	290	320	310	315	330	335	335	310	320	290	275	275	275
9	275	300	280	280	275	270	290	320	330	340	315	295	310	340	315	320	335	325	340	305	285	270	290	280			
10	285	280	270	290	280	275	330	345	330	325	330	340	325	335	335	335	C	C	C	C	C	C	C	C			
11	C	C	C	C	C	C	C	C	C	C	C	C	310	315	315	320	315	330	340	345	295	285	300	280	280		
12	280	265	280	275	285	295	330	340	350	335	305	310	325	315	330	325	315	330	320	C	C	C	C	C			
13	C	C	C	C	C	C	C	C	300	300	315	295	320	315	325	325	325	320	325	305	270	250	260 ^{I.S}	260			
14	265	295	265	255	260	260	315	340	330	345	285	320	320	315	325	325	315	325	310	340	290	280	270	270 ^{I.S}			
15	275	270	275	255	255	270	I.C	300	320	325	330	330	315	I.C	320	C	C	C	330	315	305	285	275	F	F		
16	F	F	F	F	275	285	315	340	C	C	325	C	C	320	335	C	C	C	330	305	C	275	C	C			
17	285	C	275	C	C	280	330	I.C	320	340	320	325	315	320	335	325	325	325	330	290	305	285	265	280			
18	265	F	F	F	300	300	275	320	335	325	325	330	325	320	315	325	325	325	355	300	285	275	285	280			
19	275	C	C	C	C	285	325	350	315	315	C	C	C	305	325	C	C	330	340	C	C	275	285	265			
20	260	260	260	270	265	270	315	340	340	310	295	300	310	300	295	305	320	280	315	295	290	295	285	285			
21	285	280	280	280	285	290	325	340	320	330	340	335	^R	325	325	325	315	335	320	275	300	315	305	280			
22	280	280	275	280	285	290	330	340	315	325	325	320	315	300	315	320	325	325	315	300	295	295	290	290			
23	280	275	275	280	280	300	335	335	335	335	320	325	310	315	320	330	320	325	320	300	295	285	275	280			
24	280	270	285	285	290	270	315	325	310	335	320	310	305	305	315	310	325	325	320	275	290	280	290	285			
25	280	285	290	295	285	280	290	305	300	320	315	310	310	310	320	320	320	325	305	285	290	315	320	280			
26	275	270	280	300	310	290	315	335	330	320	320	320	310	310	310	310	320	315	310	310	310	300	280	280			
27	275	265	270	290	300	300	325	330	340	320	310	320	320	325	320	320	325	330	325	300	290	290	290	270			
28	265	270	F		290	315	295	295	320	325	335	315	315	335	310	315	330	335	315	325	330	320	305	280	275	270	
29	275	275	295	295	300	325	345	350	335	335	300	315	320	305	320	330	320	320	325	325	300	305	280	280			
30	280	280	290	300	300	310	355	345	345	330	320	315	300	310	315	320	315	325	330	310	290	285	285	290			
31	275	270	275	285	290	290	310	320	325	320	310	305	305	305	305	315	I.C	320	330	330	275	270	295	280	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	27	26	27	26	26	28	28	29	29	29	29	29	27	31	30	28	27	29	30	28	27	29	27	27			
MED	275	275	280	285	285	290	320	340	330	325	320	315	315	315	320	322	320	325	325	305	290	285	280	280			
UQ	280	280	282	290	295	295	330	345	340	335	330	325	320	322	325	325	325	330	330	310	300	300	285	280			
LQ	275	270	275	280	275	275	312	325	320	320	310	310	310	310	315	320	318	325	315	292	285	275	275	270			

MAR. 1971

M(3000)F2 (0.01)

IONOSPHERIC DATA

MAR. 1971

M(3000)F1 (0.01)

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

Station	WAKKANAI				Lat. 45 23.6 N				Long. 141 41.1 E				Sweep 1 MHz to 20 MHz in 20 sec				in automatic operation							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										425	415													
2										L	370	390												
3										420	415	420	385		L	385								
4										L	A	L			L	390								
5									385		L	400			L									
6												370			L									
7											410				L									
8											400	395		U	385									
9										L			L	L	L									
10										L	L	L	L	L										
11									C	C	C	365	L	L										
12										385				375										
13									355	L	L		L	L	L	L								
14										L		L	380	L	L	L								
15										L	L	370	U	380	C	C	C							
16									C	C	L	C	C	L	L	C								
17										L	L	375	L											
18										L	365	375	385		L									
19											C	C	C		L	C								
20										L	385		365	L										
21										L	L	L												
22											365	L	380	400										
23										L	L	375	375	375	385	395								
24										L	385		340	375										
25										375	370	375	375	380										
26										L	365	375	385	L	L									
27										L	L	390	370	L		L								
28										L	L	375	385	L	370									
29										L		365	375	L	L									
30											360			L	L									
31										L	390		L	L	L	L								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	4	11	16	13	5	6	1								
MED									370	388	385	375	380	375	385	395								
UQ									405	400	388	385	385	380	385									
LQ									380	365	370	375	375	375	375									

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M(3000)F1 (0.01)

IONOSPHERIC DATA

MAR. 1971

H*F2 (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	24																							
	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											230	250												
2											235	250	255											
3										220	245	250	250	230	260									
4										250	260	235		250	250									
5									260		225	255		260										
6												270		260										
7											240			245										
8												230	260		240									
9										240			270	245	245									
10										250	250	260	255	250										
11									C	C	C	270	270	260										
12										245				270										
13									300	L	300		250	285	260	250								
14										240		265	255	260	260	250								
15										280	270	260	265		C	C	C							
16									C	C	250	C	C	260	245	C								
17										245	255	250	285											
18										250	260	250	250		250									
19											C	C	C		260	C								
20										260	260		270	285										
21										260	245	250												
22											260	255	260	255										
23										245	260	260	265	260	260	250								
24										250	250			280	265									
25										250	260	260	265	265										
26										255	260	250	270	275	270									
27									245	255	265	260	270		250									
28										275	265	255	255	265	270									
29										255		265	260	260	270									
30											260			275	280									
31									250	250		280	290	285	270									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	19	22	22	20	22	17	3								
MED									255	250	260	255	262	260	260	250								
UQ									280	255	260	260	270	275	270	250								
LQ									248	245	245	250	255	255	250	250								

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H*F2 (KM)

IONOSPHERIC DATA

MAR. 1971

H⁺F (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	275	255	250	245	245	225	210	210	205	195	195	200	240	220	225	235	230	210	225	230	275	285	290
2	275	280	300	265	275	255	230	210	215	210	210	210	225	210	215	230	240	225	215	245	240	230	275	310
3	300	295	255	270	250	225	230	220	220	210	190	180	230	225	200	245	220	225	220	220	230	245	265	300
4	310	300	290	250	240	230	245	220	220	210	A	210	250	215	210	215	225	210	230	210	240	290	305	325
5	345	305	305	295	315	295	245	210	200	225	220	200	230	205	200	225	235	225	220	220	250	250	270	300
6	300	300	305	255	250	245	225	210	205	210	195	205	220	210	230	225	225	220	205	215	260	260	295	300
7	300	290	260	260	270	250	215	210	210	210	195	205	250	220	220	240	245	225	215	230	230	250	295	285
8	300	275	280	285	255	250	220	215	220	225	215	200	200	225	225	215	230	220	215	235	250	300	295	300
9	290	250	275	280	300	300	245	240	230	215	220	210	225	240	220	235	245	225	215	215	220	295	280	295
10	285	285	290	260	250	260	220	215	210	220	240	220	210	225	230	235	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	200	200	230	210	240	225	215	210	250	260	260	265	300
12	290	300	280	280	255	250	220	230	220	215	200	220	250	215	240	220	235	240	215	C	C	C	C	C
13	C	C	C	C	C	C	C	C	215	225	205	210	225	210	I A 235	235	225	245	225	245	245	280	315	300
14	285	260	270	285	300	300	245	225	220	235	215	225	220	210	215	230	235	230	220	270	250	245	295	290
15	305	260	270	295	315	305	I C 275	235	225	225	215	215	205	I C 210	C	C	C	225	220	225	235	260	275	250
16	280	275	255	270	270	250	220	225	C	C	210	C	C	230	225	C	C	C	220	220	C	295	C	C
17	270	C	290	C	C	295	230	I C 230	225	235	210	210	200	210	220	225	245	225	215	250	250	280	305	270
18	325	315	290	250	250	305	220	235	235	235	220	225	210	200	210	240	240	230	215	225	260	280	275	280
19	275	C	C	C	C	250	220	220	220	200	C	C	C	240	220	C	C	225	210	C	C	275	300	320
20	320	320	320	300	300	275	240	225	210	205	210	200	200	235	225	235	240	220	215	230	245	250	265	275
21	265	260	265	260	240	250	225	220	215	240	215	215	210	200	200	230	225	230	210	255	250	240	230	250
22	265	260	270	260	250	240	220	220	210	200	210	205	205	205	200	240	245	225	225	230	245	250	265	270
23	295	290	270	265	255	250	215	220	225	215	220	225	210	210	210	235	230	230	225	225	245	250	265	270
24	270	265	260	255	250	295	230	225	220	205	210	230	200	205	220	225	240	235	225	260	260	250	260	270
25	265	270	245	235	225	250	230	235	230	225	220	225	215	210	220	230	245	240	240	260	265	240	235	250
26	285	295	275	250	220	240	215	225	225	220	215	210	200	210	230	240	245	250	245	230	230	210	250	270
27	295	300	300	260	245	250	220	245	215	210	205	200	205	220	230	220	225	240	230	230	260	260	260	270
28	315	290	250	225	205	250	230	220	225	220	225	220	210	210	210	225	240	245	225	220	220	260	295	300
29	300	275	250	230	245	230	210	225	205	205	205	205	200	205	215	240	245	245	230	220	240	245	270	300
30	285	285	275	250	230	225	220	225	225	205	200	205	200	200	245	250	230	245	220	220	260	255	260	300
31	295	300	290	250	250	255	220	245	225	235	230	215	225	215	220	225	I C 230	245	225	260	275	255	260	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	28	27	27	29	29	29	29	29	28	29	29	31	30	28	27	29	30	28	27	29	28	28
MED	290	285	275	260	250	250	225	225	220	215	210	210	210	210	220	230	235	230	220	230	245	255	272	290
UQ	300	300	290	275	270	275	230	230	225	225	220	220	225	225	225	240	242	240	225	248	260	275	295	300
LQ	280	272	260	250	245	245	220	220	210	210	205	205	200	210	210	225	228	225	215	220	238	250	262	270

The Radio Research Laboratories, Japan

MAR. 1971

H⁺F (KM)

IONOSPHERIC DATA

MAR. 1971

H⁺ES (KM)

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

Station	WAKKANAI				Lat. 45 23.6 N				Long. 141 41.1 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation															
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	S	E	E	E	E	E	S	G	G	G	105	105	100	G	G	G	G	E	S	S	S	S	S					
2	S	E	E	E	E	E	S	G	G	G	105	G	G	G	G	G	G	E	110	105	S	S	E					
3	L	E	E	E	E	E	S	150	G	G	G	G	G	G	110	G	G	S	E	S	E	105	E					
4	S	E	E	E	E	E	G	G	G	115	110	G	G	G	105	105	105	G	S	E	120	L	S	S				
5	E	E	115	110	105	105	S	G	G	125	110	110	105	105	G	G	G	G	S	S	E	E	S	105				
6	S	E	S	E	E	100	S	G	G	115	110	G	100	G	100	G	100	G	E	S	S	E	S	E				
7	E	E	E	E	E	E	S	G	G	G	G	105	105	G	G	G	G	125	110	S	110	105	100	S				
8	S	S	E	E	E	E	G	G	G	120	105	G	G	G	G	G	G	S	E	E	S	E	E					
9	L	E	E	E	E	E	S	S	G	G	120	115	G	G	G	G	115	G	110	115	110	S	E	S	105			
10	105	105	E	E	E	E	S	G	G	G	110	110	105	105	105	105	C	C	C	C	C	C	C	C				
11	C	C	C	C	C	C	C	C	C	C	C	G	G	105	G	G	G	115	S	105	105	S	S	S				
12	105	105	100	100	E	E	G	G	G	G	G	G	105	105	G	105	G	110	100	C	C	C	C	C				
13	C	C	C	C	C	C	C	C	120	120	115	G	105	105	105	100	G	G	100	S	S	E	E	110				
14	105	105	105	100	E	E	S	G	115	120	115	110	110	105	105	105	G	G	S	S	S	S	110	105				
15	105	105	105	E	105	E	C	G	G	115	G	G	105	C	C	C	C	G	E	E	S	E	S	105				
16	L	E	E	E	E	E	G	G	C	C	110	C	C	G	G	C	C	C	S	100	C	105	C	C				
17	100	C	E	C	C	105	G	C	G	120	G	115	110	G	G	105	105	G	105	105	S	115	110	105				
18	105	110	E	E	E	105	105	140	130	115	110	G	G	105	G	G	G	G	100	100	100	100	105	105				
19	S	C	C	C	C	100	G	G	105	G	C	C	C	100	100	C	C	105	100	C	C	100	E	S				
20	E	105	E	100	100	E	G	G	120	110	G	G	G	105	100	100	100	G	110	S	110	105	S	S				
21	S	E	E	E	E	S	G	G	G	120	G	G	100	G	G	G	G	G	S	105	S	S	100	E				
22	E	E	E	100	E	E	G	G	G	G	G	G	G	G	G	G	100	100	100	S	S	S	S	E				
23	E	S	E	E	E	E	G	G	G	G	115	G	B	G	G	G	G	G	S	E	S	E	E	S				
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	100	100	100	S	S	S	S	S				
25	E	E	E	E	E	S	G	G	G	125	120	115	110	G	G	120	G	G	S	S	E	E	S	S				
26	S	105	100	100	E	E	G	G	110	G	115	115	G	105	105	105	105	G	S	E	E	E	110	S				
27	S	100	100	100	100	S	G	140	125	120	G	105	G	105	105	105	100	100	100	100	S	S	E	E				
28	105	105	105	E	E	E	G	G	G	G	110	105	G	G	G	G	G	G	S	E	E	S	S	E				
29	E	E	E	E	E	E	G	G	G	G	G	G	105	G	G	105	105	G	100	S	S	S	E	S				
30	S	S	S	E	E	E	G	G	G	G	105	G	G	G	G	G	G	G	130	115	S	S	110	110				
31	105	105	105	E	E	E	G	G	G	115	G	G	110	G	G	G	C	G	S	E	S	S	S	E				
CNT	8	10	8	7	4	5	1	3	7	15	16	10	14	12	9	13	8	8	13	10	6	6	8	8				
MED	105	105	105	100	102	105	105	140	120	120	110	110	105	105	105	105	102	108	100	105	108	105	108	105				
UQ	105	105	105	100	105	105		145	122	120	115	115	110	105	105	105	105	110	110	110	110	105	105	108				
LQ	105	105	100	100	100	100		140	112	115	110	105	105	105	100	105	100	100	100	100	105	100	102	105				

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H⁺ES (KM)

IONOSPHERIC DATA

MAR. 1971

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												I	I	I											
2											I									F ₂	F ₂				
3							H								I								F ₂		
4									F	C ₃					I	I	I				F ₁				
5		F ₂	F ₃	F ₃	F ₂				C	I	I	I	I	I										F ₁	
6					F ₂				C	I	I	I	I	I			I								
7											I	I						C	I		F ₂	F ₂	F ₁		
8									C	I	I														
9									C	I	I					C		I	I	F ₁				F ₂	
10	F ₁	F ₂									I ₂	I ₂	I ₂	I ₂	I ₂	I ₂									
11													I	I											
12	F ₂	F ₁	F ₁	F ₁									I	I	I			I	I						
13									C	C	C		I	I	I					I				F ₂	
14	F ₂	F ₂	F ₁	F ₁					C	C	C	I	I	I	I								F ₁	F ₂	
15	F ₇	F ₂	F ₁		F ₁				C			I												F ₁	
16											C									F ₁		F ₂			
17	F ₁				F ₂				C		C ₁₁	C			I	I			I	F ₂	F ₂	F ₃	F ₁		
18	F ₄	F ₁			F ₂	I	H	H	C	I	I			I					I	F ₁	F ₂	F ₁	F ₂	F ₁	
19					F ₁				I					I ₂	I ₂				I	I		F ₁			
20		F ₁		F ₁	F ₁				C	C				I	I	I	I				F ₁	F ₂			
21									C				I								F ₂		F ₁		
22				F ₁														I	I	I					
23											I														
24																			I	I	F ₁				
25										C	C	C	I			C									
26		F ₁	F ₃	F ₁					C		C	C		I	I	I	I							F ₁	
27		F ₂	F ₂	F ₁	F ₁		H		C	C		I		I	I	I	I		I	I	F ₁				
28	F ₄	F ₁	F ₁								C	I													
29													I			I				I					
30											I								H	I	F ₁		F ₂	F ₂	
31	F ₂	F ₂	F ₁						C				I												
	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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MAR. 1971

TYPES OF ES

IONOSPHERIC DATA

MAR. 1971

FOF2 (0.1 MHz)

135° E Mean Time (G. M. T. + 9 h)

Station		AKITA										Lat. 39 43 5 N · Long. 140 08 2 E										Sweep 1		MHz to 20		MHz in 20		sec		in automatic		operation	
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
1		F	F	F	C	C	F	51	79	87	94	94	I ₉₈	I ₁₀₈	119	114	107	94	92	75	55	51	46	47	48								
2		47	46	43	45	45	43	53	74	81	86	96	99	102	99	94	89	97	87	67	54	57	51	45	S ₄₄								
3		43	46	47	46	47	41	51	83	96	92	I ₉₄	I ₉₄	I ₁₁₄	105	97	96	97	87	74	68	62	45	45	45								
4		44	45	45	47	47	39	49	79	94	101	105	112	117	107	113	96	91	84	65	61	55	46	45	46								
5		45	I ₄₅	44	44	38	38	48	I ₇₄	89	101	115	I ₁₁₀	I ₁₁₀	108	95	91	87	84	68	58	51	46	43	42								
6		43	44	44	44	43	44	51	71	83	85	101	100	I ₁₀₀	113	I ₁₀₆	94	89	81	72	52	46	45	47	46								
7		47	49	48	47	44	44	52	76	83	86	91	98	99	114	96	97	95	I ₉₉	95	61	50	44	43	43								
8		43	43	47	47	44	44	56	75	85	84	I ₁₀₄	I ₁₁₈	114	I ₁₁₄	119	106	92	96	72	47	47	48	49	48								
9		47	49	43	41	41	42	49	77	94	I ₉₈	104	I ₁₀₈	116	116	112	91	94	94	77	57	I ₄₈	43	44	43								
10		41	41	41	41	41	37	52	74	81	92	98	94	108	99	94	86	85	74	70	59	56	52	51	47								
11		45	43	43	43	44	42	54	76	82	82	91	99	96	I ₁₀₀	102	87	91	77	65	50	48	49	47	43								
12		45	46	43	43	42	44	55	75	82	76	78	99	99	96	99	88	79	79	78	54	53	51	51	44								
13		47	46	48	36	36	35	45	72	79	88	75	80	104	94	101	97	94	81	76	59	55	53	50	54								
14		53	48	42	42	43	43	51	78	84	82	94	I ₁₀₅	118	105	94	99	93	87	84	68	67	66	59	59								
15		57	62	56	49	48	46	49	64	75	84	85	99	I ₁₀₈	I ₁₀₈	I ₁₀₂	95	90	88	72	59	50	47	48	51								
16		47	46	45	43	42	45	60	75	88	95	101	109	117	116	101	91	89	91	86	65	49	51	54	S ₄								
17		51	49	45	46	41	39	59	75	90	102	114	112	96	102	I ₁₀₂	94	92	85	77	54	55	49	47	47								
18		46	48	46	47	42	46	55	74	88	101	111	I ₁₀₆	102	103	99	91	93	89	78	56	52	50	51	53								
19		50	49	47	46	43	43	58	73	78	84	95	101	111	114	107	100	102	102	86	45	45	44	45	42								
20		41	41	42	44	39	42	63	83	79	80	93	103	105	103	103	99	99	99	85	63	57	55	51	51								
21		53	52	49	48	44	46	61	81	89	100	I ₁₁₀	I ₁₀₈	I ₁₀₈	105	99	92	86	96	87	59	62	63	53	47								
22		46	47	45	45	45	44	62	73	83	92	104	110	106	99	99	95	91	91	78	64	61	57	55	54								
23		54	53	53	53	50	48	66	74	85	95	97	96	100	98	95	86	87	86	86	64	58	56	56	I ₅₇								
24		57	56	55	53	49	48	63	79	88	100	94	96	99	96	100	95	93	93	76	59	62	62	60	57								
25		57	57	58	57	44	43	56	85	101	108	102	101	101	102	94	80	84	83	74	70	70	F ₇₁	S ₆₂	49								
26		51	51	53	55	43	40	59	74	88	89	96	101	99	108	102	95	88	87	85	81	73	53	45	46								
27		43	41	43	45	41	43	66	82	88	83	99	102	101	I ₁₀₆	I ₁₀₇	98	88	83	78	71	61	62	60	55								
28		55	54	54	47	36	31	56	76	82	91	97	106	I ₁₀₈	108	101	93	87	88	94	I ₇₃	49	49	51	51								
29		52	52	50	48	39	40	54	64	75	82	94	100	99	98	99	90	93	88	87	79	56	48	48	49								
30		49	48	50	48	44	44	62	71	79	77	81	89	90	98	99	93	89	92	80	64	57	58	57	57								
31		57	54	54	55	49	I ₄₈	61	73	96	93	83	92	I ₁₀₂	98	102	103	90	77	76	66	65	65	65	64								
		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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31								
MED		47	48	46	46	43	43	56	75	85	91	96	101	104	105	101	94	91	87	77	59	55	51	50	48								
UQ		53	52	50	48	45	44	60	78	88	96	103	107	109	108	102	97	94	92	85	66	61	56	54	54								
LQ		45	45	43	44	41	40	51	74	82	84	94	98	100	99	98	91	88	84	73	56	50	46	46	46								

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FOF2 (0.1 MHz)

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IONOSPHERIC DATA

MAR. 1971

FOF1 (0.01 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										L	U	L	480	500	480	500	L	L	L						
2										L	L	480	L	480	L	L	L	L							
3										L	C	420	510	U	480	L	L	L							
4										L	L	440	470	440	450	U	420	L	L						
5										L	380	420	470	L	L	430	370	L							
6										L	L	L	470	430	L	L	L	L							
7										300	U	440	500	500	500	L	L	L	L						
8										L	L	500	490	L	U	500	450	L	L						
9										L	L	500	480	450	L	L	L	L							
10										L	L	460	L	L	L	U	490	L	L						
11										L	L	U	460	480	480	500	L	L	L						
12										L	L	500	500	480	460	480	L	L							
13										L	L	L	U	520	500	U	480	440	L	L					
14										L	L	L	U	510	U	500	470	L	U	450	L				
15										L	L	L	510	470	L	U	470	L	L						
16										L	L	U	490	L	480	490	L	L	L						
17										L	L	500	480	L	490	L	L	L							
18										L	A	U	500	U	470	480	510	L	L	L					
19										L	L	480	L	500	L	L	U	450	L						
20										L	U	440	500	510	L	510	460	L	L						
21										L	L	U	480	L	U	480	500	480	L	L					
22										L	460	500	500	500	510	480	U	470	L	L					
23										L	U	460	U	480	500	500	510	480	L	L					
24										L	460	440	L	510	510	480	U	460	L	L					
25										L	U	450	480	480	500	480	480	L	L						
26										L	U	480	480	480	510	510	470	L	L						
27									L	L	U	470	470	490	490	500	500	L	L						
28									L	L	470	470	500	490	480	460	U	410	L	L					
29										L	440	480	500	480	440	470	L	L							
30										L	L	510	480	490	500	470	440	L	L						
31										L	L	450	480	480	480	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	11	26	25	26	23	18	7									
MED									300	U	460	480	490	485	500	470	U	450							
UQ									465	500	500	500	500	505	480	U	455								
LQ									440	470	480	480	480	480	460	425									

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FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAR. 1971

FOE (0.01 MHZ)

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

Station	AKITA				Lat. 39 43.5 N		Long. 140 08.2 E		Sweep 1 MHz to 20 MHz in 20 sec in automatic operation															
Time Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	230	280	310	325	340	355	355	345	320	270	210						
2							S	225	280	315	335	345	355	355	340	320	285	220		S				
3							S	235	285	315	I C 330	345	355	360	340	315	I A 270	210		S				
4							S	225	280	315	335	A	A	355	A	A	A	200		B				
5							S	225	275	305	320	330	350	345	325	300	255	190		S				
6							B	210	270	305	320	I A 335	350	340	320	295	255		S	S				
7							S	205	260	310	330	345	I B 350	350	335	310	270		A	S				
8							S	225	285	I A 310	I A 330	345	355	350	330	310	265	215		B				
9							S	245	295	315	I A 335	350	355	355	A	A	A	A		S				
10							S	230	280	315	335	350	350	355	I A 330	I A 300	260		A	S				
11							B	245	285	315	335	345	355	345	330	300	260	210		S				
12							B	240	285	315	330	345	355	355	340	310	280		A	S				
13							S	I A 235	I A 275	I A 305	A	A	A	A	330	310	270		A	A				
14							S	235	290	315	A	A	A	355	340	310	270		A	S				
15							B	225	285	315	A	A	350	350	335	315	280		A	S				
16							S	255	295	I A 315	I A 335	A	A	A	335	I A 310	I A 265	210		S				
17								175	255	305	I A 325	I A 340	A	A	A	320	A		A	S				
18								195	265	300	320	A	A	I A 350	335	315	285	225		B				
19								175	255	295	A	A	A	350	A	A	310	I A 265	210		S			
20								180	250	290	315	I A 330	350	360	355	340	305	265	205		S			
21								190	265	300	315	335	350	355	350	335	315	280	230		S			
22								200	265	300	320	340	355	360	355	340	310	275		A	A			
23								A	A	300	325	345	355	360	355	335	315	280	235		B			
24								I A 185	255	305	325	345	355	360	360	340	325	290	235		B			
25								A	265	300	325	340	350	360	360	345	315	275		A	B			
26								200	265	305	I A 325	I A 340	350	355	360	345	320	280	240	160				
27								190	265	300	A	A	355	360	360	340	320	280	225		A			
28								200	260	300	325	A	A	A	A	A	A	275	235		B			
29								205	I A 270	305	325	340	350	I A 360	I A 360	I A 345	I A 325	A	A	A				
30								205	265	300	325	340	355	360	355	340	325	295	235		A			
31								A	265	305	325	335	345	355	350	A	A	255	205		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								12	30	31	29	24	22	24	26	26	26	27	20	1				
MED								192	248	295	315	335	350	355	355	338	312	270	212	160				
UQ								200	265	300	325	340	350	360	355	340	320	280	232					
LQ								182	230	282	315	330	345	352	350	330	310	265	210					

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FOE (0.01 MHZ)

IONOSPHERIC DATA

MAR. 1971

FOES (0.1 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₄	E ₁₄	E	C	C	E	E ₁₄	G	G	J ₃₈	G	G	G	G	G	29	25	E ₁₄	E ₁₃	E ₁₃	E ₁₄	E ₁₈	E ₁₃		
2	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₃	G	G	G	G	38	40	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	J ₂₃	E ₁₄		
3	J ₁₈	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	E ₁₃	G	31	G	C	35	G	J ₃₄	G	35	28	G	E ₁₃	E ₁₈	E ₁₄	E ₁₄	E ₁₄	J ₁₉	
4	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₄	G	J ₂₉	G	G	37	J ₄₇	G	34	31	27	G	E ₁₈	E ₁₃	J ₂₃	J ₂₆	J ₂₉	J ₃₆	
5	J ₃₉	J ₁₉	J ₄₀	J ₄₃	J ₂₃	J ₂₅	E ₁₄	26	33	33	36	37	G	G	G	31	G	G	E ₁₄	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₉	G	G	G	G	J ₃₉	37	G	G	G	G	19	E ₁₅	E ₁₄	E ₁₃	E ₁₅	E ₁₅	E ₁₄	
7	E ₁₄	E ₁₄	E ₁₂	E	E	E ₁₃	E ₁₄	G	G	G	G	G	E ₃₇	G	G	G	G	23	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	
8	E ₁₄	J ₃₀	E ₁₉	E ₁₄	E	J ₂₀	E ₁₄	G	G	34	37	G	G	G	G	G	G	18	E ₁₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
9	J ₂₁	E ₁₄	J ₂₀	E	E ₁₄	E ₁₄	E ₁₅	G	J ₂₉	35	37	G	G	G	42	39	32	J ₂₆	E ₁₄	E ₁₄	J ₂₀	J ₂₉	E ₁₄	E ₁₄	
10	E ₁₄	E ₁₄	J ₂₆	J ₂₅	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	35	33	G	25	J ₄₀	J ₂₀	J ₂₀	E ₁₃	J ₃₃	J ₁₉	
11	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₄	E ₁₇	G	32	G	G	G	G	G	36	35	G	G	J ₁₇	E ₁₃	E ₁₄	E ₁₄	J ₁₈	E ₁₄	
12	E ₁₄	E ₁₄	J ₁₉	J ₁₇	E ₁₄	E	E ₁₈	G	G	G	G	G	G	G	28	33	31	27	20	J ₂₃	E ₁₄	E ₁₄	J ₂₉	E ₁₄	
13	E ₁₄	J ₂₀	J ₂₀	J ₂₀	E ₁₄	E ₁₄	E ₁₆	G	35	38	39	37	J ₄₅	J ₄₅	J ₃₁	J ₂₉	J ₂₉	J ₃₈	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	J ₁₉	
14	J ₂₉	J ₂₅	J ₂₄	J ₁₅	E	E ₁₄	E ₁₄	G	G	40	39	J ₄₃	J ₄₀	J ₃₀	G	G	G	27	J ₂₇	E ₁₄	E ₁₄	J ₁₈	J ₁₈	J ₁₇	
15	E ₁₃	J ₂₈	J ₁₉	J ₃₆	J ₂₀	E ₁₄	E ₁₇	G	G	35	39	36	G	G	G	G	G	J ₂₅	J ₂₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	
16	E ₁₄	J ₂₄	J ₃₀	J ₁₄	J ₁₆	J ₁₈	E ₁₄	21	26	J ₃₃	36	J ₅₁	42	36	J ₃₄	33	28	26	J ₁₈	E ₁₄	E ₁₄	E ₁₄	J ₂₉	J ₂₅	
17	J ₂₅	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	G	G	G	J ₄₃	36	J ₄₃	J ₄₅	37	G	33	J ₃₆	23	22	E ₁₄	J ₂₀	J ₂₆	J ₂₅	J ₄₄	
18	J ₃₃	J ₂₅	J ₃₅	E ₁₄	E ₁₄	E ₁₄	G	G	34	J ₅₄	J ₄₆	J ₄₅	J ₃₈	J ₃₈	J ₃₃	G	J ₃₀	G	E ₁₉	J ₆₆	J ₂₀	E ₁₄	E ₁₃	J ₁₈	
19	J ₃₀	J ₂₁	J ₂₇	J ₂₃	J ₂₃	J ₂₃	G	G	33	37	J ₃₉	38	J ₃₃	37	J ₄₀	J ₂₉	30	G	J ₄₆	J ₂₀	J ₂₃	J ₃₈	J ₄₃	J ₂₁	
20	J ₂₆	J ₁₇	J ₂₀	J ₁₇	J ₂₀	E ₁₃	G	G	J ₃₈	35	J ₃₆	G	G	G	27	G	23	G	19	J ₃₀	J ₆₉	J ₃₈	J ₂₀	E ₁₄	
21	E ₁₄	E ₁₄	E ₁₃	E	E	E	G	G	31	35	G	G	G	G	G	G	G	G	20	J ₂₀	J ₂₃	J ₂₀	E ₁₄	E ₁₄	
22	E ₁₄	E ₁₄	E	E	E	E	G	29	32	36	G	G	J ₃₈	G	G	J ₂₈	J ₂₈	J ₂₉	J ₂₇	J ₂₃	J ₂₂	E ₁₄	E ₁₄	E ₁₅	
23	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	29	31	G	G	G	G	G	G	G	G	G	G	G	E ₁₉	E ₁₄	E ₁₃	E ₁₄	E ₁₄	
24	E ₁₄	E ₁₄	E	E ₁₄	E	E	23	28	G	G	G	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₃
25	E ₁₄	E ₁₄	E ₁₄	E	E	E	23	29	32	36	36	G	G	G	38	G	G	25	E ₁₈	E ₁₄	J ₁₈	E ₁₃	J ₁₈	E ₁₄	
26	E ₁₄	J ₂₀	E	E ₁₃	E	E ₁₉	G	G	G	36	37	36	G	G	G	30	G	G	G	E ₁₃	E ₁₄	E ₁₄	E ₁₄	J ₃₂	
27	J ₂₃	J ₁₉	J ₂₀	E ₁₃	E ₁₄	E ₁₄	G	G	32	34	36	G	G	G	G	G	G	G	21	J ₂₈	E ₁₄	J ₁₉	E ₁₈	E ₁₄	E ₁₄
28	E ₁₄	J ₂₃	J ₂₆	E ₁₃	J ₁₇	E	G	G	G	36	37	38	J ₄₁	38	37	33	G	G	27	J ₄₈	J ₃₆	E ₁₄	E ₁₄	J ₂₄	
29	J ₁₈	E ₁₃	E ₁₃	E	E	E	G	29	G	G	38	41	38	G	36	36	J ₃₁	J ₂₆	J ₂₃	J ₂₈	J ₁₇	E ₁₄	E ₁₄	E ₁₄	
30	E ₁₃	E ₁₃	E ₁₄	E	E	E	G	33	G	G	37	G	39	G	G	G	33	26	J ₂₁	J ₃₂	J ₃₃	J ₂₇	J ₁₉	E ₁₄	
31	E ₁₄	J ₂₄	J ₂₉	J ₅₁	J ₄₄	J ₅₈	J ₂₈	G	34	35	40	G	G	J ₇₃	37	33	G	G	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
	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	30	30	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E ₁₄	E ₁₄	E ₁₄	14	14	E ₁₄	E ₁₄	G	G	G	34	36	35	G	G	G	G	G	19	19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
UQ	J ₂₀	J ₂₀	J ₂₂	J ₁₇	E ₁₄	E ₁₄	E ₁₆	G	32	36	37	38	38	35	34	33	29	26	22	J ₂₀	J ₂₀	18	J ₂₁	J ₁₉	
LQ	E ₁₄	E ₁₄	E ₁₃	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	

The Radio Research Laboratories, Japan

MAR. 1971

FOES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

FBES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

Station	AKITA																								
	Lat. 39° 43.5 N Long 140° 08.2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	C	C	E	E ₁₄ S ₁₄	G	G	19	G	G	G	G	G	G	29	24	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₉ S ₁₉	E ₁₃ S ₁₃	
2	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	G	G	G	37	39	G	G	G	G	G	G	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E ₁₄ S ₁₄	
3	E	E ₁₃ S ₁₃	E ₁₃ S ₁₃	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	G	30	G	C	32	G	G ₃₃	G	G	28	G	E ₁₃ S ₁₃	E ₁₈ S ₁₈	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	
4	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	24	G	G	36	36	G	34	31	27	G	E ₁₈ S ₁₈	E ₁₃ S ₁₃	E	E	21	20	
5	19	16	27	19	23	20	E ₁₄ S ₁₄	25	31	33	35	35	G	G	G	30	G	G	E ₁₄ S ₁₄	E ₁₅ S ₁₅	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₈ S ₁₈	E ₁₄ S ₁₄	
6	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₉ S ₁₉	G	G	G	G	35	31	G	G	G	G	19	E ₁₅ S ₁₅	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₄ S ₁₄	
7	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₂ S ₁₂	E	E	E ₁₃ S ₁₃	E ₁₄ S ₁₄	G	G	G	G	G	E ₃₇	G	G	G	G	22	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
8	E ₁₄ S ₁₄	19	E ₁₉ S ₁₉	E ₁₄ S ₁₄	E	E	E ₁₄ S ₁₄	G	G	34	35	G	G	G	G	G	G	18	G	E ₁₉ S ₁₉	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
9	E	E ₁₄ S ₁₄	E	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₅ S ₁₅	G	G ₂₅	33	35	G	G	G	36	37	30	23	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	18	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
10	E ₁₄ S ₁₄	E ₁₄ S ₁₄	18	15	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	G	G	G	G	G	G	34	33	G	23	34	18	18	E ₁₃ S ₁₃	E	18	
11	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₇ S ₁₇	G	31	G	G	G	G	G	36	G	G	G	E	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E ₁₄ S ₁₄	
12	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	14	E ₁₄ S ₁₄	E	E ₁₈ S ₁₈	G	G	G	G	G	G	G	G	28	33	30	25	26	21	E ₁₄ S ₁₄	E ₁₄ S ₁₄	26	E ₁₄ S ₁₄
13	E ₁₄ S ₁₄	20	18	14	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₆ S ₁₆	G	31	34	37	35	36	36	G ₂₈	G ₂₇	23	29	18	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	18	
14	17	18	17	15	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	G	38	36	38	37	G ₂₈	G	G	G	24	21	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E	E	
15	E ₁₃ S ₁₃	16	19	26	18	E ₁₄ S ₁₄	E ₁₇ S ₁₇	G	G	34	37	36	G	G	G	G	G	23	E	E ₁₄ S ₁₄	E ₁₂ S ₁₂	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
16	E ₁₄ S ₁₄	21	15	E	E	E ₁₅ S ₁₅	E ₁₄ S ₁₄	G	G	25	33	36	48	42	36	29	32	28	26	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	22	E	
17	21	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	G	G	41	36	39	43	36	G	32	35	20	18	E ₁₄ S ₁₄	17	20	24	E	
18	19	22	16	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	G	32	46	44	37	37	36	G ₂₉	G	26	G	E ₁₉ S ₁₉	E	19	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E	
19	25	17	19	18	18	E	G	G	33	37	37	37	G ₃₂	37	39	G ₂₇	29	G	38	18	20	34	24	E	
20	20	16	E	E	E	E ₁₃ S ₁₃	G	G	35	33	34	G	G	G	G ₂₇	G	G ₂₀	G	19	26	45	20	E	E ₁₄ S ₁₄	
21	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E	E	E	G	G	G	34	G	G	G	G	G	G	G	G	19	18	20	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
22	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E	E	E	G	29	32	36	G	G	29	G	G	G	25	25	27	25	21	20	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₅ S ₁₅
23	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E ₁₄ S ₁₄	E	E ₁₄ S ₁₄	24	31	G	G	G	G	G	G	G	G	G	G	E ₁₉ S ₁₉	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
24	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E ₁₄ S ₁₄	E	E	22	28	G	G	G	G	G	G	G	G	G	G	E ₁₈ S ₁₈	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₃ S ₁₃	
25	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E	E	23	29	G	35	36	G	G	G	G	G	G	25	E ₁₈ S ₁₈	E ₁₄ S ₁₄	E	E ₁₃ S ₁₃	18	E ₁₄ S ₁₄	
26	E ₁₄ S ₁₄	17	E	E ₁₃ S ₁₃	E	E ₁₉ S ₁₉	G	G	G	34	36	36	G	G	G	G ₃₀	G ₂₉	G	G	G	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	21
27	20	17	E	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	G	G	34	35	G	G	G	G	G	G	G	19	23	E ₁₄ S ₁₄	18	E ₁₈ S ₁₈	E ₁₄ S ₁₄	E ₁₄ S ₁₄
28	E ₁₄ S ₁₄	E	E	E ₁₃ S ₁₃	E	E	G	G	G	34	36	38	37	37	37	33	G	G	24	41	30	E ₁₄ S ₁₄	E ₁₄ S ₁₄	19	
29	E	E ₁₃ S ₁₃	E ₁₃ S ₁₃	E	E	E	G	29	G	G	38	39	38	G	36	34	30	25	19	22	16	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
30	E ₁₃ S ₁₃	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E	E	E	G	G	33	G	G	G	G	G	39	G	G	32	26	18	32	25	24	E	E ₁₄ S ₁₄
31	E ₁₄ S ₁₄	19	16	20	32	A	26	G	34	35	39	G	G	G	35	30	G	G	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
	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	30	30	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₃ S ₁₃	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	G	G	33	35	G	G	G	G	G	G	G	19	E ₁₈ S ₁₈	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	
UQ	E ₁₄ S ₁₄	17	16	14	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₆ S ₁₆	G	31	34	36	36	36	G	32	30	28	24	19	18	18	E ₁₄ S ₁₄	E ₁₆ S ₁₆	E ₁₄ S ₁₄	
LQ	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	E ₁₄ S ₁₄	

MAR. 1971

FBES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

F-MIN (0.1 MHz)

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

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

Hour Day	Station AKITA Lat. 39 43.5 N Long. 140 08.2 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₄	E ₁₄	E	C	C	E	E ₁₄	14	15	16	18	18	18	18	18	18	16	14	E ₁₂	E ₁₃	E ₁₃	E ₁₄	19	E ₁₃	
2	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₃	14	15	15	15	16	22	19	19	16	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
3	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	E ₁₃	15	15	16	C	16	23	19	17	18	16	13	E ₁₃	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
4	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₄	14	14	15	15	18	19	16	18	16	14	14	18	E ₁₃	E ₁₄	E ₁₃	E ₁₄	E ₁₃	
5	E ₁₃	E	E	E	E	E ₁₃	E ₁₂	14	15	15	18	19	19	20	20	16	15	15	E ₁₄	E ₁₅	E ₁₄	E ₁₄	23	E ₁₄	
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	19	15	15	18	17	20	22	17	18	20	15	E ₁₃	E ₁₃	E ₁₄	E ₁₃	E ₁₅	E ₁₅	E ₁₄
7	E ₁₄	E ₁₄	E ₁₂	E	E	E ₁₃	E ₁₄	15	14	16	18	18	37	21	16	14	14	14	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄
8	E ₁₄	E	19	E ₁₄	E	E ₁₄	E ₁₄	14	15	17	15	19	19	16	19	14	14	13	19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
9	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	E ₁₅	16	14	16	18	18	19	18	16	16	14	13	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄
10	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	14	15	14	16	16	20	18	18	16	14	14	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E	
11	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₄	17	14	16	16	16	18	16	19	18	15	14	14	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄
12	E ₁₄	E ₁₄	E	E	E ₁₄	E	18	14	15	17	19	22	24	18	18	18	16	14	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄
13	E ₁₄	E	E ₁₃	E	E ₁₄	E ₁₄	E ₁₆	14	16	18	18	20	19	15	15	14	14	14	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E
14	E ₁₃	E	E	E	E	E ₁₄	E ₁₄	15	15	19	16	17	18	19	16	14	14	14	E ₁₄	E ₁₃	E ₁₂	E ₁₄	E ₁₂	E ₁₄	E ₁₄
15	E ₁₃	E	E	E ₁₄	E	E ₁₄	17	13	14	15	17	18	20	21	14	14	14	14	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄
16	E ₁₄	E ₁₄	E	E	E	E ₁₄	14	14	14	17	19	18	18	15	16	15	14	14	E ₁₄	E ₁₂	E ₁₄	E ₁₄	E ₁₃	E ₁₃	E ₁₃
17	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	14	14	15	16	20	16	20	16	16	17	17	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₃	E ₁₃
18	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	14	14	15	14	16	24	18	20	18	14	14	15	19	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄
19	E ₁₃	E ₁₃	E ₁₃	E	E	E	14	17	14	14	18	21	19	20	17	15	14	14	E ₁₃	E ₁₄	E	E ₁₃	E ₁₃	E ₁₃	E ₁₃
20	E ₁₃	E	E ₁₄	E ₁₃	E ₁₄	E ₁₃	14	14	14	15	19	16	17	18	18	17	13	14	E ₁₃	E ₁₃	E	E ₁₃	E ₁₄	E ₁₄	E ₁₄
21	E ₁₄	E ₁₄	E ₁₃	E	E	E	14	14	15	16	15	19	16	19	19	18	14	14	E ₁₄	E	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄
22	E ₁₄	E ₁₄	E	E	E	E	14	14	17	18	19	21	19	19	19	15	14	13	E	E	E	E ₁₄	E ₁₄	E ₁₅	E ₁₅
23	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	14	18	16	16	19	19	19	19	18	19	14	14	19	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄
24	E ₁₄	E ₁₄	E	E ₁₄	E	E	14	14	14	16	16	19	20	20	16	18	14	14	18	E ₁₄	E ₁₄	E ₁₃	E ₁₂	E ₁₃	E ₁₃
25	E ₁₂	E ₁₄	E ₁₄	E	E	E	15	14	15	14	19	19	18	19	18	16	15	14	18	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄
26	E ₁₄	E	E	E ₁₃	E	19	13	14	15	15	16	19	23	23	20	19	14	14	14	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₂	E ₁₃
27	E ₁₃	E	E ₁₃	E ₁₃	E ₁₄	E ₁₄	15	15	14	18	18	18	18	18	19	15	15	15	13	13	E ₁₄	E ₁₄	18	E ₁₄	E ₁₄
28	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E	15	13	15	18	19	27	23	23	18	18	14	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃
29	E ₁₄	E ₁₃	E ₁₃	E	E	E	14	14	15	18	19	21	21	21	18	17	15	13	E	E	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄
30	E ₁₃	E ₁₃	E ₁₄	E	E	E	14	16	15	18	19	19	20	19	17	15	15	14	14	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
31	E ₁₄	E ₁₄	E	E	E	E	13	15	16	21	21	20	23	21	22	20	15	13	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
CNT	31	31	31	30	30	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E ₁₄	E ₁₄	E ₁₃	E	E	E ₁₄	14	14	15	16	18	19	19	19	18	16	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
UQ	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	14	15	15	18	19	20	22	20	18	18	15	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₄	E ₁₃	E	E	E	E	14	14	15	16	18	18	18	18	16	15	14	14	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₃

The Radio Research Laboratories, Japan

MAR. 1971

F-MIN (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

M(3000)F2 (0.01)

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

Station	AKITA				Lat. 39 43.5 N	Long. 140 08.2 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	F	F	F	C	C	F	310	355	340	340	325	320	315	310	315	315	325	330	320	305	300	285	300	295		
2		300	285	285	280	290	300	320	340	335	340	335	345	320	325	320	305	330	335	325	295	305	300	290	295	
3		270	285	295	285	300	310	310	340	350	335	330	310	315	305	320	315	330	320	315	315	320	315	290	285	
4		275	275	275	300	315	305	310	325	330	325	335	305	315	310	315	325	320	325	315	315	310	285	290	285	
5		265	I ^R 270	265	280	285	280	315	I ^R 335	315	325	325	I ^R 320	I ^R 315	325	315	330	325	340	325	305	315	295	290	290	
6		265	280	275	280	295	300	325	345	340	320	330	320	305	310	I ^R 315	335	330	340	330	315	295	280	285	270	
7		280	290	305	300	285	300	330	340	360	330	315	320	315	320	325	320	320	I ^R 325	340	335	300	295	280	280	
8		280	275	300 ^R	280	295	300	320	335	340	325	I ^R 310	I ^R 315	310	305	310	315	315	335	335	325	290	290	290	285	
9		285	300	295	275	270	275	310	325	310	I ^R 330	310	310	310	315	315	315	325	330	325	315	I ^R 300	280	295	290	
10		295	290	285	295	295	290	310	345	325	330	315	300	315	330	325	320	330	335	315	315	300	310	300	300	
11		295	275	285	280	295	290	310	340	335	325	325	325	300	I ^R 320	325	330	335	290	325	325	295	305	300	280	
12		290	285	280	280	285	295	315	335	335	325	305	315	320	325	315	340	320	325	335	315	295	295	300	280	
13		275	290	325	305	280	275	310	305	320	325	330	300	320	310	315	325	325	325	315	295	285	290	260	280	
14		290	310	275	275	280	275	305	335	325	310	315	305 ^R	315	315	310	330	330	330	320	300	295	295	280	290	
15		280	295	300	280	270	270	345	325	335	330	325	315	I ^R 315	I ^R 315	315	320	325	335	325	305	285	280	290	295	
16		290	290	280	285	285	290	330	320	330	330	320	310	310	315	315	315	320	320	325	325	305	275	285	290 ^S	
17		295	305	290	300	290	290	330	330	330	315	325	315	325	315	I ^R 320	325	330	330	330	325	300	295	300	300	285
18		290	290	285	300	280	285	325	325	330	325	320	320	310	300	325	310	320	330	325	320	285	285	290	285	
19		285	300	295	285	285	300	335	335	330	320	315	315	315	315	315	320	320	330	335	320	285	290	290	280	
20		265	270	260	270	280	280	325	340	325	310	300	315	305	305	315	310	315	325	320	310	300	295	290	295	
21		290	285	295	305	280	285	325	335	330	325	I ^R 315	315	I ^R 315	315	315	315	305	325	325	305	285	310	305	300	
22		290	290	300	290	290	295	335	335	330	310	325	310	310	315	310	310	330	330	330	315	300	300	290	280	
23		280	285	280	285	300	295	325	340	330	325	320	320	315	320	315	325	325	325	335	315	300	290	280	I ^R 285	
24		285	285	295	285	290	285	315	335	330	330	325	305	315	300	320	305	310	325	325	290	280	290	285	285	
25		280	285	300	305	295	280	300	315	325	325	315	315	305	325	320	300	315	330	310	300	295	305 ^F	290 ^S	290	
26		275	310	300	315	305	295	330	320	325	325	315	315	310	300	315	315	320	320	305	310	315	300	290	285	
27		280	290	280	290	295	290	335	330	340	310	325	315	310	I ^R 310	I ^R 310	310	320	320	330	295	295	280	290	280	
28		275	285	295	320	300	295	330	325	315	320	310	310	I ^R 305	I ^R 310	315	310	320	320	325	I ^R 325	290	280	280	290	
29		285	285	300	315	310	325	355	345	325	320	310	320	315	310	315	310	315	320	330	330	310	280	285	285	
30		290	290	290	310	305	320	340	340	345	325	315	315	310	305	315	310	315	325	330	315	295	290	280	285	
31		280	275	280	290	315	I ^A 305	330	315	320	330	310	300	305	305	305	320	325	315	320	290	280	285	280	280	
	00	01	02	03	04	05	05	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	282	285	290	288	290	292	325	335	330	325	320	315	315	315	315	315	320	325	325	315	295	290	290	285		
UQ	290	290	300	300	300	300	330	340	335	330	325	320	315	318	320	325	328	330	330	318	300	300	290	290		
LQ	275	285	280	280	285	285	310	325	325	320	315	310	310	308	315	310	320	322	320	302	290	285	285	280		

The Radio Research Laboratories, Japan

MAR. 1971

M(3000)F2 (0.01)

IONOSPHERIC DATA

MAR. 1971

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	U 375	L 370	L 375	L 360	L L	L	L	L						
2									L	L	L	L	L	L	L	L	L	L	L						
3										L	C	L	L	U 355	L 380	L	L	L	L						
4									L	L	L	L	L	L	L	L	L	L	L						
5									L	L	L	L	L	L	L	L	L	L	L						
6									L	L	L	L	L	L	L	L	L	L	L						
7									L	L	L	L	L	L	L	L	L	L	L						
8									L	L	L	L	L	L	L	L	L	L	L						
9									L	L	L	L	L	L	L	L	L	L	L						
10									L	L	L	L	L	L	L	L	L	L	L						
11									L	L	L	L	L	L	L	L	L	L	L						
12									L	L	L	L	L	L	L	L	L	L	L						
13									L	L	L	L	L	L	L	L	L	L	L						
14									L	L	L	L	L	L	L	L	L	L	L						
15									L	L	L	L	L	L	L	L	L	L	L						
16									L	L	L	L	L	L	L	L	L	L	L						
17									L	L	L	L	L	L	L	L	L	L	L						
18									L	L	L	L	L	L	L	L	L	L	L						
19									L	L	L	L	L	L	L	L	L	L	L						
20									L	L	L	L	L	L	L	L	L	L	L						
21									L	L	L	L	L	L	L	L	L	L	L						
22									L	L	L	L	L	L	L	L	L	L	L						
23									L	L	L	L	L	L	L	L	L	L	L						
24									L	L	L	L	L	L	L	L	L	L	L						
25									L	L	L	L	L	L	L	L	L	L	L						
26									L	L	L	L	L	L	L	L	L	L	L						
27								L	L	L	L	L	L	L	L	L	L	L	L						
28								L	L	L	L	L	L	L	L	L	L	L	L						
29								L	L	L	L	L	L	L	L	L	L	L	L						
30								L	L	L	L	L	L	L	L	L	L	L	L						
31								L	L	L	L	L	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	11	26	25	26	23	18	7									
MED									430	U 380	L 370	L 370	L 370	L 370	L 360	L 362	L 355								
UQ										U 390	L 375	L 380	L 375	L 370	L 365	L 370									
LQ										U 370	L 365	L 360	L 360	L 358	L 360	L 350									

MAR. 1971

M(3000)F1 (0.01)

IONOSPHERIC DATA

MAR. 1971

H^oF2 (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										230	245	255	260	270	250	240	235								
2										215	225	245	250	250	240	245	250	250							
3										230	240	240	280	245	245	250	250								
4										230	235	240	255	250	255	250	240	240							
5										235	240	250	235	275	255	240	245	235							
6										230	230	250	270	250	255	280	240	240							
7										230	240	250	270	260	250	245	245	240							
8										220	235	270	260	250	265	265	250	235							
9										235	235	260	255	260	260	250	250	245							
10										225	245	250	250	275	250	265	235	230							
11										220	235	250	255	250	275	255	255	240							
12										230	225	255	275	255	255	280	250	235							
13										240	250	240	265	275	255	270	250	240							
14										225	250	255	280	265	250	250	260	235							
15										235	250	245	275	255	255	255	255	250							
16										235	245	250	275	255	260	250	255	250							
17										250	250	250	255	250	270	255	250	240							
18										250	255	260	265	255	280	250	250	245							
19										240	245	250	260	275	265	250	255	245							
20										230	245	265	280	265	285	260	240	255							
21										250	250	260	250	250	265	255	255	240							
22										245	255	260	265	260	265	270	255	240							
23										245	250	255	255	265	265	265	240	250							
24										240	255	250	270	275	280	280	255	250							
25										255	245	265	270	280	265	265	250	265							
26										250	255	265	265	280	290	270	255	255							
27										230	245	245	270	255	265	280	270	265	245						
28										245	255	255	265	270	270	270	260	255	250						
29										240	250	290	265	280	275	275	255	255							
30										240	255	275	265	270	290	285	260	265							
31										255	235	270	290	295	290	285	270								
	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	29	31	31	31	31	31	31	31	30								
MED							238		240	245	255	265	265	265	260	250	245								
UQ									245	250	265	270	275	275	270	255	250								
LQ									230	235	250	255	255	255	250	248	240								

MAR. 1971

H^oF2 (KM)

IONOSPHERIC DATA

MAR. 1971

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

Year Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	280	260	C	C	245	240	210	210	200	195	190	205	205	230	205	230	220	210	205	240	260	285	265
2	265	270	280	280	270	260	240	205	205	200	200	230	210	230	210	225	235	215	200	230	250	230	250	295
3	330	290	275	265	250	240	240	225	225	200	I ₁ C	180	205	215	230	205 ^H	240	230	210	235	200	220	275	280
4	310	310	300	265	240	220	250	225	230	210	195	200	195	200	215	220	230	215	215	215	230	255	300	310
5	330	310	340 ^A	295	250	305	240	215	220	230	220	220	200	235	210	200	230	230	220	220	235	250	270 ^B	290
6	295	290	295	275	245	250	240	225	220	205	195	205	190	225	220	235	230	225	220	205	240	270	280	305
7	285	260	240	240	240	245	235	220	200	200	190 ^H	190	200	180 ^H	210	215	230	240	210	200	230	250	270	295
8	290	310	290	280	250	255	240	215	220	210	190	205	220	200	205	230	230	220	205	210	260	290	290	290
9	295	250	250	275	315	310	250	225	215	205	200	200	195	230	240	230	230	225	205	210	230	290	280	280
10	275	290	290	255	250	290	245	215	215	200	195	220	190 ^H	220	205	230	230	220	245	215	250	240	240	250
11	250	310	290	275	260	255	250	215	220	200	200	200	210	200	245	220	230	215	205	215	250	260	245	290
12	290	270	290	290	255	245	230	230	215	210	200	205	205	190	185 ^H	230	230	230	220	220	245	260	275	295
13	295	290	230	250	305	310	250	235	235	230	220	205	200	200	205	215	220	220	235	230	240	265	320	290
14	260	255	250	290	270	290	220	220	210	235	225	230	230	215	215	215	230	230	220	250	245	245	265	270
15	270	265	255	310	325	305	240	225	225	220	230	205	195	220	200	235	230	225	215	225	245	280	290	260
16	250	285	270	245	290	265	220	215	225	220	210	I ₁ A	I ₁ A	195 ^H	220	230	240	230	220	210	255	300	285	260
17	260	255	265	255	255	265	235	225	230	235	205	210	210	195	210	215	230	230	215	220	255	245	285	300
18	290	295	265	255	255	295	225	230	235	I ₁ A	I ₁ A	215	215	195	205	230	230	230	230	215	215	250	280	265
19	290	265	270	270	260	245	225	220	220	215	195	180 ^H	230	230	225	205	230	240	215	200	270	305 ^A	290	295
20	340	315	305	300	265	290	235	215	I ₁ A	205	200	195	225	220	215	210	235	230	215	215	I ₁ A	240	260	270
21	265	265	265	245	245	250	230	230	225	210	210	200	200	205	230	225	215	230	215	220	265	245	225	245
22	285	275	255	250	245	250	220	220	215	200	220	200	195	195	205	200	235	230	215	220	245	245	255	270
23	280	280	270	260	250	250	225	220	215	210	215	205	210	220	205	215	210 ^H	235	225	225	235	250	270	275
24	275	280	270	255	255	290	240	230	230	205	200	180 ^H	190 ^H	230	225	230	230	235	215	245	265	255	260	265
25	280	275	245	230	230	260	240	235	230	220	220	215	200	210	210	215	235	235	240	250	255	235	245	245
26	295	295	250	240	210	265	230	230	220	215	215	195	195	215	210	235	240	240	240	235	230	205	250	295
27	290	310	295	265	260	270	220	225	230	210	205	210	200	190	205	230	230	230	225	230	245	260	260	270
28	295	260	245	220	230	245	225	230	230	215	205	190 ^H	180 ^H	200	210	210	230	240	230	235	255	290	300	300
29	290	280	245	220	225	230	215	220	210	195	200	200	205	195	225	230	235	240	230	225	210	265	290	295
30	290	285	265	245	215	220	210	230	215	215	190 ^H	200	195	200	195	215	240	230	215	240	260	285	280	265
31	275	300	290	265	260	I ₁ A	220	230	235	225	220	220	220	230	230	225	235	240	235	245	255	255	275	270
CNT	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	290	280	270	262	252	255	235	225	220	210	205	200	200	205	210	220	230	230	215	220	245	255	275	280
UQ	295	295	290	275	260	290	240	230	230	220	215	210	210	220	225	230	235	235	225	232	255	275	285	295
LQ	275	268	252	245	245	245	225	218	215	202	198	198	195	200	205	215	230	225	215	215	238	245	260	265

The Radio Research Laboratories, Japan

MAR. 1971

H·F (KM)

IONOSPHERIC DATA

MAR. 1971				H ⁺ 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	S	S	E	C	C	E	S	G	G	100	G	G	G	G	G	G	140	115	S	S	S	S	B	S	
2	S	S	S	S	S	S	S	G	G	G	G	160	145	G	G	G	G	G	S	S	S	S	105	S	
3	100	S	S	S	S	S	S	G	150	G	C	110	G	100	G	140	115	G	S	B	S	S	S	100	
4	S	S	S	E	E	S	S	G	110	G	G	110	110	G	115	110	115	G	B	S	120	115	110	105	
5	105	105	105	105	105	110	S	140	150	155	145	135	G	G	G	120	G	G	S	S	S	S	B	S	
6	S	S	S	S	S	S	B	G	G	G	G	100	100	G	G	G	G	125	S	S	S	S	S	S	
7	S	S	S	E	E	S	S	G	G	G	G	G	B	G	G	G	G	115	S	S	S	S	S	S	
8	S	100	B	S	E	100	S	G	G	115	110	G	G	G	G	G	G	100	B	S	S	S	S	S	
9	100	S	100	E	S	S	S	G	110	120	115	G	G	G	115	110	110	110	S	S	120	105	S	S	
10	S	S	100	100	E	S	S	G	G	G	G	G	G	G	110	105	G	120	105	105	105	S	105	100	
11	S	S	E	E	S	S	B	G	155	G	G	G	G	G	155	130	G	G	100	S	S	S	100	S	
12	S	S	100	100	S	E	B	G	G	G	G	G	G	G	105	155	140	115	105	100	S	S	105	S	
13	S	100	100	100	S	S	S	G	125	115	115	110	105	100	100	100	100	100	100	S	S	S	S	100	
14	100	100	100	100	E	S	S	G	G	115	115	105	105	105	G	G	G	110	100	S	S	100	100	100	
15	S	105	100	100	100	S	B	G	G	115	115	115	G	G	G	G	G	105	105	S	S	S	S	S	
16	S	105	105	105	100	100	S	100	100	105	115	110	105	110	100	120	115	170	100	S	S	S	105	105	
17	105	S	S	S	S	S	G	G	G	115	115	110	105	100	G	105	110	110	105	S	105	110	110	110	
18	105	100	105	S	S	S	G	G	120	115	110	110	105	105	100	G	110	G	B	110	110	S	S	105	
19	100	100	100	100	100	100	G	G	130	115	115	115	105	110	105	100	115	G	110	105	110	105	105	105	
20	100	100	100	100	105	S	G	G	115	110	110	G	100	G	105	G	100	G	110	110	105	105	105	S	
21	S	S	S	E	E	E	G	G	140	120	G	G	100	G	G	G	G	G	105	100	100	100	S	S	
22	S	S	E	E	E	E	G	150	145	120	G	G	100	G	G	100	100	100	100	100	100	S	S	S	
23	S	S	E	S	E	S	145	150	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S	
24	S	S	E	S	E	E	150	150	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S	
25	S	S	S	E	E	E	145	150	140	120	120	G	G	G	130	G	G	140	B	S	110	S	110	S	
26	S	100	E	S	E	B	G	G	G	120	120	120	G	G	105	105	G	G	G	S	S	S	S	105	
27	100	100	100	S	S	S	G	G	120	115	110	G	G	G	G	G	G	100	100	S	100	B	S	S	
28	S	110	105	S	100	E	G	G	G	140	120	115	110	110	110	110	G	G	110	110	110	S	S	130	
29	110	S	S	E	E	E	G	160	G	G	125	115	120	G	105	110	100	100	100	100	100	S	S	S	
30	S	S	S	E	E	E	G	G	150	G	G	120	G	130	G	G	155	150	115	105	105	105	105	S	
31	S	105	105	105	105	105	105	G	145	135	120	G	G	145	110	110	G	G	S	S	S	S	S	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	10	13	14	10	7	5	4	7	16	19	17	16	14	10	15	16	14	17	16	10	14	8	12	11	
MED	100	100	100	100	100	100	145	150	135	115	115	112	105	108	105	110	112	110	105	105	105	105	105	105	
UQ	105	105	105	105	105	105	148	150	148	120	120	118	110	110	112	120	115	120	108	110	110	108	108	105	
LQ	100	100	100	100	100	100	125	145	118	115	115	110	100	100	105	105	100	100	100	100	100	100	102	105	100

MAR. 1971

H⁺ES (KM)

IONOSPHERIC DATA

MAR. 1971

TYPES OF ES

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

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

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

MAR. 1971

TYPES OF ES

IONOSPHERIC DATA

MAR. 1971

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

MAR. 1971

FOF2 (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

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	L								
2									L	L	L	L	L	L	L	L	L							
3									L	L	L	L	L	L	L	L	L							
4									L	L	L	L	L	L	L	L	L							
5									L	L	L	L	L	L	L	L	L							
6									L	L	L	L	L	L	L	L	L							
7									L	L	L	L	L	U 510	L	U 510	L							
8									L	L	L	B	L	L	L	L	L							
9									L	L	U 500	L	L	L	L	A								
10									L	L	L	L	L	C	L	L								
11								L	L	L	L	L	L	L	L	L	L							
12									L	L	L	L	U 480	L	L	L	L							
13									L	L	L	A	H 510	L	L	L	L							
14									L	L	L	L	L	L	L	A								
15								L	U 370	L	L	C	L	L	L	L	L							
16									L	L	L	U 500	L	L	L	L	L							
17									L	L	L	L	U 500	L	L	L	L							
18									L	A	A	L	L	L	L	L								
19									L	L	L	U 530	U 500	L	U 500	L	L							
20									L	L	L	L	L	L	L	L	L							
21									L	L	L	L	L	L	L	L	L							
22									L	L	L	L	L	L	L	L	L							
23									L	L	L	L	U 520	U 500	L	L	L							
24									L	L	L	L	L	U 510	L	L	L							
25									L	L	L	L	L	L	L	L	L							
26									L	L	L	L	L	L	L	L	L	L						
27								L	L	C	U 490	U 500	L	U 550	L	L	L							
28									L	L	L	L	U 500	U 500	L	L	L							
29									L	L	U 480	L	L	U 500	L	L	L	L						
30									L	L	L	L	U 490	L	L	L	L	L						
31									L	L	L	L	L	L	L	A								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1		3	3	7	6	1	1								
MED									U 370		U 490	U 500	U 500	U 505	U 500	U 510								
UQ											U 495	U 515	U 505	U 510										
LQ											U 485	U 500	U 495	U 500										

The Radio Research Laboratories, Japan

MAR. 1971

FOF1 (0.01 MHz)

IONOSPHERIC DATA

MAR. 1971

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							B	220	280	R	305	340	355	360	340	320	265	230							
2							B	170	I B 265	I R 310	I R 330	R 355	I R 360	I R 350	350	A	A	A							
3							B	200	290	330	335	R	R	A	R	315	I A 270	R 200							
4							B	I R 220	280	R	R	R	R	A	A	A	A	200							
5							B	R	I R 270	I R 300	I R 320	I R 335	360	I R 360	A	A	A	A							
6							B	215	285	I R 310	345	I R 350	360	350	350	320	265	I A 200							
7							B	205	285	U S 305	I R 330	345	365	I R 360	345	305	270	I A 200							
8							B	240	275	R	R	B	350	A	A	315	270	R							
9							B	200	A	A	A	K	365	365	335	A	A	A							
10							U S 155	230	280	300	335	R	R	R	C 340	I R 310	270	205							
11							B	220	280	R	A	A	A	R	R	R	I R 310	260	215						
12							B	I R 220	280	I R 310	R	R	B	R	R	I R 310	I A 275	A							
13							B	R	290	305	A	A	R	A	A	A	A	A							
14								170	240	280	330	A	A	A	R	R	A	A	A						
15							A	235	280	315	A	C	A	R	360	A	A	A							
16							B	260	A	A	A	A	A	A	A	A	R	R	B						
17							B	R	310	A	A	K 375	A	A	A	A	A	A							
18							B	260	290	310	340	A	A	A	A	A	A	A	B						
19								170	230	290	325	340	350	R	A	A	A	215	B						
20								180	240	285	310	I A 320	I A 340	I A 360	I A 360	345	A	A	195	A					
21								195	230	290	325	340	I A 340	345	I R 350	345	320	280	225	B					
22								B	270	305	R	R	R	R	350	I R 330	325	285	I R 240	B					
23								A	A	300	330	360	365	360	360	I R 345	330	280	230	B					
24								220	270	310	350	370	370	I R 375	365	355	330	290	220	B					
25								A	250	300	325	A	R	R	R	360	I R 340	320	275	I R 235	B				
26								190	I R 255	290	305	A	A	R	A	R	R	290	230	B					
27								180	250	290	I A 315	340	I R 355	I R 360	355	345	320	280	225	B					
28								190	255	295	310	340	I R 345	I A 345	A	A	A	220	B						
29								220	265	295	R	R	R	I R 355	350	R	R	I R 280	I A 230	A					
30								B	R	R	I R 320	I R 340	I R 350	I R 345	R	R	330	290	A	B					
31								165	R	290	A	R	R	350	A	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	25	28	21	16	14	16	15	13	15	17	18							
MED							180	235	290	310	340	I R 350	360	360	345	320	275	220							
UQ							192	255	292	325	340	355	360	360	345	322	280	230							
LQ							170	220	280	310	I R 330	I R 340	350	350	I R 340	312	270	200							

MAR. 1971

FOE (0.01 MHZ)

IONOSPHERIC DATA

MAR. 1971

FOES (0.1 MHZ)

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

Station	KOKUBUNJI TOKYO											Lat.	35 42.4 N			Long.	139 29.3 E			Sweep	1 MHz to 20 MHz in 20 sec in automatic operation										
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
1	E ₁₄	E ₁₃	E ₁₄	E ₁₃	E ₁₃	E ₁₅	E ₁₄	G	G	G ₂₉	G	G	G	G	45	38	31	G ₂₁	J ₁₉	22	19	E ₁₅	E ₁₅	E ₁₅							
2	21	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E ₁₄	G	E ₃₀	G	G	G	G	G	G	35	31	J ₂₆	J ₂₅	18	E ₁₅	E ₁₅	E ₁₃	E ₁₅							
3	E ₁₅	20	20	19	E ₁₃	E ₁₅	E ₁₃	G	G	G	G	G	G	38	G	G	33	G	E ₁₃	E ₁₃	E ₁₅	E ₁₆	20	20							
4	23	J ₂₁	21	E ₁₅	E ₁₃	E ₁₃	E ₁₅	G	G	G	G	G	G	39	39	32	35	G	21	J ₂₄	J ₂₀	22	20	20							
5	E ₁₅	J ₂₆	22	E ₁₅	22	19	23	G	G	G	G	46	42	G	38	35	J ₄₁	J ₂₉	J ₂₅	J ₂₄	J ₂₉	E ₁₅	E ₁₅	E ₁₅							
6	20	20	E ₁₆	20	E ₁₅	20	E ₁₄	26	G	G	G	G ₂₉	G ₂₄	G ₂₁	36	19	G	29	J ₂₃	J ₂₁	J ₁₉	E ₁₅	J ₂₅	E ₁₅	E ₁₅						
7	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₆	G	G	G	G	G	G	G	25	32	30	22	20	E ₁₅	J ₁₆	E ₁₅	M	E ₁₅							
8	E ₁₅	E ₁₅	J ₁₇	J ₁₈	J ₁₉	E ₁₄	E ₂₀	G	30	G	G	E ₅₂	J ₃₄	J ₄₆	J ₄₁	21	G	G	E ₁₅	E ₁₅	E ₁₅	E ₁₆	E ₁₅	E ₁₅							
9	E ₁₅	E ₁₅	20	20	21	20	E ₁₆	G	32	33	36	G	G	G	39	45	37	J ₂₉	17	E ₁₄	16	18	22	E ₁₃							
10	M	J ₁₇	J ₁₇	J ₁₉	22	E ₁₄	G	25	G	G	G	G	G	C	G	G	31	28	J ₂₉	J ₂₉	J ₂₉	22	E ₁₅	E ₁₅							
11	E ₁₅	18	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₆	G	G	31	45	J ₄₁	32	30	G	G	31	J ₁₉	21	20	20	21	20	21							
12	20	21	21	J ₂₁	J ₂₈	J ₂₁	21	20	G	G	G	31	E ₄₀	31	30	G	J	J ₄₁	J ₃₅	J ₂₈	21	J ₁₉	J ₂₉	18	21						
13	20	21	E ₁₅	E ₁₅	E ₁₅	19	E ₁₆	G	G	38	37	J ₅₅	G	J ₅₄	36	J ₃₇	J ₄₀	J ₂₈	J ₂₇	M	E ₁₅	E ₁₅	M	28							
14	M	J ₂₇	J ₂₁	J ₂₅	J ₁₆	E ₁₄	G	G	30	38	47	J ₄₉	J ₅₅	34	19	J ₄₉	J ₄₂	J ₂₉	J ₃₁	J ₂₁	22	E ₁₄	E ₁₅	J ₄₉							
15	J ₃₀	J ₁₇	J ₂₇	J ₂₁	J ₃₀	J ₂₅	J ₁₇	19	G	18	34	38	C	J ₄₁	G	37	38	J ₃₅	J ₄₉	20	E ₁₃	E ₁₅	E ₁₅	E ₁₆							
16	E ₁₅	E ₁₅	21	J ₂₆	J ₂₅	J ₂₉	26	30	J ₄₉	37	39	37	J ₄₂	J ₃₆	J ₄₀	J ₃₅	G	G	E ₁₃	21	J ₂₁	E ₁₅	J ₂₄	J ₃₉							
17	J ₅₄	J ₅₁	J ₂₅	J ₂₇	E ₁₃	19	E ₁₅	G	G	39	J ₄₁	G	38	J ₃₉	J ₄₄	J ₃₉	J ₃₅	31	20	J ₃₅	J ₂₉	24	J ₂₀	J ₂₇							
18	J ₄₁	J ₂₈	J ₂₅	20	E ₁₅	E ₁₅	E ₁₅	G	32	J ₄₈	J ₅₈	40	J ₅₄	J ₄₀	J ₄₁	33	32	J ₂₉	20	J ₂₁	J ₅₃	J ₄₀	J ₅₁	J ₂₇							
19	E ₁₃	J ₂₈	J ₂₅	J ₂₄	J ₂₈	J ₁₉	J ₂₀	25	36	40	43	43	37	J ₄₁	47	37	31	28	J ₂₈	J ₂₈	J ₂₂	22	M	J ₂₄	J ₈₉						
20	J ₅₅	19	J ₂₄	J ₂₃	22	J ₂₁	J ₁₇	25	32	39	J ₅₄	J ₄₁	36	35	28	J ₄₃	32	G	J ₂₅	J ₄₁	J ₄₂	J ₅₂	J ₄₉	J ₂₆							
21	J ₂₂	M	M	E ₁₂	E ₁₂	E ₁₄	G	G	33	37	38	J ₄₀	38	38	22	G	G	G	J ₂₂	M	19	J ₁₉	J ₁₈	J ₂₆	J ₂₁						
22	E ₁₃	E ₁₄	J ₁₇	E ₁₂	E ₁₂	E ₁₅	E ₁₄	G	G	G	G	34	G	G	G	G	G	G	G	21	E ₁₃	19	E ₁₅	E ₁₆	E ₁₆						
23	21	19	E ₁₃	E ₁₅	E ₁₃	E ₁₅	23	29	G	34	38	G	G	G	G	20	18	G	21	20	J ₁₇	E ₁₅	E ₁₅	E ₁₃	E ₁₄						
24	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₃	E ₁₃	G	28	34	G	G	G	G	22	19	16	19	G	17	19	22	E ₁₅	E ₁₃	E ₁₅	E ₁₅						
25	E ₁₃	19	E ₁₃	E ₁₃	E ₁₄	E ₁₄	22	29	32	36	37	G	G	G	G	G	G	G	22	20	E ₁₅	E ₁₃	22	20	22						
26	E ₁₅	E ₁₅	18	E ₁₃	E ₁₂	E ₁₃	G	G	G	36	38	38	G	35	34	G	G	G	G	18	20	18	E ₁₃	18	E ₁₃						
27	20	21	21	E ₁₃	E ₁₅	E ₁₃	G	G	34	C	G	G	G	30	30	G	17	G	G	18	J ₂₃	J ₂₄	E ₁₄	J ₁₇	M						
28	20	17	M	J ₂₈	22	E ₁₄	G	27	31	35	36	37	37	39	43	34	J ₃₀	28	22	J ₃₇	J ₂₁	J ₂₁	J ₃₅	M							
29	J ₃₅	J ₃₇	J ₂₅	J ₂₄	M	E ₁₂	G	G	G	G	G	G	G	G	G	G	G	29	J ₂₅	35	J ₂₁	J ₁₈	E ₁₆	E ₁₅							
30	E ₁₅	E ₁₃	E ₁₆	E ₁₃	E ₁₃	E ₁₃	E ₁₄	G	G	38	39	40	G	G	G	G	34	J ₄₁	J ₂₉	J ₃₀	J ₂₉	J ₄₁	J ₆₁	J ₅₄							
31	J ₂₁	J ₂₉	E ₁₅	J ₁₉	J ₂₅	20	G	31	G	J ₃₆	37	G	42	J ₄₉	J ₄₉	J ₅₉	J ₆₀	J ₂₉	22	E ₁₅	20	E ₁₅	E ₁₅	E ₁₅							
	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	31	31	31	30	31	30	31	30	31	31	31	31	31	31	31	31	31	31							
MED	20	19	18	18	E ₁₅	E ₁₅	E ₁₅	G	G	34	36	30	30	30	30	32	31	23	21	21	19	E ₁₆	18	20							
UQ	22	21	21	J ₂₁	22	19	17	25	32	37	38	40	38	39	40	37	35	J ₂₉	J ₂₅	J ₂₄	J ₂₂	22	21	24							
LQ	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₃	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	18	E ₁₇	20	16	E ₁₅	E ₁₅	E ₁₅	E ₁₅						

The Radio Research Laboratories, Japan

MAR. 1971

FOES (0.1 MHZ)

IONOSPHERIC DATA

MAR. 1971

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 ₁₄	E ₁₃	E ₁₄	E ₁₃	E ₁₃	E ₁₅	E ₁₄	G	G	E ₂₉	G	G	G	G	43	35	E ₃₁	G	17	E	E	E ₁₅	E ₁₅	E ₁₅
2	E	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₃	E ₁₄	G	E ₃₀	G	G	G	G	G	G	34	31	22	E	E	E ₁₅	E ₁₅	E ₁₃	E ₁₅
3	E ₁₅	E	E	E	E ₁₃	E ₁₅	E ₁₃	G	G	G	G	G	G	38	G	G	30	G	E ₁₃	E ₁₃	E ₁₅	E ₁₅	E	E
4	13	17	E	E ₁₅	E ₁₃	E ₁₃	E ₁₅	G	G	G	G	G	G	38	38	32	30	G	E	22	17	E	E	E
5	E ₁₅	E	E	E ₁₅	16	E	23	G	G	G	G	44	41	G	38	34	38	27	25	22	24	E ₁₅	E ₁₅	E ₁₅
6	E	E	E ₁₆	E	E ₁₅	E	E ₁₄	25	G	G	G	G	29	24	21	27	19	27	23	15	16	E ₁₅	17	E ₁₅
7	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₆	G	G	G	G	G	G	25	32	30	22	E	E ₁₅	E	E ₁₅	E	E ₁₅	
8	E ₁₉	E ₁₅	E	E	E	E ₁₄	G	G	30	G	G	E ₅₂	33	38	40	20	G	18	E ₁₅	E ₁₅	E ₁₅	E ₁₆	E ₁₅	
9	E ₁₅	E ₁₅	E	E	E	E	E ₁₆	G	28	33	36	G	G	G	39	45	37	26	17	E ₁₄	E	E	17	E ₁₃
10	16	E	E	17	16	E ₁₄	G	25	G	G	G	G	G	C	G	G	30	25	23	28	28	E	E ₁₅	E ₁₅
11	E ₁₅	E	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₆	G	G	31	40	40	E ₃₂	E ₃₀	G	G	28	G	18	E	E	E	E	18
12	E	E	21	16	16	19	G	16	G	G	G	E ₃₁	E ₄₀	E ₃₁	E ₃₀	G	31	30	24	18	17	28	E	E
13	E	E	E ₁₅	E ₁₅	E ₁₅	E	E ₁₆	G	G	38	37	55	E ₃₅	40	36	37	35	26	23	E	E ₁₅	E ₁₅	E	20
14	E	E	18	20	E	E ₁₄	G	G	30	38	47	47	44	E ₃₄	E ₁₉	45	40	28	16	17	E	E ₁₄	E ₁₅	E
15	26	E	25	19	24	23	17	17	G	17	37	33	C	38	G	36	34	34	28	E	E ₁₃	E ₁₅	E ₁₅	E ₁₆
16	E ₁₅	E ₁₅	E	16	20	18	21	28	38	36	38	37	40	35	40	32	G	G	E ₁₃	15	16	E ₁₅	17	37
17	35	21	21	17	E ₁₃	E	E ₁₅	G	G	31	40	G	38	39	43	38	33	20	18	30	20	18	19	23
18	40	E	24	E	E ₁₅	E ₁₅	E ₁₅	G	32	46	55	40	43	40	40	33	28	26	16	E	21	31	17	E
19	E ₁₃	16	20	15	18	15	14	25	34	39	42	38	E ₃₇	40	35	35	31	25	27	25	16	17	20	35
20	A	E	E	15	E	21	16	25	32	38	41	40	31	E ₃₅	28	39	32	G	23	40	26	21	30	E
21	20	E	E	E ₁₂	E ₁₂	E ₁₄	G	G	33	36	38	40	38	38	E ₂₂	G	G	G	21	E	16	16	17	E
22	E ₁₃	E ₁₄	E	E ₁₂	E ₁₂	E ₁₅	E ₁₄	G	G	G	G	E ₃₄	E ₃₁	G	28	G	G	G	G	E ₁₃	E	E ₁₅	E ₁₆	E ₁₆
23	E	E	E ₁₃	E ₁₅	E ₁₃	E ₁₅	22	28	G	G	38	G	G	E ₁₈	E ₁₈	E ₂₀	E ₁₈	G	17	18	E	E ₁₅	E ₁₅	E ₁₃
24	E ₁₃	E ₁₄	E ₁₄	E ₁₃	E ₁₃	E ₁₃	G	28	33	G	G	G	G	22	E ₁₉	16	G	19	G	G	E	E ₁₅	E ₁₃	E ₁₅
25	E ₁₃	E	E ₁₃	E ₁₃	E ₁₄	E ₁₄	22	28	32	35	37	G	G	G	G	G	E ₂₂	G	E ₁₅	E ₁₃	E	E	E	
26	E ₁₅	E ₁₅	E	E ₁₃	E ₁₂	E ₁₃	G	G	G	35	38	38	G	E ₃₅	E ₃₄	G	G	G	16	E	E	E ₁₃	E	E ₁₃
27	E	17	E	E ₁₃	E ₁₅	E ₁₃	G	G	31	C	G	G	E ₃₀	G	30	G	E ₁₇	G	18	G	17	16	E	E ₁₄
28	E	E	E	22	16	E ₁₄	G	27	E ₃₁	35	36	E ₃₇	E ₃₇	39	43	34	29	25	17	26	18	16	25	E
29	24	27	16	17	E	E ₁₂	G	G	G	G	G	G	G	G	G	G	G	G	26	24	26	E	E	E ₁₆
30	E ₁₅	E ₁₃	E ₁₆	E ₁₃	E ₁₃	E ₁₃	E ₁₄	G	G	38	37	38	G	G	G	G	33	32	26	29	26	30	28	40
31	19	25	E ₁₅	16	20	E	G	28	G	35	37	G	41	47	45	A	56	23	G	E ₁₅	E	E ₁₅	E ₁₅	E ₁₅
CNT	31	31	31	31	31	31	31	31	31	30	31	30	31	30	31	31	31	31	31	31	31	31	31	31
MED	E ₁₅	E ₁₅	E ₁₃	15	E ₁₃	E ₁₄	E ₁₄	G	G	31	36	E ₃₀	E ₃₁	G	26	26	32	30	22	16	15	15	E ₁₅	E ₁₅
UQ	17	E ₁₅	E ₁₆	16	16	E ₁₅	E ₁₆	25	31	36	38	39	37	38	38	34	32	26	22	22	17	16	17	E ₁₆
LQ	E ₁₃	E	E	E ₁₃	E ₁₂	E ₁₃	G	G	G	G	G	G	G	G	G	G	G	18	G	E	E	E ₁₄	E	E

MAR. 1971

FBES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

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	13	14	13	13	E ₁₅ ^S	14	14	15	15	16	26	26	26	25	25	15	15	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
2	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	13	14	14	30	15	15	15	26	15	25	26	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S
3	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	13	15	15	15	26	16	16	18	25	16	15	14	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
4	12	13	E ₁₅ ^S	E ₁₅ ^S	13	13	15	14	15	15	15	26	26	26	19	16	15	15	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
5	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	12	15	15	15	16	15	16	16	16	15	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
6	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	14	14	15	15	26	15	18	16	14	14	15	14	13	13	E ₁₅ ^S	14	E ₁₅ ^S	E ₁₅ ^S
7	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	16	14	14	18	26	16	26	26	15	15	14	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
8	E ₁₅ ^S	E ₁₅ ^S	14	14	14	14	14	15	14	15	15	52	15	18	15	15	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
9	E ₁₅ ^S	E ₁₅ ^S	13	13	E ₁₅ ^S	E ₁₅ ^S	16	14	15	14	15	26	18	16	16	22	16	13	13	14	E ₁₅ ^S	E ₁₅ ^S	14	13
10	E ₁₅ ^S	14	E ₁₅ ^S	14	14	14	13	14	15	15	15	26	28	C	16	15	14	15	13	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
11	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	16	13	15	15	26	25	25	16	15	15	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
12	E ₁₅ ^S	E ₁₅ ^S	13	13	13	13	15	14	15	16	26	26	40	26	26	26	15	15	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	16	14	14	16	26	19	25	15	16	14	14	14	12	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13
14	12	E ₁₅ ^S	12	14	14	14	14	14	15	26	26	25	27	26	25	15	14	13	13	13	13	14	E ₁₅ ^S	E ₁₅ ^S
15	13	14	13	13	13	13	14	15	15	15	15	C	15	25	23	15	15	14	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
16	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	13	13	14	14	15	26	25	14	15	15	15	15	13	13	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
17	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	13	15	14	15	15	15	16	15	25	22	15	15	15	13	13	13	13	13	13
18	E ₁₅ ^S	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	15	13	15	14	14	25	26	26	15	15	15	15	13	13	13	13	14	13
19	13	13	14	13	12	12	13	14	13	15	15	18	15	15	18	15	15	13	13	13	13	13	E ₁₅ ^S	13
20	E ₁₅ ^S	14	14	12	E ₁₅ ^S	14	12	14	14	16	15	16	16	15	15	15	14	13	12	13	E ₁₅ ^S	14	14	E ₁₅ ^S
21	14	14	12	12	12	14	13	13	14	15	15	18	16	28	15	14	15	14	15	E ₁₅ ^S	12	12	13	E ₁₅ ^S
22	13	14	E ₁₅ ^S	12	12	E ₁₅ ^S	14	14	15	15	15	15	15	24	16	15	14	14	15	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
23	E ₁₅ ^S	13	13	E ₁₅ ^S	13	E ₁₅ ^S	15	14	14	15	16	26	15	15	15	14	14	14	14	E ₁₅ ^S	E ₁₅ ^S	13	14	14
24	13	14	14	13	13	13	14	14	14	15	15	25	18	16	14	15	14	12	15	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S
25	13	12	13	13	14	14	14	12	14	15	15	26	26	28	26	16	14	15	15	E ₁₅ ^S	13	14	E ₁₅ ^S	E ₁₅ ^S
26	E ₁₅ ^S	E ₁₅ ^S	13	13	12	13	13	14	14	15	16	25	26	15	23	26	14	14	13	E ₁₅ ^S	E ₁₅ ^S	13	13	13
27	E ₁₅ ^S	12	E ₁₅ ^S	13	E ₁₅ ^S	13	14	12	14	C	19	16	16	15	15	15	14	14	13	13	14	14	14	E ₁₅ ^S
28	E ₁₅ ^S	E ₁₅ ^S	14	12	13	14	15	14	15	15	15	27	27	15	26	15	15	12	14	E ₁₅ ^S	13	13	14	14
29	14	13	13	14	12	12	14	15	15	15	19	25	26	26	24	15	14	14	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
30	E ₁₅ ^S	13	E ₁₅ ^S	13	13	13	14	14	14	15	16	25	25	26	27	15	15	15	14	E ₁₅ ^S	E ₁₅ ^S	13	13	E ₁₅ ^S
31	13	14	E ₁₅ ^S	13	13	E ₁₅ ^S	14	15	14	15	26	25	26	25	25	15	15	14	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
CNT	31	31	31	31	31	31	31	31	31	30	31	30	31	30	31	31	31	31	31	31	31	31	31	31
MED	E ₁₅ ^S	13	13	13	13	14	14	14	15	15	16	25	25	18	16	15	15	14	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
UQ	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	14	E ₁₅ ^S	15	14	15	15	26	26	26	26	25	16	15	15	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
LQ	14	13	13	13	13	13	14	14	14	15	15	16	16	15	15	15	14	14	13	13	13	14	14	14

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F-MIN (0.1 MHZ)

IONOSPHERIC DATA

MAR. 1971

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	285	285	285	295	305	295	325	345	355	330	325	J ^R 330	305	305	315	320	330	325	315	305	285	280	280	280
2	300	290	290	270	295	295	315	340 ^R	355	330	J ^R 335	320	295	295	J ^R 305	J ^R 310	315	340	320	310	295	310	285	280
3	280	280	280	285	305	295	315	330	335	340	315	320	320	310	320	J ^R 310	315	J ^R 330	325	290	320	305	280	J ^R 280
4	275	280	J ^R 280	265	310	305	300	J ^R 290	335	J ^R 325	305	305	310	300	325	310	J ^R 315	340	J ^R 325	305	305	285	270	260
5	260	280	285	290	290	290	295	J ^R 315	330	305	325	310	305	310	325	315	325	335	325	305	285	280	280	280
6	270	J ^R 280	J ^R 295	300	290	300	310	J ^R 340	320	330	305	J ^R 320	J ^R 310	310	315	330	335	335	330	335	265	270	285	275
7	285	290	315	310	315	295 ^R	R	J ^R 355	J ^R 340	320	330	J ^R 310	305	315	320	310	310	340	345	345	285	295	290	275
8	S	280	285	J ^S 300	285	280	320	J ^R 365	J ^R 340	305	R	320	325	305	305	315	330	335	J ^R 330	300	270	275	260	280
9	260	280	285	280	275	280	300	R	J ^R 305	315	315	315	305	310	325	J ^R 330	315	335	330	330	300	300	295	285
10	285	285	290	295	300	280	320	345	335	325	315	J ^R 325	J ^R 295	C	310	325	325	335	320	J ^R 320	290	300	J ^R 305	J ^R 295
11	280	290	275	J ^R 300	290	290	310	J ^R 320	J ^R 335	J ^R 290	295	315	320	J ^R 300	305	330	330	345	325	305	295	295	300	280
12	275	305	295	290	285	295	335	R	J ^R 335	J ^R 335	325	305	320	320	315	320	320	330	J ^R 320	315	295	290	300	J ^R 270
13	290	300	300	305	270	270	300	310	335	345	310	295	305	310	305	315	335	345	315	300	305	280	255	260
14	315	295	290	290	J ^R 285	275	310	335	335	315	310	295	310	315	J ^R 305	310	330	320	320	295	300	300	285	280
15	285	290	290	270	260	280	340	330	345	320	320	C	305	315	310	320	310	335	J ^R 320	295	255	270	280	295
16	300	290	300	285	270	290	330	J ^R 330	325	320	315	325	315	310	305	285	315	320	320	335	J ^R 280	275	270	275
17	290	275	J ^R 290	290	285	J ^R 295	315	J ^R 325	325	315	320	315	310	295	310	305	320	335	J ^R 330	315	290	300	290	265
18	275	280	285	295	275	280	320	335	330	315	315	300	305	310	310	320	325	330	330	310	290	275	285	290
19	300	295	290	285	285	300	345	340	340	325	315	300	305	310	315	300	315	325	340	335	275	285	295	A
20	J ^A 265	J ^F 265	280	280	285	285	330	345	325	325	300	305	305	295	300	305	310	330	325	330	295	280	290	290
21	285	280	290	310	270	285	335	330	335	330	310	310	310	305	310	J ^R 310	325	320	335	330	285	285	295	300
22	290	290	290	295	290	300	345	J ^R 345	J ^R 345	305	305	305	315	305	305	320	320	325	315	300	285	295	275	275
23	275	275	290	J ^R 295	285	295	330	335	335	330	320	305	305	315	315	315	315	325	330	320	290	290	280	280
24	275	285	290	300	280	275	315	335	335	325	315	J ^R 300	300	300	305	305	310	330	330	285	280	280	295	275
25	275	280	310	330	285	270	310	320	330	315	305	300	305	315	J ^R 310	320	315	320	310	305	285	300	305	J ^F 270
26	280	290	300	J ^R 325	315	285	335	J ^R 320	335	325	305	J ^R 295	295	300	300	300	310	320	320	320	300	295	290	285
27	265	275	270	285	285	285	320	335	325	J ^I 315	305	310	290	295	310	320	320	330	320	305	295	280	280	280
28	280	295	320	320	320	280	340	335	325	315	300	300	305	310	310	310	320	320	340	345	280	280	270	280
29	290	290	295	340	325	305	355	345	330	320	315	310	305	305	300	320	310	330	325	325	305	280	270	275
30	285	290	315	320	310	310	350	J ^R 350	335	335	325	300	305	J ^R 295	310	320	320	325	340	305	290	275	J ^R 285	270
31	285	275	280	300	290	290	325	J ^R 320	330	J ^R 340	325	300	J ^R 295	300	300	J ^I 300	325	290	305	290	275	275	275	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	30	29	31	31	30	30	31	30	31	31	31	31	31	31	31	31	31	30
MED	282	285	290	295	285	290	320	335	335	325	315	308	305	308	310	315	320	330	325	310	290	285	285	280
UQ	290	290	295	302	302	295	335	345	335	330	320	315	310	310	315	320	325	335	330	328	295	295	292	280
LQ	275	280	285	285	285	280	310	325	330	315	305	300	305	300	305	310	315	325	320	302	282	280	280	275

MAR. 1971

M(3000)F2 (0.01)

IONOSPHERIC DATA

MAR. 1971

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	L									
2									L	L	L	L	L	L	L	L	L								
3									L	L	L	L	L	L	L	L	L								
4									L	L	L	L	L	L	L	L	L								
5									L	L	L	L	L	L	L	L	L								
6									L	L	L	L	L	L	L	L	L	L							
7									L	L	L	L	L	U 370	L	U 370	L								
8									L	L	L	B	L	L	L	L	L								
9									L	L	U 370	L	L	L	L	A									
10									L	L	L	L	L	C	L	L									
11								L	L	L	L	L	L	L	L	L	L								
12									L	L	L	L	U 395	L	L	L									
13									L	L	L	A	U 370	H	L	L	L	L							
14									L	L	L	L	L	L	L	A									
15								L	U 405	L	L	C	L	L	L	L	L								
16								L	L	L	L	380	L	L	L	L	L								
17								L	L	L	L	L	U 405	L	L	L	L								
18								L	A	A	L	L	L	L	L	L									
19								L	L	L	U 360	380	L	U 380	L	L	L								
20								L	L	L	L	L	L	L	L	L	L								
21								L	L	L	L	L	L	L	L	L	L								
22								L	L	L	L	L	L	L	L	L	L								
23								L	L	L	L	L	U 365	375	L	L	L								
24								L	L	L	L	L	L	360	L	L	L								
25								L	L	L	L	L	L	L	L	L	L								
26								L	L	L	L	L	L	L	L	L	L	L							
27								L	L	C	370	U 380	L	355	L	L	L	L							
28								L	L	L	L	L	U 380	365	L	L	L								
29								L	L	U 410	L	L	L	410	L	L	L	L							
30								L	L	L	L	L	385	L	L	L	L								
31								L	L	L	L	L	L	L	L	A									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT									1		3	3	7	6	1	1									
MED									U 405		U 370	U 380	U 380	U 380	U 368	U 380	U 370								
UQ											U 390	380	390	375											
LQ											370	U 370	375	360											

The Radio Research Laboratories, Japan

MAR. 1971

M(3000)F1 (0.01)

IONOSPHERIC DATA

MAR. 1971

H^oF₂ (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									220	240	245	250	285	260	265	250								
2									240	240	240	260	250	250	245	255	250							
3									230	250	250	250	270	270	270	240	250							
4									250	245	290	280	255	255	260	245	250							
5									250	250	255	260	250	265	255	250								
6									240	240	250	260	260	290	260	250	230							
7									230	260	250	270	275	280	255	280	260							
8									225	240	295	250	270	260	260	250	245							
9									240	245	250	250	275	275	255	250								
10									230	240	280	265	260	245	255	250								
11								240	235	245	295	260	260	270	270	255	250							
12									245	240	270	290	285	270	260	260								
13									250	230	230	280	290	260	275	270	245							
14									230	240	275	280	285	260	255	260								
15								230	230	245	250	C	270	255	260	255	250							
16									250	250	280	260	270	260	270	260	250							
17									250	250	260	260	265	285	265	250	250							
18									250	250	270	260	290	275	260	260								
19									230	245	280	285	285	275	270	260	240							
20									230	255	280	280	275	275	260	255	255							
21									240	245	255	260	260	270	260	255	240							
22									240	250	265	265	270	270	270	260	250							
23									245	240	270	280	275	275	260	250	245							
24									240	260	275	280	290	285	285	270	255							
25									250	250	285	275	290	280	260	250	250							
26									250	255	280	285	290	295	270	290	260	250						
27								245	250	260	275	260	270	300	275	255	245							
28									255	260	260	295	280	275	260	260	255							
29									230	250	280	295	290	290	280	270	260	250						
30									240	260	290	290	300	295	290	260	260							
31									250	250	255	290	305		290	A								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	31	31	31	30	31	30	31	30	23	2						
MED								240	240	250	270	268	275	272	260	255	250	250						
UQ								242	250	250	280	280	288	280	270	260	255							
LQ								235	230	240	252	260	268	260	260	250	245							

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H^oF₂ (KM)

IONOSPHERIC DATA

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H·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	275	275	260	255	230	255	240	220	210	200	205	200	205	240	250	240	250	215	205	240	250	255	280	275
2	280	260	270	290	250	260	245	215	230	200	210	210	200	220	210	240	240	240	210	240	250	245	250	290
3	300	295	295	260	245	250	245	230	210	240	240	210	200	200	240	220	215	240	215	215	210	240	290	295
4	310	310	300	295	240	250	245	245	215	210	200	200	240	205	220	210	240	240	250	240	230	250	300	305
5	335	305	295	260	250	295	265	245	220	220	250	240	210	240	210	215	250	230	210	240	250	260	275	295
6	300	295	295	285	240	250	240	225	230	215	210	200	200	190	210	210	220	225	210	205	220	300	295	300
7	285	260	245	240	230	260	235	220	210	225	200	210	225	230	225	210	220	240	220	195	220	255	270	300
8	310	300	280	270	260	260	245	230	220	200	200	250	210	200	240	240	240	240	210	215	295	295	295	300
9	300	260	240	295	330	340	250	240	200	230	210	220	205	205	240	230	235	240	215	200	230	255	275	280
10	280	280	290	275	245	290	255	230	220	200	210	220	220	215	220	240	240	245	210	245	270	235	245	265
11	295	310	300	280	270	260	240	230	210	200	200	250	240	220	215	250	240	230	215	225	255	250	250	305
12	295	290	295	295	295	260	240	235	220	205	195	210	210	210	240	230	240	235	225	205	250	295	280	310
13	290	250	220	240	310	330	255	240	240	230	205	205	210	220	205	230	245	230	230	225	240	270	330	300
14	240	245	260	290	290	300	240	220	205	220	225	250	250	225	220	240	245	230	240	230	240	240	260	285
15	275	270	260	300	350	320	230	210	210	230	230	C	210	220	205	240	240	245	220	210	250	290	290	270
16	250	255	270	260	310	295	240	230	240	220	200	200	210	240	240	230	240	240	215	205	250	300	295	310
17	300	290	270	270	240	260	240	240	230	240	240	240	230	205	250	240	240	235	230	250	295	255	265	305
18	310	300	290	255	285	300	240	240	240	240	240	220	225	210	225	210	235	240	210	220	260	310	290	260
19	250	260	275	270	290	250	220	220	225	225	220	185	185	250	225	225	230	235	220	200	300	290	280	A
20	340	305	305	300	270	310	220	220	220	225	220	225	230	225	220	225	230	245	210	245	270	260	300	275
21	270	260	255	225	260	285	240	230	220	210	210	220	205	220	210	210	210	235	220	210	260	245	250	255
22	270	270	260	250	250	260	225	225	220	210	200	200	200	210	200	205	240	245	210	215	245	250	260	290
23	295	290	265	250	240	260	240	220	215	220	200	210	210	215	210	200	205	240	230	210	245	250	275	280
24	285	285	270	245	245	285	245	230	225	220	180	180	210	225	220	205	230	240	220	225	275	260	250	260
25	280	275	245	205	235	275	240	240	225	220	220	210	240	240	220	210	220	245	240	235	250	250	240	290
26	310	290	250	240	240	260	240	240	230	220	220	220	230	210	230	240	240	240	240	240	235	240	250	290
27	290	310	295	280	290	285	220	230	220	200	210	210	200	200	200	240	230	240	230	240	230	270	270	285
28	290	260	225	210	240	285	230	230	225	220	210	205	210	205	250	220	220	240	225	220	240	290	320	295
29	290	290	255	220	210	230	220	220	210	200	200	210	240	210	240	210	240	240	240	220	200	300	315	300
30	295	290	255	240	240	240	215	240	205	220	210	200	215	250	240	240	250	245	230	240	270	295	295	360
31	290	315	290	260	245	270	240	240	220	240	230	240	250	290	260	285	250	240	250	245	240	280	280	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	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	30
MED	290	285	270	260	250	260	240	230	220	220	210	210	210	220	220	230	240	240	220	225	250	260	280	290
UQ	300	298	292	282	278	292	245	240	225	225	220	220	230	228	240	240	240	240	230	240	260	290	295	300
LQ	280	260	255	242	240	260	232	220	210	208	200	200	205	208	210	210	230	235	210	210	238	250	260	280

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H·F (KM)

IONOSPHERIC DATA

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H°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	B	B	B	B	B	S	B	G	G	105	G	G	G	G	130	120	130	100	100	100	100	S	S	S	
2	100	S	S	B	S	B	B	G	B	G	G	G	G	G	120	110	105	100	100	100	S	S	B	S	
3	S	100	100	100	B	S	B	G	G	G	G	G	G	115	G	G	130	G	B	B	S	S	100	100	
4	100	100	100	S	B	B	B	G	G	G	G	G	G	110	110	110	110	G	100	100	100	100	100	100	
5	S	100	100	S	100	100	100	G	G	G	G	140	130	G	120	110	110	105	105	100	100	S	S	S	
6	100	100	S	100	S	100	B	150	G	G	G	100	100	100	100	100	130	100	110	100	S	100	S	S	
7	S	S	B	S	S	S	B	G	G	G	G	G	G	G	105	185	140	115	100	S	105	S	105	S	
8	S	S	105	105	105	B	105	G	125	G	G	B	100	100	100	100	G	100	S	S	S	S	S	S	
9	S	S	100	100	100	100	B	G	115	110	110	G	G	G	110	110	110	110	110	B	100	100	105	B	
10	100	100	100	100	100	B	G	170	G	G	G	G	G	C	G	G	150	140	105	100	100	100	S	S	
11	S	100	S	S	B	S	B	G	G	110	100	105	105	105	G	G	120	100	100	100	100	100	100	100	
12	100	100	100	100	100	100	100	100	G	G	G	100	B	105	100	G	130	110	105	100	105	100	100	100	
13	100	100	S	S	S	100	B	G	G	110	110	105	105	100	100	100	100	100	100	100	S	S	105	100	
14	100	100	100	100	100	B	G	G	155	130	110	105	105	105	105	110	110	110	100	100	110	B	S	105	
15	100	100	100	100	100	100	100	100	100	130	110	C	110	G	120	110	110	105	100	B	S	S	S	S	
16	S	S	100	100	105	100	160	140	110	110	110	110	105	105	100	100	G	G	B	110	100	S	120	105	
17	100	100	100	100	B	100	B	G	G	130	110	G	110	100	110	105	110	110	100	100	100	105	105	105	
18	105	100	100	100	S	S	B	G	140	110	110	110	100	100	100	125	115	110	110	110	110	110	105	105	
19	B	100	100	100	100	100	100	150	120	115	110	115	115	110	105	140	130	120	110	105	105	105	100	100	
20	100	100	100	100	100	100	105	160	125	110	110	105	105	100	100	105	105	G	115	105	105	105	100	100	
21	100	100	100	B	B	B	G	G	130	125	120	100	115	130	100	100	G	G	110	100	105	100	100	100	
22	B	B	100	B	B	S	B	G	G	G	G	105	105	105	G	G	G	G	105	B	100	S	S	S	
23	100	100	B	S	B	S	150	150	G	155	160	G	G	100	100	100	100	100	100	140	100	S	S	B	B
24	B	B	B	B	B	B	G	160	150	G	G	G	G	100	100	100	100	95	100	95	S	B	S	S	
25	B	100	B	B	B	B	145	140	140	120	120	G	G	G	G	G	G	110	100	S	B	105	100	100	
26	S	S	100	B	B	B	G	G	G	120	120	110	G	110	105	G	G	G	115	105	100	B	110	B	
27	100	100	100	B	S	B	G	G	120	C	G	G	100	100	G	100	100	G	100	100	B	100	100		
28	100	100	100	100	100	B	G	150	135	125	125	120	115	110	110	110	115	125	115	110	110	110	105	105	
29	100	100	105	100	105	B	G	G	G	G	G	G	G	G	G	G	G	140	130	110	100	100	S	S	
30	S	B	S	B	B	B	B	G	G	160	140	140	G	G	G	G	140	110	105	100	100	100	105	100	
31	105	100	S	100	100	100	G	100	G	105	140	G	110	110	105	100	100	100	105	S	100	S	S	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	17	21	20	16	13	11	9	12	13	18	17	15	17	21	22	22	24	23	28	23	22	15	18	16	
MED	100	100	100	100	100	100	105	150	125	118	110	105	105	105	105	108	110	110	105	100	100	100	102	100	
UQ	100	100	100	100	100	100	145	155	140	130	120	112	110	110	110	110	130	110	110	105	105	105	105	105	
LQ	100	100	100	100	100	100	100	120	120	110	110	105	105	100	100	100	108	100	100	100	100	100	100	100	

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H°ES (KM)

IONOSPHERIC DATA

MAR. 1971

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																									
2																									
3																									
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5																									
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29																									
30																									
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT																									
MED																									
UQ																									
LQ																									

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TYPES OF ES

IONOSPHERIC DATA

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HPF2 (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	345	350	335	320	295	330	290	250	250	290	300	290	340	330	305	300	290	300	300	300	350	370	360	350
2	350	350	370	390	360	360	300	260	250	290	270	300	360	350	320	315	305	260	300	330	350	330	350	390
3	390	390	390	380	310	360	305	280	270	260	300	300	300	315	290	330	300	285	300	355	290	310	390	390
4	400	390	390	400	300	315	305	300	270	300	320	340	305	350	290	300	300	260	300	350	300	350	400	400
5	400	390	390	370	370	370	305	300	290	310	300	310	310	310	300	305	300	290	300	300	350	380	385	390
6	400	390	360	350	370	350	300	280	290	270	305	300	305	310	300	280	270	260	270	260	380	375	360	370
7	320	325	300	300	285	320	R	250	250	300	290	305	305	300	290	305	300	265	265	250	320	325	350	365
8	S	360	340	320	330	345	295	240	240	330	R	300	300	350	350	300	290	270	360	350	390	390	390	390
9	400	360	350	390	420	400	340	R	340	285	300	300	315	300	290	280	300	265	270	270	310	310	340	345
10	340	350	350	330	315	355	290	250	260	300	315	300	340	C	310	300	300	280	300	300	350	300	350	360
11	390	370	400	350	370	360	300	280	290	300	350	300	300	340	315	290	290	270	290	300	355	350	350	390
12	390	340	360	370	380	330	280	R	265	260	300	350	310	310	310	300	300	290	300	300	350	370	360	390
13	370	350	300	310	400	400	350	310	270	250	290	315	310	300	315	300	275	255	295	320	310	360	440	365
14	290	310	330	350	350	380	295	260	260	300	310	330	310	295	310	300	270	290	290	325	320	320	355	355
15	350	350	320	380	415	380	250	255	250	300	300	C	315	305	310	300	300	270	290	360	400	395	340	360
16	350	350	350	380	395	370	285	275	290	300	300	300	315	310	340	300	310	300	300	290	400	400	390	390
17	345	350	370	350	380	350	300	300	300	310	310	305	305	350	315	310	300	270	295	300	370	355	350	390
18	390	380	360	350	395	400	300	290	290	300	300	305	310	300	300	300	290	275	270	300	335	355	360	325
19	315	330	330	330	350	305	250	250	255	280	305	310	310	300	300	310	300	290	270	260	370	350	320	A
20	I A	Y F	385	355	360	350	255	240	280	280	320	315	310	320	305	305	300	285	270	270	320	350	340	335
21	340	350	315	295	380	340	270	260	260	285	295	300	305	310	305	300	290	295	260	260	340	340	320	315
22	330	340	330	320	335	330	255	250	260	340	340	340	305	325	315	310	300	300	300	310	355	350	385	390
23	400	390	370	350	360	360	290	250	270	270	300	305	305	305	300	300	300	295	270	280	320	330	355	360
24	360	355	340	310	350	355	300	260	260	290	305	315	315	315	315	305	300	285	270	330	370	350	325	360
25	360	355	305	260	350	370	295	295	290	300	340	350	340	330	320	305	305	300	300	340	350	340	300	400
26	400	370	340	300	300	360	280	300	290	300	330	360	350	350	350	340	330	300	300	300	340	350	360	380
27	380	390	390	360	380	390	300	290	300	300	300	300	320	330	305	290	295	270	280	310	320	350	360	355
28	365	330	295	260	280	345	255	260	280	295	315	310	310	300	300	300	300	290	265	250	355	370	380	375
29	345	350	320	260	270	300	250	250	270	300	315	315	345	340	340	300	330	290	300	290	300	390	400	390
30	380	370	320	300	305	300	260	260	280	300	300	350	340	350	315	310	300	300	300	340	350	390	350	400
31	390	390	390	350	315	350	300	290	290	280	280	340	350	340	340	355	300	310	340	350	380	380	390	390
CNT	30	31	31	31	31	31	30	29	31	31	30	30	31	30	31	31	31	31	31	31	31	31	31	30
MED	368	355	350	350	350	355	295	260	270	300	300	308	310	315	310	300	300	285	295	300	350	350	360	378
UQ	390	385	370	365	380	370	300	290	290	300	315	330	318	340	315	308	300	295	300	330	358	372	385	390
LQ	345	350	325	310	312	335	270	250	260	282	300	300	305	305	300	300	292	270	270	285	320	340	350	360

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HPF2 (KM)

IONOSPHERIC DATA

MAR. 1971

YPF2 (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	65	70	75	80	75	80	65	50	50	100	90	J ₁₀₀ ^R	100	80	95	90	100	90	90	90	90	90	100	110
2	110	110	120	100	100	100	90	100 ^R	110	100	J ₁₁₀ ^R	100	100	110	J ₉₀ ^R	J ₉₅ ^R	105	110	100	110	110	110	100	100
3	100	100	100	100	90	100	95	100	110	120	100	90	90	95	100	J ₁₁₀ ^R	100	J ₉₅ ^R	90	105	110	100	90	J ₉₀ ^R
4	100	100	100 ^R	90	100	95	95	I ₉₀ ^R	110	J ₁₀₀ ^R	95	100	85	90	100	100	J ₉₀ ^R	110	J ₉₀ ^R	90	100	110	90	100
5	90	100	90	110	110	120	95	J ₉₀ ^R	100	90	100	90	90	90	100	95	100	100	100	100	90	100	90	100
6	90	J ₉₀ ^R	110 ^R	120	110	110	100	I ₁₁₀ ^R	90	60	90	J ₆₀ ^R	J ₇₅ ^R	60	70	65	80	60	75	60	120	70	75	80
7	90	75	65	55	90	80 ^R	R	J ₄₅ ^R	J ₅₀ ^R	55	65	J ₆₅ ^R	80	70	70	95	60	55	55	70	95	90	60	80
8	S	80	65	I ₈₀ ^S	75	75	60	J ₆₀ ^R	J ₅₀ ^R	110	R	100	100	90	90	100	110	110	J ₁₀₀ ^R	110	100	100	90	100
9	90	100	110	100	90	100	100	R	J ₁₀₀ ^R	75	80	80	85	70	65	70 ^R	70	50	75	85	95	70	60	55
10	80	65	70	70	105	95	70	55	85	90	95	J ₉₀ ^R	J ₁₁₀ ^R	C	90	100	90	100	100	J ₁₀₀ ^R	100	100	J ₉₀ ^R	J ₁₁₀ ^R
11	100	110	90	J ₁₂₀ ^R	120	100	100	J ₁₁₀ ^R	J ₉₀ ^R	J ₉₀ ^R	100	100	100	J ₁₀₀ ^R	85	100	110	120	90	100	105	110	110	100
12	100	110	120	110	110	110	100	R	J ₉₅ ^R	J ₁₀₀ ^R	100	100	90	90	90	100	100	J ₁₀₀ ^R	100	90	120	100	90	80
13	110	110	100	110	90	90	90	90	110	60	95	110	90	95	85	70	60	60	70	90	85	85	80	80
14	65	100	90	65	J ₉₅ ^R	80	80	60	60	70	85	90	60	65	J ₉₀ ^R	95	55	65	65	80	85	85	90	90
15	100	70	100	70	85	70	60	65	50	90	90	C	95	105	100	100	100	110	100 ^R	100	90	95	100	120
16	100	100	110	110	95	110	95	J ₁₀₀ ^R	100	100	100	100	95	100	100	100	90	100	100	100	I ₁₀₀ ^R	90	100	100
17	115	110	I ₁₀₀ ^R	110	110	J ₁₁₀ ^R	100	J ₈₀ ^R	100	90	90	95	95	110	95	95	100	120	85 ^R	100	110	105	110	90
18	100	100	100	110	95	90	90	100	100	55	70	90	55	80	75	60	60	100	30	100	85	90	90	75
19	80	75	75	80	65	90	55	55	60	75	70	90	75	70	70	95	75	65	55	95	80	70	80	A
20	I ₈₅ ^A	J ₈₅ ^E	65	90	90	65	65	60	70	80	95	85	90	90	95	75	75	65	85	75	100	90	75	80
21	65	95	85	60	90	80	55	60	60	60	75	85	75	85	65	75 ^R	60	55	65	55	90	105	85	85
22	75	75	70	80	80	70	50	J ₅₀ ^R	J ₅₀ ^R	100	120	100	105	95	105	110	100	90	90	110	105	100	95	90
23	90 ^R	90	120	100 ^R	100	100	90	100	110 ^R	80	75	70	80	65	55	70	85	60	65	95	85	70	95	95
24	95	75	75	90	95	95	70	65	65	65	65	J ₁₀₀ ^R	85	80	80	95	80	65	75	115	80	100	85	90
25	95	100	80	55	110	80	70	60	55	100	100	100	100	70	J ₁₀₀ ^R	95	95	90	100	90	110	110	100	90 ^F
26	90	110	100	J ₉₀ ^R	100	90	100	J ₈₀ ^R	90	90	80	J ₁₀₀ ^R	110	100	90	100	110	100	110	100	100	90	100	100
27	100	100	100	90	100	90	80	90	90	I ₈₀ ^C	70	85	100	70	80	65	65	80	80	80	80	100	100	90
28	80	70	60	95	75	100	65	60	65	60	85	85	90	70	70	80	55	65	50	50	95	80	80	80
29	65	70	80	50	70	60	45	50	50	100	105	105	105	100	80	100	110	100	100	90	90	100	90	100
30	100	110	120	80	95	100	90	J ₉₀ ^R	100	90	100	100	100	J ₁₁₀ ^R	105	110	100	90	90	110	110	100	J ₉₀ ^R	90
31	90	100	90	110	95	100	90	J ₉₀ ^R	100	J ₁₀₀ ^R	100	100	J ₁₀₀ ^R	110	110	I ₉₀ ^A	100	90	100	100	100	100	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	31	31	31	31	31	30	29	31	31	30	30	31	30	31	31	31	31	31	31	31	31	31	30
MED	90	100	90	90	95	95	90	80	90	90	92	98	90	90	90	95	90	90	90	100	95	100	90	90
UQ	100	100	100	110	100	100	95	90 ^R	100	100	100	100	100	100	100	100	100	100	100	100	102	100	100	100
LQ	80	75	75	80	90	80	65	60	60	72	80	85	85	70	78	78	72	65	72	88	90	90	85	85

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MAR. 1971

YPF2 (KM)

IONOSPHERIC DATA

MAR. 1971

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 ₅₀	S ₅₂	49	46	45	36	37	S ₆₄	84	84	S ₉₅	S ₁₀₃	112	132	145 ^H	145	139	137	125	U ₀₁	S ₈₈	J ₈₆	S ₈₅	S ₆₈	
2	S ₆₅	S ₅₆	C ₄₆	S ₄₄	C ₄₅	C ₄₀	C ₄₁	C ₆₄	C ₈₇	S ₉₁	C ₈₅	93	101	113	124	130	134	S ₁₃₀	I ₁₁₈	94	69	67	59	S ₅₂	
3	S ₄₉	44	43	43	S ₄₅	39	41	S ₆₃	83	S ₉₈	106	S ₁₀₇	107	120	144	149	145	137	S ₁₃₉	115	J ₈₈	76	J ₆₂	47	
4	44	44	44	44	42	33	33	58	85	S ₉₂	101	103	109	116	120	123	121	107	90	80	66	58	51	S ₅₀	
5	50	S ₄₉	50	49	47	44	I ₄₅	S ₇₂	S ₉₄	S ₉₅	107	114	117	123	138	138	122	S ₁₂₅	I ₁₁₄	I ₁₀₂	I ₈₃	S ₆₇	J ₅₇	S ₅₂	
6	48	S ₄₉	47	45	S ₄₄	44	S ₄₂	S ₆₂	S ₈₁	S ₉₆	101	100	103	126	137	130	104	93	I ₉₆	78	51	S ₄₅	S ₅₁	51	
7	S ₅₀	45	44	45	46	32	33	S ₆₃	73	85	95	104	108	118	122	114 ^R	124	S ₁₂₁	109	84	64	61	59	47	
8	41	S ₄₀	S ₄₂	43	S ₄₀	40	I ₄₂	S ₇₂	83	77	U ₉₅	118	S ₁₂₈	127	132	137	124	S ₁₀₈	91	72	J ₆₁	S ₆₀	56	J ₅₄	
9	U ₅₀	49	41	39	39	40	U ₄₁	U ₆₃	77	U ₁₀₁	106	J ₁₂₁	122	132	139	126	114	115	I ₁₁₂	U ₉₇	U ₇₆	U ₆₁	J ₅₃	U ₅₁	
10	46	43	39	S ₃₉	40	37	U ₃₉	S ₆₆	90	C	C	105	127	135	S ₁₂₁	I ₁₁₈	118	100	U ₉₄	81	71	56	U ₅₂	39	
11	42	42	39	43	38	41	J ₄₀	57	70	72	96	119	131	127	126	128	126	S ₁₂₆	92	84	90	S ₉₀	68	51	
12	S ₄₉	54	42	40	41	42	U ₄₀	S ₆₂	69	80	84	I ₉₇	I ₁₁₂	S ₁₂₄	119	U ₁₁₆	106	91	I ₈₉	S ₈₆	S ₆₁	J ₅₃	S ₅₃	S ₅₀	
13	49	S ₅₁	45	42	35	34	35	S ₇₈	86	82	80	89	J ₁₁₉	135	126	137	130	107	89	90	I ₈₈	J ₆₈	J ₅₂	52	
14	53	48	45	43	36	37	37	68	78	81	99	115	120	122	115	107	107	103	S ₉₆	86	72	62	58	S ₅₃	
15	59	51	S ₄₉	46	48	J ₅₃	I ₅₄	78	77	77	U ₁₀₅	109	118	129	127	126	126	118	S ₁₀₆	106	68	50	51	S ₄₉	49
16	50	S ₅₀	45	45	S ₃₉	41	S ₄₅	66	76	99	S ₁₁₄	S ₁₂₂	123	139	I ₁₅₄	S ₁₆₉	147	136	132	113	96	S ₆₈	S ₆₇	62	
17	54	S ₅₁	47	42	43	34	S ₃₇	68	82	96	108	108	103	111	128	126	107	S ₁₀₄	I ₁₀₀	81	60	60	S ₅₃	50	
18	S ₅₃	S ₅₃	50	45	41	40	42	72	85	98	105	103	110	121	119	117	103	94	I ₉₂	74	61	S ₅₄	53	55	
19	S ₅₃	S ₄₉	S ₄₇	45	45	46	45	S ₆₃	80	93	99	114	124	142	153	153	S ₁₅₀	145	131	I ₁₁₅	I ₉₅	I ₈₇	74	52	
20	45	S ₄₆	46	46	44	44	46	S ₆₇	70	88	101	103	124	S ₁₂₄	124	118	111	115	109	84	58	52	54	48	
21	S ₅₁	I ₅₀	46	42	41	41	44	81	92	93	S ₉₅	S ₁₀₅	120	134	134	136	132	S ₁₂₄	I ₁₁₆	U ₁₀₈	S ₇₃	62	65	63	
22	58	S ₄₉	45	47	41	39	43	S ₇₂	73	84	94	I ₁₁₆	123	126	123	105	107	101	U ₉₉	80	60	59	55	J ₅₄	
23	S ₅₅	55	U ₅₅	55	52	44	U ₄₅	73	78	82	91	107	124	137	146	136	S ₁₁₈	I ₁₁₄	106	I ₉₄	J ₈₄	68	J ₆₆	U ₆₂	
24	60	59	60	60	47	41	40	J ₇₆	82	85	94	105	113	121	126	126	S ₁₂₅	116	U ₁₀₄	78	67	S ₆₇	J ₆₄	J ₅₅	
25	55	58	58	S ₅₁	38	33	J ₃₃	71	90	S ₉₃	89	I ₁₀₁	120	S ₁₂₄	126	103	94	S ₉₆	U ₁₀₂	J ₉₁	65	60	56	U ₅₂	
26	U ₅₀	S ₅₀	U ₅₄	48	37	32	38	69	U ₈₇	85	94	112	131	141	150	154	144	U ₁₃₁	U ₁₁₂	U ₁₀₃	J ₈₈	67	62	57	
27	U ₅₉	U ₅₈	J ₅₂	U ₅₁	50	46	S ₄₈	65	75	79	I ₁₀₂	I ₁₁₈	134	138	139	134	124	112	U ₁₀₈	I ₁₀₇	S	S	S	S	
28	I ₈₄	79	S ₇₈	70	43	U ₃₀	38	69	78	78	94	J ₁₀₉	133	141	137	131	J ₁₂₁	U ₁₁₂	S ₁₀₅	84	J ₆₃	J ₆₅	68	U ₆₅	
29	J ₆₅	69	I ₇₄	J ₈₆	J ₆₃	39	39	61	69	74	S ₉₄	105	129	137	137	134	S ₁₃₉	S ₁₂₅	S ₁₂₆	S ₁₁₆	66	62	60	J ₆₆	
30	62	S ₆₇	S ₆₉	S ₈₁	S ₆₄	S ₄₇	S ₄₅	61	71	71	84	98	102	121	121	117	112	S ₁₀₅	97	84	65	57	S ₅₄	S ₅₃	
31	51	I ₅₀	50	50	43	36	44	70	91	85	87	83	104	119	118	109	102	93	86	S ₈₆	S ₇₇	74	68	68	
	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	31	31	31	30	30	31	31	31	31	31	31	31	31	31	30	30	30	30	
MED	S ₅₁	S ₅₀	47	45	43	40	S ₄₁	67	81	85	95	105	120	126	127	128	122	114	105	86	68	62	58	52	
UQ	S ₅₆	S ₅₄	51	50	46	43	S ₄₄	72	86	93	102	114	124	135	138	136	131	125	113	S ₁₀₂	S ₈₄	S ₆₈	65	S ₅₇	
LQ	49	S ₄₈	44	43	40	36	38	63	76	80	94	103	110	121	122	118	109	104	95	81	61	58	S ₅₃	50	

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MAR. 1971

FOF2 (0.1 MHZ)

IONOSPHERIC DATA

MAR. 1971

FOF1 (0.01 MHZ)

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

Station	YAMAGAWA							Lat.	31° 12' 1" N			Long.	130° 37' 1" E			Sweep	1 MHz to 20 MHz		in 20 sec		in automatic operation			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										400	L	550	L	L	L	L	L	L						
2										290	L	L	510	510	550	540	L	L	L					
3										310	L	L	L	L	L	520	L	L	L					
4										350	L	L	510	490	L	L	L	L	L					
5										L	L	L	500	530	L	520	L	410						
6										L	L	500	500	550	L	L	L	A						
7										L	L	450	L	L	500	L	L	L						
8										L	490	500	490	520	500	L	L							
9										L	L	L	500	510	L	460	L	L						
10										C	C	L	L	L	L	C	L	L						
11										L	L	530	530	L	L	540	480	L	A					
12										L	L	C	L	L	L	L	L							
13										500	L	L	L	510	L	480	L	L						
14										L	540	490	530	500	500	440	L	L						
15										L	L	500	L	490	460	450	450	L	L					
16										L	490	520	L	L	C	500	410	L						
17										L	470	540	L	530	L	500	L	L						
18										L	L	L	L	500	L	450	400	L						
19										L	L	500	L	550	L	L	L	L						
20										L	500	L	480	530	510	L	400	L						
21										L	L	490	490	L	470	L	L	L						
22										L	L	530	510	510	510	470	L	280						
23										L	L	490	510	L	L	490	L	L						
24										L	L	500	560	530	500	510	L	L						
25										L	L	510	530	500	500	460	450	L						
26										L	L	L	500	560	560	L	L	L						
27										L	L	490	500	L	L	L	L	440						
28										L	L	530	L	L	500	L	L	L	A					
29										L	L	530	520	510	L	500	500	L	L					
30										L	L	490	530	500	510	490	L	L						
31										L	440	L	A	L	520	500	L	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	3	11	21	16	19	15	14	5	2						
MED									310	440	500	500	510	510	500	480	410	360						
UQ									330	470	530	520	530	530	515	500	410							
LQ									300	420	490	500	495	500	500	460	400							

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MAR. 1971

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAR. 1971

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								170 ^H	260	300	335	350	I ^A 365	365	I ^A 360	335	310	250		A				
2								S	250 ^H	300	330	340	360	355	355	335	310	250			B			
3								S	260	305	330	345	350 ^R	355	I ^A 350	330	300	250			B			
4								S	250 ^H	300	320	350	355	350	340		A	A	A		B			
5								S	250 ^H	300 ^H	320	345	360	360	350	I ^A 335	300	250		A				
6								S	250 ^H	300 ^H	315	330	360 ^H	I ^A 360	360	I ^A 330		A	A	A				
7								S	230	300 ^H	330	345	360	370 ^R	350 ^R	325	300	250			B			
8								S	250	300	320	335	I ^A 350	360	350	330	300		A	A				
9								155	265	300	320	325		A	A	340		A		S				
10								180	260 ^H		C	C	330	340	355	I ^A 345	I ^C 325	300	260		A			
11								160	260	300 ^H	315	I ^A 345	360 ^R	I ^A 355	350	340	300	250		A				
12								150	250	300	320	I ^C 330	I ^R 360	360	350	340 ^R	310	260	160					
13								200 ^H	250	290	305	I ^A 320	I ^A 355	365	355	330		A	A	A				
14								A	255 ^H	310 ^H	330	330	330		A	A	330	305		A	A			
15								A	250	300	320 ^H	330	335	340	I ^A 330	330		A	A	A				
16								195	265 ^H	305	330	345		A	A	I ^C 350	340	310	260		R			
17								170	270	300	325	330	I ^A 330	350	350	340	310	270		A				
18								190 ^H	270	305	325		A	A	A	360	330	310	260	165				
19								190	270	310	330	350	350	340		A	A		A	A	A			
20								180	265	300	325		A	A	A		A	330	305	250	165			
21								200 ^H	270	300	325	340	360	350	340	330	300	240		A				
22								200	260	300	320	I ^A 340	365 ^R	360	350	340	305	260	180					
23								190	270	315	340	360	360	365	355	330	310	I ^A 260		A				
24								190	260 ^H	310	330	350 ^H	360	360	350	340	300	270	165					
25								210	275	315	335	350	365 ^R	360	I ^R 350	330	310	270	180					
26								205	275	305	330	345	345	I ^A 350	350		A	A	275		A			
27								190 ^H	255	310		A	360 ^R	360	350	340	315	275	180					
28								220 ^H	280	310	330	345	I ^A 350	I ^A 350	I ^A 345	340		A	A	A				
29								195	280	320	I ^A 335		A		A	350	350	330	305	270	180			
30								190	280	310	330	340	355	350	I ^R 345	340	310	270	180					
31								190	270		A	A	A	A	A	A	A	A	270		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								22	31	29	28	26	25	25	27	26	22	23	9					
MED								190	260	300	328	342	360	355	350	330	305	260	180					
UQ								200	270	310	330	345	360	360	350	340	310	270	180					
LQ								180	250	300	320	330	350	350	348	330	300	250	165					

MAR. 1971

FOE (0.01 MHZ)

IONOSPHERIC DATA

MAR. 1971

FOES (0.1 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J ₂₄ X	E ₁₄ S	E ₁₃ S	E ₁₂ S	E ₁₃ S	E ₁₅ S	G	G	G	30	31	34	39	32	39	G	G	31	25	J ₂₈ X	J ₂₃ X	22	E ₁₅ S	J ₂₂ X	E ₁₅ S
2	J ₂₂ C	J ₂₄ C	17	J ₂₈ C	J ₂₀ C	E ₁₄ S	E ₁₂ S	E ₁₃ S	G	G	22	G	G	40	38	G	G	G	27	G	E ₁₇ B	E ₁₄ S	J ₂₂ X	E ₁₄ S	E ₁₅ S
3	E ₁₄ S	E ₁₄ S	22	E ₁₄ S	E ₁₄ S	E ₁₄ S	E ₁₅ S	E ₁₄ S	G	G	20	34	29	39	G	G	G	29	G	E ₁₅ B	E ₁₄ S	E ₁₅ S	21	E ₁₃ S	E ₁₅ S
4	L ₁₅ S	20	E ₁₃ S	17	J ₁₉ X	J ₁₉ X	E ₁₅ S	21	G	G	24	38	38	44	43	38	35	31	28	E ₁₉ B	21	E ₁₅ S	E ₁₅ S	18	21
5	21	16	21	22	J ₂₂ X	J ₂₂ X	23	20	28	21	35	39	49	49	38	36	29	29	21	J ₆₃ X	J ₄₇ X	24	23	E ₁₅ S	
6	E ₁₅ S	20	E ₁₂ S	J ₂₀ X	J ₂₂ X	J ₂₄ X	20	E ₁₅ S	G	G	32	33	35	30	37	25	J ₃₆ X	J ₃₈ X	J ₅₃ X	J ₂₀ X	23	J ₂₆ X	E ₁₇ B	E ₁₅ S	19
7	21	E ₁₄ S	E ₁₄ S	E ₁₂ S	E ₁₃ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	G	G	21	23	39	40	40	39	37	35	30	E ₁₆ B	E ₁₄ S	E ₁₅ S	E ₁₅ S	E ₁₄ S	E ₁₅ S
8	E ₁₄ S	E ₁₄ S	E ₁₅ S	J ₁₉ X	J ₃₃ X	E ₁₅ S	E ₁₅ S	E ₁₅ S	G	J ₂₈ G	28	G	38	J ₃₃ X	36	J ₂₅ G	J ₂₅ G	J ₂₈ X	J ₃₂ X	J ₂₂ X	22	E ₁₅ S	E ₁₅ S	E ₁₅ S	
9	E ₁₅ S	E ₁₅ S	E ₁₁ S	E ₁₂ S	E ₁₃ S	E ₁₅ S	E ₁₅ S	G	G	31	33	37	39	37	38	38	J ₃₅ X	G	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	22	E ₁₅ S	
10	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₂ S	J ₃₂ X	J ₂₇ X	E ₁₅ S	G	G	C	C	G	G	G	31	38	C	32	30	20	E ₁₄ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₅ S
11	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	19	E ₁₂ S	E ₁₅ S	G	G	G	24	30	J ₄₅ X	42	42	37	J ₄₃ X	J ₃₄ X	J ₅₇ X	J ₂₉ X	J ₃₂ X	23	23	E ₁₅ S	22
12	23	J ₂₀ X	J ₂₂ X	E ₁₂ S	E	E	E ₁₅ S	G	29	G	G	C	42	27	37	40	37	J ₃₉ X	33	J ₂₅ X	16	E ₁₄ S	J ₁₇ X	J ₂₀ X	
13	E ₁₄ S	E ₁₃ S	E ₁₂ S	J ₁₉ X	J ₂₀ X	E ₁₂ S	E ₁₄ S	G	27	32	36	J ₄₅ X	J ₄₃ X	31	G	29	32	29	J ₂₈ X	J ₂₇ X	J ₂₅ X	E ₁₅ S	E ₁₅ S	E ₁₄ S	
14	E ₁₅ S	22	J ₂₆ X	J ₂₅ X	J ₃₂ X	J ₂₉ X	J ₂₄ X	J ₂₂ X	G	35	37	50	40	41	37	35	28	J ₂₉ X	J ₂₁ X	24	J ₃₂ X	J ₂₃ X	17	E ₁₃ S	
15	E ₁₄ S	22	J ₃₇ X	J ₃₅ X	22	22	J ₂₀ X	J ₃₉ X	J ₂₈ X	22	28	38	45	40	36	38	34	28	18	J ₁₉ X	J ₂₂ X	J ₃₄ X	J ₂₂ X	20	
16	21	22	20	17	21	16	E ₁₄ S	25	28	33	43	46	45	44	C	37	G	34	17	G	J ₂₁ X	J ₂₅ X	J ₂₁ X	19	E ₁₅ S
17	E ₁₃ S	E ₁₅ S	J ₁₉ X	E ₁₄ S	E ₁₅ S	E ₁₁ S	E ₁₅ S	G	G	G	35	39	39	J ₃₀ G	32	G	G	31	25	J ₂₈ X	E ₁₅ S	E ₁₅ S	E ₁₅ S	J ₃₆ X	J ₄₄ X
18	J ₃₃ X	E ₁₄ S	18	E ₁₁ S	21	21	E ₁₅ S	G	29	37	41	42	J ₄₂ X	44	39	26	35	29	19	19	J ₂₄ X	J ₂₇ X	J ₃₁ X	J ₃₁ X	
19	25	E ₁₅ S	E ₁₅ S	21	21	E ₁₅ B	18	G	24	G	36	43	43	50	47	46	37	39	34	21	18	J ₁₅ S	J ₂₆ X	E ₁₅ S	J ₄₃ X
20	J ₁₀₀ X	J ₂₃ X	J ₃₃ X	J ₂₅ X	21	20	22	G	29	35	43	45	43	J ₄₈ X	43	39	G	G	24	19	J ₄₂ X	J ₃₅ X	J ₆₁ X	J ₃₀ X	
21	E ₁₄ S	17	E ₁₂ S	E ₁₄ S	E ₁₄ S	E ₁₅ S	E ₁₃ S	G	G	34	37	40	38	41	40	38	32	27	21	19	J ₂₀ X	J ₂₅ X	J ₂₉ X	J ₂₂ X	
22	21	E ₁₅ S	E ₁₄ S	E ₁₂ S	E	E	E ₁₄ S	E ₁₅ S	G	31	35	36	36	35	34	32	30	21	18	19	E ₁₅ S	22	E ₁₄ S	E ₁₄ S	
23	22	22	E ₁₄ S	E ₁₄ S	E ₁₂ S	E ₁₄ S	E ₁₅ S	26	30	33	G	G	G	30	27	23	G	28	18	J ₂₄ X	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	
24	E ₁₅ S	E ₁₄ S	E ₁₅ S	E ₁₅ S	E ₁₃ S	E ₁₃ S	E ₁₅ S	G	30	33	34	G	G	G	G	G	31	G	G	E ₁₃ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	
25	E ₁₄ S	E ₁₅ S	E ₁₄ S	E ₁₂ S	E ₁₂ S	E ₁₇ B	E ₁₅ S	G	29	34	37	41	36	G	35	36	G	24	25	14	E ₁₅ S	E ₁₅ S	J ₂₁ X	J ₂₀ X	
26	E ₁₅ S	E ₁₅ S	22	E ₁₄ S	E ₁₃ S	E ₁₅ S	E ₁₅ S	G	30	34	38	39	39	37	31	J ₃₄ X	J ₄₂ X	33	J ₄₅ X	J ₂₇ X	J ₃₁ X	J ₂₄ X	22	E ₁₅ S	
27	E ₁₅ S	18	E ₁₂ S	E ₁₂ S	E ₁₄ S	E ₁₃ S	E ₁₅ S	23	33	37	38	38	35	35	33	26	G	G	G	21	24	E ₁₅ S	E ₁₄ S	E ₁₅ S	
28	E ₁₅ S	E ₁₅ S	E ₁₁ S	18	E	E	E ₁₄ S	E ₁₅ S	G	30	34	38	J ₄₆ X	46	40	J ₄₈ X	J ₃₆ X	33	J ₅₆ X	J ₄₃ X	22	21	E ₁₅ S	18	21
29	J ₈₄ X	E ₁₅ S	J ₂₂ X	21	E ₁₂ S	18	18	G	31	22	34	39	41	47	37	26	18	G	32	31	J ₃₀ X	J ₂₄ X	J ₂₁ X	E ₁₂ S	E ₁₅ S
30	E ₁₅ S	E ₁₄ S	E ₁₄ S	E ₁₄ S	E ₁₂ S	E ₁₃ S	E ₁₅ S	26	32	41	J ₃₃ X	38	39	45	47	39	19	G	31	27	21	22	J ₂₇ X	J ₂₆ X	J ₃₈ X
31	J ₂₄ X	J ₁₉ X	J ₂₄ X	J ₂₀ X	16	E ₁₃ S	E ₁₃ S	26	32	40	43	J ₆₄ X	J ₉₄ X	J ₄₄ X	J ₃₈ X	36	37	J ₂₉ X	J ₅₆ X	J ₄₄ X	J ₂₆ X	E ₁₅ S	E ₁₅ S	E ₁₅ 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	31	31	31	31	31	31	31	31	31	30	30	30	31	31	30	30	31	31	31	31	31	31	31	31	
MED	E ₁₅ S	E ₁₅ S	E ₁₅ S	E ₁₅ S	15	E ₁₅ S	E ₁₅ S	G	27	32	35	39	40	38	37	36	31	29	21	21	22	E ₁₅ S	17	E ₁₅ S	
UQ	22	20	22	20	21	18	E ₁₅ S	20	30	34	38	43	43	44	39	37	34	32	J ₂₈ X	J ₂₄ X	J ₂₄ X	J ₂₄ X	J ₂₄ X	J ₂₂ X	21
LQ	E ₁₅ S	E ₁₄ S	E ₁₄ S	E ₁₂ S	E ₁₂ S	E ₁₃ S	E ₁₅ S	G	G	G	G	35	38	G	32	33	26	G	26	G	18	16	E ₁₅ S	E ₁₅ S	E ₁₅ S

The Radio Research Laboratories, Japan

MAR. 1971

FOES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

FBES (0.1 MHz)

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

Station	YAAGAWA				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	17	E ₁₄	E ₁₃	E ₁₂	E	E ₁₃	E ₁₅	G	G	G ₂₈	G ₃₁	G ₃₄	38	G ₃₂	39	G	G ₂₈	G ₂₁	24	21	E	E ₁₅	16	E		
2	C ₂₁	C ₁₆	E	C ₂₂	E	E ₁₄	E ₁₄	E ₁₃	G	G ₂₂	G	G	G	G	G	G	G ₂₇	G ₂₁	E ₁₇	E ₁₄	20	E ₁₂	E ₁₅	E ₁₅		
3	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	E ₁₅	E ₁₄	G	G ₂₀	G	G ₂₆	G	G	35	G	G ₂₈	G ₂₄	E ₁₅	E ₁₄	E ₁₅	E	E ₁₃	E ₁₅		
4	E ₁₅	E	E ₁₃	E	E	E	E ₁₅	S	G	G ₂₄	38	G	39	41	36	33	30	25	E ₁₉	E	E ₁₅	E ₁₅	16	E		
5	E	15	E	15	18	21	F	S	G	G ₂₁	G	38	45	E ₄₉	38	35	19	G	19	54	33	E	E	E ₁₅		
6	E ₁₅	E	E ₁₂	E	16	17	E	E ₁₅	G	G	G	G	G ₃₀	36	G ₂₃	34	34	34	20	21	20	E ₁₇	E ₁₅	15		
7	E	E ₁₄	E ₁₄	E ₁₂	E ₁₃	E ₁₅	E ₁₅	E ₁₅	G	G ₂₁	G ₂₃	G	G	40	39	36	34	29	E ₁₆	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₅		
8	E ₁₄	E ₁₄	E ₁₅	12	22	E ₁₅	E ₁₅	E ₁₅	G	G ₂₈	G ₂₈	G	36	G ₃₂	33	G ₂₁	G ₁₇	26	29	20	E	E ₁₅	E ₁₅	E ₁₅		
9	E ₁₅	E ₁₅	E ₁₁	E ₁₂	E ₁₃	E ₁₅	E ₁₅	G	G	G	G	36	38	36	37	34	33	G	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E	E ₁₅		
10	E ₁₅	E ₁₅	E ₁₅	E ₁₂	E	23	E ₁₅	G	G	C	C	G	G	G ₃₀	35	C	G	29	20	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅		
11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E	E ₁₂	E ₁₅	G	G	G ₂₄	G ₂₉	40	41	40	G	30	26	52	25	23	E	16	E ₁₅	E		
12	E	E	15	E ₁₂	E	E	E ₁₅	G	G	G	G	C	41	G ₂₇	E ₃₇	39	G	31	32	25	15	E ₁₄	E	18		
13	E ₁₄	E ₁₃	E ₁₂	15	E	E ₁₂	E ₁₄	G	G	G	35	40	39	31	G	G ₂₇	G ₃₂	27	28	22	22	E ₁₅	E ₁₅	E ₁₄		
14	E ₁₅	E	20	15	28	22	17	20	G	G	37	42	G	38	36	30	G ₂₈	26	15	E	22	16	E	E ₁₅		
15	E ₁₄	E	22	29	12	E	E	21	19	G ₂₁	G ₂₈	37	43	40	36	36	33	27	17	14	15	20	19	E		
16	E	E	E	E	E	E	E ₁₄	G	G	G	41	44	42	40	C	G	G	30	E ₁₇	E	20	21	E	E ₁₅		
17	E ₁₃	E ₁₅	15	E ₁₄	E ₁₅	E ₁₁	E ₁₅	G	G	G	G	37	39	G ₂₉	G ₃₂	G ₃₁	G ₂₇	G ₂₁	25	E ₁₅	E ₁₅	E ₁₅	23	29		
18	21	E ₁₄	E	E ₁₁	E	E	E ₁₅	G	G	G	38	40	39	38	39	G ₂₅	G	G	G	17	23	19	21	E		
19	E	E ₁₅	E ₁₅	E	E	E ₁₅	E	G	G	G ₂₄	33	40	40	48	45	42	35	37	33	21	16	S	21	E ₁₅	38	
20	E	14	21	E	E	E	E	G	G	G	34	41	42	42	38	42	37	G	G	23	18	31	22	24	E	
21	E ₁₄	E	E ₁₂	E ₁₄	E ₁₄	E ₁₅	E ₁₃	G	G	G ₁₈	G	35	38	G	39	39	36	G	G	20	18	16	21	26	18	
22	E	E ₁₅	E ₁₄	E ₁₂	E	E ₁₄	E ₁₅	G	G	G	35	36	36	G ₃₄	G ₃₃	G ₃₂	G ₂₉	G ₂₁	G ₁₇	17	E ₁₅	E	E ₁₄	E ₁₄		
23	E	E	E ₁₄	E ₁₄	E ₁₂	E ₁₄	E ₁₅	25	G	G	G	G	G	G ₃₀	G ₂₆	G ₂₅	G	27	17	20	E ₁₅	E ₁₅	E ₁₅	E ₁₅		
24	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₃	E ₁₃	E ₁₅	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅		
25	E ₁₄	E ₁₅	E ₁₄	E ₁₂	E ₁₂	E ₁₇	E ₁₅	G	G	G	34	36	38	G ₃₆	G	E ₃₅	G	G	G ₂₄	23	14	E ₁₅	E ₁₅	E	E	
26	E ₁₅	E ₁₅	E	E ₁₄	E ₁₃	E ₁₅	E ₁₅	G	G	G	34	38	38	39	37	G ₃₁	34	39	33	45	24	29	22	E	E ₁₅	
27	E ₁₅	E	E ₁₂	E ₁₂	E ₁₄	E ₁₃	E ₁₅	22	32	36	35	36	35	G ₃₄	G ₃₃	G ₂₆	G	G	G	E	16	E ₁₅	E ₁₄	E ₁₅		
28	E ₁₅	E ₁₅	E ₁₁	E	E	E ₁₄	E ₁₅	G	G	G	33	36	44	44	39	47	33	33	51	42	E	E	E ₁₅	E	E	
29	20	E ₁₅	21	E	E ₁₂	E	E	G	G	G	22	34	38	41	E ₄₇	G	G ₂₆	G ₁₈	30	30	29	19	15	E ₁₂	E ₁₅	
30	E ₁₅	E ₁₄	E ₁₄	E ₁₂	E ₁₂	E ₁₃	E ₁₅	G	G	G	40	G ₃₂	38	G	44	47	39	G ₁₉	G	27	21	19	24	21	22	
31	15	16	E	18	E	E ₁₃	E ₁₃	G	G	G	31	39	42	62	43	E ₃₈	35	35	24	46	44	24	E ₁₅	E ₁₅	E ₁₅	
	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	31	29	31	30	30	30	31	31	30	30	31	31	31	31	30	31	31	31	31	
MED	E ₁₅	E ₁₄	E ₁₄	E ₁₂	E ₁₂	E ₁₄	E ₁₅	G	G	G	21	33	38	38	36	35	32	G ₂₇	25	20	17	15	E ₁₅	15	E ₁₅	
UQ	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E ₁₄	G	G	33	37	40	41	40	39	35	32	30	26	21	20	18	16	E ₁₅	
LQ	E ₁₃	E	E ₁₁	E ₁₂	E	E ₁₂	E ₁₄	G	G	G	G	G	G	G	G	G ₃₀	G ₂₈	G ₂₃	G	E ₂₁	E ₁₇	E ₁₄	E ₁₅	E ₁₅	E ₁₂	E ₁₄

The Radio Research Laboratories, Japan

MAR. 1971

FBES (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

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

MAR. 1971

F-MIN (0.1 MHz)

IONOSPHERIC DATA

MAR. 1971

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	29 ⁰	28 ⁰	28 ⁵	28 ⁵	30 ⁵	28 ⁵	28 ⁰	33 ⁰	33 ⁵	33 ⁵	32 ⁵	31 ⁰	29 ⁵	29 ⁰	29 ⁰	29 ⁵	29 ⁵	30 ⁵	31 ⁰	31 ⁰	26 ⁵	27 ⁰	27 ⁰	29 ⁵								
2	26 ⁰	28 ⁵	28 ⁰	25 ⁰	29 ⁵	27 ⁵	28 ⁰	33 ⁰	34 ⁵	34 ⁰	33 ⁵	31 ⁵	31 ⁵	29 ⁵	30 ⁰	30 ⁵	30 ⁵	31 ⁵	32 ⁰	31 ⁰	27 ⁵	30 ⁰	29 ⁰	28 ⁰								
3	27 ⁰	28 ⁰	27 ⁵	28 ⁰	29 ⁰	28 ⁰	28 ⁵	33 ⁵	32 ⁵	33 ⁵	32 ⁵	31 ⁰	30 ⁰	29 ⁰	30 ⁰	29 ⁰	29 ⁵	30 ⁵	31 ⁰	30 ⁵	29 ⁵	29 ⁰	25 ⁰	26 ⁰								
4	27 ⁰	27 ⁵	27 ⁵	29 ⁵	33 ⁵	29 ⁰	27 ⁰	31 ⁵	34 ⁰	31 ⁵	32 ⁵	30 ⁵	30 ⁰	30 ⁰	30 ⁰	30 ⁰	31 ⁵	32 ⁰	32 ⁰	31 ⁵	30 ⁵	29 ⁵	27 ⁵	27 ⁵								
5	27 ⁰	26 ⁵	27 ⁰	28 ⁵	29 ⁰	27 ⁵	28 ⁵	33 ⁰	35 ⁰	32 ⁵	31 ⁵	30 ⁵	31 ⁰	29 ⁵	31 ⁰	30 ⁵	29 ⁵	31 ⁰	32 ⁰	31 ⁰	28 ⁵	26 ⁵	24 ⁰	27 ⁰								
6	26 ⁵	27 ⁵	27 ⁵	27 ⁵	28 ⁰	30 ⁰	28 ⁵	33 ⁰	34 ⁵	32 ⁰	31 ⁵	32 ⁰	29 ⁰	30 ⁰	31 ⁰	32 ⁵	31 ⁵	31 ⁵	33 ⁰	33 ⁵	28 ⁰	27 ⁰	28 ⁰	26 ⁵								
7	28 ⁰	29 ⁰	30 ⁵	31 ⁵	33 ⁵	28 ⁰	28 ⁰	34 ⁵	33 ⁰	33 ⁰	31 ⁵	30 ⁵	29 ⁰	30 ⁵	30 ⁵	30 ⁵	31 ⁵	33 ⁰	34 ⁰	33 ⁵	28 ⁵	30 ⁰	30 ⁵	28 ⁰								
8	27 ⁰	26 ⁵	28 ⁵	29 ⁰	29 ⁵	27 ⁵	29 ⁵	33 ⁵	34 ⁰	32 ⁰	30 ⁵	31 ⁰	31 ⁰	30 ⁰	30 ⁵	31 ⁵	32 ⁵	33 ⁰	33 ⁵	32 ⁵	28 ⁵	29 ⁰	29 ⁵	28 ⁵								
9	28 ⁵	30 ⁵	30 ⁰	28 ⁵	27 ⁰	26 ⁵	27 ⁰	34 ⁵	32 ⁰	31 ⁵	31 ⁵	30 ⁵	30 ⁵	30 ⁵	31 ⁵	31 ⁵	32 ⁰	32 ⁰	32 ⁵	33 ⁰	31 ⁰	30 ⁰	30 ⁰	31 ⁵								
10	29 ⁵	29 ⁵	29 ⁵	28 ⁵	31 ⁰	28 ⁰	27 ⁵	35 ⁵	35 ⁵			30 ⁰	31 ⁰	31 ⁵	30 ⁰	31 ⁰	33 ⁰	32 ⁵	33 ⁰	32 ⁰	32 ⁵	30 ⁵	25 ⁰	28 ⁵								
11	28 ⁵	29 ⁵	27 ⁵	30 ⁵	30 ⁵	30 ⁵	33 ⁵	36 ⁵	36 ⁵	31 ⁰	28 ⁰	30 ⁵	32 ⁰	29 ⁰	30 ⁰	31 ⁰	31 ⁵	32 ⁵	33 ⁵	30 ⁵	31 ⁰	28 ⁵	29 ⁵	26 ⁰								
12	27 ⁰	30 ⁵	28 ⁵	27 ⁵	28 ⁵	30 ⁵	32 ⁵	35 ⁵	34 ⁵	33 ⁰	31 ⁰	30 ⁵	30 ⁰	30 ⁵	30 ⁵	32 ⁰	32 ⁰	33 ⁰	33 ⁰	34 ⁰	29 ⁵	28 ⁵	28 ⁵	28 ⁵								
13	28 ⁵	29 ⁰	33 ⁰	33 ⁵	26 ⁵	26 ⁵	27 ⁰	33 ⁰	35 ⁰	33 ⁵	34 ⁵	28 ⁵	29 ⁵	31 ⁵	30 ⁵	30 ⁵	32 ⁰	33 ⁰	30 ⁵	31 ⁵	30 ⁰	24 ⁵	25 ⁵	28 ⁵								
14	30 ⁰	31 ⁰	29 ⁵	29 ⁵	28 ⁰	25 ⁵	26 ⁵	33 ⁵	34 ⁵	33 ⁰	29 ⁰	31 ⁰	30 ⁵	30 ⁵	30 ⁵	30 ⁵	31 ⁰	32 ⁰	31 ⁵	30 ⁰	29 ⁵	29 ⁰	28 ⁵	27 ⁰								
15	29 ⁵	28 ⁵	28 ⁵	27 ⁰	27 ⁰	27 ⁰	31 ⁰	33 ⁵	34 ⁰	31 ⁰	30 ⁵	31 ⁵	30 ⁵	31 ⁰	30 ⁵	30 ⁰	31 ⁰	32 ⁰	33 ⁰	33 ⁰	35 ⁰	27 ⁵	27 ⁵	28 ⁵								
16	30 ⁵	28 ⁰	28 ⁰	29 ⁰	25 ⁵	27 ⁰	31 ⁰	33 ⁵	32 ⁰	30 ⁵	32 ⁵	30 ⁵	30 ⁰	29 ⁵	29 ⁵	29 ⁵	30 ⁵	31 ⁰	31 ⁰	30 ⁵	27 ⁰	26 ⁵	27 ⁵	29 ⁰								
17	28 ⁵	29 ⁵	28 ⁰	26 ⁵	31 ⁰	29 ⁰	27 ⁰	32 ⁵	33 ⁰	31 ⁵	32 ⁵	31 ⁵	30 ⁰	29 ⁵	30 ⁰	31 ⁵	31 ⁰	30 ⁵	31 ⁵	30 ⁰	28 ⁵	29 ⁵	28 ⁵	27 ⁰								
18	27 ⁵	29 ⁰	28 ⁵	29 ⁰	27 ⁰	27 ⁰	27 ⁵	33 ⁵	33 ⁵	32 ⁵	32 ⁰	30 ⁰	30 ⁰	30 ⁵	30 ⁵	29 ⁵	31 ⁰	32 ⁰	32 ⁰	31 ⁵	29 ⁵	28 ⁵	29 ⁰	27 ⁵								
19	29 ⁰	28 ⁵	28 ⁰	27 ⁵	27 ⁵	30 ⁰	31 ⁵	35 ⁰	32 ⁵	32 ⁵	29 ⁵	29 ⁵	30 ⁰	29 ⁵	30 ⁰	29 ⁵	30 ⁵	31 ⁰	30 ⁵	31 ⁰	27 ⁵	26 ⁰	29 ⁰	26 ⁵								
20	25 ⁵	26 ⁵	26 ⁵	28 ⁰	29 ⁵	29 ⁵	30 ⁵	34 ⁵	33 ⁰	32 ⁰	31 ⁵	29 ⁰	30 ⁵	30 ⁰	30 ⁵	30 ⁵	30 ⁰	31 ⁰	32 ⁵	31 ⁰	29 ⁵	27 ⁵	29 ⁵	29 ⁰								
21	29 ⁵	30 ⁰	28 ⁵	27 ⁵	26 ⁵	26 ⁵	29 ⁵	33 ⁵	34 ⁵	34 ⁵	31 ⁰	29 ⁵	30 ⁰	30 ⁰	30 ⁰	30 ⁰	30 ⁰	31 ⁵	32 ⁵	31 ⁵	30 ⁵	27 ⁵	29 ⁰	28 ⁵								
22	31 ⁰	28 ⁵	29 ⁰	30 ⁰	29 ⁵	28 ⁰	30 ⁰	36 ⁰	34 ⁵	32 ⁵	31 ⁵	30 ⁵	31 ⁰	30 ⁵	31 ⁵	30 ⁵	30 ⁵	32 ⁰	33 ⁵	34 ⁰	29 ⁰	29 ⁰	29 ⁰	28 ⁰								
23	27 ⁵	28 ⁰	29 ⁰	30 ⁵	32 ⁵	30 ⁰	30 ⁵	36 ⁰	34 ⁵	33 ⁰	30 ⁵	30 ⁰	30 ⁵	33 ⁵	31 ⁰	30 ⁵	30 ⁵	31 ⁰	31 ⁰	33 ⁰	29 ⁰	30 ⁰	28 ⁰	28 ⁰								
24	29 ⁰	29 ⁰	30 ⁰	33 ⁵	33 ⁰	29 ⁰	28 ⁰	33 ⁵	34 ⁵	33 ⁰	30 ⁵	29 ⁵	29 ⁵	30 ⁰	30 ⁵	30 ⁵	30 ⁵	32 ⁰	33 ⁵	31 ⁵	29 ⁰	29 ⁵	30 ⁵	28 ⁰								
25	27 ⁵	29 ⁵	32 ⁵	32 ⁵	35 ⁵	28 ⁵	28 ⁵	33 ⁵	34 ⁰	34 ⁰	30 ⁵	29 ⁰	30 ⁰	30 ⁵	31 ⁵	30 ⁰	30 ⁰	31 ⁵	32 ⁵	32 ⁵	30 ⁰	29 ⁰	29 ⁵	29 ⁰								
26	28 ⁰	29 ⁵	32 ⁰	32 ⁰	31 ⁵	28 ⁰	31 ⁰	34 ⁵	33 ⁰	32 ⁵	30 ⁰	29 ⁵	29 ⁵	29 ⁵	29 ⁵	30 ⁵	30 ⁵	30 ⁵	31 ⁵	31 ⁵	29 ⁵	28 ⁵	28 ⁰	28 ⁵								
27	29 ⁰	27 ⁰	28 ⁰	29 ⁰	30 ⁵	31 ⁰	32 ⁵	35 ⁵	34 ⁰	30 ⁵	29 ⁵	29 ⁰	29 ⁵	29 ⁵	29 ⁵	30 ⁵	31 ⁵	32 ⁰	34 ⁵	31 ⁵	S	S	S	S								
28	28 ⁰	29 ⁰	30 ⁵	34 ⁵	33 ⁰	30 ⁰	30 ⁵	35 ⁰	35 ⁰	31 ⁵	29 ⁵	30 ⁰	29 ⁵	30 ⁰	30 ⁵	30 ⁵	31 ⁵	31 ⁵	33 ⁵	33 ⁰	28 ⁵	26 ⁵	26 ⁵	28 ⁵								
29	28 ⁵	28 ⁵	29 ⁰	32 ⁰	35 ⁰	33 ⁰	31 ⁵	35 ⁵	34 ⁵	31 ⁰	30 ⁰	28 ⁵	30 ⁵	30 ⁵	30 ⁰	29 ⁵	31 ⁰	31 ⁰	32 ⁵	32 ⁵	31 ⁵	26 ⁰	26 ⁰	26 ⁰								
30	27 ⁵	27 ⁰	29 ⁰	31 ⁰	29 ⁵	32 ⁰	33 ⁵	34 ⁵	33 ⁵	33 ⁰	30 ⁰	31 ⁵	28 ⁵	30 ⁰	30 ⁵	31 ⁰	31 ⁵	32 ⁵	32 ⁵	31 ⁵	30 ⁵	28 ⁵	28 ⁰	27 ⁵								
31	26 ⁵	27 ⁰	28 ⁰	32 ⁰	32 ⁵	27 ⁵	28 ⁵	33 ⁵	34 ⁰	34 ⁰	32 ⁰	29 ⁰	29 ⁰	30 ⁵	30 ⁵	31 ⁰	30 ⁰	31 ⁰	30 ⁰	29 ⁵	30 ⁵	29 ⁰	28 ⁵	28 ⁵								
	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	31	31	31	30	30	31	31	31	31	31	31	31	31	31	30	30	30	30								
MED	280	285	285	290	295	280	285	335	340	325	310	305	300	300	305	305	310	315	325	315	295	285	285	280								
UQ	290	295	295	312	320	300	310	350	345	330	320	310	305	305	305	310	315	320	330	328	305	295	295	285								
LQ	270	278	280	280	280	275	280	335	332	315	300	295	295	295	300	300	302	310	315	310	285	270	275	270								

The Radio Research Laboratories, Japan

MAR. 1971

M(3000)F2 (0.01)

IONOSPHERIC DATA

MAR. 1971

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										405	L	350	L	L	L	L	L	L						
2										415 ^C	L	L	375	365	345	340	L	L	L					
3										400 ^H	L	L	L	L	L	355	L	L	L					
4										400	L	L	360	395	L	L	L	L	L					
5										L	L	L	365	350	L	345	L	375						
6										L	L	380	385	345	L	L	L	A						
7										L	L	400	L	L	360	L	L	L						
8										L	370	370	380	365	360	L	L	L						
9										L	L	L	380	365	L	380	L	L						
10										C	C	L	L	L	L	C	L	L						
11										L	L	350	340	L	L	350	375	L	A					
12										L	L	C	L	L	L	L	L	L						
13										385	L	L	L	385	L	355	L	L						
14										L	355	365	345	370	360	445	L	L						
15										L	L	360	L	385	415	405	375	L	L					
16										L	385	365	L	L	C	340	400	L						
17										L	380	350 ^U	L	370	L	360	L	L						
18										L	L	L	L	365	L	390	400	L						
19										L	L	360	L	335	L	L	L	L						
20										L	355	L	375	340	355	L	385	L						
21										L	L	370	385	L	385	L	L	L	L					
22										L	L	355 ^U	375 ^U	375	365	395 ^U	L	430						
23										L	L	390 ^U	370	L	L	365 ^U	L	L						
24										L	L	365 ^U	340	345	370	355	L	L						
25										L	L	365 ^U	345	370	345	390 ^U	380	L						
26										L	L	L	370	340	330 ^U	L	L	L	L					
27										L	L	365 ^U	380	L	L	L	L	L	320					
28										L	L	355	L	L	365	L	L	L	A					
29										L	L	340	355	360	L	370	360	L	L					
30										L	L	L	375	360	335	355	355	L	L					
31										L	385	L	A	L	335 ^U	340	L	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									3	3	11	21	16	19	15	14	5	2						
MED									400	385	360	365	368	365	355	370	385	375						
UQ									408	395	370	375	380	370	362	390	400							
LQ									400	385	355	360	348	342	348	355	380							

The Radio Research Laboratories, Japan

MAR. 1971

M(3000)F1 (0.01)

IONOSPHERIC DATA

MAR. 1971

H'F2 (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											220	245	270	285	280	255	270	250	230						
2											225	230	235	250	255	280	275	275	245	240					
3											220	240	250	250	250	275	280	245	255	240					
4											230	260	255	260	250	280	280	270	245	225					
5											235	240	255	260	265	280	275	245	240						
6											240	250	250	260	290	265	250	260	240						
7											245	255	255	255	275	280	270	260	240						
8											240	265	270	265	270	275	265	240							
9											245	255	260	260	280	260	250	250	250						
10											C	C	240	270	270	250	I _C 265	240	230						
11											215	250	295	275	255	255	275	255	250	230					
12											250	250	I _C 290	300	275	255	260	260							
13											250	240	300	305	255	280	280	235	240						
14											245	300	275	280	275	260	270	250	245						
15											225	230	275	280	255	255	250	270	250	230					
16											250	260	265	255	290	I _C 275	270	240	240						
17											255	250	275	250	300	290	255	255	240						
18											245	260	280	280	285	255	250	255	240						
19											240	250	255	285	295	275	260	250	245						
20											250	275	265	280	290	275	260	240	245						
21											230	235	250	260	280	275	275	275	245	240					
22											250	260	290	280	270	255	250	270	230						
23											240	250	260	285	280	275	255	260	250						
24											250	275	275	300	290	280	275	260	250						
25											240	240	255	275	285	270	260	250	265	255					
26											250	250	285	290	300	290	295	275	250	240					
27											225	260	280	270	290	275	285	270	250	250					
28											235	255	300	295	300	280	270	275	250	250					
29											235	255	310	290	305	280	280	280	250	245					
30											240	290	275	325	290	280	275	270	245						
31											240	245	260	315	325	290	275	255	275	245					
CNT											13	30	30	31	31	31	31	31	28						
MED											230	245	258	270	280	280	275	265	250	240					
UQ											235	250	275	280	295	290	280	272	260	245					
LQ											225	240	250	260	258	275	260	255	245	240					

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H'F2 (KM)

IONOSPHERIC DATA

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H^oF (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	250	250	265	250	225	240	270	225	200 ^H	200	195 ^H	200	190 ^H	190 ^H	240	190 ^H	220	230	210	200	205	240	225	230
2	255	250	260	300	245	255	250	220	200	220	195 ^H	200	200	200	210	220	225	225	220	195	240	235	220	250
3	270	280	295	265	250	245	250	220	200 ^H	190 ^H	205	220 ^H	210 ^H	190 ^H	180 ^H	225 ^H	200 ^H	230	225	200	200	225	210	290
4	300	290	275	270	215	240	300	235	215	195 ^H	245	225	205	225 ^H	190 ^H	220	225	220	220	210	215	240	260	295
5	295	300	295	270	250	290	260	235	225	230	225	205	230	225 ^A	200	205 ^H	205	235	225	540 ^A	240	245	250	275
6	290	275	270	290	250	245	240	240	225	225	220 ^H	205	200	195	190 ^H	220 ^H	210 ^H	220 ^H	225	200	225	305	260	275
7	270	260	245	250	210	245	280	225	210 ^H	190 ^H	225	225	215	200 ^H	215 ^H	230	240	225	215	200	195	255	225	250
8	300	305	285	250	590 ^A	270	250	235	225	205	200	180 ^H	180 ^H	210	200 ^H	200 ^H	215	220	215	215	210	265	260	275
9	280	250	205	270	300	330	300	220	220	200 ^H	205	205	200	195	220	200	205	215 ^H	225	205	205	250	245	250
10	270	280	275	290	255	310	275	225	220	c	c	180	200 ^H	200	200	210 ^H	230	225	225	215	220	210	220	250
11	290	275	300	260	250	260	225	200	205	195	185 ^H	240	240	230	200	205	210	225 ^A	200	225	215	215	215	275
12	290	250	250	295	250	245	215	205	200 ^H	200 ^H	190	200 ^H	235 ^H	200	225	245	225	240	245	220	210	260	270	295
13	280	250	210	230	300	335	325	245	220	200	190	200	205	220 ^H	200	250	225	220	225	230	220	230	290	295
14	250	245	275	250	550 ^A	360	300	220	220	225	225 ^H	225	225	210	205	200	210 ^H	225	240	225	235	250	250	275
15	250	250	270	505 ^A	295	300	245	215	215	215 ^H	200	200 ^H	215	205	200	205	225	230	220 ^H	200	250	290	270	290
16	255	250	270	250	270	295	230	220	225	220	205	215	240	190 ^H	215 ^C	220 ^H	210	235	225 ^H	205	205	270	260	245
17	255	250	250	290	245	230	275	230	225 ^H	210	200 ^H	200 ^H	205 ^H	190 ^H	175 ^H	220	210 ^H	220	230	200	225	245	270	540 ^A
18	295	260	235	245	250	295	280	225	225	220	200 ^H	205 ^H	200 ^H	210	225 ^H	200	210	225	240	210	245	255	275	250
19	250	250	265	270	270	260	225	210	225	220	220 ^H	220	555 ^A	555 ^A	545 ^A	225	230	235	220	200	200	260	225	520 ^A
20	320	305	300	275	255	260	245	215	215 ^H	215 ^H	230	215	210	200 ^H	225	210 ^H	210	230	230	205	240	280	250	275
21	255	250	250	270	270	290	280	240	225	220	205	200	190 ^H	195	220	205 ^H	215 ^H	225	230	205	210	260	270	245
22	245	250	270	255	225	250	250	225	220	200 ^H	195 ^H	190 ^H	195 ^H	200	205	200	190 ^H	205	225	210	235	255	250	280
23	300	295	270	250	220	240	255	215	215	205	205	195	205	180 ^H	200	200	205	225	230	220	215	225	250	270
24	275	270	260	230	210	250	300	230	225	220	195 ^H	180	205	200	215	210	205	220	220	210	250	250	235	255
25	300	260	230	225	200	300	300	240	220	220	210	200	195	200	200	205	205 ^H	240	250	220	220	240	245	275
26	300	275	245	240	215	270	255	235	225	200	205	200	200	185	175 ^H	225 ^H	550 ^A	230	240	230	210	250	250	255
27	270	300	280	270	240	225	235	215	215	210	200	200	190	195	200 ^H	240	225	215	240	225	220	210	260	270
28	265	250	225	205	195	250	255	225	225	210	200	550 ^A	530 ^A	200	210 ^H	200	220	240 ^H	235	215	210	260	285	270
29	290	260	260	220	195	200	240	215 ^H	205	205 ^H	170 ^H	195 ^H	225	260 ^H	230	180 ^H	210 ^H	220	230	205	195	245	295	275
30	280	270	250	225	195	195	225	205	205 ^H	225	180 ^H	200 ^H	180 ^H	275	260 ^H	230	230 ^H	235	230	210	230	275	295	290
31	295	300	290	240	205	265	260	225	225	225	240	205 ^A	220 ^A	550 ^A	225 ^H	230 ^H	225	205 ^H	250	250	245	245	250	270
	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	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	280	260	265	252	248	260	255	225	220	210	202	200	205	200	205	210	212	225	225	210	220	250	250	272
UQ	295	280	275	270	257	292	280	232	225	220	220	212	218	212	221	225	225	230	232	220	235	260	270	280
LQ	255	250	250	242	215	245	242	215	212	200	195 ^H	200	200	195	200	200	210	220	220	202	210	240	240	252

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H^oF (KM)

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H⁺ES (KM)

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

Station		YAMAGAWA																							
		Lat. 31 12.1 N												Long. 303 71. E 1											
		Sweep 2 MHz to 02 MHz in 0 sec in automatic operation																							
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	95	S	S	S	E	S	S	G	G	100	100	100	100	100	100	G	105	105	100	95	95	S	100	100	
2	100	100	100	95	100	S	S	S	G	100	G	G	150	125	G	G	100	105	B	S	145	S	S	S	
3	S	S	95	S	E	B	S	S	G	100	125	100	140	G	100	G	100	105	B	S	S	110	S	S	
4	S	95	S	100	100	100	S	100	G	100	175	150	130	120	115	115	110	110	B	110	S	S	100	100	
5	95	100	100	100	95	95	95	100	175	100	150	130	125	120	125	100	100	110	100	100	100	100	100	S	
6	S	100	S	100	100	100	S	G	175	125	130	100	105	100	95	95	90	90	105	100	B	S	95		
7	95	S	S	S	B	S	S	S	G	100	100	175	175	170	150	150	140	125	B	S	S	S	S	S	
8	S	S	S	100	100	B	S	S	G	100	100	G	115	100	100	100	95	95	95	95	100	S	S	S	
9	S	S	S	S	S	S	S	S	G	G	140	130	125	100	100	115	105	105	G	S	S	S	100	S	
10	S	S	S	B	100	100	S	G	G	C	C	G	G	100	115	C	150	120	105	S	S	S	S	S	
11	S	S	S	S	105	S	S	G	G	100	100	100	150	150	155	95	95	110	105	95	95	95	S	100	
12	100	95	95	B	E	E	S	G	145	G	G	C	150	100	135	150	150	125	115	105	100	S	100	100	
13	S	S	B	100	100	B	S	G	130	115	110	100	100	100	G	100	115	110	100	100	95	S	S	S	
14	S	100	100	95	95	95	100	100	G	135	125	110	110	105	105	100	100	100	110	100	100	100	100	S	
15	S	100	100	100	100	100	100	95	95	100	100	120	105	110	110	115	110	105	100	100	100	100	100	100	
16	100	100	100	100	100	100	S	150	145	125	115	105	100	105	C	145	G	120	110	100	95	95	95	S	
17	S	S	95	S	B	B	S	G	G	G	140	115	105	100	100	100	100	105	100	S	S	S	100	100	
18	100	S	100	S	100	100	S	G	140	125	115	105	105	105	125	100	130	135	120	110	100	100	100	100	
19	100	S	S	100	100	B	100	G	100	125	110	110	105	105	105	110	105	105	105	100	S	95	S	100	
20	100	100	95	95	95	100	100	G	130	125	110	105	105	100	100	110	G	G	125	110	105	100	100	100	
21	S	100	S	B	B	S	S	G	100	130	125	120	125	115	110	120	125	115	105	100	100	95	95	95	
22	95	S	S	B	E	S	S	G	G	150	115	100	100	100	100	100	100	100	100	100	S	100	S	S	
23	100	100	S	S	S	S	S	145	150	150	G	G	G	100	100	100	G	105	105	105	S	S	S	S	
24	S	S	S	S	B	B	S	G	155	150	150	G	G	G	G	G	120	G	G	S	S	S	S	S	
25	S	S	S	S	B	B	S	G	140	120	115	120	105	G	105	120	G	105	130	120	S	S	105	100	
26	S	S	100	S	S	S	S	G	140	130	120	115	110	105	100	100	100	130	115	110	105	105	105	S	
27	S	100	S	S	B	S	S	125	115	110	110	105	100	100	100	100	G	G	G	120	100	S	S	S	
28	S	S	B	100	E	S	S	G	125	120	115	105	110	110	105	100	100	105	105	100	95	S	105	105	
29	100	S	100	100	S	100	100	G	130	100	105	130	100	155	140	100	100	125	110	105	100	100	S	S	
30	S	S	S	S	B	S	S	140	130	115	100	140	125	155	140	150	100	140	110	105	100	140	120	100	
31	100	100	100	100	100	S	S	155	145	135	125	125	125	100	100	105	105	95	95	95	95	S	S	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	13	13	14	15	10	7	9	18	28	27	25	28	28	27	26	26	27	24	24	20	14	16	14	
MED	100	100	100	100	100	100	100	125	135	120	115	115	108	105	105	100	102	105	105	100	100	100	100	100	
UQ	100	100	100	100	100	100	145	145	145	132	125	125	125	118	120	115	115	120	110	108	100	100	102	100	
LQ	95	100	95	100	100	100	100	125	125	100	108	105	100	100	100	100	100	105	100	100	95	95	100	100	

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H⁺ES (KM)

IONOSPHERIC DATA

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TYPES OF ES

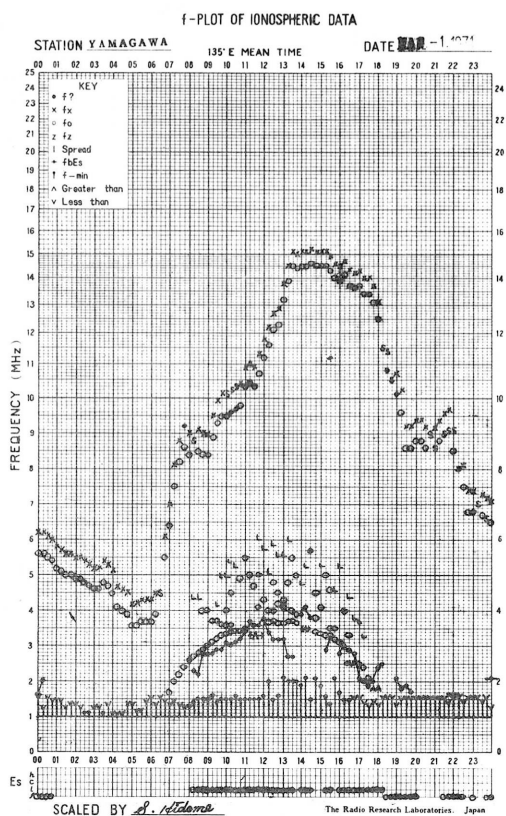
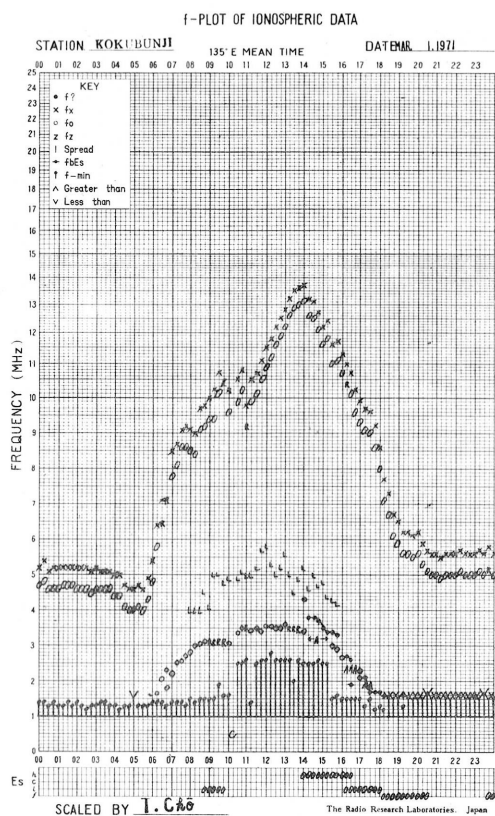
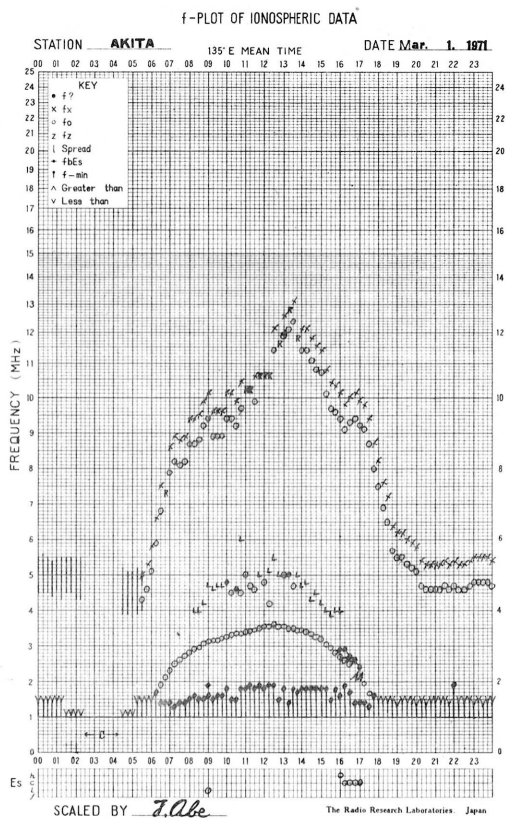
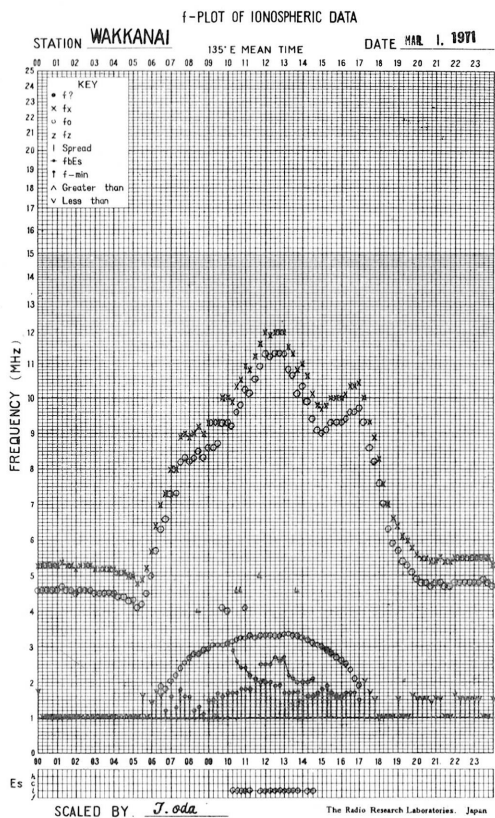
135° E Mean Time (G. M. T. + 9h)

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

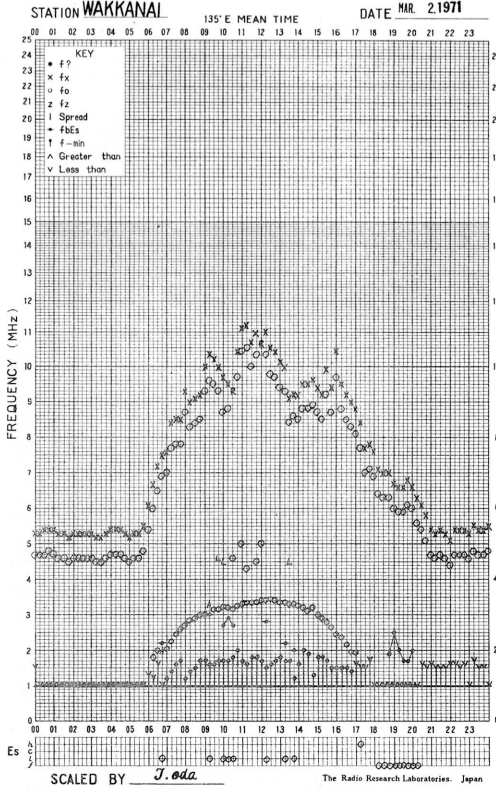
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E												Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	F	F	F	F	F								Y	Y			Y	Y			F			
3			F										Y	Y	Y	Y	Y	Y				F		
4		F		F	F	F		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y		F			F	F
5	F	F	F	F	F	F	F	Y	H	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	F	F	F	F	F
6		F		F	F	F						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

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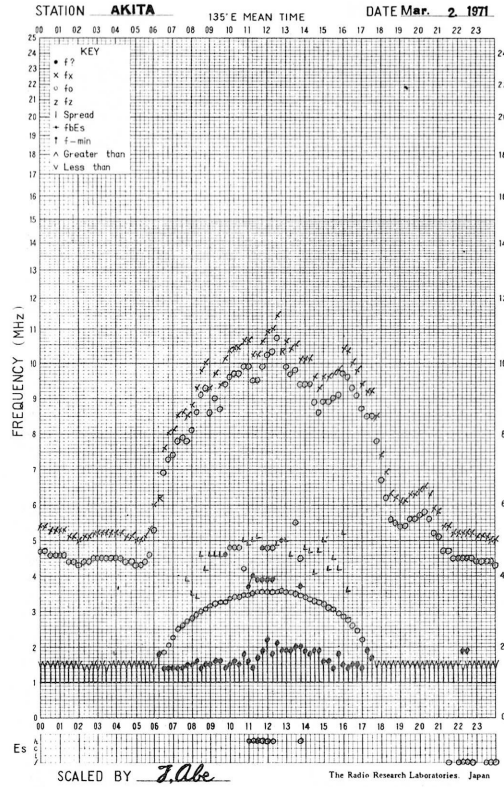
TYPES OF ES



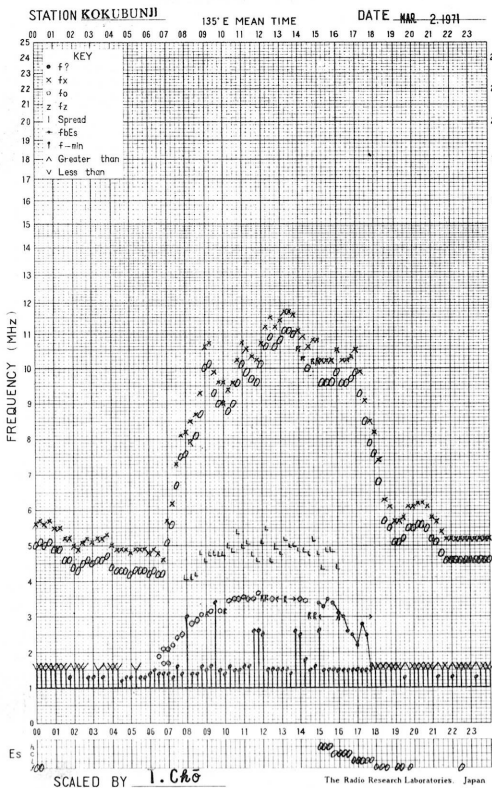
f-PLOT OF IONOSPHERIC DATA



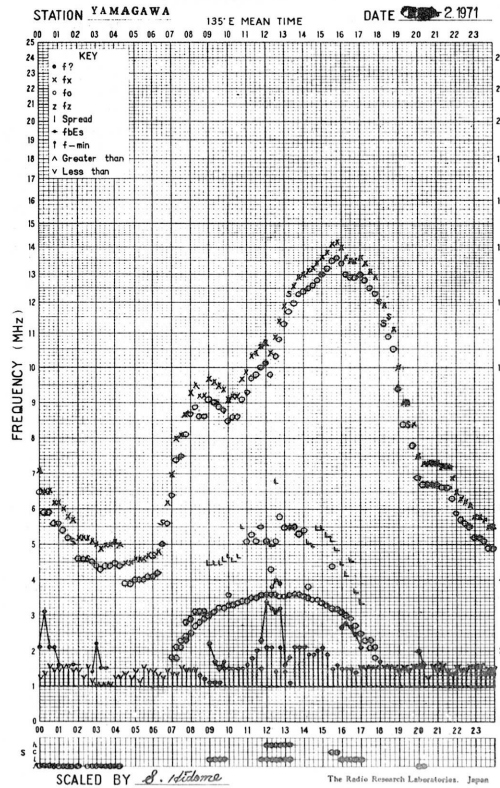
f-PLOT OF IONOSPHERIC DATA



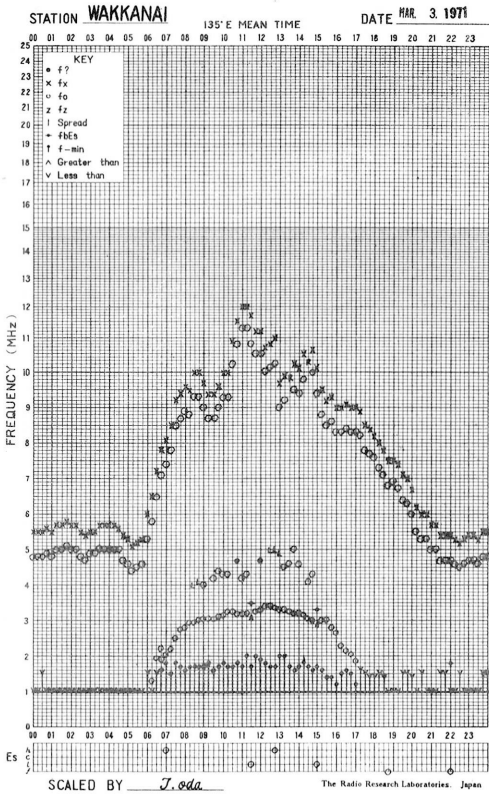
f-PLOT OF IONOSPHERIC DATA



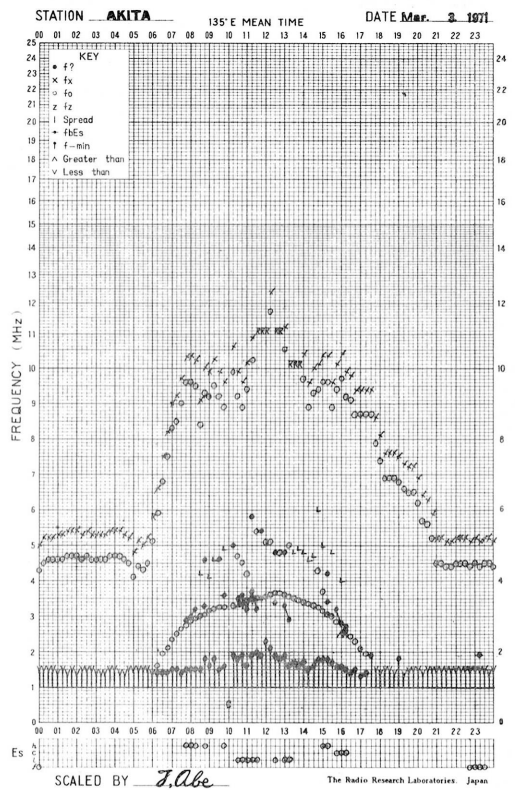
f-PLOT OF IONOSPHERIC DATA



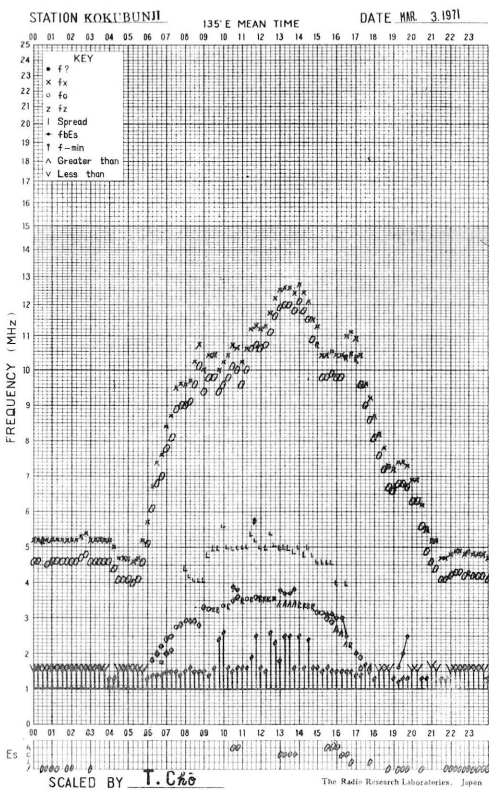
f-PLOT OF IONOSPHERIC DATA



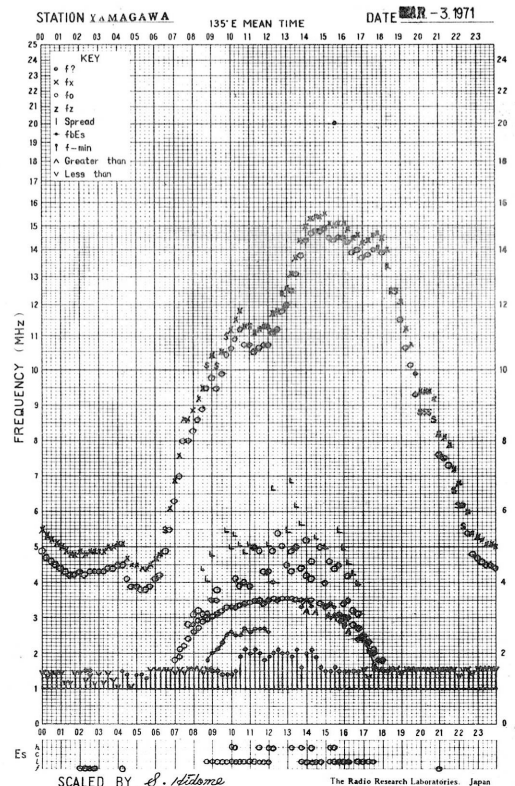
f-PLOT OF IONOSPHERIC DATA



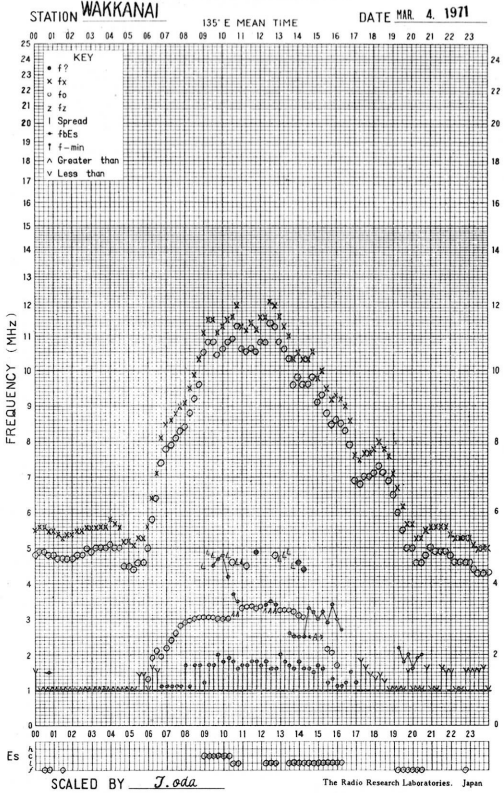
f-PLOT OF IONOSPHERIC DATA



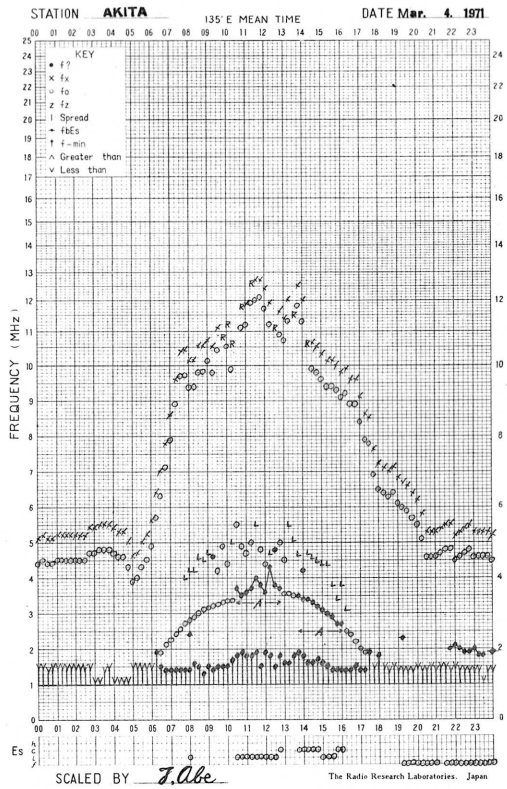
f-PLOT OF IONOSPHERIC DATA



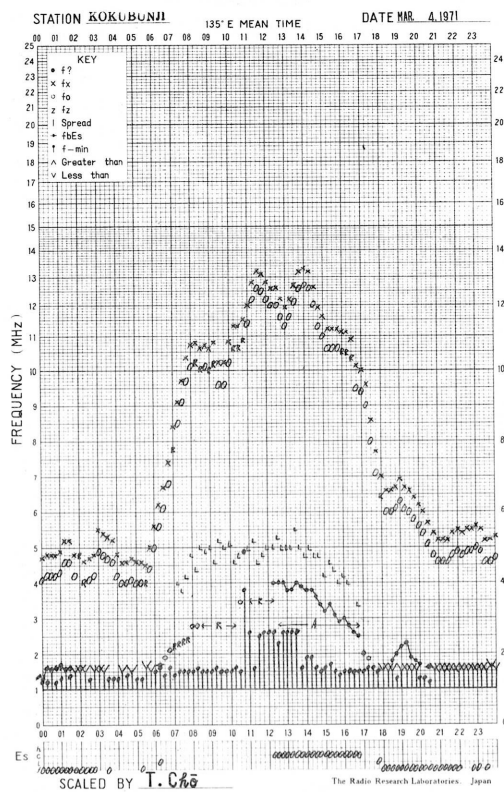
f-PLOT OF IONOSPHERIC DATA



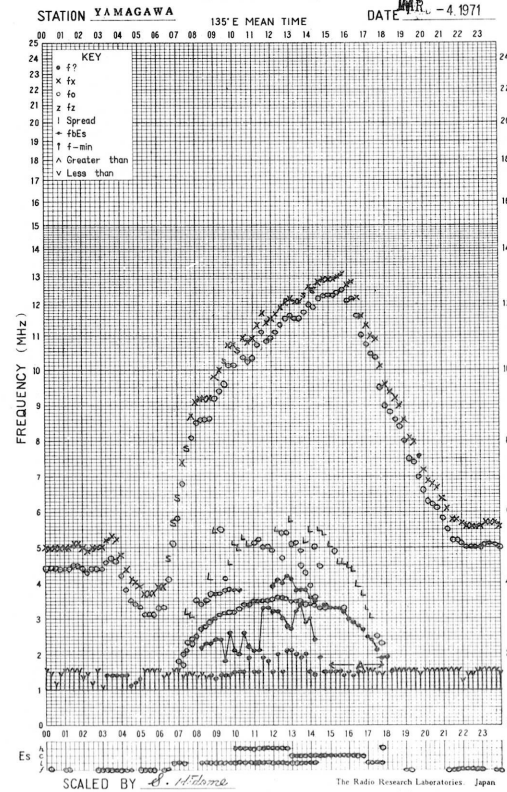
f-PLOT OF IONOSPHERIC DATA



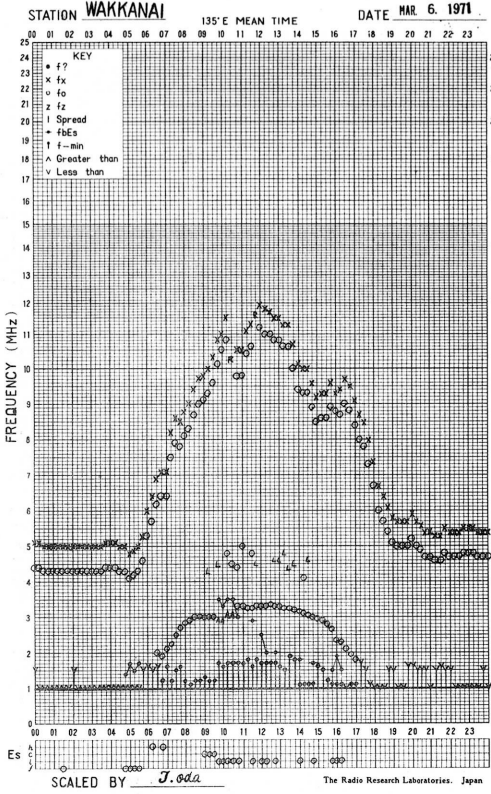
f-PLOT OF IONOSPHERIC DATA



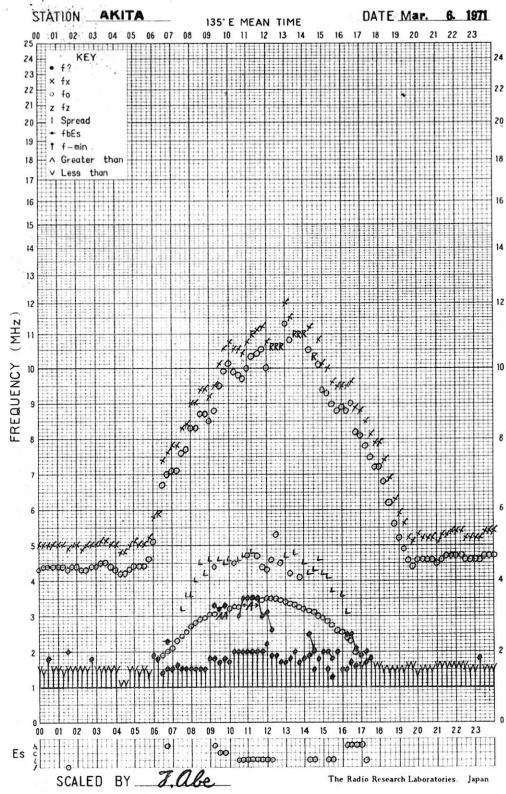
f-PLOT OF IONOSPHERIC DATA



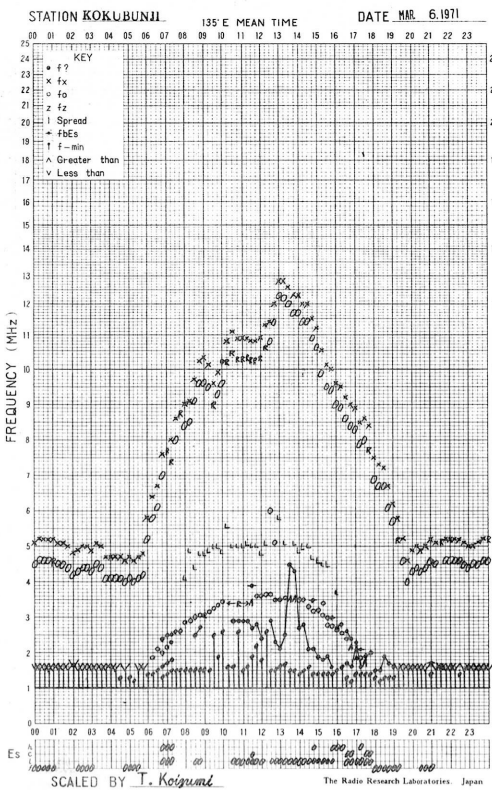
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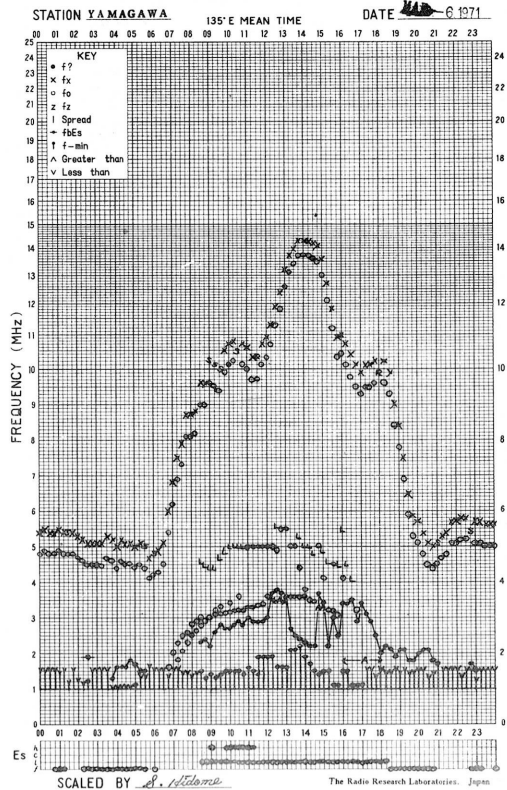
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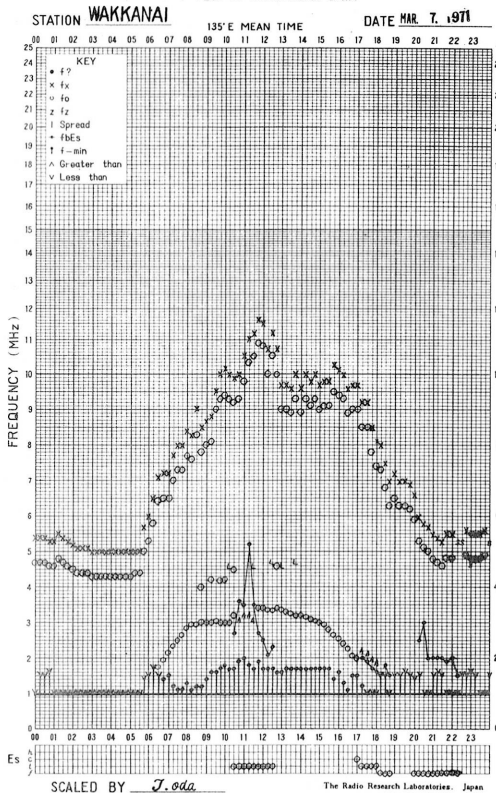
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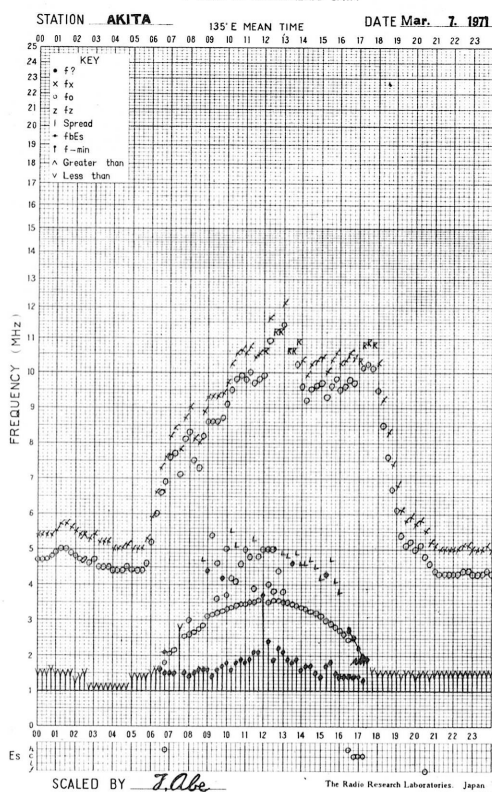
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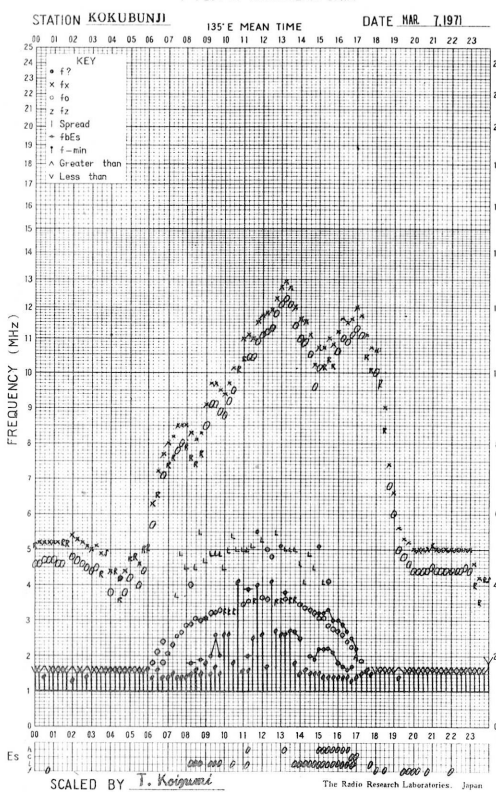
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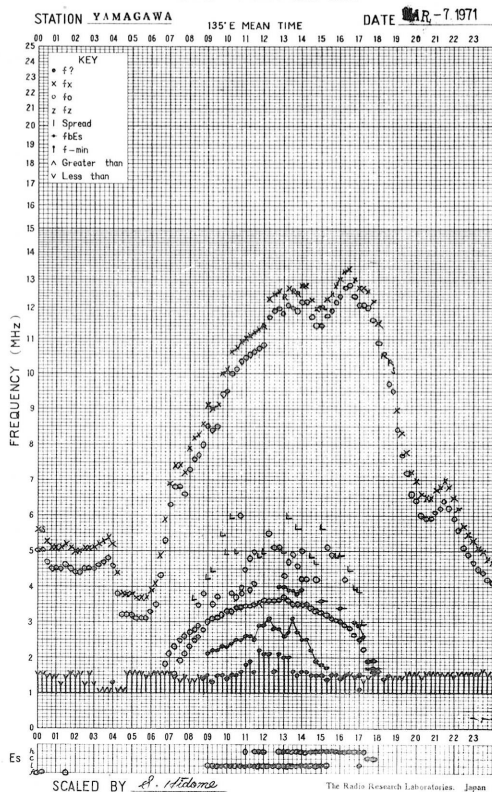
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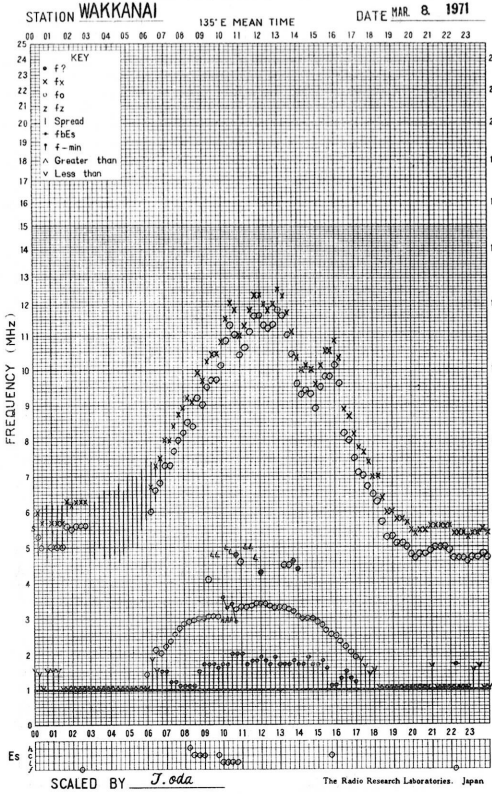
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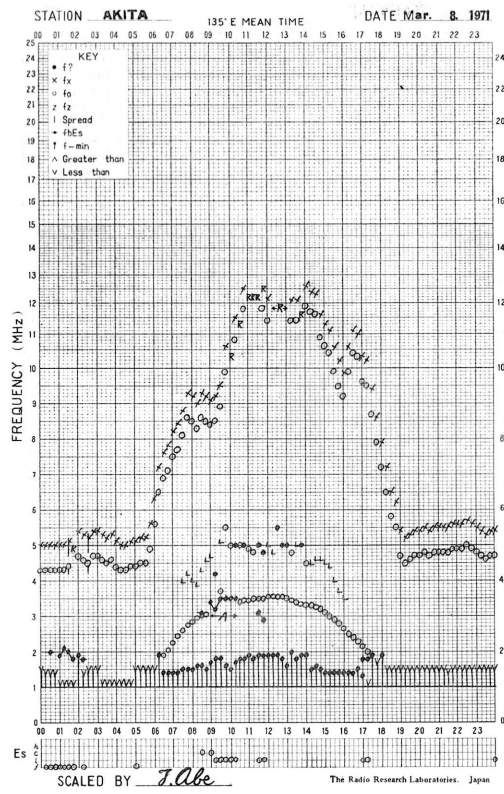
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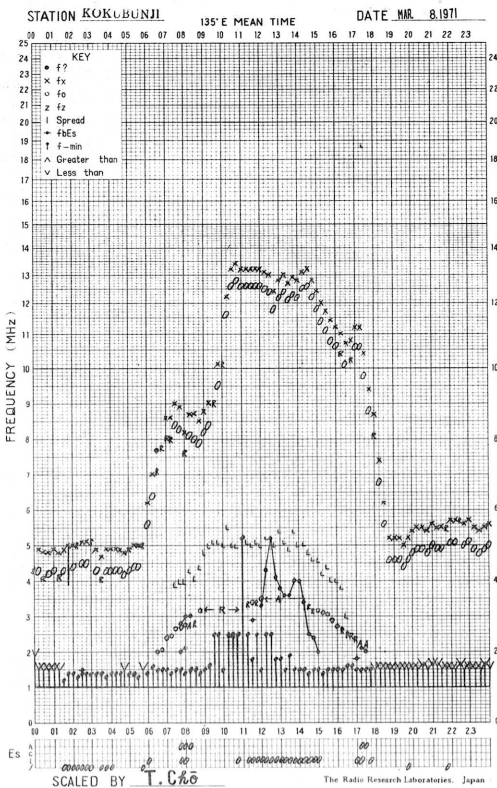
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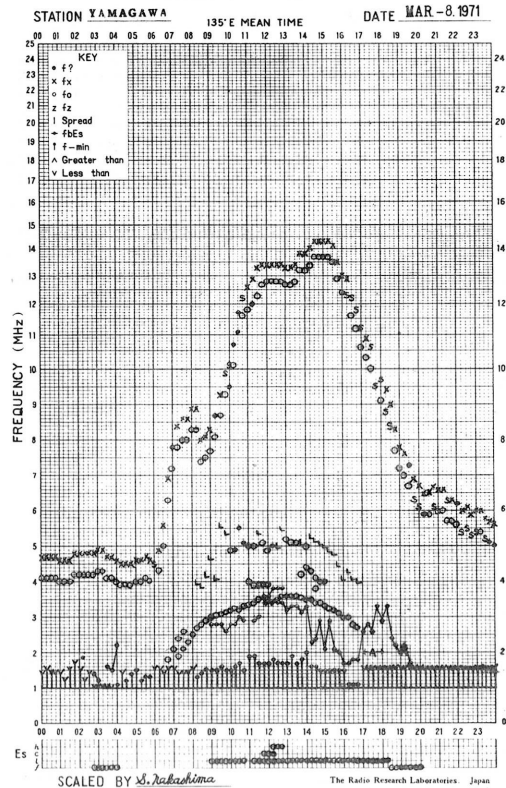
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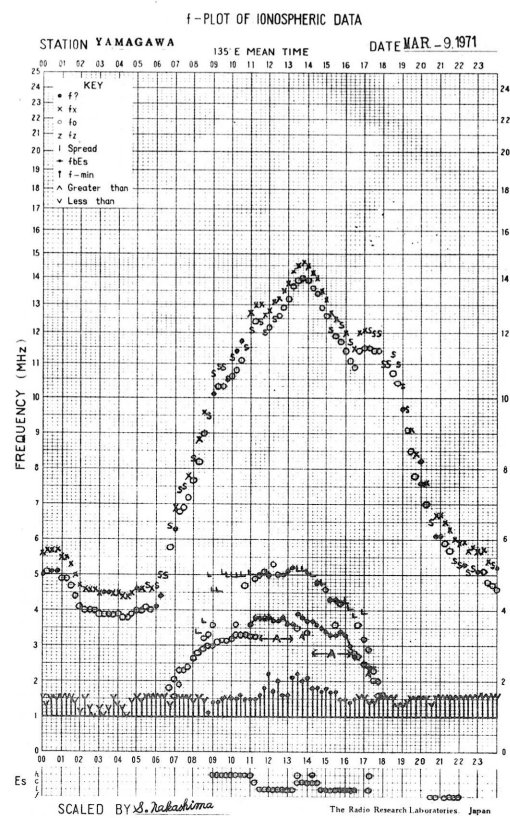
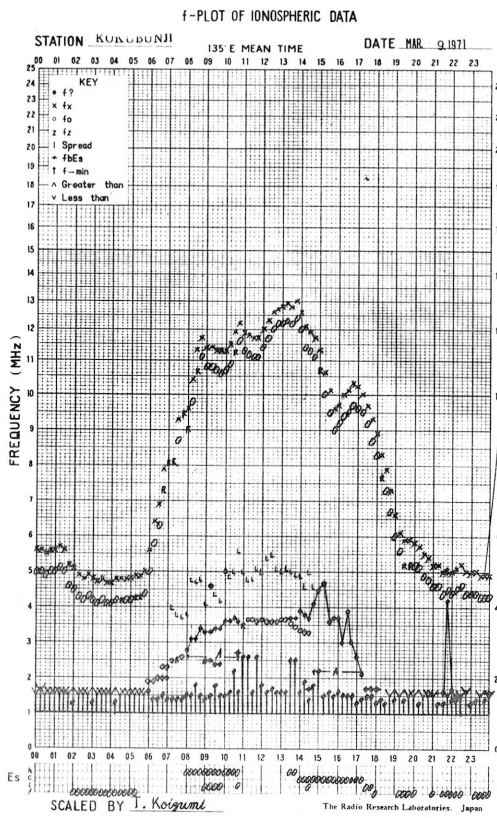
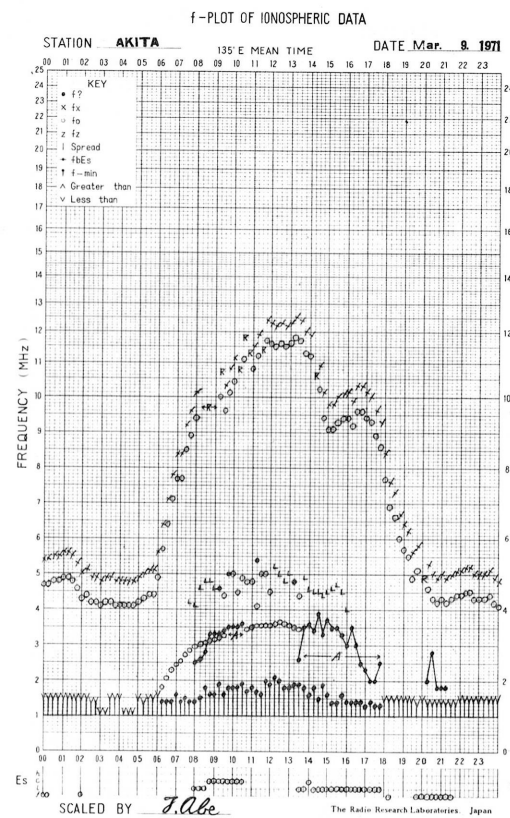
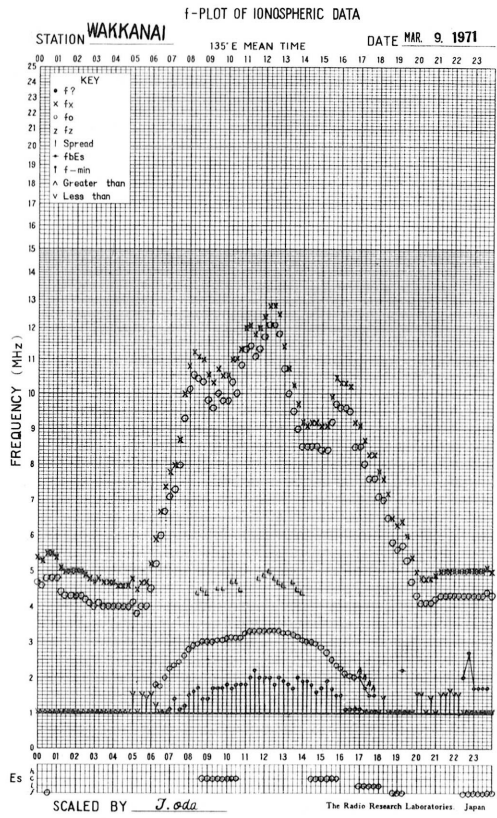


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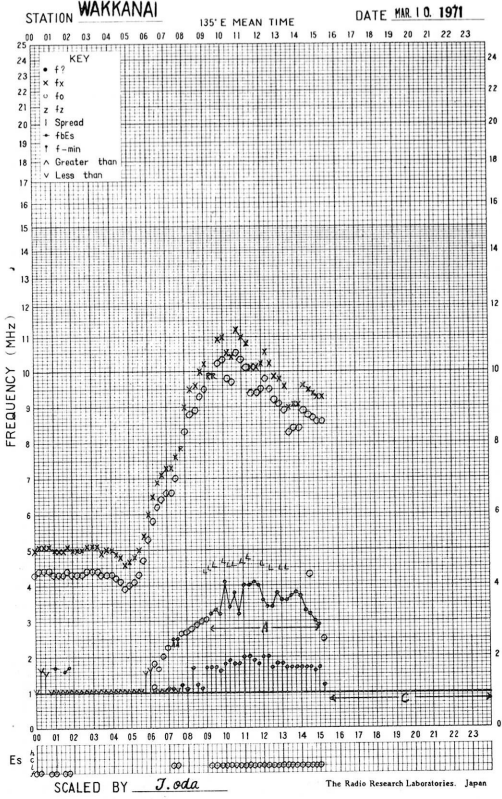


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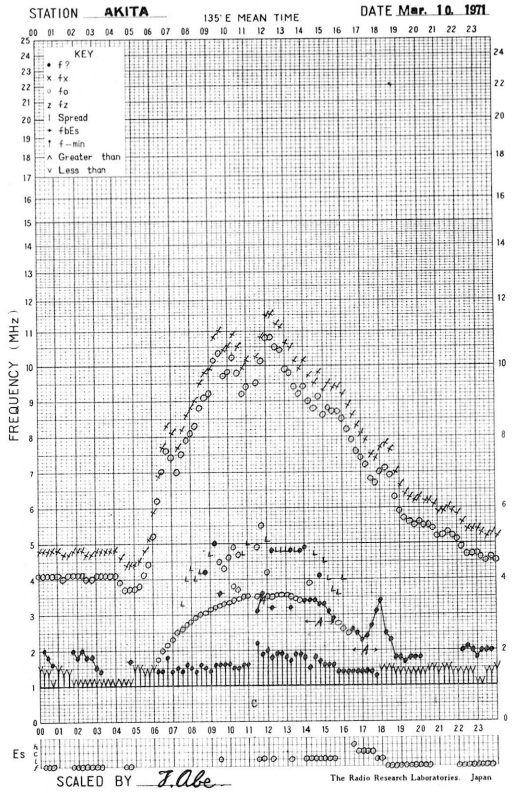




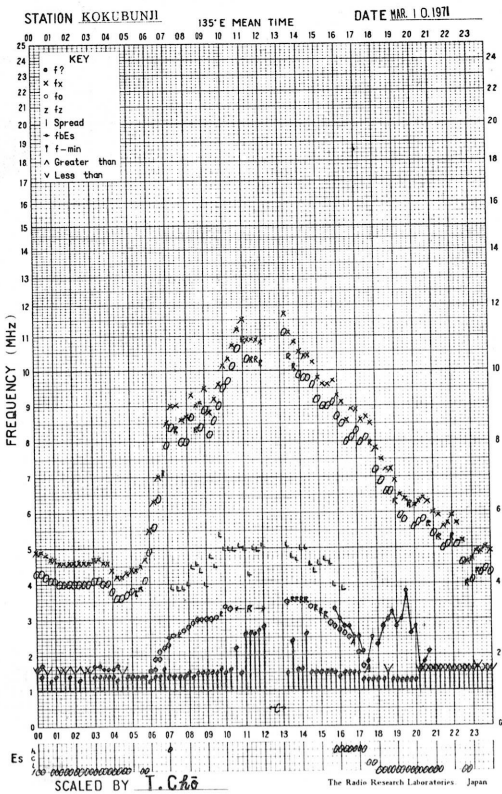
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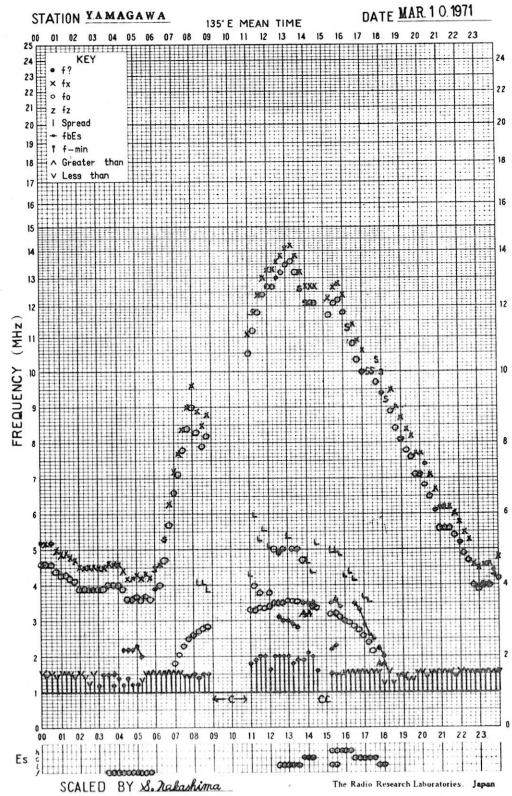
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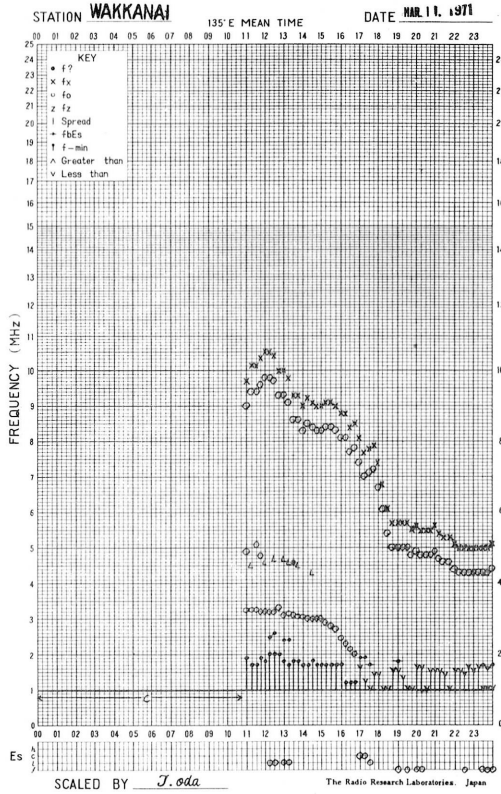
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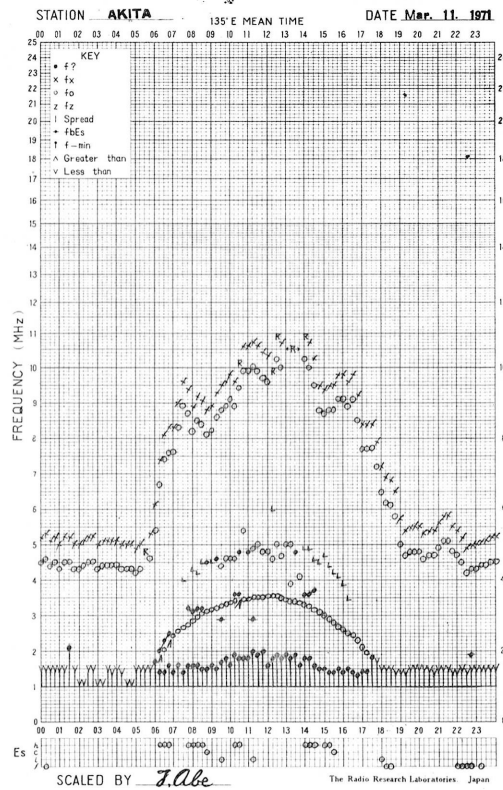
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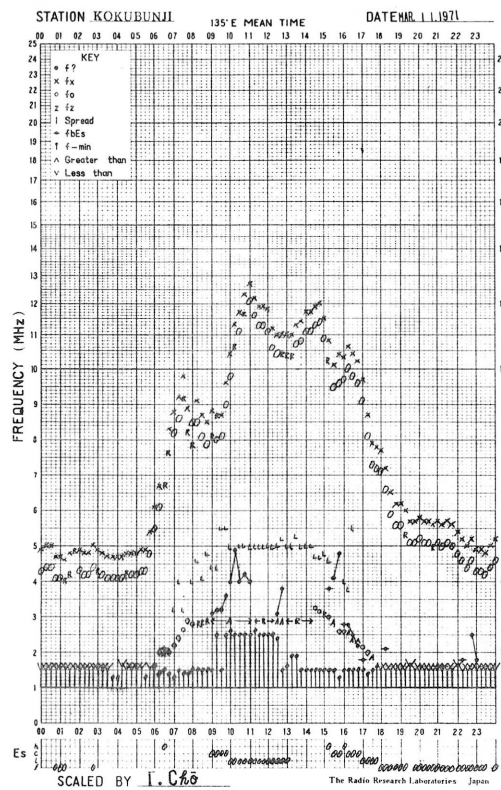
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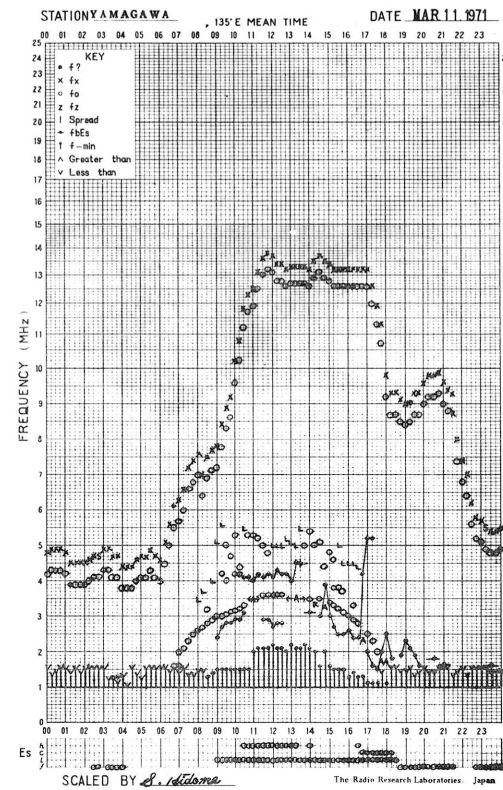
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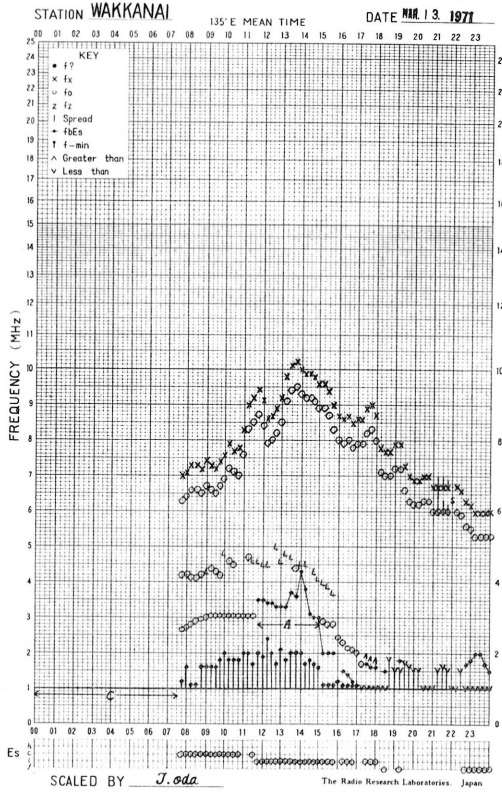
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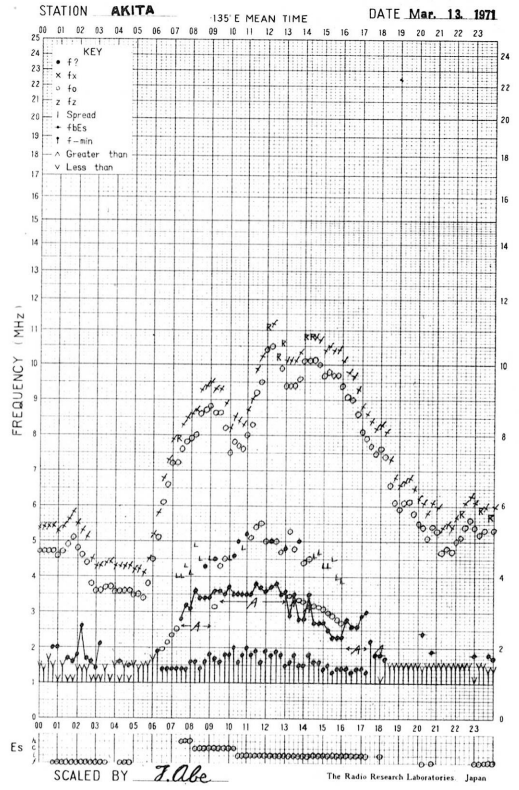
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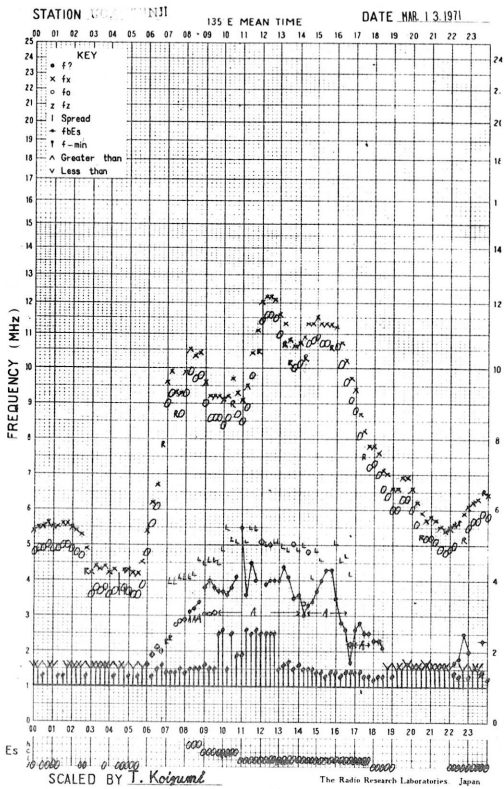
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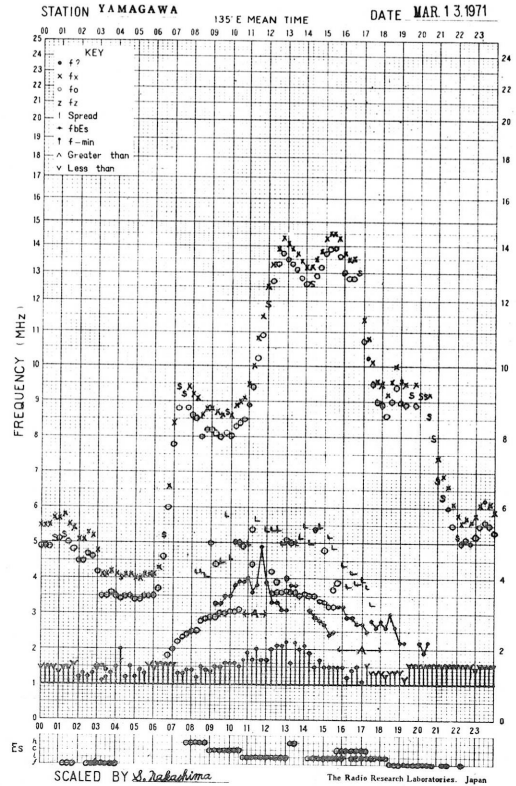
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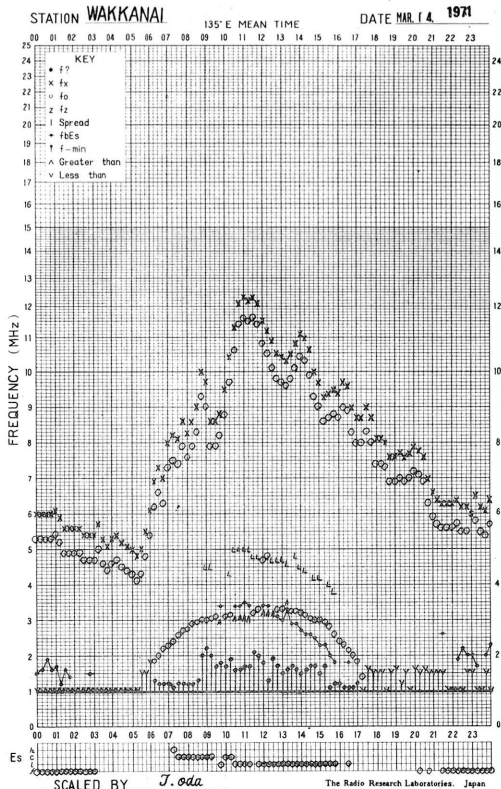
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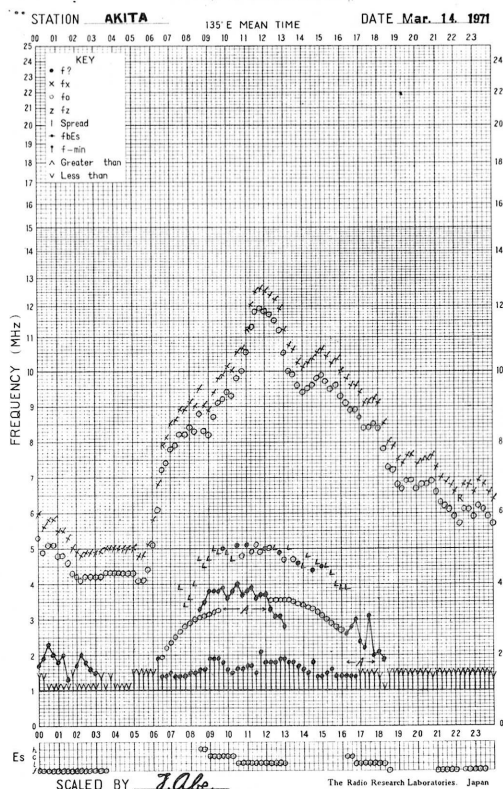
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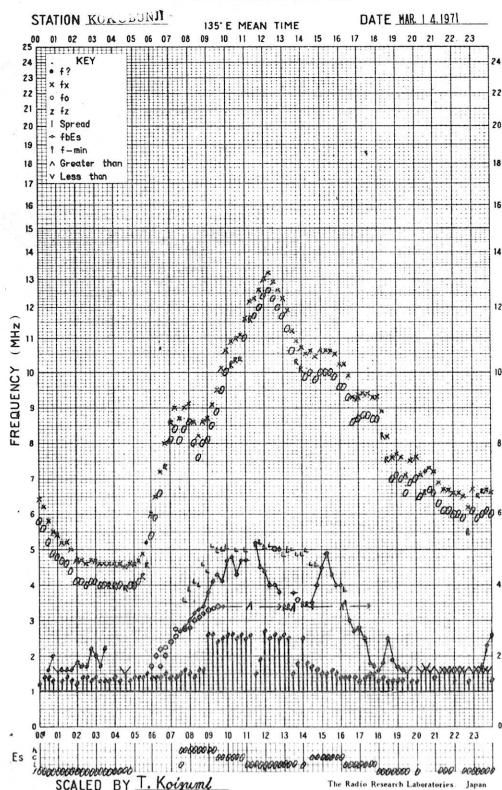
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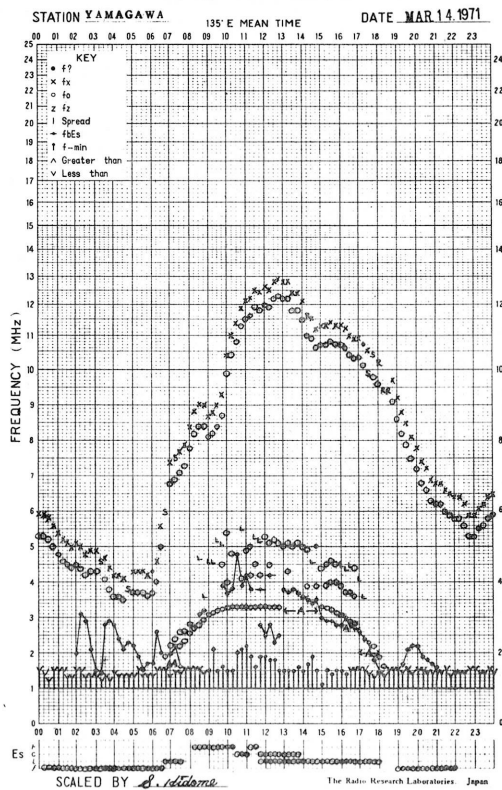
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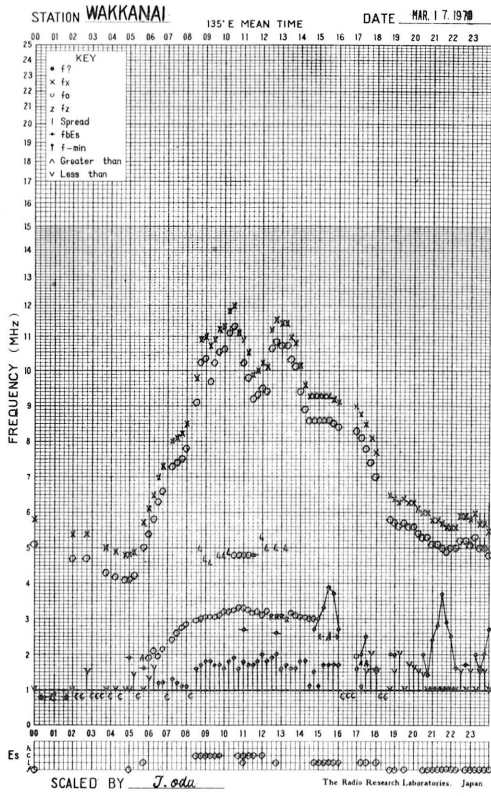
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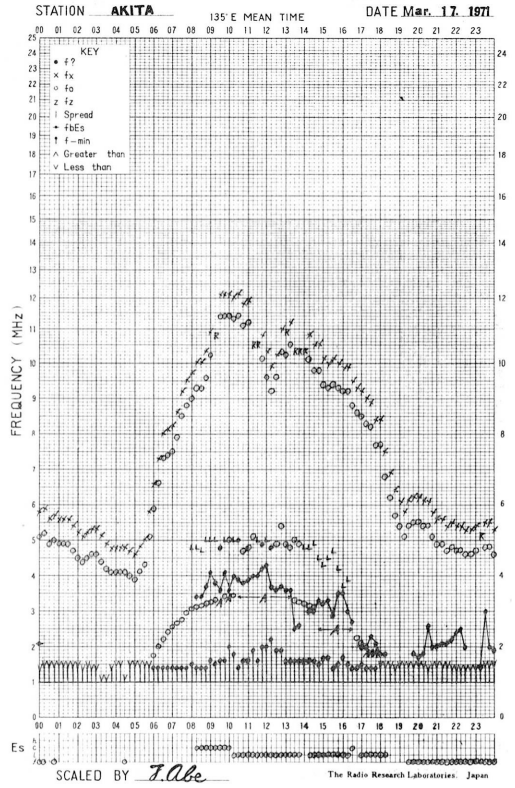
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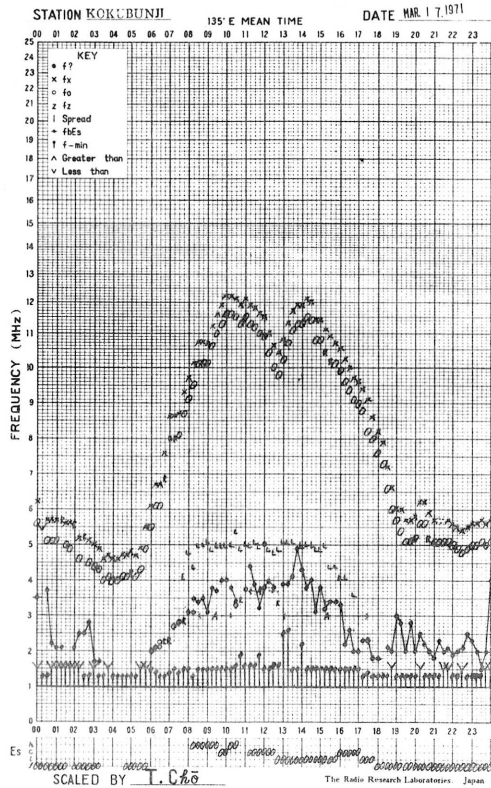
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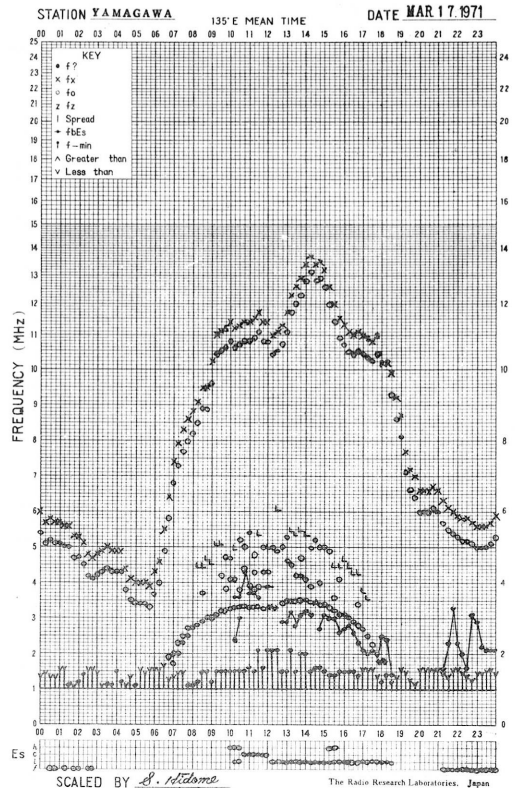
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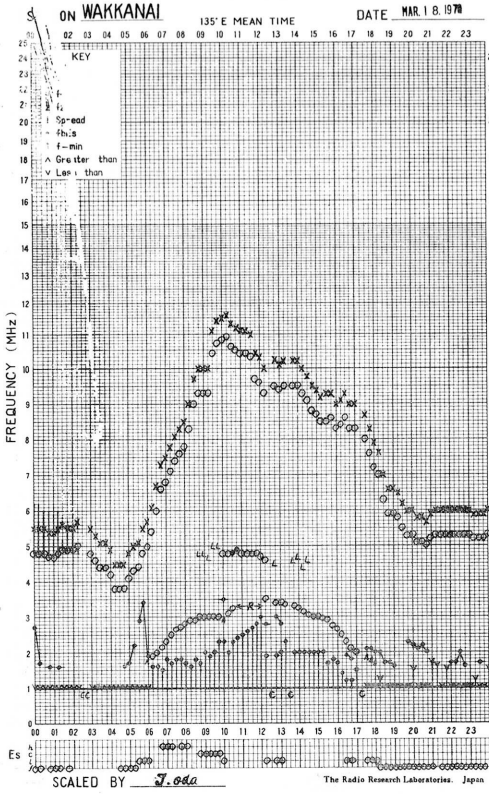
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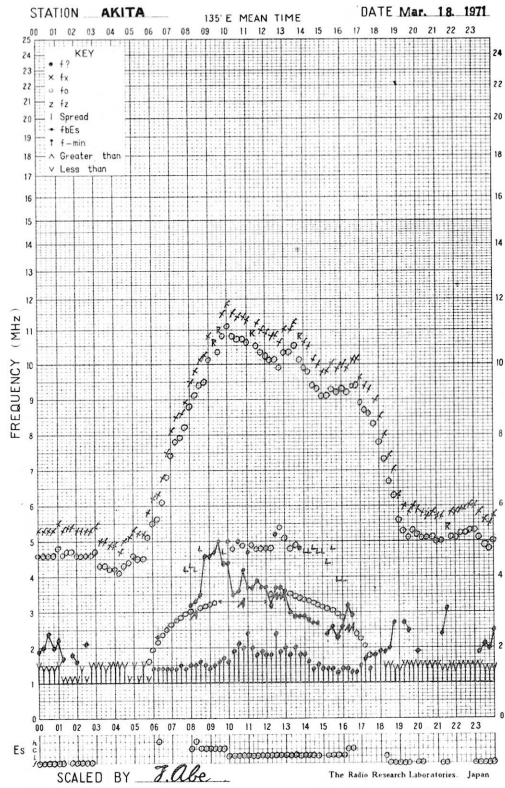
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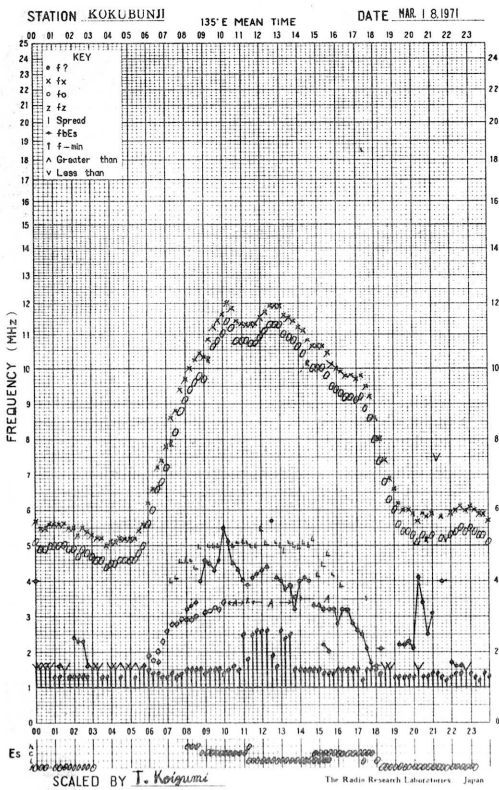
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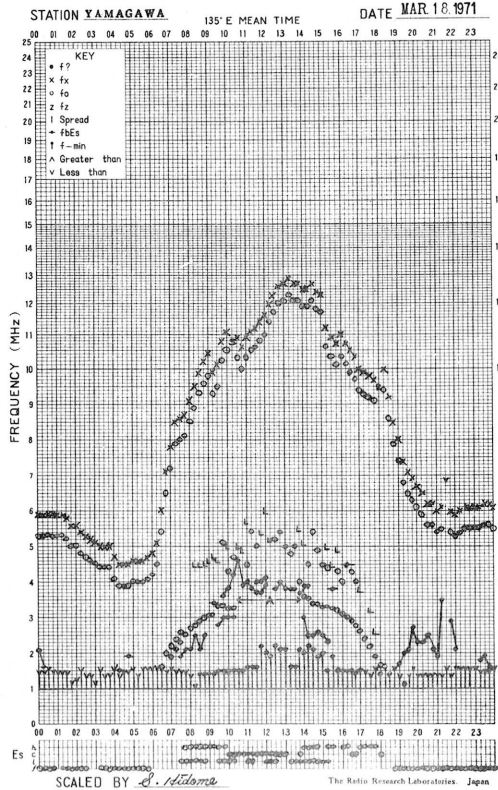
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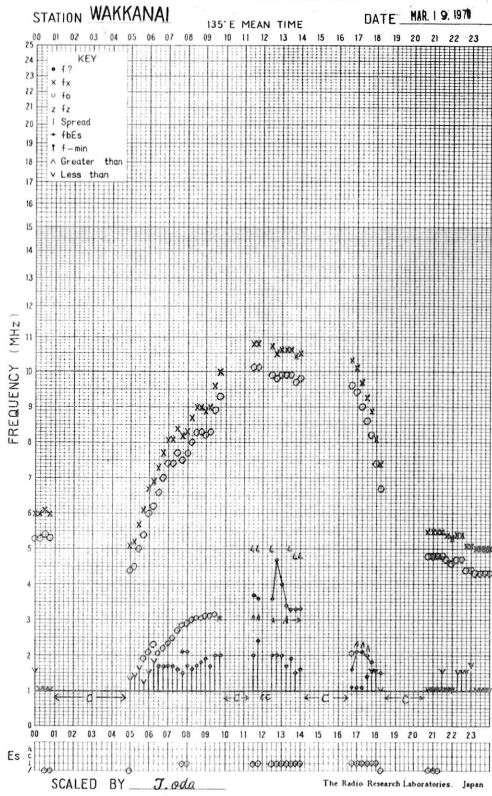
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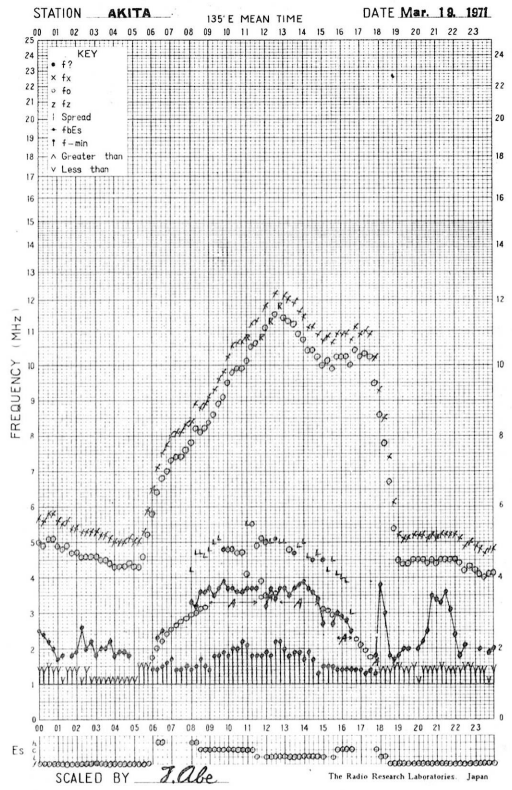
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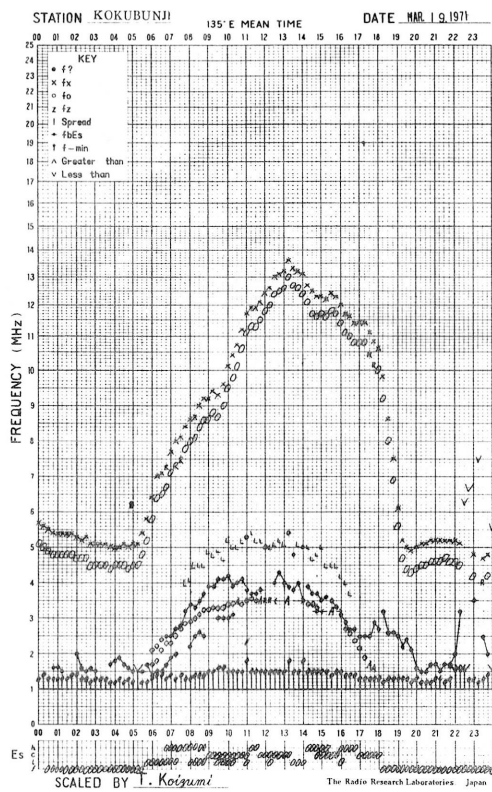
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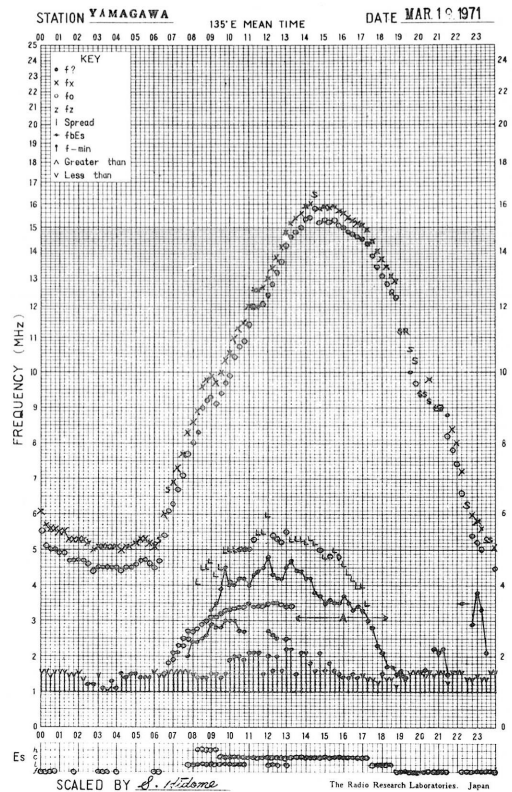
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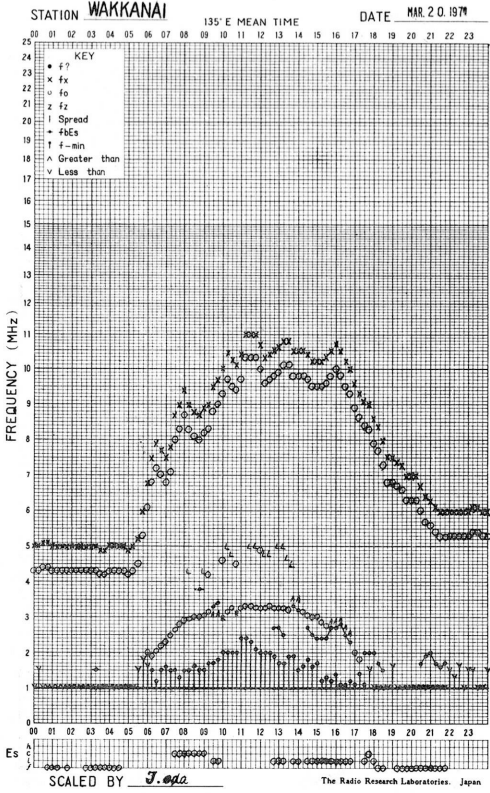
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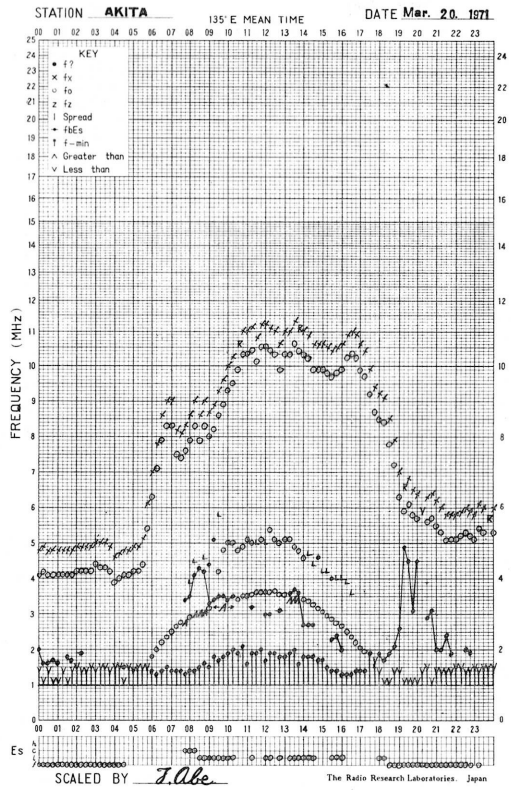
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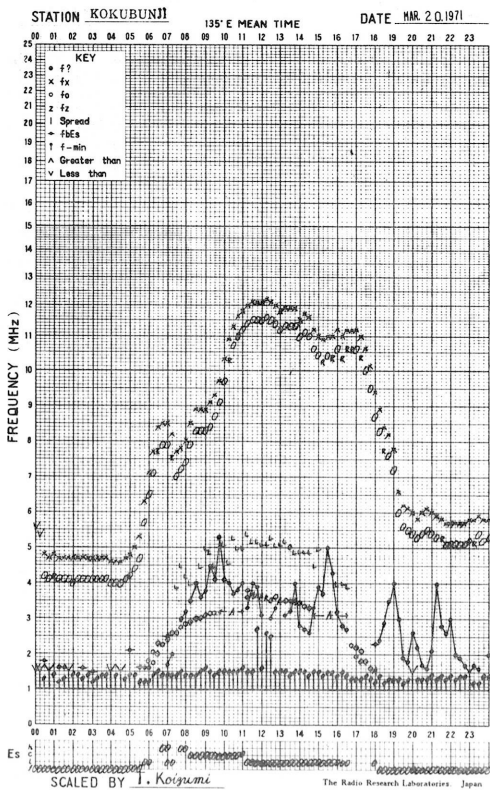
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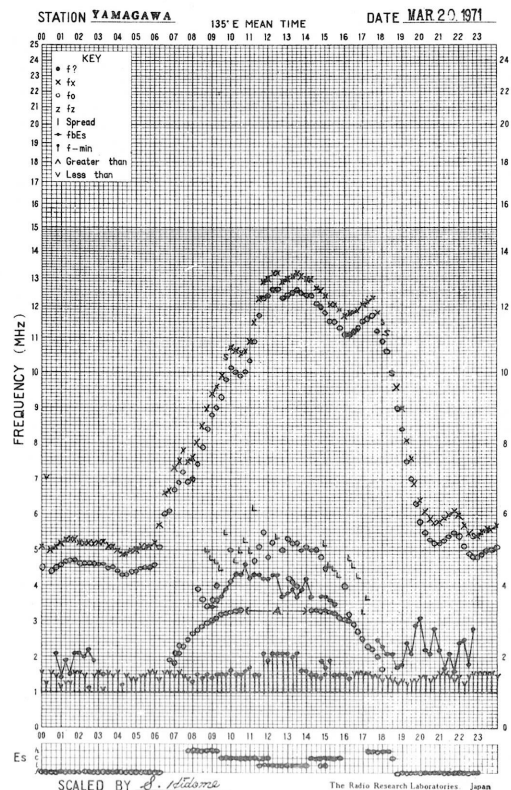
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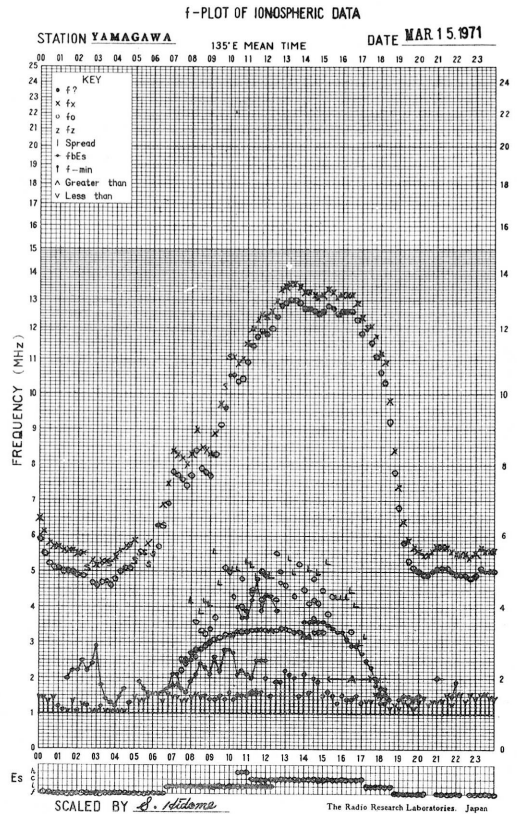
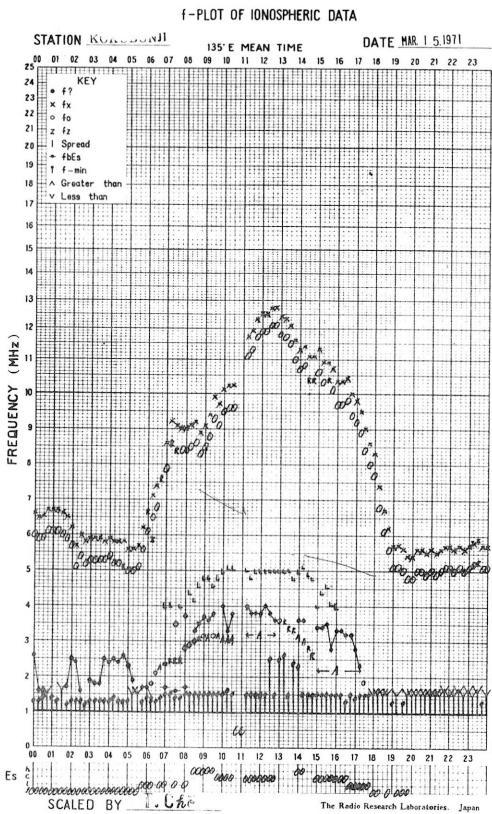
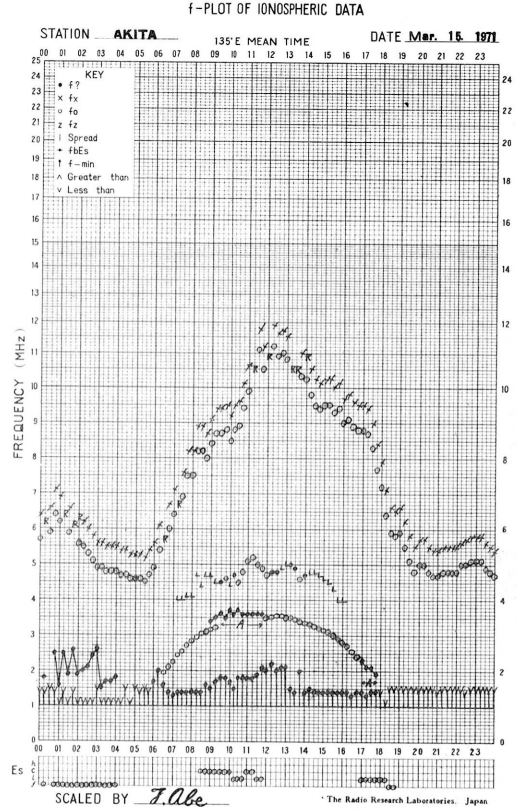
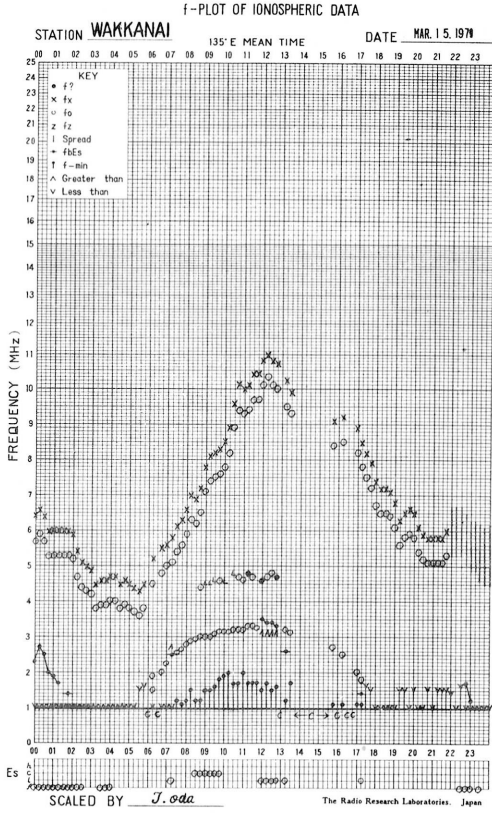


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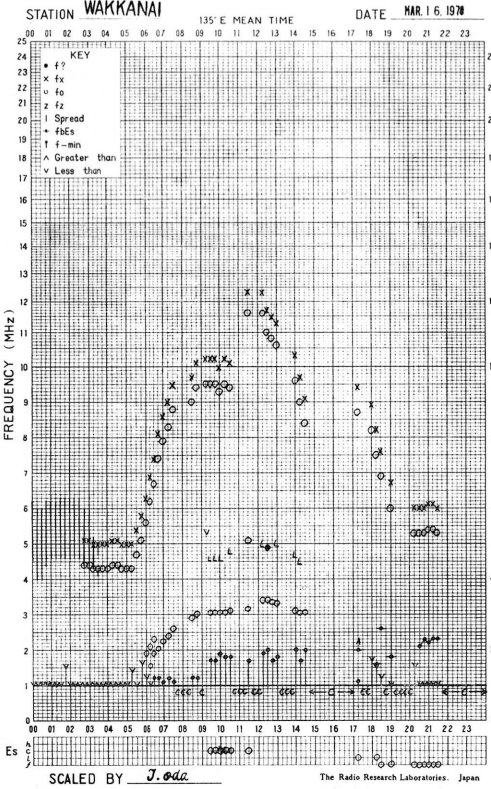


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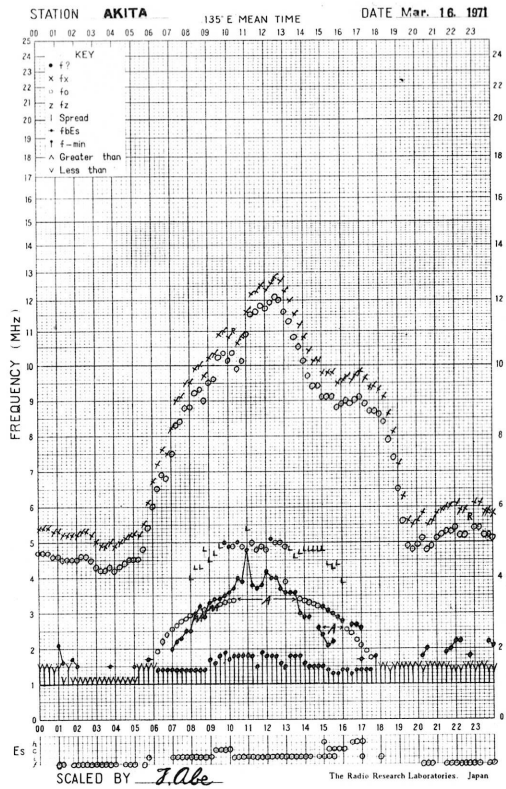




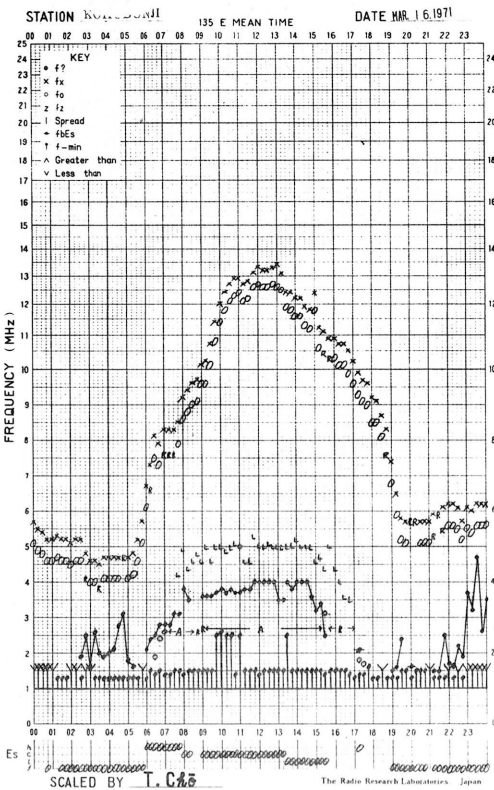
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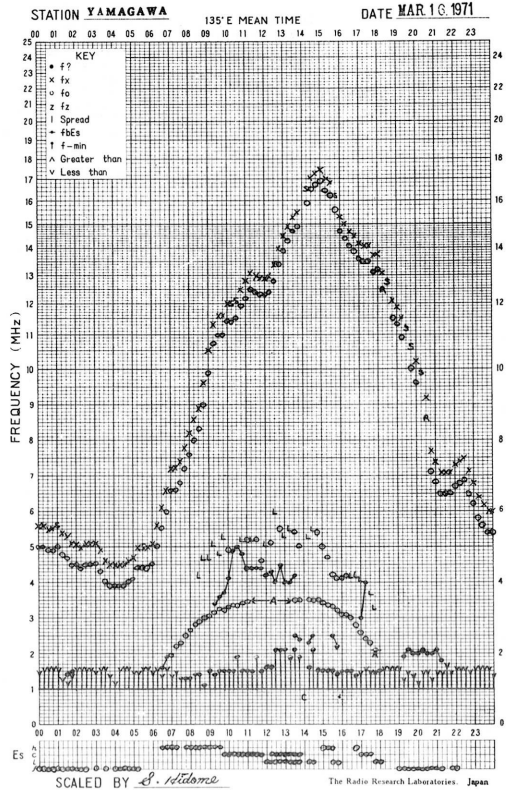
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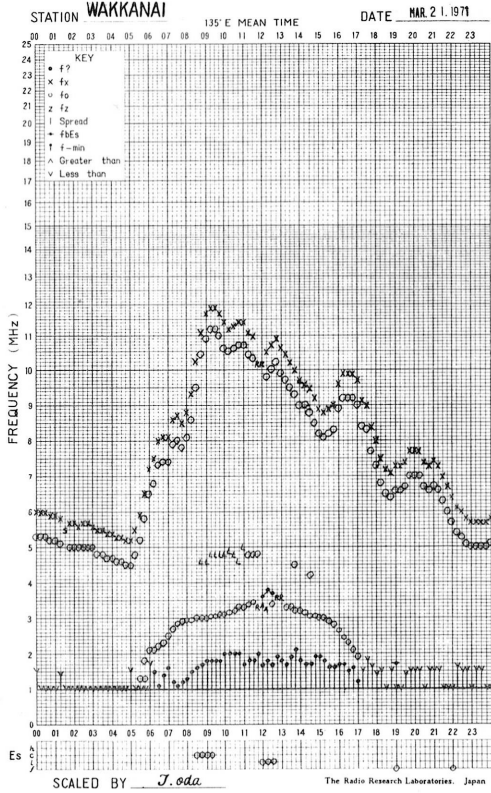
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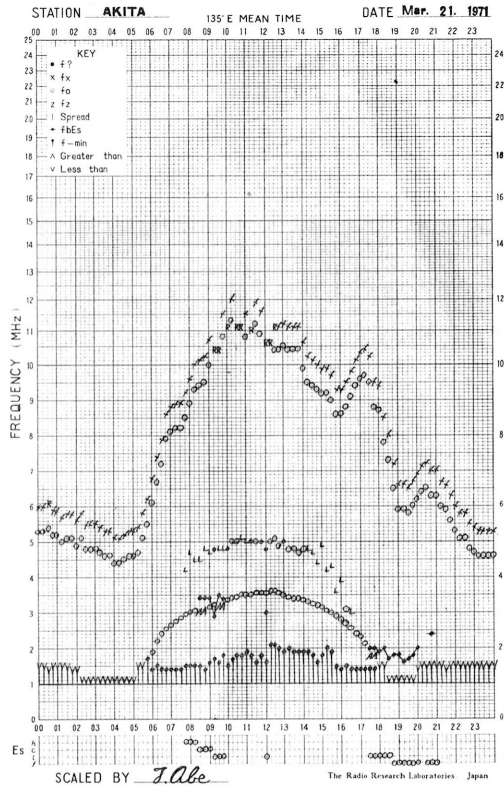
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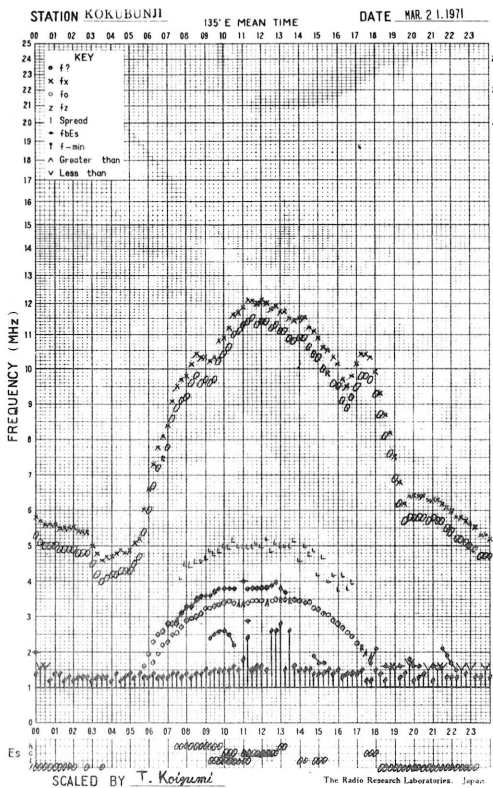
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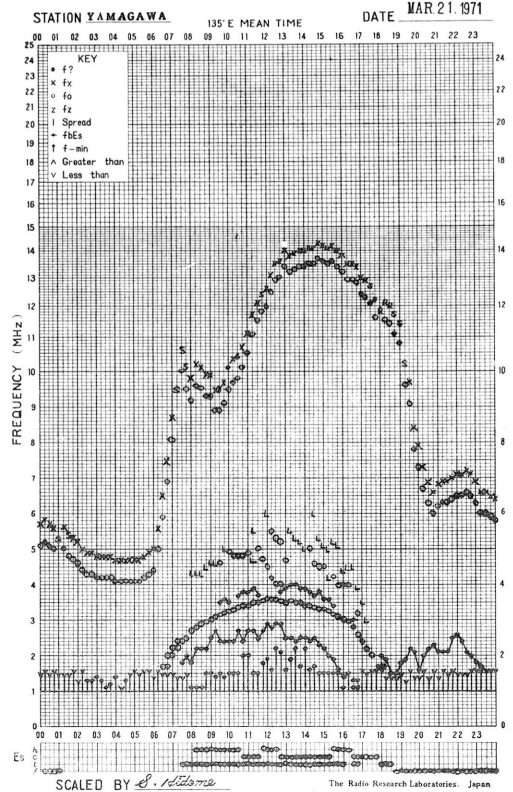
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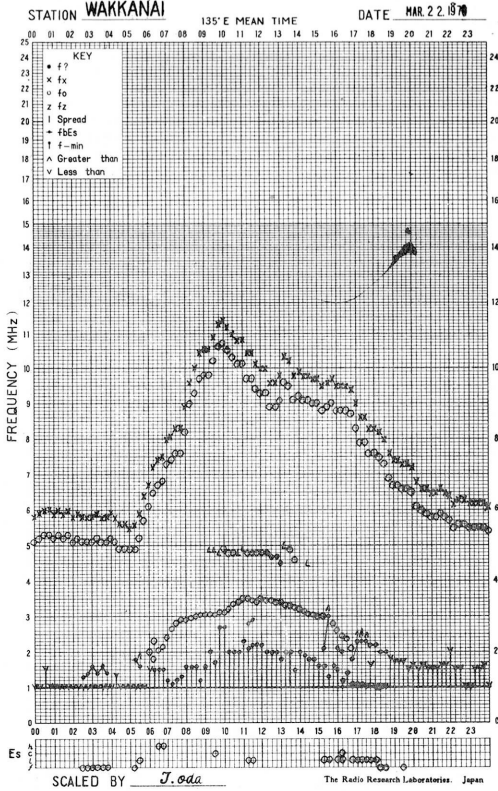
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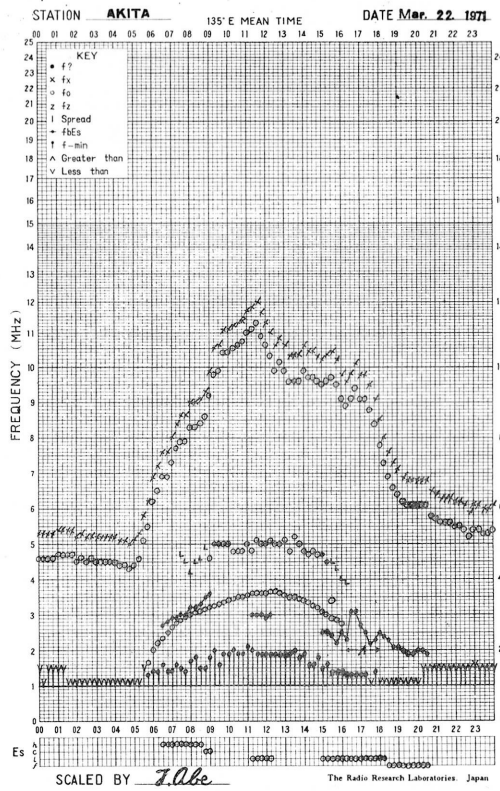
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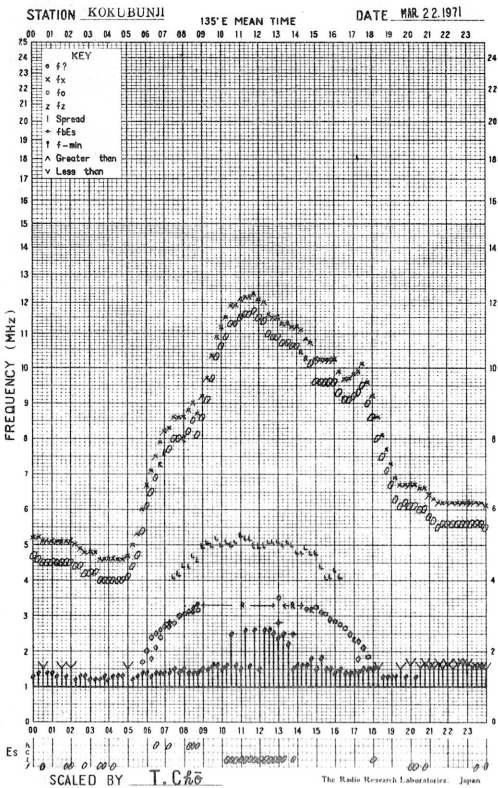
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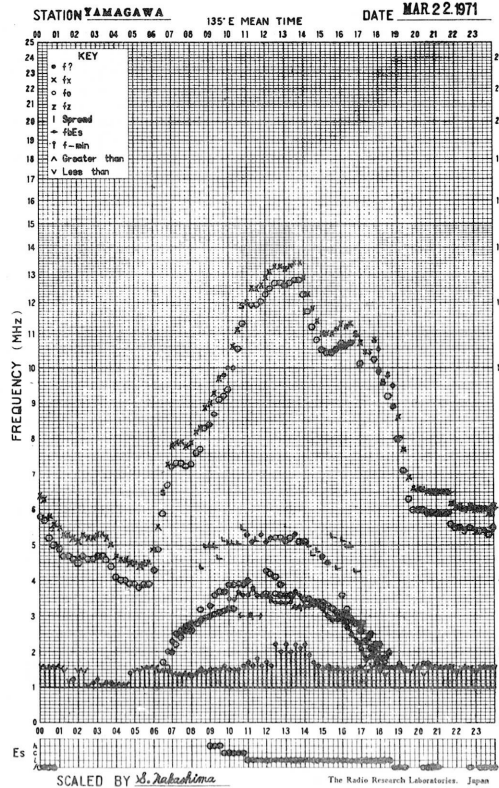
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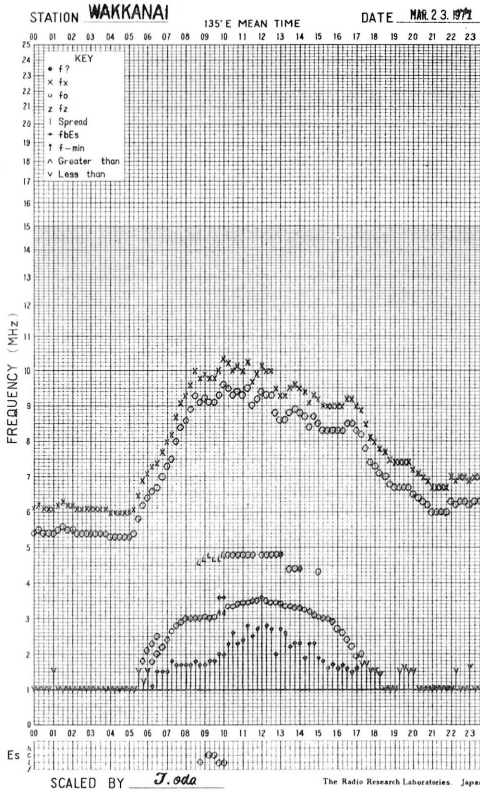
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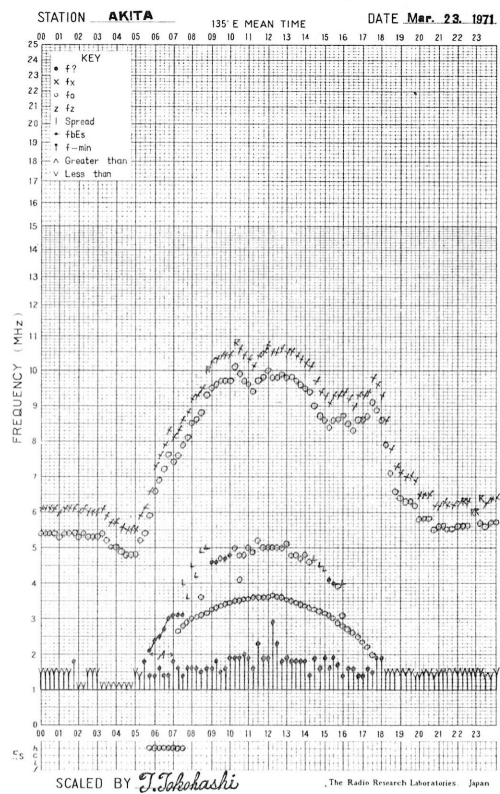
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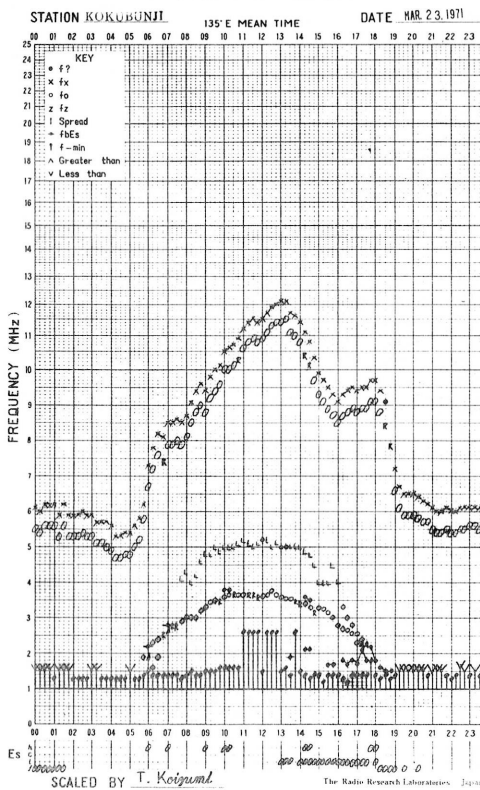
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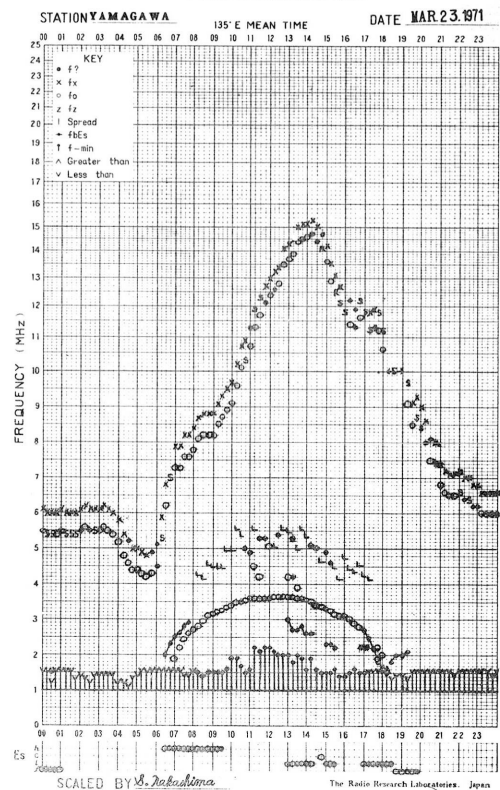
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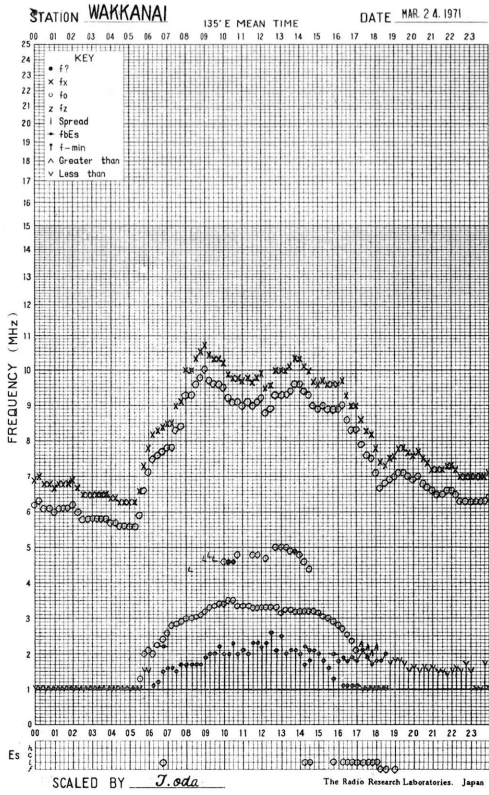
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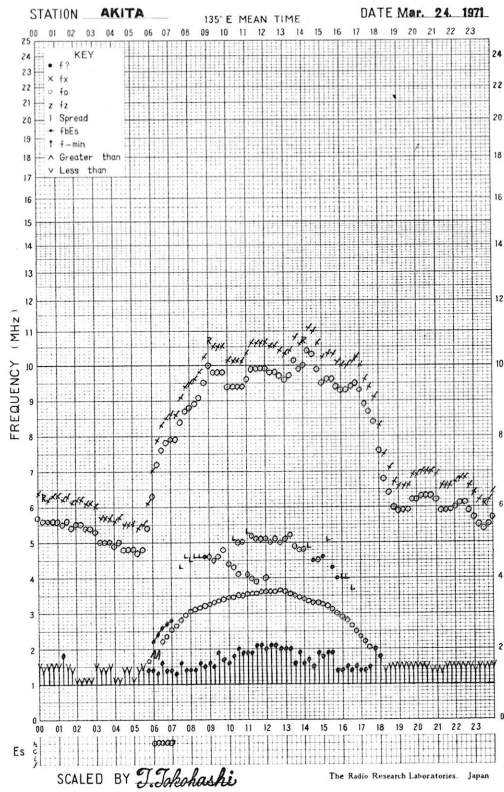
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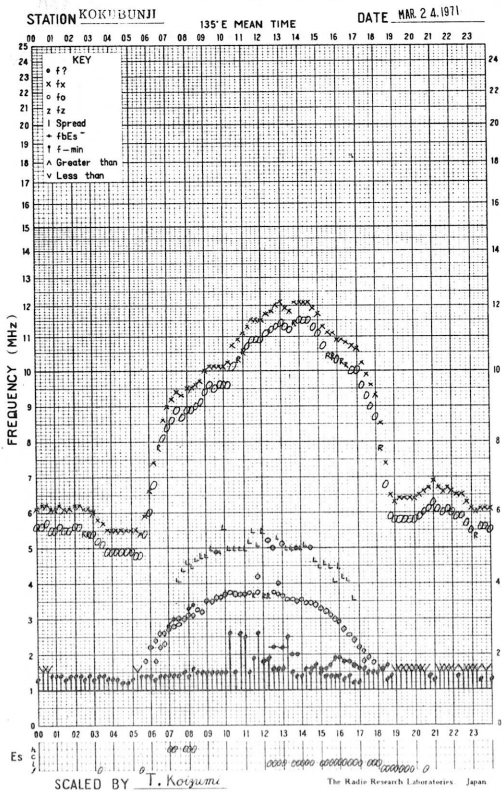
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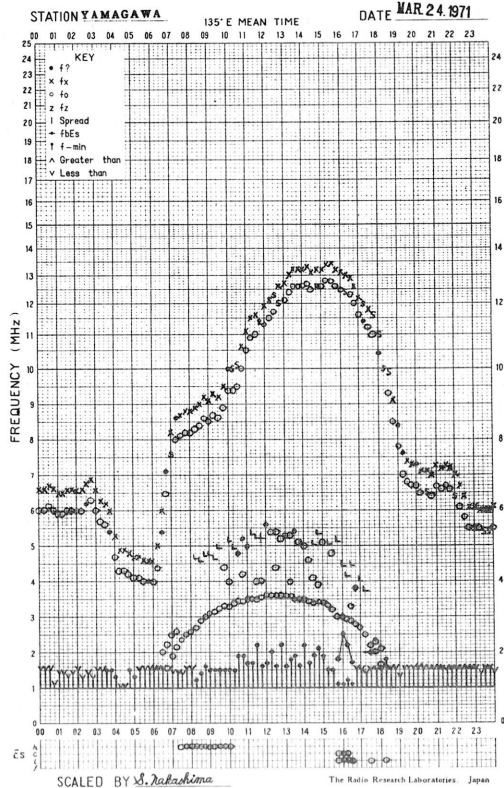
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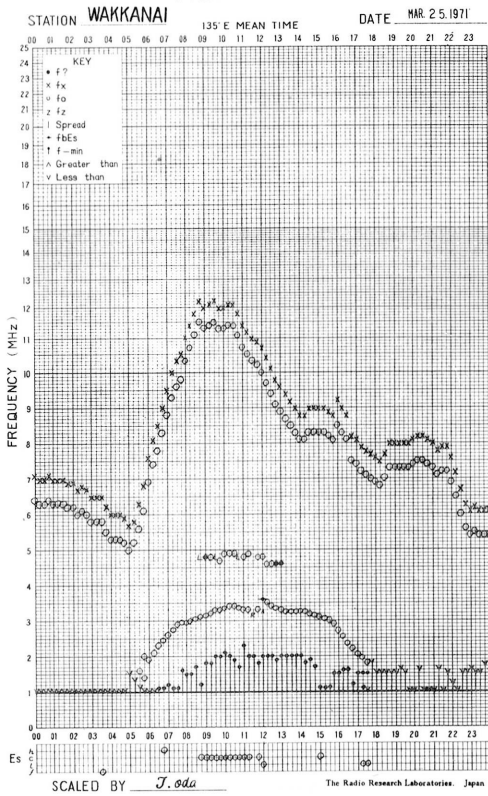
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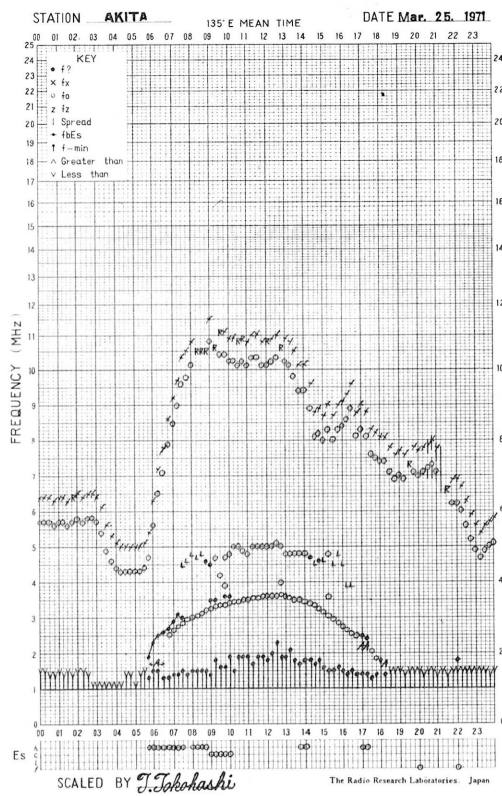
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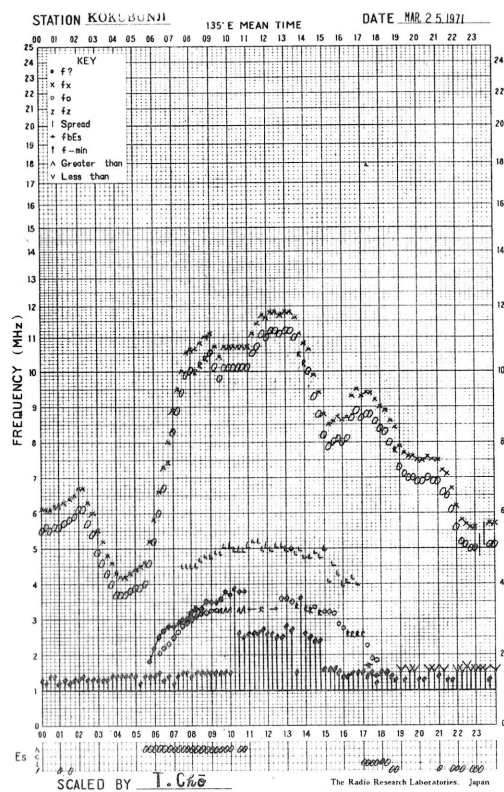
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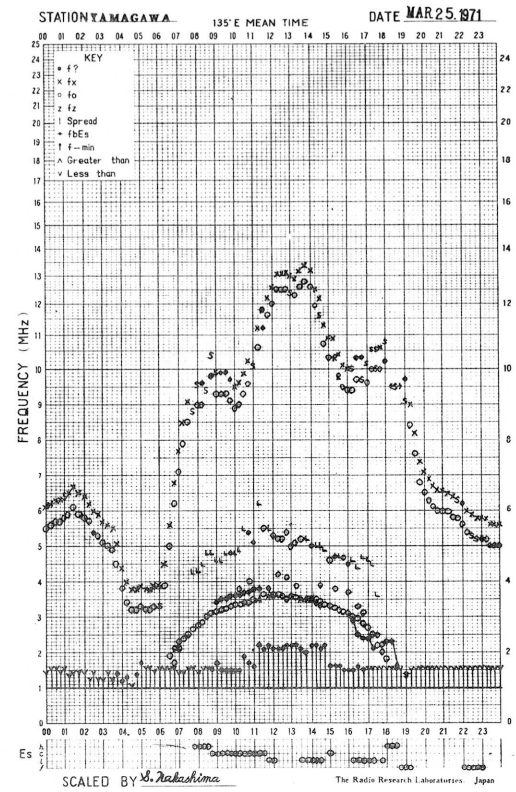
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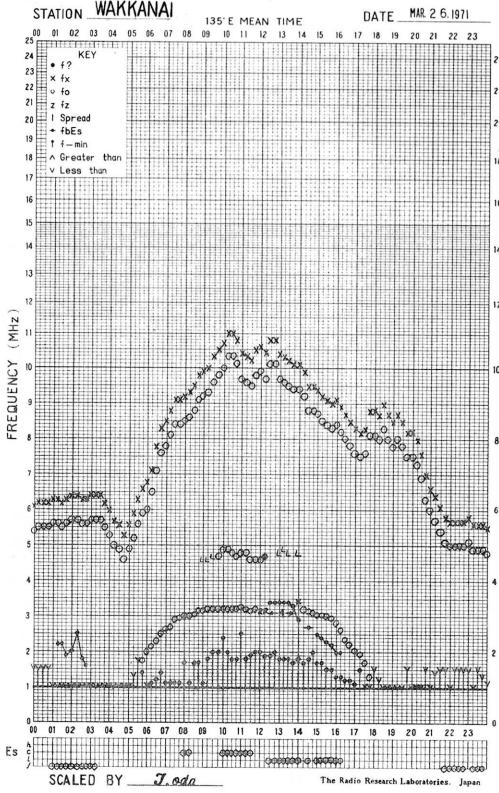
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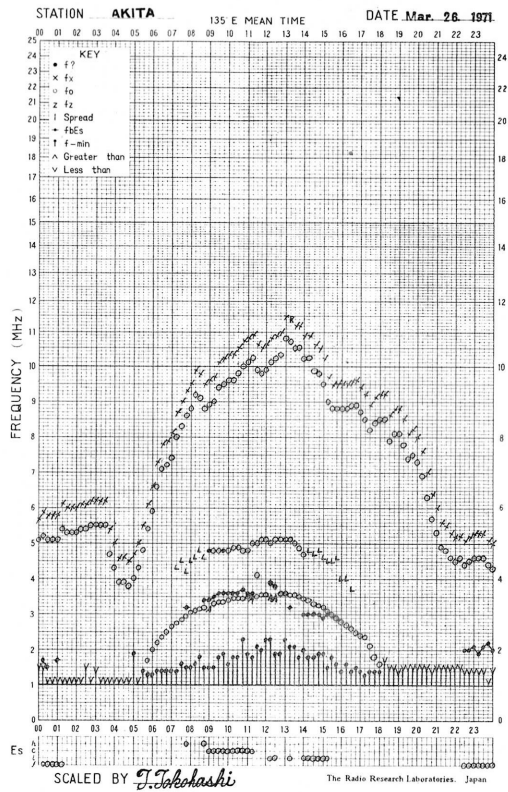
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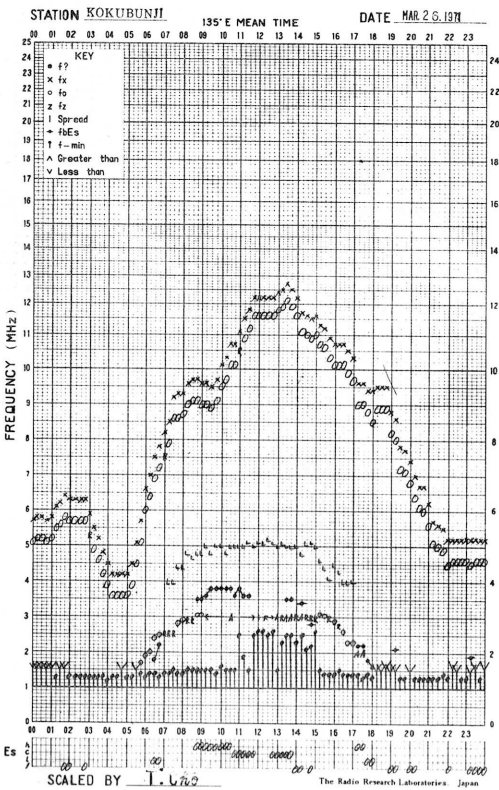
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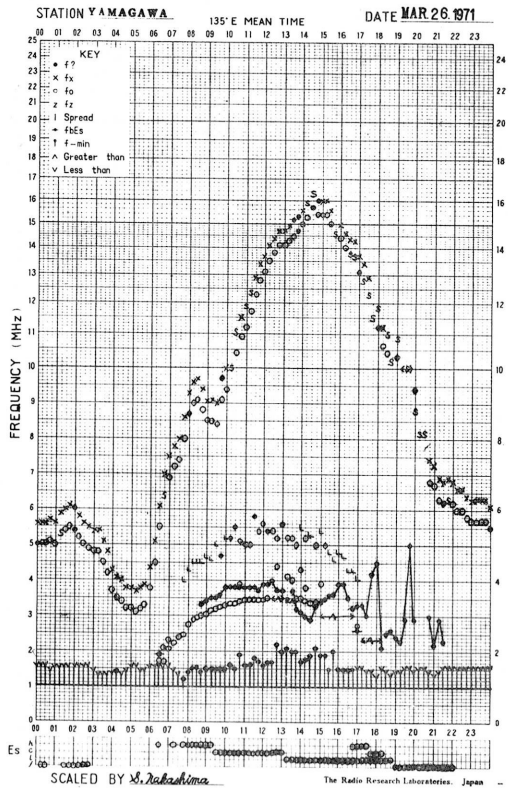
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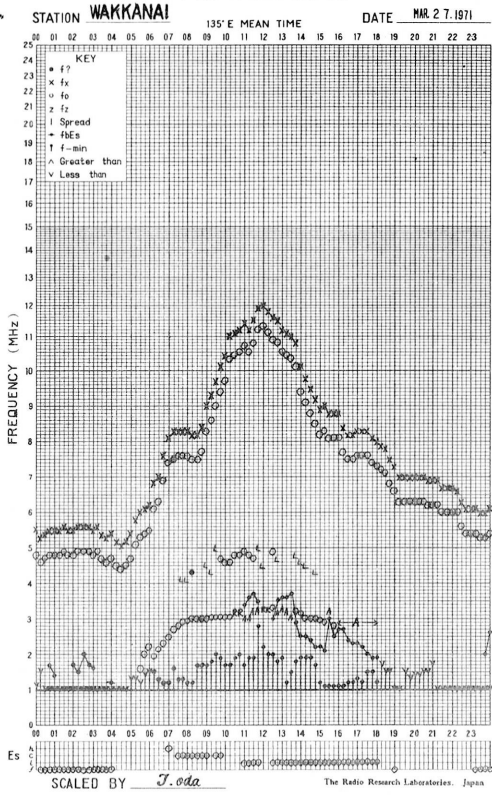
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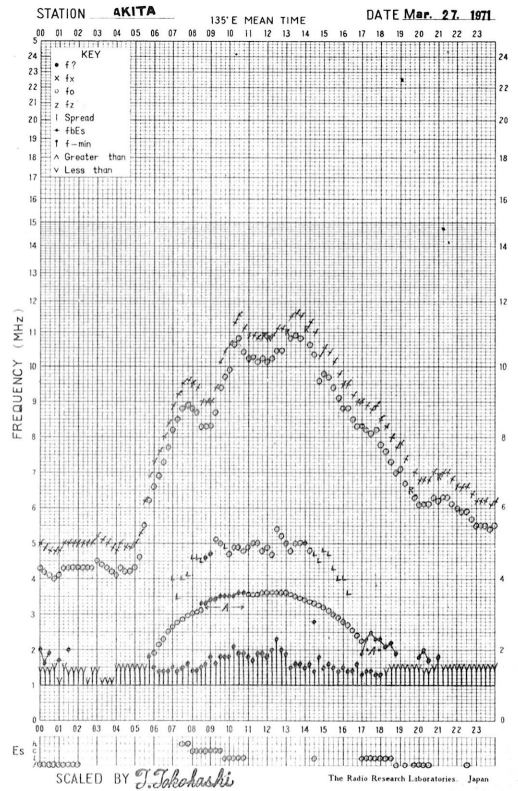
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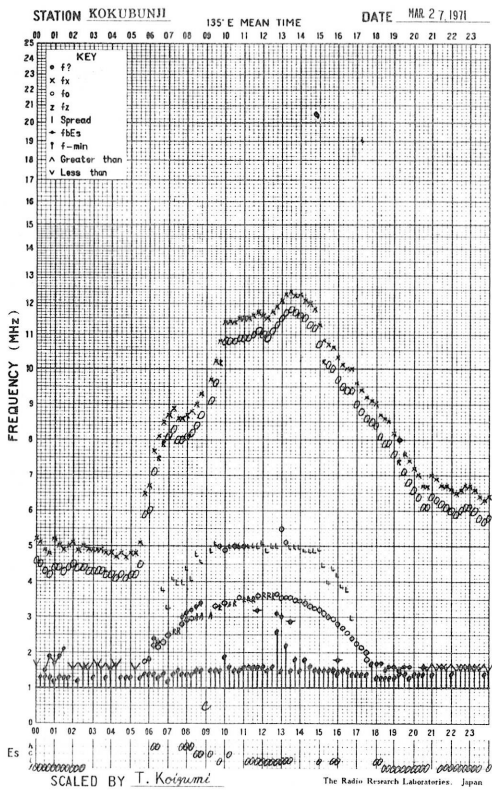
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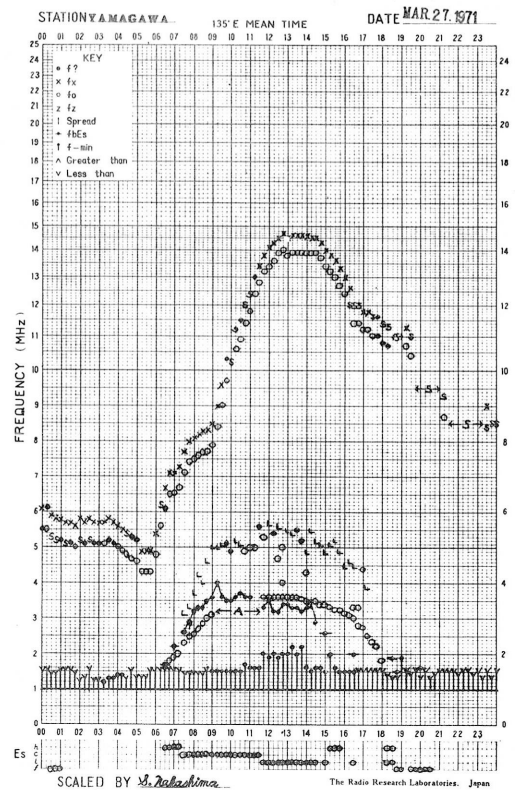
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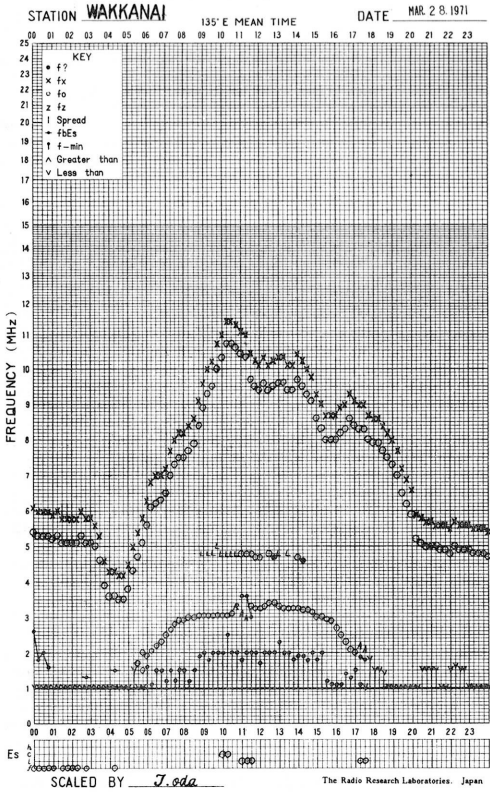
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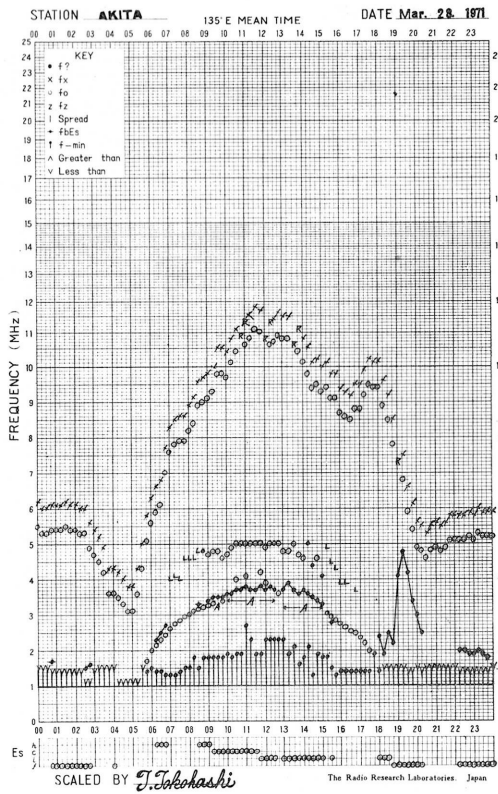
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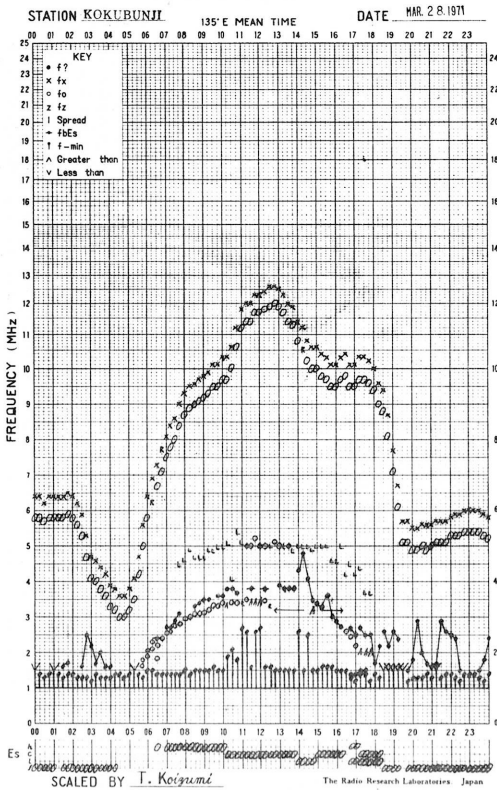
f- PLOT OF IONOSPHERIC DATA



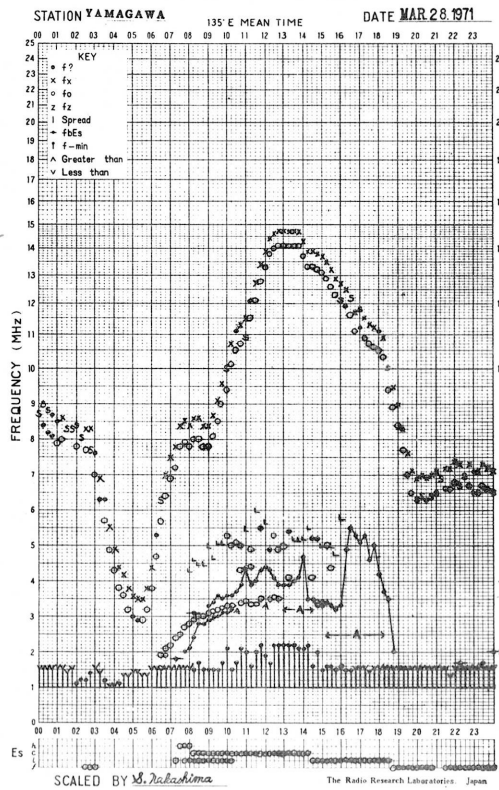
f- PLOT OF IONOSPHERIC DATA



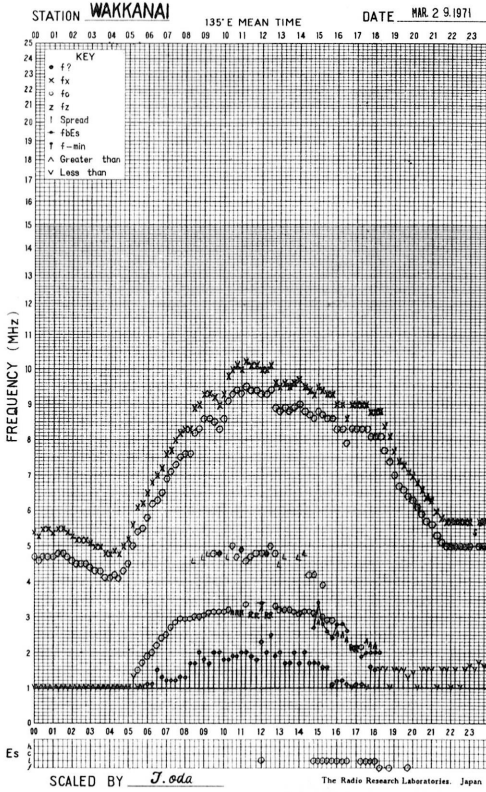
f- PLOT OF IONOSPHERIC DATA



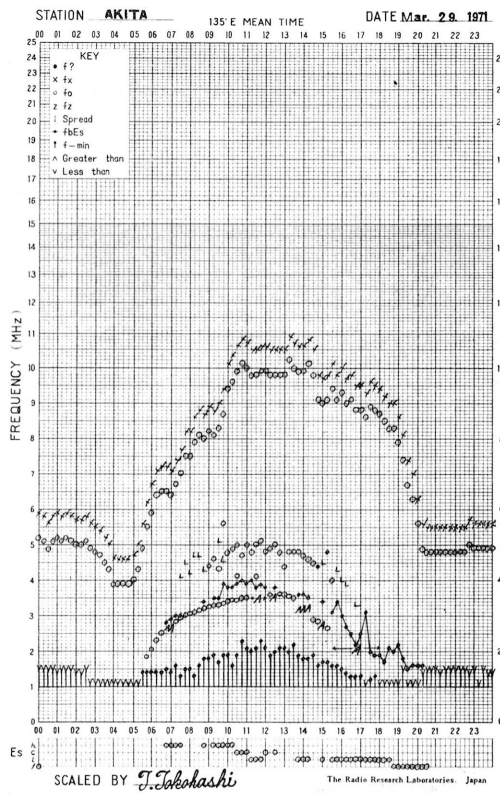
f- PLOT OF IONOSPHERIC DATA



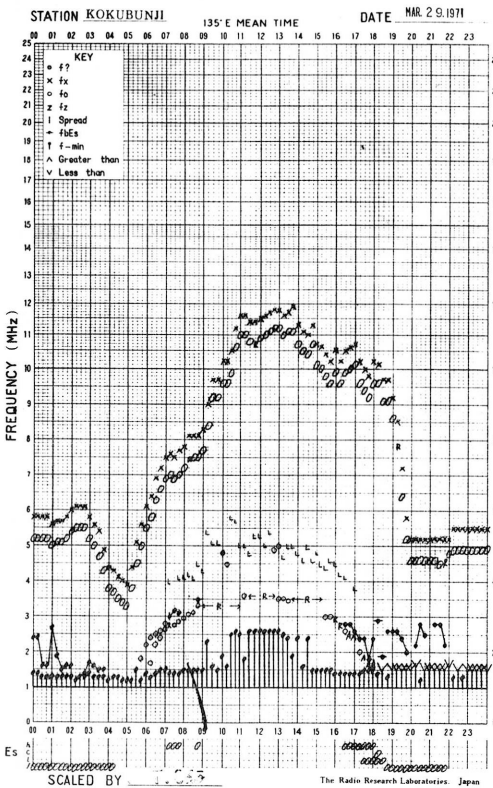
f-PLOT OF IONOSPHERIC DATA



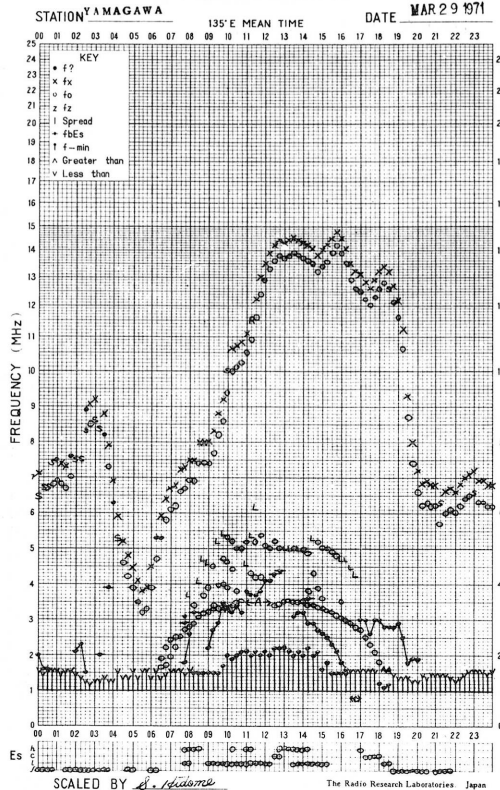
f-PLOT OF IONOSPHERIC DATA



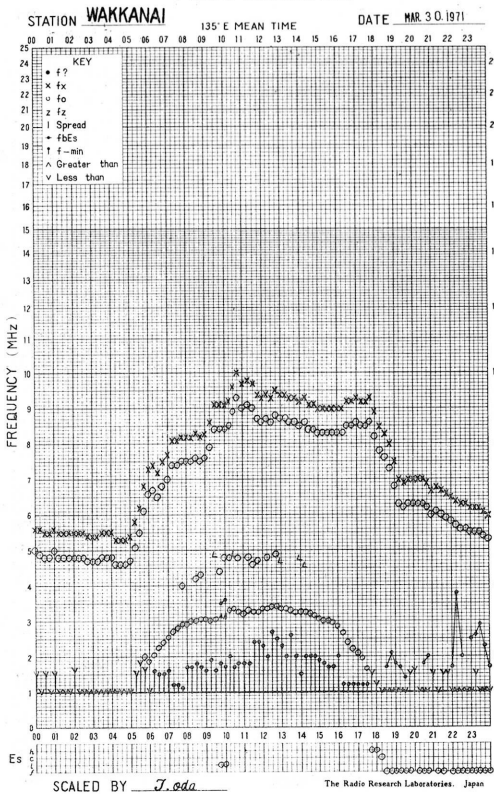
f-PLOT OF IONOSPHERIC DATA



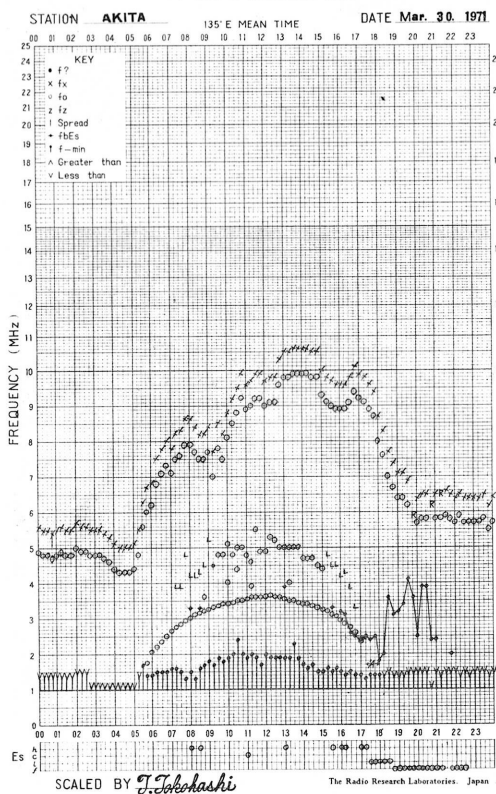
f-PLOT OF IONOSPHERIC DATA



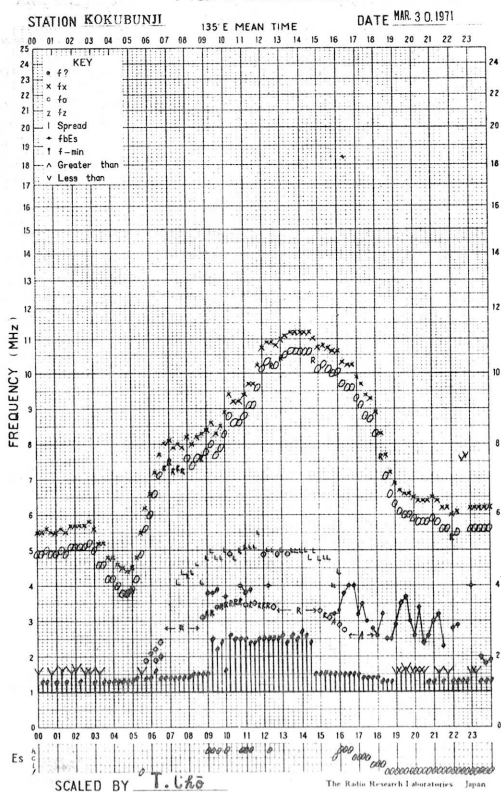
f-PLOT OF IONOSPHERIC DATA



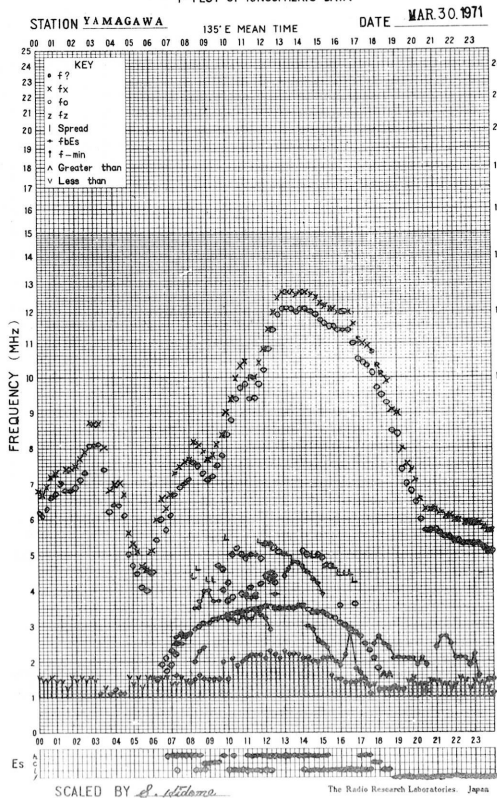
f-PLOT OF IONOSPHERIC DATA

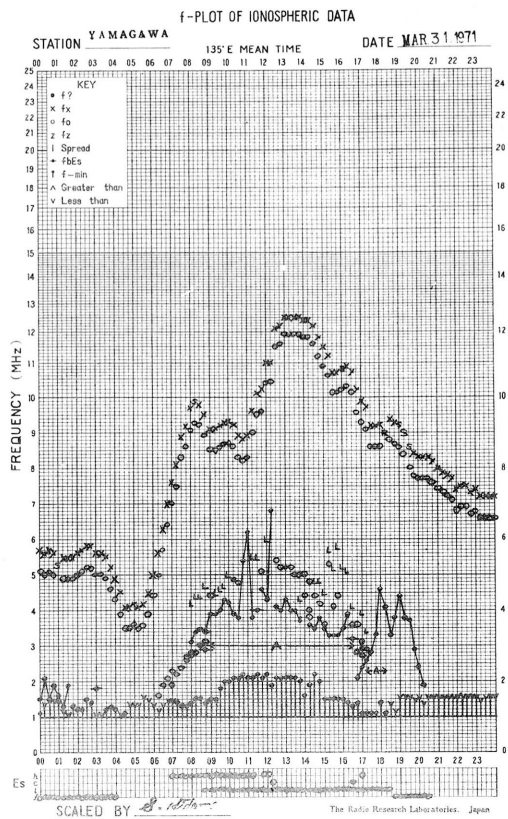
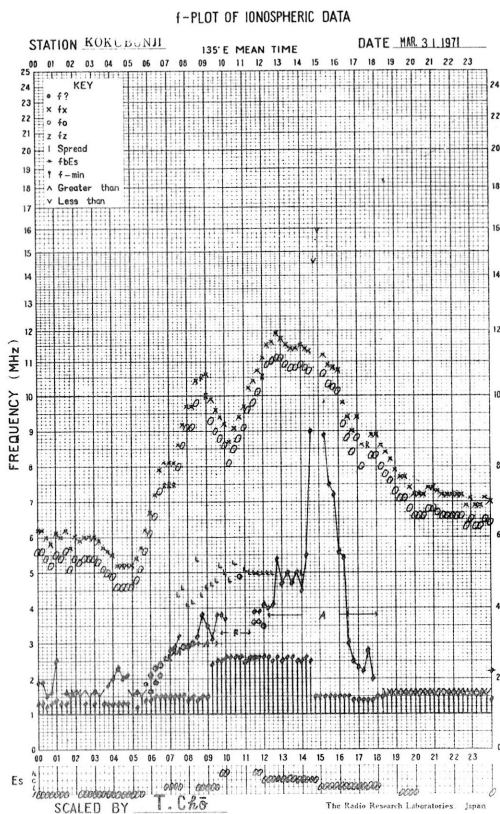
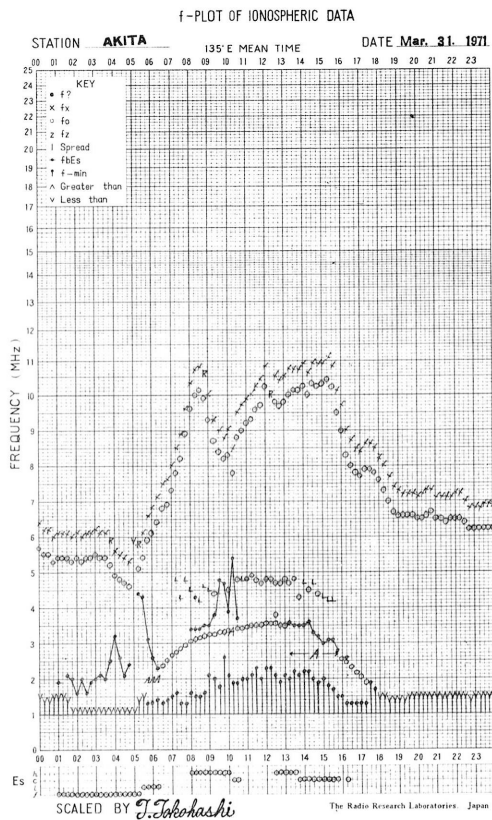
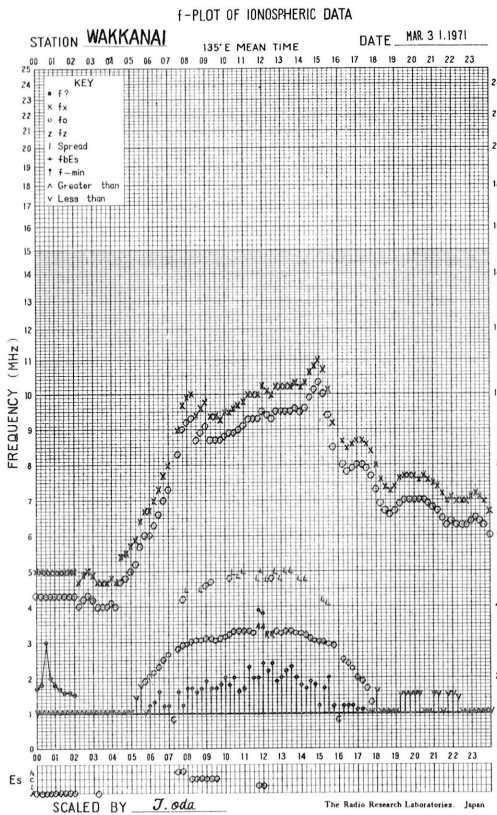


f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA





SOLAR RADIO EMISSION

Flux Density and Variability										
Month: March 1971						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} \text{ W m}^{-2} (\text{Hz})^{-1}$						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	q	7	0	0	0	0	0
3	q	q	q	7	q	0	0	0	0	0
4	7	7	7	9	7	0	0	0	0	0
5	8	8	7	10	8	0	0	0	0	0
6	9	10	9	8	9	0	0	0	0	0
7	8	9	9	8	8	0	0	0	0	0
8	8	8	8	9	8	0	0	0	0	0
9	10	7	8	5	8	0	0	0	0	0
10	7	7	6	6	6	0	0	0	0	0
11	8	8	9	6	8	0	0	0	0	0
12	7	7	7	7	7	0	0	1	0	0
13	6	6	7	8	7	0	0	0	1	0
14	7	8	7	6	7	0	0	0	0	0
15	7	7	7	8	7	0	0	0	1	0
16	7	6	6	6	7	0	0	0	0	0
17	6	6	6	8	6	0	0	1	0	0
18	7	13	8	6	9	0	1	1	0	0
19	6	6	6	7	6	0	0	0	0	0
20	7	7	6	7	7	0	0	1	0	0
21	7	6	6	6	7	0	0	0	0	0
22	7	7	7	6	7	0	0	0	0	0
23	5	5	6	8	6	0	0	0	0	0
24	7	7	7	8	7	0	0	0	0	0
25	7	6	7	6	7	0	0	0	1	0
26	6	5	6	q	6	0	0	0	0	0
27	5	5	6	7	5	0	0	0	1	0
28	6	7	7	6	7	1	1	1	1	1
29	6	6	8	6	6	0	1	0	0	0
30	7	7	8	7	7	1	0	1	0	0
31	5	5	4	q	5	0	0	0	0	0

Note No observations during the following periods:

6th 0130- 0225

q: quiet level, when radiometer is unstable.

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: March 1971					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} \text{ W m}^{-2} (\text{Hz})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	28	28	27	24	28
2	25	26	25	28	25
3	27	27	27	28	27
4	28	27	27	26	27
5	27	28	27	27	27
6	27	27	27	28	27
7	28	28	28	28	28
8	28	28	(28)	26	28
9	25	26	25	25	26
10	25	24	25	24	25
11	24	25	(25)	24	24
12	25	26	26	26	25
13	26	24	25	26	25
14	26	26	26	25	26
15	27	27	28	25	27
16	26	26	27	-	26
17	(25)	25	24	25	25
18	26	25	25	(25)	25
19	25	25	24	27	25
20	26	25	(25)	27	26
21	-	26	(25)	24	26
22	25	26	26	(27)	25
23	(29)	-	-	-	(28)
24	-	-	-	-	-
25	-	25	25	-	25
26	24	25	24	25	24
27	24	24	24	(25)	24
28	23	23	24	-	23
29	-	23	23	22	23
30	23	23	25	23	23
31	24	24	25	23	24

Note No observations during the following periods:

7th	0455-	0520	19th	0225-	0400
8th	0555-	0700	20th	0625-	0700
9th	0455-	0600	21st	0025-	0330
11th	0255-	0400	21st	0625-	0700
11th	0555-	0640	22nd	2325-	2400
13th	0400-	0425	23rd	0125-	25th 0300
15th	0355-	0500	25th	2125-	2400
16th	0355-	0440	27th	2325-	2400
16th	2050-	17th 0200	28th	2125-	29th 0240
18th	2125-	2300			

Distinctive Events								
(single-frequency observations)								
Month: March 1971								
Observing station: Hiraiso								
Normal observing period: 2050 - 0840 (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	
1	200	0453.5	0453.8	1.0	C	80	20	
		0454.8	0455.0	0.5	C	140	30	
	100	0453.5	0454.0	2.5	C	140	50	
3	200	0354.8	0354.9	1.0	C	280	20	
	100	0354.6	0355.0	1.0	C	200	150	
4	200	0302.5	0302.8	1.0	C	30	10	
	100	0302.3	0303.0	1.0	C	25	10	
	200	0304.5	0304.7	1.0	C	120	30	
	100	0304.3	0304.8	0.6	C	90	40	
6	500	0233.4	0233.4	0.2	C	30	15	
	200	0233.0	0234.0	1.5	C	230	40	
	100	0233.7	0234.0	0.5	C	25	10	
8	500	0131.0	0131.2	0.5	C	45	20	
		0133.0	0134.5	1.5	C	40	10	
	200	0133.0	0133.0	1.0	C	210	70	
15	200	2231.5	2232.2	1.5	C	150	40	
	100	2231.0	2232.7	2.0	C	110	40	
	200	2234.2	2235.0	4.5	C	40	5	
	100	2234.7	2235.0	1.0	C	65	20	
16	200	0427.5	0428.2	1.0	C	30	5	
	100	0425.7	0426.6	1.5	C	25	10	
17	200	0642.0	0646.2	8.0	C	200	10	
	100	0639.0	0644.3	7.0	C	650	80	
18	100	2246.0	2247.0	2.0	C	> 90	> 60	
		2250.0	2251.0	2.0	C	65	20	
20	200	0624.8	0624.8	1.2	C	50	10	
	100	0624.3	0625.3	1.6	C	> 90	> 70	
	200	0747.0	0747.0	1.0	C	80	30	
	100	0744.3	0744.6	4.5	C	45	10	
21	200	0335.0	0335.5	1.5	C	90	30	
	100	0335.0	0335.5	1.7	C	> 90	> 35	
25	200	2306.0	2306.2	1.5	C	210	60	
	100	2305.5	2306.0	1.3	C	30	10	

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

MAR 1971 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISSO

UT DAY	09H	10H	11H	12H	13H	14H	15H	16H	17H	18H	19H	20H	21H	22H	23H	24H	25H	26H	27H	28H	29H	30H	31H	
1	11	13	12	12	17	ES-7	ES-13	ES-10	ES-14	ES-19	ES-17	ES-2	ES-28	ES-25	-19	ES-28	ES-28	ES-28	ES-28	ES-28	-2	7	7	10
2	9	9	7	18	11	ES-26	ES-8	ES-15	ES-13	ES-14	ES-14	ES-4	ES-20	ES-22	-25	ES-28	ES-28	-25	ES-28	ES-16	ES-1	3	6	9
3	8	11	12	10	20	-9	ES-19	ES-19	ES-14	ES-13	ES-19	ES-13	ES-28	ES-28	-13	-19	-19	-19	-19	ES-28	-7	-1	1	6
4	3	8	13	15	17	19	ES-21	ES-17	ES-13	ES-21	ES-19	ES-5	ES-22	ES-19	-19	-25	ES-28	-25	ES-28	ES-28	-4	7	11	11
5	11	12	11	16	13	-8	ES-19	ES-14	ES-14	ES-15	ES-20	ES-26	ES-28	ES-19	-14	-20	-22	ES-28	-25	ES-28	2	6	4	6
6	9	7	12	12	18	ES-2	ES-19	ES-8	ES-19	ES-19	ES-19	ES-28	ES-24	ES-20	-15	-21	-18	ES-27	ES-27	ES-27	-4	3	7	5
7	4	7	15	12	19	ES-0	ES-21	ES-19	ES-11	ES-13	ES-19	ES-16	ES-19	ES-25	-3	-3	-4	13	2	-9	2	2	11	7
8	6	9	15	22	17	12	17	-8	ES-19	ES-19	ES-5	ES-28	ES-25	ES-14	ES-13	-22	-22	ES-28	ES-28	ES-28	-4	4	13	17
9	10	10	12	17	23	-4	-4	-11	ES-13	ES-11	ES-6	ES-28	ES-27	ES-27	-21	-25	-25	-15	-13	ES-27	9	12	12	13
10	11	12	16	21	16	-6	ES-8	ES-8	ES-13	ES-26	ES-15	ES-14	ES-22	ES-19	-9	ES-28	-12	-25	ES-28	ES-28	11	8	10	10
11	13	19	12	24	20	ES-19	ES-7	ES-5	ES-5	ES-10	ES-11	ES-14	ES-15	ES-16	-11	-18	-16	ES-27	ES-27	ES-27	3	9	11	11
12	10	13	17	17	2	ES-16	ES-18	ES-10	ES-19	ES-13	ES-18	ES-27	ES-27	ES-27	-11	-18	-18	ES-27	ES-27	ES-27	7	11	20	13
13	10	12	13	21	ES-2	ES-8	-11	ES-0	ES-5	ES-19	ES-12	ES-5	ES-16	ES-13	-3	-13	5	-8	ES-28	ES-28	-8	12	13	14
14	3	13	17	21	21	-4	0	ES-11	ES-17	ES-17	ES-14	ES-8	-11	-11	-1	-18	ES-15	ES-11	ES-27	ES-27	ES-7	12	5	9
15	12	12	12	19	2	-10	ES-16	-12	ES-12	ES-19	ES-22	ES-16	ES-28	ES-19	-11	-25	-14	ES-28	ES-28	ES-28	-2	6	3	6
16	8	12	13	16	17	-12	-12	ES-9	ES-11	ES-19	ES-14	ES-4	ES-16	ES-16	-1	-7	11	-26	-1	ES-28	5	8	3	7
17	7	8	12	11	8	-19	-16	-9	ES-9	ES-16	ES-22	ES-2	ES-19	ES-22	-5	ES-21	-21	-14	-10	-8	-2	7	4	3
18	4	7	7	13	17	10	4	ES-6	ES-6	ES-7	ES-13	ES-1	ES-27	ES-18	-14	-7	2	11	-22	ES-27	-2	4	3	3
19	8	9	10	7	8	ES-12	ES-12	ES-12	ES-7	ES-15	ES-23	ES-0	ES-4	ES-19	-15	-25	ES-26	-28	ES-28	ES-28	3	ES-17	7	3
20	7	2	6	13	15	-2	ES-3	-1	ES-8	-2	ES-6	ES-14	ES-16	ES-15	-16	-17	0	1	2	ES-28	2	3	4	6
21	7	10	10	15	17	8	ES-6	ES-10	ES-3	ES-7	ES-15	ES-3	ES-14	ES-9	-15	-9	2	-9	ES-29	ES-23	-1	0	4	1
22	3	9	10	17	15	15	-11	ES-5	ES-12	ES-12	ES-12	ES-1	ES-25	ES-28	-14	-6	0	9	3	-2	2	2	2	2
23	2	2	12	15	17	11	-13	ES-1	ES-13	ES-14	ES-14	ES-2	ES-18	ES-21	-7	-12	-7	11	4	-9	4	3	4	3
24	7	8	7	17	17	17	13	-1	ES-2	ES-7	ES-13	ES-9	ES-9	ES-13	-18	-19	-16	-10	14	1	4	9	7	7
25	3	2	7	7	16	-12	ES-14	ES-4	ES-2	ES-29	ES-18	ES-16	ES-3	ES-9	-14	ES-25	0	ES-2	2	ES-27	7	5	2	5
26	9	6	8	12	12	2	-8	ES-13	ES-10	ES-12	-6	ES-12	ES-8	ES-29	-5	ES-27	-25	-7	12	ES-24	5	3	5	8
27	12	8	16	15	12	2	-12	ES-11	ES-14	ES-15	ES-20	ES-15	ES-19	ES-17	-2	7	3	22	?	ES-23	7	6	5	2
28	7	9	7	12	13	16	ES-2	ES-0	ES-3	ES-2	ES-15	ES-27	ES-24	ES-21	-12	-12	1	13	ES-24	ES-18	1	-2	0	2
29	2	3	7	11	14	ES-16	ES-7	ES-2	ES-1	ES-0	ES-7	ES-2	ES-27	ES-24	-6	-2	-3	5	4	-8	3	0	5	5
30	2	3	2	8	14	14	ES-10	ES-2	ES-1	ES-8	ES-12	ES-5	ES-18	ES-5	-5	-7	9	5	4	2	10	3	7	3
31	3	3	4	12	8	0	ES-10	ES-6	-5	ES-2	ES-13	ES-3	ES-7	ES-3	ES-1	4	18	12	16	-10	7	13	9	8
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	7	9	12	15	16	US-4	ES-11	ES-9	ES-11	ES-14	ES-14	ES-2	ES-19	ES-19	ES-12	-18	-14	US-11	-22	ES-27	US-2	US-6	5	6
UD	12	13	16	21	20	16	ES-10	ES-1	ES-2	ES-2	ES-6	ES-12	ES-9	ES-7	ES-1	-2	9	13	12	-2	9	ES-12	13	13
LD	2	2	6	8	2	ES-19	ES-19	ES-17	ES-17	ES-21	ES-22	ES-27	ES-28	ES-28	ES-19	ES-28	ES-28	ES-28	ES-28	ES-28	ES-4	ES-0	2	2

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Mar. 1971	Whole Day Index	W W V				L M				W W V H				Warning				Principal magnetic storms		
		00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4°	4	-	(3)	4	4	4	(4)	(5)	4	4	(4)	4	N	N	N	N			
2	4-	4	-	(3)	4	3	4	(4)	4	4	(4)	(5)	4	N	N	N	N			
3	4°	4	-	4	4	4	4	(3)	4	4	4	(5)	4	N	N	N	N			
4	4°	4	-	(3)	4	4	4	(4)	4	4	4	(4)	4	N	N	N	N			
5	4-	4	-	3	4	3	4	(4)	4	4	4	(4)	4	N	N	N	N			
6	4-	4	-	(3)	4	3	3	(4)	4	4	3	(3)	4	N	N	N	N			
7	4°	4	-	5	4	4	4	(3)	(5)	4	4	(4)	3	N	N	N	N			
8	4-	4	(4)	(3)	4	4	3	(3)	(4)	4	4	(5)	4	N	N	N	N			
9	4°	4	(4)	4	4	4	4	(4)	4	4	4	(4)	4	N	N	N	N			
10	4-	4	-	3	4	3	3	(4)	4	4	(3)	(4)	4	N	N	N	N			
11	4°	4	-	(3)	4	3	4	(4)	5	4	4	(4)	4	N	N	N	N			
12	4-	4	-	(3)	4	3	4	(3)	4	4	3	(4)	4	N	N	N	N			
13	4°	4	(5)	4	3	4	5	(4)	3	4	4	(5)	4	N	N	N	N			
14	4°	4	(5)	4	4	4	3	(3)	(4)	4	(4)	(5)	4	N	N	N	N			
15	4-	4	(4)	(3)	4	4	4	(4)	(3)	4	4	(4)	4	N	N	N	N			
[16]	4°	4	(4)	4	4	4	4	(3)	4	4	(3)	(4)	4	N	N	N	N			
[17]	4°	4	(3)	4	4	4	5	(4)	4	4	4	-	4	N	N	N	N			
[18]	4°	4	(5)	5	4	4	4	(4)	3	4	3	(3)	4	N	N	N	N			
19	4°	4	-	(3)	4	4	5	(4)	4	4	4	(4)	4	N	N	N	N	11.50	---	68 ^Y
20	4°	4	(5)	5	4	4	5	(3)	3	4	4	(4)	4	N	N	N	N	---	12.00	
21	4-	4	-	4	4	3	3	(3)	(4)	4	4	(4)	4	N	N	N	N			
22	4°	4	(4)	5	4	4	4	(4)	-	4	4	(5)	4	N	N	N	N			
23	4-	4	(4)	5	4	4	3	(3)	3	4	4	(4)	4	N	N	N	N			
24	4°	4	(5)	4	4	4	4	(4)	4	4	4	(5)	4	N	N	N	N			
25	3+	3	-	4	3	3	4	(4)	3	4	4	(5)	4	N	N	N	N			
26	3+	(3)	(4)	4	3	4	3	(3)	4	4	4	(5)	4	N	N	N	N			
27	4-	3	-	5	3	3	4	(4)	3	4	3	(5)	4	N	N	N	N			
28	3°	3	-	5	3	4	2	(2)	(3)	4	(3)	(4)	4	N	N	N	N			
29	4-	3	-	5	4	4	3	(3)	(3)	4	(3)	(5)	4	N	N	N	N			
30	4°	4	-	5	4	4	3	(4)	3	4	(3)	(5)	4	N	N	N	N			
31	4°	3	(5)	5	3	4	5	(4)	4	4	4	(5)	4	N	N	N	N			

GEOALERT

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

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

- C = artificial accident
- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES (S.I.D.)

HIRAISO

No Sudden Ionospheric Disturbance was observed during March, 1971.

I H U B O

1971	S P A								Remarks
Mar..	Phase Advance (degrees)					Time (U.T.)			
DATE	GBR	WVVL	HAA	NWC	HPC	Start	End	Maximum	
2	-			'	-	0422	0455	0428	
7			6	<u>24</u>	-	0237	0315	0242	
11				24	-	0028	0127	0050	
13			37		-	0018	0132	0048	
13	70			-	-	1720	1814	1725	
13		<u>54</u>	37	32	-	2336	0056	0007	
15				16	-	0741	0816	0750	X
17	25			<u>24</u>	-	0652	0747	0702	
24				<u>8</u>	7	0537	0614	0540	
25				8		0743	0807	0745	
26				22	7	0536	0623	0544	X
26				<u>16</u>	13	0639	0719	0644	
26		13	<u>77</u>	6	27	0744	0934	0805	
30			6	<u>8</u>		0427	0458	0432	
30			110	<u>16</u>		0558	0658	0612	

NOTES (1) : The letter E or D attached to a time shows that the pertinent time is earlier or more delayed than the given time, respectively.

(2) : The mark * shows a multi-peak event.

(3) : The mark ** shows a time on the day before the pertinent day.

IONOSPHERIC DATA IN JAPAN FOR MARCH 1971

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