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IONOSPHERIC DATA IN JAPAN

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IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1970

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RADIO RESEARCH LABORATORIES

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SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAIISO BRANCH

Ionospheric observation is carried out at the following four observatories in Japan.

	Latitude	Longitude	Site
Wakkanai	45°23.6'N.	141°41.1'E.	Midori-cho, Wakkanai-shi, Hokkaido
Akita	39°43.5'N.	140°08.2'E.	Tegata Sumiyoshi-cho, Akita-shi, Akita-ken
Kokubunji	35°42.4'N.	139°29.3'E.	Nukui-Kitamachi, Koganei-shi, Tokyo-to
Yamagawa	31°12.1'N.	130°37.1'E.	Yamagawa-machi, Ibusuki-gun, Kagoshima-ken

Solar radio emission and radio propagation conditions are observed at Hiraiso Branch and Inubo Radio Wave Observatory.

	Latitude	Longitude	Site
Hiraiso	36°22.0'N.	140°37.5'E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken
Inubo	35°42.2'N.	140°51.5'E.	9912 Tennodai, Choshi-shi, Chiba-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_oF2 }
 f_oF1 } The ordinary wave critical frequency for the $F2$, $F1$ and E layers,
 f_oE } respectively.

f_oEs The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

f_bEs The lowest ordinary wave frequency at which the Es layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

f -min The frequency below which no echoes are observed.

$M(3000)F2$ The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$hF2$ The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.

hF The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by hF . Thus hF is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.

hEs The lowest virtual height of the trace used to give the f_oEs .

$hpF2$ The virtual height of the $F2$ layer measured on the ordinary

$ypF2$ wave component at a frequency equal to $0.834f_0F2$.
 The semi-thickness of the $F2$ layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed $h'f$ trace. (The difference between $hpF2$ and the virtual height at $0.969f_0F2$).

a. Descriptive Letters

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

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

b. Qualifying Letters

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

the monthly tabulation sheets.

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

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

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

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

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

d. Description of Standard Types of *Es*

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

F An *Es* trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat *Es* traces observed in the daytime are classified according to their virtual height: H or L.

L A flat *Es* trace at or below the normal *E* layer minimum virtual height in the day or below the night *E* layer minimum virtual height at night.

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

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

Q An *Es* trace which is diffuse and non-blanketing over a wide

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

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

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

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

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

e. Multiple Reflections from *Es*

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

B. SOLAR RADIO EMISSION

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

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

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

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

c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

Descriptive type is denoted by the following symbols:

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Strengths of WWV and WWVH

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

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

N = normal
 U = unstable
 W = disturbed

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

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

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

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

(i) SWF

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

Circuits and Drop-out intensities

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

Start-time and Duration

Types

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

Importances

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

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

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

(ii) SPA

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

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

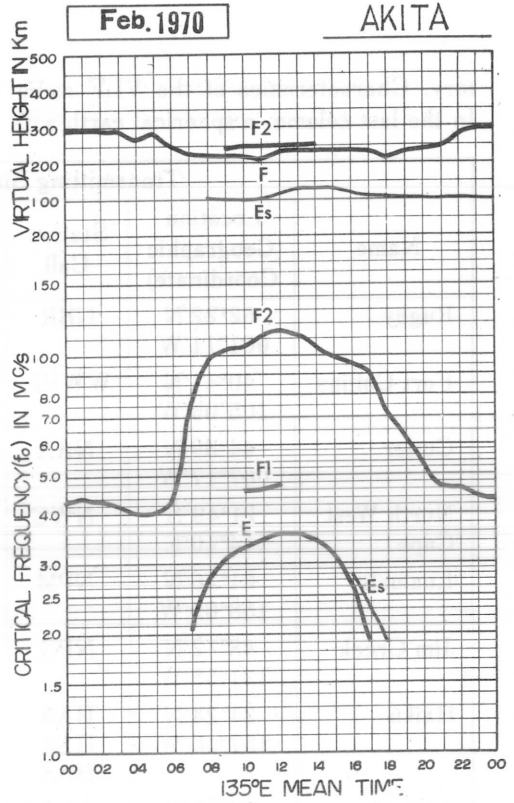
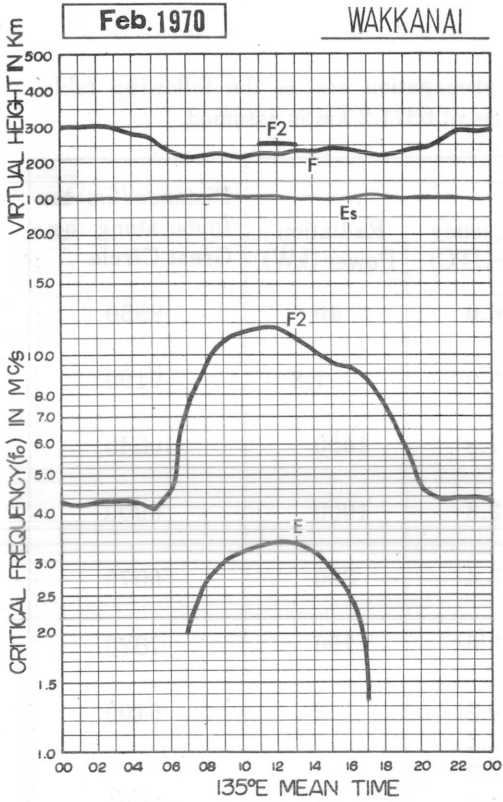
Name	Transmitting Site				Distance (km) to Inubo along the Great Circle
	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22'N 001°11'W	GBR	16.0	40	9550
Fort Collins	40°41'N 105°03'W	WWVL	20.0	1.8	9190
Cutler	44°39'N 067°17'W	NAA	17.8	1000	10640
North West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

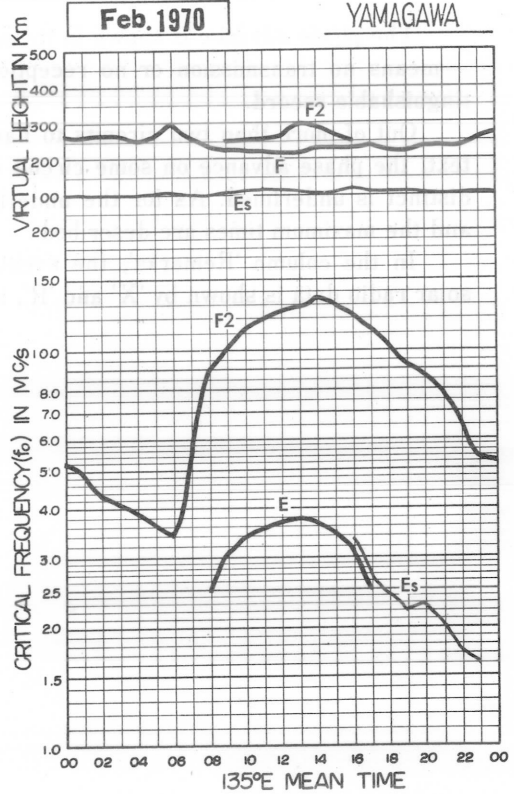
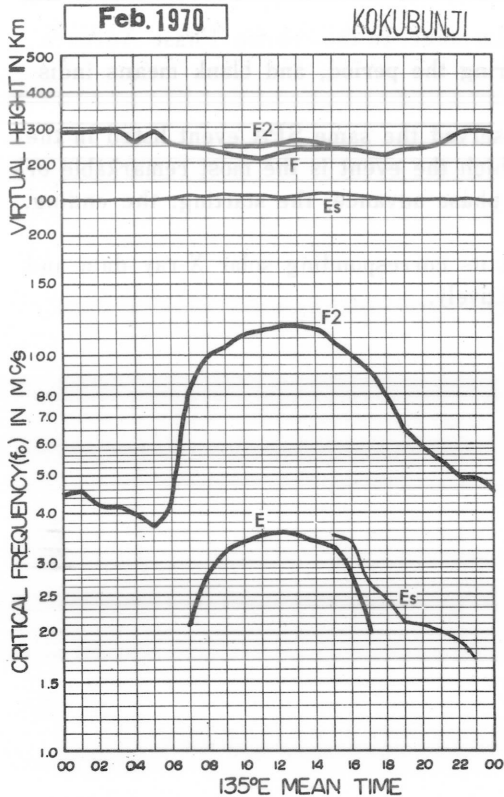
Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

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

FEB. 1970

FOF2 (0.1 MHZ)

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

Station	WAKKANAI							Lat. 45 23.6 N	Long. 141 41.1 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation												
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	36	38	37	38	41	F 36	F 38	53	74	91	93	101	95	100	90	90	81	65	56	53	34	33	35	34	
2	33	34	35	36	36	38	33	54	75	86	90	115	112	I R 90	75	86	80	74	73	60	39	37	35	37	
3	38	41	41	37	36	35	38	67	71	88	92	103	104	101	92	84	84	73	47	43	43	40	38	37	
4	40	40	40	42	40	34	34	60	83	86	97	100	100	99	96	83	74	71	62	41	33	35	33	34	
5	33	35	37	36	37	F 36	F 30	57	81	81	90	105	110	96	87	86	79	68	51	F 44	F 36	34	36	40	
6	42	F	F	F 44	F 45	38	30	65	85	92	85	103	105	93	86	83	76	74	53	54	34	33	31	28	
7	29	30	33	34	36	36	43	62	80	89	86	100	103	98	94	85	80	70	50	41	26	30	31	33	
8	33	34	35	36	37	37	36	65	84	102	93	103	104	97	87	90	85	73	50	46	33	35	38	40	
9	36	39	38	40	39	40	47	67	98	93	102	101	103	104	93	96	95	79	69	51	36	37	38	36	
10	38	37	37	38	38	41	43	59	89	103	117	110	109	103	96	95	82	82	58	53	43	43	46	43	
11	43	41	40	40	41	44	47	74	94	103	119	135	116	113	114	104	93	91	73	58	43	43	43	40	
12	38	37	37	39	40	41	45	71	106	111	114	109	108	104	97	98	100	95	77	67	44	41	40	36	
13	36	37	39	40	40	41	42	76	102	113	114	107	118	109	101	96	94	92	83	59	46	42	41	41	
14	41	41	43	43	43	43	46	S 78	115	109	120	124	121	116	106	104	110	104	76	56	48	47	48	49	
15	50	45	44	46	44	44	50	80	107	121	135	138	123	122	117	109	101	94	70	63	45	43	43	44	
16	46	44	43	42	41	41	44	76	94	107	120	134	H 128	120	122	111	108	84	74	60	57	51	44	46	
17	43	43	45	46	47	42	45	72	92	112	124	129	126	114	106	100	96	97	74	67	54	49	46	47	
18	46	46	44	44	45	U 45	48	76	94	116	121	I C 28	123	121	111	111	103	93	74	66	64	61	56	54	
19	53	54	54	56	54	53	59	83	110	116	120	H 125	119	113	101	96	92	86	69	65	63	53	55	56	
20	56	51	51	51	52	53	56	93	95	111	113	123	127	109	111	109	101	91	77	66	59	U 50	52	55	
21	51	53	F 51	53	57	53	61	91	103	109	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	104	96	96	F 70	F 56	S 54	56	56	
23	F 56	F 56	F 56	F 57	F 57	F 60	63	90	96	114	107	116	120	115	108	H 113	98	101	73	68	60	55	52	51	
24	52	50	48	46	49	48	57	71	103	116	107	107	109	110	104	96	105	87	70	66	66	59	55	53	
25	52	49	46	48	U 47	U 52	60	89	103	110	113	126	123	H 123	108	112	93	87	81	73	67	60	53	55	
26	54	54	54	54	53	53	63	83	104	113	110	126	118	118	111	113	108	99	90	75	67	55	53	53	
27	51	57	59	48	48	32	43	79	104	110	119	116	116	105	104	97	94	81	75	69	57	47	46	46	
28	47	46	44	44	43	45	54	92	101	114	126	123	120	113	110	109	98	90	73	69	61	50	49	47	
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	27	26	26	27	27	27	27	27	27	27	26	26	26	26	26	27	27	27	27	27	27	27	27	27	
MED	43	42	43	43	43	41	45	74	95	109	113	116	116	109	102	96	94	87	73	60	46	43	44	44	
UQ	51	50	48	47	48	46	55	82	103	113	120	126	121	115	110	109	101	94	76	67	60	52	52	52	
LQ	37	37	37	38	40	38	40	65	84	92	93	103	105	100	93	90	83	74	60	53	38	37	38	37	

FEB. 1970

FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

FEB. 1970

FOF1 (0.01 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1															L									
2													U L											
3												L												
4										L	L		U L											
5											L		440											
6																								
7																								
8										U L		L												
9																								
10																								
11																								
12																								
13														L										
14																								
15																								
16														L	L									
17										U L		L												
18													C		410									
19											440													
20												U L			450									
21											C	C	C	C	C	C								
22										C	C	C	C	C	C	C								
23																								
24											L													
25																								
26															450	L								
27												L	L											
28												U L			U L									
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										1	2	2	3	4										
MED										U	430	U	410	450										
UQ													425	465										
LQ													410	425										

FEB. 1970

FOF1 (0.01 MHz)

IONOSPHERIC DATA

FEB. 1970

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								A	225	280	300	315	320	305	290	245	A	E						
2								S	235	280	300	320	320	320	300	255	A	S						
3								A	250	295	300	320	325	310	295	250	A	S						
4								190	225	285	305	305	325	310	295	270	A	A						
5								185	215	275	305	315	310	315	305	260	200		S					
6								A	A	290	300	310	320	315	300	270	200		E					
7								A	A	290	305	330	335	320	300	280	190		E					
8								A	235	300	310	320	330	325	310	280	200		E					
9								150	265	300	320	335	340	340	310	280	215		E					
10								A	270	310	335	330	345	335	315	285	210		A					
11								A	270	300	320	340	345	335	320	300	230		S					
12								200	280	305	330	340	340	335	320	300	220		E					
13								A	265	300	315	330	340	345	315	290	225		S					
14								190	280	305	320	330	350	335	325	300	255		S					
15								A	270	310	330	350	350	340	310	290	240		A					
16								180	275	315	325	345	355	350	320	295	250		S					
17								E	155	265	305	325	345	350	345	320	290	245		S				
18								E	205	285	310	335	I C 345	355	350	340	315	250	175					
19								S	A	255	305	335	360	355	355	335	295	220		A				
20								S	210	280	325	340	345	350	355	335	300	240		A				
21								S	200	280	310	C	C	C	C	C	C	C						
22								C	C	C	C	C	C	C	C	C	245	165						
23								S	220	275	305	320	330	340	325	320	300	255	150					
24								E	200	270	315	325	330	340	340	320	290	245		A				
25								S	205	280	305	320	I A 320	330	330	320	300	250	150					
26								E	215	280	305	330	340	345	330	320	300	260	195					
27								E	I A 210	290	315	325	345	340	335	325	305	260	135					
28								S	260	290	310	345	345	350	345	325	300	255	195					
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							5	16	25	27	26	26	26	26	26	26	23	13						
MED							E	200	270	305	320	330	340	335	320	290	240	135						
UQ							E	210	280	310	330	345	350	345	320	300	250	165						
LQ							E	188	255	298	305	320	330	320	305	280	218		E					

FEB. 1970

FOE (0.01 MHZ)

IONOSPHERIC DATA

FEB. 1970

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	15	E	E	E	E	E	J X 23	21	30	G 26	G	G	36	G	34	43	44	J X 33	J X 25	J X 21	J X 24	J X 24	J X 21	E	
2	E	E S 15	E	E	16	E	E S 18	G	G	G	G	G	G	G	G	G	25	J X 25	J X 31	J X 33	15	E S 16	J X 51	E S 16	
3	J X 31	E S 15	E	E	E	E	J X 23	J X 23	G 23	G 21	G 25	G 23	G	G	20	33	J X 33	23	J X 30	J X 50	J X 41	20	E	E	
4	E S 12	J X 21	16	E	E	E	E	G	J X 33	G 19	G 20	35	21	34	35	31	J X 28	J X 23	24	25	19	24	J X 24	24	
5	E S 17	E S 15	20	22	20	E S 15	E	22	24	32	J X 38	M 37	M 36	J X 33	36	30	25	J X 27	J X 21	20	J X 40	J X 69	24	E	
6	E	E	E	E	15	E	J X 30	J X 33	J X 43	G	G	G 20	G 22	G 20	G	G	27	20	J X 33	J X 33	20	18	20	E S 15	
7	E S 13	E	E	E	20	E	E	25	J X 28	G	G	G	31	36	G	G	J X 38	J X 53	J X 34	J X 21	E	E S 15	E	E	
8	E S 15	E	E	E	16	E	18	J X 24	G 22	G	G	G	G	G	G	G	30	20	E S 15	23	E	E S 16	E S 16	E	
9	E	J X 23	J X 31	J X 25	J X 20	E	E	G	G 20	G	G 22	G	G	G	G	G	27	21	E	J X 25	J X 30	E	24	J X 23	
10	E	E	J X 21	J X 20	E	E	E	20	G 22	G 22	G	G	G	G	G	G	20	G	G	21	E	E	E	E	
11	J X 25	J X 23	E	E	E	E	E	J X 23	G	33	G 25	G 24	G	G	G	G	G	E S 17	E	15	J X 33	J X 33	J X 35	20	
12	J X 23	E	E	E	E	15	E	30	34	G	G	G	24	G	G	G	G	18	E	E	E S 15	E	E	E	
13	E S 15	E	E	E	E	E	E	23	G 24	G 30	G	G	36	G	G	G	G	E S 16	E	J X 22	J X 30	J X 35	15	24	
14	E	E	E	E	E	E	E	G	G	G	G	34	41	31	J X 53	G 27	30	E S 16	E	E	E	J X 40	J X 28	J X 25	
15	J X 21	18	J X 28	J X 23	E	E	E	24	32	G	G	G 24	G	G	G	G	G	24	E	E	E	E	E	E	
16	23	E	E	E	E	E	E	29	G	G	37	G 24	G 26	G	G 24	30	G	E S 15	E S 12	20	E S 16	J X 27	24	24	
17	E S 16	20	E	26	E	E	G	J X 23	30	31	G 32	37	G	39	G	30	G	19	24	E S 16	E	E	E S 17	E	
18	E S 15	E	24	J X 23	22	20	20	J X 22	G	G	G	C	G	G	G	34	27	21	E S 13	E S 15	J X 21	26	J X 23	E S 12	
19	E	E	E	E	E	E	E S 12	26	G 25	G	32	38	M J X 57	G	34	16	25	J X 23	23	E S 14	22	E	20	E S 14	
20	20	E	E	E	E	E	E S 12	16	G 25	G	G	G 34	G	39	35	G	29	J X 22	E	E	E	E	E S 18	E	
21	24	E	E S 14	E S 15	E	E S 12	E S 15	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	E	E S 12	E S 16	E	E	E S 15	
23	E	E S 14	E	E	E	E	E S 15	J X 59	30	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	
24	E	E	E	E	E	E	E	23	G	G	G	G	G	G	G	G	G	19	14	E	E	E	E	E	
25	E S 15	E	E	E	E	E	E S 12	G	G	J X 33	G	40	G	G 24	G	G	G	G	E	15	E	E	J X 23	E	
26	21	E	E	E	E	E	E	G	G 27	G	G	G	G	G	G	G	G	G	E	E	E	E	E S 14	E	
27	E	E	E	E	E	15	E	25	G	31	G	G	G	G	G	G	G	G	23	22	E	E	E S 16	E	
28	E	E S 15	19	E	E	E S 12	E S 16	G	G	32	39	G	G	G	G	G	16	G	G	E	E S 12	E S 13	E	E S 15	E S 12
29																									
30																									
31																									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	27	27	27	27	27	27	27	27	27	26	25	26	26	26	26	27	27	27	27	27	27	27	27	27
MED	E	E	E	E	E	E	E	23	G 22	G	G	G	G	G	G	G	G	20	E	E 12	15	E S 15	E S 15	E S 17	E
UQ	20	15	15	E S 15	E S 15	E S 15	E S 15	24	29	25	G 25	G 34	G 26	G 24	G 24	30	28	23	24	22	22	24	24	16	
LQ	E	E	E	E	E	E	E	E S 16	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E

The Radio Research Laboratories, Japan

FEB. 1970

FOES (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

FBES (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																			
1	E	E	E	E	E	E	E	17	17	18	G	G	G	G	G	16	17	21	16	13	16	15	17	15	E																		
2	E	E	E	E	E	E	E	E	E	18	G	G	G	G	G	G	21	24	22	24	22	14	E	16	E	16																	
3	20	E	E	E	E	E	E	19	18	18	G	20	22	G	20	G	G	23	E	15	17	22	22	15	E	E																	
4	E	S	12	16	E	E	E	E	G	G	G	19	19	G	26	G	21	G	24	27	22	24	18	E	16	E	E	18	E														
5	E	S	17	E	S	15	E	E	E	15	E	17	16	20	27	28	25	20	19	16	18	21	16	E	19	25	E	E	E														
6	E	E	E	E	E	E	E	20	30	27	G	G	G	19	G	20	G	20	G	20	G	13	20	18	E	12	18	E	S	15													
7	E	S	13	E	E	E	E	E	E	21	25	G	G	G	G	27	26	G	G	G	36	26	17	16	E	E	S	15	E	E													
8	E	S	15	E	E	E	E	E	E	12	19	G	18	G	G	G	G	G	G	G	15	18	E	15	E	E	E	S	16	E	S	16	E										
9	E	17	15	15	E	E	E	G	G	18	G	G	22	G	G	G	G	G	G	G	15	18	E	15	E	E	E	S	16	E	S	16	E										
10	E	E	E	15	E	E	E	E	19	G	G	16	G	20	G	G	G	G	G	G	G	16	E	E	E	E	E	E	E	E	E	E	16										
11	E	E	E	E	E	E	E	E	20	G	26	G	24	G	24	G	G	G	G	G	G	E	17	E	14	16	20	17	14	E	E	E	E	E									
12	15	E	E	E	E	E	E	E	17	20	G	G	G	G	23	G	G	G	G	G	G	16	E	E	E	E	S	15	E	E	E	E	E	E									
13	E	S	15	E	E	E	E	E	20	G	G	23	G	24	G	30	G	G	G	G	E	16	E	16	16	16	16	E	E	E	E	E	E	E									
14	E	E	E	E	E	E	E	G	G	G	G	G	G	G	26	29	30	26	21	20	E	16	E	E	E	E	E	E	E	E	E	E	E	18	20	18							
15	E	13	16	17	E	E	E	20	20	G	G	G	G	23	G	G	G	G	G	G	G	16	E	E	E	E	E	E	E	E	E	E	E	E	E	E							
16	E	E	E	E	E	E	E	E	15	G	G	23	24	G	26	G	G	G	21	G	18	G	E	15	E	12	E	E	S	16	20	E	E	E	E								
17	E	S	16	E	E	E	E	E	G	12	23	26	G	26	G	27	G	19	G	16	G	G	E	E	S	16	E	E	E	S	17	E	E	E	E	E							
18	E	S	15	E	E	E	16	E	14	E	15	G	G	G	C	G	G	G	G	G	G	E	13	E	S	15	E	E	E	E	E	E	E	E	E	S	12	E					
19	E	E	E	E	E	E	E	E	S	12	19	G	24	G	G	20	24	30	G	19	G	16	G	19	E	E	S	14	E	E	E	E	E	E	E	S	14	E					
20	E	E	E	E	E	E	E	E	S	12	15	19	G	G	G	26	G	G	G	G	G	16	G	G	17	E	E	E	E	E	S	18	E	E	E	E	E	E					
21	E	E	E	S	14	E	S	15	E	E	S	15	G	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	E	E	S	15	E	S	16	E	E	E	E	S	15	E	E	E	E				
23	E	E	S	14	E	E	E	E	E	S	15	15	20	G	G	G	21	G	G	G	G	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
24	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	19	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
25	E	S	15	E	E	E	E	E	E	S	12	G	G	25	G	34	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	18	E			
26	E	E	E	E	E	E	E	G	G	25	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	S	14	E	E	E	E	E	E	E				
27	E	E	E	E	E	E	E	13	E	23	G	25	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	S	16	E	E	E	E	E	E	E				
28	E	E	S	15	E	E	E	E	E	S	15	G	G	25	G	G	G	G	G	G	G	16	G	G	E	E	S	12	E	S	13	E	S	15	E	S	15	E	S	12	E		
29																																											
30																																											
31																																											
CNT	27	27	27	27	27	27	27	27	27	27	27	26	25	26	26	26	26	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27			
MED	E	E	E	E	E	E	E	16	16	16	G	G	G	G	G	G	G	G	G	G	14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
UQ	E	S	15	E	E	E	E	E	E	E	12	19	20	G	G	G	24	G	G	G	G	20	G	19	G	16	G	16	18	E	13	16	13	16	16	16	E	15	E	E	E		
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	

FEB. 1970

FBES (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

F-MIN (0.1 MHz)

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

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

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

FEB. 1970

F-MIN (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

M(3000)F2 (0.01)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	270	265	275	285	280 ^F	315 ^F	340	350	335	345	325	330	340	310	320	335	325	315	340	325	275	280	275
2	275	285	280	280	285	295	325	335	335	350	310	330	340	340 ^R	345	330	305	325	320	330	310	295	25	270
3	265	290	275	280	285	275	290	360	330	340	325	310	330	325	330	315	320	340	310	280	300	300	275	265
4	240	275	285	295	305	295	305	320	335	335	340	320	330	320	330	335	335	325	340	300	290	290	295	280
5	275	265	260	275	275	290 ^F	335 ^F	310	345	360	320	305	325	325	320	315	330	330	325	330 ^F	270 ^F	295	290	260
6	255	F	F	275	295	320	285	325	340	370	320	330	330	330	315	325	315	330	295	330	325	295	325	285
7	275	275	265	270	280	280	325	345	350	335	325	330	320	315	335	340	325	345	320	360	310	275	290	275
8	275	265	285	285	295	295	335	355	335	335	325	330	325	330	335	300	340	340	320	325	305	285	290	300
9	280	255	270	275	280	275	315	345	355	345	335	325	305	310	310	310	335	290	320	335	290	280	280	280
10	270	270	260	270	270	295	345	345	340	315	325	325	310	310	315	325	305	330	305	310	295	275	285	295
11	280	255	255	255	255	275	330	340	340	340	295	325	310	305	305	315	325	310	320	330	300	285	280	295
12	270	270	255	255	270	275	330	340	360	335	315	320	315	310	300	310	310	315	325	330	310	290	300	280
13	270	270	260	265	275	275	295	340	345	320	335	300	320	320	295	315	310	305	315	310	290	285	280	260
14	250	270	280	280	280	265	285	335 ^S	330	320	315	310	315	310	300	300	295	325	315	285	270	255	255	255
15	280	280	255	255	275	275	290	315	320	315	295	305	300	295	280	315	305	325	310	300	300	260	275	265
16	280	275	260	250	245	255	295	330	360	320	315	315	265 ^H	310	305	290	295	305	290	300	290	285	290	285
17	265	260	265	280	285	265	290	320	325	320	325	310	310	305	275	300	320	310	310	315	305	280	285	270
18	275	275	250	255	270	255 ^U	290	330	320	310	305	310 ^S	295	300	290	310	290	295	305	280	285	285	295	270
19	275	265	265	285	285	270	290	325	325	310	305 ^H	320	305	320	295	300	305	305	300	290	295	290	275	270
20	285	285	285	280	280	270	295	335	340	335	320	315	305	295	305	310	315	320	310	290	295	280 ^U	275	280
21	275	275	275 ^F	270	280	270	300	340	340	325	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	310	315	290	310 ^F	275 ^F	300 ^S	300	275
23	270 ^F	275 ^F	275 ^F	280 ^F	275 ^F	275 ^F	295	335	340	325	310	300	300	315	315	305 ^H	305	300	295	295	285	290	275	285
24	275	270	275	285	285	275	300	340	320	330	320	300	300	290	310	295	325	310	275	290	290	290	280	285
25	270	265	245	240	235 ^U	260 ^S	300	325	330	315	290	305	295	295 ^H	290	305	295	300	300	285	285	285	275	270
26	270	270	265	260	285	285	315	315	315	320	290	300	295	315	290	275	300	305	295	300	295	270	255	255
27	240	255	290	315	305	270	285	330	325	315	310	310	310	285	310	310	320	320	300	290	300	280	270	260
28	270	270	275	250	260	265	295	330	335	295	310	300	300	300	285	310	305	310	295	285	305	270	275	255
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	27	26	26	27	27	27	27	27	27	27	25	25	25	25	25	25	26	26	26	26	26	26	26	26
MED	272	270	265	275	280	275	298	335	335	325	315	315	310	310	305	310	310	315	310	300	295	285	280	275
UQ	275	275	275	280	285	280	315	340	340	335	325	325	320	320	315	315	325	325	320	330	305	290	290	285
LQ	270	265	260	255	270	270	290	325	325	315	310	305	300	300	295	300	305	305	295	290	290	275	275	265

FEB. 1970

M(3000)F2 (0.01)

IONOSPHERIC DATA

FEB. 1970

M(3000)F1 (0.01)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1															L									
2													U											
3												L												
4										L	L		U											
5												L												
6																								
7																								
8										U	L													
9																								
10																								
11																								
12																								
13													L											
14																								
15																								
16													L	L										
17										U	L		L											
18													C											
19											400													
20												U	L											
21												C	C	C	C	C	C							
22										C	C	C	C	C	C	C	C							
23																								
24											L													
25																								
26																								
27												L	L											
28												U												
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										1	2	2	3	4										
MED										U		U												
UQ										420	402	405	410	395										
LQ													415	402										
													398	385										

FEB. 1970

M(3000)F1 (0.01)

IONOSPHERIC DATA

FEB. 1970

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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1														245										
2													225											
3											250													
4											255	245		245										
5											250	250												
6																								
7																								
8											225	255												
9																								
10																								
11																								
12																								
13														265										
14																								
15																								
16														235	240									
17									225		255													
18													C	250										
19											245													
20												U L 410		395										
21											C	C	C	C	C	C								
22									C	C	C	C	C	C	C	C								
23																								
24											230													
25																								
26															260	270								
27												255	255											
28												245		255										
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										1	4	8	6	6	1									
MED									225	238	252	250	250	270										
UQ										250	255	255	260											
LQ										228	248	235	245											

FEB. 1970

H'F2 (KM)

IONOSPHERIC DATA

FEB. 1970

H¹F (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	300	300	310	300	270	280	210	210	210	225	230	225	225	215	225	245	215	215	235	220	235	300	300	290									
2	315	295	290	260	280	250	220	220	220	225	230	245	215	225	225	245	225	225	250	225	240	275	350	310									
3	350	275	290	290	285	300	285	210	205	230	235	225	235	220	240	225	235	210	240	290	275	265	290	300									
4	310	300	290	250	225	250	235	220	220	220	215	220	220	225	240	230	225	235	220	250	255	285	265	290									
5	315	320	320	305	285	265	205	230	215	230	240	240	220	235	230	240	220	215	215	240	280	305	295	305									
6	320	300	300	290	250	225	300	240	230	225	210	200	240	240	225	240	220	230	240	225	220	260	250	305									
7	300	300	305	300	300	290	225	210	210	215	215	205	225	230	235	245	230	215	215	215	250	300	290	300									
8	300	300	280	260	260	250	220	220	220	210	210	210	210	240	225	230	215	215	210	225	240	300	285	260									
9	280	300	315	300	295	265	230	210	215	220	220	215	225	245	240	245	235	225	220	230	240	260	285	280									
10	300	300	320	305	300	270	215	210	225	230	240	230	230	230	240	245	215	220	230	230	235	275	275	245									
11	265	300	325	335	325	290	215	215	215	215	200	245	225	220	220	230	230	225	210	220	250	300	270	260									
12	275	290	340	325	295	295	220	220	220	225	225	225	220	240	240	245	245	225	220	225	220	260	250	270									
13	310	310	310	300	285	300	225	220	220	225	225	225	225	235	235	245	245	225	225	225	245	270	270	300									
14	325	300	285	255	270	300	260	225	215	215	200	245	240	230	240	240	245	220	210	220	275	335	325	340									
15	285	250	315	320	275	270	250	220	220	225	200	240	235	245	240	250	235	220	225	250	210	295	295	300									
16	290	290	290	320	320	300	260	220	215	200	215	230	235	230	240	230	225	205	215	235	255	250	275	275									
17	300	305	305	255	265	240	205	210	220	225	240	245	245	230	240	250	240	235	220	235	230	250	290	270									
18	270	270	320	345	290	295	220	210	230	230	215	220	200	240	230	250	235	220	215	235	255	270	255	260									
19	270	270	280	255	255	255	250	230	230	225	215	235	210	230	235	245	230	230	225	235	245	235	275	280									
20	265	255	255	260	275	270	240	230	220	225	205	190	225	205	205	250	245	235	225	220	230	250	290	270									
21	275	280	305	300	265	270	255	230	225	220																							
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	240	225	215	220	225	245	260	270									
23	280	260	255	265	265	260	240	225	220	220	205	210	235	225	235	215	225	235	210	245	230	245	270	270									
24	270	250	265	270	270	275	235	215	220	225	215	210	215	240	245	245	250	225	205	250	250	245	250	260									
25	275	300	335	350	360	305	250	220	225	220	210	200	260	220	230	250	225	230	230	250	225	245	275	275									
26	275	275	300	300	250	260	230	215	220	220	210	200	245	225	230	245	245	235	220	220	250	230	300	310									
27	325	315	255	220	220	250	220	230	225	215	220	230	245	230	225	245	245	215	240	230	235	260	300	300									
28	290	300	260	300	295	295	255	240	230	230	200	235	230	235	235	245	245	225	215	250	235	225	295	320									
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	27	27	27	27	27	27	27	27	27	27	26	26	26	26	26	26	27	27	27	27	27	27	27	27									
MED	290	300	300	300	275	270	230	220	220	225	215	225	225	230	235	245	235	225	220	230	240	260	285	280									
UQ	310	300	315	305	295	295	250	228	225	225	225	235	235	240	240	245	245	230	228	242	250	290	295	300									
LQ	275	272	282	260	265	258	220	212	215	220	210	210	220	225	225	240	225	218	215	222	230	248	270	270									

FEB. 1970

H¹F (KM)

IONOSPHERIC DATA

FEB. 1970

H^oES (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 automatio operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	100	E	E	E	E	E	110	105	105	105	G	G	150	G	140	115	110	105	105	105	100	100	100	E	
2	E	S	E	E	100	E	E	S	G	G	G	G	G	G	G	105	110	105	105	100	100	S	100	S	
3	100	S	E	E	E	E	117	105	105	105	105	105	G	G	100	120	110	110	110	105	100	100	E	E	
4	S	100	100	E	E	E	E	G	110	105	105	165	190	135	135	100	100	100	105	110	100	105	105	100	
5	S	S	100	100	100	S	E	165	155	155	100	100	100	100	100	100	150	105	105	105	115	115	100	E	
6	E	E	E	E	125	E	110	105	105	G	G	100	100	100	G	105	120	115	110	105	100	100	100	S	
7	S	E	E	E	110	E	E	110	105	G	G	G	105	105	G	G	115	110	105	105	E	S	E	E	
8	S	E	E	E	110	E	110	105	105	G	G	G	G	G	G	G	100	115	S	100	E	S	S	E	
9	E	100	100	100	100	E	E	G	110	G	105	G	G	G	G	125	115	E	105	105	E	105	100	100	
10	E	E	100	100	E	E	105	105	105	G	G	G	G	G	100	G	G	110	E	E	E	E	E	E	
11	100	100	E	E	E	E	E	110	G	110	105	105	G	G	G	G	G	S	E	105	105	100	105	100	
12	100	E	E	E	E	100	E	110	110	G	G	G	100	G	G	G	G	115	E	E	E	S	E	E	
13	S	E	E	E	E	E	E	110	G	110	105	G	110	G	G	G	G	S	E	110	110	105	105	100	
14	E	E	E	E	E	E	E	G	G	G	G	105	105	100	100	105	100	S	E	E	E	110	100	100	
15	105	100	100	100	E	E	E	110	110	G	G	105	G	G	G	G	G	115	E	E	E	E	E	E	
16	100	E	E	E	E	E	E	110	G	G	105	105	105	G	105	105	G	S	S	105	S	105	105	105	
17	S	105	E	100	E	E	G	100	120	115	110	105	G	100	G	100	G	125	120	S	S	E	E	S	E
18	S	E	100	100	100	100	105	110	G	G	G	C	G	G	G	150	180	125	S	S	110	105	105	S	
19	E	E	E	E	E	E	S	120	110	G	105	100	100	G	100	100	135	100	100	S	110	E	105	S	
20	100	E	E	E	E	E	S	110	105	G	G	105	G	140	100	G	125	100	E	E	E	E	S	E	
21	105	E	S	S	E	S	S	G	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	G	E	S	S	E	E	S	
23	E	S	E	E	E	E	S	105	105	G	G	100	G	G	G	G	G	G	E	E	E	E	E	E	
24	E	E	E	E	E	E	E	140	G	G	G	G	G	G	G	G	G	120	110	E	E	E	E	E	
25	S	E	E	E	E	E	S	G	G	105	G	105	G	100	G	G	G	G	E	115	E	E	105	E	
26	105	E	E	E	E	E	E	G	110	G	G	G	G	G	G	G	G	G	E	E	E	E	S	E	
27	E	E	E	E	E	110	E	110	G	105	G	G	G	G	G	G	G	G	100	100	E	E	S	E	
28	E	S	100	E	E	S	S	G	G	105	115	G	G	G	G	100	G	G	E	S	S	E	S	S	
29																									
30																									
31																									
CNT	9	5	7	6	7	3	5	19	16	11	10	13	10	9	9	12	13	17	11	14	11	10	13	6	
MED	100	100	100	100	100	100	110	110	108	105	105	105	102	100	100	105	115	110	105	105	105	105	105	100	
UQ	105	100	100	100	110	105	110	110	110	110	105	105	105	105	105	110	125	115	110	105	110	105	105	100	
LQ	100	100	100	100	100	100	117	105	105	105	105	100	100	100	100	100	110	105	105	105	100	100	100	100	

FEB. 1970

H^oES (KM)

IONOSPHERIC DATA

FEB. 1970

TYPES OF ES

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F1						F1	L2	L1	L1			H1		HL11	CL11	CL11	C1	F1	F1	F2	F2	F1		
2					F1											L1	L1	L2	F4	F2	F1		F2		
3	F1						F2	L2	L1	L1	L1	L1			L1	C1	L1	L1	F1	F2	F4	F2			
4		F2	F1						L1	L1	L1	HL11	L1	HL11	HL11	L2	L2	L3	F1	F1	F1	F1	F2	F1	
5			F1	F1	F1			HL12	HL11	HL12	HL31	L3	L2	L2	L1	L1	HL21	L3	F2	F1	FF21	FF32	F1		
6					F1		F4	L4	L2			L1	L1	L1		L1	C1	C1	F2	F2	F1	F1	F1		
7					F1			L2	L2				L1	L1			C3	C3	F1	F1					
8					F1		F1	L2	L1									L1	C1		F1				
9		F2	F2	F2	F2				L1		L1			L1			C1	C1		F2	F1		F1	F1	
10			F1	F1				L1	L1	L1					L1				L1						
11	F1	F1						L1		L1	L1	L1								F1	F1	F2	F2	F1	
12	F2				F1			L1	L1				L1					C1							
13								L1		L1	L1			L1						F1	F2	F2	F1	F1	
14											L1	L1	L2	L2	L1							F2	F2	F1	
15	F1	F1	F2	F1				L2	L1			L1							L1						
16	F1							L1		L1	L2	L1	L1		L1	L1				F1		F2	F1	F1	
17		F1		F1				L2	C1	C1	L2	L1		L1		L1		C2	F1						
18			F1	F3	F1	F1	L1	L1								H1	H1	C1			F2	F1	F2		
19								CL11	L2		L1	L2	L2		L1	L1	H1	L1	F1		F1		F1		
20	F1							L1	L1			L1		H1	L1		C1	L1							
21	F1																								
22																									
23								L1	L1			L1								L1	F1				
24								H1												L1	F1				
25										L1	L1			L1							F1			F2	
26	F1								L1																
27						F1		L1		L2										F1	F1				
28			F1							L1	C1					L1									
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																									

FEB. 1970

TYPES OF ES

IONOSPHERIC DATA

FEB. 1970

FOF2 (0.1 MHZ)

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

Station		AKITA		Lat. 39 43.5 N. Long. 140 08.2 E		Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		36	35	36	38	40	37	38	66 ^S	71	86	97	98	100	104	100	87	86	78	56	50 ^{I A}	34	32	33	
2		32 ^{I A}	35	36	36	37	31	33	61 ^S	77	80	89	116	114	91	76	81	84	80	71	64	43	36	38	39
3		41	44	40	39	38	37	40	71 ^S	77	78	96	102	104	102	99	89	78	83	50 ^{I A}	39	40	38	38	39
4		38	39	37	39	40	33	31	62 ^S	84	93	93	101	94	101	94	89	77	64	61	47	46	42	38	36
5		35 ^{I S}	36	35	36	34	35	35	66	77	76	92	100	118	104	94	89	84	65	55	45	45	35	35	36
6		37	37	42 ^S	44	48	36	31	61 ^{I R}	99	106	96	96	105	102	86	80	81	70	69	54	44	33	31 ^{I R}	30
7		30	30	31	32	32	33	38	64 ^S	88	91	89	97	100	98	96 ^S	94	81	74 ^{I A}	54	40	28	30 ^{I R}	33	33
8		33	33	33	34	37	32	34	70 ^{I R}	95 ^{I R}	90	101	103	109	101	101	87	89	75	64	43	36	33	36	38
9		35	36	37	37	40	38	40	75 ^{I R}	98	99	94	102	104	106	102	94	98	82	69	66	42	33	36	36
10		36	34	34	36	37	37	40	72 ^S	83	94	112 ^{I R}	116	109	110	105	96	84	74	66	48	44	41	42	42
11		42	40	38	39	39	42	57	71	94 ^S	95	102 ^{I R}	121	123	108	107	113	99	91	84	67	51			38
12		38			36	37	38	43	71 ^{I C}	96	106 ^{I R}	113	107 ^{I C}	104 ^{I C}	99	97 ^{I C}	102	95	94	86	63	51 ^{I C}	38	39	34
13		35	36	38	39	40	42	44	74 ^{I R}	94 ^{I R}	101	106	106	107	113	101	96 ^{I C}	95 ^{I C}	91	81	67	57	46	41	40 ^{I A}
14		38	40	44	43	42	41	42	79	106	113 ^{I R}	104	112 ^{I R}	120	120	107	102	100	98	73	56	50	47	48	46
15		50 ^{I R}	49	44	43	45	44	50	82	98	120	125	121	131	114	116	105	101	94	67	58	54	41	42	43
16		46	44	43	40	39	40	47	86	115	108	122	124	126	119	114									
17		44	44	45	47	47	41	44	74	95 ^{I R}	104														
18		50	46	44	44	45	42	51	88	94	106														
19		51	48	47	49	49	46	50	85	103 ^{I R}	116	118													
20		56	55	53	51	51	46	54	89	117 ^{I R}	118 ^Z	116	116	123	115	105	108	106	91	81	66	58	49	49	48
21		47	46	45	46	47	46	49	94	110 ^{I R}	114	118	121	114	114	111	102	96	92	71	61	56	59	54	55
22		54	54	43	43	45	45	53	94	114	104	102	113 ^{I R}	120 ^{I R}	120	114	109	106	98	86	68	59	52	54	56
23		54	54	55	57	58	55	59	88	104	110	107	107	118	117	116	101	110	103	84	61	62	53	49	47
24		46	44	43	45	44	39	47	84	97	96	111	102	108	116	114	107	94	94	67	63	65	56	52	46
25		46	44	42	40	40	44	56	89	98 ^{I R}	110 ^{I R}	112	113	129	123	113	104	102	87	76	69	69	49	50	49
26		47	48 ^{I R}	46	45	46	43	51	80 ^{I R}	99 ^{I R}	109	102	114	124	124	118	113	115	104	86	78	64	55	48	49
27		47	49	56	59	40	26	39	74 ^S	104 ^{I R}	114	114	114	121	115	101	96	99	88	69	69	64	46	47	46
28		47	47	46	43	43	43	52	88	101	105	121	123	121	112	109	112	103	95	77	64	62	49	46	46
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		28	27	27	28	28	28	28	28	28	28	26	25	25	25	25	24	25	25	27	28	28	27	27	28
MED		43	44	43	42	40	40	44	74	98	104	105	112	114	112	105	98	96	91	71	63	52	46	46	44
UQ		47	48	45	45	46	44	51	87	104	110	114	116	121	116	113	106	101	94	81	66	62	52	50	48
LQ		36	36	37	38	38	36	38	70	91	94	96	102	105	102	99	89	84	78	66	52	44	37	38	36

FEB. 1970

FOF2 (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

FOF1 (0.01 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	450	L	L	L									
2										L	L	L	L	L										
3											L	L	L	L	500									
4											L	440	L	L	L									
5											L	L	470	L	L									
6										L	L	450	L	L										
7										L	L	430	L	L	L									
8										L	500	410	470	L	L									
9											L	L	L	L	L									
10										L	L	L	L	480	L									
11										L	L	460	L	L	L									
12										L	L	C	C	L	C									
13											L	L	L	C	L	C								
14										L	U	500	440	440	L	L								
15										L	L	L	L	L	L									
16										L	L	L	L	L	L									
17										L	C	C	C	C	C									
18										L	L	470	C	C	C									
19										L	L	C	C	C	C									
20										L	L	460	430	L	L									
21										L	450	480	L	L	L									
22										L	L	L	L	L	L									
23									440	L	L	L	L	L										
24									L	460	470	580	L	L	L									
25									L	L	510	450	L	L										
26									L	L	470	L	U	500	L	L								
27								L	L	410	L	530	L	L	L									
28								L	L	440	480	L	L	L	L									
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									1	6	14	7	2	1										
MED									440	455	460	470	490	500										
UQ									500	470	500													
LQ									440	440	445													

FEB. 1970

FOF1 (0.01 MHZ)

FORM 1-63 1-69

RF-1 1-69

IONOSPHERIC DATA

FEB. 1970

FOE (0.01 MHZ)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								175	240	I ^A 290	I ^A 315	335	345	340	320	A	A	S						
2								175	250	295	I ^A 315	335	I ^A 340	I ^A 340	330	305	245	S						
3								175	255	300	315	330	I ^A 340	I ^A 335	325	A	A	S						
4								180	250	295	315	335	345	340	320	300	250	A						
5								190	260	295	320	335	345	345	I ^A 330	A	A	S						
6								A	A	295	320	I ^A 330	I ^A 340	340	330	A	A	A						
7								B	255	295	315	340	A	A	A	A	245	S						
8								190	260	305	320	340	350	350	330	310	A	A						
9								190	270	300	325	345	355	355	340	305	245	B						
10								200	I ^R 265	305	325	345	360	350	330	310	A	A						
11								200	275	310	320	340	I ^B 350	355	340	315	260	B						
12								C	275	310	335	I ^C 350	I ^C 360	355	I ^C 345	I ^C 320	260	180						
13								205	270	305	325	350	360	I ^C 355	340	I ^C 320	C	A						
14								190	280	310	330	345	355	355	345	320	I ^A 265	B						
15								200	275	310	330	350	355	355	345	315	A	A						
16								205	275	315	335	350	365	360	350	C	C	C						
17								220	290	310	C	C	C	C	C	C	C	C						
18								205	I ^R 275	315	335	355	C	C	C	C	C	C						
19								B	285	315	335	C	C	C	C	C	260	A						
20								220	285	315	335	355	360	355	I ^A 340	310	280	215						
21								205	275	315	330	350	355	355	345	320	280	A						
22								215	285	310	325	345	355	355	350	330	A	A						
23								225	285	310	330	345	360	360	350	320	265	B						
24								220	I ^A 280	315	340	355	365	360	350	I ^A 315	255	185						
25								225	290	315	335	345	355	350	330	310	270	A	S					
26								225	285	315	330	345	355	355	335	315	I ^A 270	I ^A 190	S					
27							S	215	275	I ^A 310	330	350	360	360	345	325	280	190	S					
28							S	220	275	315	335	350	360	365	345	315	275	I ^B 220	S					
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							24	27	28	27	26	24	24	24	19	16	6							
MED							205	275	310	330	345	355	355	340	315	262	190							
UQ							220	282	315	335	350	360	355	345	320	272	215							
LQ							190	262	300	320	340	348	348	330	310	252	185							

FEB. 1970

FOE (0.01 MHZ)

IONOSPHERIC DATA

FEB. 1970

FOES (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	J ₅₀	J ₄₄	36	37	36	36	35	J ₆₄	J ₂₉	J ₇₄	J ₈₈	J ₄₆	J ₄₄	J ₂₀	J ₃₈	
2	J ₃₄	J ₁₈	J ₂₄	J ₂₀	J ₂₀	J ₁₆	J ₁₈	G	G	G	J ₃₄	G	36	36	G	G	27	J ₄₄	J ₅₃	J ₃₀	J ₃₀	J ₂₀	J ₃₃	J ₂₃	
3	E ₂₅	E ₁₄	E ₁₄	E ₁₄	E	E	J ₂₀	G	G	24	35	G	J ₃₆	J ₃₆	J ₄₃	J ₃₃	J ₄₉	J ₆₈	J ₄₈	J ₉₆	J ₄₄	J ₄₃	J ₃₄	J ₃₀	J ₂₃
4	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	28	G	G	J ₂₆	G	G	G	G	G	J ₂₀	J ₃₀	J ₂₅	J ₂₄	J ₁₈	J ₁₉	E ₁₄	
5	S	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	36	47	36	J ₄₃	36	27	J ₃₃	J ₂₉	J ₂₄	J ₃₀	J ₂₀	J ₁₈	E ₁₄	
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	J ₁₈	J ₂₁	J ₄₀	J ₅₀	G	J ₂₉	J ₄₄	J ₄₃	J ₃₈	J ₃₈	J ₃₉	28	J ₂₈	J ₃₄	J ₄₃	J ₃₄	J ₂₈	J ₂₅	J ₂₆	
7	J ₂₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₅	J ₁₈	E ₂₀	E ₂₅	G	G	G	37	37	36	35	26	J ₇₅	J ₉₃	J ₈₃	J ₂₀	E ₁₄	J ₂₆	E ₁₄	
8	E ₁₄	E ₁₄	E ₁₄	J ₂₄	J ₁₈	J ₂₄	J ₂₆	J ₁₉	J ₃₀	J ₂₈	G	G	G	G	G	G	G	J ₃₅	20	J ₂₀	E ₁₄	E ₁₄	E ₁₄	E	
9	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	J ₂₈	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	J ₄₀	J ₄₃	E ₁₄	J ₂₃	
10	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄	G	G	G	G	G	G	G	G	G	29	19	J ₂₆	J ₂₄	J ₄₃	E ₁₄	E ₁₄	E ₁₄	
11	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	J ₄₀	J ₃₃	J ₃₃	G	E ₃₉	G	G	G	G	E ₂₂	E ₁₄	J ₂₈	E ₁₄	C	C	J ₂₉	
12	J ₃₃	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	C	G	G	G	C	C	C	C	C	G	G	E ₁₄	E ₁₄	C	E ₁₄	E ₁₄	E ₁₄	
13	E ₁₄	C	C	E ₁₄	E	C	E ₁₄	G	G	G	G	G	G	C	G	C	C	J ₃₅	J ₂₈	J ₂₀	J ₂₉	J ₂₃	J ₂₄	J ₄₄	
14	J ₃₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	34	J ₃₀	E ₂₁	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	J ₂₈	J ₂₀	E ₁₄	E ₁₂	J ₁₈	E ₁₄	G	G	G	G	G	G	G	G	G	J ₃₄	J ₃₈	E ₁₄	E ₁₄	E ₁₄	E ₂₀	E ₁₄	E ₁₄	
16	E ₁₄	J ₂₄	J ₂₉	J ₂₃	E	E ₁₄	E ₁₄	G	G	34	G	G	G	G	G	C	C	C	E ₁₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
17	J ₂₈	E ₁₄	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	C	C	C	C	C	C	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	C	C	C	C	C	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₂₂	G	G	G	C	C	C	C	C	29	23	J ₂₀	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
20	J ₂₂	J ₁₈	J ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	40	36	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₂	E ₁₄	
21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	34	32	J ₂₁	E ₁₄	E ₁₄	E ₁₄	J ₂₀	E ₁₄	E ₁₄	
22	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	40	35	32	28	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
23	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	29	23	J ₁₉	E ₁₄	J ₁₉	E ₁₄	E ₁₄	E ₁₄	
24	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	33	G	G	G	G	G	G	33	G	23	J ₃₃	J ₃₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
25	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	22	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
26	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	34	29	21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
27	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	J ₃₄	G	J ₂₈	G	G	G	G	30	22	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
28	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₂₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
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	27	26	26	28	28	27	28	27	28	28	27	25	24	24	24	22	24	25	27	28	27	27	27	28	
MED	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	28	23	J ₁₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
UQ	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	E ₃₆	36	34	35	31	J ₂₉	J ₃₀	J ₂₆	J ₃₀	J ₂₀	J ₁₈	18	
LQ	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	20	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	

FEB. 1970

FOES (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

FBES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	34	38	36	37	36	34	35	52	26	29	A	23	A	18	25		
2	A	E	17	16	E	E	E	G	G	G	34	G	36	35	G	G	27	30	22	20	26	E	15	18		
3	E ₂₅	E ₁₄	E ₁₄	E ₁₄	E	E	18	G	G	G	G	G	30	35	36	28	45	32	45	A	24	29	27	20	18	
4	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	28	G	G	G	G	G	G	G	G	19	26	18	E	E	E	E ₁₄		
5	S	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	35	44	36	38	36	25	28	17	18	26	17	E	E ₁₄		
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E	E	31	32	G	25	34	35	29	28	34	27	20	24	24	25	24	21	18		
7	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E	E ₂₀	23	G	G	G	37	36	35	34	G	A	21	E	E	E ₁₄	20	E ₁₄		
8	E ₁₄	E ₁₄	E ₁₄	19	15	19	18	15	G	23	G	G	G	G	G	G	G	33	19	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	
9	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	25	19	E ₁₄	E		
10	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₃	E ₁₄	G	G	G	G	G	G	G	G	G	G	29	19	18	22	28	E ₁₄	E ₁₄	E ₁₄	
11	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	23	26	28	G	E ₃₉	G	G	G	G	E ₂₂	E ₁₄	25	E ₁₄	C	C	E		
12	18	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	C	G	G	G	C	C	G	C	C	G	G	E ₁₄	E ₁₄	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
13	E ₁₄	C	C	E ₁₄	E	C	E ₁₄	G	G	G	G	G	G	C	G	C	C	25	24	16	19	18	E	A		
14	21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	29	E ₂₁	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	18	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	32	34	E ₁₄	E ₁₄	E ₁₄	E ₂₀	E ₁₄	E ₁₄	
16	E ₁₄	18	20	15	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	C	C	C	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
17	23	E ₁₄	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	C	C	C	C	C	C	C	C	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	C	C	C	C	C	C	C	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₂₂	G	G	G	C	C	C	C	C	C	29	23	18	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
20	E	16	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	36	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	34	31	21	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	
22	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	38	34	30	27	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
23	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	29	23	18	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄
24	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	32	G	G	G	G	G	G	G	33	G	22	29	19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
25	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
26	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	29	21	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
27	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	25	33	G	G	G	G	G	G	G	29	21	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
28	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	E ₂₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
29																										
30																										
31																										
CNT	27	26	26	28	28	27	28	27	28	28	27	25	24	24	24	22	24	25	27	28	27	27	27	28	28	
MED	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	28	22	E	E ₁₇	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
UQ	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	G	G	E ₃₅	E ₂₉	28	34	30	26	22	18	21	E	E ₁₀	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	20	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄

FEB. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

F-MIN (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	14	14	16	15	16	18	15	15	14	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
2	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₄	E	14	15	17	18	18	16	18	18	17	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
3	25	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	14	15	18	16	18	18	15	15	14	14	E ₁₆	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
4	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	15	16	16	16	15	16	18	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
5	S	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	15	17	14	18	15	18	14	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	14	15	14	15	15	15	14	14	15	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
7	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₄	20	17	16	15	17	16	15	15	15	15	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
8	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	14	15	15	15	16	18	19	18	16	15	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	
9	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	14	15	16	16	18	19	18	16	18	15	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
10	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₃	E ₁₄	15	14	16	20	24	20	17	20	20	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
11	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	14	16	15	24	39	26	21	23	16	22	E ₁₄	E ₁₄	E ₁₄	C	C	E ₁₄	
12	E	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	C	17	20	21	C	C	20	C	C	16	14	E ₁₄	E ₁₄	C	E ₁₄	E ₁₄	E ₁₄	
13	E ₁₄	C	C	E ₁₄	E	C	E ₁₄	14	14	17	16	18	18	C	19	C	C	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	15	18	18	21	21	21	18	15	14	21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	15	16	16	18	18	21	18	16	18	16	14	E ₁₄	E ₁₄	E ₁₄	20	E ₁₄	E ₁₄	
16	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	14	15	15	18	17	20	14	17	C	C	C	19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	18	18	15	C	C	C	C	C	C	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	14	25	20	21	26	C	C	C	C	C	C	C	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
19	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	22	20	17	18	C	C	C	C	C	16	12	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
20	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	15	18	18	19	15	19	16	16	16	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	14	18	16	16	18	18	18	15	16	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
22	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	16	17	19	16	19	15	18	18	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
23	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	16	15	16	16	16	20	14	14	14	18	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
24	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	15	16	17	18	15	19	17	15	15	14	15	E	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
25	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	16	15	15	20	18	18	18	18	18	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
26	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	16	16	17	17	18	18	16	18	16	14	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
27	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	16	18	15	16	16	14	20	18	15	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
28	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	15	16	19	19	18	21	15	18	14	16	23	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
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	27	26	26	28	28	27	28	27	28	28	28	27	25	24	24	24	22	24	25	27	28	27	27	27	28
MED	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	16	16	17	18	18	18	18	16	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
UQ	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	15	17	17	18	18	20	18	18	18	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
LQ	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	14	15	15	16	16	16	16	15	15	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	

FEB. 1970

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

M(3000)F2 (0.01)

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

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

Hour Day	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	285	290	290	295	300	320	335	345	340	340	330	320	330	330	320	325	340	325	330	325	290	290	280	
2	I ^A 280	280	290	315	315	300	305	350	S 350	325	320	320	325	315	310	315	320	315	320	330	325	290	275	275	
3	285	295	290	300	295	280	300	350	S 350	335	320	325	325	330	320	325	325	320	I ^A 310	310	305	310	290	280	
4	280	300	300	300	325	300	295	330	S 345	350	335	335	315	310	320	325	335	310	320	310	310	300	290	295	
5	I ^S 280	270	285	285	295	295	315	335	340	330	330	290	320	325	320	310	330	335	330	310	310	315	275	280	
6	275	270	280	285	330	315	305	I ^R 320	345	350	330	320	325	325	315	315	325	315	330	315	335	330	I ^R 315	300	
7	300	280	270	280	290	295	315	330	S 350	350	315	325	330	310	320	S 310	330	I ^A 340	350	325	290	I ^R 285	295	285	
8	280	295	290	300	315	305	300	I ^R 335	I ^R 360	345	330	325	325	320	320	325	325	320	340	305	325	295	300	300	
9	290	285	280	290	290	290	310	I ^R 340	360	340	325	315	310	300	315	310	320	330	320	330	325	290	290	285	
10	285	280	285	280	290	300	310	340	S 340	320	I ^R 315	315	305	310	315	315	310	300	325	310	300	295	290	300	
11	295	280	265	260	260	270	340	340	S 350	335	I ^R 325	300	310	305	310	300	315	320	315	325	300	C	C	305	
12	300	C	C	270	285	280	310	I ^C 310	345	I ^R 335	325	I ^C 315	I ^C 310	305	I ^C 305	I ^C 305	315	300	335	320	I ^C 310	310	310	300	
13	290	I ^C 280	I ^C 280	280	280	I ^C 280	320	I ^R 325	I ^R 330	340	320	325	300	I ^C 305	300	I ^C 305	I ^C 305	315	305	315	315	310	285	I ^A 280	
14	270	270	290	300	285	275	285	340	335	I ^R 330	335	I ^R 310	300	300	310	305	300	325	300	305	285	280	285	280	
15	I ^R 295	285	265	270	275	265	I ^R 290	330	320	I ^R 320	315	300	310	290	310	305	305	310	325	320	320	270	285	285	
16	290	280	275	275	255	270	300	340	350	330	310	310	310	300	305	C	C	C	I ^R 315	310	305	305	300	290	
17	285	275	280	300	310	285	310	325	I ^R 335	305	C	C	C	C	C	C	C	C	C	320	315	310	300	295	290
18	295	285	270	260	280	260	300	345	340	325	R	R	C	C	C	C	C	C	C	C	300	290	305	295	290
19	275	275	280	290	300	280	295	320	I ^R 320	315	315	C	C	C	C	C	310	320	300	300	300	290	285	290	
20	285	290	290	280	280	270	290	325	I ^R 320	320	330	300	290	300	305	300	310	310	310	305	300	290	285	295	
21	285	280	270	275	300	270	300	345	I ^R 330	320	315	310	300	295	300	305	310	305	295	290	300	295	290	290	
22	285	290	295	280	280	275	305	330	320	335	325	I ^R 305	I ^R 290	300	310	295	310	315	315	320	310	290	280	295	
23	285	280	280	280	295	285	305	335	330	320	315	300	295	300	295	305	300	315	320	280	290	290	290	290	
24	295	285	280	290	290	280	295	335	345	325	325	305	295	290	300	310	300	320	295	285	300	290	290	295	
25	275	270	260	250	240	265	230	340	I ^R 330	I ^R 325	320	280	310	290	295	290	320	315	290	305	320	310	285	290	
26	280	I ^R 285	285	265	280	300	310	I ^R 330	I ^R 325	325	320	275	300	295	295	285	310	325	300	310	300	295	265	265	
27	270	265	305	325	330	290	290	325	S 325	I ^R 315	310	305	310	305	300	305	315	325	305	300	315	305	275	270	
28	280	280	285	270	270	265	300	330	320	310	305	305	305	290	300	290	320	315	300	280	295	290	280	270	
29																									
30																									
31																									
CNT	28	27	27	28	28	28	28	28	28	28	26	25	25	25	25	24	25	25	27	28	28	27	27	28	
MED	285	280	280	280	290	280	302	335	340	328	320	310	310	305	310	305	315	315	315	310	308	295	290	290	
UQ	292	285	290	295	300	298	310	340	348	338	330	320	320	310	315	315	325	325	325	320	318	305	292	295	
LQ	280	278	278	272	280	270	295	328	I ^R 328	320	315	300	300	300	300	302	310	315	302	302	300	290	285	280	

FEB. 1970

M(3000)F2 (0.01)

IONOSPHERIC DATA

FEB. 1970

M(3000)F1 (0.01)

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

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	380	L	L	L									
2										L	L	L	L	L										
3											L	L	L	L	360									
4											L	385	L	L	L									
5											L	L	385	L	L									
6										L	L	380	L	L										
7										L	L	420	L	L	L									
8										L	365	405	370	L	L									
9											L	L	L	L	L									
10										L	L	L	L	360	L									
11										L	L	390	L	L	L									
12										L	L	C	C	L	C									
13											L	L	L	C	L	C								
14										L	U 360	395	385	L	L									
15										L	L	L	L	L	L									
16										L	L	L	L	L	L									
17										L	C	C	C	C	C									
18										L	L	365	C	C	C									
19										L	L	C	C	C	C									
20										L	L	405	425	L	L									
21										L	385	380	L	L	L									
22										L	L	L	L	L	L									
23									390	L	L	L	L	L										
24									L	375	380	360	H	L	L	L								
25									L	L	390	415	L	L										
26									L	L	405	L	U 360	L	L	L								
27								L	L	380	L	360	L	L	L									
28									L	385	355	L	L	L	L									
29																								
30																								
31																								
Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										1	6	14	7	2	1									
MED										390	378	388	385	360	360									
UQ										385	405	400												
LQ										365	380	365												

FEB. 1970

M(3000)F1 (0.01)

IONOSPHERIC DATA

FEB. 1970

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										250	250	250	250	250											
2										250	250	255	240	245												
3											260	245	250	250	275											
4											245	250	245	265	250											
5											250	245	255	250	245											
6										230	250	245	250	250												
7										230	240	250	255	250	255											
8										230	245	240	250	255	260											
9											230	250	270	265	260											
10										240	250	250	250	270	250											
11										230	240	250	260	250	260											
12										240	250	I _C	I _C	260	265	I _C	I _C									
13											245	260	285	I _C	265	255	I _C	I _C								
14											250	250	245	255	260	255										
15											255	245	265	260	250	265										
16											225	250	250	260	250	250										
17											225	C	C	C	C	C										
18											245	250	260	C	C	C										
19											245	245	C	C	C	C										
20											225	240	245	245	250	250										
21											230	235	250	240	260	255										
22											220	230	255	250	255	265										
23											240	240	250	265	260	250										
24											230	255	255	315	260	260	250									
25											255	250	250	270	270	255										
26											240	245	245	270	275	255	250									
27									250	245	250	250	275	270	250	250										
28										230	250	255	260	250	250	250										
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									1	22	27	26	25	25	23	5										
MED									250	235	250	250	255	255	255	250										
UQ									245	250	255	265	265	260	250											
LQ									230	242	245	250	250	250	250											

FEB. 1970

H^oF₂ (KM)

IONOSPHERIC DATA

FEB. 1970

H¹F (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	260	290	290	290	270	280	225	220	205	230	235	220	230	230	230	240	240	225	235	225 ^A	250	275 ^A	305	310 ^B
2	315 ^A	295	280	250	245	235	250	225	225	230	230	235	230	220	230	230	240	235	240	235	250	305	300	315
3	310 ^B	255	260	280	270	265	275	215	210	225	230	230	230	240	220	250	220	235	215 ^A	265	275 ^A	295	295	300
4	300	270	270	255	235	255	270	230	225	230	230	210	220	225	235	235	225	210	245	235	245	250	260	275
5	295 ^S	320	305	290	300	270	240	220	215	225	235	230	235 ^A	245	240 ^B	240	230	220	215	230	245	245	280	310
6	320	330	305	270	230	215	240	240	235	225	215	200	220	240	240	235	235	230	235	235	240	250	280 ^A	290
7	295	295	310	315	305	295	230	220	215	220	215	205	225	230	235	240	225	220 ^A	210	205	240	305	295	280
8	290	290	290	290	250	250	260 ⁿ	245	215	220	210	200	210	215	235	230	235	220	210	210	230	260	290	265
9	260	290	310	300	255	290	230 ⁿ	225	225	230	220	225	230	230	235	245	245	220	220	215	245	280	255	290
10	280	300	305	300	285	250	220	220	215	225	235	230	240	215	245	250	235	230	215	245	240	250	270	255
11	260	275	340	345	340	300	215	210	215	220	215	205	240	230	230	245	225	235	225	230	220	C	C	250
12	280	295 ^C	325 ^C	340	300	295	235	220 ^C	225	225	240	230 ^C	225 ^C	230	235 ^C	240 ^C	245	240	215	215	220 ^C	245	250	250
13	280	300 ^C	300 ^C	300	265	290 ^C	225	220	230	230	230	205 ^H	230	230 ^C	235	240 ^C	240 ^C	235	235	220	240	240	250	295 ^A
14	325	320	275	255	265	305	275	230	225	230	220	200	240	235	230	235	235	225	205	225	270	290	295	300
15	270	260	305	310	290	295	270 ⁿ	235	225	235	240	225	240	235	240	230	230	240	210	220	230	290 ^B	295	295
16	275	290	295	295	320	330	265	225	225	220	215	235	235	240	230	C	C	C	210	235	235	245	250	275
17	295	300	300	270	250	255	245	220	225	210	C	C	C	C	C	C	C	C	220	220	220	255	275	290
18	265	255	300	320	280	290	255	220	220	230	215	220	C	C	C	C	C	C	C	235	250	245	245	255
19	300	275	280	255	245	270	265	230	225	230	240	C	C	C	C	C	245	235	225	245	245	245	260	290
20	275	260	250	265	260	285	255	230	230	225	210	200	195	230	220	230	240	225	220	220	240	240	280	285
21	270	285	290	290	270	290	280	230	225	215	210	200	210	230	245	235	235	235	205	245	255	250	255	255
22	255	250	240	250	270	270	240	230	225	210	210	195 ^H	230	245	230	230	240	230	215	220	220	245	275	260
23	265	270	275	285	255	270	245	215	220	205	215	225	230	240	240	225	240	245	215	230	250	245	265	265
24	255	270	275	270	260	275	255	240	230	215	220	205	200 ^H	245	240	230	245	235	250	260	255	230	255	255
25	290	305	320	365	365	335	230	225	230	240	230	210	190	190 ^H	235	240	240	240	220	245	220	220	270	290
26	290	280	290	305	260	250	245	210	225	230	230	200	245	240	220	220	255	230	215	245	230	240	295	320
27	310	325	270	230	210	290	290	240	230	225	205	230	230	240	240	245	245	220	220	240	230	240	295	310
28	290	280	265	305	295	310	260	230	230	210	205	205	230	240	240	230	245	245	215	245	230	235	305	310
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	28	28	28	28	28	28	28	28	28	28	27	26	25	25	25	24	25	25	27	28	28	27	27	28
MED	285	290	290	290	268	282	248	225	225	225	220	210	230	230	235	235	240	230	215	232	240	245	275	290
UQ	298	300	305	305	292	295	265	230	228	230	230	230	230	240	240	240	245	235	225	245	250	268	295	300
LQ	268	270	275	268	252	260	232	220	218	220	215	200	220	230	230	230	235	225	215	220	230	242	258	262

FEB. 1970

H¹F (KM)

IONOSPHERIC DATA

FEB. 1970

H¹ES (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	S	S	E	S	S	G	G	105	100	150	145	140	130	120	110	110	105	100	100	100	100	100	
2	100	100	100	100	100	100	100	G	G	G	110	G	120	120	G	G	140	110	105	100	100	100	100	100	
3	B	S	S	S	E	E	110	G	105	125	G	105	105	100	100	115	110	110	105	105	100	100	100	100	
4	S	S	S	S	S	S	S	G	150	G	G	105	G	G	G	G	G	110	105	105	105	105	105	100	S
5	S	100	S	S	S	S	S	G	G	G	G	155	130	140	125	140	115	110	110	110	100	100	100	S	
6	S	S	S	S	E	115	120	115	105	G	100	100	100	105	100	105	120	115	115	105	105	100	100	105	
7	105	S	S	S	S	S	100	B	110	G	G	G	120	130	140	145	120	110	105	105	105	S	100	S	
8	S	S	S	105	110	110	110	110	105	100	G	G	G	G	G	G	115	115	100	S	S	S	S	E	
9	S	S	S	S	E	S	S	G	105	G	G	G	G	G	G	G	G	B	S	S	105	105	105	105	
10	S	S	S	S	E	S	S	G	G	G	G	G	G	G	G	G	120	120	110	105	105	S	S	S	
11	S	S	S	S	S	S	S	G	105	105	100	G	B	G	G	G	G	B	S	105	S	C	C	105	
12	100	C	C	S	S	S	S	C	G	G	G	C	C	G	C	C	G	G	S	S	C	S	S	S	
13	S	C	C	S	E	C	S	G	G	G	G	G	G	C	G	C	C	105	105	110	105	110	105	100	
14	100	S	S	S	S	S	S	G	G	G	G	G	G	G	G	140	105	B	S	S	S	S	S	S	
15	S	100	105	S	S	105	S	G	G	G	G	G	G	G	G	G	115	100	S	S	S	B	S	S	
16	S	100	100	100	E	S	S	G	G	120	G	G	G	G	G	C	C	C	B	S	S	S	S	S	
17	100	S	100	S	S	S	S	G	G	G	C	C	C	C	C	C	C	C	S	S	S	S	S	S	
18	S	S	S	S	E	S	S	G	G	G	G	G	C	C	C	C	C	C	C	S	S	S	S	S	
19	S	S	S	S	S	S	S	B	G	G	G	C	C	C	C	C	175	140	110	110	S	S	S	S	
20	100	100	100	S	S	S	S	G	G	G	G	G	G	130	130	G	G	G	S	S	S	S	S	S	
21	S	S	S	S	E	S	S	G	G	G	G	G	G	G	G	155	140	125	S	S	S	105	S	S	
22	S	S	S	S	S	S	S	G	G	G	G	G	G	G	145	140	145	125	110	S	S	S	S	S	
23	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	170	150	140	S	130	S	S	S	
24	S	S	S	S	E	S	S	G	140	G	G	G	G	G	G	120	G	140	110	110	S	S	S	S	
25	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	140	S	S	S	S	S	S	S	
26	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	120	120	150	S	S	S	S	S	S	
27	S	S	S	S	S	S	S	G	110	105	G	100	G	G	G	G	155	140	S	S	S	S	S	S	
28	S	S	S	S	S	S	S	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S	S	
29																									
30																									
31																									
CNT	6	5	5	3	2	4	5	2	9	6	4	6	6	7	7	10	16	19	14	12	11	9	8	7	
MED	100	100	100	100	105	108	110	112	105	105	100	105	120	130	130	130	120	115	108	105	105	100	100	100	
UQ	100	100	100	102		112	110		110	120	105	150	130	135	135	140	142	140	110	110	105	105	100	105	
LQ	100	100	100	100		102	100		105	105	100	100	105	112	112	120	115	110	105	105	100	100	100	100	

FEB. 1970

H¹ES (KM)

IONOSPHERIC DATA

FEB. 1970

TYPES OF ES

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	H	H	H	H	C	L	L	F	F	F	F	F	F	F
2	F	F	F	F	F	F				L		C	C			H	L	F	F	F	F	F	F	F
3						F		L	H		L	L	L	C	L	L	L	F	F	F	F	F	F	F
4								H		L						L	F	F	F	F	F	F	F	F
5		F									H	H	H	H	H	C	L	F	F	F	F	F	F	F
6					F	F	C	L		L	L	L	L	L	L	C	C	F	F	F	F	F	F	F
7	F					F		L				C	H	H	H	C	L	F	F	F	F	F	F	F
8				F	F	F	L	L	L							C	C	F						
9								L													F	F		F
10																C	C	F	F	F				
11								L	L	L										F				F
12	F																							
13																	L	F	F	F	F	F	F	F
14	F														H	L								
15		F	F		F											C	L							
16		F	F	F					C															
17	F		F																					
18																								
19																H	H	F	F					
20	F	F	F									H	H											
21															H	H	H	H				F		
22														H	H	H	H	C	F					
23															H	H	H	F	F		F			
24								H							C		H	F	F					
25																	H							
26															C	C	H							
27								L	L		L					H	H							
28																								
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																								

FEB. 1970

TYPES OF ES

IONOSPHERIC DATA

FEB. 1970

FOF2 (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	35	34	36	37	41	37	38	69	J ₇₆ ^R	82	90	102	107	107	J ₁₀₄ ^R	90	89	87	65	A	A	A	A	36	
2	35	36	36	38	35	30	33	59	80	81	101	119	118	100	84	76	84	90	J ₇₆ ^R	63	46	40	45	49	
3	52	48	43	40	42	35	41	74	78	79	90	107	106	109	91	94	88	83	A	41	I ₄₂ ^A	I ₃₉ ^A	I ₃₆ ^A	I ₃₆ ^A	
4	38	39	37	38	35	31	29	62	86	96	J ₁₀₃ ^R	I ₁₀₅ ^R	97	J ₁₀₂ ^R	I ₁₀₄ ^R	94	77	67	56	56	57	49	42	40	
5	36	36	37	J ₄₀ ^R	37	36	37	J ₇₅ ^R	J ₇₇ ^R	86	101	118	114	116	107	92	80	70	56	50	47	J ₃₅ ^R	31	35	
6	36	33	36	45	36	30	30	66	95	110	111	112	113	109	93	84	80	77	71	57	52	36	30	31	
7	30	30	30	31	31	32	33	68	93	95	100	J ₁₀₅ ^R	104	108	J ₁₀₄ ^R	J ₁₀₁ ^R	91	78	65	I ₄₄ ^A	I ₃₉ ^A	I ₃₆	36	39	
8	I ₃₈ ^A	35	35	35	35	31	33	R	J ₁₀₄ ^R	94	114	117	119	114	J ₁₀₃ ^R	97	76	79	67	47	42	37	36	38	
9	36	35	38	39	38	36	40	80	R	100	101	96	111	112	115	115	J ₁₀₅ ^R	96	91	68	69	52	36	37	39
10	36	35	35	36	36	36	41	R	86	95	108	117	121	120	119	108	91	I ₇₈ ^R	71	56	51	46	41	43	
11	39	41	40	41	40	41	48	J ₆₆ ^R	88	95	110	111	127	115	114	120	118	91	84	R	79	61	56	47	41
12	36	38	36	36	38	39	41	R	98	108	C	C	C	C	C	C	J ₁₀₅ ^R	91	91	70	58	46	43	37	
13	35	36	36	37	39	39	44	R	102	101	108	107	111	114	111	105	98	91	80	71	65	59	45	43	
14	39	41	44	43	38	37	39	81	96	112	C	C	C	127	118	110	98	94	74	61	55	54	55	53	
15	54	49	40	42	41	40	46	81	J ₁₀₃ ^R	114	135	126	137	129	116	114	98	94	84	69	59	53	49	50	
16	44	46	43	41	I ₄₀ ^R	40	44	91	114	113	114	126	124	127	120	111	J ₁₀₇ ^R	102	87	65	61	60	56	51	
17	49	46	45	48	46	37	43	R	100	108	127	124	128	126	123	103	101	99	84	65	61	50	49	50	
18	50	46	43	43	43	44	51	C	C	101	113	123	125	121	127	110	111	J ₁₀₄ ^R	85	71	65	59	56	51	
19	46	49	44	46	40	40	44	85	108	112	128	119	127	119	111	102	101	93	C	C	61	59	55	51	
20	56	54	48	46	43	40	45	89	123	121	110	117	126	129	117	109	110	101	81	66	59	55	50	49	
21	51	45	43	44	42	41	45	91	116	120	129	113	119	119	C	C	104	91	77	59	58	61	60	52	
22	51	54	42	38	38	36	44	84	110	105	110	113	119	129	120	113	116	104	86	70	55	54	52	54	
23	50	48	50	51	50	46	50	81	97	101	116	111	C	C	125	110	101	110	97	61	61	55	52	51	
24	48	46	46	45	40	35	J ₄₀ ^R	88	J ₁₀₄ ^R	101	112	111	111	127	127	113	J ₁₀₂ ^R	99	71	61	J ₆₉ ^R	62	56	46	
25	48	47	44	42	41	45	56	86	J ₁₀₅ ^R	111	128	127	138	134	131	114	J ₁₀₄ ^R	94	80	71	69	56	51	52	
26	52	51	49	47	45	44	48	84	100	J ₁₀₄ ^R	114	114	134	136	131	121	120	114	89	79	69	61	51	54	
27	55	53	61	66	44	24	37	79	J ₁₀₆ ^R	116	118	117	120	114	110	101	99	96	76	70	71	54	51	50	
28	50	48	46	44	41	41	51	85	96	112	122	123	125	125	119	115	107	91	86	61	62	58	49	49	
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	28	28	28	28	28	28	28	22	27	28	26	26	25	26	26	26	28	28	26	26	27	27	27	28	
MED	45	46	42	42	40	37	42	81	100	102	112	116	119	119	116	106	100	91	78	64	59	54	49	49	
UQ	50	48	44	45	42	40	46	85	104	112	118	119	126	127	120	113	106	99	85	70	62	58	52	51	
LQ	36	36	36	38	38	35	38	69	90	95	103	111	112	114	104	97	90	85	71	57	52	43	42	39	

FEB. 1970

FOF2 (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

FOF1 (0.01 MHZ)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												L	L	L										
2										L	L	L	L	L	L	L								
3										L	L	L	L	L		L								
4										L	L	L	L	L	L									
5										L	L	L	L	L	L									
6									L	L	L	L	L	L		L								
7										L	L	L	L	L	L	L								
8										L	L	L	L	L	L									
9										L	L	L	L	L	L									
10										L	L	L	L	L	L	L								
11										L	L	L	B	L	L									
12										L	C	C	C	C	C	C								
13										L	440	L		L	L	L								
14										L	C	C	C	L	L									
15										L	L	L	580	L	L	L								
16										L	L	L	L	L	L									
17										L	L	L	L	L										
18								C	C	L	L	L	L	L	L									
19										L	L	L	L	L	L									
20										L	L	L	L	L										
21										L	L	L	L	L	C	C								
22										L	L	L	L	L	L	L	L							
23										L	L	L	L	C	C		L							
24										L	L	L	L	L	L		L							
25										L	L	L	L	L	L									
26										L	L	L	L	L	L	L	L							
27										L	L	L	L	L	L	L								
28										L	L	L	L	L	L									
29																								
30																								
31																								
CNT												1		1										
MED											440		580											
UQ																								
LQ																								

FEB. 1970

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

FEB. 1970

FOE (0.01 MHZ)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								200	I R 260	A	A	335	I A 345	340	A	A	A	A							
2								190	A	A	A	A	A	340	340	A	A	A							
3								220	I R 270	320	I A 335	340	A	A	335	A	A	A							
4								225	A	305	I R 320	I A 335	350	340	340	A	A	A							
5								210	I R 270	305	330	I A 340	345	345	340	A	A	A							
6								210	260	A	A	340	350	I R 340	335	A	A	A							
7								200	R	A	A	A	R	A	I A 330	320	255	A							
8								A	A	310	I A 330	340	360	350	335	305	260	A							
9								180	280	325	350	350	360	360	340	A	A	A							
10								A	A	A	345	I R 350	360	350	R	A	A	A							
11								R	280	315	340	350	B	R	350	A	A	R							
12								A	A	A	C	C	C	C	C	C	A	A							
13								200	I R 280	325	340	350	I R 360	360	350	340	A	B							
14								R	290	320	C	C	C	355	355	330	A	180							
15								200	270	325	350	355	360	355	345	325	265	A							
16								200	I R 285	A	A	A	R	R	R	A	A	A							
17								185	290	320	350	R	A	A	350	R	A	A							
18								C	C	R	A	I R 350	360	I R 360	I R 360	I R 330	270	I R 200							
19								220	270	335	340	I R 355	R	B	340	R	R	170							
20								190	260	310	I R 335	I R 340	345	350	R	A	A	A							
21								210	R	295	335	360	370	355	C	C	285	200							
22								220	260	320	345	360	360	360	325	330	265	A							
23								220	290	I R 330	340	350	C	C	350	I R 335	I R 280	200							
24								R	290	A	A	I R 350	360	I B 350	A	A	A	220							
25								220	290	A	R	R	355	350	340	320	275	210							
26								R	290	I R 330	340	365	360	360	350	I R 335	305	210							
27								R	300	320	340	I R 345	I R 360	I R 350	350	330	A	A							
28								230	290	330	350	370	380	365	355	325	285	200							
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								19	20	18	18	21	18	20	21	12	10	9							
MED								210	280	320	340	350	360	350	340	330	272	200							
UQ								220	290	325	345	355	360	360	350	332	285	210							
LQ								200	270	310	335	U 340	350	348	340	322	265	200							

The Radio Research Laboratories, Japan

FEB. 1970

FOE (0.01 MHZ)

IONOSPHERIC DATA

FEB. 1970

FOES (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E 15	E 15	E 15	E 12	E 15	E 15	E 15	G	G	J X 37	J X 39	39	36	40	J X 54	J X 50	J X 88	J X 50	J X 54	J X 78	J X 42	43	J X 54	J X 24		
2	21	22	E 15	E	21	20	E 15	G	G	31	37	38	42	42	G	G	35	35	J X 41	J X 42	J X 41	37	21	23	E 15	
3	E 13	E 12	E 13	E 13	E	E 15	E 15	G	G	G	41	G	42	43	G	36	J X 64	J X 36	J X 95	J X 82	J X 88	J X 51	J X 41	J X 40		
4	J X 24	J X 24	J X 24	22	23	20	E 15	G	30	G	G	39	G	G	G	35	32	21	J X 32	J X 42	J X 25	23	E 15	21		
5	21	19	J X 24	J X 29	J X 27	23	19	G	G	G	36	42	G	G	G	36	J X 29	J X 31	J X 24	E 15	20	E	E 15	E 15		
6	E 15	E 15	E 15	E 15	E 11	E 15	E 15	G	G	J X 42	37	G	G	G	G	35	J X 42	J X 32	J X 29	J X 41	21	21	22	23		
7	20	20	J X 24	24	22	J X 22	22	G	G	31	36	J X 38	G	36	35	G	29	J X 36	J X 57	J X 54	J X 85	J X 53	J X 24	J X 29		
8	J X 42	J X 15	J X 38	J X 30	J X 41	J X 14	J X 20	J X 59	J X 29	G	56	J X 24	J X 29	21	17	G	18	29	J X 27	J X 29	E 15	E 15	22	20		
9	20	E 15	E 15	E 15	E	E	E 12	22	21	G	31	G	G	G	G	J X 41	35	23	J X 24	J X 37	J X 54	J X 29	J X 29	J X 27		
10	23	22	20	E 13	E 13	E 15	E 15	23	35	36	G	G	G	G	G	J X 36	J X 52	J X 35	J X 35	J X 27	J X 24	J X 75	42	20		
11	E 15	E 15	E 12	E 12	E 13	E	E 13	G	G	G	G	G	E 45	G	G	J X 42	34	G	E 15	E 15	E 15	21	E 15	22		
12	J X 24	J X 24	21	22	E	E 12	E 13	22	35	J X 40	C	C	C	C	C	C	35	J X 28	42	J X 25	21	J X 42	J X 29	E 15		
13	21	E	E 15	E 13	E	E 15	E 15	G	G	G	G	G	G	G	G	G	J X 29	E 22	E 13	E 13	22	E 15	J X 28	E 15		
14	E 15	J X 31	21	E 15	E 15	E 15	E 15	G	G	G	C	C	C	G	J X 35	37	31	21	J X 15	J X 15	E 13	E	E 15	E 13		
15	E	E 12	J X 23	J X 15	J X 19	J X 18	J X 18	G	30	36	G	G	G	34	G	35	J X 37	J X 25	J X 22	J X 37	J X 25	M	20	E 15	E 13	
16	E 14	E 13	E	J X 15	20	E 14	E 11	G	G	35	37	36	G	G	G	38	35	26	E 13	E 15	J X 24	22	20	20	E 15	E 15
17	21	20	E 13	E	E 15	E 15	E 13	G	G	G	G	G	J X 41	41	G	G	34	J X 24	J X 24	22	20	20	E 15	E 15		
18	E 15	E 12	E 15	E 15	E 15	E 15	E 15	C	C	G	37	G	G	G	G	G	G	G	E 13	E 15	E 15	E	E 15	E 13		
19	E 13	E 13	20	20	E 13	E 13	E 13	G	G	G	G	G	E 38	G	G	G	25	C	C	E 13	E 13	E 15	E 13	E 13		
20	E 15	E 15	E 13	E 13	E 13	E 15	E 15	G	G	G	G	G	G	G	G	35	35	26	E 15	21	21	J X 24	E 15	E 15		
21	21	E 13	E 15	E 13	E 13	E 15	E 15	G	G	J X 28	G	G	G	G	C	C	46	J X 30	J X 26	21	J X 21	E 13	E 15	E		
22	E 14	E	E	E	E	E	E 14	G	G	G	G	G	G	G	35	39	33	30	J X 40	J X 20	E 14	E 15	M	19		
23	E 15	E 13	E 14	E	E	E 12	E 14	G	G	G	G	G	C	C	G	G	G	26	J X 29	21	E 12	E 15	E 13	20		
24	E 15	E 13	E 13	E	E 12	E 13	E 15	G	G	36	37	G	G	G	42	38	35	G	J X 22	J X 29	J X 28	J X 41	20	20		
25	E 15	E 15	E 15	E	E	E 12	E 15	G	G	35	G	G	G	J X 29	G	G	21	G	24	23	E	E 13	E 15	E 15		
26	E 15	E	E 14	E	E	E 15	E 15	G	G	G	G	G	G	G	G	G	G	G	E 12	E 15	E 15	E 15	E 15	E 15		
27	E 15	E 15	E 15	E	E 13	E 15	E 15	G	G	G	G	G	G	G	G	39	35	24	20	E 15	21	23	23	24		
28	E 15	E 15	E	E	E 13	E 13	E 15	G	G	34	G	G	J X 29	21	G	16	32	13	M	J X 17	J X 15	E 15	18	M	20	
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	28	28	28	28	28	28	28	27	27	28	26	26	25	26	26	26	28	28	27	27	28	28	28	28		
MED	E 15	E 15	E 15	E 14	E 15	E 14	E 15	G	G	G	G	G	G	G	G	35	34	26	J X 24	J X 21	21	20	19	17		
UQ	21	20	20	15	15	E 15	E 15	G	E 21	36	37	33	U 32	U 25	G	38	35	J X 30	J X 34	J X 37	J X 25	26	24	20		
LQ	E 15	E 13	E 14	E	E	E 12	E 14	G	G	G	G	G	G	G	G	G	29	22	18	15	E 15	E 15	E 15	E 15		

FEB. 1970

FOES (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

FBES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	G	G												A	A	A	A	19
2	E	E	E	E	E	E	E	G																	
3	E ₁₃	E ₁₂	E ₁₃	E ₁₃	E	E	E	G																	
4	15	21	19	E	E	E	E	G																	
5	E	E	19	25	25	12	E	G																	
6	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₁	E ₁₅	E ₁₅	G																	
7	E	E	E	15	15	E	E	G																	
8	A	E	26	15	25	E	15	34	28	G	42	24	G	25	G	16	G	28	25	25	25	E ₁₆	E ₁₅	16	E
9	E	E	E	E	E	E	E	22	20	G	G	G	G	G	G	G	35	31	22	22	33	45	25	20	19
10	E	E	E	E	E	E	E	21	30	34	G	G	G	G	G	G	35	40	30	32	23	23	25	30	E
11	E ₁₅	E ₁₅	E ₁₂	E ₁₂	E ₁₃	E	E	G																	
12	E	E	E	E	E	E	E	21	31	34	C	C	C	C	C	C	32	25	38	25	E	29	25	E ₁₅	
13	E	E	E	E	E	E	E	G																	
14	E ₁₅	29	E	E	E	E	E	G																	
15	E	E	E	15	E	E	E	G																	
16	E ₁₄	E ₁₃	E	E	E	E	E	G																	
17	E	E	E	E	E	E	E	G																	
18	E ₁₅	E ₁₂	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅	C	C	G	35	G	G	G	G	G	G	G	G	G	E	E	E	E	E
19	E ₁₃	E ₁₃	E	E	E	E	E	G																	
20	E ₁₅	E ₁₃	E ₁₃	E ₁₃	E ₁₂	E ₁₃	E ₁₅	G																	
21	E	E	E	E	E	E	E	G																	
22	E ₁₄	E	E	E	E	E	E	G																	
23	E ₁₅	E ₁₃	E ₁₄	E	E	E	E	G																	
24	E ₁₅	E ₁₃	E ₁₅	E	E	E	E	G																	
25	E ₁₅	E ₁₅	E ₁₅	E	E	E	E	G																	
26	E ₁₅	E	E	E	E	E	E	G																	
27	E ₁₅	E ₁₅	E ₁₅	E	E	E	E	G																	
28	E ₁₅	E ₁₅	E	E	E	E	E	G																	
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	28	28	28	28	28	28	28	27	27	28	26	26	25	26	26	26	28	28	27	27	28	28	28	28	
MED	E ₁₄	E ₁₃	E ₁₄	E ₁₂	E ₁₂	E ₁₃	E ₁₅	G	G	G	G	G	G	G	G	G	32	30	23	21	16	E ₁₅	15	15	15
UQ	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅	G	E ₂₀	33	35	33	26	G	U ₂₅	G	35	32	25	26	25	22	24	16	16
LQ	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	26	20	E ₁₄	E ₁₄	E ₁₁	E	E	E	

FEB. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

F=MIN (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	15	15	13	15	15	15	12	16	15	15	14	E ₁₅ ^S	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	10	12	E ₁₅ ^S	E ₁₅ ^S	16	15	14	25	19	25	19	19	15	22	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S
3	13	12	13	E ₁₅ ^S	10	E ₁₅ ^S	E ₁₅ ^S	15	15	14	14	25	25	25	25	15	15	12	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
4	12	12	13	12	13	E ₁₅ ^S	E ₁₅ ^S	14	12	15	15	15	14	14	14	12	13	13	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
5	E ₁₅ ^S	E ₁₅ ^S	12	10	10	12	E ₁₅ ^S	15	12	14	12	25	16	13	14	15	15	12	12	E ₁₅ ^S	E ₁₅ ^S	10	E ₁₅ ^S	E ₁₅ ^S
6	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	11	E ₁₅ ^S	E ₁₅ ^S	13	15	15	15	13	15	13	14	13	11	12	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
7	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	12	10	E ₁₅ ^S	E ₁₅ ^S	15	14	15	14	19	16	16	16	16	15	14	E ₁₅ ^S	E ₁₅ ^S	11	14	E ₁₅ ^S	E ₁₅ ^S
8	12	14	E ₁₅ ^S	10	10	10	14	15	13	15	14	14	13	13	13	10	10	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S
9	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	10	10	12	14	11	15	26	14	24	25	20	15	15	12	10	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	11
10	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	15	15	25	25	25	25	25	16	15	10	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
11	E ₁₅ ^S	E ₁₅ ^S	12	12	13	10	13	15	12	13	15	25	45	25	25	25	15	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	12
12	E ₁₅ ^S	12	E ₁₅ ^S	12	10	12	13	12	15	16	C	C	C	C	C	C	18	15	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
13	E ₁₅ ^S	10	E ₁₅ ^S	13	10	E ₁₅ ^S	E ₁₅ ^S	15	15	15	16	16	26	15	15	25	15	22	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
14	E ₁₅ ^S	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	15	16	16	C	C	C	25	19	15	14	14	14	13	13	10	E ₁₅ ^S	13
15	10	12	10	10	10	13	E ₁₅ ^S	14	15	16	15	25	25	15	15	15	16	14	11	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	13
16	14	13	10	10	10	14	11	12	14	13	13	15	25	25	25	15	15	15	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S
17	E ₁₅ ^S	13	13	10	E ₁₅ ^S	E ₁₅ ^S	13	15	15	13	16	25	18	15	17	14	12	12	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
18	E ₁₅ ^S	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	C	C	18	17	25	25	25	27	25	14	15	13	E ₁₅ ^S	E ₁₅ ^S	10	E ₁₅ ^S	13
19	13	13	E ₁₅ ^S	13	13	13	13	13	14	13	25	16	24	38	23	16	14	13	C	C	13	13	E ₁₅ ^S	13
20	E ₁₅ ^S	13	13	13	12	13	E ₁₅ ^S	13	14	13	23	15	23	26	25	13	15	15	E ₁₅ ^S	13	12	13	E ₁₅ ^S	E ₁₅ ^S
21	E ₁₅ ^S	13	E ₁₅ ^S	13	13	E ₁₅ ^S	E ₁₅ ^S	13	12	11	14	13	19	16	C	C	15	14	13	10	10	13	E ₁₅ ^S	10
22	14	10	10	10	10	10	14	15	13	14	15	19	19	19	14	15	14	14	E ₁₅ ^S	13	14	E ₁₅ ^S	14	E ₁₅ ^S
23	E ₁₅ ^S	13	14	10	10	12	14	12	12	15	15	20	C	C	15	15	15	13	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S	13	E ₁₅ ^S
24	E ₁₅ ^S	13	E ₁₅ ^S	10	12	13	E ₁₅ ^S	15	15	14	15	16	19	25	19	15	12	12	12	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
25	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	10	10	12	E ₁₅ ^S	12	15	17	25	19	16	16	16	14	13	11	12	10	11	13	E ₁₅ ^S	E ₁₅ ^S
26	E ₁₅ ^S	10	14	10	10	10	E ₁₅ ^S	15	15	17	15	16	26	16	15	19	13	14	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
27	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	10	12	13	E ₁₅ ^S	14	15	15	15	15	25	15	15	13	12	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13
28	E ₁₅ ^S	E ₁₅ ^S	10	10	13	13	E ₁₅ ^S	15	12	16	14	25	19	19	19	12	10	10	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	11	E ₁₅ ^S
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	28	28	28	28	28	28	28	27	27	28	26	26	25	26	26	26	28	28	27	27	28	28	28	28
MED	E ₁₅ ^S	12	E ₁₅ ^S	11	11	12	E ₁₅ ^S	15	15	15	15	18	23	18	16	15	14	13	E ₁₅ ^S	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	12	12	E ₁₅ ^S	E ₁₅ ^S	15	15	16	17	25	25	25	20	15	15	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
LQ	U ₁₂	12	12	10	10	12	13	13	12	13	15	15	16	15	15	14	12	12	12	12	12	12	12	12

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FEB. 1970

F=MIN (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

M(3000)F2 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	310	285	280	290	300	305	310	345	340 ^{JR}	320	315	275	300	305	310 ^{JR}	310	305	345	350	A	A	A	A	305	
2	295	280	305	310	295	285	310	325	350	325	315	320	315	320	335	305	315	325	330 ^{JR}	315	310	260	270	275	
3	295	310	300	295	295	290	280	335	365	320	310	305	305	310	310	310	320	315	A	300	305 ^{IA}	320 ^{IA}	290 ^{IA}	290 ^{IA}	
4	290	310	305	300	310	300	280	340	350	315	320 ^{JR}	320 ^{JR}	310	305 ^{JR}	315 ^{JR}	325	340	335	305	325	305	290	290	295	
5	290	280	295	310 ^{JR}	275	280	305	335	335 ^{JR}	345 ^{JR}	335	315	305	315	320	310	330	330	330	320	315	345	305 ^{JR}	270	270
6	270	275	295	330	340	325	285	305	325	320	325	315	310	325	325	315	315	330	325	315	330	340	280	285	
7	305	280	275	270	275	285	310	330	345	330	330	320	310	350	315 ^{JR}	325 ^{JR}	340	330	345	A	A	300 ^{IA}	280	280	
8	290 ^{IA}	300	295	295	315	295	290	R	355 ^{JR}	330	325	315	305	310	310 ^{JR}	325	330	335	335	340	320	280	280	295	
9	290	290	270	280	295	285	310	340	340 ^R	345	315	305	305	295	305	305 ^{JR}	315	330	320	325	350	280	260	280	
10	290	295	270	280	300	270	320	R	360	320	305	300	305	300	305	305	330	310 ^{IR}	315	320	310	310	290	285	
11	290	275	260	250	260	260	340	350 ^{JR}	345	325	315	295	300	295	290	295	320	315	310	320 ^R	300	305	305	315	
12	315	275	265	285	270	280	300	R	325	320	C	C	C	C	C	C	310 ^{JR}	310	325	320	315	290	290	305	
13	280	285	280	280	280	275	325	R	330	315	305	290	300	290	300	285	315	310	305	310	305	325	300	285	
14	275	255	295	300	310	270	305	330	330	325	C	C	C	C	275	295	300	310	315	310	295	295	290	275	
15	305	310	265	260	270	275	280	320	330 ^{JR}	315	320	295	300	295	285	305	310	305	320	315	300	295	285	300	
16	295	295	290	275	260 ^{IR}	260	295	340	335	320	305	295	290	290	295	300	300 ^{JR}	305	315	295	300	285	300	295	
17	285	275	275	310	320	290	285	325 ^{IR}	310	330	305	300	290	280	300	290	305	315	310	295	310	305	285	280	
18	300	305	275	260	265	270	310	C	C	315	305	285	280	290	290	285	300	300 ^{IR}	305	295	280	290	305	295	
19	275	280	275	305	280	260	275	330	325	320	305	305	300	290	295	295	305	325	C	C	310	300	290	290	
20	290	300	310	305	310	260	290	315	320	330	305	310	295	290	290	295	310	305	310	290	305	295	285	290	
21	300	275	280	280	295	275	285	320	325	320	325	305	295	285	C	C	300	310	310	290	295	290	295	295	
22	290	310	300	290	290	290	300	330	315	315	310	300	285	295	300	300	320	315	315	315	305	295	290	295	
23	295	290	285	280	310	285	310	340	330	305	310	305	C	C	295	290	295	310	330	315	300	295	290	300	
24	275	305	290	295	325	275	300 ^{JR}	345	320 ^{JR}	310	305	310	290	290	290	305	305 ^{JR}	315	305	280	290 ^{JR}	305	295	300	
25	285	295	260	245	250	265	310	315	310 ^{JR}	295	305	290	290	290	290	305	300 ^{IR}	315	300	295	320	290	280	290	
26	290	290	285	270	290	285	305	335	310	300 ^{JR}	305	280	290	290	300	300	295	320	305	290	305	285	275	275	
27	260	265	310	320	350	285	280	315	310 ^{JR}	310	310	310	300	305	310	310	305	320	315	285	310	295	270	270	
28	280	290	295	280	275	275	310	340	325	315	305	300	290	295	300	300	300	320	315	295	300	310	275	270	
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	28	28	28	28	28	28	28	23	27	28	26	26	25	26	26	26	28	28	26	25	26	27	27	28	
MED	290	290	285	288	295	280	302	330	330	320	310	305	300	295	300	305	310	315	315	310	305	295	290	290	
UQ	295	300	295	302	310	288	310	340	345	325	315	310	305	305	310	310	320	328	325	315	310	305	290	295	
LQ	282	278	275	278	275	270	285	322	322	315	305	295	290	290	295	295	302	310	310	295	300	290	280	280	

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FEB. 1970

M(3000)F2 (0.01)

IONOSPHERIC DATA

FEB. 1970

M(3000)F1 (0.01)

135° E Mean Time (G. M. T. + 9h)

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

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

FEB. 1970

M(3000)F1 (0.01)

IONOSPHERIC DATA

FEB. 1970

H'F2 (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												250	260	250										
2										250	275	260	250	250	245	260								
3										245	245	250	260	255		260								
4										250	250	250	250	270	250									
5										245	290	285	250	260	260									
6									240	245	250	245	250	260		250								
7										245	250	260	250	290	255	250								
8										240	250	245	255	260	250									
9										250	240	250	290	285	270									
10										245	250	250	280	255	285	250								
11										240	250	250	260	250	260									
12										250	C	C	C	C	C	C								
13										245	255	250		250	270	260								
14										240	C	C	C	270	260									
15										255	270	250	300	260	260	250								
16										240	245	250	260	270	250									
17										250	290	265	250	250										
18								C	C	250	250	260	250	250	255									
19										250	265	250	275	250	260									
20										250	240	245	250	300										
21										240	250	240	280	300	C	C								
22										240	225	250	255		290	270	280	250						
23										240	245	250	250	C	C		250							
24										245	250	250	255	290		250								
25										250	250	260	300	290	240									
26										250	250	250	250	290	290	260	255							
27										250	255	250	270	270	260									
28										270	250	270	295	290	270									
29																								
30																								
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	27	25	26	23	26	19	11	1							
MED									240	245	250	250	260	265	260	250	250							
UQ									245	250	255	260	280	290	265	260								
LQ									240	245	250	250	250	250	252	250								

FEB. 1970

H'F2 (KM)

IONOSPHERIC DATA

FEB. 1970

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	245	285	300	295	260	250	250	220	240	250	240	240	240	240	245	240	260	210	210		A	A	A	A	300
2	260	300	290	250	240	300	250	240	240	240	295	240	240	240	230	240	245	245	230	245	250	260	310	305	
3	265	245	250	290	270	250	270	240	210	220	210	240	210	240	245	230	250	230	I A 225	I A 240	I A 255	I A 270	I A 275	I A 300	
4	295	270	290	270	245	250	290	240	230	230	220	230	210	240	240	240	210	210	220	250	250	245	250	290	
5	300	340	290	295	310	300	250	210	210	210	240	240	240	230	240	245	215	210	220	245	240	240	295	305	
6	305	340	300	240	230	230	255	245	220	230	210	210	210	240	245	240	240	210	250	250	230	210	300	295	
7	290	290	310	310	305	300	240	240	230	210	220	200	210	200 H	225	225	220	220	210	A	A	A	320	350 A	
8	A	260	310	275	275	250	290	250	230	220	230	205	205	205	220	240	220	220	210	225	230	245	300	280	
9	260	295	305	300	250	260	250	225	225	230	210	220	205	240	240	250	240	220	220	240	250	350 A	355	295	
10	285	295	300	300	260	295	250	240	240	230	230	230	230	240	230	240	240	240	250	230	250	280	E A 350	275	
11	260	260	340	345	350	305	230	205	220	230	210	205	I B 225	240	240	250	245	210	240	220	210	245	245	250	
12	270	300	310	300	300	290	250	240	245	240		C	C	C	C	C	250	240	250	210	210	285	295	255	
13	295	300	300	300	290	300	245	230	240	230	200	230	250	220	240	240	250	240	210	240	240	240	250	275	
14	300	E A 390	290	250	250	300	290	240	240	220		C	C	C	245	245	240	240	230	210	230	235	270	290	280
15	250	245	295	310	300	310	290	245	240	240	240	225	225	240	220	240	240	240	220	225	240	245	290	270	
16	240	275	250	250	330	340	260	230	220	220	200	200	240	230	240	245	240	240	230	240	250	245	250	270	
17	290	300	295	250	230	290	260	240	240	240	210	240	240	230	250	250	240	245	230	240	240	250	270	290	
18	250	250	300	305	290	300	285		C	C	230	240	210	210	240	240	250	240	240	230	240	240	250	245	
19	290	290	290	250	255	290	290	240	240	230	240	220	230	240	240	245	250	240		C	C	245	250	255	290
20	280	250	245	255	245	300	290	240	240	240	230	200	200	200 H	245	250	245	240	210	240	240	270	290	275	
21	280	280	290	290	255	300	290	240	240	220	210	210	200 H	245		C	C	245	225	230	230	250	260	255	250
22	260	250	220	250	255	260	255	225	220	210 H	195 H	200 H	240	225	235	230	245	225	250	220	220	250	280	270	
23	270	280	290	275	250	255	255	220	210	220	240	220		C	C	250	240	250	240	240	215	245	250	250	260
24	265	255	280	260	245	295	290	240	240	230	200	200	200	210	250	240	250	240	210	290	290	250	260	270	
25	295	295	330	360	360	330	240	240	240	220	220	200	195 H	200 H	230	225	230	230	220	240	225	210	290	295	
26	290	270	270	300	250	220	250	240	210	240	220	210	240	240	240	240	245	240	205	245	245	245	265	305	
27	300	340	275	240	205	290	300	245	240	240	240	220	220	230	245	245	245	240	210	255	250	240	300	300	
28	295	260	260	290	295	310	260	240	240	220	225	205 H	225	230	235	230	230	230	225	225	245	245	270	320	
29																									
30																									
31																									
CNT	27	28	28	28	28	28	28	27	27	28	26	26	25	26	26	26	28	28	27	25	26	26	27	28	
MED	280	281	290	290	258	295	258	240	240	230	220	215	225	240	240	240	242	235	220	240	242	250	278	285	
UQ	295	299	300	300	298	300	290	240	240	240	240	230	240	240	245	245	248	240	230	245	250	260	296	300	
LQ	260	260	278	250	248	258	250	230	220	220	210	205	210	225	235	240	240	220	210	225	235	245	255	270	

FEB. 1970

H'F (KM)

IONOSPHERIC DATA

FEB. 1970

H^oES (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 automatio operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	B	S	S	S	G	G	105	100	145	100	145	130	110	110	110	105	105	105	100	100	100
2	100	100	S	E	100	100	S	G	110	115	110	115	110	G	G	120	130	110	105	100	100	100	100	S
3	B	B	B	S	E	S	S	G	G	G	110	G	110	115	G	120	110	110	105	100	100	100	100	100
4	100	100	100	100	100	100	S	G	150	G	G	105	G	G	G	115	115	105	100	100	100	100	S	100
5	100	100	100	100	100	100	100	G	G	G	160	130	G	G	G	115	110	105	105	S	100	E	S	S
6	S	S	S	S	B	S	S	105	G	105	105	G	105	G	G	105	105	105	105	100	100	100	100	100
7	100	100	100	100	100	100	100	G	G	110	110	110	G	115	115	G	155	110	110	105	100	100	100	100
8	100	100	115	110	105	105	115	105	105	G	100	100	100	100	100	100	150	100	110	110	S	S	100	105
9	100	S	S	S	E	E	B	175	110	G	105	G	G	G	G	115	115	110	100	105	100	100	100	100
10	100	100	100	S	B	S	S	160	115	140	G	G	G	G	G	120	120	120	105	100	100	100	100	100
11	S	S	B	B	B	E	B	G	G	G	G	G	G	B	G	G	115	130	G	S	S	S	100	S
12	100	100	100	100	E	B	B	110	110	105	C	C	C	C	C	C	135	120	110	105	100	100	100	S
13	100	E	S	B	E	S	S	G	G	G	G	G	G	G	G	G	115	B	B	B	100	S	100	S
14	S	100	100	S	S	S	S	G	G	G	C	C	C	G	105	130	115	160	110	105	B	E	S	B
15	E	B	100	100	105	105	105	G	150	210	G	G	G	100	G	145	115	110	110	105	105	100	S	B
16	B	B	E	105	100	B	B	G	G	115	120	115	G	G	G	115	115	110	B	S	100	100	100	S
17	100	100	B	E	S	S	B	G	G	G	G	G	105	100	G	G	100	100	100	100	100	100	S	S
18	S	B	S	S	S	S	S	C	C	G	115	G	G	G	G	G	G	G	B	S	S	E	S	B
19	B	B	100	100	B	B	B	G	G	G	G	G	G	B	G	G	G	150	C	C	B	B	S	B
20	S	B	B	B	B	B	S	G	G	G	G	G	G	G	G	G	130	120	150	S	100	100	100	S
21	100	B	S	B	B	S	S	G	G	105	G	G	G	G	C	C	125	130	115	100	100	B	S	E
22	B	E	E	E	E	E	B	G	G	G	G	G	G	G	150	140	140	115	115	110	B	S	150	115
23	S	B	B	E	E	B	B	G	G	G	G	G	C	C	G	G	G	160	130	110	B	S	B	100
24	S	B	S	E	B	B	S	G	G	135	120	G	G	G	120	120	120	G	115	100	100	100	100	100
25	S	S	S	E	E	B	S	G	G	110	G	105	105	105	G	100	100	140	110	E	B	B	S	S
26	S	E	B	E	E	E	S	120	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S
27	S	S	S	E	B	B	S	G	G	G	G	G	G	G	G	145	145	100	100	S	110	100	100	100
28	S	S	E	E	B	B	S	G	G	155	G	G	105	105	G	105	145	100	100	100	100	S	105	125
29																								
30																								
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	9	9	8	7	6	4	6	7	12	11	8	8	8	6	19	24	23	21	19	19	16	15	14
MED	100	100	100	100	100	100	102	115	110	112	110	112	105	105	118	115	118	110	105	100	100	100	100	100
UQ	100	100	100	102	102	105	108	160	132	138	118	122	108	115	130	125	132	125	110	105	100	100	100	100
LQ	100	100	100	100	100	100	100	105	110	105	105	105	102	100	105	112	112	105	105	100	100	100	100	100

The Radio Research Laboratories, Japan

FEB. 1970

H^oES (KM)

IONOSPHERIC DATA

FEB. 1970

TYPES OF ES

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1										L	L	H	L	HL	H	F	F	L	F	F	F	F	F	F	
2	F	F			F	F			L	F	F	F	F		H	H	L	F	F	F	F	F	F		
3											F	F	F	F	H	F	L	F	F	F	F	F	F	F	
4	F	F	F	F	F	F			H		L				F	F	L	F	F	F	F	F	F	F	
5	F	F	F	F	F	F	F			H	H				F	L	L	F		F					
6								L		L	L		L		L	L	L	F	F	F	F	F	F	F	
7	F	F	F	F	F	F	F		F	F	F		F	F		H	F	F	F	F	F	F	F	F	
8	F	F	F	F	F	F	F	L	L		L	L	L	L	L	HL	L	F	F	F			F	F	
9	F							H	L		L				F	F	L	F	F	F	F	F	F	F	
10	F	F	F					H	F	H					HL	HL	HL	F	F	F	F	F	F	F	
11															F	H						F		F	
12	F	F	F	F				L	L	L						H	H	F	F	F	F	F	F	F	
13	F															F					F			F	
14		F	F										L		H	F	H	F	F						
15			F	F	F	F	F		H	H			L		HL	F	L	F	F	F	F	F	F	F	
16				F	F				F	H	F				F	F	L				F	F	F	F	
17	F	F											L	L			L	L	F	F	F	F	F	F	
18											F														
19			F	F													H								
20																H	H	H		F	F	F			
21	F									L						H	H	H	F	F	F				
22															H	H	H	F	F	F			F	F	
23																	H	F	F					F	
24									H	H					H	H	H	F	F	F	F	F	F	F	
25									F		L	L	L		L	L	H	F							
26								L																	
27																HL	HL	L	F	F	F	F	F	F	
28									H				L	L		L	H	L	F	F	F		F	F	
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																									

FEB. 1970

TYPES OF ES

IONOSPHERIC DATA

FEB. 1970

HPF2 (KM)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	295	370	360	350	310	290	320	260	J ^R 260	295	300	290	315	310	J ^R 300	300	300	250	250	A	A	A	A	340
2	330	360	340	310	320	350	300	290	250	290	300	300	300	300	265	310	300	300	J ^R 280	300	300	400	390	390
3	350	310	350	360	350	320	350	270	245	300	300	300	300	310	300	310	300	290	A	340	I ^A 320	I ^A 300	I ^A 325	I ^A 365
4	350	300	350	330	300	300	360	260	250	300	J ^R 300	J ^R 300	300	J ^R 300	J ^R 300	290	260	260	330	300	300	370	350	340
5	360	390	350	J ^R 350	360	390	300	J ^R 250	J ^R 250	290	300	300	300	300	300	290	290	280	300	300	260	J ^R 300	360	400
6	390	400	360	290	260	300	350	300	280	300	300	300	300	300	290	300	300	280	300	300	290	280	390	350
7	330	360	400	390	390	380	310	290	250	285	280	J ^R 300	300	300	J ^R 295	J ^R 290	255	275	250	A	A	A	360	370
8	I ^A 330	320	340	320	295	315	315	R	J ^R 250	270	290	300	300	305	J ^R 300	290	260	255	260	265	295	340	355	330
9	325	350	370	360	320	355	310	255	260	250	300	310	310	350	310	J ^R 300	300	260	300	300	260	390	390	380
10	350	360	400	390	340	390	310	R	250	300	310	300	320	330	320	300	280	J ^R 310	300	300	305	310	350	350
11	350	350	410	420	400	400	260	J ^R 250	250	300	300	310	340	340	350	340	300	300	300	300	300	300	310	300
12	300	390	400	400	390	360	310	R	280	300	C	C	C	C	C	C	J ^R 300	300	300	300	300	350	350	330
13	390	390	390	390	390	390	300	R	290	300	300	340	325	350	340	305	300	300	310	300	300	300	350	380
14	390	400	340	330	330	390	350	260	260	290	C	C	C	330	320	310	300	295	305	325	330	350	355	370
15	320	305	385	395	380	380	370	290	J ^R 280	300	305	320	330	315	350	305	305	305	295	300	320	330	355	350
16	330	350	340	350	I ^R 420	415	340	255	280	300	300	315	340	330	345	300	J ^R 300	300	300	350	310	350	330	350
17	350	390	390	330	300	350	380	I ^R 280	300	280	310	300	340	385	315	350	300	300	300	310	300	340	380	380
18	350	330	390	400	390	400	330	C	C	300	300	350	350	360	360	350	310	J ^R 310	300	330	350	350	320	350
19	400	390	400	330	380	390	400	290	300	300	300	310	340	350	340	330	300	300	C	C	300	320	350	360
20	350	340	330	340	300	400	370	300	300	280	310	300	340	350	350	320	300	300	300	350	310	340	390	360
21	350	390	390	350	330	390	390	300	290	290	290	305	315	350	C	C	310	300	305	340	330	340	325	335
22	345	305	310	345	330	340	320	265	290	290	300	310	340	330	330	310	300	290	290	300	310	350	355	350
23	355	360	360	J ^R 370	310	350	315	260	260	310	300	310	C	C	350	340	350	300	260	300	340	350	340	350
24	380	350	350	350	300	390	J ^R 340	260	J ^R 280	300	310	300	350	360	350	300	J ^R 305	300	300	390	J ^R 350	300	350	350
25	380	360	400	450	450	400	300	300	J ^R 290	310	300	320	350	340	330	305	J ^R 305	300	315	330	290	340	380	360
26	350	355	355	400	350	360	320	270	305	J ^R 300	310	350	350	350	350	340	340	300	300	350	340	380	400	400
27	400	430	330	300	240	350	380	300	J ^R 300	300	300	310	340	310	310	300	340	300	300	350	300	350	400	400
28	390	360	350	380	400	400	330	280	290	300	305	310	330	325	310	310	310	290	295	325	325	305	380	400
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	28	28	28	28	28	28	28	23	27	28	26	26	25	26	26	26	28	28	26	25	26	26	27	28
MED	350	360	360	350	335	380	325	270	280	300	300	308	330	330	320	305	300	300	300	300	302	340	355	355
UQ	380	390	390	390	390	390	355	290	290	300	305	310	340	350	350	320	305	300	300	340	325	350	380	380
LQ	330	345	345	330	305	350	310	260	250	290	300	300	300	310	300	300	300	285	295	300	300	305	350	350

FEB. 1970

HPF2 (KM)

IONOSPHERIC DATA

FEB. 1970

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	85	90	90	100	90	110	80	90	J ₉₀ ^R	95	90	60	95	110	J ₈₀ ^R	100	100	100	100	A	A	A	A	100
2	90	90	80	100	90	100	90	100	100	90	90	90	100	90	85	90	100	90	J ₈₀ ^R	90	100	100	100	100
3	100	100	90	90	90	90	100	110	65	90	90	90	90	110	100	90	90	100	A	100	I ₉₅ ^A	I ₁₀₀ ^A	I ₁₀₀ ^A	I ₈₅ ^A
4	100	90	90	110	100	100	110	120	110	90	J ₉₀ ^R	I ₉₀ ^R	100	J ₉₀ ^R	I ₉₀ ^R	100	80	90	110	100	90	100	100	100
5	90	100	90	I ₁₀₀ ^R	90	100	100	I ₁₀₀ ^R	I ₁₀₀ ^R	100	90	110	100	100	100	100	100	100	90	100	90	I ₁₀₀ ^R	90	90
6	100	100	110	90	100	90	100	100	110	90	80	80	90	90	90	90	90	100	90	90	90	100	100	100
7	80	90	90	100	100	110	100	100	100	35	40	J ₅₅ ^R	75	95	J ₇₅ ^R	J ₆₅ ^R	65	70	55	A	A	A	85	75
8	I ₈₀ ^A	80	60	80	75	80	95	R	J ₄₅ ^R	60	60	70	100	65	J ₆₅ ^R	55	95	50	50	65	65	110	90	70
9	80	70	90	90	85	90	85	60	55	100	100	90	90	100	100	I ₁₀₀ ^R	100	90	90	100	120	100	100	110
10	100	110	90	100	100	100	90	R	90	90	80	100	80	80	80	100	70	I ₁₀₀ ^R	90	90	95	90	100	100
11	100	100	100	90	100	100	90	J ₁₀₀ ^R	90	80	90	100	80	70	100	110	90	90	90	90	90	100	90	100
12	100	100	100	100	100	90	90	R	70	90	C	C	C	C	C	C	J ₉₀ ^R	100	90	100	90	100	100	90
13	100	100	100	100	100	100	100	R	100	90	80	90	85	100	70	95	90	100	90	90	100	90	80	80
14	100	100	100	90	80	100	100	90	90	60	C	C	C	90	95	90	75	75	75	120	75	95	90	100
15	85	90	70	105	90	75	80	55	J ₇₀ ^R	75	45	85	65	85	75	75	70	80	65	60	85	90	85	95
16	90	90	100	45	I ₈₀ ^R	95	70	50	40	80	100	105	100	80	105	100	J ₁₀₀ ^R	100	100	100	90	100	80	100
17	100	100	100	110	90	100	110	I ₉₀ ^R	100	80	80	100	100	65	95	100	90	90	100	90	100	100	110	110
18	100	110	100	100	100	100	110	C	C	80	100	100	100	90	90	100	90	I ₁₀₀ ^R	100	80	100	90	80	90
19	90	100	90	80	110	100	90	100	80	90	90	100	100	90	100	110	90	100	C	C	100	90	100	90
20	100	100	110	110	100	100	110	100	90	80	90	100	100	90	90	90	100	90	100	100	90	90	100	110
21	100	90	100	100	110	100	100	80	70	60	60	80	95	100	C	C	95	70	90	85	85	70	95	80
22	95	90	90	95	80	65	75	55	60	65	95	130	80	70	75	85	70	65	60	70	80	95	85	95
23	90	80	85	90	85	95	65	55	60	90	100	90	C	C	100	110	100	100	90	100	100	100	110	90
24	100	100	100	90	100	100	I ₁₀₀ ^R	100	J ₇₀ ^R	100	90	100	100	90	100	100	J ₉₅ ^R	100	100	100	I ₁₀₀ ^R	100	100	120
25	110	120	90	100	100	100	100	100	I ₁₀₀ ^R	90	80	100	75	85	85	90	90	90	85	65	55	105	70	85
26	90	90	90	105	90	100	80	50	85	J ₁₀₀ ^R	100	100	100	100	70	100	100	100	100	100	100	110	100	100
27	100	100	110	90	100	90	100	100	J ₉₀ ^R	100	100	100	90	100	90	100	100	100	90	100	100	100	100	90
28	100	100	100	100	100	100	110	100	90	55	75	80	75	75	85	85	85	70	65	90	70	70	80	90
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	28	28	28	28	28	28	28	23	27	28	26	26	25	26	26	26	28	28	26	25	26	26	27	28
MED	100	100	90	100	100	100	100	100	90	90	90	95	95	90	90	100	90	95	90	90	90	100	100	95
UQ	100	100	100	100	100	100	100	100	100	90	95	100	100	100	100	100	100	100	100	100	100	100	100	100
LQ	90	90	90	90	90	90	88	70	70	78	80	85	80	80	80	90	88	85	80	90	85	90	85	90

The Radio Research Laboratories, Japan

FEB. 1970

YPF2 (KM)

IONOSPHERIC DATA

FEB. 1970

FOF2 (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U ₄₂	39	39	39	42	40	33	48	70	72	88	105	107	109	112	106	94	88	100	78	54	J ₅₁	I ₄₄	43
2	42	38	36	34	34	28	28	44	76	88	93	114	126	121	112	U ₉₆	95	J ₉₉	104	63	68	80	70	U ₇₀
3	J ₇₅	I ₇₉	68	U ₅₀	42	38	33	49	U ₉₅	85	95	108	110	115	119	112	103	Y ₀₀	91	64	U ₄₉	53	I ₅₃	50
4	45	43	37	35	30	27	26	42	82	U ₀₀	119	Y ₁₈	106	111	120	117	103	87	71	69	72	65	U ₅₇	42
5	35	34	35	36	32	32	33	J ₅₁	82	96	120	129	135	128	131	Y ₂₀	Y ₀₁	95	75	52	I ₄₈	41	35	34
6	36	J ₃₈	38	J ₄₄	34	F ₃₀	U ₂₉	38	85	107	U ₁₆	121	126	Y ₂₁	123	122	110	103	J ₉₉	Y ₀₂	J ₈₈	77	J ₆₁	49
7	50	48	43	39	39	31	32	47	U ₉₁	100	120	114	110	115	122	124	110	101	83	65	J ₆₂	52	34	34
8	36	36	37	34	36	31	32	48	U ₉₄	102	U ₁₈	123	125	130	140	Y ₂₄	108	94	91	71	57	55	45	U ₄₅
9	38	37	U ₃₇	I ₃₈	38	36	36	57	U ₉₃	104	108	Y ₁₉	126	138	146	137	127	114	89	88	87	U ₆₄	J ₅₂	45
10	39	37	35	35	38	30	32	U ₅₃	91	103	113	124	130	150	150	147	133	107	90	88	J ₈₈	73	J ₆₄	42
11	42	40	34	35	34	36	41	51	77	91	102	119	I ₁₇	118	125	128	128	115	Y ₀₁	92	88	80	67	50
12	37	37	36	35	36	34	34	57	85	108	110	111	116	123	137	138	129	118	107	93	90	70	J ₆₂	50
13	42	38	38	39	39	37	37	59	U ₉₀	96	111	116	120	U ₂₁	Y ₃₄	135	128	U ₁₅	107	I ₉₈	U ₉₆	U ₉₇	75	J ₅₁
14	45	41	I ₄₃	44	I ₄₂	37	34	U ₅₄	U ₉₂	106	113	I ₁₂	116	124	135	136	131	J ₁₉	108	93	91	I ₉₈	I ₈₆	U ₇₅
15	U ₇₃	57	42	40	37	36	36	U ₅₃	J ₉₉	112	129	136	130	144	133	127	U ₁₈	108	105	101	U ₀₀	U ₉₅	79	68
16	J ₆₄	48	44	41	35	36	37	U ₆₄	U ₉₅	102	103	119	C	C	C	127	U ₁₉	Y ₁₆	111	J ₉₄	U ₈₉	91	U ₈₁	J ₆₅
17	56	J ₅₀	47	47	40	33	32	56	90	107	129	131	131	141	140	131	128	117	102	77	77	I ₇₂	U ₆₆	66
18	70	J ₆₄	53	46	43	38	36	U ₆₁	91	93	113	122	127	140	144	144	138	132	Y ₂₉	I ₂₂	S	S	U ₉₃	72
19	J ₆₂	56	55	51	39	31	32	59	105	U ₁₈	120	126	122	128	123	122	U ₁₈	111	99	75	U ₇₆	78	J ₇₈	68
20	69	68	58	45	43	32	34	60	J ₉₇	125	129	133	132	144	159	146	Y ₃₈	129	119	90	J ₈₂	J ₈₇	J ₈₅	73
21	72	60	U ₅₄	50	45	36	U ₃₄	60	U ₀₅	116	124	118	124	128	138	142	140	127	116	U ₀₇	J ₉₈	I ₉₉	I ₉₆	U ₈₀
22	68	61	53	44	47	39	32	60	90	99	107	110	110	124	134	130	121	112	U ₉₉	83	77	73	64	U ₅₃
23	53	50	49	51	53	44	J ₃₇	U ₆₁	83	95	108	116	114	128	136	129	Y ₂₃	117	128	113	U ₉₈	S	S	S
24	U ₇₃	63	56	53	48	32	30	63	89	101	111	115	115	128	135	132	117	113	116	S	73	78	64	49
25	49	52	45	41	46	55	U ₆₂	78	Y ₁₀	Y ₂₄	135	146	141	144	148	146	129	111	112	Y ₀₈	S	S	S	J ₉₈
26	100	U ₉₇	78	U ₇₅	69	57	38	58	86	96	115	130	141	151	161	152	145	134	129	I ₉₉	J ₉₈	U ₉₉	I ₈₀	J ₆₈
27	63	59	C	C	C	C	I ₂₆	57	100	120	132	133	132	129	133	124	108	109	99	C	C	U ₉₁	72	64
28	60	56	50	49	42	42	U ₄₂	66	91	113	131	127	128	134	144	136	Y ₂₅	116	106	U ₉₄	J ₈₉	J ₁₀₁	82	U ₇₃
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	28	28	27	27	27	27	28	28	28	28	28	28	27	27	27	28	28	28	28	26	25	25	26	27
MED	52	49	43	41	39	36	34	57	91	102	114	119	125	128	135	130	122	112	103	91	87	78	66	53
UQ	68	60	53	48	43	38	36	60	95	110	122	128	130	139	142	138	129	117	112	99	91	91	80	69
LQ	42	38	38	37	36	32	32	50	85	96	108	114	116	121	124	123	109	102	95	75	73	65	57	47

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FEB. 1970

FOF2 (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

FOF1 (0.01 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									330	L	L	L	U 500	L	L									
2											L	U 510	L	L	L	L								
3											L	L		L	L	L								
4									L	L	L	L	L	L	L		370							
5									L	L	L	L	520	L	L	L								
6								270	L	L	L	L	500	L	L	L	L							
7									L	L	L	L	L	L	L	L								
8								L	L	L	L	L	U 510	L	L	L		340						
9									L	L	L	U 540	L	L	L	L								
10									L	L	L	L	L	L	L	L								
11									L	L	L	L	B	L	L	L								
12									L	L	L	L	L	L	L	L								
13									L	L	L	L	L	U 590	L	C	C							
14									L	L	C	L	L	L	L	L								
15									L	L	L	L	L	L	L	L								
16									L	L	L	C	C	C	L	L								
17									L	L	L	L	U 620	L	L		340							
18								380	L	L	L	U 490	L	L	L	L								
19									L	L	L	U 430	L	L	L	L								
20									L	L	L	U 510	L	U 600	L	L								
21									U 380	L	L	U 500	L	L	L	L	L	L						
22								300	L	L	L	L	490	L	470	L								
23								U 320	L	L	L	L	L	L	L	L								
24									L	L	L	L	L	L	L	L								
25									L	L	L	490	L	460	L	L								
26								U 310	L	L	L	L	L	L	L	L	L							
27									L	L	L	L	L	L	L	L								
28									L	L	L	L	L	L	L	L	L	L						
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									4	3		4	6	4	2	1	3							
MED									305	380		U 505	505	U 545	530	470	340							
UQ									U 315	380		U 525	U 510	U 605			355							
LQ									285	355		465	490	495			340							

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FEB. 1970

FOF1 (0.01 MHz)

IONOSPHERIC DATA

FEB. 1970

FOE (0.01 MHZ)

135° E Mean Time (G. M. T. + 9h)

Station	YAMAGAWA				Lat.	31 12.1 N				Long.	130 37.1 E				Sweep	1 MHz to 20 MHz in 20 sec				in automatic operation					
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								S	200	275	295	340	350	360	350	325	290	210							
2								S	230	275	320	340	350	355	340	I A 310	280	220							
3								S	230	300	I A 315	330	350	355	350	330	295	I A 220							
4								S	225	295	320	340	355	355	I A 330	310	A	A							
5								S	230 ^F	290	325	340	350	345	A	A	A	A							
6								S	230	300	325	I A 340	350	355	340	330	295	230							
7								S	240	295	330	355	360	360	A	A	A	A							
8								S	240	305	330	360	365	370	360	335	295	I A 220							
9								S	250	300	340	365	375	380	375	345	315	I A 220							
10								S	250	320	350	365	375	380	365	355	310	235							
11								S	250	305	335	360	380	385	370	355	315	275							
12								S	260	315	340	370	380	385	375	360	320	260							
13								S	250	315	335	I A 350	I A 375	380	375	350	315	I A 250							
14								S	260 ^H	310	340	I C 355	I A 370	375	I A 365	I A 350	310	235							
15								S	250	310	345	360 ^H	380	390	385	360	320	255							
16								S	250	310 ^H	345 ^H	370	C	C	C	355	315	250							
17								S	240	310	345	370	380	385	380	360	320	250							
18								S	240	310	345 ^H	355 ^H	360	I A 375	380 ^R	370	320	260							
19								S	260	320	345	370	385	390 ^R	385	350	320	255							
20								S	270 ^H	310 ^H	I A 335	360 ^H	370	370	365	355	315	245	245						
21								S	250	310	340	365	380	380	365	350	310	250							
22								S	250	310	330 ^H	355	370	380	370	350	310	265							
23								S	255	315	350	I A 375	385	390	380	355	320	270							
24								S	265	310	325	360	380 ^H	355	I A 370	355	325	270	140 ^R						
25								S	260	310	340	360	I A 360	360	350	I A 335	300	A							
26								S	250	320	360	375	390	390	370	350	320	240							
27								S	270	305 ^H	340	365	370	390	385	365	320	260							
28																									
29								130	270	330 ^H	345 ^H	370	380	380	380	350	315	250							
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								1	28	28	28	28	27	27	25	26	25	24	2						
MED								130	250	310	340	360	370	380	370	350	315	250	192						
UQ									260	312	345	368	380	385	380	355	320	260							
LQ									240	300	328	352	360	360	360	335	310	232							

FEB. 1970

FOE (0.01 MHZ)

IONOSPHERIC DATA

FEB. 1970

FOES (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	23	E ₁₂	19	JX ₂₁	E ₁₆	E ₁₃	17	E ₁₅	23	30	34	38	37	G	39	JX ₆₃	JX ₄₉	JX ₄₁	JX ₃₆	JX ₅₁	E ₁₅	JX ₂₆	JX ₅₁	JX ₂₇	
2	JX ₂₆	JX ₂₆	JX ₂₄	E ₁₁	JX ₂₂	24	22	22	JX ₂₆	31	JX ₃₅	36	40	JX ₃₉	42	JX ₃₆	JX ₃₀	G	JX ₂₄	JX ₅₂	24	22	JX ₂₈	JX ₂₅	
3	24	23	E ₁₅	E ₁₅	22	23	23	23	JX ₂₅	G ₂₈	JX ₃₅	40	JX ₄₈	G	43	36	37	23	JX ₂₆	JX ₃₁	JX ₃₁	24	JX ₃₀		
4	JX ₃₉	JX ₂₆	22	23	E ₁₂	E ₁₅	19	23	23	JX ₂₅	G	37	36	JX ₃₈	JX ₃₇	JX ₃₈	JX ₃₃	JX ₃₃	JX ₃₆	JX ₅₁	JX ₄₄	JX ₂₉	E ₁₅	23	
5	E ₁₅	E ₁₄	24	JX ₂₃	JX ₂₆	21	E ₁₅	23	JX ₂₇	JX ₃₂	40	39	JX ₄₆	39	JX ₄₃	JX ₃₆	JX ₃₆	JX ₄₂	JX ₃₅	JX ₂₂	JX ₃₄	23	E ₁₅	E ₁₅	
6	E ₁₅	E ₁₅	E ₁₅	E ₁₁	E ₁₅	E ₁₅	24	JX ₂₈	JX ₃₀	JX ₂₇	JX ₂₈	JX ₄₅	JX ₃₁	JX ₃₅	JX ₃₅	JX ₃₀	JX ₃₀	25	JX ₄₁	JX ₂₉	JX ₂₃	JX ₁₉	JX ₂₄	24	
7	E ₁₄	E ₁₅	E ₁₅	E ₁₂	22	24	23	JX ₂₅	23	G	G	39	38	40	38	38	34	JX ₃₆	JX ₂₆	JX ₂₆	JX ₃₀	JX ₃₆	JX ₆₁	JX ₂₁	
8	E ₁₄	JX ₃₀	JX ₂₀	20	20	22	22	24	27	G	G	24	38	42	39	JX ₂₇	JX ₂₅	22	23	23	JX ₂₉	23	E ₁₅	JX ₂₆	
9	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₁	E ₁₅	E ₁₅	23	G	G	JX ₂₉	JX ₃₀	JX ₂₉	G	38	37	34	26	E ₁₅	E ₁₅	JX ₂₇	23	22	E ₁₅	
10	E ₁₅	23	19	E ₁₄	E	E	E ₁₅	E ₁₅	27	JX ₄₉	32	G	G	G	38	39	G	37	JX ₄₆	JX ₃₁	E ₁₅	24	E ₁₅	E ₁₅	
11	E ₁₅	E ₁₄	E ₁₄	E ₁₇	E ₁₂	E ₁₅	22	E ₁₅	G ₂₅	G	G	G	B	40	38	G	35	JX ₄₉	JX ₃₈	JX ₂₃	E ₁₅	E ₁₅	JX ₁₉	23	
12	20	23	E ₁₅	E ₁₅	E ₁₃	E ₁₂	E ₁₅	E ₁₅	27	33	28	G	G	G	G	G	30	41	34	JX ₂₇	JX ₇₄	JX ₃₅	JX ₈₄	JX ₃₂	
13	E ₁₅	JX ₂₀	24	23	E ₁₃	E ₁₃	E ₁₅	E ₁₅	G	32	37	38	JX ₄₃	G ₃₅	G	G	G	37	22	C	24	E ₁₅	E ₁₅	E ₁₅	
14	E ₁₅	E ₁₅	C	JX ₃₇	D ₁₈	E ₁₂	E ₁₅	18	G	33	38	C	JX ₅₀	40	40	JX ₃₈	JX ₃₇	JX ₂₈	M	36	22	21	E ₁₅	21	
15	E ₁₅	E ₁₅	E ₁₅	E ₁₂	E ₁₂	E ₁₃	E ₁₅	E ₁₅	G	G	G	39	G ₃₈	G ₂₃	G	JX ₃₉	JX ₂₆	G	JX ₂₃	JX ₂₂	22	24	E ₁₅	E ₁₅	
16	E ₁₅	E ₁₂	E ₁₂	E	E	24	22	E ₁₅	JX ₂₆	G	37	40	C	C	C	36	JX ₃₁	G	E ₁₅	JX ₂₁	21	E ₁₅	E ₁₃	E ₁₅	
17	JX ₂₁	E ₁₂	E ₁₂	20	E	22	27	E ₁₅	G	G	G	27	39	33	G	JX ₃₁	JX ₂₉	G	G ₂₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	
18	E ₁₅	E ₁₅	E ₁₅	E ₁₃	25	E ₁₃	E ₁₅	E ₁₅	G	G	G	37	40	39	38	G	G	G	E ₁₅	E ₁₃	E ₁₃	E ₁₅	E ₁₅	E ₁₅	
19	23	E ₁₅	E ₁₂	E ₁₁	E	E ₁₂	E ₁₅	E ₁₅	JX ₂₆	G	G	G	G	G	29	39	36	36	JX ₃₅	JX ₃₂	24	E ₁₅	20	E ₁₅	
20	E ₁₅	E ₁₅	E ₁₂	E	E	E ₁₃	22	23	G	34	39	40	41	39	38	G	35	30	20	E ₁₅	21	E ₁₅	E ₁₅	E ₁₅	
21	E ₁₅	E ₁₂	E ₁₂	E ₁₁	E ₁₁	E ₁₁	E ₁₅	22	JX ₂₄	28	G ₂₉	G ₂₉	G	G	G	G	35	G	21	E ₁₅	21	E ₁₅	23	E ₁₅	
22	E ₁₅	E ₁₅	E ₁₅	E ₁₁	E	E ₁₄	E ₁₅	23	G ₂₃	G	G	40	40	G	43	41	39	34	19	E ₁₅	E ₁₄	E ₁₅	E ₁₅	19	
23	22	E ₁₃	23	JX ₂₃	E	E ₁₂	E ₁₅	E ₁₅	G ₂₃	G	G ₃₅	38	40	G ₂₃	JX ₂₃	G	G	G	G	24	19	22	21	E ₁₅	E ₁₅
24	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₅	E ₁₅	30	35	39	36	26	40	JX ₃₉	G	G	G	G	JX ₃₃	JX ₃₇	JX ₃₆	22	23	
25	JX ₂₄	E ₁₅	E ₁₃	E ₁₄	E ₁₂	E ₁₅	E ₁₅	E ₁₅	27	G	G	G	37	32	JX ₄₀	39	32	JX ₃₅	JX ₃₇	JX ₂₄	24	20	20	17	
26	E ₁₅	24	E ₁₁	E ₁₂	E	E ₁₁	E ₁₅	E ₁₅	29	JX ₃₄	G	G	G ₃₂	43	JX ₄₀	26	G ₁₇	27	17	JX ₂₉	E ₁₂	JX ₂₆	E ₁₅	E ₁₅	
27	19	E ₁₃	C	C	C	C	C	E ₁₅	G	G	G	G	39	G	22	G ₂₂	G	JX ₂₄	JX ₂₄	C	C	22	E ₁₅	17	
28	E ₁₄	E ₁₅	E ₁₂	E ₁₁	E	E ₁₁	E ₁₅	G	G	G	36	G	G	G	27	32	40	38	33	G	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
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	28	28	26	27	27	27	27	28	28	28	28	27	26	27	27	28	28	28	28	26	JX ₂₂	23	20	17	16
MED	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₂	E ₁₄	E ₁₅	E ₁₅	24	E ₂₅	G	37	38	35	38	33	33	26	24	JX ₂₂	JX ₂₂	25	24	24	
UQ	22	22	20	20	17	18	22	23	27	32	36	39	40	39	40	38	36	JX ₃₆	JX ₃₅	JX ₃₁	JX ₂₆	25	24	24	
LQ	E ₁₅	E ₁₄	E ₁₂	E ₁₁	E	E ₁₂	E ₁₅	E ₁₅	G	G	G	E ₂₉	G	G	G	G	20	G	E ₂₁	18	E ₁₅	18	E ₁₅	E ₁₅	

The Radio Research Laboratories, Japan

FEB. 1970

FOES (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

FBES (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₂	E ₁₂	E ₁₈	E ₁₇	E ₁₆	E ₁₃	E ₁₅	E ₁₅	G	29	33	36	G	G	38	G	40	40	27	50	E ₁₅	E	A	19	
2	E	E	E	E ₁₁	E	E	E	E ₁₅	G	24	G	G	38	37	40	33	27	G	S	31	E	E	25	18	
3	16	E	E ₁₅	E ₁₅	14	E	E	S	G	28	34	40	33	G	38	G	31	23	16	20	E	19	E	24	
4	24	E	E	E	E ₁₂	E ₁₅	E	S	G	16	G	37	G	24	37	29	30	29	29	32	41	23	E ₁₅	E	
5	E ₁₅	E ₁₄	16	18	18	E	E ₁₅	S	19	G	39	38	37	38	36	34	31	27	30	17	32	16	E ₁₅	E ₁₅	
6	E ₁₅	E ₁₅	E ₁₅	E ₁₁	E ₁₂	E ₁₅	E	28	15	23	24	36	23	25	20	25	25	G	27	22	18	16	17	E	
7	E ₁₄	E ₁₅	E ₁₅	E ₁₂	E	E	E	15	G	G	G	38	33	38	37	36	33	30	26	23	21	32	25	E	
8	E ₁₄	21	16	11	E	E	E	S	G	G	G	23	G	31	39	23	G	21	22	23	21	E	E ₁₅	18	
9	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₁	E ₁₅	E ₁₅	S	G	G	G	22	G	25	G	G	G	25	E ₁₆	E ₁₅	E	E	E	E ₁₃	
10	E ₁₃	E	E	E ₁₄	E	E	E ₁₅	E ₁₅	23	G	32	G	G	G	G	G	36	43	30	E ₁₅	E	E ₁₅	E ₁₅	16	
11	E ₁₂	E ₁₄	E ₁₄	E ₁₇	E ₁₂	E ₁₅	E	E ₁₅	G	G	G	G	B	G	38	G	35	49	38	20	E ₁₅	E ₁₅	E	E	
12	E	18	E ₁₅	E ₁₅	E ₁₃	E ₁₂	E ₁₅	E ₁₅	25	30	28	G	G	G	G	G	25	36	30	26	74	25	64	19	
13	E ₁₅	E	E	E	E ₁₃	E ₁₃	E ₁₅	E ₁₅	G	G	37	38	40	35	G	G	G	36	20	C	15	E ₁₅	E ₁₅	E ₁₅	
14	E ₁₅	E ₁₅	C	C	22	12	E ₁₂	E ₁₅	G	G	37	C	39	40	40	37	30	22	32	E	E	E ₁₅	E	17	
15	E ₁₅	E ₁₅	E ₁₅	E ₁₂	E ₁₂	E ₁₃	E ₁₅	E ₁₅	G	G	G	G	27	G	G	G	19	G	G	5	E	E	E	E ₁₅	
16	E ₁₅	E ₁₂	E ₁₂	E	E	E	E	E ₁₅	G	G	G	40	C	C	C	35	30	G	E ₁₅	15	E	E ₁₅	E ₁₃	E ₁₅	
17	19	E ₁₂	E ₁₂	12	E	E	E	E ₁₅	G	G	G	26	G	35	G	G	31	20	G	24	E ₁₅	E ₁₄	E ₁₅	E ₁₅	
18	E ₁₅	E ₁₅	15	E ₁₃	13	E ₁₃	E ₁₅	E ₁₅	G	G	G	E ₁₇	40	39	37	G	G	G	E ₁₅	E ₁₃	E ₁₃	E ₁₅	E ₁₅	E ₁₅	
19	E	E ₁₅	E ₁₂	E ₁₁	E	E ₁₂	E ₁₅	E ₁₅	G	G	G	G	G	G	G	G	23	39	35	35	32	27	15	E ₁₅	
20	E ₁₅	E ₁₅	E ₁₂	E	E	E ₁₃	E	S	G	G	36	40	41	39	G	G	G	29	18	E ₁₅	E	E ₁₅	E ₁₅	E ₁₅	
21	E ₁₅	E ₁₂	E ₁₂	E ₁₁	E ₁₁	E ₁₁	E ₁₅	S	G	G	G	G	G	G	G	G	G	G	S	E ₁₅	E	E ₁₅	E	E ₁₅	
22	E ₁₅	E ₁₅	E ₁₅	E ₁₁	E	E ₁₄	E ₁₅	S	G	G	G	40	G	G	43	38	38	33	18	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E	
23	E	E ₁₃	E	13	E	E ₁₂	E ₁₅	E ₁₅	G	G	G	E ₁₇	30	23	G	G	G	G	20	19	E	E	E ₁₅	E ₁₅	
24	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	E ₁₅	E ₁₅	G	G	38	35	G	26	39	37	G	G	G	G	23	16	19	E	E
25	E	E ₁₅	E ₁₃	E ₁₄	E ₁₂	E ₁₅	E ₁₅	E ₁₅	25	G	G	G	37	32	30	36	G	26	31	18	E	E	E	E	
26	E ₁₅	E	E ₁₁	E ₁₂	E	E ₁₁	E ₁₅	E ₁₅	G	25	G	G	32	43	32	20	G	17	G	E ₁₇	20	E ₁₂	E	E ₁₅	
27	E	E ₁₅	C	C	C	C	C	E ₁₅	G	G	G	G	G	G	G	G	22	G	17	G	S	C	C	E	E ₁₅
28	E ₁₄	E ₁₅	E ₁₂	E ₁₁	E	E ₁₁	E ₁₅	G	18	G	G	G	G	G	G	G	G	G	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₅	
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	28	28	26	27	27	27	27	18	28	28	28	27	26	27	27	28	28	28	24	26	27	28	28	28	
MED	E ₁₅	E ₁₄	E ₁₄	E ₁₂	E ₁₁	E ₁₂	E ₁₅	E ₁₅	G	G	G	U ₂₈	G	G	G	G	G	G	24	22	18	E ₁₅	15	15	
UQ	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₂	E ₁₄	E ₁₅	E ₁₅	G	G	20	32	38	37	38	34	32	30	30	23	15	16	E ₁₅	E ₁₅	
LQ	E ₁₂	E ₁₂	E ₁₂	E ₁₁	E	E	E	E ₁₅	G	G	G	G	G	G	G	G	G	G	E ₁₅	E	E	E	E	E	

The Radio Research Laboratories, Japan

FEB. 1970

FBES (0.1 MHz)

IONOSPHERIC DATA

FEB. 1970

F-MIN (0.1 MHZ)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E ₁₅	12	15	12	16	13	E ₁₅	E ₁₅	E ₁₅	15	15	15	16	18	19	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
2	E ₁₅	15	13	11	E	E ₁₅	E ₁₅	E ₁₅	E ₁₅	15	17	16	17	15	18	15	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
3	E ₁₅	16	15	15	E	13	E ₁₅	E ₁₅	E ₁₅	15	16	18	20	17	18	17	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
4	E ₁₅	16	16	16	12	15	E ₁₅	E ₁₅	E ₁₅	15	15	15	16	19	16	15	14	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
5	E ₁₅	14	12	E	E	13	E ₁₅	E ₁₅	E ₁₅	11	14	15	15	16	15	15	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
6	E ₁₅	E ₁₅	15	11	12	15	E ₁₅	E ₁₅	E ₁₅	11	12	12	15	15	15	12	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
7	E ₁₅	E ₁₅	15	12	11	15	E ₁₅	11	E ₁₅	15	15	16	15	16	15	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	11	E ₁₅
8	E ₁₅	12	12	E	E	13	E ₁₅	E ₁₅	E ₁₅	14	14	15	15	15	17	15	12	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
9	E ₁₅	E ₁₅	14	15	11	15	E ₁₅	E ₁₅	E ₁₅	16	16	17	17	16	17	15	16	15	16	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
10	E ₁₅	E ₁₅	14	14	E	E	E ₁₅	E ₁₅	E ₁₅	17	20	24	22	19	25	20	18	16	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
11	E ₁₅	14	14	17	12	15	E ₁₅	E ₁₅	E ₁₅	15	15	16	53	20	18	20	15	19	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
12	E ₁₅	17	15	15	13	12	E ₁₅	E ₁₅	E ₁₅	16	20	19	18	19	19	18	15	17	16	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
13	E ₁₅	E ₁₅	14	15	13	13	E ₁₅	E ₁₅	E ₁₅	15	15	18	18	16	18	18	15	E ₁₅	E ₁₅	C	E ₁₅	E ₁₅	E ₁₅	E ₁₅
14	E ₁₅	E ₁₅	C	C	11	E	12	E ₁₅	E ₁₅	15	15	17	C	19	18	20	19	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
15	E ₁₅	15	15	12	12	13	E ₁₅	E ₁₅	E ₁₅	15	16	17	17	16	16	12	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
16	E ₁₅	12	12	E	E	15	E ₁₅	E ₁₅	E ₁₅	15	16	15	C	C	C	16	15	E ₁₅	E ₁₅	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅
17	E ₁₅	12	12	E	E	13	E ₁₅	E ₁₅	E ₁₅	15	16	18	16	18	17	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
18	E ₁₅	E ₁₅	11	13	E	13	E ₁₅	E ₁₅	E ₁₅	15	16	17	16	18	27	25	15	E ₁₅	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
19	E ₁₅	E ₁₅	12	11	E	12	E ₁₅	E ₁₅	E ₁₅	14	15	15	17	18	30	17	15	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
20	E ₁₅	E ₁₅	12	E	E	13	E ₁₅	E ₁₅	E ₁₅	15	15	15	16	17	15	16	15	16	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
21	E ₁₅	12	12	11	11	11	E ₁₅	E ₁₅	E ₁₅	15	15	15	18	15	16	16	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
22	E ₁₅	E ₁₅	E ₁₅	11	E	14	E ₁₅	E ₁₅	E ₁₅	15	15	15	15	18	16	16	15	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
23	E ₁₅	13	14	12	E	12	E ₁₅	E ₁₅	E ₁₅	14	15	15	15	17	17	15	18	15	14	E ₁₅	11	E ₁₅	E ₁₅	E ₁₅
24	E ₁₅	14	14	E	E	E ₁₅	E ₁₅	E ₁₅	E ₁₅	14	14	14	15	18	17	16	17	15	15	11	11	E ₁₅	E ₁₅	E ₁₅
25	E ₁₅	E ₁₅	E ₁₅	14	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅	15	15	18	17	18	16	16	16	16	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
26	E ₁₅	E ₁₅	11	12	E	11	E ₁₅	E ₁₅	E ₁₅	15	16	15	17	16	15	16	15	14	17	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
27	E ₁₅	E ₁₅	C	C	C	C	E ₁₅	E ₁₅	E ₁₅	15	17	16	20	17	18	15	14	11	E ₁₅	C	C	E ₁₅	E ₁₅	E ₁₅
28	E ₁₅	E ₁₅	E ₁₅	11	E	11	E ₁₅	E ₁₅	E ₁₅	13	15	16	16	17	17	19	16	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
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	28	28	26	27	27	27	28	28	28	28	27	27	27	27	28	28	28	28	28	26	27	28	28	28
MED	E ₁₅	15	14	12	E	13	E ₁₅	E ₁₅	E ₁₅	15	15	16	17	17	17	15	15	U ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
UQ	E ₁₅	E ₁₅	15	14	12	14	E ₁₅	E ₁₅	E ₁₅	15	16	17	18	18	18	18	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
LQ	E ₁₅	13	12	11	E	12	E ₁₅	E ₁₅	E ₁₅	15	15	15	16	16	16	15	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅

The Radio Research Laboratories, Japan

FEB. 1970

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

FEB. 1970

M(3000)F2 (0.01)

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

Station **YAMAGAWA**

Lat. **31 12.1 N.** Long. **130 37.1 E**

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	U305	295	275	290	310	325	290	330	350	335	315	315	320	310	320	315	325	320	330	345	335	270	290	290
2	305	295	290	295	335	280	285	310	335	325	330	310	315	305	300	U285	300	310	335	335	290	305	255	245
3	U285	300	310	U285	295	315	265	300	U345	340	315	310	305	310	310	310	305	U325	330	335	U295	305	U290	295
4	300	305	315	310	315	280	290	305	335	U320	325	U320	310	300	300	315	320	340	325	295	305	305	U310	295
5	290	265	280	300	290	260	270	U320	330	315	315	315	315	295	305	U315	U305	315	330	310	310	325	295	280
6	270	U275	270	U315	320	330	U275	305	325	325	U220	315	315	U300	305	300	315	315	U310	U330	U280	305	U285	275
7	285	290	285	275	285	295	290	315	U330	330	335	325	305	295	295	310	310	325	345	320	U290	325	280	290
8	290	305	300	300	310	285	305	320	U325	315	U315	315	300	285	300	U300	300	320	325	345	275	295	290	U260
9	285	275	U270	U280	295	290	290	325	U325	345	315	U305	290	290	295	290	300	305	315	320	335	U280	U260	285
10	275	265	265	280	325	275	270	U325	340	330	310	305	290	285	285	295	295	305	315	310	U315	300	U270	290
11	285	310	265	255	255	265	305	335	345	330	310	305	U300	285	280	290	300	305	U300	305	310	315	315	320
12	270	270	275	270	275	280	275	315	340	330	325	310	285	305	280	285	285	300	305	315	310	300	U275	280
13	275	275	280	275	290	280	280	330	U335	325	310	305	295	U305	U280	250	290	U285	310	U295	U300	U305	300	U265
14	275	270	U275	300	U305	285	260	U300	U325	330	315	U295	290	275	285	290	295	U285	295	300	290	U280	U280	U280
15	U300	295	275	270	280	265	260	U290	U320	315	300	310	285	290	285	290	U290	300	300	305	U300	U280	290	290
16	U270	285	295	295	265	255	260	U315	U330	340	305	300	C	C	C	290	U295	U295	305	U285	U295	300	U290	U275
17	275	U270	285	300	330	280	255	295	335	305	305	295	280	285	285	285	285	300	315	300	285	U290	U265	265
18	290	U295	275	265	295	290	260	U310	330	310	305	290	295	285	285	250	275	285	U295	U290	S	S	U300	285
19	U270	275	290	320	315	265	260	295	335	U310	U300	300	285	285	280	285	U290	305	305	285	U285	295	U300	275
20	290	305	300	335	340	260	270	325	U320	320	315	305	280	275	285	285	U275	300	310	300	U275	U270	U290	290
21	290	280	U280	295	305	290	U255	320	U335	320	310	300	285	280	275	280	290	290	295	U290	U290	U255	U295	U295
22	280	285	305	300	315	315	280	320	335	320	315	300	280	280	285	295	305	310	U315	295	295	300	280	U265
23	275	270	275	290	310	310	U260	U315	335	295	305	300	280	275	285	280	U280	280	300	320	U245	S	S	S
24	U275	270	285	300	335	270	270	320	315	320	300	285	285	275	285	285	285	290	300	S	265	285	280	265
25	270	270	245	225	230	245	U290	295	U325	300	U295	300	275	275	285	280	270	280	295	U295	S	S	S	U250
26	285	270	275	U255	265	280	290	310	315	285	280	285	285	270	280	285	275	285	290	U290	U260	U285	U260	U250
27	255	245	C	C	C	C	U250	285	320	300	305	300	290	280	285	300	285	310	295	C	C	U285	265	260
28	265	285	265	275	250	250	U260	305	300	310	305	295	280	285	280	280	U290	295	295	U300	U270	U285	290	U270
29																								
30																								
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	27	27	27	27	28	28	28	28	28	28	27	27	27	28	28	28	28	26	25	25	26	27
MED	282	278	280	290	305	280	270	315	330	320	310	305	290	285	285	290	292	302	308	305	290	295	290	280
UQ	290	295	290	300	315	290	290	320	335	330	315	310	302	298	298	300	302	312	320	320	305	305	295	290
LQ	272	270	275	275	282	265	260	305	325	310	305	300	285	280	282	285	285	290	298	295	280	U285	275	265

FEB. 1970

M(3000)F2 (0.01)

IONOSPHERIC DATA

FEB. 1970

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									425	L	L	L	U	L	L	L								
2											L	U	L	L	L	L	L							
3											L	L		L	L	L	L							
4										L	L	L	L	L	L	L	410							
5										L	L	L	355	L	L	L								
6									390	L	L	L	370	L	L	L	L							
7										L	L	L	L	L	L	L	L							
8									L	L	L	L	U	L	L	L	370							
9										L	L	U	L	L	L	L	L							
10										L	L	L	L	L	L	L	L							
11										L	L	L	B	L	L	L	L							
12										L	L	L	L	L	L	L	L							
13										L	L	L	L	U	L	C	C							
14										L	L	C	L	L	L	L	L							
15										L	L	L	L	L	L	L	L							
16										L	L	L	C	C	C	L	L							
17										L	L	L	L	U	L	L	405							
18									405	L	L	L	U	L	L	L	L							
19										L	L	U	L	L		L	L							
20										L	L	L	U	L	L	U	L							
21										U	L	390	L	L	L	L	L	L						
22									415	L	L	L	L	380	L	370	L							
23									U	L	L	L	L	L	L	L	L							
24										L	L	L	L	L	L	L	L							
25										L	L	L	385	L	390	L	L							
26										U	L	L	L	L	L	L	L							
27										L	L	L	L	L	L	L	L							
28										L	L	L	L	L	L	L	L							
29																								
30																								
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									4	3		4	6	4	2	1	3							
MED									400	405		U	380	375	358	368	370	405						
UQ									410	415		392	380	375			408							
LQ									392	405		U	358	370	342		388							

FEB. 1970

M(3000)F1 (0.01)

IONOSPHERIC DATA

FEB. 1970

H¹F² (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	265	255	270	280	250	250								
2											255	280	265	260	270	250	250							
3											255	250		265	260	255	240							
4										250	255	255	260	280	275	255	240							
5										250	265	270	270	260	270	255								
6									240	240	255	260	250	270	275	260	250							
7										250	260	250	250	270	265	275	240							
8									230	255	255	250	260	280	275	255	230							
9										235	270	280	295	300	290	260	255							
10										245	250	250	275	290	290	270	250							
11										235	250	275	290	300	285	290	260							
12										250	250	250	260	310	290	285	270							
13										235	255	260	285	305	305	280	C	C						
14										230	250	245	305	280	300	270	250							
15										255	280	260	280	290	255	280	245							
16										235	255	265	C	C	C	265	250							
17										255	270	250	285	315	270	270	240							
18										240	280	250	255	300	315	280	280							
19										250	270	250	255	310		285	270							
20										250	250	250	255	300	310	255	255							
21										240	250	250	305	290	320	290	260	240						
22										225	235	255	250	250	275	290	270	260						
23										230		255	270	255	300	295	260	245						
24											250	275	270	260	300	300	275	250						
25											250	285	275	255	300	280	265	240						
26										240	250	270	275	290	310	300	265	265						
27											250	265	265	265	300	295	275	250						
28											255	275	255	320	300	265	250	250	245					
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										5	25	28	28	26	27	26	28	25	2					
MED										230	250	255	255	262	300	288	268	250	242					
UQ										240	250	270	270	285	300	300	278	260						
LQ										230	235	255	250	255	280	270	255	245						

FEB. 1970

H¹F² (KM)

IONOSPHERIC DATA

FEB. 1970

H¹F (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	235	275	300	290	250	240	290	225	215	205	210	225	220	210	240	F ₃₀ ^A	240	240	230	230	210	255	A	280
2	265	260	265	250	225	240	300	255	235	230	230	220	225	225	220	230	225	220	230	215	250	220	280	300
3	250	230	215	260	270	255	325	285	230	235	210	220	250	240	250	225	220	230	225	215	220	250	240	270
4	280	255	255	250	220	280	300	260	35	225	225	225	215	205	215	240	225	240	225	260	E ₇₅ ^A	240	220	250
5	300	320	290	245	E ₂₉₀ ^A	320	310	250	230	225	240	230	210	230	225	225	240	230	225	220	260	240	260	295
6	325	300	300	240	225	230	305	305	210	220	225	225	210	200	210	225	240	235	225	220	210	215	210	275
7	255	250	270	280	260	260	300	255	240	220	225	220	210	205	205	220	230	235	215	225	235	250	F ₃₀₅ ^A	300
8	275	265	255	250	230	250	270	255	220	215	210	225	210	225	215	225	215	230	220	215	215	235	250	300
9	295	300	300	300	265	250	295	250	225	225	205	215	220	205	225	230	245	240	210	225	210	210	230	275
10	275	310	305	300	230	305	315	255	240	235	225	210	220	230	225	230	E ₂₅₀ ^A	225	230	225	225	220	230	270
11	275	285	310	350	335	350	265	215	220	230	210	200	B	220	230	230	250	250	225	225	220	220	220	225
12	280	320	305	330	305	260	300	250	225	225	240	220	210	225	230	245	245	245	220	I ₂₂₅ ^A	235	I ₂₂₀ ^A	230	240
13	265	300	290	300	270	275	290	240	225	225	225	215	210	220	225	240	E ₅₀ ^C	240	225	I ₂₃₅ ^C	225	225	210	250
14	300	325	I ₂₉₀ ^C	290	I ₂₅₀ ^C	265	E ₃₄₀ ^S	265	230	220	240	I ₂₂₅ ^C	210	225	235	235	235	240	230	215	255	240	255	275
15	240	225	280	300	255	300	320	290	250	230	225	235	220	220	235	235	215	240	240	230	220	220	245	245
16	250	260	265	250	285	E ₃₅₀ ^B	320	255	220	230	235	225	C	C	C	225	230	235	225	210	240	215	235	245
17	280	280	280	245	220	270	E ₃₂₀ ^S	270	230	235	245	235	225	220	240	235	240	240	220	220	240	220	255	265
18	250	250	255	300	265	255	E ₃₂₀ ^S	250	230	220	225	220	220	250	230	255	240	245	230	220	215	225	225	240
19	260	290	265	235	225	E ₂₇₅ ^B	E ₃₅₀ ^S	270	245	235	220	225	225	240	250	230	250	250	225	240	255	240	250	250
20	270	250	235	230	225	330	E ₃₂₀ ^S	250	240	235	225	215	215	225	200	245	240	245	220	205	230	230	245	245
21	255	255	255	255	250	235	350	260	235	215	225	205	210	200	205	240	235	235	220	215	225	230	225	240
22	255	250	240	250	250	250	E ₂₇₀ ^H	245	215	200	220	240	245	250	255	225	E ₃₀ ^A	240	220	220	225	245	220	260
23	280	270	290	270	250	245	300	250	220	210	205	230	205	230	240	230	225	230	250	215	205	240	230	245
24	245	250	250	250	220	E ₂₅₀ ^S	300	255	225	230	205	210	200	200	200	225	235	245	240	215	250	250	230	240
25	300	275	315	375	390	320	245	240	240	225	210	205	205	200	230	235	235	230	250	235	205	230	230	270
26	250	245	215	275	245	200	240	230	225	220	200	215	230	240	230	240	230	240	240	210	250	250	225	275
27	300	320	C	C	C	C	C	270	250	240	230	225	225	200	245	225	225	240	230	C	C	230	225	265
28	270	250	255	270	260	285	285	255	240	250	230	230	225	200	255	230	225	240	230	225	240	240	225	255
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	28	28	27	27	27	27	27	28	28	28	28	28	26	27	27	28	28	28	28	27	27	28	27	28
MED	270	268	270	270	250	258	298	255	230	225	225	222	218	220	230	230	234	240	225	220	225	230	230	262
UQ	280	300	295	300	266	287	311	262	240	232	230	225	225	230	240	238	240	240	230	225	242	240	246	275
LQ	252	250	255	250	228	250	290	250	222	220	210	215	210	205	218	225	225	232	220	215	218	220	225	245

The Radio Research Laboratories, Japan

FEB. 1970

H¹F (KM)

IONOSPHERIC DATA

FEB. 1970

H⁺ES (KM)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	100	B	100	100	B	B	120	S	100	120	115	165	130	G	140	110	120	115	110	105	S	100	100	100	
2	100	100	100	B	110	105	105	100	100	115	120	130	125	120	120	105	105	G	105	100	100	100	100	95	
3	95	95	B	B	100	100	100	100	100	110	110	115	110	G	150	140	125	110	105	105	105	100	100	100	
4	100	100	95	95	B	B	110	105	100	100	G	135	150	105	105	105	100	100	100	120	105	100	S	105	
5	S	B	105	100	105	105	S	100	110	145	120	120	120	115	105	105	105	105	105	105	100	100	S	S	
6	S	S	B	B	B	B	110	105	105	100	100	100	100	100	100	100	100	120	100	100	100	100	95	95	
7	S	S	B	B	100	105	105	105	105	G	G	130	105	125	120	115	150	110	105	115	110	105	100	110	
8	S	105	105	110	120	105	105	105	140	G	100	135	100	125	100	100	100	115	125	110	100	S	100	100	
9	S	S	B	B	B	B	S	105	G	G	105	105	100	G	130	120	120	110	B	S	105	105	100	S	
10	S	100	100	B	E	E	S	S	115	105	110	G	G	110	125	G	125	110	110	S	100	S	S	95	
11	S	B	B	B	B	B	100	S	100	G	G	G	B	130	130	G	125	115	115	110	S	S	105	105	
12	100	100	B	B	B	B	S	S	110	105	105	G	G	G	G	100	130	125	120	115	105	105	105	S	
13	S	100	100	100	B	B	S	S	G	155	125	115	105	105	G	G	G	105	110	C	105	S	S	S	
14	S	C	C	100	C	B	S	105	G	125	120	C	115	120	110	105	105	105	105	110	110	S	100	100	
15	S	B	B	B	B	B	S	S	G	G	G	125	110	100	G	100	95	100	105	100	100	100	S	S	
16	S	B	B	E	E	100	100	S	100	G	E G	165	145	C	C	C	105	105	G	S	105	105	S	S	S
17	100	B	B	105	E	105	100	S	G	G	105	150	105	G	100	100	G	110	S	S	S	S	S	S	
18	S	S	100	B	100	B	S	S	G	G	G	130	120	105	105	G	G	G	B	S	S	S	S	S	
19	100	S	B	B	E	B	S	S	100	G	G	G	G	G	100	140	E G	165	140	125	115	110	S	105	S
20	S	S	B	E	E	B	100	100	G	125	115	120	120	125	135	G	E G	165	140	120	S	110	S	S	S
21	S	B	B	B	B	B	S	100	100	105	105	105	G	G	G	G	160	G	105	S	120	S	100	S	
22	S	S	S	B	E	B	S	100	100	G	G	E G	170	F G	G	165	150	130	115	120	S	S	S	S	100
23	105	B	105	105	E	B	S	S	95	G	105	100	130	100	100	G	G	G	155	130	100	100	S	S	
24	S	B	B	E	E	S	S	S	140	130	120	110	100	120	100	G	G	G	G	110	100	100	100	105	
25	100	S	S	B	B	S	S	S	115	G	G	G	105	100	100	125	130	100	100	100	100	100	100	100	100
26	S	100	B	B	E	B	S	S	120	110	G	G	100	155	100	100	100	170	140	105	S	100	S	S	
27	100	S	C	C	C	C	C	S	G	G	G	G	140	G	100	100	100	100	100	C	C	100	S	100	
28	S	S	S	B	E	B	S	G	105	G	135	100	100	100	175	150	150	G	S	S	S	S	S	S	
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	10	8	9	8	6	7	11	12	20	14	18	20	22	18	23	20	23	21	22	18	20	15	14	14	
MED	100	100	100	100	102	105	105	102	102	112	111	121	109	112	105	105	120	110	108	108	105	100	100	100	
UQ	100	100	105	105	110	105	108	105	112	125	120	134	122	125	130	122	130	115	120	115	108	100	100	105	
LQ	100	100	100	100	100	102	100	100	100	105	105	108	100	100	100	100	102	105	105	105	100	100	100	100	

FEB. 1970

H⁺ES (KM)

IONOSPHERIC DATA

FEB. 1970

TYPES OF ES

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

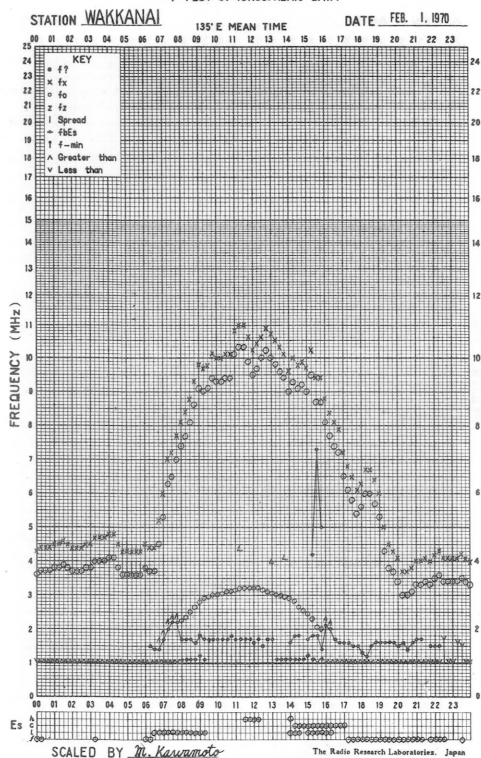
Station YAMAGAWA Lat. 31 12.1 N. Long. 130 37.1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F1		F1	F2			F1		F1	C3	C2	HL11	H1		H2	HL12	C5	C4	L6	F6		F2	F4	F3	
2	F2	F2	F1		F2	F2	F1	F1	F1	L2	F1	H1	H2	C2	C2	L2	L3		L3	F4	F3	F1	F3	F3	
3	F2	F1			F2	F1	F1	F1	F1	F1	L2	L2	F1		H1	H1	H2	F1	L2	F2	F2	F4	F1	F3	
4	F3	F1	F1	F1			F1	F1	F1	F1		HL11	HL12	HL21	HL31	HL41	L3	L5	L4	FF13	FF31	F2		F1	
5			F1	F6	F5	F1		L3	F1	HL22	CL22	C2	CL11	F1	L2	L2	L4	L5	L5	F2	F5	F2			
6						F2	L2	L2	L2	L2	L2	L2	L2	L2	F1	L4	C13	L3	F3	F2	F1	F2	F1		
7					F1	F1	F1	L3	F1		H1	F1	HL2	C1	CL22	HL3	L5	L5	F51	F3	F5	F4	F1		
8		F3	F5	F1	F1	F2	F1	L2	HL11		F1	HL2	HL31	HL4	L2	L3	L2	C2	H3	F2	F1		F2	F1	
9								F1			F1	F1	F1		HL11	HL11	CL11	C2			F3	F1	F1		
10		F1	F1					F1	F1	F1				F1	H1		H3	C5	L4		F1			F1	
11						F1			F1					H1	H1		H2	C2	C5	F2			F2	F1	
12	F1	F1							L2	L2	F1					F1	HL21	HL21	H3	F6	F3	F4	F3		
13		F1	F1	F1						HL11	H1	F1	F1	F1				F1	L2		F1			F1	
14				F3	F1			F1		H1	C1		C1	C1	F1	F1	L2	L2	L3	F1	F1		F1	F1	
15										H1	HL11	F1			F1	L2	F1	L2	F1	F1	F1	F1			
16					F1	F1		F1		H1	H1					F1	L2			F1	F1				
17	F1			F1		F1	F1			F1	HL11	F1		F1	F1				L2						
18			F2		F2					H1	C1	F1	F1												
19	F1							F1		F1					F1	HL11	HL23	HL31	H5	F5	F2		F1		
20						F1	F1		F1	H1	C1	C1	C1	H1	H1		H2	H2	H1		F1			F1	
21							F1	F1	F1	F1	F1	F1					H2		F1		F1		F1		
22								F1	F1		H1	H1		H1	H2	HL22	CL31	C1						F1	
23	F1		F1	F1					F1		F1	F1	H1	F1	F1				H2	FF1	F1	F1			
24									H2	H2	C2	HL11	F1	CL11	F1					F5	F3	F3	F1	FF11	
25	F2								L2				F1	F1	L2	HL12	HL12	L3	L5	F5	F1	F1	F1	F1	
26		F1							CL12	L2			F1	HL11	L2	F1	F1	H1	H2	F5		F3		F1	
27	F1												H1		F1	F1	F1	L2	F1			F1		F1	
28								F1		H1	F1	F1	F1	F1	HL11	HL11	H2								
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																									

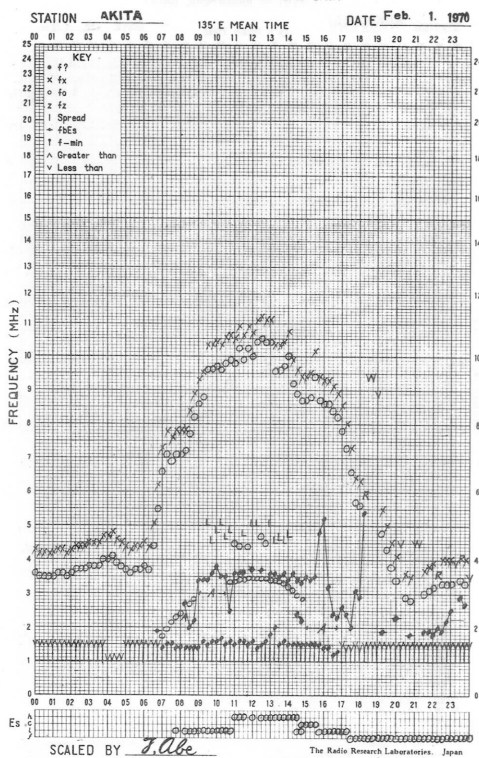
FEB. 1970

TYPES OF ES

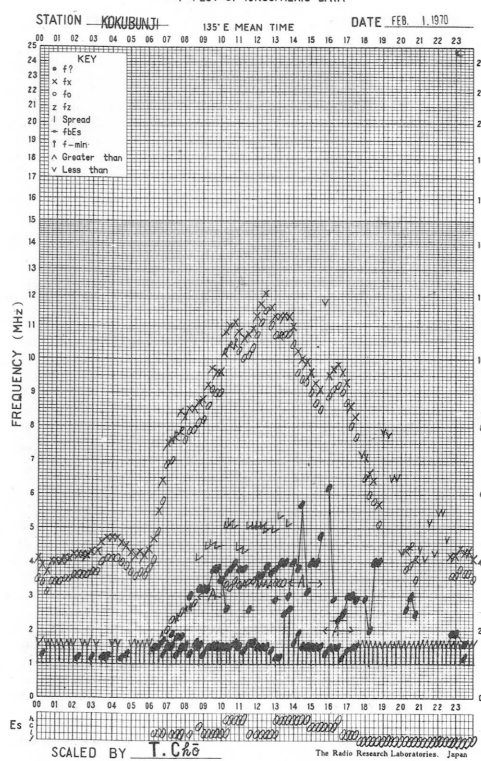
f-PLOT OF IONOSPHERIC DATA



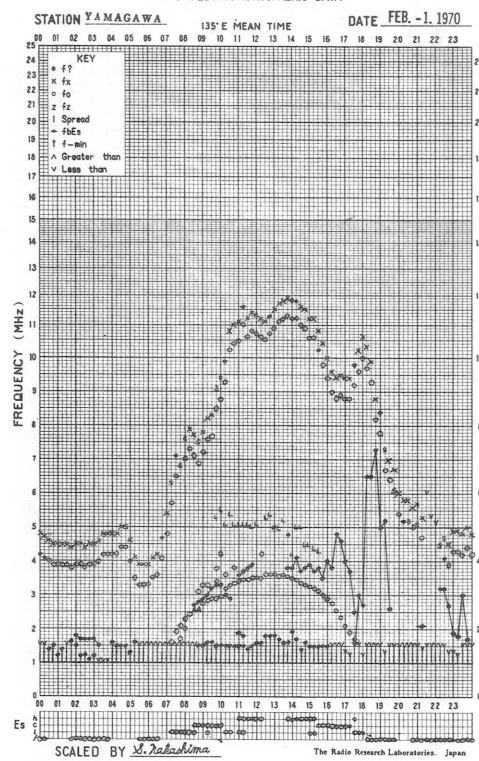
f-PLOT OF IONOSPHERIC DATA



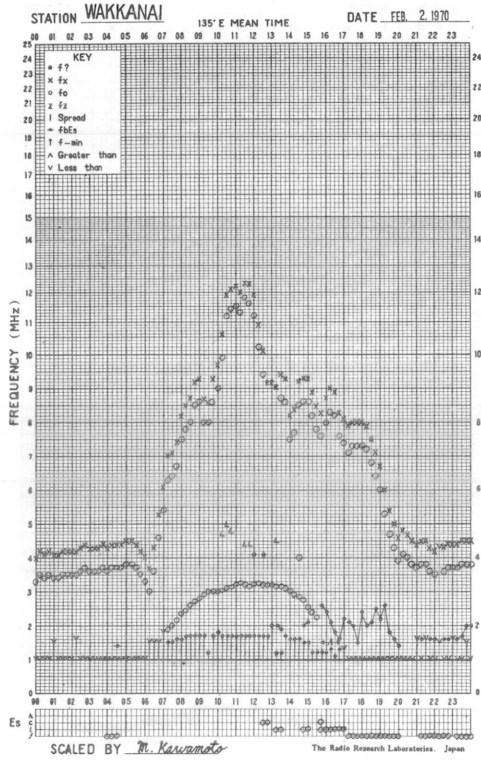
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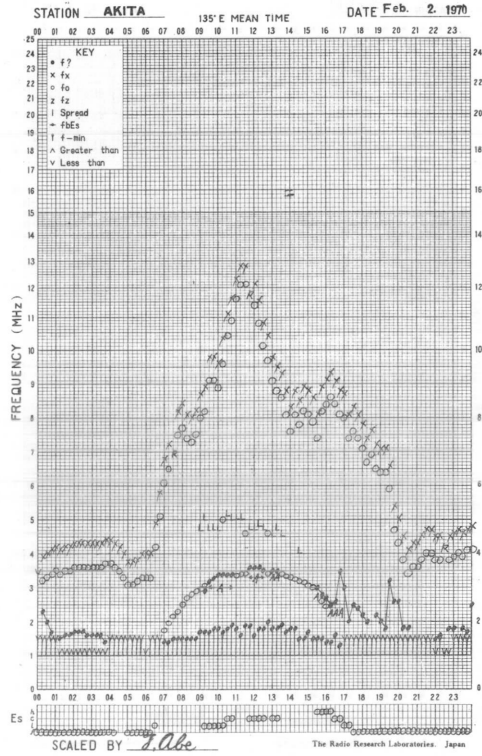
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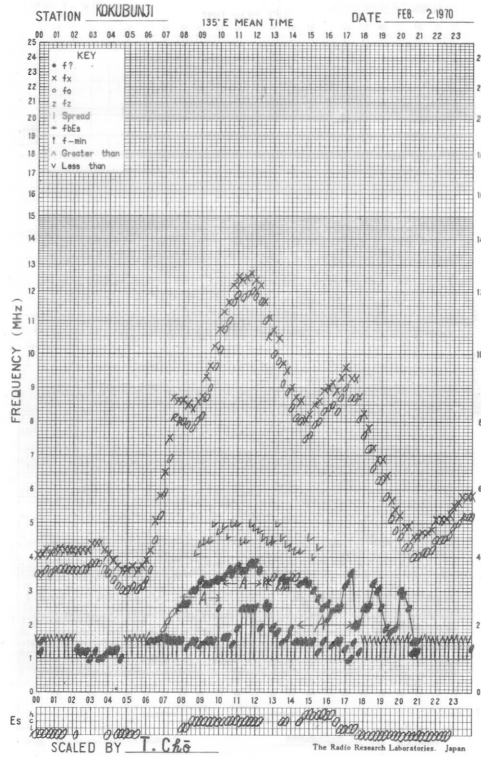
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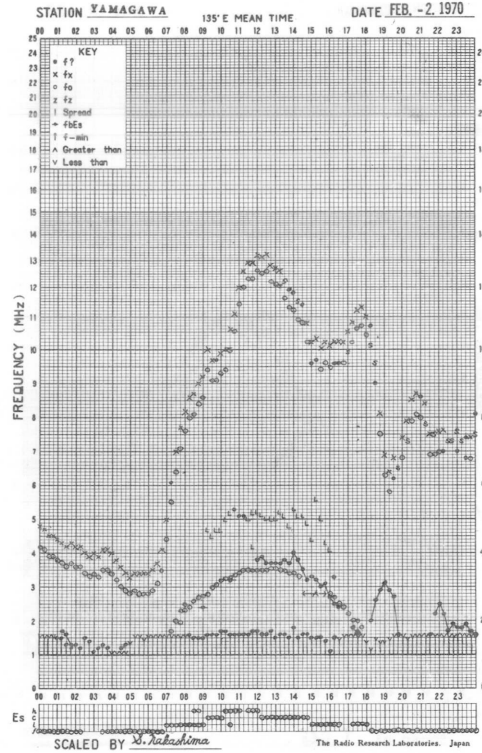
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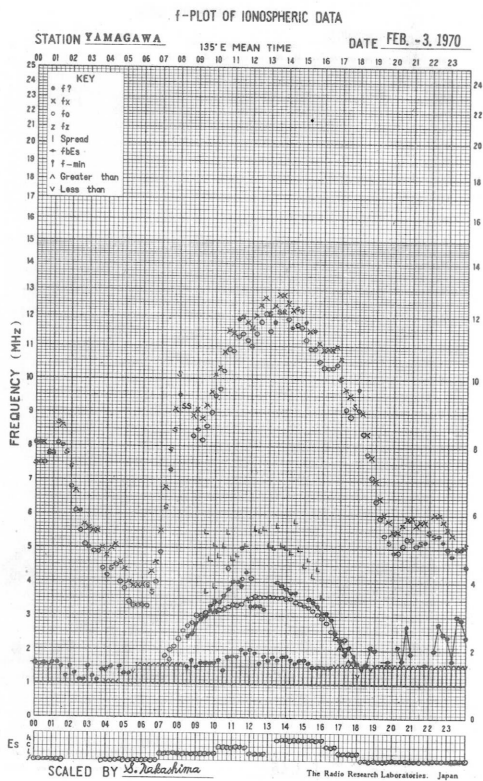
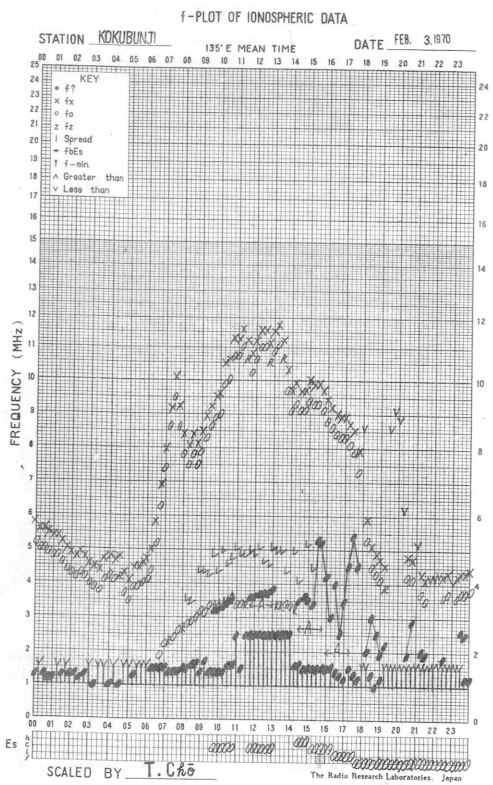
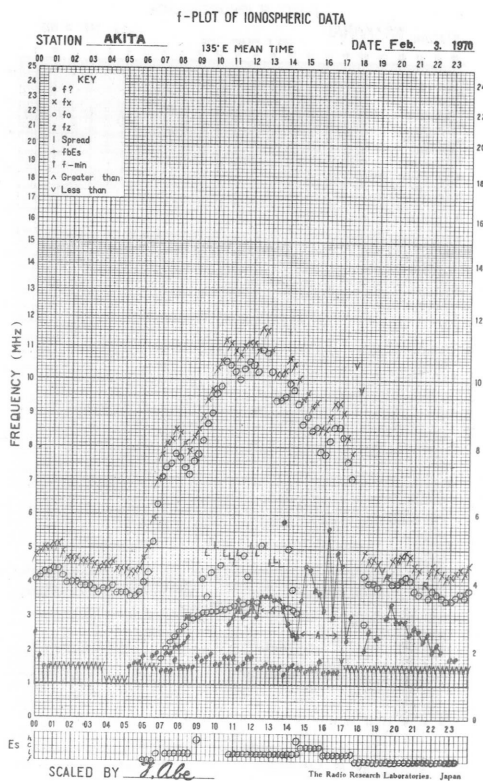
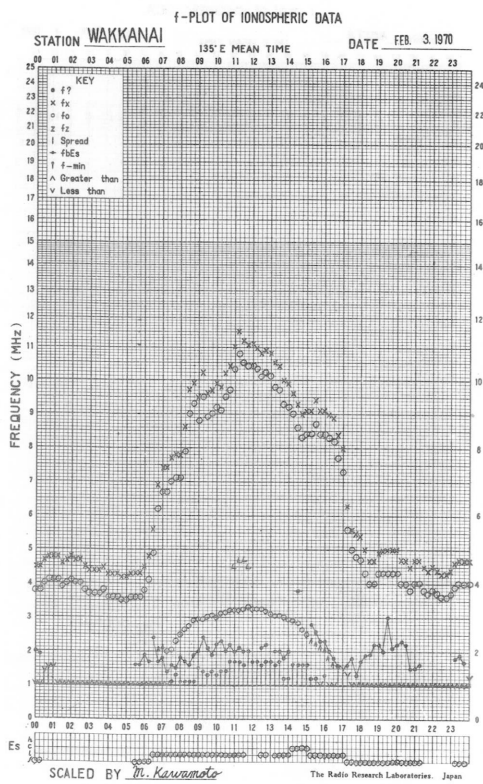


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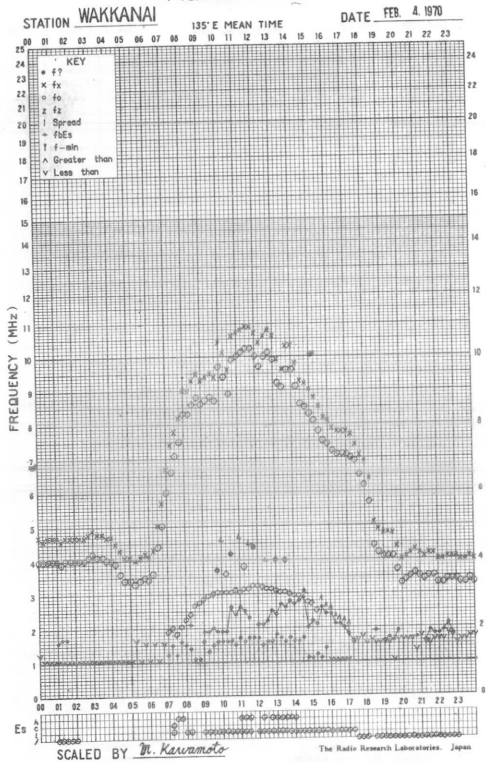


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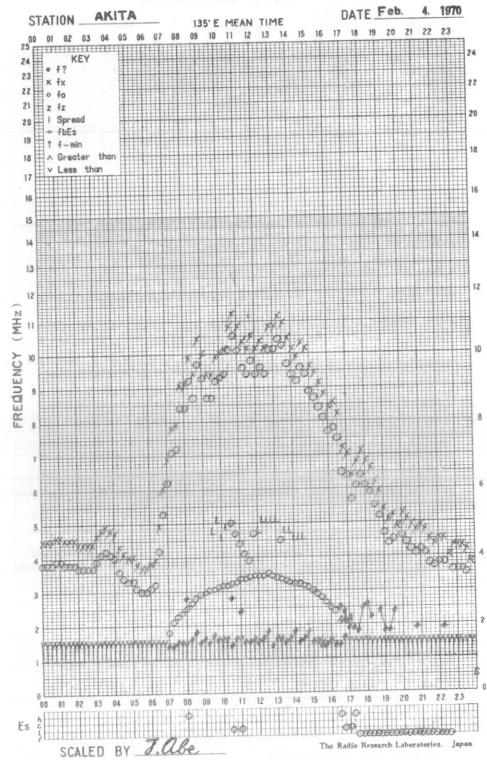




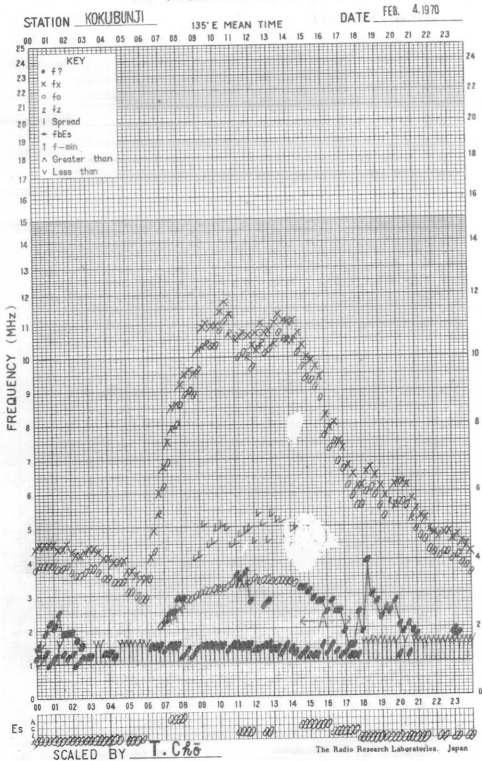
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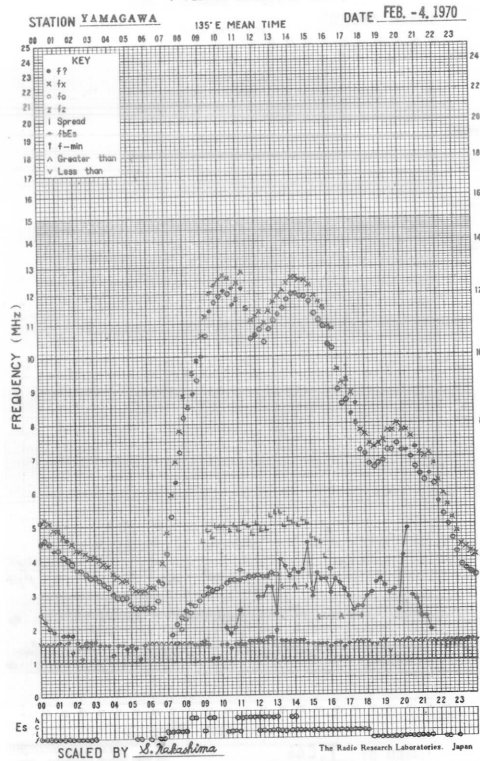
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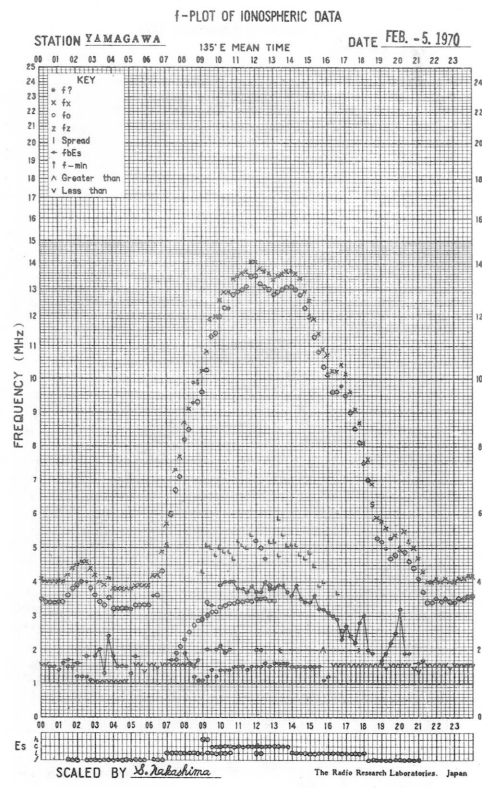
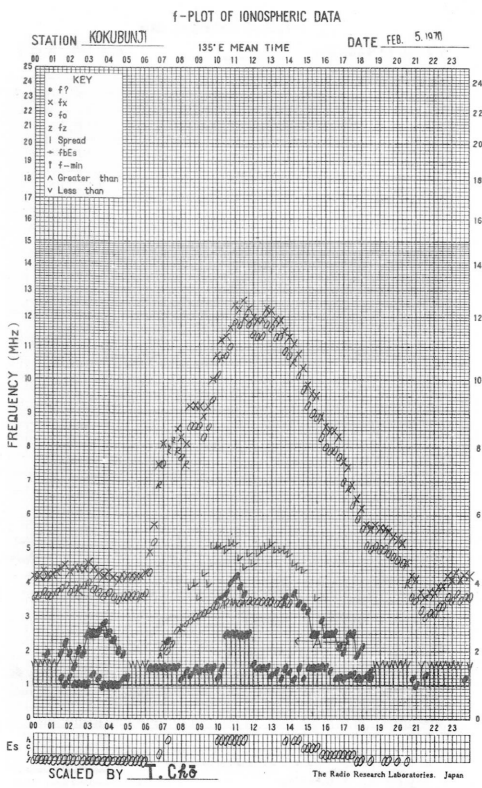
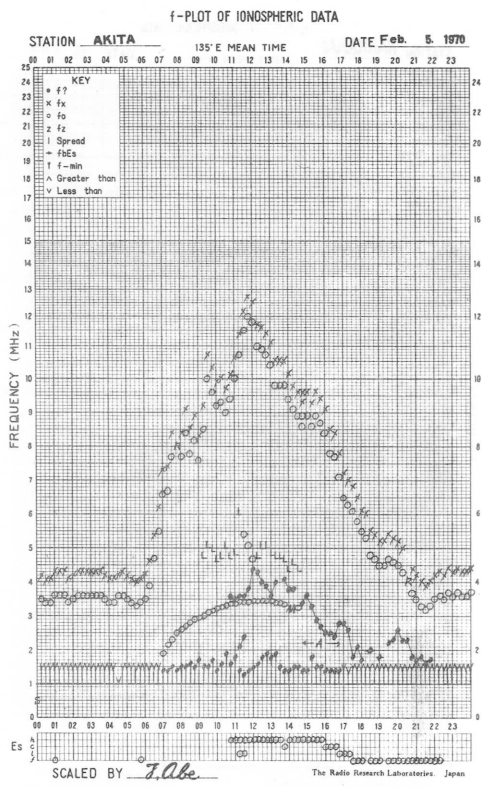
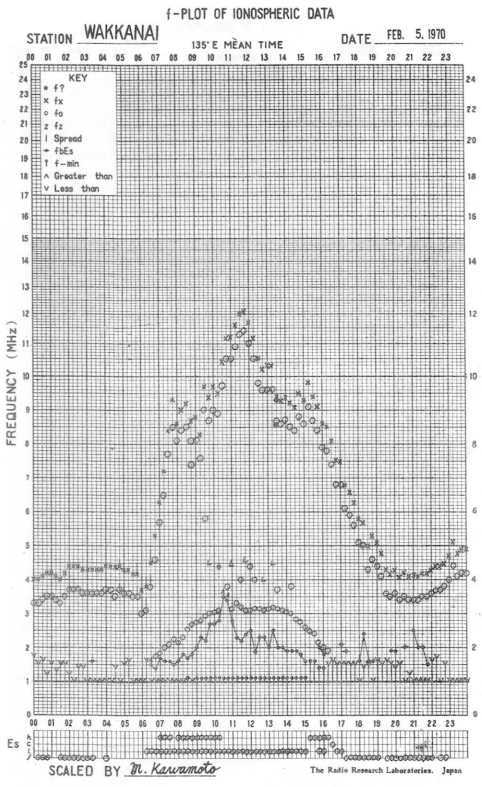


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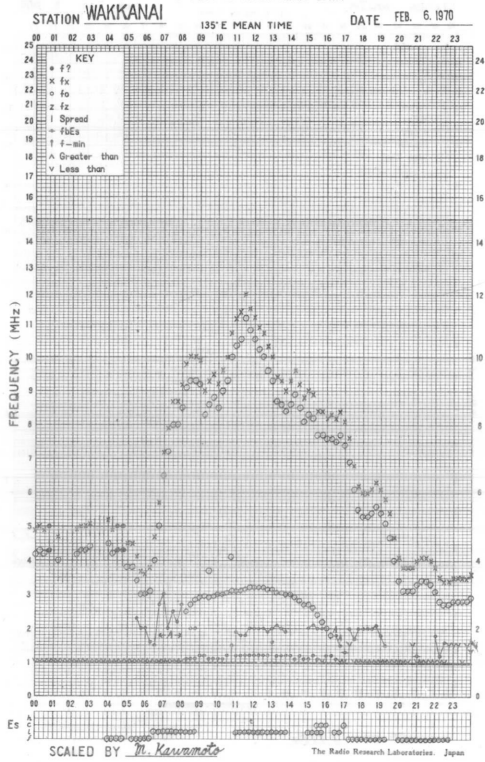


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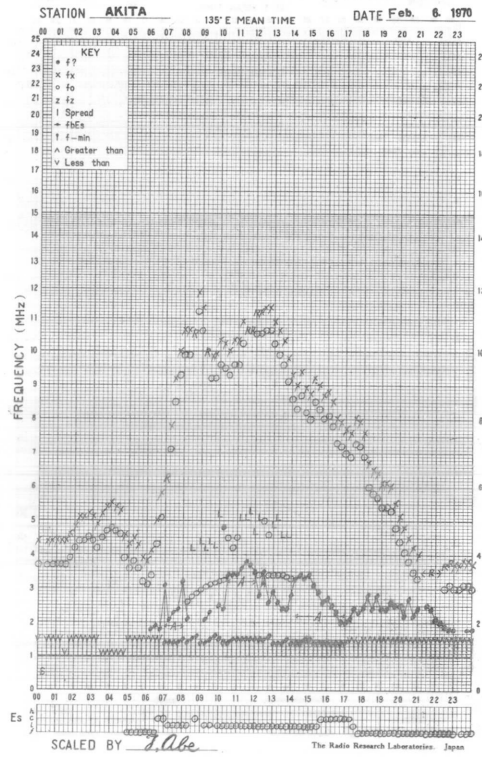




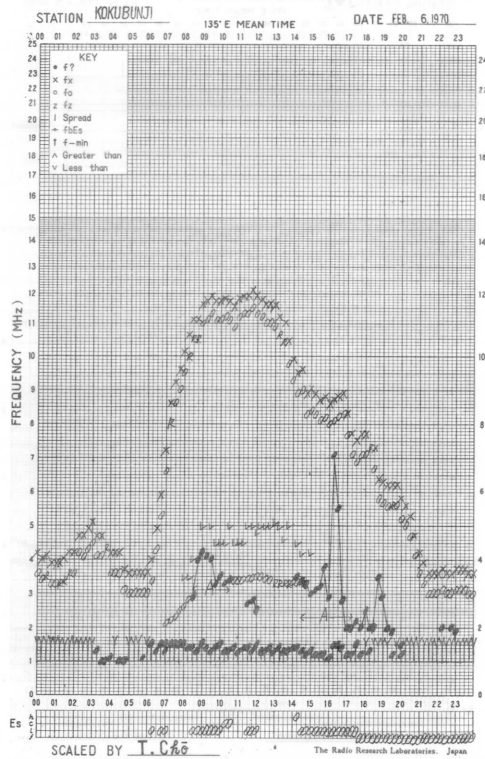
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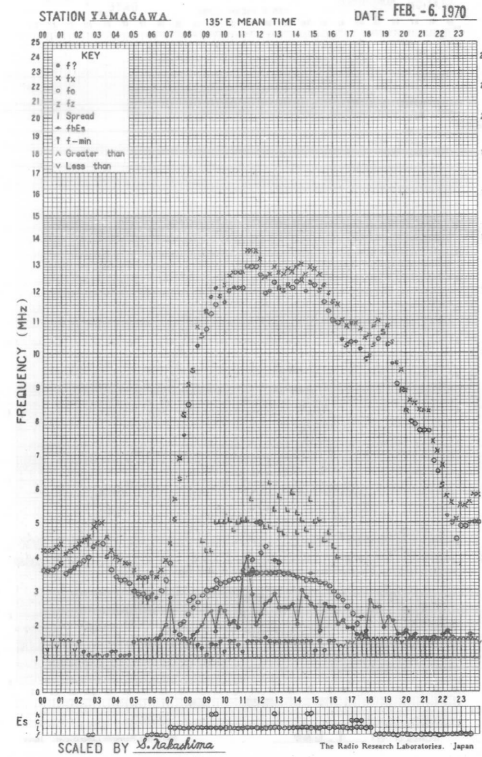
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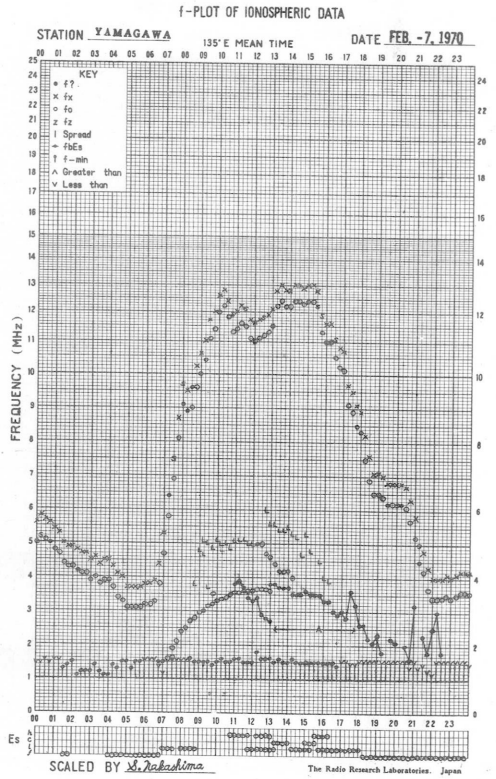
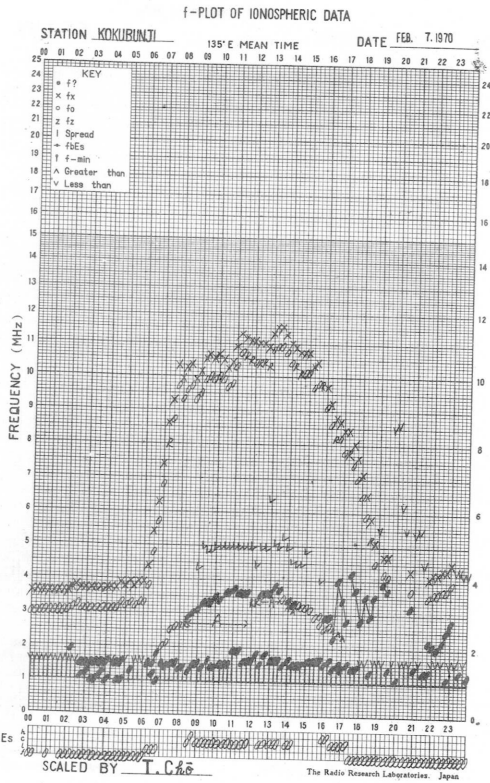
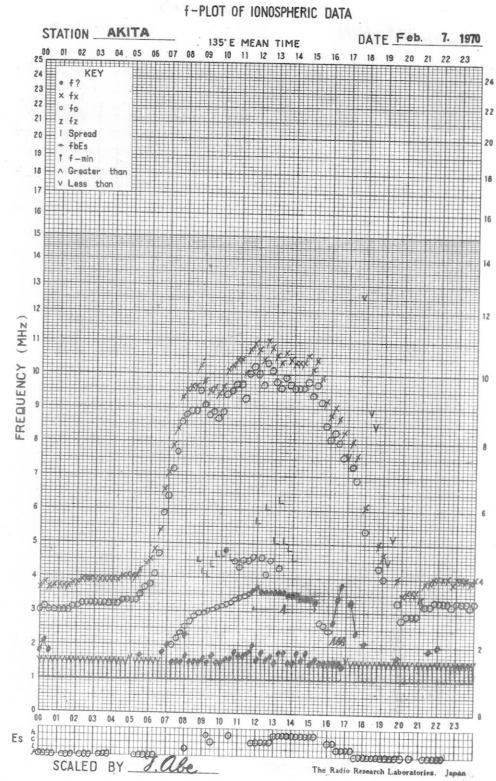
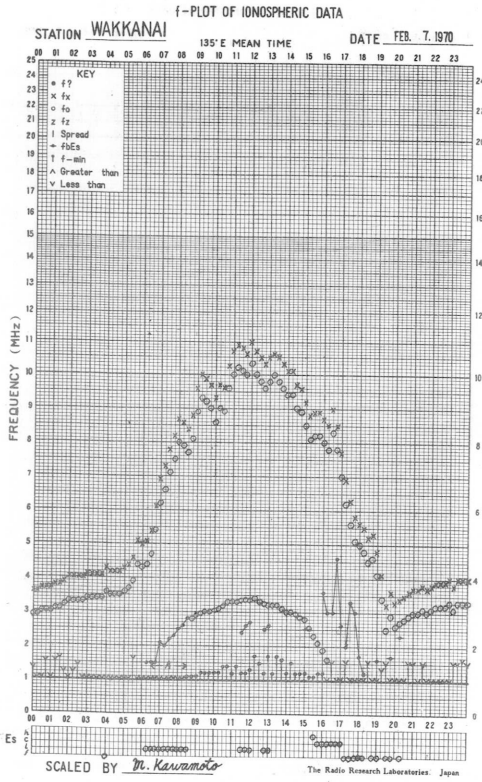


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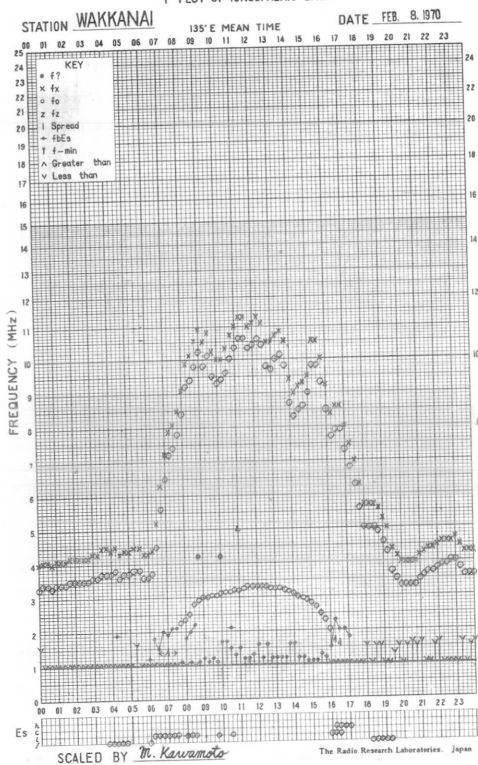


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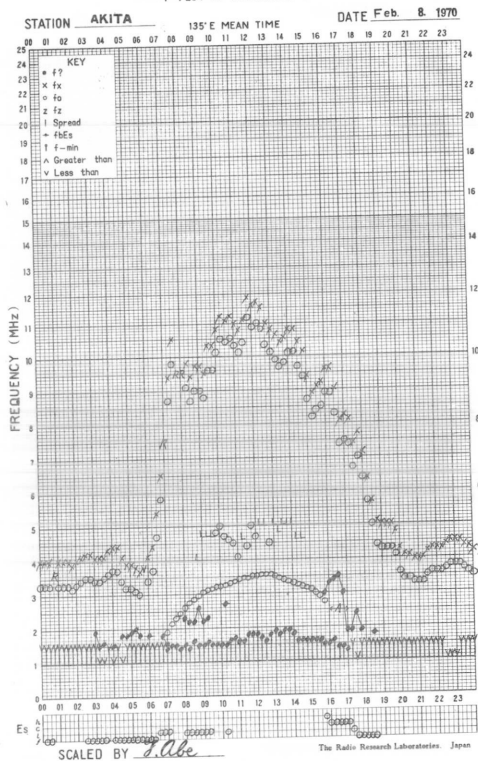




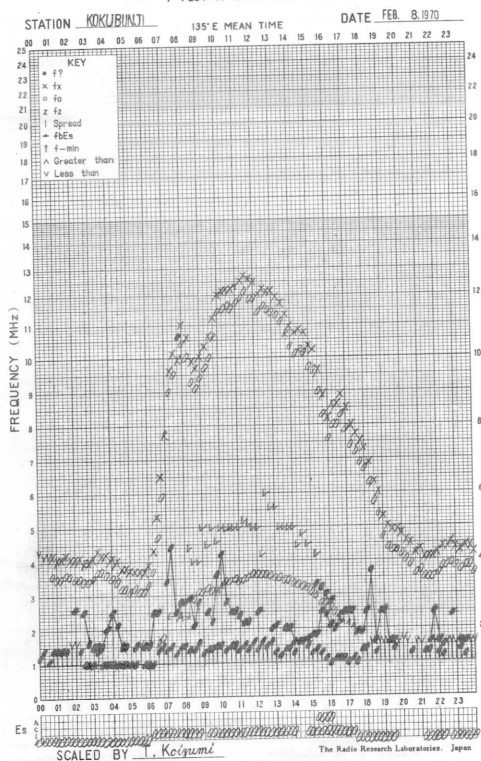
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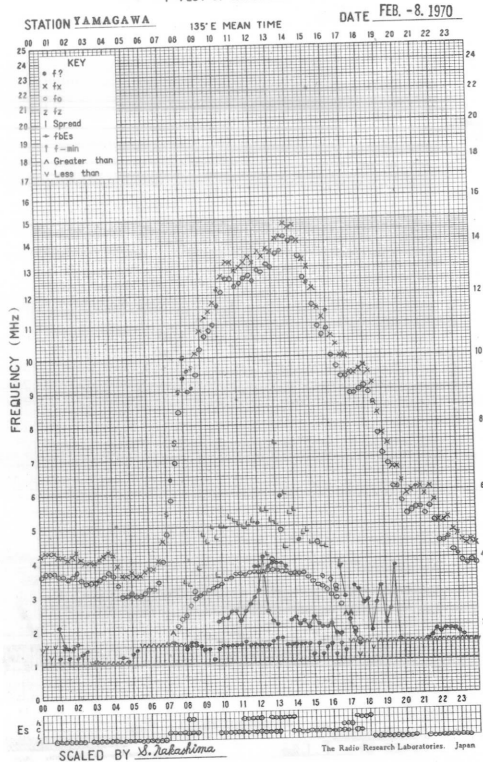
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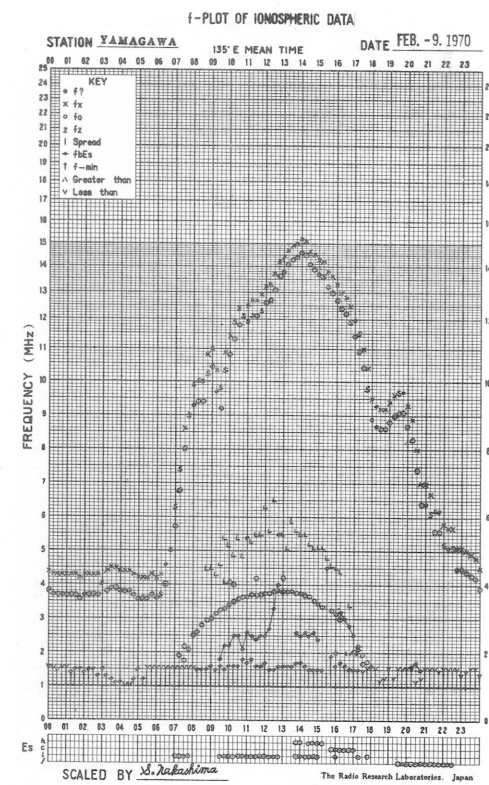
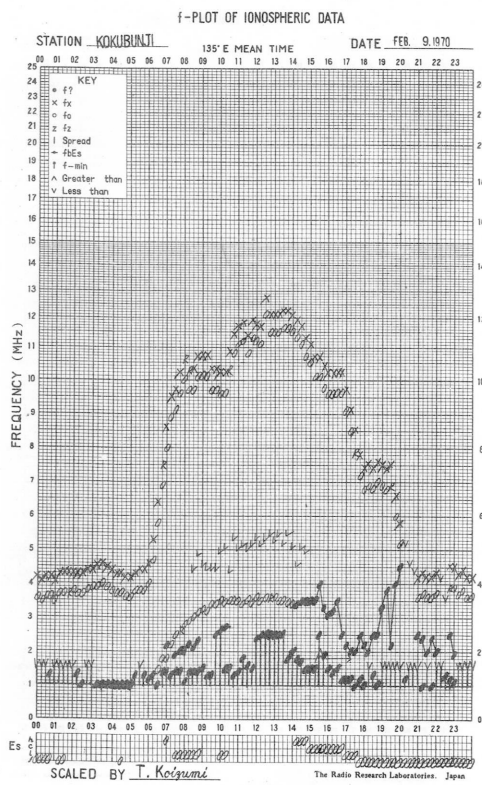
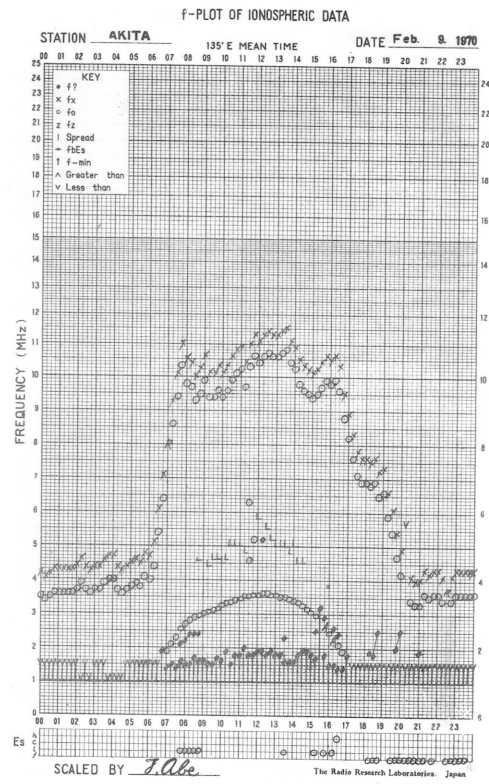
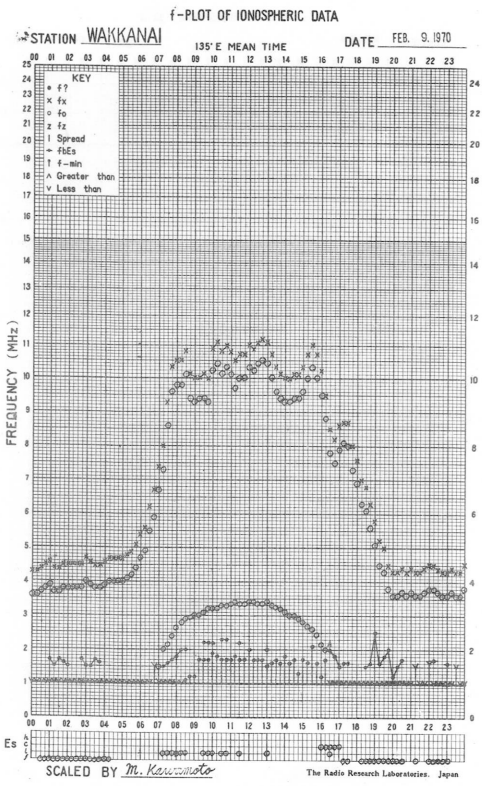


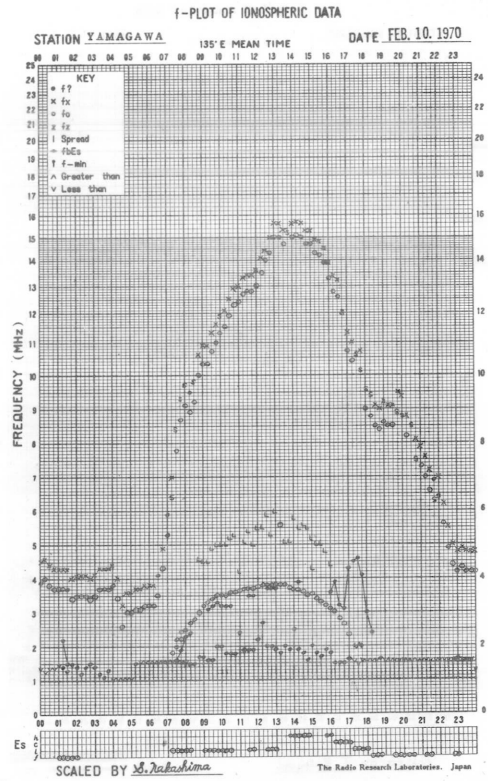
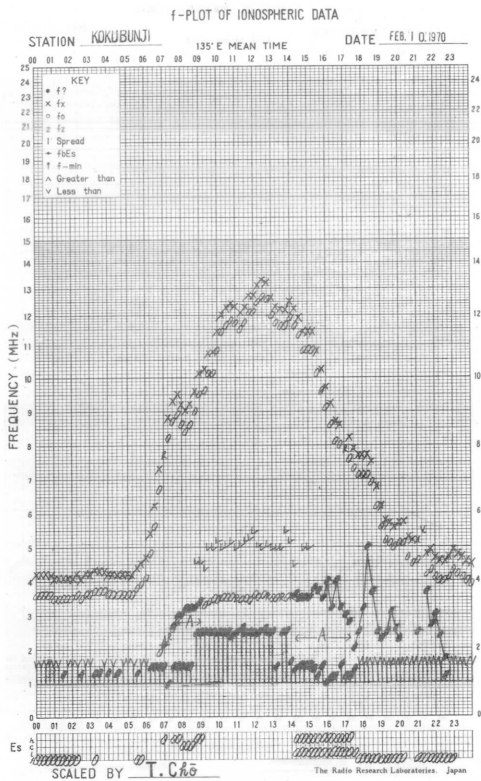
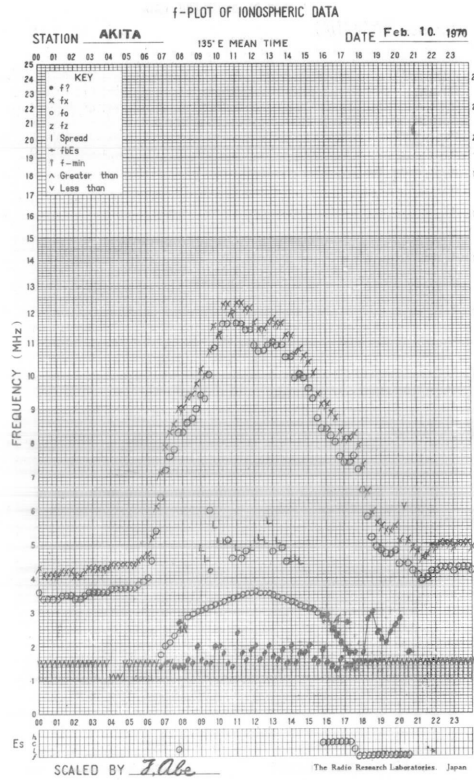
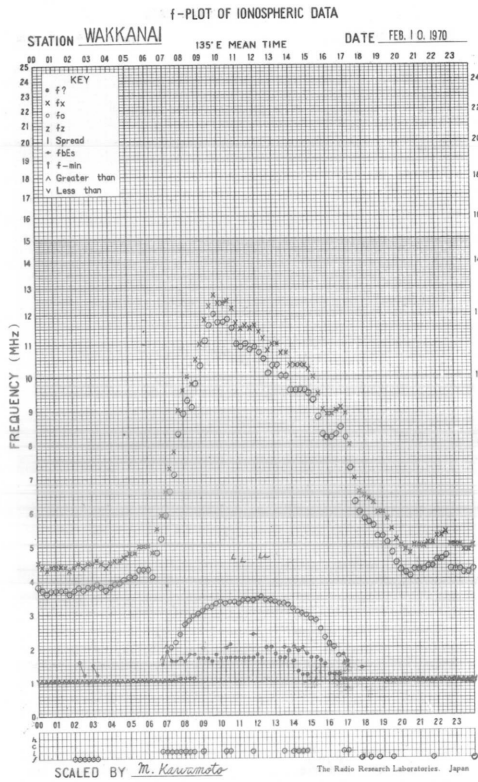
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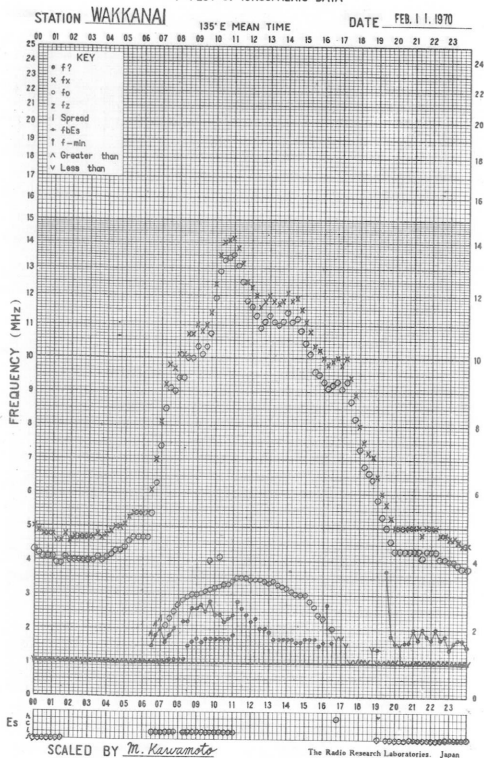
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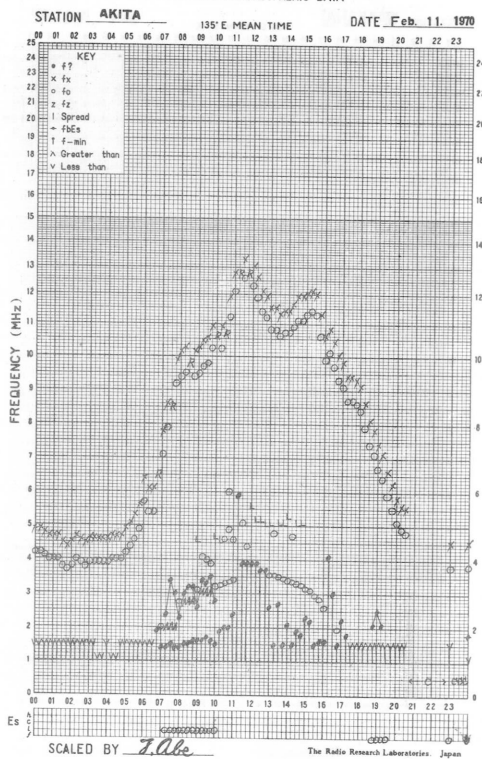




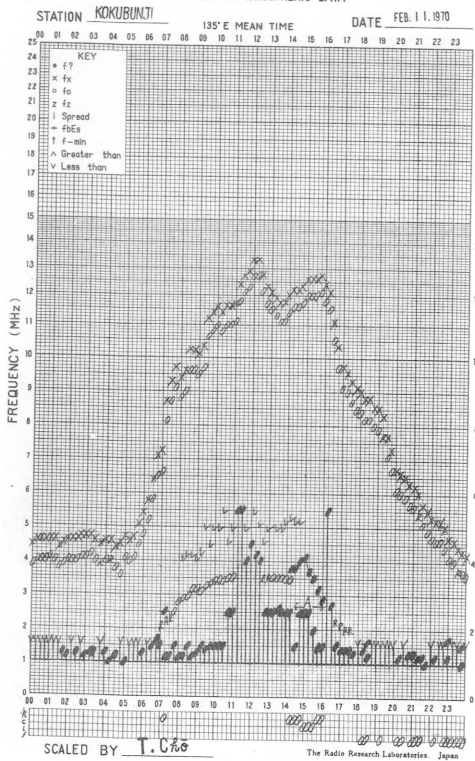
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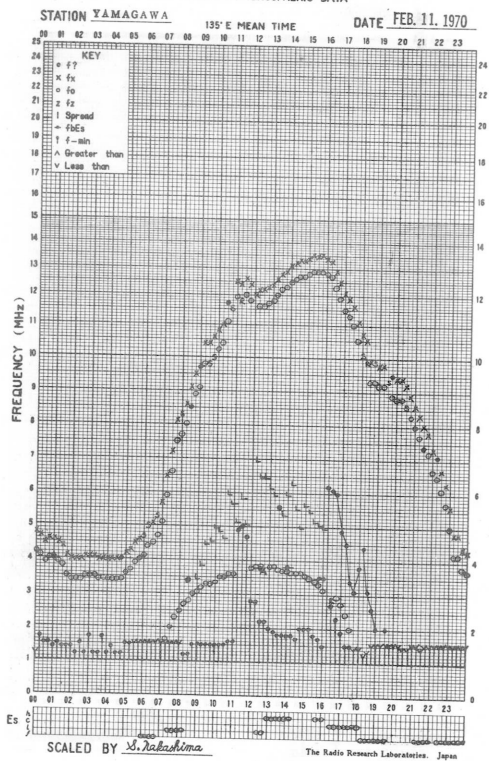
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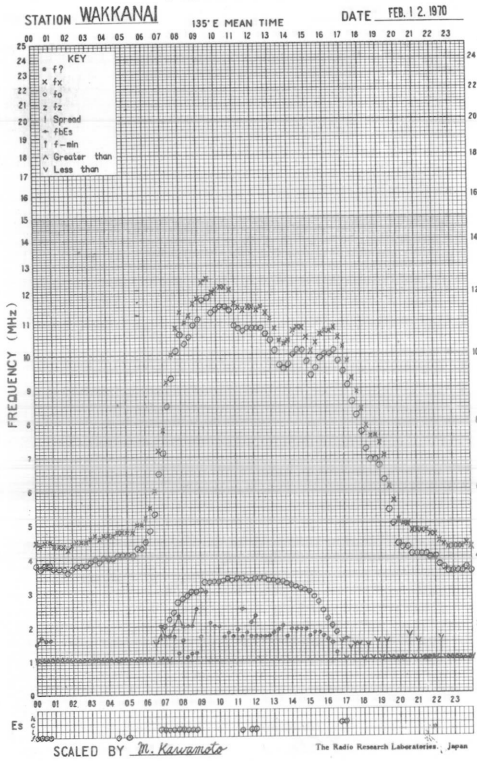
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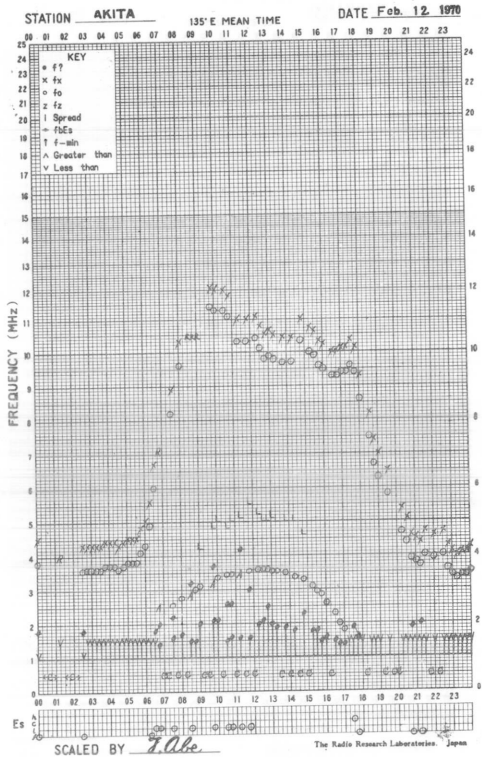
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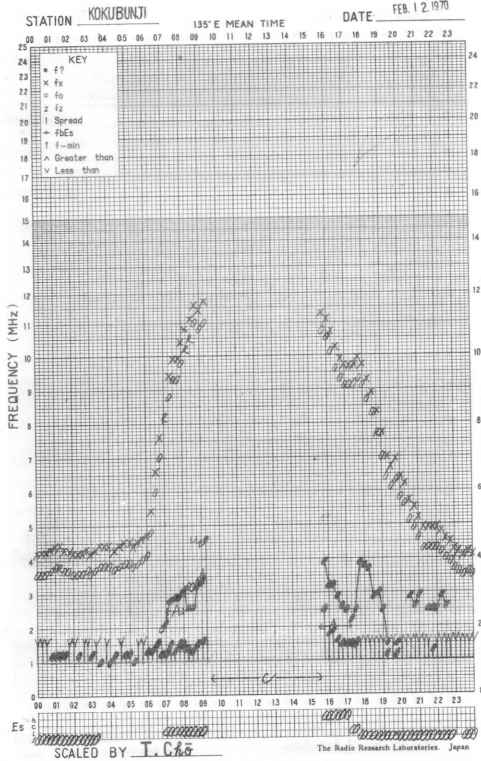
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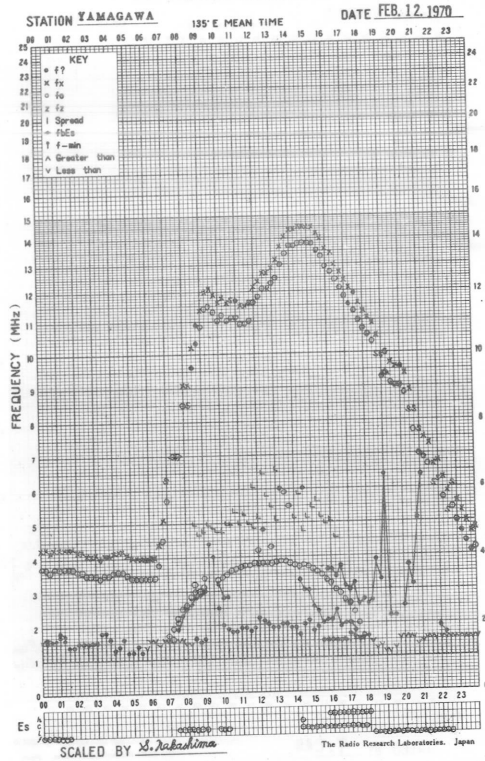
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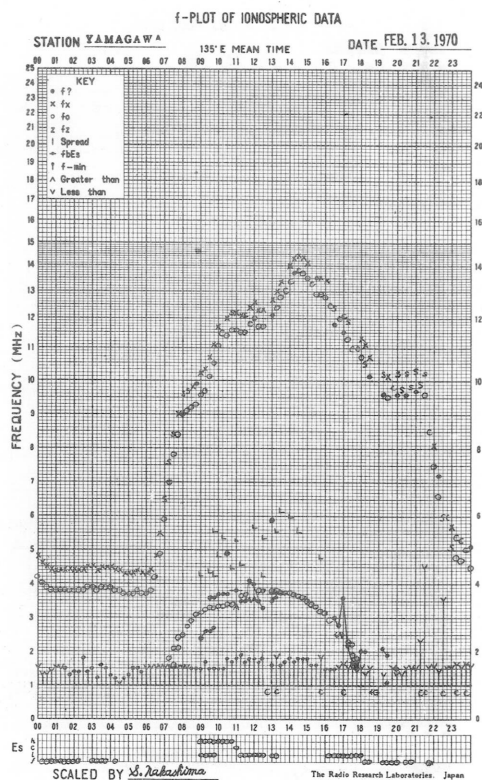
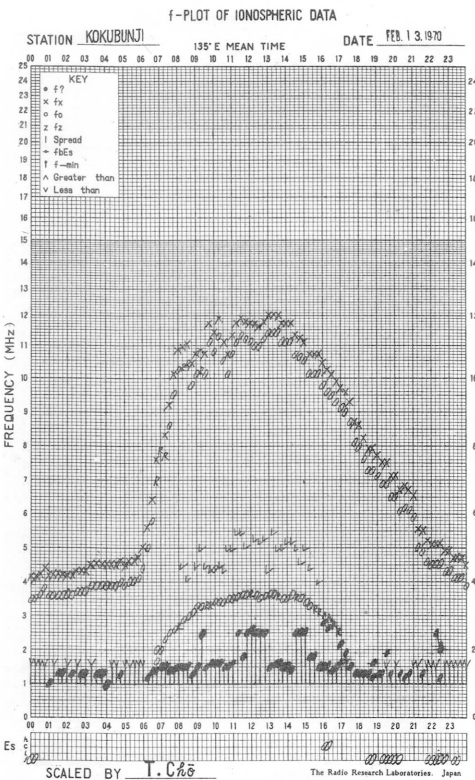
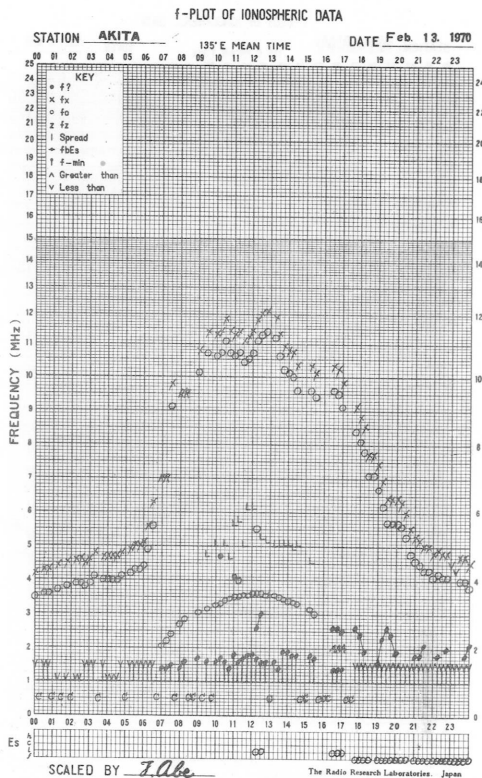
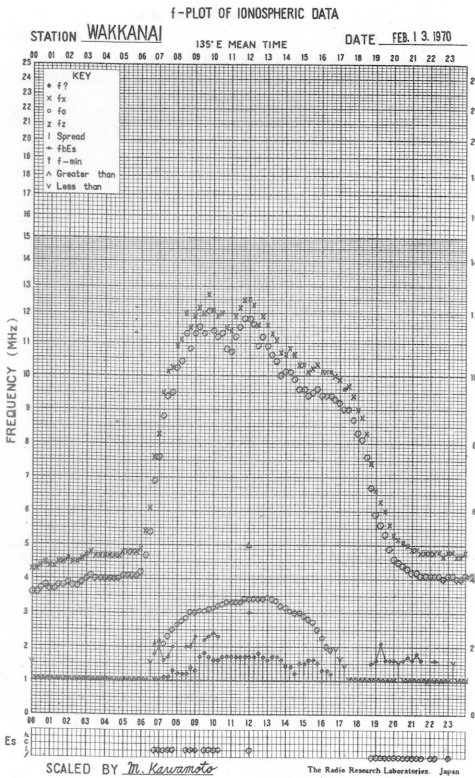


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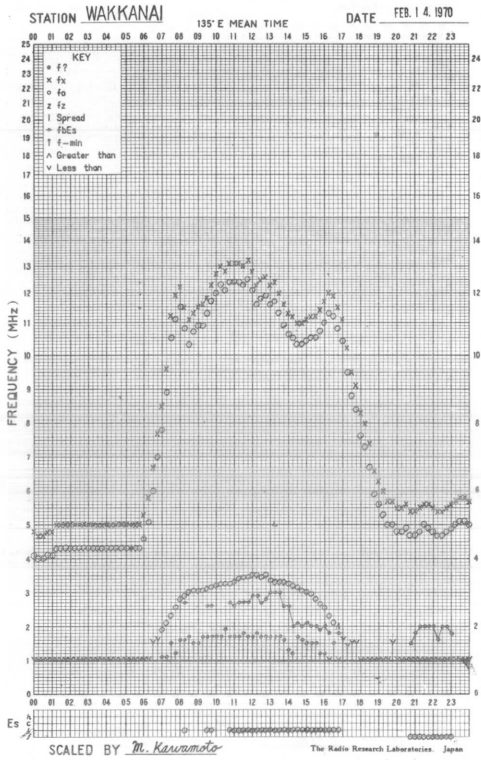


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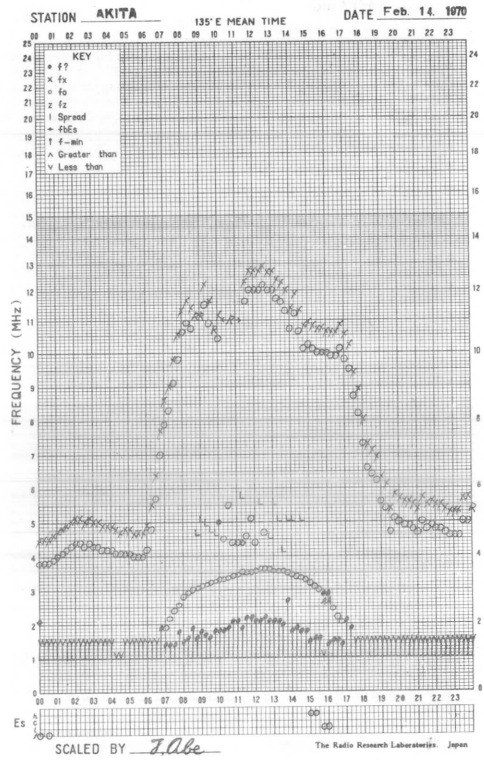




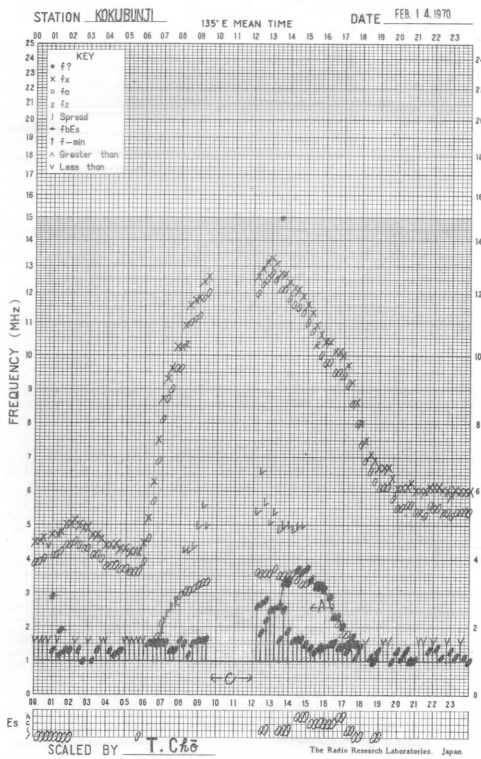
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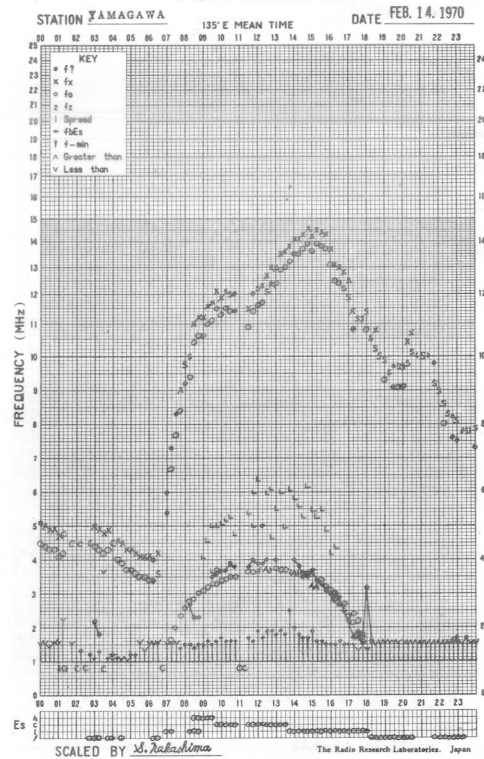
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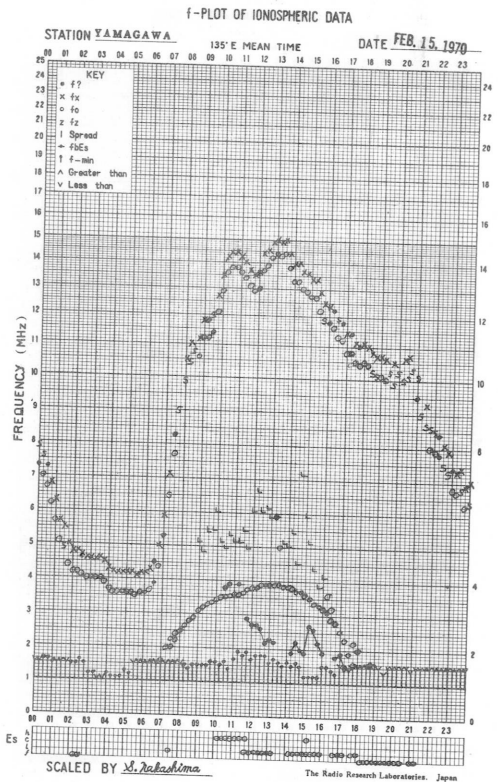
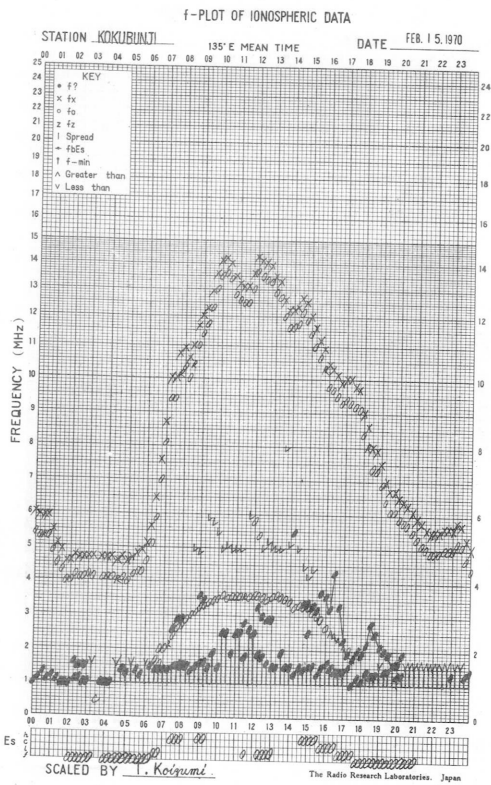
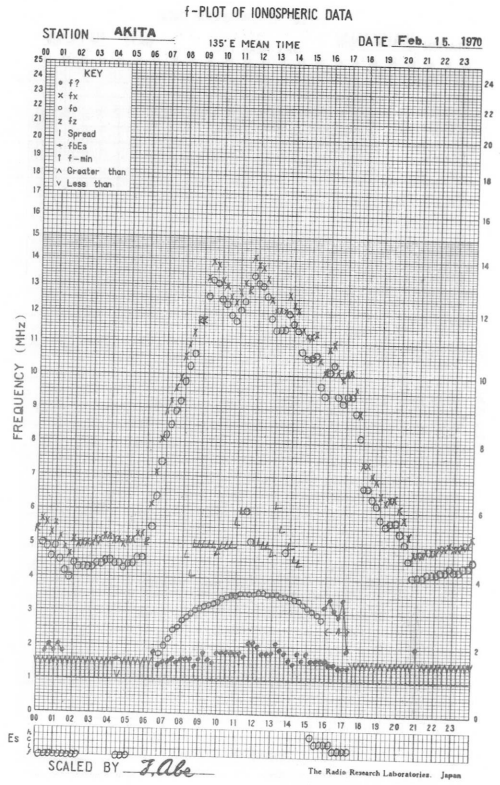
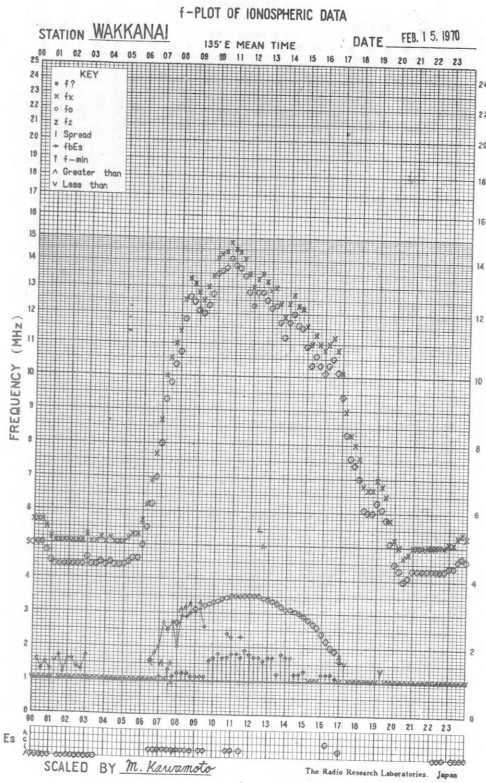


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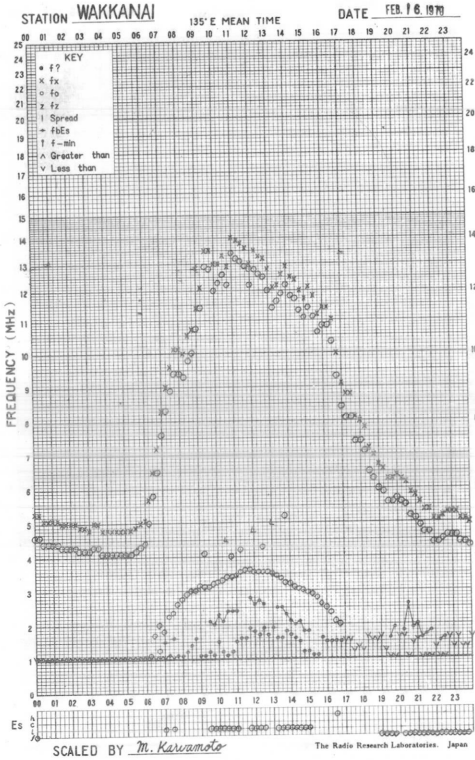


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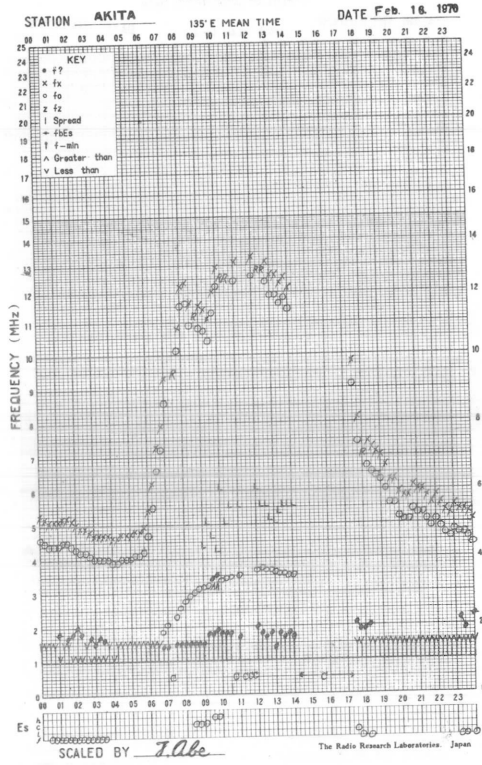




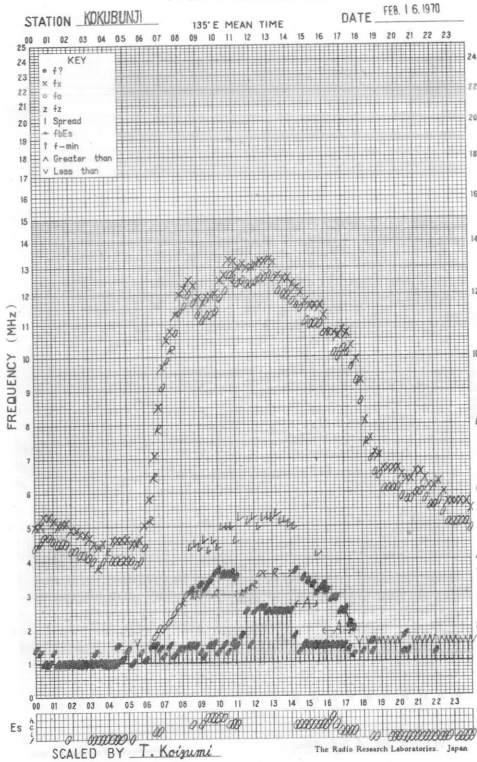
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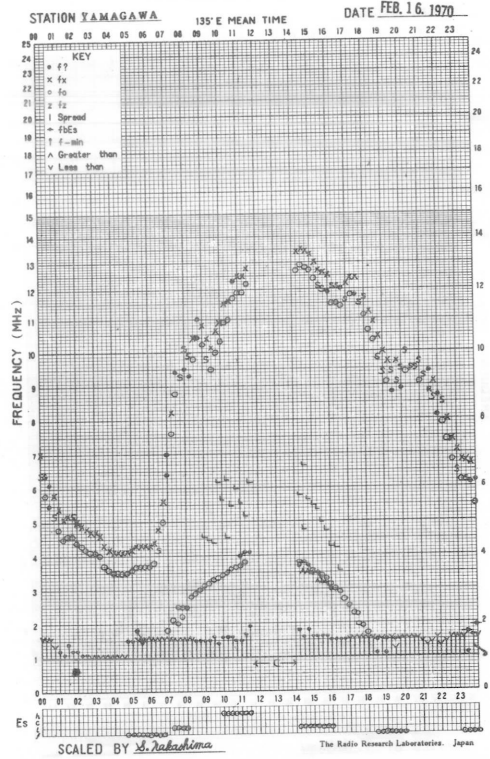
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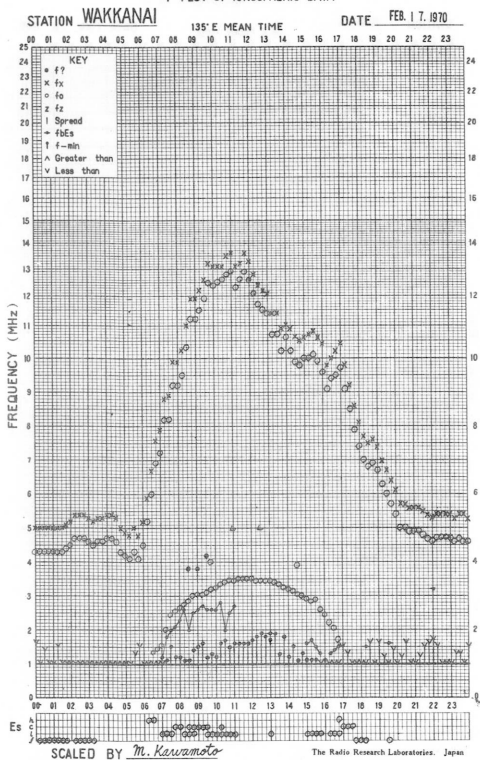
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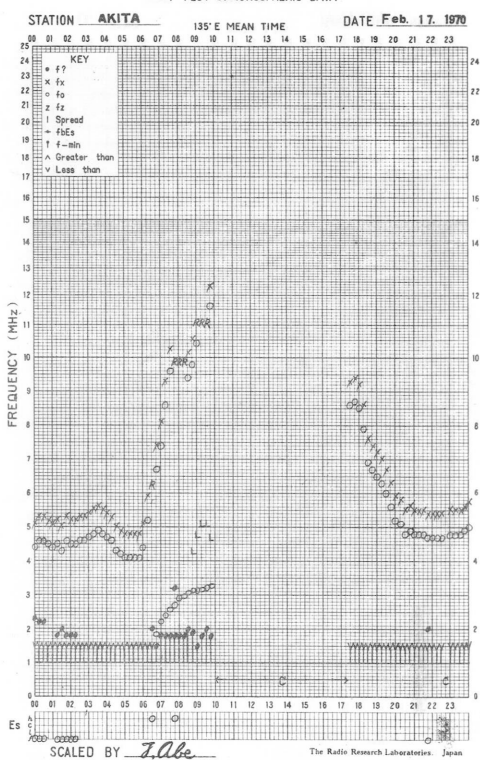
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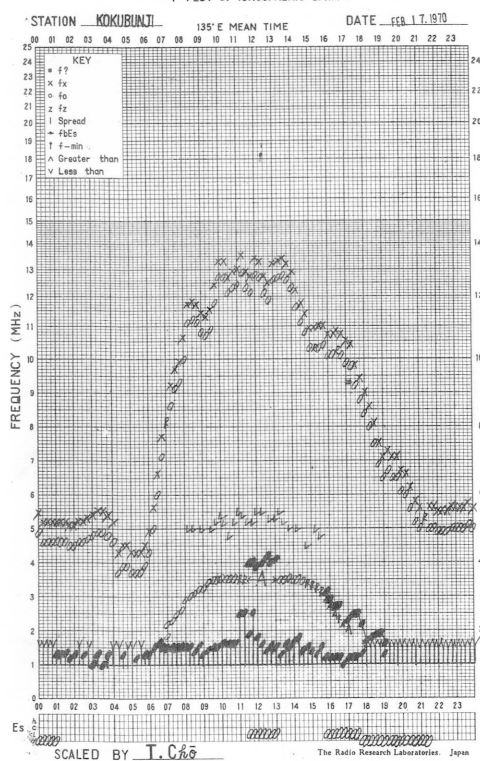
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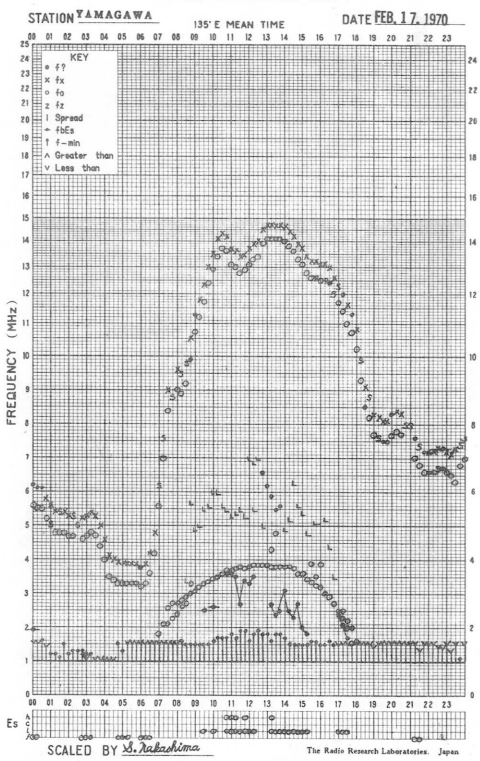
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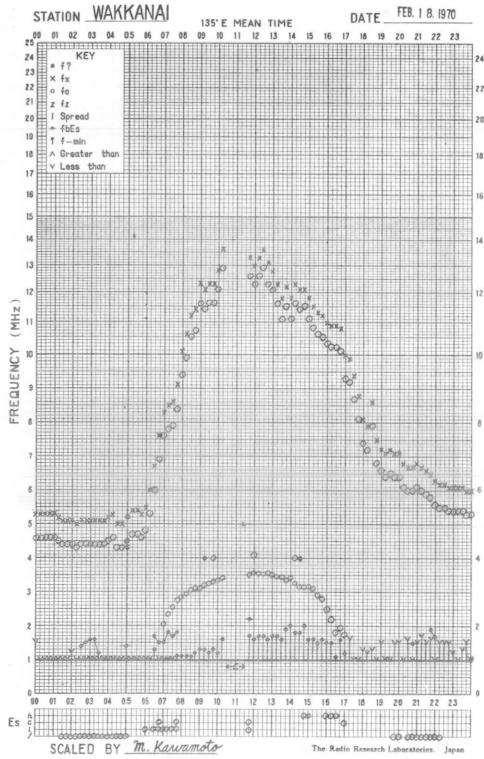
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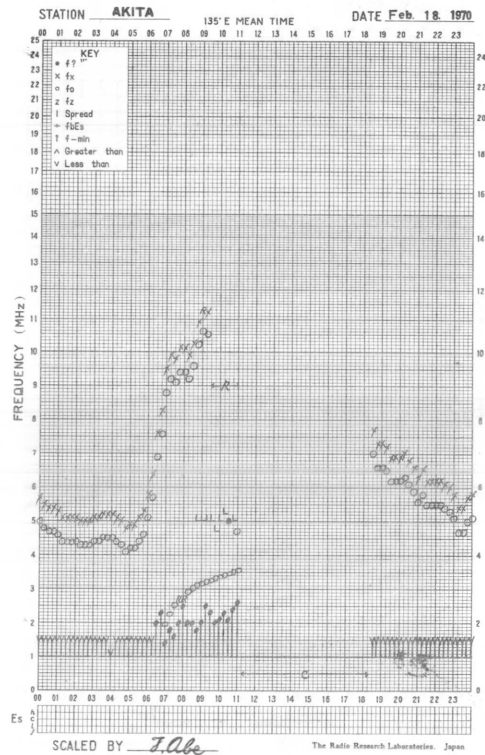
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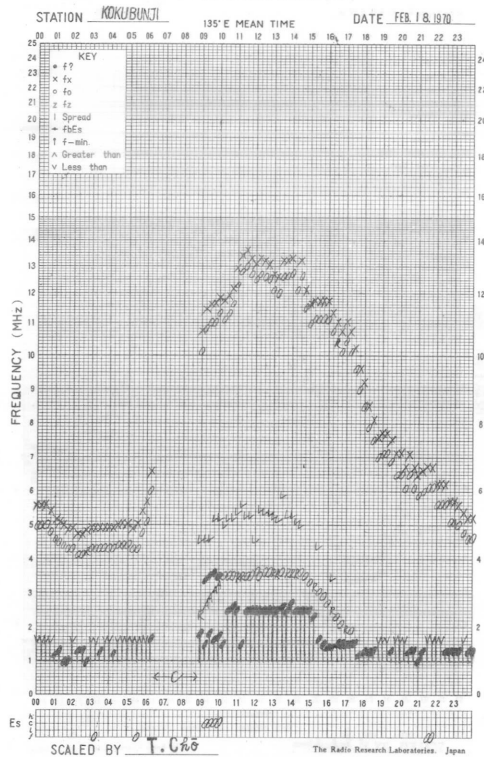
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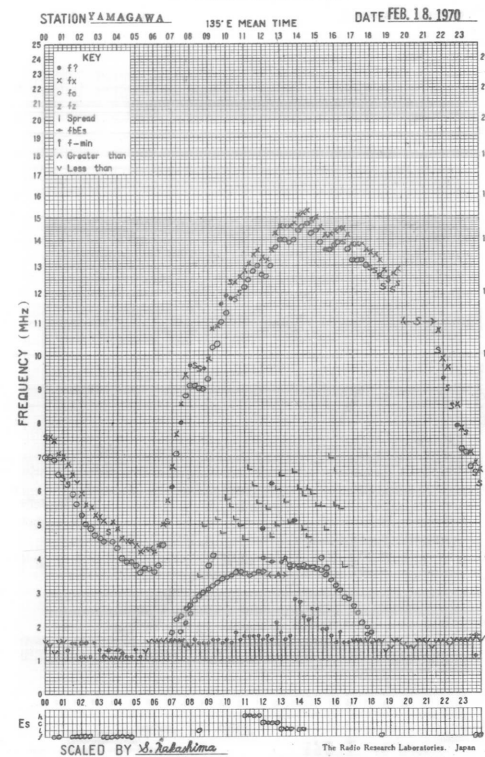
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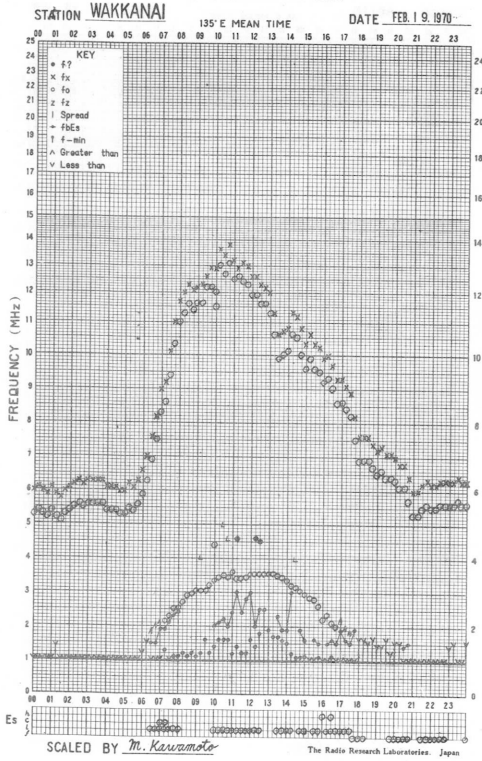
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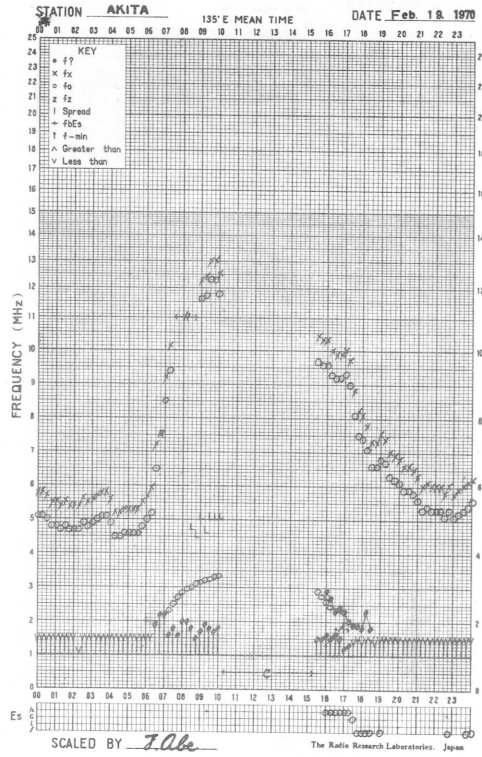
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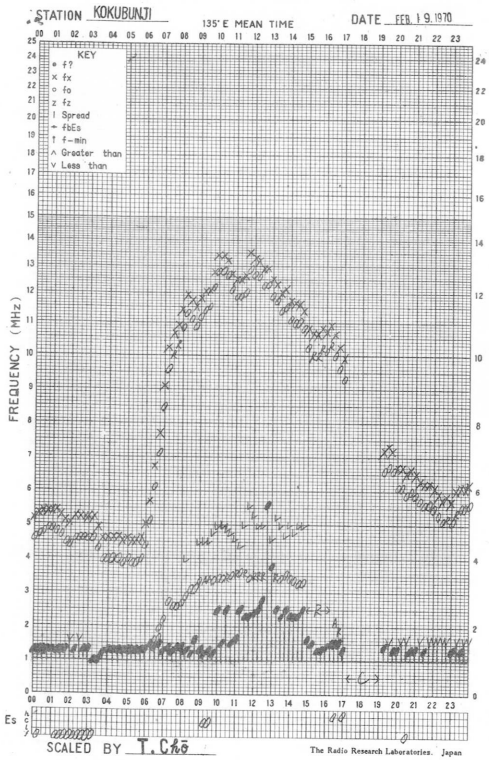
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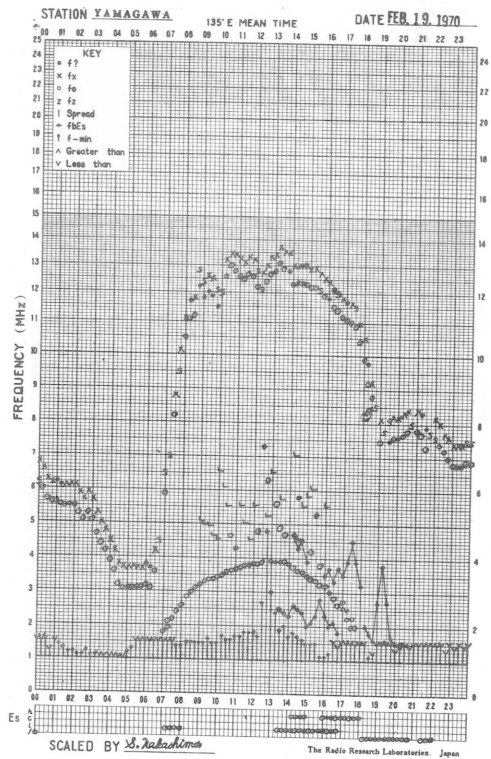
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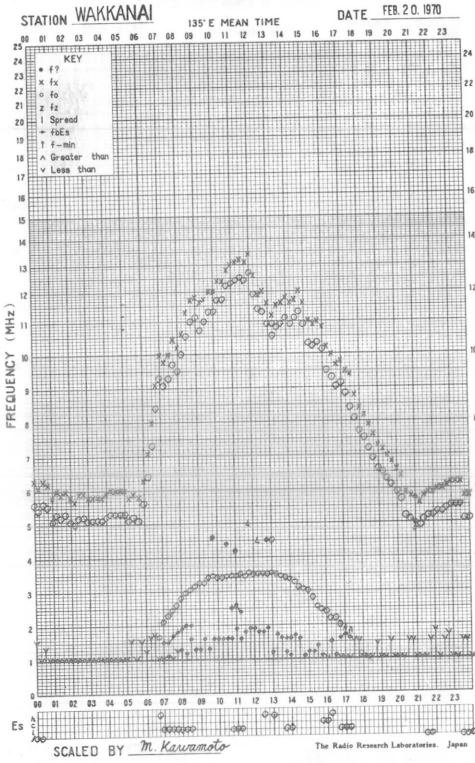
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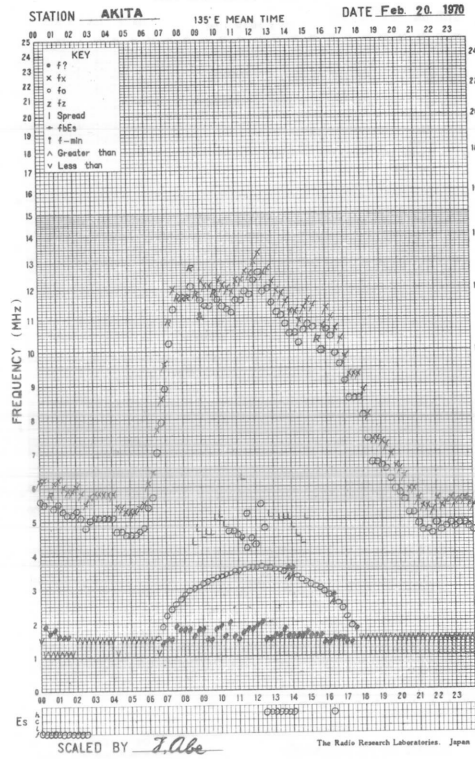
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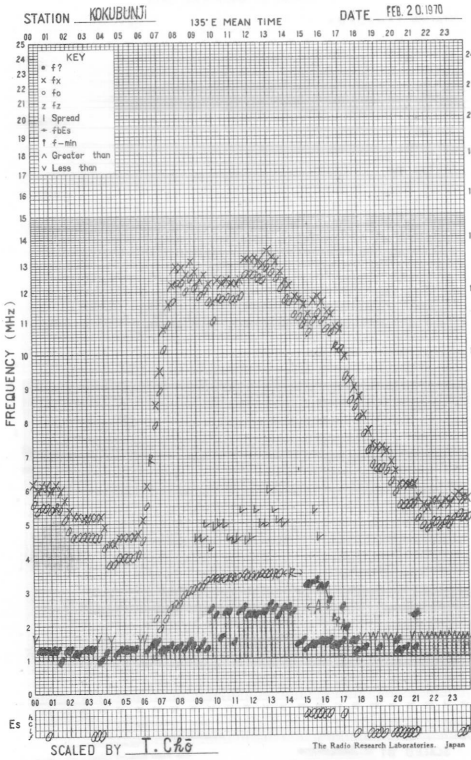
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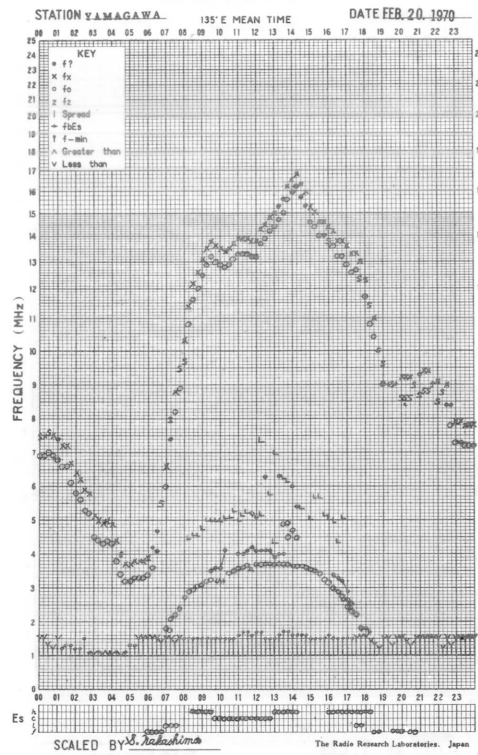
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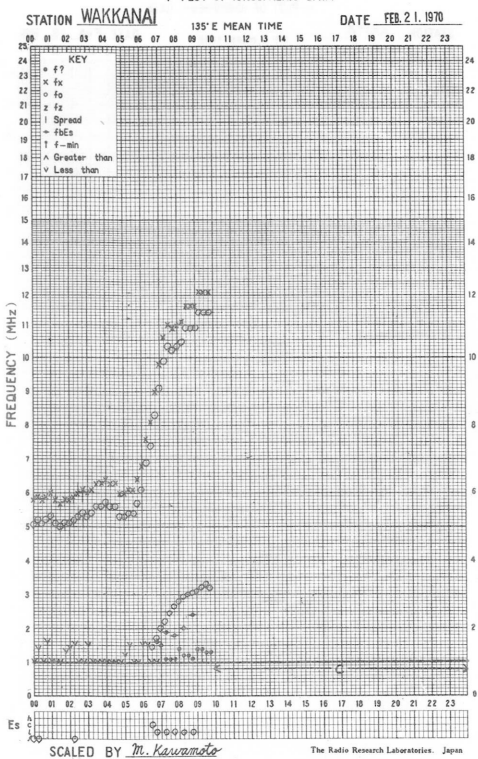
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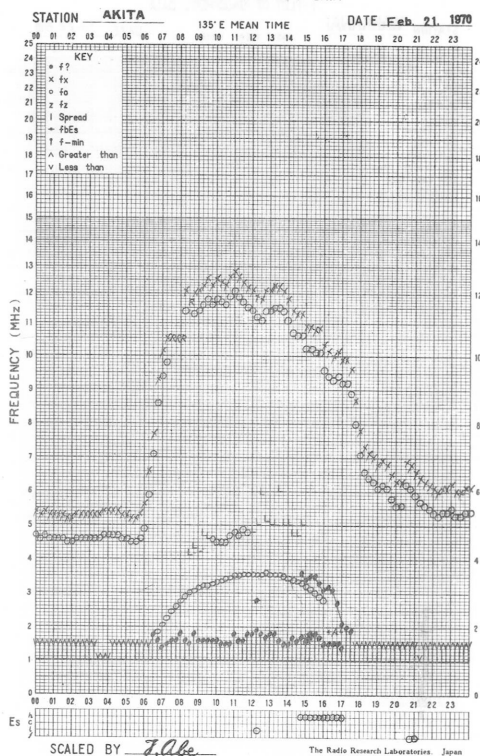
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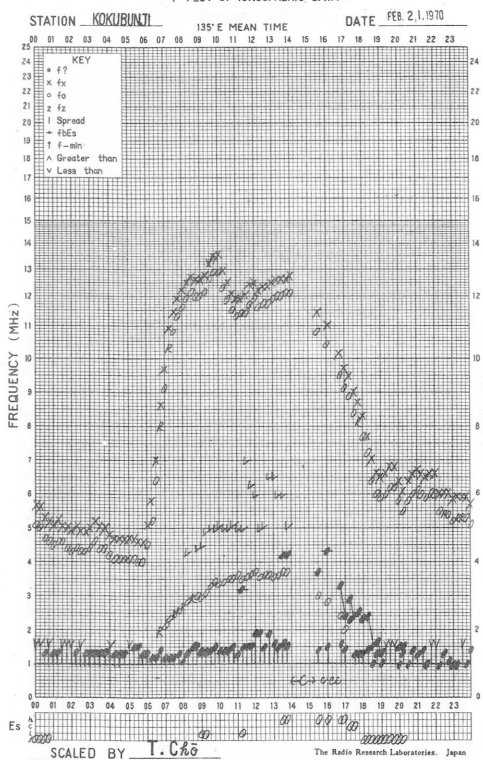
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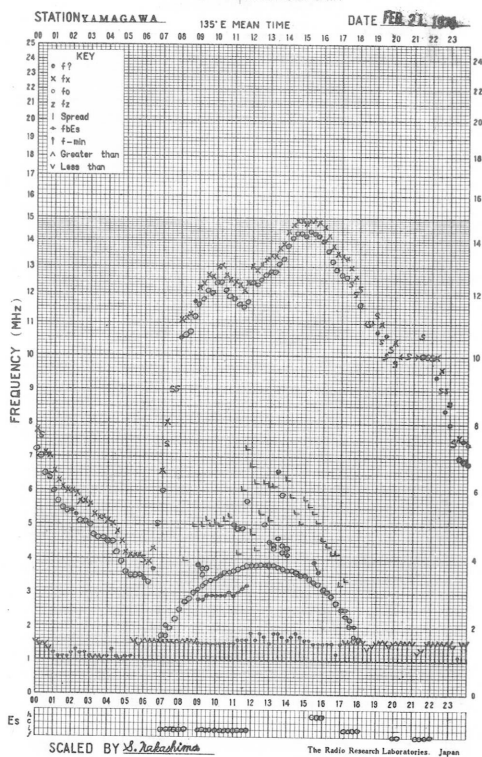
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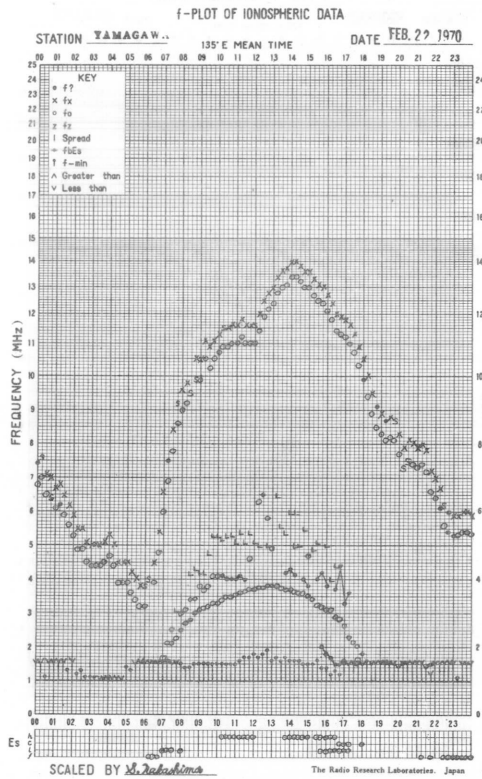
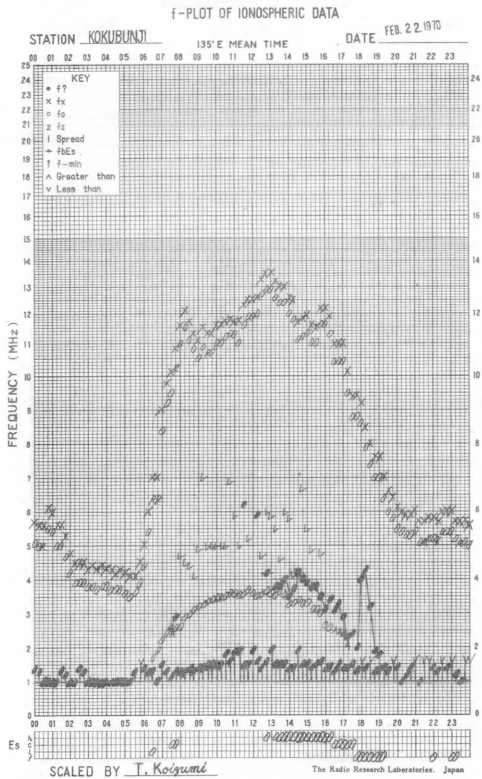
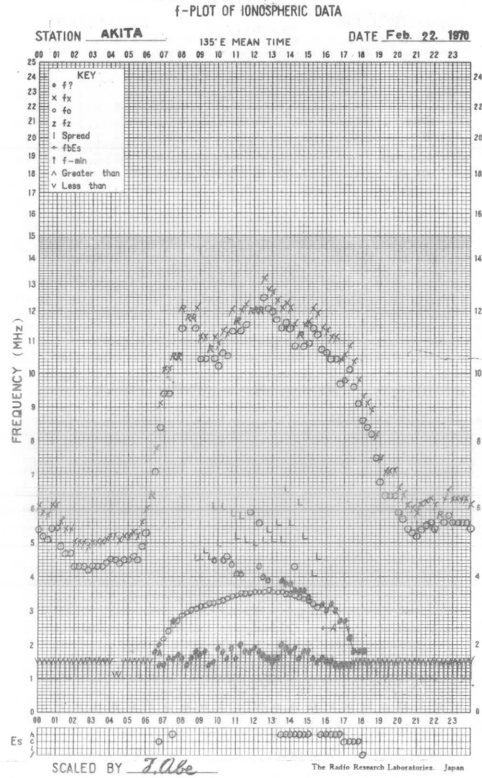
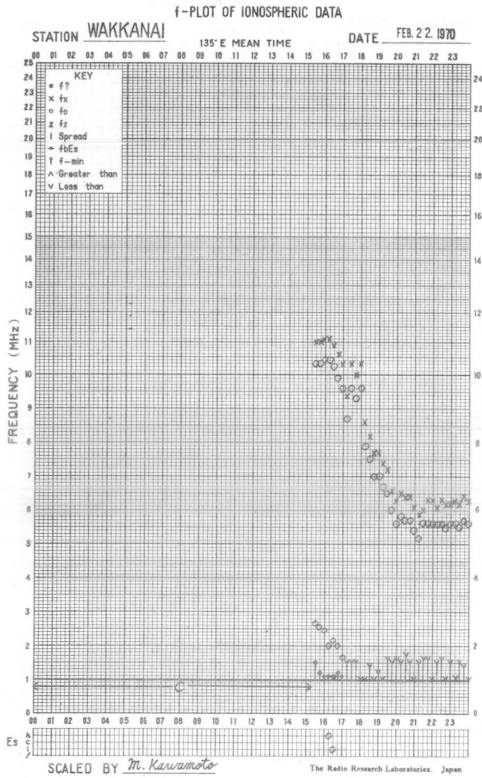


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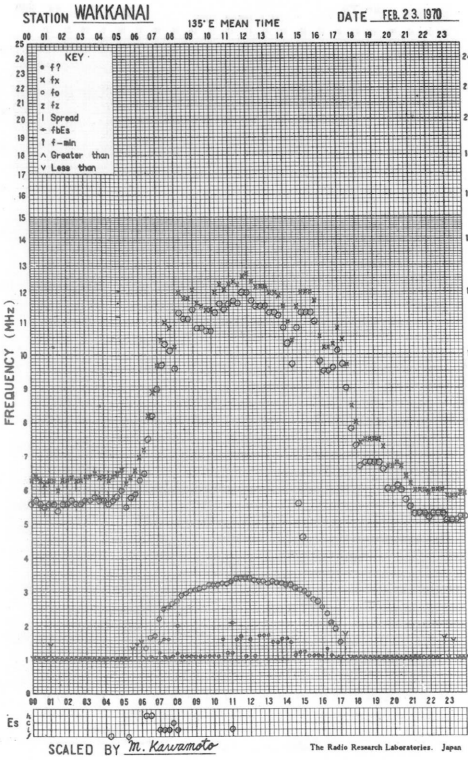


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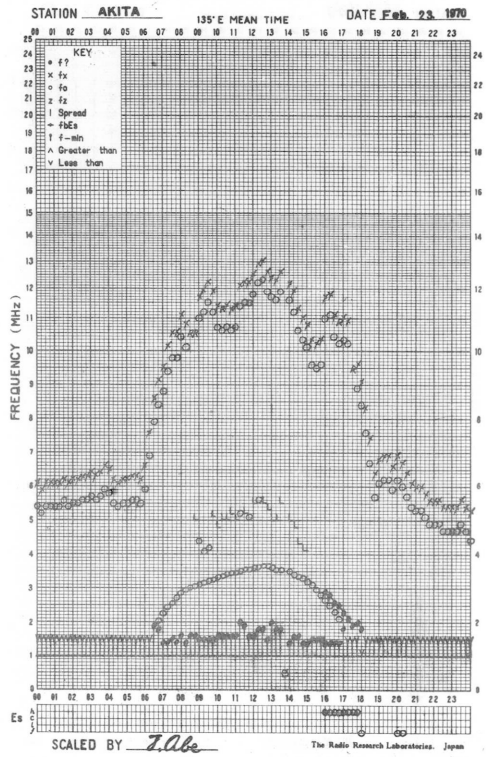




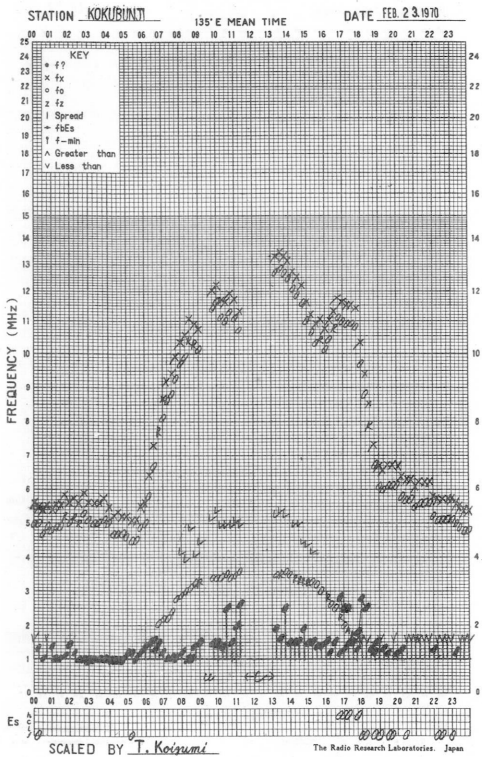
f-PLOT OF IONOSPHERIC DATA



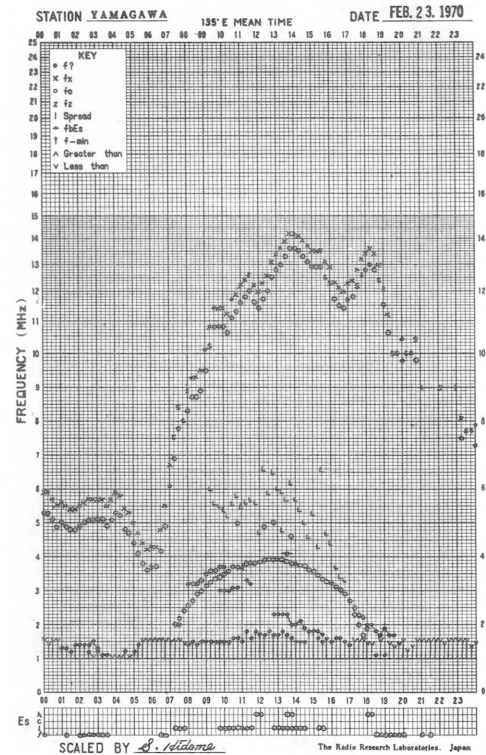
f-PLOT OF IONOSPHERIC DATA



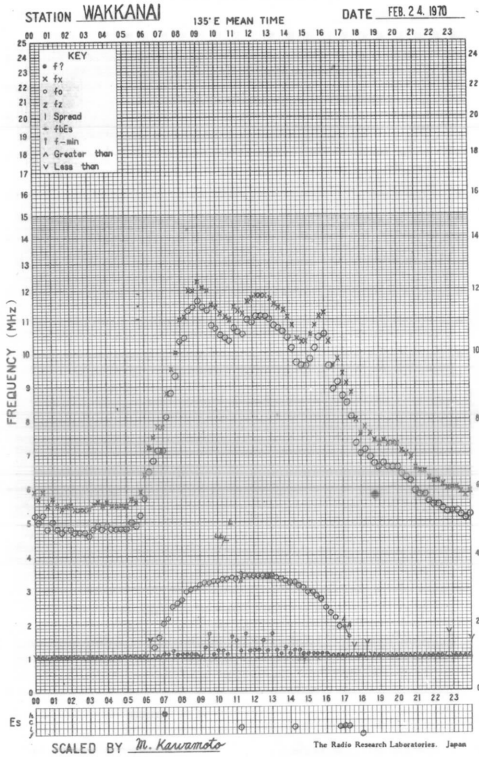
f-PLOT OF IONOSPHERIC DATA



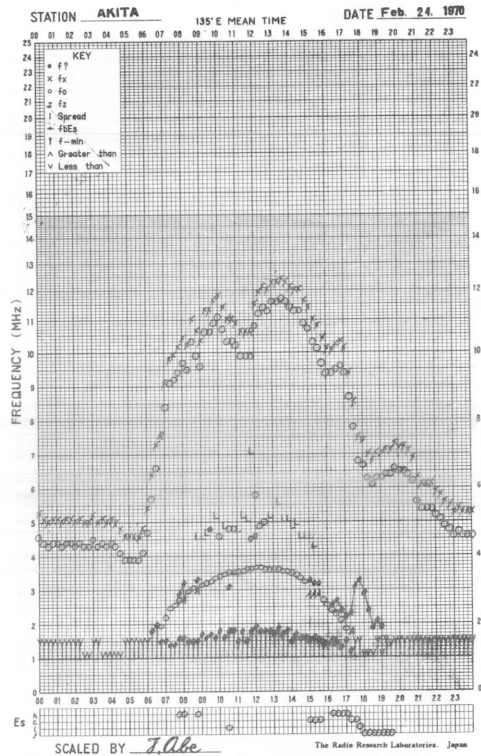
f-PLOT OF IONOSPHERIC DATA



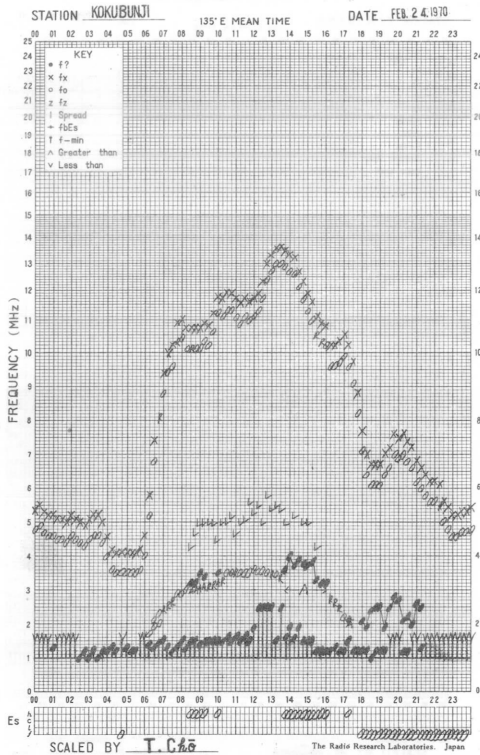
f-PLOT OF IONOSPHERIC DATA



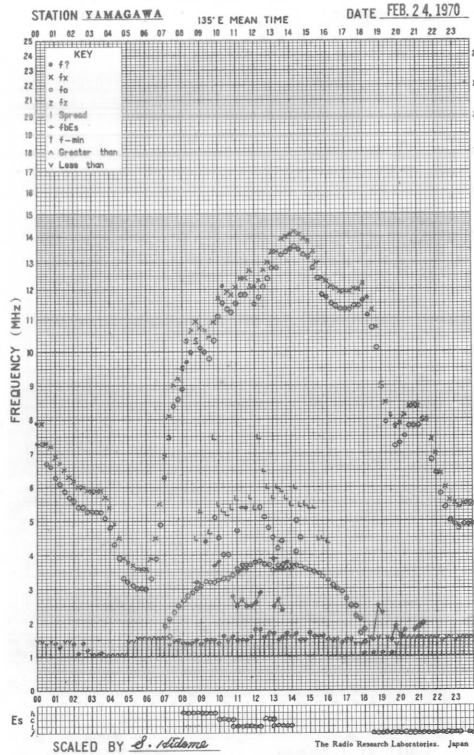
f-PLOT OF IONOSPHERIC DATA

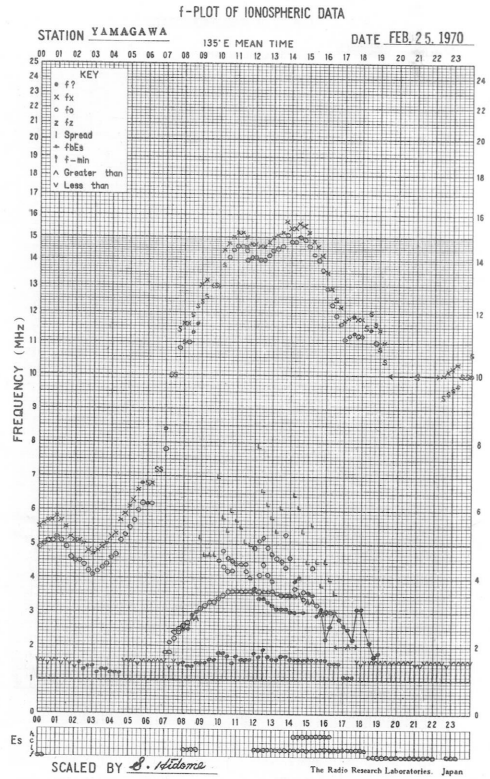
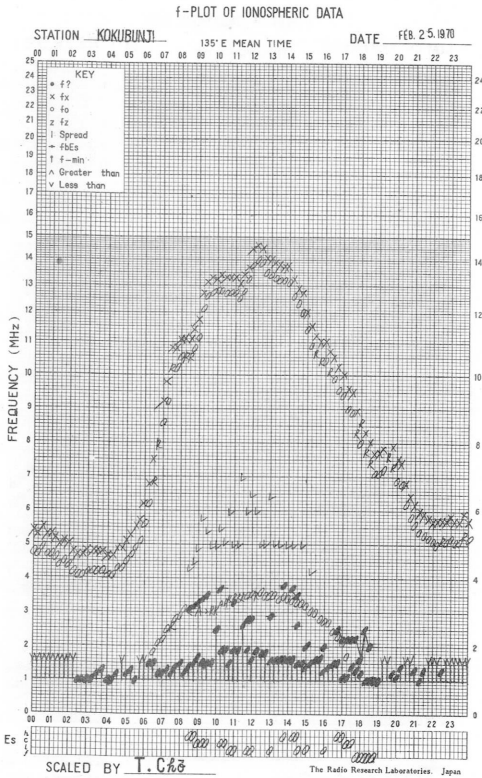
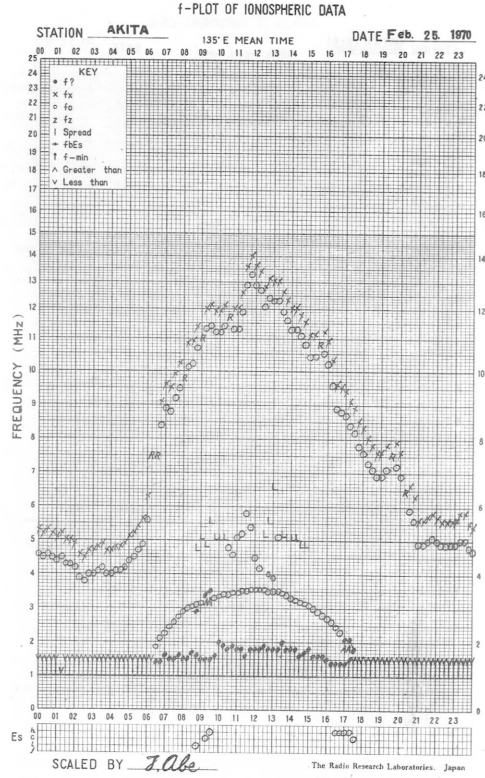
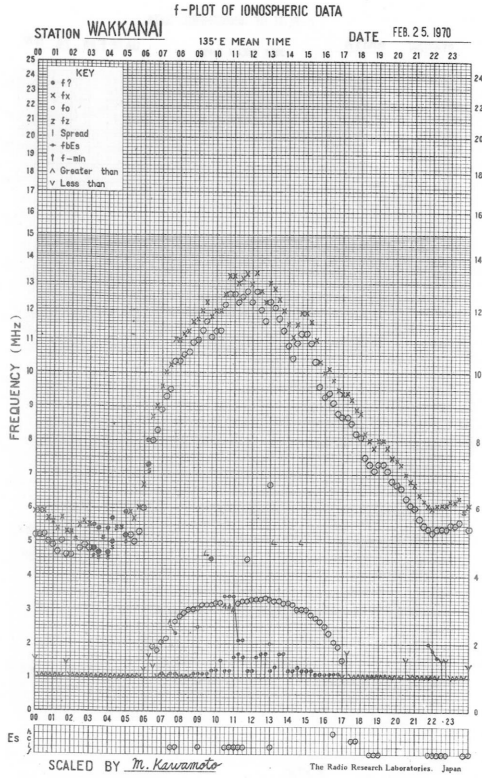


f-PLOT OF IONOSPHERIC DATA

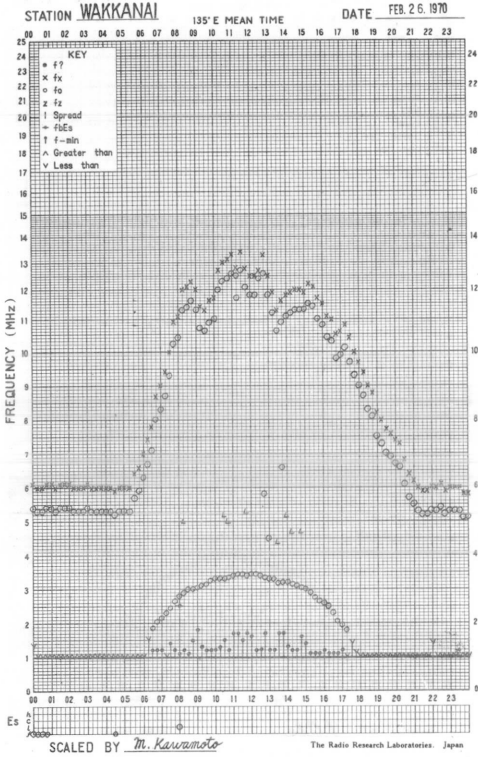


f-PLOT OF IONOSPHERIC DATA

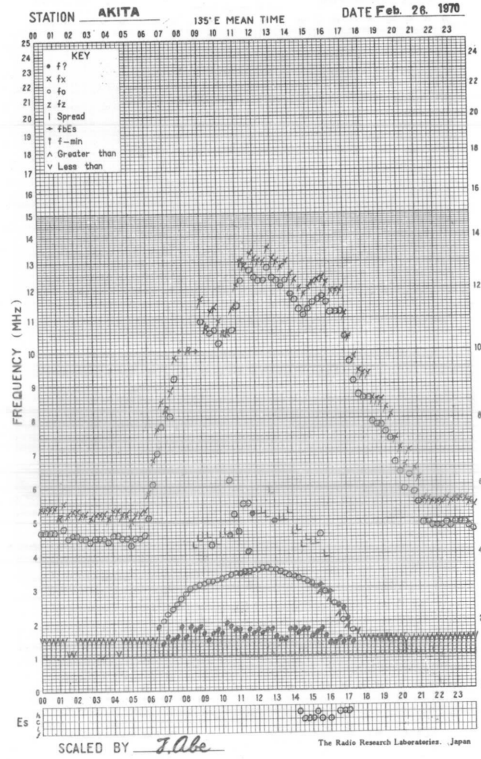




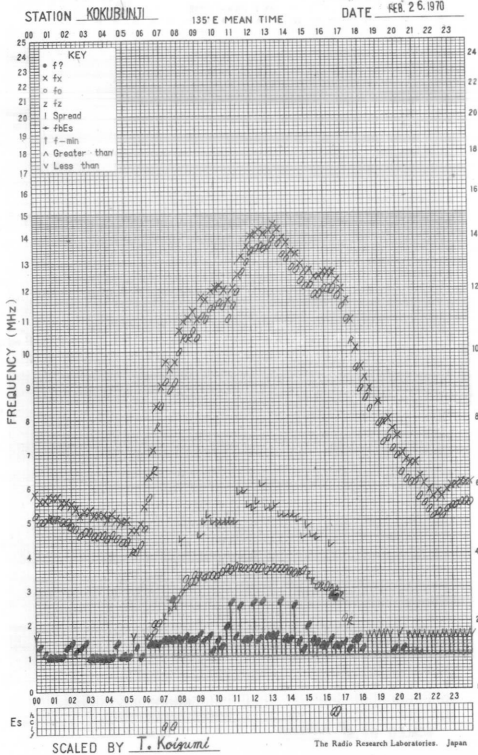
f-PLOT OF IONOSPHERIC DATA



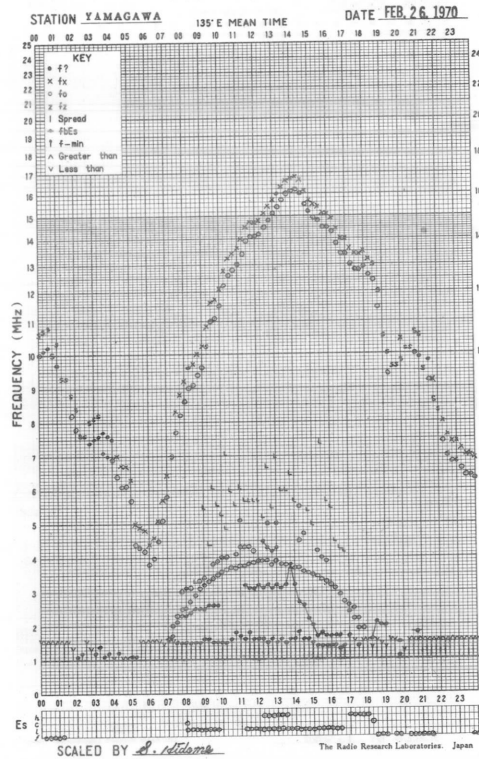
f-PLOT OF IONOSPHERIC DATA

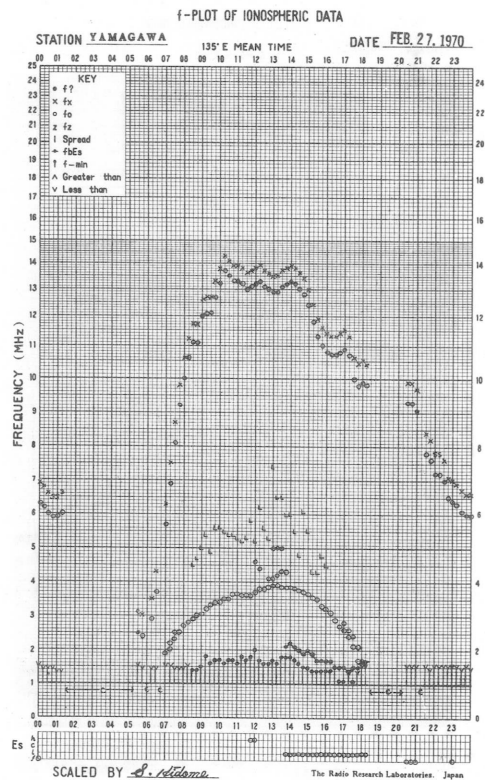
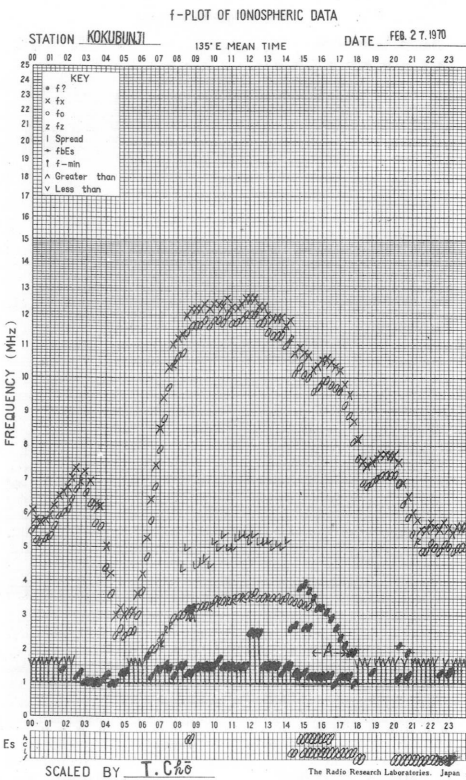
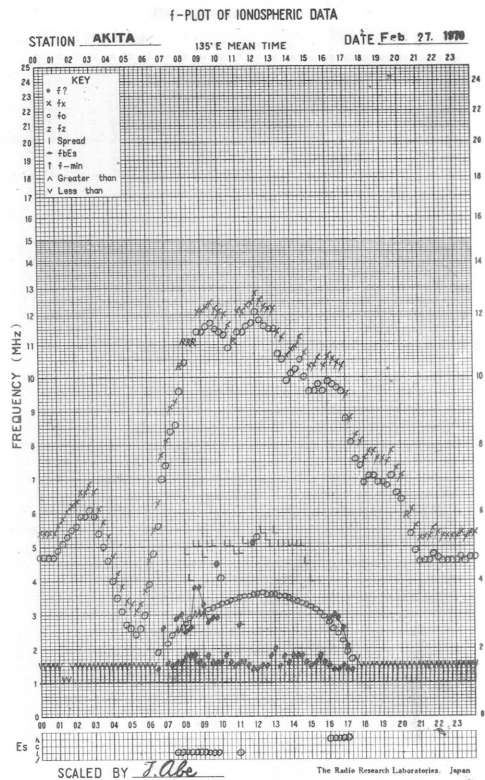
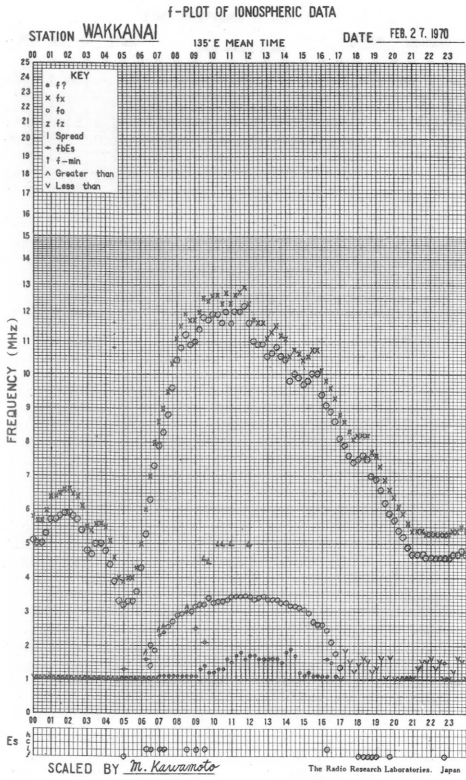


f-PLOT OF IONOSPHERIC DATA

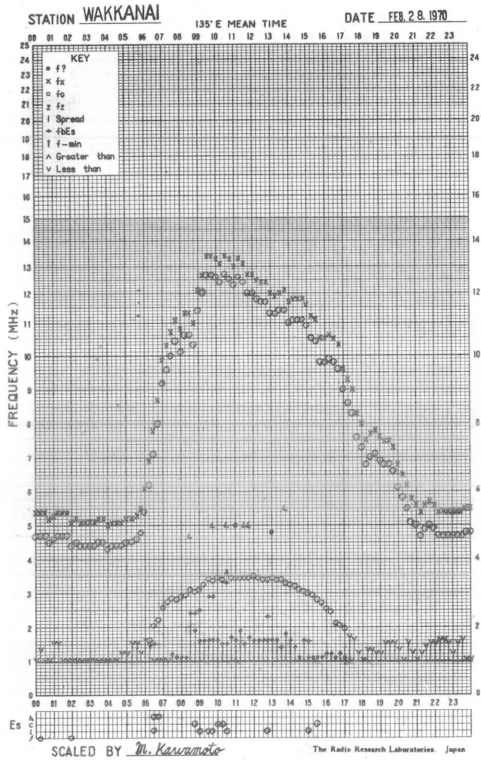


f-PLOT OF IONOSPHERIC DATA

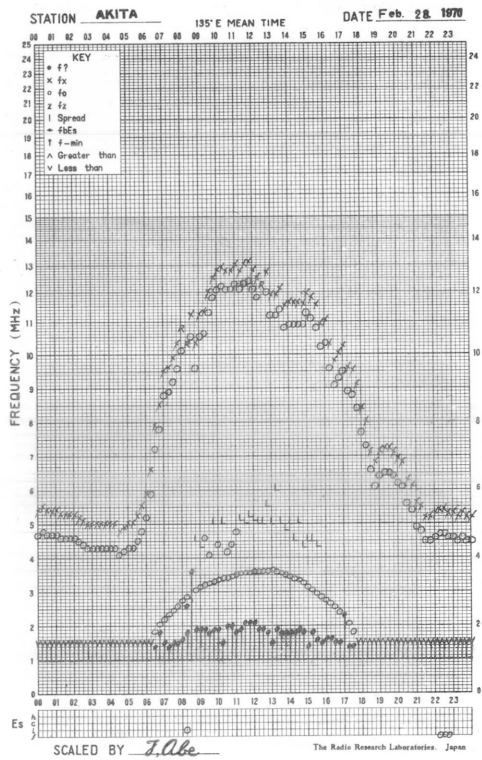




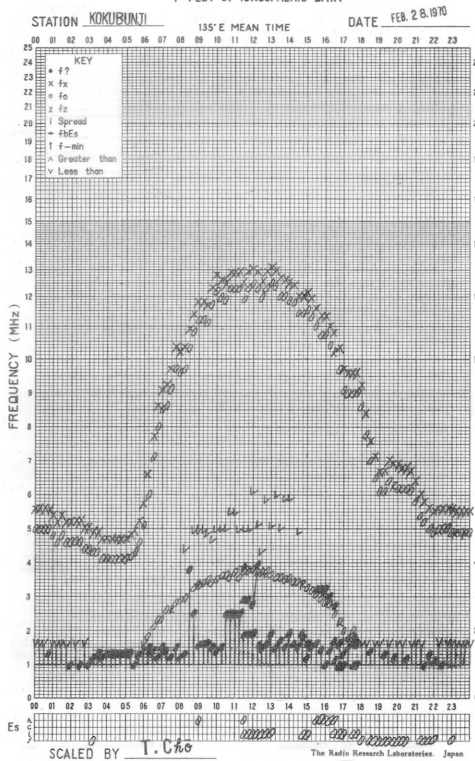
f-PLOT OF IONOSPHERIC DATA



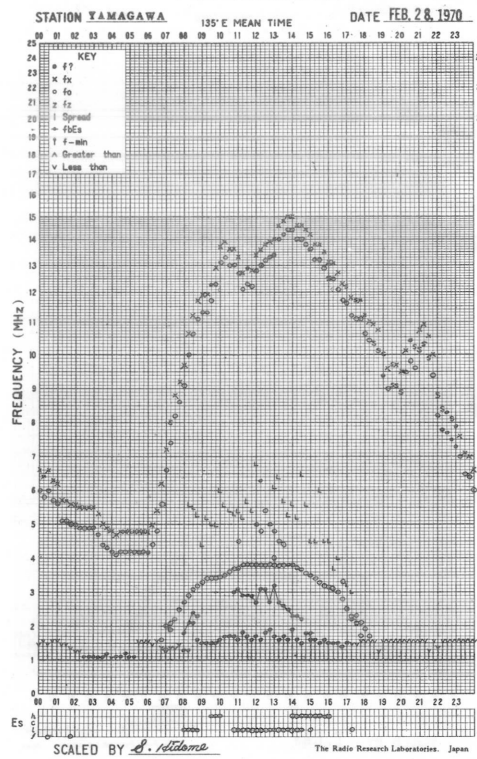
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

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

Note No observations during the following periods:

9th 2120- 10th 0410
12th 2320- 2400

SOLAR RADIO EMISSION

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

Note No observations during the following periods:

2nd	2120-	2400	10th	2120-	11th	0020
3rd	0600-	0820	13th	2120-		2400
6th	2120-	2400	26th	2120-	27th	0010
9th	2120-	10th	0430			

q: quiet level, when radiometer is unstable.

Distinctive Events (single-frequency observations)								
Month: February 1970 Observing station: Hiraiso Normal observing period: 2120 - 0820 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
1	200	0352.0	0352.5	1.0	C	1460	150	
9	200	0129.0	0129.5	2.0	C	80	10	
	100	0128.5	0129.5	2.0	C	150	10	
11	100	0452.5	0453.0	1.5	C	> 100	> 20	
	200	0709.0	0711.0	3.0	C	75	10	
	100	0712.0	0714.0	3.0	C	75	20	
	200	0722.0	-	48	C	-	9	sunset
	100	0727.0	0744.0	39	C	14	6	sunset
16	100	0046.5	0047.0	1.0	C	> 240	> 90	
	100	0212.0	-	7.0	C	> 220	> 200	
	100	2328.5	2329.0	1.0	C	> 250	> 40	
17	100	0011.0	0012.0	2.5	C	> 250	> 40	
	100	0115.0	0115.5	1.5	C	> 250	> 50	
	100	0645.5	0646.0	1.5	C	> 250	> 50	
19	100	0112.5	0113.0	1.0	C	> 260	> 50	
21	100	2136.5	2137.5	3.0	C	> 250	> 50	
23	100	0013.0	0014.0	3.0	C	> 350	> 100	
	500	0304.0	0304.7	0.5	C	630	350	
	200	0325.5	0326.0	1.0	C	140	50	
	100	0325.5	0326.0	1.5	C	> 350	> 50	
	500	0406.0	0406.4	0.6	C	90	40	
	200	0406.0	0406.0	1.0	C	60	10	
	200	0712.0	0712.5	1.5	C	130	10	
	100	0712.0	0712.5	2.0	C	> 350	> 20	
	25	100	2146.0	2146.0	1.0	C	> 340	> 60
200		2212.5	2213.0	1.5	C	200	20	
100		2212.5	2213.5	1.5	C	250	20	
200		2257.5	2258.0	0.5	C	80	20	
100		2257.5	2258.0	1.0	C	> 340	> 20	
26	200	0710.0	0710.0	1.0	C	240	20	
	100	0710.0	0710.5	1.5	C	> 350	> 110	
	200	0753.0	0753.0	2.5	C	200	10	
	100	0753.0	0753.0	1.0	C	> 340	> 60	
	100	0754.5	0755.0	1.5	C	285	40	
27	200	0733.5	0735.0	2.0	C	290	50	
	100	0733.0	0734.0	1.0	C	280	60	
	500	2319.5	2319.7	7.0	C	8000	2200	
	200	2319.5	2321.0	39.0	C	> 1800	> 100	
	100	2319.0	-	14.0	C	> 330	> 180	
28	100	0215.0	0215.0	2.0	C	> 330	> 20	
	500	2225.8	2225.8	1.0	C	660	300	

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

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

MEASURED AT HIRAIKO

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

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

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

MEASURED AT HIRAI SO

UT DAY	00H 45M	01H 45M	02H 45M	03H 45M	04H 45M	05H 45M	06H 45M	07H 45M	08H 45M	09H 45M	10H 45M	11H 45M	12H 45M	13H 45M	14H 45M	15H 45M	16H 45M	17H 45M	18H 45M	19H 45M	20H 45M	21H 45M	22H 45M	23H 45M
1	-2	-2	4	14	19	19	13	14	19	ES 0	ES 7	ES -15	ES -12	-16	-19	-22	-22	-22	-22	-20	8	3	0	2
2	1	3	7	13	18	13	18	20	4	ES 8	ES 9	-13	ES -19	ES -19	-17	-20	ES -22	ES -22	ES -31	ES -31	-1	ES -22	-5	3
3	-4	-4	2	12	17	20	2	18	2	ES 3	ES 3	ES -9	ES -1	-14	-13	-15	ES -20	ES -33	ES -18	ES -16	4	8	7	2
4	0	5	6	9	17	16	21	14	-4	-9	ES -21	ES -15	ES -13	-22	ES -39	ES -33	-25	-21	ES -19	ES -21	7	9	6	3
5	2	4	15	12	15	17	ES -1	5	ES 3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	5	9	14	9	4	8	8	ES -4	ES 2	ES -5	ES 1	ES -34	ES -34	ES -34	ES -34	ES -34	-21	-7	1	6	1	-2
7	-1	0	3	12	20	20	3	0	4	ES -6	ES -2	-8	-9	-10	-11	-21	ES -32	-18	-27	-17	2	1	0	-1
8	0	1	5	9	12	18	18	7	16	12	1	-6	-14	-23	ES -32	ES -32	ES -32	ES -32	ES -32	ES -32	1	2	0	-5
9	-3	-1	5	13	13	24	2	4	7	6	ES 7	ES -10	-14	-12	-24	ES -32	ES -32	ES -32	ES -32	ES -32	0	1	C	C
10	C	C	C	C	C	15	14	14	21	ES -5	ES 2	-9	-10	-14	-19	ES -34	ES -34	ES -34	ES -34	ES -34	-10	-11	-10	-18
11	-3	-4	-16	9	10	15	22	26	18	18	11	-7	ES -1	-10	-19	ES -31	ES -31	ES -31	ES -31	ES -31	-4	ES -31	-12	-6
12	-15	-5	-2	4	11	16	19	20	17	6	1	ES -5	-10	-13	ES -31	ES -31	ES -31	ES -31	ES -31	ES -31	0	1	-1	-2
13	-2	-2	2	7	15	16	30	22	17	15	7	ES -4	ES 0	-12	-20	ES -34	ES -34	-13	ES -34	ES -34	0	5	S	S
14	-3	-2	1	8	13	21	25	22	17	-2	-2	-7	-1	-5	-5	ES -7	-23	-21	-26	-26	3	3	-2	-2
15	-1	-2	4	4	16	21	22	26	18	14	3	-6	-7	-8	-12	ES -32	ES -32	ES -32	ES -32	ES -32	3	2	-3	-3
16	3	2	3	10	17	19	25	22	22	16	ES 3	ES 2	-2	-13	-20	ES -31	ES -31	-5	-26	-12	2	-2	0	-5
17	-5	-7	6	7	16	17	17	25	22	21	17	-3	ES -5	-13	-15	-24	ES -34	ES -34	ES -34	ES -34	2	1	-17	-10
18	ES -4	-4	2	7	12	20	17	22	20	25	9	5	-4	ES -9	ES -18	ES -32	ES -32	-7	-14	-24	5	-4	1	-6
19	-4	-7	1	-10	17	18	25	21	26	16	14	20	ES -2	ES -8	ES -11	ES -12	ES -19	-16	ES -33	ES -33	-3	-2	-6	-9
20	-4	-4	2	4	14	18	21	18	22	13	16	ES -6	ES -5	-8	ES -12	ES -31	ES -19	-26	ES -37	-12	1	4	0	-5
21	0	-2	-1	8	19	14	19	25	25	18	ES 5	19	ES -1	ES -7	ES -28	ES -25	-32	-14	-24	-11	4	4	1	-4
22	-4	5	1	6	11	20	27	16	26	14	ES -4	-7	ES -6	-14	-14	ES -34	ES -34	-16	6	-13	2	4	0	-2
23	-4	6	ES 6	ES 11	16	24	16	26	21	18	7	7	14	-9	-10	ES -34	ES -34	7	ES -34	-5	1	0	-5	-4
24	-4	-2	1	6	16	21	15	27	21	1	ES 7	20	11	-18	ES -31	ES -34	ES -34	ES -34	ES -34	ES -34	0	0	2	0
25	-2	3	1	7	15	26	21	25	18	21	24	29	ES -2	-9	-9	-4	-21	-21	-23	-14	6	2	0	-3
26	-3	0	1	10	14	20	18	20	25	10	ES 4	-1	-2	ES -11	-7	-9	-4	2	6	-12	2	5	2	1
27	-1	-1	7	11	17	20	24	27	1	12	7	9	ES -5	-14	-18	ES -17	ES -31	-23	ES -31	ES -31	0	2	-2	-8
28	-2	-1	2	9	15	20	21	22	20	16	ES 8	ES 0	ES -4	ES -4	-14	-17	-12	4	ES -31	ES -31	1	1	2	-2
CNT	26	26	27	27	27	28	28	28	28	27	27	27	27	27	27	27	27	27	27	27	27	27	25	25
MED	-2	-2	US 2	US 9	15	19	18	20	18	12	ES 7	ES -5	ES -4	ES -12	ES -18	ES -31	ES -31	-22	ES -31	US 26	1	2	0	-3
UD	1	5	7	13	19	24	25	26	25	21	16	20	ES 1	ES -7	-9	ES -9	ES -19	2	-14	-11	6	6	2	2
LD	ES -4	-5	ES -1	ES 4	11	14	2	5	ES 2	ES -5	ES -2	ES -13	ES -14	ES -22	ES -32	ES -34	ES -34	ES -34	ES -34	ES -34	-3	-11	-10	-9

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

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

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

Δ = COSMIC EVENT

() = Regular World Day

- = impossible to evaluate

() = inaccurate

C = artificial accident

--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Feb. 1970	S W F						Start- time	Dura- tion	Type	Imp.	Correspondence		
	Drop-out Intensities (db)										Flare	Solar Noise	Mag.
	CO	LM	HA	TO	HB	SH							
2	18"	42			-		21.38	42	S	3-		x	
9		17	-		11		06.24	16	S	1	x	x	
11	15"	-	15	-			02.14	44	Slow	2	x	x	
11		13	-		21		07.06	49	S	2-	x	x	
11	13"	29					21.10	60	S	2	x	x	
12	22	32		15			00.07	104	Slow	2	x		
	11"												
27		47					23.19	29	S	3	x	x	

I N U B O

1970	S P A									Remarks
Feb.	Phase Advance (degrees)						Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA3	HA2	Start	End	Maximum	
2				-	17	-	0052	0145	0105	
2				-	10	-	0226	0300	0232	
2			19	<u>48</u>		-	0454	0538	0505	X
2	-	14		16	<u>20</u>	-	2341	0024	2348	
3	-			32		-	0543	0720	0610	
7	18	-	<u>38</u>	16		-	0228	0304	0234	X
7	27	-	<u>45</u>	34	29	-	0310	0350	0315	X
7				16		-	0642	0720	0647	X
8	-		<u>26</u>	12		-	0357	0505	0425	
9	-		<u>36</u>	<u>128</u>	51	-	0623	0811	0632	X
9		14		-	<u>29</u>	-	2130	2200	2139	X
9		12		-	<u>25</u>	-	2212	2230	2224	X
9		<u>17</u>	13	-	20	-	2241	2327	2253	
9	16	41	24	<u>44</u>	54	-	2330	0030	2350	X
10	21	-	33	<u>64</u>	59	-	0030	0129	0047	X
10	22	-	27	48	<u>49</u>	-	0146	0236	0156	X
10	22	-	16	<u>32</u>	32	-	0240	0402	0305	X
10				24		-	0552	0632	0602	X
10				32		-	0738	0819	0747	X
11	65	33	83	<u>144</u>	130	-	0206	0435	0220	X
11	27	14	13	<u>64</u>		-	0542	0702	0610	
11	<u>235</u>	36	44	209		-	0702	0832	0710	X
11		151	134		<u>152</u>	-	2105	2300	2123	X
12	50	191	107	<u>140</u>	147	-	0005	0152	0018	X
12					22	-	0155	0229	0210	
12	<u>20</u>		8	16	15	-	0228	0255	0238	
12	15		14	<u>32</u>	22	-	0304	0404	0314	X
12		19	11	<u>28</u>	17	-	0416	0455	0426	
12			5	<u>16</u>		-	0457	0516	0505	
12	47	11	13	<u>44</u>		-	0522	0640	0546	
12	35			<u>48</u>		-	0740	0851	0806	X
12		11	13	16	<u>20</u>	-	2324	2355	2341	
13		31	22	<u>40</u>	34	-	0007	0053	0014	X
13			6	<u>16</u>	15	-	0202	0230	0210	X
13			<u>15</u>	12	10	-	0324	0428	0350	X
13	18	29	40	<u>32</u>		-	0549	0641	0600	X
13				32		-	0804	0840	0810	X
13		50	29	16	<u>59</u>	-	2220	2340	2253	X
14			10	<u>24</u>	12	-	0216	0250	0220	
14			<u>19</u>	16	15	-	0333	0410	0344	X

1970	S P A									Remarks
Feb.	Phase Advance (degrees)						Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA3	HA2	Start	End	Maximum	
14		29	16	<u>40</u>	44	-	0427	0530	0445	X
15	18			<u>32</u>		-	0521	0603	0525	X
16			-	-	10	-	0038	0100	0053	
16			12	<u>32</u>	17	-	0410	0527	0420	X
17				<u>16</u>	15	-	0138	0202	0148	
17			10	16	<u>20</u>	-	0314	0400	0322	
17				16		-	0809	0828	0815	X
17		46	13	16	<u>66</u>	-	2218	2341	2249	X
18			13	8	<u>17</u>	-	0007	0115	0029	X
18					12	-	0308	0352	0313	
18			13	<u>16</u>		-	0338	0405	0343	X
18	<u>40</u>		26	88	66	-	0431	0530	0443	
18	20		35	<u>96</u>		-	0534	0720	0547	
18		18			<u>56</u>	-	2126	2219	2143	
19				8		-	0254	0318	0300	
19	52	46	54	<u>96</u>	93	-	0326	0520	0342	X
19				16		-	0936	0955	0942	
19		19			<u>25</u>	-	2220	2300	2232	X
19		14		8	<u>17</u>	-	2324	0010	2329	X
20	33			<u>48</u>		-	0944	1050	1000	X
20			10	8	<u>17</u>	-	2329	0010	2343	
22				8	<u>10</u>	-	0032	0105	0043	
22					10	-	2306	2330	2320	
22					10	-	2334	2355	2346	
23			13	-	<u>25</u>	-	0211	0300	0218	
24				40	-		0857	1020	0915	
24					-	7	2200	2222	2210	
25		-		<u>8</u>	-	7	0119	0142	0123	
25		-	8	<u>24</u>	-	13	0326	0403	0334	
25				8	-		0737	0803	0744	
26		-	8	<u>8</u>	-	7	0118	0143	0125	
27	47	-	93	116	-	<u>145</u>	2319	0105	2328	X
28			13	<u>20</u>	-		0456	0606	0500	X
28		<u>17</u>			-	10	2321	2342	2330	

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

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1970

第 22 卷 第 2 号

1970年6月20日 印 刷
1970年6月25日 發 行 (不許複製非売品)

編 集 兼
發 行 人

今 野 清 恒

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發 行 所

郵 政 省 電 波 研 究 所

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