

F-300

IONOSPHERIC DATA IN JAPAN

FOR APRIL 1972

VOL. 24 No. 4

Issued in September 1972

Prepared by

THE RADIO RESEARCH LABORATORIES
MINISTRY OF POSTS AND TELECOMMUNICATIONS
TOKYO, JAPAN

F - 300

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

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SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAIISO BRANCH

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_oF2 f_oF1 f_oE	}	The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oEs		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_bEs		The lowest ordinary wave frequency at which the Es layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min		The frequency below which no echoes are observed.
$M(3000)F2$		The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$		The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$		The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
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 $h'Es$. The slant trace is sometimes observed to start at f_oE without echoes clearly identifiable as *Es* echoes being seen.

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

e. Multiple Reflections from *Es*

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

B. SOLAR RADIO EMISSION

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

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

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

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

c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

Descriptive type is denoted by the following symbols:

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Strengths of WWV and WWVH

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

± 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.

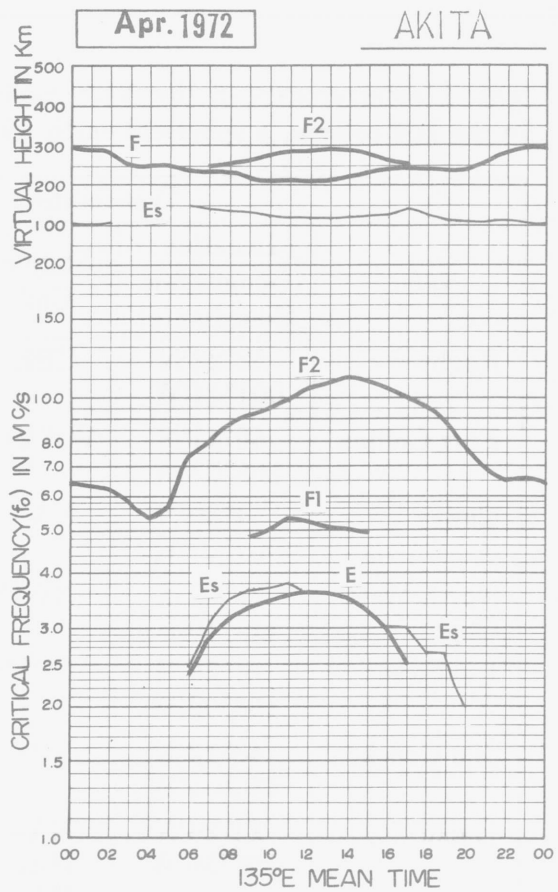
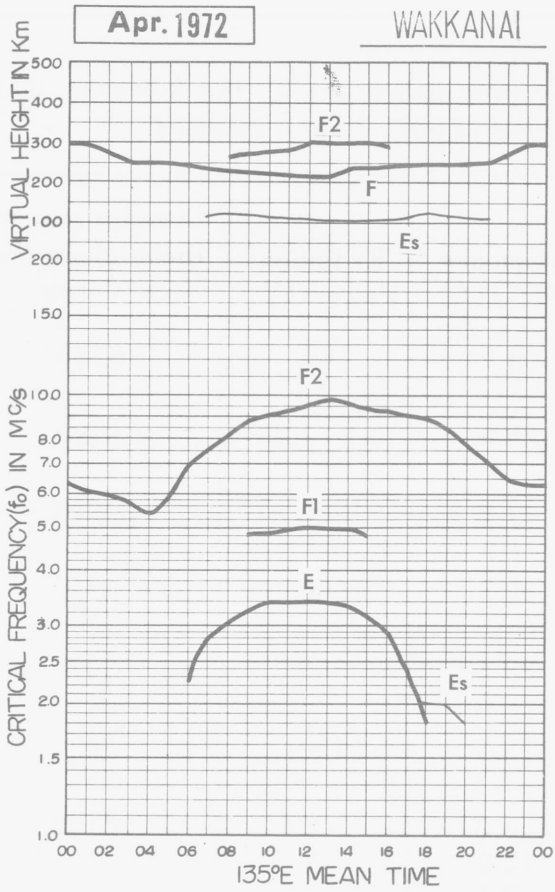
Name	Transmitting Site				Distance (km) to Inubo along the Great Circle
	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22'N 001°11'W	GBR	16.0	40	9550
Fort Collins	40°41'N 105°03'W	WWVL	20.0	1.8	9190
Cutler	44°39'N 067°17'W	NAA	17.8	1000	10640
North West 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	10.2	2	6100
		HA2	12.2		
		HA3	13.6		
Aldra	66°25'N 013°09'E	AL0	10.2	4	7820
		AL2	12.2		
		AL3	13.6		

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

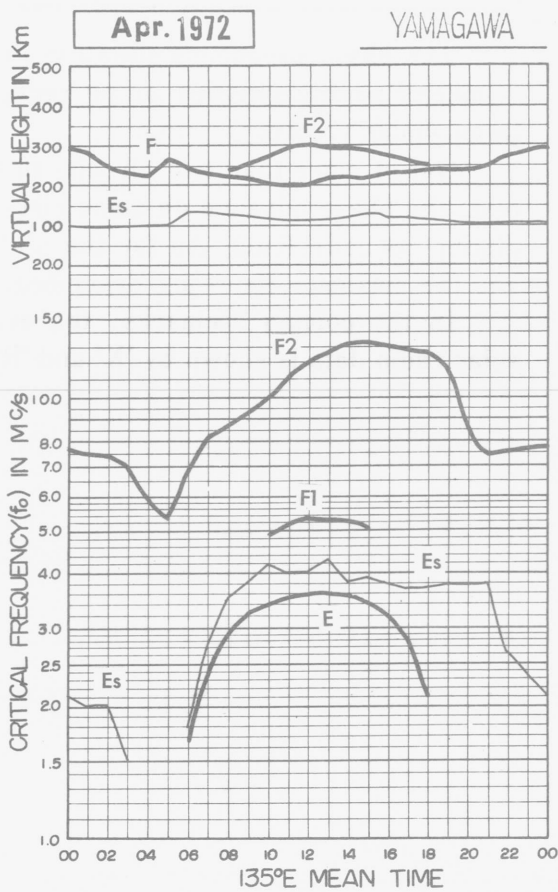
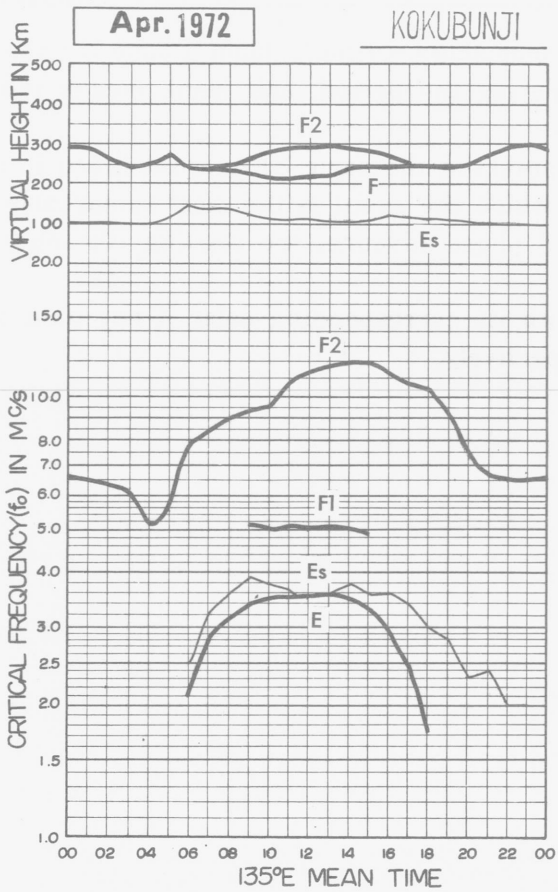
Out of more than two circuits to have observed the same SPA event listed in the text, the phase advance on some circuit on which the event is the most remarkable or distinct is underlined. As for the underlined phase advance, the starting, the ending, and the maximum times are described.

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

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

APR. 1972

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	60	51	53	51	50	53	64	72	84	99	92	95	95	95	89	83	83	84	82	67	66	64	64	64			
2	62	58	62	58	49	50	67	70	76	85	92	106	103	98	97	103	110	96	83	64	60	58	58	58			
3	60	60	58	56	53	54	65	70	73	89	106	104	103	107	94	93	93	87	83	71	62	58	61	57			
4	56	56	55	53	49	53	67	73	83	89	92	100	104	102	98	101	98	100	88	76	I ₇₀ C	60	62	62			
5	60	55	53	I ₅₂ S	46	S	C	62	68	75	83	97	105	97	100	93	86	89	93	80	61	S	S ₅₂	C			
6	C	C	48	I ₅₀ C	S ₄₀	C	C	C	83	93	95	90	90	92	91	86	80	81	77	74	71	68	S	C			
7	S	C	57	56	45	49	63	76	90	95	90	94	98	98	97	93	87	87	92	80	70	68	66	C			
8	62	S	58	60	57	63	78	85	93	93	93	93	98	96	96	93	89	90	92	85	81	74	61	58			
9	58	57	56	54	I ₅₂ S	59	U ₇₈ S	I ₈₆ R	94	94	95	93	101	107	106	92	90	86	86	83	81	71	63	I ₆₄ S			
10	64	63	63	61	61	67	I ₇₂ S	78	83	93	104	103	104	106	106	100	101	97	88	83	78	74	67	63			
11	63	63	63	61	53	58	73	85	96	114	107	100	106	108	101	96	96	96	94	94	89	78	69	65			
12	S	C	C	C	C	C	C	C	C	80	93	98	98	97	97	98	97	100	98	98	80	71	64	53			
13	I ₆₀ S	I ₆₂ C	61	60	59	68	78	81	93	90	89	86	94	98	97	95	95	95	104	103	84	73	58	C			
14	C	C	C	C	C	C	C	C	80	83	90	95	91	102	103	101	100	91	89	90	83	75	68	67			
15	66	66	67	I ₆₅ S	62	S	81	84	96	104	102	102	108	108	107	91	86	95	101	97	87	78	70	66			
16	F	F	F	F	F ₅₉	67	71	66	77	80	88	86	89	100	102	100	103	104	93	85	75	72	70	70			
17	I ₆₇ S	67	66	63	58	62	71	83	90	95	97	93	96	108	101	96	96	101	102	96	81	68	68	66			
18	67	66	66	59	47	52	58	66	70	79	89	96	104	102	105	113	106	98	86	88	85	84	82	85			
19	78	I ₈₁ C	70	57	F ₅₃	64	91	83	93	93	92	105	111	107	106	103	91	87	88	86	80	73	67	64			
20	64	66	63	53	51	58	79	89	99	96	96	101	100	103	95	93	94	89	88	89	78	74	66	62			
21	63	60	60	60	53	54	64	73	75	88	76	80	90	97	96	99	98	94	92	90	76	73	69	69			
22	69	70	63	61	54	64	75	75	74	80	78	85	83	89	86	89	84	83	75	76	I ₇₄ A	72	64	63			
23	63	58	60	58	51	58	68	90	94	76	76	80	85	95	94	94	102	97	95	81	69	70	67	66			
24	65	63	61	54	48	48	51	F ₅₃	60	60	60	62	66	69	72	73	71	72	74	76	72	70	66	F ₆₆			
25	F	F	F ₅₈	63	57	57	57	65	73	80	81	78	82	83	89	91	89	84	88	96	80	67	65	65			
26	65	61	60	58	57	65	69	70	73	71	79	76	86	90	93	94	93	86	83	91	83	75	63	62			
27	60	60	57	56	57	68	83	77	76	76	80	75	80	81	87	87	95	96	97	86	70	67	64	63			
28	63	60	59	55	53	62	79	92	82	81	73	80	86	99	92	86	88	83	77	87	87	85	86	73			
29	65	53	43	40	44	53	48	43	A	A	56	59	57	63	70	68	70	70	73	75	66	67	63	60			
30	55	46	42	37	33	40	42	42	45	44	A	A	46	A	49	50	50	F ₄₄	F ₄₃	44	47	48	45	43			
31																											
CNT	24	23	27	27	28	25	26	27	28	29	29	29	30	29	30	30	30	30	30	30	30	29	29	26			
MED	63	60	60	57	53	58	70	75	82	88	90	93	96	98	96	93	93	90	88	85	77	71	65	64			
UQ	65	64	63	60	57	64	78	84	93	93	95	100	103	103	101	99	98	96	93	90	81	74	68	66			
LQ	60	58	56	54	48	53	64	68	74	80	80	80	86	95	91	89	86	84	83	76	70	67	63	62			

APR. 1972

FOF2 (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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									U	U	L	4	5	U												
2										4	5	L														
3											L		L	L												
4									L	L	U	4	U	5	U	4										
5											U	5	5	L	L											
6									L	L	L	L														
7									L																	
8													L													
9									L	L			L	L												
10									L	L	L															
11									L				L													
12											U	5	L		L											
13								L	L																	
14										U	4	L		5	0											
15									L					L												
16									4	9	U	5	4		L											
17									L	L	4	9	4	8	L											
18									A	5	0	5	5	1		4	9	L								
19									L		U	5		L	U	5	L									
20							4	2	U	4	8	U	5	2	5		L									
21								L	4	9			5	0	5	0										
22									5	0	U	4	8	4	A	U	5	0	A			L				
23						L		L	U	4	7	4	6		5	0		A								
24					4	0	4	3	4	4	0	4	8	4	A	5	0	4	9	A	U	4	6	4	5	
25								L	4	8	5	0	4	9	5	2	5	1	4	9	L					
26								4	6	4	7	4	9	4	9	5	0	L	L	4	8		L			
27								L		4	8	4	9	U	4	8	4	8	5	0	U	4	6	L		
28								L	4	6	4	6	5	1	5	0	4	9	U	4	8	4	8			
29					2	8	3	5	3	8	0	A	A	A	4	6	4	8	4	9	4	8	4	0		
30					A	3	5	0	3	9	4	0	4	1	A	A	4	3	A	4	3	4	2	4	0	
31																										
CNT						1	3	4	4	11	13	15	14	12	8	7	3									
MED					2	8	0	3	5	4	0	5	4	3	4	8	0	4	9	5	4	9	5	4	8	0
UQ						3	7	5	4	2	5	4	5	0	5	0	5	0	5	0	4	8	0	4	2	5
LQ						3	5	0	3	8	5	4	1	0	4	6	5	4	8	0	4	6	0	4	0	0

APR. 1972

FOF1 (0.01 MHz)

IONOSPHERIC DATA

APR. 1972

FOE (0.01 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					S	195	250	290	305	315	320	320	320	305	285	270	210	S						
2					S	195	250	290	305	315	310	330	330	310	295	255	210	S						
3					S	190	250	295	320	325	335	330	325	320	295	270	215	S						
4					S	200	265	295	315	325	320	340	330	325	300	275	230	S						
5					S	I C 200	275	300	320	335	350	350	350	330	305	275	225	S						
6					C	200	270	300	325	335	325	A	350	330	300	275	230	S						
7					160	230	270	300	325	330	340	R	R	R	315	A	230	S						
8					S	I A 205	270	310	325	330	335	315	350	330	320	A	230	150	E					
9					S	220	280	300	310	320	325	330	340	335	310	285	230	S						
10					S	225	275	300	335	340	340	335	335	R	R	285	240	S						
11					S	220	280	330	335	345	340	A	A	345	330	300	235	S						
12					C	C	C	C	320	345	345	360	345	340	320	295	235	S						
13					S	225	280	310	325	325	B	B	R	R	320	285	230	S						
14					C	C	C	305	320	R	350	340	320	315	A	290	245	A						
15					S	240	295	315	330	345	330	325	320	325	320	295	230	A						
16					S	230	280	310	330	340	340	330	330	330	320	300	240	155						
17					140	235	290	320	340	345	350	R	350	I A 330	310	290	235	A						
18					S	245	300	320	340	355	360	A	360	340	320	290	240	140	E					
19					E	A	240	295	315	325	340	350	A	A	345	320	290	240	A					
20					E	150	250	295	305	340	360	355	I A 340	335	A	305	290	240	190	S				
21					S	225	280	305	325	330	330	325	340	330	310	290	240	180	S					
22					E	155	225	285	310	330	345	345	325	I B 310	A	A	A	230	A	E				
23					E	A	235	285	300	315	335	350	360	350	A	310	290	230	A	A				
24				E	E	S	240	290	310	325	335	345	340	330	305	300	295	250	180	E				
25					E	165	240	290	315	330	340	345	350	340	330	310	290	240	165	E				
26					E	150	240	285	310	325	330	345	340	340	330	310	290	240	185	S				
27					E	190	250	295	310	330	340	350	340	345	330	310	280	245	A	A				
28					E	180	250	295	310	330	335	340	345	I A 360	340	310	285	240	195	E				
29	S	E	E	E	E	150	225	275	300	320	330	330	335	325	325	300	280	240	195	E				
30			E	E	E	150	225	270	295	310	325	335	325	300	295	305	285	230	195	E				
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	3	11	10	28	28	29	30	29	29	23	26	24	27	27	30	11	8				
MED		E	E	E	E	152	225	280	305	325	335	340	335	338	330	310	290	235	180	E				
UQ				E	E	165	240	290	310	330	340	350	340	350	332	320	290	240	192	E				
LQ				E	E	150	212	270	300	320	330	330	328	325	322	302	280	230	160	E				

APR. 1972

FOE (0.01 MHZ)

IONOSPHERIC DATA

APR. 1972

FOES (0.1 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E ₁₆	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅	G	G	G	G	G	G	G	G	G	G	G	F ₁₅	E	J ₂₃	E ₁₅	F ₁₆	F ₁₅	F ₁₅	
2	E ₁₅	E ₁₅	E	E	E ₁₄	E ₁₄	G	20	25	28	35	G	G	G	G	G	G	15	E ₁₅	E ₁₅	E ₁₅	F ₁₆	F ₁₆	F ₁₆	
3	E ₁₅	E	E	E	E ₁₃	E ₁₃	G	G	G	G	G	G	G	31	29	23	G	G	E ₁₆	E ₁₅	E ₁₆	E ₁₅	F ₁₅	F ₁₅	
4	E ₁₅	E ₁₅	E	E	E ₁₃	E ₁₃	G	G	G	G	G	G	G	G	G	G	G	19	19	E ₁₅	C	E	E	F ₁₅	
5	E ₁₄	E ₁₅	E	E ₁₅	E ₁₅	E ₁₅	C	G	G	G	G	G	G	G	30	G	G	15	20	J ₂₁	E ₁₆	E ₁₅	E ₁₅	F ₂₀	
6	E ₁₆	C	E	E ₁₆	E ₁₆	C	G	G	G	37	38	40	39	33	29	G	G	G	E ₁₆	18	J ₂₃	E ₁₄	E ₁₅	C	
7	E	E ₁₄	E ₁₅	E	E	G	G	G	G	36	G	G	G	G	G	G	G	35	15	E ₁₇	E ₁₅	E ₁₅	E ₁₅	F ₁₅	
8	E ₁₅	E ₁₄	E ₁₅	E	E ₁₅	E ₁₅	G	29	G	G	G	G	G	G	G	G	G	36	G	G	E	E	E ₁₅	E ₁₅	F ₁₅
9	E ₁₅	E	E ₁₅	E	E ₁₅	E ₁₅	G	G	G	G	G	22	G	G	G	G	G	G	G	20	E ₁₅	E	E ₁₅	F ₁₆	F ₁₆
10	24	23	E	E	E	23	21	G	G	G	G	G	G	G	G	G	G	G	F ₁₇	25	21	E ₁₆	E ₁₅	F ₁₅	
11	E ₁₅	E	E	E	E	G	G	G	G	37	38	40	40	42	30	26	G	G	33	23	20	18	E ₁₆	27	21
12	23	C	C	C	C	C	C	C	C	G	43	G	G	G	30	G	G	G	33	24	E ₁₅	E ₁₄	E ₁₅	E ₁₆	F ₁₇
13	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₉	G	G	G	G	39	E ₄₅	E ₄₄	G	G	G	G	G	G	20	E ₁₇	E ₁₅	E ₁₅	E ₁₅	C
14	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	G	33	27	21	22	19	23	E ₁₅	23	21
15	E	J ₂₈	E	E	E	E ₁₇	G	G	G	36	G	G	40	38	32	G	G	18	G	J ₂₂	24	E ₁₅	E ₁₅	E	E ₁₅
16	E	E ₁₅	E	E	E	E ₁₅	G	G	G	37	39	38	36	G	G	G	G	G	28	24	J ₂₅	J ₂₁	E ₁₅	J ₂₃	E ₁₅
17	E ₁₅	E ₁₅	E	E	E	G	29	G	G	G	G	G	G	34	36	37	G	G	38	26	J ₃₁	J ₄₀	33	26	J ₂₃
18	E	E ₁₅	E	J ₂₃	E	E ₁₆	G	G	38	J ₅₃	J ₅₃	47	J ₄₄	G	G	G	G	G	G	26	16	22	20	E	E ₁₅
19	E ₁₅	E ₁₅	E	J ₂₅	21	20	G	G	G	39	40	G	39	J ₄₃	31	30	25	J ₂₆	J ₃₁	24	22	E ₁₆	F	E	
20	E	E	E	E	E	G	G	G	G	G	G	43	40	40	34	G	G	18	24	G	E ₁₅	E	E ₁₅	E ₁₅	E
21	26	E	E	E	E	19	G	21	25	G	G	G	G	26	23	G	G	G	G	21	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E
22	E	E	E	22	E	24	G	G	G	G	41	G	J ₆₀	J ₆₂	J ₇₁	J ₄₁	58	J ₄₅	J ₅₄	J ₆₃	J ₇₆	22	E ₁₅	E ₁₅	E ₁₅
23	E ₁₅	E	E ₁₃	23	E	J ₃₁	G	28	36	41	41	39	G	J ₆₀	J ₆₀	J ₅₃	36	36	30	40	25	E ₁₅	E ₁₅	E	
24	23	E ₁₄	E	14	E	19	G	35	42	40	43	50	43	38	J ₅₀	35	G	G	G	24	J ₂₅	J ₂₅	E ₁₅	E ₁₄	
25	E ₁₂	E	E	E	E	G	G	33	G	38	38	G	G	G	G	25	16	13	22	22	18	E ₁₃	E ₁₆	E ₁₅	
26	E ₁₆	E ₁₅	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	18	E ₁₂	E ₁₅	E ₁₅	
27	E ₁₅	E ₁₄	E	E	E	G	G	G	23	24	G	G	G	G	G	G	G	G	25	20	20	15	E	E	22
28	E ₁₄	E	23	E	E	G	G	G	35	J ₆₀	G	G	40	36	38	34	39	35	33	J ₂₅	J ₂₈	16	E	E	
29	E ₁₅	15	19	E	E	21	29	32	50	J ₇₀	45	43	40	G	G	G	35	28	31	J ₃₃	J ₂₇	20	18	18	
30	E ₁₅	J ₂₃	14	15	13	31	29	33	34	40	J ₅₃	43	41	J ₅₅	J ₄₃	41	40	G	G	25	J ₂₅	17	E ₁₅	E ₁₅	
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	29	27	28	28	28	27	27	28	29	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	28
MED	E ₁₅	E ₁₅	E	E	E	E ₁₅	G	G	G	E ₂₄	G	G	G	G	E ₁₇	G	G	15	20	20	18	E ₁₅	E ₁₅	E ₁₅	
UQ	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E	19	G	20	25	38	40	40	40	38	32	30	27	28	24	25	J ₂₃	E ₁₆	E ₁₆	E ₁₆	
LQ	E ₁₄	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	F ₁₆	E ₁₆	E ₁₅	E ₁₅	E ₁₅	F ₁₅	

The Radio Research Laboratories, Japan

APR. 1972

FOES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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 ₁₆ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E ₁₅ S ₁₅	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅ S ₁₅	E	16	E ₁₅ S ₁₅	F ₁₆ S ₁₅	E ₁₅ S ₁₅																									
2	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E	E ₁₄ S ₁₅	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	F ₁₆ S ₁₅	F ₁₆ S ₁₅																								
3	E ₁₅ S ₁₅	E	E	E	E ₁₃ S ₁₅	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₆ S ₁₅	E ₁₅ S ₁₅	E	E ₁₆ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅																								
4	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E	E ₁₃ S ₁₅	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₈ S ₁₅	E ₁₅ S ₁₅	C	F	F	E ₁₅ S ₁₅	E ₁₅ S ₁₅																								
5	E ₁₄ S ₁₅	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	C	G	G	G	G	G	G	G	G	G	G	G	E ₁₄ S ₁₅	G	18	E ₁₆ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₂₀ C																								
6	E ₁₆ S ₁₅	C	E	E ₁₆ S ₁₅	E ₁₆ S ₁₅	C	G	G	G	G	G	G	36	32	28	G	G	G	F ₁₆ S ₁₅	17	20	E ₁₄ S ₁₅	F ₁₅ S ₁₅	C																								
7	E	E ₁₄ S ₁₅	E ₁₅ S ₁₅	E	E	G	G	G	G	G	G	G	G	G	G	G	G	28	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	F ₁₅ S ₁₅	F ₁₅ S ₁₅																								
8	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	G	29	G	G	G	G	G	G	G	G	G	G	28	G	G	E	E	E ₁₅ S ₁₅	F ₁₅ S ₁₅	E ₁₅ S ₁₅																							
9	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	G	G	G	G	G	22	G	G	G	G	G	G	G	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	F ₁₅ S ₁₅	F ₁₆ S ₁₅																								
10	E	E	E	E	E	E	20	G	G	G	G	G	G	G	G	G	G	G	E ₁₇ S ₁₅	E	E	E ₁₄ S ₁₅	E ₁₅ S ₁₅	F ₁₅ S ₁₅																								
11	E ₁₅ S ₁₅	E	E	E	E	G	G	G	G	G	G	G	37	38	30	G	G	G	G	E	E	E ₁₆ S ₁₅	F	E																								
12	E	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	G	23	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E ₁₅ S ₁₅	F ₁₆ S ₁₅	F ₁₇ S ₁₅																								
13	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₃ S ₁₅	E ₁₉ S ₁₅	G	G	G	G	E ₄₅	E ₄₄	G	G	G	G	G	G	E ₁₇ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	F ₁₅ S ₁₅	C																									
14	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	G	31	25	G	19	18	16	E	E ₁₅ S ₁₅	F	E																					
15	E	E	E	E	E	E ₁₇ S ₁₅	G	G	G	G	G	G	G	G	G	G	G	30	G	18	G	19	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	F	F ₁₅ S ₁₅																					
16	E	E ₁₅ S ₁₅	E	E	E	S	G	G	G	G	G	G	G	G	G	G	G	G	G	17	20	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅																								
17	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	33	35	G	G	20	29	40	30	F	E																				
18	E	E ₁₅ S ₁₅	E	E	E	E ₁₆ S ₁₅	G	G	G	53	G	G	32	G	G	G	G	G	G	G	G	G	E	18	F	F ₁₅ S ₁₅																						
19	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	26	14	19	G	G	G	G	G	G	39	42	31	G	26	22	16	27	E	E	E ₁₅ S ₁₅	F	E																							
20	E	E	E	E	E	G	G	G	G	G	G	G	40	G	33	G	G	G	G	G	G	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	F ₁₅ S ₁₅	E																						
21	E	E	E	E	E	G	G	G	21	24	G	G	G	G	G	G	G	G	G	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E ₁₅ S ₁₅	E																								
22	E	E	E	E	E	G	G	G	G	G	G	G	58	45	58	35	33	20	44	63	A	E	E ₁₅ S ₁₅	F ₁₅ S ₁₅	E																							
23	E ₁₅ S ₁₅	E	E ₁₃ S ₁₅	E	E	29	G	G	G	28	G	G	G	G	G	G	G	G	49	40	23	20	27	38	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E																				
24	E	E ₁₄ S ₁₅	E	E	E	G	G	G	25	39	G	G	48	G	G	50	G	G	G	G	G	G	G	G	21	23	F ₁₅ S ₁₅	F ₁₄ S ₁₅																				
25	E ₁₂ S ₁₅	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	25	16	13	G	19	15	E ₁₃ S ₁₅	E ₁₆ S ₁₅	F ₁₅ S ₁₅	E																				
26	E ₁₆ S ₁₅	E ₁₅ S ₁₅	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄ S ₁₅	15	E ₁₂ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅																							
27	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E	E	E	G	G	G	G	23	23	G	G	G	G	G	G	G	G	20	19	18	14	E	E	E																						
28	E ₁₄ S ₁₅	E	E	E	E	G	G	G	G	28	G	G	G	G	G	G	G	G	G	36	G	G	33	25	26	E	E	E																				
29	E ₁₅ S ₁₅	G	18	E	E	G	G	G	A	A	45	42	G	G	G	G	G	G	26	G	G	32	24	19	14	16																						
30	E ₁₅ S ₁₅	20	14	15	G	28	G	G	G	40	A	A	40	A	40	G	38	G	G	23	23	15	F ₁₅ S ₁₅	F ₁₅ S ₁₅																								
31																																																
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																								
CNT	29	27	28	28	28	26	27	28	29	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	28																							
MED	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E	E	E	E ₁₃ S ₁₅	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅																					
UQ	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₄ S ₁₅	E	E	E ₁₅ S ₁₅	G	G	G	G	G	G	U	29	G	G	G	G	G	19	18	20	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅																					
LQ	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E ₁₄ S ₁₅	E	E	E	E																					

APR. 1972

FBES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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 ₁₆	E ₁₅	E ₁₅	E ₁₄	E	E ₁₅	16	11	11	16	11	13	14	14	12	11	E	E	F ₁₅	E	E ₁₅	E ₁₅	E ₁₆	E ₁₅	
2	E ₁₅	E ₁₅	E	E	E	E ₁₄	16	12	16	16	16	17	18	20	11	17	11	E	F ₁₅	E ₁₅	E ₁₅	E ₁₆	E ₁₆		
3	E ₁₅	E	E	E	E	E ₁₃	16	14	16	18	20	18	18	18	12	11	11	12	E ₁₆	E ₁₅	E	E ₁₆	E ₁₅	E ₁₅	
4	E ₁₅	E ₁₅	E	E	E	E ₁₃	14	E	11	15	15	17	17	20	20	15	11	12	E ₁₅	E ₁₅	C	E	E	E ₁₅	
5	E ₁₄	E ₁₅	E	E ₁₅	E	E ₁₅	C	12	11	15	16	18	20	22	18	17	11	E	E ₁₅	E	E ₁₆	E ₁₅	E ₁₅	E ₂₀	
6	E ₁₆	C	E	E ₁₆	E ₁₆	C	18	16	15	13	15	22	20	20	20	16	12	12	E ₁₆	E	E ₁₅	E ₁₄	E ₁₅	C	
7	E	E ₁₄	E ₁₅	E	E	E	15	11	15	16	15	18	17	18	17	19	13	11	F ₁₇	E ₁₅	E ₁₅	E ₁₅	F ₁₅	F ₁₅	
8	E ₁₅	E ₁₄	E ₁₅	E	E	E ₁₅	14	14	17	17	17	17	20	20	17	13	11	11	E	E	E	E ₁₅	E ₁₅	E ₁₅	
9	E ₁₅	E	E ₁₅	E	E ₁₅	E ₁₅	15	16	15	20	17	15	19	20	17	11	12	11	F ₁₅	E ₁₅	E	E ₁₅	E ₁₅	E ₁₆	
10	E ₁₅	E	E	E	E	E ₁₅	14	15	17	18	17	20	14	20	17	17	11	17	F ₁₇	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅	
11	E ₁₅	E	E	E	E	E ₁₄	16	16	11	16	20	20	19	20	20	17	11	14	F ₁₅	E ₁₅	E	E ₁₆	E ₁₆	E ₁₅	
12	E ₁₆	C	C	C	C	C	C	C	C	C	C	C	17	17	26	22	22	20	16	15	12	E ₁₅	E ₁₅	E ₁₇	
13	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₉	16	15	18	25	27	45	44	27	28	20	17	16	F ₁₇	E ₁₇	E ₁₅	E ₁₅	E ₁₅	C	
14	C	C	C	C	C	C	C	C	22	16	27	19	17	23	20	12	11	11	E	E	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
15	E	E	E	E	E	E ₁₇	11	11	13	15	17	17	17	17	16	16	11	12	E	E	E ₁₅	E ₁₅	E	E ₁₅	
16	E	E ₁₅	E	E	E	E ₁₅	12	11	11	16	20	16	17	19	17	16	16	14	E	E	E	E ₁₅	E ₁₅	E ₁₅	
17	E ₁₅	E ₁₅	E	E	E	E	12	11	12	16	19	20	17	11	17	16	11	11	E	E ₁₅	E ₁₄	E	E ₁₅	E ₁₅	
18	E	E ₁₅	E	E	E	E ₁₆	11	12	14	16	20	19	19	18	17	17	17	12	E	E	E ₁₅	E	E	E ₁₅	
19	E ₁₅	E ₁₅	E	E	E	E	11	11	12	15	15	18	16	17	15	12	11	E	E	E ₁₅	E ₁₆	E ₁₆	E	E	
20	E	E	E	E	E	E	12	11	16	13	18	17	16	16	12	15	E	E	14	E ₁₅	E	E ₁₅	E ₁₅	E	
21	E ₁₆	E	E	E	E	E ₁₃	11	E	11	17	17	17	18	17	15	11	15	11	E	E ₁₅	E ₁₅	E ₁₄	E ₁₂	E	
22	E	E	E	E	E	E	E	E	11	16	17	17	18	33	11	11	E	E	E	E	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
23	E ₁₅	E	E ₁₃	E	E	E	13	E	11	15	16	15	15	17	16	11	11	11	E	E	E ₁₅	E ₁₅	E ₁₅	E	
24	E ₁₅	E ₁₄	E	E	E	E ₁₃	15	11	11	16	20	17	18	16	15	16	15	11	13	E ₁₅	E	E	F ₁₅	E ₁₄	
25	E ₁₂	E	E	E	E	E	11	11	12	15	19	17	20	17	17	17	12	11	11	E	E	E ₁₃	E ₁₆	E ₁₅	
26	E ₁₆	E ₁₅	E	E	E	E	11	16	16	15	19	17	15	18	12	12	12	11	E ₁₆	E ₁₄	E	E ₁₂	E ₁₅	E ₁₅	
27	E ₁₅	E ₁₄	E	E	E	E	12	11	11	12	20	16	17	16	15	11	12	11	E	E	E	E	E	E ₁₅	
28	E ₁₄	E	E	E	E	E	11	11	13	17	11	17	16	16	16	12	11	11	E	E	E	E	E	E	
29	E ₁₅	E	E	E	E	E	12	E	E	11	12	13	15	16	15	15	15	11	11	E	E	E	E	E	
30	E ₁₅	E	E	E	E	E	F	11	13	11	15	20	16	14	16	12	15	11	11	E	E	E	E ₁₅	F ₁₅	
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	29	27	28	28	28	27	27	28	29	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	28
MED	E ₁₅	E ₁₄	E	E	E	E ₁₃	12	11	13	16	17	17	17	18	16	15	11	11	E ₁₂	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	
UQ	E ₁₅	E ₁₅	E	E	E	E ₁₅	15	14	16	17	20	19	19	20	17	17	13	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	
LQ	E ₁₄	E	E	E	E	E	11	11	11	15	15	17	16	16	15	12	11	11	E	E	E	E	E ₁₇	E ₁₄	

The Radio Research Laboratories, Japan

APR. 1972

F-MIN (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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	295	285	270	280	290	285	337	335	315	325	325	320	325	325	320	330	325	325	330	285	290	275	280	290
2	280	285	290	310	300	300	345	355	340	320	310	320	315	310	310	305	325	335	325	310	295	285	285	290
3	285	290	295	305	305	315	340	345	330	310	330	330	310	320	320	325	320	320	325	320	295	295	285	300
4	285	295	290	305	295	310	360	335	330	330	315	320	315	315	310	310	305	330	325	315	I ^S C ³⁰⁵	295	285	280
5	275	255	270	I ^S 280	275	S	C	305	315	320	315	310	310	315	320	330	315	315	315	330	310	S	275	C
6	C	C	280	I ^S C ³⁰⁵	280	C	C	C	320	330	320	320	320	310	325	325	325	325	320	310	295	310	S	C
7	S	C	290	290	290	300	320	320	320	335	310	305	310	305	310	310	310	310	315	315	285	280	275	C
8	270	S	275	275	270	275	310	320	325	310	315	305	320	315	315	310	310	310	315	310	305	310	285	280
9	275	280	285	280	I ^S 275	290	U ^S 325	I ^R 330	330	330	320	300	300	300	305	320	315	310	310	305	310	305	285	I ^S 280
10	275	275	275	285	285	330	I ^S 330	340	320	305	310	305	300	300	300	305	315	320	305	300	310	305	285	285
11	270	270	285	305	275	295	305	315	305	315	310	300	300	300	295	295	315	300	300	305	305	310	280	270
12	S	C	C	C	C	C	C	C	C	310	300	305	300	305	300	300	305	305	310	315	320	295	280	265
13	I ^S 265	I ^C 260	255	270	280	315	335	315	330	310	310	305	300	295	300	295	305	295	300	310	310	300	275	C
14	C	C	C	C	C	C	C	C	315	300	295	310	295	285	295	300	310	310	295	295	300	300	275	270
15	260	265	275	I ^S 285	280	S	330	315	305	310	305	290	295	305	305	300	295	295	305	315	310	295	285	275
16	F	F	F	F	F	285	285	325	305	300	315	310	305	295	300	305	300	305	315	315	305	300	275	275
17	I ^S 270	270	290	285	285	305	325	315	315	305	310	285	290	295	300	295	290	305	310	315	305	275	270	265
18	265	275	290	290	285	290	310	320	300	290	295	290	290	275	275	290	300	310	300	280	265	260	260	280
19	265	I ^C 290	280	265	265	280	330	320	325	330	290	295	305	300	305	310	315	315	305	305	290	290	275	265
20	265	275	295	300	280	295	315	310	325	315	305	305	305	310	315	310	320	310	305	305	305	300	275	270
21	265	265	270	295	275	295	300	325	310	320	315	280	295	300	290	305	305	310	290	310	290	275	265	265
22	265	275	285	285	265	290	315	330	330	320	320	320	300	310	305	320	315	325	320	305	I ^A 300	305	280	280
23	280	280	280	290	270	285	270	320	325	335	295	295	305	305	300	300	305	320	325	320	280	275	275	265
24	270	275	280	285	280	285	280	300	300	290	290	280	280	305	295	310	315	310	300	315	290	285	275	F
25	F	F	F	F	295	295	300	350	315	320	310	310	310	310	305	300	305	310	315	310	305	325	285	275
26	275	280	285	300	305	325	340	330	320	310	315	295	310	300	300	310	310	315	310	310	315	310	290	285
27	285	285	280	285	300	325	335	345	340	315	330	320	300	305	300	310	305	325	330	320	300	285	280	280
28	275	285	280	270	280	275	330	330	325	325	305	295	280	305	305	305	305	315	300	285	265	275	290	270
29	290	265	280	240	265	270	310	240	A	A	290	300	290	285	310	310	315	320	315	315	270	265	270	265
30	270	260	255	260	250	275	250	250	245	225	A	A	210	A	255	285	290	295	F	F	300	285	270	265
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	23	27	27	28	25	26	27	28	29	29	29	30	29	30	30	30	30	30	30	30	29	29	26
MED	272	275	280	285	280	295	325	320	320	315	310	305	300	305	305	310	310	312	310	310	300	290	275	275
UQ	280	285	290	298	290	310	330	330	328	325	315	310	310	310	310	310	315	320	320	315	310	300	285	280
LQ	265	268	275	280	275	285	310	315	310	310	305	295	295	300	300	300	305	310	300	305	290	275	275	265

APR. 1972

M(3000)F2 (0.01)

IONOSPHERIC DATA

APR. 1972

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										U	L	U	L	380	380	U	L							
2											375	L												
3												L	L	L										
4										L	L	U	375	U	360	U	385							
5												U	L	360	355	L	L							
6										L	L	L	L											
7										L														
8													L											
9										L	L			L	L									
10										L	L	L												
11										L			L											
12												U	360	L		L								
13									L	L														
14											U	L	L		360									
15										L				L										
16										355	U	360	385			L								
17										L	L	370	375	L										
18										A	355	360	365			345	L							
19										L		U	360	L	U	360	L							
20									385	U	380	375	U	350	365	360	360							
21										L	330			360	360	350								
22											360	U	365	385	A	A	350	L						
23										L	U	380	380		350	A								
24										320	335	340	355	355	A	350	345	A	U	360	360			
25										L	360	355	365	355	350	345	L							
26										380	380	360	380	370	L	L	360	L						
27										L		375	375	U	380	365	340	U	365	L				
28										L	375	390	355	355	345	U	355	355						
29										A	A	A	A	365	345	340	345	370						
30										A	335	335	355	A	A	A	355	A						
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						1	3	4	4	10	13	14	14	11	7	7	2							
MED						310	335	350	368	362	365	368	362	360	350	355	365							
UQ						338	375	380	375	375	380	375	362	352	360									
LQ						328	335	348	355	355	360	355	348	342	350									

APR. 1972

M(3000)F1 (0.01)

IONOSPHERIC DATA

APR. 1972

H^oF₂ (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										265	250	260	265	270										
2											265	260												
3												260	265	270										
4										260	265	265	270	260										
5												295	270	270	260									
6										260	265	260	265											
7										260														
8													270											
9										250	260			280	265									
10										270	270	260												
11										265			300											
12												275	265		285									
13									265	265														
14											260	275		290										
15										260				275										
16										270	275	265			280									
17										265	270	265	280	295										
18										300	315	275	310		295	270								
19										245		290		295	275	260								
20							245	245	245	260	270	275	280	275	270									
21									290	270			305	300	300									
22										310	275	300	300	285	300	275								
23							300		250	260	260			295	295									
24							350	365	340	365	370	345	370	320	320	295	290							
25									295	295	285	290	315	310	295	295								
26									260	275	280	280	300	310	285	285	265							
27									250		265	270	300	300	305	280	280							
28									260	270	290	320	330	295	275	295								
29						355	315	550	A	A	395	345	365	380	310	315	295							
30						365	500	515	545	650	A	A	700	A	500	405	365							
31																								
CNT						2	4	4	10	22	19	21	20	19	15	11	6							
MED						360	332	440	262	265	270	275	300	295	295	295	285							
UQ						425	532	295	270	282	290	312	300	302	295	295								
LQ						30R	305	250	260	265	265	270	275	278	278	270								

APR. 1972

H^oF₂ (KM)

IONOSPHERIC DATA

APR. 1972

H^oF (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	250	260	280	275	245	265	230	225	210	210	205	215	200	200	205	225	240	245	225	225	265	260	275	275	
2	275	260	250	220	210	245	220	220	215	220	210	200	210	210	220	215	240	225	215	220	245	260	290	285	
3	275	260	250	240	225	225	210	220	220	210	215	215	205	220	225	230	235	245	225	220	230	270	270	260	
4	275	275	265	250	225	245	215	220	225	225	220	215	215	200	200	235	245	250	225	230	240	245	265	295	
5	295	310	290	250	265	280	I ^o C 250	245	240	230	220	205	215	225	220	235	240	250	245	220	215	260	270	325	
6	320	C	270	255	270	C	225	230	220	225	220	225	210	205	230	225	235	250	240	240	265	250	255	C	
7	275	310	270	250	225	245	230	230	235	225	220	210	215	225	215	240	235	245	240	220	250	250	280	290	
8	300	300	295	270	260	260	240	230	230	205	200	200	210	220	225	230	240	245	245	230	245	275	240	290	
9	295	275	270	265	290	250	230	225	230	225	210	210	205	210	235	225	240	245	240	245	245	225	250	280	
10	300	295	275	250	255	240	220	220	225	225	220	225	215	215	230	230	240	250	230	245	250	245	250	270	
11	295	300	270	245	230	245	220	230	225	220	220	230	215	220	230	225	245	260	250	230	245	245	250	275	
12	300	C	C	C	C	C	C	C	C	220	215	205	215	225	225	240	250	255	250	245	220	230	245	300	
13	320	305	300	285	260	245	230	225	225	220	220	E ^o B 250	E ^o B 250	250	225	250	245	250	260	240	225	225	250	I ^o C 310	
14	C	C	C	C	C	C	C	C	220	220	220	205	215	205	230	230	240	245	250	245	245	245	245	290	
15	280	300	280	260	245	245	220	230	225	220	210	210	215	210	230	225	245	250	255	245	230	235	245	270	
16	300	315	300	270	250	255	250	240	230	225	215	210	200	215	230	235	235	245	235	235	245	265	275	275	
17	270	295	265	250	260	225	240	230	230	220	220	210	200	215	230	220	240	260	250	245	250	270	280	300	
18	300	295	260	245	240	250	245	235	235	A	245	220	210	200	235	240	235	245	255	275	270	300	295	260	
19	260	245	250	250	300	280	245	220	230	230	225	215	215	H	225	230	245	235	250	250	245	250	245	295	
20	295	275	245	225	240	240	240	210	200	210	200	210	210	210	200	220	240	240	245	230	230	240	250	300	
21	300	300	285	250	235	255	230	215	230	215	220	215	215	205	230	230	250	250	255	230	250	245	280	295	
22	300	270	250	250	250	260	245	225	225	210	230	205	A	A	I ^o A 240	245	240	245	A	A	A	250	250	285	
23	295	300	290	250	290	255	220	235	220	235	220	205	230	225	I ^o A 260	A 250	260	245	250	A 250	235	275	275	300	
24	300	280	260	250	275	260	245	240	260	A	245	250	I ^o A 250	235	215	I ^o A 230	250	230	245	260	245	270	270	265	280
25	275	295	275	235	225	215	210	225	220	225	215	210	210	200	200	225	245	225	260	245	270	230	265	290	
26	275	275	265	255	245	235	225	220	215	210	200	200	200	180	200	225	235	240	250	250	230	225	230	270	
27	275	275	275	270	260	250	230	220	215	210	210	215	210	220	215	235	230	250	245	225	230	245	250	280	
28	290	280	280	280	275	240	245	250	230	225	210	200	220	200	245	240	270	260	265	280	300	260	260	230	
29	240	280	290	350	345	305	255	240	A	A	A	A	210	200	250	235	215	250	260	250	290	275	260	300	
30	270	305	300	345	380	A	250	245	245	A	A	A	250	A	A	270	A	235	270	300	315	300	275	300	
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	29	27	28	28	28	26	28	28	28	27	28	28	29	28	29	30	29	30	29	29	29	30	30	29	
MED	295	295	272	250	252	248	230	228	225	220	220	210	212	212	230	232	240	245	250	245	245	248	262	290	
UQ	300	300	288	270	272	260	245	235	230	225	220	215	215	220	230	240	245	250	255	245	250	265	275	300	
LQ	275	275	262	250	238	240	220	220	220	212	210	205	210	202	220	225	235	245	240	230	230	240	250	275	

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H^oF (KM)

IONOSPHERIC DATA

APR. 1972

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 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	G	G	G	G	G	G	G	G	100	100	100	100	S	E	100	S	S	S
2	S	S	E	E	E	S	G	105	105	105	115	G	G	G	G	G	G	100	S	S	S	S	S	S
3	S	E	E	E	E	S	G	G	G	G	G	G	G	110	105	105	G	G	S	S	E	S	S	S
4	S	S	E	E	E	S	G	G	G	G	G	G	G	G	G	G	110	125	S	C	E	E	S	S
5	S	S	E	S	E	S	C	G	G	G	G	G	G	G	105	G	G	100	120	100	S	S	S	C
6	S	C	E	S	S	C	G	G	G	125	120	110	110	110	105	G	G	G	S	100	100	S	S	C
7	E	S	S	E	E	G	G	G	G	120	G	G	G	G	G	G	110	105	S	S	S	S	S	S
8	S	S	S	E	E	S	G	110	G	G	G	G	G	G	G	G	105	G	G	E	E	S	S	S
9	S	E	S	E	S	S	G	G	G	G	G	100	G	G	G	100	G	G	145	S	E	S	S	S
10	105	100	E	E	E	105	105	G	G	G	G	G	G	G	G	G	G	G	S	105	100	S	S	S
11	S	E	E	E	E	G	G	G	G	125	115	110	105	105	105	105	G	130	120	115	110	S	105	105
12	105	C	C	C	C	C	C	C	C	G	120	G	G	G	105	G	G	125	120	S	S	S	S	S
13	S	S	S	S	S	S	G	G	G	G	115	B	B	G	G	G	G	G	120	S	S	S	S	C
14	C	C	C	C	C	C	C	C	G	G	G	G	G	G	G	105	105	105	105	100	100	S	100	100
15	E	105	E	E	E	S	G	G	G	125	G	G	110	110	105	G	100	G	100	100	S	S	E	S
16	E	S	E	E	E	S	G	G	G	125	115	115	110	G	G	G	G	145	125	115	110	S	100	S
17	S	S	E	E	E	G	150	G	G	G	G	G	G	105	105	120	G	125	115	110	110	110	100	105
18	E	S	E	100	E	S	G	G	125	120	120	115	105	G	G	G	G	G	120	120	115	110	E	S
19	S	S	E	115	100	115	G	G	G	120	115	G	105	100	100	100	100	100	100	100	100	S	E	E
20	E	E	E	E	E	G	G	G	G	G	G	115	105	110	105	G	105	100	G	S	E	S	S	E
21	100	E	E	E	E	160	G	105	105	G	G	G	105	105	G	G	G	G	120	S	S	S	S	E
22	E	E	E	100	E	100	G	G	G	G	125	G	110	110	105	100	125	125	115	115	115	100	S	S
23	S	E	S	100	E	100	G	105	140	120	120	125	G	100	105	125	130	145	125	115	100	S	S	E
24	105	S	E	125	E	135	G	135	120	120	110	110	110	115	110	115	G	G	G	100	115	110	S	S
25	S	E	E	E	E	G	G	150	G	125	125	G	G	G	G	105	100	100	120	115	110	S	S	S
26	S	S	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	S	110	S	S	S
27	S	S	E	E	E	G	G	G	105	105	G	G	G	G	G	G	G	105	105	105	105	E	E	100
28	S	E	100	E	E	G	G	G	135	110	G	G	120	105	150	155	140	140	125	120	115	115	F	E
29	S	145	125	E	E	125	125	125	120	115	115	110	115	G	G	G	110	150	135	120	115	115	110	105
30	S	105	125	125	125	125	125	125	125	115	115	115	110	105	110	130	130	G	G	120	115	115	S	S
31																								
CNT	4	4	3	6	2	8	4	8	9	15	14	10	13	13	15	13	13	18	19	18	18	7	5	5
MED	105	105	125	108	112	120	125	118	120	120	115	112	110	105	105	105	105	108	120	112	110	110	100	105
UQ	105	125	125	125	130	138	130	125	125	120	115	110	110	110	105	120	125	130	125	115	115	115	105	105
LQ	102	102	112	100	102	115	105	105	115	115	110	105	105	105	100	100	100	115	100	100	110	100	100	100

APR. 1972

H^oES (KM)

IONOSPHERIC DATA

APR. 1972

TYPES OF ES

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

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

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

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TYPES OF ES

IONOSPHERIC DATA

APR. 1972

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

APR. 1972

FOF2 (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

FOF1 (0.01 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	U	U	U	480	480	470	L	L							
2									L	L	480	510	510 ^H	L	L	L	L							
3									L	L	480	500	510	480	470	L	L							
4									L	L	500	500	500	500	U	510	L	L						
5									L	L	500	550	510	490	470	L	L							
6									L	470	500	510	510	I	A	A	460	L						
7									L	L	U	480	550	500	U	560	500	L	L					
8									L	L	530	540	510	U	520	U	540	L	L					
9									L	L	500	500	520	550	L	L	L	L						
10									L	500	490	530	U	600	550	U	530	480	L					
11									L	L	L	580 ^H	530	540	530 ^H	490	L							
12									L	L	490	530	600	570	540	540	L							
13							L		L	U	500	490	530	550	550	U	530	L	L	L				
14									L	L	500	580	540	560	520	L	L	L	L					
15									L	L	500	580	520	500	L	L	L	L						
16								L	L	L	490	560	590	520	L	L	L	L						
17									L	L	510	510	580	520	520	L	L	L	L					
18									A	480	C	C	C	C	C	C	C	L	L					
19									L	L	610	510	520	500	500	L	L	L	L					
20									C	L	530	540	520	540	520	500	L	L						
21									470	L	550	570	570	L	500	500	L	A						
22								L	L	L	L	610	510	500	520	L	L	L						
23									L	A	L	500	530	550	L	520	I	A	470	L	L			
24						400	450	450	I	A	I	A	550	530	I	A	490	U	510	L	L			
25								L	L	U	500	500	510	550	500	500	470	L	L					
26								L	L	480	480	560	550	520	490	U	490	L						
27									L	I	C	500	500	520	500	500	L	L	L					
28							L	L	L	L	510	520	550	500	490	L	L	L						
29						L	360	380	A	A	A	I	A	I	A	500	500	500	H	L	L	L		
30							350	400	420	440	440	460	450	440	440	440	410	380						
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	3	3	10	26	29	29	26	24	11	1	1						
MED							360	400	450	485	500	530	520	505	500	490	410	380						
UQ							380	425	460	500	500	550	550	540	520	500								
LQ							355	390	435	470	490	510	510	500	490	470								

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FOF1 (0.01 MHz)

IONOSPHERIC DATA

APR. 1972

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							200	260	300	320	340	345	350	340	330	305	270	230								
2							A	255	295	320	335	340	I A 345	I A 345	345	330	310	I A 285	230							
3							A	265	300	325	340	355	I A 355	I A 345	330	315	I A 270	215								
4							200	265	305	330	345	355	355	350	335	320	290	250								
5							200	270	305	330	345	I A 355	355	I A 350	I A 340	I A 320	A	A	A							
6							200	265	305	325	345	A	A	A	A	A	A	A	A							
7							220	275	315	325	335	345	355	355	350	335	I A 300	235								
8							210	275	315	330	340	350	355	355	I A 350	335	305	240								
9							220	285	315	330	345	360	365	I A 360	345	I A 335	310	255								
10							205	280	320	340	355	365	365	360	355	345	310	255								
11						S	225	280	325	340	350	360	365	I A 355	345	330	305	245								
12						S	225	290	320	340	350	360	365	360	350	335	305	255								
13						S	240	290	320	A	A	A	A	360	350	335	305	255								
14						S	I A 225	I A 285	I A 320	340	345	350	360	A	A	335	315	265	185							
15						S	235	295	330	340	350	I A 355	360	355	345	330	305	260	185							
16						B	240	295	320	340	345	350	360	360	350	340	320	260								
17						S	240	285	320	340	350	360	365	365	350	340	A	A	A							
18						S	235	295	325	345	C	C	C	C	C	C	A	255	A							
19						S	240	300	330	I A 340	355	365	I A 365	I A 360	I A 350	A	A	A	A							
20							165	240	C	C	340	355	360	365	360	350	330	305	260							
21							170	245	285	315	340	345	355	365	360	350	330	295	250							
22							170	235	275	315	340	355	I A 360	I A 365	360	350	335	290	245							
23						S	235	280	315	335	345	355	365	R 360	360	350	330	295	250							
24						S	245	285	315	340	350	355	A	A	340	325	I A 300	255								
25						B	235	285	320	I A 340	350	355	I A 360	355	345	335	305	A	A							
26						B	250	290	I A 315	335	350	360	365	360	350	335	305	I A 250								
27						A	245	285	320	I C 335	345	355	365	360	345	325	295	250								
28							175	245	290	320	335	345	I A 350	I A 360	I A 360	A	A	A	250							
29						A	235	280	310	330	340	A	A	360	345	330	300	245								
30						A	A	275	305	330	345	I A 355	365	R 365	355	340	320	285	250							
31																										
CNT					4	27	29	29	29	28	26	25	26	26	26	24	25	2								
MED					170	235	285	315	335	345	355	365	360	348	330	302	250	185								
UQ					172	240	290	320	340	350	360	365	360	350	335	305	255									
LQ					168	220	275	310	330	345	350	355	355	340	325	292	245									

APR. 1972

FOE (0.01 MHz)

IONOSPHERIC DATA

APR. 1972

FOES (0.1 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E ₁₄	E ₁₄	E ₁₈	E ₁₃	E ₁₄	E ₁₄	G	G	G	34	G	G	G	G	G	G	G	27	23	25	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
2	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	24	27	33	35	G	36	36	G	G	J ₃₄	J ₂₉	G	E ₁₈	J ₁₈	J ₁₈	M	E ₁₄	E ₁₄		
3	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	26	G	G	G	G	G	36	36	G	G	36	G	J ₂₄	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄		
4	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	25	32	G	36	G	G	G	G	G	G	G	27	23	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄		
5	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	G	31	35	36	36	38	34	36	35	J ₃₄	J ₃₃	J ₃₈	J ₄₅	J ₄₁	J ₂₆	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	33	38	40	38	37	J ₅₂	J ₅₀	J ₄₃	J ₄₃	J ₃₀	J ₃₈	J ₂₆	E ₁₄	E ₁₄	E ₁₄	E ₁₄		
7	E ₁₄	E ₁₄	E	E	E	E ₁₄	G	G	G	35	37	G	38	37	G	G	35	26	19	J ₂₉	M	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
8	E ₁₄	M	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	36	36	G	G	G	37	G	G	30	J ₂₉	J ₂₈	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
9	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	25	G	G	G	G	G	G	J ₃₉	39	35	G	27	E ₁₉	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
10	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	G	G	G	37	G	G	G	G	G	G	G	G	E ₁₉	J ₂₀	J ₂₄	J ₁₉	E ₁₄	E ₁₄	E ₁₄	
11	J ₂₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	26	G	36	G	49	37	G	J ₆₄	G	G	G	38	J ₂₈	J ₃₃	J ₂₁	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
12	E ₁₄	E ₁₄	J ₁₈	E ₁₄	E	E ₁₄	G	G	35	38	G	G	G	40	G	G	G	31	J ₂₇	J ₂₇	J ₂₄	J ₃₆	E ₁₄	E ₁₄	E ₁₄	
13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	35	37	40	J ₄₃	J ₄₈	34	29	G	G	27	30	J ₂₆	J ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
14	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E	E ₁₄	26	35	38	39	37	40	37	39	J ₃₈	G	G	G	G	J ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	M	E ₁₄	E ₁₄	E	E ₁₆	26	G	G	38	39	39	G	G	G	G	G	J ₂₃	J ₂₄	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₇	28	31	38	40	42	38	G	G	G	G	G	34	J ₃₂	J ₂₃	J ₂₀	J ₂₇	E ₁₄	E ₁₄	E ₁₄	
17	E ₁₄	E ₁₄	E	E	E	E ₁₆	28	35	47	43	43	40	38	42	41	J ₄₂	34	29	20	E ₁₄	J ₂₂	J ₃₅	J ₂₄	J ₅₂	J ₁₈	
18	E ₁₅	J ₁₈	M	E ₁₄	E	E ₁₅	G	J ₄₄	J ₅₂	43	C	C	C	C	C	C	35	J ₂₆	26	J ₂₆	J ₃₆	J ₂₃	J ₂₆	J ₁₈	J ₁₈	
19	J ₁₈	E ₁₃	E ₁₄	E ₁₄	J ₂₃	E ₁₅	26	34	39	42	43	J ₄₅	J ₅₇	J ₃₇	J ₄₃	J ₅₉	J ₃₂	31	J ₃₁	J ₂₈	J ₂₀	E ₁₄	E ₁₄	J ₂₂	J ₁₈	
20	J ₂₃	J ₁₈	M	M	E ₁₄	G	26	C	C	G	G	G	38	G	G	G	G	28	25	J ₂₈	J ₂₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	G	G	31	G	G	G	G	G	44	G	G	35	J ₄₀	J ₃₅	J ₃₈	J ₂₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
22	E ₁₄	E ₁₄	E	M	E ₁₄	G	27	34	35	43	J ₄₃	J ₄₉	J ₄₅	G	G	37	35	37	J ₂₉	J ₂₆	J ₄₃	J ₅₀	J ₆₅	J ₄₃	J ₁₈	
23	J ₄₄	J ₆₃	E ₁₄	E	E	E ₁₅	27	J ₄₄	J ₅₃	43	J ₄₇	43	G	41	49	J ₅₉	38	J ₄₄	J ₃₈	J ₇₉	J ₅₁	J ₅₁	J ₂₈	J ₂₀	J ₁₈	
24	M	J ₁₈	J ₃₂	J ₂₀	M	J ₁₉	G	35	44	J ₆₃	J ₅₃	39	37	J ₆₇	J ₅₂	39	39	27	J ₃₃	J ₅₈	J ₃₉	J ₄₅	J ₂₃	J ₄₃	J ₁₈	
25	J ₂₀	M	E ₁₄	E	E ₁₄	E ₁₇	28	32	35	41	43	41	38	G	G	G	G	J ₂₉	J ₂₁	E ₁₄	J ₁₈	J ₂₃	J ₂₂	M	18	
26	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₇	G	31	36	36	G	G	42	42	G	37	J ₄₃	39	27	E ₁₄	M	J ₁₈	E ₁₄	J ₁₈	J ₁₈	
27	M	M	E ₁₄	E ₁₃	E ₁₄	21	G	31	35	C	G	G	G	G	G	36	35	31	26	J ₂₇	J ₁₈	E ₁₄	M	E ₁₄	E ₁₄	
28	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E	G	G	35	41	43	42	40	41	39	39	J ₅₃	J ₃₅	33	J ₄₂	J ₃₉	J ₄₂	J ₃₃	M	E ₁₄	E ₁₄	
29	E ₁₄	E ₁₄	M	E	E ₁₄	20	27	36	J ₅₄	J ₅₀	J ₆₆	J ₃₉	J ₅₂	G	G	G	G	28	33	J ₃₉	J ₂₇	J ₂₇	J ₂₉	J ₂₅	J ₁₈	
30	J ₂₀	J ₂₄	J ₂₀	J ₂₀	J ₁₈	J ₃₂	37	34	38	36	42	42	G	G	42	36	34	35	J ₃₀	J ₂₄	J ₂₄	J ₂₆	J ₂₁	M	21	
31																										
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	
MED	E ₁₄	E ₁₄	E ₁₄	E ₁₄	14	E ₁₄	24	31	35	37	37	38	36	36	G	G	30	30	J ₂₆	J ₂₆	J ₂₀	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
UQ	18	18	E ₁₄	E ₁₄	E ₁₄	E ₁₆	26	34	38	42	43	40	38	40	39	37	35	34	J ₃₂	J ₂₉	J ₂₆	J ₂₇	J ₂₁	J ₁₈	J ₁₈	
LQ	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E	E ₁₄	G	G	G	35	G	G	G	G	G	G	G	26	21	J ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	

The Radio Research Laboratories, Japan

APR. 1972

FOES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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	E ₁₃	E ₁₄	E ₁₄	G	G	G	34	G	G	G	G	G	G	G	E ₁₈	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄		
2	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	24	27	33	35	G	36	36	G	G	26	29	G	E ₁₈	E	E	E ₁₄	E ₁₄		
3	E ₁₄	E ₁₄	E ₁₄	E	E	E ₁₄	25	G	G	G	G	G	36	36	G	G	36	G	19	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
4	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	25	30	G	36	G	G	G	G	G	G	G	27	20	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
5	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	G	30	35	36	36	38	34	36	35	34	30	30	42	26	19	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	33	38	39	38	37	51	49	40	35	26	29	23	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
7	E ₁₄	E ₁₄	E	E	E	E ₁₄	G	G	G	35	37	G	38	37	G	G	34	25	19	E	E	E ₁₄	E ₁₄	E ₁₄	
8	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	G	36	36	G	G	G	37	G	G	28	27	28	E ₁₃	E ₁₄	E ₁₄	E ₁₄	
9	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	25	G	G	G	G	G	G	37	37	35	G	27	E ₁₉	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
10	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	G	G	G	37	G	G	G	G	G	G	G	G	E ₁₉	E	21	E	E ₁₄	E ₁₄	
11	E	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	26	G	35	G	48	37	G	48	G	G	G	35	26	30	E	E ₁₄	E ₁₄	E ₁₄	
12	E ₁₄	E ₁₄	E	E ₁₄	E	E ₁₄	G	G	35	38	G	G	G	G	G	G	G	30	25	21	22	25	E ₁₄	E ₁₄	
13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	G	G	35	37	38	38	48	34	29	G	27	28	23	20	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
14	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E	E ₁₄	25	33	37	38	37	40	37	39	37	G	G	G	G	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
15	E ₁₄	E	E ₁₄	E ₁₄	E	E ₁₆	26	G	G	38	G	40	G	G	G	G	G	18	16	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₇	26	31	36	40	40	38	G	G	G	G	G	34	30	E	E	19	E ₁₄	E ₁₄	
17	E ₁₄	E ₁₄	E	E	E	E ₁₆	28	35	44	43	42	39	38	40	40	40	33	28	20	E ₁₄	E	26	19	26	
18	E ₁₅	E	E	E ₁₄	E	E ₁₅	G	40	52	41	C	C	C	C	C	C	32	23	20	23	30	21	23	E	
19	E	E ₁₃	E ₁₄	E ₁₄	E	E ₁₅	26	G	36	37	42	42	43	37	38	42	32	26	27	23	19	E ₁₄	E ₁₄	20	
20	E	E	E	E	E ₁₄	G	G	C	C	G	G	G	G	G	G	G	G	28	23	23	E	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	G	G	31	G	G	G	G	G	42	G	G	35	40	28	32	23	E ₁₄	E ₁₄	E ₁₄	
22	E ₁₄	E ₁₄	E	E	E ₁₄	G	27	33	35	43	39	40	38	G	G	37	35	28	22	24	25	28	43	E	
23	41	E	E ₁₄	E	E	E ₁₅	27	36	53	41	39	42	G	41	49	53	36	37	32	38	40	44	25	E	
24	E	E	29	E	E	19	G	35	43	60	53	39	37	57	47	37	35	27	30	53	U ₃₉	22	22	E	
25	18	E	E ₁₄	E	E ₁₄	E ₁₇	28	32	35	40	41	40	38	G	G	G	G	28	20	E ₁₄	E	21	19	E	
26	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₇	G	31	35	36	G	G	39	38	G	36	40	39	27	E ₁₄	E	E	E ₁₄	E	
27	E	E	E ₁₄	E ₁₃	E ₁₄	20	G	G	35	C	G	G	G	G	G	36	35	29	23	23	E	E ₁₄	E	E ₁₄	
28	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E	G	G	35	39	40	40	39	40	39	38	35	36	33	40	38	35	26	E	E ₁₄	
29	E ₁₄	E ₁₄	E	E	E ₁₄	17	G	34	A	47	55	52	52	G	G	G	G	G	30	28	24	22	26	21	
30	20	20	18	27	E	28	28	32	35	35	40	37	G	G	38	35	33	31	28	20	21	18	17	E	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	
MED	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	G	30	35	37	37	37	34	34	G	G	30	28	23	20	14	E ₁₄	E ₁₄	E ₁₄	
UQ	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₆	26	33	36	40	40	39	38	39	37	36	35	30	28	26	22	21	17	E ₁₄	
LQ	E ₁₄	E	E	E	E	E ₁₄	G	G	G	35	G	G	G	G	G	G	G	25	19	E	E	E ₁₄	E ₁₄	E ₁₄	

APR. 1972

FBES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

F-MIN (0.1 MHz)

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

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

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F-MIN (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

M(3000)F2 (0.01)

135 E Mean Time (G. M. T. + gh)

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	305 ^F	290	285	285	290	285	320	305	320	315	315	315	305	310	310	325	315	320	330	310	280	280	275	290																										
2	280	285	300	320	280	300	340	330	320	325	300	305	310	305	300	300	310	320	325	320	275	275	270	270																										
3	290	300	305	310	295	300	340	330	320	305	315	310	305	305	310	310	320	330	320	320	295	290	290	290																										
4	285	280	280	300	300	300	330	330	320	315	310	305	310	300	300	300	315	315	325	315	295	290	290	285																										
5	285	265	265	290	285	270	315	310	305	315	305	295	305	300	310	320	310	310	320	330	335	280	275	270																										
6	265	285	290	300	270	280	325	325	315	330	310	310	300	305	310	310	315	310	315	310	290	290	280	275																										
7	275	260	285	290	290	290	330	315	325	325	300	305	295	295	300	300	310	305	310	305	290	280	280	280																										
8	270	270	265	270	275	280	305	320	325	325	300	305	300	305	300	310	310	300	310	315	305	290	285	265																										
9	280	280	280	285	270	280	330	335	320	320	310	290	285	290	300	310	315	310	310	310	300	290	270	275																										
10	265	270	280	295	295	280	340	325	305 ^V	320	305	305	285	290	290	305	310	300	310	305	300	290	290	280																										
11	275	275	290	300	280	270	325	320	310	310	300	285	290	270	295	290	285	300	295	305	315	285	270	270																										
12	270	270	285	295	290	295	325	320	330	310	300	305	285	285	290	290	300	305	320	320	300	270	270	275																										
13	260	260	270	275	280	300	320	325	330	325	310	300	290	295	290	300	300	300	305	315	315	280	275	270																										
14	270	265	265	290	295	325	330	340	295	300	305	295	295	290	290	295	300	305	295	295	305	290	270	260																										
15	265	265	280	290	300	295	325	320	320	295	300	295	295	295	290	295	285	300	305	315	300	280	270	270																										
16	270	265	260	270	275	300	320	310 ^V	305	310	295	295	285	295	290	295	300	310	315	300	285	275	270	275																										
17	275	280	295	300	280	300	330	310	315	315	305	290	285	285	295	295	300	300	305	315	295	275	275	275																										
18	270	280	295	310	295	280	315	300	285 ^H	C	C	C	C	C	C	C	295	305	300	285	270	260	265	265																										
19	265	285	305	295	265	275	315	325	320	305	275	290	300	295	300	300	295	310	310	300	285	290	280	265																										
20	260	275	310	290	280	300	315	C	C	300	305	300	300	300	295	310	300	305	305	310	290	280	280	270																										
21	270	270	280	310	275	280	315	315	315	315	300	280	280	300	295	295	310	310	305	300	270	275	270	265																										
22	270	280	295	295	280	280	315	330	320	305	295	275	310	300	305	315	310	320	310	305	290	290	275	270																										
23	265	280	275	295	280	280	295	310	330	340	300	300	295	290	295	300	310	310	320	320	280	280	275	265																										
24	270	275	295	290	285	295	290	305	305	305	305	295	295	300	305	300	310	310	315	310	305	275	270	270																										
25	280	270	285	310	310	325	340	320	315	310	310	300	290	290	290	305	305	300	310	320	315	270	270	270																										
26	280	285	290	295	305	320	335	325	320	310	295	295	290	285	295	305	305	310	305	305	315	295	285	315																										
27	290	280	280	285	300	325	340	330	345	I ^C	320	310	300	280	295	290	295	315	320	330	315	305	280	280	270																									
28	275	275	280	285	270	310	315	330	320	310	290	275	290	290	295	305	305	310	295	280	285	290	265	275																										
29	290	280	270	260	260	250	270	275	I ^A	265	300	320	305	285	300	305	310	320	315	305	260	260	270	260																										
30	280	275	270	270	250	275	290	245	250	G	250	G	240	270	270	275	305	290	290	285	275	275	F	F																										
31																																																		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																										
CNT	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	29	29																										
MED	272	275	282	292	280	292	322	320	320	310	300	300	295	295	295	300	310	310	310	310	295	280	275	270																										
UQ	280	280	295	300	295	300	330	330	320	320	310	305	300	300	300	310	310	310	320	315	305	290	280	275																										
LQ	270	270	275	285	275	280	315	310	305	305	300	290	285	290	290	295	300	300	305	305	285	275	270	270																										

APR. 1972

M(3000)F2 (0.01)

IONOSPHERIC DATA

APR. 1972

M(3000)F1 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	U ₃₅₅	U ₃₅₅	350	365	365	340	L	L							
2									L	L	355	360	355 ^H	L	L	L	L							
3									L	L	370	355	355	370	355	L	L							
4									L	L	350	365	365	350	U ₃₄₀	L	L							
5									L	L	360	345	350	360	365	L	L							
6									L	380	380	360	360	I ₃₇₀	A	375	L							
7									L	L	U ₃₇₅	345	360	U ₃₂₀	355	L	L							
8									L	L	350	350	360	U ₃₅₅	U ₃₃₅	L	L							
9									L	L	370	380	350	340	L	L	L							
10									L	365	380	360	U ₃₃₅	335	U ₃₄₅	340	L							
11									L	L	L	345 ^H	350	330	335 ^H	355	L							
12									L	L	370	360	335	335	340	325	L							
13								L	L	U ₃₆₅	375	370	350	340	U ₃₃₀	L	L	L						
14									L	L	370	345	350	340	345	L	L							
15									L	L	365	340	365	360	L	L	L	L						
16								L	L	L	380	355	340	345	L	L	L	L						
17									L	L	365	365	335	360	345	L	L	L						
18									A	375	C	C	C	C	C	C	L	L						
19									L	L	330	360	360	360	360	L	L	L						
20									C	L	360	350	370	335	350	350	L	L						
21									360	L	345	335	335	L	350	340	L	A						
22								L	L	L	L	325	355	360	350	L	L	L						
23								L	A	L	360	340	340	L	I ₃₈₀	I ₃₆₀	L	L						
24						345	340	I ₃₃₅	I ₃₄₅	I ₃₆₅	335	340	I ₃₇₀	I ₃₇₀	U ₃₄₀	L	L							
25								L	L	U ₃₆₀	360	365	345	360	340	350	L	L						
26								L	L	375	395	340	340	350	365	U ₃₄₅	L							
27								L	L	I ₃₆₅	360	360	350	360	350	L	L	L						
28							L	L	L	L	360	350	330	360	335	L	L	L						
29					L	330	360	A	A	A	A	I ₃₆₀	355	360	L	L	L							
30						335	350	360	355	330	365	365	365	335	350	375	345							
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	3	3	10	26	28	29	26	24	11	1	1						
MED							335	350	360	365	362	352	350	358	348	350	375	345						
UQ							340	355	360	375	370	360	360	360	358	352								
LQ							332	345	348	355	355	345	340	340	340	340								

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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H*F2 (KM)

135 E Mean Time (G. M. T. + 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	265	280	265	260	270	270	255	245												
2									245	245	275	285	265	260	260	260	255												
3									255	250	270	270	280	265	270	270	250												
4									250	260	265	275	270	285	290	275	255												
5									255	255	280	295	280	280	270	260	250												
6									255	260	265	265	270	280	280	255	250												
7									250	250	250	280	285	290	290	265	255												
8									250	250	270	285	290	280	290	275	260												
9									250	250	260	255	285	295	280	255	255												
10									250	260	285	280	290	295	290	275	255												
11									255	255	260	300	290	295	285	270	260												
12									245	255	260	260	295	310	295	295	280												
13								250	235	250	250	285	300	300	295	280	265	265											
14									240	250	260	285	275	300	295	280	255												
15									250	250	270	290	290	280	300	285	270	265											
16								250	255	260	250	280	315	300	290	270	260												
17									265	265	280	285	305	290	290	280	285	260											
18									260	275	C	C	C	C	C	C	265	250											
19									240	255	345	300	285	280	290	290	260	255											
20									C	275	280	280	285	295	290	275	270	245											
21									270	260	275	305	325	285	295	290	270	250											
22									240	255	255	260	350	295	295	290	270	255	265										
23									255	250	245	290	300	310	305	295	285	270	250										
24									325	310	315	360	320	330	305	300	275	295	275	255									
25									250	280	280	285	295	300	295	300	285	285	255										
26									255	255	275	265	310	300	305	300	280	260											
27									245	250	275	285	280	295	310	300	290	270	250										
28									250	245	265	260	290	320	315	305	290	285	280	250									
29									320	345	430	465	470	320	300	340	345	310	295	285	250								
30									300	550	545	G	550	G	550	455	455	350	325	345									
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	11	29	30	29	29	29	29	29	29	30	15											
MED						320	312	250	255	260	275	285	290	295	290	280	260	255											
UQ						335	282	260	275	285	300	305	300	295	285	270	262												
LQ						275	248	250	250	260	280	285	280	285	270	255	250												

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H*F2 (KM)

IONOSPHERIC DATA

APR. 1972

H^oF (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	250	245	285	265	260	280	240	240	230	215	220	200	215	200	205	235	235	235	230	220	265	275	300	280	
2	290	270	255	210	195	255	215	230	220	225	200	220	195 ^H	225	235	230	245	240	220	215	260	290	305	300	
3	290	265	250	245	215	240	220	215	220	215	215	205	210	230 ^U	215	240	210	240	235	220	225	260	265	270	
4	290	295	290	245	250	255	225	230	235	230	215	210	220	205	230	235	245	245	230	220	220	250	280	285	
5	280	340	300	260	245	300	230	235	230	235	230	220	215	210	220	240	225	255	245	230	205	260	300	320	
6	315	290	270	245	245	290	235	230	230	240	205	205	205	A	A	A	A	235	245	240	240	250	260	295	
7	295	320	280	245	220	275	225	235	240	220	210	205	205	235	220	235	235	250	245	215	235	275	290	290	
8	290	295	295	275	265	275	235	240	230	215	205	220	225	220	225	235	235	250	245	240	220	245	245	295	
9	295	280	270	260	290	295	230	235	230	220	210	200	205	210	235	230	240	245	245	235	240	245	280	295	
10	310	295	280	255	250	255	225	230	240	220	205	200	215	205	225	230	240	245	235	245	245	245	250	280	
11	295	295	260	235	240	275	225	235	230	220	210	195 ^H	200	220	205 ^H	230	240	255	255	250	225	225	275	295	
12	310	300	275	240	235	255	225	235	240	225	205	210	205	205	225	230	245	245	245	235	220	260	265	300	
13	335	305	295	270	255	245	230	230	230	215	215	200	205	205	230	240	240	250	255	235	215	220	265	305	
14	320	315	310	275	255	240	230	235	215	215	205	215	220	205	235	230	240	245	250	245	235	240	265	300	
15	300	300	275	255	250	250	230	240	230	215	205	210	220	205	215 ^H	225	245	250	255	225	230	245	270	300	
16	295	300	295	290	260	255	230	235	230	225	210	205	205	195	240	240	240	245	240	230	230	280	295	290	
17	280	280	250	245	240	255	225	240	245	240	215	215	200	225	225	250	245	235	250	235	215	285	295	305	
18	305	290	255	230	245	255	235	250	235	235	C	C	C	C	C	C	230	250	250	265	290	320	290	275	
19	265	280	235	215	280	280	235	230	230	235	225	245	230	220	210	260	245	230	240	245	260	250	260	310	
20	300	275	235	215	250	275	235	C	C	C	205 ^H	200	205	205	205	210	210	230	235	245	235	240	255	270	290
21	305	300	290	245	210	260	245	235	220	235	205	230	220	260	235	230	255	250	240	240	245	255	295	300	
22	300	275	250	245	245	255	245	240	235	240	235	215	210	230	220	235	240	235	250	240	250	270	285	295	
23	300	285	280	250	275	250	240	A	A	230	215	230	215	220	245	250	245	235	235	230	290	300	295	315	
24	295	260	290	245	230	280	245	245	A	A	A	205	210	215	225	245	240	245	245	255	250	290	290	300	
25	295	285	270	240	215	235	215	215	235	235	230	210	200	195	215	240	240	245	245	230	205	250	295	295	
26	295	280	255	250	240	235	225	225	225	210	200	195	195	195	220	235	245	250	250	245	220	215	250	285	
27	285	285	285	270	255	245	220	230	215	205	205	200	215	200	215	250	250	240	235	220	215	255	295	295	
28	290	290	280	280	300	245	240	240	240	230	205	210	235	230	240	250	245	250	295	305	275	245	255		
29	250	275	295	310	315	280	260	A	A	A	A	A	A	200	180 ^H	245	240	250	245	250	285	320	305	310	
30	265	290	300	305	335	335	260	240	240	230	240	225	225	225	280	245	250	245	300	280	300	295	270	295	
31																									
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	30	30	30	30	30	30	27	26	28	27	28	28	28	28	28	29	30	30	30	30	30	30	30	
MED	295	290	280	248	250	255	230	235	230	225	210	210	210	210	225	235	240	245	245	235	238	258	280	295	
UQ	300	300	290	270	260	280	240	240	235	232	215	218	220	225	235	245	245	250	250	245	260	280	295	300	
LQ	290	280	255	245	240	250	225	230	230	215	205	202	205	205	215	230	240	240	240	230	220	245	265	290	

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H^oF (KM)

IONOSPHERIC DATA

APR. 1972

H[°]E S (KM)

135° E Mean Time (G. M. T. + 9^h)

Station	AKITA																							
	Lat. 39 43.5 N. Long. 140 08.2 E												Sweep 1 MHz to 20 MHz in 20 sec in automatic operation											
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	105	S	S	S	G	G	G	125	G	G	G	G	G	105	105	155	B	S	S	S	S	S
2	S	S	S	S	E	S	150	170	155	155	G	120	115	G	G	105	115	G	B	100	105	100	S	S
3	S	S	S	E	E	S	150	G	G	G	G	G	120	115	G	G	115	G	100	100	S	S	S	S
4	S	S	S	E	S	S	160	150	G	130	G	G	G	G	G	G	G	155	130	S	S	S	S	S
5	S	S	S	S	E	S	G	150	140	140	140	120	110	110	110	105	105	100	100	100	100	S	S	S
6	S	S	S	S	S	S	G	G	150	140	130	120	105	105	105	105	105	100	100	100	100	S	S	S
7	S	S	E	E	E	S	G	G	G	140	140	G	130	135	G	G	140	145	130	115	110	S	S	S
8	S	105	S	S	S	S	G	G	G	130	130	G	G	G	125	G	G	140	125	110	S	S	S	S
9	S	S	S	S	S	S	160	G	G	G	G	G	G	105	130	130	G	150	B	110	S	S	S	S
10	S	S	S	S	E	S	G	G	G	150	G	G	G	G	G	G	G	G	B	100	110	105	S	S
11	105	S	S	S	E	S	160	G	140	G	115	115	G	110	G	G	G	125	120	110	110	S	S	S
12	S	S	105	S	E	S	G	G	145	125	G	G	G	130	G	G	G	130	120	110	110	105	S	S
13	S	S	S	S	S	S	G	G	120	115	110	110	105	100	100	G	105	140	100	100	S	S	S	S
14	S	S	S	S	E	S	140	130	120	125	130	130	120	115	110	G	G	G	G	100	S	S	S	S
15	S	105	S	S	E	S	150	G	G	130	125	115	G	G	G	G	G	100	100	100	S	S	S	S
16	S	S	S	S	S	B	150	140	130	120	115	130	G	G	G	G	G	140	115	115	110	105	S	S
17	S	S	E	E	E	S	145	140	130	125	120	125	130	115	120	120	115	115	110	S	105	105	105	105
18	S	105	100	S	E	S	G	130	125	130	C	C	C	C	C	C	125	110	130	115	110	110	110	105
19	110	S	S	S	105	S	155	140	115	115	115	110	110	105	105	100	100	140	100	100	100	S	S	105
20	105	100	105	100	S	G	140	C	C	G	G	G	115	G	G	G	G	150	125	100	100	S	S	S
21	S	S	S	S	E	G	G	150	G	G	G	G	G	170	G	G	145	130	120	105	100	S	S	S
22	S	S	E	100	S	G	155	140	140	130	120	115	120	G	G	140	140	130	130	115	115	110	110	120
23	105	110	S	E	E	S	150	140	125	130	125	130	G	150	135	120	130	120	115	100	100	110	100	105
24	100	100	100	100	100	105	G	140	130	120	115	125	125	110	125	125	120	140	120	110	115	110	110	105
25	105	105	S	E	S	B	165	150	140	130	115	120	130	G	G	G	G	110	110	S	100	100	105	100
26	S	S	S	S	S	B	G	140	140	130	G	G	140	140	G	145	135	140	130	S	110	110	S	105
27	105	105	S	S	S	150	G	140	140	C	G	G	G	G	G	150	150	140	130	115	110	S	100	S
28	S	S	S	S	E	G	G	140	130	120	115	115	115	115	115	115	110	140	120	115	115	110	110	S
29	S	S	140	E	S	150	140	130	125	120	115	110	110	G	G	G	G	140	130	115	115	115	110	110
30	105	105	115	125	125	130	130	130	140	130	130	120	G	G	140	140	145	140	125	115	110	110	105	105
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	8	9	7	4	3	4	16	18	20	24	18	17	16	16	12	14	18	26	25	25	21	14	10	10
MED	105	105	105	100	105	140	150	140	135	130	120	120	118	115	118	120	118	140	120	110	110	110	108	105
UQ	105	105	110	112	115	150	158	150	140	130	130	125	128	132	128	140	140	140	130	115	110	110	110	105
LQ	105	105	102	100	102	118	142	140	125	122	115	115	110	108	108	105	105	120	110	100	100	105	105	105

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H[°]E S (KM)

IONOSPHERIC DATA

APR. 1972

TYPES OF ES

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

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

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

APR. 1972

TYPES OF ES

IONOSPHERIC DATA

APR. 1972

FOF2 (0.1 MHz)

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

Station		KOKUBUNJI TOKYO Lat. 35 42.4 N. Long. 139 29.3 E								Sweep 1 MHz to 20 MHz in 20 sec in automatic operation														
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	56	51	49	46	48	65	83	92	90	100 ^R	111	109	104 ^R	111	115	102	102 ^R	90	67	A	60	61	63
2	60	62	61	65	35	36	59	J76 ^R	95	86	90	Y05 ^B	117	117	115	112	119	120	100	64	54	56	57	59
3	61	63	64	J62 ^R	43	40	60	73	82	95	105	121	121	120	127	123	116	111	101 ^R	83	69	62 ^B	61	60
4	55	53	53	51	46	46	62	R	81	92	103	C	120	116	123	122	123	112	111	83	65	63	62 ^B	61
5	61	55	56 ^R	61	51	51	I68 ^R	81	95	108	116	121	132 ^R	128	125	116	Y04	Y05 ^B	111	Y01 ^R	55	46	51	50 ^R
6	50	52	53	50	43	42	65	84	101	Y04 ^R	100	101 ^R	110	105	101	Y04 ^R	98	97	Y03	U90 ^R	66	66	U62 ^R	61
7	61	56	56	56	49	48	71	81 ^R	98	97	Y01 ^R	111	112	110	110	110	Y05 ^B	103	Y00 ^R	90	71	I71 ^R	U72 ^R	R
8	69 ^R	65	62 ^R	65 ^R	62 ^R	U62 ^R	J89 ^R	Y03 ^R	Y05 ^R	94	90	Y04 ^R	113	112	108	109	108	108	114	109	85	67	70	66
9	66	66	66	57	53	54	84	89	91	95	94	106	113	119	125	119	103	95	101	95	U70 ^S	68	69	67
10	67	67	66	66	56	59	J80 ^S	J86 ^R	94	96	98	110	115	116	118	120	113	108	103 ^B	96	82	69	65	66
11	67 ^R	67	66	61	50	50	J73 ^R	86	110	108	95	113	123	128	134	125	113	Y03 ^B	111	111	86 ^R	61	65	69
12	70	70 ^R	71 ^R	65	58	58	81 ^R	92	90	93	Y03 ^R	Y08 ^R	116	121	124	123	123	128	126	Y03 ^B	67	62	65	63
13	61	62	62	62 ^R	60	65	90	91	91	85	95	Y05 ^B	111	116	113	113	113	111	113	110	82 ^R	61	62 ^R	61
14	61	61	60	61	62	63	78	J75 ^R	820	96	108	108	115	114	120	123	112	106	Y04 ^R	Y04 ^R	87	U71 ^R	U65 ^R	65
15	66	63 ^B	66	63	58	61	91	91	88	95	Y05 ^B	122	120	120	121	123	119	129	128	109	U81 ^S	64	67	67
16	66	62	60	59	59	69	86	88	87	Y02 ^B	98	106	116	130	138	139	137	125	117	92	J79 ^S	67	74	75
17	75	70	70	64	51	59	80	84	95	104	109	113	120	126	132	131	125	120	123	Y04 ^R	75 ^R	72 ^R	73 ^R	71 ^R
18	70	I71 ^R	U75 ^R	60	51	53	J77 ^R	J89 ^R	91	Y03 ^R	Y05 ^B	116	135	Y37 ^R	136	140	140	129	108	95	91	J89 ^R	U92 ^R	I92 ^R
19	J88 ^R	92 ^R	R	75 ^R	65	J75 ^R	Y04 ^R	Y05 ^R	96	85	91	121	128	130	130	131	130	116	109	U91 ^R	U76 ^R	85	73	71
20	68	65	66	J53 ^R	45	50	80 ^R	82	96	Y01 ^R	109	107	114	122	122	122	115	109	96	85 ^B	72 ^R	70	U73 ^R	70
21	U66 ^R	65 ^R	67	62 ^R	50	55	86 ^R	J99 ^R	86 ^R	86	90	90	108	125	122	123	120	111	Y02 ^R	96 ^R	U73 ^R	U75 ^R	R	R
22	R	J79 ^R	U82 ^R	60	57	61	90	J90 ^R	85	79	84	93	113	113	112	104	96	99	Y04 ^R	90	73 ^S	64	62 ^S	68
23	64	66	61	64	51	56	J84 ^R	93 ^S	90	68	87	105	110	115	124	127	121	119	Y04 ^R	85	71	J76 ^S	76 ^S	J75 ^S
24	74 ^S	70	66	64	51	49	63	65	64	81	J90 ^R	92	103 ^R	Y03 ^B	108	105	107	Y05 ^B	Y05 ^B	81	66	63	63	R
25	65 ^R	65 ^R	F	63 ^R	46	50	J64 ^R	65	73	80	88	95	106	116	118	121	120	123	120	107	76 ^R	71	75	73
26	73	I77 ^R	74 ^R	J65 ^R	61	70	72 ^R	70	J77 ^R	97	86	96	100	109	124	121	109	106	105	Y02 ^R	84	69	69	U69 ^S
27	67 ^S	64	J62 ^R	63	57	69	82	J76 ^R	76	80	75	I88 ^R	95	Y04 ^R	110	120	115	108	Y04 ^R	85	62 ^R	60	62 ^R	62
28	61	61	60	56	51	58	U79 ^R	80	78	79	88	96	109	114	119	115	106	100	92	90	S	95	86	87
29	89	75 ^S	71	62	F	F	71 ^F	55	59	67	83	75	J79 ^R	76	J89 ^R	Y03 ^B	Y00 ^R	Y03 ^B	93	63	60	62	J60 ^S	64 ^S
30	69	61	53	52	47	49	48	46	47	R	54	R	U51 ^R	52	54	57 ^V	51	49	51	55	I54 ^A	50	52 ^S	50
31																								
CNT	28	30	28	30	29	29	30	29	30	29	30	28	30	30	30	30	30	30	30	30	28	30	29	27
MED	66	65	63	62	51	55	78	84	90	94	95	106	113	116	120	120	113	108	104	92	72	66	65	66
UQ	70	70	66	64	58	61	84 ^R	91	95	97	103	112	120	122	125	123	120	119	111	104	82	71 ^R	73	70
LQ	61	61	60	57	47	49	65	76	81	85	88	96	109	110	111	112	105	103	101 ^R	85	66	62	62	62

APR. 1972

FOF2 (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

FOF1 (0.01 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	U 500	490	U 480	L	L								
2									L	L	L	R 500	R 480	L	U 510	L	L							
3								L	L	L	L	L	L	500	L	440	L							
4								L	L	L	470	C	L	L	L	L	L							
5								L	L	L	U 510	L	500	490	460		L							
6								L	L	L	L	460	510	480	L	L	L	L						
7								L	L	L	490	U 510	L	510	L	L	L							
8								L	L	L	U 510	L	L	550	L	L	A	L						
9								L	L	L	U 500	L	L	510	L	L	L	A	A					
10								L	L	L	500	560	510	L	500	420	L							
11								L	490	480	510	520	510	L	L	L								
12								L	L	L	L	510	U 550	540	L	L	L							
13								L	L	L	510	510	510	A	540	L	L	L						
14								L	L	L	500	L	500	530	U 500	L	L							
15								L	L	L	L	U 520	L	L	U 550	U 510	L	L						
16								L	L	L	L	L	U 590	L	L	L	A	A	A					
17								L	A	A	510	510	A	510	L	A	A							
18								L	510	L	A	L	L	510	L	L	L							
19								L	L	L	560	510	L	A	A	A	A							
20								L	U 510	510	L	L	480	L	L									
21								L	L	U 510	480	490	L	520	L	480	L	L						
22								L	L	L	500	L	520	U 500	L	L	L							
23								L	L	L	560	500	U 500	U 550	500	L	L							
24								L	A	A	500	500	L	490	L	L	A							
25								L	L	U 480	L	510	510	500	L	L	L							
26								L	L	L	510	L	L	L	A	A	A							
27								L	L	L	500	490	500	490	L	A								
28								L	L	L	500	A	A	A	A	L	L	L						
29						L	350	420	A	A	A	500	500	L	500	U 500	A	L						
30					L	A	390	420	A	430	450	450	450	A	A	L	L	A						
31																								
CNT								1	2	1	5	16	19	17	19	10	6							
MED								350	405	420	U 510	500	510	500	510	500	490							
UQ								U 510	510	510	510	510	525	510	U 510									
LQ								U 490	485	500	500	500	490	500	440									

The Radio Research Laboratories, Japan

APR. 1972

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

APR. 1972

FOE (0.01 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							B	220	290	320	330	A	A	A	A	A	A	240	B						
2							210	255	300	320	325	330	R	325	315	310	300	280	240	B					
3							170	260	300	325	I ^R ₃₅₀	350		A	A	A	A	290	230	B					
4							160	260	290	335	A	C	R	R	I ^R ₃₅₀	I ^R ₃₂₀	290	160	A						
5							200	250	300	320	I ^R ₃₄₀	R	R	R	A	A	A	A	A						
6							190	260	290	340	350	R	R	A	R	R	290	250	B						
7							190	280	R	R	R	R	R	R	360	350	295	240	A						
8							165	275	I ^R ₃₁₀	335	345	I ^R ₃₅₀	I ^R ₃₅₀	365	355	335	I ^A ₃₀₀	255	A						
9							225	285	310	345	355	R	R	A	I ^A ₃₅₀	350	305	240	A						
10							225	285	335	A	A	A	A	A	A	A	290	R	B						
11							210	280	330	345	355	R	R	R	I ^R ₃₆₀	I ^R ₃₄₀	290	250	A						
12							210	290	320	345	350	360	B	I ^R ₃₅₅	I ^R ₃₅₀	330	300	250	A						
13							I ^A ₂₂₀	I ^A ₂₈₀	310	345	I ^R ₃₆₀	B	A	A	R	I ^R ₃₄₀	I ^A ₃₀₀	250	A						
14							190	280	I ^A ₃₁₀	A	340	A	A	A	A	A	A	A	A						
15							230	290	I ^A ₃₂₀	350	A	A	R	R	I ^A ₃₆₀	345	310	255	A						
16						B	235	275	320	340	R	R	R	R	375	350	300	260	A						
17						145	245	290	330	I ^A ₃₅₀	I ^R ₃₆₀	B	I ^R ₃₈₀	370	355	340	A	A	A						
18						S	I ^A ₂₃₀	295	345	345	A	A	A	R	R	R	A	A	175	H					
19						S	I ^A ₂₂₀	I ^A ₂₄₀	320	350	A	B	A	A	A	A	A	A	A						
20						B	200	290	A	A	R	R	R	R	355	I ^R ₃₃₀	A	A	A						
21						B	210	280	I ^R ₃₂₀	R	R	R	R	R	I ^R ₃₄₀	340	290	240	A						
22						B	175	275	I ^R ₃₀₅	320	I ^R ₃₅₀	360	365	370	I ^R ₃₅₅	325	295	250	155						
23						B	240	275	310	335	360	I ^R ₃₇₀	I ^R ₃₈₀	360	350	330	295	250	A						
24						S	150	230	290	330	345	R	R	B	B	B	I ^R ₃₃₀	A	A	A					
25						B	190	285	A	350	A	B	R	R	A	I ^A ₃₂₀	A	A	A						
26						S	200	280	I ^R ₃₂₀	335	340	R	R	385	360	340	300	255	170	U ^A					
27						B	240	285	320	340	R	A	R	R	R	I ^R ₃₃₅	275	245	A						
28						B	230	290	315	330	350	I ^R ₃₆₀	350	I ^A ₃₄₀	I ^R ₃₃₀	300	300	250	175						
29						B	225	275	300	340	350	350	R	R	I ^R ₃₆₀	325	290	250	165						
30						B	225	270	300	330	330	345	I ^R ₃₄₅	I ^R ₃₄₅	I ^R ₃₄₀	325	300	255	175						
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT					2	29	30	27	26	17	9	7	9	18	22	21	21	6							
MED					148	210	280	310	340	350	350	I ^R ₃₅₀	360	I ^R ₃₅₅	332	295	250	172							
UQ					230	285	320	345	355	360	I ^R ₃₇₂	370	360	340	300	250	175								
LQ					190	270	300	330	340	350	I ^R ₃₄₈	345	I ^R ₃₅₀	325	290	240	165								

APR. 1972

FOE (0.01 MHZ)

IONOSPHERIC DATA

APR. 1972

FOES (0.1 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J ₂₅ ^X	21	19	E ₁₃ ^B	20	E ₁₃ ^B	23	G	32	40	G	37	36	38	36	37	J ₆₀ ^X	29	J ₃₄ ^X	J ₆₄ ^X	M ₅₅	J ₁₉ ^X	M ₁₉	E ₁₄ ^B	
2	E ₁₅ ^S	E ₁₂ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₂ ^B	M ₁₈	G	28	33	34	36	37	36	37	35	32	G	G	20	21	E ₁₅ ^S	E ₁₄ ^B	E ₁₅ ^S	M ₂₂	
3	M ₂₀	18	E ₁₄ ^B	E ₁₂ ^B	E ₁₂ ^B	E ₁₃ ^B	G	G	33	36	40	38	38	40	34	35	G	29	25	24	22	20	E ₁₅ ^S	E ₁₃ ^B	
4	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	25	32	32	35	38	C	G	G	J ₃₄ ^X	J ₃₆ ^X	24	G	20	25	J ₂₅ ^X	19	E ₁₃ ^B	E ₁₅ ^S	
5	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₄ ^B	20	E ₁₅ ^S	G	31	38	40	37	37	G	36	35	J ₄₁ ^X	36	44	J ₂₉ ^X	J ₂₅ ^X	20	J ₂₅ ^X	19	E ₁₅ ^S	
6	E ₁₅ ^S	18	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	G	G	G	37	40	G	G	42	26	31	J ₂₅ ^X	19	19	J ₂₃ ^X	J ₁₉ ^X	E ₁₃ ^B	E ₁₅ ^S	E ₁₅ ^S	
7	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₄ ^B	G	31	G	G	G	G	G	G	40	23	34	30	J ₅₄ ^X	J ₂₅ ^X	J ₂₅ ^X	J ₂₅ ^X	20	E ₁₅ ^S	
8	20	22	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	20	25	30	G	37	37	37	G	39	38	37	J ₆₁ ^X	31	J ₈₉ ^X	J ₂₇ ^X	21	22	E ₁₄ ^B	E ₁₂ ^B	
9	E ₁₃ ^B	E ₁₃ ^B	E ₁₂ ^B	E ₁₂ ^B	E ₁₂ ^B	17	24	31	33	37	37	37	G	40	44	37	J ₄₁ ^X	J ₄₅ ^X	J ₅₄ ^X	J ₆₀ ^X	24	J ₃₀ ^X	E ₁₄ ^B		
10	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^B	E ₁₄ ^B	G	G	37	42	41	41	J ₄₁ ^X	J ₅₅ ^X	J ₄₆ ^X	J ₃₅ ^X	G	20	E ₂₀	J ₃₇ ^X	J ₁₉ ^X	20	21	E ₁₅ ^S	
11	E ₁₅ ^S	20	20	19	E ₁₃ ^B	E ₁₅ ^S	G	34	36	38	42	G	G	G	G	23	20	J ₅₈ ^X	J ₂₅ ^X	J ₂₉ ^X	J ₃₉ ^X	J ₃₁ ^X	21	E ₁₅ ^S	
12	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	G	G	38	37	32	G	E ₄₀	G	G	36	36	J ₄₂ ^X	J ₅₁ ^X	J ₃₂ ^X	J ₂₂ ^X	J ₃₄ ^X	J ₂₅ ^X	20	
13	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	25	35	40	38	G	E ₄₀	J ₃₈ ^X	J ₆₄ ^X	G	G	35	28	J ₂₆ ^X	J ₂₅ ^X	20	J ₂₈ ^X	19	E ₁₅ ^S	
14	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	20	E ₁₃ ^B	G	35	J ₄₁ ^X	38	41	45	41	40	J ₄₀ ^X	J ₃₉ ^X	36	J ₂₉ ^X	22	25	21	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
15	E ₁₅ ^S	E ₁₄ ^B	21	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	27	31	36	37	38	39	G	34	40	G	G	30	J ₂₅ ^X	26	J ₂₅ ^X	J ₄₀ ^X	J ₁₇ ^X	M ₂₀	
16	E ₁₅ ^S	E ₁₃ ^B	E ₁₂ ^B	M ₁₇	J ₁₅ ^X	E ₁₄ ^B	25	37	J ₄₁ ^X	43	43	G	G	G	41	G	J ₃₇ ^X	J ₇₄ ^X	J ₆₉ ^X	J ₃₀ ^X	J ₂₇ ^X	J ₂₃ ^X	J ₃₀ ^X	J ₁₉ ^X	
17	J ₁₉ ^X	21	E ₁₃ ^B	E ₁₂ ^B	J ₂₅ ^X	19	28	36	J ₄₅ ^X	J ₅₀ ^X	48	60	G	G	55	J ₄₄ ^X	J ₅₄ ^X	J ₅₄ ^X	J ₃₈ ^X	J ₄₅ ^X	J ₂₂ ^X	E ₁₅ ^S	E ₁₅ ^S	J ₂₄ ^X	
18	J ₂₈ ^X	J ₂₅ ^X	J ₂₃ ^X	20	E ₁₃ ^B	E ₁₅ ^S	29	36	38	45	41	J ₅₄ ^X	43	35	35	30	33	34	G	J ₂₁ ^X	J ₄₁ ^X	J ₃₀ ^X	J ₃₁ ^X	J ₂₄ ^X	
19	J ₂₈ ^X	J ₂₂ ^X	E ₁₃ ^B	22	24	E ₁₅ ^S	25	35	45	47	J ₅₅ ^X	50	J ₆₂ ^X	J ₅₆ ^X	55	J ₆₁ ^X	J ₅₃ ^X	J ₆₄ ^X	J ₅₃ ^X	71	J ₃₀ ^X	J ₂₅ ^X	E ₁₅ ^S	E ₁₃ ^B	
20	J ₂₀ ^X	22	J ₂₄ ^X	J ₁₉ ^X	21	J ₁₈ ^X	J ₁₉ ^G	31	36	40	34	34	34	G	46	G	45	J ₃₅ ^X	J ₂₉ ^X	30	J ₂₁ ^X	J ₂₁ ^X	20	21	
21	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	G	G	34	G	G	G	G	G	G	G	39	36	32	J ₆₀ ^X	J ₄₀ ^X	J ₂₂ ^X	19	J ₂₅ ^X	22	
22	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	J ₂₂ ^X	22	E ₁₅ ^S	26	31	35	G	G	G	G	G	G	37	40	32	21	J ₁₉ ^X	J ₂₁ ^X	J ₃₆ ^X	J ₅₃ ^X	53	
23	J ₃₀ ^X	J ₄₁ ^X	J ₃₀ ^X	J ₂₈ ^X	J ₁₉ ^X	18	33	35	40	37	G	G	41	G	42	43	40	J ₄₁ ^X	J ₃₃ ^X	J ₃₃ ^X	J ₃₇ ^X	J ₅₃ ^X	J ₅₁ ^X	J ₃₀ ^X	
24	J ₂₉ ^X	J ₃₄ ^X	J ₃₀ ^X	J ₁₉ ^X	J ₁₇ ^X	G	29	40	47	81	73	41	E ₄₀	E ₄₀	E ₄₁	J ₅₄ ^X	J ₅₉ ^X	J ₃₈ ^X	22	J ₂₄ ^X	J ₂₅ ^X	J ₄₁ ^X	J ₆₀ ^X	J ₅₄ ^X	
25	J ₅₅ ^X	19	22	J ₁₉ ^X	21	J ₂₀ ^X	G	32	36	J ₄₂ ^X	45	E ₄₀	G	G	40	J ₄₁ ^X	J ₄₀ ^X	J ₄₀ ^X	J ₃₁ ^X	J ₂₃ ^X	J ₂₁ ^X	J ₂₂ ^X	J ₂₆ ^X	J ₂₉ ^X	
26	J ₂₄ ^X	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	27	36	41	40	36	G	21	44	49	49	J ₅₄ ^X	J ₄₇ ^X	J ₅₂ ^X	J ₆₃ ^X	M ₂₁	M ₂₀	J ₁₉ ^X	M ₂₀	
27	J ₁₉ ^X	18	J ₁₉ ^X	E ₁₂ ^B	E ₁₂ ^B	18	27	32	35	40	G	J ₅₉ ^X	G	G	G	46	J ₅₄ ^X	J ₅₈ ^X	J ₅₀ ^X	J ₅₁ ^X	J ₂₄ ^X	E ₁₅ ^S	22	22	
28	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	E ₁₅ ^S	G	31	39	J ₄₁ ^X	J ₅₂ ^X	54	68	J ₅₈ ^X	J ₅₃ ^X	J ₅₄ ^X	34	35	34	J ₃₈ ^X	J ₃₇ ^X	J ₃₇ ^X	J ₃₉ ^X	J ₂₆ ^X	19	
29	M ₂₁	19	J ₁₄ ^X	E ₁₄ ^B	E ₁₄ ^B	18	27	34	44	J ₅₄ ^X	51	49	G	G	G	G	J ₄₄ ^X	37	G	J ₂₉ ^X	J ₃₅ ^X	J ₂₉ ^X	J ₄₁ ^X	36	
30	J ₃₀ ^X	26	M ₂₀	J ₃₀ ^X	J ₂₄ ^X	J ₃₀ ^X	J ₄₂ ^X	36	39	45	47	38	38	G	45	47	G	30	J ₃₂ ^X	18	M ₆₀	J ₃₈ ^X	J ₂₄ ^X	J ₂₆ ^X	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E ₁₅ ^S	16	E ₁₄ ^B	E ₁₄ ^B	E ₁₄ ^B	E ₁₅ ^S	25	32	36	39	38	37	E ₂₈	G	38	36	36	34	J ₃₀ ^X	J ₂₈ ^X	J ₂₃ ^X	J ₂₄ ^X	20	20	
UQ	J ₂₄ ^X	21	20	19	20	18	27	35	41	43	43	41	40	40	44	41	J ₄₅ ^X	J ₄₂ ^X	J ₅₀ ^X	J ₃₇ ^X	J ₃₅ ^X	J ₃₁ ^X	J ₂₆ ^X	24	
LQ	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	G	31	33	37	32	G	G	G	G	26	G	23	25	29	22	J ₂₄ ^X	J ₂₁ ^X	19	E ₁₅ ^S

The Radio Research Laboratories, Japan

APR. 1972

FOES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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	23	E	E	E ₁₃	E	E ₁₃	22	G	31	34	G	37	E ₃₆ ^R	38	35	37	34	27	28	30	A	16	E	E ₁₄ ^B	
2	E ₁₅ ^S	E ₁₂ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E	G	27	33	34	36	E ₃₇ ^R	E ₃₆ ^R	36	35	32	G	G	G	E	E ₁₅ ^S	E ₁₄ ^B	F	S ₁₅	16
3	E	E	E ₁₄ ^B	E ₁₂ ^B	E ₁₂ ^B	E ₁₃ ^B	G	G	33	35	40	37	E ₃₈ ^R	32	E ₃₄ ^R	34	G	28	25	16	E	E	E ₁₅ ^S	E ₁₃ ^B	
4	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	25	32	32	35	38	C	G	G	G ₃₂	32	G	G	19	16	17	E	E ₁₃ ^B	E ₁₅ ^S	
5	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₄ ^B	E	E ₁₅ ^S	G	31	35	40	37	E ₃₇ ^R	G	E ₃₆ ^R	35	40	33	31	24	19	E	24	E	E ₁₅ ^S	
6	E ₁₅ ^S	E	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	G	G	G	37	40	G	G	38	E ₂₆ ^R	G ₃₁	G ₂₃	G ₁₆	16	20	16	E ₁₃ ^B	E ₁₅ ^S	E ₁₅ ^S	
7	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₄ ^B	G	30	G	G	G	G	G	G	40	E ₂₃ ^R	33	27	53	24	24	23	E	E ₁₅ ^S	
8	E	E	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E	25	30	G	37	E ₃₇ ^S	E ₃₇ ^S	G	E ₃₉ ^S	38	E ₃₇ ^R	42	30	89	25	18	17	E ₁₄ ^B	E ₁₂ ^B	
9	E ₁₃ ^B	E ₁₃ ^B	E ₁₂ ^B	E ₁₂ ^B	E ₁₂ ^B	E	24	30	33	E ₃₇ ^R	37	E ₃₇ ^R	G	40	42	G	36	40	43	49	40	16	25	E ₁₄ ^B	
10	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	E	E ₁₃ ^B	E ₁₄ ^B	G	G	37	40	36	41	41	G	40	34	G	G	E ₂₀ ^B	35	E	16	E	E ₁₅ ^S	
11	E ₁₃ ^B	E	E	E	E ₁₃ ^B	E ₁₅ ^S	G	33	35	38	40	G	E ₃₅ ^R	G	G	E ₂₃ ^R	G ₂₆	55	25	28	25	16	E	E ₁₅ ^S	
12	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	G	G	36	32	31	G	E ₄₀ ^B	G	G	35	35	42	45	25	21	25	16	E	
13	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	24	33	37	37	G	E ₄₀ ^B	38	63	G	G	32	28	25	20	E	16	E	E ₁₅ ^S	
14	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E	E ₁₃ ^B	G	31	39	38	40	41	40	39	39	36	35	27	20	15	E	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
15	E ₁₃ ^B	E ₁₄ ^B	E	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	25	31	35	37	38	39	G	E ₃₄ ^R	40	G	G	29	22	19	17	22	E	E	
16	E ₁₅ ^S	E ₁₃ ^B	E ₁₂ ^B	E	E	E ₁₄ ^B	25	35	40	42	41	G	G	G	41	G	43	68	62	29	25	22	E	16	
17	E	E	E ₁₃ ^B	E ₁₂ ^B	E	G	27	35	45	46	42	58	G	G	54	41	53	45	35	44	15	E ₁₅ ^S	E ₁₅ ^S	20	
18	27	16	16	E	E ₁₃ ^B	E ₁₅ ^S	20	35	35	42	40	52	42	E ₃₅ ^R	E ₃₅ ^R	E ₃₀ ^R	31	28	G	16	35	25	23	15	
19	16	17	E ₁₃ ^B	E	15	E ₁₅ ^S	25	32	40	45	49	45	40	50	52	60	50	50	50	70	21	23	E ₁₅ ^S	E ₁₃ ^B	
20	E	16	19	16	16	15	G	30	35	38	E ₃₄ ^R	E ₃₄ ^R	E ₃₄ ^R	G	41	G	41	33	25	23	17	16	E	E	
21	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	G	34	G	G	G	G	G	G	G	G	36	35	32	60	40	21	E	23	16	
22	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E	E	E ₁₅ ^S	25	30	33	G	G	G	G	G	G	35	33	32	20	16	19	26	26	19	
23	16	40	18	24	E	17	31	33	38	E ₃₇ ^S	G	G	41	G	41	42	40	36	30	29	31	41	25	28	
24	25	25	25	16	15	G	27	39	44	78	65	41	E ₄₀ ^B	E ₄₀ ^B	E ₄₁ ^B	44	52	35	21	21	20	40	50	31	
25	35	E	E	16	E	16	G	31	36	40	40	E ₄₀ ^B	G	G	39	39	38	38	30	22	19	16	20	E	
26	20	E ₁₃ ^B	E ₁₃ ^B	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	20	35	40	40	E ₃₆ ^R	G	G	21	44	48	47	52	45	52	63	E	E	16	E
27	E	E	E	E ₁₃ ^B	E ₁₂ ^B	17	26	32	35	40	G	40	G	G	G	45	52	55	25	35	16	E ₁₅ ^S	E	E	
28	E ₁₅ ^S	E ₁₅ ^S	E ₁₃ ^B	E ₁₅ ^S	E ₁₅ ^S	G	29	35	40	47	44	67	56	52	54	33	34	33	37	36	36	38	21	E	
29	E	E	E	E ₁₄ ^B	E ₁₄ ^B	16	27	33	44	53	50	48	G	G	G	G	41	33	G	27	25	22	40	32	
30	25	20	E	E	22	22	40	35	35	44	40	38	34	G	45	43	G	30	28	14	A	25	22	22	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	
MED	E ₁₅ ^S	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₃ ^B	E ₁₄ ^B	23	32	35	38	38	E ₃₇ ^R	E ₂₈ ^G	E ₃₂ ^G	37	34	34	32	25	24	19	16	15	15	
UQ	16	E ₁₅ ^S	E ₁₅ ^S	E ₁₄ ^B	E ₁₄ ^B	E ₁₅ ^S	25	34	39	42	40	41	40	38	41	40	41	40	43	35	25	24	22	16	
LQ	E ₁₃ ^B	E	E ₁₂ ^B	E ₁₂ ^B	E	E ₁₃ ^B	G	30	33	34	E ₃₁ ^G	G	G	G	E ₂₆ ^G	E ₂₃ ^G	26	28	20	19	15	15	E	E ₁₂ ^B	

The Radio Research Laboratories, Japan

APR. 1972

FBES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

F-MIN (0.1 MHZ)

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

Station KUKUBUNJI 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	13	13	13	13	13	13	15	13	13	15	15	15	20	19	21	15	13	13	13	E ₁₅ ^S	E ₁₅ ^S	14	E ₁₅ ^S	14
2	E ₁₅ ^S	12	13	13	12	14	16	14	13	14	15	22	19	15	15	14	12	14	15	13	E ₁₅ ^S	14	E ₁₅ ^S	E ₁₅ ^S
3	14	14	14	12	12	13	14	14	14	15	15	25	25	25	15	15	15	15	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13
4	E ₁₅ ^S	13	13	13	E ₁₅ ^S	13	14	15	14	15	15	C	19	25	15	15	14	13	15	13	13	13	13	E ₁₅ ^S
5	13	E ₁₅ ^S	13	14	13	E ₁₅ ^S	13	15	15	15	25	25	25	25	19	21	15	13	13	E ₁₅ ^S	13	13	E ₁₅ ^S	E ₁₅ ^S
6	E ₁₅ ^S	13	13	13	13	E ₁₅ ^S	15	14	15	15	25	26	25	25	15	15	15	15	13	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
7	13	E ₁₅ ^S	13	13	E ₁₅ ^S	14	14	15	15	18	19	25	25	23	23	15	15	15	13	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
8	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13	13	13	13	15	15	15	21	22	25	26	16	15	15	14	12	13	14	13	14	12
9	13	13	12	12	12	14	15	13	15	22	15	26	26	26	26	14	15	13	13	E ₁₅ ^S	E ₁₅ ^S	12	13	14
10	E ₁₅ ^S	13	E ₁₅ ^S	13	13	14	12	14	15	25	23	24	24	16	25	20	15	15	20	13	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S
11	13	E ₁₅ ^S	E ₁₅ ^S	13	13	E ₁₅ ^S	15	14	15	15	19	25	32	23	26	15	15	15	15	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S
12	E ₁₅ ^S	E ₁₅ ^S	13	13	13	E ₁₅ ^S	15	15	15	15	25	26	40	25	25	21	15	15	13	13	13	13	13	E ₁₅ ^S
13	13	13	E ₁₅ ^S	13	13	13	15	15	15	25	24	40	13	25	25	23	15	15	15	15	13	13	13	E ₁₅ ^S
14	E ₁₅ ^S	13	E ₁₅ ^S	13	E ₁₅ ^S	13	15	16	15	15	25	28	25	25	23	25	16	13	15	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
15	13	14	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	15	15	15	15	25	25	25	25	26	15	15	15	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
16	E ₁₅ ^S	13	12	13	12	14	14	13	14	15	19	26	26	26	26	25	15	14	15	14	E ₁₅ ^S	12	13	13
17	E ₁₅ ^S	14	13	12	12	12	14	14	15	15	25	40	25	25	23	19	15	15	13	E ₁₅ ^S	14	E ₁₅ ^S	E ₁₅ ^S	13
18	E ₁₅ ^S	E ₁₅ ^S	14	E ₁₅ ^S	13	E ₁₅ ^S	13	15	18	25	25	23	26	25	16	23	15	15	15	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	13
19	E ₁₅ ^S	13	13	E ₁₅ ^S	13	E ₁₅ ^S	15	15	15	25	25	39	33	25	23	19	15	13	13	13	13	13	E ₁₅ ^S	13
20	E ₁₅ ^S	12	14	12	13	12	13	14	15	20	19	25	23	23	25	16	14	14	14	13	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S
21	E ₁₅ ^S	13	13	13	13	15	14	15	15	25	25	23	25	26	26	15	15	14	13	13	13	13	E ₁₅ ^S	E ₁₅ ^S
22	E ₁₅ ^S	13	13	13	13	15	15	15	15	15	22	25	25	19	25	15	14	12	14	12	12	E ₁₅ ^S	14	13
23	12	14	14	12	14	13	14	15	15	15	18	25	15	25	25	25	14	15	13	12	13	14	E ₁₅ ^S	13
24	E ₁₅ ^S	14	14	13	13	14	16	15	15	16	25	25	40	40	41	16	15	15	15	13	13	13	E ₁₅ ^S	E ₁₅ ^S
25	E ₁₅ ^S	13	13	13	E ₁₅ ^S	13	15	15	15	19	19	40	23	26	24	15	16	15	13	13	12	13	13	E ₁₅ ^S
26	13	13	13	E ₁₅ ^S	13	E ₁₅ ^S	14	15	15	15	22	20	19	15	16	15	15	14	14	14	E ₁₅ ^S	E ₁₅ ^S	12	E ₁₅ ^S
27	14	13	E ₁₅ ^S	12	12	13	12	14	16	15	25	25	15	25	25	15	15	15	15	13	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
28	E ₁₅ ^S	E ₁₅ ^S	13	E ₁₅ ^S	E ₁₅ ^S	15	14	15	15	15	15	18	25	24	16	15	15	14	12	12	12	13	E ₁₅ ^S	E ₁₅ ^S
29	13	14	14	14	14	14	15	15	15	15	19	17	18	26	15	15	15	13	13	12	12	12	13	E ₁₅ ^S
30	14	12	14	12	12	12	14	14	15	18	23	22	25	25	28	24	15	14	13	12	12	14	E ₁₅ ^S	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	E ₁₅ ^S	13	13	13	13	14	14	15	15	15	22	25	25	25	24	15	15	14	14	13	12	13	E ₁₅ ^S	E ₁₅ ^S
UQ	E ₁₅ ^S	14	14	13	13	E ₁₅ ^S	15	15	15	19	25	26	25	25	25	21	15	15	15	14	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S
LQ	13	13	13	13	13	13	14	14	15	15	19	23	20	23	16	15	15	13	13	13	13	13	13	13

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APR. 1972

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

APR. 1972

M(3000)F2 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	F	320	290	290	290	280	325	335	335	320	310	320	315	305	320	325	325	335	325	320	A	285	280	305		
2		285	290	300	350	290	280	330	320	340	330	300	305	315	310	310	305	335	335	345	330	280	270	265	280	
3		275	315	320	335	300	300	340	325	320	315	295	315	150	315	300	320	310	315	320	315	290	290	270	285	
4		275	290	305	300	300	285	290	R	335	305	300	C	310	295	300	305	310	325	325	325	295	275	275	280	
5		290	275	280	280	280	275	310	285	295	300	300	300	300	305	295	310	310	305	330	335	325	285	285	280	
6		260	285	305	300	285	285	325	325	325	325	310	305	305	310	310	310	310	320	335	320	290	265	280		
7		280	265	280	305	285	280	325	335	315	320	300	295	295	290	275	305	310	320	310	300	280	280	285		
8		280	280	275	280	290	265	305	330	335	325	300	300	300	300	295	300	290	300	320	330	320	310	270	290	
9		275	290	300	295	275	275	330	345	330	325	290	295	295	295	305	315	320	315	320	330	315	270	270	280	
10		270	270	290	310	295	290	315	345	320	340	290	295	280	290	290	300	315	300	300	305	305	305	300	275	
11		275	285	310	320	305	270	315	315	325	320	300	285	295	290	300	300	300	295	275	305	315	280	270	280	
12		260	275	305	310	300	290	335	335	325	300	295	280	285	285	290	295	300	305	320	330	300	275	265	270	
13		265	275	280	275	290	290	335	330	340	310	305	280	290	290	295	295	300	300	305	310	330	270	275	265	
14		265	265	270	280	295	335	340	340	305	305	305	280	295	280	290	305	300	300	295	305	315	270	265	265	
15		275	280	290	305	290	290	340	345	310	305	300	300	295	295	290	295	295	310	325	335	300	285	265	280	
16		275	275	270	280	285	295	345	335	320	320	305	285	290	290	295	310	315	315	315	310	265	295	270	280	
17		275	290	300	310	295	295	340	330	305	310	295	285	285	285	290	300	300	300	315	305	295	280	275	280	
18		270	290	305	290	285	270	330	315	330	305	290	280	295	280	280	285	300	305	300	285	275	265	275	275	
19		295	295	R	295	280	280	310	325	325	305	285	290	290	295	290	300	310	310	320	310	305	285	290	270	
20		265	295	305	325	290	280	315	305	325	305	295	290	290	295	300	295	315	310	325	310	295	275	280	275	
21		275	275	290	290	300	275	315	335	325	305	280	280	280	295	295	300	300	305	310	305	290	285	R	R	
22		R	285	310	300	280	280	310	335	335	315	310	285	300	310	315	310	305	305	320	325	300	280	270	255	
23		280	275	280	310	285	290	335	320	345	330	280	295	300	290	305	315	315	320	325	305	295	270	275	270	
24		280	295	290	300	310	265	310	330	305	300	305	315	300	300	300	290	320	315	320	310	290	270	270	R	
25		265	290	F	320	330	300	330	325	330	305	300	295	295	295	290	300	300	300	315	325	305	285	270	290	
26		280	290	295	325	320	315	335	335	315	330	300	300	295	290	310	310	315	310	315	335	320	295	290	280	
27		285	280	280	300	305	325	355	365	335	300	320	295	295	290	295	310	280	325	325	320	310	270	275	275	
28		280	285	300	290	275	280	350	340	310	305	290	290	295	295	300	310	310	320	315	280	S	285	280	275	
29		290	285	280	260	F	F	295	265	260	285	325	315	305	300	305	305	330	325	345	305	265	275	265	265	
30		290	295	275	290	255	275	270	260	250	R	220	R	225	270	A	300	V	305	300	300	290	285	290	280	255
31																										
CNT	28	30	28	30	29	29	30	29	30	29	30	28	30	30	29	30	30	30	30	30	30	28	30	29	28	
MED	275	285	290	300	290	280	328	330	325	310	300	295	295	295	295	302	310	310	320	310	300	280	275	280		
UQ	280	290	302	310	300	290	335	335	335	320	305	300	300	300	305	310	315	315	325	330	315	285	280	280		
LQ	270	275	280	290	285	275	310	320	310	305	290	285	290	290	290	300	300	300	315	305	290	270	270	270		

APR. 1972

M(3000)F2 (0.01)

IONOSPHERIC DATA

APR. 1972

M(3000)F1 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	U 360	U 390	U 390	L	L								
2									L	L	L	R 360	R 380	L	U 370	L	L							
3									L	L	L	L	L	380	L	390	L							
4								L	L	L	370	C	L	L	L	L	L							
5									L	L	U 370	L	380	380	390		L							
6									L	L	L	420	380	380	L	L	L	L						
7								L	L	L	390	380	L	370	L	L	L							
8									L	L	L	U 370	L	360	L	L	A	L						
9									L	L	U 380	L	L	380	L	L	L	A	A					
10									L	L	390	360	380	L	390	390	L							
11									L	390	410	390	380	380	L	L	L							
12									L	L	L	380	U 370	370	L	L	L							
13								L	L	L	370	370	370	A	350	L	L	L						
14									L	L	L	380	L	380	350	U 380	L	L						
15								L	L	L	L	U 370	L	L	U 350	U 370	L	L						
16									L	L	L	L	L	U 340	L	L	A	A	A					
17										L	A	A	380	370	A	380	A	A						
18									L	380	L	A	L	L	360	L	L	L						
19								L		L	350	360	L	A	A	A	A							
20									L	U 380	380	L	L	400	L	L								
21									L	L	U 370	400	390	L	370	L	380	L	L					
22									L	L	L	380	L	370	U 360	L	L	L						
23									L	L	L	360	360	U 370	U 330	350	L	L						
24									L	A	A	380	380	L	370	L	A							
25								L	L	U 380	L	370	370	360	L	L	L							
26									L	L	L	400	L	L	L	A	A	A						
27								L	L	L	380	390	370	390	L	A								
28									L	L	370	A	A	A	A	L	L	L						
29					L	330	340	A	A	A	A	A	380	L	340	U 350	A	L						
30					L	A	350	360	A	370	360	380	380	A	A	L	L	A						
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							1	2	1	5	16	18	17	19	10	6								
MED							330	345	360	U 380	380	370	380	370	365	380								
UQ										380	385	390	380	380	380	390								
LQ										U 380	370	360	370	360	350	U 370								

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M(3000)F1 (0.01)

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H^oF₂ (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								250	240	255	280	275	255	260	275	265									
2									245	240	260	285	275	275	285	275	255								
3									250	265	275	285	270	290	270	260	250								
4								240	250	270	260	C	265	260	285	270	260								
5									250	275	290	285	295	290	265		250								
6									260	250	250	270	290	275	270	270	260	250							
7								245	255	250	265	280	280	290	280	260	260								
8									250	245	250	290	290	290	270	280	270	255							
9									255	260	255	285	290	290	285	265	255	250	245						
10									260	255	270	300	290	300	300	270	260								
11									260	250	250	310	290	300	290	265	285								
12									250	250	260	260	290	310	300	280	290								
13								250	250	250	280	280	310	300	300	290	280	265							
14									250	280	290	275	280	310	290	270	260								
15								250	250	260	260	300	275	280	290	290	260	275							
16									250	260	250	270	300	310	290	275	270	250 ^A	250						
17									270	280	300	295	310	300	290	285	275								
18									260	290	285	290	310	320	330	300	270	255							
19								240	260	350	310	295	290	300	290	270									
20								240	265	285	290	290	290	300	290	290									
21								240	250	295	285	290	340	300	280	290	285	260							
22								240	250	255	290	310	300	275	275	275	250								
23								230	240	260	340	290	280	315	290	280	260								
24									315	A	300 ^A	280	300	285	295	290	280								
25								250	265	285	290	305	305	310	290	290	280								
26									260	275	290 ^b	290	305	310	295	270	265	255							
27								230	255	265	270	300	305	305	290	290									
28									280	280	E ^A 330	305	310	285	275	275	260								
29						310 ^S	310	420	425	375	280	275	300	340	305	285	255	250							
30						350	400 ^A	490	550	525	460	R	550 ^B	460	455	350	340	330	290						
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						2	2	14	26	29	30	28	30	30	30	29	27	13	3						
MED						330	355	242	250	260	280	289	292	300	290	280	265	255	250						
UQ								250	260	275	290	300	305	310	300	290	280	265	270						
LQ								240	250	255	260	280	280	290	280	270	260	250	248						

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H^oF (KM)

135° E Mean Time (G. M. T. + 9^h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	300	240	250	260	280	295	240	240	230	220	205	205	220	210	210	240	245	235	225	240	A	290	300	265
2	275	275	245	205	200	280	220	220	230	220	220	225	205	220	205	210	210	230	220	205	250	300	305	305
3	290	255	245	225	205	275	220	220	225	225	230	210	200	230	205	240	240	250	230	230	240	260	260	260
4	290	290	260	245	245	260	230	235	225	210	210	C	200	225	210	240	240	240	235	220	235	265	290	290
5	290	300	320	270	210	305	240	240	240	230	210	230	240	240	220	250	240	250	240	210	200	320	320	340
6	305	290	260	245	250	290	240	240	210	245	210	205	210	205	240	240	240	245	250	240	240	250	290	290
7	285	310	270	250	260	275	240	240	240	220	200	200	240	240	250	245	240	250	260	240	250	300	290	290
8	270	290	300	290	260	290	240	245	240	225	210	220	225	225	220	240	I ₂₅₀	245	I ₂₅₅	230	210	240	245	275
9	290	275	250	230	275	300	225	220	225	225	205	205	220	205	245	240	245	A	I ₂₄₅	I ₂₄₅	I ₂₅₀	255	300	290
10	290	295	275	245	230	275	225	230	225	240	220	210	220	250	240	200	240	250	245	260	220	250	270	290
11	290	290	255	235	250	300	240	240	240	200	200	200	240	240	240	240	200	280	260	240	235	240	300	305
12	310	300	260	240	240	285	240	245	240	230	220	210	210	210	250	240	240	260	250	220	215	290	300	305
13	310	305	290	270	250	250	240	240	240	200	210	205	210	A	240	250	245	250	260	245	210	255	290	310
14	345	310	310	260	250	240	230	240	240	200	210	245	220	210	200	240	250	240	250	255	230	250	290	300
15	300	300	280	250	240	270	240	240	230	205	205	200	200	230	220	220	230	250	240	220	220	255	280	290
16	290	290	290	275	255	255	230	240	220	220	220	200	220	220	245	240	A	A	A	220	250	270	310	290
17	280	275	250	225	220	275	230	225	250	250	I ₂₄₀	I ₂₄₀	220	210	I ₂₃₀	250	I ₂₇₀	I ₂₆₀	250	250	210	250	300	310
18	310	290	260	210	240	300	240	240	230	240	210	I ₂₂₀	200	200	240	240	240	220	240	260	305	340	300	300
19	290	285	250	240	280	270	240	230	245	250	260	270	200	I ₂₄₀	A	A	A	250	250	290	250	280	250	290
20	300	285	240	210	265	285	240	240	240	220	240	235	210	210	240	240	265	250	245	250	245	265	290	300
21	310	310	290	240	250	285	250	240	235	220	210	210	220	200	240	240	250	250	250	255	250	290	300	305
22	300	290	250	240	255	290	240	240	220	210	200	205	210	225	225	230	230	250	245	220	245	275	300	310
23	290	310	300	260	260	275	245	230	230	205	205	205	240	220	240	270	250	250	230	245	270	310	300	310
24	300	290	260	240	230	240	255	250	I ₂₆₀	A	A	245	210	200	235	260	I ₂₆₀	255	250	230	250	340	I ₃₀₀	350
25	340	290	260	240	205	250	245	240	245	210	240	250	210	220	240	250	260	260	250	225	210	260	290	290
26	300	260	250	240	240	250	220	230	240	220	200	180	195	235	A	A	A	A	A	E ₅₀	210	220	270	270
27	275	275	270	255	245	235	215	220	210	210	250	200	200	210	240	I ₂₆₀	260	250	240	230	210	260	300	305
28	290	290	260	260	305	260	235	230	245	I ₂₅₀	245	A	A	A	I ₂₄₅	225	240	255	240	290	310	290	270	275
29	260	270	275	300	320	280	260	250	A	A	A	I ₂₁₀	200	200	245	250	I ₂₅₀	I ₂₄₀	230	245	300	330	I ₃₅₀	I ₃₅₀
30	290	250	290	300	340	300	A	260	245	I ₂₄₀	240	250	225	210	I ₂₄₀	I ₂₃₀	225	250	I ₂₆₀	I ₂₈₀	I ₃₀₀	305	300	310
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	29	30	29	28	28	28	29	28	28	28	27	27	28	30	29	30	30	30
MED	290	290	260	245	250	275	240	240	240	220	210	210	210	220	240	240	240	250	245	240	240	268	295	300
UQ	300	300	290	260	260	290	240	240	240	235	235	232	220	230	240	250	250	250	250	250	250	300	300	310
LQ	290	275	250	240	240	260	230	230	225	210	205	205	200	210	220	240	240	245	240	225	215	255	290	290

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IONOSPHERIC DATA

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H[∞]ES (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	B	100	B	150	G	140	115	G	110	110	110	105	110	110	130	120	110	105	110	110	B
2	S	B	B	B	B	170	G	170	150	140	125	125	125	125	125	125	100	G	100	125	S	B	S	100
3	100	100	B	B	B	B	G	G	180	160	140	140	120	110	110	110	G	140	130	100	100	100	S	B
4	S	B	B	B	S	B	170	160	160	140	120	C	G	G	100	100	100	G	115	110	110	110	H	S
5	B	S	B	B	100	S	G	150	140	125	125	120	G	110	110	100	100	100	100	110	100	100	100	S
6	S	100	B	B	B	S	G	G	G	135	125	G	G	110	100	100	100	100	125	110	110	B	S	S
7	B	S	B	B	S	B	G	165	G	G	G	G	G	G	140	100	130	120	110	100	110	105	110	S
8	100	100	S	B	B	100	160	150	G	125	125	125	G	125	150	125	125	125	115	110	105	100	B	B
9	B	B	B	B	B	105	175	150	145	130	125	125	G	125	110	G	130	120	110	105	105	105	100	B
10	S	B	S	105	B	B	G	G	160	140	100	100	100	100	100	105	G	100	B	100	100	100	100	S
11	B	100	100	100	B	S	G	150	150	140	100	G	100	G	G	100	100	130	120	100	100	105	100	S
12	S	S	B	B	B	S	G	G	140	130	130	G	B	G	G	150	140	120	110	105	105	105	100	100
13	B	B	S	B	B	B	140	110	110	100	G	B	100	100	G	G	100	140	115	110	110	100	110	S
14	S	B	S	B	100	B	G	125	115	110	110	100	110	110	100	100	100	105	100	110	110	S	S	S
15	B	B	100	S	B	S	150	145	140	125	125	110	G	100	105	G	G	150	125	110	110	105	100	100
16	S	B	B	100	100	B	155	125	115	110	110	G	G	G	175	G	140	125	115	100	110	105	100	100
17	100	100	B	B	100	105	150	130	125	115	120	110	G	G	110	110	110	110	105	105	105	S	S	100
18	100	100	100	100	B	S	140	140	140	125	110	105	115	110	100	110	120	110	G	110	110	110	110	110
19	105	110	B	105	110	S	140	120	130	115	110	110	110	100	100	100	105	100	100	110	110	110	S	B
20	100	100	100	100	100	100	160	150	100	100	110	105	G	135	G	140	120	110	110	100	100	100	100	100
21	S	B	B	B	B	G	G	150	G	G	G	G	G	G	G	140	140	140	110	100	110	110	100	100
22	S	B	B	115	110	B	150	150	140	G	G	G	G	G	G	145	130	125	125	120	110	105	105	105
23	105	105	105	105	110	150	140	140	120	130	G	G	150	G	130	125	125	110	110	105	105	105	105	105
24	105	100	100	100	100	G	150	125	120	110	110	110	B	B	B	110	110	110	110	110	110	110	105	110
25	105	105	100	100	105	100	G	150	140	140	110	B	G	G	110	110	110	110	105	105	105	100	100	100
26	100	B	B	S	B	S	140	130	115	115	130	G	100	150	130	130	125	125	120	115	105	105	100	100
27	100	100	100	B	B	140	140	140	130	125	G	105	G	G	G	140	135	110	110	110	110	S	100	100
28	S	S	B	S	S	G	150	140	120	110	110	110	110	110	105	110	145	125	120	110	115	105	105	110
29	105	105	B	B	B	140	125	125	120	115	110	110	G	G	G	G	125	125	G	115	110	105	105	105
30	100	105	125	120	120	125	120	125	120	110	115	125	105	G	130	124	G	140	115	110	110	105	105	105
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	14	15	10	11	12	10	19	25	26	27	23	18	14	15	22	24	26	28	27	30	29	25	22	17
MED	100	100	100	100	100	115	150	140	140	125	115	110	110	110	110	110	122	120	110	110	110	105	100	100
UQ	105	105	100	105	110	140	150	150	145	132	125	125	115	118	130	125	130	128	120	110	110	105	105	105
LQ	100	100	100	100	100	100	140	125	120	112	110	110	100	105	100	100	100	110	110	105	105	100	100	100

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H[∞]ES (KM)

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TYPES OF ES

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	F ₃	F ₂	F ₁		F ₂		H ₁		H ₁	H ₁		C ₁	C ₁	C ₂	L ₁	C ₂	C ₃	H ₁	H ₃	F ₄	F ₆	F ₂	F ₁			
2						F ₁		H ₁	H ₁	H ₁	H ₁	H ₁	H ₁	H ₁	H ₁	H ₁	L ₁		L ₁	F ₁				F ₂		
3	F ₁	F ₂							H ₁	H ₁	H ₁	H ₁	H ₁	C ₁	C ₁	C ₁		H ₁	H ₃	FF ₁₁	F ₁	F ₁				
4							H ₁	H ₁	H ₁	H ₁	H ₁				L ₂	L ₁			L ₂	FF ₁₁	F ₃	F ₁				
5					F ₁			H ₁	H ₁	H ₁	H ₁	H ₁		C ₁	C ₁	L ₂	L ₂	L ₄	L ₂	FF ₁₁	F ₁	F ₂	F ₁			
6		F ₁							H ₁	H ₁				C ₁	L ₁	L ₁	L ₁	L ₁	H ₂	F ₄	F ₁					
7								H ₁							H ₁	L ₁	H ₁	H ₁	L ₃	F ₃	F ₃	F ₅	F ₁			
8	F ₂	F ₁				F ₁	H ₁	H ₁		H ₁	H ₁	H ₁		H ₁	H ₁	H ₁	HC ₂₂	H ₂	C ₃	F ₅	F ₂	F ₂				
9						F ₁	H ₁	HL ₁₂	H ₁	HL ₁₁	H ₁	H ₁		H ₁	C ₁		H ₁	HL ₃₂	CL ₃₂	FF ₃₂	F ₃	F ₁	F ₅			
10				F ₁					H ₁	HC ₁₁	C ₁	C ₁	C ₁	HL ₁₁	L ₁	L ₁		L ₁		F ₅	F ₁	F ₂	F ₁			
11		F ₁	F ₁	F ₁				H ₁	H ₁	H ₁	H ₁		L ₁			L ₁	L ₁	H ₃	H ₃	F ₅	F ₄	F ₄	F ₁			
12									H ₁	H ₁	H ₁				H ₁	H ₁	H ₂	L ₃	F ₄	F ₄	F ₄	F ₄	F ₂			
13							H ₁	C ₁	C ₁	C ₁			C ₁	L ₂			L ₂	H ₁	C ₂	FF ₂₁	F ₁	F ₂	F ₂			
14					F ₁			H ₁	C ₁	C ₁	C ₁	C ₁	C ₁	C ₁	C ₁	L ₁	L ₂	L ₂	C ₂	FF ₁₁	FF ₁₁					
15			F ₂				H ₁	H ₁	H ₁	H ₁	H ₁	C ₁		L ₁	L ₂			H ₂	H ₂	FF ₂₄	FF ₂₅	FF ₂₅	F ₂	F ₁		
16				F ₁	F ₁		H ₁	H ₂	C ₁	C ₂	C ₂				H ₁		H ₂	H ₄	C ₃	F ₅	F ₃	F ₅	F ₅	F ₂		
17	F ₂	F ₁			F ₁	L ₁	H ₁	H ₂	H ₂	C ₁	H ₁	C ₁			C ₁	C ₂	C ₃	C ₂	L ₃	F ₄	F ₁			F ₂		
18	F ₂	F ₁	F ₁	F ₁			H ₁	H ₁	H ₁	H ₁	C ₁	C ₂	C ₁	L ₁	L ₁	L ₁	H ₁	C ₁		FF ₂₁	F ₄	FF ₄₁	FF ₄₁	FF ₂₁		
19	F ₂	F ₂		F ₁	FF ₁₁		H ₁	H ₁	H ₁	C ₂	C ₁	C ₁	C ₁	L ₁	L ₂	L ₂	L ₄	L ₅	L ₄	FF ₄₄	FF ₂₃	FF ₂₂				
20	F ₁	F ₂	F ₃	F ₂	F ₂	L ₂	L ₂	HL ₁₂	HL ₁₂	L ₂	L ₁	L ₁	L ₁		H ₁		HL ₁₁	HL ₂₂	L ₃	FF ₁₃	F ₂	F ₁	F ₁	F ₂		
21								H ₁							HL ₁₁	H ₁	H ₂	L ₃	F ₄	F ₄	F ₁	F ₃	F ₂			
22				F ₁	F ₁		H ₁	H ₁	H ₁						H ₁	H ₂	H ₂	C ₂	E ₂	F ₄	F ₄	F ₃	F ₃			
23	F ₃	F ₃	F ₄	F ₄	F ₁	H ₂	H ₃	H ₁	H ₁	H ₁			H ₁		H ₁	H ₁	H ₂	C ₃	C ₄	F ₆	F ₄	F ₅	F ₅	F ₄		
24	F ₆	F ₄	F ₄	F ₃	F ₂		H ₁	H ₂	H ₂	C ₁	C ₁	C ₁			C ₂	C ₃	C ₃	C ₁	F ₄	F ₄	F ₅	F ₄	F ₄			
25	F ₄	F ₁	F ₁	F ₂	F ₁	L ₂		H ₁	H ₁	H ₁	C ₁				C ₁	C ₁	C ₂	C ₂	L ₂	F ₄	F ₃	F ₂	F ₃	F ₂		
26	F ₄						H ₁	H ₁	C ₁	C ₁	H ₁		L ₁	H ₁	H ₂	H ₃	H ₃	H ₃	HL ₄₁	F ₆	F ₁	F ₁	F ₃	F ₁		
27	F ₁	F ₂	F ₁				H ₂	H ₂	H ₁	H ₁	H ₁	C ₁				H ₂	H ₂	C ₂	L ₃	F ₄	F ₁		F ₁	F ₁		
28							H ₁	H ₁	H ₁	C ₂	C ₂	C ₂	C ₂	C ₃	C ₂	C ₁	H ₁	H ₂	C ₃	F ₅	F ₄	F ₅	F ₅	F ₁		
29	F ₂	F ₁	F ₂				H ₁	H ₂	H ₁	H ₂	H ₂	C ₂	C ₂				H ₂	H ₂		F ₄	F ₄	F ₅	F ₄	F ₅		
30	F ₄	F ₄	F ₁	F ₆	F ₆	C ₂	C ₃	H ₂	H ₁	C ₃	C ₁	H ₁	L ₁		H ₁	H ₂		H ₁	C ₃	F ₆	F ₅	F ₃	F ₄	F ₄		
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																										

APR. 1972

TYPES OF ES

IONOSPHERIC DATA

APR. 1972

HPF2 (KM)

135 E Mean Time (G. M. T. + gh)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	300	350	350	360	350	300	290	300	290	310	300	295	315	300	300	290	280	290	280	A	375	370	320
2	360	350	315	250	315	350	265	280	280	270	325	320	300	305	320	320	300	270	260	280	360	380	400	370
3	370	320	300	260	300	325	255	270	290	300	300	305	300	315	310	300	300	300	300	300	300	350	360	360
4	360	360	340	300	300	360	250	R	290	305	350	C	300	340	310	305	300	300	300	300	350	365	360	350
5	350	365	390	360	350	400	300	340	300	315	350	325	335	310	310	300	300	300	290	290	290	380	280	380
6	400	360	300	310	350	380	300	300	300	300	300	300	310	300	300	300	305	300	300	300	300	360	400	360
7	350	400	360	300	360	350	300	290	300	300	340	315	310	340	350	350	340	310	300	300	300	360	390	R
8	360	390	400	355	350	350	300	290	290	280	320	325	320	320	325	320	310	310	300	280	280	310	345	355
9	375	355	325	325	375	375	270	260	275	290	340	340	335	330	315	305	290	300	300	280	300	380	375	380
10	375	380	355	305	315	330	280	260	300	270	320	350	350	350	350	350	310	310	350	310	350	350	350	350
11	350	355	310	300	340	390	295	300	300	300	310	350	350	350	340	350	350	350	350	300	320	290	400	390
12	400	400	350	300	300	350	290	290	295	310	340	360	355	350	350	350	350	300	300	270	300	400	400	400
13	400	400	390	390	350	350	290	290	280	300	340	390	350	350	350	340	350	350	340	310	290	400	400	400
14	400	400	400	350	340	270	260	250	300	310	330	360	340	350	350	340	350	350	360	340	300	400	360	400
15	400	390	350	340	355	350	280	260	300	305	350	325	325	340	350	325	345	300	290	280	310	355	390	375
16	370	380	380	360	350	310	250	260	290	300	305	350	350	350	330	310	305	300	300	300	350	350	400	375
17	375	350	320	305	335	320	250	285	310	300	350	360	350	360	350	350	350	350	300	300	350	390	400	390
18	400	360	340	350	360	400	290	300	300	340	360	380	375	380	380	350	340	310	350	360	400	400	400	400
19	350	360	R	350	390	350	310	300	300	340	380	350	350	350	350	350	315	300	300	300	310	350	350	400
20	400	350	300	300	350	355	300	300	300	340	350	350	350	350	350	340	300	300	300	300	350	390	390	400
21	400	400	350	310	350	395	300	285	290	340	345	360	355	340	350	340	300	310	300	340	350	380	R	R
22	R	360	330	300	360	390	300	255	290	280	305	350	330	305	305	305	310	310	290	280	310	360	375	400
23	370	375	360	315	350	355	260	290	255	280	370	350	320	350	320	305	300	290	280	310	325	400	375	400
24	370	350	350	315	300	360	310	290	325	340	310	300	340	340	350	350	300	300	300	300	350	400	400	R
25	390	355	F	290	280	300	250	280	290	305	350	350	350	350	350	340	350	345	300	300	300	360	400	360
26	390	360	350	300	300	300	280	250	300	280	320	325	340	350	320	300	305	300	295	280	280	340	355	360
27	360	360	350	330	310	280	230	250	275	300	300	360	340	360	340	305	300	300	300	300	300	390	390	390
28	380	350	340	360	390	350	250	250	300	300	340	360	350	340	320	305	300	300	300	355	S	365	370	375
29	350	355	370	405	F	F	350	415	430	375	290	300	300	350	315	305	290	280	255	305	400	385	380	405
30	365	325	380	350	385	375	A	G	G	R	G	R	G	G	A	350	340	330	315	320	350	365	375	385
31																								
CNT	28	30	28	30	29	29	29	28	29	29	29	28	29	29	29	30	30	30	30	30	28	30	29	27
MED	372	360	350	315	350	350	290	288	300	300	340	350	340	350	340	322	305	300	300	300	310	370	380	380
UQ	400	380	365	350	360	375	300	295	300	310	350	360	350	350	350	350	340	310	300	310	350	390	400	400
LQ	360	350	328	300	315	330	260	260	290	290	310	322	320	330	315	305	300	300	290	280	300	355	360	360

APR. 1972

HPF2 (KM)

IONOSPHERIC DATA

APR. 1972

YPF2 (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	100	90	90	100	100	90	100	90	70	80	70	70	90	60	75	80	J50	70	75	A	70	75	80
2	85	90	90	50	125	90	75	J75	40	85	120	J85	80	90	80	85	90	75	70	90	100	90	100	100
3	80	80	70	60	105	75	80	85	70	90	90	85	90	75	80	90	90	90	90	90	90	110	100	100
4	100	100	120	90	90	100	100	R	100	85	110	C	90	100	80	85	90	90	90	90	100	95	100	110
5	110	95	100	100	90	100	I90	100	90	95	90	95	105	100	80	90	J90	J90	100	Y00	100	100	110	100
6	90	90	90	80	90	100	90	90	90	J90	90	90	80	90	90	J90	85	90	J90	Y00	90	100	U90	100
7	110	90	100	90	100	110	90	100	90	90	Y00	95	100	100	100	90	Y00	80	U90	90	90	100	U00	R
8	100	100	90	105	110	U00	J90	Y00	J90	75	100	J95	100	90	90	100	90	90	75	65	75	60	100	90
9	75	90	90	90	95	85	75	45	70	60	100	100	95	75	75	85	70	80	70	65	Y00	95	80	80
10	90	80	90	95	95	100	J75	J70	60	100	100	90	90	110	110	90	90	90	90	90	90	110	110	110
11	110	95	100	100	100	100	95	90	90	90	110	110	100	90	100	90	90	110	100	90	70	100	90	100
12	100	100	110	100	90	110	100	100	95	90	J90	Y00	105	110	90	110	90	90	90	Y10	90	90	90	90
13	90	90	90	100	110	100	100	100	110	90	110	Y00	110	110	110	120	90	90	100	90	100	90	90	100
14	90	100	100	110	90	105	100	100	100	90	90	100	100	110	110	100	90	90	Y00	100	90	Y00	Y10	90
15	90	100	110	100	105	110	100	100	90	90	J90	80	110	105	100	85	100	80	60	60	U90	95	100	100
16	100	95	110	95	95	90	55	60	75	J70	100	100	100	100	85	90	70	75	70	95	J95	70	70	75
17	75	95	80	95	85	85	60	65	80	100	110	100	110	100	110	90	100	110	90	Y00	90	100	90	100
18	90	I00	U00	110	100	90	J90	90	90	J10	Y00	110	95	Y00	100	110	100	100	90	100	90	Y00	Y00	Y00
19	90	90	R	100	100	Y10	Y00	J90	90	100	100	90	100	100	110	110	125	90	90	U90	U00	110	110	90
20	100	110	90	J90	100	105	90	90	90	Y00	90	100	110	110	90	100	100	90	90	90	90	110	100	Y00
21	U90	90	100	90	110	95	90	Y05	100	100	115	100	105	100	90	110	100	100	J90	110	U10	U00	R	R
22	R	Y20	U00	90	100	100	90	Y05	100	85	95	100	75	105	90	65	95	90	J65	85	90	100	75	75
23	80	100	95	85	100	90	J80	65	80	70	100	100	100	95	75	80	100	90	70	105	90	85	85	100
24	90	90	95	100	95	135	95	60	100	I00	J90	90	100	Y00	90	110	90	J90	J90	90	110	90	90	R
25	90	105	F	100	80	90	Y00	100	100	85	100	100	90	110	100	120	110	95	90	90	90	100	90	100
26	100	I00	110	J90	90	90	100	100	J90	70	120	100	100	95	90	100	90	95	70	J70	75	105	95	Y00
27	80	90	J65	100	95	65	70	J50	70	90	90	I00	120	Y00	110	85	90	90	J90	90	90	100	100	100
28	110	110	100	100	100	110	U90	110	90	100	110	85	95	65	80	100	75	75	75	95	S	90	80	90
29	65	90	85	100	F	F	95	85	120	75	65	95	J95	70	J85	J85	J65	J55	45	95	100	85	J75	95
30	110	80	90	100	115	100	A	G	G	R	G	R	G	G	A	55	75	70	90	I00	I00	80	80	85
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	30	28	30	29	29	29	28	29	29	29	28	29	29	29	30	30	30	30	30	28	30	29	27
MED	90	95	95	98	100	100	90	90	90	90	100	100	100	100	90	90	90	90	90	90	90	98	95	100
UQ	100	100	100	100	100	105	100	100	100	100	110	100	105	105	100	100	100	90	90	100	100	100	100	100
LQ	88	90	90	90	90	90	80	72	80	85	90	90	90	90	80	85	90	80	70	90	90	90	90	90

APR. 1972

YPF2 (KM)

IONOSPHERIC DATA

APR. 1972

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	63	63	55	I 54	48	45	45	I 84	I 94	90	97	114	120	116	118	118	120	113	Y 02	88	65	65	65	65
2	63	62	66	83	29	25	40	73	93	86	81	96	123	125	120	123	130	133	108	89	70	61	I 62	65
3	68	66	67	67	43	37	44	74	90	98	108	113	121	135	149	147	153	145	141	129	Y 02	73	J 64	65
4	58	57	58	60	47	40	J 51	72	84	91	103	120	Y 19	Y 24	140	140	135	133	I 21	U 13	81	72	J 77	J 75
5	J 72	J 67	56	56	53	48	56	J 70	J 87	101	114	126	137	135	130	127	121	123	Y 24	112	73	60	63	64
6	61	59	62	54	50	48	55	84	91	95	108	112	119	114	115	120	118	117	I 18	109	79	68	68	64
7	63	63	59	57	52	46	58	83	91	94	101	113	126	128	128	127	126	123	115	110	S	S	S	I 87
8	83	74	69	68	67	62	76	I 98	97	90	92	106	123	126	122	122	127	131	Y 33	J 33	111	I 88	84	81
9	78	75	75	65	55	51	66	U 88	87	91	108	113	128	134	136	130	113	112	Y 30	I 17	71	68	75	I 76
10	U 77	77	U 85	83	65	54	65	I 94	99	I 94	98	113	128	130	128	124	125	129	I 18	I 04	I 91	82	82	
11	80	80	J 79	70	52	47	58	U 95	105	98	93	117	128	138	135	134	128	Y 25	Y 31	Y 28	I 96	76	J 77	79
12	I 81	U 81	U 85	U 95	69	57	67	75	81	95	103	109	Y 28	139	149	151	150	147	139	Y 27	85	81	U 82	U 82
13	80	I 85	I 90	84	71	U 66	69	91	84	J 87	96	116	119	129	135	135	137	134	Y 29	131	I 06	87	I 87	81
14	80	I 86	I 90	U 94	88	68	59	69	85	97	108	116	125	125	130	128	Y 24	124	Y 28	Y 25	I 00	75	73	73
15	79	82	88	78	58	57	74	86	85	98	110	123	128	130	132	137	153	152	134	131	I 06	89	I 88	J 86
16	81	77	74	76	J 66	68	79	83	J 88	94	102	113	127	139	154	158	149	147	140	I 18	95	84	79	84
17	I 85	I 85	I 79	71	55	50	68	92	90	97	100	112	125	134	148	161	157	151	148	I 13	108	I 99	I 91	I 87
18	84	84	I 86	77	55	55	71	98	93	Y 00	Y 00	I 18	141	Y 55	Y 56	Y 58	167	147	Y 35	S	S	S	S	S
19	S	S	S	U 87	73	J 80	J 85	I 92	89	82	101	129	140	136	139	146	Y 51	146	Y 33	S	S	I 02	I 96	J 90
20	77	75	I 80	I 70	44	42	56	I 89	91	94	101	102	114	122	126	127	128	117	U 96	I 90	80	I 78	79	82
21	79	U 80	79	73	63	57	69	101	90	82	97	101	120	127	140	138	130	124	Y 14	107	S	S	S	S
22	I 90	S	S	66	59	57	79	93	82	79	88	109	122	127	113	111	Y 17	124	I 25	113	78	69	77	U 74
23	71	71	I 70	71	57	52	70	80	85	75	87	116	128	134	137	139	138	134	I 24	S	S	S	S	S
24	S	S	S	73	58	55	74	74	71	83	99	105	117	Y 21	Y 28	133	132	134	I 18	U 94	70	69	I 70	72
25	F	70	I 66	F	57	U 44	65	67	73	80	86	103	113	Y 26	133	146	159	158	153	138	113	S	S	S
26	S	S	S	S	71	62	71	70	81	92	94	98	113	128	132	133	138	139	135	121	I 00	80	78	I 78
27	U 72	68	U 72	67	58	52	75	74	76	80	79	87	Y 01	Y 15	127	Y 31	122	Y 14	111	108	I 84	71	68	70
28	U 71	69	J 75	68	59	61	I 76	77	69	82	102	103	112	118	128	123	Y 18	113	107	S	S	S	S	82
29	S	S	73	74	72	75	78	S	F	F	80	90	108	102	103	118	127	107	I 94	65	62	64	J 67	69
30	75	75	69	69	52	45	50	56	59	A	50	53	52	57	62	J 61	62	59	60	62	62	I 50	J 50	J 50
31																								
CNT	25	25	26	29	30	30	29	29	28	30	30	30	30	30	30	30	30	30	30	26	24	24	24	26
MED	77	75	74	70	58	53	68	83	87	92	100	112	122	128	131	132	129	128	126	115	84	74	78	78
UQ	80	80	80	77	66	61	74	92	91	96	103	116	127	134	139	140	149	145	134	128	I 03	86	82	82
LQ	71	67	66	67	52	46	56	74	82	82	92	102	114	122	122	123	122	117	114	107	72	68	68	69

APR. 1972

FOF2 (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

FOF1 (0.01 MHz)

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

Station	YAMAGAWA				Lat. 31 12.1 N.	Long. 130 37.1 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1									L	L	460	L	500	500	520	L	L	L								
2									L	L	L	L	L	L	520	A	A	L								
3									L	L	L	480	L	L	L	L	L	L								
4									L	L	L	U 530	U 510	U 500	L	L	L	L								
5										L	L	L	L	L	L	U 520	L	L								
6									L	L	U 530	L	U 550	U 490	L	L	L	L								
7									L	L	L	520	520	L	L	L	L	L								
8									L	440	L	L	L	530	L	L	L	L								
9									L	L	490	L	540	520	L	470	L	L								
10									L	U 430	L	L	L	570	L	500	U 500	L								
11									L	L	L	L	570	L	L	L	L	L	A							
12									L	L	L	L	L	L	L	U 500	L	L	L							
13									L	L	L	L	550	L	560	L	L	L								
14										A	L	L	L	L	L	L	L	L	L							
15									L	L	L	520	L	590	510	560	L	A								
16									L	L	L	L	L	590	L	L	L	A								
17										L	L	L	L	U 560	530	L	L	L								
18									L	L	L	L	560	L	600	L	L	L								
19									L	L	490	L	A	A	L	L	L	L								
20									L	U 500	530	U 480	570	530	U 540	L	L	L								
21									L	L	470	530	470	500	520	L	A	A								
22									L	L	550	550	L	520	530	L	A	L	L							
23									L	L	L	530	530	A	530	A	L	A								
24										L	L	510	510	L	540	530	L	L								
25										L	L	540	520	520	L	L	L	A								
26									L	L	U 490	U 510	570	530	L	A	L	A								
27									L	L	L	L	L	U 530	L	A	A	A	A							
28									A	L	L	520	530	550	490	500	490	L	A							
29										450	A	A	A	A	520	500	480	500	A	A	A					
30									330	370	410	A	A	A	470	460	460	450	440	410	L					
31																										
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT						1	2	1	3	8	12	17	18	14	9	3	1									
MED						330	410	410	440	490	520	530	525	525	500	490	410									
UQ									470	530	530	550	550	540	520	495										
LQ									435	480	510	510	500	510	500	465										

The Radio Research Laboratories, Japan

APR. 1972

FOF1 (0.01 MHz)

IONOSPHERIC DATA

APR. 1972

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	220 ^H	270 ^H	300	R	A	A	350	350	330	320	270	160					
2							S	230 ^H	280 ^H	300	320	330	I ^A 335	350	350	A	A	270	A					
3							S	220 ^H	280	315	335	345	I ^A 355	350	355	330	315	275	A					
4							S	215	290	315	330 ^R	340	A	A	R	A	300	270	210 ^H					
5							S	230 ^H	I ^A 280	340	350	350	A	A	350	340	320	275	A					
6							S	225 ^H	280	A	A	A	A	A	A	A	A	A	A					
7							S	240 ^H	295	320	I ^A 335	I ^A 345	I ^R 355	380	370	I ^A 360	330	280	200					
8							S	220	290	320	A	A	A	370 ^H	370	350	320	290	200					
9							S	220	300	I ^C 325	340	350	360	360	350	350	330	290	180					
10							S	250 ^H	300 ^H	330 ^H	350	I ^A 370	I ^A 375	380 ^R	I ^R 380	350 ^H	330	280	I ^A 200					
11							S	230	300	330	350	370	I ^R 370	I ^A 360	345 ^H	330 ^H	320	290	220					
12							S	260 ^H	300 ^H	335	340	A	A	A	A	I ^A 360	330	290	A					
13							S	235	300	325	355	A	A	A	370	360	330	285	210					
14							S	230	300	330	355	360	360	350	340	I ^A 330	320	I ^A 280	220					
15							S	250	300	330	350	A	A	A	370	350	325	300	210					
16							S	250 ^H	290	320	340	A	A	370	370	355	330 ^H	280	210					
17						170	250 ^H	300	330	350	360	390	375	360	350	325	280	180						
18							S	260	315	330	I ^A 335	A	A	R	R	I ^A 340	320	270	210 ^H					
19							S	255 ^H	300 ^H	325	345	355	345	I ^A 355	360	350	325	280	A					
20							S	A	A	320	I ^A 335	355	A	S	360	350	320	290	A					
21							S	245	290	320	I ^A 330	I ^R 345	350	360	360 ^H	350	320	280	210					
22							S	250	290	325	340	A	A	A	360	340	310	280 ^H	210					
23						150	250	300	330	340	360	370 ^R	370 ^R	350 ^R	340	320	280	220						
24						160	260 ^H	300	325	345	355	360	365	355	340	320	275	215						
25							S	230	290	I ^A 325	355	I ^A 360	I ^A 350	340	345	325	310	265	200					
26						180	255	300	320	I ^A 335	I ^A 345	365	365	370	345	315	285	A						
27							A	265	295	325	335 ^R	340 ^R	360 ^H	370 ^R	I ^A 360	340 ^H	315 ^H	270 ^H	195					
28						160	260	295	320	340	350 ^R	350	350 ^R	I ^R 350	340	315	275	220 ^H						
29							S	250 ^H	290	315 ^H	330	I ^A 340	350	I ^R 355	I ^R 355	330	310	270	210 ^H					
30						180	240 ^H	280	310	330 ^S	335	345	350 ^S	350 ^S	330	310	270	220 ^H						
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						6	29	29	29	27	21	18	21	26	27	28	29	22						
MED						165	245	295	325	340	350	358	360	358	340	320	280	210						
UQ						180	250	300	330	350	360	365	370	370	350	325	285	215						
LQ						160	230	290	320	335	345	350	350	350	335	315	270	200						

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APR. 1972

FOE (0.01 MHz)

IONOSPHERIC DATA

APR. 1972

FOES (0.1 MHz)

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

Station	YAMAGAWA				Lat. 31 12.1 N.	Long. 130 37.1 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																						
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	E ₁₅	E ₁₅	J ₂₉	J ₂₆	18	E ₁₅	E ₁₅	24	30	37	32 ^G	37	37	35 ^G	22 ^G	35	G	32	29	29	J ₂₅	24	26	23					
2	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₄	26	30	35	36	38	35	33 ^G	34 ^G	J ₆₈	J ₅₃	J ₂₄	28	J ₃₇	J ₄₁	J ₄₂	43	19					
3	21	E ₁₅	E ₁₅	E ₁₅	18	E ₁₅	E ₁₅	27	32	35	39	38	39	43	39	43	38	G	25	J ₂₃	J ₃₂	J ₂₉	24	24					
4	E ₁₅	E ₁₅	19	19	22	E ₁₅	E ₁₅	28	32	33	35	36	36	36	34 ^G	J ₄₅	G	G	29	J ₃₁	35	J ₃₂	J ₂₃	J ₁₉					
5	J ₂₈	37	J ₃₆	32	E ₁₃	J ₂₂	J ₂₃	22	31	39	40	G	J ₄₈	36	G	G	G	30	28	J ₂₈	J ₂₁	E ₁₅	E ₁₅	E ₁₅					
6	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	G	G	40	40	J ₅₂	J ₆₇	40	48	J ₄₂	J ₄₀	J ₄₂	J ₃₈	J ₃₂	27	E ₁₅	22	16					
7	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₂	E ₁₄	E ₁₄	G	31	34	37	40	34 ^G	45	46	39	38	37	45	27	J ₄₁	J ₂₇	J ₂₂	J ₂₁					
8	23	23	E ₁₄	E ₁₄	E ₁₅	20	E ₁₃	G	32	34	37	38	39	39	G	21 ^G	40	39	42	J ₄₂	J ₂₆	17	17	E ₁₅					
9	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₃	G	33	E ₄₁	41	40	39	40	41	G	35	42	J ₆₉	J ₆₀	J ₄₉	J ₈₁	J ₂₆	J ₂₇					
10	J ₂₄	E ₁₄	E ₁₄	E	20	E ₁₅	E ₁₅	28	33	35	57	45	47	42	36 ^G	G	21 ^G	J ₂₆	J ₂₁	25	21	J ₃₉	J ₂₄	20					
11	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E	E ₁₅	E ₁₅	G	32	37	42	42	34 ^G	39	25 ^G	21 ^G	17 ^G	29 ^G	37	J ₄₃	J ₅₂	J ₄₀	J ₂₆	J ₁₈					
12	18	22	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	G	35	42	41	39	39	40	37	37	35	31	25	J ₃₆	J ₂₁	E ₁₅	28	J ₂₅					
13	J ₃₅	J ₂₈	J ₂₈	22	E ₁₅	E ₁₅	18	29	36	36	38	42	39	J ₄₅	27 ^G	G	26 ^G	16 ^G	J ₄₁	J ₃₄	J ₄₁	J ₁₀₀	J ₂₄	E ₁₅					
14	E ₁₅	E ₁₄	21	J ₃₁	27	J ₂₈	20	29	39	46	46	44	57	52	41	37	32 ^G	31	25	J ₄₂	J ₅₀	J ₆₂	J ₃₁	J ₂₆					
15	J ₁₉	23	J ₉₈	J ₃₈	J ₃₄	J ₁₉	22	37	39	37	42	43	43	J ₆₅	30	32 ^G	46	J ₅₀	J ₄₄	J ₄₄	J ₆₃	J ₆₅	27	23					
16	17	E ₁₅	E ₁₃	E ₁₄	E ₁₅	E ₁₅	21	30	39	48	43	43	42	J ₅₈	45	45	41	46	J ₅₉	J ₄₂	J ₄₀	J ₈₂	J ₃₆	J ₂₅					
17	24	J ₂₆	25	21	E ₁₅	19	21	32	42	45	50	44	G	51	44	G	37	40	J ₃₇	J ₃₂	22	E ₁₅	J ₂₁	J ₂₈					
18	J ₂₆	J ₃₄	J ₁₉	22	E ₁₄	E ₁₅	E ₁₅	30	38	43	J ₅₂	39	40	36 ^G	31 ^G	29 ^G	35	37	G	E ₁₅	20	J ₂₆	J ₁₈	J ₂₃					
19	J ₂₅	22	20	E ₁₄	E ₁₅	E ₁₄	22	30	38	35	44	50	J ₇₀	J ₆₅	38	29 ^G	25 ^G	21 ^G	28	54	J ₃₁	J ₃₈	J ₃₇	J ₅₂					
20	J ₂₆	J ₂₆	J ₂₈	J ₂₆	J ₂₅	J ₂₅	J ₃₀	J ₅₂	J ₃₆	38	41	38	J ₄₇	52	41	47	J ₇₃	30	J ₃₈	J ₇₆	J ₅₄	J ₄₈	J ₃₇	24					
21	E ₁₅	E ₁₅	25	E ₁₅	E ₁₃	E ₁₅	E ₁₅	J ₂₄	32	36	36	37	G	43	47	50	50	46	J ₄₇	J ₄₇	26	20	21	J ₃₇					
22	23	E ₁₅	E ₁₄	E ₁₃	E ₁₃	17	20	30	J ₃₉	36	39	43	47	43	43	51	J ₅₈	33	28	J ₃₈	J ₂₁	E ₁₄	J ₂₈	19					
23	J ₃₄	J ₃₈	J ₃₄	J ₂₀	23	22	19	31	37	44	J ₄₉	38	45	56	43	53	45	J ₄₈	J ₄₂	J ₃₄	J ₄₇	46	J ₇₀	J ₂₉					
24	J ₂₈	J ₂₇	20	J ₂₈	23	E ₁₅	25	36	43	J ₅₁	48	42	45	44	29 ^G	43	42	J ₃₉	29	J ₂₇	J ₂₇	J ₃₈	J ₅₂	J ₂₄					
25	J ₃₅	J ₃₆	J ₄₁	J ₄₁	J ₄₀	J ₄₉	31	24	41	43	53	J ₅₃	45	42	39	47	42	42	J ₅₉	J ₆₁	J ₈₈	J ₅₂	J ₂₂	J ₁₈					
26	J ₂₁	E ₁₅	20	E ₁₅	E ₁₅	E ₁₄	G	G	37	45	J ₄₆	37	40	47	49	62	J ₄₄	J ₅₀	63	J ₆₅	J ₄₄	J ₆₁	J ₂₆	J ₁₉					
27	E ₁₅	20	E ₁₅	E ₁₄	E ₁₄	E ₁₅	23	32	39	40	41	38	G	43	47	51	J ₇₅	J ₇₅	J ₆₉	J ₆₅	J ₆₅	J ₃₆	J ₂₅	J ₂₂					
28	22	21	31	25	23	21	17	35	J ₅₇	46	56	41	45	G	32 ^G	39	34	39	33	J ₃₉	J ₃₇	J ₄₁	21	20					
29	E ₁₅	J ₁₉	J ₂₃	E ₁₄	E ₁₄	E ₁₄	20	29	47	J ₇₃	J ₁₀	140	41	32 ^G	41	40	J ₆₁	J ₆₄	J ₆₂	J ₄₉	J ₅₀	J ₅₅	J ₃₂	J ₂₄					
30	J ₃₇	J ₅₅	J ₃₈	J ₂₇	J ₂₈	21	26	33	J ₅₁	J ₆₁	47	49	40	48	38	G	G	G	G	J ₄₇	J ₇₂	J ₅₀	J ₃₁	J ₂₉					
31																													
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30					
MED	21	20	20	15	E ₁₅	E ₁₅	18	28	36	39	42	40	40	43	38	39	38	37	37	J ₃₈	J ₃₈	J ₃₈	J ₂₆	J ₂₃					
UQ	J ₂₆	J ₂₆	J ₂₈	J ₂₆	23	20	22	31	39	45	48	44	45	48	43	47	45	42	J ₄₅	J ₄₇	J ₅₀	J ₅₂	J ₃₁	J ₂₅					
LQ	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₅	G	32	36	39	38	37	39	31 ^G	21 ^G	G	G	G	J ₃₁	J ₂₆	24	J ₂₂	19					

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APR. 1972

FOES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

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 ₁₅	E ₁₅	E ₁₅	E	E	E ₁₅	E ₁₅	G	G	G	E ₃₂	35	35	33	G ₂₂	G	G	G	28	27	22	E	17	E	
2	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₄	G	G	34	G	37	E ₃₅	32	G ₃₄	66	53	21	G	26	23	35	E ₄₂	27	E
3	E	E ₁₅	E ₁₅	E ₁₅	E	E ₁₃	E ₁₅	G	G	34	38	37	39	43	39	42	36	G	25	22	32	28	E	E	
4	E ₁₅	E ₁₅	E	E	E	E ₁₅	E ₁₅	27	31	G	G	G	E ₃₆	E ₃₆	E ₃₄	E ₄₅	G	G	29	31	33	30	E ₂₃	E	
5	18	30	32	24	E ₁₃	18	20	21	31	36	39	G	48	36	G	G	G	30	27	20	16	E ₁₅	E ₁₅	E ₁₅	
6	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	G	G	33	37	48	46	40	47	42	37	39	34	29	15	E ₁₄	E	E	
7	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₂	E ₁₄	E ₁₄	G	G	G	36	E ₄₀	E ₃₄	44	45	38	G	G	45	26	32	17	E	E	
8	E	E	E ₁₄	E ₁₄	E ₁₅	E	E ₁₃	G	G	G	36	E ₃₈	37	E ₃₉	G	21	39	37	33	35	23	E	E	E ₁₅	
9	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₃	G	G	E ₄₁	40	E ₄₀	39	E ₄₀	E ₄₁	G	G	42	66	59	36	53	21	E	
10	18	E ₁₄	E ₁₄	E	E	E ₁₅	E ₁₅	G	G	G	47	45	47	E ₄₂	E ₃₆	G	G	21	20	E ₂₁	E	E	36	19	E
11	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E	E ₁₅	E ₁₅	G	G	G	41	E ₄₂	E ₃₄	E ₃₉	25	21	G	17	25	35	E ₄₃	27	21	16	16
12	E	E	E ₁₃	E ₁₃	E ₁₃	E ₁₄	E ₁₄	G	G	41	40	39	E ₃₉	E ₄₀	E ₃₇	36	G	30	25	26	18	E ₁₅	19	19	
13	29	26	23	E	E ₁₅	E ₁₅	16	29	35	35	37	42	E ₃₉	45	27	G	25	G	16	26	31	41	53	16	E ₁₅
14	E ₁₅	E ₁₄	E	20	22	26	18	29	36	45	44	44	53	51	41	35	30	G	30	G	41	50	28	21	E
15	E	E	52	28	E	E	19	34	G	G	38	40	42	47	30	31	43	48	43	41	46	32	18	E	
16	E	E ₁₅	E ₁₃	E ₁₄	E ₁₅	E ₁₅	19	30	35	47	42	43	E ₄₂	43	44	44	40	44	50	36	35	58	20	E	
17	E	E	E	E	E ₁₅	E	G	31	41	43	44	44	G	47	43	G	34	39	33	28	E	E ₁₅	E	21	
18	22	17	E	E	E ₁₄	E ₁₅	E ₁₅	G	G	40	43	E ₃₉	E ₄₀	E ₃₆	E ₃₁	E ₂₉	G	G	G	E ₁₅	18	23	E	18	
19	21	E	E	E ₁₄	E ₁₅	E ₁₄	22	30	37	G	43	50	63	63	E ₃₈	29	25	G	20	28	54	25	25	30	47
20	20	26	28	23	25	17	25	29	33	37	41	E ₃₈	42	47	40	47	44	G	38	E ₇₆	50	26	E	E	
21	E ₁₅	E ₁₅	E	E ₁₅	E ₁₃	E ₁₅	E ₁₅	23	G	35	35	E ₃₇	G	41	46	50	48	45	E ₄₇	45	17	E	E	E ₃₇	
22	E	E ₁₅	E ₁₄	E ₁₃	E ₁₃	E	19	28	35	G	39	42	44	42	42	47	54	31	26	35	E	E ₁₄	E	E	
23	E	23	25	E	E	E	G	30	G	37	38	G	45	55	42	52	45	46	40	28	23	24	26	E	
24	E	22	E	E	E	E ₁₅	24	35	42	46	46	41	45	42	29	38	37	36	28	26	25	34	50	20	
25	29	36	E	31	33	33	S	G	40	42	49	48	44	42	39	46	40	42	57	56	67	26	19	E	
26	18	E ₁₅	E	E ₁₅	E ₁₅	E ₁₄	G	G	36	44	44	37	40	47	48	52	43	49	62	65	43	55	E	E	
27	E ₁₅	E	E ₁₅	E ₁₄	E ₁₄	E ₁₅	22	31	38	39	39	38	G	E ₄₃	47	51	71	74	69	65	61	25	16	19	
28	E	E	26	16	E	E	G	32	55	44	49	40	42	G	E ₃₂	38	G	38	30	37	31	18	E	E	
29	E ₁₅	E	E	E ₁₄	E ₁₄	E ₁₄	18	28	45	55	71	59	40	E ₃₂	E ₄₁	38	48	47	E ₆₂	45	43	29	29	E	
30	30	29	35	22	E ₂₈	18	25	32	50	A	E ₄₇	48	38	48	G	G	G	G	G	42	31	E ₅₀	28	25	
31																									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₅	15	25	31	36	40	39	40	42	U ₃₄	38	35	30	U ₃₀	U ₃₃	31	25	16	E	
UQ	18	17	15	E ₁₅	E ₁₅	E ₁₅	19	30	37	43	44	44	44	47	42	46	43	42	U ₄₂	44	41	U ₃₂	21	17	
LQ	E	E	E	E	E	E ₁₄	E ₁₄	G	G	G	37	E ₃₇	E ₃₆	E ₃₉	E ₃₀	E ₂₁	G	G	26	26	18	15	E	E	

APR. 1972

FBES (0.1 MHz)

IONOSPHERIC DATA

APR. 1972

F-MIN (0.1 MHZ)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E ₁₅	E ₁₅	E ₁₄	E ₁₅	13	E ₁₅	E ₁₅	E ₁₄	15	14	15	15	15	16	15	15	14	15	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
2	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₄	15	15	15	15	15	16	15	15	15	E ₁₅	15	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅
3	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E	E ₁₃	E ₁₅	E ₁₅	15	14	15	15	15	15	16	14	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
4	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	15	15	17	24	18	16	14	15	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅
5	E ₁₅	E ₁₄	12	E ₁₄	13	E ₁₅	E ₁₅	E ₁₄	14	15	15	20	18	20	21	16	15	11	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
6	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	14	14	15	18	15	15	18	18	15	14	11	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
7	E ₁₄	E ₁₄	E ₁₄	E ₁₄	12	E ₁₄	E ₁₄	E ₁₄	14	15	15	15	20	19	18	18	15	15	17	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅
8	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₃	15	14	15	15	16	15	19	16	15	15	14	E ₁₃	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅
9	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E	14	E ₁₃	11	11	E ₄₁	15	15	18	15	18	15	14	15	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅
10	E ₁₅	E ₁₄	E ₁₄	E	E ₁₃	E ₁₅	E ₁₅	15	14	14	15	17	16	16	16	15	15	11	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
11	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E	E ₁₅	E ₁₅	14	14	15	17	20	24	24	17	16	15	11	13	13	E ₁₄	E ₁₄	13	E ₁₄
12	E ₁₄	E ₁₅	13	13	13	E ₁₄	E ₁₄	15	15	15	18	17	22	23	24	16	16	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
13	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	15	15	16	16	17	19	20	16	16	15	15	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
14	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	16	15	24	24	20	17	17	15	11	14	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₄
15	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₅	14	14	15	15	15	17	19	15	15	15	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅
16	E ₁₅	E ₁₅	E ₁₃	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₄	15	15	17	16	14	16	15	15	14	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅
17	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	15	16	15	20	18	17	16	15	15	15	13	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
18	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅	15	15	16	17	25	24	29	23	26	17	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₄
19	E ₁₄	12	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₄	15	15	16	18	19	25	24	18	17	18	14	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅
20	E ₁₄	E ₁₅	E ₁₄	E ₁₃	E ₁₄	E ₁₃	E ₁₅	E ₁₅	15	15	21	18	21	E ₃₀	24	17	15	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
21	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E ₁₅	15	15	16	16	17	15	16	16	15	14	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₅
22	E ₁₅	E ₁₅	E ₁₄	E ₁₃	E ₁₃	E ₁₅	E ₁₄	E ₁₄	E ₁₄	15	15	17	15	15	22	16	15	14	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅
23	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₄	14	15	15	18	19	21	15	15	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
24	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E ₁₅	E ₁₄	E ₁₄	15	15	15	18	17	23	21	15	16	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅
25	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	14	15	16	18	22	24	20	20	17	16	14	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅
26	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	13	14	15	15	15	16	15	16	16	14	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅
27	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	15	17	16	19	18	17	16	15	E ₁₄	13	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅
28	E ₁₅	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₄	14	14	15	16	17	17	23	19	16	15	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
29	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	15	15	18	18	16	19	16	15	15	14	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅
30	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	16	18	17	18	E ₂₄	16	18	15	E ₁₈	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₄	15	15	15	17	18	18	16	16	15	13	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
UQ	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	15	15	16	17	18	21	22	19	16	15	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
LQ	E ₁₅	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄	14	15	15	15	16	16	16	15	15	14	E ₁₃	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₅

The Radio Research Laboratories, Japan

APR. 1972

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

APR. 1972

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	285	300	300	I 280	295	270	265	S 330	I 340	335	315	300	315	310	300	300	315	320	325	310	295	265	275	280	
2	275	280	295	360	325	260	285	330	350	335	310	285	300	305	295	295	300	320	315	305	290	270	I 260	270	
3	285	305	300	330	335	255	280	330	325	310	320	305	290	295	295	295	305	305	310	315	325	295	I 275	285	
4	285	280	295	315	335	300	315	350	340	325	300	275	305	325	300	305	305	315	I 315	U 320	290	285	I 275	I 280	
5	U 265	U 275	260	280	280	255	275	315	300	315	320	315	330	325	315	320	320	320	340	360	320	285	260	280	
6	285	290	310	305	310	295	315	355	375	320	315	310	300	300	295	295	305	300	I 320	330	345	290	290	290	
7	290	285	290	300	300	285	300	340	350	295	295	285	295	295	285	285	290	310	305	305	S	S	S	I 295	
8	290	265	260	265	280	275	295	I 325	330	320	305	280	295	295	285	285	285	295	305	315	315	315	I 285	275	280
9	275	280	295	300	275	265	305	U 350	335	345	295	290	285	295	295	300	295	295	305	I 325	270	265	260	I 265	
10	U 275	285	U 290	315	295	270	290	I 315	335	300	I 315	270	275	285	285	295	285	290	295	I 305	I 290	I 270	270	275	
11	275	280	290	320	300	255	290	U 315	330	320	290	270	285	295	290	290	285	290	305	315	I 320	255	I 260	265	
12	I 275	U 275	U 295	U 325	315	300	325	345	320	315	280	275	I 280	290	295	300	300	315	325	330	330	275	I 270	U 270	
13	270	I 275	I 290	300	320	320	335	345	340	300	280	290	285	280	290	290	295	305	305	310	315	320	I 265	270	
14	270	I 275	I 280	U 305	310	315	330	325	315	300	295	295	290	290	290	295	I 280	285	295	305	315	275	260	265	
15	270	290	290	310	310	300	325	325	310	290	285	295	285	290	280	285	290	305	315	310	I 290	270	I 260	I 265	
16	270	260	270	280	I 275	295	315	340	305	310	290	285	285	285	290	295	290	295	305	I 315	285	275	260	255	
17	I 285	I 285	I 285	310	270	270	295	325	325	315	290	280	285	290	295	300	310	305	315	I 305	290	I 275	I 270	I 270	
18	275	285	I 300	310	275	265	300	330	320	I 320	250	I 265	285	U 290	290	285	300	300	305	S	S	S	S	S	
19	S	S	S	U 300	275	I 285	305	I 340	315	310	260	290	305	295	290	295	U 300	320	310	S	S	I 290	I 265	I 265	
20	260	280	I 300	I 340	300	280	315	I 310	325	320	320	285	290	300	300	305	310	325	U 325	I 320	290	I 275	270	280	
21	275	U 285	290	305	285	290	295	345	345	285	270	255	275	285	300	300	300	300	U 295	290	S	S	S	S	
22	I 265	S	S	295	270	270	295	325	340	310	295	285	295	315	300	290	U 295	305	I 310	320	310	270	255	I 270	
23	270	I 275	I 280	305	300	270	315	335	345	295	265	295	295	305	300	305	305	305	I 305	S	S	S	S	S	
24	S	S	S	300	285	265	310	335	315	310	305	295	295	295	300	310	305	320	I 325	335	290	275	I 270	275	
25	F	285	I 290	295	325	U 275	340	365	330	325	295	285	290	290	290	305	310	310	315	310	I 300	S	S	S	
26	S	S	S	S	310	295	330	330	315	320	305	285	290	295	305	305	310	315	325	320	I 315	290	280	I 285	
27	U 285	290	U 295	315	335	315	350	360	340	330	305	270	I 260	U 295	285	310	315	I 325	310	335	I 300	280	265	270	
28	U 265	290	U 295	310	270	265	I 310	360	325	320	295	285	295	285	315	310	U 305	300	310	S	S	S	S	255	
29	S	S	260	255	250	255	245	S	F	F	270	270	305	290	275	295	325	325	I 320	295	265	255	I 255	260	
30	270	280	260	280	250	245	245	260	275	A	A	260	275	265	285	295	295	305	315	300	295	I 270	I 270	I 265	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	25	25	26	29	30	30	30	29	29	28	29	30	30	30	30	30	30	30	30	26	24	24	24	26	
MED	275	280	290	305	298	272	305	330	330	315	295	285	290	295	295	295	300	305	310	315	298	275	270	270	
UQ	285	285	295	315	310	295	315	345	340	320	305	295	295	295	300	305	310	320	320	320	315	285	275	280	
LQ	270	275	280	295	275	265	290	325	315	305	285	275	285	290	290	295	295	300	305	305	290	270	260	265	

APR. 1972

M(3000)F2 (0.01)

IONOSPHERIC DATA

APR. 1972

M(3000)F1 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	390	L	375	370	345	L	L	L						
2									L	L	L	L	L	L	345	A	A	L						
3									L	L	L	380	L	L	L	L	L	L						
4									L	L	L	U360	U380	U360	L	L	L	L						
5									L	L	L	L	L	L	L	U385	L	L						
6									L	L	U355	L	U355	U380	L	L	L							
7									L	L	L	365	355	L	L	L	L	L						
8									L	395	L	L	L	360	L	L	L	L						
9									L	L	375	L	355	365	L	375	L	L						
10									L	U395	L	L	L	340	L	360	U370	L						
11									L	L	L	L	H350	L	L	L	L	L	A					
12									L	L	L	L	L	L	L	U380	L	L	L					
13									L	L	L	L	365	L	345	L	L	L						
14										A	L	L	L	L	L	L	L	L	L					
15									L	L	L	375	L	345	375	330	L	A						
16									L	L	L	L	L	340	L	L	L	A						
17										L	L	L	L	U350	360	L	L	L						
18									L	L	L	L	350	L	325	L	L	L						
19									L	L	370	L	A	A	L	L	L	L						
20									L	U370	365	U400	365	360	U360	L	L	L						
21									L	L	405	345	385	370	345	L	A	A						
22									L	L	345	355	L	355	U345	L	A	L	L					
23									L	L	L	350	340	A	340	A	L	A						
24									L	L	375	375	L	345	345	L	L							
25									L	L	A	365	365	L	L	L	A							
26									L	L	U390	U385	335	340	L	A	L	A						
27									L	L	L	L	L	U345	L	A	A	A	A					
28									A	L	L	365	340	365	365	345	345	L	A					
29									A	A	A	A	375	340	365	340	A	A	A					
30									290	330	450	A	A	A	370	380	375	360	360	340	L			
31																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	1	3	8	11	17	18	14	9	3	1						
MED							290	370	450	U395	372	365	365	360	345	360	360	340						
UQ										395	390	378	375	365	365	375	365							
LQ										U382	360	358	350	345	345	345	352							

APR. 1972

M(3000)F1 (0.01)

IONOSPHERIC DATA

APR. 1972

H^oF₂ (KM)

135 E Mean Time (G. M. T. + gh)

Station		YAMAGAWA											Lat. 31 12.1 N, Long. 130 37.1 E											Sweep 1 MHz to 20 MHz in 20 sec in automatic operation										
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23										
1									225	245	250	280	255	270	280	255	255	235																
2									225	230	250	295	290	260	275	285	275	240																
3									230	250	255	270	300	280	290	275	265	250																
4									230	255	285	260	270	295	290	265	265	250																
5									260	270	285	290	260	280	270	260	265																	
6									235	240	270	260	280	260	285	290	270																	
7									230	225	260	285	290	275	290	295	270	250																
8									225	240	250	300	290	280	275	295	290	275																
9									235	250	260	290	295	290	275	270	250	270																
10									235	240	255	330	305	305	280	280	275	275																
11									235	240	250	325	305	300	300	290	255	275	270															
12									225	260	250	250	335	310	305	290	285	260	240															
13									230	310	270	300	285	285	300	300	290	260																
14									240	290	280	300	295	300	285	265	275	255																
15									230	250	280	275	300	315	280	315	290	260																
16									225	250	270	310	300	305	290	275	265	250																
17									235	290	280	290	310	310	280	270	260																	
18									235	250	325	320	325	310	310	310	275	260																
19									250	250	300	310	285	305	305	310	275	255																
20									245	255	280	255	310	295	290	280	280	250																
21									235	250	250	300	300	295	295	280	265	260																
22									230	240	300	320	295	275	280	290	290	260	240															
23									230	300	300	290	295	290	290	275	275	255																
24									290	285	285	290	295	285	280	270	255																	
25									245	280	305	300	305	315	300	280	255																	
26									240	260	270	290	335	305	290	295	285	260																
27									250	245	250	265	325	300	295	270	265	250	260															
28									275	300	285	295	310	320	280	275	275	265	245															
29									410 ^F	350	300	400 ^{E A}	325	295	285	310	290	260	250	245														
30									410	400	395	A	A	455	450	450	380	355	350	310	290													
31																																		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23										
CNT							1	2	25	29	29	30	30	30	30	30	30	29	8															
MED							410	405	235	250	270	290	298	295	290	285	272	260	250															
UQ									240	260	285	310	305	305	300	295	280	265	265															
LQ									230	240	255	280	290	280	280	275	265	250	242															

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H^oF₂ (KM)

IONOSPHERIC DATA

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H·F (KM)

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

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

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	255	250	250	260	230	280	275	235	220	210	200	190	200	200	190	195	225	240	230	225	225	275	290	275	
2	280	290	250	205	200	E30	265	230	220	220	210	200	195	180	225	A	A	225	225	225	250	A	325	300	
3	275	250	245	225	200	230	260	235	225	230	225	205	200	200	200	E50	225	240	235	215	215	220	260	280	
4	290	295	270	240	205	250	245	215	225	215	205	205	180	195	215	I21	200	230	235	225	235	E50	280	260	
5	290	305	E36	E29	220	325	275	220	230	220	220	200	A	185	205	220	215	240	245	230	200	240	305	295	
6	295	300	255	240	250	280	260	225	215	215	200	A	E30	200	A	A	A	260	250	230	215	225	265	270	
7	290	280	280	240	220	265	260	220	220	210	200	200	195	250	245	225	235	230	245	240	245	250	265	250	
8	250	275	300	280	250	250	250	230	225	205	200	200	185	215	220	200	255	255	250	240	215	210	255	250	
9	270	255	245	225	255	305	250	220	220	E20	210	220	190	205	245	215	235	260	265	240	225	I20	300	295	
10	295	280	255	230	210	225	250	230	230	205	A	225	E50	270	245	210	200	240	250	235	230	245	260	280	
11	275	260	245	220	200	290	250	235	230	220	205	210	190	255	180	200	230	240	A	250	220	245	305	300	
12	285	280	260	225	210	235	235	210	215	E30	205	200	200	210	210	200	235	245	250	220	205	230	290	295	
13	315	305	275	250	220	210	230	235	215	210	205	210	200	E50	190	190	200	230	250	245	225	E30	270	285	
14	305	290	275	255	215	220	215	225	240	I24	I22	I20	I20	I22	205	220	235	235	250	250	245	240	300	305	
15	290	275	I25	240	220	250	240	225	220	200	200	200	200	250	225	200	270	A	245	245	225	250	260	275	
16	280	275	275	255	230	230	230	220	220	240	210	200	200	225	250	260	245	I24	245	225	245	305	300	300	
17	275	250	245	205	240	275	245	230	230	240	230	230	190	E50	250	215	230	I23	250	230	205	240	280	300	
18	300	290	245	210	215	295	255	240	225	230	220	250	245	200	200	210	230	230	245	245	270	260	275	305	
19	290	255	245	215	240	250	250	225	230	220	225	A	A	A	240	220	240	235	235	250	250	250	250	E30	
20	310	300	250	225	E50	300	250	235	235	215	205	220	210	I20	215	I21	I22	225	E40	A	A	E28	295	290	
21	295	290	260	240	210	255	250	235	215	200	200	205	195	220	A	A	A	A	250	250	240	260	270	E30	
22	295	275	240	205	270	290	240	230	225	220	200	210	E50	240	230	265	I24	245	240	225	210	255	300	285	
23	295	290	285	230	245	295	240	225	220	210	200	200	250	I24	240	A	A	A	235	220	245	265	275	265	
24	270	275	245	210	230	275	240	220	240	E60	E55	220	E30	230	200	225	250	255	235	225	245	305	E70	300	
25	310	300	245	E27	230	E31	230	215	240	A	A	A	220	I21	200	I25	260	I26	240	235	260	250	260	260	
26	260	250	240	230	225	230	210	220	220	A	E35	190	190	A	A	A	A	A	A	245	240	240	A	255	275
27	280	285	260	240	225	240	230	225	225	215	200	200	200	A	A	A	A	A	A	A	245	E20	265	300	305
28	300	285	265	240	255	300	230	215	I23	E50	A	205	220	230	220	230	230	250	A	E27	E30	270	250	300	
29	285	270	285	315	305	300	265	245	A	A	A	A	200	260	I24	245	A	A	A	275	E50	340	340	315	
30	305	250	315	250	335	350	300	A	A	A	A	A	240	I24	230	230	215	225	250	E29	290	I30	E34	E34	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	29	28	26	25	25	28	27	26	24	23	24	26	29	29	28	30	30	
MED	290	280	254	235	226	268	250	225	225	218	205	205	200	220	220	216	230	240	245	238	232	251	278	290	
UQ	295	290	275	245	250	298	260	235	230	225	215	220	215	244	240	229	242	248	250	245	248	273	300	300	
LQ	275	260	245	225	215	240	235	220	220	210	200	200	195	202	200	205	225	230	235	225	220	241	260	275	

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H·F (KM)

IONOSPHERIC DATA

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H^oES (KM)

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

Station	YAMAGAWA				Lat. 31 12.1 N.	Long. 303 71. E 1	Sweep 2 MHz to 02 MHz in 0 sec in automatic operation																						
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	S	S	100	100	105	S	S	150	140	120	100	100	105	100	100	130	G	145	110	105	105	105	105	105					
2	S	S	S	S	S	S	S	E G 175	E G 170	125	125	110	110	100	100	125	120	95	125	110	105	105	100	100					
3	95	S	S	S	100	S	S	160	150	150	125	130	130	115	120	120	115	G	155	125	105	105	105	105					
4	S	S	100	100	105	S	S	150	160	145	130	125	115	120	105	100	G	G	130	110	110	110	105	105					
5	100	100	100	100	B	105	105	105	145	110	110	G	105	105	G	G	G	140	120	110	105	S	S	S					
6	S	S	S	S	S	S	S	G	G	105	110	105	105	105	100	100	100	100	95	95	95	S	110	110					
7	S	S	S	S	B	S	S	G	155	145	130	100	100	150	135	145	140	135	115	110	105	105	105	100					
8	100	100	S	S	S	100	S	G	140	125	125	115	115	130	G	100	E G 175	135	120	110	105	105	95	S					
9	S	S	S	S	E	B	S	G	140	C	115	115	115	110	110	G	150	115	110	105	105	105	105	100					
10	100	S	S	E	100	S	S	155	150	150	125	130	130	140	120	G	100	95	95	100	110	100	100	100					
11	S	S	S	S	E	S	S	G	E G 165	140	130	130	105	100	100	100	100	100	120	110	105	105	105	105					
12	105	100	B	B	B	S	S	G	135	115	110	110	110	110	125	130	130	120	110	110	110	S	105	105					
13	100	100	95	100	S	S	130	115	115	120	115	105	105	100	100	G	100	100	120	110	105	105	105	S					
14	S	S	120	100	100	100	105	130	120	110	110	105	105	105	105	105	105	105	135	110	105	100	105	105					
15	130	105	130	100	100	105	135	125	125	125	110	105	110	110	110	110	E G 175	130	115	105	105	100	100	120					
16	100	S	S	S	S	S	140	130	120	115	110	100	100	110	165	145	150	130	125	110	105	100	100	100					
17	100	100	100	100	S	100	150	130	125	115	115	115	G	110	110	G	120	105	105	105	100	S	100	100					
18	100	100	100	100	S	S	S	135	125	110	110	105	105	105	100	100	125	120	G	S	105	105	105	100					
19	100	100	105	S	S	S	150	140	120	145	120	115	105	105	130	105	105	100	120	100	95	110	105	105					
20	100	100	100	100	100	100	105	105	100	125	105	130	105	130	125	115	115	130	110	110	110	100	105	100					
21	S	S	105	S	S	S	S	110	145	125	125	130	G	155	150	140	125	120	115	105	105	105	105	100					
22	100	S	S	S	S	110	140	140	125	130	120	105	105	155	145	125	120	125	120	110	105	S	105	105					
23	105	105	105	100	105	100	150	130	130	125	115	130	150	130	135	115	115	115	115	105	105	105	105	100					
24	100	100	100	100	100	S	130	125	120	120	115	120	120	120	100	140	130	125	125	105	105	100	105	105					
25	105	105	105	105	100	100	155	150	120	110	110	110	110	110	115	110	110	130	105	105	100	100	100	100					
26	100	S	100	S	S	S	G	G	125	115	110	115	125	150	140	135	150	135	115	115	110	105	110	105					
27	S	100	S	S	S	S	135	130	120	115	120	110	G	165	145	135	120	115	115	110	110	105	105	105					
28	100	100	100	100	100	100	135	110	115	110	115	115	G	100	150	E G 175	130	125	110	105	105	105	105	100					
29	S	100	105	S	S	S	140	125	115	110	105	105	120	100	150	135	125	115	110	110	105	105	105	100					
30	100	100	100	100	100	125	125	120	115	115	110	110	120	130	160	G	G	G	G	110	105	105	105	100					
31																													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT	19	16	18	14	12	11	16	23	29	29	30	29	27	29	28	24	26	27	28	29	30	25	29	27					
MED	100	100	100	100	100	100	135	130	125	120	115	110	110	110	118	122	119	120	115	110	105	105	105	100					
UQ	100	100	105	100	102	105	145	142	142	125	125	120	118	130	138	135	U	132	130	122	110	105	105	105					
LQ	100	100	100	100	100	100	115	125	120	115	110	105	105	105	100	105	110	105	110	105	105	100	105	100					

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H^oES (KM)

IONOSPHERIC DATA

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TYPES OF ES

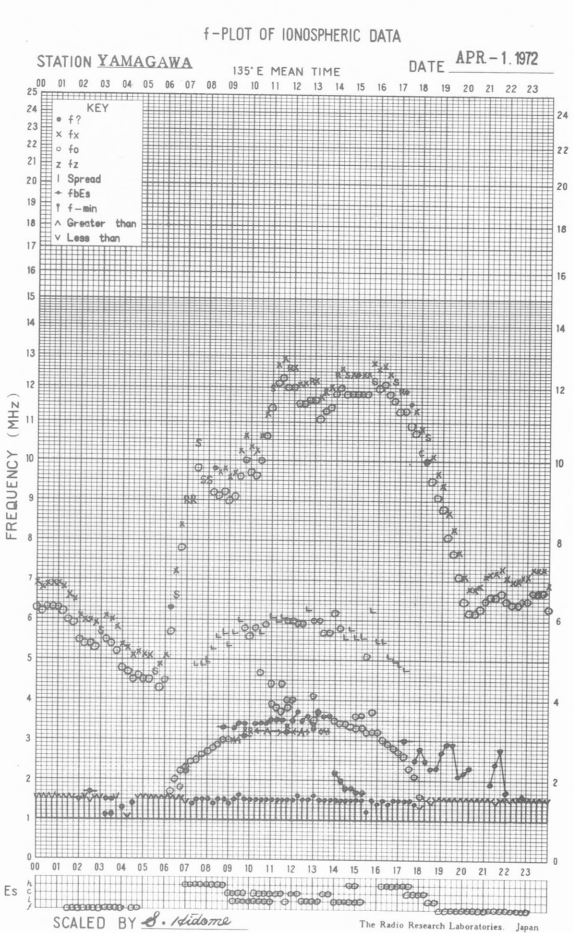
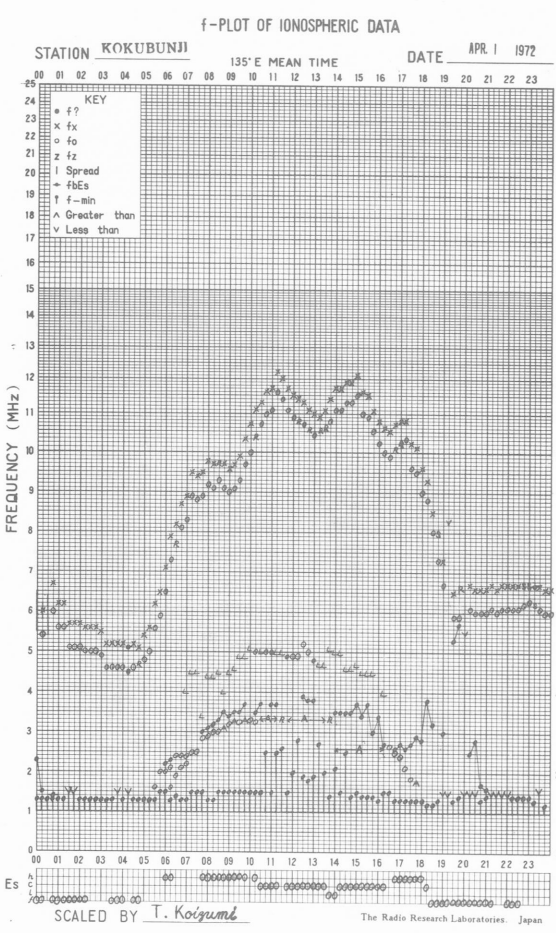
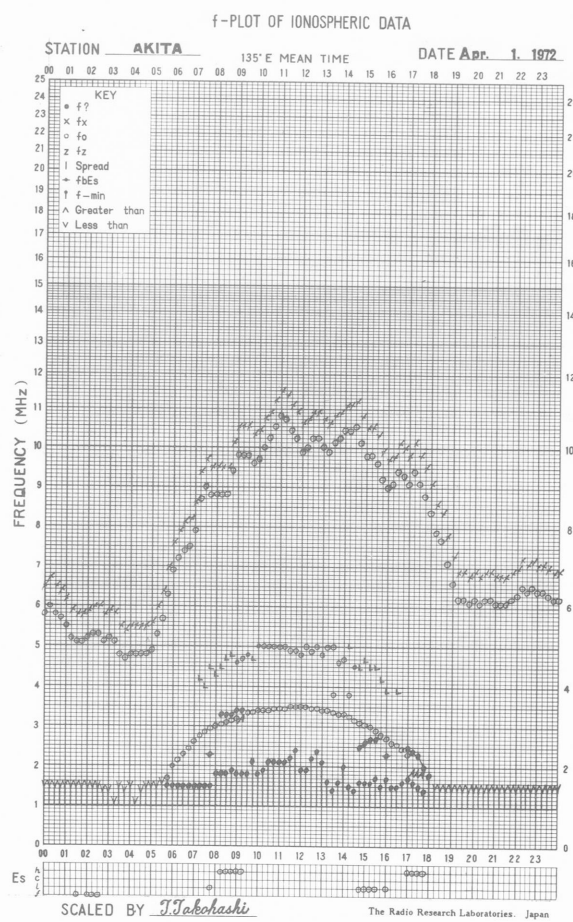
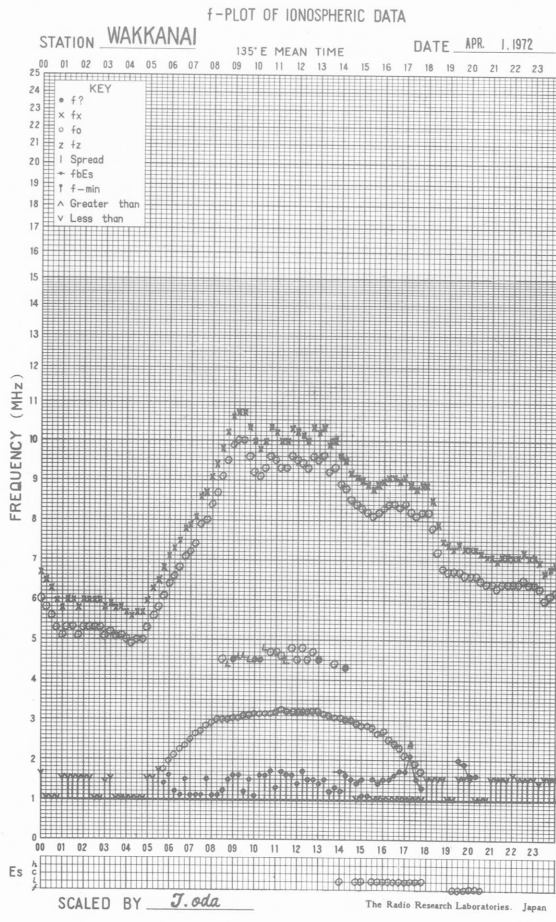
135 E Mean Time (G. M. T. + 9^h)

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

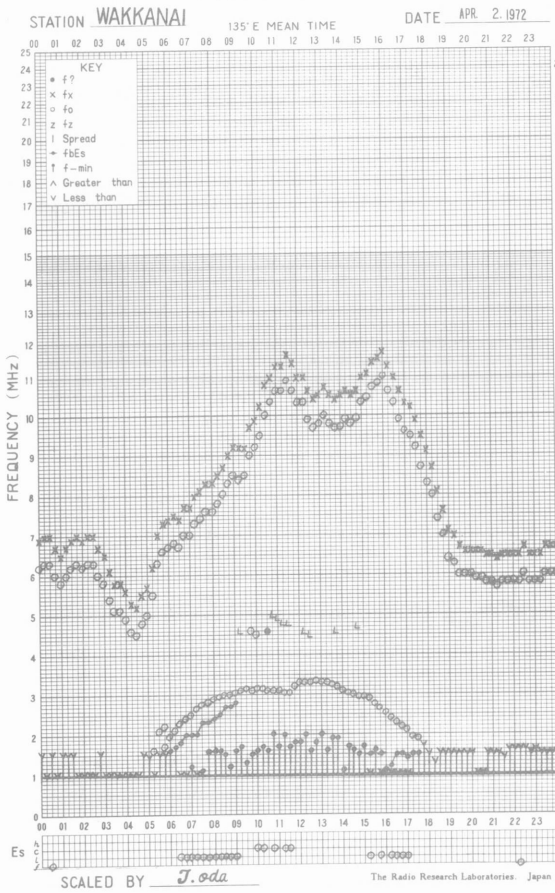
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		F3	F2	F1			H1	H2	S	L	L	L	L	L	L	H1		H2	C	F	F	F	F	F	
2							H1	H1	H2	H1	S	L	L	L	HCL	H2	L	H3	FF	FF	FF	F	F	F	F
3	F2				F1		H2	H1	H1	H2	H1	H1	H1	H1	L	L			H1	FF	F	F	F	F	F
4			F1	F1	F1		H2	H1	H1	H1	H1	L	L	L	L			H2	F	F	F	F	F	F	F
5	F3	F3	F3	F4		F4	F3	L	H2	S	L		L	L				H1	L	FF	FF	F			
6									S	S	S	L	L	L	L	L	L	L	L	L	F	F	F	F	F
7									H2	H1	H2	H1	L	H1	H1	H1	H1	H1	L	L	F	F	F	F	F
8	F1	F1			F1				H2	H1	H1	L	L	L	L	L	L	H2	C	F	F	F	F	F	F
9									H2		L	L	L	L	L	L	L	H1	C	C	F	F	F	F	F
10	F4				F1		H1	H2	H1	H1	H1	H1	H2	H1	L	L	L	L	L	L	F	F	F	F	F
11									H1	H1	H1	H1	L	L	L	L	L	L	L	L	F	F	F	F	F
12	F1	F1							H2	L	L	L	L	L	L	L	L	H1	L	L	F	F	F	F	F
13	F3	F2	F3	F1			L	L	S	L	L	L	L	L	L	L	L	L	L	S	FF	FF	F	F	F
14			F1	F4	F3	F6	L	H2	H2	S	L	L	L	L	L	L	L	L	L	L	F	F	F	F	F
15	F2	F2	F3	F5	F2	F1	H2	H3	H2	H1	S	S	S	L	L	L	L	H1	H2	C	F	F	F	F	F
16	F1						H3	H2	H3	S	S	L	L	L	L	HCL	H1	H2	H3	H3	F	F	F	F	F
17	F3	F2	F1	F1		F1	H1	H2	H2	S	S	L	L	L	L	L	L	H2	C	C	F	F	F	F	F
18	F2	F2	F1	F1			H1	H2	H2	S	S	L	L	L	L	L	L	H1	L			F	F	F	F
19	F2	F1	F1				H2	H1	H2	H1	L	L	L	L	L	L	L	L	L	L	F	F	FF	FF	F
20	F3	F5	F6	F6	F3	F2	H1	H1	L	L	L	H1	S	H1	H1	L	L	H1	L	L	F	F	F	F	F
21			F1				L	H1	H1	H1	H1	L	L	L	L	L	L	H2	C	C	F	F	F	F	F
22	F1				F1	H2	H1	H2	H1	H1	L	L	L	L	L	L	L	H3	H3	C	F	F	F	F	F
23	F2	F3	F7	F3	F1	F1	H1	H2	H2	H1	L	L	L	L	L	L	L	L	L	L	F	F	FF	FF	F
24	F3	F4	F1	F1	F1		S	H2	C	L	L	L	L	L	L	L	L	H1	H2	H2	F	F	F	F	F
25	F5	F4	F4	F5	F3	F4	H1	H1	S	S	S	L	L	L	L	L	L	H3	C	C	F	F	F	F	F
26	F2		F1						H2	L	L	L	L	L	L	L	L	H2	H2	L	FF	FF	F	F	F
27		F1					S	L	S	L	L	L	L	L	L	L	L	H3	C	C	F	F	F	F	F
28	F1	F1	F6	F3	F3	F1	L	H1	S	L	L	L	L	L	L	L	L	H1	H2	H2	F	F	F	F	F
29		F2	F2				H1	H1	C	S	C	C	L	L	L	L	L	H2	C	C	F	F	F	F	F
30	F4	F4	F5	F6	F7	FF	C	H2	C	S	L	L	L	L	L	L	L				F	F	F	F	F
31																									

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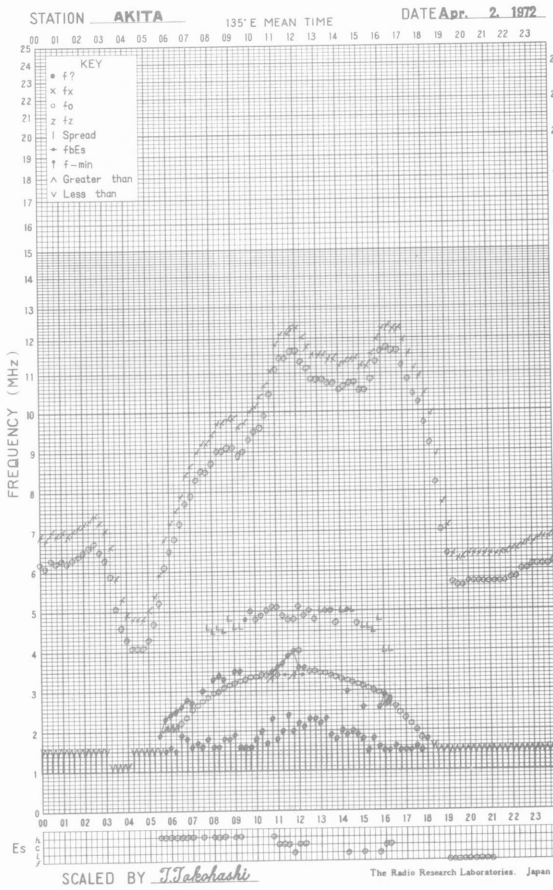
TYPES OF ES



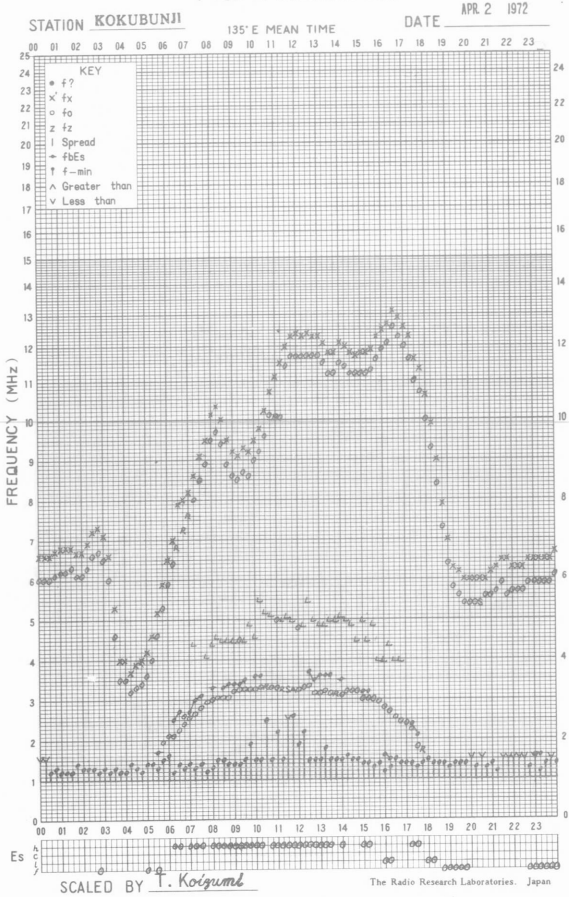
f-PLOT OF IONOSPHERIC DATA



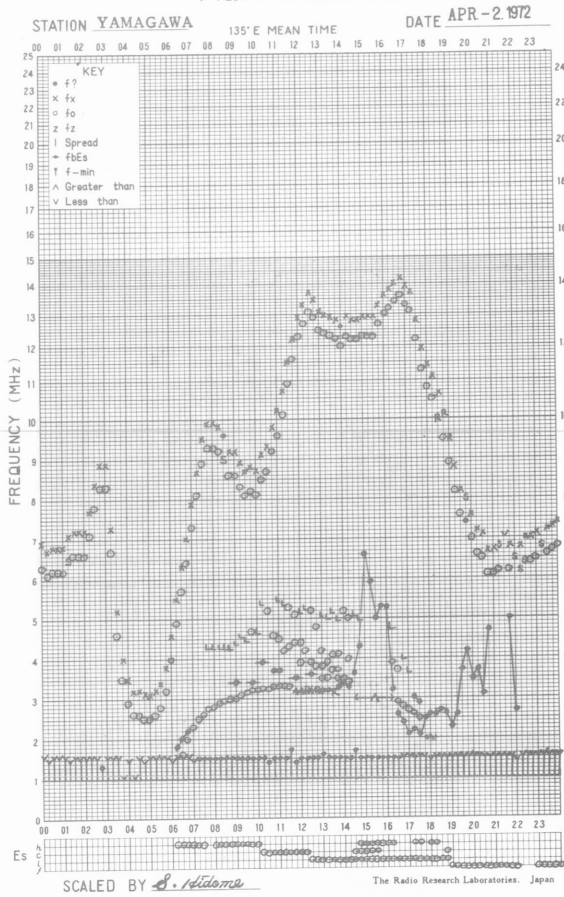
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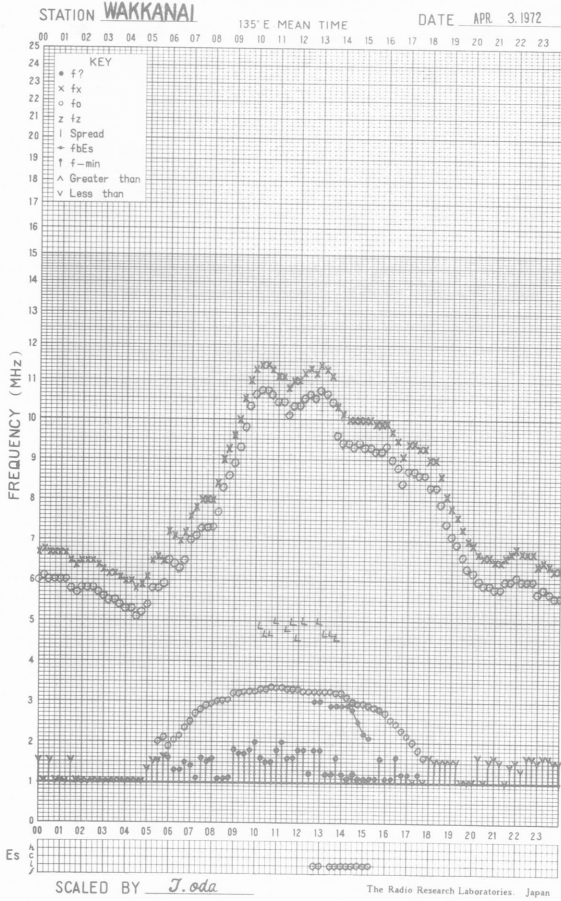
f-PLOT OF IONOSPHERIC DATA



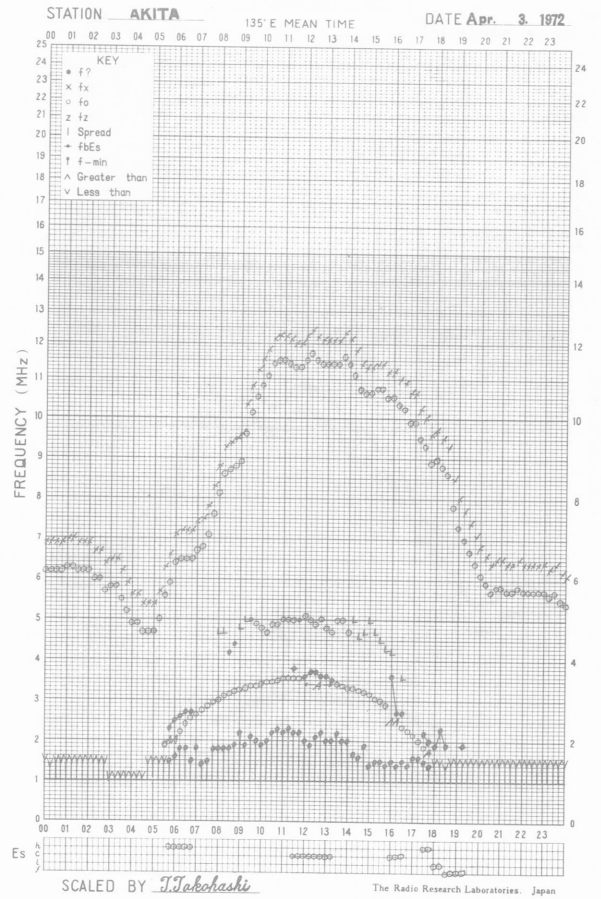
f-PLOT OF IONOSPHERIC DATA



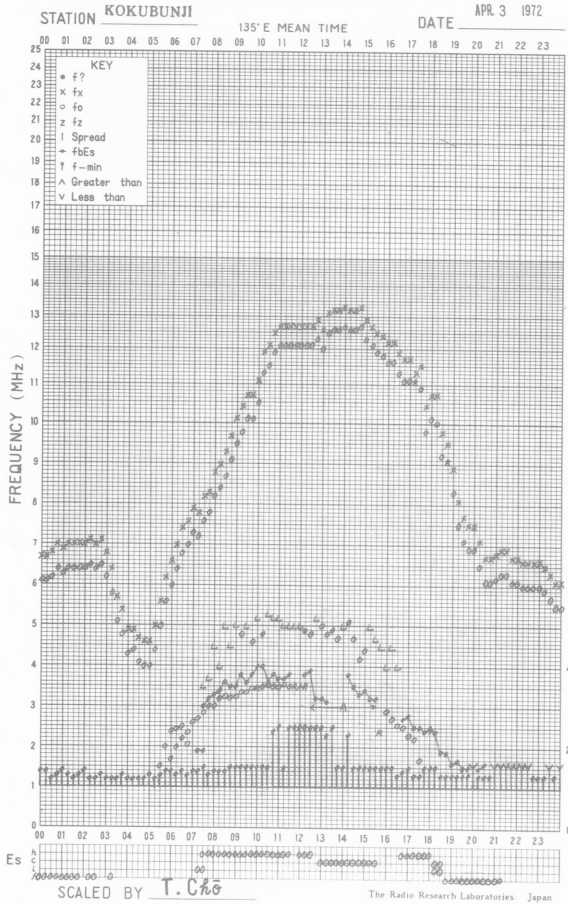
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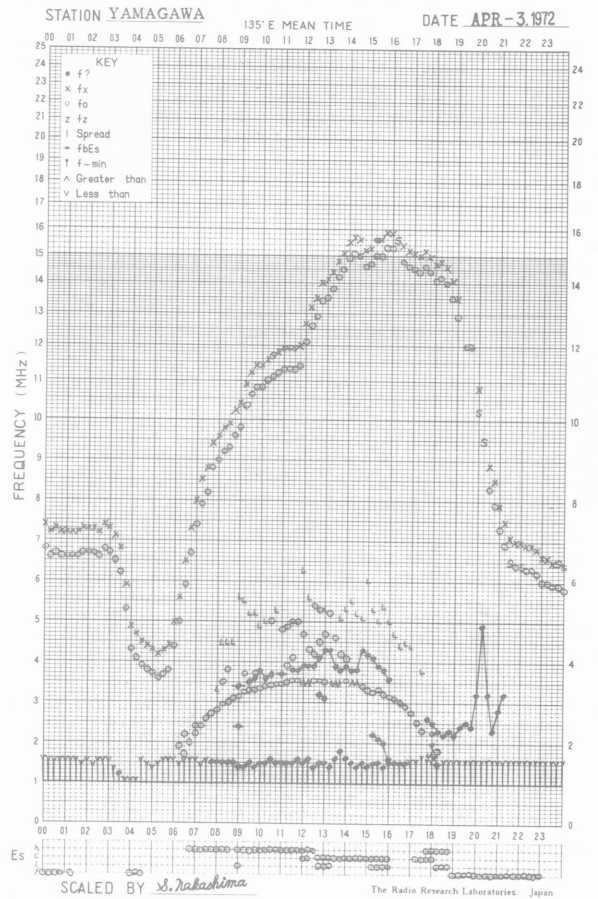
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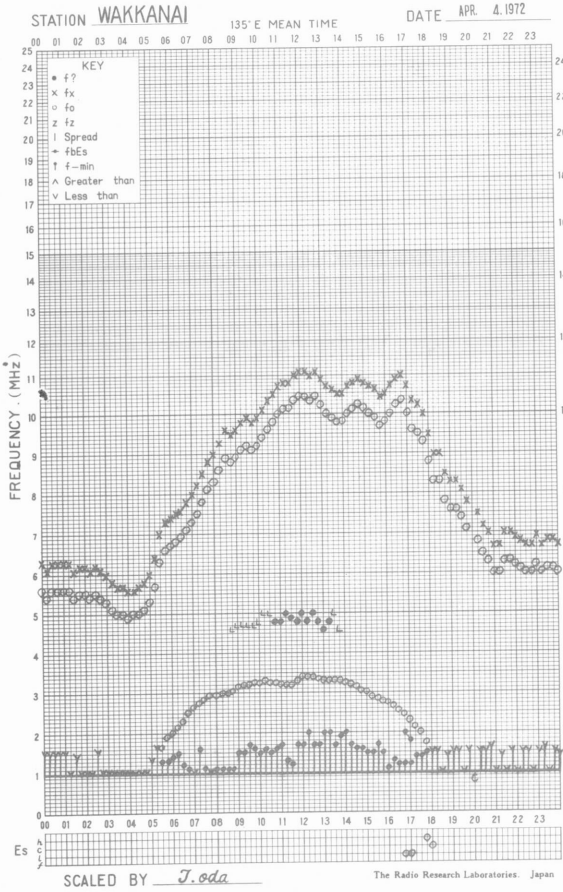
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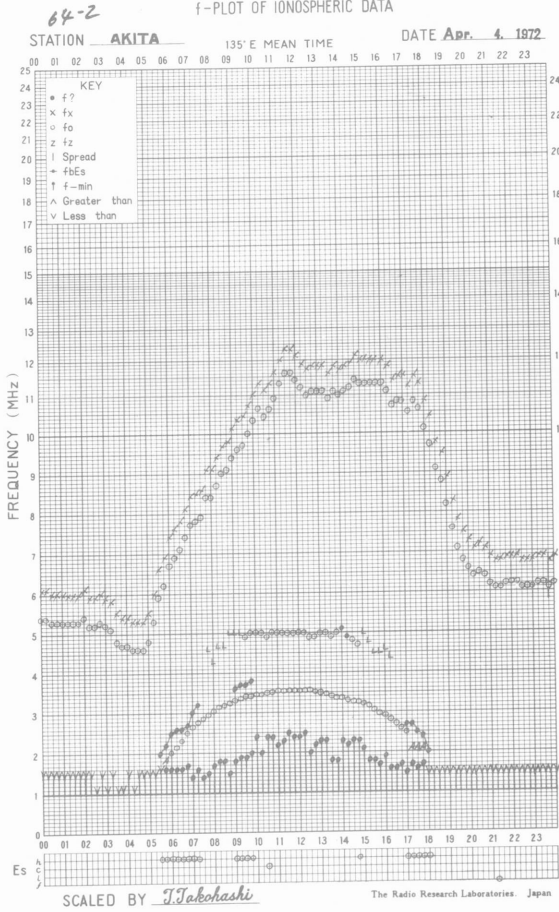
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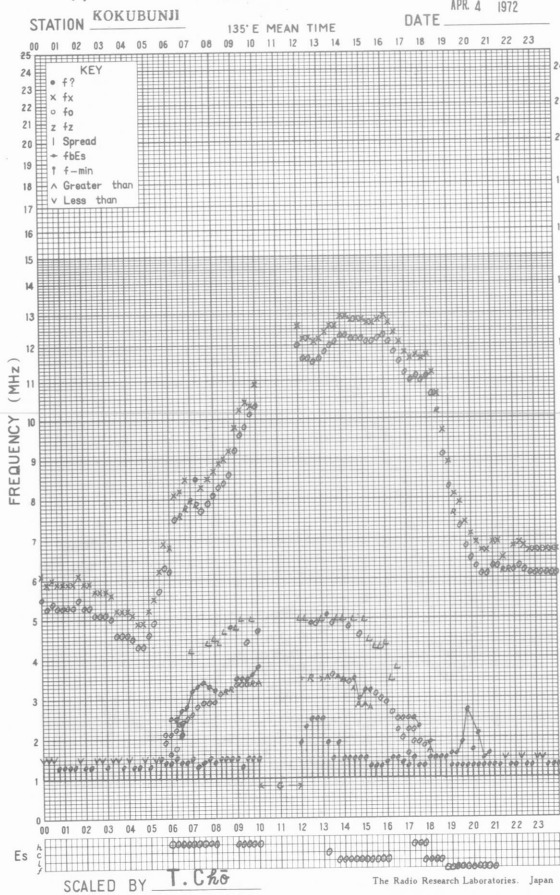
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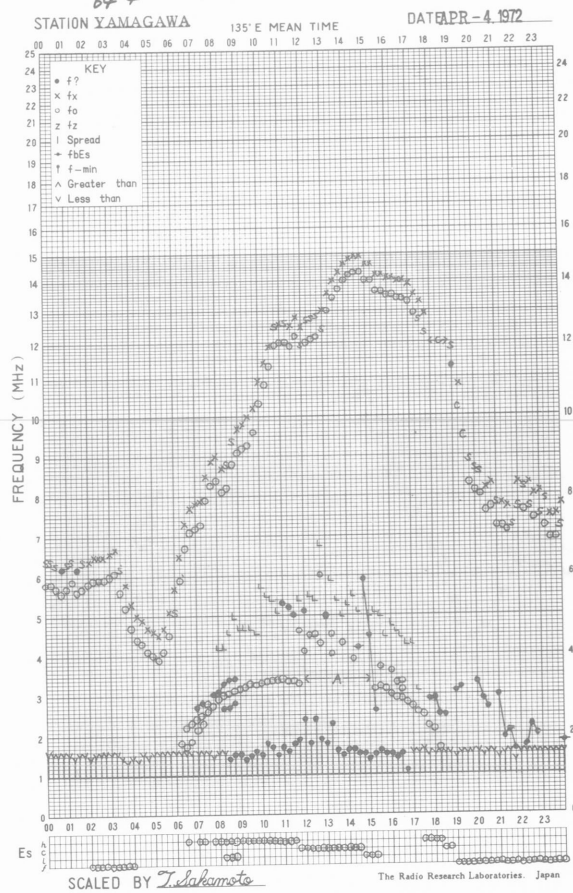
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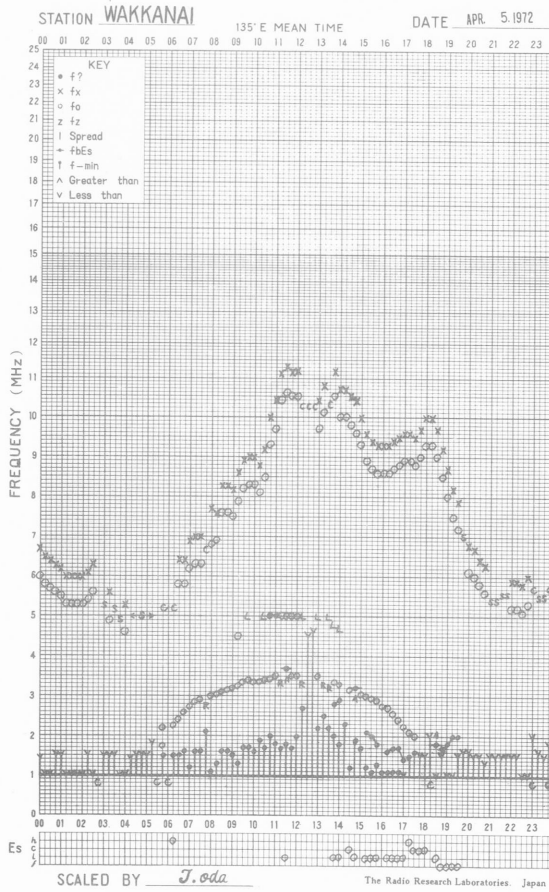
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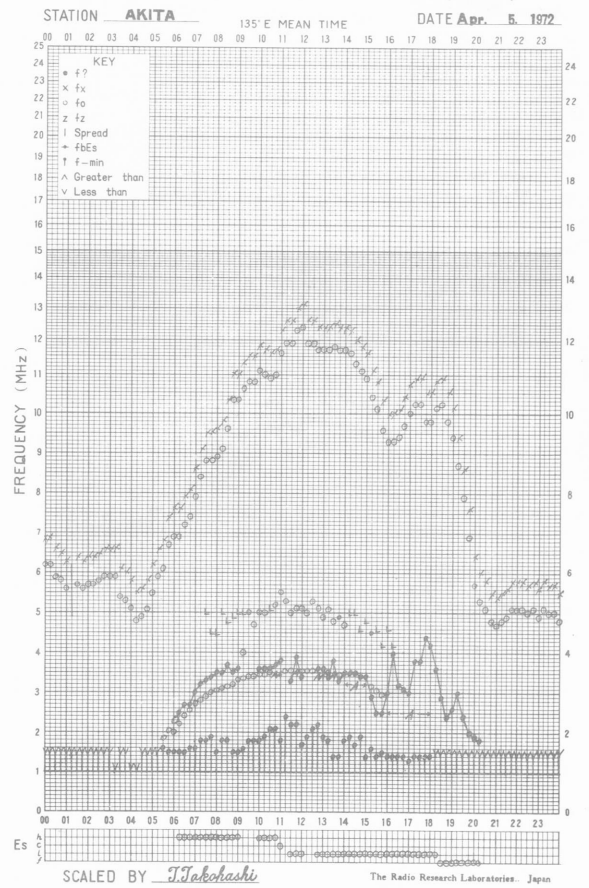
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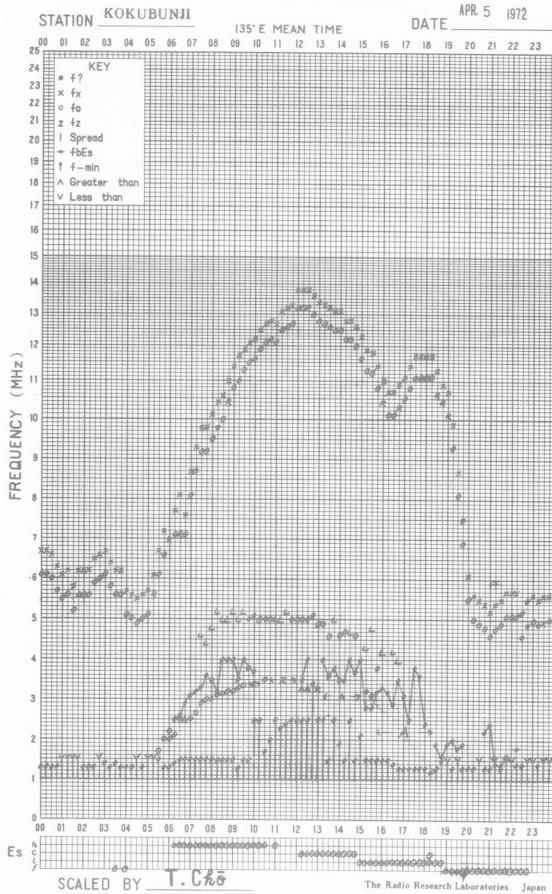
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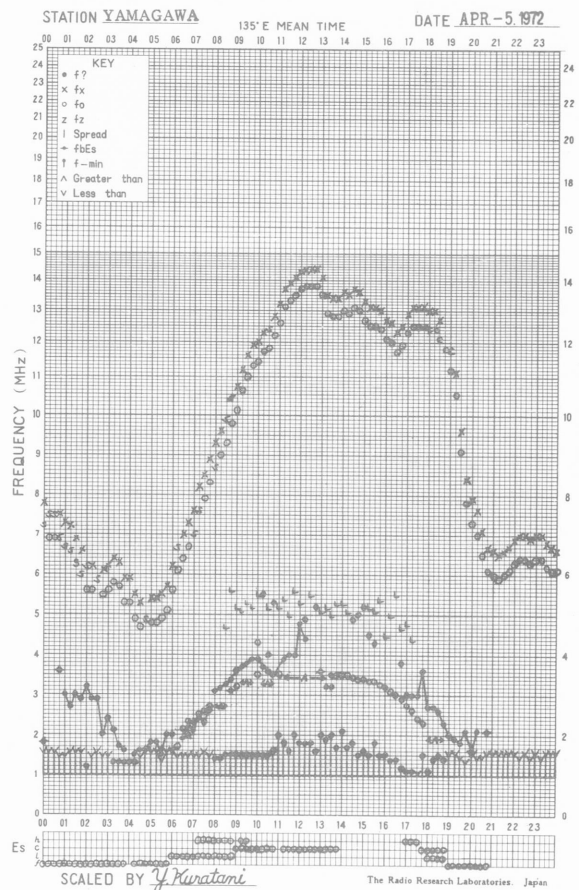
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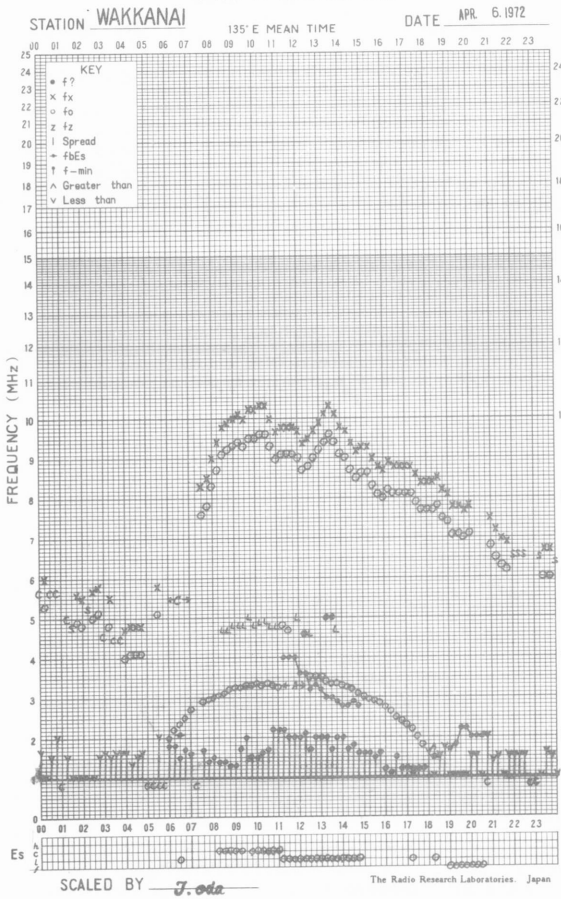
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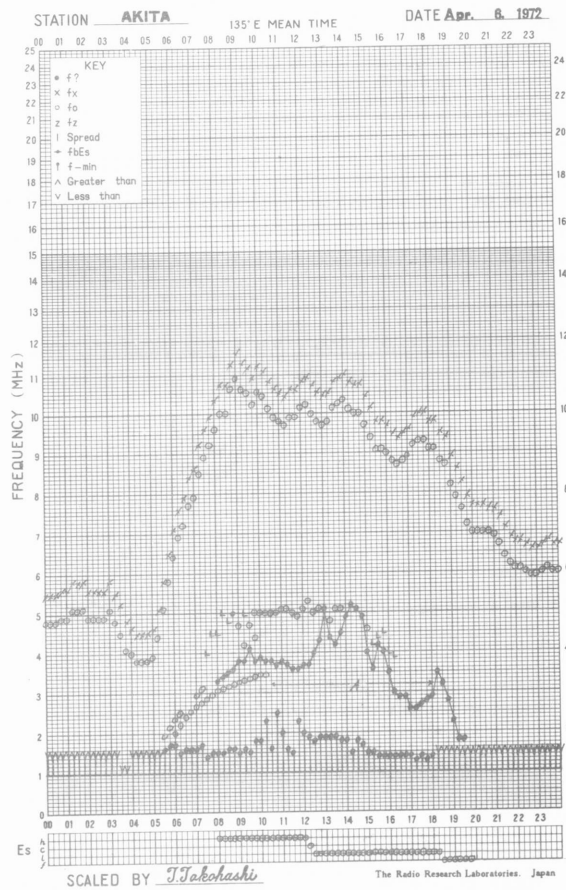
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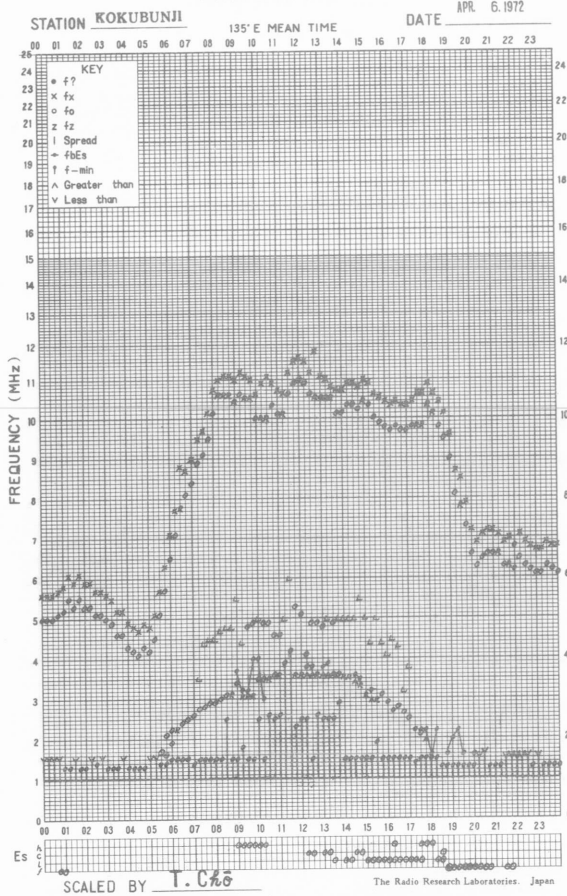
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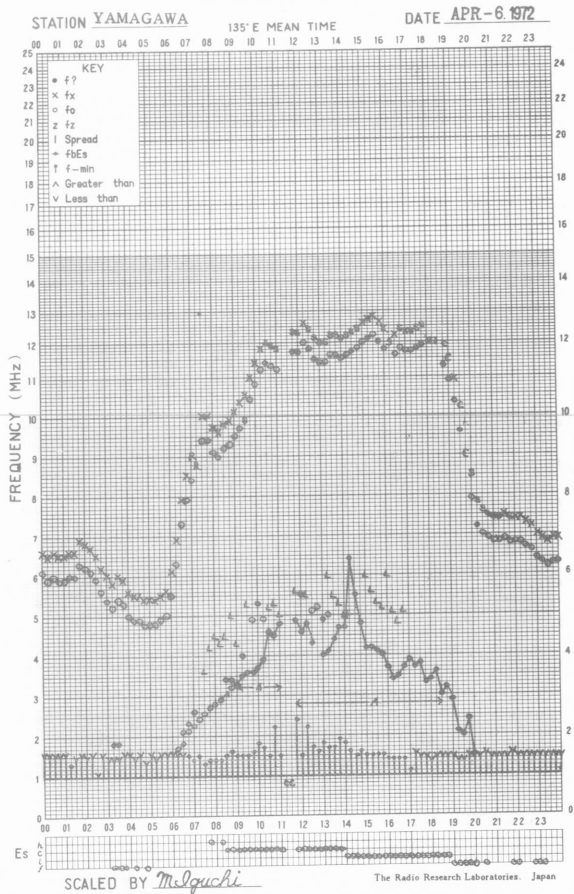
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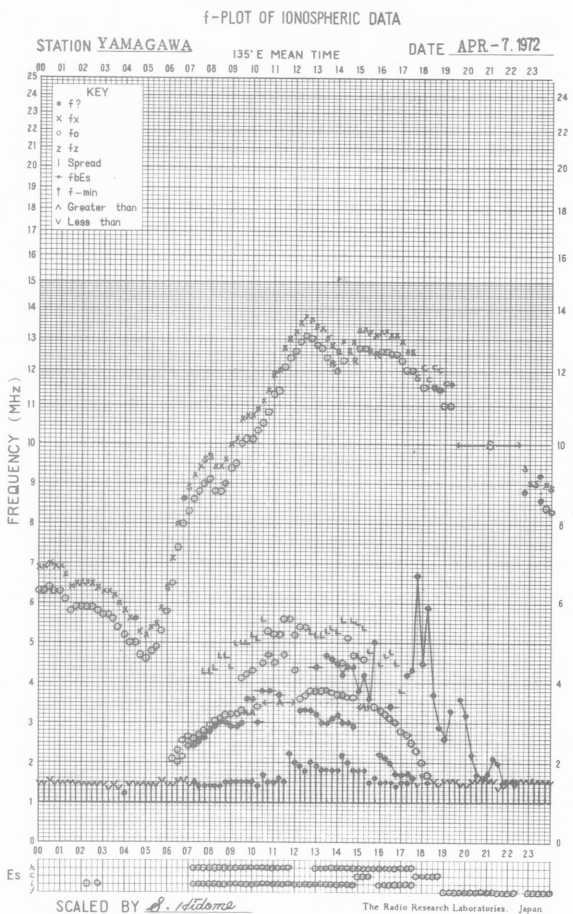
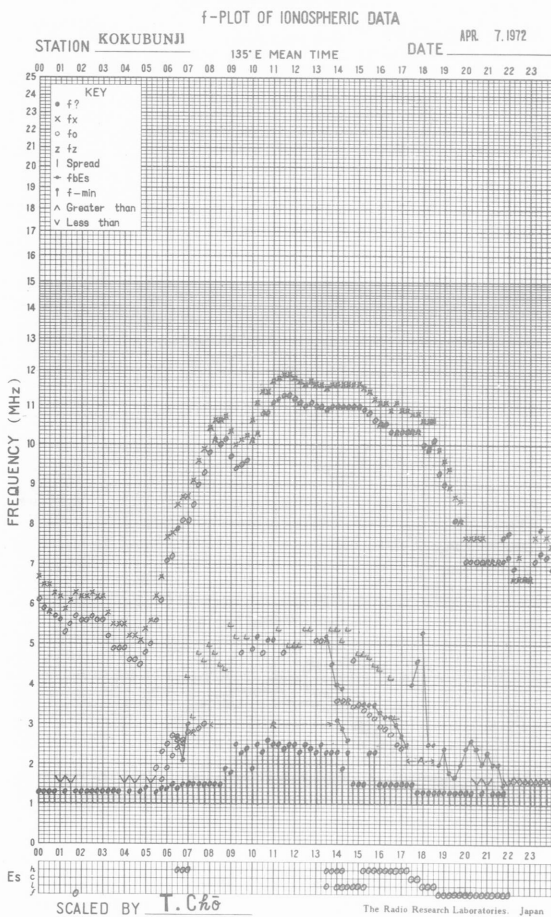
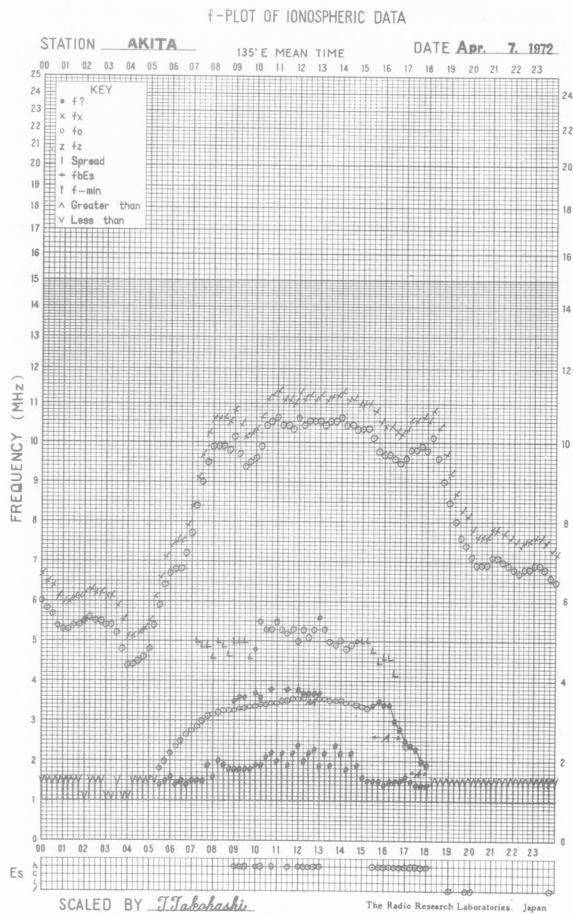
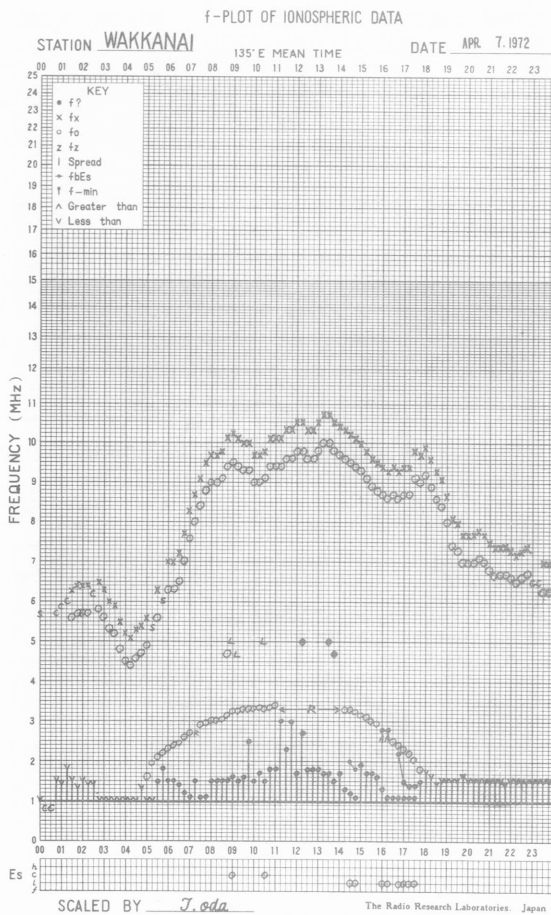


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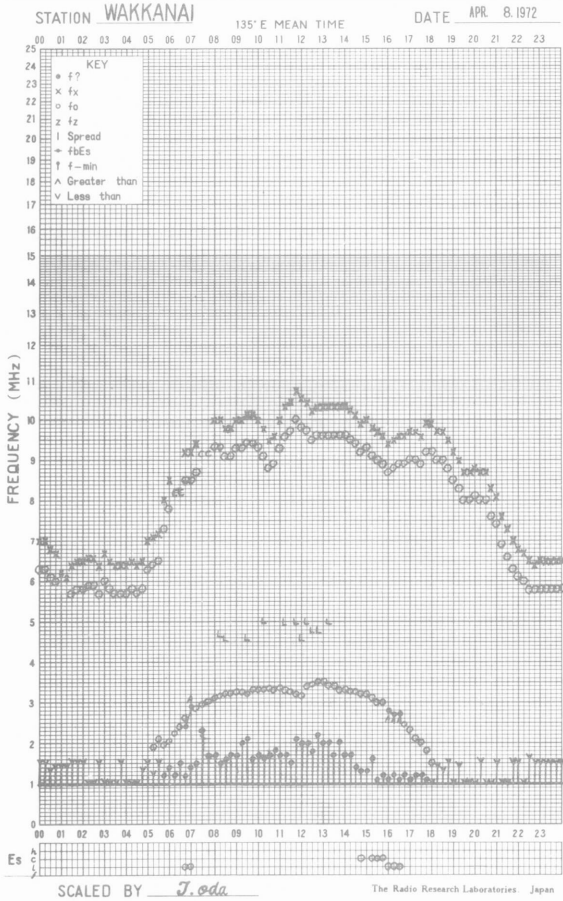


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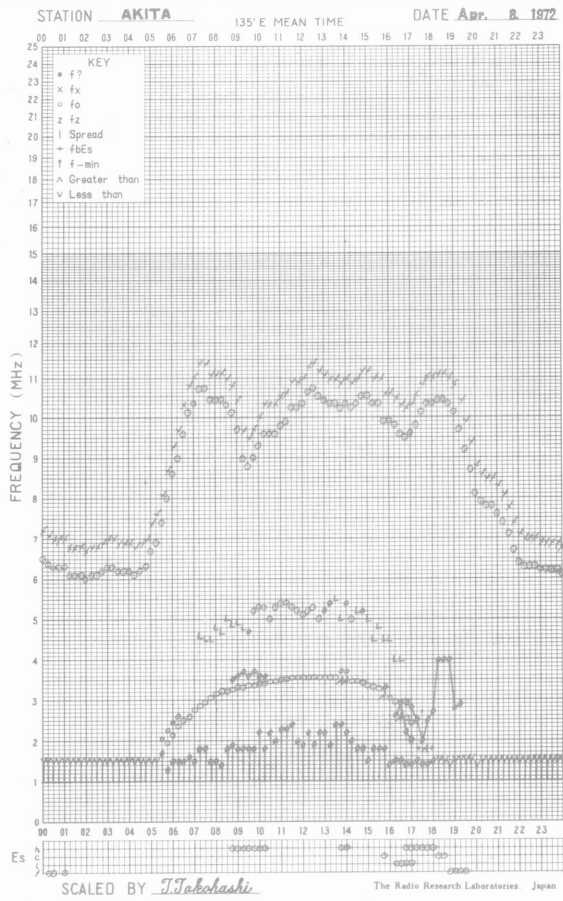




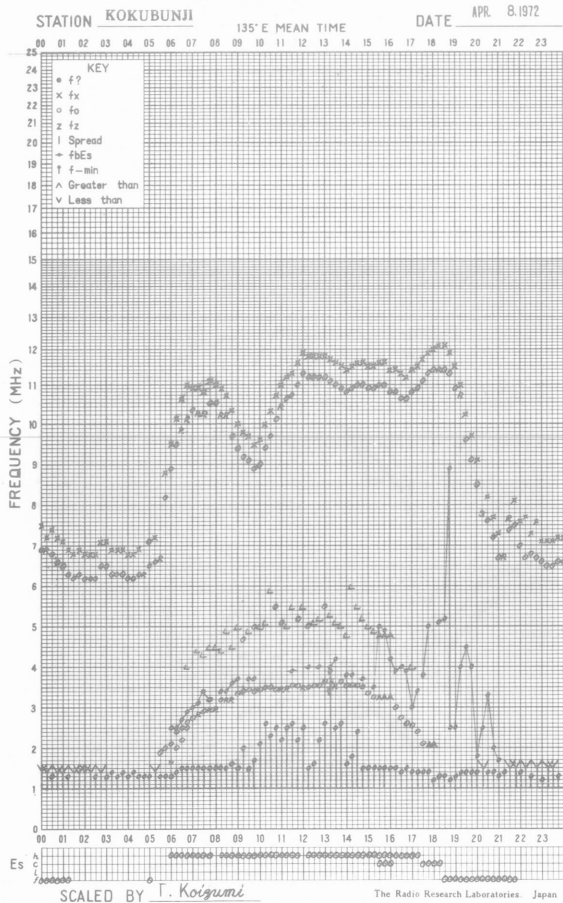
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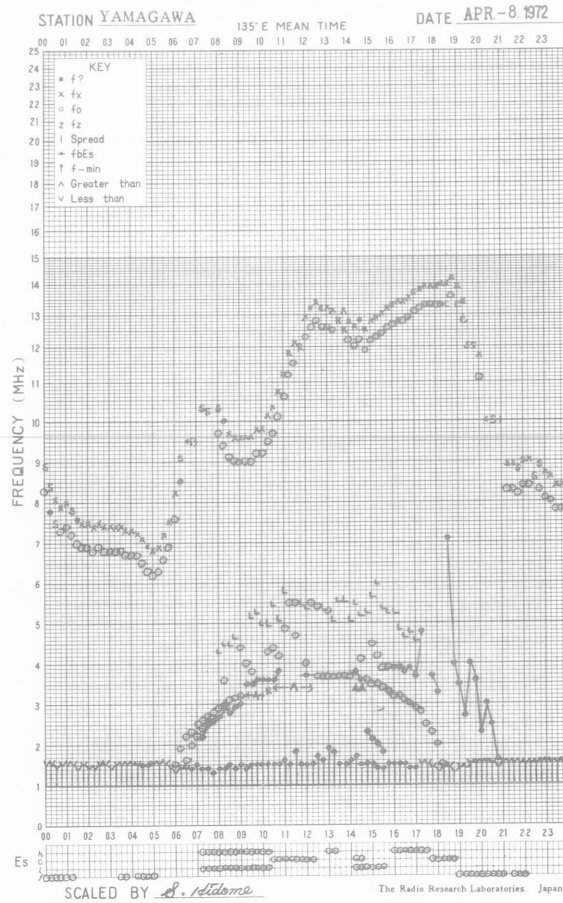
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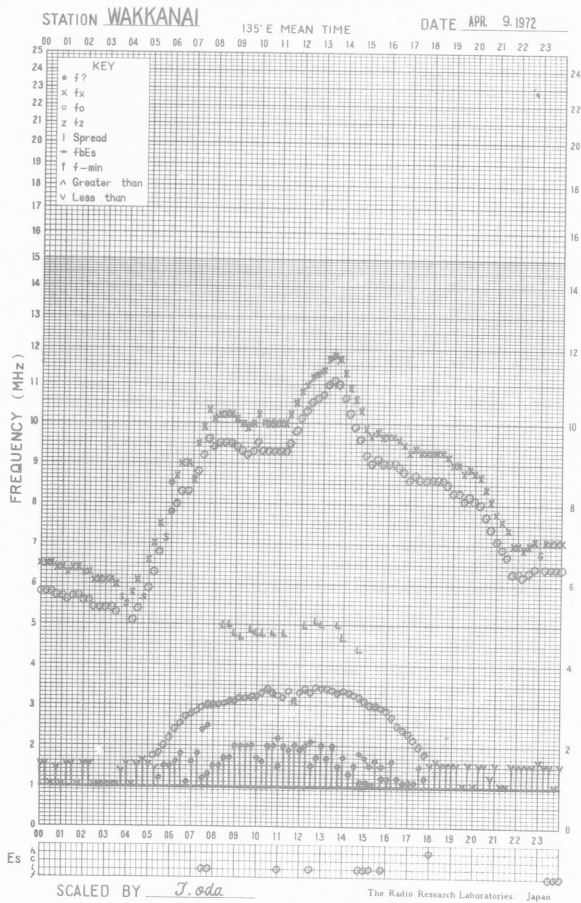
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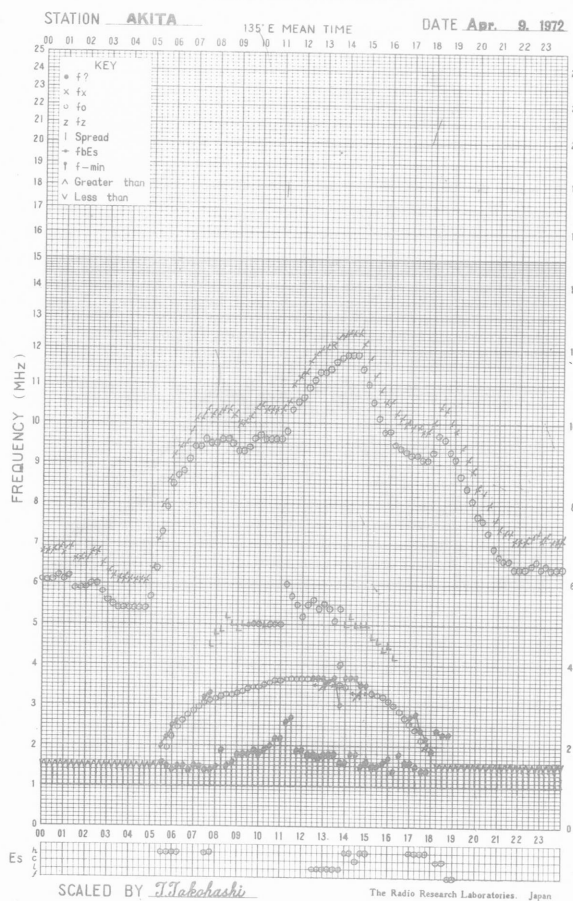
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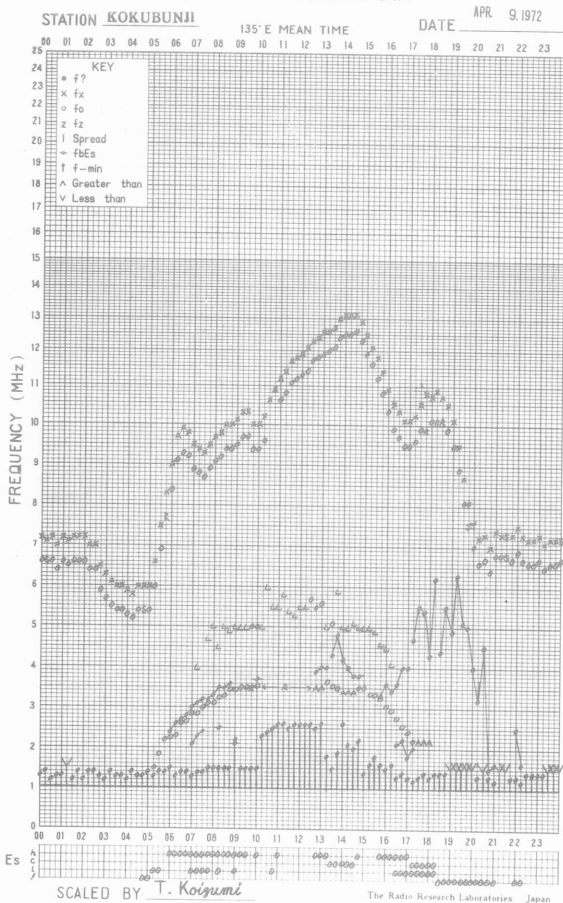
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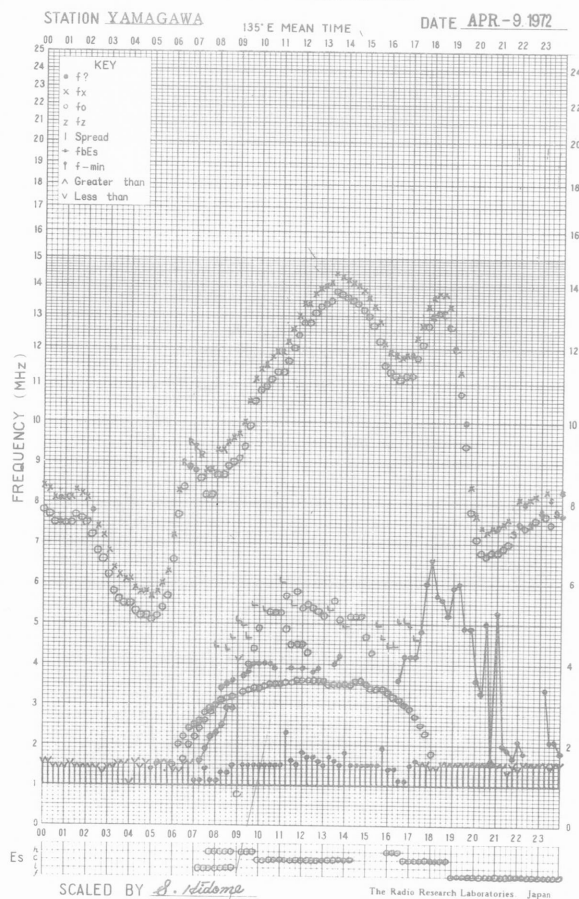
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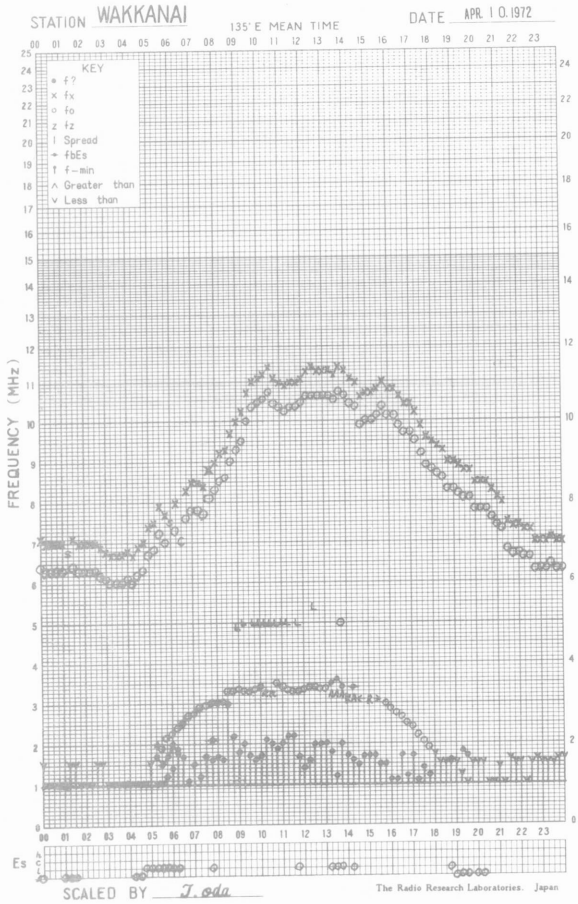
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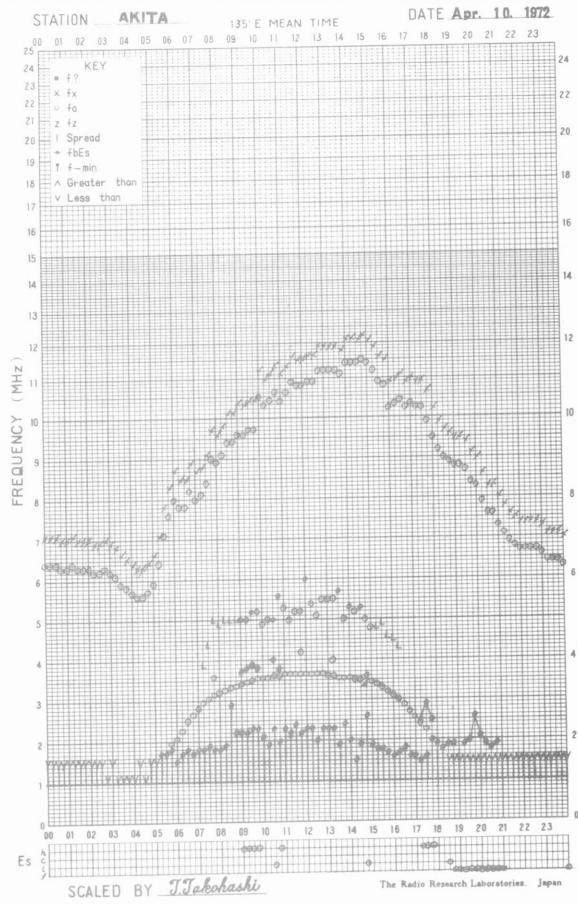
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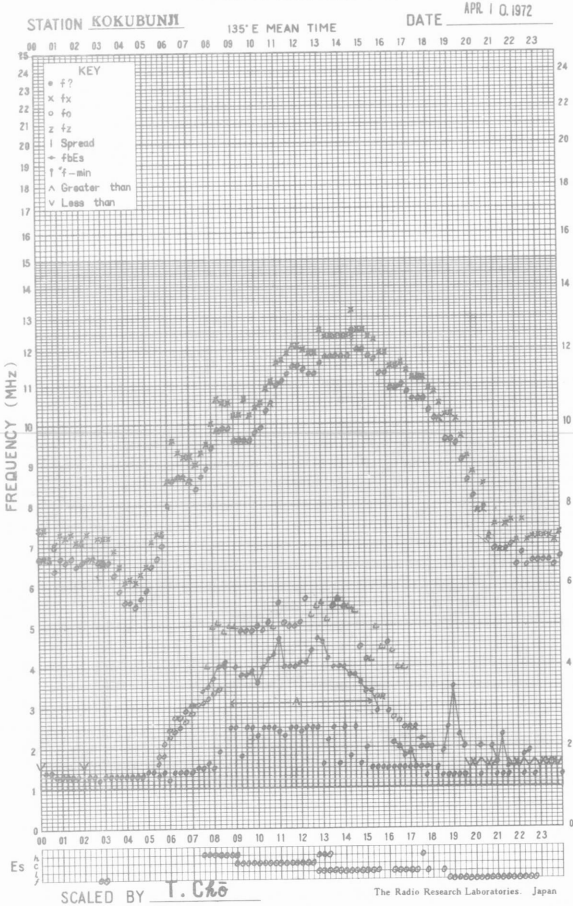
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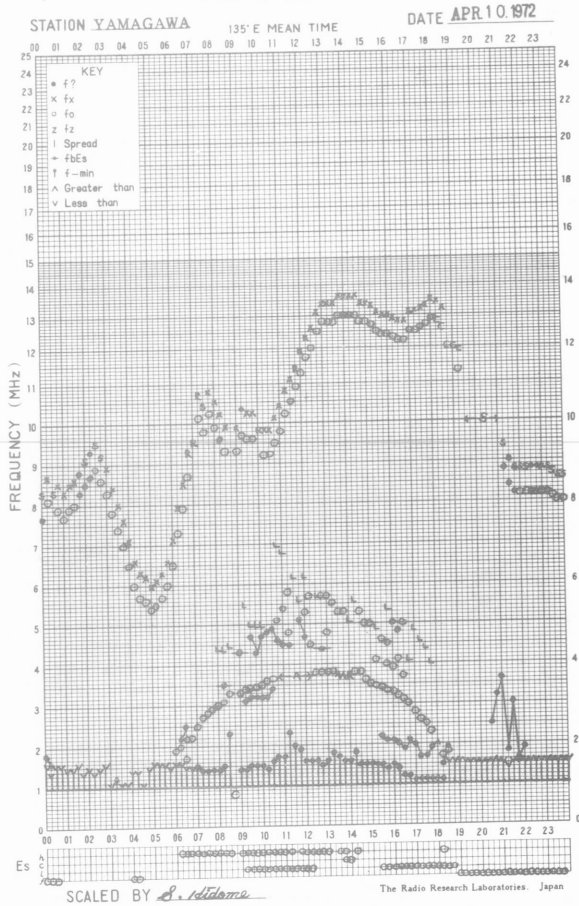
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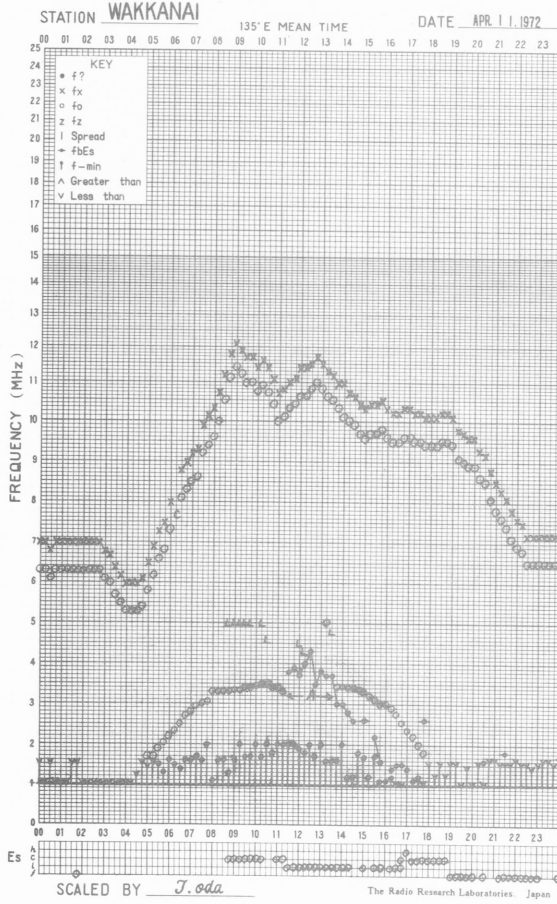
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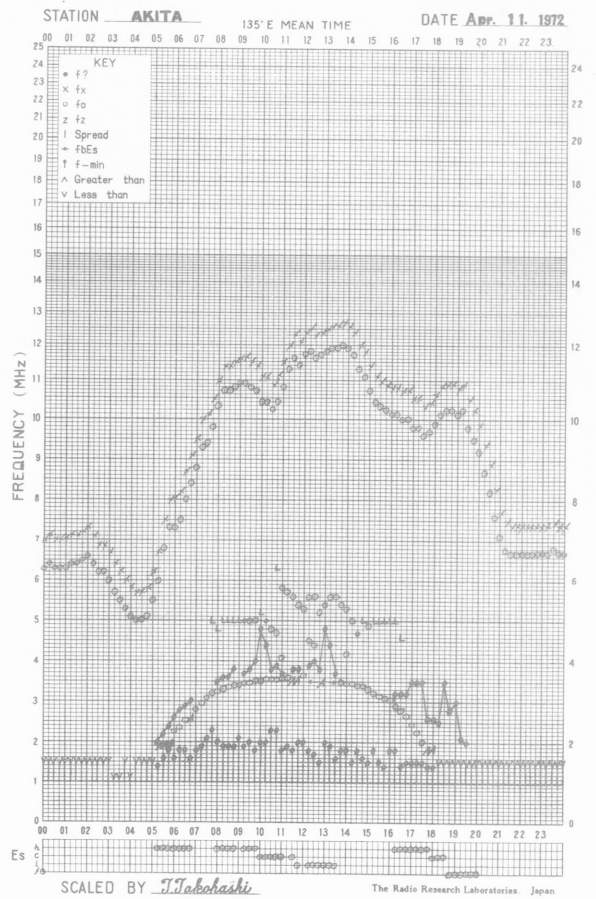
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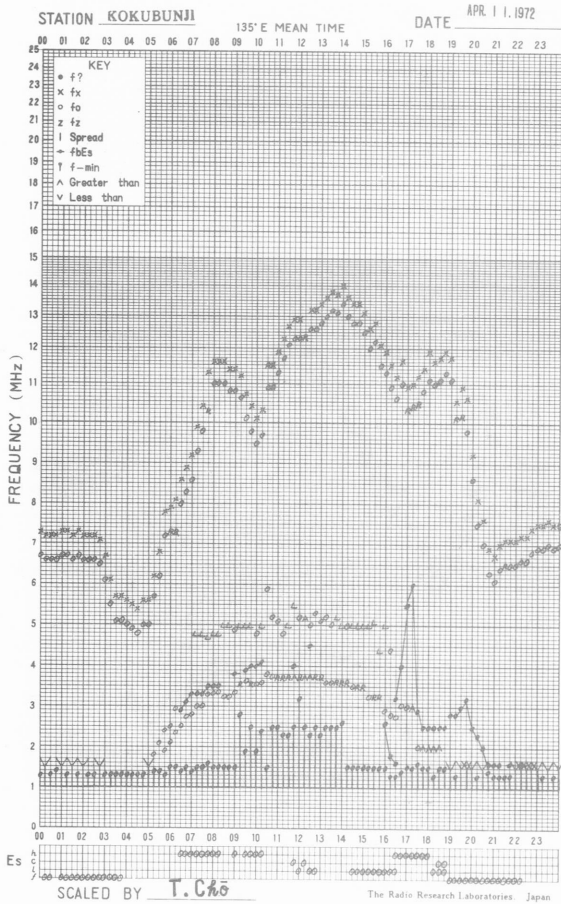
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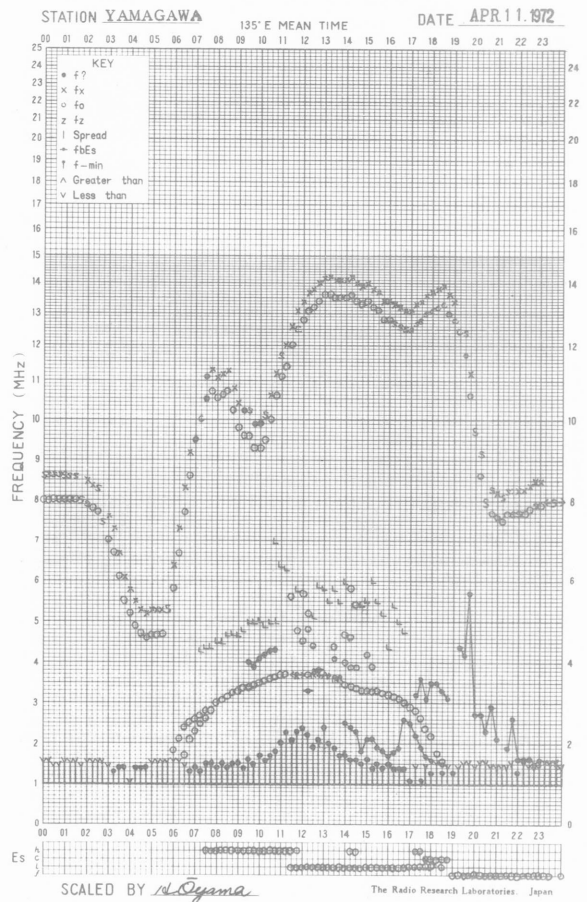
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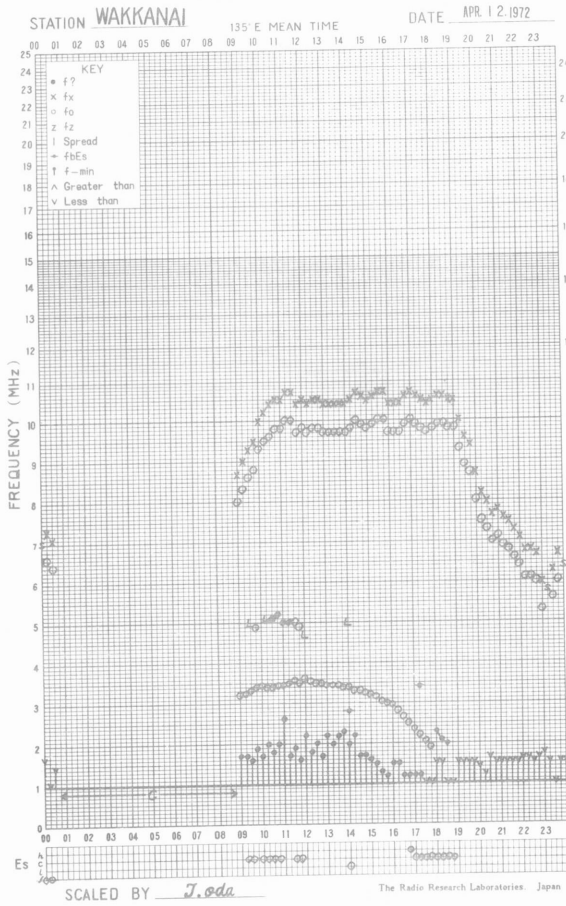
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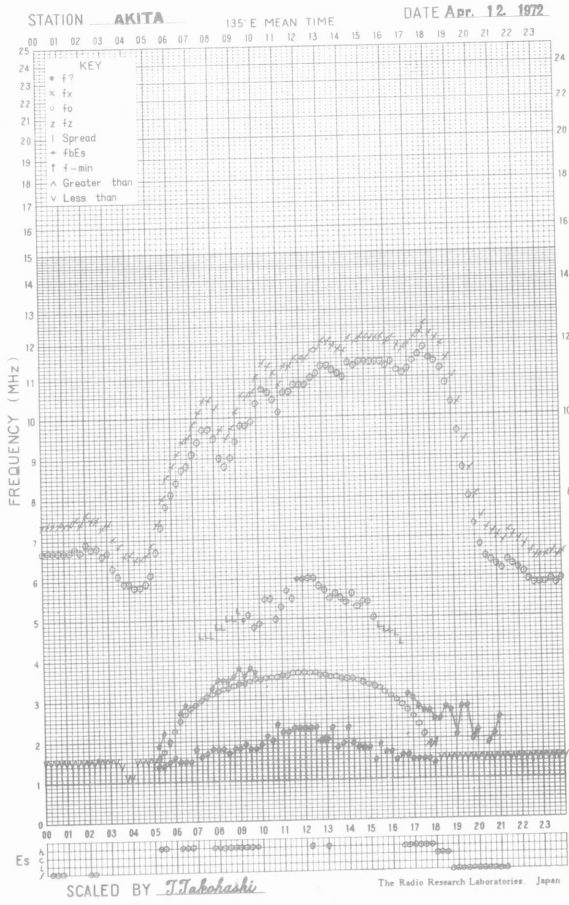
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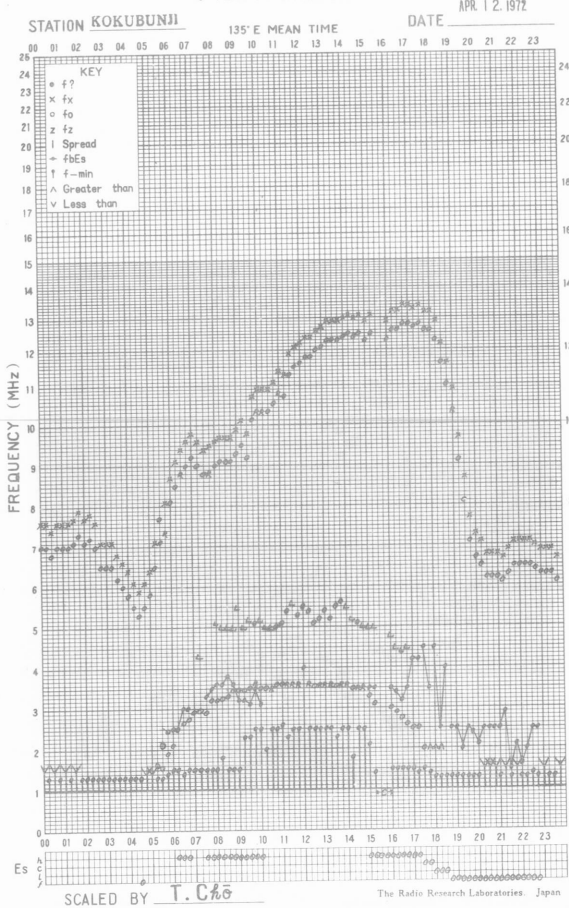
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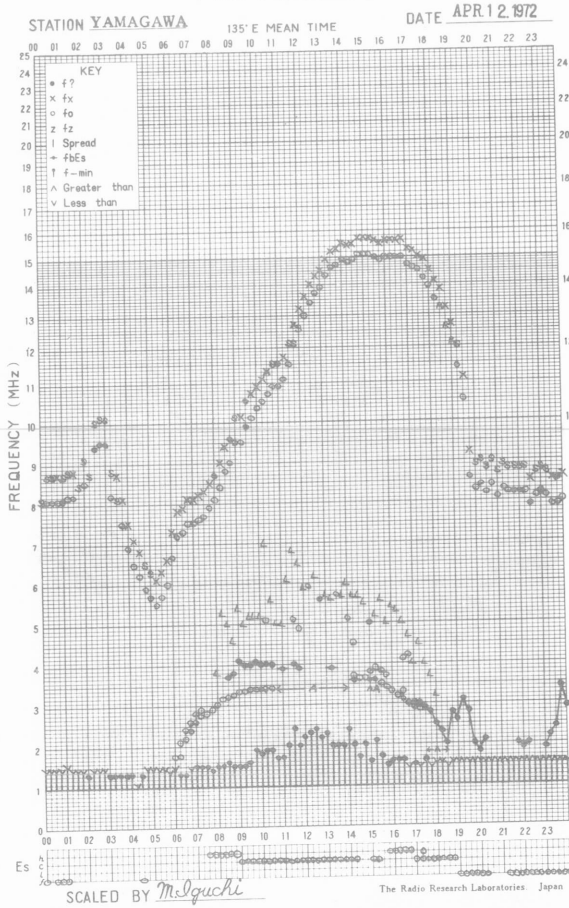
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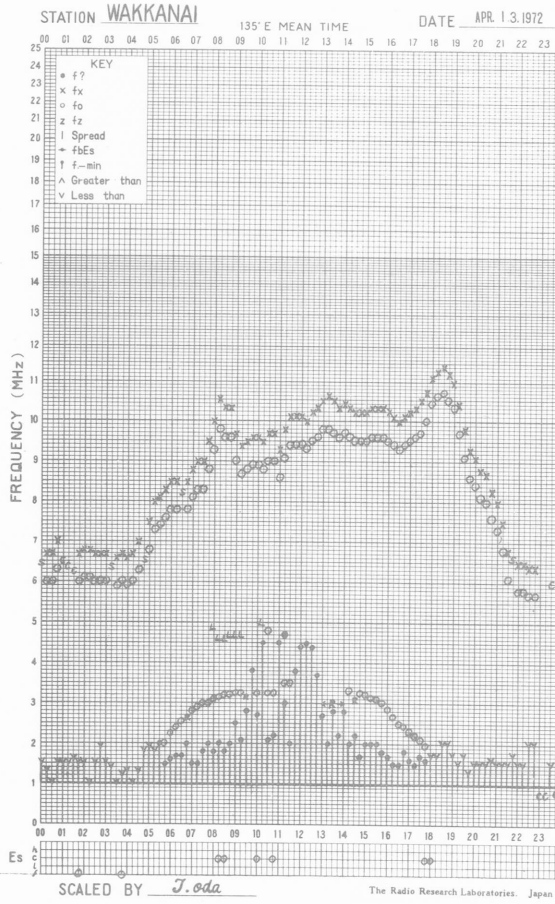
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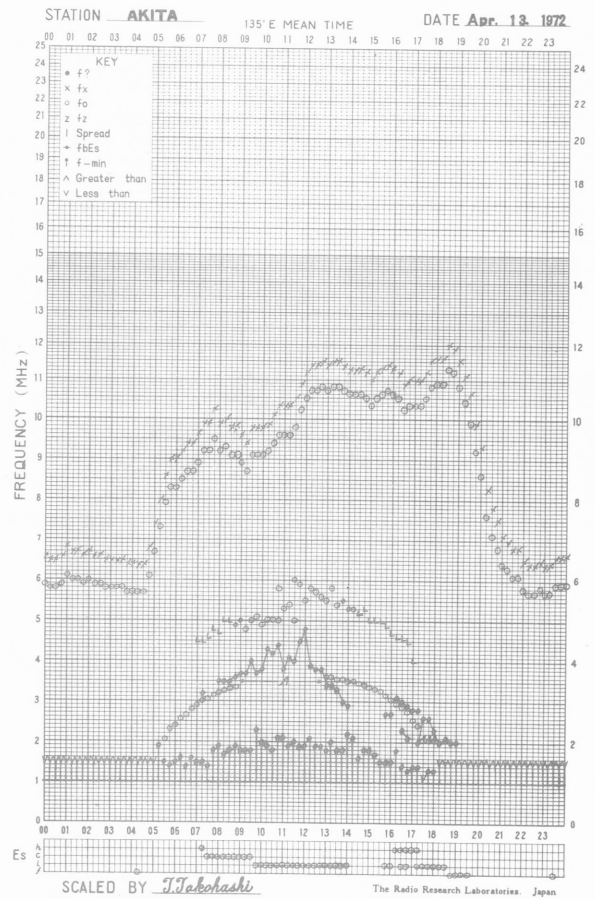
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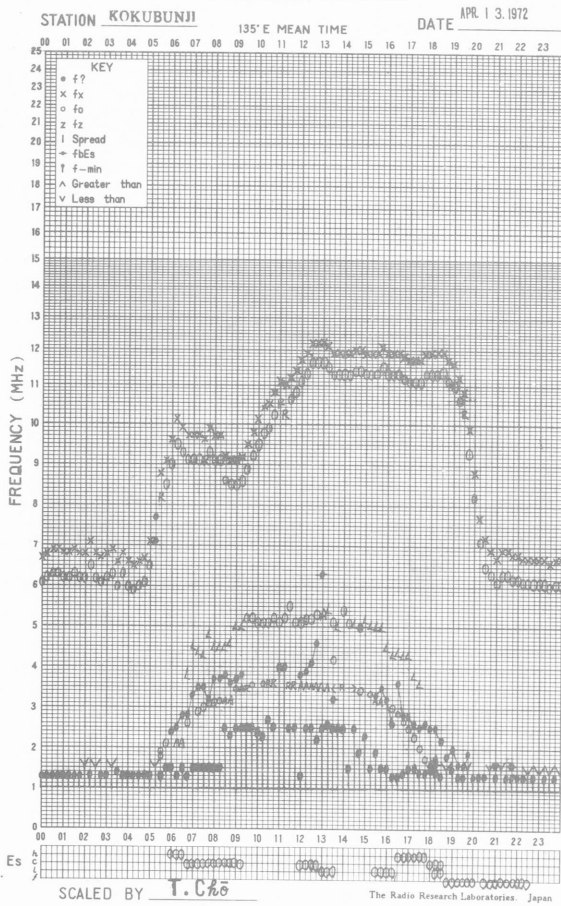
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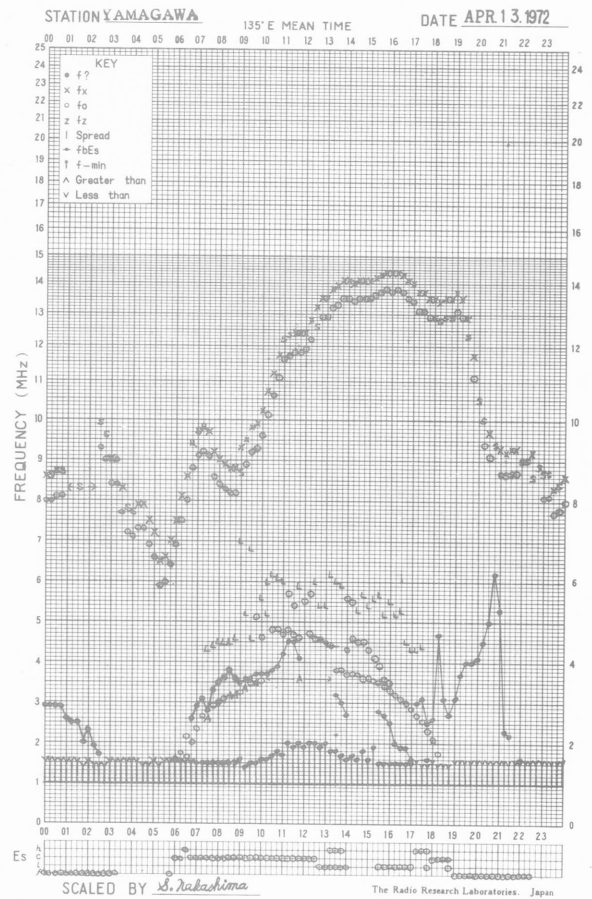
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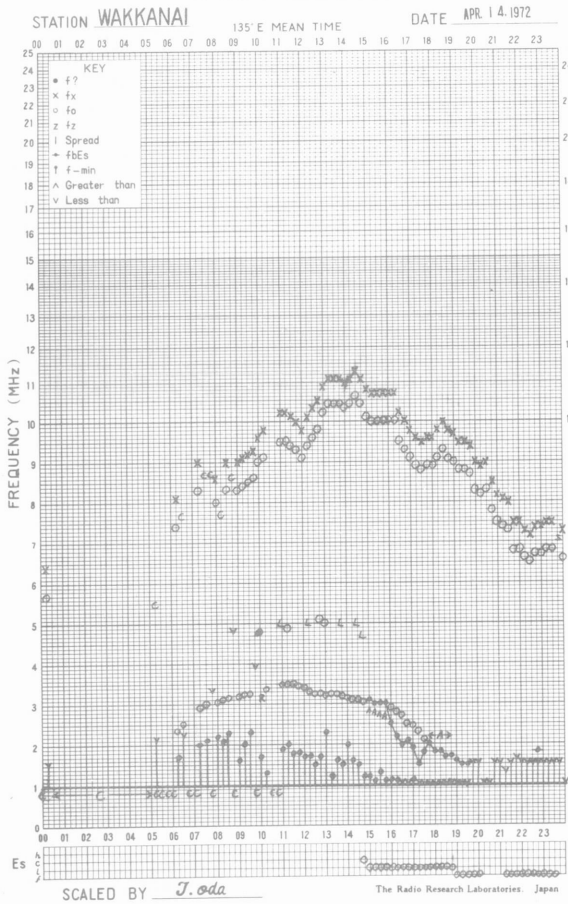
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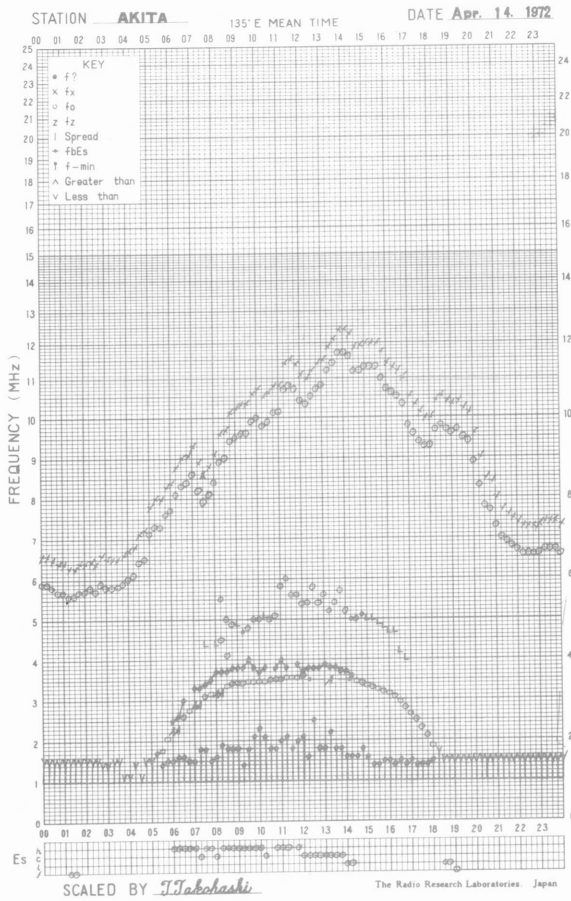
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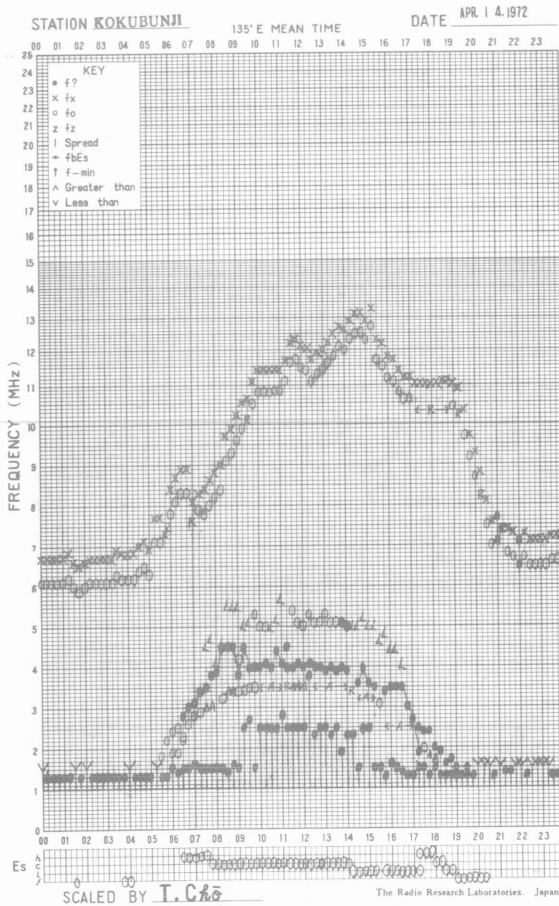
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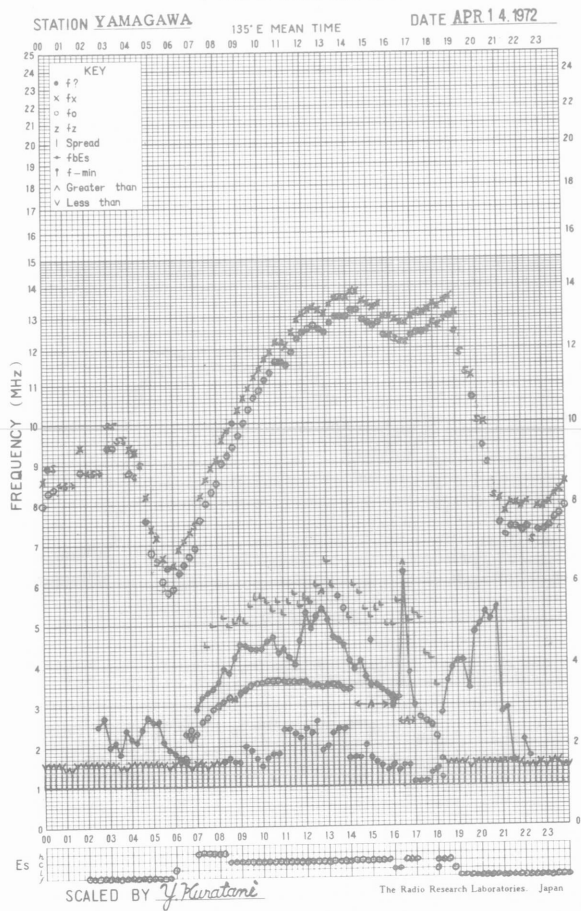
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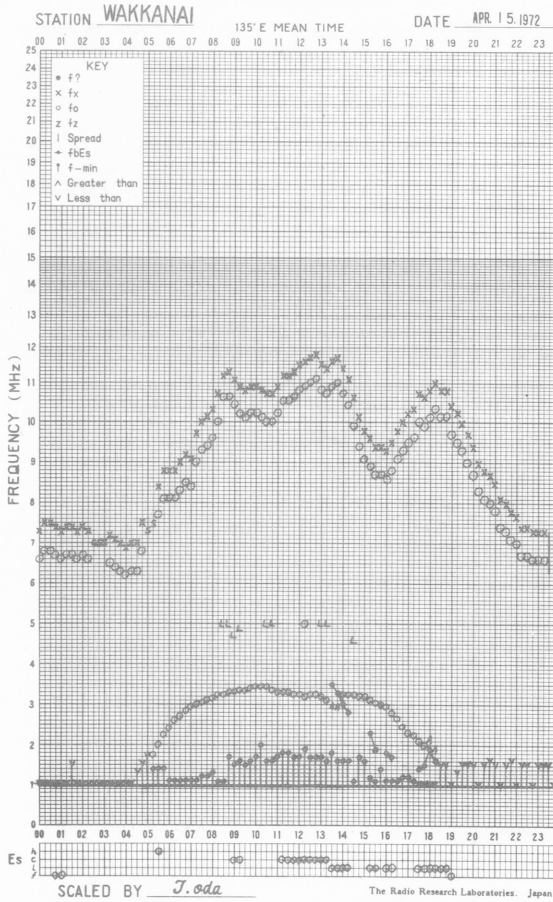
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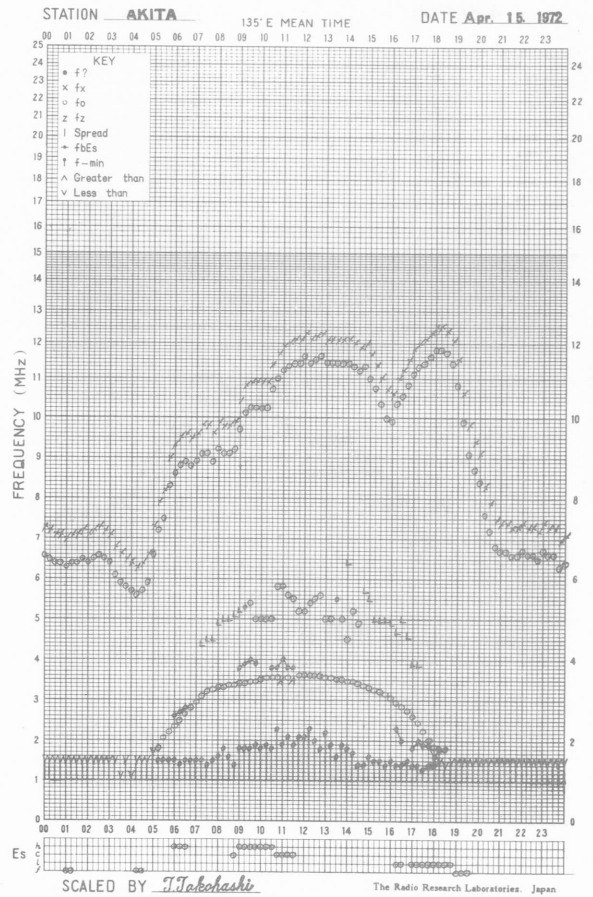
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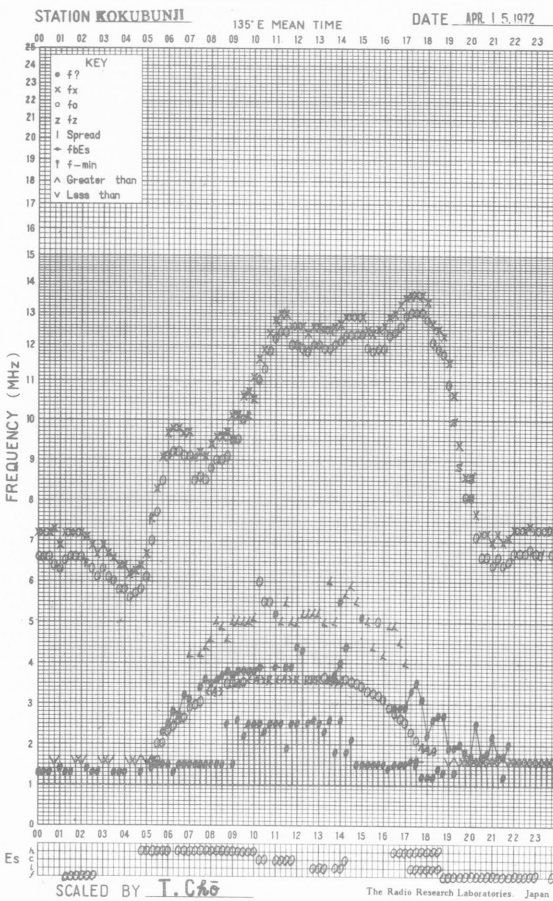
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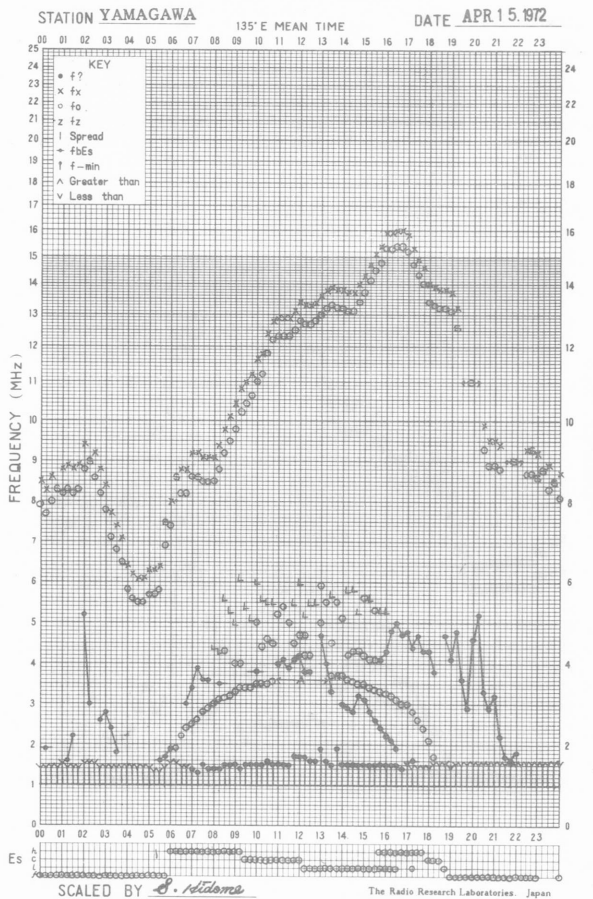
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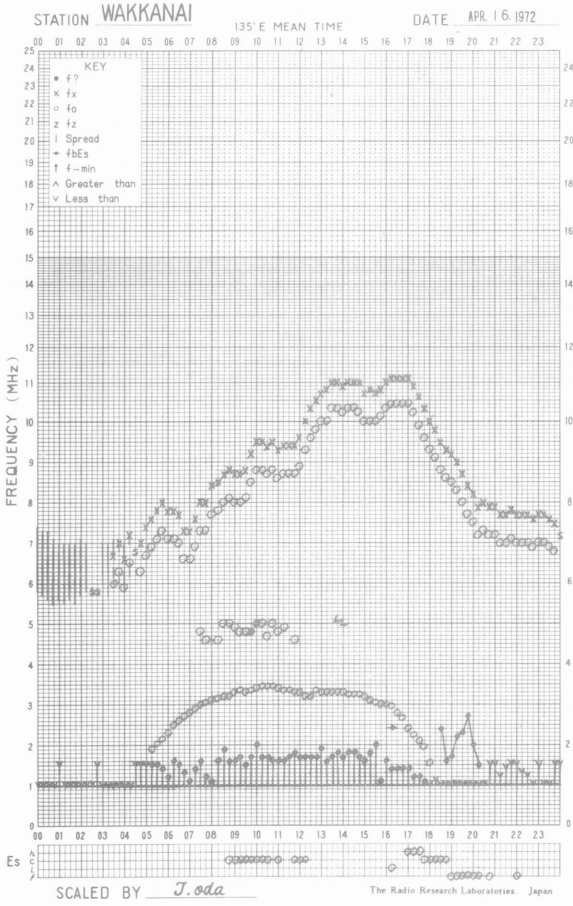
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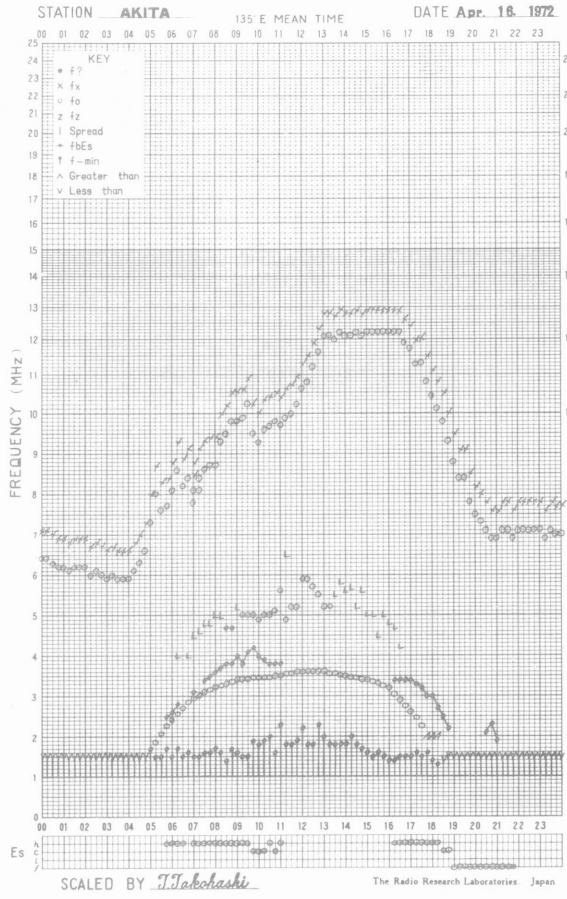
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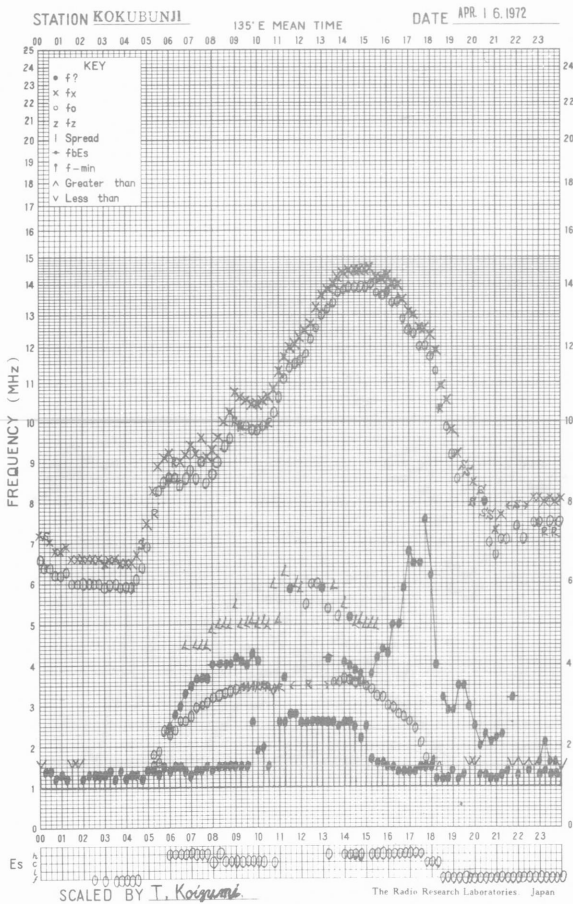
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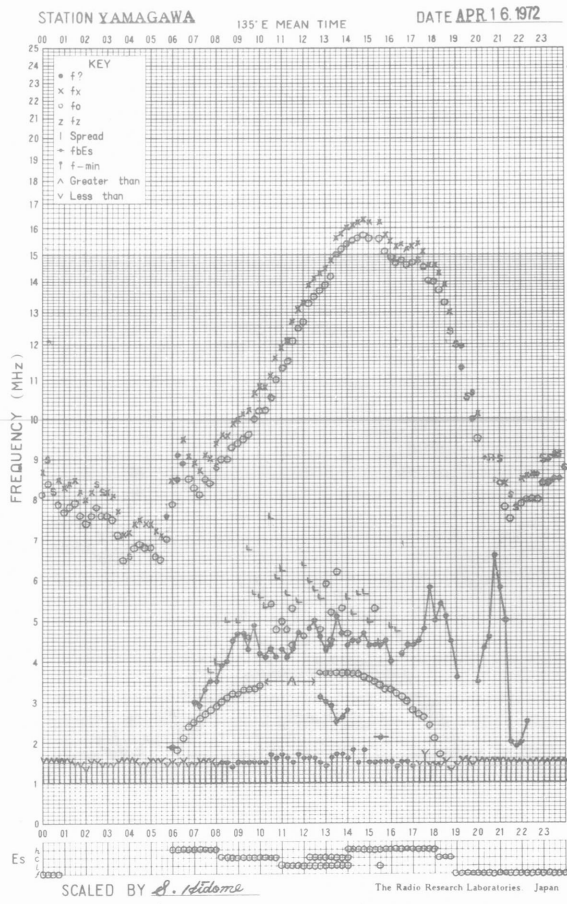
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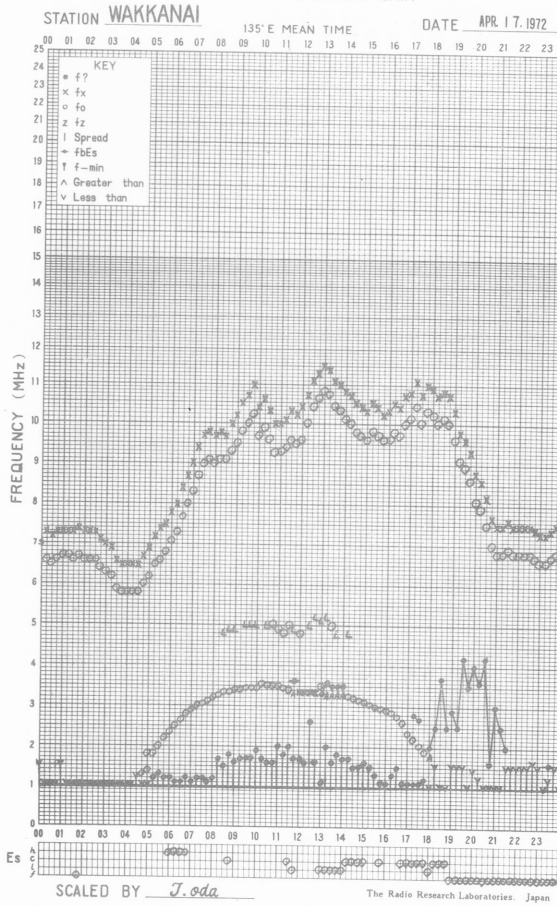
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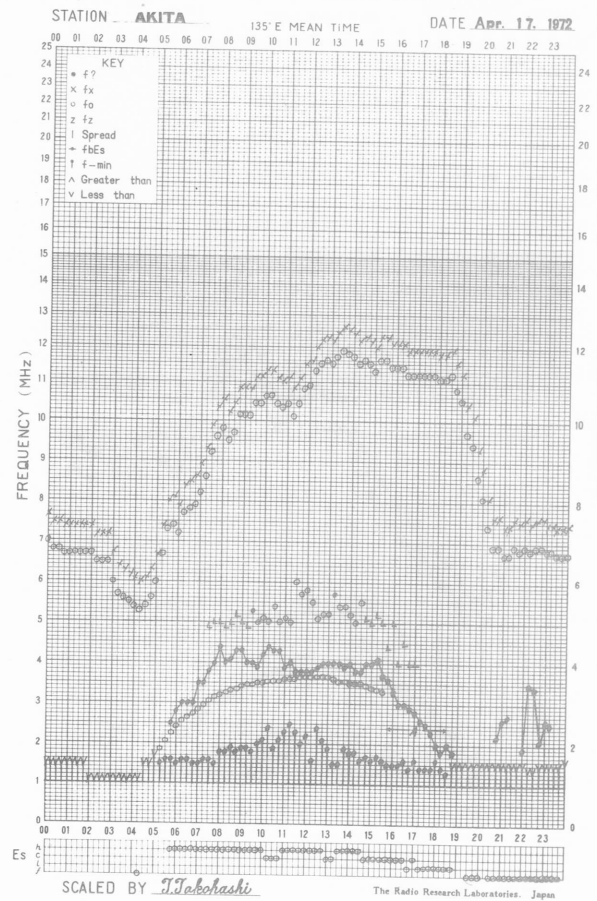
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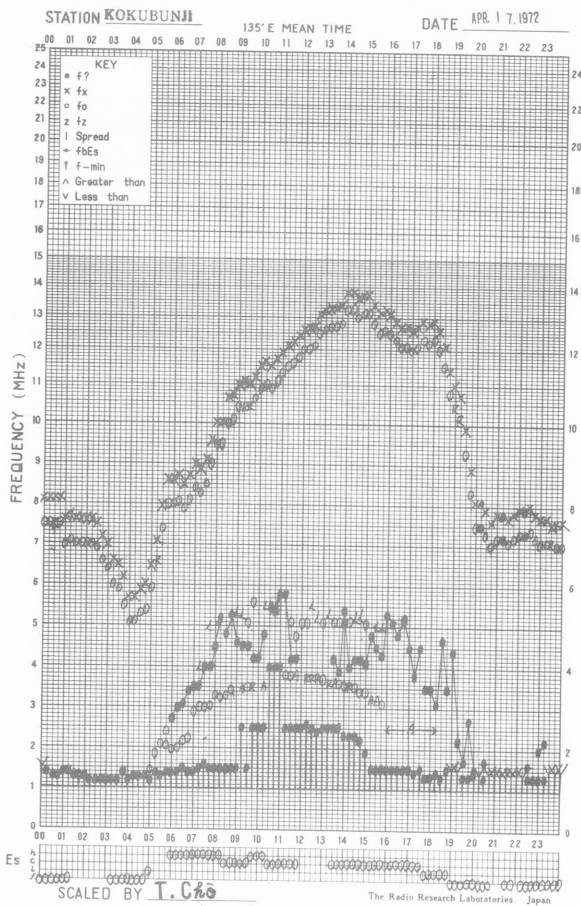
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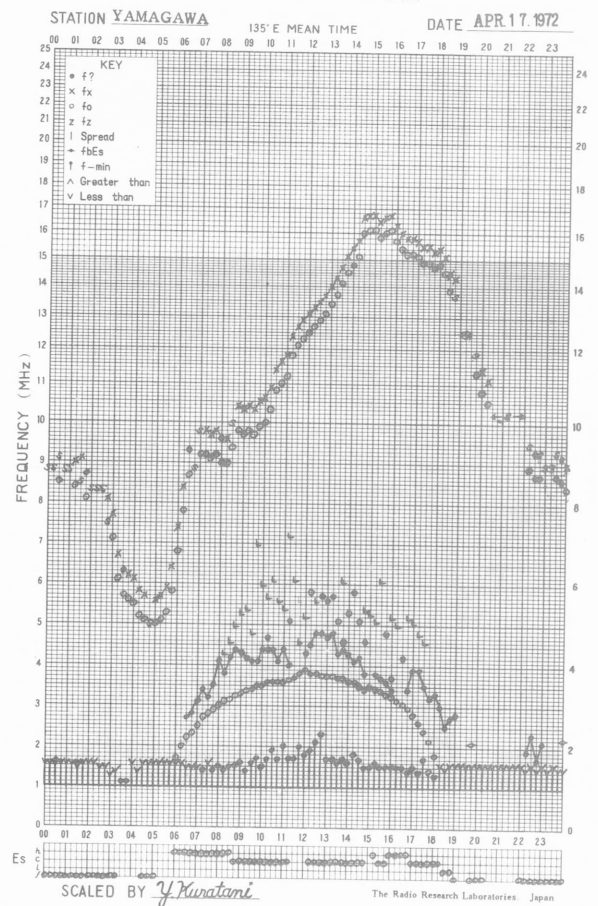
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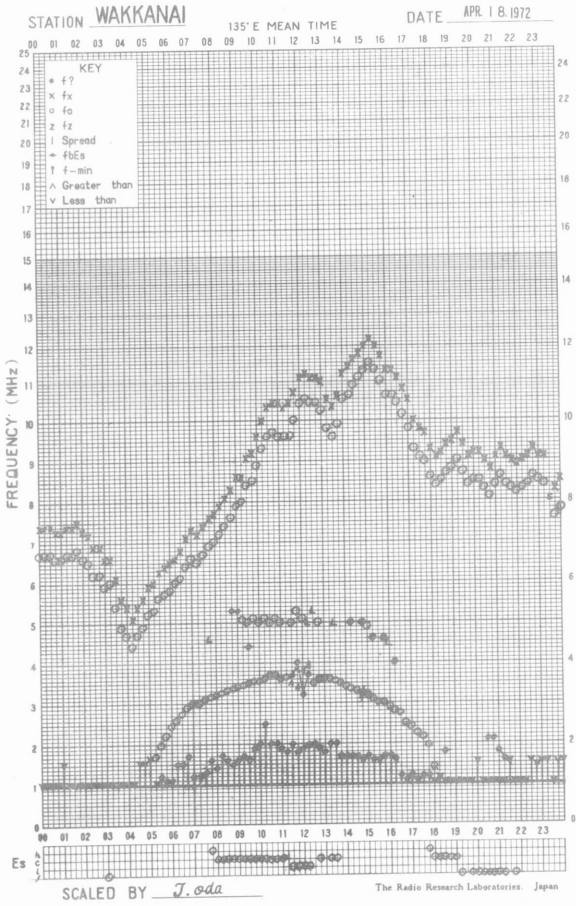
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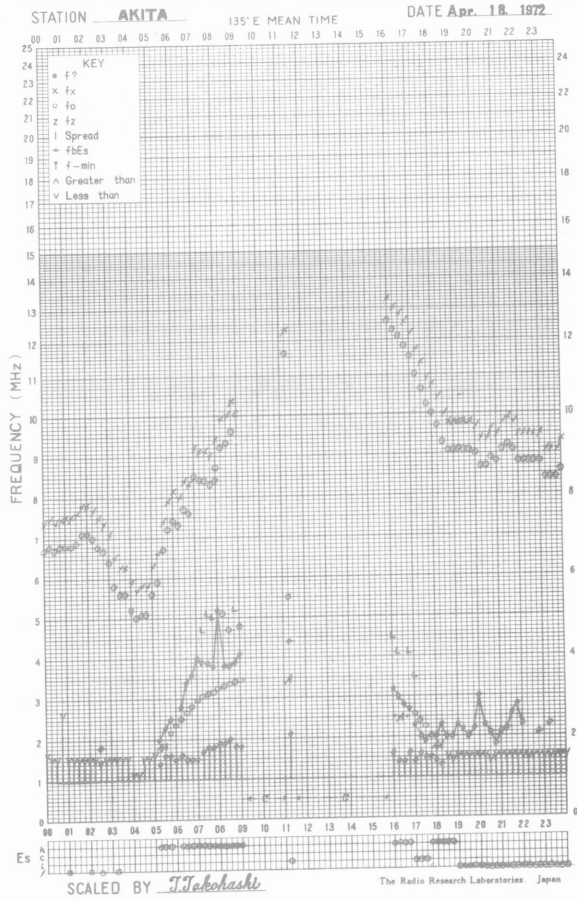
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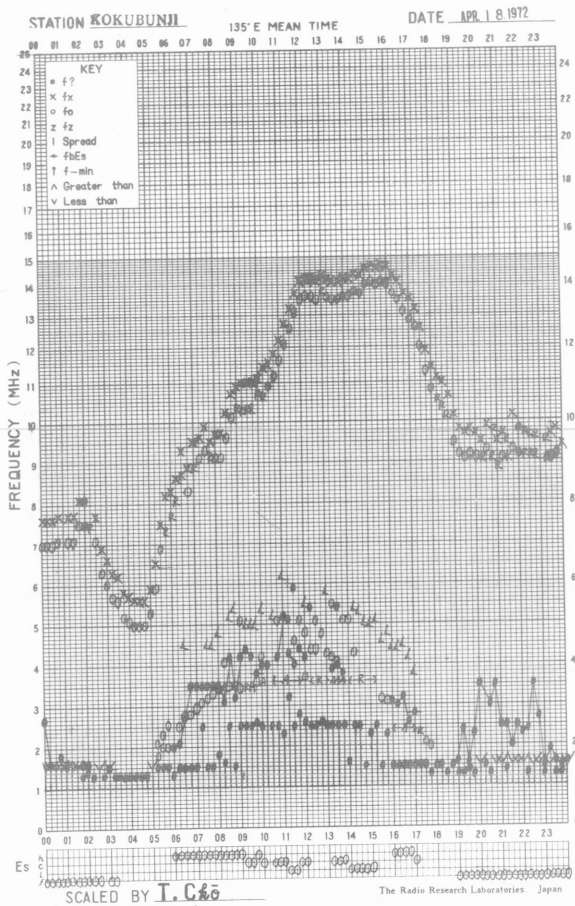
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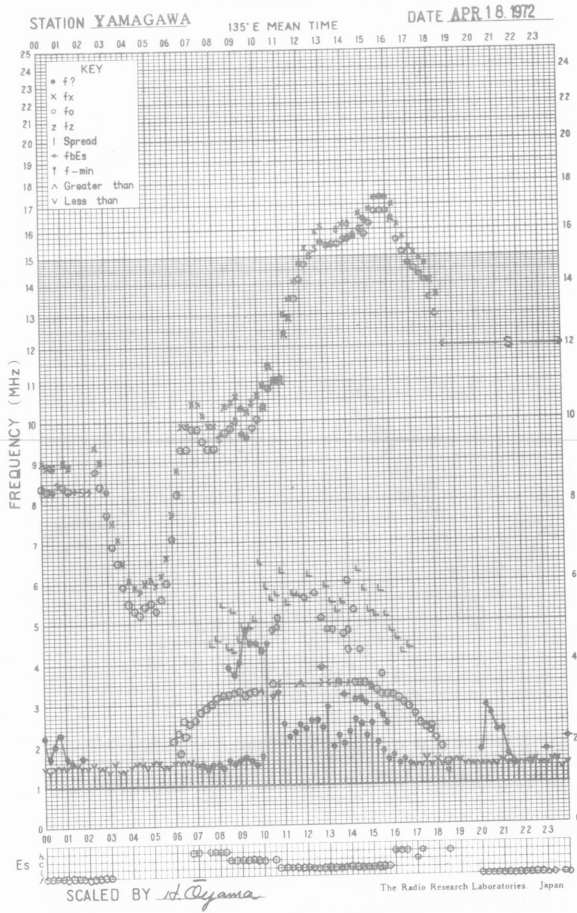
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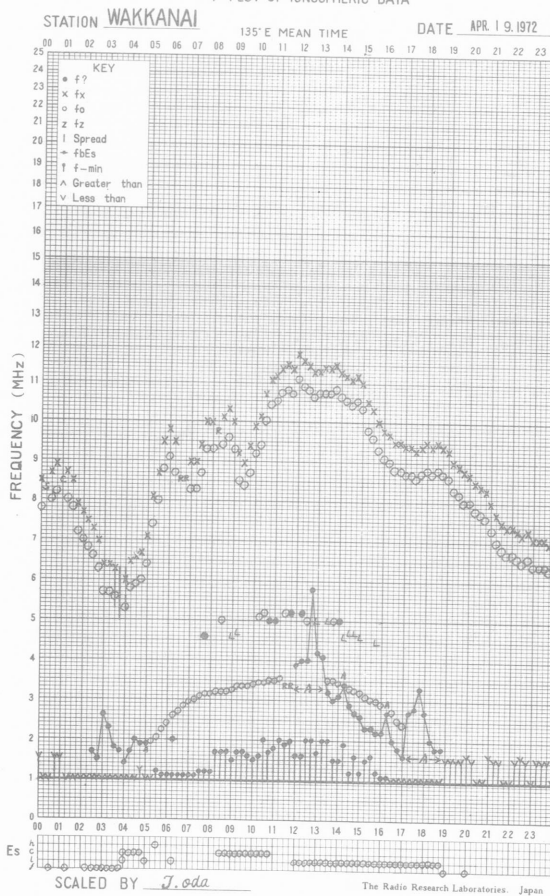
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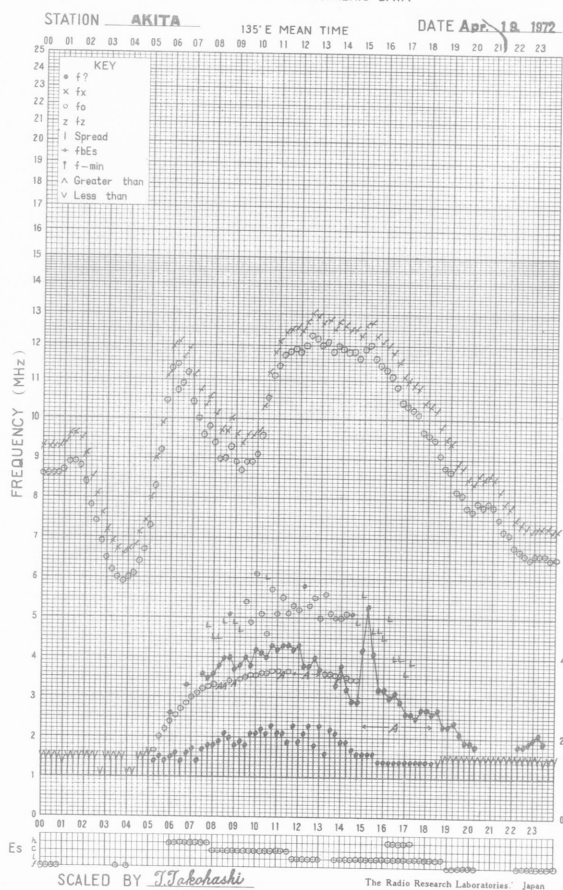
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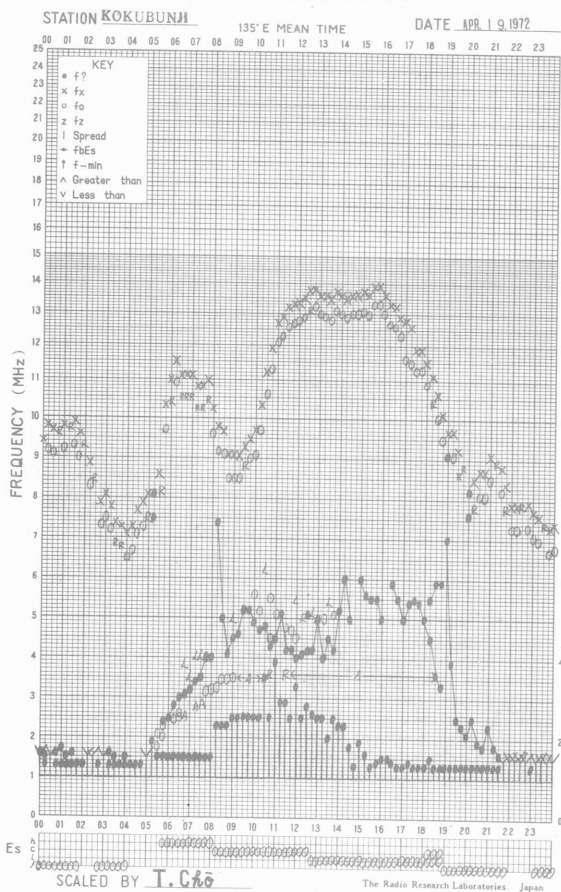
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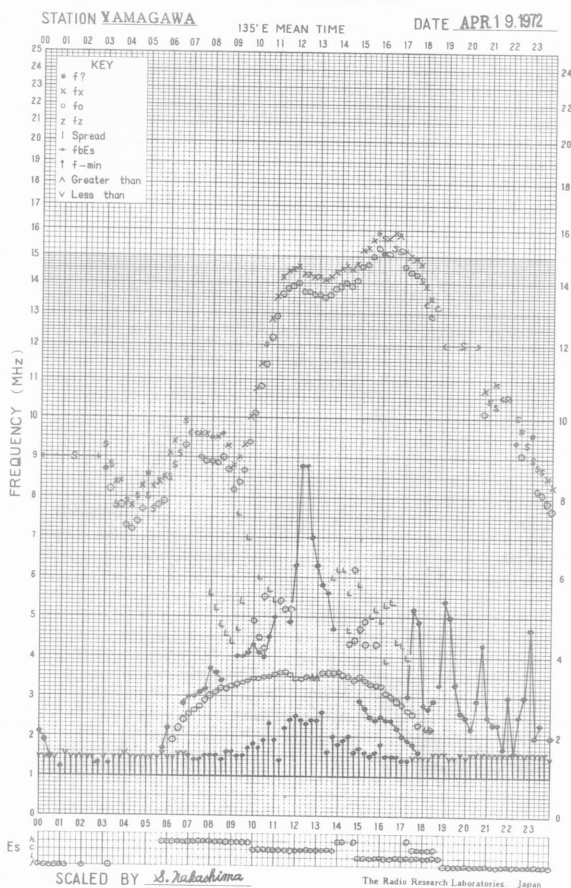
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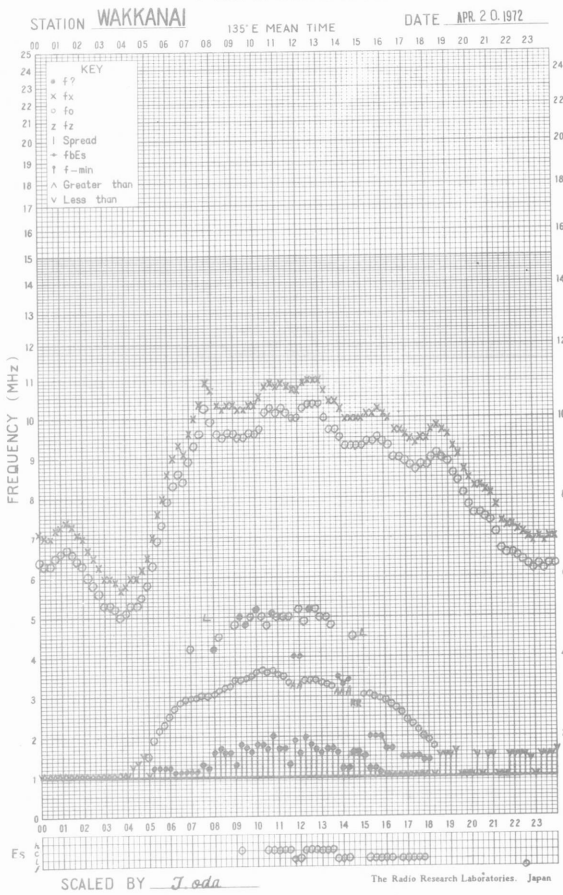
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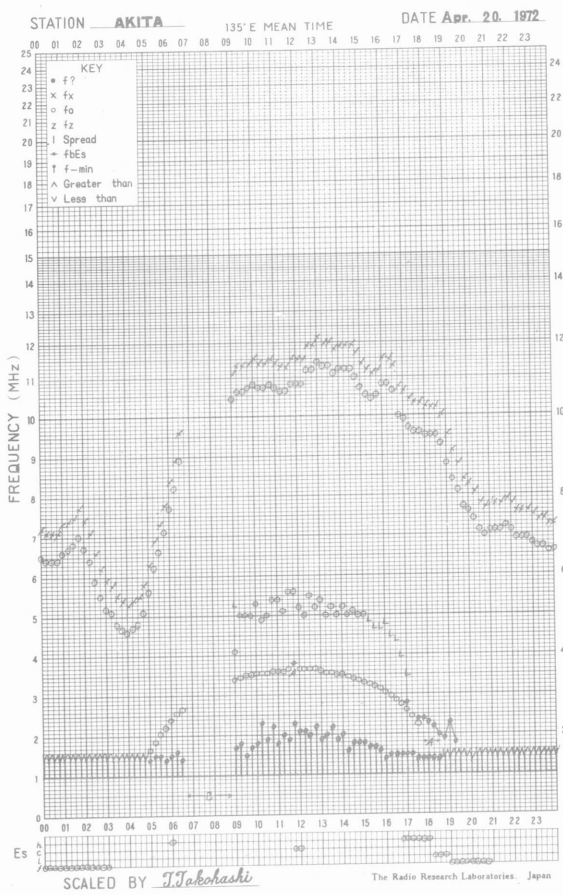
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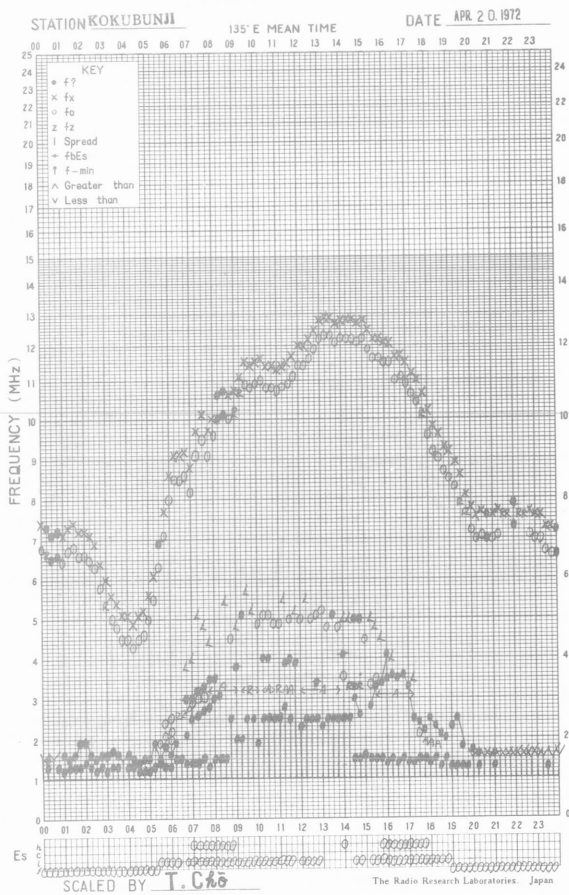
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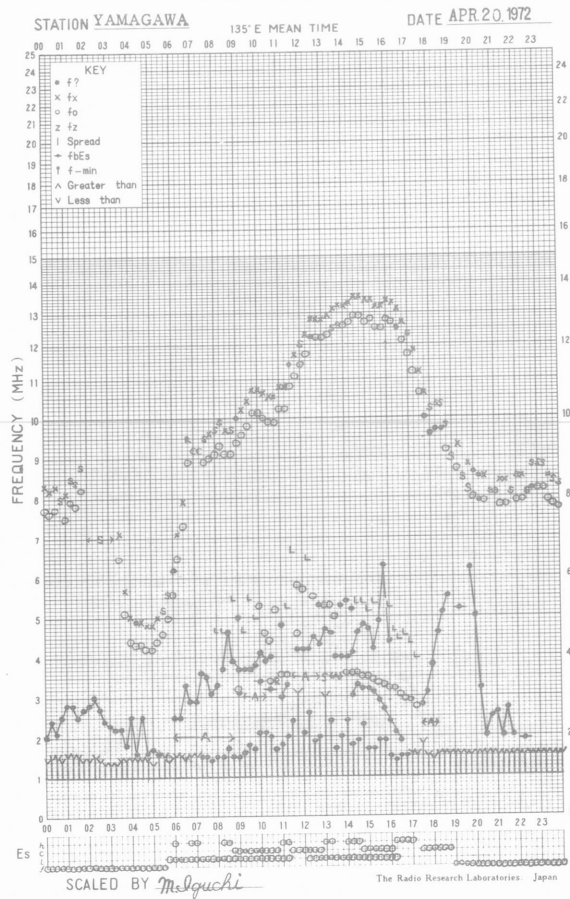
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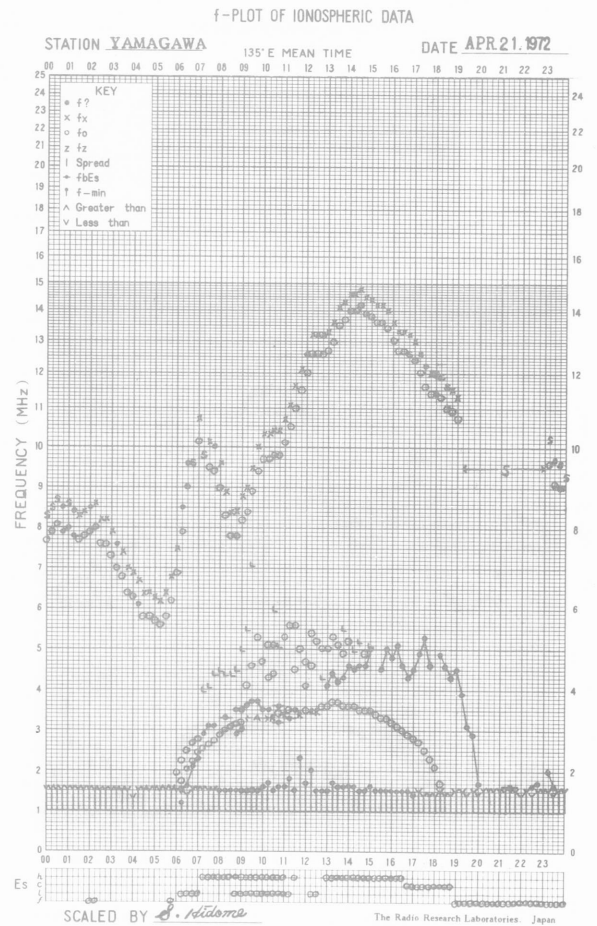
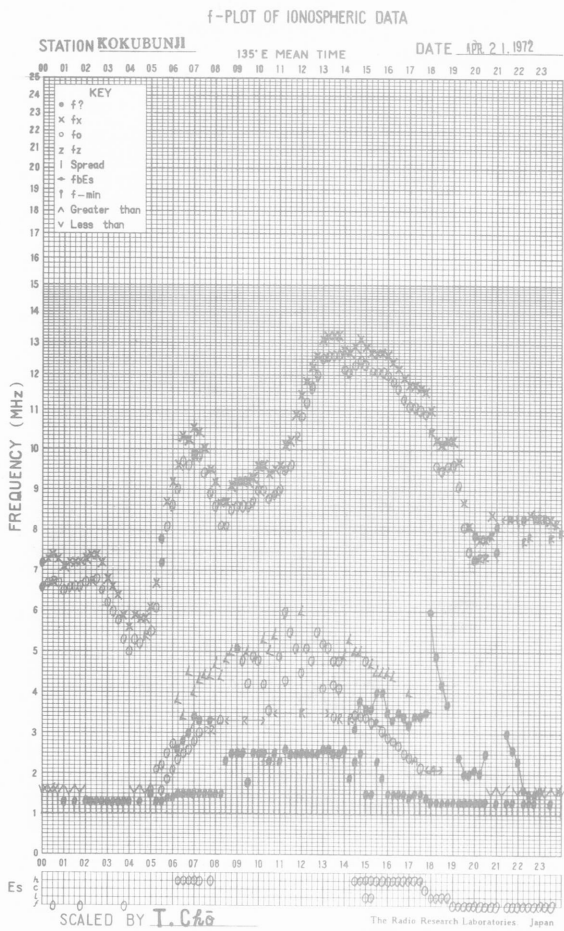
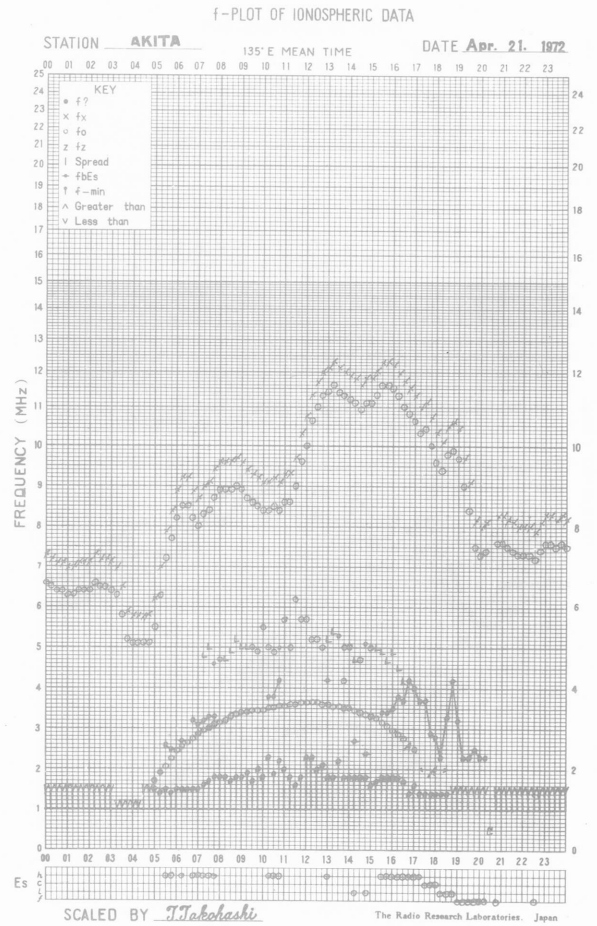
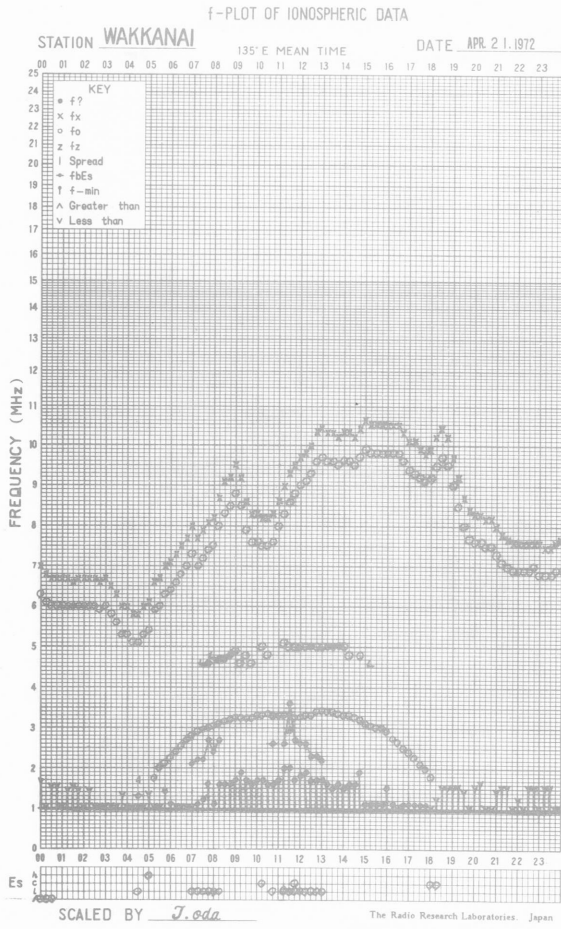


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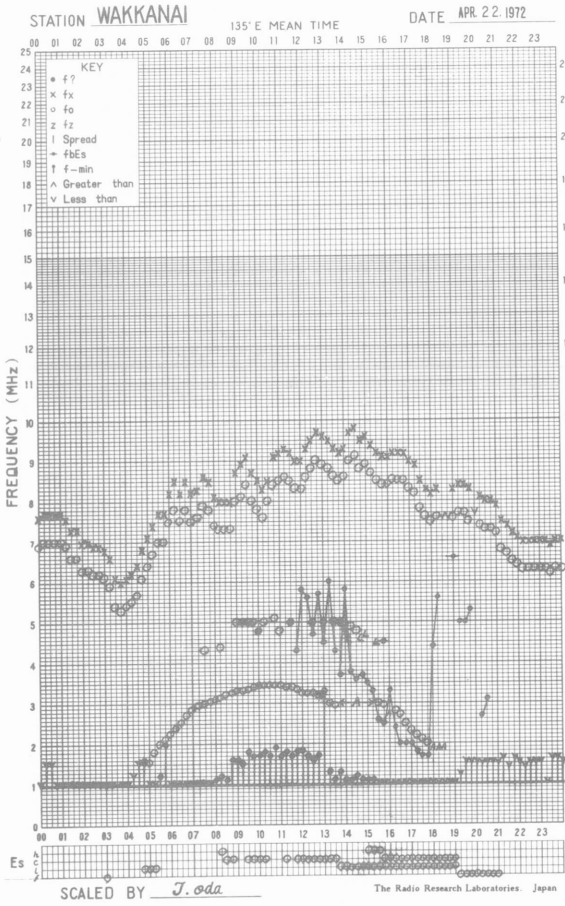


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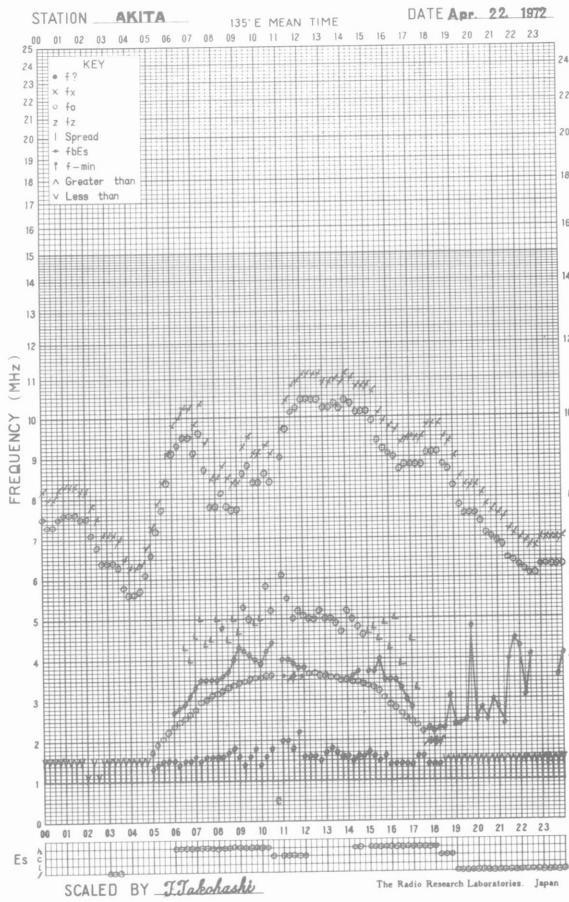




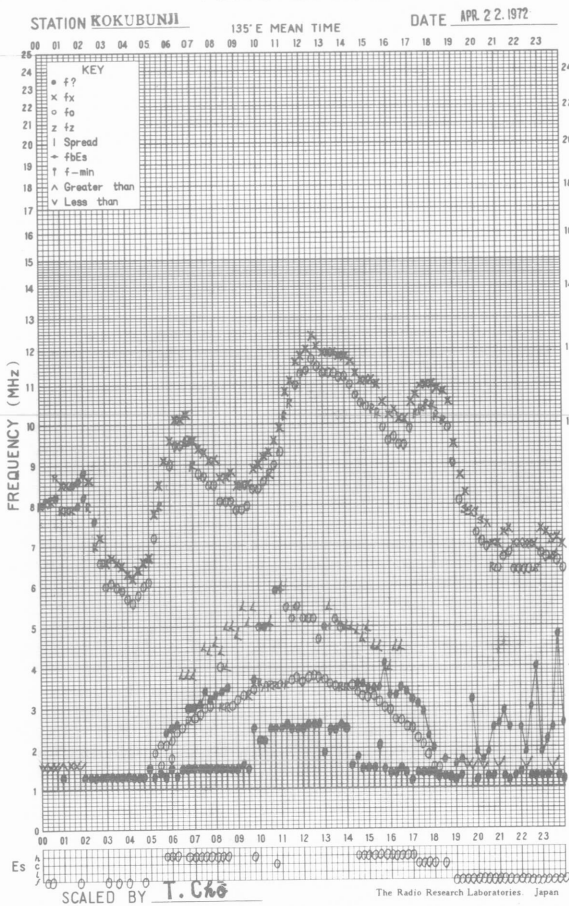
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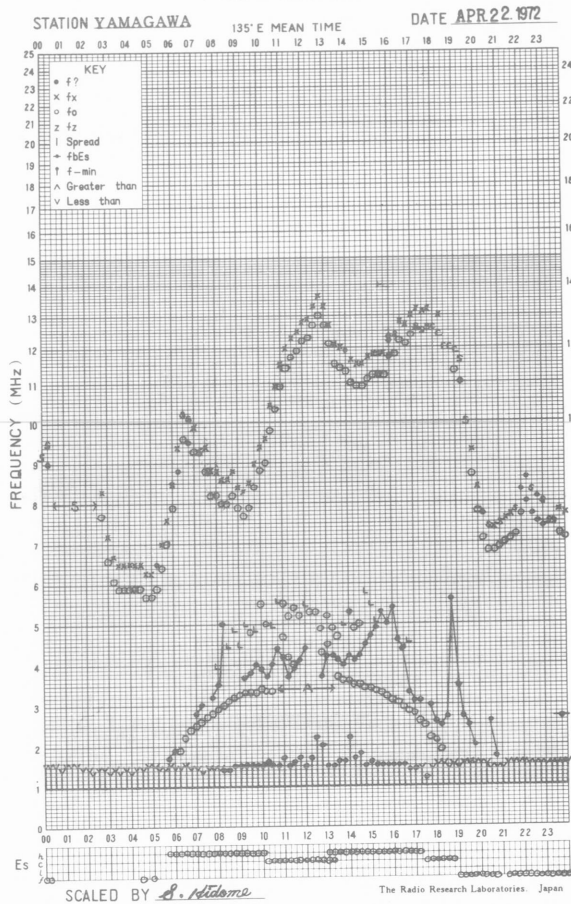
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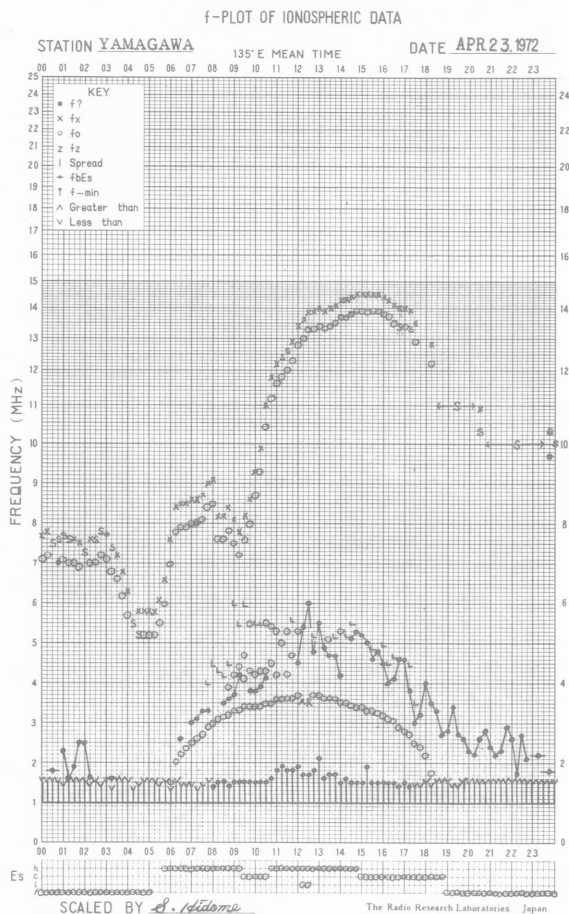
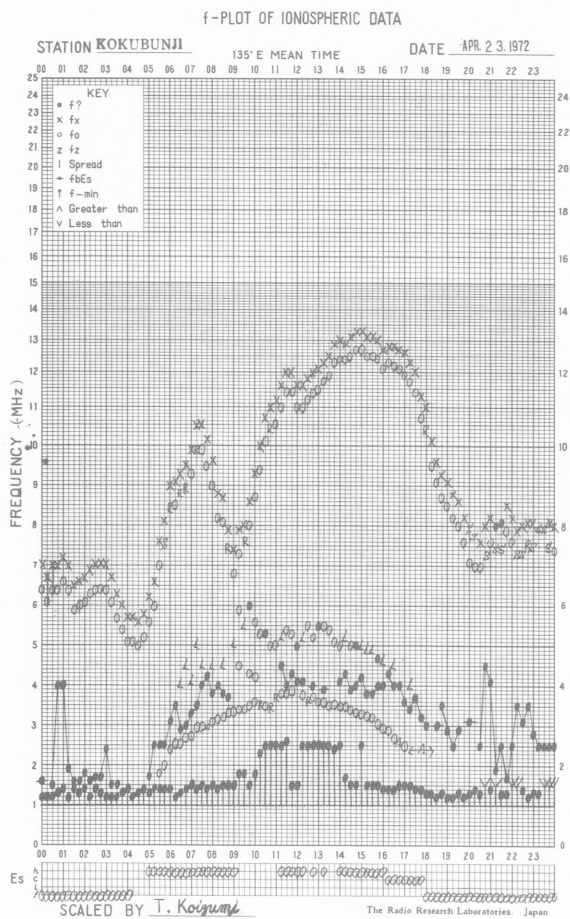
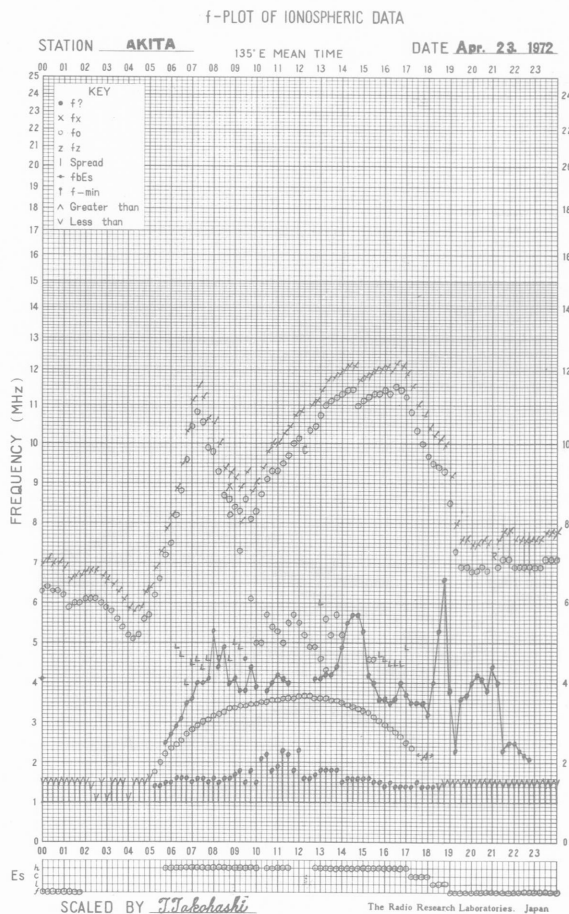
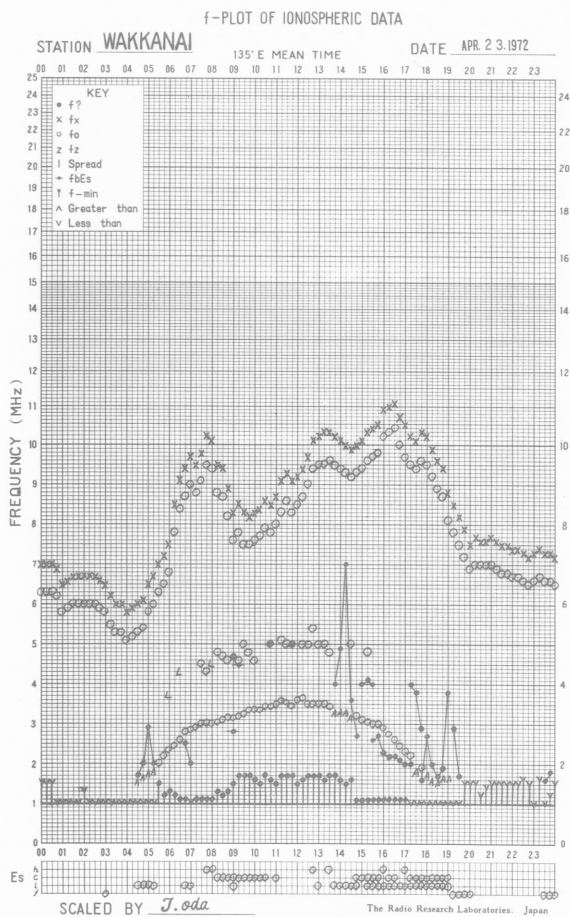


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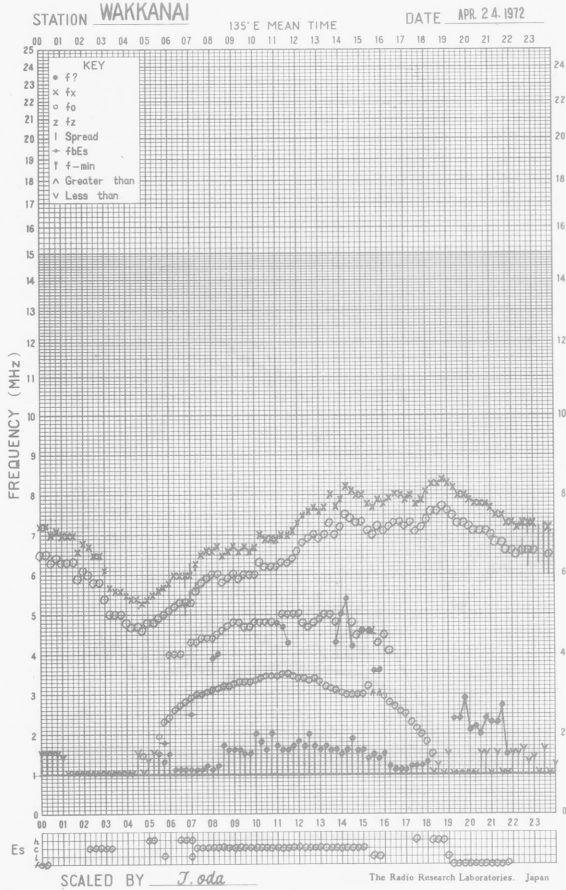


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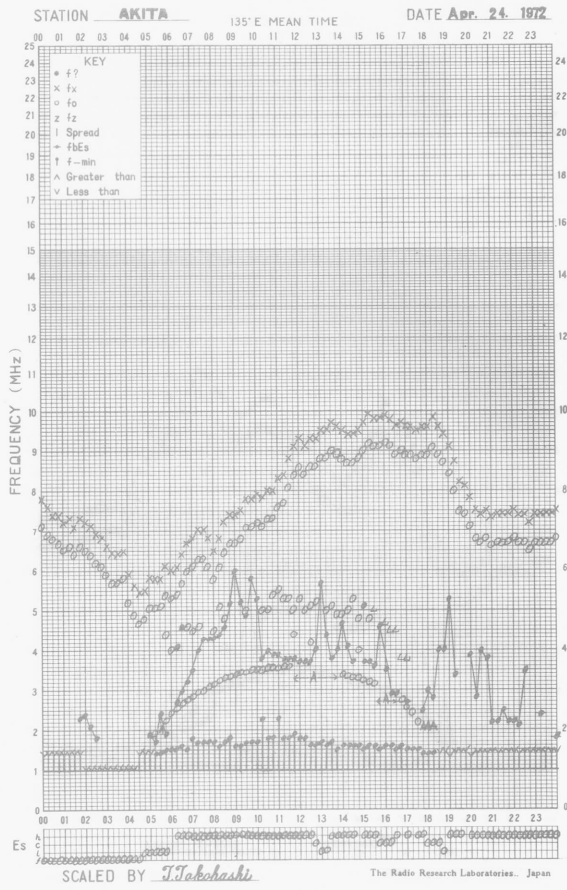




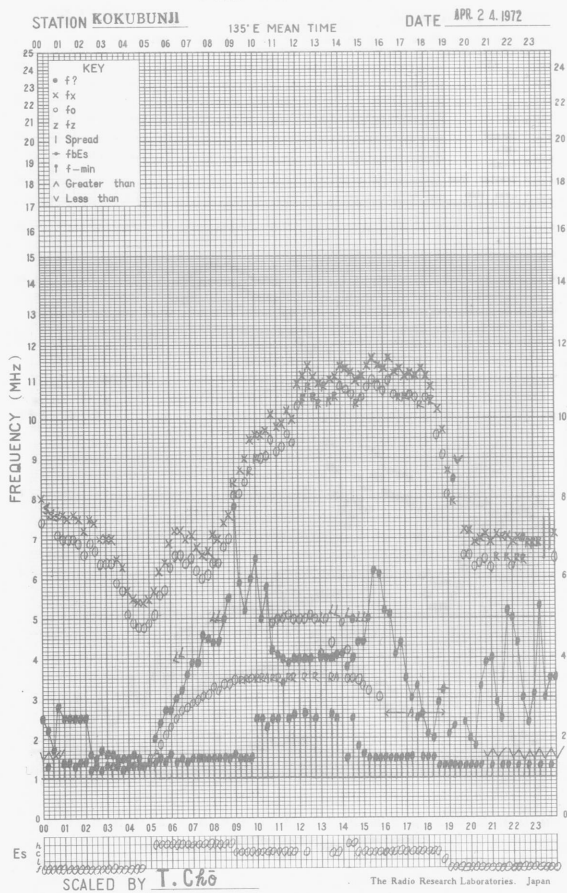
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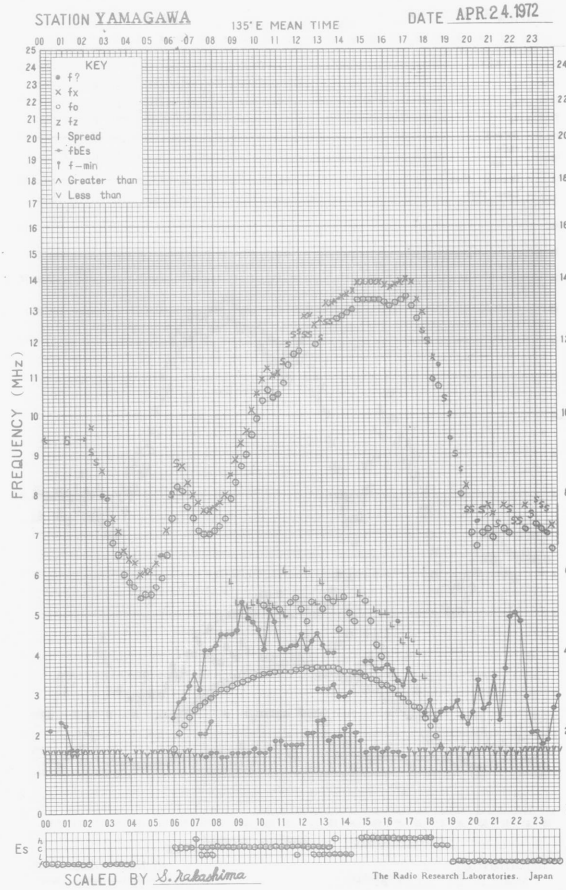
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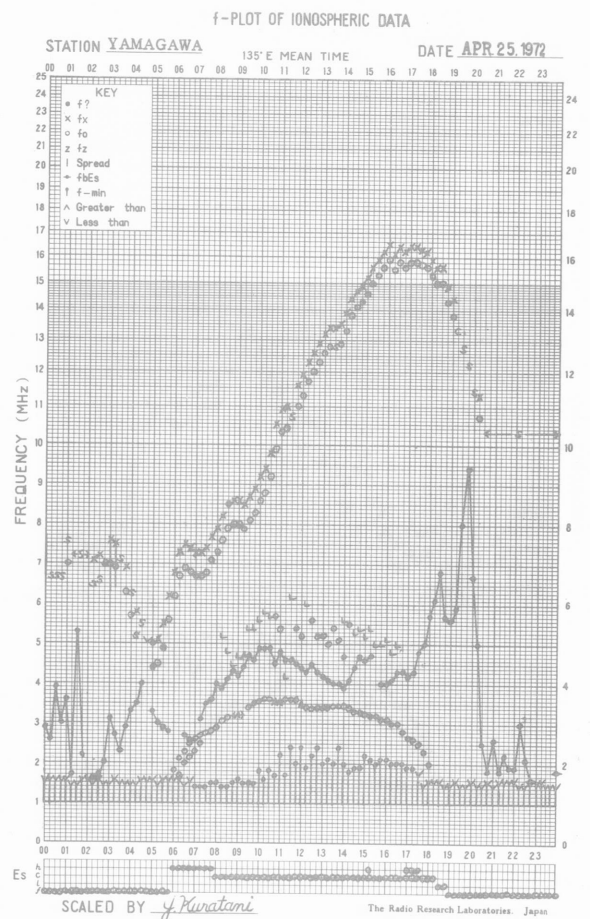
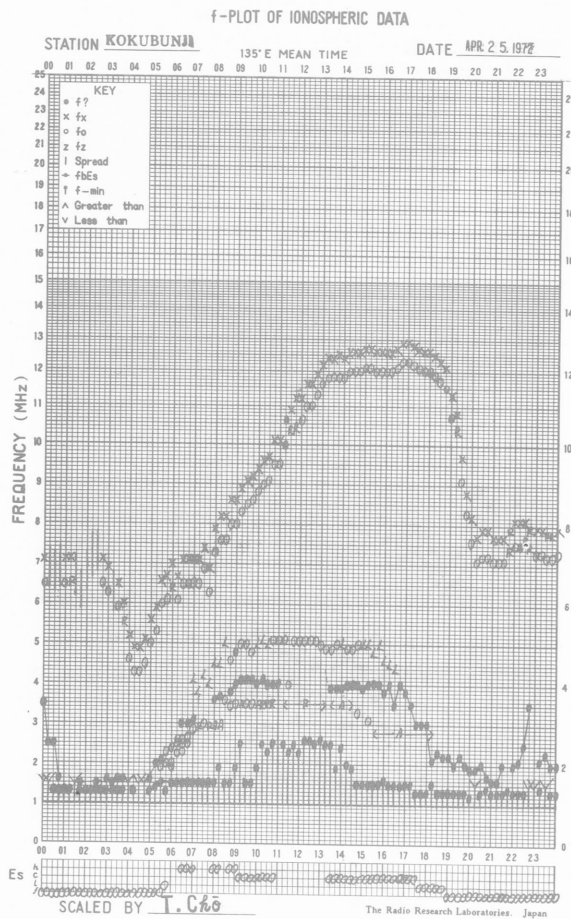
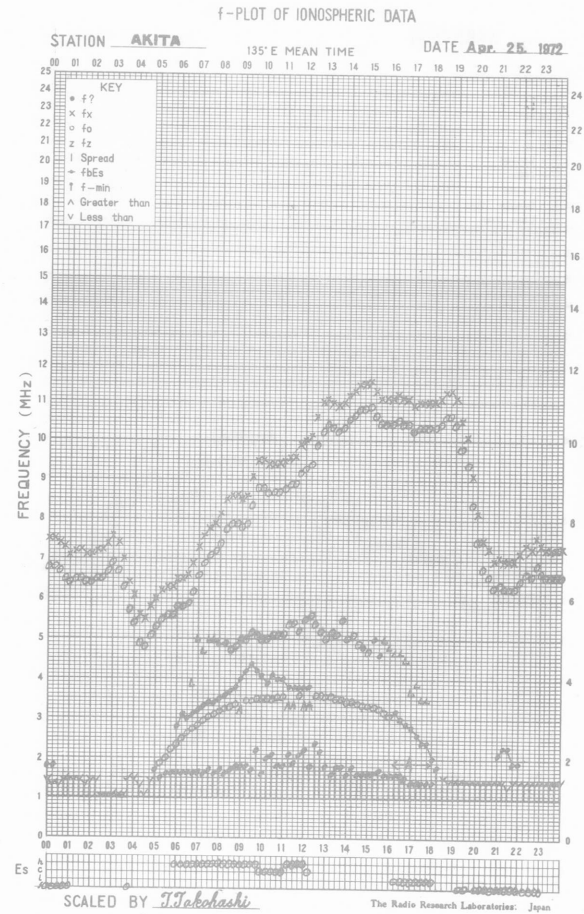
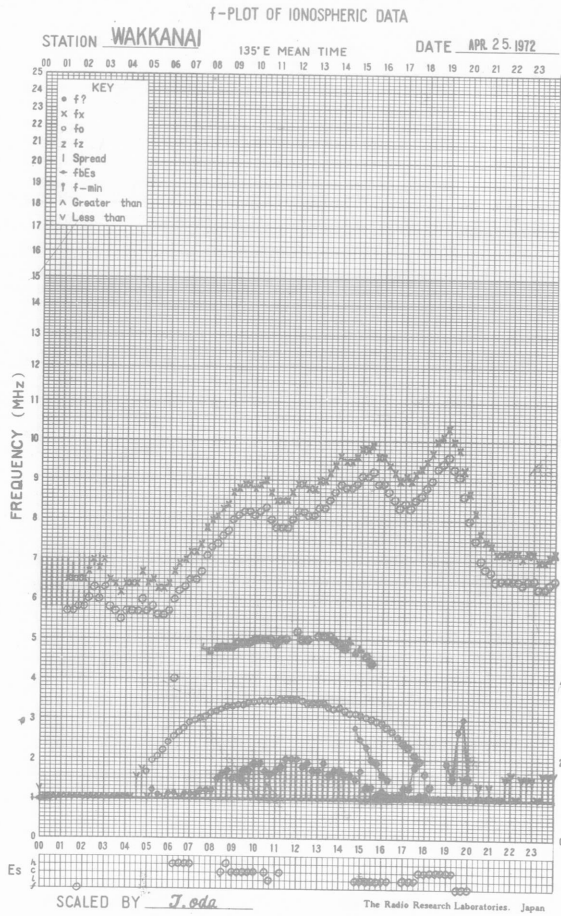


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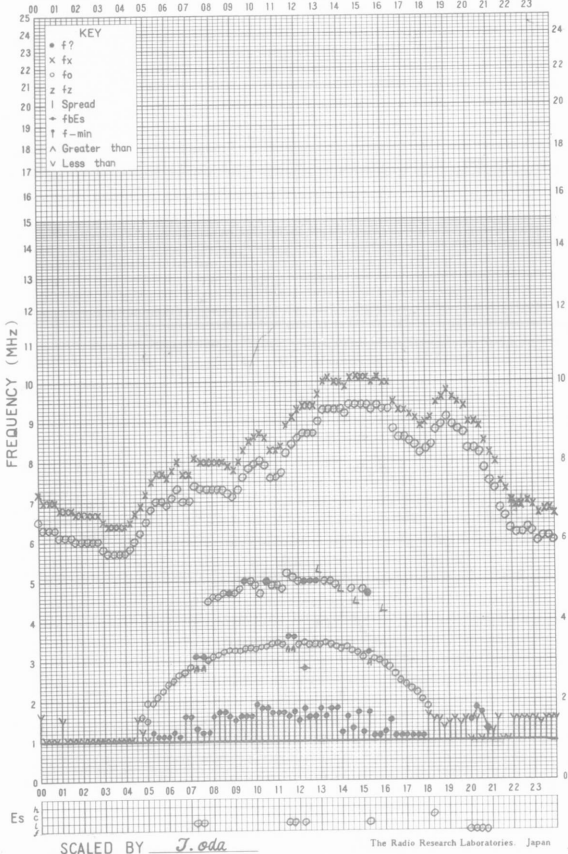
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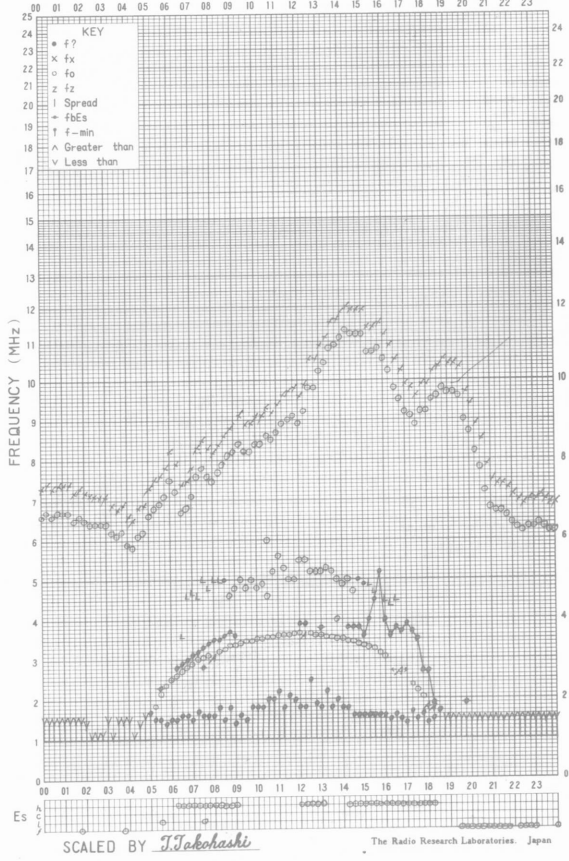
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STATION **WAKKANAI** 135° E MEAN TIME DATE **APR 26 1972**



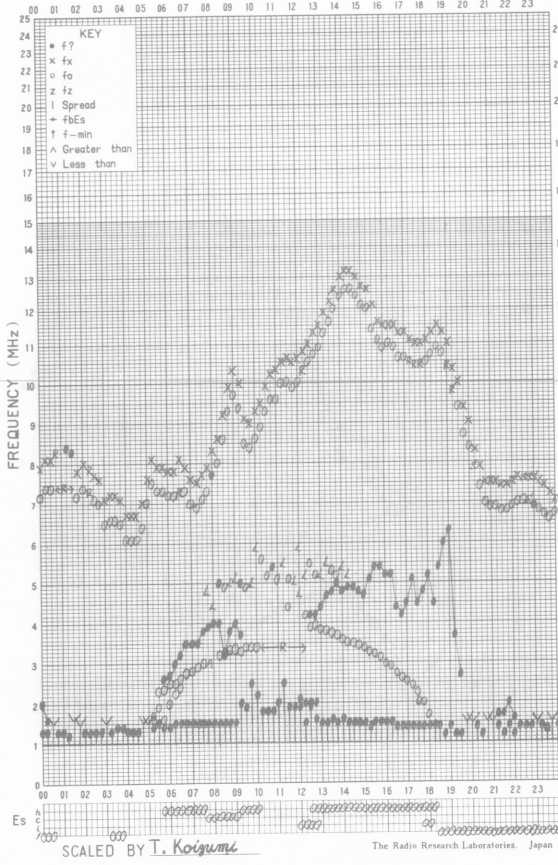
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STATION **AKITA** 135° E MEAN TIME DATE **Apr. 26 1972**



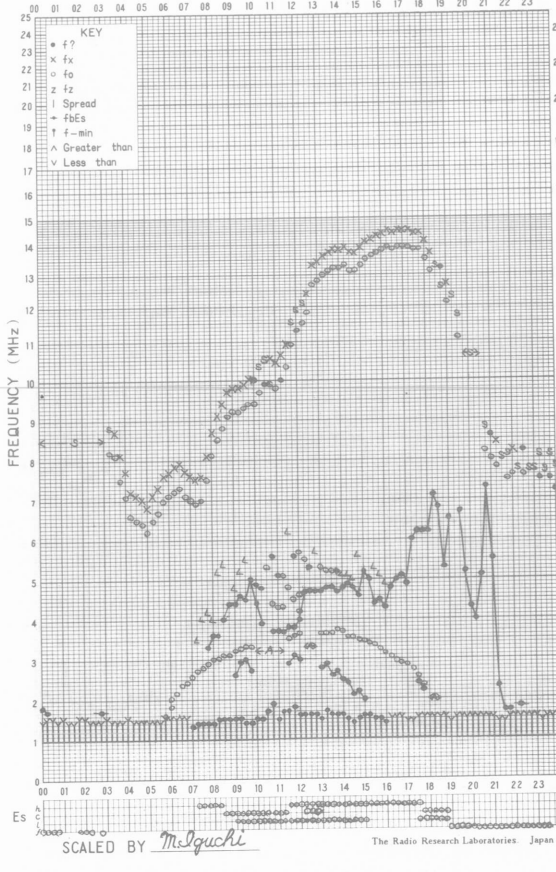
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STATION **KOKUBUNJI** 135° E MEAN TIME DATE **APR 26 1972**

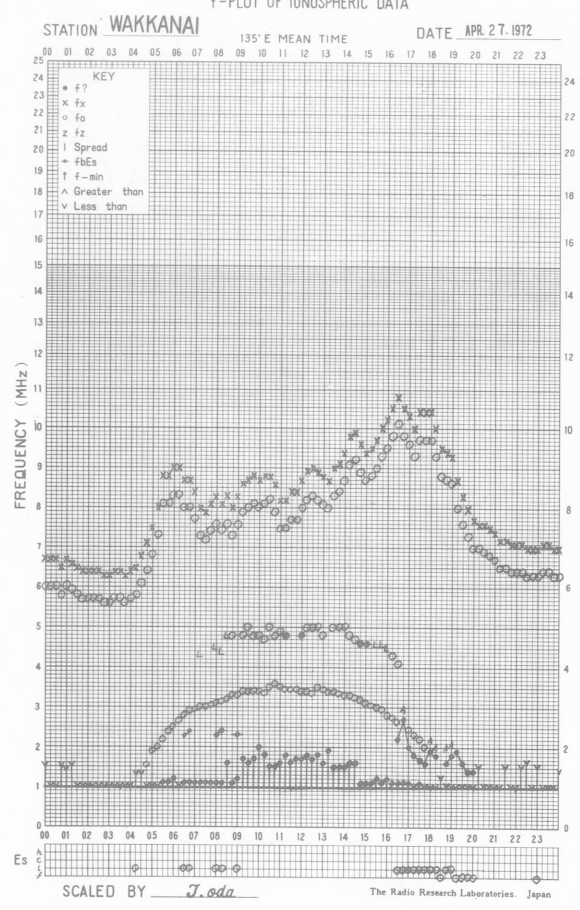


f-PLOT OF IONOSPHERIC DATA

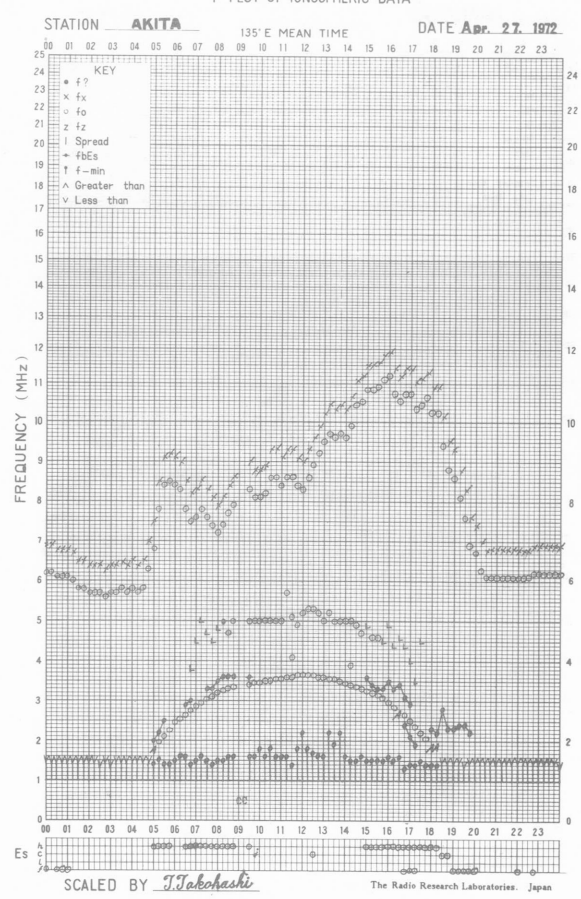
STATION **YAMAGAWA** 135° E MEAN TIME DATE **APR 26 1972**



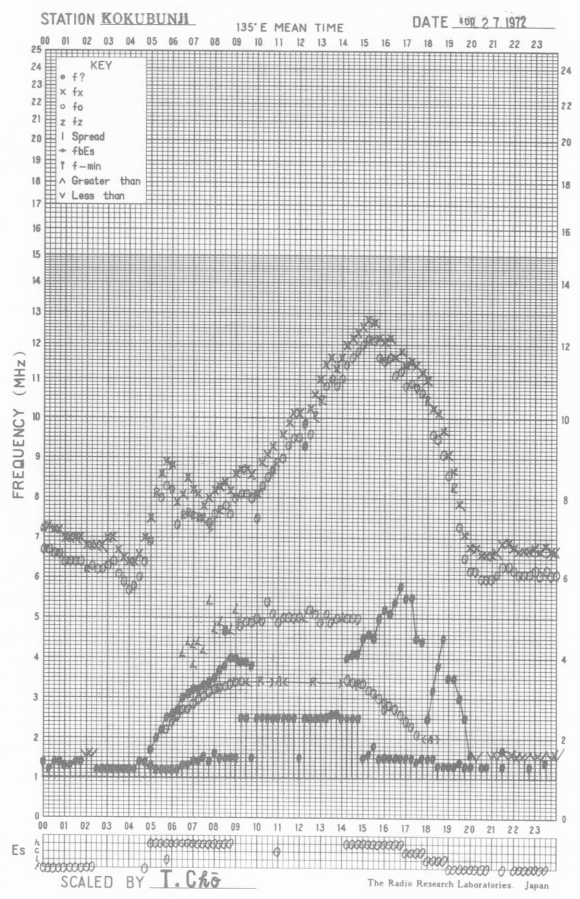
f-PLOT OF IONOSPHERIC DATA



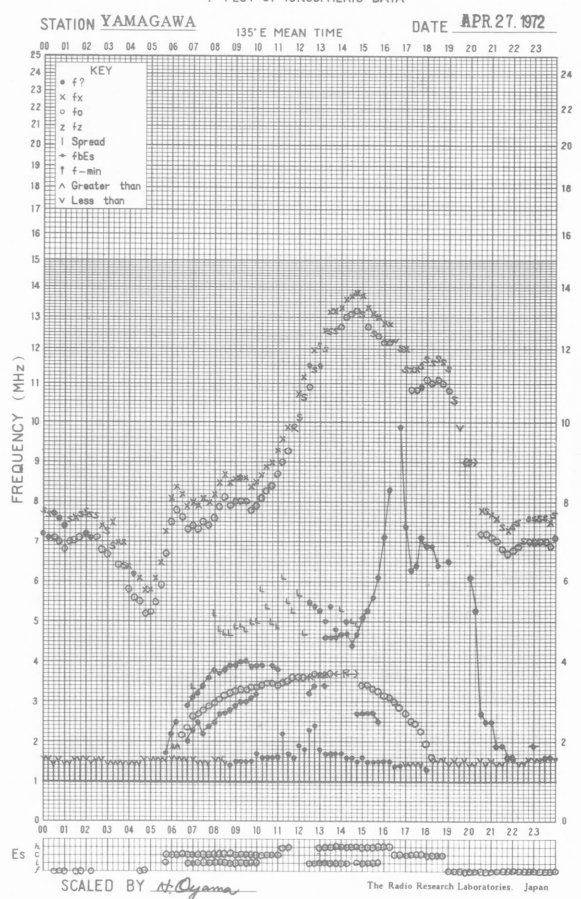
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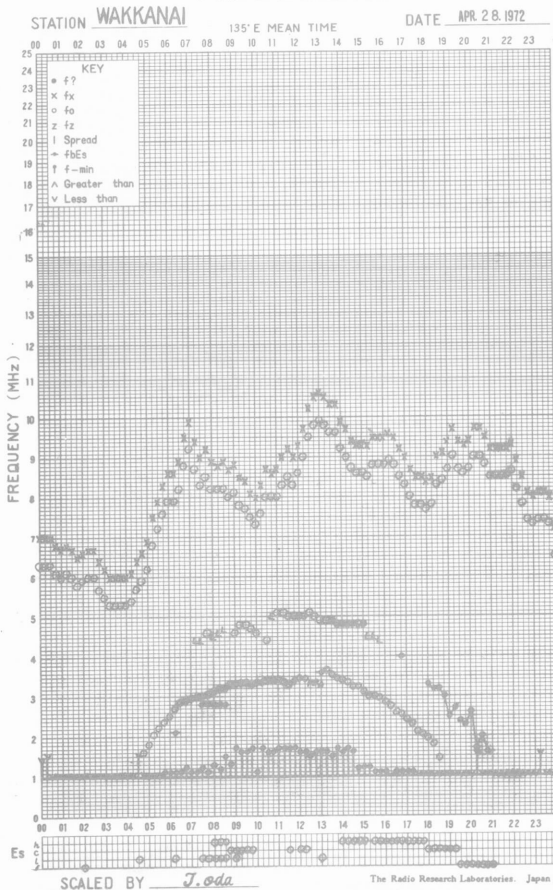
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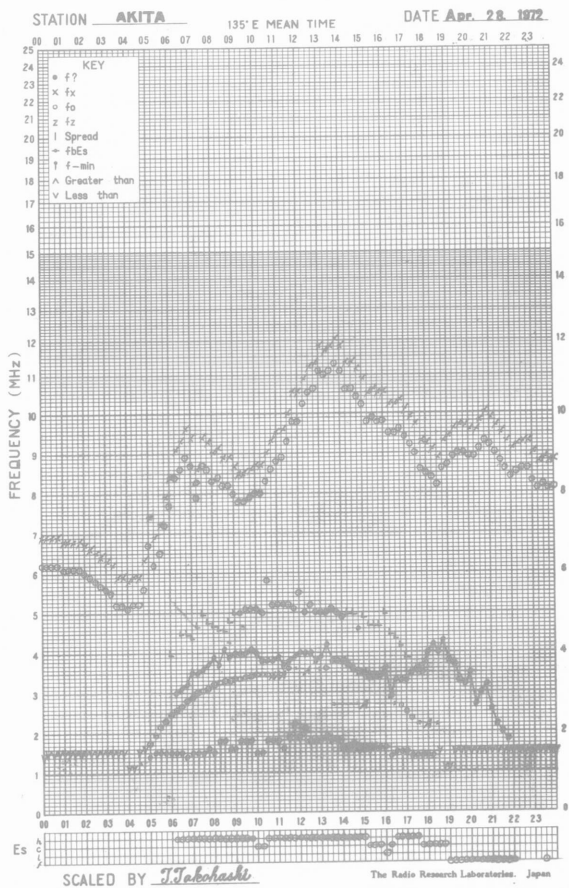
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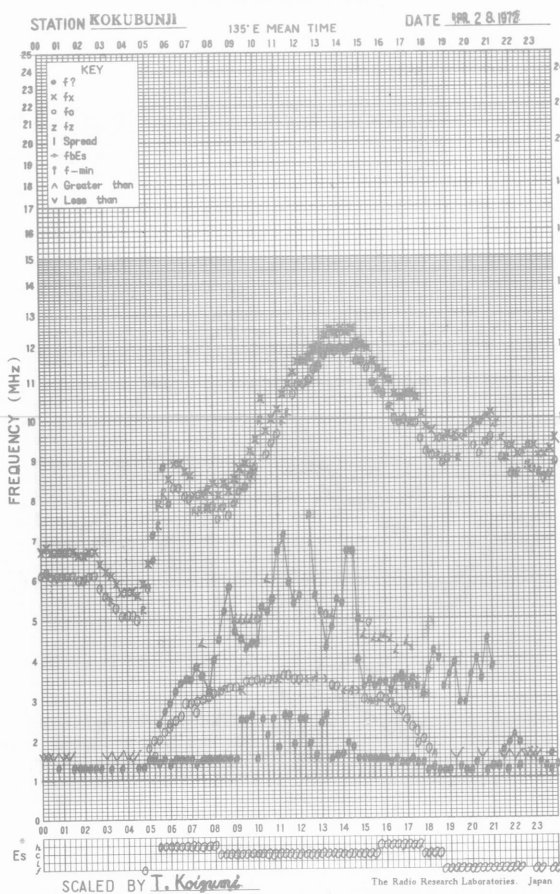
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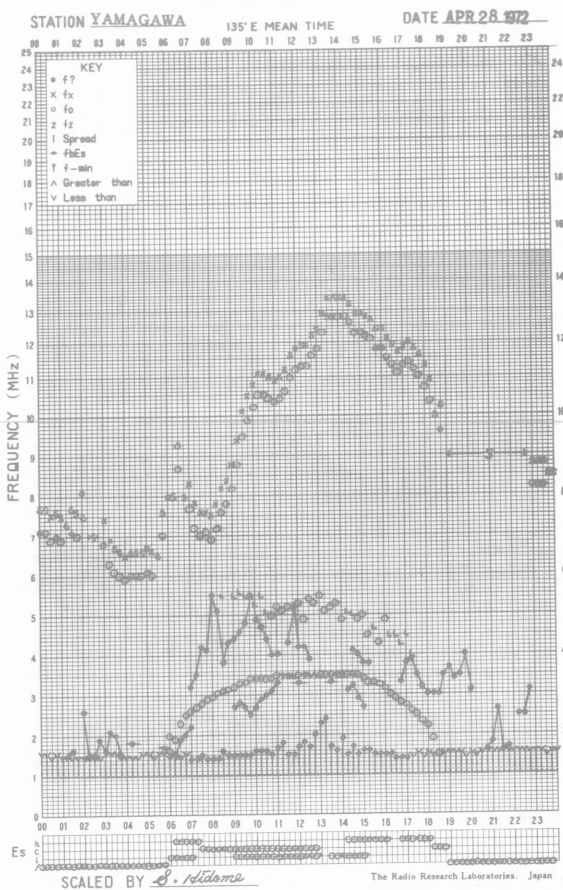
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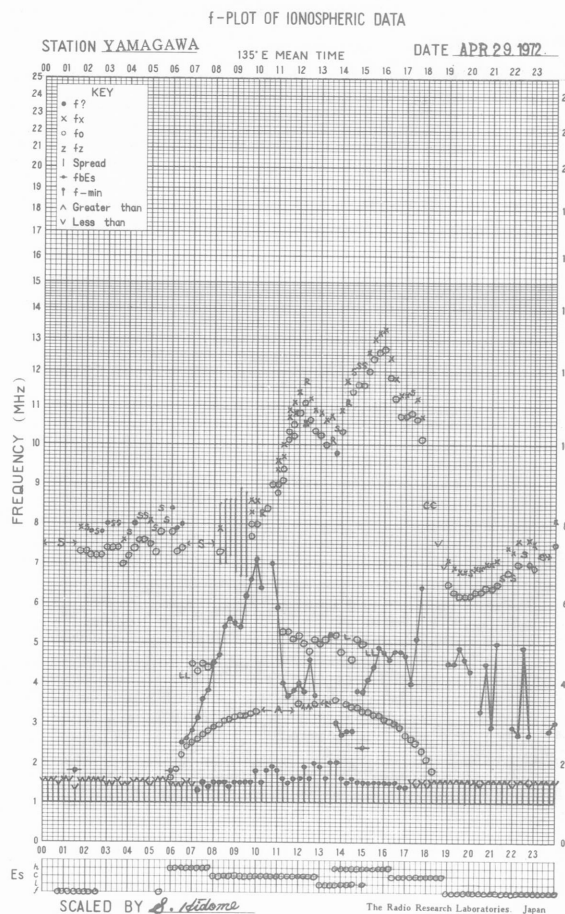
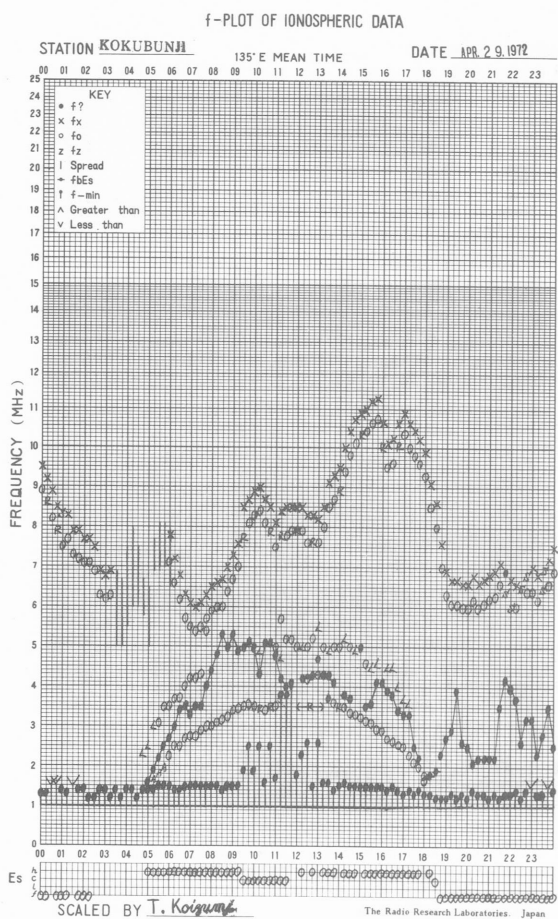
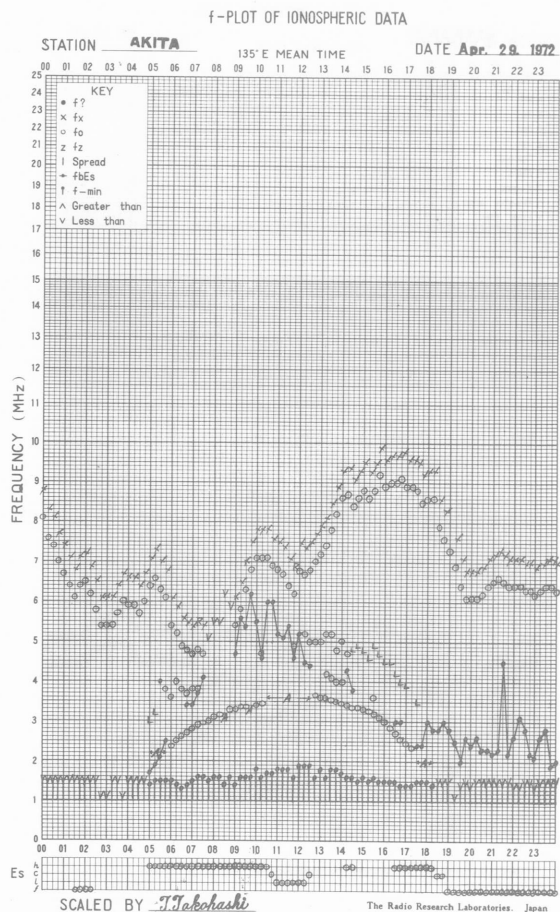
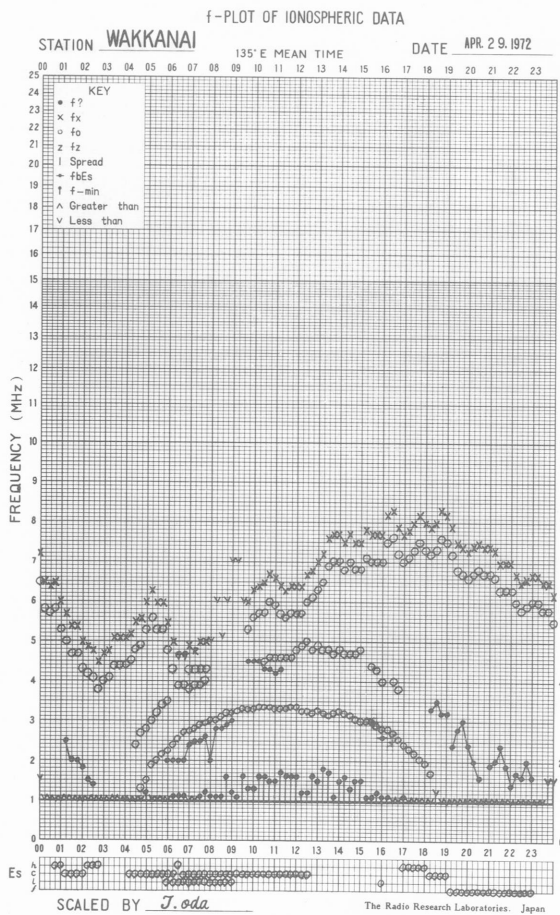


f-PLOT OF IONOSPHERIC DATA

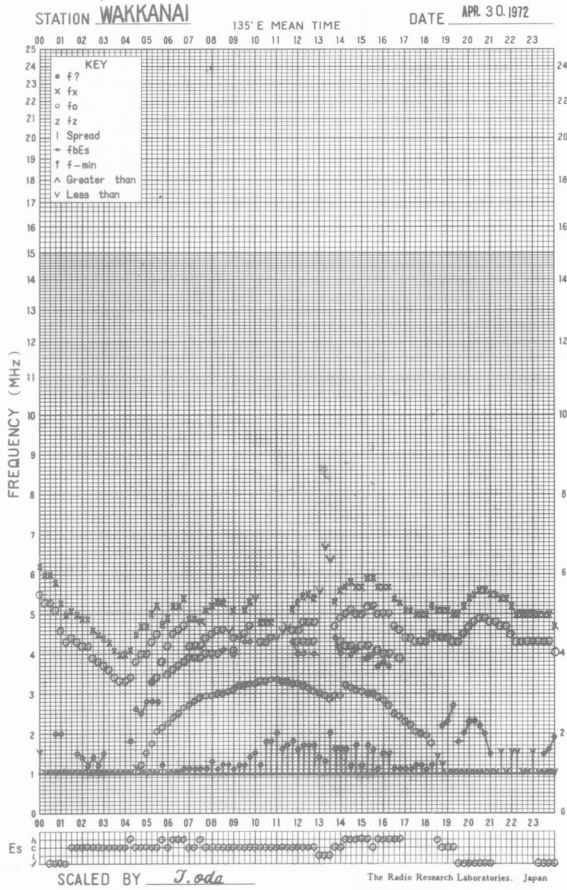


f-PLOT OF IONOSPHERIC DATA

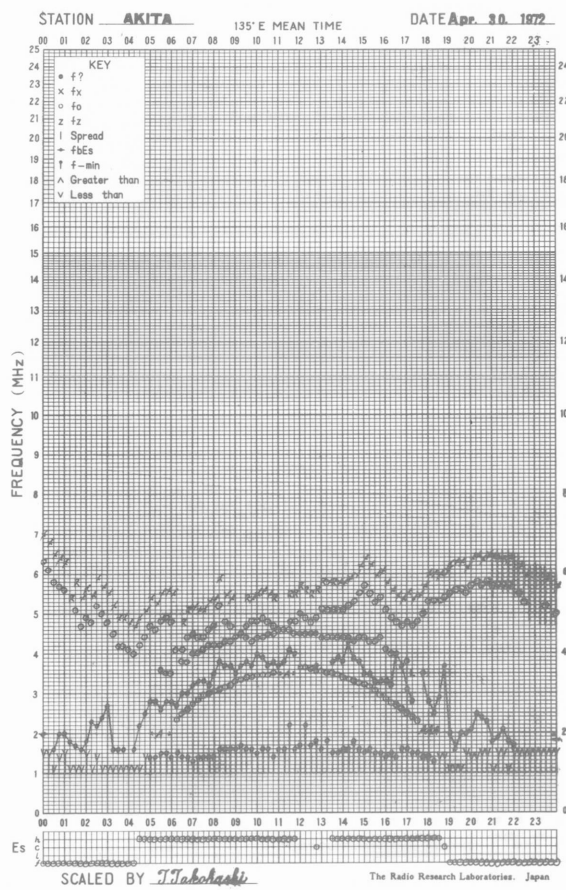




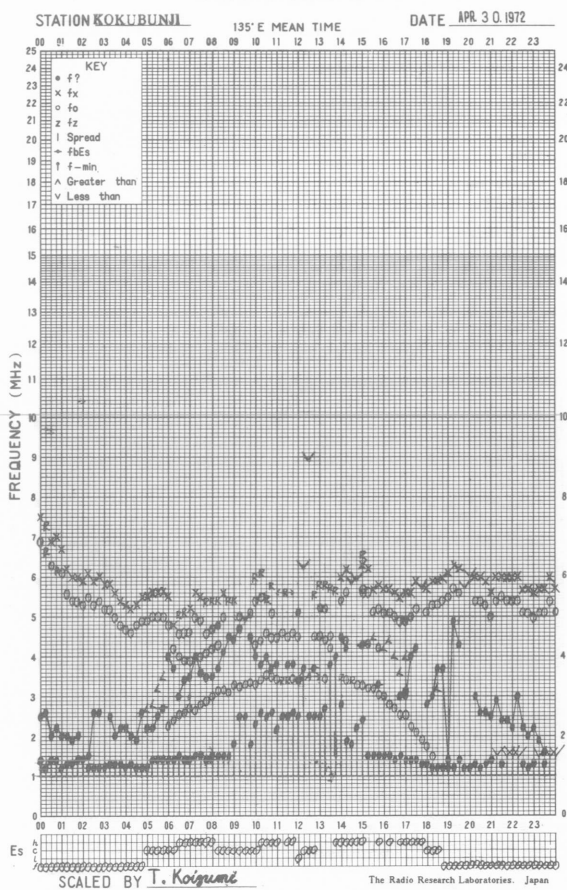
f-PLOT OF IONOSPHERIC DATA



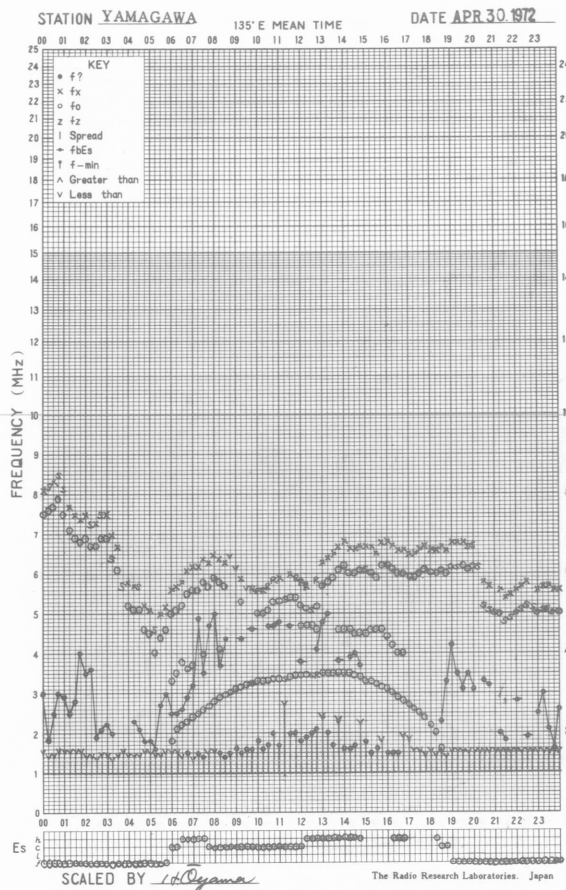
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: April 1972						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	6	6	6	6	6	0	0	0	0	0
2	6	6	6	6	6	0	0	1	0	0
3	6	6	5	5	6	0	0	0	0	0
4	5	5	5	5	5	0	0	0	0	0
5	5	5	5	6	5	0	0	0	0	0
6	6	6	6	q	6	0	0	0	0	0
7	q	q	q	5	q	0	0	0	0	0
8	6	6	5	-	6	0	0	0	-	0
9	5	6	5	6	5	0	0	0	0	0
10	6	6	6	6	6	0	0	0	0	0
11	6	6	7	q	6	0	0	0	0	0
12	q	q	q	5	q	*	*	0	0	*
13	6	6	6	6	6	0	0	0	0	0
14	5	6	6	7	6	0	0	0	0	0
15	7	6	6	5	7	0	0	0	0	0
16	5	6	6	7	6	0	0	1	0	0
17	8	9	13	10	9	0	0	2	0	1
18	34	46	28	8	30	1	1	1	0	1
19	7	7	7	7	7	0	0	0	0	0
20	6	7	7	6	6	0	0	0	0	0
21	7	7	13	22	8	0	1	2	0	1
22	22	22	23	6	22	1	1	1	0	0
23	6	6	6	q	6	0	0	0	0	0
24	6	5	6	6	5	0	0	0	0	0
25	5	5	6	5	6	0	0	0	0	0
26	5	5	5	5	5	0	0	0	0	0
27	8	8	10	12	8	0	0	1	1	0
28	10	13	10	7	11	1	1	1	0	1
29	7	6	6	7	7	0	0	0	0	0
30	6	6	6	5	6	0	0	0	0	0

Note No observations during the following periods:

8th 2000- 9th 0030

q: quiet level, when radiometer is unstable.

*: interference by atmospherics.

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: April 1972					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	27	27	25	27	27
2	26	26	26	24	26
3	25	25	25	25	25
4	25	25	24	24	25
5	26	27	27	27	26
6	27	26	27	24	27
7	27	29	26	27	27
8	28	30	30	27	29
9	30	31	28	30	29
10	30	29	29	31	30
11	30	29	29	31	30
12	32	33	34	30	32
13	31	30	30	28	30
14	29	29	31	28	29
15	28	29	30	30	29
16	30	30	31	28	30
17	28	28	28	27	28
18	30	30	30	28	29
19	27	28	28	27	28
20	27	28	28	26	28
21	27	27	26	26	26
22	27	26	27	26	26
23	26	27	27	25	26
24	26	26	26	25	26
25	26	26	26	24	26
26	26	25	26	24	25
27	26	28	26	24	26
28	24	25	25	26	24
29	25	25	26	24	25
30	24	25	25	25	24

Note No observations during the following periods:

28th 0135- 0235

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: April 1972								
Observing station: Hiraiso								
Normal observing period: 2000 - 0910 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density		Remarks
	MHz	UT	UT	minutes		$10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$	peak	
1	200	2056.5	2056.5	0.5	C	20	5	
	100	2056.5	2056.7	0.5	C	80	30	
2	200	0608.5	0608.5	2.5	C	110	20	
	100	0609.0	0609.2	3.0	C	40	10	
9	500	2320.0	2324.5	13.0	C	80	10	
	200	2324.5	2327.0	8.0	C	50	10	
	100	2326.5	2327.5	9.0	C	250	60	
18			2330.3			250		1st peak
								2nd peak
18	200	0025	0343	535		85	35	*1, *2
	100	0115	0210	128		100	25	*1, polarization L
20	100	1955	0858	795		250	20	*1, polarization L
21	100	1955	0144	795		115	40	*1, polarization L
24	200	2333.0	2333.0	1.0	C	30	10	
	100	2333.0	2333.2	1.5	C	130	30	

*1: noise storm

*2: flux duplicates in steady flux.

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

APR 1972 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	3	4	0	2	0	ES 1	ES 2	ES 3	ES 7	ES 6	ES 2	ES 3	ES 5	ES 1	ES 11	ES 10	-10	18	1	ES 22	-3	5	8	5	
2	2	-1	0	12	ES 2	ES 8	ES 6	ES 4	ES 2	ES 8	ES 9	ES 10	ES 11	ES 5	4	ES 3	-6	16	-3	-8	-1	-4	-2	0	
3	3	2	4	9	13	-2	ES 8	ES 6	ES 2	ES 0	ES 3	ES 6	ES 3	ES 8	ES 14	ES 7	3	-2	-1	-8	-3	0	2	-2	
4	3	3	3	10	16	12	ES 1	ES 1	ES 3	ES 5	ES 3	ES 1	ES 8	ES 0	ES 3	ES 8	-6	-3	-8	ES 23	-11	3	-8	-6	
5	4	0	10	9	8	-4	ES 23	ES 23	ES 8	-8	-14	ES 23	ES 8	ES 8	ES 3	ES 0	-5	-5	ES 23	ES 23	-9	-1	-6	-5	
6	-6	1	4	4	16	11	ES 7	1	ES 10	ES 10	ES 9	ES 7	ES 1	ES 6	ES 8	19	-17	8	13	-14	5	1	-5	-3	
7	-3	0	3	7	7	6	ES 8	ES 11	ES 8	ES 5	ES 1	ES 2	ES 2	ES 1	ES 6	ES 2	-3	13	-8	-11	-3	2	3	-1	
8	-1	4	4	6	10	-4	ES 10	ES 1	ES 2	ES 2	ES 1	ES 8	ES 2	ES 4	ES 8	10	11	8	10	-5	0	-2	2	-8	
9	-4	-1	-4	2	9	14	10	1	9	-4	ES 5	ES 1	ES 1	ES 1	ES 6	ES 6	3	0	3	-7	-3	-6	-5	-9	
10	-9	-6	1	5	15	11	16	1	4	ES 2	-1	ES 2	ES 3	ES 2	ES 2	ES 6	19	8	8	-2	-2	-2	-6	-9	
11	-6	-3	1	3	6	13	14	ES 4	ES 0	ES 1	ES 0	ES 0	ES 2	ES 0	ES 6	ES 10	15	-1	4	-1	-1	19	20	-4	
12	-4	-5	2	11	13	11	4	ES 10	ES 7	ES 2	ES 0	ES 2	ES 4	ES 1	ES 3	ES 3	8	1	-2	-6	0	-6	-6	-6	
13	-2	0	0	4	7	15	13	-8	-1	3	ES 1	ES 3	ES 4	ES 1	ES 5	ES 9	-3	-3	-6	4	0	-3	-8	-3	
14	-5	-3	-3	8	15	9	2	-3	-2	1	ES 2	ES 3	ES 3	ES 1	13	ES 4	10	1	6	-4	-11	-3	-4	-7	
15	-7	-7	1	10	13	14	9	7	6	-1	ES 0	ES 1	ES 0	3	5	5	15	-3	4	-3	-1	3	-1	-1	
16	-4	-3	0	8	12	14	14	-3	-1	ES 1	ES 3	ES 12	ES 3	ES 9	ES 7	ES 20	-6	-4	3	-10	-2	-5	-3	-8	
17	-7	-1	4	5	10	16	5	-8	ES 9	ES 2	-3	ES 0	-1	16	ES 17	ES 6	13	3	13	-14	-8	-8	-9	-8	
18	-11	-11	6	8	5	6	-2	-2	-1	ES 0	ES 3	ES 8	ES 1	ES 8	ES 8	20	-8	-1	3	-19	8	3	7	0	
19	-12	-12	-14	3	3	ES 23	ES 23	-19	-19	ES 23	ES 14	ES 12	ES 14	ES 11	ES 3	ES 3	ES 12	-12	-15	-1	-3	-14	-8	-4	
20	-3	2	-2	3	6	6	9	-2	ES 11	ES 8	ES 8	ES 1	ES 6	ES 0	10	14	20	12	15	-2	5	1	3	0	
21	-7	-1	5	9	9	8	-8	-7	ES 5	ES 1	ES 1	ES 2	1	ES 43	ES 4	ES 6	ES 16	3	ES 4	3	9	ES 6	1	1	
22	1	4	1	1	9	4	ES 11	ES 14	-2	2	ES 1	ES 2	ES 4	15	9	12	ES 11	3	-3	2	8	7	1	-8	
23	-5	-3	-5	0	8	8	1	-8	-7	ES 8	ES 2	ES 2	-5	ES 7	ES 9	ES 3	12	15	-1	-7	-7	-5	-9	-11	
24	-8	-8	4	8	ES 13	15	3	-9	-8	ES 5	ES 4	ES 2	ES 4	14	0	ES 1	19	5	3	-3	-3	-14	-10	-10	
25	-12	-2	-1	1	13	13	11	ES 12	ES 8	ES 8	ES 6	ES 4	ES 6	ES 21	ES 3	ES 4	ES 23	ES 9	7	-8	0	-5	-11	-3	
26	-9	-2	-8	-3	8	11	16	12	-8	ES 10	ES 8	ES 0	ES 4	ES 2	ES 2	21	8	-3	-6	-2	-1	-3	-5	-14	
27	-10	-2	-2	-2	8	13	17	12	13	ES 8	ES 3	ES 2	ES 7	ES 5	ES 2	ES 1	5	4	ES 22	-2	1	0	-7	-2	
28	-3	-4	7	7	7	13	ES 12	ES 15	ES 9	ES 4	ES 3	ES 5	ES 0	ES 19	ES 4	ES 2	ES 14	ES 23	ES 10	ES 23	ES 23	ES 23	ES 23	ES 23	
29	-4	5	-1	-11	-4	9	-9	ES 4	ES 15	ES 7	ES 4	ES 13	ES 2	ES 4	ES 18	ES 5	ES 5	ES 5	ES 16	ES 22	ES 22	ES 22	ES 22	ES 22	
30	ES 22	ES 22	ES 22	-7	-18	-13	ES 16	ES 18	ES 13	ES 18	ES 16	ES 13	ES 7	ES 22	ES 22	ES 22	ES 22	ES 22	ES 22	ES 22	-13	-10	-11	-1	-7
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	-4	-2	1	5	US 8	10	US 0	ES 4	ES 2	ES 4	ES 2	ES 0	ES 2	ES 1	ES 5	ES 6	ES 6	US 1	US 0	-7	-2	US 2	-5	-6	
UD	3	4	6	10	15	15	16	7	ES 9	ES 2	ES 3	ES 6	ES 4	ES 19	ES 13	ES 20	ES 19	15	13	2	8	ES 6	7	0	
LD	-12	-11	-8	-3	ES 2	ES 8	ES 18	ES 18	ES 11	ES 10	ES 14	ES 13	ES 8	ES 8	ES 3	ES 1	ES 12	ES 12	ES 22	ES 23	-11	-14	-11	-14	

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

APR 1972 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAIKO

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

RADIO PROPAGATION QUALITY FIGURES

HIRAIISO

Time in U.T.

Apr. 1972	Whole Day Index	W W V				L M				W W V H				Warning				Principal magnetic storms		
		00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4-	(3)	-	(4)	(4)	4	4	(3)	-	4	3	3	4	N	N	N	N			
2	3+	(4)	-	(4)	(4)	4	3	(2)	-	4	2	(2)	4	N	N	N	N			
3	4°	(4)	-	(4)	(4)	4	4	(4)	4	4	3	(2)	4	N	N	N	N			
4	4-	(4)	-	(3)	(3)	4	4	(4)	3	4	3	4	4	N	N	N	N			
5	3+	(3)	(3)	(3)	(3)	4	4	(4)	4	4	3	(1)	4	N	N	N	N			
6	4-	(4)	(3)	(4)	(4)	4	4	(3)	4	4	4	3	4	N	N	N	N			
7	4°	(4)	-	(4)	(4)	3	4	(4)	4	4	4	3	4	N	N	N	N			
8	4-	(3)	-	(4)	4	4	4	(3)	-	4	4	4	4	N	N	N	N			
9	4°	(4)	(4)	(4)	4	4	4	(3)	-	4	4	4	4	N	N	N	N			
10	4°	(4)	(4)	(5)	4	4	4	(4)	4	4	4	4	4	N	N	N	N			
11	4°	(4)	-	(4)	4	4	4	(4)	4	4	4	4	4	N	N	N	N			
12	4°	(4)	-	(4)	4	4	4	(4)	4	4	4	3	4	N	N	N	N			
13	4°	(5)	(4)	(3)	4	4	4	(4)	3	4	4	4	4	N	N	N	N			
14	4°	(4)	(4)	(4)	4	4	4	(4)	4	4	4	4	4	N	N	N	N			
15	4°	(4)	(5)	(4)	4	4	4	(4)	-	4	4	5	4	N	N	N	N			
16	3+	(4)	(4)	(3)	4	4	3	(2)	-	4	4	4	4	N	N	N	N	18.0	---	80 ^Y
17	4+	(5)	(4)	(5)	4	-	4	(4)	4	4	4	5	4	N	N	N	N	---	---	
[18]	4°	(4)	(4)	(4)	(4)	4	4	(4)	3	4	4	5	4	N	N	N	N	---	---	
[19]	3°	(2)	(2)	(2)	(4)	(4)	4	(4)	(2)	4	4	3	4	N	N	N	N	---	21.0	
[20]	4°	(4)	(4)	(5)	5	3	4	(4)	4	4	3	4	4	N	N	N	N			
21	4°	(4)	(4)	(4)	(4)	4	4	(4)	4	4	4	4	4	N	N	N	N			
22	4°	(3)	(4)	(4)	(4)	4	4	(4)	-	4	4	4	4	N	N	N	N			
23	3+	(3)	(4)	(4)	(3)	4	3	(2)	-	4	4	4	4	N	N	N	N			
24	4-	(3)	(4)	(4)	(4)	4	4	(4)	3	4	4	5	4	N	N	N	N			
25	4°	(3)	-	(5)	(4)	4	4	(4)	4	4	4	4	4	N	N	N	N			
26	4-	(3)	(5)	(4)	(4)	4	3	(3)	4	4	4	4	4	N	N	N	N			
27	4-	(4)	(5)	(3)	4	3	3	(3)	4	4	3	(3)	4	N	N	N	N	13.3	---	132 ^Y
28	3+	(3)	-	(4)	(3)	4	4	(4)	(1)	4	4	4	3	N	N	N	N	---	---	
29	3+	(3)	-	(4)	(2)	3	4	(4)	-	4	4	(2)	2	N	U	U	U	---	---	
30	3°	(2)	-	(4)	(3)	-	3	(3)	-	3	3	(2)	3	W	U	U	U	---	04.0	

GEOALERT

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

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

- C = artificial accident
- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Apr. 1972	S W F						Correspondence					
	Drop-out Intensities (db)					Start- time	Dura- tion	Type	Imp.	Flare	Solar Noise	Mag
CO	LM	HA	TO	SH								
9	>15		10			23.21	28	Slow	1+	23.23	×	
18	×	20	×			01.02	20	Slow	1+	00.55	×	

I N U B O

1972	S P A											Remarks
Apr.	Phase Advance (degrees)								Time (U.T.)			
DATE	GBR	WWVL	NAA	NWC	NPG	HA2	HA3	AL3	Start	End	Maximum	
7				<u>8</u>	5	6	7		0145	0213	0148	
7				<u>8</u>	3	6			0235	0302	0240	
8			<u>10</u>		5	6	4		2310	2327	2313	
8			6		5	<u>7</u>	7		2352	0012	0000	
9	20	<u>61</u>	8	28	13	22	19	22	0210	0240	0219	
9	37		12	<u>43</u>		11	11	36	0627	0730	0634	X
9					5				2243	2302	2246	
9	25	<u>94</u>	51	40	56	70	66	34	2323	0048	2335	
11	—			6	3	<u>12</u>	5		0112	0145	0122	
14	—	50			25	<u>44</u>	26		2000	2101	2007	
16	—				3				2124	2142	2128	
18	—	86	45	64	<u>72</u>	70	65		0100	0226	0107	X
18	—						7		0221	0244	0229	
18	—				10				2023	2136	2028	
21	—		<u>8</u>		3		6		2248	2312	2256	
27	—	—	6	4	3	<u>9</u>	7		0054	0126	0059	
27	—	—	—		<u>9</u>	12	13		1956	2018	1958	
27	—	—			5	<u>9</u>	8		2126	2152	2131	X
27	—	—		4	<u>13</u>	16	12		2240	2326	2251	
28	—	—		<u>8</u>	3	4	4		0013	0034	0018	

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

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

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

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1972

第 24 卷 第 4 号

1972年10月10日 印 刷
1972年10月25日 発 行 (不許複製非売品)

編 集 兼
発 行 人

今 野 清 恒
東京都小金井市貫井北町4丁目2-1

発 行 所

郵 政 省 電 波 研 究 所
184 東京都小金井市貫井北町4丁目2-1
電話 国分寺 (0423)(21)1 2 1 1(代)

印 刷 所

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