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IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

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SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAIISO BRANCH

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

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

Solar radio emission and radio propagation conditions are observed at Hiraiso Branch.

	Latitude	Longitude	Site
Hiraiso	36°22.0'N.	140°37.5'E.	Isozaki-machi, Nakaminato-shi, Ibaraki-ken

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_oF2	} The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oF1	
f_oE	
f_oE_s	The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_oE_s	The lowest ordinary wave frequency at which the E_s layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.
f -min	The frequency below which no echoes are observed.
$M(3000)F2$	The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.
$M(3000)F1$	The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.
$h'F2$	The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the F region and can only be scaled when such stratification is present.
$h'F$	The natural and most significant F region virtual height parameter is that for lowest F region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when F region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.
$h'E_s$	The lowest virtual height of the trace used to give the f_oE_s .
$hpF2$	The virtual height of the $F2$ layer measured on the ordinary

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

a. Descriptive Letters

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

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

b. Qualifying Letters

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

value on the monthly tabulation sheets.

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

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

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

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

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

d. Description of Standard Types of E_s

The eight standard types of E_s 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 E_s trace that does not correspond to any of the eight types.

F An E_s 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 E_s traces observed in the daytime are classified according to their virtual height: *H* or *L*.

L A flat E_s 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 E_s 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 E_s 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 E_s trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

Q An E_s 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 E_s trace showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing 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 E_s 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 E_s trace which rises steadily with frequency and usually emerges from another type E_s 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 E_s trace such as E_s-L or E_s-F , at frequencies which greatly exceed the E layer critical frequency, whereas at low latitudes it usually rises from E_s-Q E_s-C or E_s-H at frequencies near the regular E critical frequency. Type S is never used to determine f_oE_s and $h'E_s$. The slant trace is sometimes observed to start at f_oE without echoes clearly identifiable as E_s echoes being seen.

N The designation 'N' is used to denote an E_s 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 E_s

When the ionogram shows the presence of multiple reflections from E_s 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 500MHz at Hiraiso Branch. Antennas are two parabolic reflectors : 10 meter for 200 MHz and 5 meter for 500 MHz, each having the total power receiver. Observations are feasible almost from sunrise to sunset.

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

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

The number of bursts exceeding the flux level is counted.

Bracket means that observation time does not exceed one third of the period.

c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

Descriptive type is denoted by the following symbols:

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Strengths of WWV and WWVH

Field Strengths observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraiso Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 Hz is picked up by the use of a narrow band pass filter with ± 40 Hz bandwidth.

The *tabulated field strength* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

Transmitter

	WWV	WWVH
Location	Fort Collins, Colorado Long. 105°02' W Lat. 40°41' N	Maui, Hawaii Long. 156°28' W Lat. 20°46' N
Power	3 kW for the upper side-band	0.5 kW* for the upper side-band
Antenna	$\lambda/2$ vertical	$\lambda/2$ vertical
Distance	9150 km	6270 km

* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

Receiver

Antenna	4.5 m vertical rod
Bandwidth	± 40 Hz for the upper side-band
Calibration	every half an hour

The meaning of *Descriptive symbols* is as follows:

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

b. Radio Propagation Quality Figures

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

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

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 15MHz 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.)

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

C O	.....	WWV 20, 15 and 10 MHz (Fort Collins, Colorado)
L M	.....	Various frequencies of commercial circuit (Lima)
H A	.....	WWVH 15 and 10 MHz (Hawaii)
T O	.....	JJY 15 and 10 MHz (Tokyo)
S H	.....	BPV 15 and 10 MHz (Shanghai)
H B	.....	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

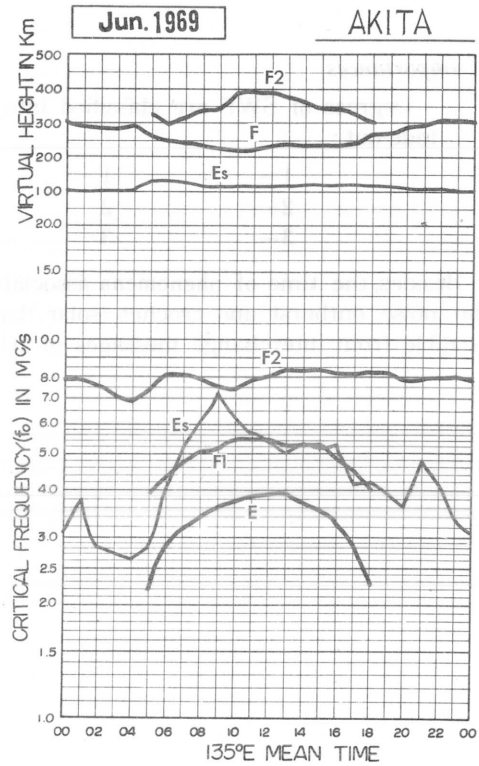
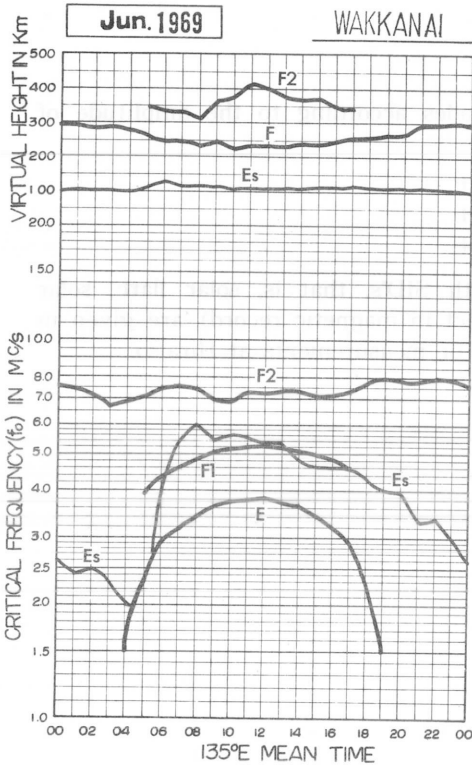
Importances

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

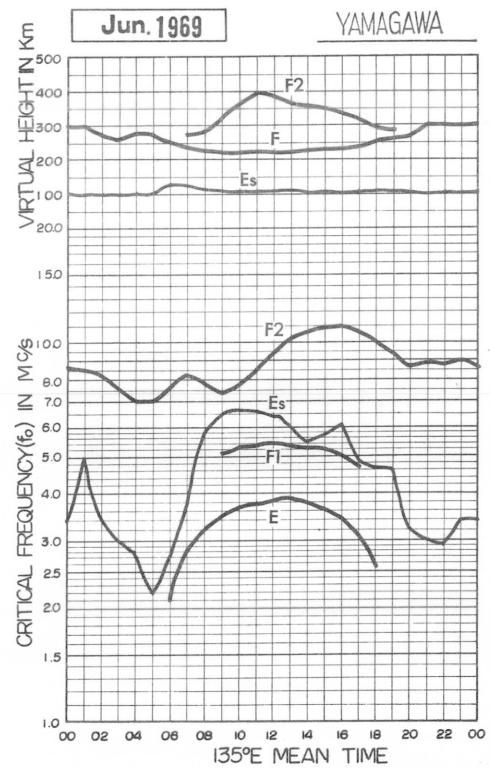
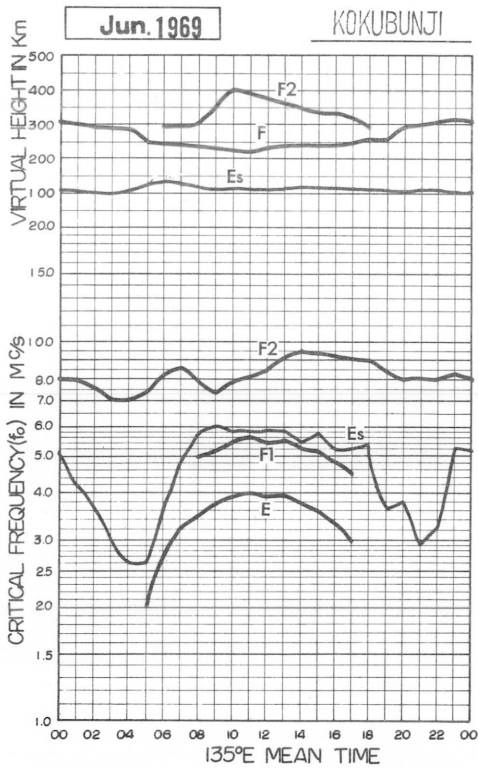
1-	1	1+
2-	2	2+
3-	3	3+

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.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



IONOSPHERIC DATA

JUN. 1969

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	84	F ₇₃	76	F	F ₆₈	68	67	A	A	A	A	63	C	C	C	C	71	77	82	83	82	76	74	68	
2	64	63	63	63	66	73	F ₉₀	I ₈₅	83	78	69	75	73	C	C	85	87	88	83	82	83	88	F ₈₂	F	
3	F	F ₇₅	F	F ₆₃	F ₅₉	71	76	70	69	65	65	72	69	81	78	74	74	83	84	83	78	78	80	81	
4	76	74	70	67	70	75	74	73	79	73	71	75	76	78	77	75	86	88	88	93	93	88	86	86	
5	82	78	80	73	73	73	73	68	67	68	63	A	65	63	I ₆₆	71	72	73	74	77	73	77	80	80	
6	76	74	73	70	68	70	73	76	70	73	75	A	77	A	83	78	81	87	84	90	88	84	80	F	
7	U ₈₃	F	F	F	F ₇₃	82	90	87	77	74	82	83	88	89	I ₈₇	87	A	83	86	88	88	92	85	86	
8	86	83	76	73	74	83	83	73	65	69	67	73	75	I ₇₆	76	74	68	72	76	74	73	76	F ₇₇	F ₇₁	
9	F	71	68	66	69	77	78	75	65	61	57	58	60	61	60	61	60	62	66	71	73	77	76	77	
10	78	78	74	70	70	80	82	83	85	84	84	90	88	89	90	88	85	85	88	89	83	86	88	87	
11	83	84	81	78	81	88	87	83	73	70	71	76	78	77	77	81	84	86	89	I ₈₇	88	U ₈₈	U ₈₉	89	
12	84	82	79	74	78	82	77	77	77	76	76	74	79	81	86	89	93	88	83	80	78	81	81	78	
13	76	73	70	70	75	84	93	88	A	75	79	79	82	77	77	83	86	86	84	I ₈₆	83	88	92	U ₈₇	
14	83	84	83	80	77	76	86	83	80	I ₇₁	U ₆₅	63	R	A	A	71	71	I ₇₂	78	80	A	76	F	F	
15	U ₇₄	F	F	F	67	63	65	66	63	57	I ₆₄	60	62	60	59	63	64	64	66	68	72	72	73	73	
16	75	73	68	60	63	71	78	76	68	A	A	59	59	A	64	67	A	69	71	70	75	75	75	71	
17	70	67	61	62	61	70	73	67	A	55	55	R ₅₄	60	58	59	60	61	54	60	65	70	73	73	73	
18	67	67	F ₆₇	F ₆₃	F	F ₆₅	74	84	A	69	64	63	A	62	A	59	60	65	68	70	74	A	80	77	
19	F ₇₆	U ₇₃	F ₆₇	F ₆₅	F ₆₃	71	80	79	74	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
20	C	C	C	C	C	C	C	C	C	A	75	I ₇₄	74	78	77	73	A	70	71	68	73	78	81	73	
21	68	64	62	63	54	57	65	64	I ₆₃	60	55	A	A	59	61	60	56	58	63	68	74	74	73	72	
22	67	68	65	62	59	69	82	92	77	76	C	C	63	66	69	69	66	68	76	77	74	76	77	79	
23	76	75	72	67	64	69	76	81	85	71	74	U ₇₀	72	76	76	68	71	66	70	78	80	83	83	83	
24	76	U ₇₅	73	68	70	70	67	70	70	68	78	70	70	76	74	73	71	74	77	81	82	77	80	81	
25	76	73	77	67	64	63	73	75	70	63	64	C	69	67	66	I ₆₆	68	69	72	76	78	76	F	F	
26	F	S ₈₀	77	F ₆₇	62	C	C	C	C	C	66	73	70	74	73	70	I ₇₂	70	73	77	75	77	76	71	
27	F ₇₀	F ₇₀	F	F	56	60	67	74	76	71	71	I ₇₄	78	73	70	70	70	70	80	94	88	90	S	F	F
28	F	F ₈₀	F ₆₉	F ₇₃	73	74	I ₇₂	74	76	69	73	80	67	69	73	69	71	73	75	75	78	F ₇₈	S ₇₇	F	
29	F	F	F	F	F ₆₈	F ₇₀	75	77	76	71	65	66	A	74	74	71	73	72	77	84	78	73	73	F	
30	F	F	F	F	F ₆₃	75	78	83	78	70	68	A	71	75	76	73	76	72	78	86	87	84	86	83	
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	23	25	23	23	28	28	28	27	24	25	26	23	24	24	25	28	26	29	29	29	28	28	26	22	
MED	76	74	72	67	68	71	76	76	75	70	68	73	72	74	74	71	71	72	77	80	78	78	80	78	
UQ	82	78	76	72	73	76	82	83	78	73	75	75	78	78	77	76	81	83	83	86	83	85	83	83	
LQ	72	71	68	63	63	69	73	73	68	68	64	63	66	64	66	68	68	69	71	74	74	76	76	73	

The Radio Research Laboratories, Japan

JUN. 1969

FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

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						A	A	A	A	A	A	A	C	C	C	C	440	420						
2							430	I A 450	470	A		510	510		C	C	480	450	430					
3						390	420	440	470	490	540	510	520	500	500	500	470	440						
4								500	500	500		540	540	540	520	530	490	450						
5							430		A	A	A	A	510	530	I A 510	I A 500	490	460						
6						410	UL 480	UL 500		520	A	A	A	A	A	L 510	A	A						
7						UL 440	A	A	A	550	A	570	530		A	A	A	A	A	UL 400				
8							430	I A 500		520	530	540	530	540	540	UL 510	500	470						
9							440	A	480	500	500	500	510	510	510	500	480	460	400					
10									530	580	540	570	550	540	540	520	520	UL 480						
11							UL 440	A	A	A	540	A	570		A	A	A	530	A					
12								A	A	A		A	560	550	540	530	520	500	480					
13								510	A	530	560	A	A		570	580	550	A						
14								A	A	A	A		540	530	A	A	A	A	A					
15							A	A	R	500	I A 510	520	530	520	530	I A 500	500	460						
16							450	A	A	A	A	530	530		A	520	520	A	A					
17							370	450	460	A	510	500	500	510	520	510	I A 500	480	A					
18								410	430	A	A	510	A		A	A	500	A	460					
19							A	335	A	A	C	C	C	C	C	C	C	C	C					
20								C	C	C	A	520	A	A	A	520	A	A	450					
21							380	A	A	A	A	490	A	A	500	500	470	480	400					
22								430	I A 460	500	500	C	C	520	500	490	480	UL 430	UL 390					
23									490	490	A	490	490	510	500	480	500	460						
24									A	A	A	500	A	510	510	500	480	490	UL 440					
25							380	420	460	A	A	A	C	520	500	500	I C 500	470						
26								C	C	C	C	A	A	A	A	A	A	A	A					
27							400	I A 420	440	A		A	A	A	A	500	500	460	A					
28								A	A	A	500	510	490	500	520	500	480	A	A					
29								A	A	460	510	500	520	A	A	A	A	A	L					
30							UL 400	A	A	A	A	A	A		520	500	510	500	A					
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	14	12	8	13	15	15	19	17	20	22	18	14	4						
MED					395	430	460	485	510	510	520	520	520	510	500	485	455	400						
UQ					405	440	500	500	520	535	540	530	540	525	510	500	460	400						
LQ					380	420	445	470	500	500	505	510	500	500	500	470	440	395						

The Radio Research Laboratories, Japan

JUN. 1969

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1969

FOE (0.01 MHz)

135° E Mean Time (G. M. T. + 9h)

Station		WAKKANAI		Lat. 45° 23.6' N		Long. 141° 41.1' E		Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1						A	230	290	325	340	355	370	375	C	C	C	C	305	280	A	A						
2						140	215	275	310	330	345	365	375	370	C	C	335	300	280	220	S						
3						140	235	295	310	330	355	370	380	385	380	R	R	A	A	A	S						
4						A	245	300	320	350	350	390	395	390	365	A	380	345	295	235	S						
5						140	230	290	315	345	370	390	395	400	U R	390	360	340	310	295	230	180					
6						A	235	300	335	355	390	B	385	A	A	B	B	B	A	A	S						
7						A	245	300	325	355	I B	395	B	375	390	385	350	300	280	A	A						
8						A	245	300	315	335	365	355	B	395	390	370	340	310	I A	280	250	S					
9						A	245	300	320	345	365	I B	400	395	390	385	370	335	300	235	140						
10			E			175	250	I C	295	325	345	360	U R	380	U R	380	385	395	A	A	335	I A	295	250	170		
11						180	250	300	330	355	370	380	375	375	375	A	A	A	A	A	A						
12						200	I A	245	295	330	365	380	390	395	385	355	355	A	A	A	A	A					
13						160	240	300	335	365	390	395	395	400	360	350	370	335	305	A	A						
14						170	255	310	355	380	390	395	400	405	395	385	I A	360	355	310	230	S					
15						180	250	310	B	375	U R	390	395	B	B	B	410	360	330	300	240	S					
16						A	245	300	320	345	375	B	B	B	B	390	390	380	320	295	240	A					
17						145	240	300	325	345	370	380	385	390	I A	380	390	355	315	295	220	140					
18						A	245	300	315	330	360	375	380	A	A	A	A	330	300	250	180						
19						A	230	295	330	345	C	C	C	C	C	C	C	C	C	C	C						
20						C	C	C	C	C	360	370	385	390	345	385	365	325	295	230	160						
21						A	220	285	305	325	340	360	360	345	365	355	320	320	290	230	150						
22						150	230	285	305	325	345	C	C	A	A	355	325	A	A	215	120						
23						160	220	A	315	330	355	365	380	385	I A	355	340	345	325	295	225	A					
24						130	215	290	310	335	355	370	375	365	360	345	330	320	290	235	135						
25						135	220	285	310	325	350	375	C	345	I A	355	A	C	300	290	230	150					
26						A	C	C	C	C	C	345	355	A	A	A	340	315	290	220	S						
27						A	225	290	310	330	340	360	360	380	370	360	330	310	280	A	A						
28						A	235	285	305	315	350	350	350	320	305	365	340	300	A	A	150						
29						A	A	270	300	320	A	A	340	370	310	370	340	315	290	230	E						
30						125	225	290	315	325	350	355	340	320	390	A	A	A	290	235	120						
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	15	27	27	27	28	27	25	23	22	22	18	20	23	23	20	13						
MED					E	150	235	295	315	342	360	375	380	385	372	368	342	320	295	230	150						
UQ						172	245	300	325	352	372	390	390	390	390	385	362	330	295	238	160						
LQ						140	228	290	310	330	350	365	368	370	355	355	338	310	290	228	135						

JUN. 1969

FOE (0.01 MHz)

IONOSPHERIC DATA

JUN. 1969

FOES (0.1 MHZ)

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

Station	WAKKANAI				Lat	45	23.6	N	Long	141	41.1	E	Sweep	1	MHz to	20	MHz in	20	sec	in	automatic	operation			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J ₅₃	J ₂₄	J ₃₁	J ₂₈	J ₄₁	41	J ₆₅	J ₆₈	J ₆₆	J ₇₀	D ₆₀	53	C	C	C	C	34	J ₅₃	130	J ₆₃	J ₂₈	J ₃₁	31	E	
2	E	E	20	J ₂₁	20	33	J ₆₃	J ₁₃₃	40	52	G	45	50	C	C	J ₆₃	G	40	38	30	J ₄₃	25	J ₂₅	J ₂₃	
3	J ₂₃	19	E	20	G	30	39	43	46	44	47	G	G	G	G	G	36	30	J ₃₂	24	E	E	18	15	
4	23	J ₂₅	J ₂₈	J ₄₃	J ₃₃	J ₃₃	34	40	40	G	G	52	45	46	43	G	G	38	31	18	E	15	20	J ₅₆	
5	J ₂₆	J ₂₆	15	16	G	G	40	41	J ₇₀	58	J ₇₁	J ₈₁	48	42	J ₇₃	J ₅₅	J ₅₃	G	34	24	16	15	20	J ₃₄	
6	J ₂₅	J ₄₀	J ₅₀	J ₃₄	J ₃₁	G	G	44	41	44	J ₆₆	D	J ₁₅₆	J ₁₄₅	J ₈₅	40	J ₅₃	J ₅₀	33	J ₂₉	J ₄₀	J ₈₆	J ₇₄	72	
7	E	E	J ₂₈	J ₂₃	20	22	J ₅₀	J ₅₅	M ₆₀	53	59	50	43	J ₇₁	J ₁₃₁	J ₇₄	J ₁₂₈	J ₁₁₃	J ₆₃	J ₃₃	50	J ₅₃	J ₅₁	E	
8	E ₁₈	15	J ₂₀	J ₂₁	24	G	J ₈₀	J ₆₃	J ₆₅	G	J ₅₆	E ₄₇	J ₅₅	63	53	J ₅₁	38	33	32	J ₄₀	J ₇₀	J ₈₀	J ₇₁	J ₇₁	
9	J ₅₃	J ₂₅	J ₂₀	20	J ₂₅	G	40	70	48	40	G	54	43	43	G	G	40	34	40	J ₄₀	J ₄₃	16	J ₄₁	J ₅₁	
10	J ₃₅	E	J ₂₃	E	G	G	38	44	43	47	47	J ₅₈	45	G	41	46	46	40	J ₅₁	J ₅₁	33	J ₆₃	J ₂₅	20	
11	J ₂₃	J ₃₁	J ₂₅	J ₃₃	G	G	38	J ₅₃	J ₅₉	60	48	J ₆₃	J ₅₈	J ₆₁	J ₇₀	M ₆₈	J ₆₀	90	J ₉₃	J ₁₁₂	J ₆₄	J ₃₅	J ₈₅	J ₂₀	
12	J ₃₀	J ₂₃	E	17	18	37	J ₇₄	J ₆₄	J ₇₄	56	53	52	J ₆₆	51	41	40	42	32	28	31	J ₄₂	J ₂₄	E	E	
13	18	E	E	J ₃₃	G	G	38	47	J ₉₈	J ₅₆	57	J ₇₀	M ₇₀	J ₆₁	J ₅₂	41	J ₇₄	38	53	J ₈₁	J ₇₀	J ₇₃	J ₃₄	J ₂₈	
14	J ₂₃	J ₂₃	J ₁₉	E	G	G	43	J ₆₅	J ₆₀	J ₇₃	58	55	53	J ₇₈	94	104	J ₅₅	J ₁₀₃	J ₉₀	J ₇₀	J ₁₁₅	J ₁₁₃	J ₈₃	J ₈₀	
15	J ₇₃	J ₇₀	J ₃₀	J ₂₃	29	J ₄₄	J ₇₁	J ₇₃	51	43	J ₇₀	47	46	E ₄₅	44	51	43	J ₅₀	J ₅₆	34	J ₂₈	J ₃₀	J ₅₁	J ₃₁	
16	J ₂₄	E	J ₅₃	J ₂₃	22	G	42	54	J ₆₄	73	J ₇₃	45	49	J ₆₄	53	47	J ₁₀₅	J ₆₀	J ₄₃	J ₄₃	J ₄₀	J ₂₃	E	J ₂₈	
17	J ₂₉	J ₃₁	J ₂₉	J ₂₀	J ₃₉	J ₃₇	33	J ₅₆	J ₆₃	49	45	42	43	42	G	J ₇₄	J ₅₆	J ₅₃	J ₇₄	J ₅₇	J ₃₃	J ₄₄	J ₅₅	J ₈₁	
18	J ₅₃	J ₂₄	J ₄₃	J ₃₁	20	G	G	J ₅₃	J ₁₃₈	J ₇₅	44	J ₆₃	68	J ₉₃	J ₆₈	J ₅₁	J ₇₃	J ₅₅	J ₇₃	J ₅₁	J ₆₁	J ₉₅	J ₃₅	J ₆₃	
19	J ₅₄	J ₄₃	J ₄₃	J ₂₅	22	J ₄₄	38	47	M ₈₀	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
20	C	C	C	C	C	C	C	C	C	J ₁₂₅	J ₆₀	J ₈₀	J ₆₅	J ₇₃	45	J ₇₀	J ₇₃	J ₄₆	G	J ₄₃	J ₃₃	J ₂₄	J ₂₅	E	
21	J ₃₀	19	J ₂₅	J ₂₃	J ₃₂	34	J ₄₆	J ₅₈	J ₇₀	J ₈₀	43	J ₇₅	J ₇₅	43	40	36	G	36	J ₅₃	J ₅₅	J ₅₀	J ₂₃	17	18	
22	E	E	13	15	20	G	36	50	43	50	C	C	J ₅₃	J ₅₃	G	39	J ₅₅	J ₅₀	J ₄₀	J ₈₃	J ₆₅	J ₄₁	J ₂₁	J ₅₃	
23	J ₄₀	J ₂₅	E	E	G	G	34	G	41	J ₅₅	J ₅₅	J ₆₃	J ₄₉	J ₇₅	J ₅₈	G	G	41	J ₆₁	30	J ₃₅	E	E	18	
24	J ₂₀	E	15	E	20	30	J ₆₀	J ₅₃	J ₅₂	J ₅₅	J ₆₆	48	42	48	G	40	40	J ₇₀	J ₃₁	J ₂₈	J ₂₅	J ₅₅	18		
25	J ₂₃	E	E	E	G	G	40	40	J ₆₃	J ₆₈	J ₆₁	C	J ₅₁	45	40	C	G	40	41	J ₃₁	J ₃₃	J ₆₃	J ₇₃	J ₅₄	
26	J ₆₃	J ₅₃	J ₆₄	J ₁₀₃	J ₁₀₃	C	C	C	C	J ₆₆	J ₉₀	J ₇₁	J ₆₁	J ₆₀	J ₆₃	J ₇₃	J ₅₈	J ₇₁	30	J ₄₀	J ₂₃	J ₃₃	J ₃₀		
27	J ₃₀	J ₆₄	J ₈₃	J ₄₃	J ₂₉	G	J ₅₀	J ₄₈	J ₅₄	J ₈₀	J ₆₃	J ₁₂₁	J ₇₀	48	48	G	J ₄₅	J ₇₃	J ₅₅	J ₆₃	J ₁₁₀	J ₁₀₃	J ₇₃	J ₄₃	
28	J ₂₃	J ₃₃	J ₃₅	J ₃₀	J ₃₃	J ₄₃	J ₇₄	J ₇₀	J ₇₄	J ₅₀	46	J ₅₅	J ₅₄	J ₆₀	43	43	J ₆₃	J ₇₈	J ₃₃	J ₈₀	J ₇₃	J ₈₃	J ₁₂₃	J ₈₁	
29	J ₇₁	J ₄₀	J ₄₀	J ₅₃	J ₁₁₃	J ₆₃	J ₅₀	J ₈₀	J ₅₂	43	50	50	J ₈₁	J ₆₅	J ₇₀	J ₇₀	J ₅₅	36	40	J ₃₄	J ₂₃	J ₃₃	J ₃₅	J ₅₃	
30	J ₄₀	J ₆₃	J ₅₃	E	19	G	43	J ₆₀	J ₇₃	J ₇₃	J ₆₂	J ₈₃	J ₇₄	G	J ₅₃	40	40	J ₅₆	J ₃₈	27	J ₄₃	J ₃₄	J ₃₃	J ₂₀	
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	29	29	29	29	28	28	28	28	28	27	28	27	27	27	29	29	29	29	29	29	29	29	29	29
MED	J ₂₆	J ₂₄	J ₂₅	J ₂₃	20	G	40	J ₅₄	J ₆₀	54	56	55	53	53	48	46	J ₄₆	46	J ₄₃	J ₄₀	J ₄₀	J ₃₃	J ₃₄	J ₃₀	
UQ	J ₄₀	J ₃₃	J ₄₀	J ₃₁	J ₃₁	36	J ₅₀	J ₆₄	J ₇₀	J ₇₂	J ₆₂	J ₇₂	J ₆₉	J ₆₄	J ₆₄	J ₆₃	J ₆₀	J ₅₆	J ₆₃	J ₅₇	J ₆₁	J ₆₃	J ₅₅	J ₅₄	
LQ	J ₂₃	E	15	16	G	G	38	46	47	46	46	50	47	42	41	38	38	38	34	30	J ₃₃	J ₂₃	21	18	

JUN. 1969

FOES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

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 ↓		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	18	E	E	16	20	40	60	A	A	A	A	52	C	C	C	C	G	G	30	24	24	19	19	E			
2	E	E	E	15	G	G	40	67	G	50	G	G	45	C	C	G	G	40	38	G	30	22	18	20			
3	17	17	E	E	G	G	38	41	44	44	47	G	G	G	G	G	35	30	25	G	E	E	18	12			
4	19	19	20	35	23	G	G	G	G	G	G	50	G	G	40	G	G	G	G	G	E	15	15	20			
5	17	18	E	E	G	G	39	G	59	51	54	A	47	G	A	51	G	G	G	G	15	14	18	20			
6	18	15	38	22	20	G	G	44	G	G	61	A	55	A	55	G	50	49	32	23	25	35	56	18			
7	E	E	E	20	16	18	21	45	52	58	50	55	G	G	57	A	73	A	68	32	21	34	37	30	E		
8	E	S	E	17	18	20	G	40	62	G	G	G	E	B	47	G	G	G	G	33	32	40	28	46	40	52	
9	34	21	14	13	20	G	G	65	44	G	G	G	G	G	G	G	G	G	G	39	40	16	37	22			
10	18	E	E	20	E	G	G	G	44	G	G	G	50	G	G	41	40	43	40	50	41	28	20	21	16		
11	18	25	20	19	G	G	G	48	54	60	G	57	50	58	55	56	40	80	73	A	35	31	50	18			
12	16	E	E	14	15	27	73	64	62	55	53	50	50	50	G	40	40	31	27	30	27	21	E	E			
13	16	E	E	E	G	G	G	G	A	G	51	63	64	50	50	G	58	G	49	E	R	64	50	30	21		
14	19	17	16	E	G	G	G	60	53	A	54	50	50	A	A	53	55	A	50	50	A	53	50	50			
15	44	45	25	15	20	43	54	53	E	R	51	G	A	G	E	B	45	G	51	G	40	50	34	27	28	44	30
16	21	E	18	20	20	G	G	53	60	A	A	G	47	A	50	47	A	48	39	21	25	21	E	24			
17	22	15	19	15	20	32	G	G	A	46	G	G	G	40	G	54	46	47	50	47	30	40	30	52			
18	42	20	25	31	18	G	G	G	A	52	G	57	A	53	A	37	47	39	50	48	56	A	29	34			
19	22	24	20	20	18	41	G	43	72	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
20	C	C	C	C	C	C	C	C	C	A	G	A	54	51	45	66	A	G	G	28	20	19	22	E			
21	21	11	17	16	20	20	41	45	A	51	G	A	A	G	G	G	G	G	30	48	44	20	15	15			
22	E	E	E	12	12	G	G	G	47	G	47	C	C	41	42	G	G	36	32	G	60	47	20	17	18		
23	34	18	E	E	G	G	27	G	G	50	G	G	G	43	G	G	G	G	G	20	15	E	E	16			
24	15	E	E	E	G	G	G	50	45	50	48	51	G	G	G	G	G	40	44	30	20	18	24	17			
25	E	E	E	E	G	G	G	G	52	57	60	C	45	40	37	C	G	G	G	G	26	47	40	40			
26	17	40	20	18	52	C	C	C	C	C	50	60	66	57	53	54	A	55	66	27	40	20	20	20			
27	17	16	20	20	20	G	47	G	47	43	56	A	58	48	G	G	43	48	48	60	75	51	16	20			
28	16	20	20	22	20	36	A	60	60	G	G	G	49	G	52	G	56	58	24	20	24	36	50	17			
29	50	20	20	20	36	27	50	60	G	37	48	49	A	56	61	55	50	G	G	29	18	18	18	18			
30	17	40	E	E	G	G	41	51	59	58	60	A	68	G	42	38	34	52	G	24	40	32	19	12			
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	29	29	29	29	28	28	28	28	28	28	27	28	27	27	27	29	29	29	29	29	29	29	29	29		
MED	18	16	17	15	18	G	E	27	48	52	50	48	50	47	42	41	37	40	39	32	28	28	21	21	18		
UQ	21	20	20	20	20	24	43	60	61	56	56	62	56	54	54	52	50	48	49	U	44	40	37	37	24		
LQ	16	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	21	24	19	18	16		

JUN. 1969

FBES (0.1 MHz)

IONOSPHERIC DATA

JUN. 1969

F=MIN (0.1 MHZ)

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

Station	WAKKANAI				Lat. 45 23.6 N.	Long. 141 41.1 E						Sweep 1 MHz to 20 MHz in 20 sec in automatic operation													
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	E	E	E	E	E	11	13	22	22	20	21	22	C	C	C	C	13	12	E	E	E	E	E		
2	E	E	E	E	E	11	12	15	20	20	20	21	20	C	C	18	15	12	11	E ₁₂ S	E	E	E	E	
3	E	E	E	E	E	E	11	20	18	20	20	21	21	20	21	21	17	12	E	E ₁₂ S	E	E	E	E	
4	E	E	E	E	E	E	11	16	18	20	20	20	27	28	18	19	18	13	13	E ₁₂ S	E	E	E	E	
5	E	E	E	E	E	E	11	17	20	23	27	25	30	27	25	27	21	17	12	E	E	E	E	E	
6	E	E	E	E	E	E	13	18	20	20	27	40	32	20	25	37	33	33	20	18	E ₁₃ S	E	E	E	E ₁₅ S
7	E	E	E	E	E	E	13	18	17	21	40	29	40	28	28	28	23	20	20	13	E	E	E	E	E
8	E ₁₈ S	E	E	E	E	E	12	16	17	21	28	27	47	20	27	23	22	20	17	12	E ₁₅ S	E	E	E	E
9	E	E	E	E	E	E	12	13	20	19	26	27	21	20	20	28	20	20	18	13	E	E	E	E	E
10	E	E	E	E	E	E	11	E ₃₀ C	14	20	21	27	28	20	22	21	27	20	19	12	E	E	E	E	E
11	E	E	E	E	E	E	11	17	20	20	23	27	27	30	20	25	20	20	15	E	E	E	E	E	E
12	E	E	E	E	E	E	15	17	20	20	27	21	22	24	30	20	20	17	13	13	E	E	E	E	E
13	E	E	E	E	E	E	12	18	18	17	21	20	20	29	30	21	17	12	11	E	E	E ₁₂ S	E	E ₁₂ S	E ₁₃ S
14	E ₁₆ S	E	E	E	E	E	11	20	22	23	26	27	30	22	27	30	24	20	17	13	E ₁₆ S	E	E	E	E
15	E ₁₅ S	E	E	E	E	E	E	21	38	26	25	30	40	38	45	27	22	20	18	17	E ₁₇ S	E	E	E	E
16	E	E	E	E	E	E	15	20	21	20	22	39	40	40	20	21	29	17	12	13	E	E	E	E	E
17	E	E	E	E	E	E	11	21	20	20	24	28	30	28	27	21	20	16	E	13	E	E	E	E	E
18	E	E	E	E	E	E	E	17	18	18	20	20	21	35	24	20	18	13	13	11	E	E	E	E	E
19	E	E	E	E	E	E	E	17	18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	25	20	27	21	20	20	19	17	E	E	13	E	E	E	E
21	E	E	E	E	E	E	16	16	17	18	22	27	20	24	25	20	13	18	11	E	E	E	E	E	E
22	E	E	E	E	E	E	13	13	16	20	20	C	C	30	20	20	20	20	15	E	E	E	E	E	E
23	E	E	E	E	E	E	11	17	16	20	27	21	30	25	20	25	20	12	E	E	E	E	E	E	E
24	E	E	E	E	E	E	12	13	20	17	20	22	30	31	23	25	20	20	12	11	E	E	E	E	E
25	E	E	E	E	E	E	13	17	17	23	27	30	C	20	20	20	C	11	12	11	E	E	E	E	E
26	E	E	E	E	E	E	C	C	C	C	C	18	20	18	17	17	17	13	11	17	E ₁₃ S	E	E	E	E
27	E	E	E	E	E	E	12	12	11	16	17	18	20	20	22	22	18	13	E	E	E	E	E	E	E
28	E	E	E	E	E	E	12	E	11	17	18	17	20	19	21	18	16	13	11	E	E	E	E	E	E
29	E	E	E	E	E	E	12	15	12	17	18	20	20	18	20	17	17	12	E	11	E	E	E	E	E
30	E	E	E	E	E	E	E	18	17	E ₂₄ C	18	20	20	19	20	18	18	12	E	E	E	E	E	E	E
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	29	29	29	29	28	28	28	28	28	28	27	28	27	27	27	29	29	29	29	29	29	29	29	29
MED	E	E	E	E	E	11	14	17	20	22	22	22	21	23	21	20	18	13	11	E	E	E	E	E	E
UQ	E	E	E	E	E	E	12	18	20	20	26	27	30	30	27	25	22	20	17	13	E ₁₂ S	E	E	E	E
LQ	E	E	E	E	E	E	12	16	17	20	20	20	20	20	20	18	15	12	E	E	E	E	E	E	E

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F=MIN (0.1 MHZ)

IONOSPHERIC DATA

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M(3000)F2 (0.01)

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

Station WAKKANAI				Lat 45 23.6 N Long 141 41.1 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1	275	F 265	280	F	F 270	265	280	A	A	A	A	255	C	C	C	C	280	290	295	290	280	275	280	265			
2	270	F 265	265	270	F 275	265	F 300	I 300	330	255	270	305	260	C	C	285	295	285	290	280	275	280	F 275	F			
3	F	F 280	F	F 270	F 255	275	285	285	290	285	270	305	295	295	295	290	285	295	300	290	275	265	270	280			
4	275	270	270	275	280	295	310	305	305	320	280	280	285	280	285	270	290	285	280	270	285	275	270	265			
5	270	280	280	290	275	275	290	265	270	280	270	A	270	270	I 260	270	280	285	285	285	260	250	255	270			
6	265	255	265	275	275	280	265	300	270	290	280	A	275	A	280	280	280	275	275	275	275	265	265	F			
7	U 265	F	F	F	F 285	275	280	280	280	245	275	260	275	280	I 270	275	A	275	280	280	275	270	270	265			
8	260	270	265	260	255	265	295	270	275	260	255	260	265	I 280	R 275	280	270	265	285	275	255	270	F 260	F 255			
9	F	255	260	260	250	270	255	280	255	245	220	235	235	250	240	255	250	260	260	270	260	250	255	250			
10	245	255	260	260	250	275	270	280	280	260	270	265	265	275	280	275	285	280	285	295	270	265	265	270			
11	265	275	270	280	255	280	275	310	295	255	270	260	270	275	265	270	270	290	280	I 285	275	U 265	U 255	245			
12	270	270	275	265	270	275	I 270	275	255	265	265	250	255	240	250	255	270	275	280	285	260	250	265	265			
13	255	265	265	265	270	265	270	275	A	265	275	280	285	275	275	265	275	290	285	I 280	270	250	265	U 260			
14	245	250	260	285	260	275	265	275	260	I 260	U 300	235	R	A	A	260	260	I 250	280	275	A	250	F	F			
15	U 245	F	F	F	295	270	265	270	330	215	I 240	230	240	220	220	260	260	260	265	265	265	250	245	245			
16	255	260	270	265	245	250	270	265	265	A	A	230	230	A	255	265	A	275	275	270	270	255	265	260			
17	290	265	255	250	345	255	275	270	A	235	245	215	245	230	245	265	270	250	270	265	255	260	260	275			
18	270	270	F 270	F 275	F 250	F 255	275	A	265	280	245	A	255	A	240	265	270	285	285	270	A	265	275				
19	F 275	U 265	F 270	F 270	F 255	260	280	280	I 290	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C			
20	C	C	C	C	C	C	C	C	C	A	270	I 270	260	280	300	290	A	295	300	275	260	270	280	275			
21	270	265	265	275	265	255	275	265	I 270	A	265	245	A	A	270	275	290	270	275	285	275	285	280	265	260		
22	270	265	280	280	270	265	260	305	290	305	C	C	255	280	275	290	265	265	295	295	280	275	275	270			
23	275	280	290	290	290	275	275	285	295	300	290	U 295	265	290	305	280	295	290	290	285	280	270	270	280			
24	275	U 280	275	270	280	275	275	285	305	270	295	270	270	290	285	285	280	260	290	275	280	260	255	265			
25	265	260	275	270	265	270	275	280	300	275	245	C	270	285	275	I 280	275	275	280	275	290	265	F	F			
26	F	S 275	275	F 270	240	C	C	C	C	C	270	290	I 275	280	300	275	I 300	285	290	285	285	285	275	270			
27	F 255	F 260	F	F	285	280	285	300	285	295	310	I 295	290	290	300	285	300	275	290	295	285	280	F	F			
28	F	F 285	F 275	F 290	290	310	I 290	295	240	290	280	315	270	280	295	275	300	315	305	300	285	F 280	F 275	F			
29	F	F	F	F	295	285	300	285	325	295	275	280	A	295	295	270	305	290	275	305	310	275	285	F			
30	F	F	F	F	F 270	290	280	290	310	315	305	A	280	295	295	275	290	280	280	280	285	285	285	280			
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	23	25	23	23	28	28	28	27	24	25	26	23	24	24	25	28	26	29	29	29	28	28	26	22			
MED	270	265	270	270	270	275	275	280	288	265	270	265	268	280	275	275	280	275	285	280	275	268	265	265			
UQ	272	275	275	278	282	278	285	292	302	290	280	285	275	288	295	282	290	290	290	285	285	275	275	275			
LQ	258	260	265	265	255	265	270	275	270	260	265	248	258	270	265	265	270	270	280	275	268	258	260	260			

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M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 1969

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						A	A	A	A	A	A	A	C	C	C	C	365	335						
2							I ₃₅₀ A	I ₃₆₅ A	365	A		365	360	C	C	345	350	A						
3						335	A	A	A	365	335	355	365	360	345	345	345	335						
4								350	340	355		I ₃₆₅ A	335	340	350	330	330	340						
5							A		A	A	A	A	A	340	I ₃₃₅ A	I ₃₄₅ A	325	315						
6						L ₃₄₀	U ₃₃₅ L	U ₃₄₀ L		345	A	A	A	A	A	L ₃₅₀	A	A						
7						U ₃₂₅	A	A	A	A	A	335	360	A	A	A	A	A	U ₃₅₀					
8							I ₃₃₀ A	I ₃₄₀ A		345	360	B	A	350	335	U ₃₅₅ L	340	315						
9						320	A	A	A	365	370	360	355	335	355	345	335	320	315					
10									360	330	350	I ₃₅₅ A	365	350	350	345	330	U ₃₃₅ L						
11						U ₃₈₀ L	A	A	A	A	365	A	A	A	A	A	330	A						
12							A	A	A	A	A	A	A	A	335	340	325	320						
13							355	A	L ₃₄₀	A	A	A	A	A	I ₃₂₀ A	315	A							
14							A	A	A	A	A	A	A	A	A	A	A	A						
15						A	A	R	340	I ₃₅₀ A	345	340	350	335	I ₃₄₀ A	320	A							
16						325	A	A	A	A	340	I ₃₃₅ A	A	A	A	A	A	A						
17						325	335	345	A	A	375	370	365	345	350	A	A	A						
18						360	385		A	A	355	A	A	A	A	340	A	325						
19						A	335	A	A	C	C	C	C	C	C	C	C	C						
20							C	C	C	A	350	A	A	A	I ₃₃₅ A	A	A	335						
21						315	A	A	A	A	385	A	A	355	360	385	340		325					
22							I ₃₄₅ A	I ₃₄₀ A	340	I ₃₅₅ A	C	C	360	345	360	365	U ₃₄₀ L	335						
23							345	345	A	390	410	355	355	375	345	350								
24							A	A	A	A	A		355	355	345	355	320	A						
25						340	335	350	A	A	A	C	A	350	345	I ₃₅₀ C	355							
26							C	C	C	C	A	A	A	A	A	A	A	A						
27						310	I ₃₅₀ A	370	A		A	A	A	A	350	350	A	A						
28							A	A	A	360	375	375	I ₃₇₀ A	345	I ₃₅₀ A	355	A	A						
29							A	A	390	360	A	A	A	A	A	A	A	L						
30						L ₃₅₀	A	A	A	A	A	A	A	355	360	355	340	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						8	12	11	6	11	12	11	13	15	19	20	16	11	4					
MED						330	335	350	352	355	362	360	360	350	350	345	338	335	330					
UQ						340	U ₃₅₀	360	365	360	375	368	365	355	352	355	348	335	342					
LQ						320	332	342	340	342	350	350	355	345	335	342	328	320	320					

The Radio Research Laboratories, Japan

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M(3000)F1 (0.01)

IONOSPHERIC DATA

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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					350	A	A	A	A	A	450	C	C	C	C	320	305							
2					295	I A	275	260	300		330	305		C	C	325	305	305						
3					325	315	325	315	345	460	325	420	335	335	340	315	315							
4						310	310	295			375	360	365	365	375	330	305							
5						305		A	375	405	A	430	425	I A	430	385	350	325						
6					305	370	315		350	370	A	410	A		350	350	350	325						
7					340	295	315	300	A	395	375	405	365	360	A	A	A	A	290					
8					280		A		440	475	420	395	420	380	375	360	395							
9					370	I A	360	450	505	660	575	560	500	540	465	485	410	370						
10								370	400	360	360	375	360	360	360	350	345							
11					280	300	315	A	400	440	410	390	400	395	360	A								
12							A	405	400	395	430	435	450	425	395	350	345							
13						350	A	350	400	400	I A	365	400	410	400	360								
14						A	390	I A	410	340	600	R	A	A	435	400	A							
15					A	410	R	675	I A	520	600	535	610	655	465	440	410							
16					350	390	A	A	A	615	620	A	480	440	A	360								
17					360	400	365	A	600	545	710	525	600	535	470	415	A							
18					345	340	A	400	405	I A	415	A	500	A	535	425	400							
19					360	350	345	I A	330	C	C	C	C	C	C	C	C							
20						C	C	C	A	370	A	395	350	320	A	A	345							
21					430	365	420	A	450	515	A	A	465	440	385	425	320							
22					365	285	325	325	C	C	490	400	375	325	320	300								
23						325	310	295	340	365	375	350	325	375	340									
24						I A	330	300	325	340	375	375	360	350	350	360	345							
25					310	370	350	325	A	A	C	390	360	385	I C	370	360							
26						C	C	C	C	350	A	A	370	345	375	I A	320	345						
27					350	320	300	310		320	A	345	320	340	360	310	360							
28						A	A	320	350	375	310	365	380	345	325	345	305							
29					300	345	290	340	290	400	A	360	350	A	315	325								
30					300	275	310	300	325	360	A	A	360	355	370	340	340							
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					10	18	21	18	22	23	20	22	24	24	25	25	21	4						
MED					345	332	330	315	362	375	410	395	375	370	375	350	345	310						
UQ					360	365	350	330	410	432	512	435	438	428	400	360	360	345						
LQ					310	295	310	300	325	355	370	365	360	348	360	330	320	295						

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H^oF₂ (KM)

IONOSPHERIC DATA

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H¹F (KM)

135° E Mean Time (G. M. T. + 9h)

Station	WAKKANAI				Lat. 45 23.6 N	Long. 141 41.1 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation															
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	275	270	250	295	270	A	A	A	A	A	A	A	C	C	C	C	240	280	250	275	270	250	270	270	
2	285	300	270	280	270	255	I ₂₆₀ ^A	I ₂₅₀ ^A	235	A	215	225	245	C	C	260	250	I ₂₆₅ ^A	I ₂₇₀ ^A	270	290	290	280	300	
3	280	260	240	270	290	260	A	A	A	250	265	210	205	210	225	235	250	260	255	260	260	290	305	270	
4	290	290	280	I ₃₀₀ ^A	270	240	250	240	220	215	220	I ₂₂₀ ^A	240	225	240	250	250	250	260	265	260	265	270	300	
5	280	275	260	250	270	260	I ₂₆₅ ^A	245	A	A	A	A	A	250	I ₂₈₀ ^A	I ₂₅₀ ^A	275	250	290	265	265	300	320	300	
6	295	310	310	275	270	250	250	I ₂₉₀ ^A	230	250	A	A	A	A	A	250	I ₂₇₅ ^A	I ₂₆₀ ^A	270	280	270	I ₃₁₀ ^A	A	320	
7	270	285	295	295	270	240	I ₂₆₀ ^A	I ₂₅₀ ^A	A	A	A	235	250	A	A	A	A	A	275	270	305	I ₃₁₅ ^A	300	300	
8	295	270	300	300	300	260	A	A	225	250	235	B	A	250	230	240	250	260	295	A	305	A	A	A	
9	I ₃₁₅ ^A	280	300	300	290	260	290	A	A	225	225	250	225	275	225	240	250	255	250	A	I ₂₈₀ ^A	295	I ₃₃₅ ^A	345	
10	315	300	290	295	295	260	250	260	240	250	250	A	210	210	250	250	I ₂₆₅ ^A	300	A	A	I ₂₇₅ ^A	310	305	280	
11	315	300	275	295	275	260	245	A	A	A	225	A	A	A	A	A	260	A	A	A	270	315	355	300	
12	275	250	270	255	275	250	A	A	A	A	A	A	A	A	A	250	250	265	250	255	275	285	310	270	275
13	300	290	280	300	260	260	250	250	A	265	A	A	A	A	A	250	A	260	A	A	A	A	310	315	
14	320	320	305	275	270	260	270	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
15	A	A	300	300	265	A	A	A	A	250	I ₂₅₀ ^A	250	250	250	250	A	300	A	A	310	300	315	I ₃₅₀ ^A	350	
16	310	275	270	300	300	265	300	A	A	A	A	250	I ₂₅₀ ^A	A	A	A	A	A	A	295	270	300	300	310	
17	305	300	285	310	315	A	260	245	A	A	215	250	210	210	275	A	A	A	A	A	I ₃₀₅ ^A	A	I ₃₅₀ ^A	A	
18	A	290	300	300	255	255	240	235	A	A	260	A	A	A	A	215	A	250	A	A	A	A	315	I ₃₀₀ ^A	
19	300	300	300	300	300	A	250	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
20	C	C	C	C	C	C	C	C	C	A	215	A	A	A	A	A	A	250	260	295	300	300	275	260	
21	270	300	315	295	290	260	A	A	A	A	205	A	A	245	240	235	220	275	285	A	I ₂₉₀ ^A	290	295	295	
22	300	280	250	260	265	250	250	I ₂₅₀ ^A	250	I ₂₅₀ ^A	C	C	215	260	250	235	240	240	260	I ₂₇₀ ^A	I ₃₀₀ ^A	295	280	300	
23	I ₃₁₅ ^A	290	250	240	260	250	240	225	260	A	210	200	225	250	235	235	215	260	295	275	260	275	280	260	
24	295	265	275	290	285	250	250	A	A	A	A	A	235	230	260	220	260	A	A	275	265	285	315	300	
25	290	290	275	250	280	260	250	265	A	A	A	C	A	225	210	I ₂₄₀ ^C	220	265	240	270	260	I ₃₁₀ ^A	A	A	
26	340	I ₃₂₀ ^A	295	260	A	C	C	C	C	C	A	A	A	A	A	A	A	A	A	260	295	290	280	295	
27	300	285	290	245	275	250	I ₂₇₀ ^A	250	A	A	A	A	A	A	275	205	A	A	A	A	A	A	275	270	
28	255	260	300	275	280	270	A	A	A	240	210	215	I ₂₃₀ ^A	225	I ₂₄₀ ^A	250	A	A	245	265	265	I ₂₉₅ ^A	A	315	
29	A	250	270	285	290	250	A	A	200	210	A	A	A	A	A	A	A	265	260	270	245	260	295	270	
30	285	I ₂₉₀ ^A	285	290	270	250	A	A	A	A	A	A	A	220	240	240	225	A	270	275	I ₂₆₀ ^A	280	260	250	
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	26	28	29	29	28	24	19	13	8	11	14	10	13	15	17	19	18	18	18	19	25	23	24	25	
MED	295	290	285	290	275	258	250	250	232	250	222	230	230	230	240	240	250	260	260	270	270	295	298	300	
UQ	310	300	300	300	290	260	262	I ₂₅₀ ^A	245	250	250	250	245	250	250	250	265	265	275	275	295	310	315	300	
LQ	280	272	270	270	270	250	250	245	222	232	215	215	215	222	235	235	240	250	255	268	265	288	278	270	

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H¹F (KM)

IONOSPHERIC DATA

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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										
Mon Day	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	110	105	110	105	105	135	125	125	120	115	115	115	C	C	C	C	145	125	110	110	115	115	120	E									
2	E	E		105	105	150	125	125	125	120	G	115	115		C	C		G	140	120	115	110	110	105									
3	100	100	E	105	G	150	135	120	120	120	115	G	G	G	G	G	110	105	105	130	E	E	110	110									
4	105	110	110	105	105	105	150	140	140	G	G	115	120	125	110	G	G	120	125	120	E	115	110	110									
5	110	105	105	110	G	G	125	140	120	115	120	110	115	120	110	110	110	G	120	125	115	115	110	110									
6	110	100	100	100	100	G	G	125	125	120	110	110	105	105	105	115	110	110	110	110	105	115	110	110									
7	E	E		100	105	110	110	120	115	120	115	115	115	110	110	110	110	110	110	110	120	115	110	E									
8	S		105	105	105	105	G	115	110	110	G	110	B	115	110	115	115	120	105	125	115	110	110	105									
9	105	105	105	100	100	G	135	115	120	125	G	135	150	145	G	G	140	145	120	115	110	105	105	105									
10	100	E	100	E	G	G	125	115	115	115	115	110	110	G	105	105	135	125	120	115	115	110	110	110									
11	105	105	105	105	G	G	135	115	110	110	110	110	110	105	105	105	105	100	105	100	100	110	115	105									
12	105	110	E	100	100	110	115	110	110	110	110	110	105	110	110	105	105	105	105	110	110	105	E	E									
13	105	E	E	100	G	G	125	125	110	115	110	110	110	110	110	145	115	140	120	115	110	110	105	105									
14	105	105	105	E	G	G	135	115	115	120	120	120	120	110	110	110	125	120	110	115	115	110	115	110									
15	105	105	100	105	145	125	125	125	120	120	110	120	115	B	125	120	125	125	115	120	110	110	110	110									
16	105	E	105	105	105	G	125	120	115	115	110	115	115	110	115	120	110	110	120	115	105	110	E	110									
17	110	110	105	105	105	125	135	115	115	115	115	120	120	110	G	115	115	110	110	110	110	110	110	110									
18	105	105	100	100	105	G	G	120	110	115	120	120	105	105	105	105	115	115	110	110	110	110	110	110									
19	105	100	100	100	110	120	125	120	115	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C									
20	C	C	C	C	C	C	C	C	C		110	115	110	110	110	140	140	120	120	G	120	110	105	105	E								
21	105	110	110	110	105	120	115	110	110	110	115	110	105	115	120	115	G	125	115	110	110	110	110	110									
22	E	E		100	100	140	G	125	115	120	115	C	C	110	105	G	115	110	110	115	110	110	110	110									
23	105	105	E	E	G	G	110	G	145	120	120	120	120	110	110	G	G	120	115	115	115	E	E	110									
24	105	E	105	E	125	120	145	120	120	110	110	110	115	120	115	G	125	140	115	120	120	115	110	115									
25	110	E	E	E	G	G	125	120	115	120	110	C	110	105	105	C	G	120	140	125	110	115	115	110									
26	105	105	105	105	105	C	C	C	C	C		110	110	105	100	125	120	115	115	110	115	125	115	110	105								
27	105	110	100	100	105	G	120	120	115	110	110	110	110	115	120	G	115	110	110	110	110	110	110	105									
28	105	105	100	100	100	120	110	110	110	110	110	110	110	105	125	120	110	105	105	110	110	110	105	105									
29	105	100	100	100	105	110	115	110	110	110	105	110	110	110	115	115	115	120	120	110	110	105	100	105									
30	105	100	110	E	160	G	120	115	110	110	110	110	105	G	120	110	105	120	115	115	110	110	110	110									
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	21	24	23	21	13	26	27	28	26	25	25	27	23	23	21	24	28	28	29	27	27	26	25									
MED	105	105	105	105	105	120	125	115	115	115	110	110	110	110	110	115	115	120	115	115	110	110	110	110									
UQ	105	105	105	105	110	125	135	120	120	120	115	115	115	112	120	120	122	125	120	115	115	115	110	110									
LQ	105	105	100	100	105	110	120	115	110	110	110	110	110	105	110	110	110	110	110	110	110	110	110	105									

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H^oES (KM)

IONOSPHERIC DATA

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TYPES OF ES

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

Station	WAKKANAI							Lat. 45 23.6 N · Long. 141 41.1 E							Sweep 1 MHz to 20 MHz in 20 sec in automatic operation									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F1	F2	H2	H2	G	N	S	S	I	I					H	N	N	N	F4	F2	F1	
2			F1	F2	H1	C	N	C	C	C	C	C				C		H	N	N	F3	F2	F3	F1
3	F1	F1		F1		H1	H1	N	C	C	C	C					I	N	N	H			F2	F1
4	F1	F2	F3	F4	F3	F3	H1	H1	H1		C	C	C	C	F			C	C	C		F1	F1	F2
5	F2	F2	F1	F1			C	H	S	S	S	S	C	C	S	S	S		C	C	F1	F1	F2	F4
6	F2	F2	F6	F2	F3			C	C	C	C	N	N	N	N	C	C	N	N	N	F2	FF22	F4	F2
7			F2	F2	N	F	S	S	S	S	C	C	C	S	S	S	S	S	N	F	FF41	F4	F3	
8		F1	F2	F2	N		C	N	C	C	C	C	C	C	C	C	C	F	C	N	F4	F4	F4	F4
9	F4	F4	F2	F2	N		H	S	C	C	C	H	H	H			H	H	C	S	F5	F1	F3	F3
10	F2		F2				S	S	C	C	C	S	C		F	F	H	C	N	C	FF11	F3	F3	F1
11	F2	F3	F2	F2			H	S	S	S	C	S	C	S	N	N	N	N	N	N	F3	F4	F7	F2
12	F1	F1		F1	F	F	N	N	S	C	C	C	F	N	C	F	N	N	F	N	F4	F2		
13	F1			F2			C	C	S	S	C	S	S	C	C	H	S	H	S	C	F4	F3	F4	F2
14	F2	F2	F1				H	N	N	N	C	C	C	N	N	F	N	S	N	S	F4	F3	F2	F3
15	F4	F4	F4	F1	H	S	S	C	C	C	C	C	C	C	C	C	C	C	S	S	F2	F2	F3	F3
16	F2		F2	F2	F		C	N	N	N	N	C	C	C	C	C	N	S	N	N	F3	F1		F5
17	F3	F4	F4	F1	N	C	H	C	C	C	C	C	C	F		S	S	C	S	S	F6	F4	F6	F5
18	F4	F2	F3	F3	F			C	N	C	C	C	N	N	N	F	N	S	N	C	F6	F4	F3	F3
19	F2	F4	F3	F2	F	S	C	C	S															
20									S	S	S	S	S	S	H	N	C	S		N	F3	F2	F2	
21	F2	F1	F2	F2	N	C	S	S	S	S	C	S	S	C	C	C		C	S	C	F6	F2	F1	F1
22			F1	F1	H		C	S	C	C			F	F		C	F	N	N	C	F3	F2	F1	F2
23	F4	F1					F		H	N	C	C	C	F	C			N	N	F	F1			F1
24	F1		F1		C	C	H	C	C	N	C	C	C	C	C		C	N	N	N	F2	F1	F3	F1
25	F1						S	C	C	C	C	S	C	F	F			C	H	S	F2	F4	F4	F3
26	F2	F4	F3	F2	F4						C	S	S	S	N	C	N	S	S	N	F5	F2	F4	F3
27	F1	F2	F2	F2	N		S	C	S	S	S	C	S	C	C		S	S	F	N	F6	F3	F2	F2
28	F2	F2	F2	F2	N	N	C	S	N	C	C	C	C	C	C	C	C	S	N	N	F2	F3	F2	F3
29	F3	F2	F2	F3	F3	N	N	S	C	C	F	N	N	C	S	S	S	C	C	S	F2	F2	F2	F1
30	F2	F3	F1		H		N	N	C	N	N	S	C		C	F	F	N	S	S	F4	F4	F2	F1
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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TYPES OF ES

IONOSPHERIC DATA

JUN. 1969

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	F	F	F	F ₇₉	71	73	71	A	A	A	67	I ₆₉ A	I ₇₃ A	82	87	85	A	A	90	79	I ₇₉ A	I ₇₅ R	70																										
2	69	62	61	57	57	I ₆₈ R	89	86	79	68	67	69	78	82	91	96	97	I ₉₂ A	91	86	I ₈₆ R	86	87	I ₈₂ R																										
3	80	81	76	71	67	77	85	79	80	I ₆₉ A	71	82	81	94	98	91	91	I ₉₄ R	90	87	I ₇₈ R	81	83	86																										
4	83	80	76	74	70	79	80	78	80	71	71	81	89	87	84	86	91	96	C	C	C	C	C	C																										
5	C	C	C	C	C	C	C	C	C	C	C	C	74	76	C	C	C	C	C	C	C	C	C	C																										
6	C	C	C	C	C	C	C	C	C	75	70	78	84	89	I ₉₆ C	94	92	93	96	94	89	86	86	84																										
7	I ₈₈ R	S ₉₂	83	S ₇₈	F	82	87	88	81	78	81	89	93	96	101	101	97	95	100	96	86	77	87	S ₉₁																										
8	I ₉₂ R	84	77	72	73	87	91	78	76	78	78	80	86	88	92	87	81	74	79	79	I ₈₁ R	I ₈₀ R	78	79																										
9	76	76	71	66	67	84	72	78	66	63	I ₆₁ A	I ₆₁ R	61	66	62	I ₆₁ A	63	68	69	71	71	I ₇₂ B	F	S ₇₆																										
10	S ₇₆	77	76	68	70	76	84	84	86	91	86	96	93	98	99	98	I ₉₇ A	92	89	86	83	86	F	R																										
11	91	89	I ₈₆ R	82	86	99	102	91	85	I ₈₃ A	79	84	91	90	92	91	96	98	I ₉₈ R	I ₈₉ R	83	I ₈₂ A	85	89																										
12	F	F	F	F	F	87	81	79	78	79	83	84	92	98	102	112	109	99	I ₉₄ R	83	81	81	82	82																										
13	80	83	78	I ₇₄ R	77	80	92	88	93	87	85	91	93	91	88	91	95	97	A	R	79	I ₈₄ R	I ₈₆ R	I ₈₉ R																										
14	R	R	86	F	77	80	93	91	77	69	A	A	70	71	71	80	79	80	84	87	73	I ₇₃ B	76	S ₇₆																										
15	76	81	80	77	76	62	63	56	A	A	A	A	68	64	65	66	70	69	73	72	I ₇₀ R	74	73	75																										
16	77	I ₇₈ R	69	61	66	71	79	76	75	68	65	68	67	72	71	74	C	C	80	73	78	I ₇₉ R	80	71																										
17	72	70	66	65	61	73	84	70	59	59	I ₅₈ A	62	62	I ₆₂ A	61	60	A	A	A	65	I ₆₉ R	72	72	I ₇₁ A																										
18	I ₇₁ R	S ₆₉	68	62	58	65	80	88	86	76	73	67	67	63	62	60	66	70	71	68	76	74	74	81																										
19	81	74	68	62	61	68	85	104	79	73	76	80	90	91	89	84	I ₈₂ R	79	I ₇₈ R	R	R	R	R	R																										
20	R	R	R	R	I ₇₀ R	R	R	R	R	101	I ₉₃ R	90	96	96	95	91	82	I ₈₄ R	85	I ₇₂ R	74	R	R	R																										
21	R	R	R	R	57	I ₅₄ R	64	68	I ₆₄ A	I ₆₂ A	61	61	65	66	67	63	64	65	68	73	R	R	I ₇₁ R	I ₇₀ R																										
22	I ₆₆ R	66	I ₆₇ R	60	57	I ₆₆ R	85	90	90	93	I ₈₃ R	I ₇₈ A	80	83	79	80	79	78	I ₈₁ R	I ₇₆ R	74	R	R	R																										
23	R	R	79	I ₇₂ R	64	63	74	87	89	83	72	71	79	85	83	82	71	72	72	I ₈₀ C	I ₇₉ R	79	81	84																										
24	78	79	77	73	73	70	81	70	73	77	76	77	81	83	86	83	79	79	82	80	I ₇₈ R	78	I ₈₁ R	I ₈₂ R																										
25	80	81	76	74	67	68	70	88	72	64	61	67	74	74	74	72	71	71	77	82	74	71	73	72																										
26	74	I ₇₆ R	81	68	59	63	69	72	59	I ₆₄ A	70	74	76	83	84	77	79	81	82	81	82	78	79	81																										
27	81	80	I ₇₄ R	70	67	67	74	81	81	74	78	81	81	86	I ₈₀ C	77	75	78	87	90	88	82	R	R																										
28	R	87	80	79	82	80	74	78	84	I ₈₃ A	81	81	86	87	90	93	87	82	76	81	74	74	78	F																										
29	F	F	F	77	74	74	82	I ₉₄ A	88	I ₇₈ R	67	69	70	80	84	84	80	83	87	91	72	71	74	75																										
30	75	74	71	70	68	77	88	96	77	71	74	75	77	85	86	91	84	81	81	86	I ₈₈ R	I ₈₆ R	84	82																										
31																																																		
CNT	20	21	23	23	26	27	27	27	25	27	26	27	30	30	29	29	27	26	25	26	26	24	22	22																										
MED	78	79	76	71	68	73	81	81	79	75	74	78	80	84	84	84	82	81	82	82	78	79	80	81																										
UQ	81	81	80	74	74	80	86	88	85	81	81	82	89	90	92	91	92	93	89	87	83	82	84	84																										
LQ	74	74	70	66	61	68	74	77	75	68	67	68	70	73	74	77	77	74	77	73	74	74	74	75																										

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FOF2 (0.1 MHz)

IONOSPHERIC DATA

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FOF1 (0.01 MHZ)

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

Station	AKITA				Lat. 39 43.5 N	Long. 140 08.2 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																		
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1						L	A	A	A	A	A	A	A	A	A	A	A	A	A						
2						L	L	L	L	470	490	520	520	480	480	470	A	A	A						
3						L	L	L	L	460	490	530	560	580	550	510	500	A	A	L					
4							L	L	L	L	510	560	560	550	540	560	520	510	460						
5						C	C	C	C	C	C	C	C	550	540	C	C	C	C						
6						C	C	C	C	A	470	540	540	I 560	A 540	I 550	A	A							
7						L	A	A	A	A	A	A	A	A	I 570	A 530	A	A							
8						L	L	L	L	540	560	540	540	570	R 560	I 560	570	550	480	L					
9							L	L	L	480	470	A	530	I 530	560	I 540	510	510	I 510	480	480				
10							A	L	L	570	600	560	600	580	540	590	560	I 550	A	A					
11						L	L	L	L	650	570	A	A	A	A	580	540	570	H 530	L 510	L				
12							A	A	A	A	A	A	A	A	A	540	550	A	A						
13							L	L	L	L	560	570	I 590	590	590	570	570	A	A	A					
14							A	A	A	A	A	A	A	A	A	A	570	510	L 490	L					
15						L	L	L	L	500	450	I 480	A	A	A	A	550	580	530	520	510	470	400		
16						L	L	L	L	450	500	560	A	540	550	580	550	520	530	C	C	L			
17						L	L	L	L	400	420	460	500	510	I 520	530	540	I 520	500	I 500	A	A	A		
18							A	A	A	420	550	I 500	500	510	540	510	510	540	480	A	440	380			
19							L	L	L	380	I 440	470	600	520	550	570	570	510	A	A	A	A			
20							L	L	L	L	500	510	510	570	A	A	520	I 520	520	510	450				
21							L	L	L	390	410	A	A	A	A	520	510	500	500	540	470	460	410		
22							L	L	L	L	440	A	A	A	A	I 560	I 550	530	540	520	I 480	440			
23							L	L	L	L	470	470	490	510	570	540	540	510	500	510	550	430	430		
24							L	L	L	L	430	L	H 500	530	550	530	520	I 510	I 500	500	490	450	L		
25							L	L	L	L	450	450	A	A	550	520	530	530	530	510	500	450	360		
26							L	L	L	L	360	A	A	A	I 490	510	520	530	500	I 490	490	460	450	A	
27							L	L	L	L	430	L	I 450	470	470	500	500	520	510	I 500	A	I 470	420		
28							L	L	L	L	L	A	A	A	A	A	510	520	520	500	450	420	L		
29							L	L	L	L	420	I 460	I 480	I 500	I 560	530	520	520	I 510	480	I 470	440	A		
30							L	L	L	L	L	460	470	I 510	510	520	520	520	540	I 500	I 470	A	A		
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	13	18	16	17	20	21	24	26	26	24	17	16	5							
MED					395	440	470	505	510	545	540	540	520	525	520	480	450	400							
UQ					430	450	500	560	530	560	560	550	550	540	545	510	465	410							
LQ					380	420	460	490	500	510	520	520	510	500	500	470	440	380							

The Radio Research Laboratories, Japan

JUN. 1969

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

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JUN. 1969

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					A	A	270	305	350	360	365	370	370	360	345	335	305	A	A	S					
2					S	195	260	300	320	355	355	I R 375	360	355	I A 350	340	320	265	210	S					
3					E	A 215	275	310	335	I A 355	370	390	A	A	A	A	A	A	A	S					
4					E	A	275	320	340	I A 360	385	A	A	A	A	355	A	A	C	C					
5					C	C	C	C	C	C	C	C	C	A	395	C	C	C	C	C	C				
6					C	C	C	C	C	360	I A 375	A	A	A	C	A	A	A	A	A					
7					E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A					
8					E	220	285	315	A	A	I A 375	I B 385	395	I A 395	I A 385	I A 355	A	A	A	A					
9					E	235	295	I A 320	A	A	A	A	A	A	390	360	340	A	A	S					
10					E	A	I A 290	I A 325	I A 345	360	380	I A 385	I A 395	I A 395	395	A	A	A	A	A					
11					E	A	290	I A 325	A	A	A	A	385	400	390	370	355	310	A	A					
12					E	A 230	290	A	A	365	I A 380	A	A	A	A	A	A	A	A	A					
13					E	I A 220	A	A	350	365	380	395	I A 395	400	380	365	340	305	A	A					
14					E	250	295	335	A	A	A	A	A	390	I A 370	360	350	315	A	A					
15					E	205	300	I A 340	360	370	375	I A 390	A	A	A	A	A	A	A	A					
16					E	I A 230	I A 300	320	340	360	375	380	395	405	390	A	C	C	A	A					
17					E	225	290	320	355	365	375	I A 385	395	A	A	380	340	A	A	A					
18					E	A	A	315	335	355	370	380	390	380	I C 340	I A 325	315	295	225	S					
19					E	I A 240	290	315	340	360	I A 380	I A 390	A	A	A	A	A	A	A	S					
20					E	A	275	310	335	360	A	A	A	A	A	355	I A 320	290	230	A					
21					E	200	285	310	I A 340	A	A	A	380	A	A	360	330	280	230	A					
22					E	I A 220	290	A	A	I A 360	A	A	A	A	A	A	A	A	A	A					
23					E	220	280	I A 315	I A 345	360	375	390	395	390	385	I A 350	A	A	A	C					
24					E	A	285	A	A	A	370	385	390	A	A	I A 345	I A 315	I A 275	I A 220	S					
25					E	215	265	310	335	360	A	A	A	390	I A 370	330	310	280	225	A					
26					E	200	I A 265	I A 310	335	360	I A 370	I A 380	385	385	370	335	315	A	A	A					
27					E	I A 215	I A 275	310	A	A	A	375	380	380	I C 365	350	A	A	A	A					
28					E	A	A	A	325	I A 345	365	375	380	A	A	A	325	280	220	A					
29					E	220	270	A	A	A	375	385	395	385	365	345	320	280	A	A					
30					E	215	280	I A 310	330	355	370	380	A	A	A	360	330	300	235	A					
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					26	19	24	21	18	20	20	18	16	15	15	19	16	12	8						
MED					E	220	285	315	340	360	375	385	390	390	370	355	322	285	225						
UQ					E	228	290	320	345	360	378	U 390	395	395	388	360	340	302	230						
LQ					E	215	275	310	335	358	370	380	380	382	U 365	342	315	280	220						

JUN. 1969

FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1969

FOES (0.1 MHZ)

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

Station	AKITA				Lat. 39 43.5 N	Long. 140 08.2 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
2	J X	E	E	J X	E S	25	35	J X	41	44	41	G	G	G	J X	G	J X	J X	J X	J X	J X	J X	J X	J X
3	J X	J X	J X	J X	J X	28	36	J X	J X	J X	42	G	43	J X	48	61	J X	J X	J X	J X	J X	J X	E S	E
4	J X	J X	J X	J X	J X	26	30	37	41	44	42	44	44	J X	42	42	36	33	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	J X	J X	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	J X	J X	J X	J X	J X	C	J X	J X	J X	J X	J X	J X	J X	J X	J X
7	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
8	E S	J X	J X	E S	J X	G	35	J X	J X	J X	E B	J X	J X	J X	J X	J X	38	33	J X	J X	J X	J X	J X	J X
9	J X	J X	J X	J X	J X	G	38	43	J X	J X	J X	J X	J X	J X	J X	J X	J X	36	J X	J X	J X	J X	J X	J X
10	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
11	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
12	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
13	J X	J X	J X	J X	J X	26	41	43	42	J X	J X	56	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
14	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	E	J X	J X	J X
15	J X	J X	J X	J X	J X	26	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
16	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
17	J X	J X	E S	E	J X	26	J X	36	J X	J X	J X	45	45	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
18	J X	J X	J X	J X	J X	J X	J X	39	J X	40	47	47	41	41	E B	39	J X	35	35	J X	J X	J X	J X	J X
19	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
20	J X	J X	J X	J X	J X	J X	J X	37	39	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
21	J X	J X	J X	J X	J X	G	35	J X	J X	J X	J X	J X	G	41	46	G	G	G	27	20	J X	J X	J X	J X
22	J X	J X	J X	J X	J X	26	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
23	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
24	J X	J X	J X	E	E	31	G	J X	J X	J X	44	G	47	J X	J X	J X	39	J X	32	J X	J X	J X	J X	J X
25	J X	E	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	E S	J X
26	J X	J X	J X	J X	E	30	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
27	J X	J X	J X	J X	J X	23	31	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
28	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
29	J X	J X	J X	J X	J X	G	J X	J X	J X	J X	J X	J X	G	44	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
30	J X	E S	E	E	J X	G	J X	39	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J 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	28	28	28	28	28	28	28	28	28	29	29	29	30	30	27	29	28	28	28	27	28	28	28	28
MED	J X	J X	J X	J X	J X	28	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
UQ	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X	J X
LQ	J X	J X	J X	J X	J X	26	36	43	J X	J X	46	47	44	43	44	43	38	34	32	J X	J X	J X	J X	J X

The Radio Research Laboratories, Japan

JUN. 1969

FOES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

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	27	15	35	25	30	27	42	58	A	A	A	59	A	A	56	70	64	A	A	54	37	A	14	16																								
2	20	E	E	14	S	23	30	42	39	41	41	G	G	G	G	70	A	49	39	27	25	18	15																									
3	19	18	18	16	13	G	36	51	45	A	41	G	43	50	46	58	50	39	28	33	33	16	E ₁₄	E																								
4	E	21	19	15	15	26	30	37	41	44	42	43	43	49	40	G	35	30	C	C	C	C	C	C																								
5	C	C	C	C	C	C	C	C	C	C	C	C	54	48	C	C	C	C	C	C	C	C	C	C																								
6	C	C	C	C	C	C	C	C	C	60	43	48	47	66	C	60	60	62	49	66	65	29	40	25																								
7	24	25	E	15	30	24	58	40	59	71	64	73	81	65	61	62	59	77	48	22	17	24	40	39																								
8	E ₁₄	S	14	16	E ₁₃	14	G	31	41	44	45	44	E ₄₇	46	57	49	48	37	33	25	20	26	70	48	34																							
9	32	59	44	25	E	G	35	43	50	40	A	49	55	47	44	A	44	35	39	33	17	17	16	E																								
10	16	16	24	24	16	37	49	44	47	43	46	42	47	52	43	64	A	60	35	37	29	48	48	50																								
11	E	20	22	16	18	25	46	51	52	A	75	70	69	47	46	43	G	35	26	74	28	A	23	52																								
12	40	40	38	38	17	34	45	60	46	63	62	66	59	80	49	50	90	60	U ₈₅	31	30	29	19	20																								
13	19	E	E	18	21	26	34	40	40	45	77	47	49	50	54	65	65	U ₇₉	A	U ₇₅	58	40	26	19																								
14	23	23	E	E	17	49	74	52	65	64	A	A	59	62	58	G	G	36	29	20	E	51	18	E																								
15	20	20	40	22	20	25	34	49	A	A	A	A	44	46	43	44	43	32	32	54	50	24	E	E																								
16	24	26	19	22	18	31	31	40	44	55	47	49	45	54	48	43	C	C	28	18	21	26	21	E																								
17	17	15	E ₁₄	E	15	G	39	35	39	39	A	45	44	A	46	54	A	A	A	31	17	24	58	A																								
18	E	24	20	16	20	40	34	39	52	39	41	45	41	40	E ₄₀	38	47	35	32	50	32	18	25	21																								
19	30	36	26	15	19	25	51	44	49	43	44	45	43	43	64	54	52	48	65	47	37	44	U ₄₉	78																								
20	67	59	45	34	19	26	34	38	38	45	47	74	61	45	58	42	38	35	39	27	30	24	28	39																								
21	18	E	E	17	19	G	34	48	A	A	56	45	G	41	45	G	G	G	G	19	18	17	18	E																								
22	17	E	E	E	18	25	36	52	66	60	64	A	60	46	40	42	52	37	47	23	42	65	51	19																								
23	29	E	E	18	15	26	26	36	38	42	44	44	48	G	G	37	35	29	40	C	32	E	E	E																								
24	E	E	E	E	E	30	G	40	37	44	44	G	45	65	64	45	33	29	30	20	21	36	28	29																								
25	E	E	E	16	16	25	40	43	57	51	48	45	42	G	40	42	39	34	G	18	15	E	E ₁₄	E																								
26	15	21	23	40	E	29	45	48	52	A	40	45	45	40	53	36	35	37	50	23	E	18	20	15																								
27	E	E	E	15	18	23	29	46	44	40	48	60	42	42	C	50	62	30	46	20	15	40	68	44																								
28	E	21	16	18	15	25	34	56	64	A	69	72	46	41	44	37	G	30	24	19	16	30	17	30																								
29	25	14	E	15	42	G	36	A	74	56	59	43	G	43	70	43	64	33	70	69	17	20	36	E																								
30	E	E ₁₄	E	E	14	G	16	35	37	64	49	49	71	47	42	54	47	46	46	55	24	19	25	16																								
31																																																
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																								
CNT	28	28	28	28	27	28	28	28	28	29	29	29	30	30	27	29	28	28	28	27	28	28	28	28																								
MED	18	17	16	16	17	25	34	44	48	55	48	47	46	47	46	44	47	36	40	31	26	26	24	19																								
UQ	24	24	24	22	19	28	44	51	62	71	69	66	59	57	55	54	63	60	50	52	32	42	40	36																								
LQ	E	E	E	14	15	E ₂₃	G	31	40	40	43	44	44	43	42	42	38	35	32	28	20	17	18	18	E																							

JUN. 1969

FBES (0.1 MHz)

IONOSPHERIC DATA

JUN. 1969

F-MIN (0.1 MHZ)

135° E Mean Time (G. M. T. + 9h)

Station	AKITA				Lat. 39 43.5 N.	Long. 140 08.2 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E ₁₂	E ₁₃	E ₁₃	E ₁₃	E	13	13	20	20	18	23	20	19	18	18	16	15	15	13	13	13	12	13	14
2	13	E	E	E	E ₁₃	13	15	16	16	20	18	25	18	23	17	16	17	14	13	E ₁₂	E ₁₂	E ₁₅	E ₁₆	E ₁₃
3	E ₁₃	E ₁₃	E ₁₃	E	E	13	13	14	17	18	18	24	19	20	19	18	15	14	13	E ₁₄	E ₁₂	E ₁₃	E ₁₄	E
4	E ₁₄	E ₁₄	E ₁₃	E	E	14	14	16	14	16	15	19	18	18	17	17	15	15	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	31	23	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	24	25	27	24	23	C	25	25	16	14	13	E ₁₃	E ₁₃	16	14
7	E ₁₄	E ₁₃	E ₁₃	E	E	13	13	15	17	34	35	29	30	26	25	24	17	19	14	13	E ₁₄	E ₁₄	E ₁₃	E ₁₄
8	E ₁₄	E	E	E ₁₃	E	15	15	17	15	19	24	47	24	25	20	25	18	19	14	19	E ₁₃	E ₁₃	E ₁₃	E ₁₃
9	E ₁₂	E ₁₃	E ₁₃	E	E	13	13	15	16	16	19	30	31	25	19	19	16	16	14	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E ₁₃
10	E ₁₃	E ₁₃	E ₁₃	E ₁₃	E	14	14	14	15	18	18	24	19	20	19	19	17	15	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄
11	E ₁₄	E	E ₁₃	E	E	13	16	18	20	22	24	22	23	24	24	23	18	14	16	13	E	E	E ₁₃	E ₁₃
12	E ₁₃	E ₁₃	E	E	E	14	13	15	18	21	23	24	24	23	23	17	15	17	14	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄
13	E ₁₄	E ₁₄	E ₁₃	E	E	13	13	13	16	18	19	24	18	24	18	18	15	15	15	14	E ₁₃	E ₁₃	E ₁₄	E ₁₄
14	E ₁₄	E ₁₃	E ₁₃	E ₁₃	E	14	15	18	19	25	25	35	34	17	25	22	17	15	14	14	E	E ₁₃	E ₁₃	E ₁₃
15	E ₁₃	E ₁₃	E	E	E	13	19	31	23	18	20	19	34	31	20	18	17	15	14	13	E ₁₄	E	E ₁₃	E ₁₄
16	E ₁₄	E ₁₃	E	E	E	14	16	16	16	18	19	23	25	24	24	15	C	C	13	13	E ₁₃	E ₁₄	E ₁₃	E ₁₄
17	E ₁₃	E ₁₃	E ₁₃	E	E	14	17	18	17	15	20	19	26	18	19	18	18	17	14	12	E ₁₃	E ₁₄	E ₁₃	E ₁₄
18	E ₁₃	E ₁₄	E	E	E	E	14	18	18	18	19	19	21	17	E ₄₀	22	16	16	14	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E ₁₄
19	E ₁₄	E	E ₁₃	E	E	14	14	44	14	16	18	18	17	19	20	18	13	14	14	E ₁₄	E ₁₄	E ₁₃	E ₁₃	E ₁₃
20	E ₁₄	E ₁₃	E ₁₄	E ₁₄	E	14	15	15	19	17	18	19	18	18	19	18	16	19	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄
21	E ₁₄	E ₁₄	E ₁₃	E	E	E	14	16	16	16	19	20	19	20	19	18	16	13	14	13	E ₁₄	E ₁₄	E ₁₃	E ₁₄
22	E ₁₄	E ₁₄	E	E	E	14	16	16	16	18	19	13	18	20	17	14	13	16	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄
23	E ₁₄	E ₁₃	E ₁₃	E	E	14	14	14	15	16	18	15	25	16	14	16	16	13	14	C	E ₁₃	E ₁₃	E ₁₃	E ₁₃
24	E ₁₄	E ₁₃	E ₁₃	E	E	15	15	14	16	14	16	18	16	16	16	16	14	14	13	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄
25	E ₁₄	E	E ₁₃	E	E	14	14	15	14	17	19	18	19	16	17	16	15	15	E	E	E	E ₁₄	E ₁₄	E ₁₄
26	E	E	E	E	E	13	18	14	13	15	18	24	17	16	17	15	14	14	E	E	E ₁₄	E ₁₃	E	E
27	E ₁₃	E ₁₄	E	E	E	14	13	14	14	15	18	18	18	16	C	17	14	14	13	12	E	E ₁₃	E ₁₃	E ₁₄
28	E ₁₄	E	E ₁₃	E	E	13	14	14	14	14	15	17	16	17	18	18	14	14	13	13	E ₁₃	E	E ₁₃	E ₁₄
29	E ₁₄	E	E ₁₃	E	E	13	14	14	16	14	19	20	16	17	17	17	13	13	13	12	E	E ₁₄	E ₁₄	E ₁₄
30	E ₁₄	E ₁₄	E	E	E	13	14	14	16	18	14	18	16	18	14	17	17	14	13	13	E ₁₃	E ₁₄	E ₁₄	E ₁₂
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	28	28	29	29	29	30	30	27	29	28	28	28	27	28	28	28	28
MED	E ₁₄	E ₁₃	E ₁₃	E	E	14	14	15	16	18	19	20	19	20	19	18	16	15	14	13	E ₁₃	E ₁₄	E ₁₄	E ₁₄
UQ	E ₁₄	E ₁₄	E ₁₃	E	E	14	15	16	18	18	20	24	25	23	20	19	17	16	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₃	E	E	E	E	13	14	14	15	16	18	18	18	17	17	16	14	14	13	13	E ₁₂	E ₁₃	E ₁₃	E ₁₃

JUN. 1969

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

M(3000)F2 (0.01)

135° E Mean Time (G. M. T. + 9h)

Station	AKITA				Lat. 39 43.5 N. Long. 140 08.2 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation															
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	F	F	285	295	310	A	A	A	285	I ₂₉₀ ^A	I ₂₈₅ ^A	285	300	290	A	A	295	I ₂₈₀ ^A	I ₂₈₅ ^R	I ₂₇₀ ^R	
2	280	265	275	295	275	I ₂₉₅ ^R	310	325	325	330	290	280	275	275	290	285	295	I ₂₉₀ ^A	300	280	I ₂₈₀ ^R	275	270	I ₂₇₀ ^R
3	255	265	280	275	275	270	310	285	285	I ₂₉₀ ^A	275	275	260	270	275	280	285	I ₂₉₀ ^R	290	300	I ₂₆₅ ^R	265	260	275
4	275	270	275	280	275	305	305	310	300	315	270	265	280	285	280	275	275	290	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	275	285	265	265	270	I ₂₆₅ ^C	280	270	270	280	280	280	260	265	265
7	I ₂₇₀ ^R	S	290	I ₂₇₀ ^S	F	295	295	285	305	275	250	275	265	265	270	270	280	275	285	290	290	270	255	250 ^S
8	I ₂₇₅ ^R	275	275	265	260	280	305	265	275	270	280	255	265	275	275	285	285	265	285	270	I ₂₆₀ ^R	I ₂₆₀ ^R	260	265
9	265	260	275	255	255	290	275	265	250	240	I ₂₅₀ ^A	I ₂₅₀ ^R	240	255	250	I ₂₄₅ ^A	255	260	270	275	265	I ₂₄₅ ^R	F	265 ^S
10	260 ^S	270	275	270	255	280	290	275	265	275	250	255	275	270	270	275	I ₂₇₅ ^A	285	285	280	265	255	F	R
11	265	275	I ₂₈₅ ^R	270	265	285	295	295	285	I ₂₇₀ ^R	I ₂₇₀ ^R	255	265	265	270	265	275	285	I ₂₉₀ ^R	I ₂₉₀ ^R	270	I ₂₆₀ ^A	255	260
12	F	F	F	F	F	300	285	280	255	265	265	250	250	250	255	260	275	285	I ₂₈₀ ^R	270	265	250	260	270
13	260	270	265	I ₂₆₀ ^R	275	285	275	310	280	265	260	270	270	265	260	255	265	280	A	R	265	I ₂₅₅ ^R	I ₂₆₀ ^R	I ₂₆₅ ^R
14	R	R	280	F	275	275	280	275	270	240	A	A	245	260	260	265	265	255	285	290	270	I ₂₆₀ ^R	250	250 ^S
15	255	270	255	275	285	260	270	250	A	A	A	A	255	240	245	255	260	260	275	280	I ₂₆₀ ^R	255	245	245
16	255	I ₂₇₀ ^R	275	255	270	255	265	265	280	275	260	260	245	260	265	265	C	C	275	285	260	I ₂₆₀ ^R	265	265
17	255	255	260	260	255	270	295	275	235	250	I ₂₄₀ ^R	235	245	I ₂₄₅ ^A	255	260	A	A	A	260	I ₂₆₅ ^R	280	280	I ₂₅₅ ^A
18	I ₂₆₅ ^R	S	270	265	270	270	255	260	270	270	270	250	260	250	255	255	270	280	290	275	270	285	270	265
19	270	270	285	280	260	280	270	305	270	290	270	260	265	270	275	280	I ₂₉₀ ^R	285	I ₂₈₀ ^R	R	R	R	R	R
20	R	R	R	R	I ₂₆₀ ^R	R	R	R	R	285	I ₂₈₀ ^R	255	275	275	275	285	270	I ₂₈₀ ^R	290	I ₂₇₀ ^R	260	R	R	R
21	R	R	R	R	260	I ₂₆₀ ^R	260	265	I ₂₅₅ ^A	I ₂₅₀ ^R	260	250	260	265	275	260	280	265	275	285	R	R	I ₂₇₀ ^R	I ₂₆₅ ^R
22	I ₂₆₅ ^R	265	I ₂₈₀ ^R	285	265	I ₂₇₀ ^R	270	280	285	290	I ₂₈₀ ^R	I ₂₇₀ ^R	275	265	275	285	280	285	300	I ₂₉₅ ^R	265	R	R	R
23	R	R	280	I ₂₇₅ ^R	270	285	270	285	305	290	280	270	265	275	275	290	275	280	285	I ₂₇₅ ^C	I ₂₇₀ ^R	265	255	270
24	270	265	275	265	270	275	310	315	285	270	275	270	265	275	290	290	275	280	275	275	I ₂₈₀ ^R	255	I ₂₅₅ ^R	I ₂₇₀ ^R
25	265	270	280	285	265	280	270	295	285	285	230	260	265	280	270	275	285	280	285	295	280	265	265	265
26	265	I ₂₇₀ ^R	295	290	270	275	295	305	255	I ₂₆₀ ^A	265	275	270	285	285	280	285	290	290	285	280	270	265	275
27	275	265	I ₂₈₀ ^R	280	285	270	290	300	290	290	280	285	280	280	I ₂₈₀ ^C	290	285	285	285	300	285	270	R	R
28	R	280	280	270	295	305	295	295	295	I ₂₉₀ ^A	275	270	285	280	280	290	300	310	290	295	280	275	280	F
29	F	F	F	285	280	295	280	I ₃₀₀ ^A	305	I ₃₀₅ ^R	270	280	275	275	285	290	290	290	290	305	300	255	265	270
30	275	280	270	275	275	285	290	300	290	295	305	280	270	275	275	285	285	285	280	285	I ₂₉₀ ^R	I ₂₉₀ ^R	285	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	21	23	23	26	27	27	27	25	27	26	27	30	30	29	29	27	26	25	26	26	24	22	22
MED	265	270	275	275	270	280	290	285	285	275	270	265	265	270	275	280	280	282	285	285	270	262	265	265
UQ	272	270	280	280	275	288	295	302	290	290	280	275	275	275	280	285	285	285	290	295	280	272	270	270
LQ	260	265	275	265	260	270	270	275	270	268	260	255	260	265	265	265	272	275	280	275	265	255	255	265

JUN. 1969

M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 1969

M(3000)F1 (0.01)

135° E Mean Time (G. M. T. + 9h)

Station	AKITA				Lat. 39 43.5 N.	Long. 140 08.2 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1						L	A	A	A	A	A	A	A	A	A	A	A	A	A							
2						L	375	A	L	375	390	375	350	385	365	350		A	A	A						
3						L	L	I ₃₆₀ A	360	I ₃₄₀ A	340	335	335	I ₃₄₀ A	340	A	A	L								
4							L	L	L	355	345	345	350	335	325	330	320	330								
5						C	C	C	C	C	C	C	I ₃₄₀ A	340	C	C	C	C								
6						C	C	C	C	A	405	355	370	I ₃₄₀ A	I ₃₃₀ C	I ₃₂₅ A	A	A								
7						L	A	370	A	A	A	A	A	A	I ₃₂₀ A	I ₃₄₀ A	A	A								
8						L	L	330	340	335	355	345	340	R	I ₃₃₀ A	320	335	355	L							
9								315	315	A	355	I ₃₆₀ A	320	I ₃₄₀ A	350	360	I ₃₀₀ A	335	315							
10						A	L	315	330	325	335	345	350	320	340	I ₃₃₀ A	A	A								
11						L	340	335	A	A	A	A	A	330	360	335	320	H	320	L						
12						A	A	340	A	A	A	A	A	A	330	A	A	A								
13						L	L	340	355	I ₃₂₀ A	340	345	335	I ₃₃₅ A	A	A	A									
14						A	A	A	A	A	A	A	A	A	A	320	345	315	L							
15						295	315	I ₃₃₀ A	A	A	A	A	345	330	345	335	320	320	325							
16						L	335	335	325	A	345	330	335	I ₃₅₀ A	325	340	C	C	L							
17						320	I ₃₃₀ A	345	375	355	I ₃₅₀ A	355	345	A	A	A	A	A	A							
18						A	355	350	I ₃₅₀ A	370	375	370	390	375	345	410	A	365	A							
19						320	I ₃₄₀ A	365	330	365	365	335	345	380	A	A	A	A								
20						L	340	355	380	335	A	A	A	345	I ₃₅₀ A	335	335	340								
21						290	320	A	A	A	A	365	365	360	360	315	345	330	320							
22						U	L	A	A	A	A	I ₃₂₀ A	I ₃₂₅ A	340	355	345	I ₃₃₀ A	335								
23							325	345	350	360	340	335	335	365	355	335	310	345	A							
24							340	L	H	360	340	340	360	365	A	A	340	345	330	L						
25							335	I ₃₅₀ A	A	A	340	365	340	355	330	340	325	330	355							
26						325	A	A	A	I ₃₅₀ A	360	350	340	360	I ₃₇₀ A	345	340	340	A							
27						320	L	I ₃₆₀ A	380	370	I ₃₆₀ A	I ₃₇₀ A	370	355	I ₃₅₀ C	A	I ₃₅₀ A	350								
28							L	A	A	A	A	A	355	350	340	350	365	340	L							
29							355	I ₃₄₀ A	I ₃₇₅ A	I ₃₇₀ A	I ₃₄₅ A	360	365	330	I ₃₅₀ A	355	I ₃₅₀ A	345	A							
30						L	L	370	370	I ₃₅₅ A	I ₃₈₀ A	A	A	340	345	I ₃₆₅ A	I ₃₆₀ A	A	A							
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	13	17	16	17	20	20	23	24	24	22	17	16	3								
MED					320	335	345	350	355	348	348	345	342	345	338	340	332	325								
UQ					320	340	360	365	370	362	362	360	358	355	345	350	342	340								
LQ					295	325	335	338	350	340	335	340	335	330	330	325	325	322								

JUN. 1969

M(3000)F1 (0.01)

IONOSPHERIC DATA

JUN. 1969

H^oF² (KM)

135° E Mean Time (G. M. T. + 9h)

Station	AKITA																								
Lat.	39° 43.5' N · Long. 140° 08.2' E																								
Sweep	1 MHz to 20 MHz in 20 sec in automatic operation																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1						300	290	A	A	A	A	I A 375	I A 365	A	345	330	330	A	A						
2						295	280	260	275	275	280	380	370	370	335	325	320	I A 310	285						
3						320	280	290	290	A	360	350	360	350	325	320	325	300							
4						265	270	290	290	405	395	345	330	355	345	345	300								
5						C	C	C	C	C	C	C	390	395	C	C	C	C							
6						C	C	C	C	370	260	390	385	390	I C 365	340	340	330							
7						270	290	290	270	A	425	390	405	370	355	345	325	350							
8						290	295	360	385	375	355	440	390	380	350	325	320	325							
9						340	375	410	515	A	445	A	470	480	I A 500	440	410								
10						290	340	380	340	425	400	340	370	370	345	I A 340	330								
11						255	315	335	I A 375	I A 400	415	395	390	375	385	340	330	280							
12						275	320	430	380	395	430	410	410	390	370	I A 345	320								
13						290	265	340	380	I A 405	380	375	380	400	385	380	I A 320								
14						340	290	A	A	A	A	500	445	445	390	380	360	320							
15						370	390	I A 500	A	A	A	A	460	480	495	470	415	400	330						
16						350	340	330	375	405	440	450	495	430	420	400	C	C	330						
17						330	305	360	540	480	I A 590	540	510	I A 485	460	I A 440	A	A	A						
18						300	290	375	350	380	420	470	440	490	445	490	400	355	310						
19						340	345	280	340	305	390	410	390	355	350	345	320	315							
20						290	315	320	300	305	390	350	350	350	330	360	320								
21						450	390	380	A	A	470	490	440	420	400	435	330	365	350						
22						315	315	330	315	340	I A 390	380	380	360	345	340	325								
23						330	325	285	320	390	420	390	350	340	345	380	300	295							
24						290	270	345	355	360	365	390	375	350	330	350	340	325							
25						370	315	340	325	600	440	415	360	390	360	340	340	290							
26						340	295	295	A	I A 400	395	370	390	340	340	340	325	320	300						
27						350	290	305	315	325	345	340	365	340	I C 340	335	350	320							
28						250	300	325	I A 340	370	I A 335	340	345	345	305	305	290	290							
29						295	I A 280	325	315	I A 390	370	395	365	350	320	335	325	I A 290							
30						285	280	275	280	I A 325	305	375	I A 355	340	370	320	320	305	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						14	28	27	23	23	25	27	29	29	29	29	27	26	14						
MED						325	290	315	335	340	390	390	390	375	360	345	340	325	300						
UQ						350	335	335	362	380	420	435	410	410	400	385	355	340	325						
LQ						295	285	285	302	318	355	375	365	350	350	330	325	315	290						

JUN. 1969

H^oF² (KM)

IONOSPHERIC DATA

JUN. 1969

H^oF (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	320	270	290	290	285	265	A	A	A	A	A	A	A	A	A	A	A	A	A	280	290	I A 290	250	290
2	295	270	280	260	295	260	250	A	A	250	220	210	200	225	I 230	230	A	A	A	255	290	290	270	295
3	290	285	270	270	290	275	255	A	A	I A 245	220	220	225	I A 235	I A 240	A	A	A	250	265	295	290	295	280
4	280	290	280	265	270	245	240	230	235	240	205	220	230	I 240	225	240	245	245	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	A	A	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	A	215	I 230	215	A	C	A	A	A	290	320	I A 305	295	I A 300	305
7	295	290	250	280	285	250	I A 235	220	A	A	A	A	A	A	A	A	A	A	305	265	255	270	340	350
8	275	270	280	290	305	270	240	240	230	250	235	220	230	A	A	I 230	225	250	270	270	290	I 300	I 320	330
9	310	I A 320	I A 305	305	290	255	260	I 255	I A 245	220	I 230	I 215	I 235	250	230	I 240	I 270	245	320	285	280	305	330	315
10	310	305	280	300	305	270	I 255	260	240	230	240	215	240	I 210	230	I 235	A	A	285	280	290	A	A	A
11	305	290	270	265	305	270	I 260	240	A	A	A	A	A	245	230	255	230	260	255	I 260	280	A	330	I A 335
12	340	310	290	280	260	265	A	A	250	A	A	A	A	A	A	A	A	A	I 310	275	290	300	295	295
13	305	290	275	290	270	265	250	240	220	215	I 220	225	230	A	A	A	A	A	A	I A 280	I 300	I 340	350	315
14	325	325	290	245	255	290	A	A	A	A	A	A	A	A	A	240	235	260	275	285	235	I 300	320	355
15	345	300	I 300	255	245	255	270	A	A	A	A	A	230	240	245	250	I 230	240	I 265	I 280	I 290	305	320	325
16	325	300	245	280	290	290	250	250	240	I 250	245	I 240	240	I 230	I 240	230	C	C	255	270	290	300	300	295
17	310	300	285	290	320	260	I A 265	240	230	220	I 215	230	250	A	A	A	A	A	A	330	310	295	A	A
18	295	305	280	285	260	I 260	240	230	I 230	220	230	245	230	200	220	240	I 260	250	I 260	I 280	290	280	300	305
19	290	310	290	275	320	270	A	A	A	220	205	230	220	210	A	A	A	A	I 300	290	300	A	A	A
20	A	A	I 275	I 300	305	270	250	260	230	240	265	A	A	250	I 230	250	240	240	290	255	300	340	325	I 310
21	280	290	290	265	320	255	260	A	A	A	A	220	210	240	260	220	230	245	250	290	290	300	290	305
22	300	290	275	240	290	255	250	A	A	A	A	A	A	250	215	250	A	A	280	250	I 280	I 300	I 315	320
23	330	290	270	250	270	245	240	240	240	220	235	I 210	I 220	240	230	220	240	245	I 260	I 280	280	270	300	290
24	295	290	280	290	265	240	230	I 230	205	I 230	240	200	235	A	A	A	210	240	250	265	255	A	335	I 305
25	300	290	265	260	290	250	A	A	A	A	A	230	230	215	240	250	255	255	245	265	235	290	290	320
26	325	310	260	I 255	290	290	A	A	A	A	200	I 245	240	230	I 235	235	250	250	I 280	260	255	280	310	290
27	290	290	245	240	275	245	250	I 230	I 210	205	A	A	215	235	C	A	A	230	300	260	240	290	I A 310	340
28	285	280	255	280	250	240	230	A	A	A	A	A	A	240	250	225	225	220	260	260	245	300	285	295
29	290	295	295	265	290	240	240	I 210	I 230	I 225	I 225	220	205	260	I 240	235	I 230	230	I 235	270	230	300	315	280
30	275	270	280	280	295	245	245	215	205	I 220	I 220	A	A	A	245	A	A	I 280	I 305	305	260	260	270	280
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	28	28	28	22	16	15	17	18	18	20	19	18	18	15	17	24	28	28	24	25	25
MED	300	290	280	278	290	260	250	240	230	225	222	220	230	240	232	238	235	245	272	272	290	298	310	305
UQ	315	302	290	290	300	270	255	245	240	240	235	230	235	242	240	250	248	250	295	282	290	300	320	320
LQ	290	290	270	260	270	248	240	230	225	220	215	215	218	228	230	230	230	240	255	262	255	290	295	295

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H^oF (KM)

IONOSPHERIC DATA

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H^oE5 (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	105	105	105	105	110	110	130	135	130	125	120	120	120	120	120	120	120	110	110	110	105	110	120	120																								
2	110	E	E	110	S	145	135	135	140	130	130	G	G	G	110	G	135	130	120	120	115	110	110	100																								
3	100	100	100	100	100	140	135	125	120	115	130	G	125	125	120	115	105	105	105	105	100	100	S	E																								
4	105	105	105	105	110	140	140	140	140	130	140	130	125	120	130	120	125	125	C	C	C	C	C	C																								
5	C	C	C	C	C	C	C	C	C	C	C	C	115	120	C	C	C	C	C	C	C	C	C	C																								
6	C	C	C	C	C	C	C	C	C	120	120	110	110	110	C	110	105	105	105	105	100	100	100	100																								
7	100	105	105	105	105	105	105	105	110	115	115	110	110	110	115	115	110	110	110	105	100	100	110	110																								
8	S	105	105	S	110	G	130	125	115	125	125	B	125	120	120	115	120	120	115	115	105	105	105	105																								
9	105	105	100	100	100	G	150	125	125	115	105	140	140	130	130	125	125	130	120	105	110	105	110	105																								
10	105	105	100	105	105	125	115	115	115	120	120	120	115	110	115	110	115	115	115	120	105	110	110	105																								
11	105	100	105	105	105	105	135	125	120	115	110	105	115	140	130	140	G	140	120	115	110	110	110	110																								
12	110	105	100	105	110	130	125	120	115	115	115	115	115	110	110	105	105	105	105	105	100	100	110	105																								
13	100	100	100	100	105	140	130	120	130	120	115	115	120	140	130	125	125	120	120	115	115	115	110	105																								
14	105	105	105	105	105	130	125	125	125	115	115	115	115	115	115	G	G	130	120	120	E	110	110	105																								
15	105	100	100	100	100	150	130	125	115	115	120	115	120	115	125	115	115	140	125	115	110	105	105	110																								
16	105	105	105	100	100	130	130	125	125	125	120	115	130	120	125	120	C	C	115	105	105	100	110	115																								
17	115	110	S	E	110	140	125	140	130	120	120	125	120	115	120	125	120	115	115	105	100	100	100	105																								
18	105	105	105	105	100	115	125	130	125	130	130	135	135	125	C	140	135	130	120	115	115	115	105	110																								
19	105	105	105	100	110	120	130	120	120	120	125	120	120	120	115	115	115	110	105	105	105	110	105	105																								
20	105	100	100	100	100	110	130	130	130	125	120	115	115	115	125	130	125	130	125	115	110	105	115	105																								
21	105	100	105	100	150	G	130	125	115	115	115	115	G	130	120	G	G	G	140	130	120	110	105	105																								
22	105	100	100	105	110	140	130	120	120	120	115	115	115	115	115	115	115	115	110	110	115	115	115	115																								
23	110	115	110	105	110	E G 175	110	115	110	140	130	130	130	G	G	120	115	110	110	C	115	115	105	110																								
24	105	105	110	E	E	120	G	120	115	120	130	G	120	115	115	115	125	115	120	115	120	110	110	105																								
25	105	E	100	100	100	150	130	130	115	115	115	115	115	120	125	140	130	130	140	120	115	110	S	115																								
26	115	110	105	110	E	140	130	120	120	115	120	120	130	150	130	140	130	130	115	120	125	120	115	110																								
27	110	105	110	110	105	140	140	120	115	115	115	115	115	125	C	115	115	115	115	110	110	110	110	110																								
28	110	105	105	110	110	115	120	115	115	115	115	115	115	125	120	120	G	150	140	120	115	115	110	110																								
29	110	105	105	110	110	G	115	115	115	115	115	125	G	125	120	125	115	125	115	110	105	105	105	100																								
30	100	S	E	E	100	G	100	125	130	115	110	115	115	115	125	130	125	125	120	115	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	27	25	25	24	25	23	27	28	28	29	29	25	27	28	25	26	24	27	28	27	27	28	26	27																								
MED	105	105	105	105	105	130	130	125	120	120	120	115	120	120	120	120	120	120	115	115	110	110	110	105																								
UQ	110	105	105	105	110	140	130	128	128	125	125	120	125	125	125	125	125	130	120	118	115	110	110	110																								
LQ	105	100	100	100	100	118	125	120	115	115	115	115	115	115	115	115	115	112	110	105	105	105	105	105																								

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H^oE5 (KM)

IONOSPHERIC DATA

JUN. 1969

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	F4	F4	F4	F4	L3	L3	H4	H2	H3	H3	H3	H1	H2	H3	H3	H2	H2	C3	C3	C4	F3	F4	F2	F1
2	F4			F1		H2	H2	H2	H1	H2	H1				C2		H2	H2	C6	C5	F4	F5	F5	F2
3	F3	F3	F2	F2	L2	H1	H3	H2	H2	C2	H1	H1	H3	C1	C3	F4	F2	F4	F4	F4	F4	F3		
4	F1	F3	F4	F3	F1	H2	H1	H1	H1	H1	H1	H1	H2	H1	H1	H1	H1							
5													F1	H2										
6									H2	H1	C2	C1	C2		C2	F2	F2	F2	F2	F3	F4	F3	F2	
7	F2	F3	F2	F3	L3	L2	L4	L2	L2	C1	C2	C2	C2	C2	C2	C3	C4	L3	L2	F1	F4	F5	F3	
8		F1	F2		F1		H1	H1	C1	H1	H1	H1	H1	C1	C1	C1	C1	C1	C2	F4	F3	F4	F4	
9	F5	F3	F4	F2	F2		H2	H1	H1	C1	L2	H1	H1	H2	H1	H1	H1	H1	F3	F2	F2	F2	F2	
10	F2	F2	F4	F2	F2	H3	C3	C2	C2	H2	H2	H1	C2	C3	C1	C3	C4	C3	C4	F4	F6	F5	F4	
11	F2	F5	F4	F3	F2	L2	H3	H3	C2	C2	C2	L2	C2	H1	H1	H1		H2	C2	C4	F3	F4	F2	F6
12	F4	F3	F3	F5	F3	H3	H3	H3	C2	C2	C2	C2	C2	C3	C2	F2	F2	F2	F2	F3	F6	F5	F6	F6
13	F2	F2	F2	F2	F2	H1	H2	C2	H1	H1	C2	C2	H1	H2	H2	H1	H2	C2	C2	F3	F3	F3	F2	F2
14	F4	F2	F2	F1	F1	H2	H3	H2	H2	C2	C2	C1	C1	C2	C2			H1	C2	C2		F5	F2	F2
15	F3	F2	F3	F2	F2	H1	H1	C1	C2	C2	H2	C2	C1	C1	H1	C2	H1	H2	C4	F4	F3	F2	F2	
16	F4	F4	F3	F2	F2	H3	H1	H2	H2	H3	H1	C1	H1	H2	H2	H1			C2	F2	F5	F3	F2	F2
17	F3	F3			F1	H1	H2	H1	H1	H1	H2	H1	H1	C1	H1	H2	H2	C2	C3	F3	F4	F3	F4	F4
18	F3	F3	F3	F3	F2	C4	H2	H2	H1	H1	H1	H1	H1	H1		H1	H1	C3	C3	F4	F4	F4	F4	F4
19	F4	F5	F6	F1	F2	C2	H4	H3	H2	H1	H1	H1	H2	H1	C3	C4	C2	C2	F4	F3	F3	F4	F3	F3
20	F3	F3	F3	F3	F1	F3	H2	H2	H1	H2	H2	C2	C2	C1	H1	H1	H1	H1	H1	F3	F6	F3	F3	F3
21	F2	F2	F2	F2	F2		H2	H2	C2	C2	C2	C1		H1	C1			H1	H2	F2	F4	F3	F2	F2
22	F2	F2	F2	F2	F2	H2	H2	H3	H3	C2	C2	C2	C2	C1	C2	C3	C3	C3	C3	F3	F3	F3	F3	F3
23	F4	F3	F4	F4	F2	H1	L1	C2	H1	H1	H1	H1	H1		C1	C2	F2	L3	F4	F2	F2	F2	F2	
24	F3	F2	F1			C3		H3	C1	C1	H1		H2	C3	C3	C2	H1	C2	C1	F3	F4	F6	F4	F4
25	F3		F2	F2	F2	H2	H2	H4	H2	C2	C2	C2	C2	H1	H1	H2	H2	H2	H1	F1	F1		F2	F2
26	F2	F5	F6	F4		H2	H4	H3	H3	C2	C1	H2	H1	H1	H2	H1	H1	H1	C3	C3	F2	F4	F3	F3
27	F2	F1	F1	F2	F1	H2	H2	H3	H3	C2	C2	C2	C2	C1	H1		C2	C3	C3	C3	F2	F3	F3	F3
28	F2	F3	F2	F3	F1	C3	H2	C3	C3	C3	C3	C2	C1	H1	H2	H2		H1	H1	F1	F3	F3	F4	F4
29	F4	F2	F2	F2	F2		C3	C3	C2	C2	C3	H1		H1	H1	H2	C3	H2	C2	F2	F3	F4	F1	F1
30	F1				F2		L1	H2	H2	C2	C2	C2	C2	C2	H1	H2	H2	H2	H3	C3	F4	F5	F4	F3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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JUN. 1969

TYPES OF ES

IONOSPHERIC DATA

JUN. 1969

FOF2 (0.1 MHz)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J ₈₀ S	J ₈₆ R	J ₈₀ R	J ₇₀ R	J ₆₉ R	82	85	79	A	A	A	A	A	I ₈₇ C	95	I ₉₇ C	99	106	108	99	79	J ₇₈ R	78	S
2	72	68	64	61	59	72	90	86	72	J ₇₄ R	68	69	84	90	I ₉₈ A	I ₁₀₃ A	103	96	93	I ₉₀ A	90	87	91	R ₈₃
3	80	I ₈₀ C	70	66	65	80	87	83	74	68	79	86	90	96	105	105	J ₁₀₆ R	98	95	81	78	82	85	90
4	86	I ₈₂ R	80	76	72	81	92	80	71	68	69	I ₈₃ C	95	94	94	93	98	104	107	101	90	93	94	R ₉₃
5	I ₉₃ R	90	I ₈₂ R	72	72	79	80	95	83	66	I ₇₀ A	81	I ₇₈ A	84	85	93	95	A	85	78	74	84	84	83
6	I ₈₀ R	R ₈₄	76	68	68	71	85	85	80	73	72	80	85	94	101	I ₁₀₆ A	100	101	102	101	87	R ₈₉	I ₉₂ R	F ₉₁
7	F ₉₁	R	F ₉₀	F ₈₃	F	F ₇₆	86	86	82	74	81	92	98	100	109	112	111	111	110	98	85	84	83	F ₈₄
8	J ₉₀ F	J ₉₁ F	84	J ₇₈ R	79	86	87	80	84	89	85	84	91	97	106	107	90	78	82	88	84	I ₇₈ R	80	83
9	79	81	69	E ₆₅	72	80	77	74	I ₆₇ A	62	60	62	64	I ₆₅ A	64	I ₆₂ A	67	A	70	69	67	S ₇₀	75	80
10	78	J ₇₇ R	74	69	65	74	83	81	83	H ₈₇	87	96	105	104	I ₁₀₇ R	106	101	98	98	85	85	87	88	91
11	93	95	90	80	81	96	J ₁₀₆ R	87	82	84	85	90	98	100	98	101	103	110	106	90	85	86	85	88
12	F ₉₁	U ₉₂ S	F ₈₉	F	J ₇₆ R	F ₇₄	82	80	85	88	A	97	104	I ₁₁₃ A	A	124	124	117	107	J ₈₉ R	86	89	90	86
13	87	I ₉₂ C	F ₉₂	F	85	78	88	94	I ₉₀ A	87	84	95	101	98	97	98	104	113	106	90	80	84	F ₈₇	F ₉₂
14	94	U ₈₉ F	F	F	J ₈₆ F	87	89	95	A	I ₇₇ A	A	79	75	I ₇₉ A	C	88	92	90	91	86	78	80	76	82
15	81	88	86	85	69	67	63	I ₆₁ A	I ₅₇ R	I ₅₉ A	63	69	69	69	68	70	73	75	78	74	74	79	J ₇₆ R	77
16	J ₇₆ F	79	74	67	65	69	82	87	79	74	69	A	74	79	78	81	I ₈₃ A	I ₈₄ A	87	74	81	84	R ₈₆	78
17	73	70	J ₇₀ F	65	64	76	80	71	65	63	62	66	I ₆₆ A	64	65	64	61	60	60	70	74	71	70	71
18	F ₇₁	74	F ₆₄	62	F	63	78	91	91	81	80	82	71	70	70	71	76	78	71	74	78	J ₈₀ R	80	80
19	R ₈₃	R ₇₈	76	68	64	66	94	99	80	76	81	93	98	104	104	98	92	83	75	80	83	82	83	86
20	85	F	78	F ₇₅	F ₇₃	72	92	108	108	101	101	101	104	103	104	96	94	93	95	81	73	75	J ₈₀ R	80
21	78	77	71	E ₆₅	63	60	64	70	66	J ₆₅ R	66	I ₆₈ A	69	C	C	67	68	68	74	76	70	J ₇₂ F	74	F ₇₀
22	F ₆₈	71	69	60	59	65	74	95	98	89	85	88	97	96	93	90	87	89	90	76	U ₇₂ S	78	F ₇₈	84
23	F ₈₄	J ₈₀ F	A	F	F ₆₄	F ₅₈	71	94	94	74	67	70	80	94	90	81	J ₇₅ R	77	82	83	82	I ₇₈ R	J ₇₇ R	83
24	80	78	76	74	74	81	79	64	76	77	78	79	87	92	95	93	85	83	85	86	I ₇₈ R	77	80	F
25	R ₈₂	82	76	J ₇₉ R	69	71	73	87	71	69	64	67	79	81	78	80	78	77	89	84	70	I ₇₂ R	J ₇₇ R	J ₇₈ R
26	75	71	74	66	61	62	65	63	60	67	74	78	84	88	92	I ₈₆ A	84	89	90	84	89	79	80	R ₈₁
27	F	81	J ₈₀ R	74	74	73	81	93	81	79	81	84	84	89	91	84	84	83	90	91	87	I ₈₁ R	I ₈₂ R	81
28	F	91	86	80	82	74	76	84	89	83	I ₈₂ A	88	95	104	106	106	98	81	80	82	78	81	J ₈₂ R	J ₇₈ F
29	76	J ₇₉ F	82	J ₈₃ R	F ₇₆	85	90	105	89	78	72	76	76	87	94	88	90	96	I ₉₅ A	88	74	74	74	76
30	I ₇₈ R	79	74	74	73	76	94	95	74	73	78	76	J ₈₃ R	92	101	98	96	90	I ₈₇ A	90	90	86	88	96
31																								
CNT	28	28	28	26	28	30	30	30	28	29	27	28	29	29	27	30	30	28	30	30	30	30	30	28
MED	80	80	76	71	70	74	82	86	80	74	78	82	84	92	95	93	92	90	90	84	80	80	81	83
UQ	86	88	83	78	75	80	89	94	87	83	82	89	97	98	102	103	100	100	98	90	85	84	86	87
LQ	77	78	72	66	64	69	76	80	72	68	68	73	76	84	88	81	83	80	82	78	74	78	77	79

JUN. 1969

FOF2 (0.1 MHz)

IONOSPHERIC DATA

JUN. 1969

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							A	A	A	A	A	A	A	C	A	C	A	A						
2							L	L	L	580	R	570	520	A	A	A	A	420	A					
3						L	L	L	480	L	500	A	A	550	530	500	A	L	L					
4									A	A	610	C	530	440	530	500	480	A						
5						L	L	A	L	500	A	A	A	A	A	A	A	A	A	A				
6						L	L			580	L	L	580	A	A	A	R	A						
7							L	A	U	600	A	590	A	L	570	A	L	U	500	L				
8						L	L	L	A	A	580	L	A	A	A	A	L	L	A					
9						C	L	A	A	530	A	530	A	A	A	A	A	A	L					
10						L	A	L	L	600	550	L	590	590	A	A	L	A						
11						L	A	A	A	A	620	590	590	590	550	550	L	L						
12						A	A	A	A	A	A	A	A	A	A	A	A	A						
13						A	L	A	A	A	570	600	580	560	A	560	A	A						
14						A	A	A	A	A	590	580	A	C	550	L	L	L						
15						U	L	A	500	A	540	550	550	550	A	520	500	490	L					
16						L	A	A	A	450	A	A	550	U	580	U	550	A	A	L				
17						L	L	500	A	R	520	A	A	A	550	520	500	500	450	410				
18							A	550	U	610	A	530	500	A	A	500	480	450	L					
19						430	A	A	A	570	560	A	A	A	510	480	A	A						
20						L	A	A	L	A	A	A	550	500	580	500	L	L	L					
21					340	400	A	A	A	A	A	A	C	C	A	480	U	450	U	400				
22						L	A	A	A	L	560	540	A	530	A	A	A	A						
23						L	470	500	500	580	550	530	510	500	500	460	450	L						
24						A	L	500	L	520	A	A	A	A	A	450	460	L						
25						L	450	A	500	500	530	A	A	510	490	470	440							
26						L	L	450	A	500	R	510	A	A	A	A	A	A						
27						L	L	A	A	A	A	L	A	A	A	A	A	A						
28						L	L	450	510	A	A	A	530	520	A	470	L	L						
29						L	L	L	A	U	550	550	540	520	520	U	520	490	A	A				
30						L	L	L	L	A	A	A	A	A	500	500	A	A	A	A				
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	3	3	7	9	12	14	15	12	14	13	14	9	2					
MED						340	430	470	500	510	545	560	540	550	520	510	480	450	405					
UQ						445	485	500	580	580	580	580	580	565	560	550	500	460						
LQ						415	460	465	500	510	550	530	525	500	500	470	450							

JUN. 1969

FOF1 (0.01 MHz)

IONOSPHERIC DATA

JUN. 1969

FOE (0.01 MHZ)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						210	A	325	360	370	380	A	A	C	370	C	A	A	A					
2						I A 200	270	305	335	A	R	A	I A 370	290	A	A	A	280	A					
3						220	280	310	340	I A 355	A	A	A	A	R	350	A	A	A					
4						200	270	310	I A 340	380	385	I C 390	A	A	A	A	A	A	A					
5						180	270	A	A	I A 370	A	400	A	A	A	360	A	A	A					
6						215	A	I A 335	A	A	B	B	A	A	B	A	A	A	A					
7						B	A	A	A	A	A	A	A	A	380	I A 350	335	A	230					
8						A	290	320	350	I A 375	I A 390	415	405	410	390	355	I C 330	A	A					
9						190	I C 280	A	A	A	A	A	A	A	A	I C 380	340	290	A					
10						210	280	320	355	375	390	390	I A 395	400	I A 390	365	A	300	A					
11						A	270	325	A	A	400	410	410	395	R	385	380	350	310	A				
12						190	300	330	360	380	400	405	405	A	A	A	A	A	A					
13						A	A	330	360	385	400	I A 400	400	405	395	380	345	300	A					
14						A	300	350	I A 375	390	I A 400	I A 410	I A 425	I A 410	C	385	350	300	A					
15						A	290	350	I A 385	400	400	405	A	B	A	A	A	300	220					
16						210	290	335	360	A	A	A	405	400	I A 395	380	A	A	A					
17						A	A	A	350	370	390	A	A	390	I A 375	360	335	A	A					
18						B	A	A	A	I A 340	A	A	A	I A 370	A	R	330	290	A					
19						A	I R 265	I A 310	I A 340	360	370	I A 385	390	A	A	A	A	A	A					
20						A	A	A	A	A	A	A	385	I R 380	375	355	I A 330	A	220					
21						A	I A 270	I A 300	325	350	370	380	380	C	C	A	A	A	220					
22						A	A	A	350	360	370	380	I A 385	A	A	A	A	A	A					
23						200	A	A	340	A	A	A	I R 385	A	A	A	A	A	A					
24						210	A	A	A	A	A	A	A	A	A	A	A	R	A					
25						A	A	A	330	A	A	A	A	A	370	340	320	280	A					
26						I R 190	260	A	A	I A 350	I A 360	A	A	A	B	A	I A 340	315	A	A				
27						I B 210	260	A	A	A	B	B	A	B	A	A	A	A	A					
28						A	A	A	A	350	A	B	B	A	A	A	A	270	A					
29						A	260	I A 290	325	I A 360	I R 375	390	I B 390	395	380	350	I A 320	A	A					
30						A	A	A	340	I A 355	370	B	A	A	A	365	A	295	A					
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	17	16	19	19	16	13	14	11	11	16	12	11	4					
MED						205	270	322	350	370	388	400	392	395	380	360	332	295	220					
UQ						210	290	332	360	378	400	405	405	402	390	380	342	300	225					
LQ						190	270	310	340	355	370	390	U 385	385	375	350	325	285	220					

JUN. 1969

FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1969

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 _X 59	J _X 80	J _X 42	J _X 38	21	J _X 36	58	45	M ₈₁	M ₉₁	J _X 65	J _X 78	J _X 96	C	J _X 64	C	79	J _X 74	J _X 63	J _X 48	J _X 38	J _X 29	J _X 40	J _X 62	
2	J _X 56	J _X 54	J _X 24	22	J _X 15	23	32	37	36	41	46	J _X 53	43	J _X 66	198	200	J _X 65	109	J _X 73	140	J _X 54	J _X 19	J _X 26	J _X 26	
3	24	C	J _X 25	J _X 25	21	G ₁₈	G	36	41	48	J _X 59	56	43	46	G	J _X 62	J _X 85	J _X 43	J _X 65	J _X 26	J _X 25	J _X 29	23	22	
4	J _X 43	21	J _X 30	J _X 29	J _X 20	21	29	J _X 55	J _X 41	J _X 53	J _X 63	C	48	47	44	44	J _X 41	J _X 48	J _X 57	J _X 51	J _X 64	J _X 37	38	J _X 79	
5	J _X 55	J _X 21	J _X 24	J _X 30	J _X 41	J _X 30	36	43	J _X 53	44	J _X 96	74	80	J _X 73	57	J _X 64	J _X 88	J _X 148	J _X 138	J _X 108	J _X 55	J _X 41	J _X 54	J _X 63	
6	J _X 43	J _X 50	J _X 50	J _X 53	J _X 30	25	36	42	J _X 60	62	57	J _X 55	48	J _X 85	62	J _X 120	49	J _X 94	J _X 55	J _X 63	J _X 59	J _X 29	J _X 23	J _X 85	
7	J _X 89	J _X 89	109	J _X 74	J _X 50	J _X 48	J _X 51	J _X 52	J _X 54	J _X 60	J _X 64	J _X 62	60	42	46	J _X 68	G	32	21	J _X 25	J _X 41	22	23	J _X 63	
8	J _X 123	J _X 41	J _X 52	M ₃₀	22	J _X 29	J _X 29	36	43	J _X 28	J _X 90	J _X 54	63	69	J _X 73	77	80	J _X 73	J _X 90	86	77	J _X 61	J _X 89	J _X 92	
9	J _X 56	J _X 59	J _X 40	J _X 42	J _X 37	J _X 25	G	J _X 42	J _X 74	95	48	J _X 58	45	J _X 140	J _X 63	90	J _X 93	142	33	22	J _X 28	J _X 56	J _X 43	J _X 27	
10	J _X 26	23	J _X 39	31	J _X 27	30	J _X 38	J _X 56	J _X 55	J _X 62	45	60	J _X 71	43	J _X 180	69	61	J _X 85	41	J _X 41	J _X 29	J _X 36	34	J _X 52	
11	J _X 67	43	J _X 30	J _X 62	J _X 25	J _X 42	G	J _X 56	J _X 84	M ₁₂₀	M ₈₀	44	55	43	G	43	G	48	J _X 33	J _X 25	27	J _X 79	J _X 80	J _X 67	
12	J _X 73	J _X 130	J _X 92	J _X 84	J _X 26	J _X 41	J _X 61	M ₉₂	J _X 80	J _X 74	J _X 116	M ₁₁₄	J _X 114	J _X 144	155	J _X 120	J _X 110	J _X 67	J _X 74	J _X 96	J _X 43	23	J _X 29	J _X 103	
13	J _X 96	C	J _X 71	J _X 68	J _X 55	J _X 54	J _X 59	42	J _X 101	J _X 66	J _X 83	J _X 83	G	48	J _X 50	J _X 57	J _X 56	J _X 52	J _X 65	53	J _X 37	J _X 96	J _X 30	J _X 31	
14	J _X 51	J _X 91	J _X 90	J _X 80	J _X 53	J _X 40	J _X 63	J _X 82	102	83	J _X 121	J _X 139	J _X 119	J _X 139	C	G	49	39	J _X 41	J _X 41	J _X 27	35	J _X 30	J _X 24	
15	J _X 24	21	J _X 29	21	J _X 23	24	J _X 42	J _X 71	J _X 63	M ₅₉	43	46	48	45	J _X 66	J _X 42	J _X 42	38	J _X 33	18	J _X 53	J _X 53	J _X 25	21	
16	J _X 39	22	35	35	M ₃₄	28	34	J _X 74	J _X 69	J _X 96	44	J _X 139	J _X 71	J _X 56	J _X 54	44	J _X 93	J _X 124	J _X 29	J _X 24	J _X 51	J _X 30	J _X 41	J _X 94	
17	J _X 36	J _X 29	J _X 43	J _X 24	31	33	J _X 41	J _X 66	J _X 85	43	J _X 62	J _X 58	J _X 102	44	J _X 54	G	J _X 49	J _X 52	26	J _X 55	J _X 51	J _X 29	J _X 26	J _X 25	
18	J _X 106	J _X 86	J _X 65	J _X 54	J _X 26	J _X 42	J _X 53	J _X 71	49	J _X 42	J _X 54	43	48	J _X 93	64	G	36	J _X 39	35	J _X 29	J _X 25	22	J _X 50	J _X 51	
19	J _X 51	J _X 54	J _X 55	J _X 41	J _X 43	23	G	J _X 61	J _X 56	77	44	49	J _X 64	J _X 71	J _X 54	J _X 41	J _X 42	J _X 51	J _X 59	J _X 36	J _X 29	J _X 27	43	J _X 62	
20	J _X 71	J _X 54	J _X 55	21	J _X 23	23	30	J _X 88	J _X 89	J _X 55	J _X 61	J _X 56	J _X 55	44	41	J _X 55	40	J _X 36	J _X 55	J _X 29	J _X 64	J _X 22	J _X 41	J _X 54	
21	J _X 43	J _X 51	J _X 43	J _X 41	J _X 39	21	33	J _X 61	60	72	J _X 56	M ₁₁₃	68	C	C	J _X 69	33	J _X 36	22	J _X 24	M ₂₃	J _X 55	J _X 47	J _X 56	
22	J _X 29	J _X 30	J _X 23	J _X 34	J _X 35	J _X 30	J _X 41	J _X 58	J _X 93	J _X 80	J _X 89	62	47	80	J _X 107	J _X 138	92	J _X 96	J _X 54	49	J _X 54	J _X 88	J _X 60	J _X 62	
23	J _X 89	J _X 80	J _X 127	M ₆₁	J _X 52	G	31	37	J _X 42	J _X 51	49	43	45	40	J _X 41	38	44	J _X 37	26	J _X 23	J _X 37	J _X 25	22	22	
24	J _X 21	J _X 27	J _X 25	21	E ₁₁	G	J _X 38	J _X 59	J _X 42	43	J _X 42	J _X 89	J _X 88	J _X 73	J _X 71	J _X 54	42	G	35	J _X 29	J _X 53	J _X 24	J _X 24	J _X 51	
25	J _X 32	J _X 24	J _X 29	J _X 25	21	27	J _X 41	J _X 43	J _X 64	48	42	J _X 42	J _X 74	J _X 51	G	42	38	35	J _X 41	J _X 25	22	J _X 29	19	23	
26	E ₁₄	E	22	E ₁₂	E	G	34	J _X 42	J _X 41	J _X 56	J _X 42	47	J _X 54	62	J _X 53	J _X 123	J _X 89	J _X 78	J _X 84	J _X 51	J _X 24	22	J _X 35	J _X 29	
27	J _X 80	J _X 29	J _X 29	22	E ₁₂	23	35	42	107	J _X 57	J _X 68	J _X 110	57	J _X 107	J _X 96	J _X 90	57	J _X 52	J _X 63	J _X 27	J _X 35	J _X 22	J _X 23	J _X 24	
28	J _X 24	J _X 20	J _X 29	J _X 26	J _X 41	J _X 26	J _X 51	42	J _X 41	45	J _X 118	60	62	43	42	J _X 58	J _X 36	31	28	J _X 24	J _X 28	J _X 33	J _X 62	J _X 107	
29	J _X 84	J _X 52	J _X 34	J _X 30	J _X 34	J _X 39	30	J _X 39	J _X 39	J _X 64	G	44	G	46	47	J _X 68	J _X 62	J _X 48	J _X 144	35	21	27	29	32	
30	J _X 25	22	22	J _X 24	J _X 25	J _X 25	J _X 39	35	40	J _X 54	J _X 56	J _X 54	81	J _X 63	44	G	J _X 56	J _X 104	J _X 94	J _X 94	J _X 84	E ₁₆	21	20	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	28	30	30	30	30	30	30	30	30	30	29	30	28	28	29	30	30	30	30	30	30	30	30	
MED	J _X 51	J _X 42	J _X 37	J _X 30	J _X 26	26	36	J _X 48	J _X 58	60	J _X 58	J _X 58	58	59	J _X 54	J _X 58	52	J _X 52	J _X 54	J _X 36	J _X 38	J _X 29	J _X 32	J _X 52	
UQ	J _X 73	J _X 56	J _X 55	J _X 53	J _X 39	J _X 36	J _X 42	J _X 61	J _X 81	J _X 77	J _X 80	J _X 78	J _X 74	J _X 76	J _X 68	J _X 77	J _X 80	J _X 85	J _X 65	J _X 53	J _X 54	J _X 41	J _X 43	J _X 63	
LQ	J _X 29	J _X 22	J _X 29	J _X 24	J _X 21	23	30	42	J _X 42	48	45	49	48	44	44	42	41	J _X 38	33	J _X 25	J _X 27	J _X 28	J _X 24	J _X 25	

JUN. 1969

FOES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

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	41	20	33	26	E	25	54	45	A	A	A	A	A	C	61	C	79	53	41	41	27	25	33	45	
2	37	18	17	E	E	24	32	34	37	41	E ₄₆ ^R	52	41	65	A	A	53	27	51	A	37	17	26	19	
3	18	C	17	16	E	G ₁₈	G	35	38	44	55	53	41	45	G	62	53	30	38	16	25	16	E	E	
4	25	E	E	19	17	18	29	50	41	53	56	C	44	46	40	39	38	40	46	51	52	30	22	33	
5	20	15	15	17	22	G	34	40	52	40	A	74	A	69	56	63	87	A	82	53	25	26	40	55	
6	30	27	40	28	30	20	G	40	59	61	53	50	46	75	E ₆₂ ^B	A	E ₄₉ ^R	70	55	50	40	27	19	26	
7	40	53	18	36	29	45	46	46	52	55	61	52	57	41	46	62	G	31	17	G	19	40	16	16	29
8	19	16	25	20	15	22	G ₂₇	35	40	70	63	54	63	66	54	76	E ₄₃ ^C	41	74	74	65	41	40	40	
9	39	50	20	32	E ₃₅ ^C	15	G	41	A	54	44	53	43	A	56	A	50	A	29	19	25	17	22	25	
10	25	E	21	25	15	26	34	46	46	53	42	46	47	43	A	65	48	80	39	25	25	29	20	34	
11	34	29	25	25	17	24	G	53	66	80	67	E ₄₄ ^R	55	42	G	42	G	38	31	22	19	62	22	53	
12	53	45	56	53	15	34	55	66	59	65	A	65	71	A	A	106	104	55	46	57	27	16	21	57	
13	55	C	35	35	40	41	54	40	A	65	79	52	G	46	46	55	39	48	65	38	35	41	29	15	
14	30	25	55	38	30	35	59	75	A	A	A	55	45	A	C	G	45	34	38	37	18	18	20	19	
15	15	E	16	E	E	22	35	A	41	A	41	44	45	44	57	42	32	34	29	18	18	32	E	16	
16	18	16	15	25	20	25	G	52	53	64	42	A	69	50	52	41	A	A	29	20	28	28	30	18	
17	29	17	26	16	26	30	34	44	55	41	53	57	A	44	41	G	45	39	25	38	41	25	22	25	
18	25	24	26	40	17	37	46	71	45	41	53	41	45	53	59	G	36	39	30	25	22	16	25	16	
19	21	35	45	26	26	E ₂₃ ^R	G	38	53	70	44	46	61	55	51	40	42	47	58	32	26	20	30	40	
20	32	42	35	16	16	21	27	85	77	54	55	55	55	43	40	53	40	36	26	16	56	E	27	41	
21	37	46	32	32	29	20	27	56	56	65	56	A	62	C	C	53	33	29	20	G	20	16	42	16	34
22	E	E	12	22	28	25	38	54	75	54	56	45	41	65	48	86	82	46	36	47	40	31	21	50	
23	39	27	A	29	E	G	30	G ₃₆	41	45	40	43	43	40	40	27	39	37	26	20	26	25	16	E	
24	E	16	19	14	E ₁₁ ^B	G	36	30	40	39	42	51	66	55	53	51	24	G	26	20	25	19	24	30	
25	20	18	16	16	15	26	40	40	48	46	41	41	74	51	G	41	37	30	40	18	16	E	E	16	
26	E ₁₄ ^B	E	16	E ₁₂ ^B	E	G	32	41	38	51	41	E ₄₇ ^R	45	58	52	A	55	70	40	40	22	E	35	25	
27	19	16	25	15	E ₁₂ ^B	21	35	41	60	51	65	59	52	80	61	60	52	46	63	25	26	18	E	20	
28	20	14	21	17	16	25	35	32	39	45	A	55	56	E ₄₃ ^R	42	54	35	31	26	22	20	E	17	17	
29	16	29	25	26	19	35	29	35	39	51	G	42	G	45	44	45	39	46	A	28	15	17	16	27	
30	16	E	15	13	15	23	27	33	38	52	55	52	78	60	42	G	56	79	A	80	40	E ₁₆ ^S	E	16	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	28	30	30	30	30	30	30	30	30	30	29	30	28	28	29	30	30	30	30	30	30	30	30	
MED	25	18	23	24	16	24	33	41	52	54	55	52	54	52	51	53	42	40	38	26	26	20	22	26	
UQ	37	28	33	29	26	26	38	53	60	65	65	55	66	66	57	65	53	55	55	47	40	29	27	40	
LQ	18	14	16	16	12	19	27	36	40	45	42	46	44	44	42	41	36	34	29	20	22	16	16	17	

JUN. 1969

FBES (0.1 MHz)

IONOSPHERIC DATA

JUN. 1969

F-MIN (0.1 MHZ)

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

Station: KOKUBUNJI TOKYO		Lat. 35 42.4 N		Long. 139 29.3 E		Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																			
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E ₁₆ ^S	13	12	11	13	15	16	26	24	26	22	28	26	C	26	C	16	16	12	12	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
2	E ₁₆ ^S	12	12	14	13	13	16	18	19	26	28	27	26	18	16	26	16	16	12	14	10	10	E ₁₆ ^S	E ₁₆ ^S	
3	E ₁₆ ^S	C	12	10	E ₁₆ ^S	15	15	15	16	18	27	28	28	26	26	16	16	16	13	10	10	12	E ₁₆ ^S	E ₁₆ ^S	
4	13	14	13	E ₁₅ ^S	14	14	16	15	17	20	26	C	28	26	25	26	25	14	12	10	E ₁₅ ^S	E ₁₆ ^S	E ₁₅ ^S	12	
5	14	10	14	12	10	16	12	13	16	26	26	28	28	27	26	26	16	16	12	12	11	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	
6	E ₁₆ ^S	12	11	12	E ₁₆ ^S	12	26	28	26	27	40	41	27	26	40	33	28	18	11	10	11	E ₁₆ ^S	13	E ₁₆ ^S	
7	13	12	E ₁₅ ^S	10	11	12	15	16	25	26	27	30	27	28	26	19	15	14	13	10	11	12	12	E ₁₆ ^S	
8	12	11	E ₂₀ ^C	10	10	12	14	15	14	26	25	28	25	25	E ₂₇ ^C	25	E ₄₃ ^C	16	13	E ₁₆ ^C	12	E ₂₄ ^C	11	12	
9	E ₁₆ ^S	E ₁₇ ^C	12	E	E ₃₅ ^C	11	16	15	20	16	25	28	27	26	27	E ₄₃ ^C	16	15	11	10	11	12	11	13	
10	E ₁₅ ^S	12	10	10	10	14	12	13	14	26	27	26	22	29	22	17	16	14	12	11	10	10	12	13	
11	11	E ₁₅ ^S	10	10	10	15	15	16	16	26	26	31	28	26	25	26	25	16	13	10	12	10	10	13	
12	12	11	12	11	10	14	16	16	18	26	26	28	26	25	26	16	14	14	12	12	12	12	11	12	
13	12	C	11	12	11	15	14	14	16	19	26	26	18	22	26	19	13	13	15	12	10	10	12	11	
14	10	10	10	12	11	15	15	14	18	26	29	28	28	26	C	28	15	14	12	12	10	11	10	E ₁₅ ^S	
15	10	11	10	12	12	13	16	28	25	26	28	26	25	40	26	18	17	16	13	13	10	12	13	12	
16	10	E ₁₅ ^S	10	10	10	13	16	15	16	17	26	26	27	26	26	17	16	14	12	11	E ₁₆ ^S	11	12	E ₁₆ ^S	
17	14	10	14	10	10	14	19	16	20	16	26	26	26	25	26	18	17	14	12	10	13	11	11	11	
18	E ₁₆ ^S	10	13	10	10	16	15	15	18	19	25	26	26	26	27	25	16	16	13	12	16	13	11	14	
19	12	10	11	11	10	13	12	15	16	25	26	25	26	25	26	16	16	12	11	10	11	12	E ₁₅ ^S	11	
20	E ₁₆ ^S	10	11	12	12	16	15	16	16	18	25	26	26	26	26	19	15	16	11	10	E ₁₆ ^S	E ₁₅ ^S	13	E ₁₅ ^S	
21	E ₁₆ ^S	10	10	12	11	16	12	13	16	15	25	27	26	C	C	16	15	12	12	10	12	11	12	12	
22	E ₁₆ ^S	12	10	10	10	11	12	12	15	16	25	25	25	21	20	17	18	15	12	11	11	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
23	E ₁₅ ^S	11	10	10	10	12	12	12	14	16	25	27	28	25	26	26	16	16	12	12	11	13	11	E ₁₅ ^S	
24	E ₁₅ ^S	11	10	10	11	15	16	16	15	26	27	26	25	19	25	17	16	14	11	10	E ₁₆ ^S	10	E ₁₅ ^S	11	
25	E ₁₅ ^S	10	11	10	12	14	13	16	16	18	25	26	26	26	18	18	15	12	11	11	12	E ₁₅ ^S	E ₁₆ ^S	10	
26	14	10	14	12	10	16	15	12	13	16	15	26	26	40	29	25	16	14	12	14	E ₁₆ ^S	E ₁₅ ^S	E ₁₅ ^S	14	
27	12	11	E ₁₅ ^S	10	12	16	16	16	16	26	36	40	20	41	28	23	25	16	16	14	E ₁₅ ^S	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	
28	E ₁₅ ^S	10	10	11	10	15	15	16	18	27	32	40	39	28	26	25	15	16	13	E ₁₇ ^S	13	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
29	E ₁₅ ^S	10	13	12	10	15	16	18	17	30	25	22	25	25	20	25	16	15	11	11	11	11	E ₁₅ ^S	10	
30	E ₁₅ ^S	10	10	10	11	14	14	15	16	30	26	38	37	26	26	25	16	20	16	13	E ₁₆ ^S	E ₁₆ ^S	E ₁₆ ^S	14	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	28	30	30	30	30	30	30	30	30	30	29	30	28	28	29	30	30	30	30	30	30	30	30	30
MED	E ₁₅ ^S	10	11	10	10	14	15	15	16	26	26	27	26	26	26	U ₂₁	16	15	12	11	12	11	12	12	
UQ	E ₁₆ ^S	12	12	12	12	15	16	16	18	26	27	28	28	26	26	26	16	16	13	12	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	E ₁₅ ^S	
LQ	12	10	10	10	10	13	14	14	16	18	25	26	25	25	25	17	15	14	12	10	11	11	11	12	

The Radio Research Laboratories, Japan

JUN. 1969

F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

M(3000)F2 (0.01)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J ₂₇₀ S	J ₂₅₅ R	J ₂₉₅ R	J ₂₇₅ R	J ₂₈₅ R	290	305	305	A	A	A	A	A	I ₂₉₀ C	285	I ₂₉₀ G	280	285	305	310	285	J ₂₈₀ B	275	S	
2	275	270	280	280	290	295	330	335	320	J ₂₇₀ B	310	235	290	290	I ₂₈₀ A	I ₂₉₀ A	300	300	290	I ₂₈₀ A	285	275	285	280	
3	270	I ₃₀₀ C	285	270	280	300	300	325	325	280	280	275	270	275	285	285	J ₂₉₀ B	290	315	290	275	260	270	265	
4	280	I ₂₈₅ R	290	290	295	300	315	325	310	300	245	I ₂₇₅ C	285	285	280	280	275	290	300	315	265	270	265	275	
5	I ₂₈₀ B	290	I ₂₈₅ R	290	265	290	290	310	315	320	I ₂₇₀ B	260	I ₂₆₅ A	275	275	270	285	A	310	280	270	260	265	275	
6	I ₂₇₀ B	275	285	280	260	280	305	315	315	315	260	260	260	265	265	I ₂₈₀ A	270	275	285	285	275	265	I ₂₆₀ B	260	
7	285	F	R	F	F	F	305	305	290	305	255	260	255	265	255	260	265	270	280	285	305	270	255	260	260
8	J ₂₉₀ F	J ₂₈₅ F	280	J ₂₇₀ B	265	290	300	365	260	280	280	260	265	260	280	290	290	280	265	270	275	I ₂₆₀ B	260	260	
9	255	270	260	260	265	300	270	275	I ₂₆₅ A	250	230	230	245	I ₂₅₀ B	250	I ₂₄₀ A	260	A	270	280	250	260	245	250	
10	250	J ₂₆₀ B	280	275	260	280	290	270	275	270	240	245	260	260	I ₂₆₅ A	260	280	270	265	260	265	260	250	260	
11	270	270	280	270	265	265	310	300	270	A	270	250	255	260	260	260	270	280	295	285	260	260	255	265	
12	250	F	U ₂₉₀ S	F	F	I ₂₈₅ B	315	290	270	270	A	250	240	I ₂₅₀ A	A	265	265	280	290	J ₂₆₅ B	275	260	265	270	
13	255	I ₂₇₀ C	280	F	F	290	295	270	285	I ₂₆₀ A	275	I ₂₅₀ B	255	265	265	260	255	260	285	290	290	255	250	255	260
14	255	U ₂₆₀ F	F	F	J ₂₇₅ F	280	290	285	A	A	A	255	250	I ₂₆₅ A	C	275	260	270	275	300	255	255	255	245	
15	245	265	275	320	280	300	265	A	260	I ₂₃₅ B	235	250	260	270	250	255	265	270	280	280	250	245	J ₂₄₅ B	250	
16	J ₂₆₀ F	275	285	280	270	255	280	275	280	260	260	A	290	275	255	270	I ₂₇₅ A	I ₂₇₅ A	285	285	260	255	260	265	
17	265	270	J ₂₆₅ F	265	265	275	295	275	235	255	240	255	I ₂₅₅ B	255	260	265	265	280	255	260	285	270	260	255	
18	270	285	280	265	F	285	275	270	265	250	255	285	255	260	260	265	280	310	300	285	280	J ₂₇₅ B	270	275	
19	275	280	280	280	290	260	280	320	305	260	245	255	265	270	280	295	295	290	280	265	265	260	255	295	
20	295	F	280	275	F	275	270	260	275	280	270	270	265	265	280	280	275	275	280	275	285	265	255	J ₂₅₀ B	265
21	265	280	285	265	F	260	260	270	270	245	A	260	I ₂₇₀ A	260	C	C	265	280	280	285	295	275	J ₂₅₅ F	260	265
22	265	F	275	295	275	280	280	295	280	285	270	255	260	270	270	280	I ₂₈₅ A	I ₂₉₀ A	295	320	290	U ₂₈₀ S	255	255	270
23	270	J ₂₉₀ F	A	F	F	275	290	285	310	310	310	270	255	265	285	285	275	J ₂₈₅ B	285	285	285	270	I ₂₇₀ B	J ₂₆₅ B	265
24	265	275	275	270	285	310	315	300	290	285	270	255	270	275	280	280	280	280	280	280	280	I ₂₇₀ B	255	260	F
25	265	270	270	J ₃₂₅ R	265	290	290	315	300	305	295	260	A	285	280	290	280	285	290	310	270	R	J ₂₆₀ B	J ₂₇₀ B	
26	270	270	310	305	280	290	290	285	295	270	280	280	285	270	285	I ₂₉₀ A	280	280	290	285	280	280	275	260	
27	F	260	J ₂₈₀ B	285	295	275	275	290	295	280	275	275	275	270	270	290	285	285	285	280	290	295	I ₂₈₀ B	I ₂₇₅ B	275
28	F	290	295	290	305	340	305	300	315	315	I ₂₈₅ A	265	265	275	285	290	305	310	295	295	270	270	J ₂₈₀ B	J ₂₇₅ F	
29	275	J ₂₇₀ F	280	J ₂₉₀ B	295	300	290	305	305	295	270	275	265	275	280	275	280	290	I ₂₉₅ B	305	270	265	270	270	
30	J ₂₇₀ B	280	280	275	280	290	300	320	305	275	290	280	J ₂₇₀ B	265	275	275	280	280	I ₂₈₀ A	I ₂₈₀ A	290	290	275	270	
31																									
CNT	28	28	28	26	28	30	30	29	28	26	27	28	28	29	27	30	30	28	30	30	30	29	30	28	
MED	270	275	280	278	280	290	290	300	292	272	270	260	265	270	280	275	280	280	285	285	270	260	260	265	
UQ	275	285	285	290	288	300	305	315	308	295	278	272	270	275	280	285	285	290	295	295	280	270	270	272	
LQ	262	270	280	270	265	280	280	275	268	260	252	255	260	260	260	265	270	280	280	280	265	255	255	260	

JUN. 1969

M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 1969

M(3000)F1 (0.01)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	C	A	C	A	A						
2							L	L	L	350	R	340	365	A	A	A	A	365	L	A				
3						L	L	L	370	360	A	A	345	340	375	A	L	L						
4									A	A	315	C	360	415	340	350	345	A						
5							L	L	A	375	A	A	A	A	A	A	A	A	A					
6							L	L		A	330	L	300	A	A	A	R	A						
7							L	A	U L	355	A	A	A	L	330	A	L	U L	320	L				
8							L	L	L	A	A	A	A	A	A	A	L	L	A					
9							C	L	A	A	360	A	345	A	A	A	A	A	L					
10							L	A	L	L	335	365	330	320	A	A	L	A						
11							L	A	A	A	A	340	A	325	320	325	320	L	L					
12							A	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	L	A	A	A	335	335	330	340	A	320	A	A					
14							A	A	A	A	A	A	345	A	C	345	L	L	L					
15							U L	A	340	A	345	355	290	A	A	335	340	310	L					
16							L	A	A	A	420	A	A	325	U L	U L	330	A	A	L				
17						L	L	385	A	R	365	A	A	A	R	360	360	320	350	320				
18							A	335	U L	300	A	370	395	A	A	345	335	335	L					
19							335	A	A	A	320	355	A	A	A	355	370	A	A					
20							L	A	A	L	A	A	A	355	380	330	340	L	L					
21						300	355	A	A	A	A	A	A	C	C	A	340	U L	U L	360	315			
22							L	A	A	A	L	340	370	A	345	A	A	A	A					
23							L	345	345	365	330	350	360	370	360	365	350	335	L					
24							A	L	350	L	355	A	A	A	A	A	360	335	L					
25							L	355	A	345	380	360	A	A	365	350	345	345						
26							L	L	380	A	380	R	350	A	A	A	A	A	A					
27							L	L	A	A	A	A	L	A	A	A	A	A	A					
28							L	L	380	390	A	A	A	335	345	A	340	L	L					
29							L	L	L	A	U L	345	355	355	360	345	U L	340	330	A	A			
30							L	L	L	L	A	A	A	A	A	340	345	A	A	A	A			
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	3	3	7	9	12	11	14	11	14	13	14	9	2					
MED						300	335	355	350	360	345	355	348	340	345	345	340	335	318					
UQ							345	370	375	365	370	358	360	362	360	350	345	350						
LQ							330	350	342	350	330	340	335	328	340	335	330	335						

JUN. 1969

M(3000)F1 (0.01)

IONOSPHERIC DATA

JUN. 1969

H^oF₂ (KM)

135° E Mean Time (G. M. T. + 9h)

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						280	290		A	A	A	A	A	C	320	I ^o C ^o 300	A	350	300					
2						250	250	255	395	320	540	350	340	I ^o A ^o 340	I ^o A ^o 315	295	300	285						
3						290	260	275	290	300	365	360	350	350	330	320	305	290						
4								255	290	400	I ^o A ^o 380	I ^o C ^o 380	335	340	335	345	340	300						
5						280	290	290	290	A	E ^o A ^o 490	A	390	385	345	400	A	360						
6						275	270		300	400	395	415	395	360		A	330	350						
7							285	275	400	405	380	375	375	360	330	325	320	290						
8						255	350	370	350	A	345	375	380	370	340	325	300	330	A					
9						I ^o C ^o 350	370	I ^o A ^o 425	505	640	560	520	I ^o A ^o 490	490	A	430	A	300						
10						275	270	305	310	H	440	385	375	370	I ^o A ^o 355	350	320	I ^o A ^o 310						
11						250	250		A	A	370	425	380	375	375	355	350	305						
12						290	I ^o A ^o 300	340	A	375	A	400	425	I ^o A ^o 395	A	A	E ^o A ^o 400	290	280					
13						295	260		A	340	I ^o A ^o 415	390	365	350	380	390	355	300	290					
14						270	A	330	A	I ^o A ^o 465	A	430	455	I ^o A ^o 425	C	355	360	340	320					
15						300	A	490	A	555	480	450	450	480	440	400	370	320						
16						315	320	350	I ^o A ^o 360	480	A	A	400	420	380	A	A	295						
17						310	285	345	500	500	550	490	I ^o A ^o 470	490	450	420	430	385	400					
18							310	A	370	440	385	380	450	450	440	410	360	330	295					
19						325	255	290	490	A	460	400	370	355	340	320	310	295	340					
20						290	350	350	340	355	340	350	345	340	340	330	330	285						
21						360	360	390	465	I ^o A ^o 470	450	I ^o A ^o 405	450	C	C	390	385	340	320					
22						250	300	340	290	405	370	355	340	340	A	A	300	250						
23						320	290	280	270	430	445	445	345	340	340	310	340	300						
24						245	240	325	310	375	365	360	340	350	320	310	335	285						
25						335	285	300	325	380	460	A	350	360	345	340	325							
26						265	300	300	405	365	355	350	350	325	I ^o A ^o 315	350	345	290						
27						310	290	300	350	400	A	355	350	E ^o A ^o 400	325	340	340	300	320					
28						255	265	250	275	I ^o A ^o 325	A	355	355	340	320	300	275	255	275					
29						270	270	260	300	370	375	390	355	325	315	335	290	I ^o A ^o 280						
30						290	280	250	300	360	350	330	A	355	350	325	335	360	I ^o A ^o 350	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	27	28	25	27	26	28	25	28	27	26	28	27	22					
MED						300	280	290	300	350	400	385	375	358	350	340	339	320	295					
UQ						335	305	315	350	402	440	433	425	396	378	355	359	340	320					
LQ						290	262	268	290	300	365	368	355	348	338	320	315	300	285					

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H^oF₂ (KM)

IONOSPHERIC DATA

JUN. 1969

H*F (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	340 ^A	350 ^E	275	275	280	260	A	A	A	A	A	A	A	C	A	C	A	A	270 ^A	250 ^A	270	275	310	300 ^A	
2	310 ^A	300	280	275	270	250	245	245	210	200 ^H	230 ^I	290 ^E	205	A	A	A	245 ^I	240	260 ^I	280 ^I	285	275	290	290	
3	290	260 ^C	250	250	295	260	240	240	240	240	255 ^I	260 ^I	240	265	240	A	A	245	260	245	290	300	290	295	
4	300	285	285	265	285	245	250	260	A	A	A	C	240	250	250	230	250	270 ^I	290	260	310 ^A	295	300	300	
5	300	250	235	250	310	250	250	250	250 ^I	230	A	A	A	A	A	A	A	A	A	A	290	300	320	350	320
6	300	305	300	295	300	250	250	250	285	A	A	A	220 ^H	A	A	A	A	A	A	300	295	300	305	300	340 ^E
7	320	350 ^E	315	300	300	250	285	270 ^I	A	270 ^E	A	A	A	220	245	240 ^I	225	245	255	255	270 ^A	290	305	300	
8	295	290	290	290	295	255	240	225	245	250 ^I	A	A	A	A	A	A	230 ^I	255 ^E	280 ^E	A	A	350 ^E	310	350	320
9	355	310	275	350 ^A	320	240	240 ^I	240 ^I	250 ^I	250 ^I	220	220 ^I	230	A	A	A	A	A	255 ^A	270	310	320	350	345	
10	340	300	255	285	320	250	250	230 ^I	260 ^I	245 ^I	210	220	250	245	A	A	A	A	270 ^A	260	300	310	320	350 ^A	
11	320	290	270	270	300	260	240	A	A	A	A	250	205 ^I	220	225	245	240	250	255	255	270	A	340	340 ^I	
12	390 ^A	305	320 ^A	310 ^A	260	240	250 ^I	A	A	A	A	A	A	A	A	A	A	A	A	A	A	290	290	275	330 ^A
13	360 ^E	C	290	290	270	250 ^I	260 ^I	240	A	A	A	A	245	250	250	A	250	A	A	260	300	360 ^I	360 ^I	320	
14	310	350	330 ^I	270 ^A	250	270	A	A	A	A	A	A	205	230 ^I	C	225	220 ^I	255	280 ^I	270	270	300	340	340	
15	350	300	260	220	240	270	260 ^I	255 ^I	245 ^I	A	200	210	245 ^I	240 ^I	230 ^I	240 ^I	225	250 ^I	270 ^I	275	290	350	320	340	
16	320	290	250	290	290	260	250	A	A	A	220 ^H	A	A	260 ^A	A	250	A	A	275	260	320	305	300	295	
17	340	295	320	300	300	295 ^I	260	A	A	240 ^H	A	A	A	250	230	210 ^H	300 ^I	260	270	320	310	290	310	345	
18	320	290	300	360	285	285	300	A	255	210 ^H	250 ^I	210	230	A	220 ^I	235	240	270 ^A	260	280	290	290	295	295	
19	320	305	310	295	300	260	245	A	A	295 ^I	250	240	A	A	A	230	250	A	A	285	300	305	300	300	
20	300	310	300	290	295	260	250	A	A	A	A	A	A	225	210	230 ^I	250	250	250	245	360 ^E	330	345	310	
21	310	310	295	350	320	290	220	A	A	A	A	A	A	C	C	220 ^I	220	245	250	270	260	335 ^I	290	350	
22	300	300	250	290	300	260	245	A	A	A	A	230	205	A	260 ^A	A	A	A	A	290	310	340	340	340 ^A	
23	300	290	A	260	260	245	240	245	240	250 ^H	200 ^H	240	235	230	210	230	245	240 ^I	250	260	285	300	305	295	
24	300	300	290	295	260	245	220 ^I	210	220	200 ^H	240	225 ^I	A	A	A	A	235	240	250	260	265	310	330	350	
25	330	295	290	255	260	250	250 ^I	250 ^I	230 ^I	200 ^I	230	200	230 ^I	230 ^I	220	250	240	250	300	260	240	300	305	310	
26	310	300	250	235	275	250	240	250	215	225 ^I	210	220 ^I	250	A	A	A	A	A	A	265	280	250	300	340	
27	305	300	295	250	250	250	245 ^A	A	A	A	A	A	A	A	A	A	A	A	A	255	245	260	285	290	
28	300	260	260	285	250	220	240	240	220	200	A	A	A	260	240	245 ^I	230	240	255	255	280	290	260	255	
29	295	310	300	255	250	260	225	240	240	205 ^I	225	200	210	240	245	260 ^A	250 ^A	A	A	240	245	300	290	300	
30	290	270	275	270	270	250	245	240	210	A	A	A	A	A	260	250	A	A	A	A	285	240	250	295	
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	29	29	30	30	30	28	18	16	16	13	14	16	15	15	17	18	16	20	27	30	29	30	30	
MED	310	300	290	285	285	250	245	242	240	232	225	221	230	240	240	235	241	249	260	260	288	300	305	312	
UQ	325	305	300	295	300	260	250	250	250	249	240	240	240	250	248	245	250	255	272	278	300	310	340	340	
LQ	300	290	260	260	260	250	240	240	220	202	210	210	205	230	222	230	230	242	255	255	270	290	290	295	

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H*F (KM)

IONOSPHERIC DATA

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H°ES (KM)

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

Station KOKUBUNJI TOKYO		Lat. 35 42.4 N				Long. 139 29.3 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23									
1	110	105	105	105	115	140	105	125	125	115	115	110	110	C	115	C	110	105	105	105	105	100	115	115									
2	115	115	110	105	110	150	140	125	130	130	130	115	115	130	115	115	130	115	110	110	110	105	105	100									
3	100	C	100	100	100	110	G	140	145	125	115	115	115	115	G	130	120	115	110	115	130	100	100	100									
4	110	100	100	100	100	110	175	125	110	125	130	C	120	125	125	125	115	115	110	110	110	105	110	110									
5	110	105	105	105	110	105	140	130	130	145	120	115	110	110	115	110	110	105	105	105	105	105	105	105									
6	100	105	100	100	105	180	130	140	130	130	115	115	110	110	110	110	110	105	105	100	100	100	100	110									
7	110	110	105	105	105	105	105	105	105	105	105	105	110	125	120	110	G	125	105	105	100	100	100	110									
8	110	105	105	105	105	105	110	140	125	115	115	120	120	115	115	110	115	110	105	105	105	105	105	105									
9	105	105	100	100	100	100	G	115	125	110	110	110	115	110	110	125	120	110	115	100	100	115	110	110									
10	105	100	105	100	100	130	125	120	120	115	115	110	110	135	110	115	115	120	110	120	115	110	105	105									
11	105	105	100	105	105	125	G	125	115	110	110	150	125	155	G	130	G	125	115	110	110	105	105	105									
12	105	105	100	105	110	130	130	125	120	110	110	110	110	110	110	105	105	105	105	105	100	100	100	105									
13	110	C	105	105	105	105	115	125	115	110	110	110	G	155	140	130	130	120	115	110	110	105	105	110									
14	105	105	105	100	100	140	125	120	110	110	110	110	115	110	C	G	125	125	110	110	105	110	105	105									
15	105	105	100	100	105	125	125	125	125	125	130	115	110	120	110	110	110	125	115	110	110	110	110	105									
16	105	100	100	100	100	140	130	120	120	115	140	110	110	110	125	130	110	110	105	100	100	100	115	110									
17	110	105	110	105	110	145	130	130	110	140	115	110	110	115	110	G	130	115	120	105	100	100	100	100									
18	105	105	105	105	110	110	110	110	110	110	110	115	115	110	110	G	150	120	120	110	105	105	100	105									
19	105	100	100	100	100	120	G	120	115	110	125	115	110	110	110	110	115	110	110	110	100	100	100	100									
20	105	105	100	100	110	130	130	110	110	115	110	110	110	140	160	140	125	115	125	110	110	100	105	105									
21	100	100	100	100	100	140	140	120	115	110	110	110	110	C	C	110	110	105	105	105	105	105	105	110									
22	110	105	105	100	105	110	120	120	115	115	115	110	110	110	110	105	105	105	105	105	105	115	110	110									
23	105	105	105	105	105	G	175	140	140	130	110	130	150	125	115	130	115	125	130	115	110	110	110	110									
24	110	100	100	100	B	G	125	125	120	115	120	110	110	110	110	110	130	G	105	100	110	100	110	110									
25	100	110	100	110	100	150	130	130	125	115	115	115	110	110	G	150	150	140	120	100	100	100	100	110									
26	B	E	100	B	E	G	140	130	115	125	120	110	150	140	140	140	125	115	115	110	110	100	110	105									
27	110	100	100	100	B	130	140	120	110	110	110	110	130	110	115	115	115	110	110	110	105	105	100	105									
28	110	110	110	110	115	115	115	115	115	110	110	110	110	110	110	105	105	150	150	120	115	110	110	105									
29	105	110	110	110	110	115	130	115	115	120	G	140	G	125	120	115	115	110	105	105	105	100	100	100									
30	100	100	100	100	110	110	105	110	125	115	110	110	110	110	115	G	140	115	115	110	110	S	100	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	29	27	30	29	27	27	26	30	30	30	29	29	28	28	25	25	28	29	30	30	30	29	30	30									
MED	105	105	100	100	105	125	130	125	118	115	115	110	110	112	115	115	115	115	110	110	105	105	105	105									
UQ	110	105	105	105	110	140	140	130	125	125	120	115	115	125	120	130	128	120	115	110	110	105	110	110									
LQ	105	100	100	100	100	110	115	120	115	110	110	110	110	110	110	110	110	110	105	105	100	100	100	105									

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JUN. 1969

H°ES (KM)

IONOSPHERIC DATA

JUN. 1969

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	F3	F3	F3	F3	F2	H1	L3	H1	H2	C3	C2	C1	C2		C1		C3	F3	F3	F3	F4	F5	F3	F3	
2	F3	F3	F3	F1	F1	H1	H2	H2	H1	H1	H1	C2	C1	H1	C2	C2	H2	C2	C2	F4	F5	F3	F3	F3	
3	F2		F2	F2	F1	L1		H1	H1	H1	C2	C1	C1	C1		H2	H2	C1	F3	FF11	FF11	F2	F1	F2	
4	F3	F1	F3	F2	F1	L1	H1	H2	F2	H2	H2		H1	H1	H1	H1	C2	C2	C3	F4	F2	F3	F3	F3	
5	F3	F3	F2	F2	F2	L1	H1	H1	H2	H1	H3	C2	C2	C2	C1	C2	C2	C4	C4	F4	F3	F3	F4	F3	
6	F3	F3	F3	F3	F2	H1	H1	H1	H2	H1	C1	C1	C1	C2	C1	C2	C1	F2	F3	F3	F3	F3	F3	F3	
7	F3	F3	F3	F2	F3	L4	L2	L2	L2	C2	L2	L2	C1	C1	C1	C3		C2	L1	F2	F4	F2	F2	F3	
8	F3	F4	F3	F4	F3	L2	L2	H1	H2	C2	C2	C1	C2	C1	C2	C2	C3	C3	F3	F4	F4	F3	F3	F3	
9	F4	F5	F3	F4	F1	L1		C3	C2	C2	C1	C2	C1	C2	C2	H2	H2	C3	C3	F3	F3	F2	F4	F4	
10	F4	F1	F4	F3	F1	H1	H3	C3	C2	C2	C1	C1	C2	H1	C2	C3	C2	C3	C3	FF22	FF31	F5	F3	F3	
11	F4	F4	F4	F3	F2	C1		H2	C3	C3	C2	H1	H1	H1		H1		H2	C3	F4	F3	F4	F3	F4	
12	F4	F3	F4	F4	F3	H3	H3	H3	H2	C2	C2	C2	C2	C2	C4	L4	L4	F3	L3	F4	F4	F2	F4	F4	
13	F3		F3	F3	F4	L3	C3	H1	C2	C3	C2	C1		H1	H1	H1	H1	C3	C2	F3	F4	F4	F3	F3	
14	F4	F3	F4	F3	F4	H3	H3	C3	C3	C2	C2	C2	C2	C2			H1	H1	C3	F3	F2	F3	F3	F4	
15	F2	F2	F2	F1	F1	C2	H2	H1	H1	H2	H1	C1	C1	C1	C2	C2	C2	H1	C3	F2	F3	F3	F1	F2	
16	F3	F2	F4	F4	F2	H1	H1	C3	H2	C2	H1	C3	C2	C1	H1	H1	C2	L3	L2	F2	F3	F2	FF11	F2	
17	F5	F2	F3	F2	F2	H1	H1	H2	C2	H1	C2	C2	C3	C1	C1		H2	C3	H1	F3	F7	F3	F4	F3	
18	F3	F4	F3	F5	F3	L3	C3	C2	C2	C1	C2	C1	C1	C2	C2		H1	H2	H2	F3	F6	F2	F3	F3	
19	F4	F4	F3	F3	F3	H1		H3	C2	C2	H2	C1	C2	C2	C2	C1	C2	C3	C2	F3	F3	F3	F3	F3	
20	F3	F4	F4	F1	F2	H1	H1	C2	C3	C2	C2	C1	C2	H1	H1	H2	H1	C2	H1	F1	F4	F2	F3	F4	
21	F5	F5	F4	F3	F3	H1	H2	H3	C3	C3	C2	C3	C2			C3	C2	L2	L2	F4	F2	F6	F4	F4	
22	F2	F2	F2	F3	F4	L2	C3	C3	C3	C2	C2	C1	C1	C3	C2	C2	L3	L3	L3	F5	F5	FF23	F3	F4	
23	F4	F4	F3	F4	F2		H2	H2	H2	H1	L1	H1	H1	H1	C1	H1	C1	H2	H1	F2	F2	F2	F1	F1	
24	F2	F2	F3	F1			H1	H1	H1	C1	H1	C2	C2	C1	C2	C2	H1		L3	F3	FF12	F3	F3	F3	
25	F3	F3	F2	F2	F2	H1	H2	H2	H2	C1	C1	C1	C2	C2		H1	H1	H1	L1	F2	F1	F2	F1	F2	
26			F1				H1	H2	C1	H2	H1	C2	C1	H1	H2	H2	H2	C2	C2	F2	F3	F1	F3	F3	
27	F3	F2	F2	F1		H1	H2	H2	C2	C2	C2	C1	H1	C2	C2	C1	C2	C2	L1	F1	F3	F2	F2	F2	
28	F2	F2	F3	F4	F2	L2	C1	C1	C1	C1	C3	L2	C1	L1	C1	L2	L2	H1	H1	F1	F2	F2	F2	F2	
29	F3	F3	F4	F4	F4	C2	H1	C1	C1	C1		H1		H2	C1	C2	C2	C3	L4	F3	F2	F2	F2	F3	
30	F2	F2	F2	F1	F1	L2	L2	C1	C1	C2	C2	C1	C2	C2	C1		H2	C3	C3	F5	F2		F1	F2	
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																									

JUN. 1969

TYPES OF ES

IONOSPHERIC DATA

JUN. 1969

HPF2 (KM)

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

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

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J ₃₉₀ S	J ₄₁₀ R	J ₃₄₅ R	J ₃₅₅ R	J ₃₅₀ R	320	300	300	A	A	A	A	A	C	345	I ₃₃₅ C	A	350	300	300	345	350	380	S	
2	370	415	360	355	345	305	270	260	270	J ₄₀₀ R	340	560	370	360	I ₃₅₅ A	I ₃₅₀ A	340	340	350	I ₃₅₅ A	350	380	370	390	
3	380	I ₃₅₀ C	350	400	380	320	300	290	290	365	380	390	390	390	360	350	J ₃₄₀ R	350	300	350	380	400	380	395	
4	365	I ₃₆₅ R	360	340	350	310	300	270	300	320	A	I ₃₉₀ C	350	365	360	360	385	350	340	300	390	390	380	390	
5	J ₃₇₀ R	350	I ₃₄₀ R	350	385	330	355	305	300	300	A	A	I ₄₁₀ A	395	400	385	A	A	A	350	390	400	400	390	
6	I ₃₈₅ R	380	350	370	430	375	300	295	300	320	400	410	420	400	400	I ₃₈₀ A	380	380	345	360	390	410	I ₄₀₀ R	410	
7	380	R	370	350	F	300	330	300	405	405	400	400	420	405	380	375	360	345	305	360	410	400	410	410	
8	J ₃₅₅ F	J ₃₅₅ F	355	J ₃₈₀ R	390	360	310	390	390	380	355	390	400	400	360	350	340	350	A	A	360	I ₃₉₀ R	400	390	
9	410	380	380	F	380	300	370	370	A	G	G	A	G	A	A	A	430	A	370	350	430	400	445	430	
10	420	J ₃₈₅ R	340	350	410	350	320	350	345	380	470	430	410	405	I ₃₉₀ A	390	355	370	360	370	390	400	440	405	
11	385	360	350	360	380	350	J ₃₀₀ R	300	390	A	390	435	410	400	400	400	395	355	315	340	400	405	410	390	
12	430	J ₃₅₀ F	350	F	J ₃₅₀ R	290	310	380	370	390	A	425	460	I ₄₃₀ A	A	440	400	350	330	J ₃₆₀ R	370	405	380	370	
13	415	I ₃₈₀ C	350	F	320	305	350	340	I ₃₆₀ A	355	I ₄₃₀ A	410	400	390	410	420	400	340	340	340	405	420	450	400	
14	415	U ₄₁₀ F	F	F	J ₃₅₀ F	350	320	350	A	A	A	430	455	I ₄₂₅ A	C	370	390	385	380	335	420	420	420	445	
15	455	400	360	290	340	305	410	A	G	A	G	G	G	G	G	440	400	390	355	360	430	430	J ₄₄₀ R	440	
16	J ₄₀₀ F	380	350	365	370	385	350	360	360	A	G	A	A	400	440	400	I ₃₈₀ A	I ₃₇₀ A	355	360	400	400	410	400	
17	440	400	J ₄₀₀ F	405	400	385	365	385	A	G	A	A	A	G	G	420	430	390	440	400	365	385	410	430	
18	400	365	390	400	F	360	365	365	400	440	400	380	G	G	A	420	380	330	330	365	390	J ₃₉₀ R	395	400	
19	395	390	360	385	370	430	380	300	310	A	465	445	400	385	365	355	345	345	360	400	400	395	440	350	
20	355	F	370	F	J ₄₀₀ F	390	390	420	385	360	400	390	400	400	380	370	390	390	360	350	360	400	415	J ₄₄₀ R	400
21	385	380	355	F	405	400	400	400	A	A	A	A	A	C	C	390	380	355	350	320	360	415	390	400	
22	390	365	320	370	370	360	305	350	355	360	420	390	390	380	360	A	A	320	290	330	U ₃₆₀ S	420	410	360	
23	360	J ₃₅₀ F	A	F	380	330	350	305	300	300	440	450	410	360	365	350	J ₃₈₀ R	370	345	360	380	J ₃₉₀ R	400	390	
24	400	400	385	390	350	300	300	300	345	350	390	415	400	385	385	360	360	360	360	340	I ₃₉₅ R	410	400	F	
25	400	360	390	J ₂₉₀ R	400	340	350	300	330	330	G	G	A	360	380	360	360	360	345	300	385	R	J ₄₂₀ R	400	
26	400	400	315	325	380	350	350	350	335	405	380	385	365	390	365	I ₃₅₀ A	380	385	350	335	365	365	390	400	
27	F	395	J ₃₉₀ R	350	340	340	360	345	325	380	400	380	385	A	350	365	350	355	340	350	345	J ₃₇₅ R	I ₃₈₀ R	390	
28	F	350	340	350	305	260	300	335	300	300	J ₃₄₀ A	380	400	360	350	350	305	290	320	320	370	370	J ₃₆₀ R	J ₃₅₅ F	
29	360	J ₃₉₀ F	360	J ₃₂₅ R	320	310	340	305	305	350	380	380	400	370	355	350	355	340	310	295	360	395	370	380	
30	I ₃₈₅ R	350	360	360	350	350	310	290	305	390	370	340	I ₄₀₀ A	400	395	360	365	A	I ₃₅₀ A	I ₃₅₅ A	360	340	380	400	
31																									
CNT	28	28	28	26	28	30	30	29	24	21	19	22	22	23	23	28	27	27	28	29	30	29	30	28	
MED	390	380	358	360	370	340	330	335	328	365	390	400	400	390	365	368	380	355	345	350	382	400	400	400	
UQ	405	392	370	390	388	360	360	360	360	390	412	430	410	400	398	395	390	370	355	360	400	410	420	402	
LQ	375	358	350	350	350	305	300	300	300	320	380	385	390	375	360	350	355	348	330	330	360	390	380	390	

JUN. 1969

HPF2 (KM)

IONOSPHERIC DATA

JUN. 1969 YPF2 (KM) 135 E Mean Time (G. M. T. + 9h)

Station: KOKUBUNJI TOKYO		Lat. 35 42.4 N Long. 139 29.3 E										Sweep 1 MHz to 20 MHz in 20 sec in automatic operation													
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	J S 100	J R 65	J R 60	J R 100	J R 75	100	100	95	A	A	A	A	A	C	90	I C 100	A	105	100	90	100	J R 70	75	S	
2	90	80	110	100	75	95	85	95	85	J R 90	60	90	90	100	I A 100	I A 90	100	100	90	I A 120	110	80	90	I R 100	
3	100	I C 90	100	100	100	100	120	70	60	95	100	90	110	90	90	110	I 20	90	90	110	80	90	115	105	
4	85	I R 85	85	100	90	90	90	80	100	120	A	I C 90	110	85	100	105	115	100	100	90	110	100	120	I R 100	
5	I R 85	110	I 20	110	105	120	85	85	60	130	A	A	I A 90	85	90	105	A	A	A	110	100	90	100	100	
6	I R 95	R 80	100	110	90	115	100	55	100	80	120	120	100	120	100	I A 90	100	110	105	90	90	R 90	I R 100	F 90	
7	110	R	120	F 90	F	F 100	100	110	100	95	100	140	100	120	105	125	125	100	100	85	95	100	100	F 95	
8	J F 90	J F 90	100	J R 75	100	80	100	110	110	110	100	110	110	110	110	100	115	95	A	A	95	I R 95	95	105	
9	90	90	110	F 100	90	95	115	85	A	G	G	A	G	A	A	A	80	A	90	100	110	S 95	110	90	
10	90	J R 90	105	100	80	105	100	140	150	I 20	130	120	100	100	I A 100	100	100	100	95	130	110	100	105	90	
11	70	90	100	90	110	100	J R 70	145	110	A	110	125	110	100	100	105	100	105	95	105	100	95	80	100	
12	80	U S 70	F 60	F	J R 95	70	100	120	105	110	A	125	115	I A 115	A	80	110	120	115	J R 95	90	95	135	100	
13	95	I C 90	95	F	90	95	155	110	I A 105	115	I A 120	110	100	110	105	125	110	110	105	110	115	120	F 60	F 70	
14	85	U F 90	F	F	J F 100	105	130	120	A	A	A	85	65	I A 75	C	110	130	115	90	70	125	90	80	100	
15	95	100	110	70	105	95	70	A	G	A	G	G	G	G	G	G	105	95	80	100	100	115	115	J R 80	80
16	J F 100	70	95	95	100	140	120	110	90	A	G	A	A	90	110	100	I A 100	I A 85	95	100	100	90	R 90	100	
17	100	100	J F 100	95	100	105	125	105	A	G	A	A	A	G	G	80	70	110	100	100	115	105	90	80	
18	F 100	115	F 100	100	F	130	115	145	90	110	120	100	G	G	A	90	100	110	100	115	100	R 100	95	100	
19	95	R 100	R 135	95	120	80	100	90	150	A	115	95	110	95	125	105	105	95	120	110	100	95	70	90	
20	105	F	120	F 100	F 100	110	90	95	100	90	90	90	100	100	90	110	110	120	100	130	100	95	I R 100	100	
21	105	110	105	100	105	100	100	100	A	A	A	A	A	C	C	80	90	95	95	100	110	J R 85	100	F 100	
22	F 80	85	80	85	90	110	110	110	90	140	120	120	105	110	110	A	A	85	90	90	U S 85	85	95	90	
23	100	J F 75	A	F	F 90	F 80	100	75	95	100	50	60	90	120	115	100	J R 100	90	115	90	110	I R 105	J R 100	90	
24	100	80	105	90	100	R 80	100	110	95	140	120	175	90	105	95	100	120	100	120	120	I R 105	100	100	F	
25	R 100	120	110	J R 100	100	110	100	90	70	80	G	G	A	80	100	100	120	100	115	90	105	R 100	J R 100	J R 90	
26	100	100	85	115	120	90	100	100	155	95	100	95	115	90	115	I A 100	80	115	110	105	95	115	100	I R 100	
27	F	95	J R 90	100	80	90	130	95	105	100	80	100	105	A	90	95	90	105	80	100	R 75	I R 85	I R 105	100	
28	F	100	100	110	95	100	100	105	100	70	I A 125	120	100	110	105	100	95	105	100	95	90	100	J R 90	J F 95	
29	90	J F 65	85	J R 75	F 85	95	115	65	95	80	105	90	105	100	100	140	120	115	I A 105	80	95	100	80	80	
30	I R 85	75	85	110	95	70	100	60	95	70	80	70	I A 100	100	95	100	115	A	I A 100	I A 115	100	100	100	100	
31																									
CNT	28	28	28	26	28	30	30	29	24	21	19	22	22	23	23	28	27	27	28	29	30	29	30	28	
MED	95	90	100	100	98	100	100	100	100	100	105	100	100	100	100	100	100	100	100	100	100	95	100	100	
UQ	100	100	110	100	100	105	115	110	105	115	120	120	110	110	108	105	115	110	105	110	110	100	100	100	
LQ	88	80	88	90	90	90	100	85	90	90	95	90	100	90	95	98	98	95	95	90	95	90	90	90	

JUN. 1969 YPF2 (KM)

IONOSPHERIC DATA

JUN. 1969

FOF2 (0.1 MHz)

135° E Mean Time (G. M. T. + 9h)

Station	YAMAGAWA				Lat. 31 12.1 N. Long. 130 37.1 E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S ₉₄	S	S	S	S	F	86	81	A	A	72	81	98	109	110	113	115	U ₁₂₁	R ₁₂₄	I ₁₁₅	S ₉₆	92	J ₉₀	J ₉₀	
2	F ₈₂	F	S	F ₇₀	F ₅₇	F ₆₃	F ₇₄	78	64	66	V ₇₃	74	94	103	111	118	S ₁₁₆	I ₁₁₀	U ₉₈	I ₁₀₄	I ₉₂	95	88	F ₉₁	
3	90	J ₉₅	J ₁₀₄	S ₈₅	74	73	80	S ₉₅	66	68	79	87	R ₉₅	107	116	117	117	113	106	J ₉₈	I ₈₈	J ₈₇	I ₉₀	91	
4	U ₈₇	S ₈₅	76	70	70	76	J ₉₈	73	I ₆₉	70	71	86	101	104	104	112	119	I ₁₂₆	120	J ₁₀₂	I ₉₈	J ₉₇	I ₉₉	100	
5	I ₉₆	U ₉₆	91	76	U ₇₃	U ₇₇	J ₁₀₂	102	81	A	A	80	92	104	106	115	118	107	95	I ₉₁	J ₉₁	92	99	99	
6	S	F	F ₇₆	F ₇₀	F	F	U ₉₄	90	74	72	75	79	91	J ₁₀₁	I ₁₁₄	121	123	124	J ₁₂₆	112	S ₉₅	I ₉₈	I ₁₀₄	I ₁₀₀	
7	U ₉₈	F	F	F	F	F	F	F ₈₆	F	H ₇₂	81	90	96	104	112	122	130	131	115	107	S ₉₈	92	93	I ₉₁	
8	J ₈₆	I ₈₈	S	F	F	F ₆₈	77	87	94	98	90	93	101	I ₁₁₃	124	126	S ₁₁₂	95	I ₁₀₁	J ₁₁₄	91	I ₈₀	I ₈₇	S ₈₉	
9	86	I ₈₄	S ₇₉	F	F ₆₈	F ₆₉	77	86	H ₈₉	67	66	67	I ₇₀	I ₆₇	66	70	75	80	78	66	68	77	U ₈₃	82	
10	81	I ₈₃	86	S ₇₄	S ₇₀	S ₇₄	78	80	75	72	77	86	R ₁₀₀	106	I ₁₀₇	103	100	98	R	S	S	I ₈₉	J ₈₉	I ₈₉	
11	J ₉₁	I ₈₈	J ₈₄	J ₇₇	73	77	93	79	75	82	I ₈₄	R ₉₅	104	107	111	R ₁₁₄	Y ₁₁₉	I ₁₁₈	I ₁₁₂	I ₉₈	90	I ₉₃	94	J ₉₉	
12	I ₉₄	S	S	U ₉₃	80	F	F	83	92	91	93	98	R ₁₀₈	J ₁₁₇	125	J ₁₃₇	S ₁₃₇	140	J ₁₃₄	S	S	S	S	S	
13	S	S	S	J ₁₀₃	J ₈₇	71	73	89	91	I ₈₀	81	92	101	99	97	102	J ₁₁₂	120	U ₁₁₃	U ₉₈	83	91	92	J ₁₀₀	
14	J ₉₆	I ₉₆	J ₉₂	J ₈₉	78	71	83	87	I ₉₃	83	I ₈₈	91	96	A	C	103	J ₁₂₀	J ₁₁₄	103	J ₉₉	J ₈₉	J ₉₁	J ₈₇	95	
15	93	J ₉₅	J ₁₀₂	86	65	64	70	76	68	58	60	I ₆₄	68	R ₆₉	71	74	80	82	82	78	74	75	J ₇₉	81	
16	J ₈₅	83	V ₈₅	F ₆₄	F	53	68	78	84	76	U ₈₀	83	93	90	S ₉₆	104	109	108	100	I ₉₉	U ₈₆	89	88	85	
17	U ₈₀	U ₈₂	80	73	71	F ₆₉	72	67	70	R ₆₄	66	71	68	68	I ₇₁	72	67	69	71	79	81	71	73	74	
18	V ₈₀	81	71	F ₆₅	F ₅₆	J ₅₄	67	82	81	77	88	96	85	83	87	S ₉₆	95	84	87	90	92	J ₈₈	80	U ₇₅	
19	U ₇₆	F ₇₃	S	S ₇₁	F	F	83	86	73	72	81	93	99	111	118	117	98	87	S ₈₂	79	84	S ₈₆	J ₈₄	I ₈₄	
20	80	F	F ₈₁	F	F	F ₇₁	83	U ₉₆	97	95	95	97	102	104	105	115	110	104	J ₁₀₄	J ₉₁	73	73	74	75	
21	S ₇₅	F	F ₆₉	F	F ₆₇	F ₆₈	71	62	64	69	64	I ₆₄	70	75	73	I ₇₆	86	87	84	79	62	J ₆₂	J ₆₄	S	
22	S	F	F	F ₆₉	56	53	63	78	85	H ₇₆	80	95	110	I ₁₁₁	106	107	112	114	J ₁₀₂	85	I ₈₂	I ₈₅	S ₈₆	83	
23	85	I ₈₅	F ₇₂	F	F	A	F ₇₈	J ₉₈	87	68	64	I ₇₄	87	96	96	A	A	94	S ₉₆	85	79	S ₈₆	J ₈₄	90	
24	F ₈₈	S ₈₂	S ₇₆	F ₇₆	73	77	72	70	74	78	72	85	98	104	102	102	96	93	S ₉₆	S ₉₆	82	81	87	87	
25	J ₈₆	I ₈₉	83	73	F ₆₄	F ₆₄	75	91	97	79	70	74	80	83	80	83	85	82	96	90	69	72	77	79	
26	80	I ₈₁	S ₈₄	78	56	53	63	71	72	74	76	84	93	98	103	96	95	97	S ₉₅	S ₈₅	J ₈₆	81	I ₈₆	86	
27	79	76	76	76	69	60	61	73	82	V ₇₆	77	86	94	92	102	104	102	101	96	I ₉₇	88	91	S ₉₆	I ₉₄	
28	I ₉₂	J ₉₀	S ₉₆	S ₈₆	81	70	71	82	73	76	80	85	95	107	116	118	96	89	92	81	82	92	98	100	
29	I ₉₈	S ₈₈	S ₈₀	75	S ₇₉	72	72	88	80	73	74	80	83	R ₉₆	96	96	104	108	100	82	83	I ₈₄	I ₈₆	90	
30	S ₉₁	89	87	79	I ₇₂	73	92	78	66	74	85	74	85	96	106	112	113	116	S ₁₁₄	J ₁₀₄	J ₁₀₁	S ₉₄	101	I 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	27	21	22	23	22	24	28	30	28	28	29	30	30	29	29	29	29	30	29	28	28	29	29	28	
MED	S ₈₆	S ₈₅	82	76	70	70	76	82	78	74	77	85	94	103	105	107	110	106	100	S ₉₄	86	S ₈₈	87	S ₉₀	
UQ	S ₉₂	S ₈₉	S ₈₇	82	S ₇₄	73	83	88	88	78	81	92	100	107	111	117	117	116	112	100	S ₉₂	S ₉₂	S ₉₃	S ₉₆	
LQ	80	S ₈₂	76	70	65	F ₆₄	71	78	71	70	72	74	85	92	96	96	96	89	95	84	82	S ₈₁	S ₈₄	84	

JUN. 1969

FOF2 (0.1 MHz)

IONOSPHERIC DATA

JUN. 1969

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									A	A	A	A	A	A	500	A	A	A	A					
2								L	L	470	540	530	530	510	520	A	A	U	L	L				
3								A	A	A	500	A	570	520	520	H	530	450	U	L	L			
4									A	L	560	530	U	L	A	A	540	A	A	A				
5									A	A	A	A	A	I	A	540	A	A	A	A				
6								A	A	L	A	560	560	A	A	A	A	A	L	L				
7								L	L	L	L	L	A	A	A	L	520	L	L	L				
8								L	L	L	A	610	A	A	560	H	540	L	L	A				
9								L	L	A	530	530	R	A	A	A	510	480	480	L				
10								L	L	A	A	I	A	590	530	A	A	A	A	A				
11								L	L	L	A	L	U	R	540	L	580	I	A	A	A			
12								L	A	A	A	L	570	A	A	550	550	L	L					
13								L	L	A	A	580	L	570	610	I	A	I	A	L	L			
14								L	A	A	A	A	A	A	C	540	L	L	A					
15								L	620	500	510	I	A	520	A	A	530	530	I	A	490	L		
16								L	A	A	600	A	590	L	A	I	A	570	H	560	520	480	A	
17								450	I	A	520	530	520	A	A	A	I	A	520	520	490	450	L	
18								460	L	A	L	A	580	H	540	540	530	A	U	L	A			
19								L	L	L	540	R	500	530	520	510	520	490	L	L	L			
20								L	L	540	H	580	L	570	530	550	510	H	510	L	L			
21								L	L	440	480	510	A	A	A	A	I	A	500	490	A	A		
22								L	L	A	H	560	520	A	A	A	A	A	A	A	A			
23								L	A	L	460	H	I	A	520	A	A	A	A	480	L			
24								L	L	A	L	530	530	550	520	520	490	L	L	L				
25								L	L	L	560	510	550	A	510	510	H	480	460	L				
26								L	L	L	520	530	530	520	H	510	L	460	L	L				
27								L	L	L	L	A	530	520	490	510	H	470	440	L	L			
28								L	L	540	530	530	I	A	530	I	A	510	L	A	A	A		
29								L	L	490	510	540	A	510	510	520	500	I	A	A				
30								L	L	L	520	520	660	H	560	A	510	510	500	470	L	L		
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	3	10	16	20	16	13	19	20	17	12	1					
MED								455	490	510	530	530	540	530	520	525	500	465	450					
UQ									555	540	560	580	565	540	545	540	520	480						
LQ									465	480	515	520	530	520	510	510	480	U	455					

JUN. 1969

FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1969

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							205	H ₃₂₀	H ₃₅₀	360	380	380	380	370	350	310	A	A	A					
2							190	270	I ₃₂₀	A ₃₃₅	I ₃₄₀	350	350	350	370	H ₃₆₀	330	290	230	B				
3							180	270	315	335	340	A	A	A	R	360	340	300	250	S				
4							200	H ₂₈₀	320	345	365	390	390	I ₃₈₅	370	A	A	A	A	A				
5							190	290	330	360	390	400	I ₄₀₅	R ₄₀₀	395	360	330	A	A	A				
6							H ₂₄₀	290	330	360	380	A	R	R ₃₉₅	B	B	A	A	A	B				
7							A	295	A	A	400	A	A	A	A	A	A	A	A	A				
8							230	290	330	370	R ₃₉₀	I ₄₀₀	R ₄₀₅	R ₄₁₀	390	I ₃₈₅	355	310	240	S				
9							230	290	330	355	390	375	370	I ₃₆₅	360	365	350	315	H ₂₅₅	S				
10							210	285	330	365	370	I ₃₇₅	A ₄₁₀	400	I ₃₈₅	370	A	A	A	S				
11							A	290	330	370	400	U ₄₁₀	U ₄₁₀	U ₄₁₀	U ₄₀₀	390	360	320	H ₂₆₅	S				
12							225	310	340	370	390	400	410	S ₄₁₀	380	A	A	A	270	A				
13							A	A	R ₃₄₀	365	390	400	410	R ₄₁₀	I ₄₀₀	390	H ₃₆₀	320	265	S				
14							245	H ₃₀₀	335	375	400	R ₄₀₅	R ₄₁₀	410	I ₄₀₅	R ₄₀₀	370	320	270	S				
15							240	310	350	I ₃₇₀	R ₃₉₅	R ₄₀₀	385	B	A	A	A	A	A	A				
16							235	295	330	350	390	400	I ₃₉₅	R ₃₉₅	I ₃₈₀	350	315	A	A					
17							230	300	345	360	385	I ₃₈₅	A ₄₀₀	395	385	350	345	310	250	S				
18							210	280	310	340	350	I ₃₆₅	I ₃₇₅	360	A	A	A	310	255	A				
19							220	290	315	I ₃₄₅	I ₃₇₀	I ₃₇₅	375	R ₄₀₀	375	365	345	305	255	B				
20							210	A	A	340	I ₃₆₀	A ₃₈₀	R ₃₈₀	R ₃₉₀	R ₃₇₀	365	H ₃₄₀	310	260	150				
21							200	260	310	340	R ₃₆₀	375	380	385	380	355	A	A	A	A				
22							210	280	320	335	370	380	380	380	A	A	A	A	A	B				
23							A	A	A	A	H ₃₈₀	385	400	400	380	360	330	290	250	S				
24							210	275	315	350	360	375	380	I ₃₈₅	385	360	I ₃₃₀	H ₃₀₀	250	A				
25							210	260	320	335	350	A	A	A	A	A	A	295	240	A				
26							200	280	310	A	A	A	R	R	380	350	330	300	250	S				
27							I ₁₉₅	A ₂₇₀	305	330	360	360	375	I ₃₈₀	380	370	A	A	255	160				
28							210	H ₂₈₀	320	350	365	370	A	A	A	A	A	A	A	A				
29							200	270	310	340	355	360	380	380	370	380	350	290	A	A				
30							190	270	320	345	375	385	385	385	A	A	330	I ₃₀₀	A ₂₆₅	A				
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							26	27	27	27	29	25	24	24	21	20	18	18	18	2				
MED							210	285	320	350	370	380	385	392	380	365	342	308	255	155				
UQ							230	290	330	362	390	400	405	400	390	380	350	315	265					
LQ							200	272	315	340	360	375	380	380	370	360	330	300	250					

JUN. 1969

FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1969

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	J ₃₄ X	J ₃₄ X	J ₄₀ X	J ₃₅ X	J ₃₈ X	J ₂₆ X	J ₇₁ X	J ₆₉ X	91	J ₁₁₆ X	J ₇₅ X	J ₁₀₀ X	J ₁₁₃ X	J ₇₂ X	49	J ₅₄ X	J ₈₂ X	J ₆₈ X	145	74	J ₅₀ X	J ₆₄ X	J ₉₇ X	J ₈₆ X		
2	J ₄₄ X	50	J ₂₉ X	E ₁₂ B	J ₂₀ X	19	29	38	35	J ₅₃ X	46	J ₈₀ X	48	J ₄₇ X	43	J ₈₅ X	D	J ₇₃ X	J ₄₂ X	J ₄₅ X	J ₃₁ X	J ₈₄ X	J ₂₉ X	J ₃₃ X		
3	J ₃₆ X	J ₅₀ X	J ₃₃ X	J ₂₀ X	J ₃₇ X	J ₂₂ X	J ₄₃ X	J ₆₃ X	J ₇₉ X	J ₇₅ X	J ₈₈ X	J ₈₉ X	J ₆₅ X	42	39	35	G	31	35	36	J ₃₆ X	J ₃₂ X	20	E ₁₅ S	J ₂₃ X	
4	J ₂₁ X	J ₂₉ X	J ₂₂ X	18	E ₁₂ B	E ₁₃ B	25	39	J ₈₄ X	J ₆₁ X	46	50	J ₅₇ X	J ₆₀ X	90	J ₇₂ X	J ₆₂ X	J ₈₈ X	91	J ₇₁ X	J ₁₀₉ X	J ₁₀₂ X	J ₆₃ X	J ₆₁ X		
5	J ₄₀ X	J ₄₉ X	J ₉₄ X	J ₅₁ X	J ₄₈ X	J ₂₄ X	30	J ₄₄ X	J ₆₅ X	112	J ₃₆ X	90	85	J ₇₅ X	41	86	J ₁₀₀ X	J ₉₉ X	70	J ₁₀₀ X	69	J ₆₃ X	J ₃₃ X	J ₃₈ X		
6	J ₆₃ X	J ₇₁ X	71	J ₃₉ X	26	E ₁₄ B	26	42	70	J ₆₂ X	67	53	44	J ₉₂ X	130	J ₇₈ X	J ₇₆ X	J ₄₉ X	J ₃₂ X	J ₄₁ X	J ₃₄ X	J ₂₄ X	24	J ₂₄ X		
7	J ₅₂ X	80	J ₆₅ X	J ₄₂ X	40	J ₅₃ X	J ₅₂ X	J ₅₃ X	J ₄₁ X	J ₆₂ X	J ₇₃ X	47	83	J ₉₁ X	J ₆₀ X	J ₅₆ X	J ₄₄ X	J ₄₁ X	42	J ₃₃ X	J ₃₈ X	20	23	23		
8	E ₁₅ S	69	70	J ₆₄ X	23	J ₂₈ X	24	32	36	55	J ₅₉ X	61	J ₆₇ X	60	G	E ₄₃ C	J ₉₀ X	J ₈₆ X	138	J ₅₄ X	E ₆₁ C	C	J ₃₈ X	J ₂₄ X		
9	J ₅₅ X	57	J ₃₅ X	J ₃₈ X	J ₃₄ X	J ₂₅ X	26	38	40	J ₇₆ X	G	J ₆₂ X	J ₁₁₇ X	J ₁₆₃ X	J ₆₅ X	47	43	40	36	J ₈₆ X	J ₄₆ X	J ₃₀ X	J ₂₀ X	J ₃₃ X		
10	92	J ₆₂ X	J ₃₀ X	J ₃₀ X	J ₂₂ X	23	26	36	J ₇₅ X	J ₁₀₆ X	J ₁₃₀ X	J ₉₉ X	46	J ₇₀ X	J ₈₉ X	J ₅₈ X	72	J ₆₁ X	J ₈₆ X	J ₉₈ X	J ₈₆ X	61	J ₂₉ X	J ₂₁ X		
11	J ₂₅ X	J ₄₅ X	J ₃₆ X	J ₃₈ X	J ₂₄ X	J ₂₅ X	22	36	40	50	J ₂₈ X	J ₆₈ X	60	50	G	J ₇₃ X	J ₆₀ X	J ₇₅ X	J ₇₇ X	J ₈₉ X	J ₂₄ X	J ₃₂ X	J ₈₄ X	J ₄₂ X		
12	35	58	45	J ₅₁ X	J ₄₉ X	J ₂₁ X	J ₇₀ X	J ₅₆ X	61	J ₈₀ X	J ₈₅ X	61	54	J ₆₂ X	J ₈₅ X	J ₆₂ X	44	J ₄₅ X	39	J ₃₄ X	32	J ₃₆ X	J ₂₅ X	25		
13	J ₂₄ X	J ₂₆ X	20	E ₁₄ S	J ₂₄ X	J ₂₅ X	J ₂₉ X	J ₄₇ X	38	84	J ₇₁ X	J ₁₂₅ X	57	52	53	J ₇₉ X	J ₆₈ X	47	44	J ₄₇ X	58	J ₃₆ X	J ₃₂ X	J ₈₆ X		
14	J ₉₇ X	J ₆₂ X	J ₆₄ X	56	J ₃₃ X	15	27	J ₅₆ X	130	J ₁₀₇ X	J ₁₀₆ X	J ₉₉ X	J ₇₅ X	J ₁₄₁ X	C	45	38	70	J ₅₆ X	J ₆₅ X	J ₈₄ X	J ₅₃ X	J ₆₃ X	J ₃₇ X		
15	J ₅₁ X	J ₃₇ X	J ₂₄ X	J ₂₃ X	18	23	G	35	J ₅₂ X	J ₆₆ X	46	101	70	J ₁₇₉ X	J ₅₀ X	J ₅₂ X	J ₆₈ X	J ₄₀ X	28	24	21	22	J ₇₁ X	J ₅₁ X		
16	J ₃₄ X	J ₆₂ X	J ₃₃ X	J ₃₀ X	J ₂₈ X	J ₂₃ X	28	J ₆₁ X	J ₉₂ X	D	J ₁₃₆ X	J ₈₄ X	J ₆₅ X	J ₁₀₂ X	47	J ₁₅₉ X	39	J ₄₈ X	J ₁₆₈ X	J ₁₂₆ X	J ₈₄ X	J ₂₅ X	J ₃₇ X	J ₂₅ X		
17	J ₂₉ X	J ₃₈ X	J ₆₃ X	J ₈₅ X	J ₆₄ X	J ₃₅ X	J ₅₁ X	48	J ₈₄ X	J ₇₅ X	J ₈₆ X	42	J ₁₄₁ X	J ₅₃ X	J ₁₀₁ X	J ₆₇ X	G	40	31	26	J ₁₅ X	E ₁₅ S	J ₂₃ X	25		
18	J ₄₅ X	J ₇₃ X	J ₄₀ X	J ₃₉ X	J ₂₈ X	E ₁₃ S	G	31	J ₅₃ X	J ₇₁ X	J ₆₅ X	J ₈₇ X	38	41	J ₇₇ X	J ₆₃ X	J ₇₃ X	42	M	J ₈₅ X	J ₄₆ X	J ₂₁ X	J ₂₄ X	J ₂₄ X		
19	J ₂₂ X	E ₁₄ S	J ₂₃ X	J ₂₄ X	J ₂₉ X	J ₂₂ X	G	G	G	J ₈₃ X	J ₈₃ X	J ₉₈ X	47	48	48	39	49	J ₄₇ X	J ₅₉ X	J ₃₅ X	17	J ₃₄ X	J ₃₆ X	J ₆₂ X		
20	23	E ₁₄ S	J ₄₈ X	J ₄₂ X	J ₄₀ X	18	24	30	J ₅₄ X	36	38	G	G	49	43	39	30	G	21	G	20	22	21	J ₂₅ X	J ₂₉ X	51
21	J ₆₆ X	J ₆₁ X	J ₃₄ X	J ₃₀ X	J ₂₆ X	J ₂₁ X	25	30	38	44	50	J ₆₆ X	J ₆₇ X	J ₆₆ X	J ₇₆ X	J ₁₂₄ X	81	J ₆₃ X	J ₈₈ X	J ₆₀ X	J ₃₆ X	J ₃₀ X	J ₃₄ X	J ₆₂ X		
22	J ₈₉ X	J ₆₁ X	J ₃₀ X	24	J ₄₁ X	J ₂₉ X	45	J ₆₅ X	J ₇₁ X	J ₆₄ X	J ₅₁ X	J ₆₃ X	J ₇₇ X	J ₁₇₂ X	86	J ₇₄ X	J ₈₆ X	J ₁₀₄ X	J ₇₄ X	J ₆₀ X	J ₆₁ X	J ₇₅ X	J ₄₀ X	J ₆₀ X		
23	J ₂₄ X	J ₇₃ X	J ₇₄ X	J ₈₅ X	J ₁₃₁ X	J ₁₃₂ X	J ₆₄ X	J ₇₉ X	J ₆₉ X	46	44	J ₈₁ X	J ₆₄ X	57	J ₁₀₄ X	110	J ₁₂₂ X	J ₁₂₁ X	J ₅₁ X	J ₃₀ X	21	J ₄₅ X	J ₄₉ X	J ₃₉ X		
24	J ₂₂ X	J ₅₁ X	J ₃₁ X	J ₂₉ X	J ₂₆ X	E ₁₃ B	28	J ₃₅ X	J ₆₈ X	J ₈₆ X	J ₉₆ X	J ₆₅ X	J ₆₄ X	J ₅₃ X	J ₆₄ X	40	35	G	21	J ₂₄ X	J ₁₇ X	19	J ₁₆ X	J ₃₄ X		
25	J ₂₈ X	J ₃₇ X	J ₃₄ X	J ₂₈ X	J ₃₄ X	E ₁₅ S	28	35	42	J ₅₃ X	44	J ₅₂ X	J ₅₃ X	59	J ₅₄ X	42	J ₃₉ X	39	32	J ₆₃ X	J ₂₇ X	J ₂₄ X	J ₂₇ X	J ₂₄ X		
26	J ₃₃ X	J ₁₉ X	J ₁₈ X	E ₁₁ B	E	E ₁₄ S	G	36	J ₆₈ X	J ₈₅ X	J ₉₁ X	J ₇₀ X	43	36	42	40	42	44	32	J ₃₀ X	J ₇₀ X	J ₃₅ X	23	24		
27	E ₁₅ S	23	20	J ₁₇ X	E ₁₃ S	E ₁₂ S	21	34	36	37	39	J ₆₂ X	51	J ₈₀ X	40	G	37	35	30	20	J ₂₉ X	J ₂₉ X	22	E ₁₅ S		
28	E ₁₅ S	J ₁₈ X	20	E ₁₃ B	J ₂₀ X	E ₁₄ S	29	33	39	39	44	41	J ₁₃₈ X	J ₁₀₃ X	J ₁₀₁ X	J ₇₄ X	J ₆₄ X	J ₅₉ X	J ₆₁ X	J ₆₄ X	J ₂₃ X	20	20	J ₃₆ X		
29	24	J ₂₈ X	24	22	J ₂₀ X	E ₁₂ B	27	J ₅₄ X	J ₈₈ X	J ₆₃ X	J ₆₆ X	J ₅₄ X	J ₁₀₀ X	J ₅₀ X	43	41	J ₆₇ X	J ₅₁ X	J ₄₈ X	J ₄₄ X	J ₆₄ X	J ₈₄ X	J ₃₁ X	J ₄₂ X		
30	J ₂₁ X	J ₂₂ X	J ₂₅ X	J ₂₈ X	J ₃₅ X	J ₂₂ X	G	32	40	43	49	J ₅₂ X	J ₅₄ X	61	J ₆₅ X	J ₄₉ X	35	J ₃₅ X	28	20	J ₃₂ X	J ₁₉ X	23	23		
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	29	30	30	30	30	30	30	29	30	30		
MED	J ₃₄ X	J ₅₀ X	J ₃₄ X	J ₃₀ X	J ₂₈ X	J ₂₂ X	27	38	58	J ₆₅ X	J ₆₆ X	J ₆₆ X	J ₆₄ X	J ₆₀ X	54	J ₅₇ X	61	J ₄₈ X	46	J ₄₆ X	J ₃₂ X	J ₃₀ X	J ₂₉ X	J ₃₄ X		
UQ	J ₅₁ X	J ₆₂ X	J ₄₈ X	J ₄₂ X	J ₃₈ X	J ₂₅ X	30	J ₅₄ X	J ₇₅ X	J ₈₄ X	J ₈₈ X	J ₈₉ X	J ₇₇ X	J ₉₁ X	J ₈₅ X	J ₇₄ X	J ₇₆ X	J ₇₀ X	J ₇₇ X	J ₆₅ X	J ₆₁ X	J ₅₃ X	J ₃₈ X	J ₅₁ X		
LQ	J ₂₃ X	J ₂₈ X	J ₂₄ X	J ₂₂ X	J ₂₂ X	E ₁₄ B	24	34	40	53	46	53	51	50	43	42	39	40	32	J ₃₀ X	J ₂₃ X	J ₂₄ X	J ₂₈ X	J ₂₄ X		

The Radio Research Laboratories, Japan

JUN. 1969

FOES (0.1 MHZ)

IONOSPHERIC DATA

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JUN. 1969

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	E	29	26	18	18	50	43	A	A	61	63	58	64	48	52	55	53	65	33	41	51	28	56	
2	44	33	16	E ₁₂	14	15	26	34	G	44	46	48	47	E ₄₇	42	71	A	40	32	42	31	65	E	E	
3	E	15	E	E	25	15	41	58	52	52	48	56	54	42	E ₃₉	G ₃₅	G ₃₁	G	34	28	20	E	E ₁₅	E	
4	19	18	17	E	E ₁₂	E ₁₃	G	37	62	50	45	50	49	56	87	46	51	62	87	68	A	52	51	29	
5	28	19	22	20	24	20	28	36	58	A	A	56	68	65	E ₄₁	64	51	96	50	A	44	52	21	25	
6	40	40	30	31	15	E ₁₄	G	40	44	51	E ₆₇	49	E ₄₄	91	A	75	73	42	31	33	28	19	E	E	
7	27	33	47	20	E	26	24	26	37	42	55	46	77	81	54	51	41	37	32	30	34	18	E	E	
8	E ₁₅	22	15	16	E	18	17	G	35	48	51	54	66	58	G	E ₄₃	47	47	73	53	E ₆₁	C	29	24	
9	41	29	26	34	22	17	G	32	G	56	G	44	A	A	62	46	42	39	36	60	29	26	16	29	
10	46	E ₆₂	26	25	18	16	26	35	42	65	70	65	45	E ₇₀	89	55	59	55	E ₈₆	E ₉₈	E ₈₆	E ₈₆	42	22	E
11	E	27	24	E	15	19	21	G	G	46	A	50	50	50	G	73	57	74	E ₇₇	E ₈₉	18	23	21	25	
12	E	53	25	30	28	15	50	48	60	75	73	56	52	E ₆₂	E ₈₅	51	43	43	39	19	17	34	25	25	
13	22	E	E	E ₁₄	20	21	26	31	G	A	65	49	47	50	52	79	67	46	28	20	28	36	32	53	
14	33	15	52	21	18	14	G	54	A	73	A	60	68	A	C	45	E ₃₈	45	E ₅₆	31	18	32	14	30	
15	36	28	18	15	E	E	G	35	52	47	43	A	54	60	46	46	64	34	28	21	E	E	28	50	
16	25	32	27	27	20	E	G	53	58	43	60	54	62	83	46	44	37	42	97	A	62	19	21	18	
17	19	28	33	15	37	26	36	42	59	47	45	42	64	53	A	53	G	37	30	25	15	E ₁₅	23	E	
18	27	51	27	32	22	E ₁₃	G	G	48	58	48	71	E ₃₈	41	51	49	51	40	73	45	15	20	20	18	
19	E	E ₁₄	E	11	12	E	G	G	G	39	48	48	46	47	46	G	42	45	37	28	E	29	19	17	
20	E	E ₁₄	E	19	18	14	20	28	34	G	38	C	G	45	43	38	G ₃₀	G ₂₁	G ₂₀	G	E	E	18	E	
21	E	40	22	17	17	E	G	G	37	43	48	A	61	56	61	A	41	52	40	31	36	18	E	E ₆₂	
22	50	15	E	14	16	20	33	38	45	57	42	45	62	A	68	52	64	76	68	51	50	52	16	18	
23	16	20	28	36	31	A	25	52	41	39	40	A	57	53	87	A	A	40	29	22	21	24	40	20	
24	18	27	16	15	12	E ₁₃	G	30	43	50	50	44	43	50	39	39	33	G	G ₁₉	18	E	E	E	E	
25	E	22	E	21	18	E ₁₅	G	G	40	46	41	49	50	51	45	41	36	G	31	49	25	E	E	E	
26	E	E	E	E ₁₁	E	E ₁₄	G	32	43	42	44	41	43	36	G	G	36	43	28	26	17	15	E	E	
27	E ₁₅	E	E	E	E ₁₃	E ₁₂	E ₂₁	29	G	G	38	58	49	45	G	G	35	29	G	G	25	E	E	E ₁₅	
28	E ₁₅	E	E	E ₁₃	E	E ₁₄	G	G	34	38	40	41	79	47	96	49	60	44	49	64	E	E	E	29	
29	15	19	E	E	16	E ₁₂	26	32	35	G	40	47	54	46	42	40	40	47	42	35	47	51	E	31	
30	16	15	21	19	14	14	G	G	35	41	46	41	48	51	49	48	G	33	G	19	21	E	E	E	
31																									
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	29	30	30	
MED	17	20	20	16	16	14	18	32	42	47	48	50	53	52	47	48	42	42	U ₃₄	31	U ₂₃	20	17	18	
UQ	28	30	27	25	20	18	26	40	52	57	60	58	62	64	65	55	59	47	U ₅₇	51	U ₃₈	36	23	U ₂₇	
LQ	E	15	E	E ₁₂	12	E ₁₃	G	G	34	42	42	45	47	47	42	40	36	37	29	22	17	E	E	E	

The Radio Research Laboratories, Japan

JUN. 1969

FBES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1969

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 ₁₃	E ₁₄	15	12	11	E ₁₃	18	18	18	18	22	23	21	23	18	15	12	15	11	E ₁₅	12	E ₁₄	E ₁₅
2	E ₁₅	12	E ₁₄	12	E	E	E ₁₅	15	15	15	17	19	18	21	18	17	15	15	12	13	E ₁₅	E ₁₅	E ₁₅	E ₁₅
3	E ₁₅	E ₁₂	E ₁₅	12	13	14	15	15	15	18	18	21	20	23	24	18	16	17	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
4	E ₁₅	E ₁₅	E ₁₅	12	12	13	E ₁₅	15	15	17	19	27	21	20	18	17	18	15	15	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅
5	E ₁₅	E ₁₂	E ₁₅	E ₁₄	12	12	E ₁₅	15	15	15	21	20	26	26	24	19	17	15	11	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅
6	E ₁₅	E ₁₂	12	13	13	14	E ₁₅	14	17	19	24	29	24	22	41	39	35	19	15	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅
7	E ₁₅	E ₁₅	E ₁₅	12	13	11	E ₁₅	15	15	21	25	19	21	19	24	18	16	15	14	11	E ₁₅	E ₁₃	E ₁₅	E ₁₅
8	E ₁₅	E ₁₄	E	11	E	11	14	15	14	17	16	21	18	23	20	E ₄₃	16	16	14	E ₁₅	E ₆₁	C	E ₁₅	E ₁₃
9	E ₁₅	E ₁₄	E ₁₅	12	12	11	E ₁₆	14	14	17	19	20	22	20	22	22	16	14	15	E ₁₅	E ₁₃	E ₁₅	E ₁₅	E ₁₅
10	E ₁₅	E ₁₅	E ₁₅	E ₁₃	E	E ₁₃	E ₁₅	E ₁₅	15	15	16	18	24	23	25	22	19	15	14	E ₁₄	E ₁₃	E ₁₅	E ₁₅	E ₁₅
11	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₃	11	15	15	15	18	18	25	24	25	22	22	18	15	15	E ₁₄	11	E ₁₅	E ₁₅	E ₁₅
12	E ₁₅	E ₁₄	13	11	11	E	E ₁₅	15	15	18	18	19	26	24	22	19	17	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
13	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E	E	E ₁₅	15	15	14	18	17	18	22	20	21	16	15	E ₁₅	E ₁₄	E ₁₃	E ₁₃	E ₁₂	E ₁₄
14	E ₁₄	11	11	E	12	E	15	14	15	20	25	22	26	29	C	19	16	16	16	E ₁₃	E ₁₄	E ₁₃	12	E ₁₃
15	E ₁₅	E ₁₅	12	11	13	14	14	22	20	18	17	22	26	43	25	20	19	15	14	11	E ₁₅	E ₁₄	E ₁₄	E ₁₃
16	E ₁₅	E	E	11	12	E ₁₃	17	14	15	18	20	20	19	21	21	18	16	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄
17	E ₁₅	E ₁₅	E	11	E	E	15	18	18	19	18	17	20	20	20	17	17	16	15	E ₁₃	11	E ₁₅	E ₁₂	E ₁₅
18	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E	E ₁₃	15	15	15	17	19	19	19	20	19	16	16	15	15	14	E ₁₄	E ₁₅	E ₁₅	E ₁₅
19	E ₁₅	E ₁₄	E ₁₅	E	E	11	E ₁₅	15	15	14	16	19	18	22	19	16	15	14	11	15	E ₁₅	E ₁₄	E ₁₄	E ₁₄
20	E ₁₅	E ₁₄	E ₁₅	E	12	E	14	14	16	15	16	16	17	18	26	15	17	15	16	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅
21	E ₁₅	E ₁₅	15	11	12	E ₁₅	15	14	15	16	19	20	22	19	19	19	15	14	14	11	E ₁₃	E ₁₅	E ₁₅	E ₁₅
22	E ₁₄	E ₁₂	E ₁₄	E	E	E	15	15	15	15	16	18	19	17	18	18	15	15	11	11	E ₁₄	E ₁₂	E ₁₄	E ₁₄
23	E ₁₅	E ₁₄	12	11	E	E	11	12	15	17	18	16	28	20	18	15	14	15	11	E ₁₅	E ₁₃	E ₁₄	E ₁₄	E ₁₅
24	E ₁₄	12	12	11	E	13	14	15	15	15	18	18	17	17	17	17	15	14	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
25	E ₁₅	E ₁₅	12	15	E	E ₁₅	13	13	15	15	18	18	19	19	17	15	15	11	12	E ₁₁	11	E ₁₅	E ₁₅	E ₁₄
26	E ₁₅	E ₁₅	E ₁₃	11	E	E ₁₄	E ₁₄	15	15	15	15	25	17	17	22	17	14	E ₁₅	E ₁₅	E ₁₄	E ₁₁	E ₁₂	E ₁₅	E ₁₄
27	E ₁₅	11	E ₁₄	14	13	E ₁₅	13	15	15	18	19	19	23	21	19	16	15	15	14	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅
28	E ₁₅	E ₁₃	E ₁₅	13	E	14	E ₁₃	11	15	15	17	17	19	19	19	17	15	11	11	11	E ₁₅	E ₁₄	E ₁₅	E ₁₂
29	E ₁₅	E ₁₄	12	13	12	12	13	14	14	15	16	17	16	19	18	16	15	14	14	11	E ₁₅	E ₁₅	E ₁₅	E ₁₃
30	E ₁₄	E ₁₄	13	11	13	E	15	14	15	15	16	16	20	24	18	21	18	14	13	11	E ₁₄	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	29	30	30	30	30	30	30	29	30	30
MED	E ₁₅	E ₁₄	E ₁₄	12	12	E ₁₂	14	15	15	16	18	19	20	21	20	18	16	15	14	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅
UQ	E ₁₅	E ₁₅	E ₁₅	12	12	12	15	15	15	18	19	21	24	23	23	20	17	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
LQ	E ₁₅	E ₁₂	12	11	E	E	12	14	15	15	16	18	18	19	18	17	15	14	12	11	E ₁₃	E ₁₄	E ₁₄	E ₁₄

The Radio Research Laboratories, Japan

JUN. 1969

F-MIN (0.1 MHZ)

(SUM 1969 230)

RFI 100

IONOSPHERIC DATA

JUN. 1969

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	25 ^S	S	S	S	S	F	300	335	A	A	270	270	275	285	285	275	280	U ₂₈₀	290	I ₂₉₅	285	270	U ₂₆₅	U ₂₅₅	
2	25 ^F	F	S	F	F	F	325	335	345	320	290	265	275	275	275	285	I ₂₉₀	300	U ₂₉₀	I ₃₀₀	I ₂₉₀	280	275	I ₂₇₀	
3	275	J ₂₈₅	J ₃₁₅	290	285	295	310	345	330	315	285	275	265	270	285	285	295	295	300	300	I ₂₉₀	U ₂₈₀	U ₂₇₅	285	
4	U ₂₇₅	295	285	280	275	295	J ₃₅₀	345	I ₃₄₀	290	285	275	275	275	270	270	280	I ₂₉₅	315	U ₂₈₀	I ₂₇₀	U ₂₆₅	U ₂₈₀	275	
5	I ₂₉₅	U ₂₉₀	295	275	U ₂₇₅	U ₂₇₀	J ₃₂₀	330	330	A	A	265	250	270	275	280	290	300	285	U ₂₇₀	U ₂₆₅	250	260	270	
6	S	F	F	F	F	F	U ₃₀₀	335	310	305	270	265	255	A	I ₂₅₅	265	270	275	U ₂₈₅	295	255	U ₂₅₀	U ₂₅₅	U ₂₆₀	
7	U ₂₆₅	F	F	F	F	F	F	F	290	F	305	265	265	245	255	250	265	270	280	280	280	265	250	250	U ₂₅₅
8	J ₂₆₀	I ₂₆₀	S	F	F	F	280	285	285	270	285	270	240	250	I ₂₅₅	275	280	285	265	I ₂₆₅	U ₂₉₀	275	I ₂₆₀	U ₂₅₀	245
9	25 ^F	I ₂₇₀	290	F	250	260	290	280	280	285	235	245	I ₂₆₀	I ₂₄₅	245	235	265	265	295	255	240	240	U ₂₅₀	255	
10	240	U ₂₇₅	270	270	255	270	305	300	295	235	245	240	260	265	I ₂₇₀	265	270	275	R	S	S	S	U ₂₅₀	U ₂₄₅	U ₂₅₅
11	U ₂₅₅	U ₂₆₅	U ₂₈₅	U ₂₇₅	265	285	345	305	305	295	U ₂₆₅	U ₂₅₀	250	255	250	260	U ₂₇₀	U ₂₄₀	U ₂₅₅	U ₂₈₀	260	U ₂₅₀	U ₂₄₀	U ₂₈₅	
12	I ₂₆₅	S	S	U ₃₀₀	295	F	F	285	305	260	230	235	240	U ₂₅₀	250	U ₂₅₀	260	270	U ₂₇₀	S	S	S	S	S	
13	S	S	S	J ₂₈₀	J ₃₀₀	270	270	285	300	I ₂₇₀	245	250	255	255	250	245	U ₂₆₀	285	U ₂₉₀	U ₂₈₅	260	245	250	U ₂₅₅	
14	U ₂₇₀	I ₂₇₀	J ₂₈₅	J ₂₈₅	295	260	295	285	I ₂₈₅	270	I ₂₆₀	255	255	A	C	285	U ₂₇₀	U ₂₇₀	275	U ₂₇₅	U ₂₇₅	U ₂₆₀	U ₂₄₅	235	
15	235	U ₂₅₅	J ₃₀₅	300	280	295	285	295	250	225	225	U ₂₅₀	250	U ₂₅₀	255	255	265	275	285	270	255	245	U ₂₃₅	245	
16	U ₂₆₀	280	270	U ₂₈₅	F	245	270	305	295	280	U ₂₇₀	250	265	260	U ₂₆₅	265	275	280	280	A	U ₂₆₀	260	265	255	
17	U ₂₅₅	U ₂₆₀	275	260	265	U ₂₆₀	305	275	285	U ₂₄₅	250	260	255	245	U ₂₆₀	270	260	265	265	275	275	250	250	U ₂₅₅	
18	25 ^V	290	290	275	265	U ₂₆₀	285	305	290	255	260	270	270	255	260	U ₂₆₅	285	280	275	280	270	U ₂₈₅	270	U ₂₆₅	
19	U ₂₆₅	265	S	270	F	F	300	300	275	255	235	245	240	260	280	280	285	265	280	260	260	U ₂₆₀	U ₂₅₀	U ₂₆₀	
20	260	F	F	F	F	260	260	U ₂₈₀	285	265	250	255	265	265	255	270	275	270	U ₂₉₀	U ₂₈₅	265	245	255	255	
21	25 ^S	F	275	F	255	270	275	260	270	260	255	U ₂₃₀	255	275	265	U ₂₆₀	280	285	280	300	260	U ₂₅₅	U ₂₃₅	S	
22	S	F	F	280	270	265	270	300	325	275	240	255	270	I ₂₈₀	270	270	270	290	U ₂₈₅	280	I ₂₆₀	U ₂₅₀	U ₂₄₅	255	
23	265	U ₂₉₀	295	F	F	A	285	J ₃₁₅	335	335	260	U ₂₅₀	260	280	280	A	A	275	300	295	265	255	U ₂₄₀	255	
24	275	U ₂₆₅	270	260	275	300	325	300	300	315	270	260	275	270	265	275	270	270	280	280	270	245	245	250	
25	U ₂₅₅	U ₂₈₅	290	300	260	255	280	290	310	295	270	265	270	275	275	265	285	270	290	310	260	245	250	255	
26	260	U ₂₇₀	295	320	265	245	305	325	290	285	275	260	270	275	280	280	290	290	305	270	U ₂₉₀	260	U ₂₆₀	275	
27	260	265	275	295	305	320	295	295	305	285	270	260	270	265	275	285	285	275	290	I ₂₈₀	270	265	270	U ₂₆₅	
28	I ₂₇₀	U ₂₇₅	305	290	310	300	310	305	305	290	275	250	255	270	285	295	290	280	300	285	270	265	275	275	
29	I ₂₈₅	270	275	280	305	310	305	310	310	315	290	275	260	270	280	260	285	305	320	280	270	U ₂₇₅	U ₂₇₀	270	
30	265	280	285	290	I ₂₈₀	285	320	330	305	295	315	230	245	260	265	265	275	290	290	300	U ₂₈₀	U ₂₆₅	U ₂₆₀	U ₂₆₀	
31																									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	21	22	23	22	24	28	30	28	28	29	30	30	28	29	29	29	30	29	27	28	29	29	28	
MED	260	270	285	280	275	270	300	300	302	285	265	255	260	265	270	270	275	278	285	280	268	255	250	255	
UQ	268	285	295	290	295	295	310	325	310	300	270	265	270	275	275	280	285	290	290	295	275	265	265	270	
LQ	255	U ₂₆₅	275	272	265	260	285	285	285	262	250	250	250	255	255	265	270	270	280	278	260	U ₂₅₀	U ₂₄₅	255	

JUN. 1969

M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 1969

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									A	A	A	A	A	A	A	A	A	A						
2								L	L	385	335	355	A	C	360	A	A	U	L					
3							A	A	A	A	A	A	375	335	345	390	355	L						
4								A	L	350	L	A	A	A	A	330	L	A	A	A				
5								A	A	A	A	A	A	A	350	A	A	A	A					
6							A	A	L	A	355	355	A	A	A	A	A	L	L					
7							L	L	L	L	L	L	A	A	A	L	330	L	L					
8							L	L	L	A	330	L	A	A	355	335	L	L	A					
9							L	L	A	360	360	R	A	A	A	350	355	305	L					
10							L	L	A	A	I	A	335	380	A	A	A	A	A					
11							L	L	L	A	L	L	A	L	325	335	I	A	A	A				
12							L	A	A	A	L	L	A	A	A	A	325	L	L					
13							L	L	A	A	345	L	335	310	A	A	L	L						
14							L	A	A	A	A	A	A	C	350	L	L	A						
15							L	265	335	355	A	A	A	355	345	A	325	L						
16						L	A	A	335	A	A	A	A	320	H	350	345	355	A					
17							A	A	A	335	360	A	A	A	A	A	340	320	310	L				
18						345	L	L	A	L	A	320	H	385	340	A	A	U	L	A				
19							L	L	L	360	R	A	380	365	370	350	365	L	L	L				
20							L	L	340	315	H	335	L	335	360	350	355	345	L	L				
21						L	L	375	365	A	A	A	A	A	A	A	345	A	A					
22							L	L	A	330	H	375	A	A	A	A	A	A	A					
23						L	A	L	395	H	355	A	A	A	A	A	A	335	L					
24						L	L	A	L	375	360	340	A	345	345	345	L	L	L					
25						L	L	L	340	A	A	A	350	355	H	345	330	L						
26						L	L	L	345	360	360	365	H	355	L	360	L	L						
27						L	L	L	L	A	A	365	395	335	H	380	350	L	L					
28						L	L	335	340	360	I	A	350	345	A	L	A	A	A					
29						L	L	370	355	350	A	370	350	345	325	I	A	A						
30						L	L	L	345	A	310	H	350	A	A	A	340	340	L	L				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	2	9	13	14	9	10	15	14	15	12	1					
MED							345	320	345	345	355	355	365	350	345	345	345	340	310					
UQ									370	355	360	360	370	355	350	358	350							
LQ									335	335	335	350	345	338	335	340	328							

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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									A	A	E A 370	390	355	315	310	315	310	300	290						
2								255	225	270	350	400	350	340	345	320	I A 330	290	300						
3								250	255	280	305	370	360	350	325	320	290	280	270						
4								I A 250	310	350	370	330	330	E A 400	350	330	300	285							
5								255	A	A		380	400	350	345	325	300	A	285						
6								245	250	300	E R 425	375	400	A	I A 375	350	325	320	275						
7								250	250	275	390	360	I A 410	400	370	360	330	300	275						
8								285	310	295	290	425	400	385	340	320	300	340	A						
9								280	290	360	510	500	I A 470	I A 500	E A 530	505	400	340	295						
10								290	255	I A 390	I A 415	450	395	375	E A 400	350	350	335	A						
11								250	250	320	I A 345	400	390	370	385	360	350	310	310						
12								300	290	E A 595	E A 470	400	425	400	405	375	355	310	285						
13								285	285	A	440	405	375	385	405	440	375	305	275						
14								300	I A 320	E A 420	A	410	410	A	C	360	340	335	300						
15								300	520	640	605	I A 500	485	490	480	440	400	360	305						
16								305	275	330	375	380	400	370	E A 460	375	370	340	315	E A 450					
17								350	355	490	480	435	E A 520	430	I A 420	405	420	390	370	305					
18								290	300	430	350	365	365	420	405	355	340	305	E A 390						
19								255	350	385	450	370	395	360	330	320	300	350	305	325					
20								295	280	325	385	370	350	375	380	350	320	335	280						
21								305	345	395	425	440	A	450	395	400	I A 400	350	335	300					
22								300	270	300	440	395	340	I A 350	340	340	340	300	300						
23								285	275	250	255	520	I A 440	390	340	A	A	A	325	270					
24								270	280	290	350	385	350	350	340	335	320	340	290	270					
25								300	265	280	375	390	395	360	355	375	335	350	295						
26								260	320	330	350	375	350	350	315	325	320	300	285						
27								255	290	345	320	355	345	340	345	325	305	315	275	280					
28								255	250	340	340	400	E A 440	350	E A 350	300	280	290	285						
29								255	260	295	310	360	390	350	320	350	320	295	255						
30								250	250	320	340	290	550	405	390	345	345	320	305	290	250				
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							4	27	29	27	28	29	30	28	28	29	29	29	28	5					
MED							295	275	280	325	364	395	391	362	354	350	330	315	288	280					
UQ							305	298	320	378	440	410	405	395	391	370	350	335	300	305					
LQ							268	255	255	295	345	370	355	350	340	325	320	300	278	270					

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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	300	280	280	280	240	230	255	240	A	A	A	A	A	A	A	A	A	A	A	250	255	F310	300	350	
2	E350	305	270	250	250	245	235	240	215	E255	E275	E270	A	C	235	A	A	E280	250	270	255	325	245	270	
3	305	290	250	220	280	255	250	I255	I250	I235	I220	I210	A	205	225	H205	235	240	260	255	255	280	275	280	
4	270	280	255	270	280	280	230	220	A	E265	220	A	A	A	A	E280	A	A	A	300	A	E355	325	310	
5	285	260	260	250	295	305	250	250	A	A	A	A	A	A	245	A	A	A	A	A	300	E350	300	300	
6	310	300	265	300	300	290	245	I235	I225	E265	A	E250	240	A	A	A	A	I245	I250	255	250	310	310	300	
7	305	300	270	300	275	270	250	240	230	200	A	E250	A	A	A	A	250	250	250	255	275	290	300	300	
8	295	300	280	280	250	280	250	245	210	H	A	A	A	A	A	H200	255	A	A	A	285	E295	I330	340	335
9	325	280	250	350	340	265	250	240	230	I240	220	230	A	A	A	295	250	250	I255	I270	E350	350	335	330	
10	375	I320	300	270	305	300	250	245	I235	A	A	I250	220	A	A	A	A	A	A	A	A	E345	345	310	
11	300	325	265	265	300	285	240	220	H210	250	A	E250	A	I215	250	A	A	A	A	A	H275	310	340	H290	
12	270	350	250	250	250	260	E320	I250	I255	A	A	A	A	A	A	A	275	I265	I255	250	260	310	300	295	
13	275	275	280	255	245	240	250	240	225	A	A	250	240	H280	E305	A	A	E295	275	260	295	350	300	E350	
14	340	300	310	275	250	275	255	I240	I250	A	A	A	A	A	C	235	250	E290	A	275	250	305	325	355	
15	390	330	260	205	240	250	250	265	A	E310	240	I250	A	A	A	250	260	A	225	H255	275	290	H300	390	E410
16	335	300	280	250	280	310	275	A	A	235	A	A	A	A	E255	240	220	E250	A	A	350	300	300	300	
17	315	330	300	290	350	290	260	A	A	A	270	225	A	A	A	I240	225	250	255	290	275	250	350	340	
18	340	300	260	320	300	300	255	235	A	A	A	A	H200	210	A	A	A	E265	A	290	260	265	260	300	
19	300	300	260	250	290	H250	255	230	205	H205	250	I250	220	E260	E250	245	225	A	I265	I290	295	325	325	290	
20	290	305	275	260	300	280	250	240	235	205	200	H200	195	H245	225	200	H215	H220	245	245	245	325	335	315	
21	315	305	270	290	295	295	265	240	225	250	A	A	A	A	A	I240	250	A	A	275	E300	325	350	A	
22	E345	295	270	260	255	300	290	255	A	A	H210	225	A	A	A	A	A	A	A	A	280	E340	E360	300	320
23	290	250	260	290	325	A	250	A	A	A	210	200	A	A	A	A	A	E250	250	250	280	300	395	300	
24	275	310	290	300	270	245	220	205	H250	A	I230	205	200	I220	I220	205	220	H215	H250	260	250	300	310	330	
25	300	270	250	225	290	300	H250	245	E250	I225	225	A	A	A	E250	210	H240	235	250	260	255	330	330	325	
26	310	290	250	220	245	310	H250	230	I210	E250	250	210	210	195	H235	215	230	I245	245	260	255	290	300	280	
27	300	300	285	250	220	230	245	245	H225	H220	H215	A	A	E250	200	210	H210	220	240	255	240	290	270	275	
28	280	280	255	245	225	230	240	235	230	215	225	225	A	E250	A	A	A	A	A	A	280	295	280	300	
29	250	275	280	270	245	230	240	240	225	205	H205	250	I225	240	220	205	E250	A	I230	255	300	E320	270	300	
30	300	280	270	250	255	275	240	205	220	H220	A	H205	225	A	A	I230	230	225	H250	260	260	250	280	290	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	29	30	27	21	19	16	18	10	11	15	17	16	19	18	25	28	30	30	29	
MED	300	300	270	262	278	275	250	240	225	U222	221	229	220	U222	228	232	231	U238	250	260	266	305	305	300	
UQ	320	305	280	290	300	295	255	245	235	A242	240	250	225	E250	242	242	250	E258	255	275	288	328	335	325	
LQ	290	280	260	250	250	250	245	235	220	212	212	210	200	212	222	210	222	228	250	255	255	292	300	295	

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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	105	105	100	95	100	105	125	125	120	115	110	110	110	120	120	110	105	105	105	100	100	110	105	110																								
2	110	110	105	B	105	130	130	120	140	110	130	105	150	150	155	125	120	130	110	110	110	110	105	105																								
3	105	105	100	105	105	105	125	120	110	105	105	105	105	105	105	105	105	140	120	110	110	105	S	105																								
4	100	100	95	95	B	B	150	125	115	115	120	115	115	110	105	105	105	105	105	105	105	105	105	105																								
5	105	105	100	100	100	100	145	125	120	110	110	110	110	105	125	110	105	105	105	105	105	100	95	105																								
6	105	100	100	95	95	B	165	115	110	110	115	105	120	110	105	105	105	100	100	100	100	95	95	105																								
7	100	105	100	105	110	105	100	100	105	120	120	110	105	100	100	100	100	100	145	100	120	115	120	100																								
8	S	105	105	105	110	105	105	165	150	125	120	110	110	115	G	C	120	120	110	110	C	C	105	100																								
9	100	100	95	95	95	95	170	140	130	125	G	105	105	105	105	105	130	115	110	100	100	100	100	100																								
10	100	100	95	95	95	95	145	125	110	105	105	100	110	105	100	105	100	115	110	110	110	110	100	100																								
11	115	100	100	100	105	105	110	135	140	130	120	120	130	135	G	130	125	120	110	110	110	100	100	100																								
12	100	110	100	100	105	110	125	110	110	110	110	105	110	105	100	100	145	100	115	100	100	100	100	100																								
13	100	100	95	S	105	105	105	105	140	110	110	110	140	155	130	120	115	120	115	110	110	110	105	100																								
14	100	100	100	100	100	140	140	110	110	110	110	105	115	110	C	145	E G	150	115	110	105	100	100	100																								
15	100	100	100	100	100	100	G	140	125	125	130	110	105	105	105	105	105	100	100	100	100	120	100	110																								
16	100	100	100	100	100	100	130	115	115	110	110	110	110	105	115	110	120	105	105	100	100	100	110	110																								
17	110	110	105	105	105	105	125	125	115	120	110	120	110	110	105	105	G	125	125	115	115	S	110	150																								
18	105	100	100	105	105	S	G	150	110	105	105	105	105	115	105	105	105	120	110	105	105	100	100	100																								
19	100	S	110	110	105	125	G	G	125	105	105	105	120	120	120	145	125	115	115	110	110	100	100	100																								
20	100	S	105	105	105	105	110	110	105	120	110	G	G	130	130	145	105	100	105	125	100	110	105	105																								
21	100	100	100	100	95	100	155	150	135	125	125	115	110	110	105	110	105	100	110	100	100	100	110	105																								
22	105	100	100	105	100	100	115	120	115	110	125	115	110	105	105	105	100	100	100	100	100	110	105	105																								
23	105	105	100	105	100	100	100	100	100	120	140	125	125	125	115	110	110	110	110	110	125	110	110	105																								
24	105	100	100	105	105	B	145	130	120	110	110	110	110	110	110	110	105	G	100	100	100	100	100	105																								
25	110	105	105	105	105	S	135	140	125	115	115	105	105	105	105	105	100	125	120	110	110	105	105	105																								
26	105	100	100	B	E	S	G	125	110	105	100	105	145	100	160	145	130	120	115	110	105	105	105	105																								
27	S	100	100	100	S	S	115	120	120	120	110	105	110	110	120	G	110	105	130	125	115	115	110	S																								
28	S	110	100	B	100	B	140	135	130	130	130	110	105	105	105	105	100	125	100	120	100	110	110	105																								
29	105	105	105	105	105	B	135	125	115	125	115	105	105	105	110	140	115	110	105	100	100	100	100	100																								
30	95	95	105	105	105	G	150	115	110	110	110	105	105	105	105	105	110	100	140	120	100	100	100	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	27	28	30	26	27	21	25	29	30	30	29	29	29	30	27	28	29	29	30	30	29	28	29	29																								
MED	105	100	100	102	105	105	130	125	115	112	110	110	110	110	105	108	105	110	110	108	105	102	105	105																								
UQ	105	105	105	105	105	105	145	135	125	120	120	110	115	115	120	122	120	120	115	110	110	110	110	105																								
LQ	100	100	100	100	100	100	115	115	110	110	110	105	105	105	105	105	105	100	105	100	100	100	100	100																								

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TYPES OF ES

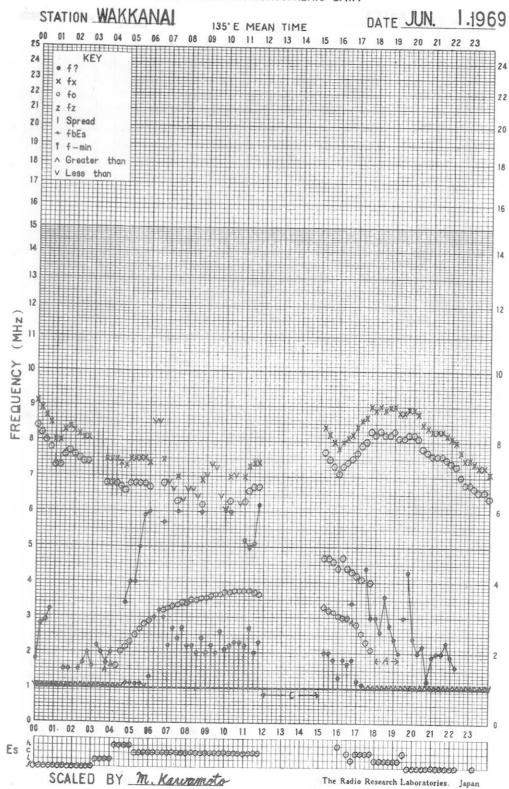
135 E Mean Time (G. M. T. + 9h)

Station	YAMAGAWA				Lat. 31 12.1 N	Long. 130 37.1 E	Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																						
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1	F2	F2	F3	F2	FF31	F4	H4	H2	C4	C4	C2	C3	C3	C2	C2	C3	C3	LC42	CL16	L5	F4	FF25	FF31	F4					
2	F5	F7	F2		F2	FF22	H3	H4	H1	C2	H11	C2	HC11	HC11	H1	H3	H3	H2	C3	C4	F6	F4	F3	F2					
3	F2	F3	F2	F2	F1	F1	H5	C4	C2	C3	C2	L4	L2	L1	L1	L1	L1	H11	C11	CL22	FF13	F2		F1					
4	F3	F2	F1	F1			H1	H3	C3	C1	C1	C2	C1	C2	C3	C2	C2	C3	L4	L5	F6	F4	F4	F5					
5	F4	F3	F4	F3	F3	F3	H1	H3	CL42	C5	C5	C2	C5	C5	H11	C4	C4	C5	C5	L5	FF62	F7	F5	FF22					
6	FF32	F4	F4	F3	F2		HH11	C3	C3	CC22	CC21	LC1	CL11	C3	C2	C2	L4	L2	L1	L2	F4	F4	F2	FF11					
7	F3	FF32	F4	FF23	FF22	F5	L4	L5	L2	C1	H1	C1	C4	L4	L2	L5	L5	H12	L5	FF64	FF21	FF11	F2						
8		F4	F3	F3	F1	F3	L4	H12	H12	H1	C2	C1	C2	C2			H2	H3	C3	C6			FF53	F7					
9	F5	F3	F3	F7	F4	F2	H1	H3	H1	H2		C1	C3	L2	C1	C1	H1	C1	C2	L4	F5	F5	F2	F2					
10	F4	F3	F5	F4	F3	F1	H2	H2	C2	C3	C2	L2	C1	C2	L2	C3	L2	C1	CL12	CL32	FF63	FF13	F4	F2					
11	FF22	F3	F5	F2	F1	F2	L2	H2	H2	H1	C2	C1	H2	H1		H2	H3	CL32	C2	C6	F4	F6	F4	F4					
12	F2	FF23	F3	F4	F7	F2	C3	C4	C2	C3	C2	C2	C2	C2	C2	L2	H11	L2	CL22	L2	F4	F8	F7	F6					
13	F4	F1	F1		F6	F4	L5	L2	H1	C2	C2	C1	H1	H1	H2	H3	C2	H3	C6	C2	F5	F7	F7	F4					
14	F4	F2	F4	F5	F5	F1	H1	C3	C2	C2	C2	C2	C2	C2		H1	H1	C1	C2	C3	F4	F3	F2	F7					
15	F4	F5	F2	F2	F1	F1		H1	H1	H2	H1	C2	C2	L2	L1	L1	L2	L2	L2	L2	F1	F1	FF23	F6					
16	F4	F5	F4	F4	F2	F1	H1	C2	C3	C1	C2	C2	C2	C3	C1	C1	C1	C2	L4	L6	F4	F2	FF22	F3					
17	F3	F4	F3	F4	F5	F4	H2	H1	C4	C1	C2	CL11	C2	C1	C3	C2		H2	H2	C4	F1		F4	FF11					
18	F3	F4	F3	F5	F7		H1		C2	C3	C2	C4	L1	C1	C2	C2	L3	CL22	C3	L3	F2	F3	F3	F2					
19	F1		F1	F2	F1	F1			H1	C2	C3	C2	HC11	C1	C1	H11	H11	C2	CL41	C7	F4	F7	F3	F2					
20	F1		F3	F3	F4	F1	L2	C2	C2	C1	C1		H1	H1	H1	L1	L1	L1	H2	F1	F2	FF31	FF21						
21	F3	F4	F4	F3	F2	F1	H2	H2	H2	H1	H1	C2	C2	C2	C2	C2	L2	L5	CL24	L4	F5	F4	FF31	F3					
22	F6	F2	F2	F2	F6	F3	C4	C4	C3	C3	H1	C2	C3	C5	C4	C3	L5	L6	L5	L4	F6	FF34	FF22	FF21					
23	FF21	FF31	F4	FF14	F4	F3	L2	L5	L5	C1	H1	H3	H3	H2	C5	C4	C3	C2	CL1	L4	F5	F6	FF71	F3					
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25	F3	F4	F3	FF41	FF31		H3	H3	H2	C2	C1	C3	C2	C2	C1	L2	L5	H123	H122	CL61	FF25	FF22	FF11	F2					
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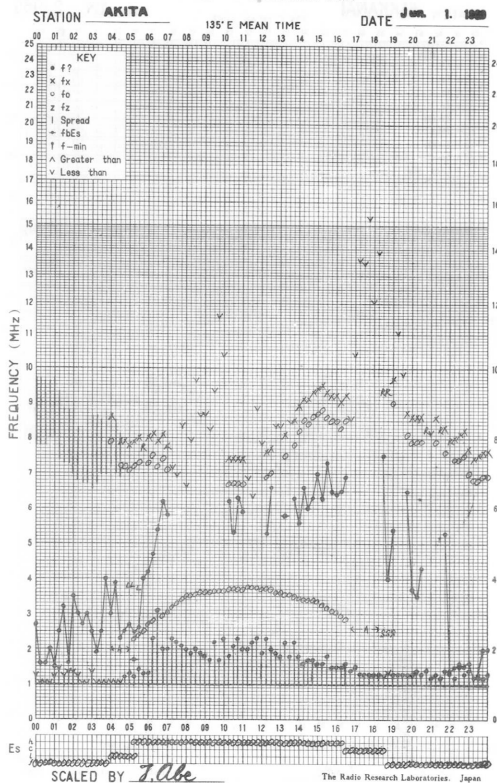
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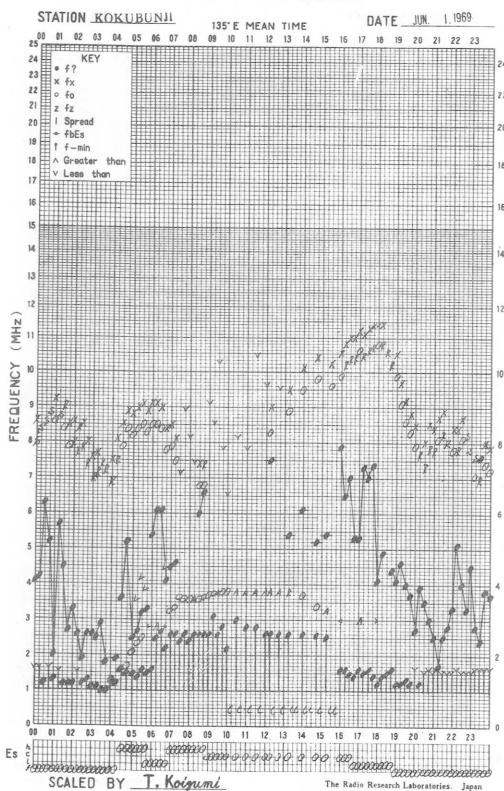
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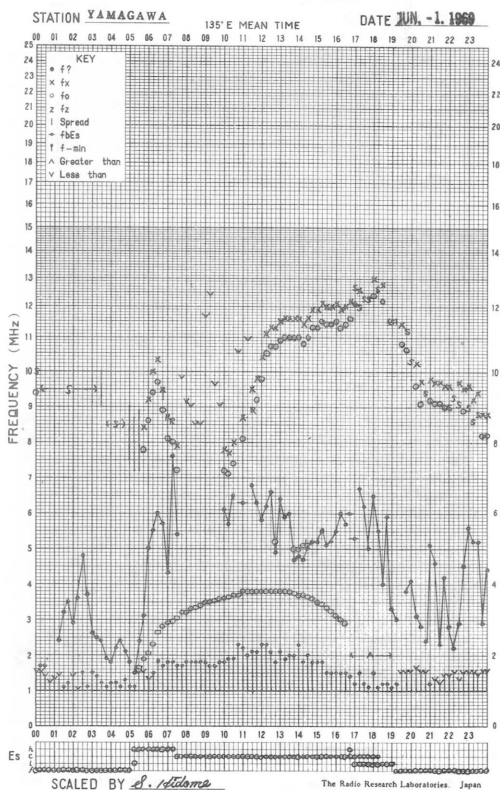
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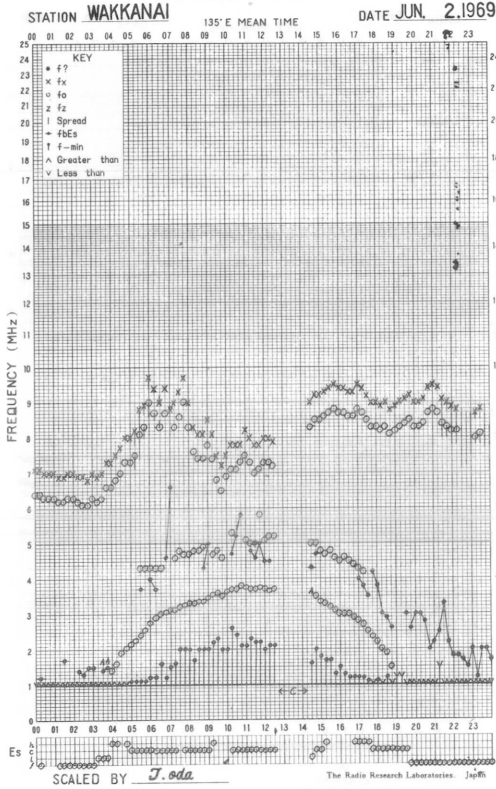
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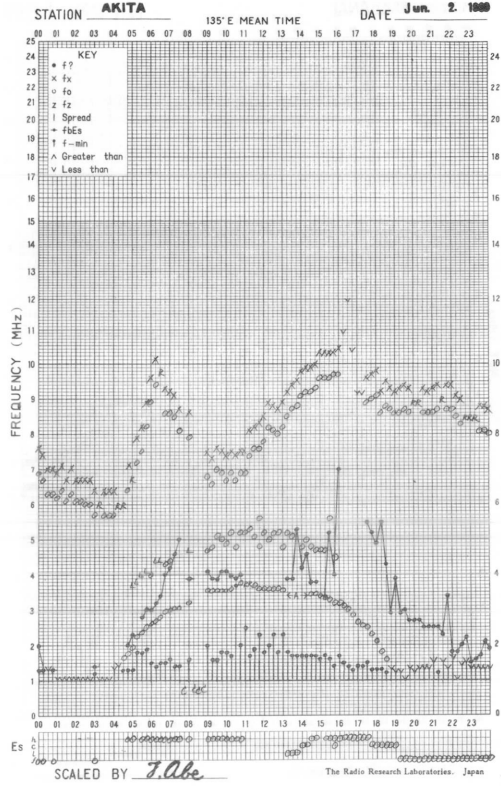
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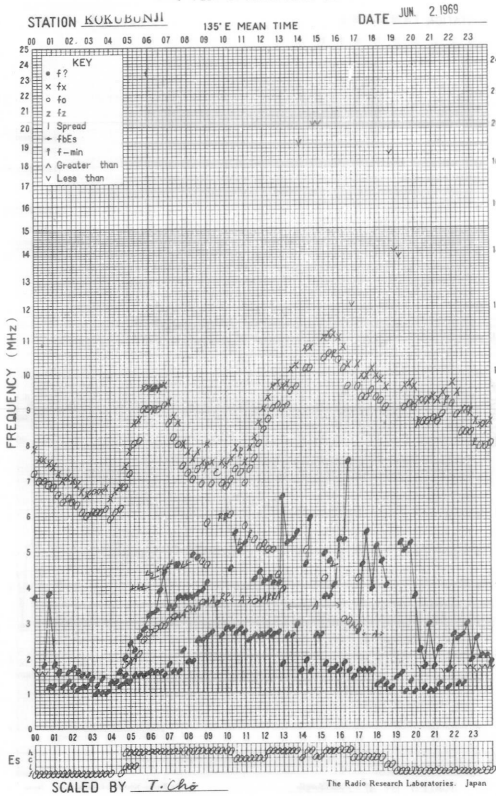
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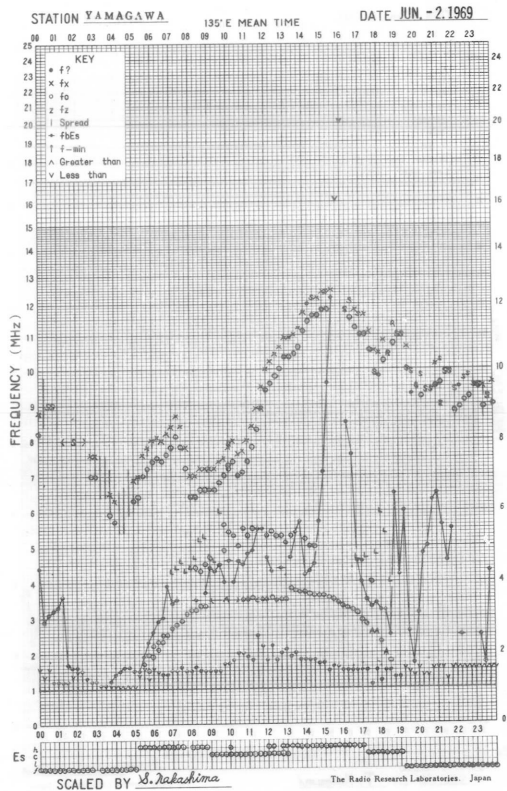
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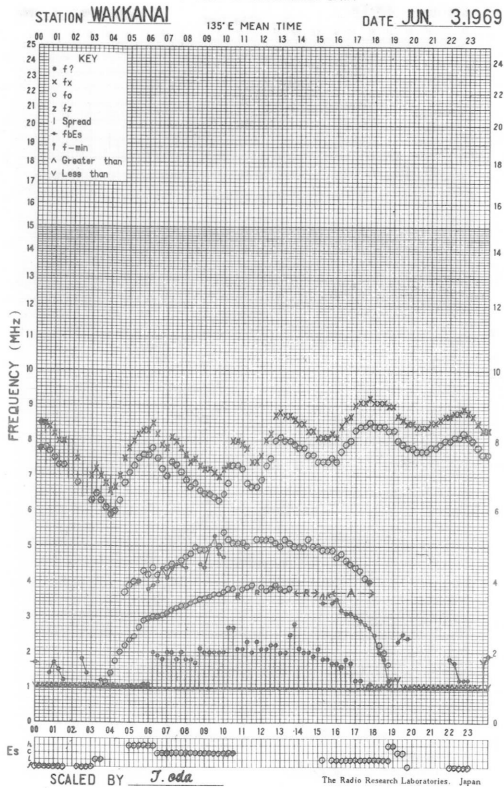
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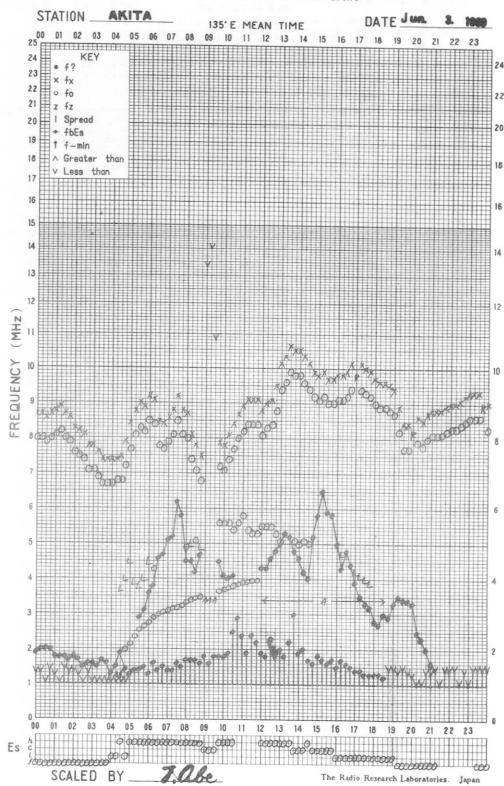
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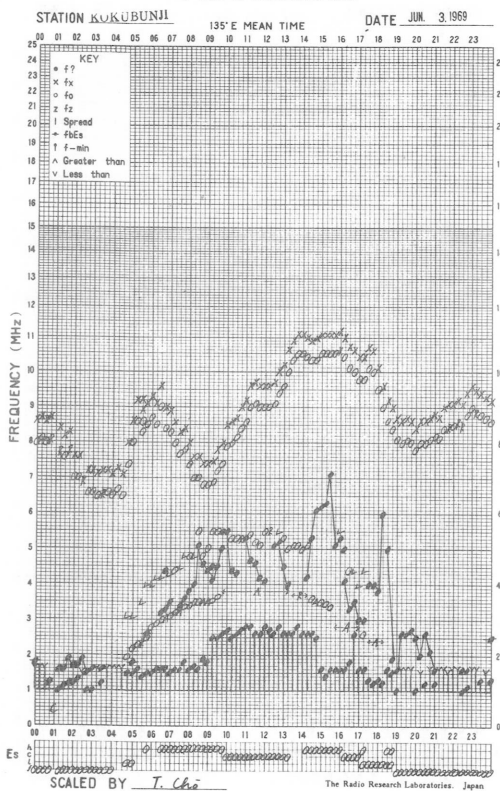
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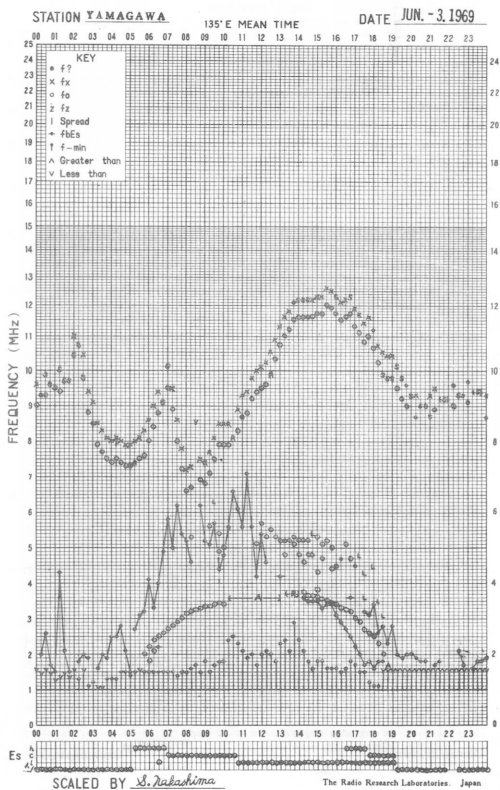
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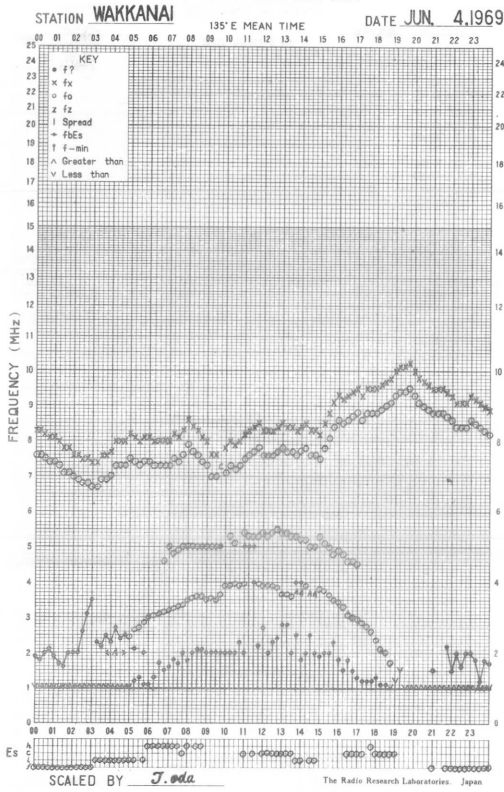
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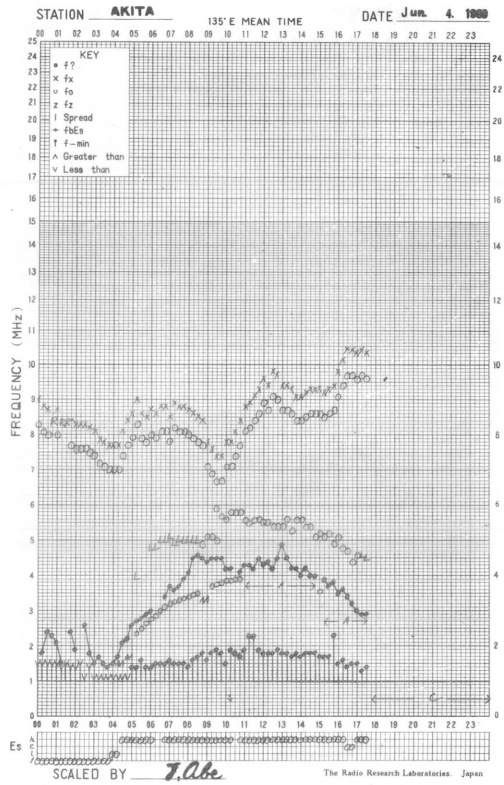
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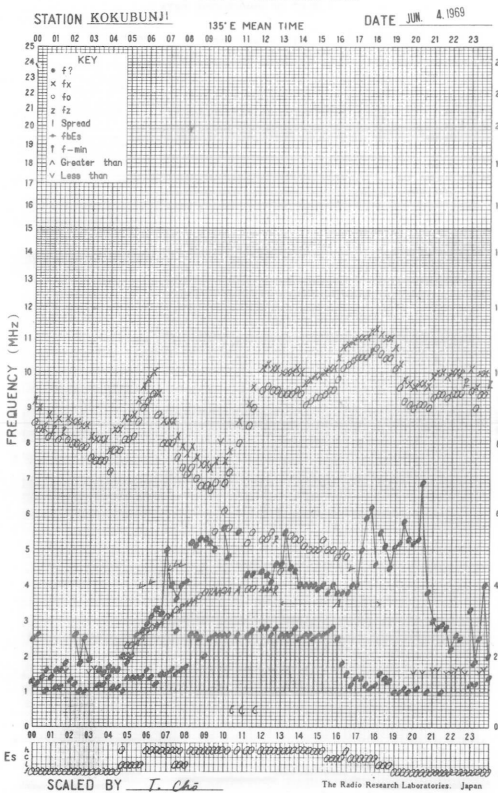
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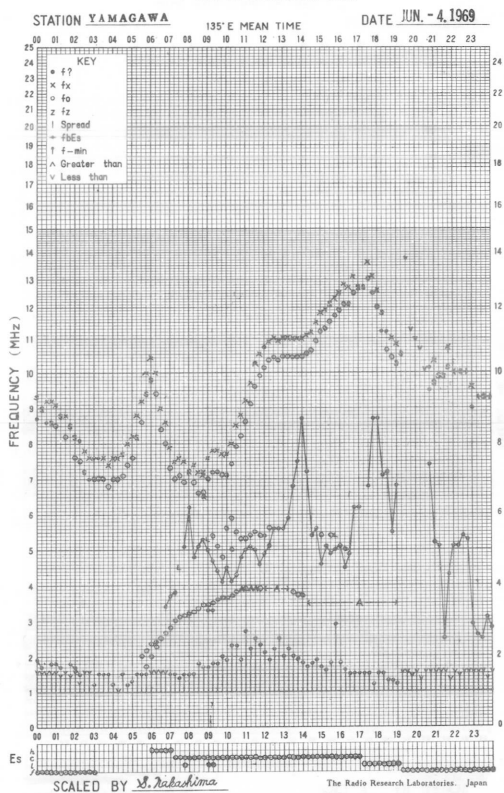
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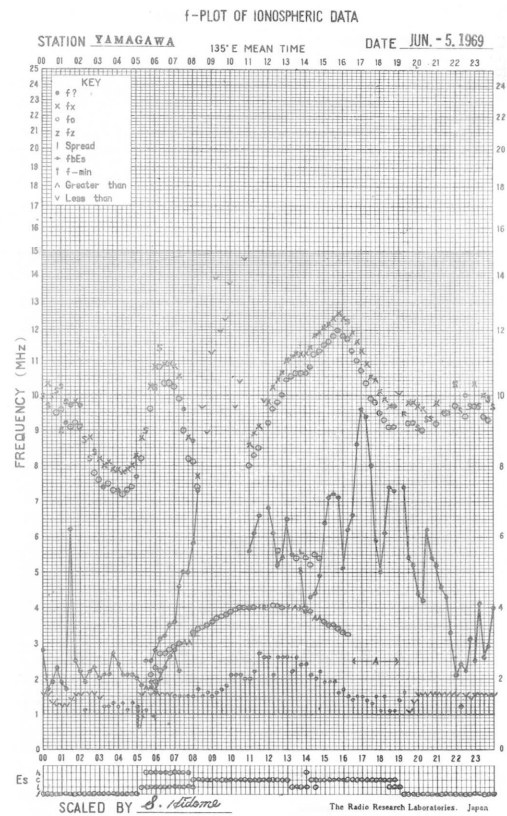
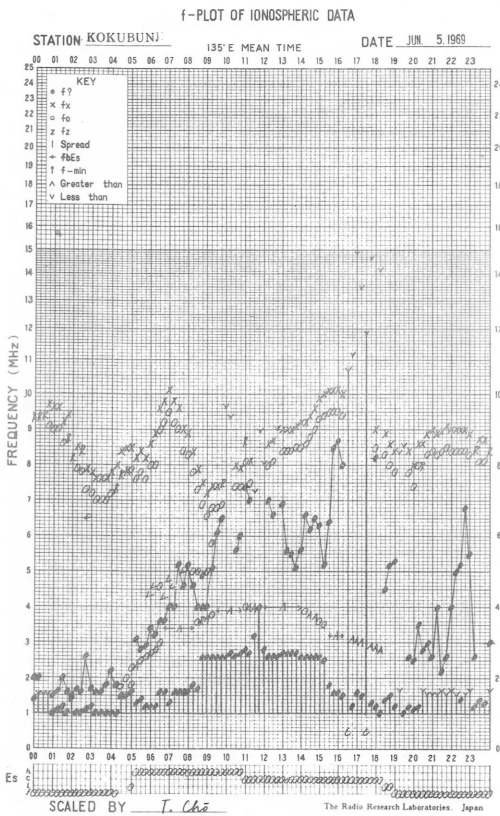
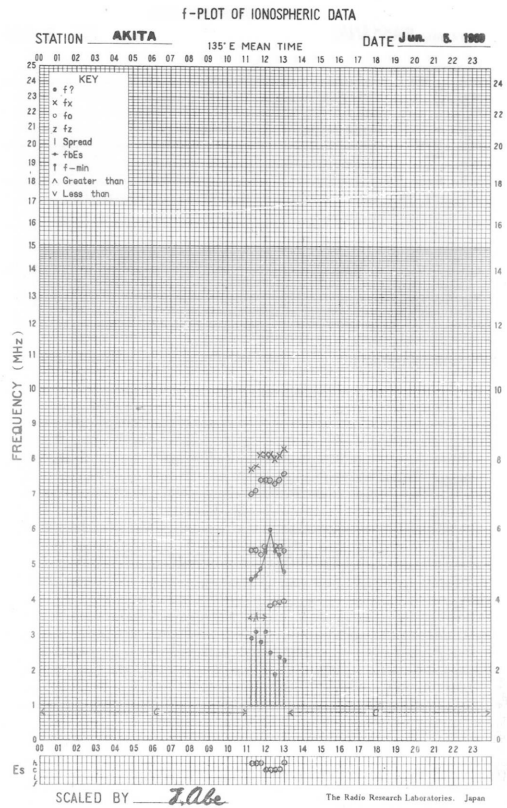
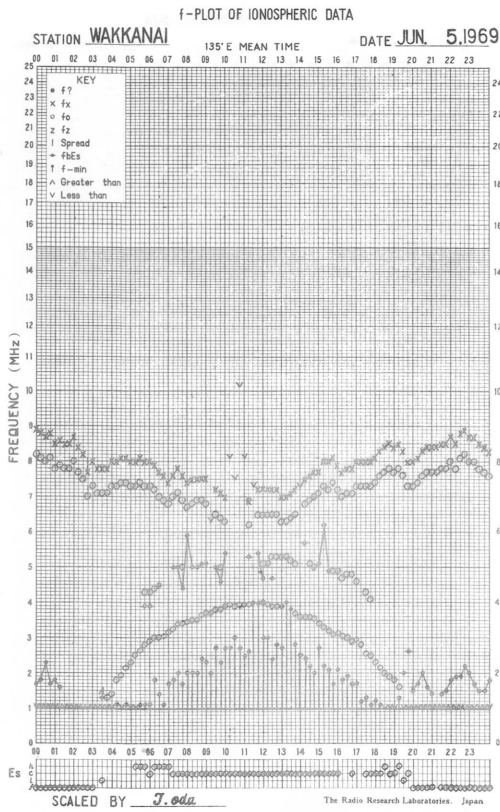


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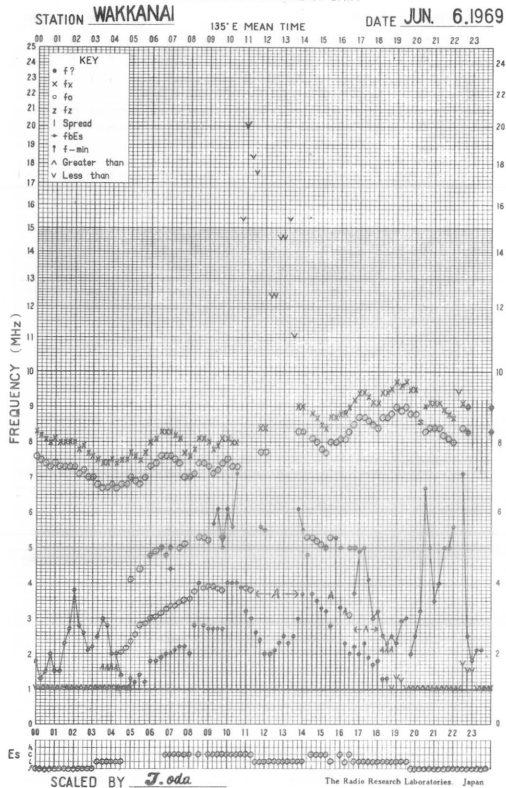


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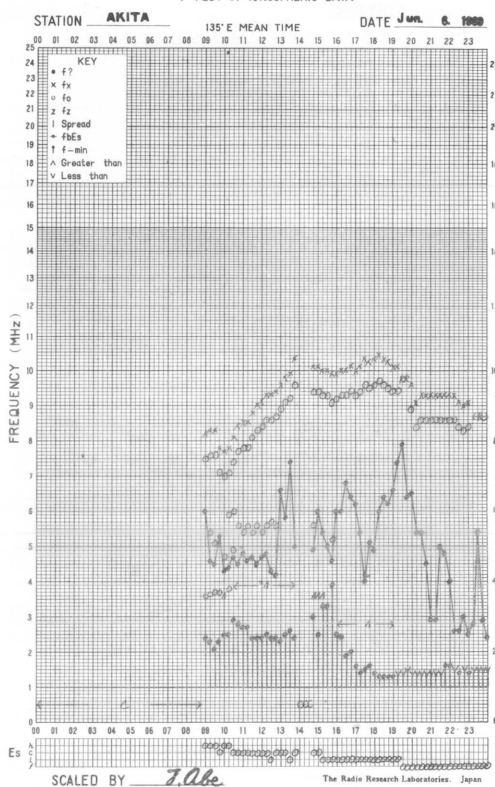




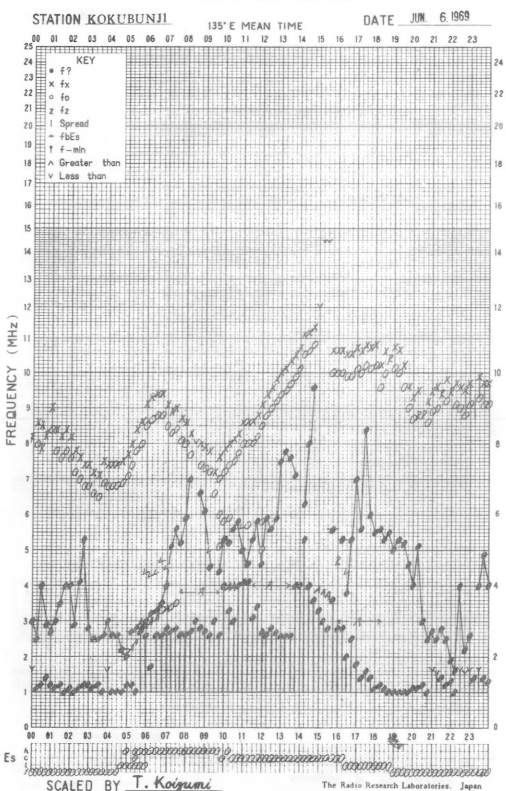
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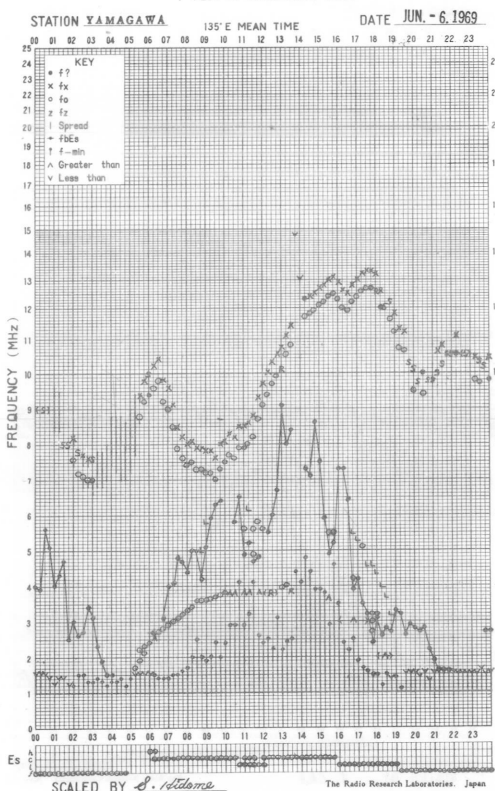
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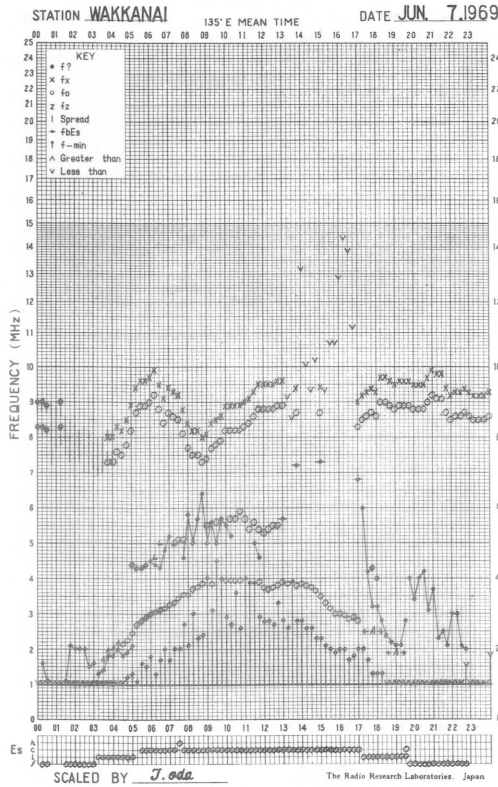
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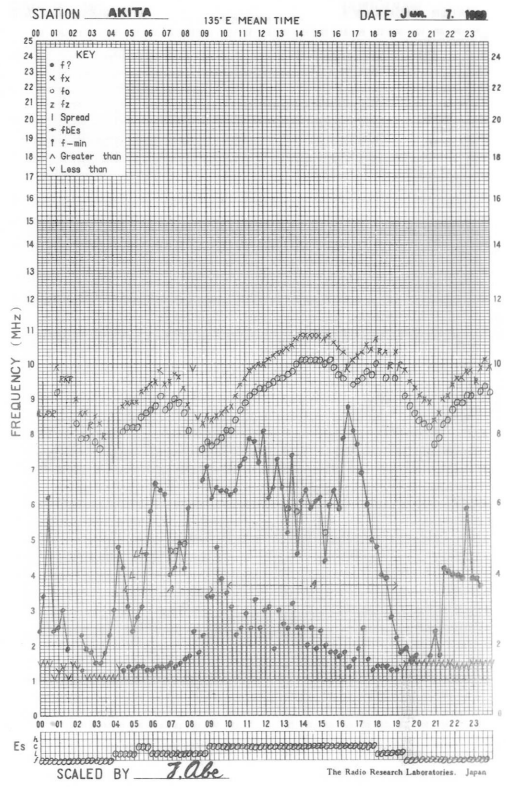
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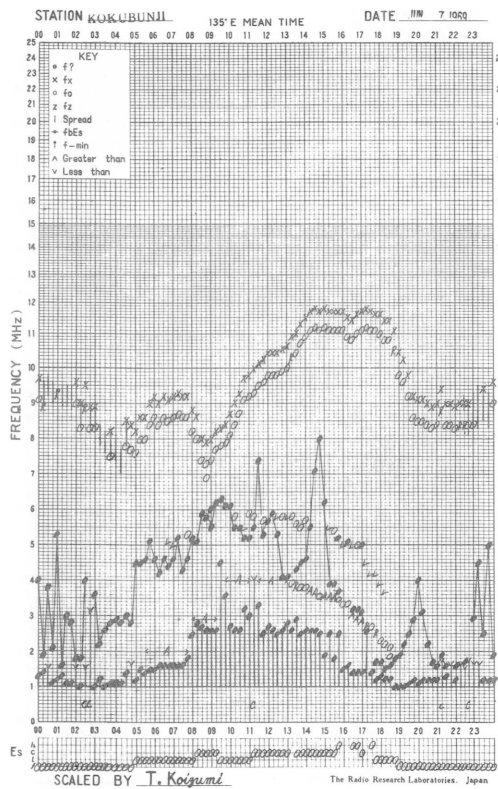
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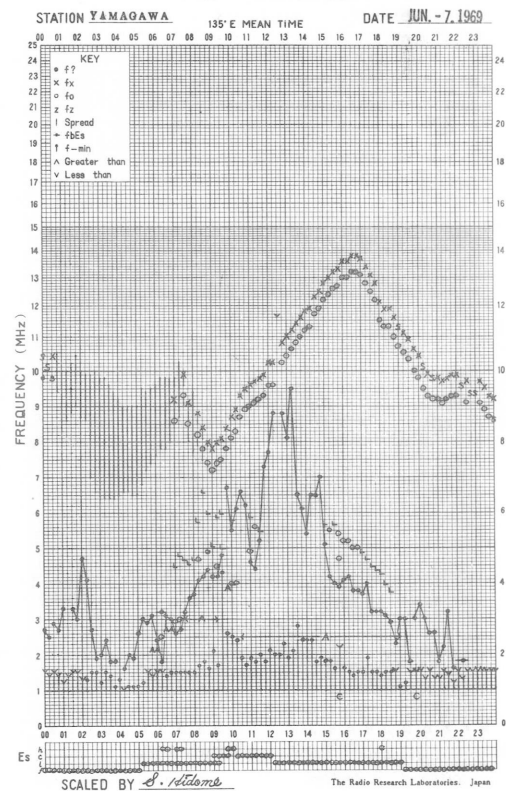
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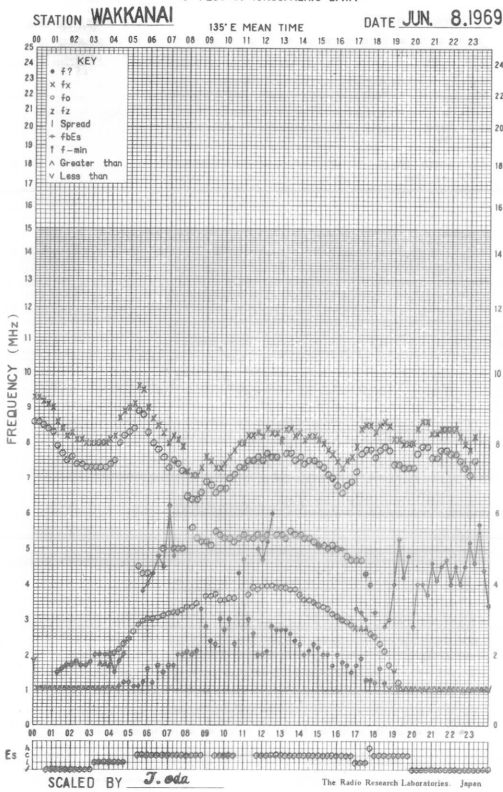
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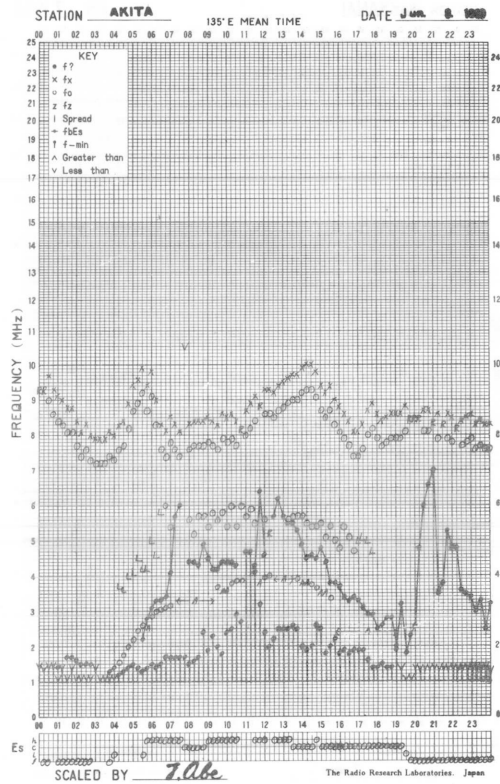
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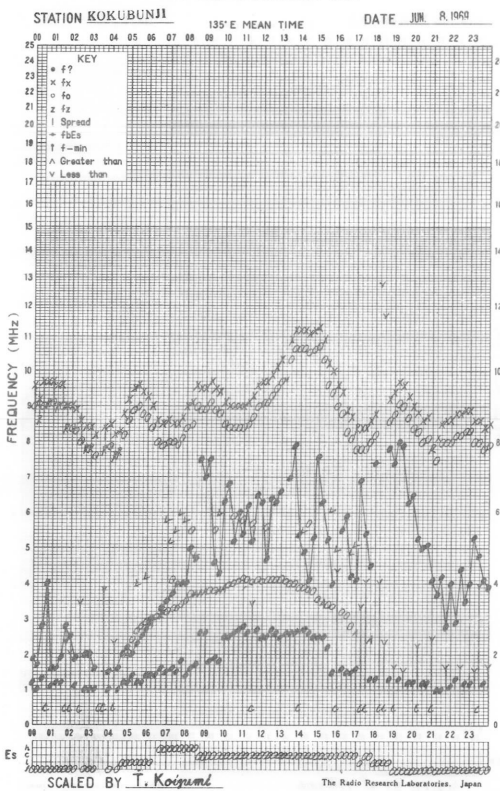
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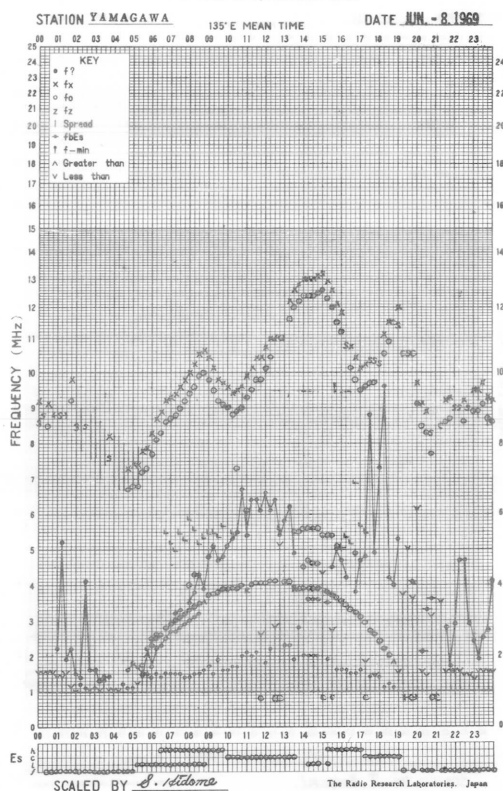
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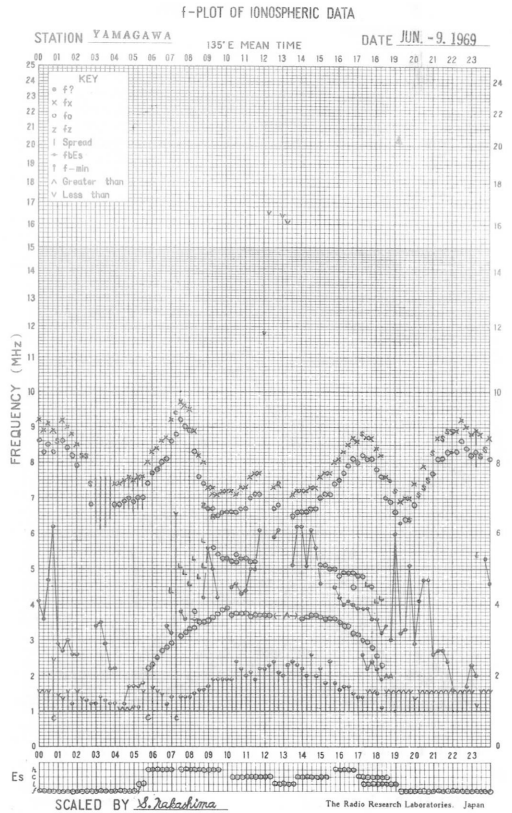
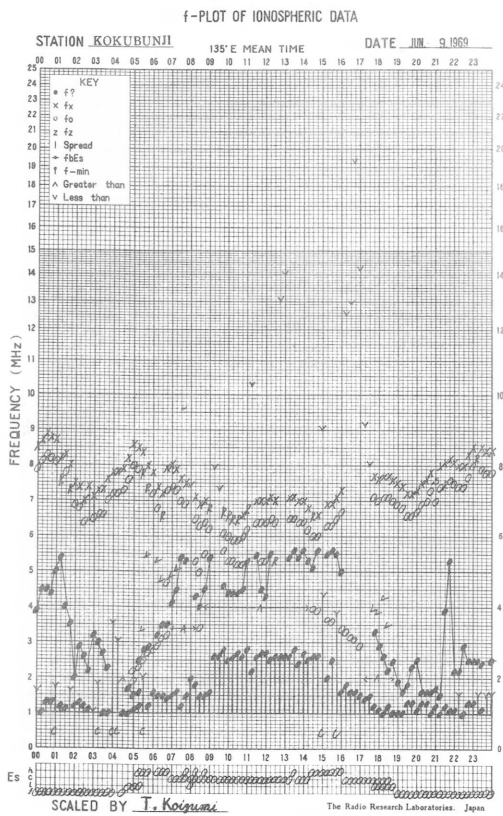
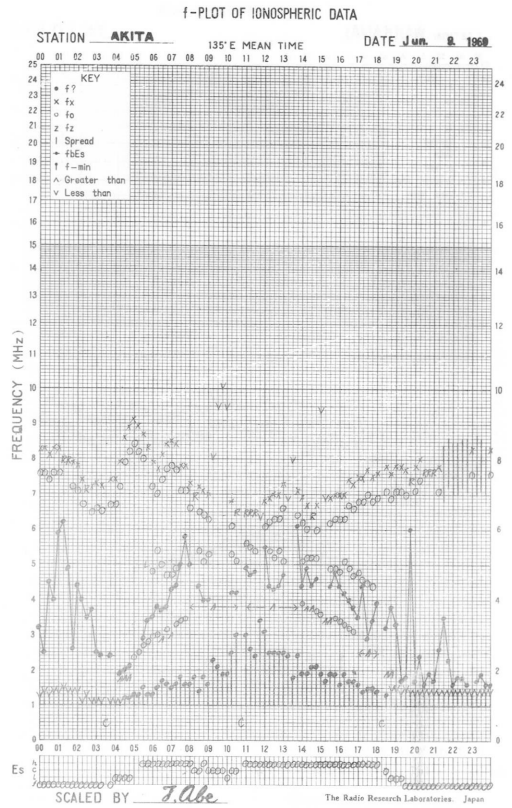
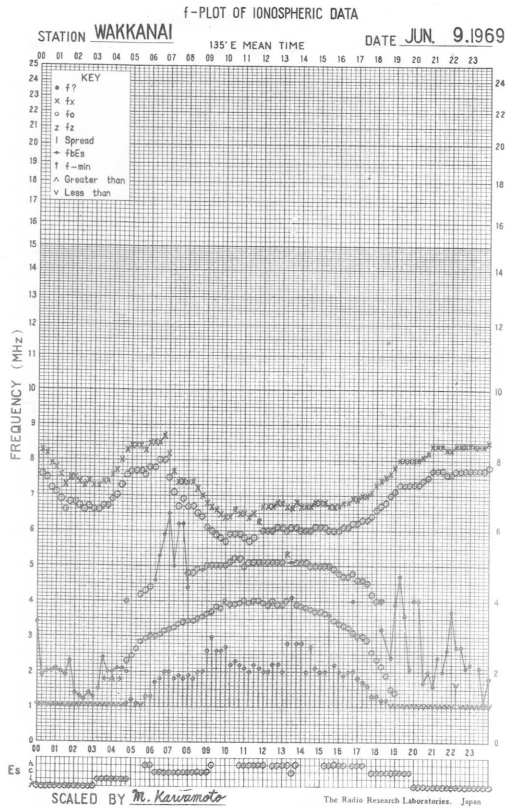


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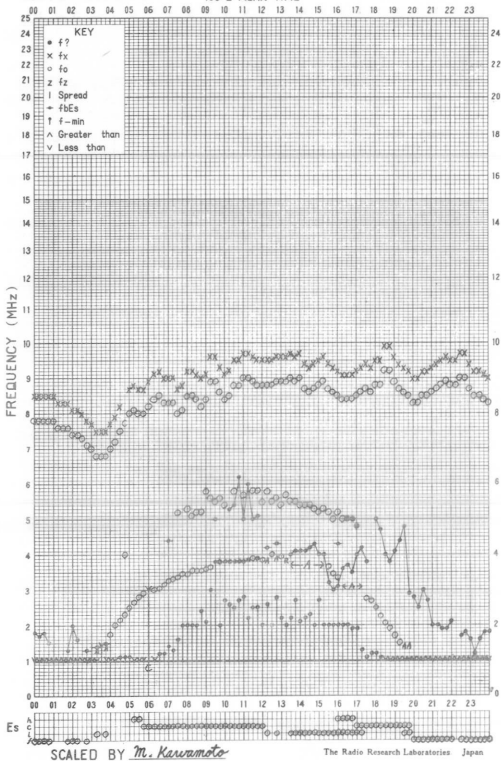
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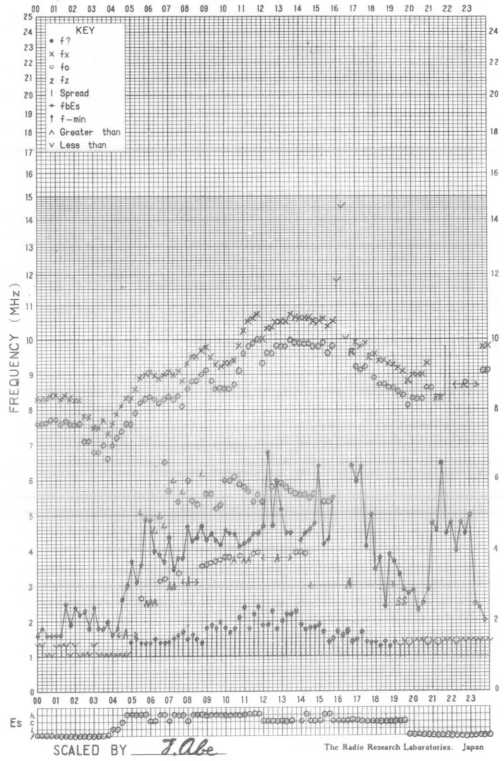
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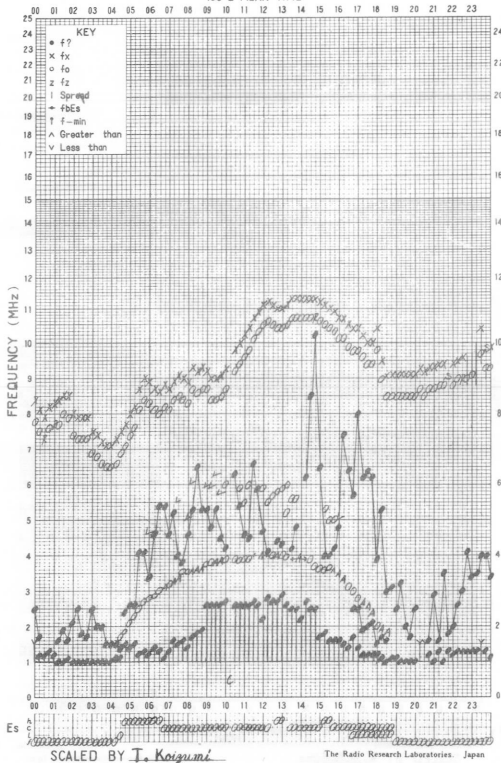
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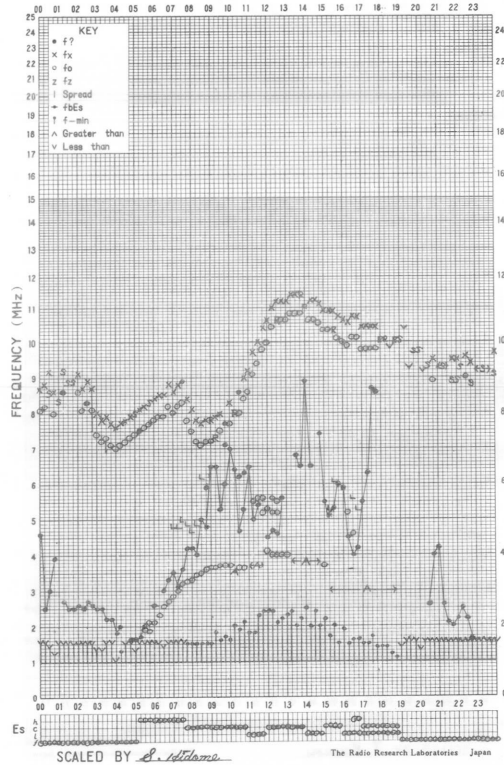
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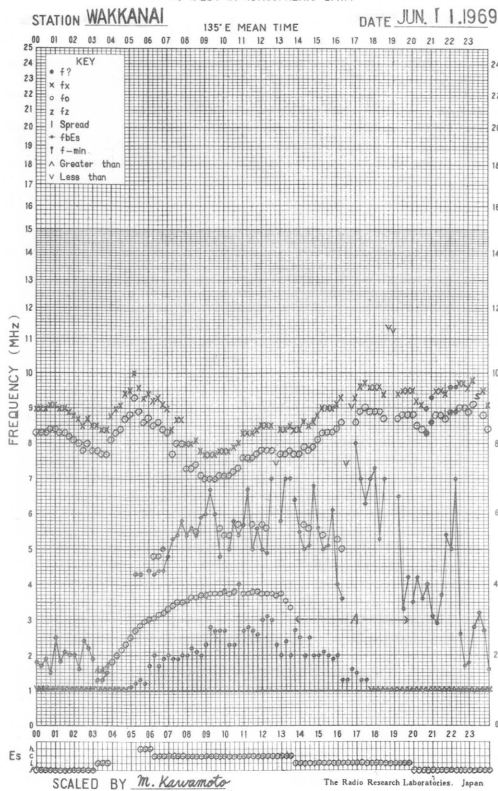


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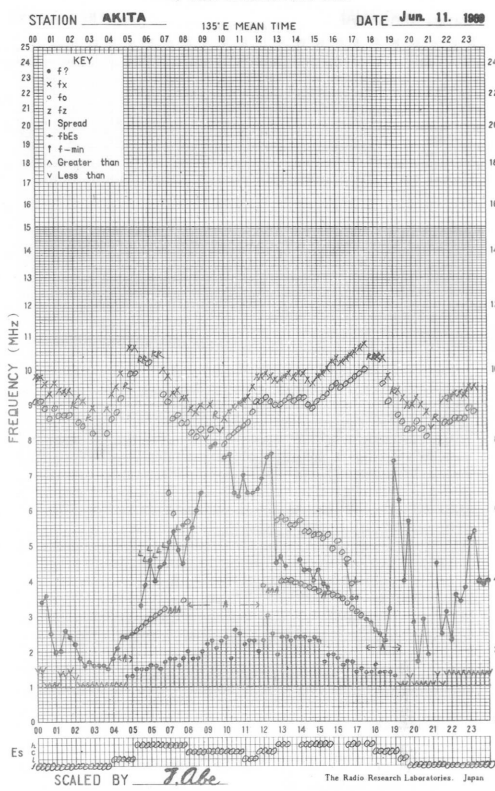
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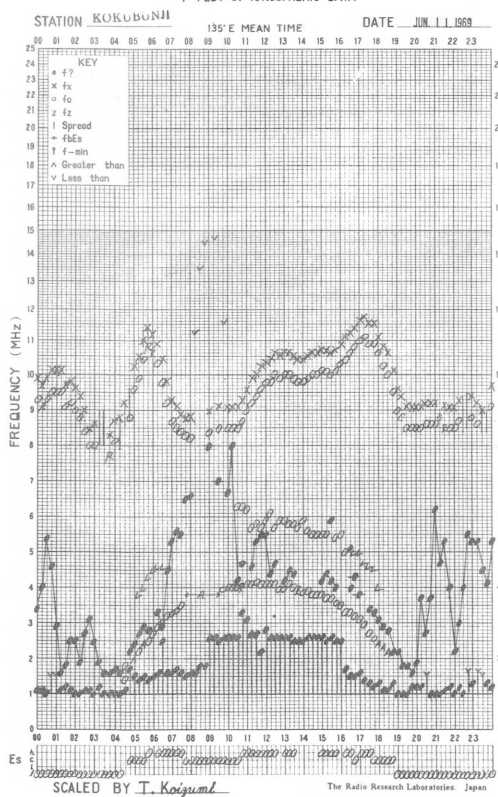
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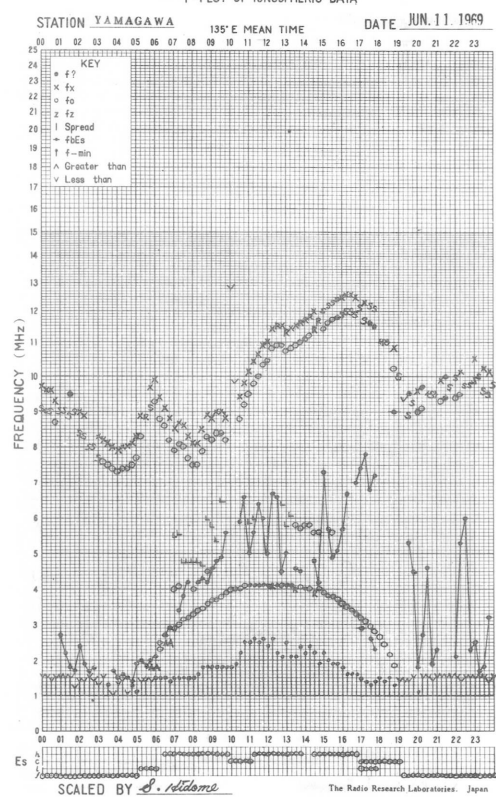
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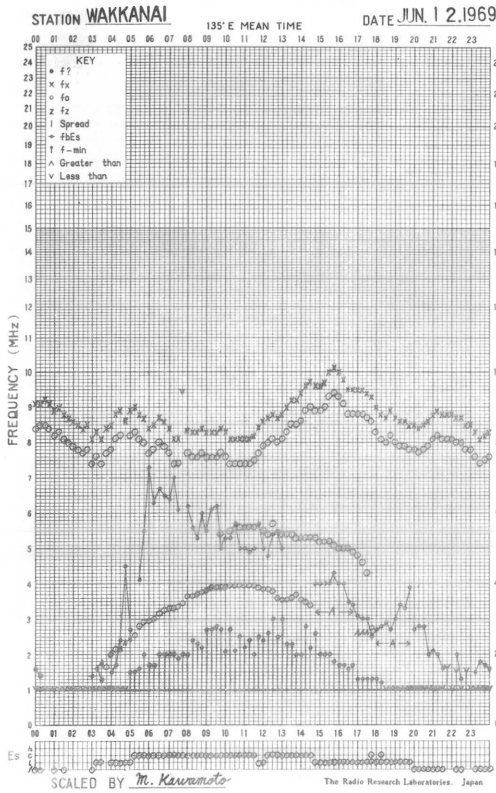
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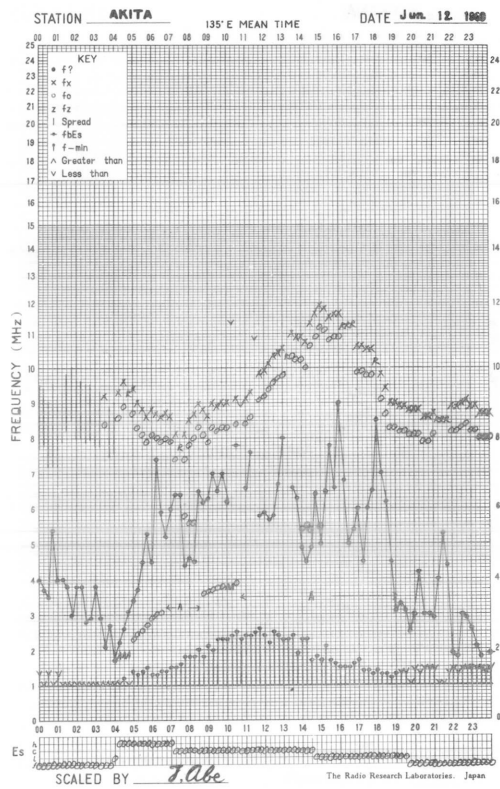
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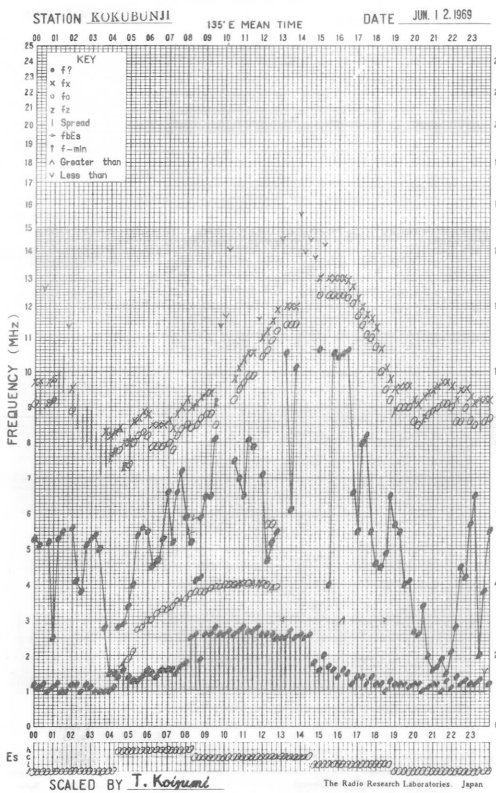
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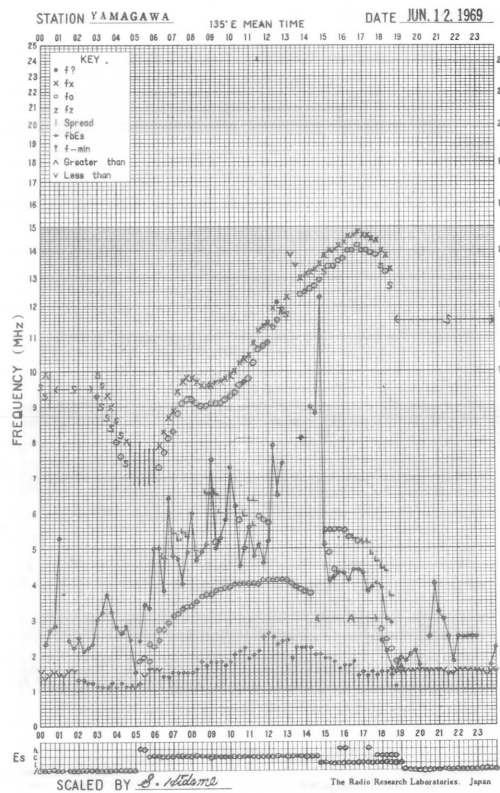
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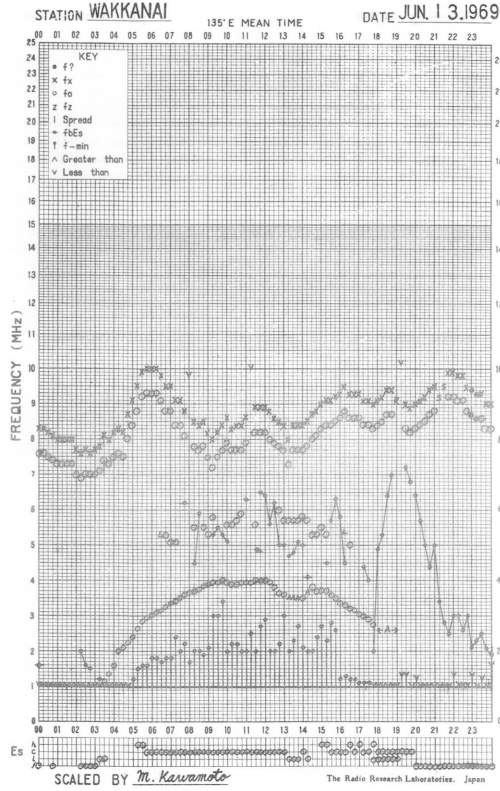
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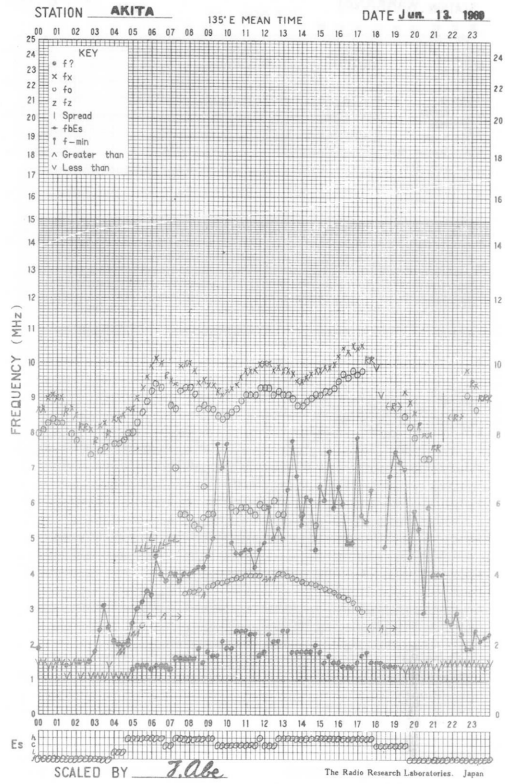
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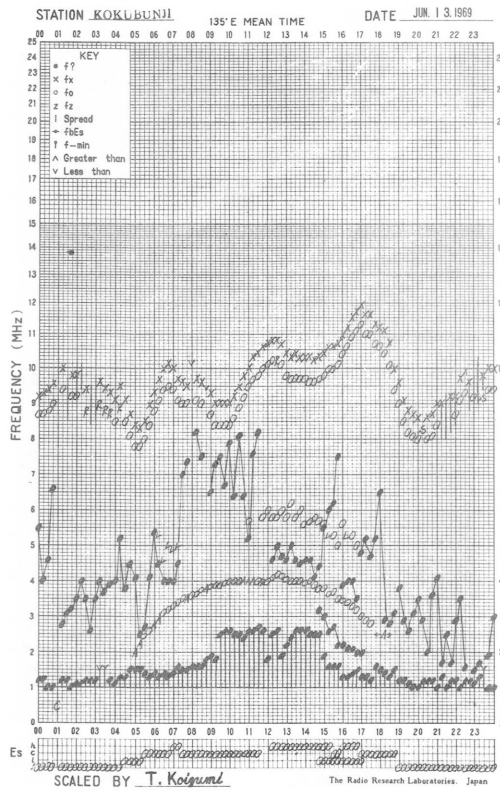
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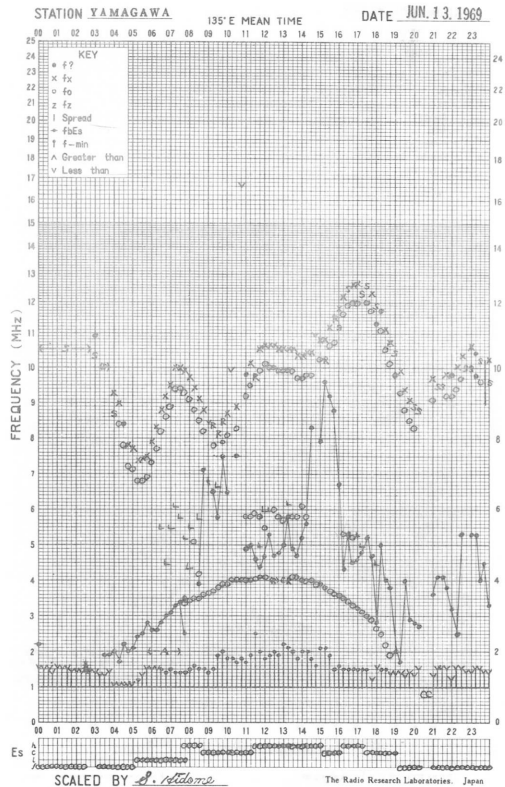
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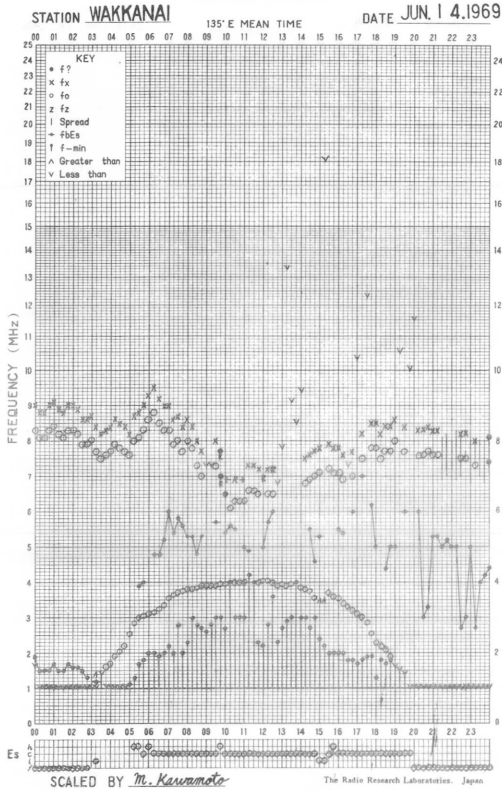
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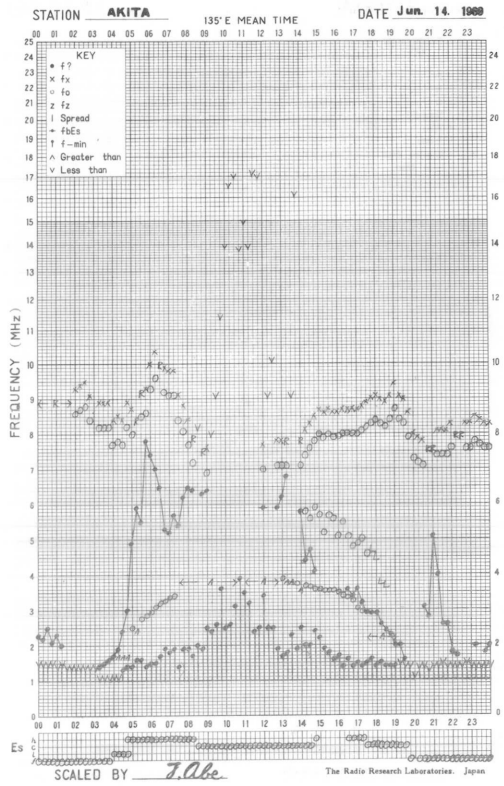
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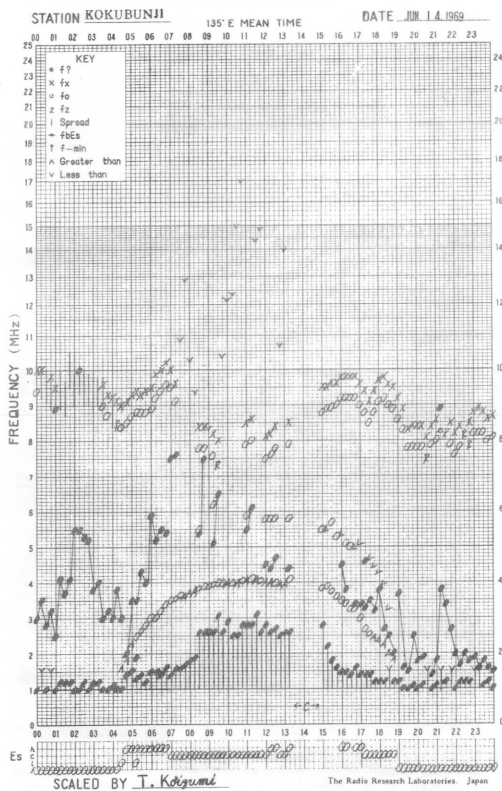
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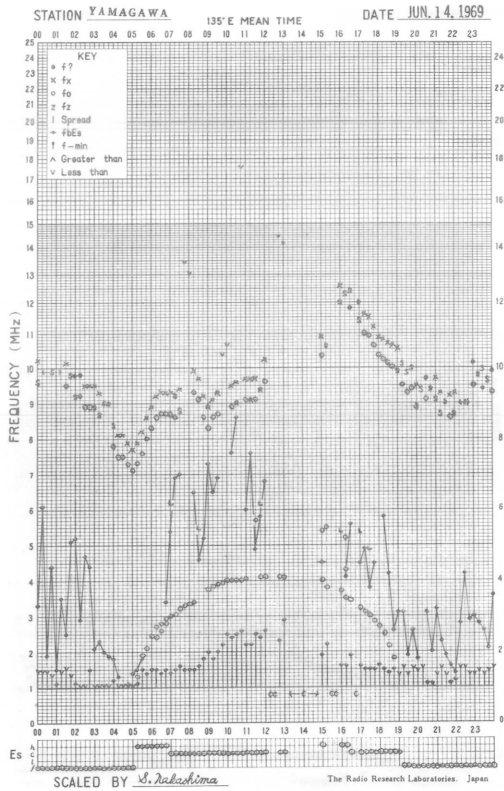
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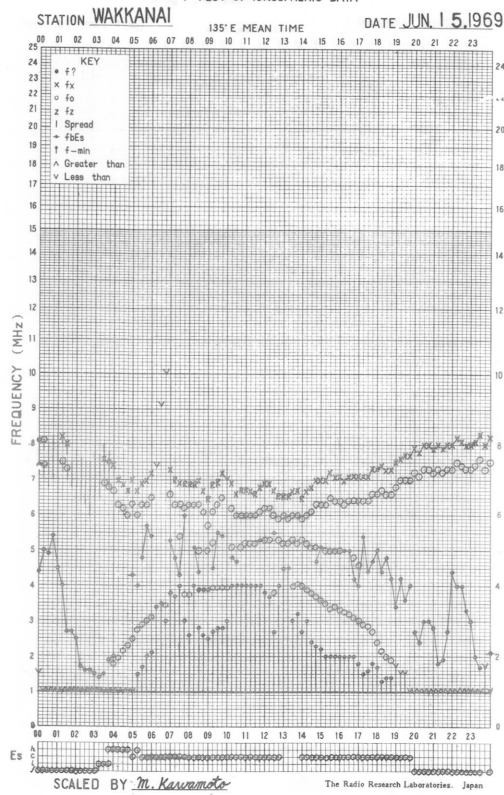
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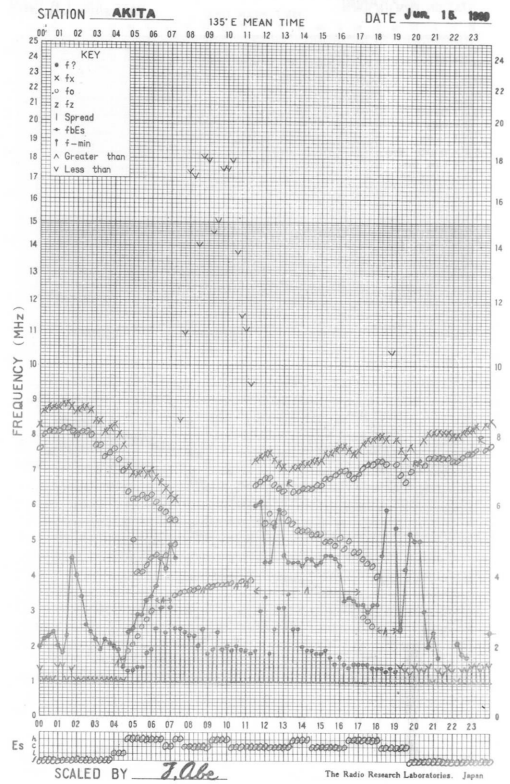
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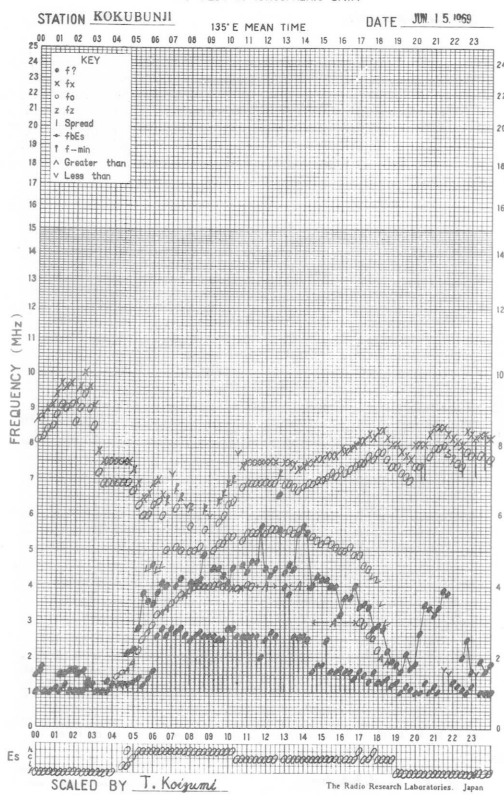
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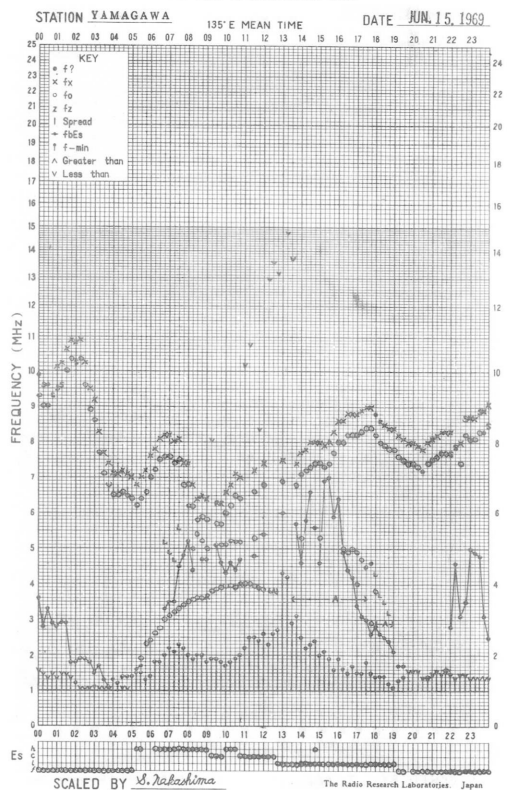
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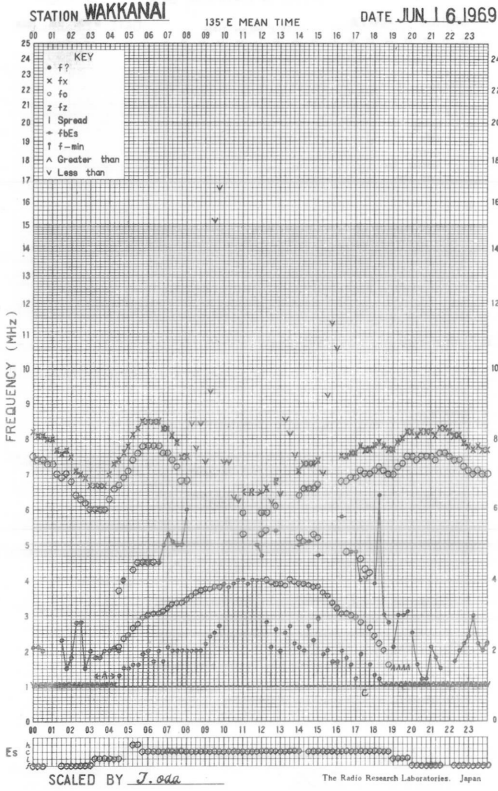
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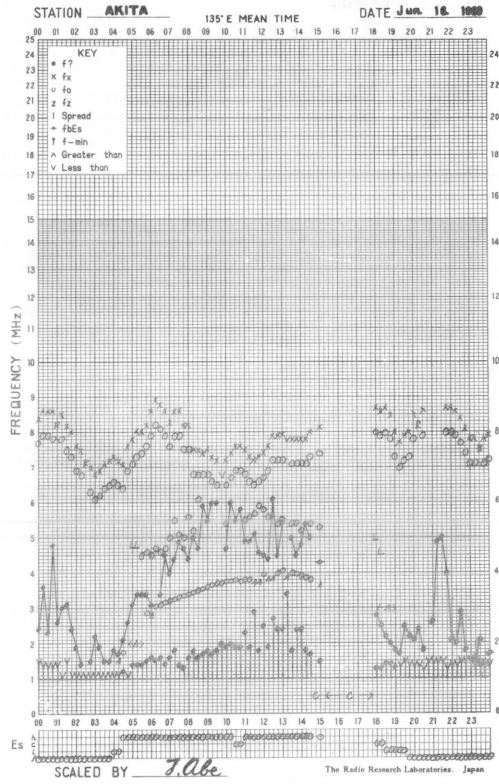
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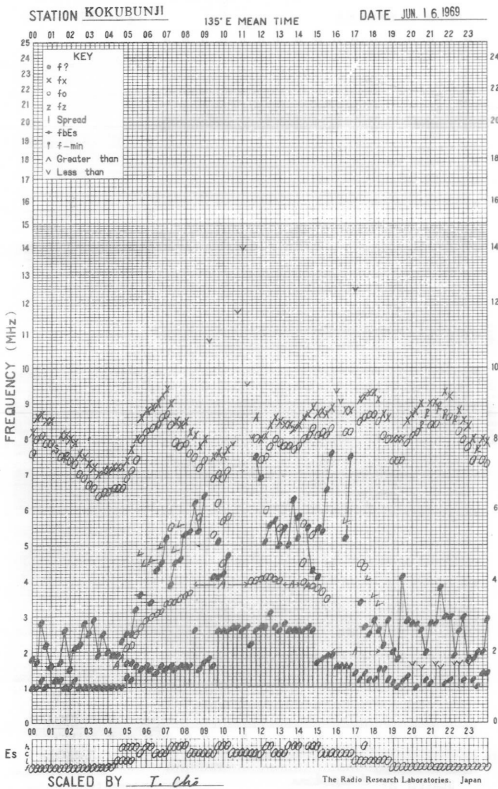
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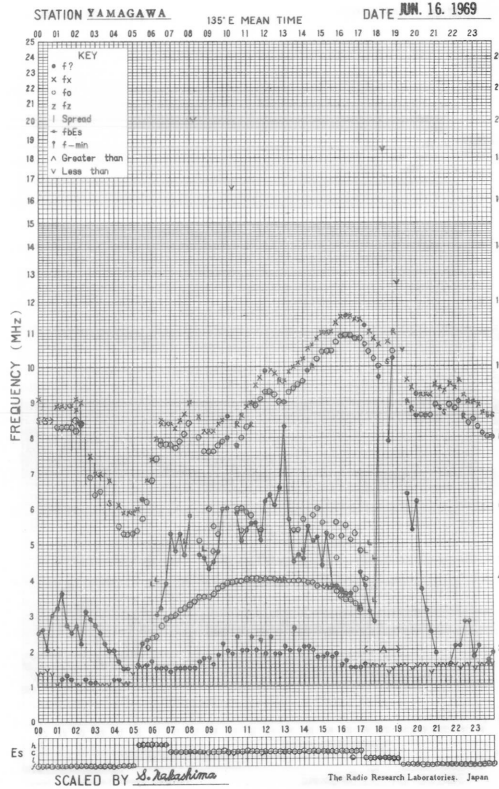
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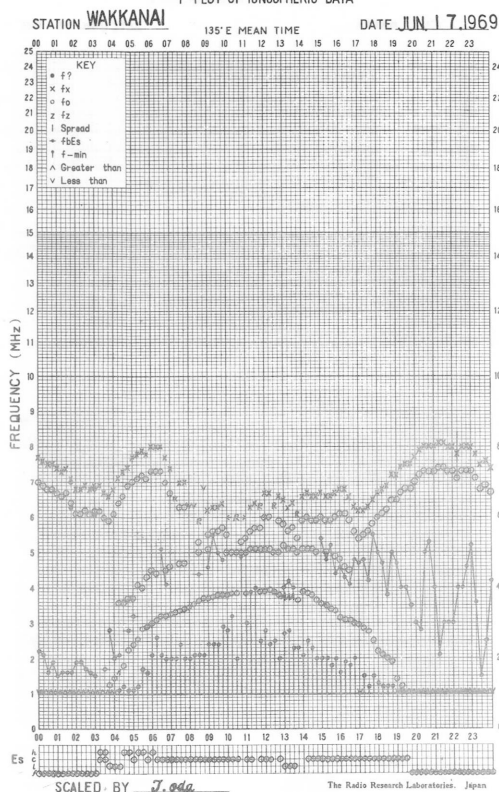
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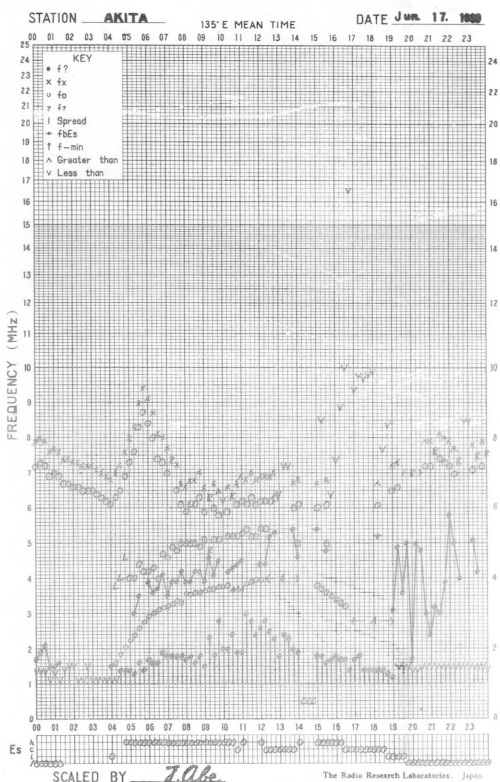
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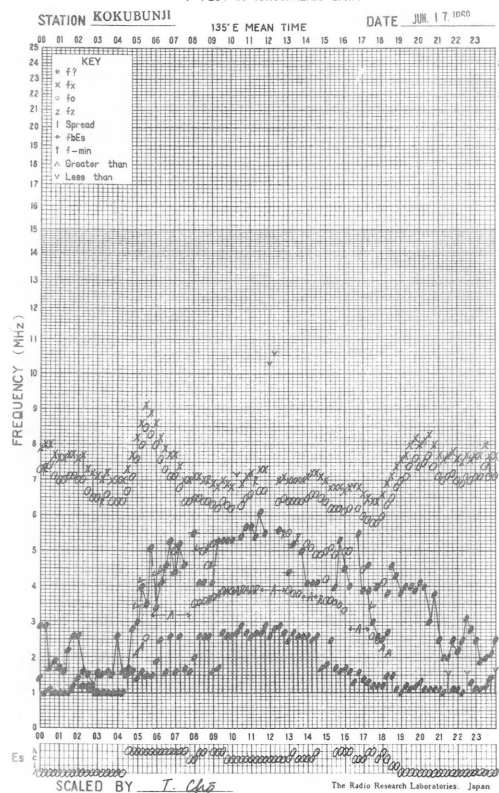
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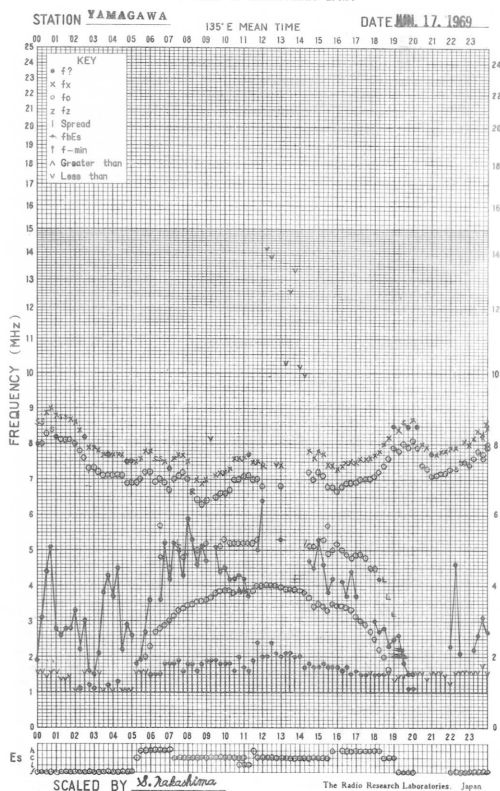
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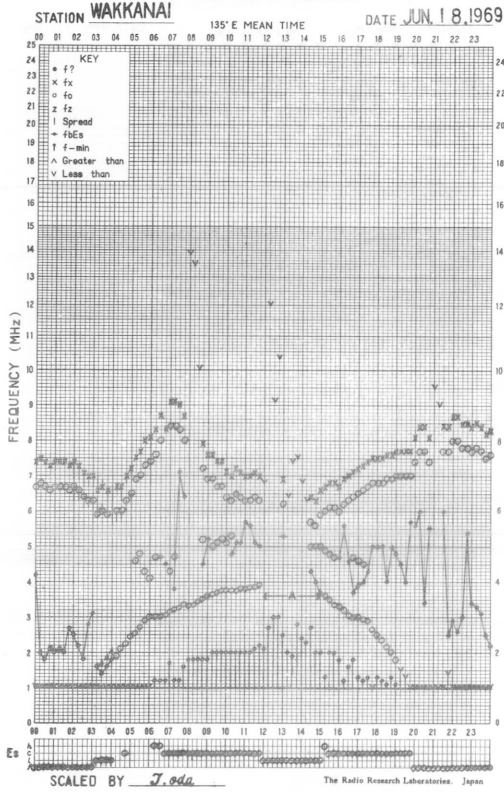
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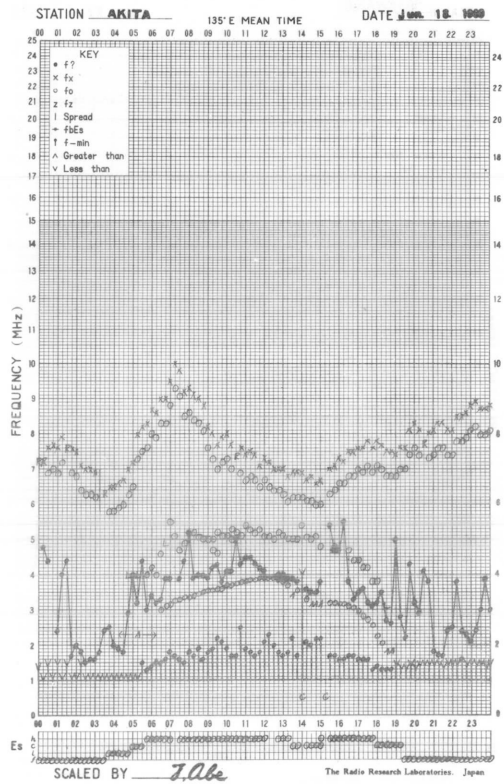
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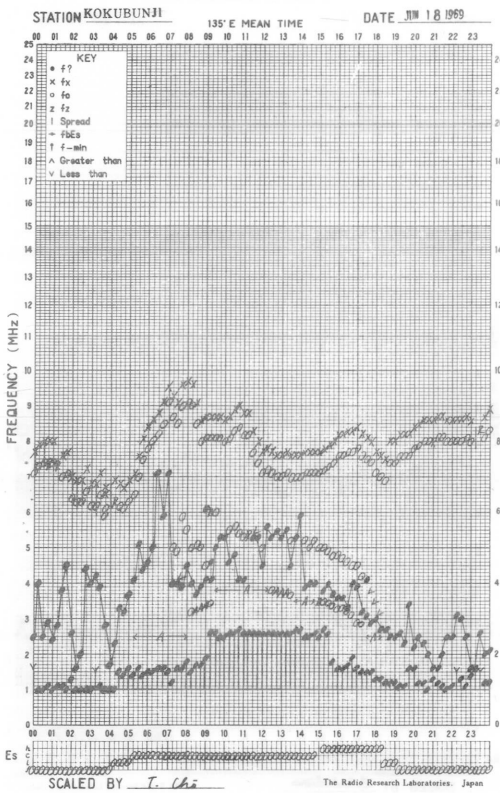
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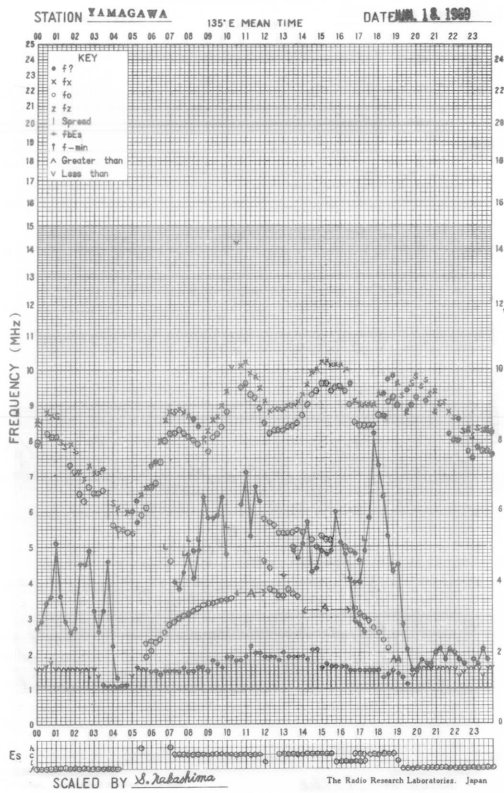
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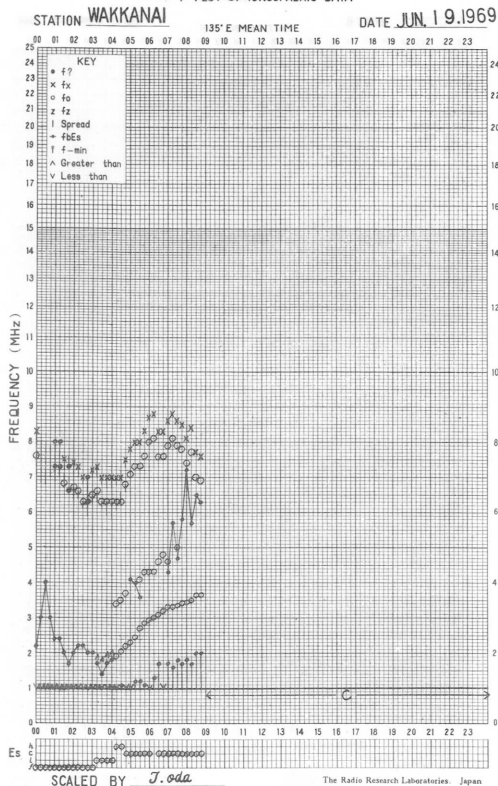
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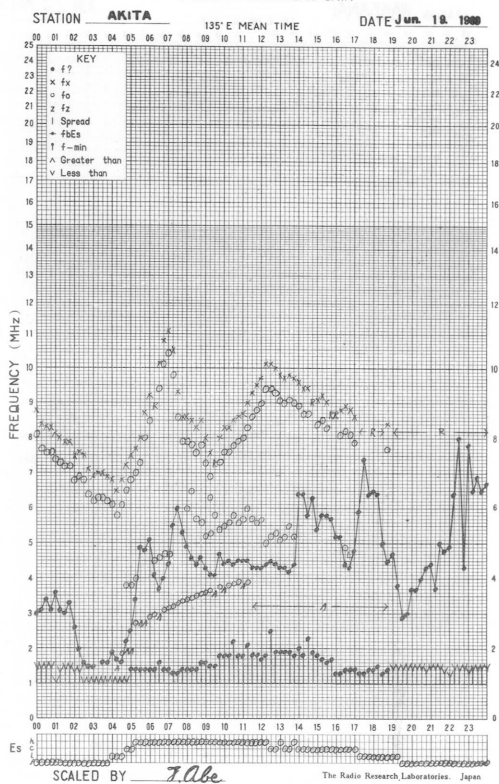
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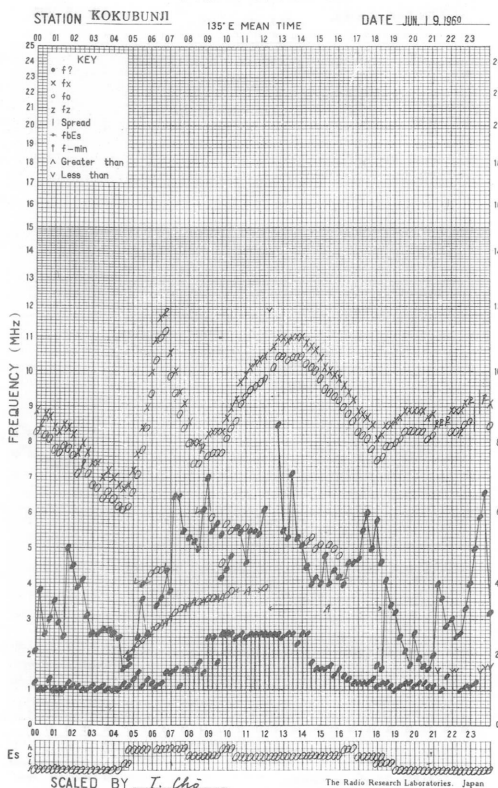
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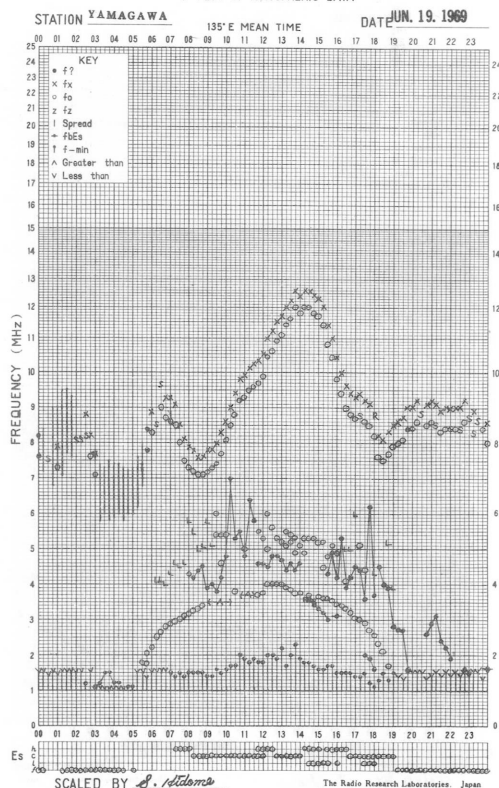
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA

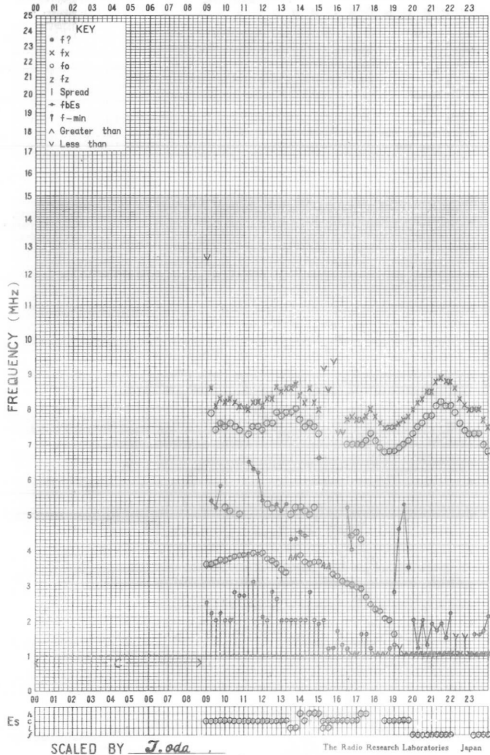


f-PLOT OF IONOSPHERIC DATA



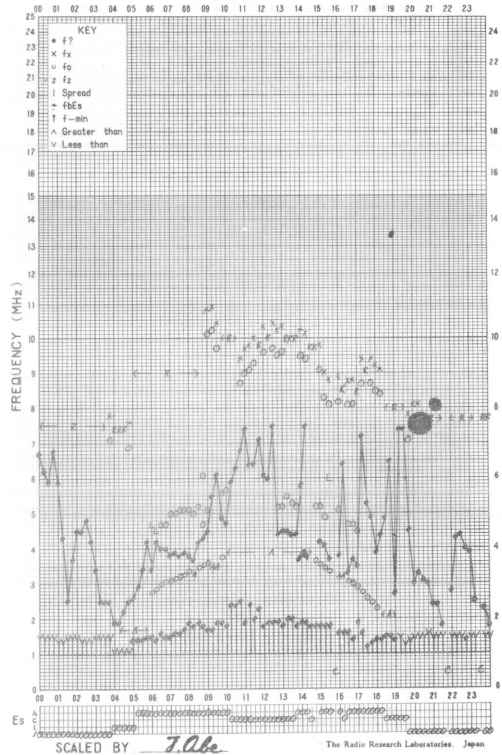
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STATION WAKKANAI 135° E MEAN TIME DATE JUN. 20. 1969



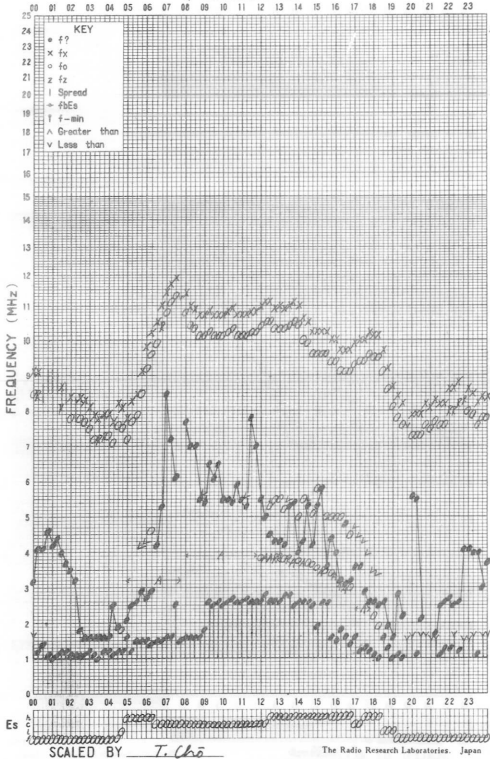
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STATION AKITA 135° E MEAN TIME DATE Jun. 20. 1969



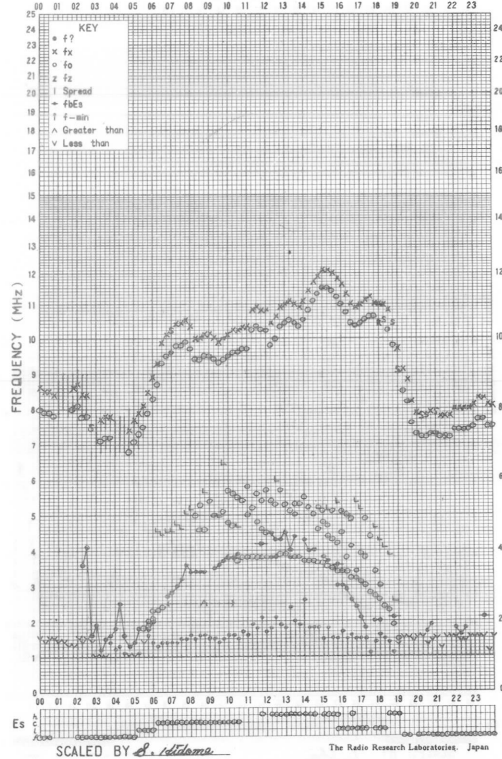
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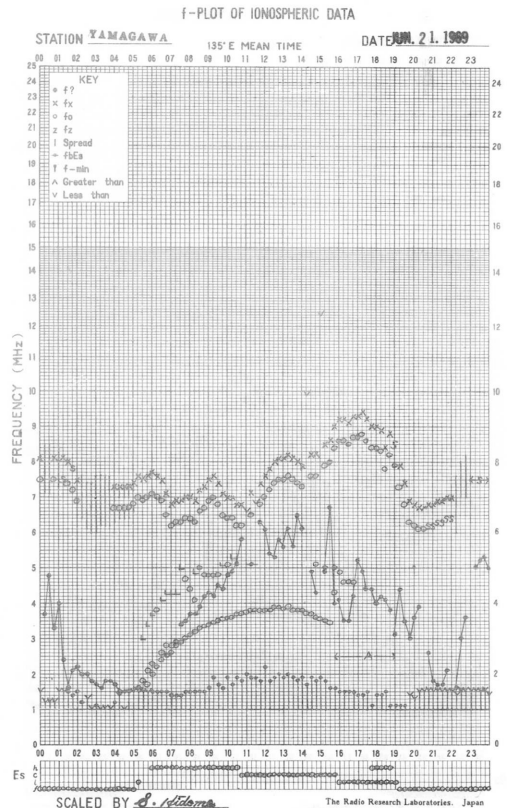
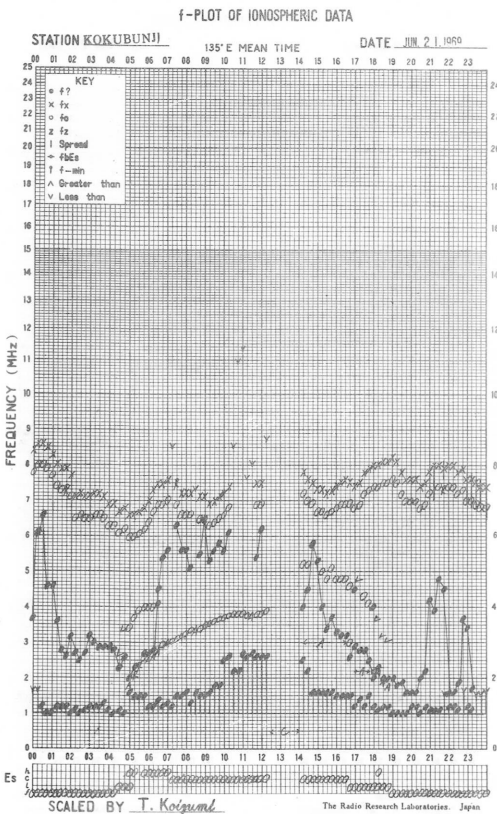
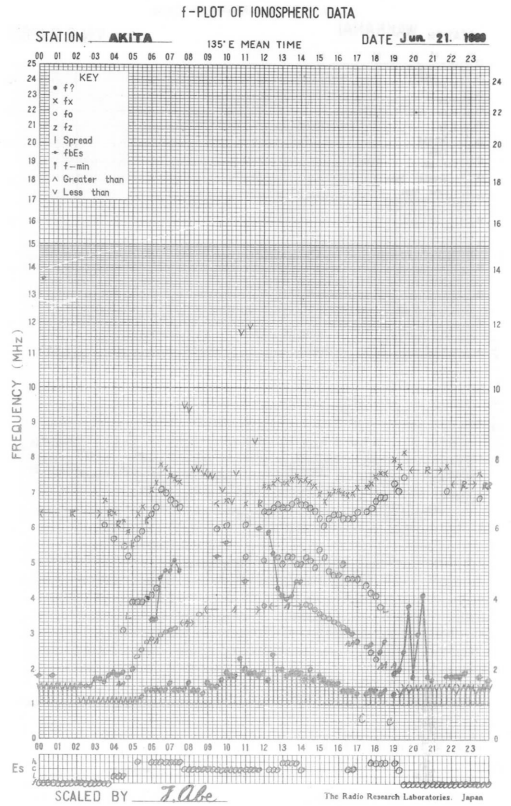
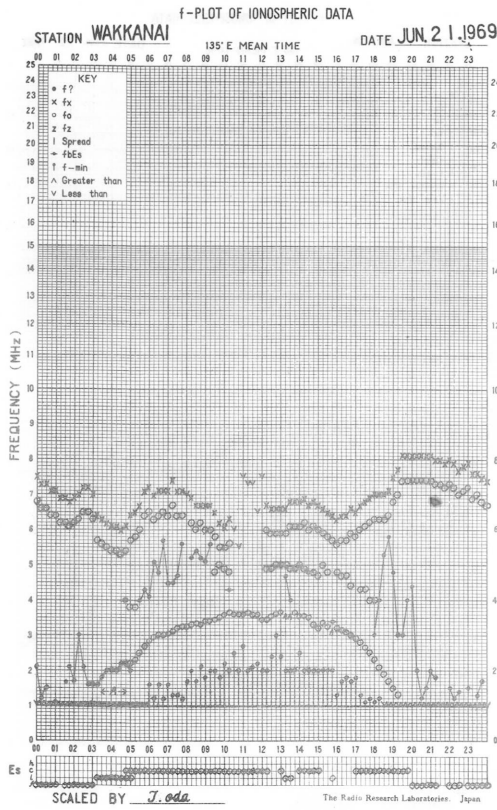
STATION ROKIUBUNJI 135° E MEAN TIME DATE JUN 20. 1969



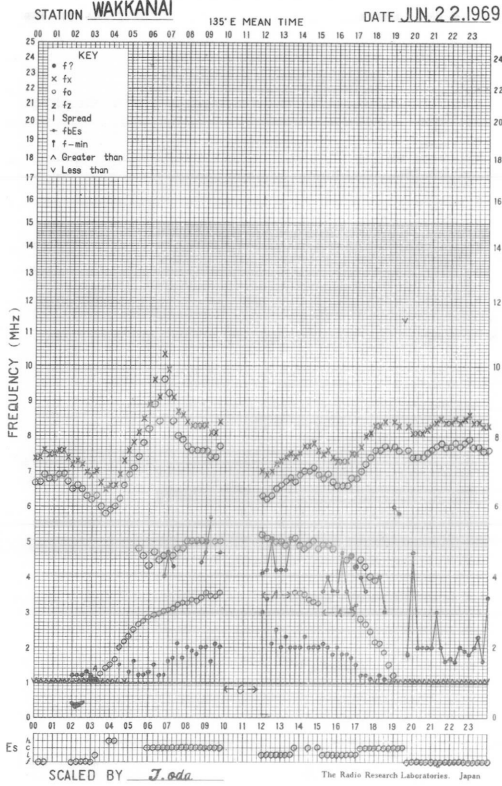
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STATION YAMAGAWA 135° E MEAN TIME DATE JUN. 20. 1969

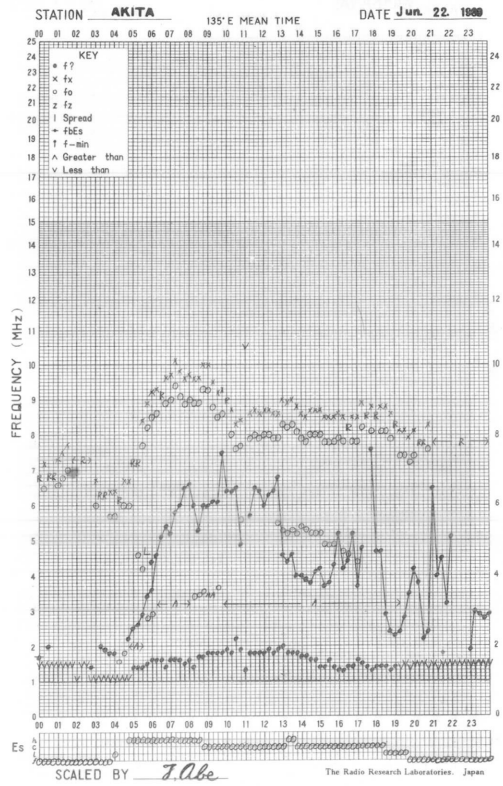




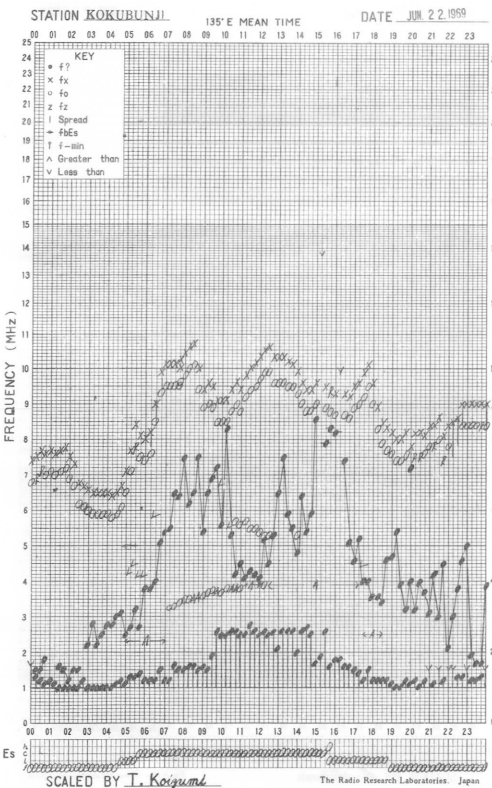
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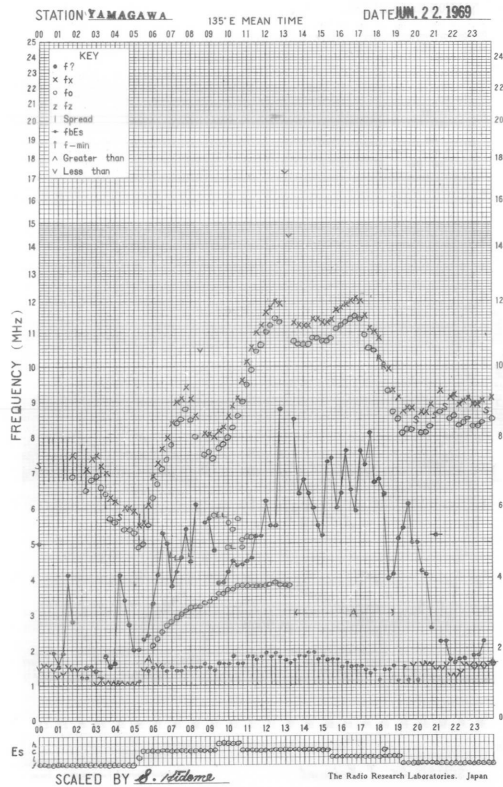
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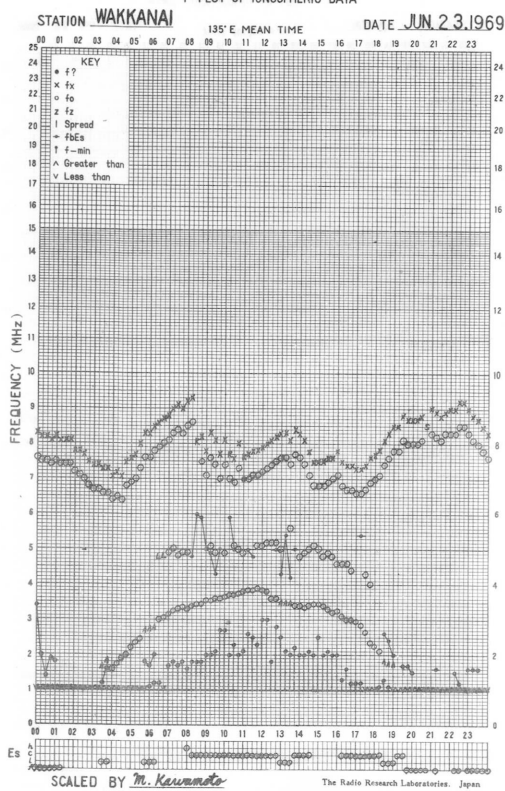
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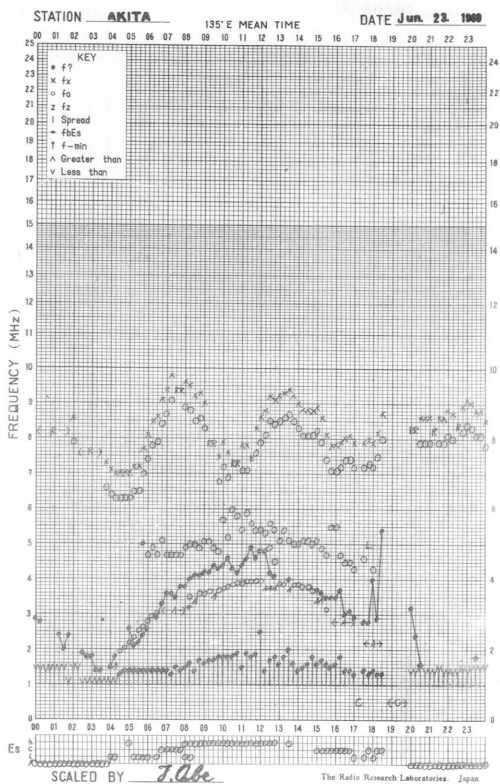
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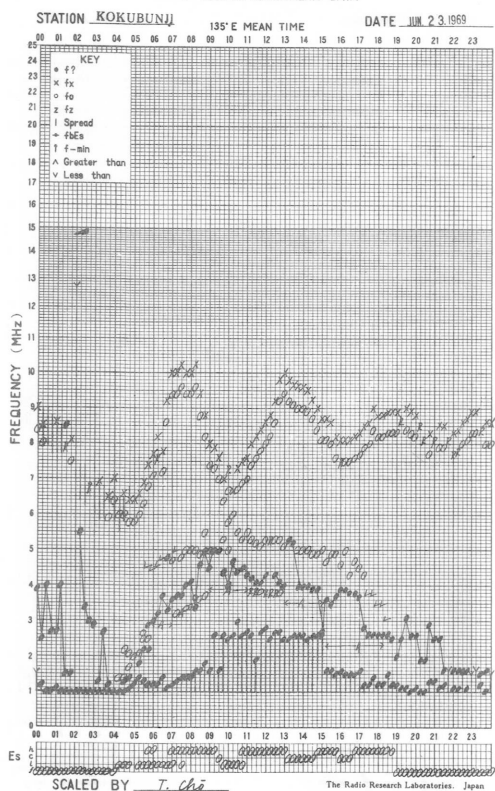
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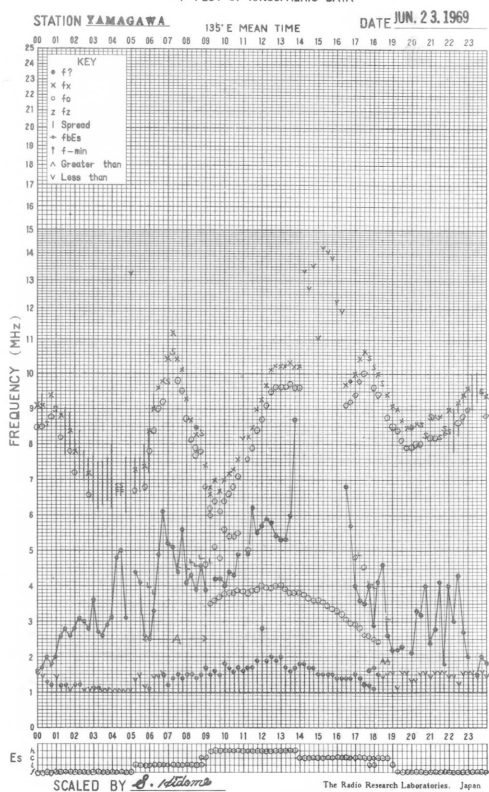
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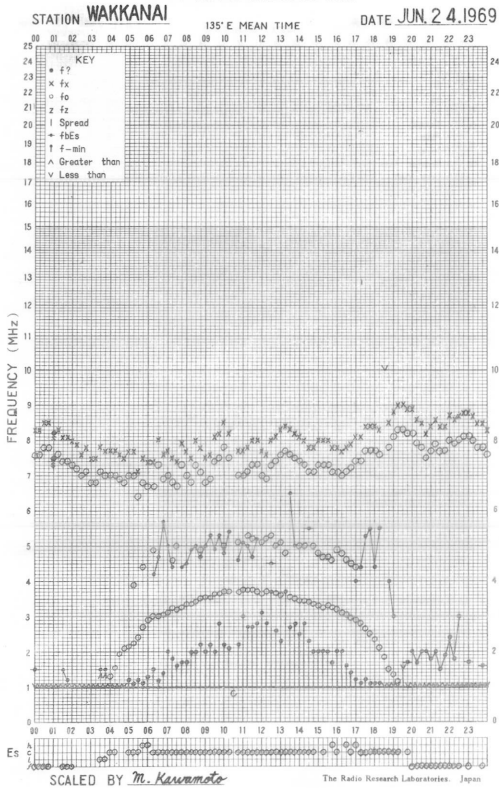
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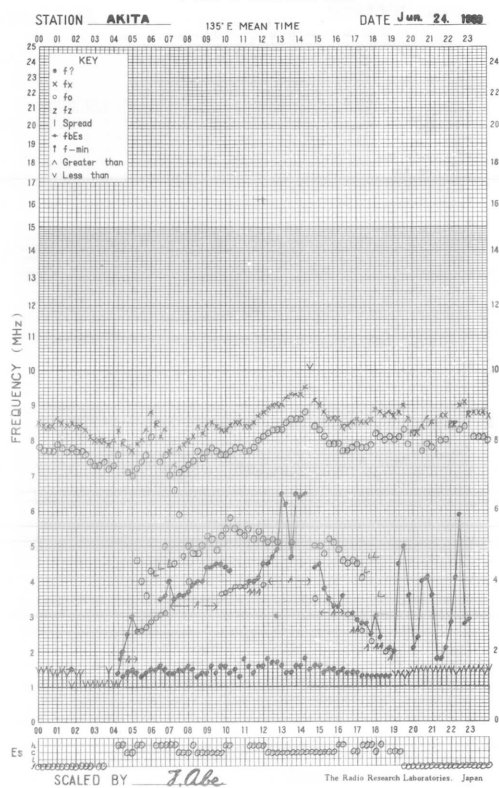
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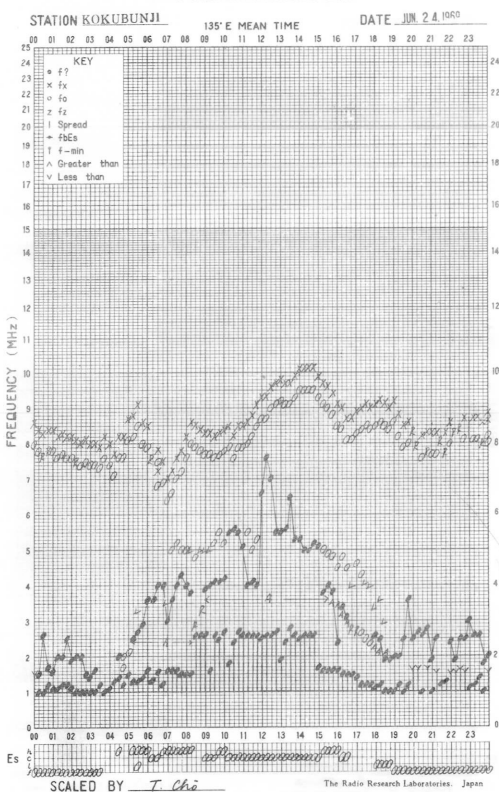
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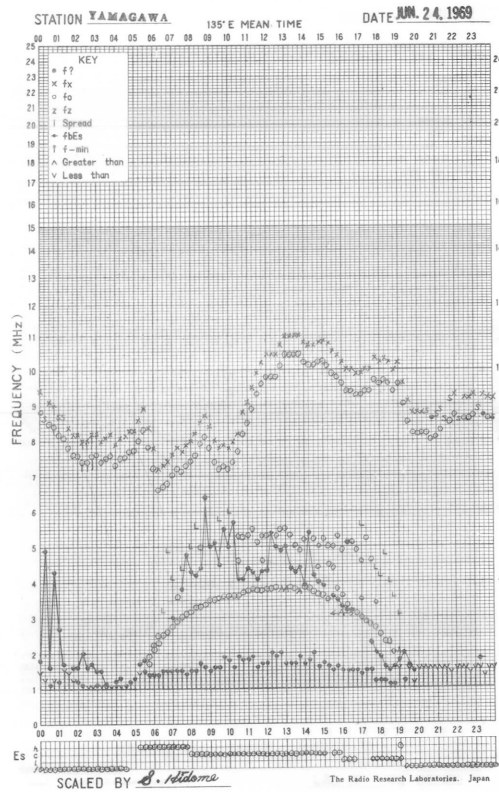
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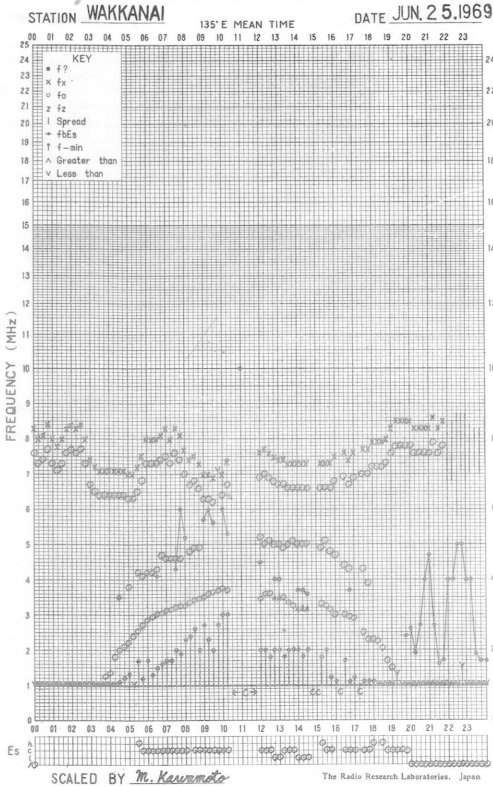
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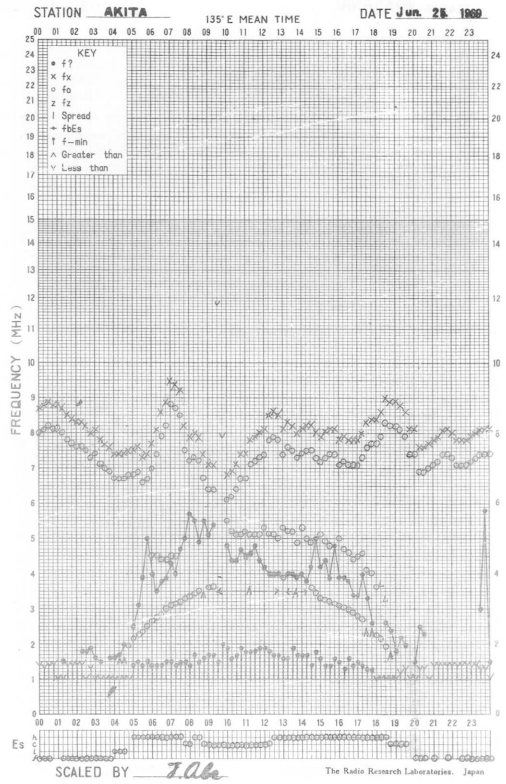
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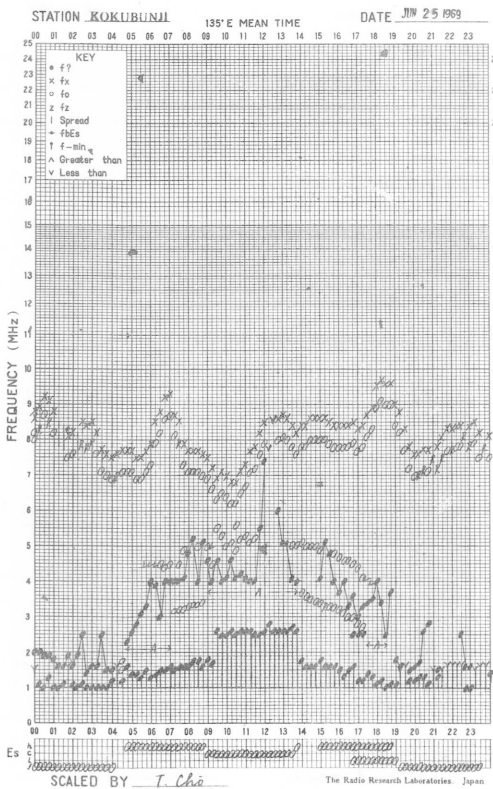
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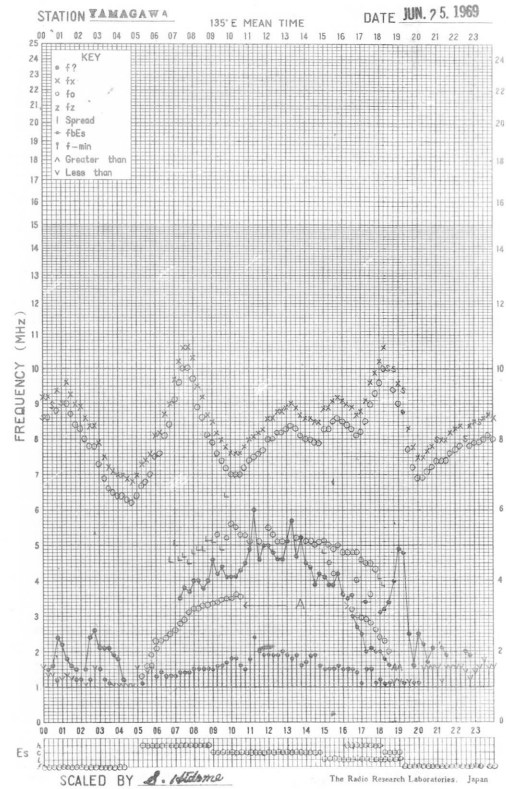
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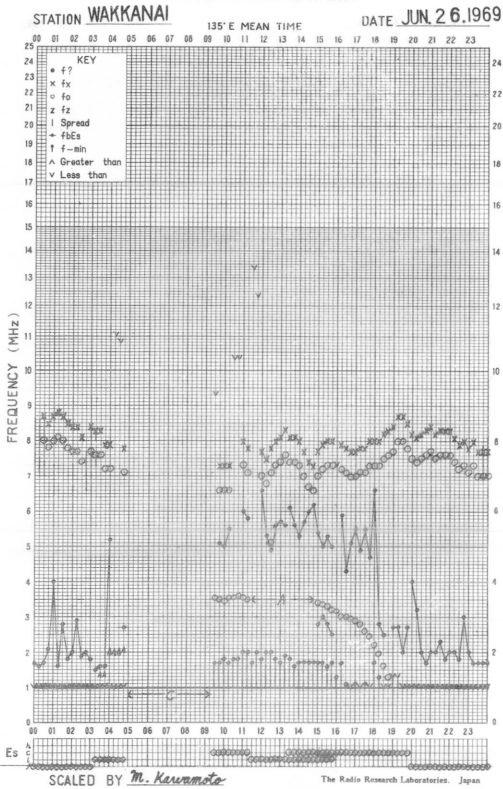
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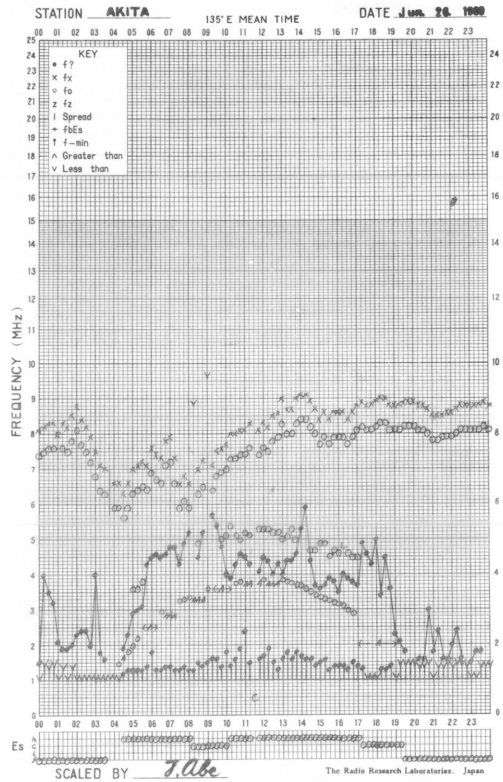
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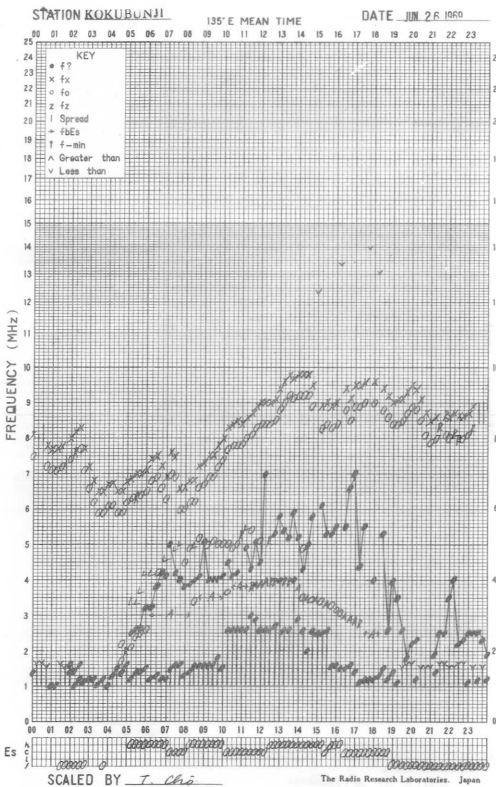
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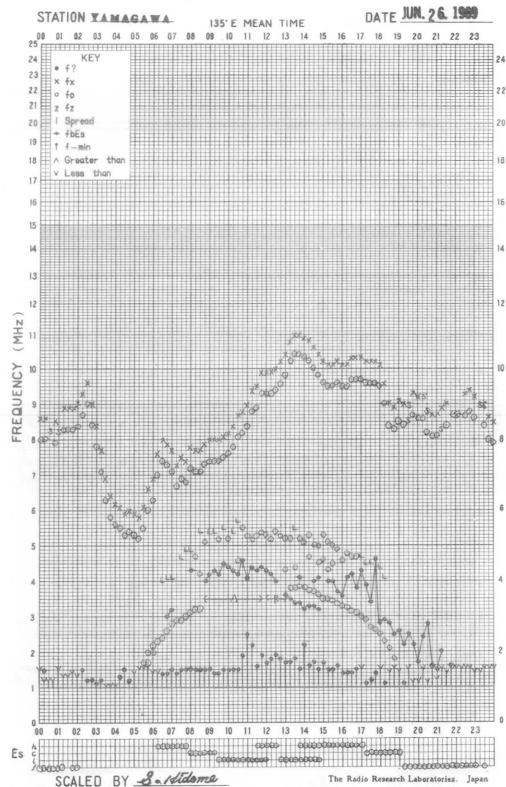
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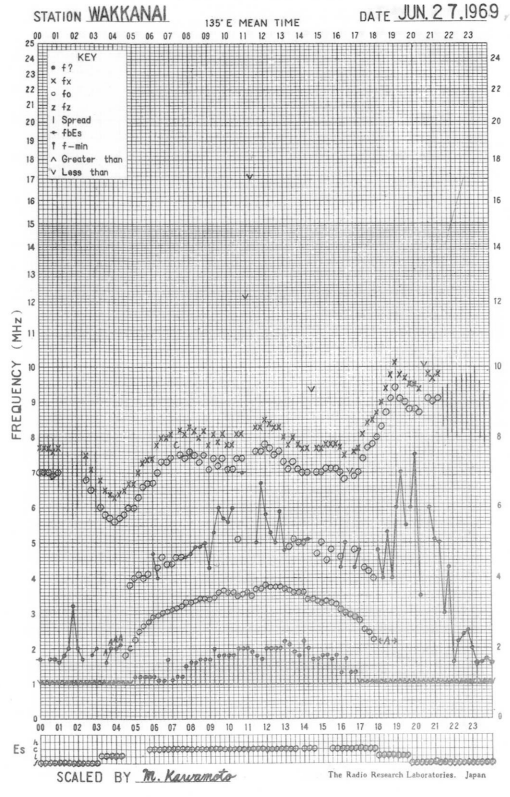
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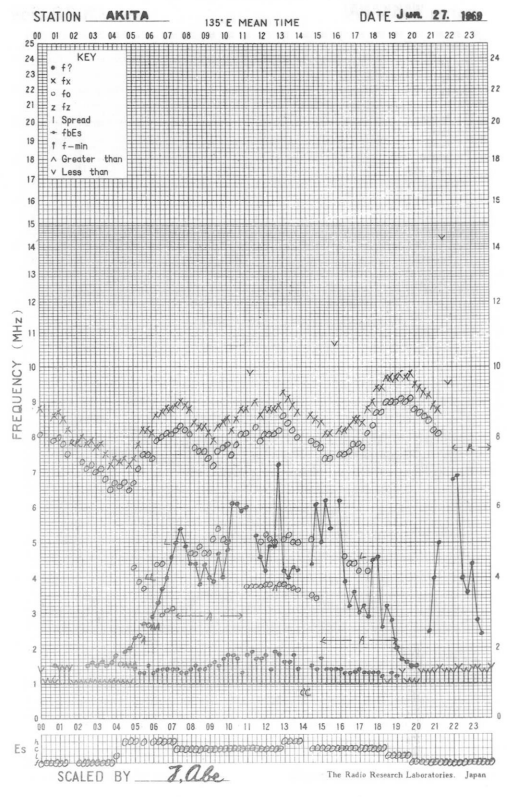
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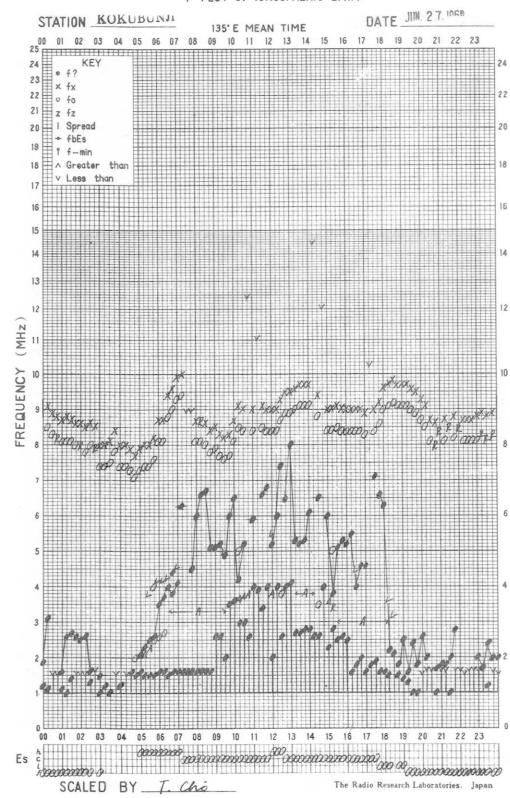
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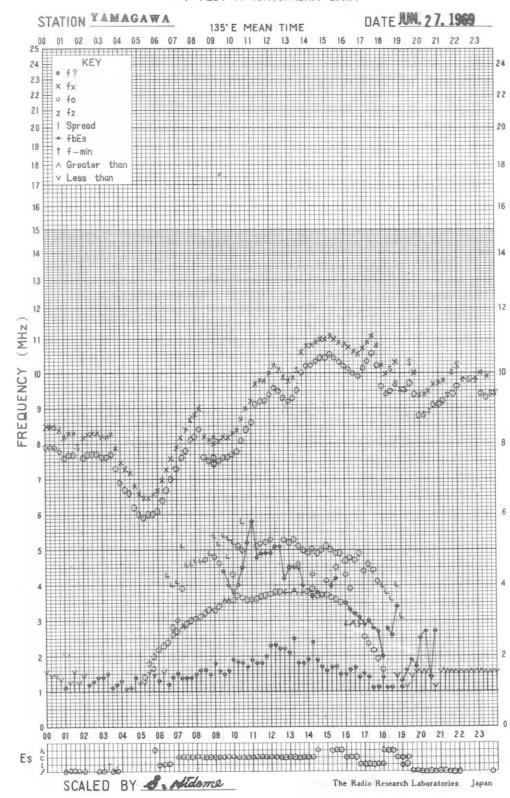
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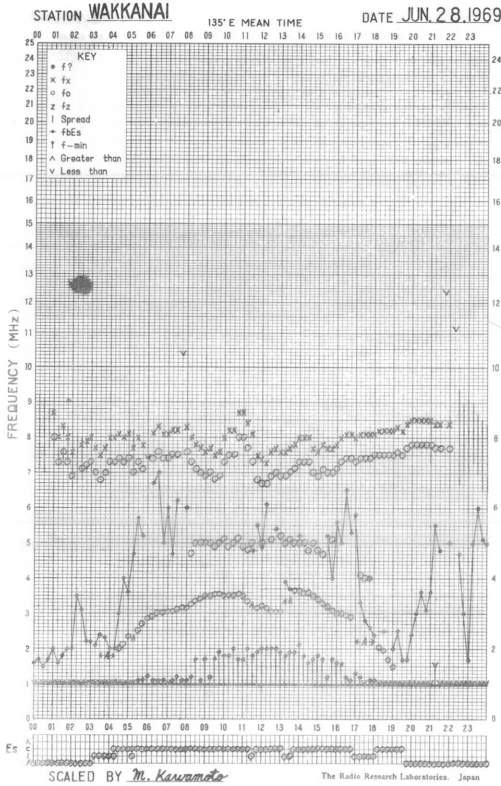
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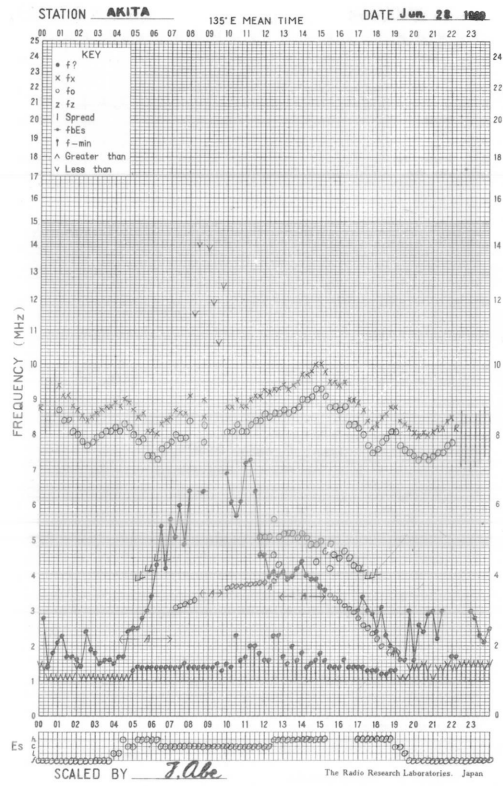
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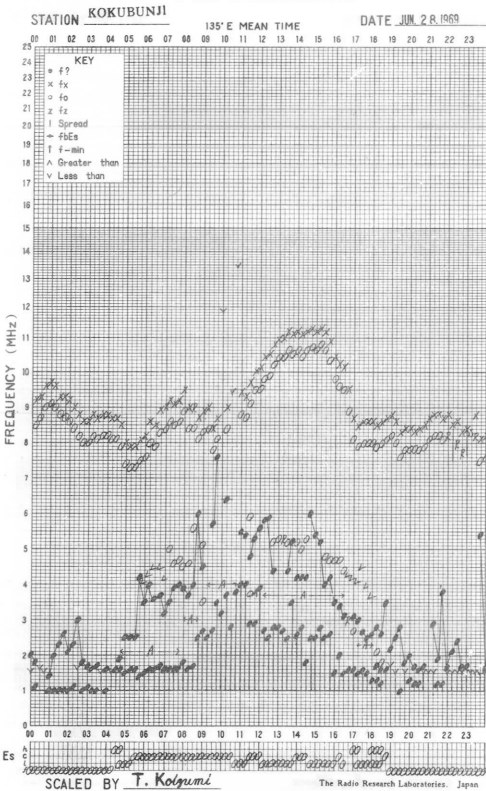
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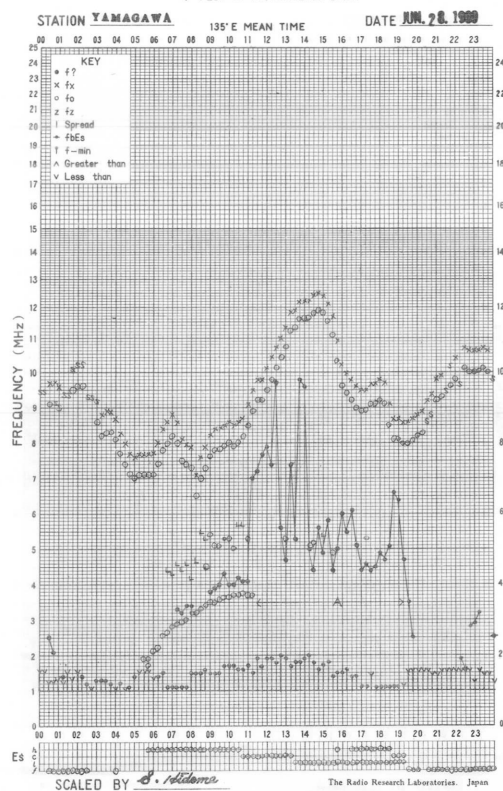
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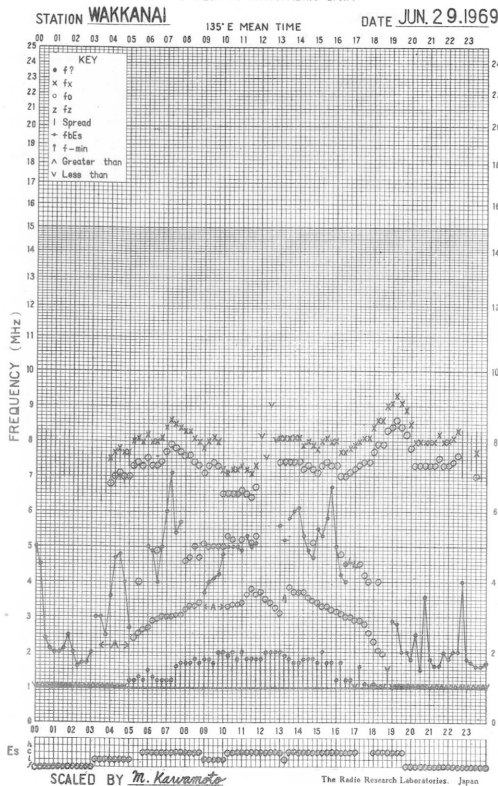
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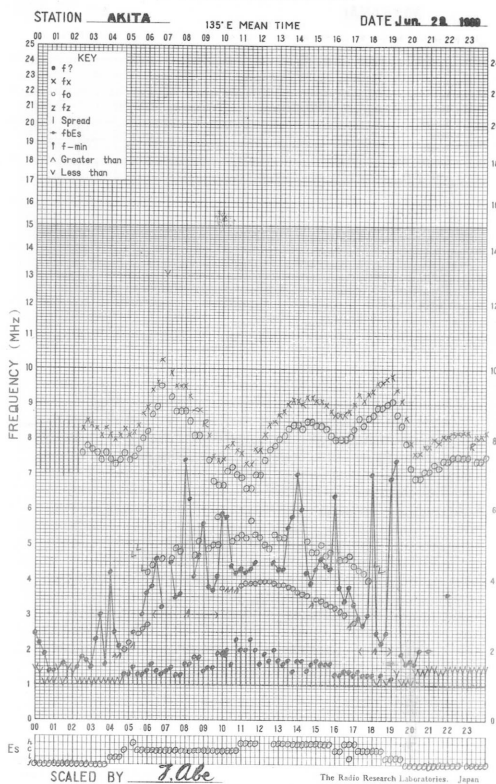
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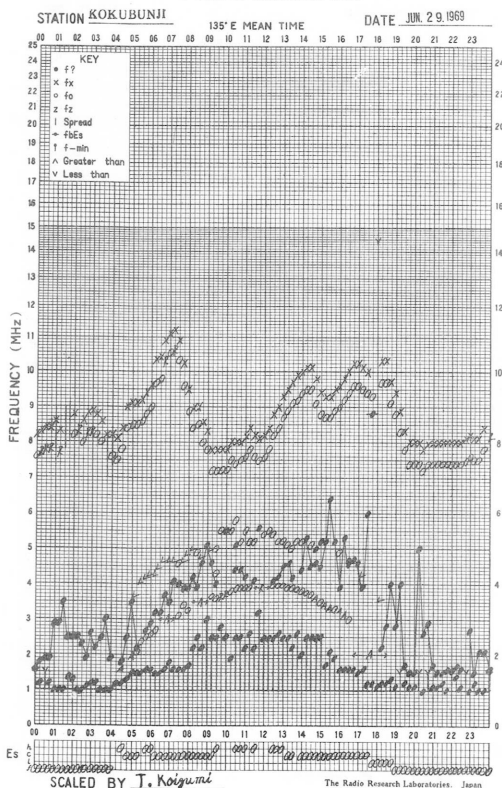
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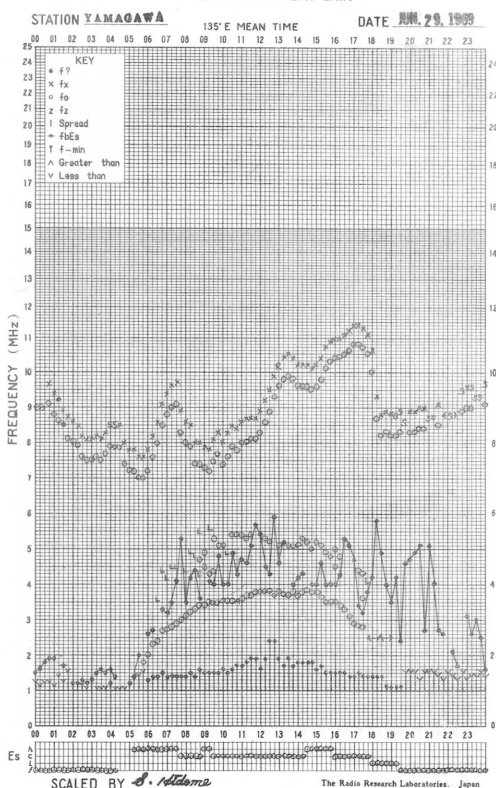
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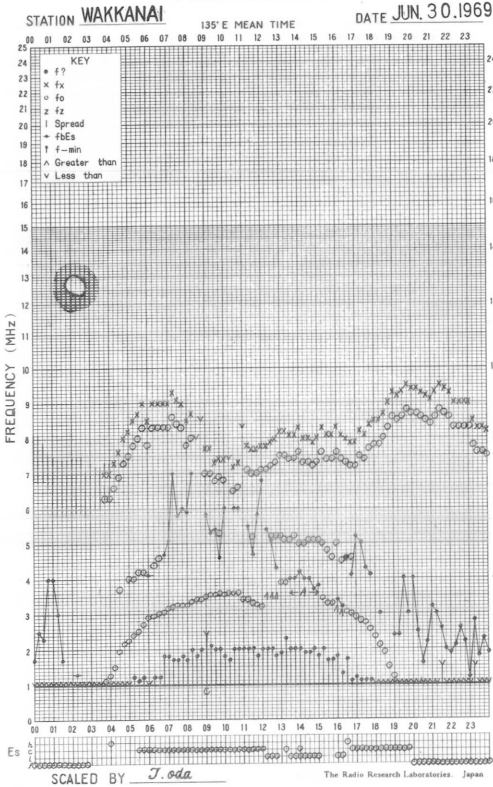
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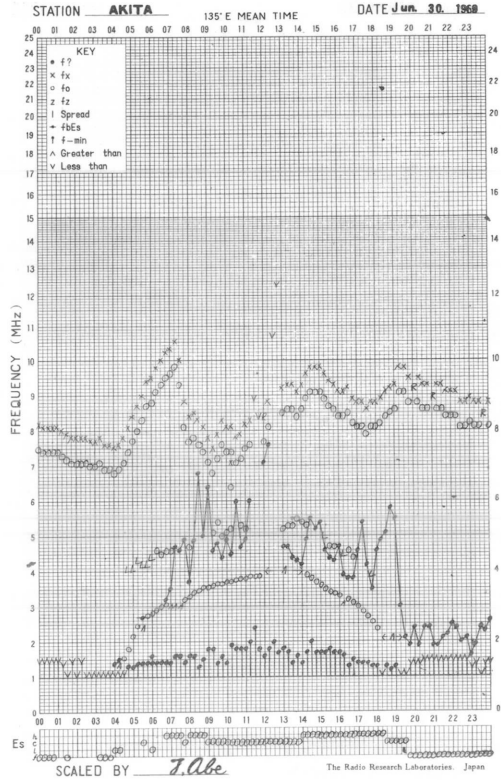
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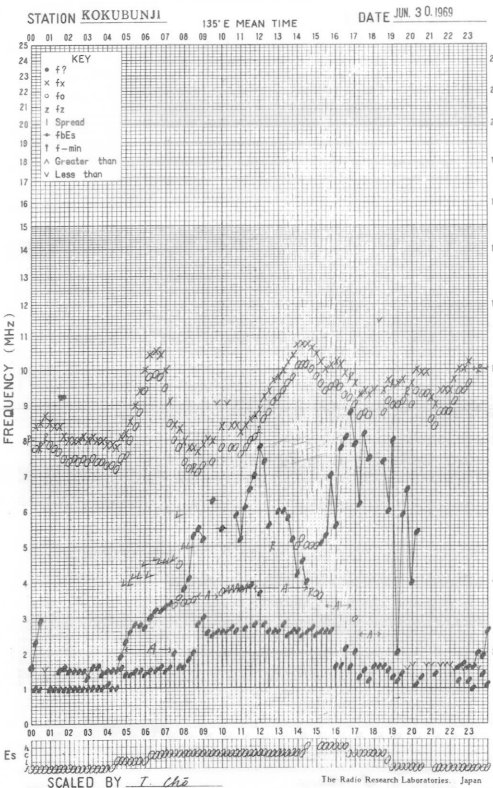
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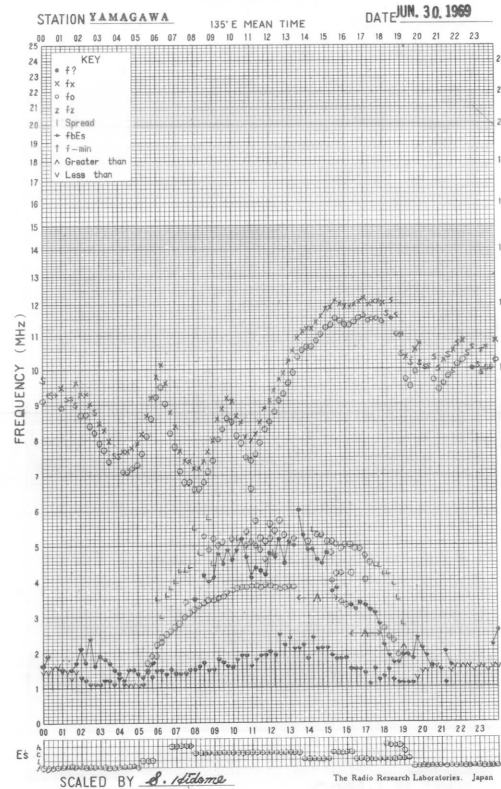
f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA



SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: June 1969						Frequency: 200 MHz				
Observing station: Hiraiso										
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$						Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	6	6	6	5	6	1	1	1	0	1
2	5	5	6	6	5	0	0	0	0	0
3	6	6	6	6	6	0	0	0	0	0
4	6	6	6	8	6	0	0	0	1	0
5	9	8	8	9	8	1	1	0	1	1
6	9	6	7	10	8	1	0	1	1	1
7	9	9	10	13	9	1	1	1	1	1
8	8	7	7	-	9	1	1	0	-	1
9	10	13	11	17	11	1	2	1	1	1
10	19	28	93	33	39	1	1	2	1	1
11	42	33	26	90	34	1	1	2	2	1
12	65	30	17	8	51	2	2	1	1	2
13	8	8	8	11	8	1	1	1	1	1
14	8	10	18	(13)	12	1	*	2	(1)	1
15	9	8	8	(8)	9	1	1	1	(0)	1
16	7	7	7	(9)	7	0	0	1	(1)	0
17	7	8	9	12	8	0	1	1	1	1
18	11	11	11	10	11	1	1	1	1	1
19	8	9	10	11	9	1	1	1	1	1
20	9	10	12	20	10	1	0	1	2	1
21	16	14	12	-	16	1	1	1	-	1
22	(14)	12	26	16	18	(1)	1	2	1	1
23	10	7	7	6	10	0	0	0	1	0
24	6	6	7	6	7	0	0	0	0	0
25	7	6	6	6	6	0	0	0	0	0
26	6	6	6	6	6	0	*	0	0	0
27	6	6	7	6	6	0	1	1	0	1
28	5	6	6	6	6	0	0	0	0	0
29	5	6	6	6	6	0	0	0	0	0
30	6	-	6	-	6	1	-	0	-	0

Note No observations during the following periods:

2nd	0500-	0600	16th	1920-	2300
3rd	0130-	0200	19th	0130-	0220
8th	1920-	2400	21st	1920-	22nd 0210
14th	1920-	2300	30th	0300-	0700
15th	1920-	2300	30th	1920-	2400

*: interference by atmospherics.

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: June 1969					
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	30	27	-	28
2	30	28	29	28	29
3	30	31	32	30	30
4	31	31	32	30	31
5	32	31	32	36	31
6	38	36	36	32	37
7	35	36	39	36	35
8	37	36	35	31	36
9	35	38	37	36	35
10	40	42	77	44	49
11	48	49	54	46	49
12	47	54	41	32	47
13	33	34	35	38	34
14	37	41	40	(46)	39
15	37	32	31	(34)	35
16	32	33	33	(36)	33
17	33	34	35	33	34
18	34	34	33	34	33
19	33	34	32	-	33
20	31	32	31	32	31
21	32	34	33	-	33
22	-	33	35	31	34
23	32	30	33	31	32
24	30	32	33	29	31
25	30	30	29	29	30
26	30	30	29	29	30
27	31	30	29	26	30
28	26	27	25	(25)	26
29	26	27	26	27	26
30	27	26	27	26	27

Note No observations during the following periods:

1st	0820-	2nd	0010	23rd	2030-	2130
14th	1920-		2300	24th	2030-	2130
15th	1920-		2300	25th	2030-	2130
16th	1920-		2250	26th	0630-	0708
17th	2030-		2130	27th	2030-	2130
18th	2030-		2130	28th	2030-	2230
19th	1920-	20th	0015	29th	2030-	2130
21st	1920-	22nd	0300	30th	2030-	2130

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: June 1969								
Observing station: Hiraiso								
Normal observing period: 1920 - 1000 (sunrise to sunset)								
Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22} \text{ W m}^{-2} (\text{Hz})^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
5	500	<1919.5	1952.0	>81.6	C	60	17	*
		2256.0	2301.4	12.0	C	60	10	
13	200	0028.5	0029.0	2.0	C	350	80	
18	200	0457.0	0457.5	1.5	C	470	130	
		2108.5	2110.0	6.0	C	180	30	
	500	2339.0	2339.8	4.0	C	100	10	
	200	2339.0	2340	5.0	C	>2120	>240	

*: uncertain owing to low elevation at sunrise.

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

JUN 1969 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISSO

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jun. 1969	Whole Day Index	H B		W W V				L M				W W V H				Warning				Principal magnetic storms			
		06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	00	06	12	18	Start	End	ΔH
		12	18	24	06	12	18	24	06	12	18	24	06	12	18	24	06	12	18	24			
1	4o	4	3	(4)	4	5	4	5	(4)	-	-	-	4	4	5	4	N	N	N	N			
2	4+	4	4	4	3	4	4	4	5	5	-	5	4	4	4	4	N	N	N	N			
3	4+	4	4	4	4	4	4	5	5	4	-	4	4	4	4	4	N	N	N	N			
4	5-	4	4	4	5	4	5	5	5	5	-	4	4	4	4	5	N	N	N	N			
5	4-	3	3	4	4	4	4	4	4	4	-	C	4	4	4	4	N	N	N	N			
6	4+	3	5	4	4	4	5	5	4	4	-	4	(3)	4	4	4	N	N	N	N			
7	5-	4	4	5	5	5	4	4	5	5	-	-	4	4	4	4	N	N	N	N			
8	4o	4	4	(3)	(4)	4	4	4	(4)	-	-	-	4	4	4	4	N	U	U	U	05.08	---	84 ^Y
9*	4o	4	4	4	3	4	4	4	4	4	-	4	3	4	4	4	N	N	N	N	---	---	
10	4o	4	4	4	4	4	4	4	3	4	-	4	4	4	4	3	N	N	N	N	---	11xx	
11*	4o	4	4	4	3	4	5	4	3	(4)	-	4	3	4	4	4	N	N	N	N			
12	4+	4	5	4	4	4	4	4	4	5	-	4	(4)	4	4	4	N	N	N	N			
13	4o	4	4	3	4	4	4	3	4	(5)	-	C	4	4	4	3	N	N	N	N	20.8	---	78 ^Y
14	3o	4	(4)	C	2	3	4	2	3	3	-	C	(3)	3	3	3	N	N	U	U	---	---	
15	4-	4	(4)	C	3	4	(4)	4	C	-	-	-	3	4	4	4	N	N	N	N	---	01xx	
16	4-	4	4	5	(3)	4	3	3	3	4	-	(3)	4	4	3	3	N	N	N	N	06.22	---	52 ^Y
17*	3+	4	4	4	2	3	4	3	4	4	-	3	4	4	4	4	N	N	N	N	---	13xx	
18	4-	4	(4)	(3)	3	4	4	4	3	(3)	-	C	4	4	4	4	N	N	N	N			
19	5-	4	5	5	5	4	5	5	4	(4)	-	5	4	4	4	4	N	N	N	N			
20	4o	4	4	4	4	4	4	3	5	5	-	3	4	4	4	4	N	N	N	N			
21	4-	4	C	C	3	4	(4)	C	4	(4)	-	C	4	5	(4)	C	N	N	N	N			
22	5-	C	(4)	4	(5)	4	5	5	C	C	-	C	4	(4)	(3)	4	N	N	N	N			
23	5-	5	(4)	C	5	4	5	5	5	5	-	4	5	5	4	C	N	N	N	N			
24	4+	5	4	4	5	4	4	4	(4)	(4)	-	C	4	4	4	4	N	N	N	N			
25	4o	4	4	4	4	4	5	4	4	4	-	4	4	4	5	C	N	N	N	N			
26	4+	4	4	4	5	5	5	4	4	(3)	-	C	5	4	4	4	N	N	N	N			
27	4o	4	4	4	4	4	5	(5)	4	(3)	-	4	4	4	4	4	N	N	N	N			
28	4+	4	4	4	(5)	4	5	5	4	3	-	-	C	4	4	3	N	N	N	N			
29	4+	4	4	4	5	5	4	5	(4)	-	-	-	(4)	4	4	4	N	N	N	N			
30	4+	4	4	4	5	4	5	5	(4)	(4)	-	4	4	4	4	5	N	N	N	N			

IQSY GEOALERT and ADALERT (Western Pacific Region)

- * = MAGSTORM
- o = MAGCALME
- Δ = COSMIC EVENT

- () = Regular World Day
- = impossible to evaluate
- () = inaccurate
- C = artificial accident
- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jun. 1969	S W F						Correspondence					
	Drop-out Intensities (db)						Start- time	Dura- tion	Type	Imp.	Flare	Solar Noise	Mag.
CO	LM	HA	TO	HB	SH							
5					40	09.56	64	S	3+	x	x	
6					23	09.48	72	Slow	2	x	x	
7	-	-	-	13	<u>32</u>	00.18	40	S	3-	x	x	
7	13"				28	08.07	13	S	2+	x	x	
7					18	09.51	37	Slow	1+	x	x	
11					16	16.20	20	Slow	1+	x	x	

IONOSPHERIC DATA IN JAPAN FOR JUNE 1969

第 21 卷 第 6 号

1969年10月20日 印 刷
1969年10月25日 發 行 (不許複製非売品)

編 集 兼
發 行 人

今 野 清 恒

東京都小金井市貫井北町4丁目2-1

發 行 所

郵 政 省 電 波 研 究 所

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