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IONOSPHERIC DATA IN JAPAN

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F — 265

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

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

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

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

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

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

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

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

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

$h'Es$ — The lowest virtual height of the trace used to give the f_oEs.

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

wave component at a frequency equal to $0.834 f_0F2$.

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

a. Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *f*-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Letters

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

the monthly tabulation sheets.

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

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

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

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

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

d. Description of Standard Types of *Es*

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

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

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

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

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

S A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace. The rising trace alone is classified as *'S'*; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal *Es* trace such as *Es-L*, or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine f_0Es and $h'Es$. The slant trace is sometimes observed to start at f_0E without echoes clearly identifiable as *Es* echoes being seen.

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

e. Multiple Reflections from *Es*

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

B. SOLAR RADIO EMISSION

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

a. Time and Unit

The time is expressed as U.T.

The unit is $10^{-22}\,W\cdot m^{-2}Hz^{-1}$ 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 atmospherics.

U : Inaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.

E : Less than the following figure.

b. Radio Propagation Quality Figures

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

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

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

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

N = normal
U = unstable
W = disturbed

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

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

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

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

(i) SWF

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

Circuits and Drop-out intensities

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

Start-time and Duration

Types

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

Importances

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

1−	1	1+
2−	2	2+
3−	3	3+

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

(ii) SPA

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

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

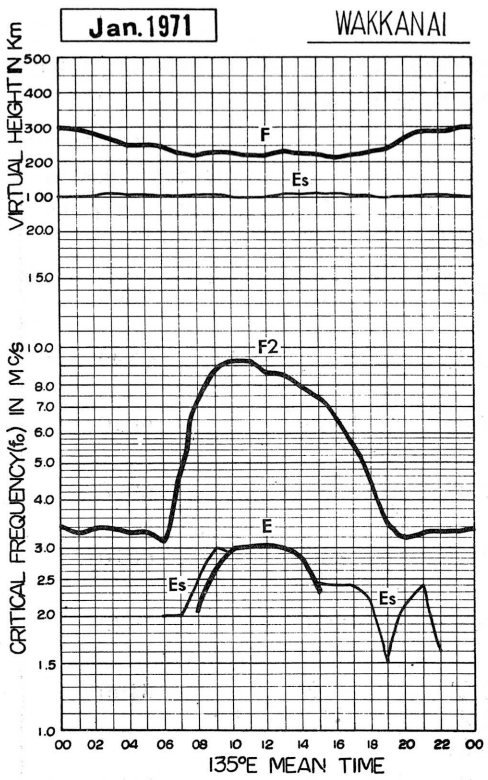
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West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

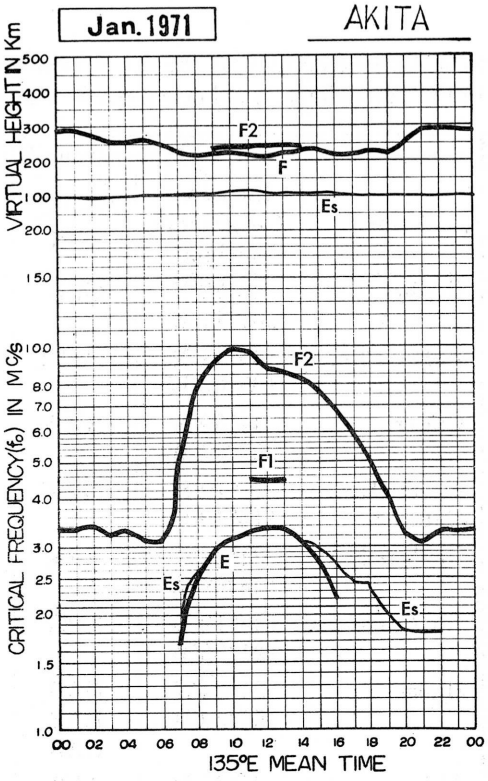
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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

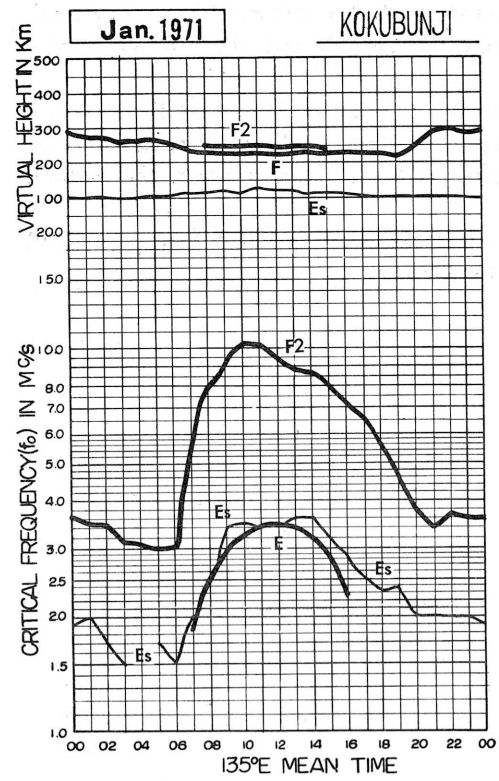
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

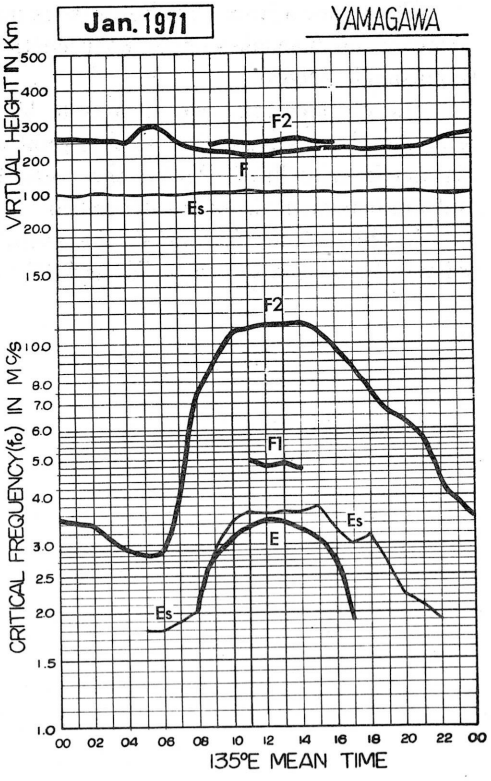
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

JAN. 1971 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	35	33	35	35	37	37	36	48	80	R	89	93	87	88	83	76	61	43	44	34	27	29	31	33
2	36	33	32	33	33	33	27	46	77	88	R	H 91	86	90	82	72	59	44	42	28	27	30	33	35
3	35	34	34	34	34	30	I A 23	41	68	R	86	81	88	83	78	77	64	55	44	33	33	34	33	36
4	35	33	36	34	F 30	33	35	54	86	113	106	105	108	106	94	79	77	58	54	36	33	37	35	F 38
5	F	F	F	F 44	F 31	F 30	F 26	46	81	96	93	96	93	88	91	73	73	67	48	A	A	30	31	33
6	34	33	33	34	33	33	35	48	78	93	103	92	88	87	79	68	67	59	45	28	28	30	31	32
7	34	33	34	34	33	33	31	46	73	88	83	90	83	94	73	67	72	54	45	26	A	27	A	32
8	33	33	33	34	35	34	34	45	68	78	86	80	66	83	78	70	60	60	44	23	25	27	28	F 33
9	F 29	32	F	F	F	F	F 34	46	68	89	81	79	84	H 77	73	68	60	53	46	26	26	30	30	32
10	32	34	36	35	F 34	F 33	31	44	68	88	93	83	H 82	77	73	70	62	53	43	34	31	33	32	31
11	33	34	32	32	27	25	23	48	81	96	87	86	84	84	77	66	63	60	45	27	22	25	27	29
12	29	33	33	F	U F 43	F	F 30	43	74	86	91	86	91	900	74	63	72	53	33	27	32	29	F 31	F
13	F 33	F 33	F 37	F 33	F 33	F	26	46	69	91	92	81	82	85	72	67	57	45	35	33	F 30	F 33	33	36
14	40	42	43	F	F 42	F 36	28	47	74	101	106	93	83	89	78	74	65	53	37	32	32	33	34	36
15	37	33	37	35	36	34	29	53	87	115	113	95	79	75	78	72	72	61	48	36	32	30	28	30
16	30	32	33	33	33	F 33	33	52	93	93	109	97	94	89	85	74	71	52	38	35	29	F 33	F 35	33
17	31	F 33	F 33	F 33	F 33	30	31	48	73	93	104	91	83	83	78	70	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	94	95	88	90	80	78	66	57	40	36	F 34	F 37	F 37	35
20	36	37	38	40	39	34	A	A	69	93	93	94	91	84	79	72	78	73	46	35	32	36	32	36
21	33	30	31	32	33	28	I A 28	43	63	78	93	117	78	83	76	73	63	53	58	53	38	33	35	33
22	31	32	31	33	37	30	26	47	67	82	90	85	84	81	76	72	62	55	45	31	A	33	33	33
23	32	33	33	I A 32	33	33	23	44	67	80	81	84	84	89	82	77	71	55	41	39	34	34	33	33
24	34	34	35	36	41	36	33	47	78	82	76	83	85	96	87	83	62	53	45	32	30	33	34	36
25	37	38	40	35	F 33	F 33	F 33	55	78	96	90	94	91	80	77	71	62	58	64	56	35	37	38	38
26	40	38	38	40	39	38	33	56	78	87	90	C	C	86	79	74	60	C	41	31	28	31	31	33
27	34	35	36	36	37	S	32	51	I C 70	78	I R 82	94	90	86	75	76	C	C	C	C	35	36	38	28
28	31	31	29	A	A	A	A	48	71	89	110	97	75	86	81	76	71	68	55	41	36	S 35	36	38
29	C	S	S	U S 36	42	38	F	50	70	93	99	101	92	80	75	81	76	F 58	F 60	F	F	F	F	F
30	F	F	F	F 24	F 23	F 23	23	50	72	86	92	97	87	84	89	94	78	57	53	45	31	34	34	34
31	38	34	32	31	32	33	38	53	74	91	98	108	93	88	90	88	79	56	58	58	46	43	44	F 40
	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	26	25	25	27	24	26	28	29	27	29	29	29	30	30	30	28	27	28	26	25	28	27	27
MED	34	33	34	34	33	33	31	48	73	89	92	93	86	86	78	73	66	55	45	34	32	33	33	33
UQ	36	34	36	35	37	34	33	50	78	93	99	96	91	89	82	77	72	58	50	36	34	34	35	36
LQ	32	33	33	33	33	30	26	46	69	86	87	85	83	83	76	70	62	53	42	28	28	30	31	32

JAN. 1971 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | 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												440L												
2												400L												
3													400L											
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
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17													L											
18											C	C	C	C	C									
19												L	L 410											
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26																								
27																								
28														L										
29											L													
30																								
31																								

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT												2	2											
MED												L 420	L 405											
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JAN. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOE (0.01 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	205	270	295	300	305	295	265	S	S							
2								A	A	A	A	300	300	290	260	215	S							
3								A	200	260	290	300	300	300	270	210	S							
4							E	S	A	A	295	300	305	300	285	230	A							
5								A	A	A	300	I A 310	305	300	A	A	A							
6								A	235	270	290	300	305	300	270	220	S							
7								A	A	I A 280	300	305	310	300	A	A	A							
8								A	A	A	A	A	300	I A 295	275	A	A							
9								S	205	255	290	300	305	300	275	205	A							
10								S	205	285	300	300	310	295	290	240	S							
11								E	200	270	300	310	305	305	280	215	A							
12								A	220	265	300	300	305	300	290	215	A							
13								S	205	270	295	300	300	295	280	220	A							
14								S	200	270	300	305	305	305	285	215	A							
15								A	A	A	305	305	300	300	B	B	A							
16								A	200	265	295	300	305	300	265	A	A							
17								A	A	275	300	305	305	300	280	235	C							
18								C	C	C	C	C	C	C	C	C	C							
19								C	C	C	300	300	305	300	280	230	A							
20								A	A	280	300	305	300	300	280	A	A							
21								A	230	280	300	300	300	300	295	230	A							
22								S	A	A	300	305	300	300	290	235	S							
23								A	A	A	A	300	305	305	I A 300	240	A							
24								A	240	285	300	295	300	300	295	A	A							
25								A	215	B	340	320	300	320	300	270	A	S						
26								S	215	285	305	310	A	A	A	A	A	S						
27								S	215	275	300	310	320	315	300	260	C	C						
28	S	E					S	S	A	255	300	305	310	305	285	250	A	E						
29								S	205	270	295	300	I A 300	300	295	A	A	A						
30								A	A	A	300	310	315	315	290	A	A	A						
31								S	220	260	300	305	305	305	290	I A 260	200	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1					1	1	17	20	27	29	29	29	26	19	1	1						
MED		E					E	E	205	270	300	300	305	300	285	230	200	E						
UQ									220	280	300	305	305	305	290	240								
LQ									205	265	295	300	300	300	275	215								

The Radio Research Laboratories, Japan

JAN. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOES (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 15	J X 25	24	J X 31	J X 25	J X 24	J X 20	E S 15	G	G	G 22	G 26	G 23	G	G	E S 23	E S 17	E S 15	E	E	E S 15	J X 25	J X 33	28
2	E S 16	25	E	E	E	E	J X 23	J X 31	J X 32	J X 54	35	G 25	G 29	G	G	G	E S 17	E S 15	E S 15	E	E S 15	J X 25	J X 25	J X 25
3	E	E S 15	E S 15	E	E	E	33	20	G	J X 51	G	G 27	G 22	G	31	23	E S 15	E S 13	E	E S 15	E	J X 26	E S 15	J X 21
4	25	J X 23	J X 21	E	E	E	E	E S 15	28	34	31	G	G	G 22	G 28	30	26	J X 35	J X 43	J X 55	J X 53	J X 33	J X 33	J X 21
5	E S 16	E S 15	15	E	E	J X 21	28	25	J X 63	J X 45	J X 36	J X 39	33	J X 55	J X 34	28	23	J X 25	J X 25	J X 78	J X 53	J X 33	J X 25	J X 24
6	J X 25	E	E	E	E	E	J X 21	20	24	G 20	G	G 26	G 27	G	G	G	E S 20	E S 16	E S 15	E S 15	E S 15	25	J X 36	E S 15
7	E	E	E	E	E	E	E	20	24	30	G	36	G 30	G 25	30	23	25	J X 32	J X 26	J X 33	J X 43	J X 33	J X 43	J X 25
8	J X 24	J X 24	E	E	E	E	E	20	J X 33	J X 54	J X 41	39	G 28	J X 41	37	40	36	E S 15	E S 15	E	E S 15	E S 15	21	23
9	J X 24	J X 39	J X 23	E	E	E	23	E S 15	25	32	G	G	G	G	G 26	25	20	E S 15	E S 14	E S 15	25	25	E	E S 16
10	E S 15	E	E	E	E	E	E	26	G	G	G	G	G	G	G	G	E S 17	J X 53	J X 38	J X 53	J X 23	J X 30	E S 16	E S 17
11	E	E	E	E	E	E	E S 16	G	28	G	G 20	G	G	41	34	38	26	21	E S 15	16	E S 15	E	E S 15	E S 15
12	E S 15	E	E	E	E	E	19	23	J X 32	32	G	G	G	G	G	G	19	24	J X 25	E S 15	E	J X 23	E	30
13	E	E	J X 23	16	15	E	E	G	G	G	G	G	G 24	G	G 20	J X 40	J X 26	J X 43	J X 25	J X 25	E	24	E S 15	E S 15
14	E S 15	E	E	E	E	24	E	E S 15	G	G	G	G	G	G	32	32	J X 35	J X 25	E	E S 15	J X 25	E S 15	E	E S 15
15	E	E	E	15	J X 23	24	J X 28	J X 63	J X 60	J X 63	34	G	G	G	E B 33	E B 28	22	J X 53	J X 65	E S 15	E	E S 15	E S 15	E
16	E S 15	E S 15	E	E	15	J X 31	J X 31	28	G	G	G	G	G	45	33	J X 60	J X 35	J X 28	J X 25	J X 23	J X 21	J X 24	J X 23	E S 15
17	E	E	E	E	J X 23	E	18	28	33	33	G	G	G	G	G	G	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	23	E	E	E S 15	J X 26	J X 23	E S 15	J X 40
20	J X 25	J X 26	E	E	E	E S 15	J X 58	J X 51	J X 63	30	G	G	G	G	G	25	J X 24	J X 23	J X 23	E S 15	E S 15	24	24	J X 25
21	J X 23	J X 23	E	20	E	16	34	J X 43	32	31	G	G	G 20	J X 113	G	G 20	21	J X 24	23	E S 15	E S 15	E S 17	E S 15	E
22	E	E	E	E	E	E	E	E S 17	24	32	J X 43	32	G	G	G	G	21	E S 15	27	M 35	J X 65	J X 33	J X 34	26
23	28	26	J X 25	J X 40	J X 50	J X 35	J X 31	J X 33	J X 40	J X 49	39	34	G 30	G	30	G	27	E S 15	21	J X 24	J X 30	J X 25	28	E S 15
24	28	J X 25	E S 15	E	E	15	J X 30	J X 26	G 20	G	G	G	G	G	G	26	26	J X 28	21	E S 15	E S 15	E S 15	J X 30	J X 30
25	J X 25	J X 30	J X 25	J X 30	J X 28	J X 20	J X 25	20	25	E B 44	G	G	G 25	G 30	G	G	J X 29	J X 24	J X 31	J X 30	J X 23	24	E S 16	E S 15
26	E S 15	E S 14	E	15	E S 15	J X 25	E S 15	E S 18	G	G	G	G	37	33	J X 33	33	J X 40	J X 25	J X 25	J X 24	26	J X 24	E S 12	E S 16
27	J X 24	E S 16	E	E	E	E	E S 15	G	G	G	G	G	G	G	33	G	C	C	C	C	J X 24	27	E S 16	E S 16
28	26	19	18	J X 28	J X 63	J X 43	M 31	25	32	38	48	44	45	36	J X 41	J X 50	J X 60	J X 31	J X 30	J X 23	J X 21	J X 25	J X 25	E S 15
29	C	E S 17	E S 16	E S 15	J X 40	19	J X 24	E S 17	24	G	G	G	34	43	35	30	25	19	E	E	28	E	E S 16	E
30	E S 16	E	E	E	E	E	E	J X 26	J X 31	J X 50	31	G	G	G	45	33	J X 55	J X 25	E S 15	E S 15	J X 24	E S 16	J X 25	J X 23
31	E	E	E S 16	E	E	E S 15	E	E S 17	G	G	G	G	G	G	G	34	G	J X 23	E S 14	E S 15	E S 15	J X 24	E S 15	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	28	28	28	28	29	29	29	29
MED	16	E 15	E	E	E	E	20	20	25	30	G	G	G	G	G 25	24	24	J X 24	22	15	21	J X 24	16	E 16
UQ	24	J X 24	16	15	15	21	J X 28	26	J X 32	44	31	G 26	G 28	33	33	33	28	J X 28	J X 26	J X 24	J X 26	J X 25	J X 25	J X 25
LQ	E	E	E	E	E	E	E	E S 17	G	G	G	G	G	G	G	G	20	E S 15	E E 14	E S 15	E S 15	17	E S 15	E S 15

The Radio Research Laboratories, Japan

JAN. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 15	19	E	18	E	E	E	E S 15	G	G	G 20	G 23	G 20	G	G	E S 23	E S 17	E S 15	E	E	E S 15	20	17	E
2	E S 16	E	E	E	E	E	17	15	27	26	28	G 22	G 22	G	G	G	E S 17	E S 15	E S 15	E	E S 15	15	15	18
3	E	E S 15	E S 15	E	E	E	A	16	G	G	G	G 20	G 21	G	20	18	E S 15	E S 13	E	E S 15	E	17	E S 15	E
4	E	15	E	E	E	E	E	E S 15	23	27	26	G	G	G 22	G 23	18	21	18	35	20	E	17	E	17
5	E S 16	E S 15	E	E	E	15	17	14	23	27	25	32	26	25	28	23	19	15	E	A	A	18	17	16
6	17	E	E	E	E	E	E	14	17	G 18	G	G 21	G 20	G	G	G	E S 20	E S 16	E S 15	E S 15	E S 15	18	17	E S 15
7	E	E	E	E	E	E	E	15	22	28	G	28	25	G 24	27	23	18	26	16	17	A	17	A	17
8	20	16	E	E	E	E	E	15	23	37	36	31	G 23	32	23	27	20	E S 15	E S 15	E	E S 15	E S 15	E	E
9	16	20	16	E	E	E	E	E S 15	G	G	G	G	G	G	G 17	G	18	E S 15	E S 14	E S 15	E	E	E	E S 16
10	E S 15	E	E	E	E	E	E	E S 15	G	G	G	G	G	G	G	G	E S 17	E	18	16	E	17	E S 16	E S 17
11	E	E	E	E	E	E	E S 16	G	G	G	G 20	G	G	G	G	G	18	17	E S 15	E	E S 15	E	E S 15	E S 15
12	E S 15	E	E	E	E	E	18	16	17	18	G	G	G	G	G	G	19	15	22	E S 15	E	17	E	16
13	E	E	16	E	E	E	E	G	G	G	G	G	G 20	G	G 20	18	18	20	18	21	E	E	E S 15	E S 15
14	E S 15	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	19	23	E	E S 15	E	E S 15	E	E S 15
15	E	E	E	14	E	15	17	40	27	36	26	G	G	G	E B 33	E B 28	22	20	24	E S 15	E	E S 15	E S 15	E
16	E S 15	E S 15	E	E	E	16	E	16	G	G	G	G	G	45	G	26	16	16	E	E	15	17	16	E S 15
17	E	E	E	E	18	E	E	17	22	G	G	G	G	G	G	G	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	21	E	E	E S 15	E	E	E S 15	E
20	E	E	E	E	E	E S 15	A	A	45	22	G	G	G	G	G	25	20	20	16	E S 15	E S 15	E	E	E
21	E	18	E	E	E	E	A	30	G	21	G	G	G 19	G	G	G 16	20	15	E	E S 15	E S 15	E S 17	E S 15	E
22	E	E	E	E	E	E	E	E S 17	24	28	26	20	G	G	G	G	21	E S 15	17	20	A	20	18	18
23	E	16	23	A	25	20	E	17	23	30	31	21	G 20	G	30	G	20	E S 15	19	17	E	17	E	E S 15
24	E	15	E S 15	E	E	E	E	18	17	G	G	G	G	G	G	26	23	15	E	E S 15	E S 15	E S 15	E	E
25	E	19	17	20	16	E	E	18	G	E B 44	G	G	G 25	G 28	G	G	22	18	15	16	17	E	E S 16	E S 15
26	E S 15	E S 14	E	E	E S 15	17	E S 15	E S 18	G	G	G	G	36	33	30	29	25	20	19	18	E	17	E S 12	E S 16
27	E	E S 16	E	E	E	E	E S 15	G	G	G	G	G	G	G	25	G	C	C	C	C	20	16	E S 16	E S 16
28	18	17	12	A	A	A	A	21	24	35	47	43	44	G	G	G	25	E	17	E	E	E	E	E S 15
29	C	E S 17	E S 16	E S 15	18	E	16	E S 17	G	G	G	G	34	26	G	28	21	16	E	E	E	E	E S 16	E
30	E S 16	E	E	E	E	E	E	18	26	30	22	G	G	G	42	26	22	15	E S 15	E S 15	20	E S 16	E	E
31	E	E	E S 16	E	E	E S 15	E	E S 17	G	G	G	G	G	G	G	28	G	12	E S 14	E S 15	E S 15	E	E S 15	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	28	28	28	28	29	29	29	29
MED	E	E E 14	E	E	E	E	E	16	17	E G 18	G	G	G	G	G	E G 17	20	15	15	15	15	E E 16	E E 15	E E 15
UQ	E S 16	16	E E 15	E	E	15	17	18	23	28	25	G 21	G 22	G 22	23	26	21	18	18	16	E S 15	17	E S 16	E S 16
LQ	E	E	E	E	E	E	E	15	G	G	G	G	G	G	G	G	18	15	E	E E 15	E	E	E	E

JAN. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | F-MIN (0.1 MHZ) | 135 E Mean Time (G. M. T. + 9h)

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

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

JAN. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | 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	285	305	295	290	290	305	335	335	345	R	360	360	345	335	325	355	330	325	340	330	320	295	290	280
2	305	290	280	290	290	305	320	325	355	345	R	H 315	330	355	330	345	310	340	350	340	265	285	280	285
3	295	280	275	290	310	335	I A 295	315	330	R	360	360	360	325	335	335	345	320	340	325	305	270	270	270
4	275	280	285	290	F 265	270	280	320	355	370	340	335	335	340	340	350	335	315	335	335	300	295	295	F 270
5	F	F	F	F 305	F 290	F 305	F 285	335	360	355	360	355	360	335	350	340	320	360	345	A	A	280	290	295
6	295	280	290	310	275	270	315	350	335	360	350	360	365	345	345	355	305	315	335	310	305	295	290	280
7	280	280	280	305	300	280	320	325	340	365	325	375	325	355	355	305	330	335	365	345	A	280	A	275
8	280	285	280	295	300	325	320	315	340	350	345	350	360	350	345	345	335	315	350	305	295	265	280	F 275
9	F 285	270	F	F	F	F	F 315	335	340	360	360	370	350	H 315	355	300	325	320	355	345	295	305	300	280
10	280	280	290	325	F 310	F 305	305	320	355	345	345	350	H 320	315	335	355	325	320	325	305	295	275	280	290
11	280	300	305	290	320	290	285	315	320	350	345	335	320	335	350	335	315	320	335	335	275	280	260	275
12	275	275	275	F	J F 285	F	F 335	325	340	345	355	330	335	370	350	340	335	340	305	315	315	285	F 270	F
13	F 275	F 290	F 290	F 325	F 300	F	325	315	335	350	350	370	330	355	345	345	315	335	315	330	F 295	F 295	300	325
14	290	275	280	F	F 290	F 305	285	315	330	335	355	345	325	335	335	355	325	320	310	295	295	295	270	270
15	270	275	285	285	290	295	285	320	345	350	345	360	345	345	350	365	320	315	335	315	295	300	270	265
16	275	310	275	275	285	F 275	305	310	355	355	350	355	345	335	340	340	340	330	320	345	305	F 270	F 280	305
17	285	F 275	F 295	F 295	F 275	295	310	285	340	345	355	365	330	330	345	335	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	340	340	330	325	335	340	335	325	325	320	F 295	F 300	F 295	285
20	295	270	295	305	290	300	A	A	320	345	335	340	320	335	320	320	325	335	320	315	280	290	260	305
21	290	265	260	270	305	305	I A 330	325	335	345	335	355	335	335	335	340	335	290	310	320	325	305	300	290
22	290	280	270	295	320	305	340	320	350	360	355	345	330	335	340	345	335	325	320	305	A	280	305	305
23	290	270	280	I A 290	290	305	325	325	335	350	355	350	350	335	330	340	340	325	310	320	325	295	305	295
24	295	295	285	285	310	285	305	320	360	330	360	340	330	365	340	350	340	320	335	320	265	275	295	290
25	305	310	320	305	F 280	F 285	F 290	325	345	355	335	325	335	340	325	340	325	295	315	340	315	295	290	305
26	265	290	290	285	305	330	305	320	345	340	325	C	C	335	330	340	330	C	325	340	285	290	290	280
27	280	295	285	300	305	S	310	345	I C 365	345	I B 340	340	355	335	330	355	C	C	C	C	295	285	320	270
28	260	260	260	A	A	A	A	290	325	305	290	310	325	300	320	330	325	310	325	345	280	S 295	265	270
29	C	S	S	U S 255	260	295	F	305	325	350	330	325	355	340	335	335	340	F 310	F 315	F	F	F	F	F
30	F	F	F	F 270	F 275	F 250	F 285	340	345	350	340	355	345	320	305	340	340	300	320	355	270	265	270	280
31	290	310	280	260	270	275	330	330	340	320	345	340	330	330	310	330	340	320	295	335	310	290	305	F 285
	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	26	25	25	27	24	26	28	29	27	29	29	29	30	30	30	28	27	28	26	25	28	27	27
MED	285	280	285	290	290	298	310	320	340	350	345	350	335	335	335	340	330	320	325	328	295	290	290	280
UQ	290	295	290	305	305	305	325	328	350	355	355	360	350	345	345	350	338	328	338	340	305	295	298	292
LQ	275	275	280	285	282	282	290	315	335	345	335	340	330	330	330	335	325	315	315	315	285	280	270	275

JAN. 1971 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JAN. 1971 | M(3000)F1 (0.01) | 135 E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												385L												
2												410L												
3													375L											
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17													L											
18											C	C	C	C	C									
19												L	L 415											
20																								
21												L												
22																								
23																								
24																								
25																								
26																								
27																								
28														L										
29											L													
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT												2	2											
MED												398L	395L											
UQ																								
LQ																								

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JAN. 1971 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JAN. 1971 | H'F2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1												225												
2												210												
3													235											
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17													220											
18											C	C	C	C	C									
19												235	235											
20																								
21												235												
22																								
23																								
24																								
25																								
26																								
27																								
28														275										
29											265													
30																								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											1	4	3	1										
MED											265	230	235	275										
UQ												235	235											
LQ												218	228											

The Radio Research Laboratories, Japan

JAN. 1971 | H'F2 (KM)

IONOSPHERIC DATA

JAN. 1971 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	295	300	275	300	280	255	225	220	205	215	210	210	210	225	225	215	205	220	215	215	250	300	280	305
2	250	255	290	270	275	250	250	220	215	215	205	200	220	220	215	210	200	205	215	225	310	320	310	305
3	270	300	300	285	250	210	A	235	220	220	215	220	220	215	225	225	215	225	220	235	265	315	325	310
4	305	300	275	250	275	305	280	215	210	225	215	225	225	225	220	210	215	225	230	240	250	265	250	305
5	300	325	285	225	225	250	300	225	220	215	215	215	220	220	225	215	220	210	225	A	A	325	300	300
6	290	295	275	250	300	300	250	215	220	220	225	215	220	225	220	210	225	215	220	235	270	290	290	310
7	300	295	290	235	230	225	220	215	210	220	215	220	215	240	215	210	225	220	215	250	A	320	A	315
8	320	275	265	260	250	230	220	200	205	215	225	220	220	240	225	230	215	235	215	240	310	310	320	290
9	295	325	300	295	270	250	230	220	210	225	220	215	205	220	225	210	210	230	210	210	285	265	280	295
10	300	290	260	225	225	260	210	240	210	220	215	225	225	225	235	225	215	220	220	250	275	320	300	305
11	300	260	245	250	220	275	350	245	230	230	225	225	225	240	235	220	215	220	225	230	305	300	350	310
12	315	300	300	285	250	220	225	240	225	225	225	205	235	235	220	205	225	205	260	250	250	275	300	320
13	330	300	280	225	240	270	250	230	210	225	225	220	200	245	220	220	200	230	260	260	290	275	275	275
14	275	300	275	250	235	240	300	230	220	230	230	225	225	235	220	225	220	225	210	260	270	295	315	300
15	275	300	275	275	280	250	290	A	230	230	220	215	220	225	225	225	225	230	240	240	250	265	315	315
16	300	310	290	300	300	285	265	220	225	215	225	220	225	240	220	220	210	210	250	240	260	340	300	250
17	280	290	270	265	300	275	250	215	215	220	225	215	210	200	225	225	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	225	215	210	230	225	230	215	220	215	240	275	275	250	275
20	300	295	255	235	220	250	A	A	225	230	225	235	215	230	220	235	245	220	225	225	290	290	350	275
21	260	330	340	315	225	250	270	240	220	225	235	240	215	225	225	225	220	230	250	225	230	280	275	250
22	260	275	300	265	230	215	235	220	210	215	225	225	225	230	225	215	215	220	220	300	A	325	285	270
23	300	300	350	320	320	260	250	225	215	225	225	225	210	240	230	230	260	275	260	270	235	230	220	220
24	260	275	260	270	235	230	220	220	210	220	220	220	230	245	225	220	205	210	220	230	290	305	275	290
25	265	260	240	275	295	270	275	230	210	225	215	240	220	225	230	225	220	240	240	220	225	260	275	250
26	310	280	290	270	240	225	250	220	220	220	225	230	230	230	225	225	220	215	225	230	300	300	280	300
27	300	290	280	260	250	260	250	220	215	225	225	240	225	235	225	230	C	C	C	C	235	285	245	305
28	350	350	335	A	A	A	A	270	245	250	260	250	260	240	240	240	240	215	220	210	300	270	300	305
29	C	315	340	345	325	275	250	240	215	245	225	240	225	235	220	245	215	240	225	225	240	260	280	300
30	275	285	320	315	310	320	290	230	210	225	225	225	215	220	225	245	215	200	230	215	370	345	335	300
31	300	250	300	305	300	300	225	220	210	220	225	225	215	230	220	230	225	205	260	220	240	255	250	260
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	28	28	28	26	27	29	29	30	30	30	30	30	30	28	28	28	27	26	29	28	29
MED	300	295	285	270	250	252	250	220	215	225	225	222	220	230	225	225	215	220	225	235	270	290	288	300
UQ	300	300	300	298	298	275	275	232	220	225	225	225	225	240	225	230	225	230	240	245	290	315	312	305
LQ	275	280	275	250	232	235	225	220	210	220	215	215	215	225	220	215	215	212	218	225	250	270	275	275

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IONOSPHERIC DATA

JAN. 1971 | H'ES (KM) | 135 E Mean Time (G. M. T. + 9h)

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

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

JAN. 1971 | H'ES (KM)

IONOSPHERIC DATA

JAN. 1971 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F2	F1	F2	F2	F1	F1				L1	L1	L1									F1	F2	F1
2		F1					F2	L1	L1	L1	L1	L1	L1									F1	F1	F2
3							F3	L1		L1		L1	L1		L1	L1						F2		F1
4	F1	F1	F1						L2	L1	L1			L1	L1	L1	L1	F2	F2	F2	F1	F2	F1	F2
5			F1			F1	F2	L1	L2	L1	L1	L2	L1	L1	L1	L1	L1	F1	F1	F2	F2	F2	F1	F2
6	F2						F1	L1	L1	L1		L1	L1									F1	F2	
7								L1	L1	L1		L1	L1	L1	L1	L1	L1	F3	F1	F1	F4	F2	F4	F2
8	F2	F1						L1	L2	L2	L2	L2	L2	L2	L2	L2	L1						F1	F1
9	F2	F3	F1				F1		H1	C1					L1	C1	L1				F1	F1		
10								L1										F1	F2	F1	F1	F1		
11									H1		L1			C1	C1	C1	L1	F1		F1				
12							F1	L1	L1	L1							L1	F1	F2			F1		F1
13			F2	F1	F1								L1		L1	L1	L1	F3	F2	F2		F1		
14						F1									H1	C1	L1	F2			F1			
15				F1	F2	F2	F2	L4	L1	L1	L1						L1	F2	F2					
16					F1	F2	F1	L1						C2	C1	L2	L1	F1	F1	F1	F2	F2	F1	
17					F2	F2	F1	L1	L1	L1														
18																								
19																	L1				F2	F1		F1
20	F1	F2					F3	L3	L2	L1						L1	L1	F1	F1			F1	F1	F1
21	F1	F1		F1		F1	F4	L3	L1	L1			L1	L1		L1	L1	F1	F1					
22									L1	L1	L1	L1					L1		F1	F2	F3	F1	F2	F2
23	F1	F1	F2	F3	F3	F3	F1	L1	L1	L1	L1	C11	L1		L1		L1		F1	F2	F1	F1	F1	
24	F1	F1				F1	F1	L1	L1							L1	L1	F1	F1				F1	F2
25	F1	F3	F3	F2	F2	F1	F1	L1	H1				L1	L1			L1	L2	F1	F1	F2	F1		
26				F1		F2							L1	L1	L1	L1	L1	L1	F2	F2	F1	F1		
27	F1														L1						F2	F1		
28	H1	C1	F1	F3	F6	F4	C1	C3	L2	C2	C1	C1	C2	C1	H1	C1	L2	L1	F1	F1	F2	F1	F1	
29					F2	F1	F2		C1				L1	C11	C1	L1	L2	L1			F1			
30								L1	L2	L1	L1				C2	L1	L1	L1			F2		F1	F1
31																L1		L1				F1		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

JAN. 1971 | TYPES OF ES

IONOSPHERIC DATA

JAN. 1971 | 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	I R 32	32	34	33	36	36	36	I R 58	I C 84	I R 98	98	87	83	94	96	82	68	50	46	42	32	27	27	32
2	33	I R 32	I C 33	33	I C 32	32	34	I C 46	80	96	96	94	105	96	91	71	62	48	C	C	C	29	33	35
3	36	33	36	I R 36	37	I C 32	29	46	S 65	94	95	89	87	84	81	76	72	54	45	42	33	32	34	37
4	35	37	34	33	32	I C 33	34	I R 64	84	97	115	108	118	99	96	87	71	68	I C 56	38	I A 36	320	I A 34	F
5	F	F	F	45	37	27	26	S 53	88	I R 106	118	99	H 86	84	97	88	67	79	58	45	A	A	31	32
6	34	31	33	32	33	31	S 34	I R 58	I R 70	92	119	87	109	91	74	73	61	72	58	F 34	31	31	29	31
7	32	32	34	30	34	33	30	I R 54	I R 75	84	94	99	94	80	87	72	59	78	51	37	26	26	I A 29	I A 31
8	32	34	33	28	31	S 33	29	51	64	80	94	83	81	77	81	72	76	58	59	29	22	26	F 29	F
9	F 31	F 33	31	32	F	F	F 38	S 51	I R 70	81	I R 93	79	77	H 80	79	72	66	46	54	38	23	28	F 29	F 32
10	S 33	I R 34	F	33	31	32	33	S 49	S 71	76	89	86	79	77	74	64	62	55	54	I C 37	33	30	F	F
11	39	37	34	30	31	29	27	S 52	S 76	89	108	90	86	83	89	71	59	59	58	36	27	23	26	28
12	31	33	31	31	33	36	31	I R 50	I R 76	99	86	91	82	92	81	71	62	70	47	33	26	26	31	33
13	F 37	F	F 42	F 38	F 26	23	27	S 47	87	95	113	89	73	83	77	67	62	43	42	38	29	F	S 34	33
14	F 34	35	36	F 33	F 39	29	31	49	78	I R 99	114	99	88	87	82	77	69	57	48	38	32	34	35	41
15	39	36	37	39	36	37	33	51	94	114	122	105	87	77	80	72	68	64	55	42	37	38	31	32
16	31	32	33	32	33	34	32	59	103	115	107	105	91	91	82	80	73	67	49	39	I A 30	27	I R 30	32
17	33	32	28	27	29	30	26	52	86	99	112	102	87	82	81	78	66	68	47	30	24	F 27	26	C
18	C	C	31	29	33	25	I A 26	49	I R 90	114	117	106	107	96	90	I A 78	A	A	44	I A 36	32	30	33	33
19	31	31	32	32	28	22	21	S 50	86	I R 99	112	99	91	83	86	77	69	61	48	36	37	F	F	32
20	34	36	36	36	36	35	32	I R 56	I R 80	S 93	98	103	104	96	78	77	79	78	64	43	31	33	32	35
21	38	28	27	29	30	26	23	I R 52	I R 78	84	90	105	I C 78	78	77	75	68	57	51	53	45	32	34	31
22	33	32	34	35	36	30	29	54	I R 70	84	90	96	88	86	79	72	64	56	49	42	29	31	37	34
23	33	33	33	36	33	27	27	48	67	78	93	86	80	76	85	73	72	59	46	43	37	31	33	34
24	33	35	34	36	39	30	32	54	74	79	94	83	82	88	95	80	62	54	53	41	29	32	34	35
25	40	33	33	32	28	31	31	54	86	87	108	96	93	82	74	72	63	56	61	68	37	34	36	36
26	35	36	36	36	34	37	36	54	70	86	87	96	94	88	84	78	70	55	46	32	28	28	31	31
27	31	32	34	32	31	31	28	53	69	75	99	86	87	85	81	76	67	54	65	59	34	31	40	26
28	26	29	30	31	27	25	22	54	79	I R 105	R 134	114	84	91	89	79	I C 75	69	I R 58	42	38	37	36	36
29	37	36	36	36	36	I R 36	36	67	81	84	I R 102	106	101	82	83	76	89	62	60	S 62	44	46	41	40
30	C	C	C	C	C	C	C	C	C	V 80	I C 96	I R 101	95	89	84	89	92	64	46	40	30	35	36	41
31	40	32	30	29	29	31	39	53	70	86	I R 102	105	96	85	88	90	81	65	45	61	48	40	38	38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	30	29	29	30	30	30	31	31	31	31	31	31	31	30	30	30	30	29	28	29	27
MED	33	33	34	32	33	31	31	52	78	92	99	96	87	85	82	76	68	59	51	40	32	31	33	33
UQ	36	35	35	36	36	33	34	54	86	99	112	104	94	91	88	78	72	68	58	43	37	34	35	36
LQ	32	32	32	31	31	29	27	50	70	84	94	88	82	82	80	72	62	55	46	36	29	28	30	32

JAN. 1971 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	U L 440	U L 420	L										
2											390	L	L 430	L										
3										U L 400	L	L	U L 500	U L 440	U L 390									
4										L	L	L	L	L	L									
5											L	L	L	U L 440	U L 450									
6											L	L	L 460	L	L									
7											L	L	U L 480	L	L									
8										L	L	L	L	L	L									
9											L	L	U L 450	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L	L									
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L									
14										L	L	L	L	L	L									
15										L	U L 450	L	L	L	L									
16										L	L	L	U L 500	L	L									
17										L	L	L	U L 440	L	L									
18										L	L	L	L 400	L	L									
19										L	L	L	L	L 450	L									
20									L	L	L	L	L	L	L									
21										L	L	L	C	L	L									
22										L	L	U L 480	L	U L 450	L									
23										L	L	A	L	L	L									
24											L	L	L	L	L									
25										B	L	L	L	L	L									
26										L	L	U L 490	L	L	L									
27										L	L	L	L	L	L									
28										L	L	L	A	U L 500	L	L								
29										L 600	L	L	L	L	L									
30											I C 410	400	L	L										
31									310	L	L	450	420	L	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	2	3	5	10	5	2									
MED									310	L 500	410	U L 450	U L 445	U L 450	U L 420									
UQ											430	U L 480	U L 480	U L 450										
LQ											400	440	L 420	U L 440										

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JAN. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	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	I C 260	305	320	330	340	335	305	250	A							
2								C	I A 255	300	315	330	335	325	295	250	A							
3								165	I A 245	300	315	335	345	335	310	255	A							
4								170	250	I A 285	315	330	340	335	305	I A 260	A							
5								A	245	295	315	330	I A 340	330	300	260	A							
6								A	I A 240	300	320	330	340	335	305	265	200							
7								A	A	I A 295	I A 310	330	340	345	315	270	215							
8								A	255	300	320	330	340	330	I A 300	255	A							
9								S	235	295	315	325	335	335	305	265	205							
10								S	I A 250	295	315	330	335	335	I A 310	275	205							
11								S	250	295	315	330	I A 340	330	305	265	A							
12								A	250	300	320	330	345	335	305	265	220							
13								B	250	295	315	330	340	340	310	270	220							
14								S	235	300	320	335	345	340	330	285	A							
15								A	255	300	320	330	340	335	310	A	A							
16								A	255	300	320	330	345	340	320	265	A							
17								A	A	295	320	330	345	335	315	270	A							
18								A	255	295	320	335	345	340	A	A	A							
19								170	250	295	320	335	345	335	315	285	225	S						
20								160	255	I A 300	320	I A 330	340	I A 335	325	290	235	S						
21								A	235	295	I A 315	335	I C 340	335	315	275	220	E						
22								B	250	300	315	325	335	I A 330	I A 310	285	A	S						
23								A	255	295	315	330	I A 340	I A 340	I A 320	280	235	S						
24								A	260	300	320	335	345	340	I A 320	I A 260	I A 215	B						
25								A	255	B	B	R 330	I B 340	345	335	295	240	S						
26								170	250	300	A	A	A	345	I A 320	285	A	S						
27								165	245	300	320	340	I A 345	350	315	I A 270	230	B						
28								B	I A 245	295	320	335	I A 340	I A 340	A 330	A	C	S						
29								A	260	I R 300	A	A	335	340	310	285	A	S						
30								C	C	I R 280	I C 310	I A 325	335	340	305	A	A	S						
31								S	220	275	300	315	325	330	305	280	A	S						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								6	28	30	28	29	30	31	30	27	13	1						
MED								168	250	298	318	330	340	335	310	270	220	E						
UQ								170	255	300	320	335	345	340	320	282	230							
LQ								165	245	295	315	330	340	335	305	262	215							

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JAN. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOES (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J X 34	J X 27	J X 24	J X 25	E S 14	E S 14	E S 14	J X 19	C	G	G	J G 29	G	G	G	J X 26	J X 34	J X 20	E S 14	E S 13	E S 13	E S 14	E S 14	E S 14
2	E S 14	E S 14	C	E S 14	C	E S 14	J X 18	C	J X 37	J X 38	J G 29	G	J X 70	G	G	J X 39	J X 35	E S 14	C	C	C	J X 23	J X 27	J X 29
3	J X 20	E S 14	J X 28	J X 20	J X 22	C	E S 14	J X 20	J X 93	J G 29	G	G	G	G	G	28	J X 24	E S 14	E S 14	J X 39	J X 23	E S 14	E S 14	J X 19
4	E S 14	J X 20	J X 24	J X 19	J X 19	C	E S 14	G	J X 38	J X 37	J X 37	G	G	G	J G 30	J X 28	J X 23	J X 20	C	J X 45	J X 39	J X 63	J X 53	J X 34
5	J X 25	J X 36	J X 38	J X 23	J X 19	E S 14	E S 14	20	27	32	G	J X 43	J X 46	J X 43	J G 29	J X 33	J X 30	J X 25	J X 20	J X 26	J X 90	J X 49	J X 29	J X 20
6	J X 34	J X 23	E S 14	J X 29	J X 16	E S 14	E S 14	J X 29	J X 29	G	G	G	G	J G 28	G	J G 23	G	E S 14	J X 24	J X 40	J X 25	J X 24	J X 28	J X 27
7	J X 25	J X 24	E S 14	E S 14	E S 14	E S 14	E S 14	J X 23	27	31	34	G	G	G	G	G	G	E S 14	J X 40	J X 40	J X 32	E S 14	J X 84	J X 43
8	J X 24	E S 13	E S 14	E S 13	E S 14	E	E S 14	21	G	32	J X 46	36	G	J X 38	J X 44	J X 29	J X 24	J X 33	J X 24	E S 14	E S 14	E S 14	J X 33	E S 14
9	J X 20	E	E S 14	J X 20	J X 19	E S 13	E S 13	E S 16	G	G	35	J X 44	G	G	J X 38	J X 38	G	E S 14	E S 14	E S 14	E S 14	E S 13	J X 23	J X 19
10	E S 13	J X 19	E S 14	E	E	E S 13	E S 14	E S 16	28	G	G	G	G 26	G 32	36	G	G	E S 14	J X 44	C	E S 14	J X 23	E S 14	E S 13
11	E S 14	E S 14	E	E S 14	E S 13	E S 13	E S 14	E S 16	G	G	36	35	38	39	37	33	J X 27	J X 20	E S 13	E S 13	E S 14	E S 14	E S 14	E S 14
12	E S 13	E	E S 14	E S 14	E	E S 14	E S 14	J X 24	G	33	G	G	G	G	G	J X 29	G	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
13	E S 13	J X 20	E S 14	E	E S 13	E S 14	E S 14	E B 18	G	G	G	G	G	36	G 27	G	G	J X 33	J X 35	J X 20	J X 18	E S 14	E S 14	E S 14
14	E S 13	E S 13	E S 13	E S 13	E	E	E S 13	E S 17	G	G	G	G	G	36	G	34	J X 48	J X 35	J X 34	E S 14	E S 14	E S 13	E S 14	E S 14
15	E S 14	E S 14	E S 13	E	J X 19	E S 14	J X 23	J X 25	J G 20	G	G	J X 34	G	G	36	J X 32	J X 55	J X 51	J X 64	J X 38	J X 20	J X 18	E S 14	E S 14
16	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	J X 19	J X 25	J X 29	J X 33	G	G	G	G	G	J X 45	J X 44	J X 43	J X 54	J X 29	J X 38	J X 20	E S 14	E S 14
17	E S 13	J X 20	E S 14	E S 13	E S 13	J X 26	J X 20	J X 27	J X 43	J X 43	J G 29	G	G	G	G	33	J X 37	J X 28	J X 23	J X 20	E S 14	E S 14	J X 18	C
18	C	C	E S 13	E S 14	J X 18	J X 19	J X 45	J X 28	J X 26	G	G	G	J X 36	J G 28	J X 41	J X 80	J X 100	J X 94	J X 68	J X 48	J X 27	J X 24	J X 28	J X 19
19	J X 20	J X 20	E S 14	E	E	E S 14	E S 14	G	28	J X 36	J G 28	G	J G 29	G	G	G	G	J X 25	J X 39	J X 29	J X 28	J X 19	J X 24	E S 14
20	E S 14	E S 14	E S 13	E S 13	E S 13	E S 13	E S 14	G	J X 39	J X 43	G	J X 40	G 27	J X 40	J X 38	G	G	J X 22	J X 20	E S 13	E S 13	J X 20	J X 28	J X 25
21	J X 21	E S 14	E S 14	E	E	E S 14	J X 21	J X 26	J X 28	J G 29	J X 54	J G 30	C	J G 29	G	G	J X 29	J X 29	J X 28	J X 20	E S 14	E S 14	E S 14	E S 13
22	E S 14	J X 18	E S 14	E S 14	E	E S 14	E S 14	E B 19	26	G	35	36	J X 43	J X 34	J X 43	J X 29	J X 27	J X 24	J X 46	J X 29	J X 29	J X 23	J X 29	E S 14
23	E S 14	E S 13	E B 19	J X 29	J X 27	E S 13	E B 18	20	G	G	34	J X 71	36	36	J X 38	G 27	J X 27	E S 16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
24	E S 14	E S 14	E S 13	E S 13	E S 13	E S 14	J X 26	J X 44	J X 30	G	G	G	G	G	34	J X 31	24	E B 19	E S 14	E S 14	J X 23	J X 20	J X 18	J X 23
25	J X 20	J X 26	E S 13	J X 23	J X 29	J X 27	J X 23	J X 20	G	E B 59	E B 39	G	E B 38	G	G	G	J X 28	J X 28	E S 14	E S 14	J X 17	E S 14	E S 14	E S 14
26	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	G	31	36	37	J X 39	J X 37	J X 43	J X 38	J X 38	J X 35	J X 33	E S 14	E S 14	E C 18	E S 14	E C 21
27	E S 14	E C 18	E S 14	E S 14	E S 14	E S 14	E S 14	G	G	G	36	G	36	G	J G 31	30	G	E B 18	E S 13	E S 14	E S 13	E B 21	E S 14	E S 14
28	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14	J X 19	E B 19	J X 33	G	34	42	J X 48	36	36	J X 45	C	J X 33	J X 94	J X 44	J X 20	J X 23	J X 23	J X 30
29	E S 14	E S 14	E S 14	E S 14	J X 22	J X 26	J X 30	25	G	G	36	34	G	36	37	J X 46	J X 36	J X 33	J X 28	E S 13	E S 14	M 21	J X 16	J X 18
30	C	C	C	C	C	C	C	C	C	G 22	C	J X 43	36	35	40	J X 44	J X 28	J X 25	J X 36	J X 20	M 19	J X 18	J X 18	E S 14
31	E S 13	E S 13	E S 13	E	E S 14	J X 19	J X 18	J X 20	G	G	G	G	G	G	33	31	J X 26	17	E S 14	J X 20	J X 22	J X 28	J X 20	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	29	28	30	29	29	31	30	31	30	31	31	31	30	31	29	29	30	31	31	30
MED	E S 14	E S 14	E S 14	E S 14	14	E S 14	E S 14	20	26	G	G 28	G	G	G 28	G 31	J X 30	J X 27	J X 24	J X 24	J X 20	18	18	J X 18	E S 14
UQ	J X 20	J X 20	E S 14	J X 19	J X 19	E S 14	J X 19	J X 25	J X 29	32	36	36	36	36	38	J X 36	J X 35	J X 33	J X 39	J X 29	J X 25	J X 23	J X 28	J X 21
LQ	E S 14	E S 14	E S 13	E S 13	E S 13	E S 14	E S 14	E G 16	G	G	G	G	G	G	G	G 24	G	E E 16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14

JAN. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	21	21	19	20	E S 14	E S 14	E S 14	E	C	G	G	G 24	G	G	G	19	23	18	E S 14	E S 13	E S 13	E S 14	E S 14	E S 14
2	E S 14	E S 14	C	E S 14	C	E S 14	E	C	34	26	G 27	G	26	G	G	20	23	E S 14	C	C	C	E	17	22
3	16	E S 14	19	19	15	C	E S 14	E	42	G 23	G	G	G	G	G	28	22	E S 14	E S 14	E	E	E S 14	E S 14	E
4	E S 14	E	16	16	15	C	E S 14	G	20	30	28	G	G	G	G 25	27	20	E	C	25	A	18	A	19
5	E	19	25	16	15	E S 14	E S 14	20	27	31	G	27	39	28	G 25	19	23	E	18	E	A	A	E	E
6	E	E	E S 14	20	E	E S 14	E S 14	20	26	G	G	G	G	G 25	G	G 21	G	E S 14	E	E	E	E	E	19
7	19	E	E S 14	E S 14	E S 14	E S 14	E S 14	19	26	30	34	G	G	G	G	G	G	E S 14	19	E	19	E S 14	A	A
8	E	E S 13	E S 14	E S 13	E S 14	E	E S 14	21	G	32	35	35	G	27	31	22	24	20	19	E S 14	E S 14	E S 14	E	E S 14
9	E	E	E S 14	E	15	E S 13	E S 13	E S 16	G	G	G	16	G	G	24	19	G	E S 14	E S 14	E S 14	E S 14	E S 13	E	E
10	E S 13	E	E S 14	E	E	E S 13	E S 14	E S 16	28	G	G	G	G 22	G 30	33	G	G	E S 14	19	C	E S 14	E	E S 14	E S 13
11	E S 14	E S 14	E	E S 14	E S 13	E S 13	E S 14	E S 16	G	G	35	35	36	36	35	30	24	19	E S 13	E S 13	E S 14	E S 14	E S 14	E S 14
12	E S 13	E	E S 14	E S 14	E	E S 14	E S 14	21	G	G	G	G	G	G	G	21	G	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
13	E S 13	E	E S 14	E	E S 13	E S 14	E S 14	E B 18	G	G	G	G	G	G	G 27	G	G	17	16	E	E	E S 14	E S 14	E S 14
14	E S 13	E S 13	E S 13	E S 13	E	E	E S 13	E S 17	G	G	G	G	G	35	G	33	41	24	20	E S 14	E S 14	E S 13	E S 14	E S 14
15	E S 14	E S 14	E S 14	E	E	E S 14	E	18	G 19	G	G	24	G	G	G	29	22	20	28	21	17	E	E S 14	E S 14
16	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	E	19	19	24	G	G	G	G	G	40	42	30	20	21	A	E	E S 14	E S 14
17	E S 13	E	E S 14	E S 13	E S 13	19	E	20	31	22	G 20	G	G	G	G	33	29	E	E	E	E S 14	E S 14	E	C
18	C	C	E S 13	E S 14	E	16	A	20	20	G	G	G	29	G 27	39	A	A	A	E	A	19	18	19	E
19	E	E	E S 14	E	E	E S 14	E S 14	G	28	32	G 20	G	G 22	G	G	G	G	E	19	19	E	E	20	E S 14
20	E S 14	E S 14	E S 13	E S 13	E S 13	E S 13	E S 14	G	20	32	G	37	G 27	37	24	G	G	18	E	E S 13	E S 13	E	19	21
21	E	E S 14	E S 14	E	E	E S 14	E	21	20	G 22	33	G 27	C	G 21	G	G	18	18	E	E	E S 14	E S 14	E S 14	E S 13
22	E S 14	E	E S 14	E S 14	E	E S 14	E S 14	E B 19	21	G	33	35	G	34	31	23	25	18	E	E	18	20	19	E S 14
23	E S 14	E S 13	E B 19	18	21	E S 13	E B 18	19	G	G	34	60	35	36	34	G 24	19	E S 16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
24	E S 14	E S 14	E S 13	E S 13	E S 13	E S 14	20	26	20	G	G	G	G	G	34	31	24	E B 19	E S 14	E S 14	21	18	E	19
25	19	E	E S 13	20	17	20	E	19	G	E B 59	E B 39	G	E B 38	G	G	G	19	18	E S 14	E S 14	E	E S 14	E S 14	E S 14
26	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	G	G	31	34	36	35	30	36	25	33	24	29	E S 14	E S 14	E C 18	E S 14	E C 21
27	E S 14	E C 18	E S 14	E S 14	E S 14	E S 14	E S 14	G	G	G	36	G	36	G	G 27	30	G	E B 18	E S 13	E S 14	E S 13	E B 21	E S 14	E S 14
28	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14	E	E B 19	32	G	35	39	48	36	36	31	C	25	38	19	E	E	19	22
29	E S 14	E S 14	E S 14	E S 14	18	23	21	23	G	G	35	34	G	35	34	46	31	23	19	E S 13	E S 14	E	E	E
30	C	C	C	C	C	C	C	C	C	G 22	C	33	U R 36	35	40	30	24	17	22	E	E	E	17	E S 14
31	E S 13	E S 13	E S 13	E	E S 14	15	E	17	G	G	G	G	G	G	32	30	24	17	E S 14	E	18	18	17	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	29	28	30	29	29	31	30	31	30	31	31	31	30	31	29	29	30	31	31	30
MED	E S 14	E S 13	E S 14	E S 14	14	E S 14	E S 14	19	20	G	E G 20	G	G	G	G 25	24	22	18	14	14	14	E E 14	14	E S 14
UQ	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	20	26	26	34	34	32	32	34	30	24	20	19	E S 14	18	E E 16	17	E E 19
LQ	E S 13	E	E S 13	E S 13	E	E S 14	E	E E 16	G	G	G	G	G	G	G	G 19	G	E E 14	E S 13	E	E S 13	E	E S 14	E S 14

JAN. 1971 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1971 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 14	E	E	E	E S 14	E S 14	E S 14	E S 17	C	16	15	15	17	16	18	14	13	E S 14	E S 14	E S 13	E S 13	E S 14	E S 14	E S 14
2	E S 14	E S 14	C	E S 14	C	E S 14	E S 14	C	13	15	16	15	18	17	16	15	13	E S 14	C	C	C	E S 13	E S 13	E S 13
3	E	E S 14	E S 13	E	E	C	E S 14	14	14	15	16	16	16	17	13	14	14	E S 14	E S 14	E S 13	E S 13	E S 14	E S 14	E S 13
4	E S 14	E S 14	E	E	E	C	E S 14	14	14	16	15	20	18	16	17	15	14	E S 14	C	E S 14	E S 14	E S 13	E S 14	E S 14
5	E S 14	E	E	E	E	E S 14	E S 14	14	15	15	18	15	17	15	13	13	14	E S 13	E	E S 13	E	E S 14	E S 14	E S 13
6	E S 13	E S 14	E S 14	E	E	E S 14	E S 14	13	14	15	18	15	15	16	16	15	13	E S 14	E S 13	E S 13	E S 13	E S 13	E S 13	E S 13
7	E S 13	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14	13	14	17	18	18	17	17	17	19	16	E S 14	E S 13	E S 13	E S 14	E S 14	E S 13	E S 13
8	E S 13	E S 13	E S 14	E S 13	E S 14	E	E S 14	14	16	15	16	14	15	15	E	13	13	E S 13	E	E S 14	E S 14	E S 14	E S 14	E S 14
9	E S 14	E	E S 14	E S 13	E	E S 13	E S 13	E S 16	14	14	16	16	16	14	14	14	14	E S 14	E S 14	E S 14	E S 14	E S 13	E S 13	E S 14
10	E S 13	E S 13	E S 14	E	E	E S 13	E S 14	E S 16	16	16	18	18	16	19	16	17	16	E S 14	E S 14	C	E S 14	E S 14	E S 14	E S 13
11	E S 14	E S 14	E	E S 14	E S 13	E S 13	E S 14	E S 16	15	14	14	15	17	17	15	14	14	E S 13	E S 13	E S 13	E S 14	E S 14	E S 14	E S 14
12	E S 13	E	E S 14	E S 14	E	E S 14	E S 14	13	16	16	15	18	15	17	17	14	14	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
13	E S 13	E S 13	E S 14	E	E S 13	E S 14	E S 14	18	16	15	15	16	19	16	16	14	14	E	E	E S 14	E S 14	E S 14	E S 14	E S 14
14	E S 13	E S 13	E S 13	E S 13	E	E	E S 13	E S 17	15	17	19	19	19	19	18	14	14	E S 13	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
15	E S 14	E S 14	E S 13	E	E	E S 14	E S 14	13	15	16	19	16	20	19	17	16	15	E S 13	E S 13	E S 13	E S 13	E S 14	E S 14	E S 14
16	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	14	14	15	14	18	18	18	15	15	16	E S 14	E S 13	E S 14	E S 14	E S 13	E S 14	E S 14
17	E S 13	E S 14	E S 14	E S 13	E S 13	E S 14	E S 14	14	14	15	16	20	17	19	16	16	14	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	C
18	C	C	E S 13	E S 14	E	E	E S 13	13	14	14	19	16	15	14	14	15	14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
19	E S 14	E S 14	E S 14	E	E	E S 14	E S 14	14	14	14	14	15	15	18	14	14	14	E S 14	E S 13	E S 13	E S 13	E S 14	E S 14	E S 14
20	E S 14	E S 14	E S 13	E S 13	E S 13	E S 13	E S 14	13	14	16	15	16	16	16	15	15	14	E S 13	E S 14	E S 13	E S 13	E S 13	E S 14	E S 14	E S 14
21	E S 13	E S 14	E S 14	E	E	E S 14	E S 14	13	15	14	14	14	C	14	14	14	14	E	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 13
22	E S 14	E S 14	E S 14	E S 14	E	E S 14	E S 14	19	14	15	14	15	15	16	15	15	16	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
23	E S 14	E S 13	19	E S 13	E	E S 13	18	14	15	16	15	18	21	16	16	15	16	E S 16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
24	E S 14	E S 14	E S 13	E S 13	E S 13	E S 14	E S 13	14	17	17	19	20	21	24	20	18	16	19	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
25	E S 14	E S 14	E S 13	E S 14	E	E	E S 14	14	15	59	39	21	38	27	19	19	16	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
26	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	15	15	17	16	19	18	18	19	14	16	E S 14	E S 13	E S 14	E S 14	E C 18	E S 14	E C 21
27	E S 14	E C 18	E S 14	E S 14	E S 14	E S 14	E S 14	13	15	16	19	20	22	20	18	18	14	18	E S 13	E S 14	E S 13	21	E S 14	E S 14
28	E S 14	E S 14	E S 14	E S 13	E S 14	E S 14	E S 14	19	15	17	19	18	20	18	18	15	C	E S 13	E S 14	E S 14	E S 14	E S 14	E S 13	E S 14
29	E S 14	E S 14	E S 14	E S 14	E	E S 13	E S 13	14	14	16	20	24	20	20	21	20	15	E S 14	E S 13	E S 13	E S 14	E S 14	E S 13	E S 13
30	C	C	C	C	C	C	C	C	C	16	C	16	22	17	15	15	15	E S 13	E S 13	E S 13	E S 14	E S 13	E S 14	E S 14
31	E S 13	E S 13	E S 13	E	E S 14	E S 13	E S 13	E S 13	16	17	17	19	18	19	16	16	14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	29	28	30	29	29	31	30	31	30	31	31	31	30	31	29	29	30	31	31	30
MED	E S 14	E S 14	E S 14	E S 13	E	E S 14	E S 14	14	15	16	16	16	18	17	16	15	14	E S 14	E S 13	E S 14	E S 14	E S 14	E S 14	E S 14
UQ	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	15	15	16	19	19	20	19	18	16	16	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14	E S 14
LQ	E S 13	E S 13	E S 13	E	E	E S 13	E S 14	13	14	15	15	15	16	16	15	14	14	E S 13	E S 13	E S 13	E S 13	E S 14	E S 14	E S 13

The Radio Research Laboratories, Japan

JAN. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | M(3000)F2 (0.01)

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	285	295	280	305	330	340	335	350	350	355	350	325	320	325	330	340	330	310	325	335	295	300	295
2	295	295	295	290	290	290	330	330	345	350	345	330	335	335	330	340	335	330	C	C	C	285	280	290
3	305	280	285	290	305	295	285	325	325	330	340	350	335	325	330	335	330	315	315	330	295	285	285	290
4	295	295	300	305	260	270	295	330	345	345	320	325	325	325	325	330	320	325	320	335	305	295	305	F
5	F	F	F	315	330	295	275	315	350	340	340	350	320	315	330	335	330	335	340	315	A	A	290	295
6	315	290	295	305	275	270	295	335	330	335	355	345	340	340	345	330	325	320	345	330	315	315	285	270
7	290	285	310	300	305	295	320	335	350	325	360	345	330	315	345	350	305	335	325	330	285	280	280	280
8	255	300	315	300	300	315	315	335	350	330	355	340	345	330	325	340	305	320	340	335	290	285	285	F
9	295	285	295	295	F	F	320	330	340	345	350	330	335	350	340	335	335	305	320	340	305	320	290	280
10	295	295	F	335	305	295	305	345	350	330	340	340	330	330	330	345	340	340	335	330	310	280	F	F
11	295	325	330	300	300	285	270	325	345	315	335	320	345	320	340	340	340	315	330	335	320	280	275	285
12	290	295	290	285	295	315	295	330	340	345	340	345	320	340	335	340	320	330	320	330	290	310	295	285
13	285	F	315	325	310	300	300	335	350	335	335	345	330	330	340	345	345	325	335	335	320	F	305	295
14	300	290	305	305	310	295	295	315	335	330	335	340	330	335	335	325	340	335	335	325	295	305	285	285
15	280	290	300	310	295	290	305	320	325	340	340	335	345	325	340	335	325	330	325	315	315	315	290	290
16	280	280	290	285	280	295	295	335	330	350	335	345	330	340	335	340	335	330	345	340	330	305	300	315
17	315	305	300	295	300	305	290	335	350	345	340	345	335	335	315	330	325	330	345	335	295	300	290	C
18	C	C	295	305	315	285	285	320	335	335	335	320	330	320	320	330	A	A	350	335	295	280	280	295
19	285	270	295	320	325	280	295	320	340	345	350	335	330	325	330	330	325	335	320	335	320	F	F	295
20	300	300	295	310	305	300	315	325	335	325	320	315	325	315	315	300	315	325	330	325	290	280	295	295
21	315	320	275	315	305	310	310	330	340	345	335	340	330	345	330	325	330	320	315	325	325	305	325	295
22	295	295	300	310	335	305	315	335	335	325	325	330	330	335	335	325	335	325	325	320	315	290	315	315
23	295	290	285	305	325	300	330	350	345	340	340	355	340	305	330	320	340	340	320	330	325	295	310	320
24	285	325	305	310	345	290	325	355	330	330	340	330	330	320	340	350	330	320	325	345	315	295	295	285
25	310	305	305	315	275	295	305	345	355	335	335	335	335	330	325	335	340	310	310	340	350	295	305	285
26	290	295	285	310	300	305	310	350	330	340	335	325	330	335	325	335	330	330	330	315	315	290	305	305
27	295	295	295	295	315	305	310	340	340	335	345	335	345	330	335	325	345	320	310	340	315	290	320	270
28	260	260	280	280	275	290	275	300	335	310	335	300	300	295	320	330	325	320	335	310	315	315	270	280
29	290	300	280	270	270	285	305	345	360	305	325	320	330	330	335	310	335	330	305	315	305	310	300	310
30	C	C	C	C	C	C	C	C	C	325	330	325	335	325	310	310	340	325	330	330	265	265	280	285
31	305	310	285	260	265	280	320	335	345	335	330	340	320	325	320	320	330	255	285	325	330	310	290	305
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	30	29	29	30	30	30	31	31	31	31	31	31	31	30	30	30	30	29	28	29	27
MED	295	295	295	305	305	295	305	335	340	335	340	335	330	330	330	330	330	325	325	330	315	295	290	290
UQ	300	300	302	310	310	305	315	335	350	345	342	345	335	335	335	340	340	330	335	335	320	308	305	295
LQ	285	288	288	290	290	290	295	325	335	330	335	328	330	320	325	325	325	320	320	325	295	285	285	285

IONOSPHERIC DATA

JAN. 1971 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	U L 365	U L 380	L										
2											405	L	L 370	L										
3										U L 380	L	L	U L 360	U L 365	U L 360									
4										L	L	L	L	L	L									
5											L	L	L	U L 370	U L 310									
6											L	L	L 350	L	L									
7											L	L	U L 375	L	L									
8										L	L	L	L	L	L									
9											L	L	U L 380	L	L									
10										L	L	L	L	L	L									
11										L	L	L	L	L	L									
12										L	L	L	L	L	L	L								
13										L	L	L	L	L	L									
14										L	L	L	L	L	L									
15										L	U L 380	L	L	L	L									
16										L	L	L	U L 360	L	L									
17										L	L	L	U L 390	L	L									
18										L	L	L	L 375	L	L									
19										L	L	L	L	L 355	L									
20									L	L	L	L	L	L	L									
21										L	L	L	C	L	L									
22										L	L	U L 355	L	U L 380	L									
23										L	L	A	L	L	L									
24											L	L	L	L	L									
25										B	L	L	L	L	L									
26										L	L	U L 365	L	L	L									
27										L	L	L	L	L	L									
28										L	L	L	A	U L 350	L	L								
29										L 370	L	L	L	L	L									
30											I C 400	390	L	L										
31									405		L	L	400	L	L									

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	2	3	5	10	5	2									
MED									405	L 375	400	U L 365	U L 375	U L 365	U L 335									
UQ											402	390	U L 380	U L 370										
LQ											390	U L 365	L 360	U L 355										

The Radio Research Laboratories, Japan

JAN. 1971 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JAN. 1971 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											210	230	235	250										
2											235	230	245	250										
3										255	230	215	265	250	240									
4										235	250	235	250	235	240									
5											220	225	220	235	250									
6											245	210	250	240	215									
7											230	235	255	235	240									
8										245	235	230	235	230	250									
9											230	230	245	235	240									
10										220	230	245	235	250	230									
11										235	235	250	245	250	245									
12										235	235	235	255	250	230	230								
13										235	240	225	220	240	235									
14										245	240	240	245	240	230									
15										235	240	225	235	255	245									
16										235	230	225	250	240	225									
17										235	225	215	230	230	245									
18										235	235	235	245	250	250									
19										245	235	235	235	245	250									
20									235	245	240	250	250	240	250									
21										220	250	240	I C 240	235	235									
22										240	230	260	245	255	240									
23										230	240	240	240	235	240									
24											240	240	245	250	230									
25										240	245	235	240	245	230									
26										225	230	255	250	235	250									
27										235	245	235	245	255	240									
28										250	240	235	245	290	255	245								
29										290	265	245	240	245	245									
30											I C 245	250	245	250										
31									225	230	240	240	240	240	245									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	23	31	31	31	31	28	2								
MED									230	235	235	235	245	245	240	238								
UQ										245	240	240	248	250	248									
LQ										235	230	230	238	235	232									

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JAN. 1971 | H'F2 (KM)

IONOSPHERIC DATA

JAN. 1971 | H'F (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	300	285	300	255	240	240	210	210	220	210	200	205	200	235	220	215	205	240	215	215	260	315	290
2	250	255	275	250	270	265	210	225	215	225	190	215	200	225	230	210	210	215	C	C	C	305	310	290
3	260	290	305	300	255	260	240	215	210	225	230	215	230	205	200	230	215	200	215	230	240	305	310	300
4	265	255	260	260	315	305	275	215	205	230	230	215	225	225	220	225	210	210	240	220	A	295	270	300
5	305	340	340	220	230	215	290	235	215	225	220	225	215	205	200	225	215	235	210	215	A	A	300	280
6	275	280	280	290	300	340	285	200	200	220	235	210	200	215	215	225	205	240	200	220	250	250	290	335
7	325	285	250	250	260	255	245	215	205	215	225	225	200	225	230	215	205	225	205	210	270	295	330	335
8	295	280	255	265	280	245	240	215	205	225	235	230	215	215	215	220	240	205	220	205	320	295	300	310
9	295	265	270	255	320	275	240	210	210	220	230	215	200	225	230	225	210	245	215	210	245	245	300	315
10	280	255	255	215	260	280	240	210	205	200	200	230	215	230	220	215	205	205	235	220	245	290	305	295
11	270	235	235	255	250	275	300	245	205	220	230	230	235	235	245	225	205	240	210	210	245	290	315	315
12	300	275	295	315	290	235	245	240	220	235	220	230	210	235	230	215	215	220	205	220	245	240	270	305
13	295	295	245	200	230	245	250	240	230	230	240	215	205	220	235	220	215	200	225	220	255	300	255	260
14	285	290	250	285	250	235	285	240	220	230	230	230	235	240	215	240	230	220	235	220	285	270	305	290
15	290	295	285	255	270	250	245	240	235	235	210	220	225	205	230	230	230	225	240	240	255	245	280	305
16	300	300	290	300	300	270	290	235	235	235	220	215	210	220	215	230	220	215	215	215	A	255	290	295
17	245	260	290	260	280	280	260	230	220	230	215	215	205	230	230	230	210	210	205	195	285	280	295	C
18	C	C	290	265	240	280	295	240	230	225	225	215	205	225	235	240	A	A	205	A	265	315	320	290
19	305	305	265	230	245	300	315	240	225	240	230	230	210	200	230	230	215	215	230	235	240	270	240	280
20	275	270	270	215	245	255	230	250	235	230	220	230	245	230	225	240	245	235	210	215	270	315	255	295
21	245	270	315	255	245	255	280	230	215	210	230	225	230	235	220	230	230	235	215	240	220	245	245	270
22	280	285	260	255	215	240	240	215	205	215	220	215	230	215	230	220	210	215	235	205	250	290	260	250
23	275	295	300	260	245	270	245	215	210	220	230	235	215	215	235	215	215	215	230	220	220	250	290	260
24	260	250	265	250	210	315	250	200	215	215	220	220	220	230	230	220	200	215	230	200	280	310	320	315
25	245	240	250	245	290	310	250	210	210	240	245	230	240	220	215	235	215	230	245	220	200	285	260	290
26	265	295	300	250	220	255	240	210	215	225	220	215	235	235	235	235	225	215	240	200	260	295	280	265
27	270	295	275	255	250	250	245	220	220	225	245	220	225	230	230	235	215	245	255	215	205	290	230	285
28	360	350	290	300	255	240	320	255	240	230	240	235	240	240	245	240	235	230	225	240	240	250	310	300
29	295	290	320	330	330	345	300	225	215	210	225	240	235	235	240	250	245	210	255	230	230	245	250	245
30	C	C	C	C	C	C	C	C	C	215	205	225	235	215	245	245	235	210	220	225	295	320	320	255
31	225	240	275	300	325	300	240	210	210	215	235	220	210	230	225	240	220	220	220	245	230	240	260	255
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	30	30	30	30	30	30	30	31	31	31	31	31	31	31	30	30	30	29	27	30	31	30
MED	280	285	275	255	255	262	248	222	215	225	225	220	215	225	230	230	215	215	222	220	245	288	290	290
UQ	295	295	290	290	290	280	285	240	220	230	230	230	232	230	235	235	230	230	235	225	268	295	310	305
LQ	265	260	260	250	245	245	240	210	210	218	220	215	208	215	220	220	210	210	210	210	235	250	260	270

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JAN. 1971 | H'F (KM)

IONOSPHERIC DATA

JAN. 1971 | H'ES (KM) | 135 E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	100	S	S	S	105	C	G	G	100	G	G	G	105	100	100	S	S	S	S	S	S
2	S	S	C	S	C	S	110	C	100	100	100	G	100	G	G	100	100	S	C	C	C	105	100	100
3	100	S	100	100	105	C	S	110	105	105	G	G	G	G	G	140	100	S	S	110	120	S	S	110
4	S	105	100	100	100	C	S	G	105	110	110	G	G	G	100	100	105	100	C	105	105	105	105	100
5	105	100	100	100	100	S	S	155	165	140	G	110	105	100	100	100	100	100	100	105	105	100	105	100
6	100	100	S	100	100	S	S	105	105	G	G	G	G	100	G	100	G	S	105	100	105	105	105	105
7	100	105	S	S	S	S	S	105	130	130	115	G	G	G	G	G	G	S	105	105	100	S	105	100
8	100	S	S	S	S	E	S	150	G	150	110	140	G	100	100	100	100	100	100	S	S	S	105	S
9	100	E	S	100	100	S	S	S	G	G	140	105	G	G	100	100	G	S	S	S	S	S	100	100
10	S	100	S	E	E	S	S	S	150	G	G	G	100	110	115	G	G	S	100	C	S	105	S	S
11	S	S	E	S	S	S	S	S	G	G	150	145	140	130	130	130	110	100	S	S	S	S	S	S
12	S	E	S	S	E	S	S	100	G	120	G	G	G	G	G	110	G	S	S	S	S	S	S	S
13	S	100	S	E	S	S	S	B	G	G	G	G	G	120	110	G	G	100	100	100	100	S	S	S
14	S	S	S	S	E	E	S	S	G	G	G	G	G	150	G	140	110	105	105	S	S	S	S	S
15	S	S	S	E	100	S	105	100	100	G	G	100	G	G	115	115	105	100	100	100	100	100	S	S
16	S	S	S	S	S	S	105	100	100	100	G	G	G	G	G	115	110	100	100	100	100	100	S	S
17	S	100	S	S	S	105	105	100	100	100	100	G	G	G	G	140	110	105	100	105	S	S	100	C
18	C	C	S	S	100	105	100	100	100	G	G	G	100	100	115	105	105	105	105	100	100	100	100	100
19	100	100	S	E	E	S	S	G	155	100	100	G	100	G	G	G	G	105	100	100	100	100	100	S
20	S	S	S	S	S	S	S	G	100	100	G	100	100	100	100	G	G	100	110	S	S	100	100	100
21	105	S	S	E	E	S	110	105	105	100	100	100	C	100	G	G	100	100	100	100	S	S	S	S
22	S	100	S	S	E	S	S	B	105	G	145	145	120	100	100	100	110	105	105	105	100	100	100	S
23	S	S	B	105	100	S	B	140	G	G	145	120	110	105	105	105	105	S	S	S	S	S	S	S
24	S	S	S	S	S	S	105	105	110	G	G	G	G	G	105	105	105	B	S	S	100	100	100	100
25	100	105	S	100	100	100	100	150	G	B	B	G	B	G	G	G	105	105	S	S	100	S	S	S
26	S	S	S	S	S	S	S	G	G	150	120	115	115	110	105	105	105	100	100	S	S	C	S	C
27	S	C	S	S	S	S	S	G	G	G	150	G	110	G	110	110	G	B	S	S	S	B	S	S
28	S	S	S	S	S	S	120	B	115	G	150	130	120	130	120	115	C	110	105	100	100	100	100	100
29	S	S	S	S	110	110	105	140	G	G	110	110	G	135	125	115	110	110	100	S	S	100	100	100
30	C	C	C	C	C	C	C	C	C	100	C	100	145	135	120	115	110	110	105	105	100	100	100	S
31	S	S	S	E	S	105	100	105	G	G	G	G	G	G	145	120	100	105	S	100	100	100	100	S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	11	4	8	10	5	11	17	17	14	15	14	13	16	19	24	21	21	19	16	16	16	17	12
MED	100	100	100	100	100	105	105	105	105	102	115	110	110	108	110	108	105	100	100	100	100	100	100	100
UQ	100	102	100	100	100	105	108	140	115	130	145	130	120	130	118	115	110	105	105	105	102	102	105	100
LQ	100	100	100	100	100	105	102	100	100	100	105	100	100	100	100	100	100	100	100	100	100	100	100	100

JAN. 1971 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JAN. 1971 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

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

JAN. 1971 | TYPES OF ES

IONOSPHERIC DATA

JAN. 1971 | FOF2 (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

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

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

JAN. 1971 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L								
2										L	L	L	L	L	L	L								
3											L	L	L	L	L									
4											L	L	L	L	L									
5										L	L	L	L	L	L									
6											L	L	L	L	L									
7											L	L	L	L										
8											L	L	L	L	L	L								
9										L	L	L	L	L		L								
10										L		L	L	L	L									
11								C	C	L	L	C	C	C	L	L								
12										L	L	L	L	L	L									
13										L	L	L	L	L	L	L								
14										L	L	L	L	L	L									
15									L	L	L	L	L	L	L	L								
16										L	L	L	L	L	A			A						
17										L	L	L	L	L										
18										L		L	L	L										
19									L	L	L	L	L	L	L									
20									L	L	L	L	L	L	L									
21										L	L	A	L	L	L	L								
22											L	L	L	L	L	L								
23										L	L	L	L	L	L	L	L							
24											L	L	L	L	L	A								
25										B	B	L	L	L	L									
26										L	L	L	L	L	L									
27										L	L	J L 500	L	L	L	L								
28									L	L	L	L	L	L	L									
29										A	L	L	L	L	L									
30											L	L	L	L	L	L								
31										L	L	L	L	L		L								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT												1												
MED												J L 500												
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JAN. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B	R	285	I R 320	I R 340	350	325	305	A	A							
2								A	I R 250	I R 270	300	315	325	315	I A 310	265	190							
3								R	A	A	A	345	R 345	I A 340	R 325	A	A							
4								190	260		A	R	A	A	325	R	A							
5								B	240	R 295	I A 320	I A 335	I R 345	340	320	280	A							
6								A	A	A	A	I R 345	345	345	325	I R 280	R							
7								A	A	A	A	A	I R 345	345	R	A	A							
8								190	A	A	320	I R 335	345	I R 335	R 310	I R 290	A							
9								B	R 250	300	325	335	340	340	330	280	R 220	B						
10								175	250	300	R 335	340	345	I A 330	I A 320	I A 270	A	B						
11								C	C	325	A	C	C	C	315	I A 270	A	B						
12								B	R	290	A	I R 345	R 340	I R 320	310	280	210	B						
13								B	I R 235	290	I R 320	335	R 340	A	R	R	A	B						
14								B	R 260	275	335	360	350	340	320	270	A	B						
15								180	255	280	320	I R 345	I A 350	340	310	I A 290	A	B						
16								A	A	300	330	340	I A 350	345	325	290	210	B						
17								185	260	I A 300	335	350	355	350	I R 320	280	A	B						
18								A	A	A	A	345	R	A	A	A	A	A						
19								A	250	300	330	340	350	I R 340	I R 325	290	A	A						
20								A	250	A	R	R	A	A	A	A	A	A						
21								A	A	A	325	A	R	I R 330	A	A	A	A						
22								195	R	A	A	R 330	345	I A 330	I R 315	A	A	185						
23								A	250	290	330	345	A	A	A	290	240	B						
24								B	260	300	330	I A 345	340	A	A	A	A	B						
25								180	R 260	B	B	R	I R 355	340	325	300	245	B						
26								B	260	300	325	I A 345	A	A	A	A	A	B						
27								160	250	300	330	355	A	A	A	305	R 250	180						
28								B	255	300	325	340	345	345	320	A	R	B						
29								190	A	A	A	A	A	A	A	A	A	A						
30								200	I R 250	300	325	345	350	340	325	A	A	B						
31								165	250	300	330	345	360	345	325	290	230	155						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								11	19	20	20	24	22	21	21	17	8	3						
MED								185	250	300	325	345	345	340	320	280	225	180						
UQ								190	260	300	330	345	350	345	325	290	242	182						
LQ								178	250	290	320	338	345	I 330	315	280	210	168						

JAN. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOES (0.1 MHZ) | 135 E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J X 54	J X 21	J X 24	21	E S 15	E S 15	E S 15	E B 14	G	31	G	G	J G 29	G	G	J X 28	J X 49	J X 44	J X 24	21	21	22	20	E S 15
2	E S 15	E S 15	E S 15	E B 14	E B 13	E B 13	E B 14	J X 29	G	G	G	J G 29	J G 30	G	J X 39	G	G	E S 15	E S 15	22	E S 15	J X 25	J X 19	24
3	E S 15	20	E S 15	E S 15	J X 29	21	25	G	J X 29	J X 75	35	G	G	35	G	J X 36	J X 39	J X 51	E S 15	E S 15	E S 15	E S 15	J X 39	24
4	22	22	24	E S 15	E S 15	E S 15	E B 14	G	G	J X 51	36	G 32	J X 52	J X 81	G 30	G	26	J X 25	J X 27	J X 29	35	J X 29	J X 84	J X 54
5	J X 39	J X 44	J X 29	J X 24	J X 30	21	E S 15	E B 15	26	G	36	37	G 31	G	G	J G 25	J X 29	21	20	J X 24	E S 15	J X 31	J X 54	J X 49
6	J X 24	22	J X 25	22	E S 15	19	E S 15	23	J X 29	J X 36	J X 35	G	G	G	G	G	G	E S 15	J X 29	J X 29	J X 25	J X 29	22	J X 21
7	J X 29	J X 26	J X 29	J X 24	E S 15	E S 15	20	J X 25	31	35	36	J X 36	G	G	G	35	28	21	E S 15	E S 15	E S 15	E S 15	E S 15	24
8	J X 21	21	21	E B 13	22	20	20	G	30	35	36	G	G	G	G	J X 31	J X 29	J X 29	J X 25	E B 14	E S 15	E S 15	E S 15	E S 15
9	J X 22	J X 24	22	20	20	E S 15	E S 15	E B 15	G	33	G	G	36	36	J X 44	J X 30	J X 29	E B 15	M 20	E B 13	E B 13	E B 14	E S 15	E S 15
10	E S 15	E S 15	E B 12	E S 15	E B 14	E S 15	E S 15	G	G	35	G	G	36	39	36	29	J X 26	31	E B 13	24	J X 24	23	E S 15	19
11	E S 15	E B 12	E B 12	E B 12	E B 13	J X 15	E B 14	C	C	38	37	C	C	C	36	31	23	J X 24	22	20	E S 15	E S 15	20	19
12	18	E S 15	E S 15	E S 15	E S 15	E B 14	E S 15	E B 15	G	G	35	36	G	G	G	G	25	E B 15	E S 15	E S 15	20	E S 15	E S 15	E S 15
13	21	21	E S 15	21	19	E S 15	E S 15	E B 15	G	34	G	G	G	40	G	30	25	J X 20	J X 19	J X 25	23	20	20	E S 15
14	19	E B 13	E B 13	20	20	21	E B 13	E B 14	G	31	G	38	38	39	37	40	J X 29	J X 37	J X 26	17	J X 14	J X 16	M 21	J X 16
15	E S 15	E B 12	M 18	E B 13	J X 16	J X 19	J X 16	J X 24	G	G	G 17	37	37	G	39	J X 30	25	J X 57	J X 42	J X 42	J X 30	J X 28	J X 18	J X 17
16	E B 14	E B 14	E B 14	E B 13	E B 12	J X 17	J X 19	J X 27	J X 30	44	J X 40	G 20	37	37	J X 59	37	J X 51	J X 84	J X 23	J X 36	J X 21	E S 15	J X 22	J X 19
17	E S 15	19	E B 14	E B 13	E B 14	J X 18	J X 23	J X 24	J X 29	J X 50	J G 29	37	G	G 20	G	32	32	J X 30	J X 30	J X 30	J X 28	J X 18	M 20	J X 22
18	J X 23	M 21	M 19	J X 16	J X 22	J X 26	J X 23	J X 73	J X 54	J X 45	J X 54	J G 29	G 30	38	J X 59	J X 61	J X 91	J X 54	J X 74	J X 74	J X 29	J X 25	J X 24	E S 15
19	21	21	E S 15	E B 13	E B 14	E S 15	22	25	30	36	40	37	G	G	G	G	J X 45	J X 39	J X 54	J X 79	J X 35	J X 25	22	22
20	20	20	E S 15	21	E B 14	E S 15	E S 15	22	J X 29	35	G 29	G	J X 55	J X 39	J X 37	32	30	J X 25	22	19	20	20	J X 25	22
21	J X 24	J X 24	J X 27	J X 19	20	E S 15	22	20	J X 30	35	G	J X 84	G	G	J X 35	35	J X 27	J X 24	22	J X 94	J X 84	J X 28	E S 15	E B 14
22	21	20	E S 15	E B 13	E S 15	20	E B 13	G	G	33	J X 35	G	37	38	G 29	J X 30	35	G	J X 18	E S 15	E S 15	E S 15	E S 15	J X 25
23	20	20	19	19	J X 29	20	J X 24	20	28	32	35	36	36	J X 36	33	J G 26	J X 25	19	J X 24	E S 15	M 19	E B 13	E S 15	E B 14
24	E B 13	E B 14	M 17	M 19	E B 13	J X 17	E B 13	17	G	J X 31	G	36	G	35	50	J X 89	J X 44	J X 48	J X 61	J X 30	J X 17	J X 19	J X 18	E B 14
25	E B 13	M 20	J X 18	23	J X 27	J X 17	J X 16	G	G	E B 58	E B 45	G	G	37	G	G 29	J X 36	J X 26	24	E S 15	M 20	J X 17	M 20	M 21
26	19	E B 13	E B 14	E B 14	E B 13	E B 13	J X 16	J X 30	G	33	37	J X 42	42	37	J X 38	65	J X 55	J X 36	J X 41	J X 28	E B 14	E B 13	E S 15	E B 14
27	E S 15	E S 15	J X 18	M 20	J X 17	M 18	J X 15	G	G 19	33	38	40	J X 43	J X 50	J X 40	G	G	20	18	19	E B 14	E B 14	E B 13	J X 22
28	J X 18	J X 18	M 19	J X 15	E B 14	J X 19	J X 15	20	31	G	43	38	39	36	37	J X 41	G 31	20	J X 21	J X 61	J X 30	J X 30	J X 26	21
29	E B 13	J X 17	23	M 21	E B 13	E B 13	17	30	J X 37	J X 46	35	42	J X 37	35	36	J X 41	J X 35	J X 24	J X 19	J X 30	J X 29	21	E S 16	26
30	E S 15	E B 13	E S 15	E S 15	E B 13	20	20	22	G	G 19	G	G	40	39	36	32	J X 27	J X 26	J X 26	J X 41	J X 28	J X 30	J X 29	J X 22
31	18	19	E B 14	E S 15	18	M 19	J X 17	20	G	G	G	37	38	G 30	37	32	J X 28	18	J X 29	21	J X 18	J X 29	J X 30	J X 20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	19	20	17	15	E 15	17	15	20	G 19	34	35	34	34	36	36	31	J X 29	J X 25	J X 23	24	20	20	20	20
UQ	22	21	22	20	20	20	J X 20	24	J X 30	36	36	37	38	38	38	36	J X 36	J X 36	J X 28	J X 30	J X 28	J X 26	J X 23	22
LQ	E 15	E 15	E 15	E B 14	E B 14	E S 15	E 15	E G 14	G	31	G	G	G	G	G	G 27	26	20	19	16	E 15	E 15	E S 15	E 15

The Radio Research Laboratories, Japan

JAN. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{B}	G	30	G	G	$\frac{G}{28}$	G	G	26	37	E	16	E	E	E	E	E_{15}^{S}
2	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{B}	E_{13}^{B}	E_{13}^{B}	E_{14}^{B}	25	G	G	G	$\frac{G}{26}$	$\frac{G}{19}$	G	32	G	G	E_{15}^{S}	E_{15}^{S}	E	E_{15}^{S}	17	16	E
3	E_{15}^{S}	E	E_{15}^{S}	E_{15}^{S}	19	E	E	G	25	26	33	G	G	34	G	34	25	24	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E
4	E	E	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{B}	G	G	35	34	E_{32}^{R}	39	38	$\frac{G}{26}$	G	24	20	E	22	A	19	A	A
5	A	E	E	E	23	E	E_{15}^{S}	E_{15}^{B}	26	G	33	36	E_{31}^{R}	G	G	$\frac{G}{23}$	23	E	19	E	E_{15}^{S}	E	A	A
6	E	E	20	E	E_{15}^{S}	E	E_{15}^{S}	18	25	32	34	G	G	G	G	G	G	E_{15}^{S}	16	20	22	E	E	E
7	E	16	19	E	E_{15}^{S}	E_{15}^{S}	E	20	26	31	34	35	G	G	G	30	25	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E
8	18	E	E	E_{13}^{B}	E	E	E	G	20	31	34	G	G	G	G	23	23	20	E	E_{14}^{B}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
9	E	18	E	E	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{B}	G	32	G	G	36	36	26	18	17	E_{15}^{B}	E	E_{13}^{B}	E_{13}^{B}	E_{14}^{B}	E_{15}^{S}	E_{15}^{S}
10	E_{15}^{S}	E_{15}^{S}	E_{12}^{B}	E_{15}^{S}	E_{14}^{B}	E_{15}^{S}	E_{15}^{S}	G	G	34	G	G	36	33	35	28	26	24	E_{13}^{B}	17	17	E	E_{15}^{S}	E
11	E_{15}^{S}	E_{12}^{B}	E_{12}^{B}	E_{12}^{B}	E_{13}^{B}	E	E_{14}^{B}	C	C	38	36	C	C	C	35	30	22	16	E	E	E_{15}^{S}	E_{15}^{S}	E	E
12	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{B}	E_{15}^{S}	E_{15}^{B}	G	G	32	36	G	G	G	G	25	E_{15}^{B}	E_{15}^{S}	E_{15}^{S}	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
13	E	E	E_{15}^{S}	E	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{B}	G	33	G	G	G	40	G	30	24	17	16	18	16	E	E	E_{15}^{S}
14	E	E_{13}^{B}	E_{13}^{B}	E	E	E	E_{13}^{B}	E_{14}^{B}	G	30	G	37	38	38	35	35	25	18	22	E	E	E	E	E
15	E_{15}^{S}	E_{12}^{B}	E	E_{13}^{B}	E	17	16	G	G	G	$\frac{G}{17}$	37	37	G	38	29	25	30	35	19	25	24	15	E
16	E_{14}^{B}	E_{14}^{B}	E_{14}^{B}	E_{13}^{B}	E_{12}^{B}	16	16	25	27	23	26	$\frac{G}{20}$	37	36	45	32	38	A	E	22	16	E_{15}^{S}	E	E
17	E_{15}^{S}	E	E_{14}^{B}	E_{13}^{B}	E_{14}^{B}	15	19	17	20	34	$\frac{G}{27}$	36	G	$\frac{G}{20}$	G	32	32	24	22	21	16	E	E	16
18	16	E	E	E	E	16	E	A	34	35	38	$\frac{G}{25}$	E_{30}^{R}	36	50	45	25	36	A	A	17	18	20	E_{15}^{S}
19	E	E	E_{15}^{S}	E_{13}^{B}	E_{14}^{B}	E_{15}^{S}	E	23	28	35	38	36	G	G	G	G	41	21	31	A	19	17	E	E
20	E	E	E_{15}^{S}	E	E_{14}^{B}	E_{15}^{S}	E_{15}^{S}	20	G	31	$\frac{G}{25}$	G	43	35	34	28	25	16	E	E	E	E	E	E
21	18	E	20	16	E	E_{15}^{S}	E	18	25	31	G	75	G	G	34	28	25	G	E	29	A	20	E_{15}^{S}	E_{14}^{B}
22	E	E	E_{15}^{S}	E_{13}^{B}	E_{15}^{S}	E	E_{13}^{B}	G	G	32	34	G	36	37	E_{29}^{R}	29	33	G	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	21
23	E	E	E	E	16	E	E	15	26	31	35	36	36	35	33	$\frac{G}{26}$	20	G	E	E_{15}^{S}	E	E_{13}^{B}	E_{15}^{S}	E_{14}^{B}
24	E_{13}^{B}	E_{14}^{B}	E	E	E_{13}^{B}	E	E_{13}^{B}	G	G	G	G	35	G	E_{35}^{R}	38	84	41	40	A	16	E	19	E	E_{14}^{B}
25	E_{13}^{B}	E	E	16	17	E	E	G	G	E_{58}^{B}	E_{45}^{B}	G	G	37	G	$\frac{G}{26}$	20	18	E	E_{15}^{S}	E	E	E	E
26	E	E_{13}^{B}	E_{14}^{B}	E_{14}^{B}	E_{13}^{B}	E_{13}^{B}	E	G	G	33	37	38	37	35	34	39	25	29	29	18	E_{14}^{B}	E_{13}^{B}	E_{15}^{S}	E_{14}^{B}
27	E_{15}^{S}	E_{15}^{S}	E	E	E	E	E	G	$\frac{G}{19}$	33	37	37	38	42	35	G	G	20	E	E	E_{14}^{B}	E_{14}^{B}	E_{13}^{B}	E
28	E	16	E	E	E_{14}^{B}	16	E	19	27	G	41	38	38	36	35	40	$\frac{G}{31}$	20	16	A	28	30	26	E
29	E_{13}^{B}	E	16	E	E_{13}^{B}	E_{13}^{B}	16	26	35	44	35	38	36	35	34	39	34	24	15	25	20	E	E_{16}^{S}	E
30	E_{15}^{S}	E_{13}^{B}	E_{15}^{S}	E_{15}^{S}	E_{13}^{B}	E	E	15	G	$\frac{G}{19}$	G	G	38	38	36	32	25	18	20	A	24	25	18	18
31	E	E	E_{14}^{B}	E_{15}^{S}	E	E	E	15	G	G	G	39	38	$\frac{G}{30}$	36	31	26	G	16	E	16	22	16	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	E_{13}	E	E_{14}	E_{13}	E_{13}	E_{13}	E_{13}	15	G	31	32	34	34	35	33	29	25	18	15	15	15	15	E_{15}	E
UQ	E_{15}	E_{14}	E_{15}	E_{14}	E_{15}	E_{15}	E_{15}	19	26	34	34	37	37	36	35	32	28	24	20	22	18	18	16	E_{15}
LQ	E	E	E	E	E	E	E	G	G	21	G	G	G	G	G	$\frac{G}{23}$	23	15	E	E_{13}	E_{14}	E	E	E

JAN. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	14	16	15	19	25	22	15	15	15	15	14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
2	E S 15	E S 15	E S 15	14	13	13	14	13	15	15	15	15	15	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
3	E S 15	E S 15	E S 15	E S 15	13	E S 15	E S 15	15	15	15	15	15	19	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
4	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	14	15	15	15	19	25	15	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
5	E S 15	E S 15	E S 15	E S 15	E S 15	13	E S 15	15	15	15	15	15	15	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16
6	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	15	19	19	15	15	18	15	E S 15	14	14	14	E S 15	E S 15	E S 15
7	E S 15	E S 15	14	E S 15	E S 15	E S 15	13	14	14	15	19	25	15	15	15	19	15	13	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
8	E S 15	E S 15	E S 15	13	13	E S 15	13	14	15	15	15	15	15	15	15	15	14	13	E S 15	14	E S 15	E S 15	E S 15	E S 15
9	E S 15	14	E S 15	E S 15	13	E S 15	E S 15	15	14	15	15	15	15	15	14	16	16	15	E S 15	13	13	14	E S 15	E S 15
10	E S 15	E S 15	12	E S 15	14	E S 15	E S 15	14	15	15	16	16	18	15	14	15	14	14	13	E S 15	14	E S 15	E S 15	E S 15
11	E S 15	12	12	12	13	14	14	C	C	15	25	C	C	C	15	15	15	13	13	E S 15	E S 15	E S 15	E S 15	E S 15
12	E S 15	E S 15	E S 15	E S 15	E S 15	14	E S 15	15	15	15	15	24	18	19	16	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
13	E S 15	13	E S 15	E S 15	13	E S 15	E S 15	15	15	15	24	18	19	24	15	15	15	14	13	13	13	E S 15	E S 15	E S 15
14	E S 15	13	13	13	13	13	13	14	15	15	18	24	26	15	15	15	14	13	13	14	13	14	E S 15	E S 15
15	E S 15	12	13	13	13	14	12	15	16	16	14	26	16	16	15	14	14	14	14	13	13	E S 15	13	14
16	14	14	14	13	12	13	13	14	14	14	14	15	15	14	14	14	13	15	14	13	14	E S 15	E S 15	14
17	E S 15	E S 15	14	13	14	13	12	14	13	14	15	15	22	15	26	16	15	15	14	13	13	E S 15	13	13
18	13	13	14	14	13	13	14	13	14	15	15	15	15	15	15	15	14	13	13	E S 15	E S 15	E S 15	E S 15	E S 15
19	E S 15	13	E S 15	13	14	E S 15	E S 15	15	15	15	15	14	15	15	15	15	14	14	E S 15	14	14	13	E S 15	E S 15
20	E S 15	E S 15	E S 15	13	14	E S 15	E S 15	13	15	15	15	15	15	15	14	15	13	14	13	E S 15	E S 15	E S 15	13	E S 15
21	13	E S 15	14	13	E S 15	E S 15	13	15	14	15	15	14	19	15	24	14	14	13	13	13	E S 15	E S 15	E S 15	E B 14
22	E S 15	E S 15	E S 15	13	E S 15	13	13	15	15	15	15	15	14	20	24	15	15	15	14	E S 15	E S 15	E S 15	E S 15	E S 15
23	E S 15	E S 15	E S 15	13	13	E S 15	E S 15	13	14	14	14	15	15	15	16	14	14	14	E S 15	E S 15	14	13	E S 15	14
24	13	14	13	13	13	14	13	15	15	16	26	14	17	18	15	14	14	14	12	14	E S 15	14	E S 15	14
25	13	13	13	13	13	14	13	14	14	58	45	28	27	26	15	15	14	15	E S 15	E S 15	E S 15	E S 15	14	E S 15
26	E S 15	13	14	14	13	13	E S 15	E S 15	14	15	16	15	15	15	15	14	14	13	14	13	14	13	E S 15	14
27	E S 15	E S 15	14	14	14	13	14	14	14	15	15	15	15	15	14	15	14	14	13	12	14	14	13	E S 15
28	E S 15	13	14	14	14	13	14	14	14	15	15	14	15	15	16	15	15	14	13	14	13	13	13	E S 15
29	13	E S 15	13	14	13	13	13	14	16	15	15	15	15	15	15	25	15	14	14	13	E S 15	E S 15	16	E S 15
30	E S 15	13	E S 15	E S 15	13	E S 15	E S 15	13	14	14	16	16	17	16	16	16	14	13	13	E S 15	13	14	13	E S 15
31	E S 15	14	14	E S 15	E S 15	14	14	14	15	15	16	26	22	15	15	14	14	14	14	14	E S 15	13	14	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	31	31	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	E S 15	E S 15	13	14	13	14	14	14	15	15	15	15	15	15	15	15	14	14	14	13	E S 15	E S 15	E S 15	E S 15
UQ	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	17	24	19	15	15	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	E S 15	13	14	13	13	13	13	14	14	15	15	15	15	15	15	15	14	14	13	13	14	14	14	E S 15

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JAN. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	265	290	295	270	290	300	310	350	350	350	350	325	325	305	315	335	330	325	315	340	330	285	270	260
2	305	290	300	315	265	285	335	345	330	335	320	310	320	320	325	335	325	310	330	325	315	265	265	305
3	285	275	265	270	270	295	300	340	345	335	325	340	345	315	315	335	320	330	335	320	295	F	F	F
4	300	F	295	270	255	260	275	310	345	325	315	320	315	320	315	325	315	325	330	345	A	265	A	A
5	A	F	285	310	310	280	275	310	335	335	340	335	330	315	300	325	325	315	335	320	340	285	A	A
6	295	280	290	310	260	255	270	340	335	325	335	345	310	340	310	320	310	300	335	315	310	305	275	260
7	270	285	315	290	295	295	280	350	350	330	345	320	345	315	335	330	345	305	340	315	295	275	260	260
8	285	285	295	270	305	305	325	335	365	320	330	345	340	340	315	335	310	315	330	325	290	275	F	275
9	280	300	295	295	280	265	310	320	345	340	330	350	320	345	325	345	370	335	305	340	330	305	270	F
10	305	315	320	340	295	280	315	350	345	335	315	345	315	325	335	335	340	325	310	325	295	270	245	290
11	290	325	340	310	320	295	270	C	C	320	320	C	C	C	325	340	340	300	330	315	310	285	265	270
12	285	310	300	260	280	315	305	325	350	325	335	330	340	300	335	340	340	305	335	335	280	285	270	275
13	285	295	330	340	270	300	280	310	315	325	315	325	325	325	325	345	360	335	325	330	295	275	295	265
14	280	295	310	290	275	300	285	315	300	320	340	335	340	325	340	325	335	330	325	340	265	285	280	285
15	285	275	280	300	295	295	300	330	345	330	335	325	325	335	325	315	335	330	320	335	315	300	280	275
16	275	265	280	280	275	285	265	320	330	340	325	320	320	315	330	340	325	335	340	355	305	300	270	285
17	280	310	275	285	285	305	295	350	335	340	340	325	335	320	315	320	340	320	355	340	295	295	265	270
18	285	290	295	315	300	310	290	A	320	330	330	310	305	305	300	310	330	330	335	320	285	265	260	280
19	275	275	285	350	280	275	280	320	315	305	340	325	325	305	315	320	335	335	330	320	300	330	275	285
20	285	310	315	305	295	300	310	335	320	320	315	310	310	315	310	305	305	320	335	315	260	260	305	295
21	300	300	285	300	305	310	295	320	350	340	330	320	330	320	315	330	325	330	305	295	310	300	310	310
22	270	290	330	325	310	285	285	330	350	325	325	335	325	335	325	320	340	325	315	335	295	285	320	310
23	285	280	290	320	270	275	305	345	350	335	335	350	355	305	330	335	335	335	325	315	305	285	285	310
24	295	310	305	310	345	265	300	345	345	340	330	355	335	325	320	345	365	330	A	340	345	270	250	270
25	295	330	290	340	275	280	305	360	330	335	330	335	315	325	325	335	340	315	315	320	300	300	305	305
26	315	290	280	320	285	290	325	360	335	330	335	315	315	325	330	340	350	335	325	330	305	280	285	295
27	280	295	305	310	305	285	290	355	350	330	320	350	325	330	320	325	335	325	300	335	310	280	310	305
28	235	260	300	255	260	290	250	300	310	315	310	315	285	290	305	315	335	320	305	310	310	295	265	290
29	285	285	265	265	255	265	275	335	350	330	300	320	320	325	315	315	320	320	295	315	305	315	275	315
30	295	280	275	270	290	280	290	335	350	330	330	325	320	325	310	305	325	340	315	315	270	265	270	295
31	315	300	265	270	265	275	320	360	365	335	325	330	325	320	310	320	335	325	325	300	325	345	285	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	31	31	31	31	31	29	30	31	31	30	30	30	31	31	31	31	30	31	30	30	27	27
MED	285	290	295	300	285	285	295	335	345	330	330	325	325	320	320	330	335	325	325	325	305	285	275	285
UQ	295	300	305	315	298	300	308	350	350	335	335	340	335	325	325	335	340	330	335	335	310	300	285	302
LQ	280	280	282	270	270	278	280	320	330	325	320	320	315	315	315	320	325	318	315	315	295	275	265	272

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JAN. 1971 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JAN. 1971 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

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

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

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JAN. 1971 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JAN. 1971 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									230	220	250	240	240	280	260	250								
2										240	250	265	260	250	255	240								
3											250	250	250	290	250									
4											250	250	250	250	250									
5										250	245	250	245	240	255									
6											250	250	240	250	245									
7											250	280	250	250										
8											250	250	255	250	265	250								
9										250	250	245	230	260		230								
10										230		250	240	260	255									
11								C	C	255	255	C	C	C	275	245								
12										250	250	250	245	250	250									
13										250	250	245	245	270	250	240								
14										245	240	250	240	255	240									
15									240	255	250	230	250	250	270	240								
16										230	230	230	260	230	250			A						
17										240	240	230	255	260										
18										250		250	250	255										
19									250	250	255	250	250	250	260									
20									250	250	250	260	280	250	250									
21										250	250	260 A	250	240	255	250								
22											250	250	260	250	250	245								
23										255	245	240	240	240	275	230	225							
24										255	260	240	250	270	260	A								
25										E B 260	240	250	240	250	245									
26										275	255	250	265	260	260									
27										250	275	240	250	250	250	240								
28									275	235	260	260	240	300	275									
29										245	245	260	250	250	250									
30											230	245	245	275	240	240								
31										230	240	240	240	250		230								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									5	24	29	30	30	30	26	13	1							
MED									250	250	250	250	250	250	252	240	225							
UQ									250	251	250	250	250	260	260	245								
LQ									240	240	245	240	240	250	250	240								

JAN. 1971 | H'F2 (KM)

IONOSPHERIC DATA

JAN. 1971 | 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	310	300	290	300	260	265	250	240	230	220	240	200	200	200	240	240	240	240	240	215	210	250	330	300
2	250	260	290	260	290	300	235	210	230	210	210	240	240	240	240	220	230	225	220	240	245	350	300	285
3	290	300	305	280	300	290	260	240	230	240	210	240	210	230	240	250	240	240	230	245	250	280	315	305
4	260	250	240	250	350	350	290	210	230	240	240	240	230	210	240	240	230	240	240	230	A	310	A	A
5	I A 310	350	300	240	260	245	250	240	230	240	205	240	210	215	240	245	230	240	210	210	210	290	A	A
6	290	295	295	250	340	355	300	230	215	240	220	230	200	205	230	240	215	240	220	230	250	290	300	310
7	310	300	260	290	260	250	250	240	230	235	220	205	240	210	240	230	225	230	210	205	240	290	310	310
8	310	290	250	270	290	260	240	220	230	225	215	240	210	225	210	235	210	240	225	205	245	300	350	300
9	295	290	290	255	290	290	255	225	215	225	220	195	225	230	230	230	205	225	220	205	210	250	310	310
10	290	240	220	205	290	290	250	220	210	225	230	200 H	220	230	235	230	220	230	210	220	255	295	350	300
11	280	240	220	245	250	270	310	C	C	240	240	C	C	C	240	240	230	210	245	200	240	255	330	340
12	310	260	255	340	310	240	240	245	240	240	240	240	200	210	240	245	215	215	215	210	250	280	290	300
13	290	260	245	205	300	260	295	245	245	240	240	220	210	250	240	240	210	230	240	240	250	300	290	290
14	290	255	245	275	290	250	275	240	240	230	230	225	245	230	230	230	240	240	240	220	245	290	290	280
15	285	275	260	255	250	270	260	240	230	225	230	220	230	220	230	230	230	250	250	240	250	260	300	300
16	300	290	290	275	260	300	300	250	240	230	225	205	220	220	I A 230	230	235	I A 235	205	220	240	260	270	290
17	260	250	280	275	290	255	I A 285	240	240	230	225	210	245	230	230	235	230	220	210	220	275	280	310	320
18	290	280	275	240	280	245	300	I A 270	250	240	245	205	240	240	250	245	230	210	I A 220	I A 230	280	290	310	275
19	290	290	250	210	250	310	300	245	245	240	245	240	230	210	235	245	245	240	240	I A 250	260	250	300	280
20	285	250	255	245	250	250	240	240	240	240	230	220	255	210	210	240	245	240	210	210	250	320	240	260
21	265	260	305	260	260	250	300	245	245	240	220	I A 240	205	220	230	220	240	240	245	275	A	280	250	250
22	295	280	245	240	210	250	260	240	230	230	220	240	230	240	215	230	240	240	230	215	240	300	255	285
23	290	290	290	245	210	340	275	230	225	225	230	220	210	205	240	230	230	225	225	220	220	260	275	250
24	260	255	265	245	205	340	270	225	220	230	230	230	225	230	220	I A 230	220	E A 255	I A 240	220	220	350	320	310
25	260	220	270	230	A 345	320	260	220	220	B	B	240	225	225	240	240	230	235	240	225	205	255	255	260
26	245	275	300	240	250	275	240	220	210	230	245	225	220	230	225	230	225	220	245	230	230	260	280	275
27	260	275	260	260	255	260	255	230	220	225	230	230	220	230	230	230	230	220	260	220	210	260	240	230
28	385	375	275	325	270	245	375	270	260	230	250	225	225	230 H	230	250 A	240	220	220	I A 250	270	300 A	360	280
29	260	290	315	305	345	320	320	240	230	I A 230	230	240	240	220	210	245	245	210	245	245	245	245	260	250
30	245	290	290	300	265	285	250	245	210	225	225	205 H	225	225	225	230	240 H	210	205	A	320	340	310	270
31	220	250	300	305	330	310	245	220	220	220	210	225	210	220	230	225	230	220	210	255	230	230	260	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	30	30	30	30	30	30	31	31	31	31	31	30	29	31	29	29
MED	290	275	275	255	270	270	260	240	230	230	230	225	225	225	230	235	230	230	225	220	245	280	300	285
UQ	295	290	290	278	295	305	298	245	240	240	240	240	230	230	240	240	240	240	240	240	250	300	310	300
LQ	260	255	252	242	252	250	250	225	220	225	220	210	210	210	230	230	225	220	212	215	230	260	270	270

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IONOSPHERIC DATA

JAN. 1971 | H'ES (KM) | 135 E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	100	100	S	S	S	B	G	150	G	G	100	G	G	100	100	100	100	100	100	100	100	S
2	S	S	S	B	B	B	B	105	G	G	G	100	100	G	100	G	G	S	S	100	S	100	100	100
3	S	100	S	S	100	110	110	G	115	110	110	G	G	100	G	125	120	110	S	S	S	S	100	100
4	100	100	100	S	S	S	B	G	G	110	110	105	100	100	100	G	140	110	110	100	100	100	100	100
5	100	100	100	100	100	100	S	B	180	G	110	110	110	G	G	100	100	100	100	100	S	100	100	100
6	100	100	100	100	S	100	S	115	110	110	110	G	G	G	G	G	G	S	110	100	100	100	100	100
7	100	100	100	100	S	S	110	110	105	120	110	110	G	G	G	115	120	105	S	S	S	S	S	100
8	100	100	100	B	100	110	110	G	110	110	150	G	G	G	G	100	100	100	100	B	S	S	S	S
9	100	100	100	100	100	S	S	B	G	170	G	G	175	160	100	100	100	B	100	B	B	B	S	S
10	S	S	B	S	B	S	S	G	G	155	G	G	175	150	130	110	105	100	B	95	95	95	S	95
11	S	B	B	B	B	100	B	C	C	150	150	C	C	C	140	140	100	100	100	100	S	S	115	115
12	120	S	S	S	S	B	S	B	G	G	115	150	G	G	G	G	150	B	S	S	100	S	S	S
13	100	110	S	100	100	S	S	B	G	150	G	G	G	195	G	180	150	100	120	100	100	100	100	S
14	110	B	B	100	100	100	B	B	G	120	G	200	180	150	150	130	115	105	100	100	100	100	100	100
15	S	B	115	B	105	105	100	100	G	G	100	140	115	G	120	110	155	100	100	100	100	100	100	100
16	B	B	B	B	B	110	105	100	100	100	100	100	120	140	120	180	115	105	105	100	100	S	100	100
17	S	95	B	B	B	105	105	100	100	100	100	150	G	100	G	155	125	110	100	100	100	100	100	100
18	100	100	100	115	110	105	105	100	100	100	100	100	100	120	110	110	105	100	100	100	100	100	100	S
19	100	100	S	B	B	S	115	150	150	150	150	150	G	G	G	G	100	105	105	100	100	100	100	100
20	100	100	S	110	B	S	S	140	100	120	100	G	100	100	100	100	110	105	100	100	100	100	100	100
21	100	100	110	115	110	S	115	115	110	110	G	100	G	G	110	110	100	100	100	100	100	100	S	B
22	100	100	S	B	S	115	B	G	G	150	120	G	140	130	100	105	105	G	100	S	S	S	S	100
23	100	100	100	100	100	100	100	150	160	170	155	130	115	110	110	100	100	100	100	S	100	B	S	B
24	B	B	120	115	B	110	B	110	G	105	G	110	G	120	110	105	105	100	100	100	100	100	100	B
25	B	110	100	100	105	105	100	G	G	B	B	G	G	130	G	105	100	100	100	S	100	100	100	100
26	95	B	B	B	B	B	100	100	G	155	130	125	115	110	110	105	100	100	100	100	B	B	S	B
27	S	S	100	100	105	105	100	G	105	180	150	140	115	110	105	G	G	160	130	100	B	B	B	100
28	100	125	125	120	B	125	130	125	125	G	130	130	130	155	140	115	110	120	105	100	100	100	100	95
29	B	110	110	110	B	B	160	160	110	110	110	110	110	110	130	120	110	110	105	100	100	100	S	100
30	S	B	S	S	B	100	100	100	G	100	G	G	130	130	125	125	110	105	100	100	100	100	100	100
31	100	100	B	S	110	110	105	100	G	G	G	195	190	105	130	130	120	110	100	100	100	100	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	20	16	16	13	18	17	17	15	24	20	19	19	20	20	25	28	26	26	23	21	20	20	21
MED	100	100	100	100	100	105	105	110	110	120	110	125	115	120	110	110	108	102	100	100	100	100	100	100
UQ	100	100	110	112	105	110	110	125	120	150	140	145	135	145	130	125	120	110	105	100	100	100	100	100
LQ	100	100	100	100	100	100	100	100	102	110	105	108	105	108	102	105	100	100	100	100	100	100	100	100

JAN. 1971 | H'ES (KM)

IONOSPHERIC DATA

JAN. 1971 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F2	F2						HL 11			L1			L1	L2	F4	F1	F1	F1	F1	F1	
2								L2				L1	L1		L1					F1		F2	F2	F2
3		F1			F2	F2	F1		C2	C1	C1			L1		H1	H2	F2					F2	F1
4	F1	F1	F1							C2	C1	L1	L2	L2	L1		H1	F2	F1	F2	F3	F2	F3	F2
5	F2	F2	F2	F1	F3	F1			H1		C1	C1	L1			L1	L1	F2	F2	F1		F1	F4	F3
6	F2	F1	F2	F1		F1		L1	L1	C1	C1								F1	F3	F4	F1	F1	F2
7	F2	F2	F2	F1			F1	L1	L1	H1	C1	C1				C1	H1	F1						F1
8	F1	F1	F1		F1	F1	F1		C1	L1	H1					L1	L3	F2	F1					
9	F2	F3	F1	F1	F1					H1			HL 11	H1	L2	L1	L1		F1					
10										H1			H1	HL 11	HLL 12	L1	L2	L3		F3	F2	F1		F1
11						F1				H1	H1				H1	H1	L1	L2	F1	F1			F1	F1
12	F1										C1	H1					H1				F1			
13	F2	F1		F1	F1					H1				H1		H1	H1	L1	F1	F3	F2	F2	F1	
14	F1			F1	F1	F1				L1		H1	H1	H1	H1	H2	C2	L3	F3	F1	F1	F2	F1	F1
15			F1		F1	F2	F3	L1			L1	H1	C1		C2	C1	HCL 11	L3	F3	F3	F4	F3	F2	F2
16						F3	F2	L6	L2	L2	L2	L1	CL 11	HL 11	CL 23	H1	C4	L4	F1	F4	F3		F2	F2
17		F1				F3	F4	L3	L2	L3	L1	HL 11		L1		H1	H3	C4	F3	F3	F2	F1	F1	F2
18	F2	F1	F2	FF 11	F2	F3	F2	L3	L2	L2	L2	L1	L1	HL 11	C2	C2	L2	L2	F2	F2	F2	F2	F2	
19	F1	F1					F1	H1	H1	HL 11	HL 11	HL 11					L3	L3	F3	F3	F2	F2	F2	F2
20	F1	F1		F1				H1	L1	H1	L1		L2	L2	L2	C1	C1	L1	F1	F1	F2	F1	F2	F1
21	F2	F2	F3	F2	F1		F1	C1	L1	C1		L2			C1	C1	L2	L1	F2	F3	F3	F3		
22	F1	F1				F2				H1	H1		H1	H1	L1	L1	L3		F1					F2
23	F1	F1	F1	F1	F2	F1	F2	H1	H1	HL 11	H1	H1	C1	C1	C2	L2	L1	L1	F1		F2			
24			F1	F2		F1		L1		L1		L1		C1	C2	LL 31	L4	L4	F4	F3	F1	F2	F1	
25		F1	F1	F3	F3	F1	F2							H1		L1	L1	L2	F1		F1	F1	F1	F1
26	F1						F1	L1		H1	H1	H1	C1	C1	C2	L3	L2	L2	F3	F2				
27			F2	F1	F1	F1	F1		L1	H1	H1	H1	C1	C2	L2			H1	F1	F1				F1
28	F1	F2	F1	F1		F1	F1	C2	C2		H1	H1	H1	H1	H1	C2	L2	C2	F3	F4	F2	F3	F4	F2
29		F2	F1	F2			H1	HL 22	L3	C2	C1	C1	C1	C1	H1	H1	C3	L3	F1	F2	F3	F1		F1
30						F1	F1	L1		L1			H1	H1	H1	H1	C1	L2	F2	F4	F3	F3	F2	F1
31	F1	F1			F1	F1	F2	L1				H1	H1	L1	HL 12	HL 11	C2	L1	F2	F1	F2	F4	F2	F2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

JAN. 1971 | TYPES OF ES

IONOSPHERIC DATA

JAN. 1971 | 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	390	370	360	390	350	350	300	↓260R	250	260R	↓275R	280	300	315	310	↓270R	300	290	300	280	280	350	390	360
2	340	350	350	320	350	380	280	260	260	290	300	↓300R	300	300	300	280	290	300	290	290	300	400	360	350
3	350	390	385	350	390	385	305	270	255R	280	300	270	280	310	300	280	↓295R	290	290	300	350E	F	F	F
4	350	F	350	390	400	400	390	290	260	300	300	300	300	300	310	300	300	300	290	260	A	395	A	A
5	A	F	380	300	300	385	340	300	280	295	260	280	290	300	350	↓295R	290	330	280	290	260	350	A	A
6	340	360	310	300	400	400	355	260	260R	300	270	280	300	270	300	300	300	340	250	300	300	300	370	380
7	395	355	310	350	350	310	350	250	250	290	285	300	280	320	290	280	280	300	250	280	310	360	400	400
8	390	390	350	390	350	350	300	280	250	280	300	260	260	280	300	290	315	↓290R	300	260	340	380	F	380
9	380E	360	380E	340	380	390	300	290	260	260	285	260	260	270	280	↓250R	220	275	300	250	250	310	↓390E	F
10	320	305E	↓270E	240	310	↓330R	295	250	245	260	290	260	280	290	270	260	260	290	295	275	305	355	420	350
11	340	290	280	320	290	315	360	C	C	300	300	C	C	C	300	↓255R	260	320	300	280	300	380	400	400
12	400	300	300	400	400	300	310	300	265	300	270	290	260	↓300R	270	280	270	340	285	↓285R	340	350	390	390
13	350	340	300	290	380	340	380	300	↓295R	300	300	295R	298	300	290	260	240	280	300	290	300	380	350	↓390R
14	350	↓350R	340	360	385E	↓350R	360R	300	300	290	265	275	260	280	255	270	270	280	280	260	360	355	355	↓350R
15	360	350	360	315	315	320	310	280	265	280	275	280	280	260	290	290	260	280	280	290	290	305	370	370
16	375	375	360	350	360	350	360	290	↓290R	265	280	290	295	295	290	260	275	I260A	255	250	295	320	350	345
17	345	290	345	345	320	300	300	260	260	260	265	280	280	300	280	295	260	290	250	250	320	330	370	370
18	340	330	320	290	320	270	320	A	300	290	I295C	310	310	320	340	300	↓285R	280R	I270A	I310A	380	390	400	400
19	400	400	320	255	340	380	380	300	300	310	260	300	300	340	300	300	270	290	280	A	350	280	380	380
20	350	300	320	340	340	350	300	290	300	300	300	310	310	300	310	300	300	300	270	300	400	400	300	350
21	350	335	380	340	340R	310	345	300	250	285	↓290R	300	290	280	300R	290	300	290	320	340	I320A	340	310	300
22	390	350	290	300	300	340	350	290	↓260R	300	300	270	300	270	300	300R	280	300	300	280	300	380	320	330
23	380	380	350	300	400	400	310	260	250	↓270R	260	250	250	300	295	260	270	↓260R	285	290	300	340	350	300
24	320	305	315	300	240	380	315	260	240	280	285	255	270	290	300	I250A	240	280	A	255	250	385	410E	385E
25	330	270	320	260	390	375	310	240	260R	275	↓285R	280	270	275	270	270	260	295	305	290S	300	305	320	315
26	300	320	360	280	360	320	280	240	250	290	↓280R	300	300	285	285	255	250	265	290	270	300	345	330	325
27	330	325	310	300	305	345	305	250	↓245R	270	300	255	295	290	285	↓275R	270	275	320	260	295	350	I300S	290
28	420	420	315	405	360	300	415	320	305	300	305	300	345	345	↓315R	300	260	270	300	I295A	300	315	390	345
29	355	355	390	375	420	405	375	275	250	300	310	300	300	300	300	300	300	↓300R	350	300	300	300	380	300
30	360	390	390	390	370	390	350	270	250	290	275	280	290	300	295	310	295	260	290	I300A	380	380	385	325
31	290	300	390	360	400	370	290	240	240	260	290	270	280	300	305	290	285	270	275	315	280	260	320	315
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	31	31	31	31	31	29	30	31	31	30	30	30	31	31	31	31	30	30	30	30	27	27
MED	350	350	345	340	350	350	315	275	260	290	285	280	290	300	300	280	275	290	290	288	300	350	370	350
UQ	380	370	360	360	388	382	358	290	280	300	300	300	300	300	300	300	295	300	300	300	340	380	390	380
LQ	340	305	312	300	320	320	300	260	250	272	275	270	280	280	288	265	260	278	280	260	295	315	340	325

JAN. 1971 | HPF2 (KM)

IONOSPHERIC DATA

JAN. 1971 | YPF2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	100	100	90	100	90	90	100	J,R 100	90	90 R	J,R 85	80	100	85	90	J,R 100	100	100	100	100	100	100	100	90
2	100	100	90	110	100	100	100	90	90	100	100	J,R 100	100	100	100	100	90	100	110	100	100	100	90	100
3	100	100	95	100	100	95	95	90	95 R	100	100	90	100	90	100	100	J,R 95	100	90	100	100 F	F	F	F
4	100	F	100	100	100	100	100	100	110	100	100	100	100	100	110	100	90	100	110	90	A	85	A	A
5	A	F	110	100	100	95	100	100	100	85	110	90	90	100	110	J,R 85	90	110	100	95	90	100	A	A
6	100	90	90	100	90	100	95	90	90 R	100	110	100	100	100	100	80	100	100	100	100	100	100	90	100
7	95	95	90	100	100	100	100	100	110	90	95	100	100	90	100	100	100	100	100	100	90	100	90	90
8	100	100	90	100	100	90	100	100	100	110	100	110	110	100	100	100	105	J,R 90	100	105	100	100	F	100
9	F 100	100	F 100	100	100	90	100	90	100	55	65	40	95	45	70	J,R 50	70	65	95	50	75	90	U,F 100	F
10	75	E 55	J,F 75	70	85	J,R 85	60	55	60	50	75	50	90	60	50	95	45	65	105	70	95	105	85	90
11	105	65	80	90	70	85	85	C	C	100	100	C	C	C	100	J,R 95	100	90	80	100	100	100	80	90
12	90	100	100	100	90	100	100	80	95	80	110	100	120	J,R 90	110	100	110	100	95	J,R 95	110	100	100	100
13	100	100	90	90	100	100	100	110	J,R 85	80	80	R 85	R 90	80	90	120	110	100	100	90	100	100	100	J,R 90
14	100	J,R 90	100	100	F 95	J,R 100	R 100	110	90	65	55	75	60	80	50	85	50	65	75	45	130	90	95	J,R 95
15	85	100	90	60	85	80	70	70	50	50	45	75	80	60	55	65	60	75	75	60	70	100	70	80
16	95	75	65	70	100	95	90	65	J,R 45	55	70	70	75	60	65	55	70	I,A 50	65	50	100	80	125	100
17	105	70	100	100	80	95	100	45	65	45	50	80	50	60	120	80	50	70	50	55	80	85	90	80
18	100	70	80	105	80	85	95	A	50	110	I,C 105	90	100	90	100	100	J,R 95	R 100	I,A 100	I,A 95	100	100	90	90
19	90	90	90	105	100	100	100	100	90	100	110	80	90	100	100	100	110	90	100	A	90	100	100	100
20	110	100	110	100	100	90	100	100	100	90	100	100	90	100	90	100	100	100	110	100	100	100	100	90
21	100	105	90	100	R 100	100	105	100	90	85	J,R 90	100	110	120	R 100	100	100	90	110	100	I,A 100	100	110	100
22	100	100	100	90	100	110	90	110	J,R 100	90	90	110	100	110	100	R 90	100	80	100	105	100	110	120	110
23	110	100	100	100	100	100	110	100	100	J,R 45	85	50	55	100	50	95	75	J,R 60	70	80	70	80	95	90
24	80	90	85	70	60	70	90	55	75	40	45	45	75	65	50	I,A 50	55	70	A	45	60	70	F 90	F 75
25	90	75	80	95	105	75	90	55	R 60	50	J,R 60	45	100	85	70	55	65	65	80	S 60	95	90	80	85
26	75	80	90	80	85	80	40	60	110	55	J,R 50	55	60	55	45	50	55	90	70	75	100	100	75	80
27	115	75	85	60	90	100	95	50	J,R 55	55	55	50	55	70	75	J,R 85	50	85	80	60	105	95	I,S 60	105
28	85	100	85	105	90	100	110	80	65	75	75	70	115	75	J,R 85	95	60	95	100	I,A 85	100	85	105	100
29	95	90	100	100	80	95	75	50	60	90	100	100	90	100	100	100	100	J,R 90	90	100	100	100	100	100
30	120	100	100	100	100	100	100	110	100	60	75	80	70	50	100	90	60	60	110	I,A 80	110	90	110	75
31	70	75	105	90	100	80	60	35	40	55	65	70	80	50	95	70	60	60	85	80	80	50	85	85
	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	31	31	31	31	31	29	30	31	31	30	30	30	31	31	31	31	30	30	30	30	27	27
MED	100	95	90	100	100	95	100	90	90	80	85	80	90	88	100	95	90	90	100	90	100	100	95	90
UQ	100	100	100	100	100	100	100	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100
LQ	90	75	88	90	88	88	90	60	60	55	65	70	75	60	70	80	60	68	80	60	90	90	88	88

The Radio Research Laboratories, Japan

JAN. 1971 | YPF2 (KM)

IONOSPHERIC DATA

JAN. 1971 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	29	30	27	29	31	31	41	73	93S	107	101S	98	123	143R	142R	112VR	98US	79JS	73JS	64	45	39S	39
2	40	36	36	35	31	28	30	43	68	81	99	132	134	140	133US	111	80	73	60	53	57	52S	38	36
3	30	30	33F	44	44	46	49	S	72US	76	81	104	112	100	112	111	101	89	77	58	61	65	53	42
4	40	42	39	25	27	29	30	50S	76	84JS	120S	146	137	132S	135JS	145VS	145JS	S	S	79	52JS	41S	40S	33
5	28IA	32IA	35	34	26F	30	26S	41	83	90S	107	114	112	112	118S	129	120	93US	89	107VS	94JS	62JS	39JS	25
6	30IA	31IA	33	37	26IA	29F	27F	42	80	97S	98	116US	104	98S	118	134VS	140JS	116US	94JS	94JS	74US	63JS	36US	25
7	28F	32F	34F	32	29	30	29	40	78	81	107	107	119S	99JS	103	102	82	80	81	90	59S	48S	35	30
8	30	29	28	29	29	30	30	41	65	79	84	85	106	112	111	111	94	64	77	80	55	38	29	27
9	28	28	31	29	30	32	33	39	83	71	94	101S	78	84	96	98S	84	67	61	71	63JS	46	28	27
10	29	31	34	26	25	26	26	38	69	76	78	88	89	91	82	80	71	68	60	57	63JS	59S	33	31
11	32US	35	32	27	31	27	28S	33S	85US	76	99	132	128	124IC	135IC	130IC	104	75S	77S	R	61	46	35	34
12	34	38IC	31	27	32	30	33	40S	77	96	113	105	106V	83	93	86	75	70	72	76	51	35	32	33
13	30	32	36	32	25	26	26	32	69	88	126	132	127	111S	105	97	69	65	60	64	52	48	44	46IS
14	44JS	48	42	32	26	27	29	33	76	98S	123S	110	96	92	90	78	77	84S	67	62	60	58	67C	61C
15	55C	55C	53C	51C	44C	38C	37C	40C	81C	110C	142C	177C	173C	154C	137C	109C	91C	75V	67C	77C	84C	56C	44C	45C
16	49S	50S	46C	40C	36C	35	35	39	94C	136C	148IC	154IC	154	115	98	89	81	86	82IS	64IA	62	62	49	40
17	40S	39	34	31	32	27	30	42	88S	101	125	134	151	144	140	124	112	96	79	78	70	46	41	38
18	36	34F	34	29	25	25	25	36S	68	120US	143	168R	173R	168R	147	132	120JS	101US	93IS	71	65JR	62S	61US	61JS
19	52	57	55	41	22JR	20UR	28	40	62S	87	128	140	143	145	145	138R	115	88IS	68	54IA	56	60JS	53	41
20	49US	39	31	28	26	28	29	41	72	96	118S	123US	144	143	141	128US	120JS	112S	100US	90J	68	S	56	51
21	44	42	35	31	26	19	20	37US	71US	93US	111	115S	110	104IS	105	105US	103S	98JS	86S	57	57	67JS	61S	51
22	31	27	30	29	29	22	22	36S	71	80	90	109	115	104	108	100JS	88UR	82S	75JS	63US	63JS	53JS	51US	51S
23	35	29	29	30	26	24	22	38	66	75	87	102	84	81	101S	102US	84	81	68	54	63US	59S	41	37
24	33	30	30	32	32	30	31	41	74JS	86	112	100	96	98US	120	93	87	73	71	53JS	51US	48US	39	38
25	38	38	26	26	27	28	27	41	70	87	120	103	87	94	100	92	77	72	64	66	75S	45	42S	49
26	47	39	35	41S	28	27	30	42	76S	82	123JS	127S	112	117	114	101	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	86	95	105	101S	106	106	109S	91	73S	88JS	77	63JS	50US	39
28	28	28	37IS	23	26	26	19	36	92	137S	117S	98	108	111	121S	111	108	91J	76US	68IC	64S	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	94	92	90	95	67	63	76JS	73	62	54
30	40	30	31	35S	35S	37	36	46	86	95S	98S	99	111	112	116	114	104	113	88IC	50	48	61	61	58
31	52	41	31	33	32	32	31	50S	91	88S	97	105	94	95	102	114	110	115	78	57	68	69	54	38S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	29	29	29	28	29	29	30	30	30	30	31	31	30	29	29	29	30	28	29	29
MED	35	34	34	31	29	28	29	40	76	88	109	110	112	111	112	109	98	86	76	66	63	57	44	39
UQ	44	39	36	35	32	30	31	42	83	96S	123	132	134	124	134	126	112	96S	81S	78	68S	62S	53	49
LQ	30	30	31	28	26	26	26	38	70	81	97	101	98	98	102	96	82	73	67	57	57	46	38	33

The Radio Research Laboratories, Japan

JAN. 1971 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L	L	L							
2										L	L	L 500	L	L	L	L								
3											L	L	L	L	L	L 390	A							
4											L	L	L	L	L	L								
5											L	L	L	L	L	L								
6											L	L	L	L	L	C								
7											L	L 440	U L 480	L	L	L								
8										L	L	L	L	L	L	L								
9										L 350	L	L	L	L	L	L								
10										L		L	L	U L 440	L	L								
11										L 330	L	L	L	C	C	C	U L 340							
12										L	L	L	L	L	L	L								
13											L	L	L 480	L 460	L	L								
14										L	L	L	L	L	L 450	L 400								
15										L	L	L 500	L	L	L	L	A							
16										L	C	C	L 490	L	L	L								
17										L	L	L	L 450	L	L	A	L							
18									L	L	L	A	L	U L 500	L	A								
19										L	L	L	L	L	L	L	L							
20										L	U L 430	L	L	L	L	L	L							
21										L	L	L	L	L	L	L	L							
22											L	L	L	L 490	U L 470	L								
23											L	L	L	L	L	L	L							
24											L	L	L	L	U L 480	L								
25										B	L	L	L	L	L	L								
26											L	L	L	L	L	L	C	C						
27									C	C	L	L	L	L	L	L								
28										L	L	L	L	L	L	L	L							
29									C	C	C	C	C	C	L	L	L							
30											L	U L 500	U L 540	L 570	L	L	U L 370							
31											L	L 470	L	L	L	L	L	270						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										2	1	5	5	5	3	2	2	1						
MED										L 340	U L 430	L 500	L 480	L 490	U L 470	L 395	U L 355	270						
UQ												L 500	L	U L 490	L 500	U L 475								
LQ												L 470	L 480	L 460	L 460									

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JAN. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOE (0.01 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31 12·1 N Long. 130 37·1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								S	200	290	310	330	330	I A 330	325	300	250	A						
2								S	190	H 270	I R 310	330	340	340	320	300	260	165						
3								S	205	275	A	A	340	340	330	305	I A 250	A						
4								S	200	270	A	I A 330	350	I A 350	335	I A 310	270	A						
5								S	210	270	300	I A 320	335	340	315	305	250	A						
6								S	A	A	A	A	350	I A 355	A	C	270	A						
7								S	A	A	A	330	I A 335	I A 340	330	I A 305	270	A						
8								S	220	A	A	335	340	345	340	310	250	S						
9								S	210	I A 270	300	330	340	340	325	305	270	170						
10								S	210	270	310	330	345	335	325	310	260	190						
11								S	205	270	310	330	340	I C 340	I C 325	I C 305	270	180						
12								S	195	280	305	I A 330	I A 335	I A 340	330	310	270	A						
13								S	190	H 280	H 320	350	350	340	330	300	270	A						
14								S	H 190	H 275	305	330	H 340	H 340	340	310	270	A						
15								S	200	C 270	I A 310	I A 335	C 350	C 355	C 330	C 320	C 270	A						
16								S	A	280	I C 310	I C 335	I A 355	360	350	315	280	A						
17								S	A	290	330	340	360	350	345	320	270	A						
18								S	220	290	315	I A 335	350	A	A	295	270	A						
19								S	200	280	320	340	350	350	A	A	A	A						
20								S	220	280	A	A	A	350	330	A	A	195						
21								S	A	A	320	340	350	345	340	320	A	A						
22								S	215	280	320	335	345	350	A	A	A	A						
23								S	210	285	320	335	345	340	I A 335	315	285	205						
24								S	220	300	325	A	A	A	340	A	A	A						
25								S	225	I b 290	340	360	360	350	I A 325	I A 310	280	210						
26								S	220	290	315	330	335	340	330	A	C	C						
27								C	C	C	330	345	355	350	A	A	A	200						
28								S	210	270	310	340	H 350	H 350	340	320	290	170						
29								C	C	C	C	C	C	C	340	325	280	A						
30								S	210	285	320	340	350	350	340	320	270	A						
31								S	220	290	320	340	350	360	350	320	280	220						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									24	25	24	26	28	28	26	24	24	10						
MED									210	280	315	335	348	345	330	310	270	192						
UQ									220	290	320	340	350	350	340	320	275	205						
LQ									200	270	310	330	340	340	325	305	265	170						

JAN. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JAN. 1971 | FOES (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31 12·1 N · Long. 130 37·1 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 14	E S 11	E S 15	E B 12	E B 12	E B 12	E S 15	J X 25	G	33	J G 31	J G 31	J X 36	J X 46	J X 36	J G 30	G	18	J X 24	J X 26	E S 15	J S 15	J X 19	E B 17
2	E S 15	E B 15	E B 14	E B 15	E	E B 11	E S 15	E S 15	G	32	G 30	G 24	G 27	J X 36	G 21	G 30	J X 31	G	E S 15	E S 15	E S 15	J X 61	M 37	J X 28
3	J X 29	19	E S 15	18	E B 11	J X 21	J X 19	J X 36	26	30	J X 51	J X 36	J G 34	G 30	G 30	J X 33	J X 44	J X 31	J X 35	J X 25	J X 36	E S 15	E S 15	E S 15
4	J X 23	J X 44	J X 41	J X 24	J X 19	J X 20	J X 19	E S 15	G	J X 41	J X 54	J X 59	J X 45	J X 44	J X 36	J X 56	J X 37	25	J X 24	J X 24	J X 20	E S 15	J X 25	E S 15
5	J X 80	J X 40	J X 28	J X 38	J X 28	J X 27	J X 19	J X 17	J X 25	J X 37	J X 33	35	J X 44	J X 38	J X 34	J X 40	J X 45	J X 40	J X 50	J X 29	J X 34	J X 26	19	E S 15
6	J X 54	J X 60	J X 38	J X 37	J X 39	J X 25	J X 26	25	J X 28	J X 39	J X 60	J X 42	J X 46	J X 54	J X 53	C	J X 29	J X 32	J X 44	J X 29	J X 25	16	E S 15	E S 15
7	J X 37	J X 28	J X 22	J X 18	J X 24	E B 15	23	21	25	J X 39	J X 36	J G 31	36	J X 36	J X 40	J X 38	J X 31	J X 25	J X 21	E B 12	E S 11	E S 15	E S 15	E S 15
8	E S 13	E S 14	E B 15	J X 26	E B 15	F S 13	E S 15	E S 15	G	29	J X 45	G 33	G	J G 31	G	G	G 19	J X 17	E S 15	J X 18	18	E b 17	E S 15	E S 15
9	E S 15	E S 15	E S 15	E	E B 11	E S 15	E S 15	E S 15	G	J X 28	J G 30	35	G	G	J X 34	G	G	G	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
10	24	17	E S 11	E	E B 12	E S 11	E S 14	E S 15	G	J X 28	J X 36	37	47	37	37	37	28	G	E S 15	E S 11	J X 19	E S 15	E S 15	E S 11
11	E S 15	E S 14	E	E S 11	E	E B 15	E S 15	E S 15	G	G	36	38	J G 34	G 34	C	C	G 18	21	J X 21	J X 20	E S 11	E S 11	E S 15	19
12	E S 15	C	E S 12	E	E	E	F S 14	19	G	G	33	36	J X 35	35	G 31	G 30	G 20	J X 31	E S 14	E S 14	E S 15	E S 15	E S 15	E S 13
13	E S 15	E	E S 15	E S 11	E	E S 12	E S 15	20	G	G	39	G	36	G	G 30	40	36	J X 23	J X 29	J X 29	20	J X 22	J X 21	J X 20
14	21	19	E S 15	E	E	E S 13	E S 15	E S 15	G	G	36	39	36	G	G	G	33	J X 33	J X 34	J X 39	J X 27	J X 24	J C 24	E S 15
15	E S 14	F S 15	E S 15	18	J X 19	J X 21	24	J X 24	G	G	C 35	C 40	C 43	C 39	G	C 38	J C 42	J C 33	J C 38	J C 100	J C 41	J C 27	20	J X 19
16	J X 19	J X 28	E S 11	E S 13	E	M 35	J X 24	J X 26	J X 38	J X 34	C	C	J X 39	43	J X 39	34	J X 34	J X 64	J X 57	J X 104	J X 36	J X 22	E S 15	E S 15
17	J X 22	J X 20	E S 13	E S 14	E	E S 11	J X 21	J X 21	J X 41	31	G 31	J G 30	G 30	36	G 30	41	36	J X 36	J X 42	J X 59	J X 30	J X 30	J X 26	J X 24
18	E S 16	E S 15	E B 11	E B 15	E	J X 39	E S 15	24	J X 26	45	J X 50	J X 53	G 34	39	J X 44	J X 52	J X 61	J X 108	J X 40	J X 61	J X 37	J X 50	25	J X 21
19	E B 20	E B 16	J X 26	J X 32	J X 38	J X 23	J X 21	17	27	33	G	G 30	J G 25	G 25	J X 38	J X 37	J X 32	J X 39	J X 42	J X 86	J X 51	J X 31	J X 31	J X 24
20	J X 19	J X 20	J X 18	E	E B 13	J X 19	20	J X 25	G 22	J X 29	J X 39	J X 64	J X 39	41	38	35	J X 28	21	J X 20	J X 19	22	20	J X 29	J X 19
21	E S 15	E S 15	20	20	20	23	18	19	J X 49	J X 40	J X 34	J X 35	G 29	G 28	J G 29	J G 26	J X 35	J X 30	J X 33	21	19	J X 51	J X 32	J X 33
22	J X 26	17	J X 23	J X 24	J X 20	20	20	18	G 29	J G 26	36	37	37	40	J X 35	J X 39	J X 38	J X 41	J X 36	J X 35	J X 44	J X 28	J X 29	24
23	18	26	J X 36	J X 22	J X 25	20	23	21	G	32	36	42	40	42	J X 54	J X 41	J X 32	J X 27	J X 29	J X 21	J X 24	20	17	E S 15
24	E S 11	E S 12	E S 15	E	E B 12	E S 12	E S 15	E S 15	G	G	34	39	J X 45	J X 39	35	J X 48	J X 40	J X 30	J X 35	J X 36	20	21	E S 15	20
25	E S 12	E S 12	J X 34	J X 19	20	20	23	19	G	E B 47	G	40	39	37	42	J X 46	J X 33	J X 29	J X 22	J X 22	J X 21	J X 22	J X 22	18
26	E S 15	E S 13	E S 11	E	J X 25	18	18	18	G	J G 28	34	37	37	42	41	35	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	36	38	40	J X 51	J X 50	J X 67	J X 43	J X 34	J X 32	J X 27	20	21	E S 15	E S 15
28	22	21	J X 24	J X 20	J X 20	18	E S 15	E S 15	G	G	G	G	43	G	38	39	35	J X 39	J X 37	D C 26	J X 51	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	37	43	36	J X 49	J X 36	J X 25	J X 26	J X 21	18	E S 15
30	E S 14	E S 16	E S 12	E S 15	E S 17	E S 11	20	19	G 19	G	34	40	42	42	37	36	31	J X 40	35	J X 50	J X 22	E S 15	E S 15	E S 15
31	E S 11	E B 11	E	E	E	E B 11	E S 15	24	J X 25	G 19	G 25	G	G 19	G	G	39	J G 28	J X 25	J X 28	J X 27	J X 30	J X 29	J X 37	J X 27
	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	28	29	29	29	29	29	29	29	29	29	29	30	30	30	29	30	30	30	30	30	29	29	29
MED	E S 16	16	E 15	15	E b 13	18	18	19	G	29	35	37	36	37	36	38	J X 33	J X 30	J X 32	J X 26	J X 22	J 21	19	E S 15
UQ	J X 22	20	J X 23	J X 20	J X 20	J X 21	21	24	26	34	J X 36	40	42	42	J X 39	J X 41	J X 37	J X 39	J X 37	J X 38	J X 34	J X 27	J X 25	J X 20
LQ	E S 15	E S 14	E S 12	E	E	E S 12	E S 15	E S 15	G	G	G 31	G 31	G 34	G 30	G 30	33	J 28	J X 23	J X 21	J X 20	19	E S 15	E S 15	E S 15

The Radio Research Laboratories, Japan

JAN. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | 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 S 14	E S 11	E S 15	E B 12	E B 12	E B 12	E S 15	S	G	G	G 27	G 27	30	42	26	G 27	G	16	15	E	E S 15	S	17	E B 17
2	E S 15	E B 15	E B 14	E B 15	E	E B 11	E S 15	E S 15	G	G	E R 30	G 24	G 26	26	G 20	G 21	20	G	E S 15	E S 15	E S 15	43	E	E
3	17	E	E S 15	14	E B 11	E	E	16	G	G	33	33	G 31	G 30	G 29	27	40	23	23	20	22	E S 15	E S 15	E S 15
4	E	25	26	16	14	E	E	E S 15	G	G	49	36	31	39	31	37	26	21	19	E	E	E S 15	E	E S 15
5	A	A	E	19	16	17	E	G	17	24	33	34	31	30	30	25	23	29	20	19	20	16	19	E S 15
6	A	A	21	25	A	22	E	S	23	31	39	36	33	48	49	C	25	24	38	23	E	E	E S 15	E S 15
7	19	19	E	E	15	E B 15	E	S	22	32	35	G 31	35	34	31	30	26	22	E	E B 12	E S 11	E S 15	E S 15	E S 15
8	E S 13	E S 14	E B 15	19	E B 15	E S 13	E S 15	E S 15	G	29	35	G 32	G	G 26	G	G	G 18	S	E S 15	16	E	E B 17	E S 15	E S 15
9	E S 15	E S 15	E S 15	E	E B 11	E S 15	E S 15	E S 15	G	28	G 29	G	G	G	32	G	G	G	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
10	E	E	E S 11	E	E B 12	E S 11	E S 14	E S 15	G	26	30	36	44	36	35	34	27	G	E S 15	E S 11	E	E S 15	E S 15	E S 17
11	E S 15	E S 14	E	E B 11	E	E B 15	E S 15	E S 15	G	G	35	37	G 31	G 32	C	C	G 18	G	E	E	E S 11	E S 11	E S 15	E
12	E S 15	C	E S 12	E	E	E	E S 14	S	G	G	G	35	E R 35	35	G 30	G 26	G 20	22	E S 14	E S 14	E S 15	E S 15	E S 15	E S 13
13	E S 15	E	E S 15	E B 11	E	E S 12	E S 15	S	G	G	36	G	G	G	G 30	37	33	21	E	21	E	E	E	E
14	F	E	E S 15	E	E	E S 13	E S 15	E S 15	G	G	36	38	E R 36	G	G	G	G	22	20	19	22	22	C 18	E S 15
15	E S 14	E S 15	E S 15	E	E	19	E	S	G	G	C 33	C 39	C 43	C 38	G	C 36	C 39	C 32	28	C 42	C 33	16	E	E
16	E	20	E S 11	E S 13	E	17	19	21	23	20	C	C	38	41	26	25	22	45	48	A	20	16	E S 15	E S 15
17	E	E	E S 13	E S 14	E	E S 11	E	S	25	20	G 20	G 24	G 22	G	G 22	40	30	24	39	22	E	23	22	20
18	E S 16	E S 15	E B 11	E B 15	E	E	E S 15	S	19	25	30	49	G 33	39	42	48	32	49	16	40	26	35	19	20
19	E B 20	E S 16	20	24	16	16	19	S	25	31	G	G 30	G 24	G 24	37	36	31	25	36	A	35	26	30	23
20	E	E	E	E	E B 13	E	F	S	G 21	27	34	48	37	40	37	35	27	16	E	13	E	E	28	E
21	E S 15	E S 15	E	13	12	11	E	S	22	30	30	32	G 28	G 27	G 26	G 26	28	23	30	17	E	36	20	20
22	19	E	E	19	11	E	E	S	G	G 15	35	G	G	40	33	34	35	32	26	26	28	26	20	17
23	E	19	15	16	15	E	E	S	G	G	G	41	38	37	35	30	25	16	17	18	E	E	E	E S 15
24	E S 11	E S 12	E S 15	E	E B 12	E S 12	E S 15	E S 15	G	G	G	36	37	36	32	37	36	24	20	34	E	E	E S 15	E
25	E S 12	E S 12	19	11	E	E	E	S	G	E B 47	G	39	G	G	39	33	20	19	15	E	E	E	16	E
26	E S 15	E S 13	E S 11	E	15	E	E	S	G	G 25	G	37	36	41	37	33	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	G	G	38	46	40	38	31	17	19	19	16	E	E S 15	E S 15
28	E	15	15	E	19	E	E S 15	E S 15	G	G	G	G	43	G	G	38	35	35	28	19	43	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G	42	22	40	31	19	22	15	E	E S 15
30	E S 14	E S 16	E S 12	E S 15	E S 17	E S 11	E	S	G 15	G	G	39	41	41	G	G	G	27	C	41	19	E S 15	E S 15	E S 15
31	E S 11	E B 11	E	E	E	E B 11	E S 15	S	16	G 18	G 23	G	G 19	G	G	36	G 25	18	E	16	E	24	26	17
	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	28	29	29	29	29	29	12	29	29	29	29	30	30	30	29	30	29	29	30	30	28	29	29
MED	E S 14	E E 14	E E 14	E E 12	E E 12	E E 11	E E 14	E S 15	G	G 16	30	34	32	34	30	33	26	22	19	19	15	E E 15	15	E S 15
UQ	E S 15	16	E 15	15	14	E 15	E S 15	E S 15	19	26	35	37	37	40	35	37	31	27	28	23	22	22	19	E S 15
LQ	E	E E 11	E E 11	E	E	E	E	E S 15	G	G	G	G 24	G 24	G 24	G 20	G 26	G 20	17	15	E E 14	E	E E 11	E S 15	E S 11

JAN. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | F-MIN (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 14	E S 11	E S 15	12	12	12	E S 15	E S 15	E S 15	13	15	16	15	16	15	16	17	E S 15	11	E S 14	E S 15	E S 15	E S 15	17
2	E S 15	15	14	15	E	11	E S 15	E S 15	11	14	14	15	15	15	15	15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 13
3	E S 15	E S 15	E S 15	E	11	E S 15	E S 15	E S 15	11	15	15	15	15	19	16	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
4	E S 15	11	11	E	E	E S 15	E S 15	E S 15	E S 11	11	11	15	19	20	19	17	E S 15	E S 14	11	E S 15	E S 15	E S 15	E S 15	E S 15
5	E S 15	11	E	E	E	E	E S 15	E S 15	11	12	11	15	17	15	15	15	E S 14	E S 15	E S 12	E S 11	E S 15	E S 15	E S 15	E S 15
6	E S 15	E S 15	15	15	11	E S 15	E S 15	E S 15	E S 15	12	12	15	17	19	15	E C 100	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
7	E S 15	E S 15	15	15	12	15	E S 15	E S 15	11	12	11	12	11	16	15	19	15	E S 15	E S 12	12	E S 11	E S 15	E S 15	E S 15
8	E S 13	E S 14	15	11	15	E S 13	E S 15	E S 15	E S 14	15	15	16	16	15	16	11	14	E S 15	E S 15	E S 15	E S 15	17	E S 15	E S 15
9	E S 15	E S 15	E S 15	E	11	E S 15	E S 15	E S 15	E S 15	12	15	15	15	15	15	11	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
10	E S 15	E S 15	E S 11	E	12	E S 11	E S 14	E S 15	E S 15	12	15	16	15	15	15	15	E S 15	E S 15	E S 15	E S 11	E S 15	E S 15	E S 15	E S 11
11	E S 15	E S 14	E	11	E	15	E S 15	E S 15	E S 15	15	15	20	19	19	C	C	11	E S 11	E S 15	E S 14	E S 11	E S 11	E S 15	E S 15
12	E S 15	C	E S 12	E	E	E	E S 14	E S 15	E S 15	11	15	14	14	15	16	15	E S 15	E S 15	E S 14	E S 14	E S 15	E S 15	E S 15	E S 13
13	E S 15	E	E S 15	11	E	E S 12	E S 15	E S 15	E S 15	14	15	16	15	15	16	15	11	E S 15	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15
14	E S 15	E S 15	E S 15	E	E	E S 13	E S 15	E S 15	E S 14	15	15	19	19	19	19	15	11	E S 11	E S 15	E S 15	E S 15	E S 11	E S 15	E S 15
15	E S 14	E S 15	E S 15	E S 15	E	E S 15	E S 15	E S 15	E S 14	16	15	21	19	19	19	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
16	E S 15	E S 14	E S 11	E S 13	E	E	E S 15	E S 15	E S 14	11	C	C	11	14	14	11	11	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
17	E S 15	E S 15	E S 13	E S 14	E	E S 11	E S 15	E S 15	E S 11	11	11	15	15	15	11	11	E S 15	E S 14	E S 14	E S 15	E S 15	E S 14	E S 15	E S 15
18	E S 16	E S 15	11	15	E	E S 11	E S 15	E S 15	E S 15	11	15	15	15	16	17	15	11	E S 11	E S 12	E S 15	E S 15	E S 15	E S 15	E S 15
19	20	16	15	12	13	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	17	16	15	E S 15	E S 12	E S 11	E S 15	E S 11	E S 15	E S 15	E S 12
20	E S 15	E S 15	E S 15	E	13	E S 13	E S 15	E S 15	E S 15	15	15	15	15	15	17	15	E S 15	E S 15	E S 13	E S 11	E S 15	E S 15	E S 15	E S 15
21	E S 15	E S 15	E S 15	E	E	E	E S 15	E S 15	E S 15	12	15	15	19	15	16	12	E	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
22	E S 14	E S 15	E S 15	E S 11	E	E	E S 15	E S 15	E S 15	14	11	15	15	15	17	16	15	E S 15	E S 12	E S 12	E S 15	E S 15	E S 12	E S 15
23	E S 15	E S 15	E S 11	E	E	E S 11	E S 15	E S 15	E S 15	12	14	15	16	16	15	15	15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
24	E S 11	E S 12	E S 15	E	12	E S 12	E S 15	E S 15	E S 14	14	11	15	15	15	15	15	15	E S 15	E S 11	E S 11	E S 15	E S 15	E S 15	E S 15
25	E S 12	E S 12	E S 11	E	E	E S 11	E S 15	E S 15	E S 14	47	24	21	22	20	15	15	11	E S 15	E S 11	E S 15	E S 11	E S 15	E S 15	E S 15
26	E S 15	E S 13	E S 11	E	E	E S 15	E S 15	E S 15	E S 15	16	15	15	16	16	15	15	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	15	15	15	15	15	16	11	E S 15	E S 11	E S 15	E S 15	E S 15	E S 15	E S 15
28	E S 15	E S 11	11	E	E	11	E S 15	E S 15	E S 14	11	11	12	15	16	15	11	11	E S 15	11	E S 12	E S 15	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	20	20	15	E S 15	E S 11	E S 11	E S 11	E S 11	E S 15	E S 15
30	E S 14	E S 16	E S 12	E S 15	E S 17	E S 11	E S 15	E S 15	E S 11	15	14	15	16	19	19	15	15	E S 11	E C 34	E S 15	E S 11	E S 15	E S 15	E S 15
31	E S 11	11	E	E	E	11	E S 15	E S 14	E S 11	12	14	16	16	20	15	15	15	E S 14	E S 15	E S 11	E S 15	E S 15	E S 15	E S 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30	30	30	30	30	29	29	29
MED	E S 15	E S 15	E S 14	E	E	E S 12	E S 15	E S 15	E S 14	12	15	15	15	16	15	15	15	E S 15	E S 14	E S 15	E S 15	E S 15	E S 15	E S 15
UQ	E S 15	E S 15	E S 15	12	12	E S 15	E S 15	E S 15	E S 15	15	15	16	17	19	17	15	15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	E S 14	E S 12	E S 11	E	E	E E 11	E S 15	E S 15	E S 11	12	12	15	15	15	15	15	11	E S 14	E S 11	E S 12	E S 15	E S 15	E S 15	E S 15

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JAN. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JAN. 1971 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	295	305	295	305	290	320	300	345	345 S	345	320 US	295	295	300 J	300 R	320 UR	310 US	305 US	320 US	340	305	255 S	275
2	285	300	305	335	325	270	275	325	365	335	315	310	300	295	285 US	305	325	315	335	310	315	290 S	265	305
3	285	270	255 F	275	285	270	285	S	335 US	355	325	325	320	290	305	310	325	315	285	295	295	305	285	275
4	275	290	335	290	265	255	270	315 S	340	320 JS	300 JS	320	315	295 S	290 JS	295 US	290 JS	S	S	320	300 JS	270 S	275 S	280
5	A	A	310	350	280 F	265	280 S	315	350	365 S	320	340	315	310	305 S	310	330	320 US	300	325 JS	325 JS	300 JS	315 JS	305
6	290 IA	290 IA	295	315	280 IA	270 F	265 F	320	355	340 S	335	330 US	345	295 S	305	C	305 US	330 US	C	330 JS	305 US	325 JS	320 US	295
7	255 F	270 F	270 F	295	300	285	300	310	350	345	325	325	330 S	295 JS	315	335	345	325	320	345	305 S	330 S	295	290
8	295	300	305	285	280	285	300	325	360	340	350	325	315	320	315	320	345	330	320	345	350	335	295	295
9	305	305	275	290	300	285	295	365	360	360	320	345 S	330	340	330	335 S	345	340	300	325	315 JS	335	290	280
10	280	305	340	305	295	285	290	320	355	345	335	340	335	320	310	330	350	335	325	300	335 JS	315 S	285	275
11	280 US	315	325	275	290	290	280 S	290 S	360 US	330	300	315	305	290 IC	290 IC	315 IC	335	305 S	300 S	R	310	320	260	260
12	265	295 IC	325	275	285	265	305	285 S	335	325	325	315	320 V	315	325	330	325	320	305	340	325	280	275	280
13	270	280	305	345	280	270	290	295	335	325	325	325	325	315 S	285	335	355	335	330	325	280	290	275	275 IS
14	275 JS	295	310	310	285	280	280	290	335	315 S	335 S	330	315	310	320	310	310	335 S	335	325	285	275	290 C	300 C
15	275 C	290 C	290 C	305 C	275 C	280 C	295 C	275 C	345 C	320 C	315 C	295 C	300 C	300 C	280 C	305 C	330 C	305 V	305 C	310 C	335 C	320 C	255 C	250 C
16	265 C	280 C	285 C	275 C	275 C	260	265	270	305 C	325 C	325 IC	310 IC	315	295	305	310	330	335	335 IS	320 IA	325	305	305	270
17	290 S	285	275	285	310	290	300	300	345 S	325	325	320	300	290	300	300	320	325	320	335	345	265	290	275
18	285	265 F	295	315	285	280	265	280 S	295	300 US	320	305 R	310 R	300 R	305	305	325 US	325 US	335 IS	350	295 R	290 S	275 US	285 US
19	285	285	300	365	365 JR	275 UR	305	325	345 S	315	305	325	310	295	295	300 R	315	330 IS	345	330 IA	295	285 JS	325	295
20	305 US	335	315	305	270	280	310	315	325	315	330 S	305 JS	305	300	300	295 US	300 JS	330 S	320 US	325 JS	310	S	285	330
21	295	295	290	290	385	280	290	310 US	340 US	330 US	335	325 S	310	300 IS	295	300 US	310 S	305 JS	335 S	315	285	305 JS	290 S	350
22	320	285	315	325	365	280	280	310 S	350	355	320	315	330	310	315	260 JS	330 UR	310 S	335 JS	310 JS	300 JS	255 JS	285 US	315 S
23	315	325	305	310	340	270	295	325	355	345	335	355	340	305	315 S	315 US	320	335	345	295	315 US	310 S	300	310
24	325	300	295	300	305	280	280	310	340 JS	330	335	325	315	300 US	325	315	340	315	345	320 JS	305 US	285 US	285	290
25	310	340	310	285	290	280	285	320	365	325	335	340	320	300	310	315	315	325	305	305	335 S	295	270 S	265
26	300	285	285	315 S	270	280	300	300	340 S	315	325 JS	335 S	295	315	310	325	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	335	320	325	310 S	320	310	315 S	340	295 S	320 JS	310	300 JS	285 US	285
28	265	255	305 IS	270	275	310	255	260	305	335 S	325 S	315	285	295	305 S	315	325	310 JS	315 US	300 IC	320 S	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	320	315	310	340	315	300	305 JS	300	295	325
30	300	265	270	260 S	265 S	295	280	305	345	325 S	335 S	325	310	305	290	295	300	315	350 IC	300	260	265	290	300
31	310	320	260	270	270	255	275	325 S	360	355 S	340	325	320	305	290	295	300	320	335	290	295	330	315	285 S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	29	29	29	29	28	29	29	30	30	30	30	31	30	30	29	28	29	30	28	29	29
MED	285	292	305	295	285	280	285	310	345	330	325	325	315	300	305	310	325	325	320	320	310	300	285	285
UQ	302	302	310	315	305	285	300	320	355	345	335	330	325	310	315	315	330	335	335	325	325	318	295	300
LQ	275	282	285	285	275	270	280	292	335	325	320	315	305	295	295	300	310	315	305	305	295	285	275	275

JAN. 1971 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JAN. 1971 | M(3000)F1 (0.01)

135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											L	L	L	L	L	L	L							
2										L	L	L 340	L	L	L	L								
3											L	L	L	L	L	L 385	A							
4											L	L	L	L	L	L								
5											L	L	L	L	L	L								
6											L	L	L	L	L	C								
7											L	L 420	U L 365	L	L	L								
8										L	L	L	L	L	L	L								
9										L 415	L	L	L	L	L	L								
10										L		L	L	U L 395	L	L								
11										L 435	L	L	L	C	C	C	U L 385							
12										L	L	L	L	L	L	L								
13											L	L	L 375	L 400	L	L								
14										L	L	L	L	L	L 375	L 400								
15										L	L	L 355	L	L	L	L	A							
16										L	C	C	L 365	L	L	L								
17										L	L	L	L 400	L	L	A	L							
18									L	L	L	A	L	U L 360	L	A								
19										L	L	L	L	L	L	L	L							
20										L	U L 380	L	L	L	L	L	L							
21										L	L	L	L	L	L	L	L							
22											L	L	L	L 370	U L 370	L								
23											L	L	L	L	L	L	L							
24											L	L	L	L	U L 355	L								
25										B	L	L	L	L	L	L								
26											L	L	L	L	L	L	C	C						
27									C	C	L	L	L	L	L	L								
28										L	L	L	L	L	L	L	L							
29									C	C	C	C	C	C	L	L	L							
30											L	U L 375	U L 350	L 350	L	L	U L 390							
31											L	L 405	L	L	L	L	L	390						
	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	1	5	5	5	3	2	2	1						
MED										L U L 425 380		L 375	L 365	L 370	U L 370	L 392	U L 388	390						
UQ												L 405	L 375	L 395	L 372									
LQ												L 355	U L 365	L 360	U L 362									

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JAN. 1971 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JAN. 1971 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											250	235	240	285	275	235	225							
2										235	245	260	250	255	245	235								
3											230	255	255	240	270	250	245							
4											285	250	245	245	260	255								
5											235	230	225	245	245	265								
6											245	250	230	300	265	E C 290								
7											245	225	255	235	260	245								
8										230	230	240	265	260	265	250								
9										215	275	250	245	245	260	250								
10										235		240	250	255	250	245								
11										220	290	255	250	250	I C 245	I C 235	220							
12										240	245	240	245	230	255	240								
13											255	235	240	240	275	245								
14										245	230	230	250	250	245	230								
15										255	260	245	265	260	270	250	240							
16										250	I C 250	I C 250	245	240	245	275								
17										230	230	230	245	240	255	230	245							
18									300	265	255	255	255	255	250	250								
19										255	275	255	255	275	265	260	240							
20										250	250	270	265	255	260	255	255							
21										250	240	250	240	260	275	260	250							
22											260	265	255	255	255	240								
23											250	240	240	250	285	255	230							
24											250	240	255	280	260	240								
25										250	245	245	250	255	275	250								
26											255	250	290	275	255	255	C	C						
27									C	C	240	260	250	250	260	265								
28										240	250	240	250	295	270	255	250							
29									C	C	C	C	C	C	255	255	255							
30											230	245	270	295	245	255	245							
31											240	245	240	280	275	265	240	240						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	16	29	30	30	30	31	31	13	1						
MED									300	242	250	245	250	255	260	250	245	240						
UQ										250	255	255	255	275	270	255	250							
LQ										232	240	240	245	245	252	242	240							

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IONOSPHERIC DATA

JAN. 1971 | H'F (kM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	275	260	265	270	250	245	250	215	225	225	205	200	230	240	235	225	210	200	210	210	225	255	300
2	270	260	270	245	235	285	300	235	210	225	210H	200	225	200H	220H	225	235	220	200	230	210	A	E S 280	250
3	E A 300	300	350	280	250	295	285	240	205	215	215	200H	205H	210	205H	220	I A 230	225	200	245	250	230	225	260
4	290	300	250	E A 250	325	350	300	245	220	230	I A 245	230	225	225	200H	240	225	225	205	200	200	245	270	250
5	A	A	260	230	275	E A 330	300	250	220	220	220	210H	200	210	200H	240	225	215	220	225	205	200	250	250
6	A	A	E A 300	250	A	E A 400	E A 350	250	225	225	220	220	215	E A 240	E A 255	I C 240	225	210	240	205	205	200	215	285
7	E A 360	E A 350	320	275	285	300	260	250	220	215	200	200	200	200H	205	220	220	220	220	210	195	215	225	250
8	270	260	255	320	310	300	280	245	215	200H	220	205	205	210	200H	220	220	205	240	205	205	215	295	260
9	275	260	310	275	275	310	255	250	220	200	200H	230	205	190H	200	220	220	205	200	215	200	215	275	315
10	315	270	230	220	250	300	295	250	215	200H	220	225	E A 250	200	220	220	220	220	205	250	225	215	250	280
11	300	245	230	260	260	300	300	295	220	195	220	240	225	I C 220	I C 205	I C 220	220	205	215H	210	205	205	270	310
12	305	I C 255	240	270	270	200H	260	275	245	220	215H	190H	210	200	190H	225	225	225	220	210	195	220	295	275
13	295	275H	250	225	250	290	290	290	240	225	225	215	215	210	225H	I A 245	210	220	210	225	230	245	275	275
14	295	275	230	230	215H	275	295	275	245	240	230	225	220	225	205	205	240	235	215	225	245	280	250	250
15	265	280	250	250	230	300	265	290	240	240	225	205	230	205H	240	250	I A 230	215	230	255	230	205	285	330
16	300	300	250	260	250	E A 300	E A 305	E A 315	250	240	I C 220	I C 205	225	225	225	195H	230	E A 240	240	I A 210	225	245	230	270
17	275	270	250	295	245	E S 275	280	245	240	220	210	200H	210	220	225	I A 240	240	225	240	210	200	275	260	295
18	280	295	270	240	255	295	325	280	215H	240	210H	A	220	215	E A 245	A	230	240	205	215	225	E A 300	270	270
19	275	265	260	200	260	E A 375	300	230	215	230	220H	220	210H	205	220	235	230	235	225	I A 230	275	245	250	300
20	255	245	255	210	250	320	255	250	240	220	215	E A 270	230	220	220	220	230	225	225	205	205	275	300	225
21	250	250	265	290	200	E A 340	320	255	240	240	225	215	215	200	210	230	225	235	215	210	260	250	250	220
22	250	300	260	260	215	300	320	265	225	230	220	205H	220	210	215	210	245	225	215	240	240	260	285	245
23	240	270	270	290	225	310	310	235	225	225	225	235	220	200	200	225	225	230	215	230	225	215	240	255
24	240	225	290	265	250	250	300	260	235	225	225	215	200	215	210	225	235	225	220	250	225	240	250	285
25	260	220	E A 280	270	265	300	300	230	215	I B 250	250	240	235	225	E A 240	225	230	230	225	230	210	205	290	290
26	250	250	270	240	250	300	250	255	225	220	225	220	205H	215	250	215	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	220	215	225	E A 250	230	220	245	230	240	225	205	210	240	255
28	350	395	255	250	350	230	E S 400	305	260	240	225	210H	245	230	250	240	250	220	225	245	255	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	220	245	225	225	225	260	250	210	230	225
30	225	300	300	300	305	245	250	255	225	220	225	215	215	225	I A 215	200H	200H	240	200	I A 210	290	290	250	245
31	225	220	270	295	280	E B 310	300	245	225	220	225	200	210	210H	215	230	230	225	200	240	250	225	225	250
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	29	29	28	29	29	29	29	29	30	29	30	30	31	30	30	30	30	30	30	28	29	29
MED	272	270	260	260	252	295	295	250	225	225	220	215	215	211	218	225	228	225	218	225	225	224	250	260
UQ	295	293	270	275	275	305	300	270	240	230	225	222	225	222	225	240	230	230	225	240	245	246	275	285
LQ	252	252	250	240	248	280	265	245	215	220	215	205	205	205	205	220	225	220	205	210	205	212	240	250

JAN. 1971 | H'F (kM)

IONOSPHERIC DATA

JAN. 1971 | H'ES (KM) | 135° E Mean Time (G. M. T.+ 9h)

Station YAMAGAWA Lat. 31 12.1 N. Long. 303 71 .E 1 Sweep 2 MHz to 02 MHz in 0 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	B	B	B	S	100	G	135	100	100	100	100	100	100	G	100	100	110	S	S	100	B
2	S	B	B	B	E	B	S	S	G	150	100	100	100	100	100	100	100	G	S	S	S	95	95	105
3	100	100	S	100	B	100	100	100	150	125	105	100	100	100	100	100	100	95	100	100	100	S	S	S
4	100	100	95	95	95	100	100	S	G	100	105	105	100	100	100	100	100	105	105	105	100	S	105	S
5	100	100	105	100	100	100	100	100	100	105	110	105	105	100	100	100	100	120	110	110	110	100	100	S
6	105	100	100	100	100	100	100	100	100	105	105	105	105	105	100	C	100	100	100	100	100	100	S	S
7	100	100	100	100	100	B	100	100	110	105	100	100	100	105	100	105	105	105	110	B	S	S	S	S
8	S	S	B	95	B	S	S	S	G	105	105	105	G	105	G	G	100	100	S	95	100	B	S	S
9	S	S	S	E	B	S	S	S	G	105	105	155	G	G	100	G	G	G	S	S	S	S	S	S
10	100	95	S	E	B	S	S	S	G	105	100	165	140	145	150	125	120	G	S	S	100	S	S	S
11	S	S	E	B	E	B	S	S	G	G	125	165	100	100	C	C	100	150	100	100	S	S	S	95
12	S	C	S	E	E	E	S	100	G	G	145	110	100	100	100	100	100	110	S	S	S	S	S	S
13	S	E	S	B	E	S	S	100	G	G	140	G	130	G	105	170	140	100	100	95	95	95	95	95
14	100	95	S	E	E	S	S	S	G	G	165	150	130	G	G	G	175	100	100	95	95	95	95	S
15	S	S	S	105	100	100	100	100	G	G	110	110	115	125	G	150	125	110	100	100	100	100	95	95
16	95	100	S	S	E	100	100	100	100	100	C	C	95	125	95	95	100	110	100	100	95	95	S	S
17	100	100	S	S	E	S	100	100	100	95	95	100	95	120	95	145	125	105	100	100	100	95	95	95
18	S	S	B	B	E	100	S	105	100	95	95	95	110	110	105	105	110	105	100	100	95	95	100	100
19	B	B	120	115	110	150	150	140	145	130	G	115	95	100	100	100	100	105	105	100	100	95	95	95
20	100	95	95	E	B	120	120	100	120	105	95	95	95	115	110	105	110	105	100	100	100	100	100	100
21	S	S	120	120	110	110	125	120	105	105	105	105	100	100	100	100	95	95	105	95	100	100	95	100
22	100	100	100	100	100	100	100	100	100	100	130	130	140	125	100	105	105	100	100	100	100	95	100	95
23	95	100	105	105	105	105	100	150	G	140	135	120	120	115	105	105	100	100	100	100	100	100	95	S
24	S	S	S	E	B	S	S	S	G	G	155	105	105	100	100	105	105	100	100	100	100	100	S	100
25	S	S	105	100	100	105	100	100	G	B	G	135	135	125	105	100	100	100	100	100	100	100	95	95
26	S	S	S	E	100	100	100	100	G	105	150	115	120	110	105	100	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	150	135	120	105	100	100	100	100	100	100	100	100	S	S
28	125	125	105	110	110	115	S	S	G	G	G	G	175	G	150	140	135	105	100	100	100	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	130	115	100	100	95	95	95	100	100	S
30	S	S	S	S	S	S	100	100	100	G	155	135	125	125	130	115	120	100	100	95	95	S	S	S
31	S	B	E	E	E	B	S	100	100	100	100	G	100	G	G	145	105	100	100	100	100	100	95	95
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	13	11	13	12	15	16	20	13	20	26	26	28	25	26	26	28	27	25	25	24	19	17	13
MED	100	100	105	100	100	100	100	100	100	105	105	108	105	105	100	105	100	100	100	100	100	100	95	95
UQ	100	100	105	105	108	108	100	100	110	115	140	135	122	120	105	115	115	105	100	100	100	100	100	100
LQ	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	95	95	95

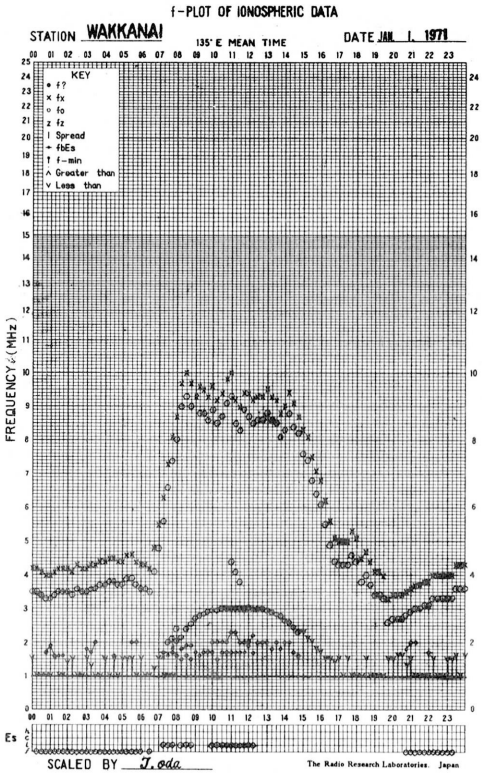
IONOSPHERIC DATA

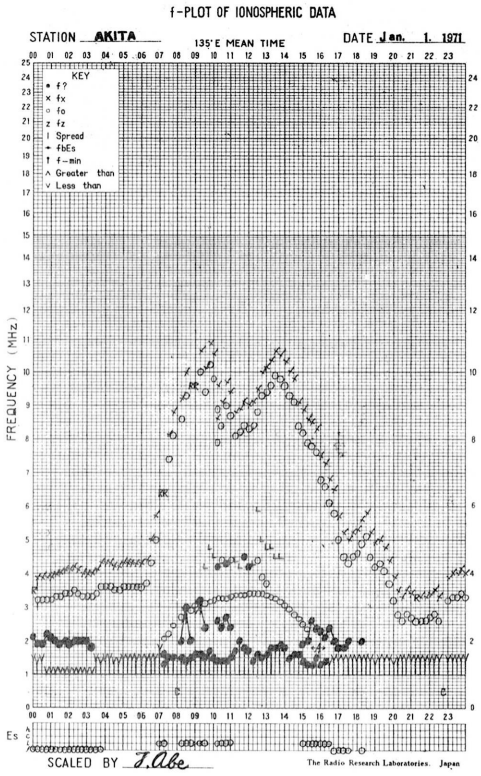
JAN. 1971 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

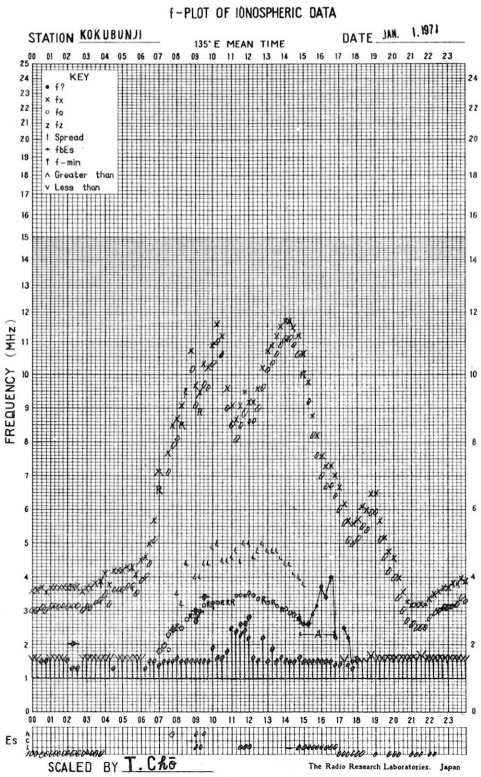
Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

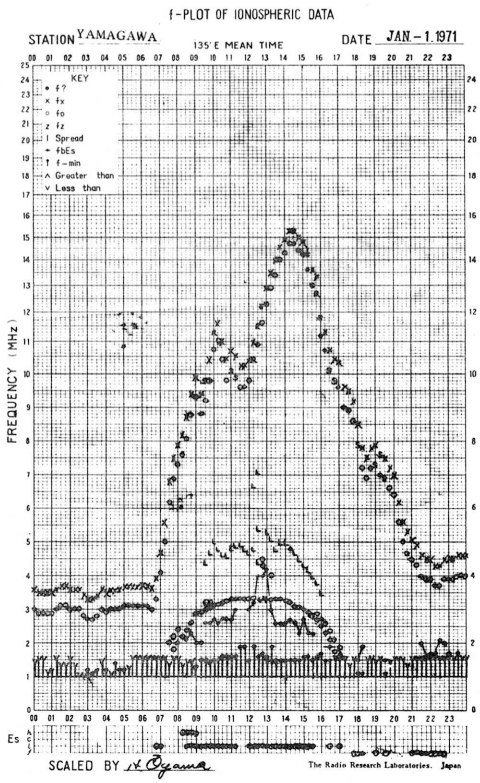
Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L 1		HL 11	L 1	L 2	L 1	L 3	L 1	L 1		L 1	F 1	F 1		F 1	F 1	
2										H 1	L 1	L 1	L 2	L 2	L 1	L 1	L 1					F 5	F 2	F 2
3	F 2	F 1		F 1		F 1	F 1	L 3	HL 32	H 1	C 2	L 1	L 1	L 1	L 1	L 2	L 4	L 2	F 4	F 4	F 3			
4	F 1	F 3	F 4	F 1	F 1	F 1	F 1			LH 12	C 3	L 1	L 1	L 2	L 1	L 2	L 2	L 2	F 2	F 1	F 1		F 1	
5	F 3	F 3	F 1	F 2	F 1	F 2	F 2	L 2	L 2	L 2	C 2	L 2	L 2	L 2	L 2	L 2	LH 22	CL 32	FF 12	FF 21	FF 11	F 1	F 1	
6	F 2	F 3	F 2	F 3	F 2	F 2	F 2	L 1	L 3	L 2	L 2	L 2	L 2	L 3	L 4		L 3	L 3	F 3	F 2	F 1	F 1		
7	F 2	F 1	F 1	F 1	F 1		F 1	L 1	L 2	L 2	L 2	L 1	L 2	L 1	L 1	L 3	L 2	L 2	F 1					
8				F 2						L 1	L 2	L 1		L 2			L 1	L 1		F 1	F 1			
9										L 2	L 2	HL 12			L 2									
10	F 1	F 1								L 2	LH 21	HL 11	H 2	H 1	H 1	H 2	C 1				F 1			
11											H 2	H 1	L 1	L 1			L 1	HL 11	F 1	F 1				F 1
12								L 1			H 1	C 1	L 2	L 2	L 2	L 2	L 2	C 2						
13								L 1			HH 21		H 1		L 1	HL 11	HL 32	LH 32	F 1	F 4	F 1	F 1	F 1	F 1
14	F 1	F 1									HH 11	HH 11	H 1				H 1	L 2	F 2	F 3	F 5	F 3	F 2	
15				F 1	F 1	F 4	F 4	L 2			L 2	L 1	C 2	H 1		H 1	H 3	C 6	F 7	F 5	F 5	F 4	F 1	F 2
16	F 1	F 1				F 3	F 7	L 7	L 4	L 3			L 3	HL 24	L 2	L 2	L 1	C 5	F 6	F 5	F 3	F 2		
17	F 1	F 1					F 2	L 3	L 3	L 3	L 1	L 1	L 1	CL 11	L 1	HL 21	HL 22	CL 41	FF 41	F 3	F 1	F 4	F 3	F 1
18						F 2		L 1	L 1	L 4	L 2	L 3	LL 11	LL 11	C 2	C 5	C 3	L 2	F 1	F 3	F 3	F 3	F 1	F 1
19			FF 11	F 6	F 3	F 1	F 2	H 1	H 2	HL 11		LL 12	L 1	L 1	L 2	L 2	L 4	L 3	F 4	F 3	F 3	F 5	F 5	F 4
20	F 1	F 3	F 2			F 1	F 1	LH 11	L 2	L 2	LC 21	L 2	LC 21	CL 11	CL 21	LL 12	LL 21	L 2	F 1	F 1	F 1	F 1	F 2	F 1
21			F 1	F 1	F 1	F 1	F 1	C 1	L 2	L 2	L 2	L 1	L 2	L 2	L 1	L 2	L 3	L 4	FF 33	FF 21	F 1	F 4	F 2	F 2
22	F 1	F 1	F 1	F 1	F 1	F 1	F 1	L 1	L 1	L 1	H 1	H 1	H 1	H 1	L 2	L 2	L 4	L 4	F 4	F 6	F 5	F 4	F 2	F 1
23	F 2	F 2	FF 21	F 1	F 1	F 1	F 2	HL 11		H 2	HL 11	CL 12	CL 12	C 1	L 2	L 2	L 3	L 2	F 2	F 2	F 2	F 1	F 1	
24											H 1	L 1	L 2	L 1	L 1	L 2	L 4	L 2	F 4	F 3	F 1	F 1		F 1
25			F 3	F 2	F 1	F 1	F 1	L 1				HL 11	HL 11	HL 11	CL 21	L 2	L 2	L 2	F 1	F 1	F 1	F 1	F 1	F 1
26					F 2	F 1	F 1	L 1		L 1	H 1	C 1	C 1	C 2	C 2	L 3								
27											H 1	H 1	C 1	C 2	L 2	L 2	L 4	L 3	F 2	F 2	F 1	F 1		
28	F 1	F 1	FF 22	F 2	F 3	F 1							H 1		H 1	H 1	H 2	C 5	F 3	F 2	F 3			
29															H 1	C 1	L 3	L 6	F 5	F 3	F 3	F 1	F 1	
30							F 2	L 1	L 1		H 1	H 1	H 1	H 1	H 1	C 2	C 2	L 5	F 1	F 8	F 4			
31								L 1	L 2	L 2	L 1		L 1			H 2	L 2	L 2	FF 21	FF 21	F 3	F 3	F 4	F 2
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

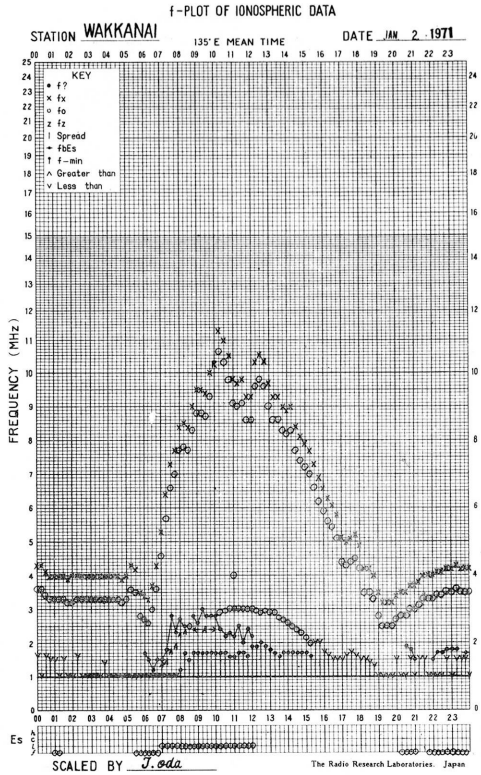
JAN. 1971 | TYPES OF ES

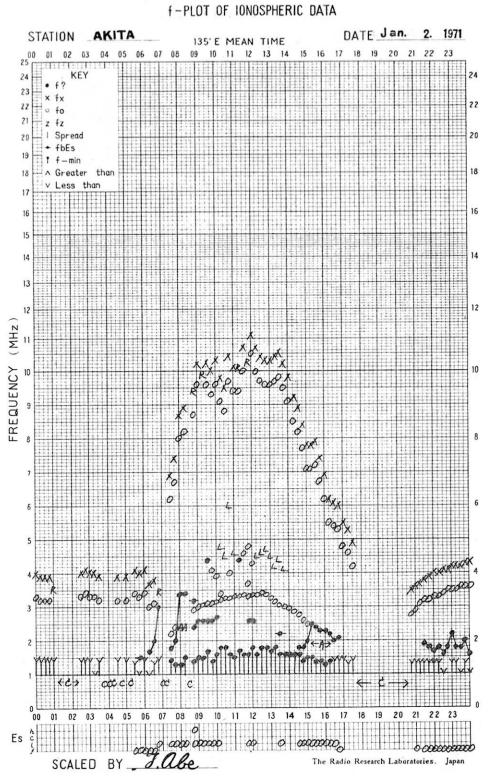

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE JAN. 1. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan

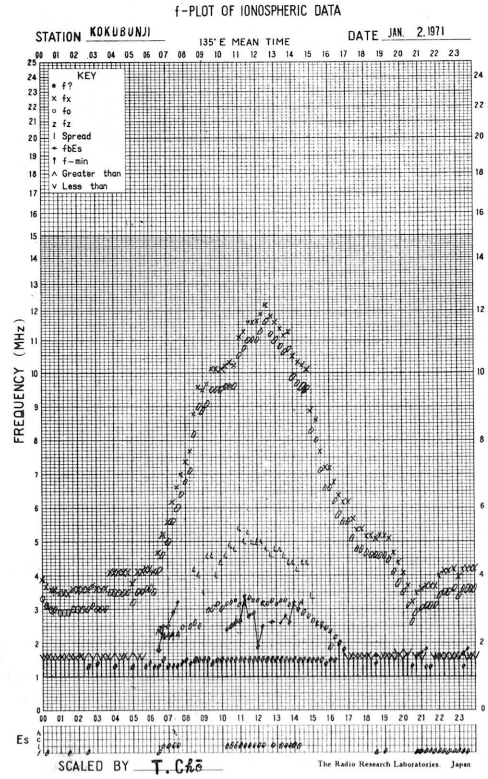

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Jan. 1. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE JAN. 1. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE JAN - 1. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY K. Ogawa
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JAN. 2. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jan. 2. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY Y. Abe
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE JAN. 2. 1971
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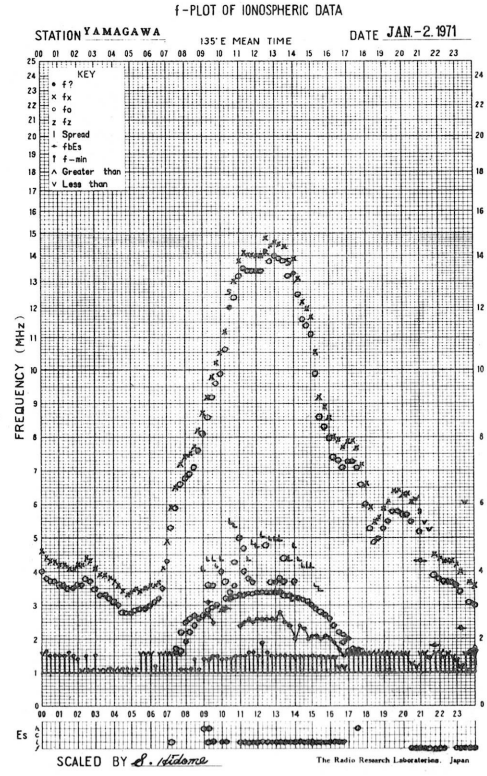
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan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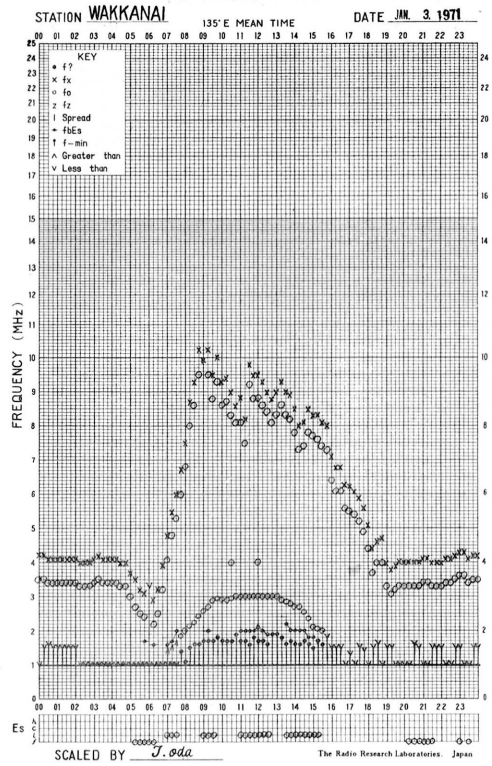
SCALED BY S. Hidoma
The Radio Research Laboratories. Japan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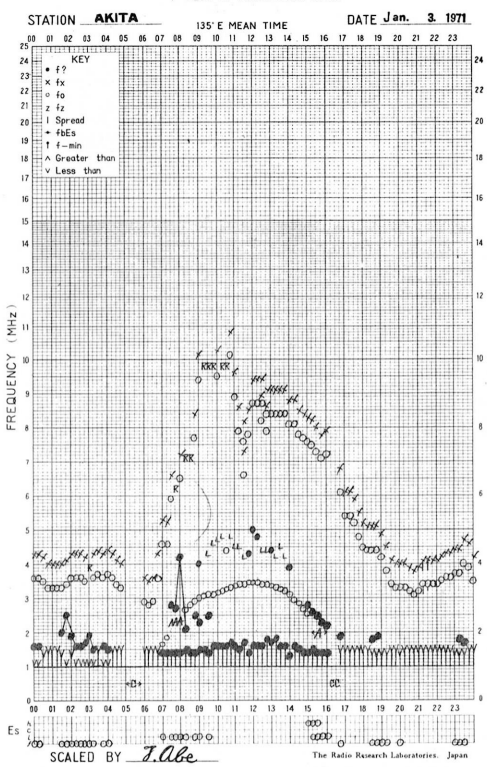
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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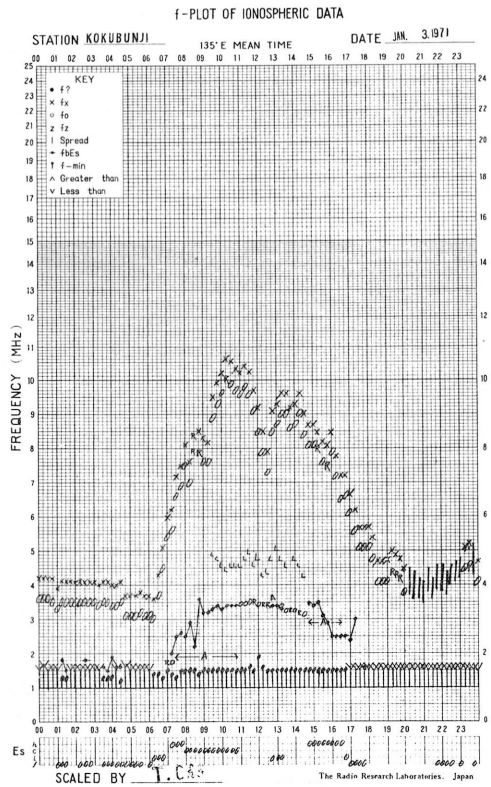
SCALED BY T. Abe
The Radio Research Laboratories. Japan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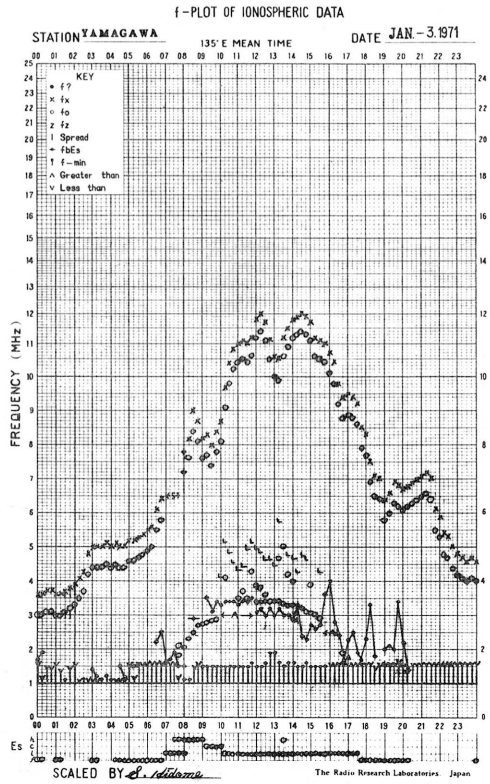
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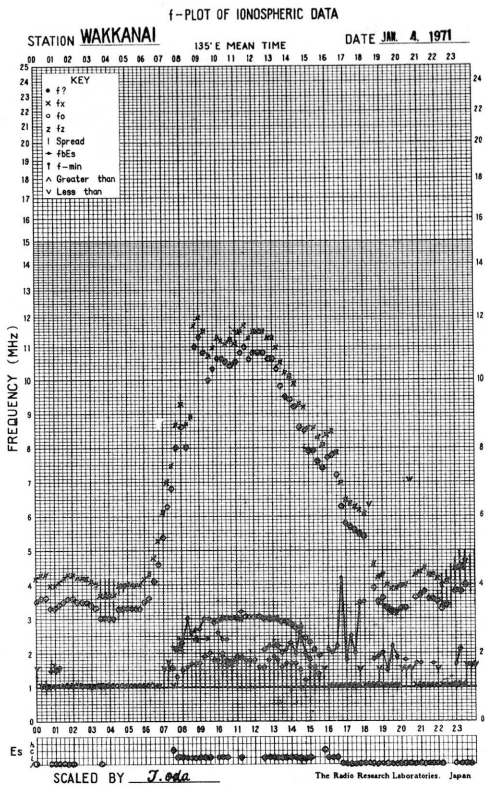
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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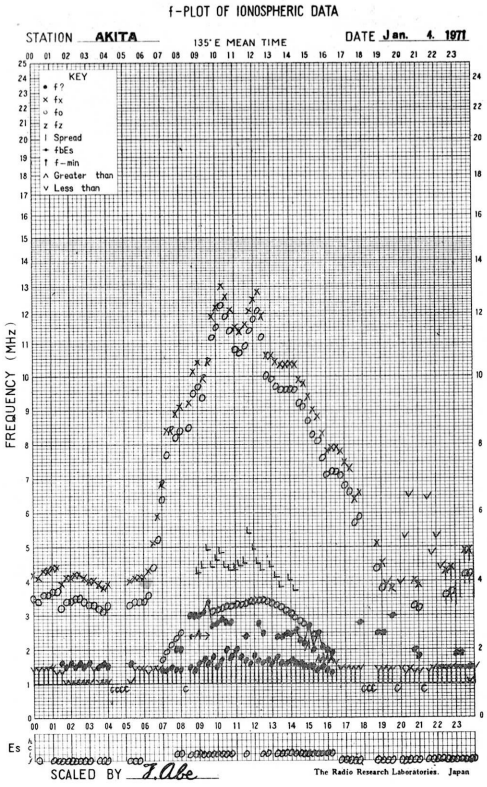
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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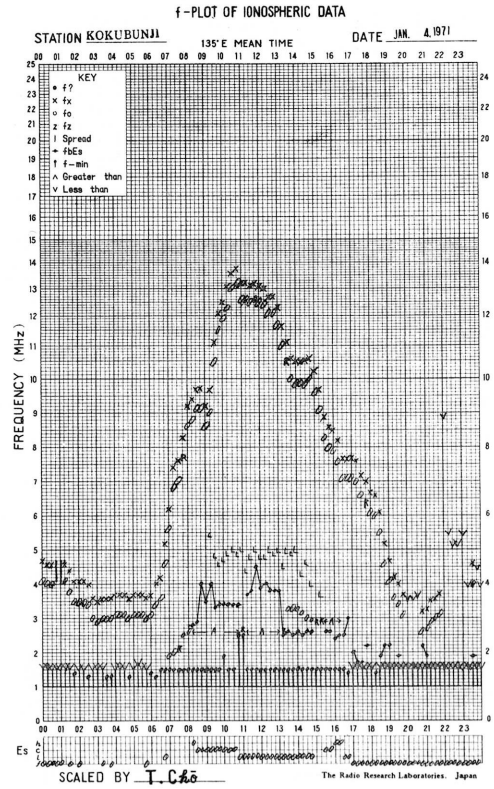
SCALED BY T. Abe
The Radio Research Laboratories. Japan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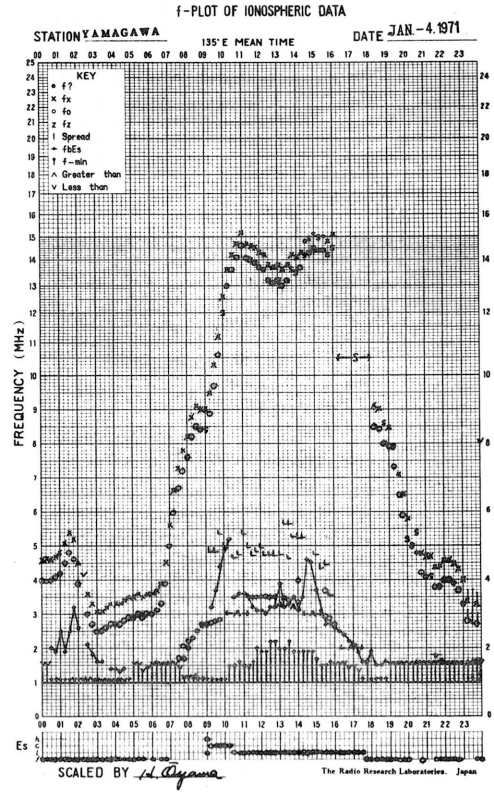
The Radio Research Laboratories. Japan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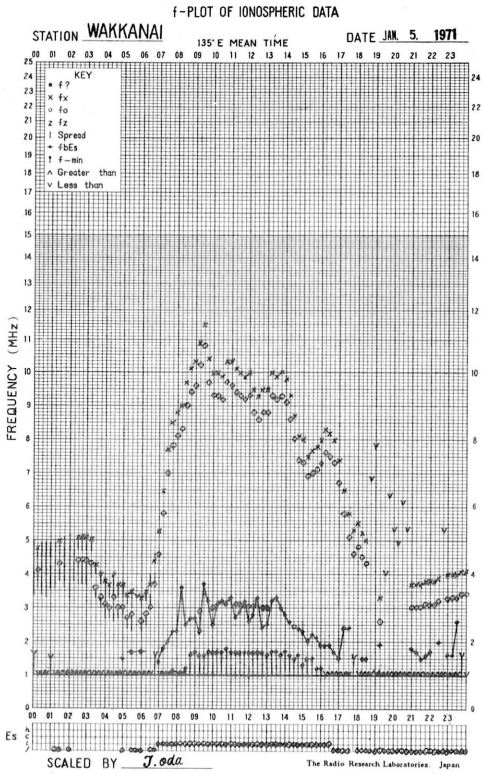
The Radio Research Laboratories. Japan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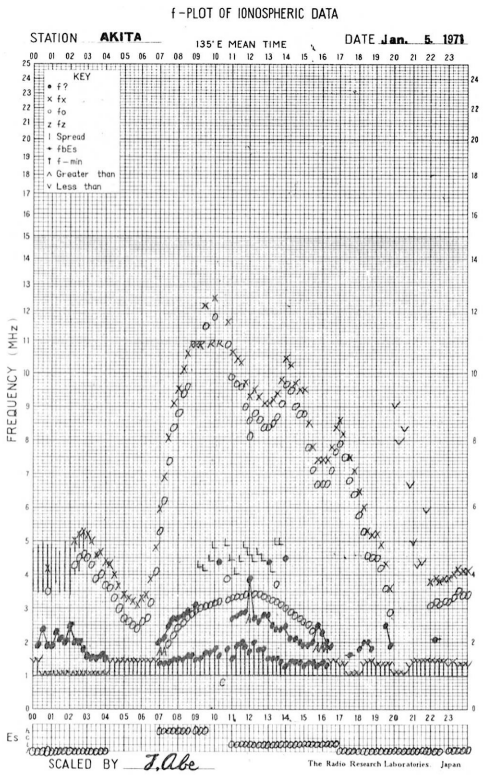
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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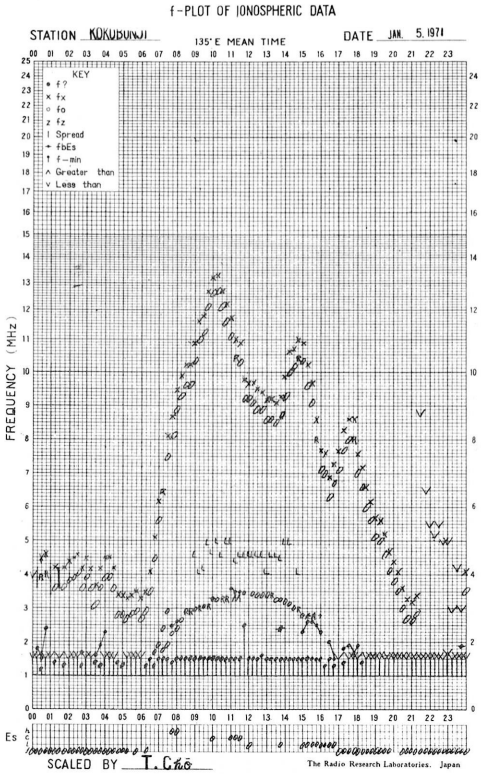
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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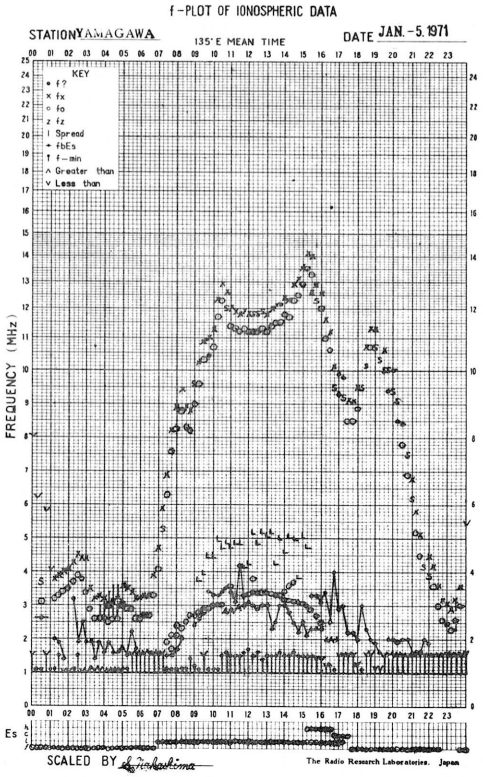
SCALED BY T. Ono
The Radio Research Laboratories. Japan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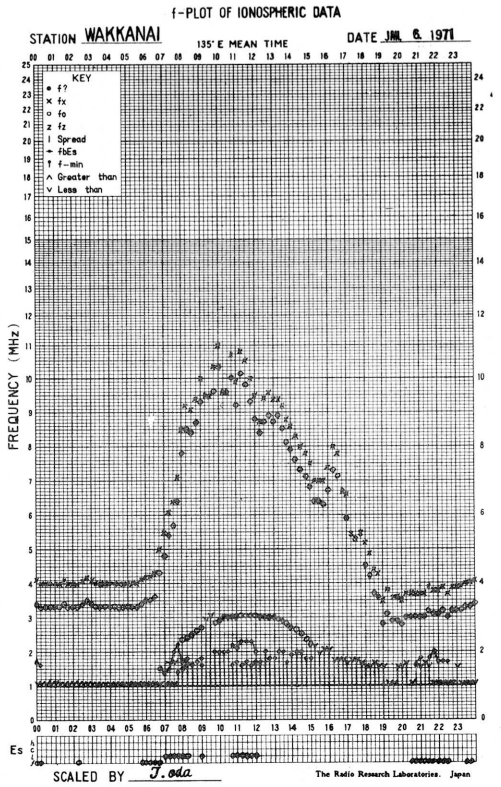
The Radio Research Laboratories. Japan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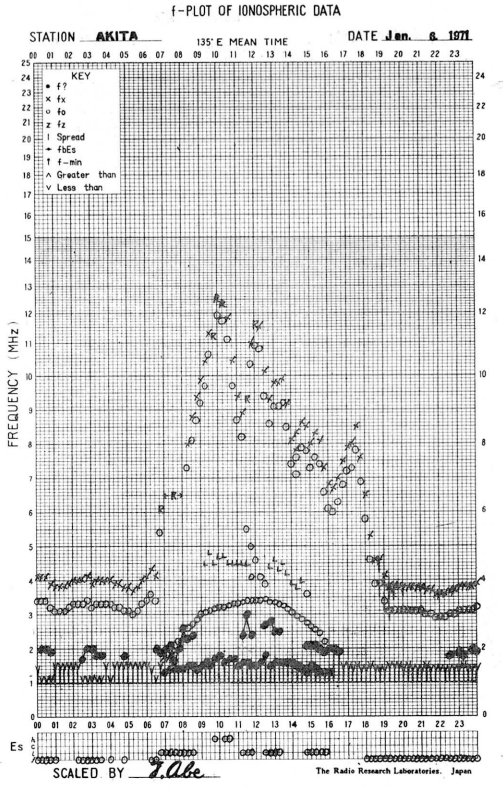
SCALED BY T. oda
The Radio Research Laboratories. Japan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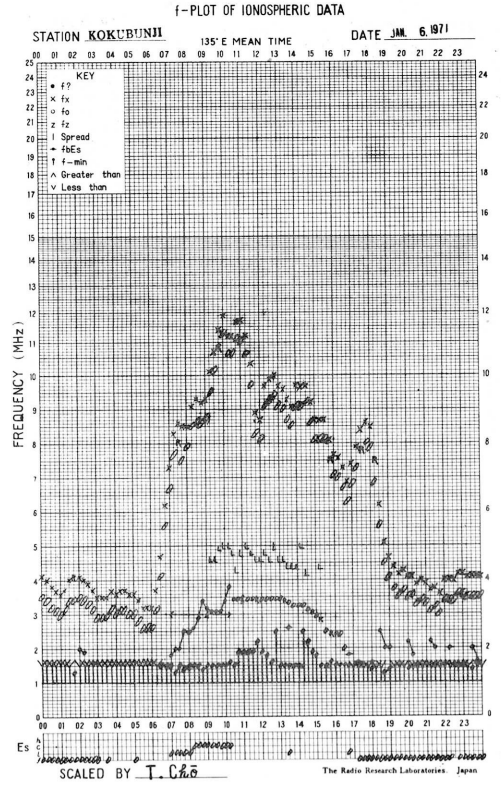
The Radio Research Laboratories. Japan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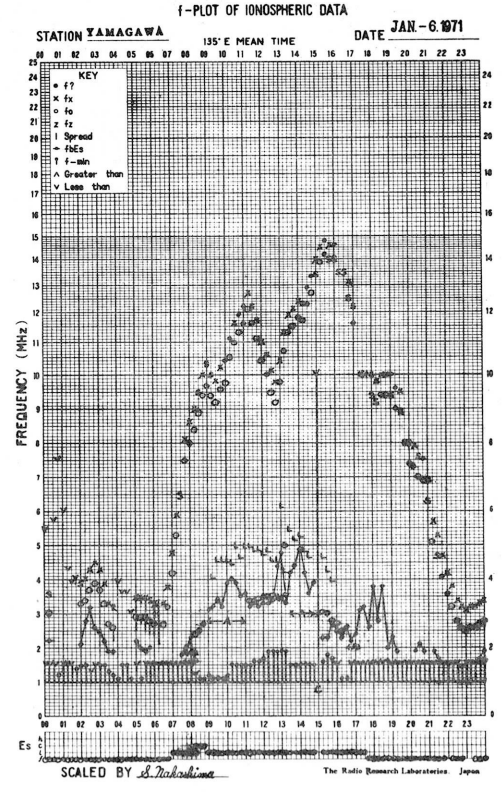
SCALED BY T. Cho
The Radio Research Laboratories. Japan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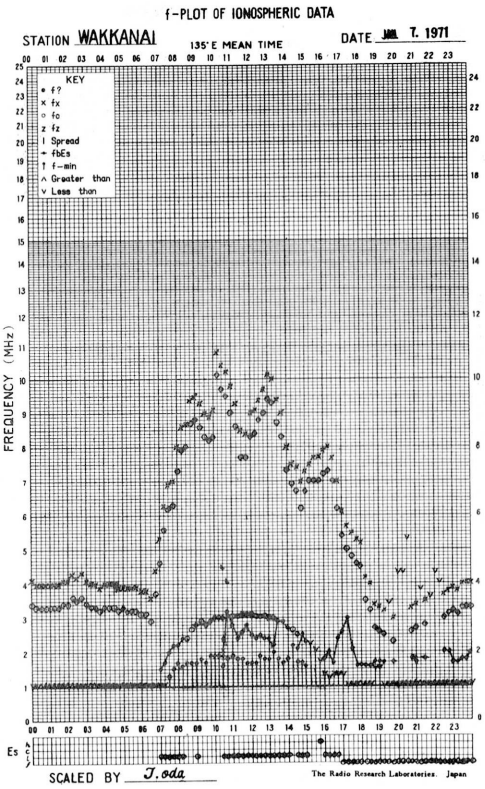
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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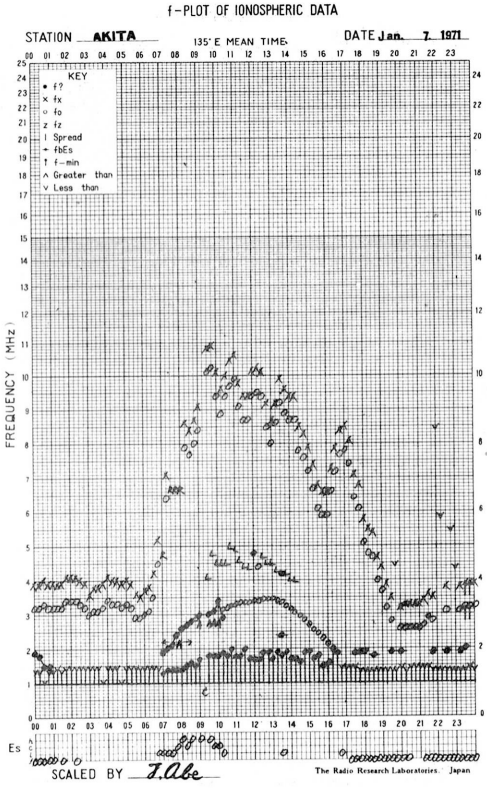
SCALED BY T. Oda
The Radio Research Laboratories. Japan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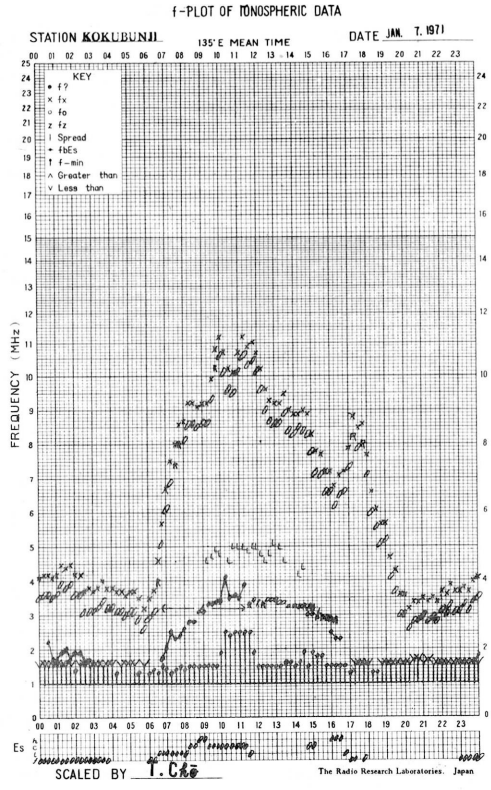
The Radio Research Laboratories. Japan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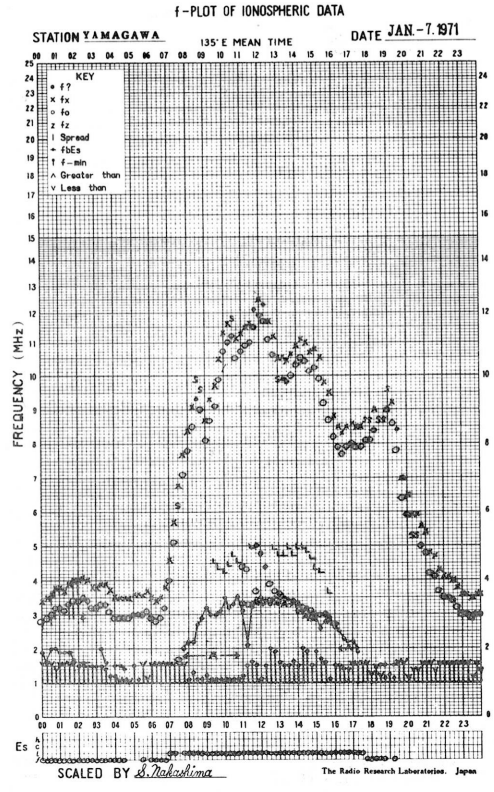
The Radio Research Laboratories. Japan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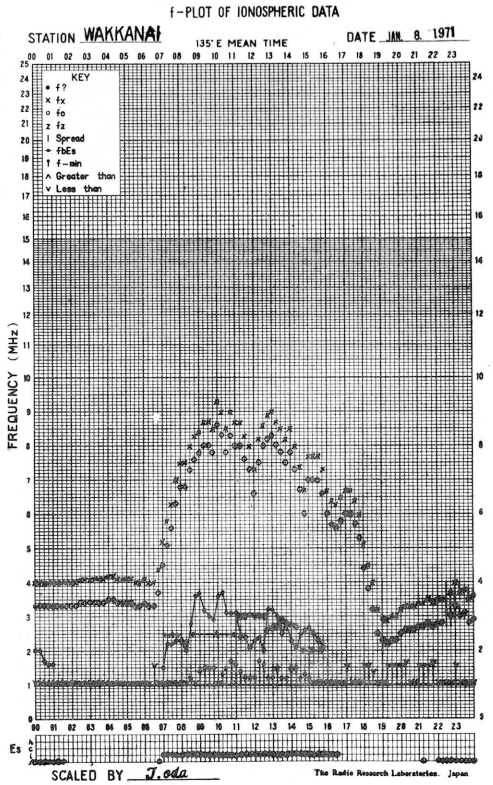
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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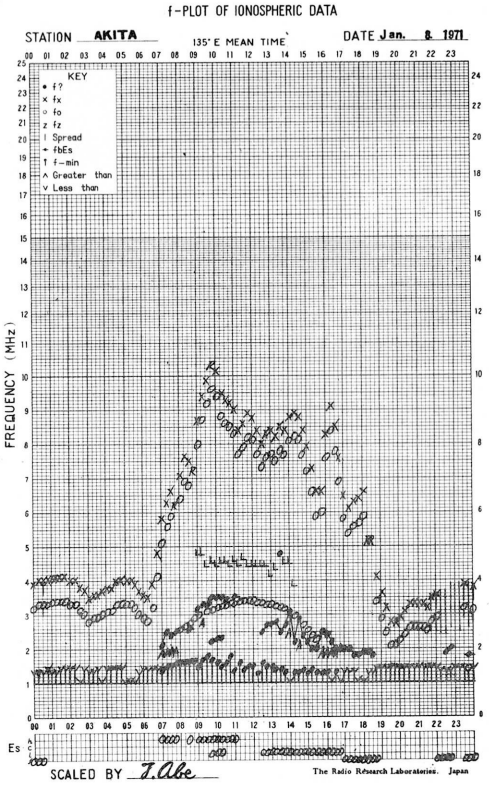
The Radio Research Laboratories. Japan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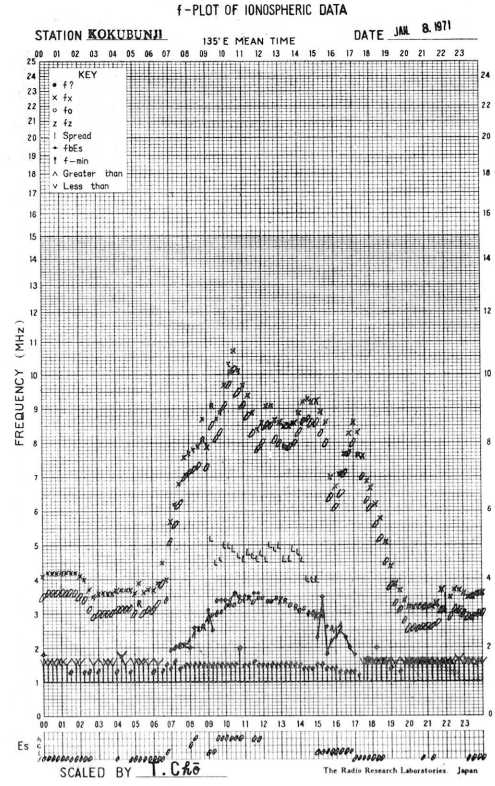
The Radio Research Laboratories. Japan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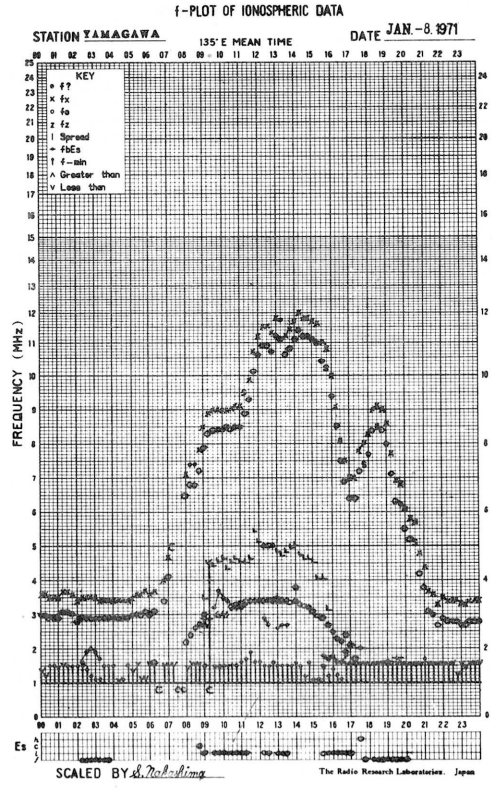
SCALED BY T. Chō
The Radio Research Laboratories. Japan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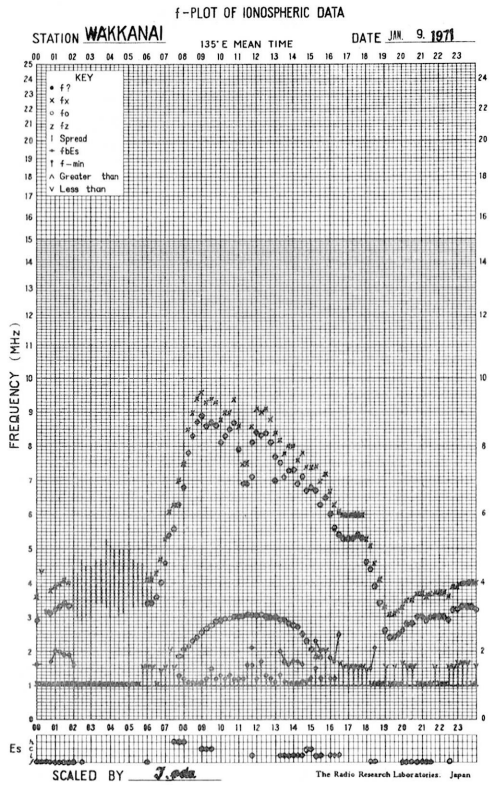
The Radio Research Laboratories. Japan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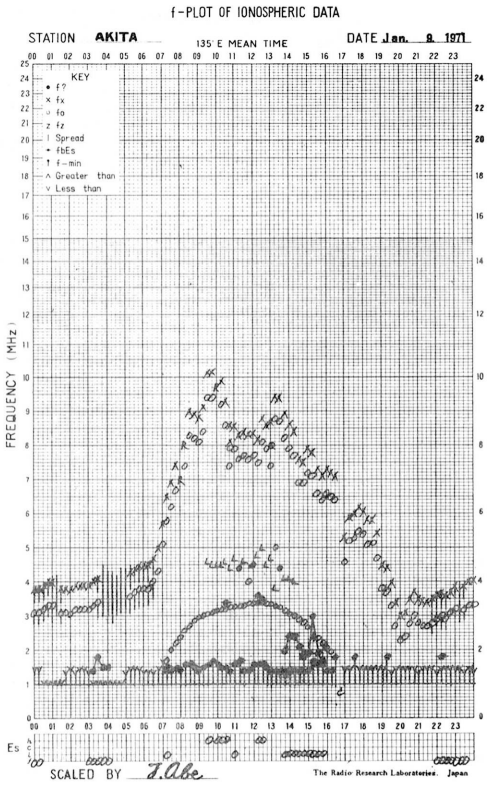
The Radio Research Laboratories. Japan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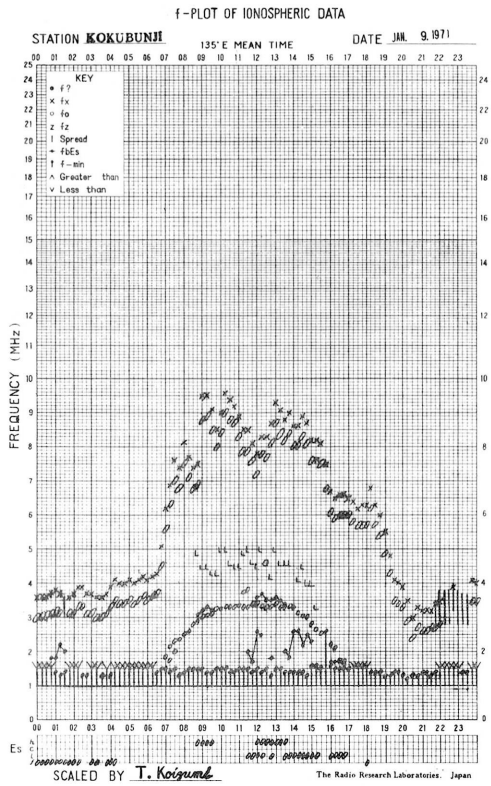
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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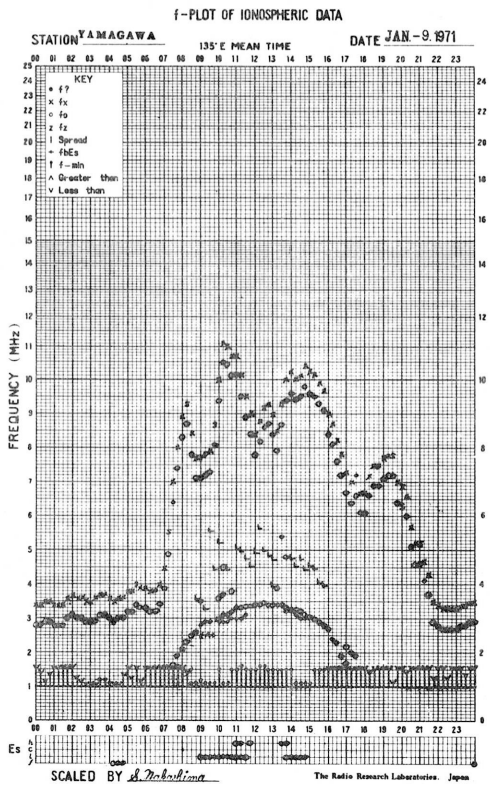
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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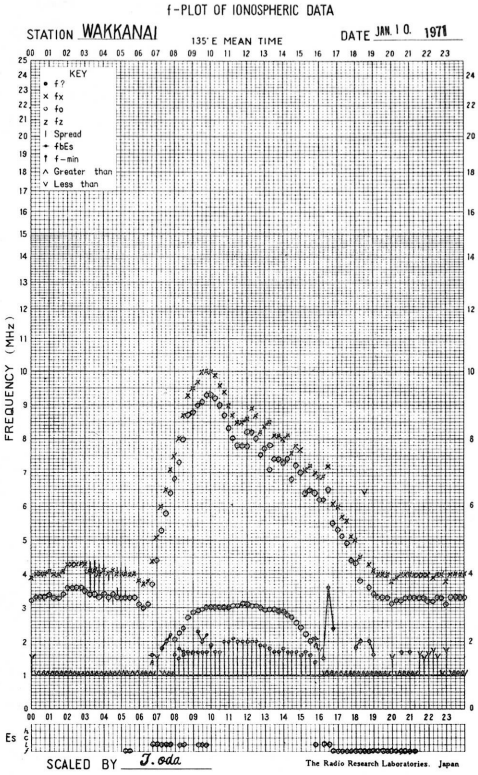
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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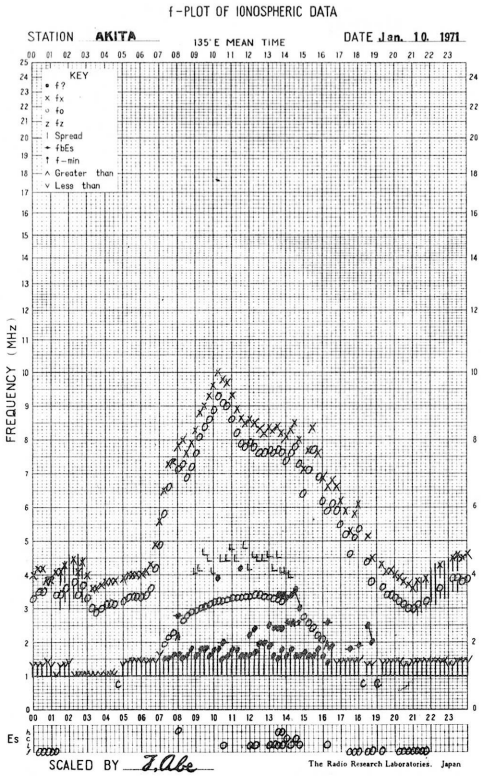
SCALED BY J. Oda
The Radio Research Laboratories. Japan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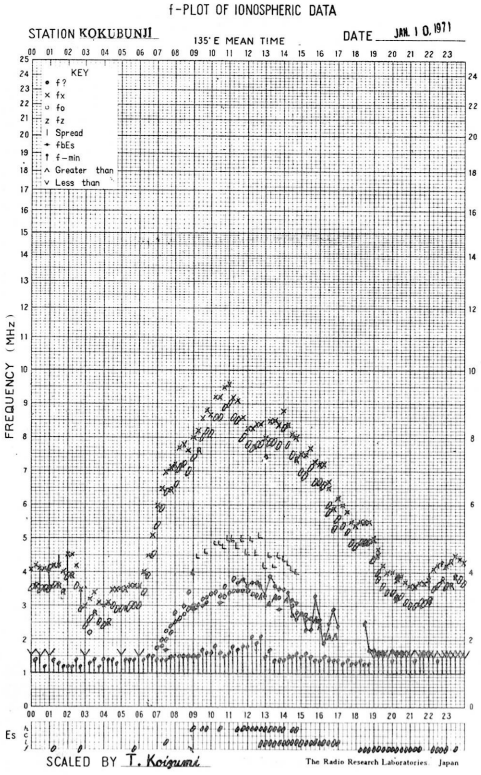
SCALED BY I. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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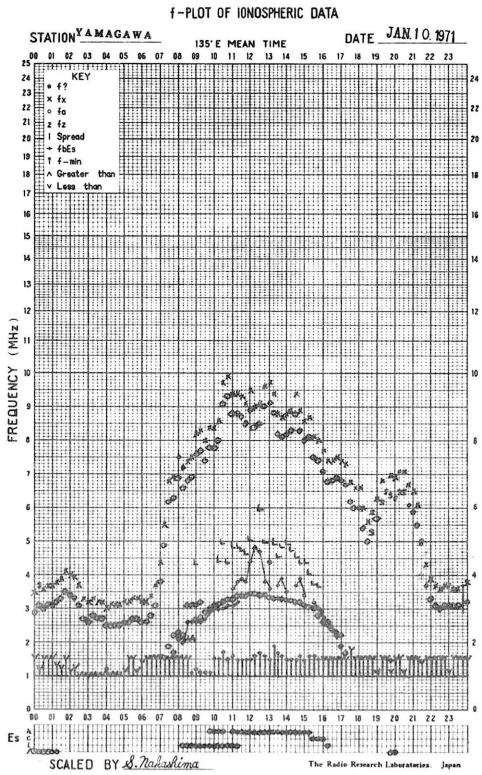
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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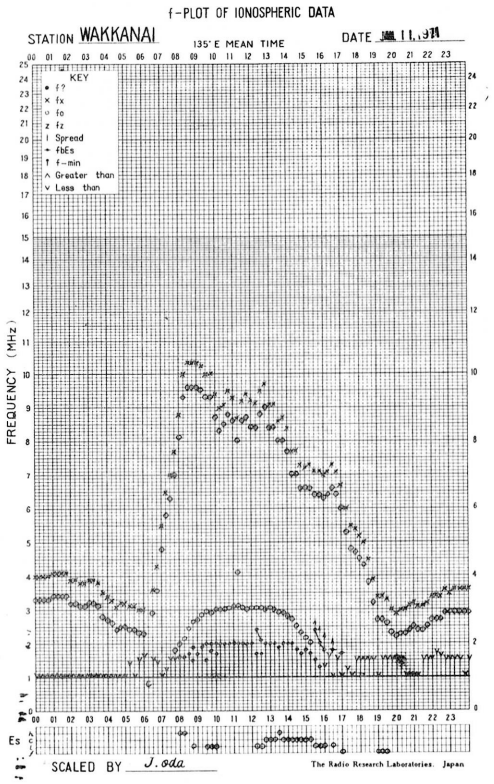
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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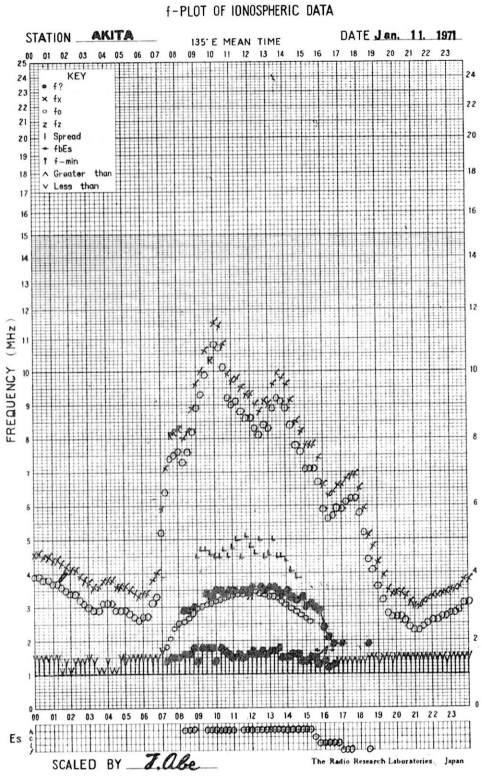
SCALED BY J. oda
The Radio Research Laboratories. Japan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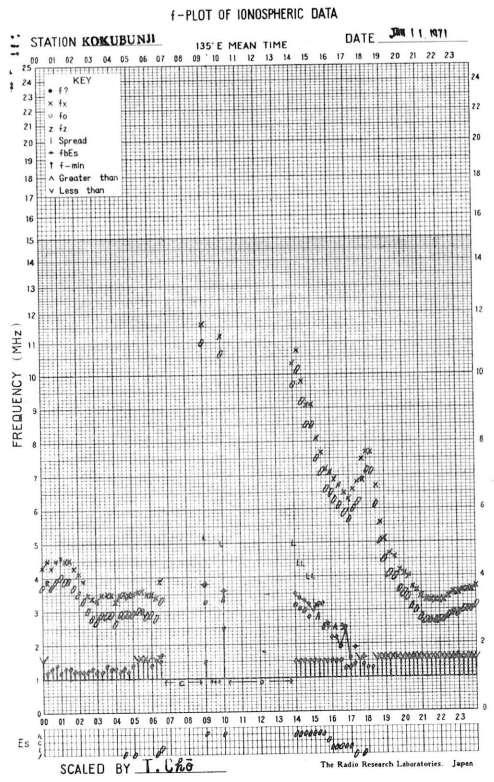
SCALED BY T. Abe
The Radio Research Laboratories. Japan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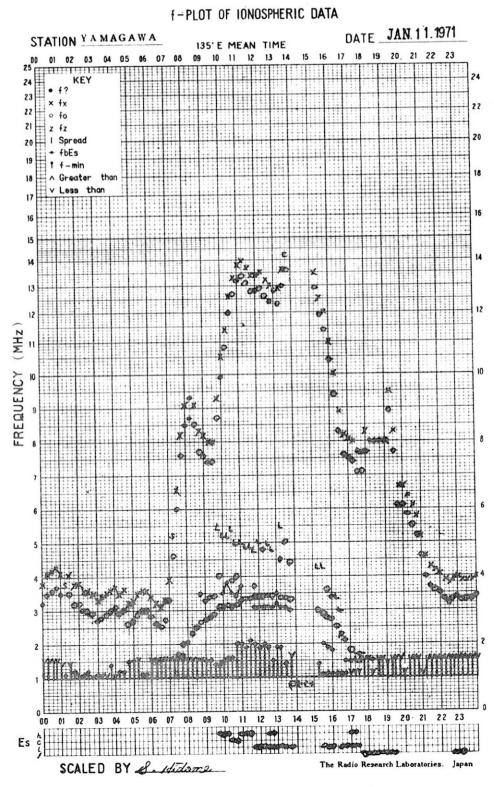
SCALED BY T. Ohō
The Radio Research Laboratories. Japan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v Less than
FREQUENCY (MHz)
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SCALED BY S. Watanabe
The Radio Research Laboratories. Japan

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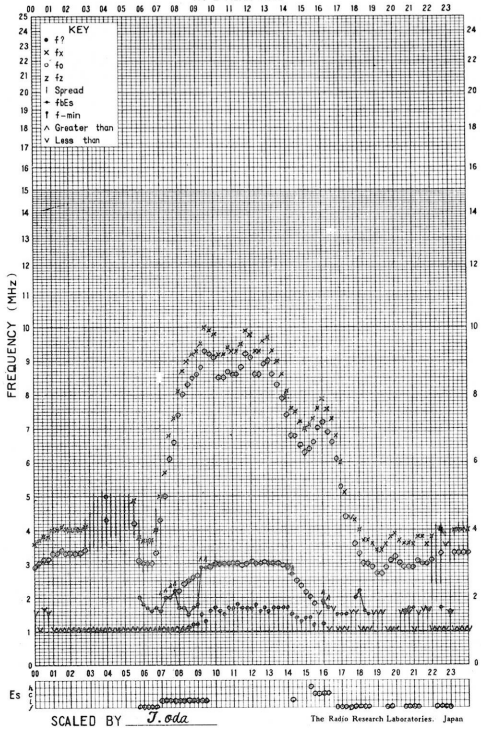

SCALED BY J. Oda

The Radio Research Laboratories, Japan

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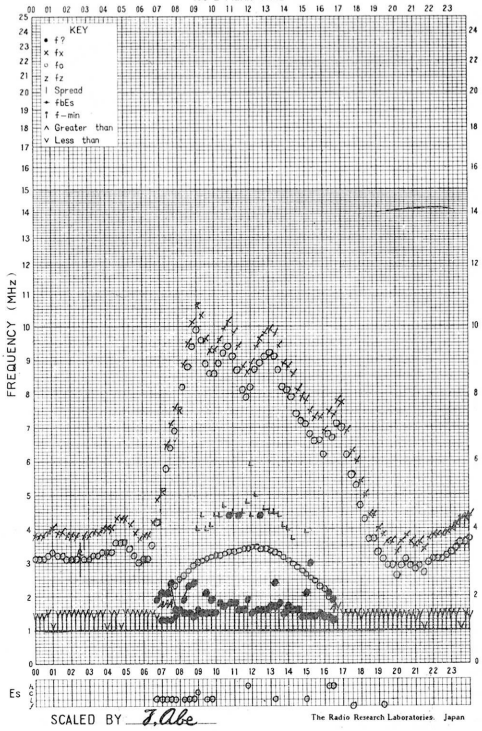

SCALED BY I. Abe

The Radio Research Laboratories, Japan

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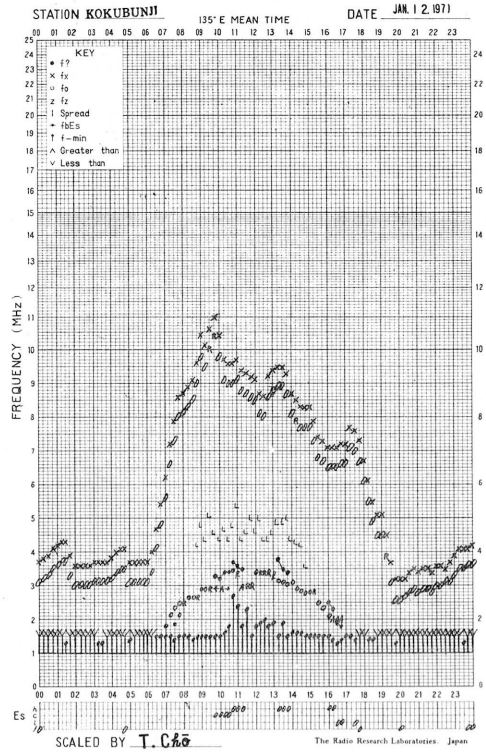

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The Radio Research Laboratories, Japan

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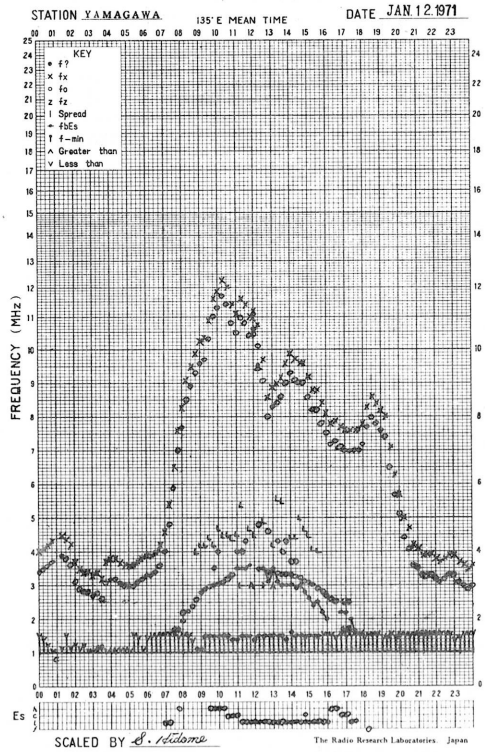

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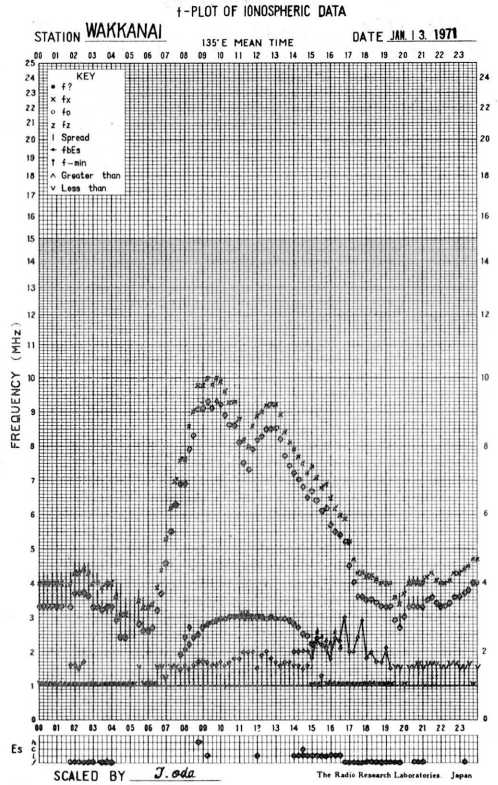
The Radio Research Laboratories, Japan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FREQUENCY (MHz)
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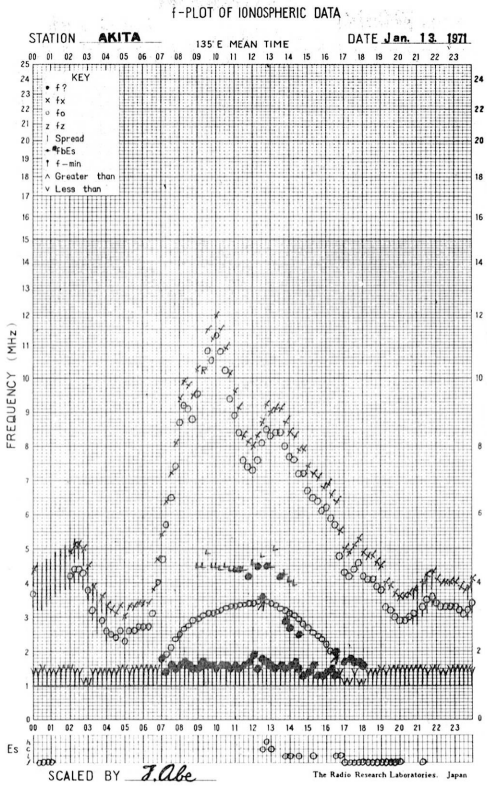
SCALED BY T. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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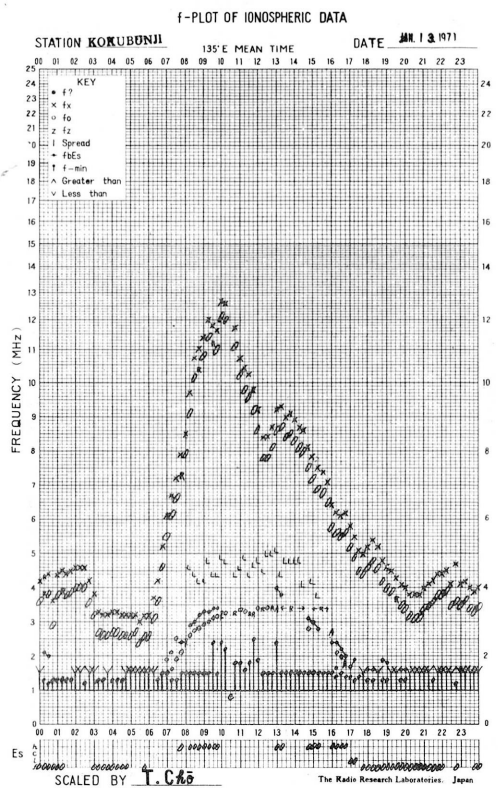
SCALED BY T. Abe
The Radio Research Laboratories. Japan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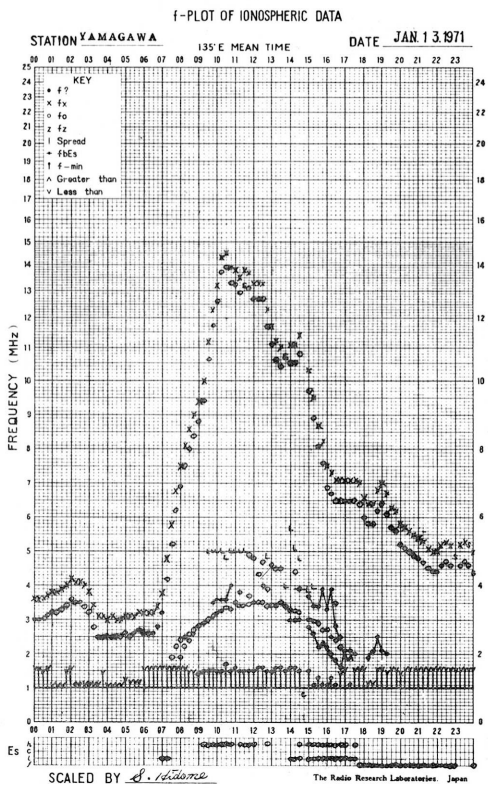
SCALED BY T. Ito
The Radio Research Laboratories. Japan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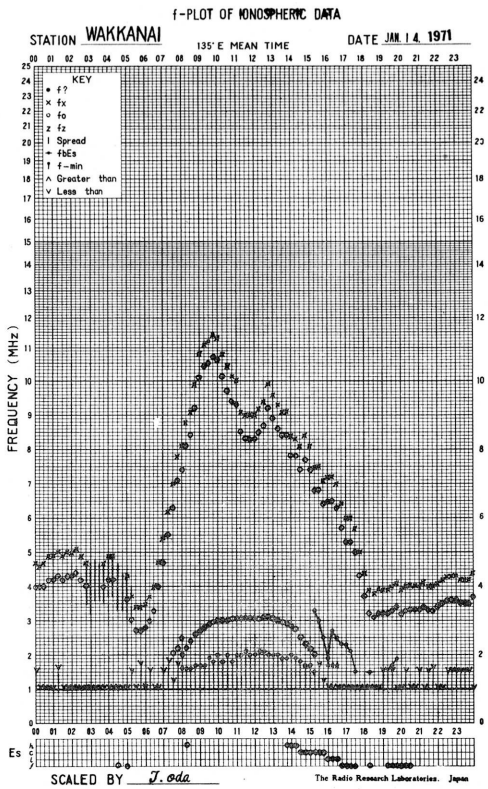
SCALED BY S. Hitomi
The Radio Research Laboratories. Japan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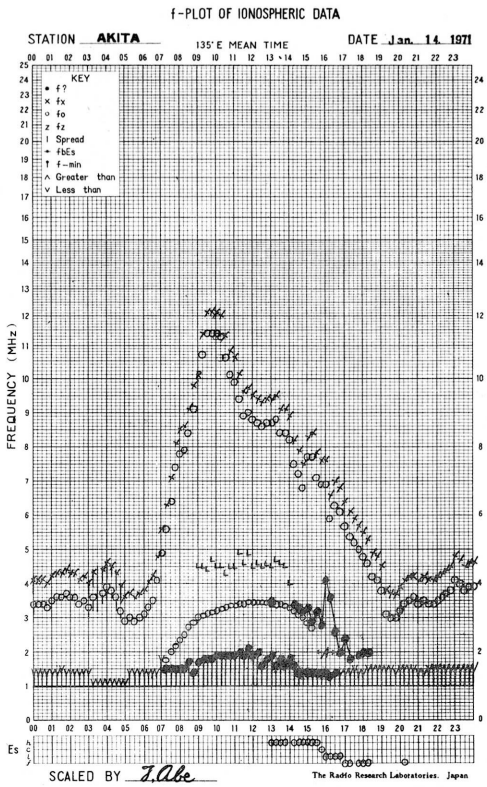
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan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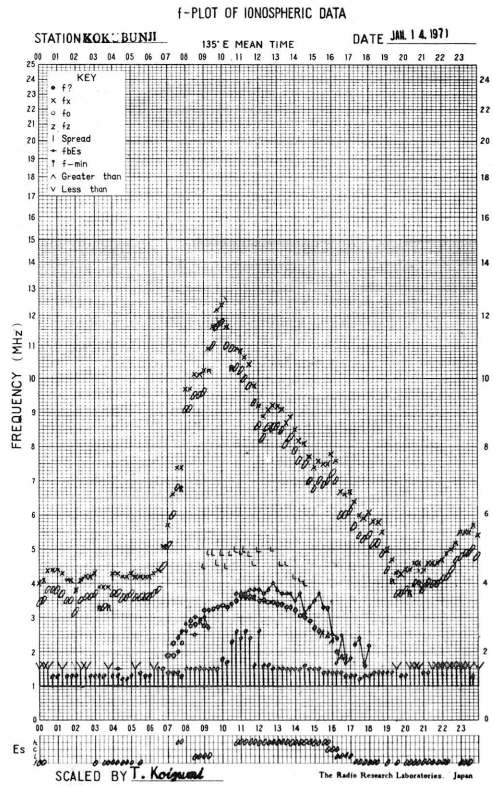
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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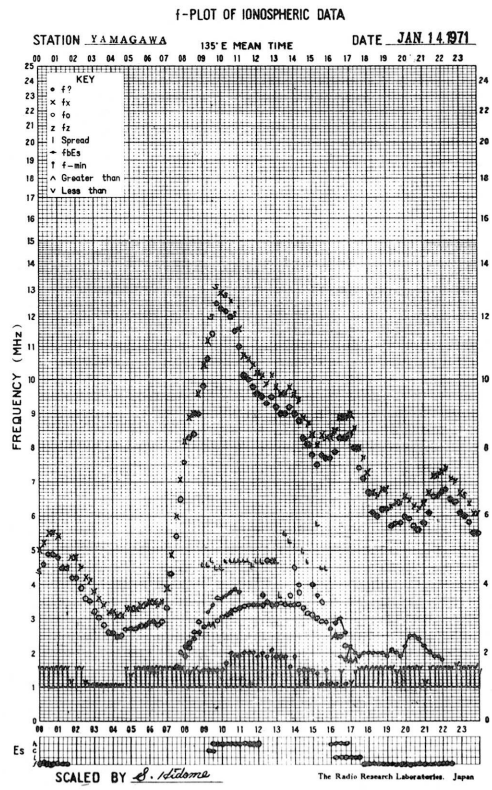
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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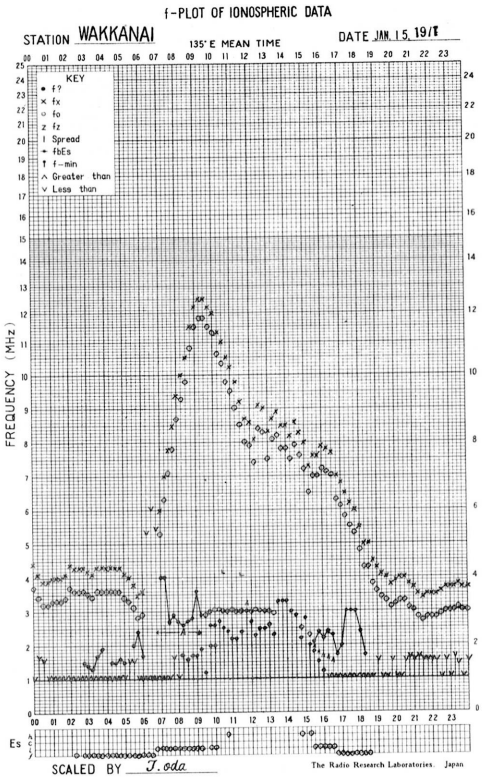
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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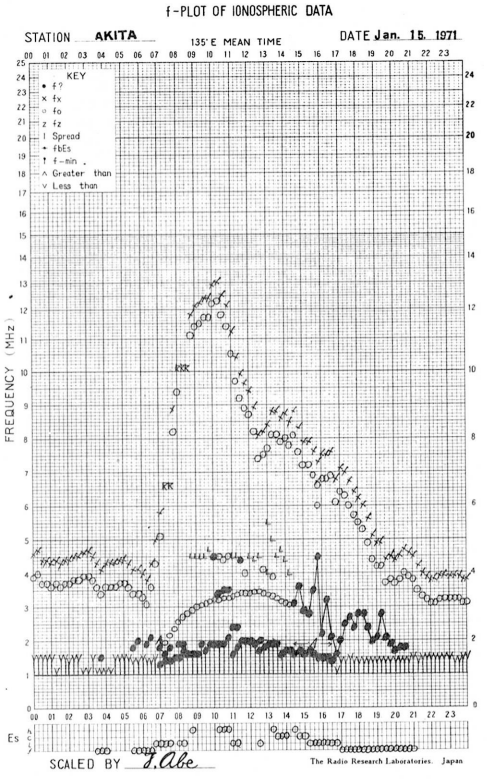
SCALED BY J. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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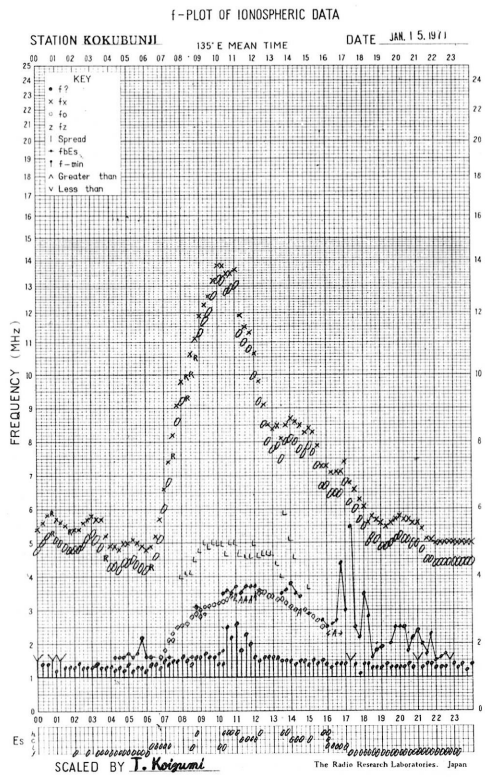
SCALED BY J. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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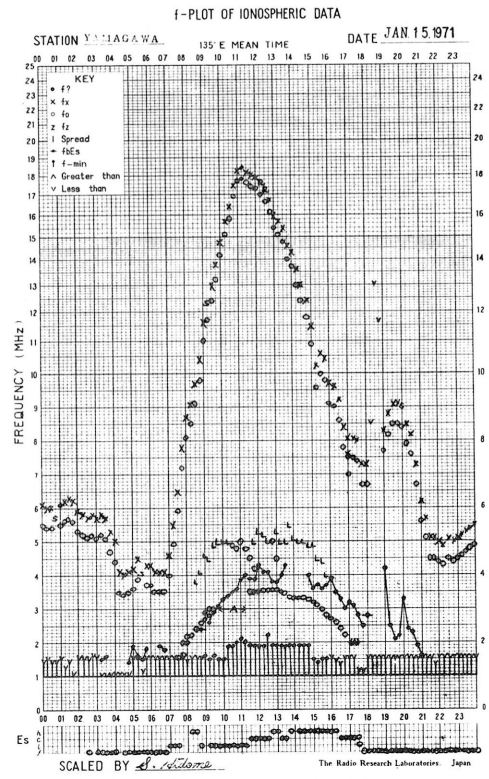
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
Es
SCALED BY S. Watanabe
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JAN. 16, 1971

KEY
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FREQUENCY (MHz)

Es

SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jan. 16, 1971

KEY
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FREQUENCY (MHz)

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SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JAN. 16, 1971

KEY
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FREQUENCY (MHz)

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SCALED BY T. Koigumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JAN. 16, 1971

KEY
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SCALED BY

The Radio Research Laboratories. Japan

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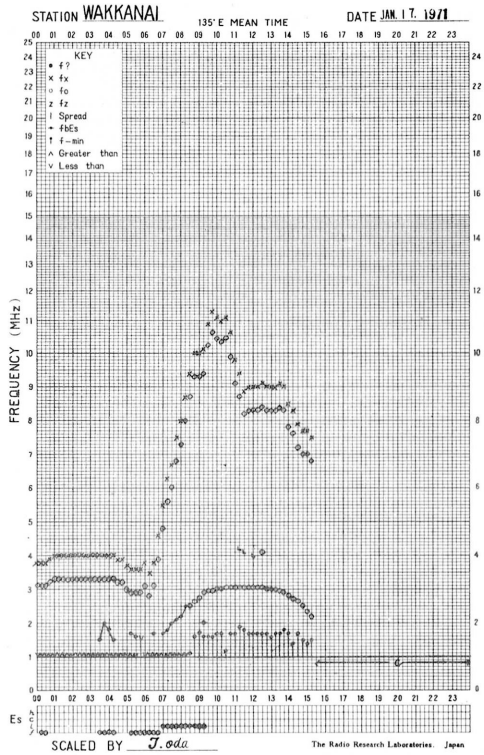

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The Radio Research Laboratories. Japan

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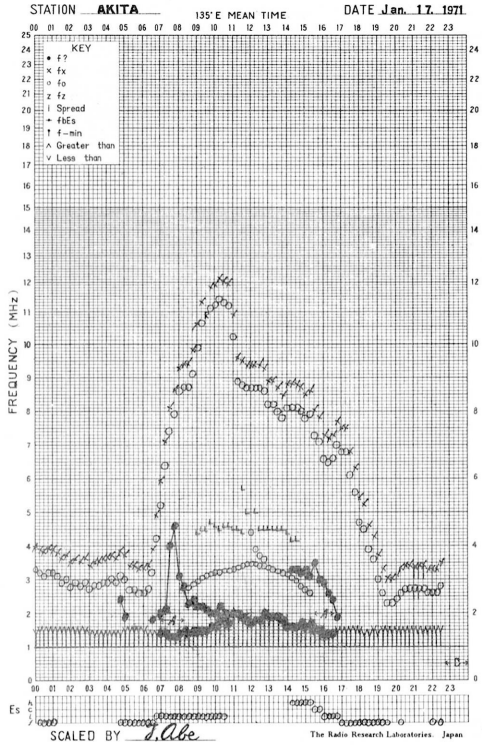

SCALED BY I. Abe

The Radio Research Laboratories. Japan

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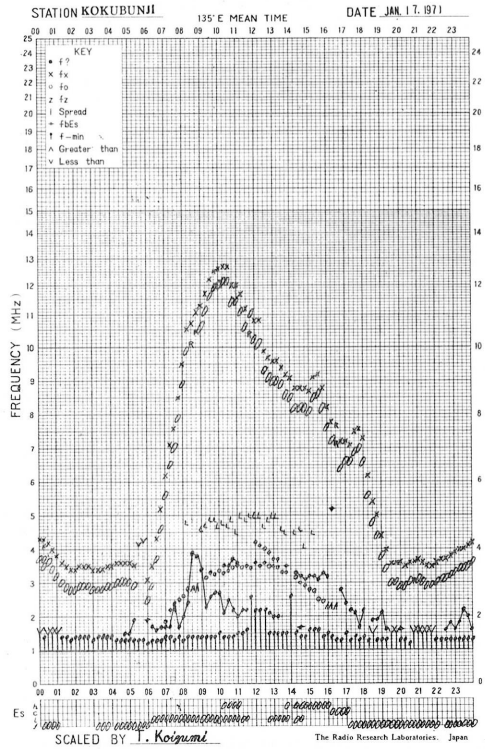

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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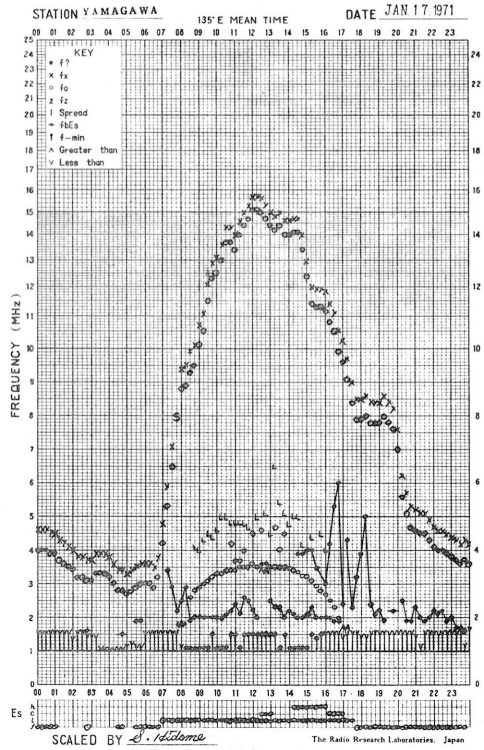
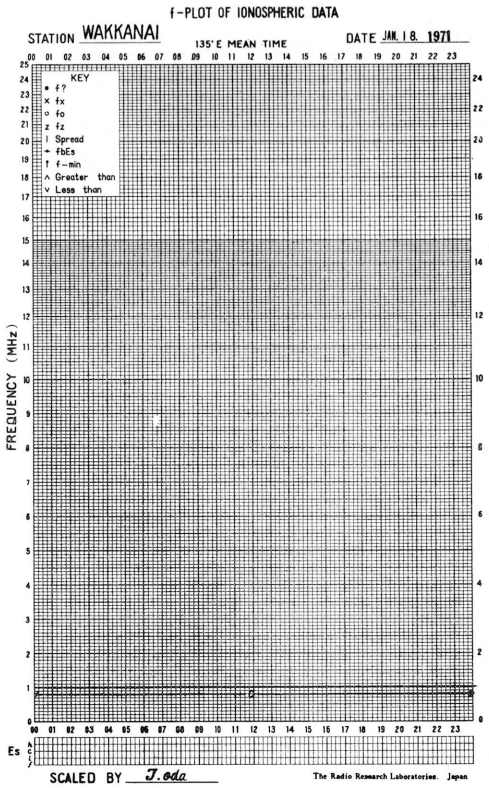


SCALED BY S. Ishidome

The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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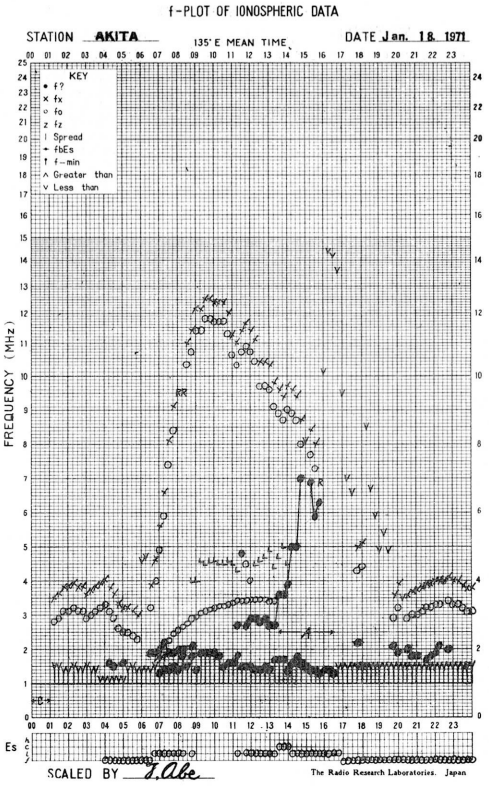
SCALED BY J. Oda
The Radio Research Laboratories. Japan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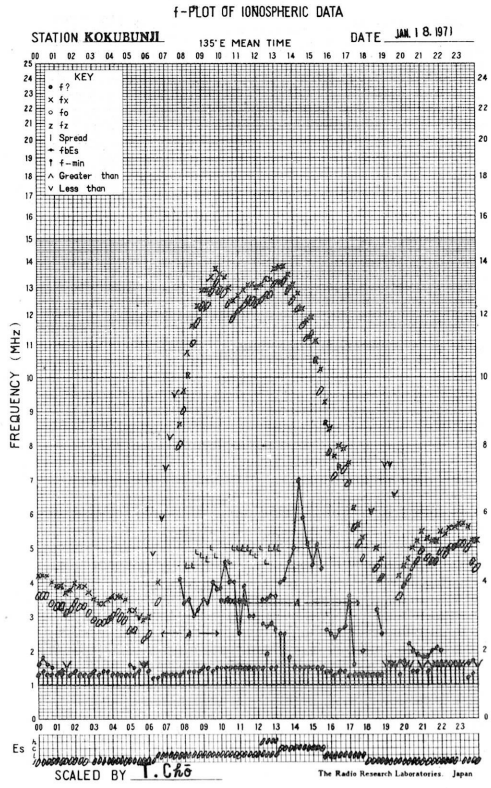
SCALED BY T. Abe
The Radio Research Laboratories. Japan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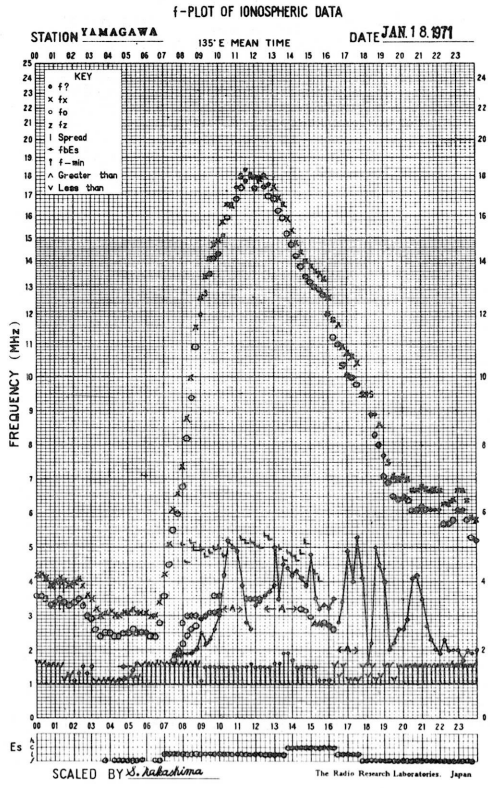
SCALED BY T. Chō
The Radio Research Laboratories. Japan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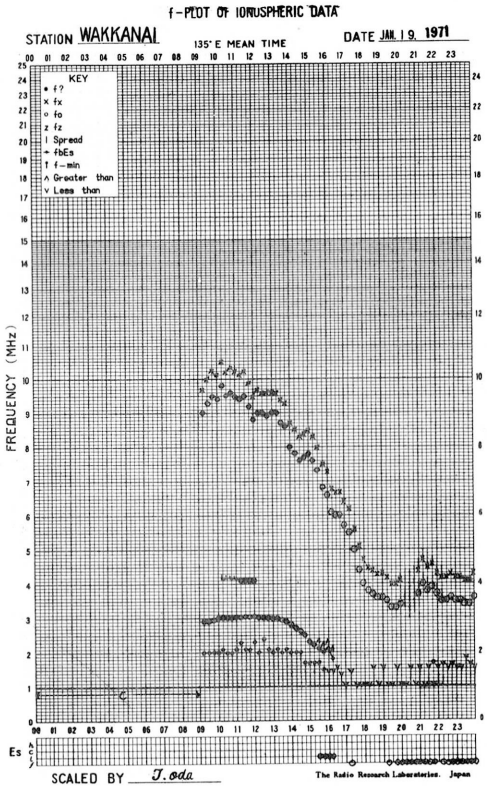
SCALED BY S. Takashima
The Radio Research Laboratories. Japan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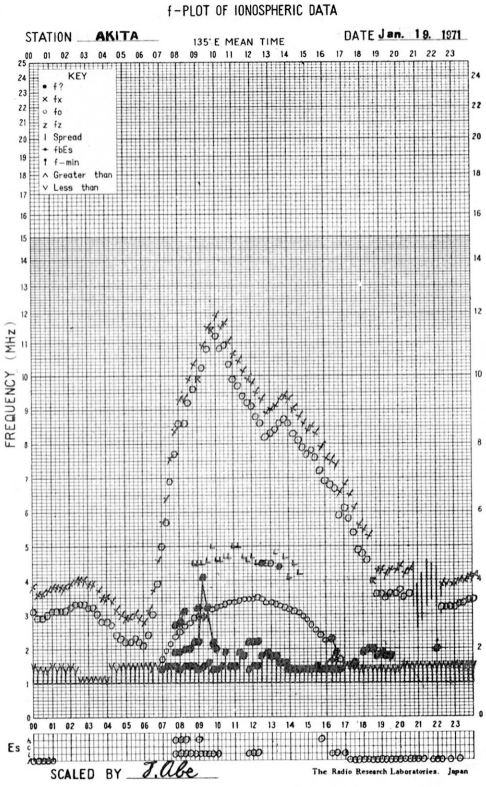
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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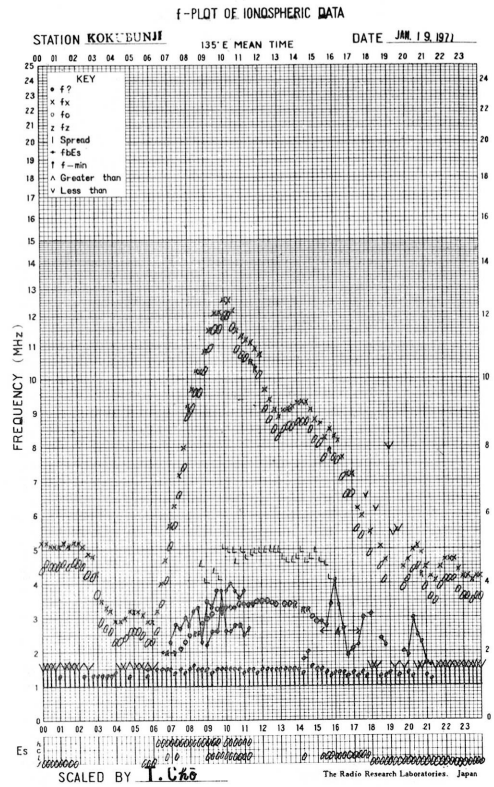
SCALED BY T. Abe
The Radio Research Laboratories. Japan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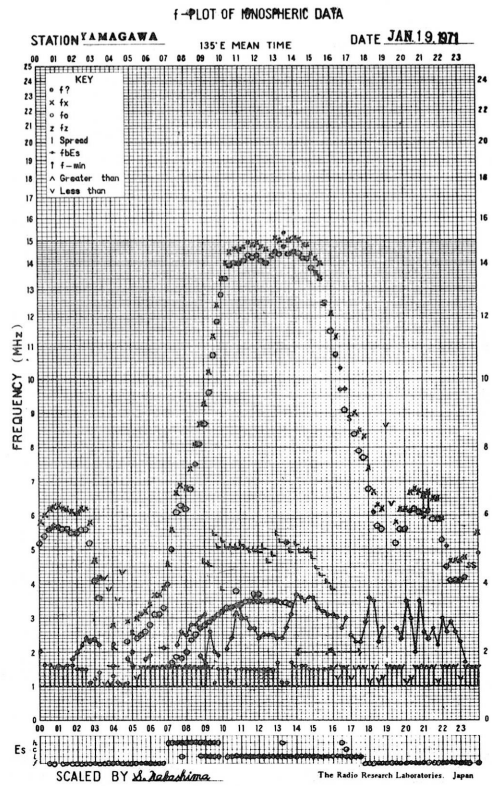
SCALED BY T. Ito
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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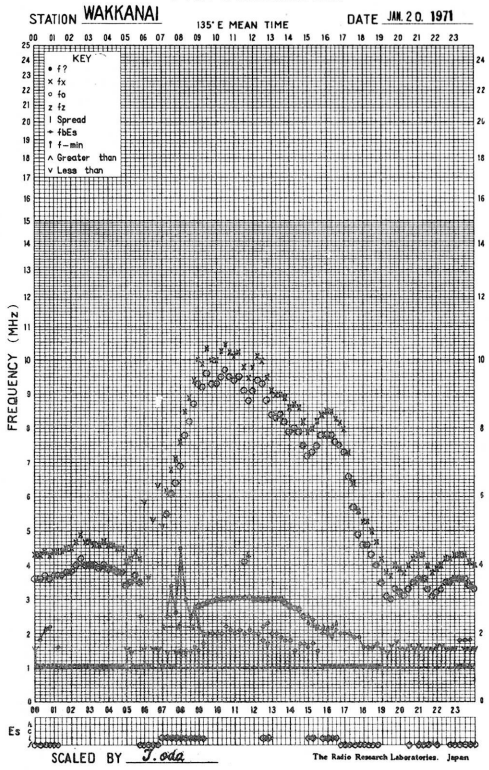
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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DATE JAN. 20. 1971
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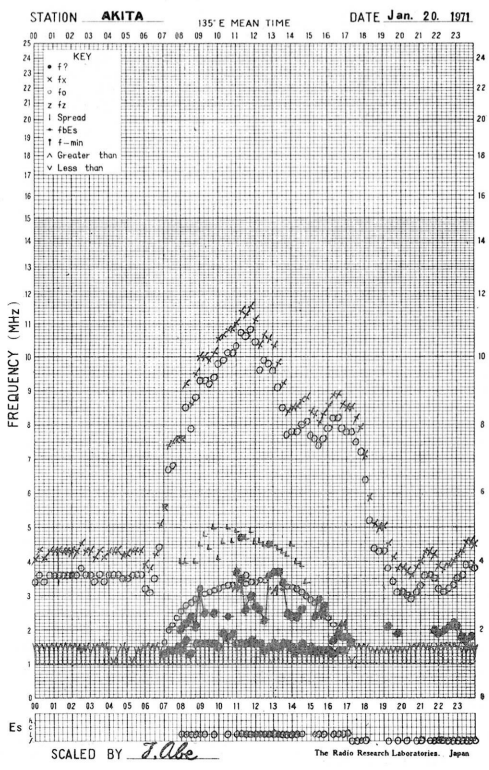
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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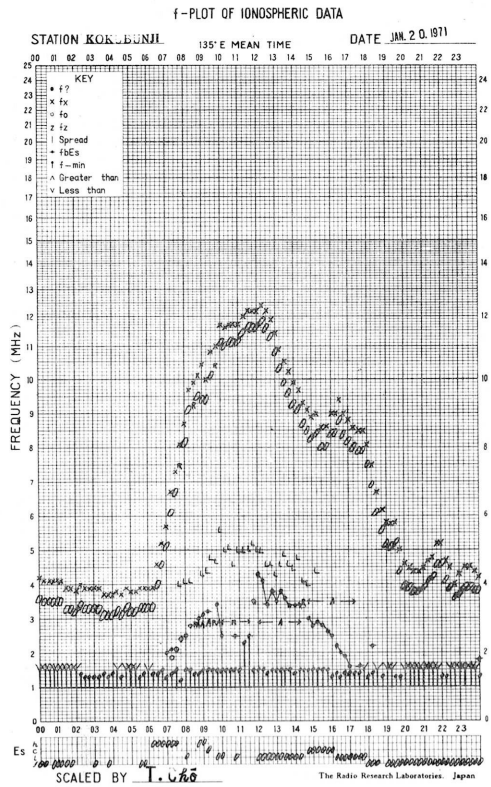
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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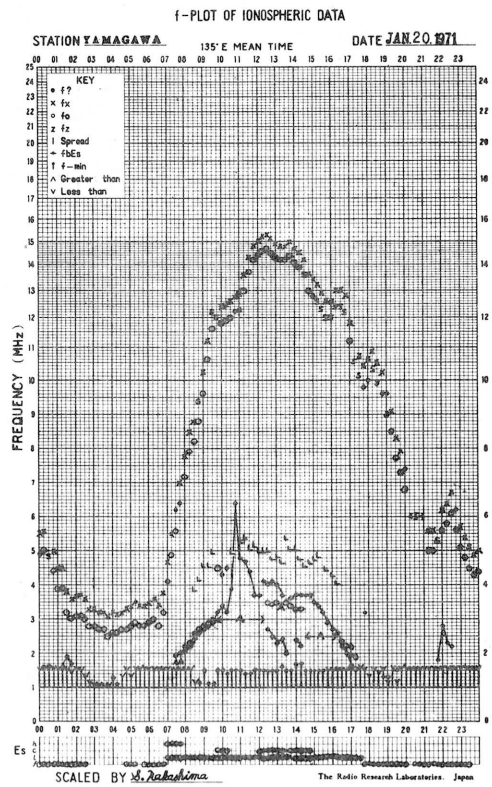
SCALED BY T. Oda
The Radio Research Laboratories. Japan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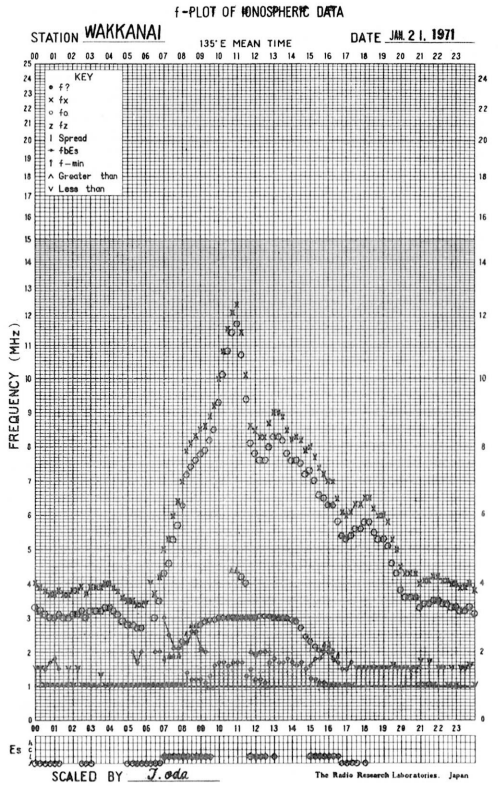
SCALED BY S. Takashima
The Radio Research Laboratories. Japan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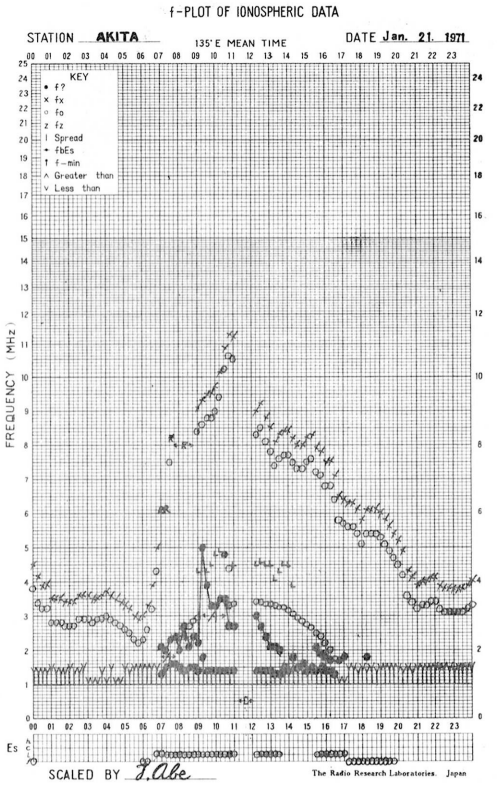
The Radio Research Laboratories. Japan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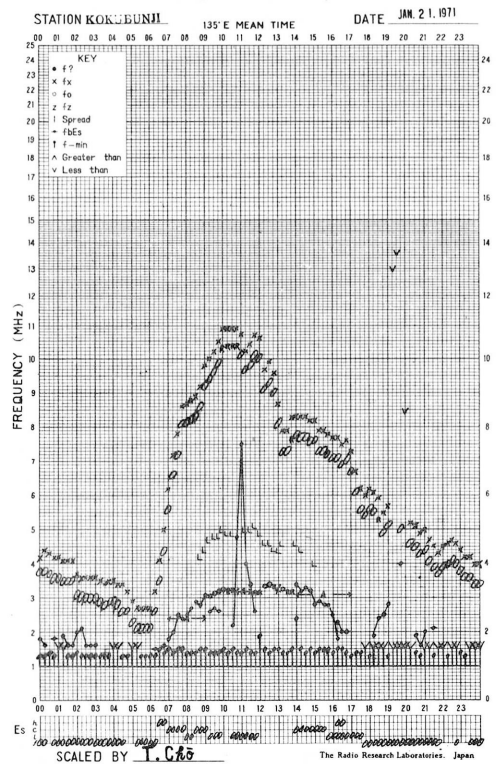
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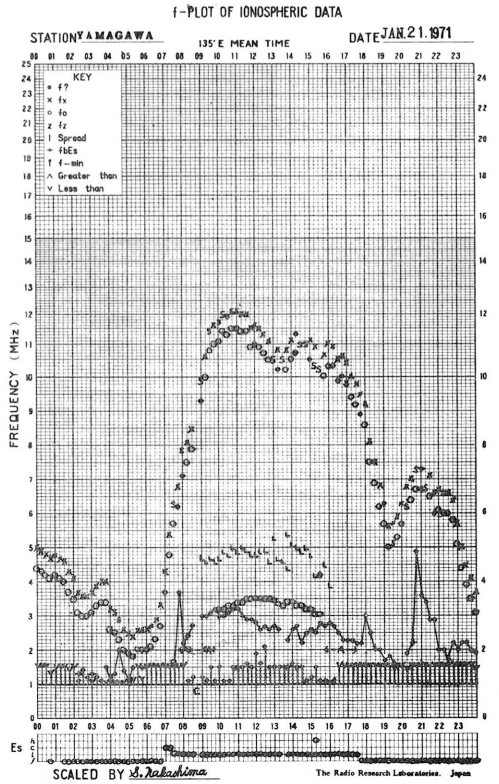
The Radio Research Laboratories. Japan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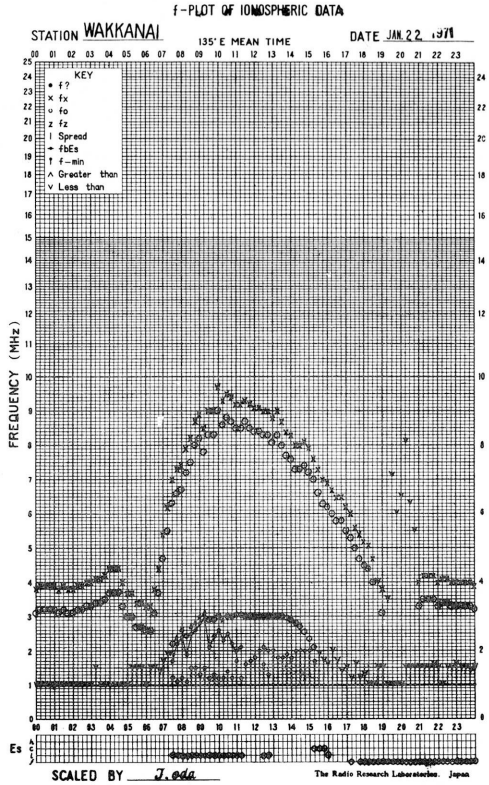
The Radio Research Laboratories. Japan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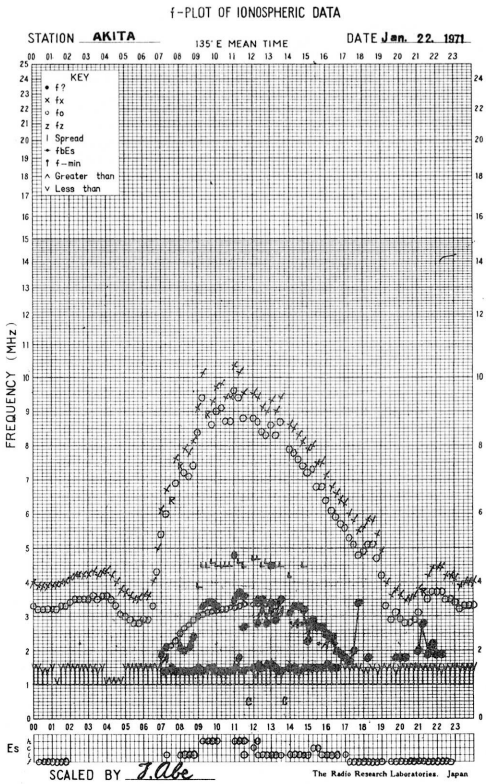
SCALED BY J. Oda
The Radio Research Laboratories. Japan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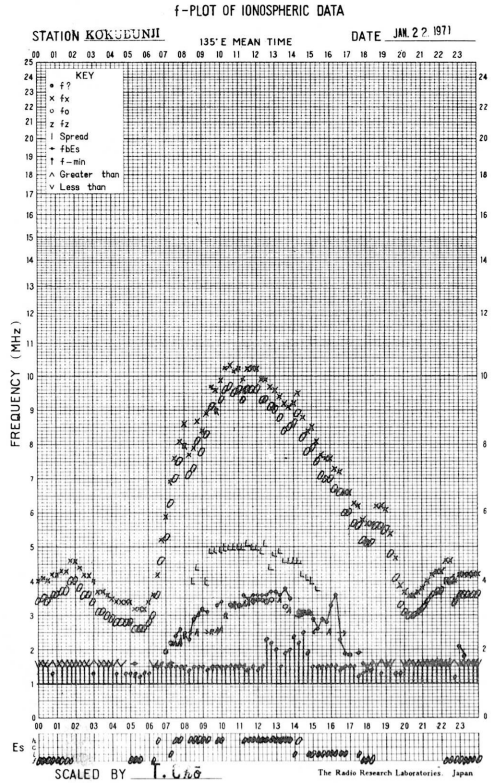
The Radio Research Laboratories. Japan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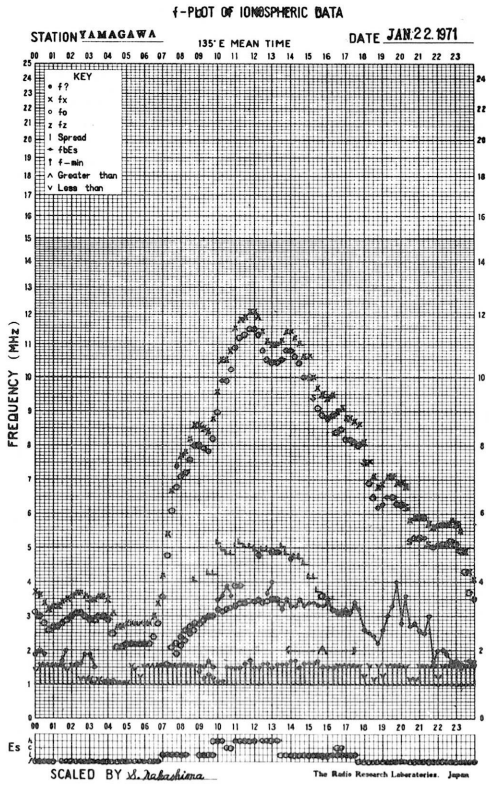
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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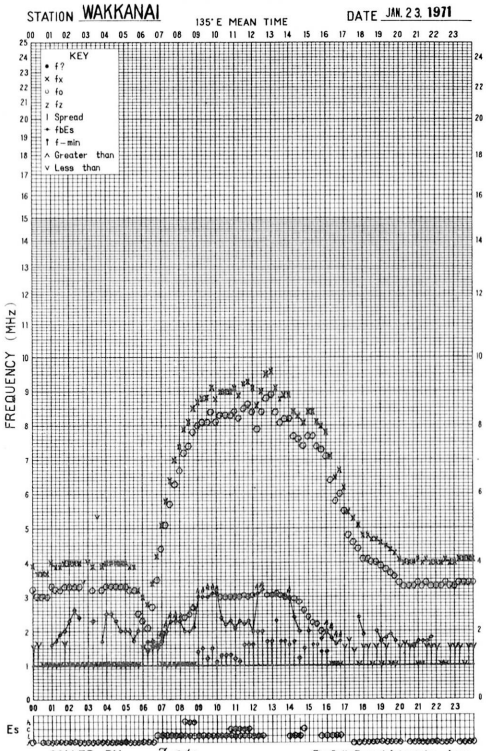

SCALED BY I. Oda

The Radio Research Laboratories. Japan

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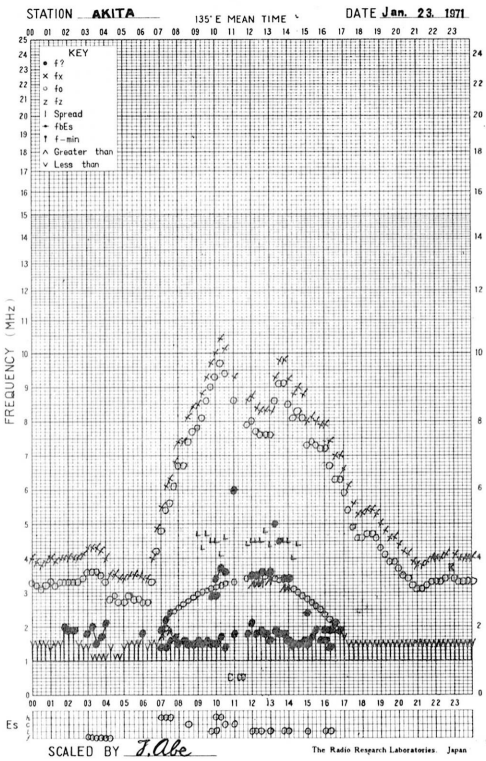

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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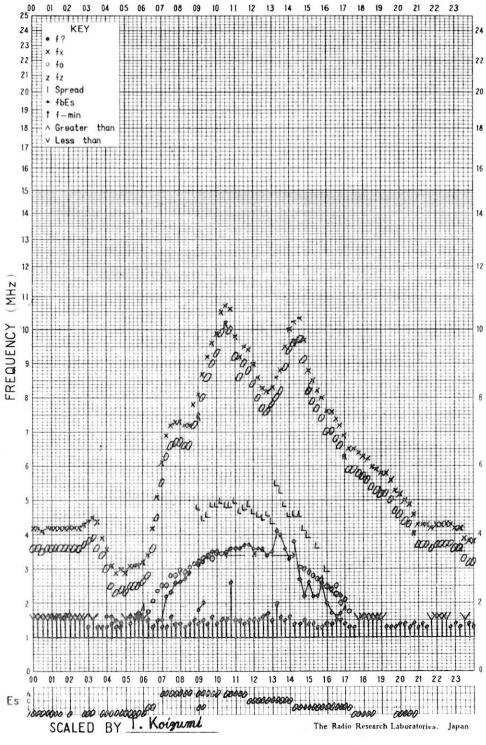

SCALED BY I. Koizumi

The Radio Research Laboratories. Japan

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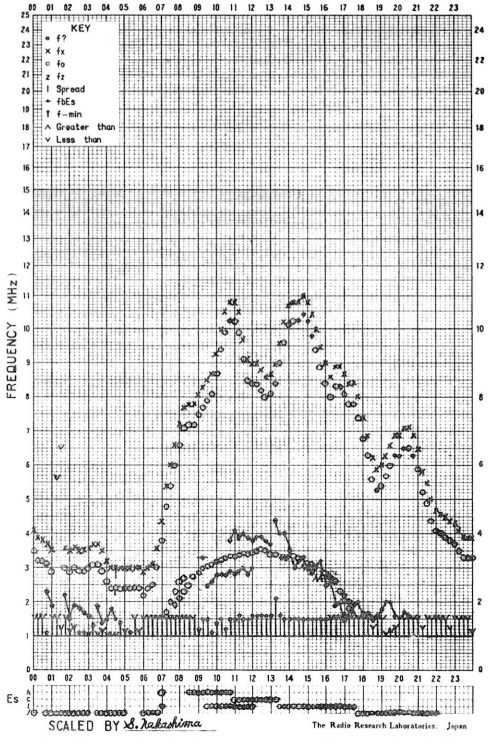
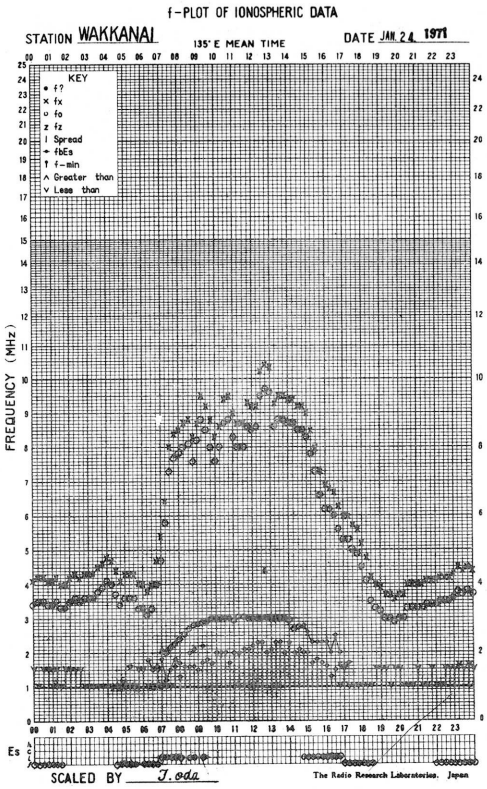


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan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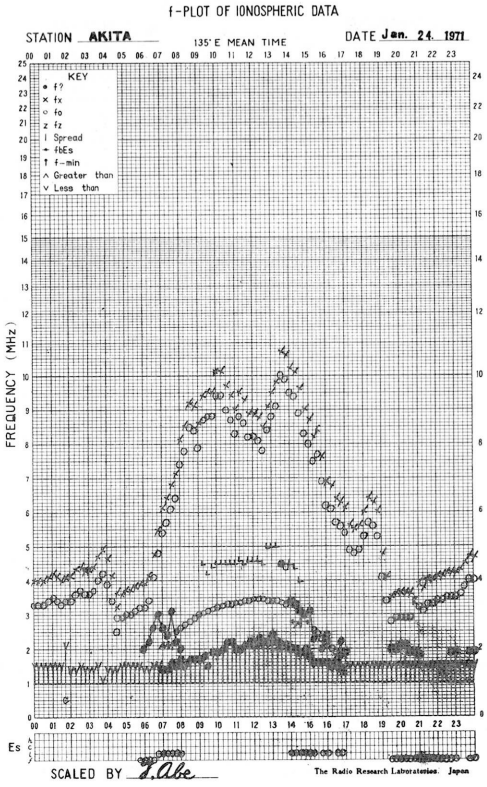
The Radio Research Laboratories. Japan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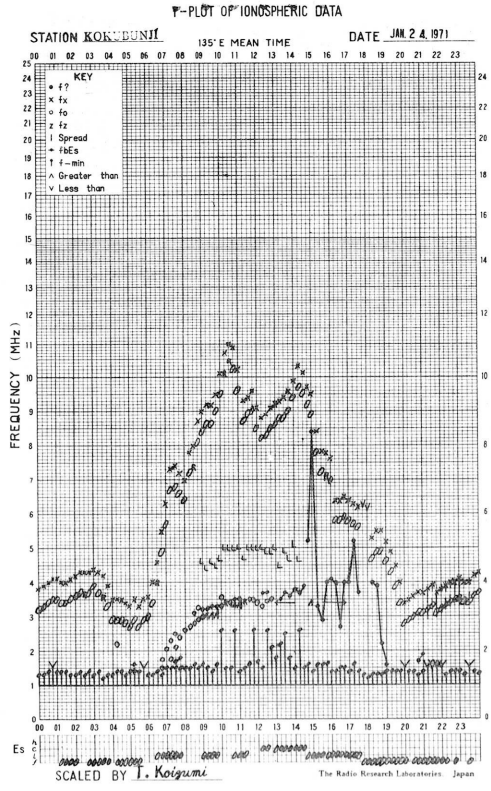
The Radio Research Laboratories. Japan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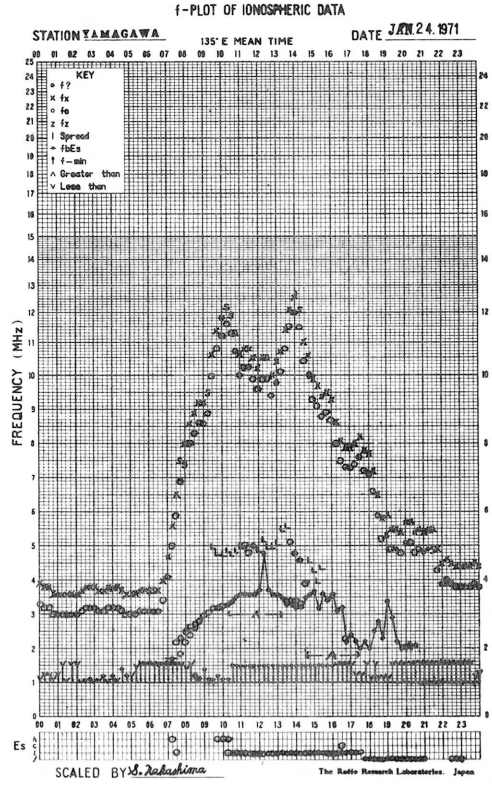
The Radio Research Laboratories. Japan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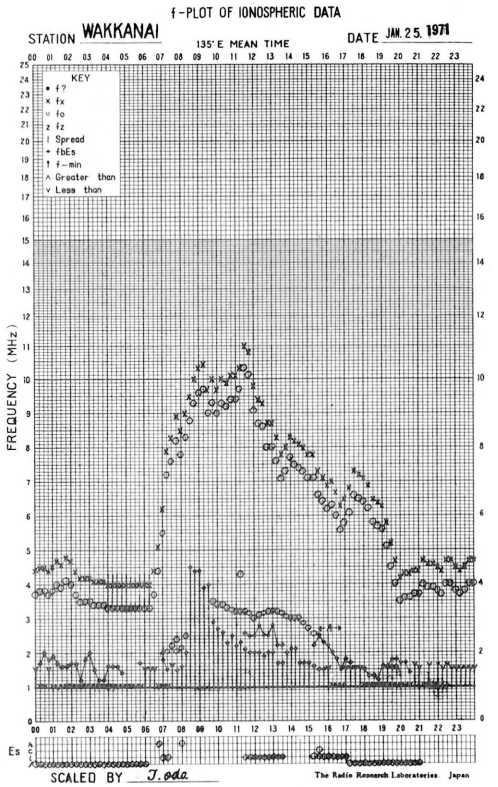
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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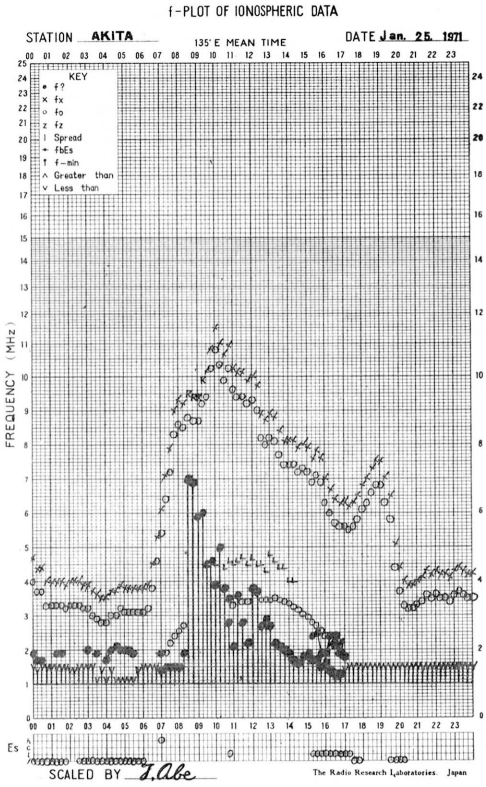
SCALED BY T. oda
The Radio Research Laboratories. Japan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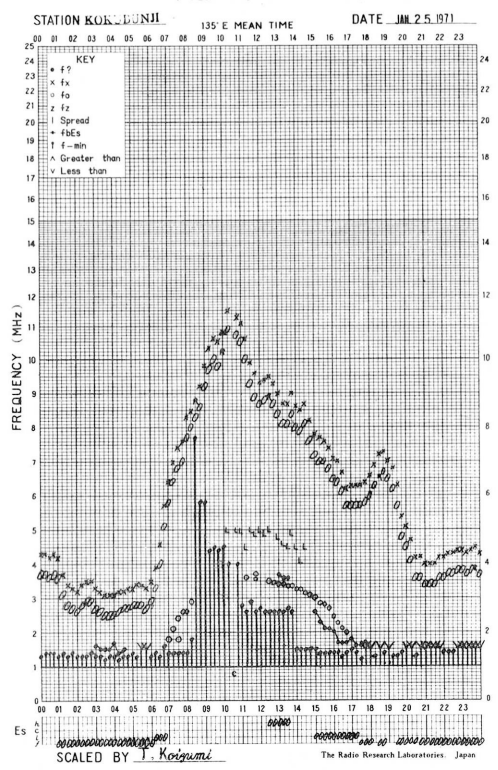
The Radio Research Laboratories. Japan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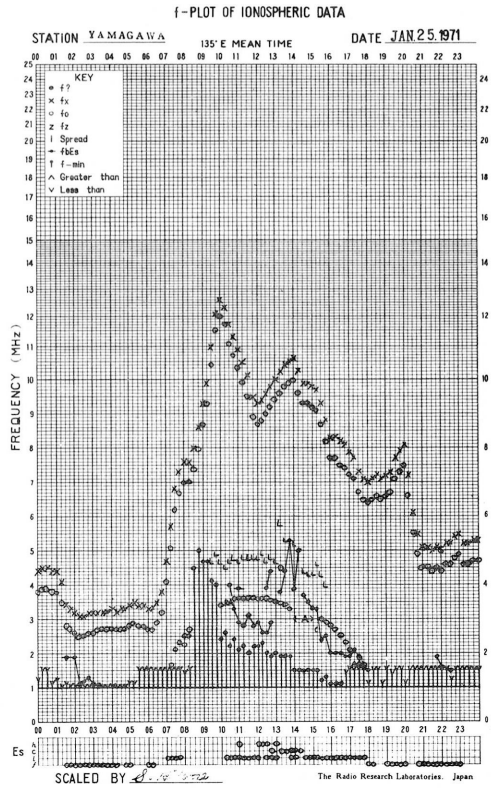
SCALED BY T. Koigumi
The Radio Research Laboratories. Japan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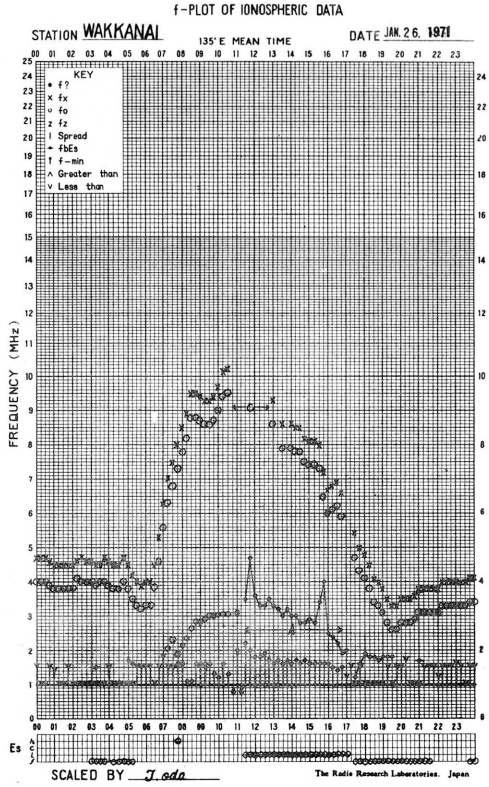
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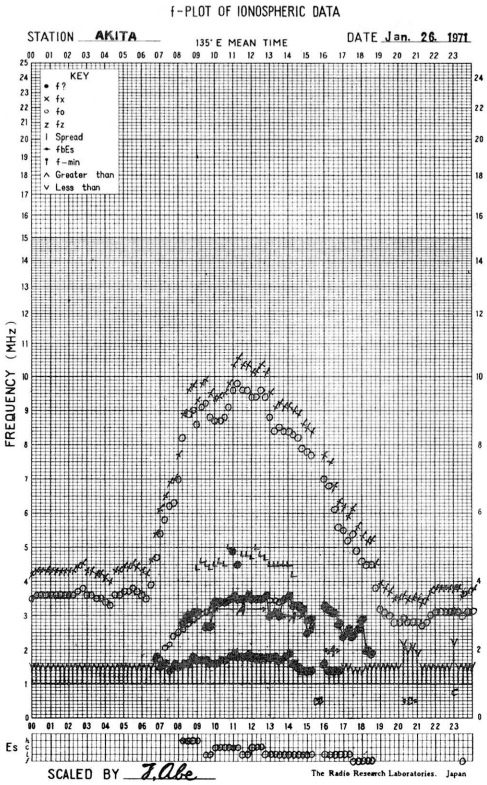
SCALED BY T. Oda
The Radio Research Laboratories. Japan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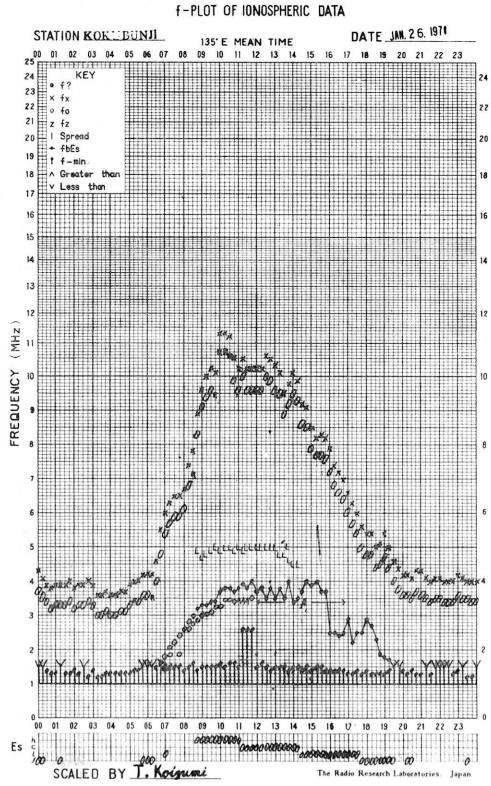
The Radio Research Laboratories. Japan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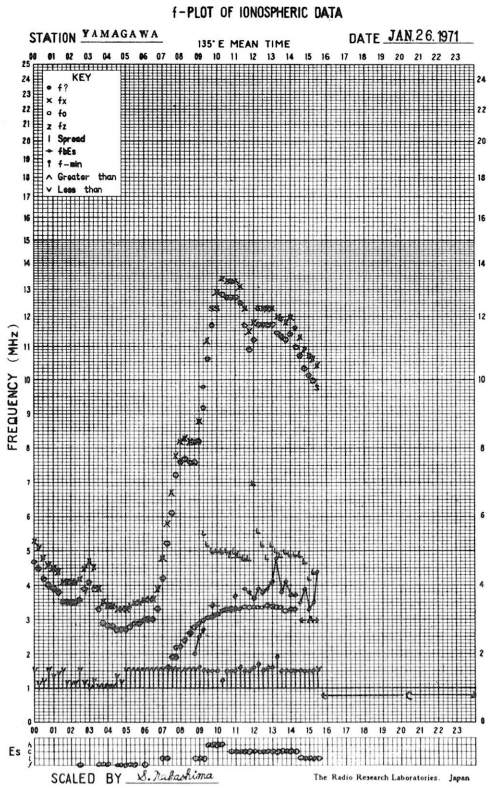
The Radio Research Laboratories. Japan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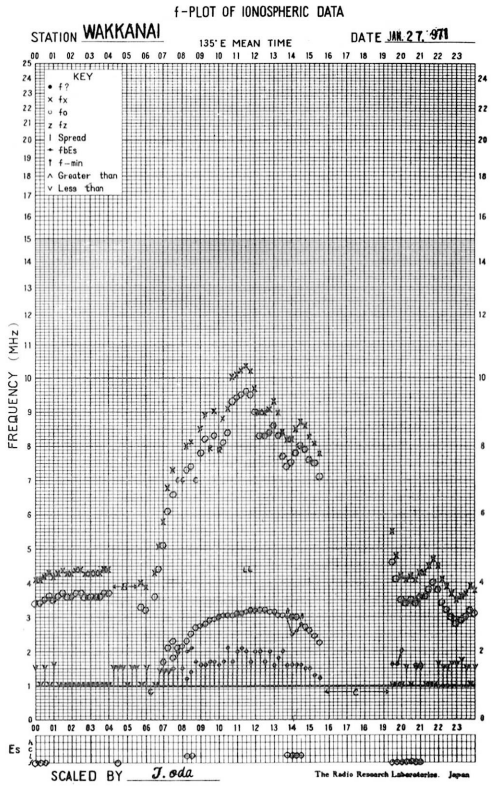
The Radio Research Laboratories. Japan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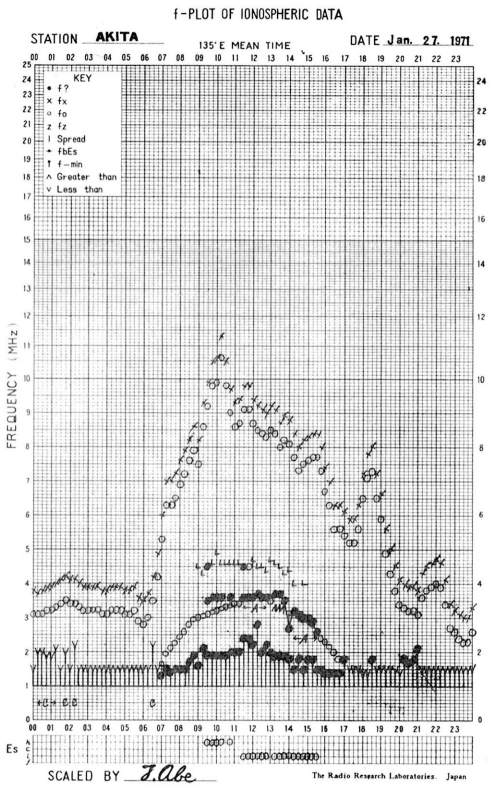
The Radio Research Laboratories. Japan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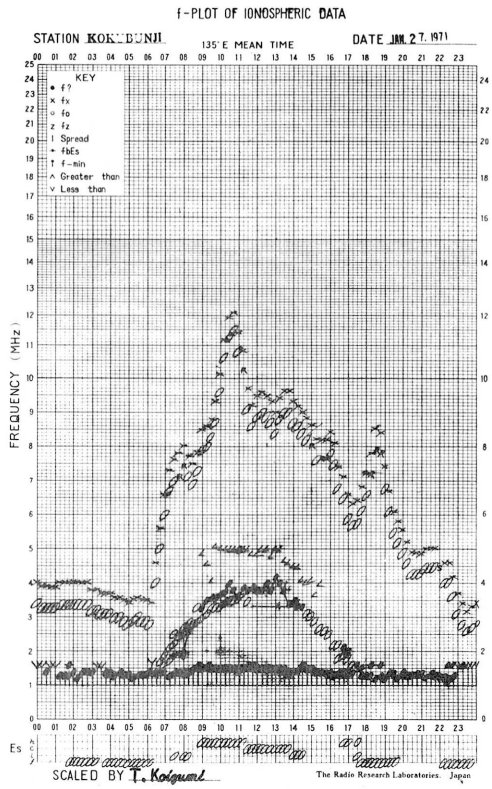
The Radio Research Laboratories. Japan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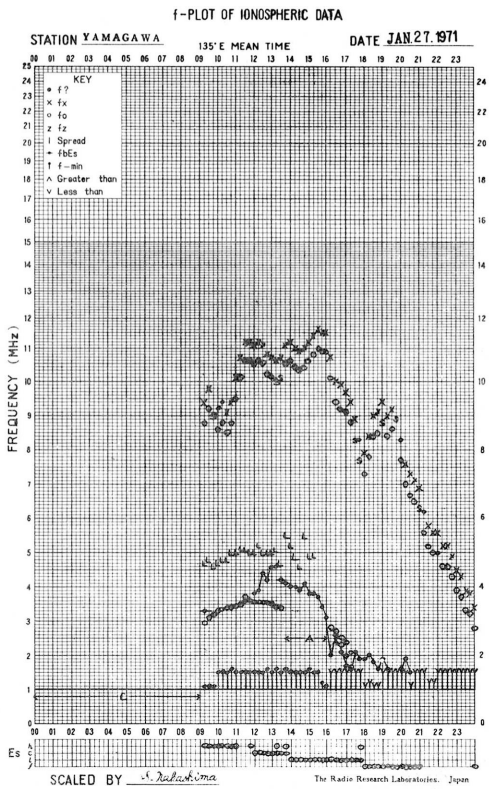
The Radio Research Laboratories. Japan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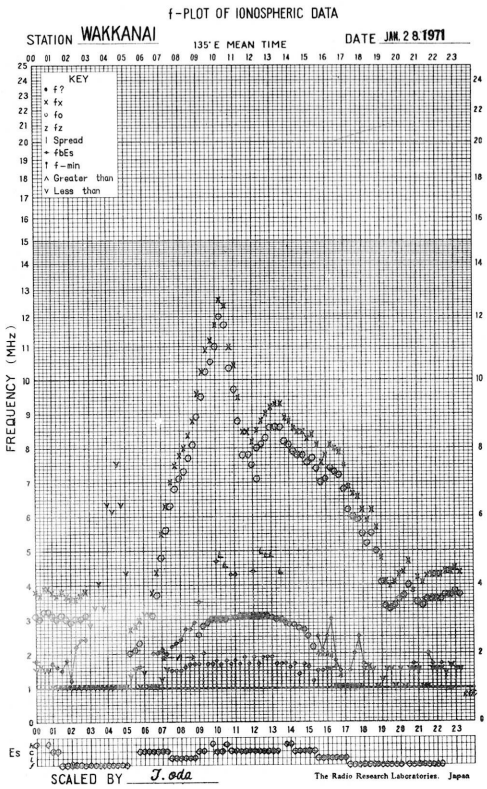
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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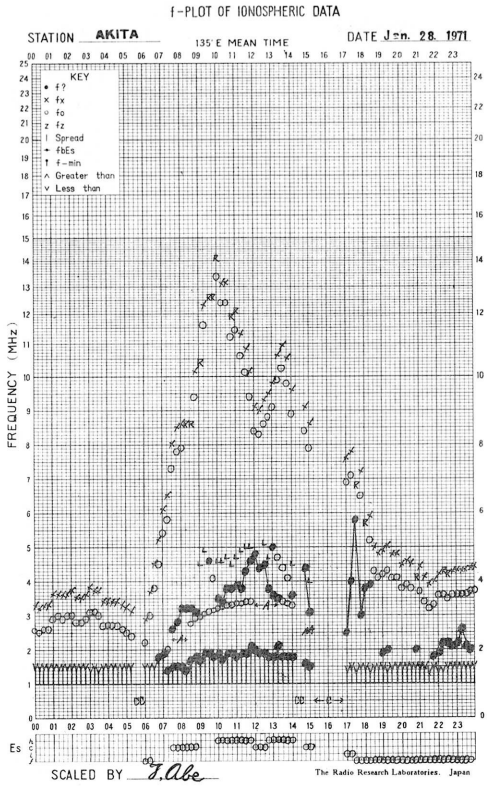
SCALED BY T. oda
The Radio Research Laboratories. Japan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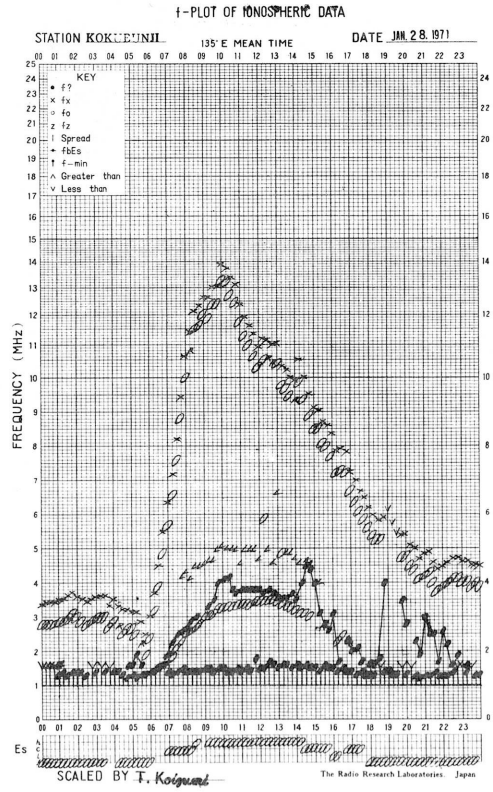
The Radio Research Laboratories. Japan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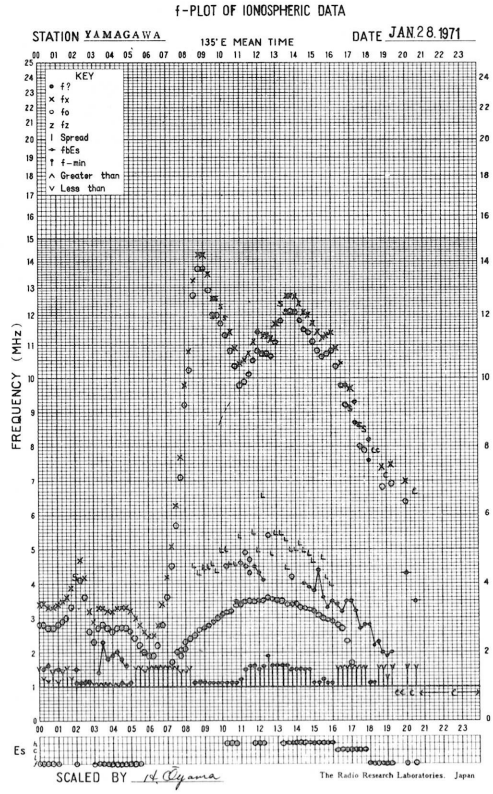
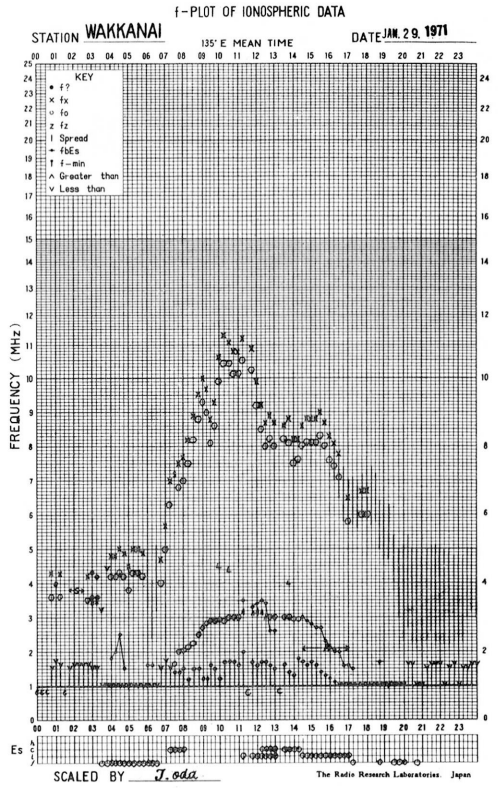
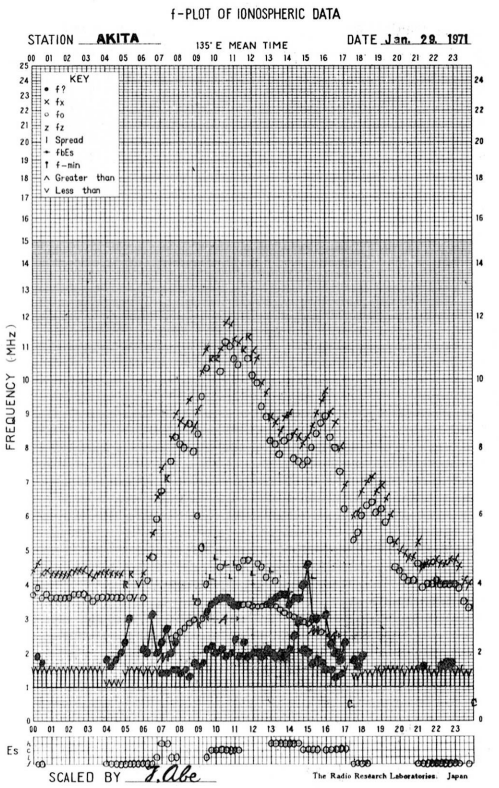
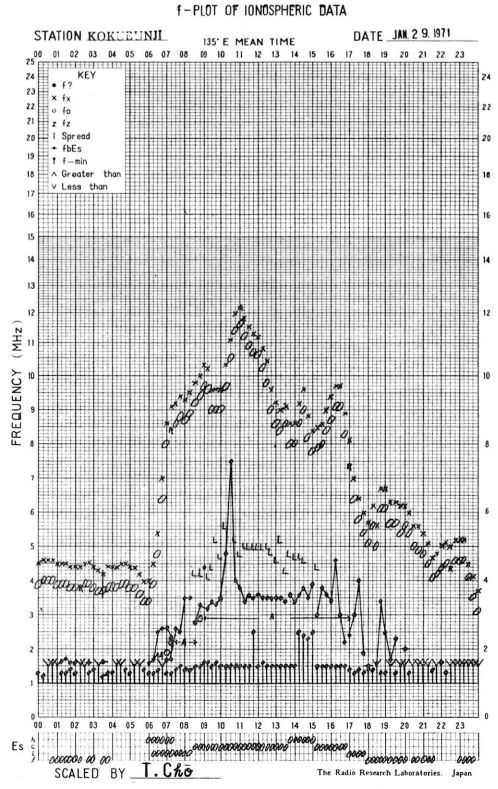
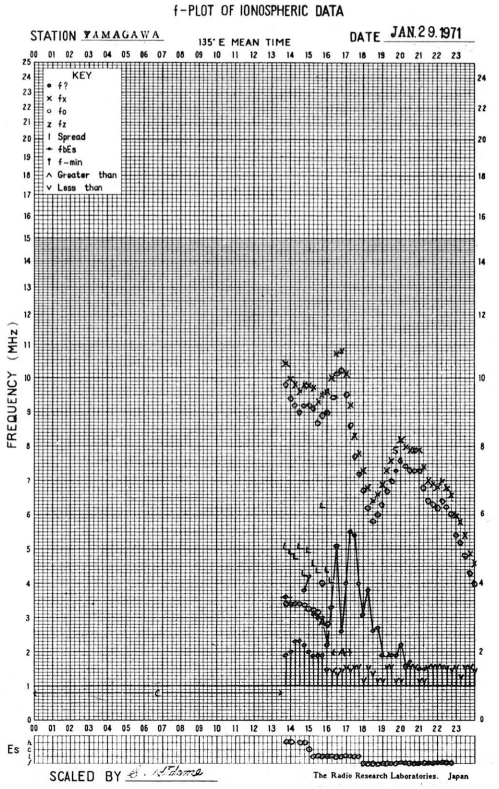
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koiguni
The Radio Research Laboratories. Japan

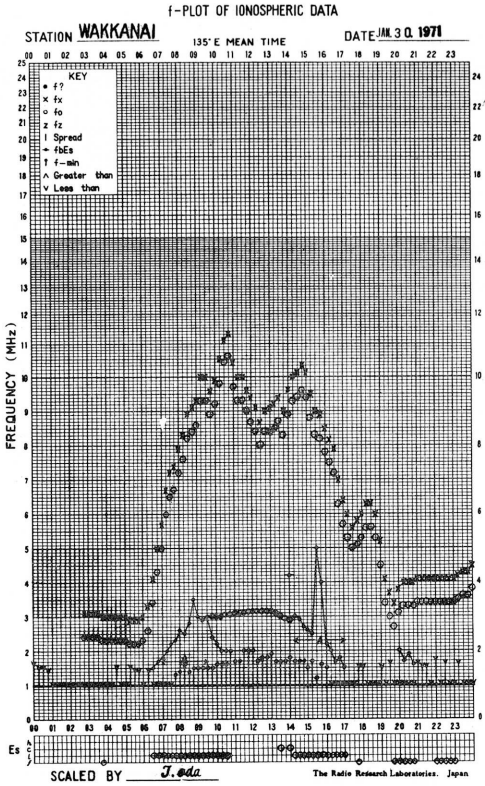

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE JAN 28. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY H. Oyama
The Radio Research Laboratories. Japan

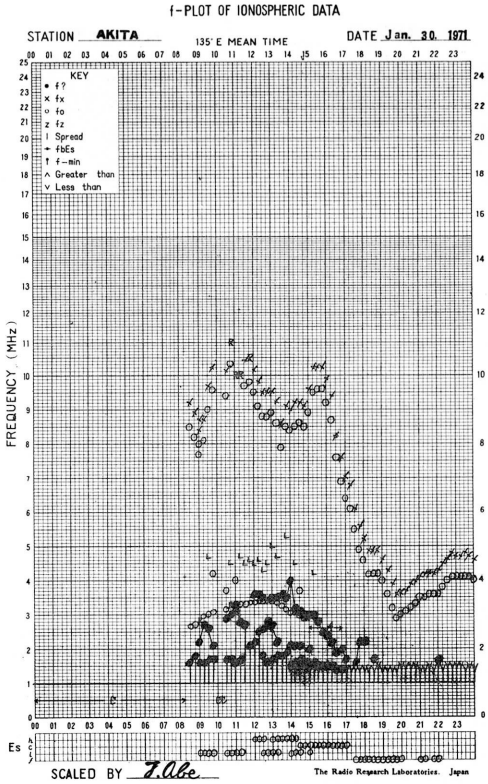

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE JAN. 29. 1971
KEY
● f?
× fx
○ fo
z fz
! Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan

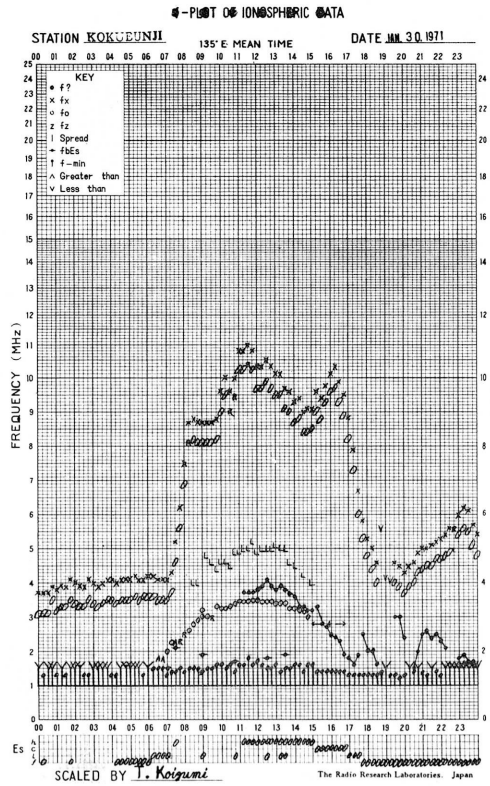

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Jan. 29. 1971
KEY
● f?
× fx
○ fo
z fz
! Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. Abe
The Radio Research Laboratories. Japan

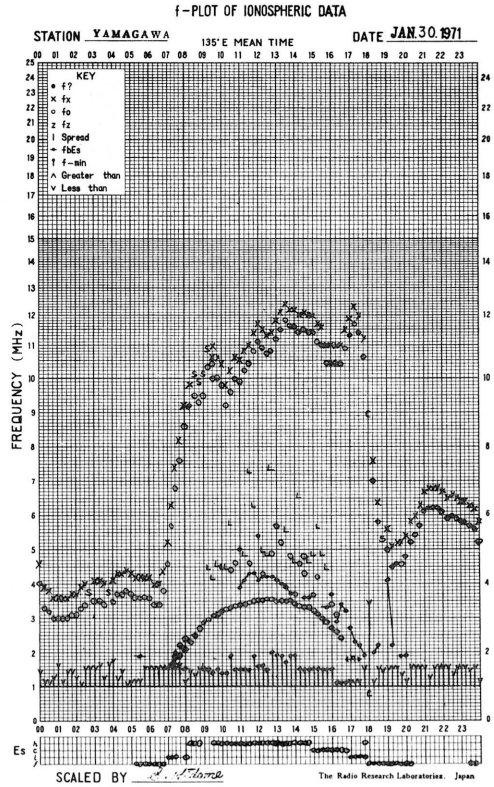

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE JAN. 29. 1971
KEY
● f?
× fx
○ fo
z fz
! Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

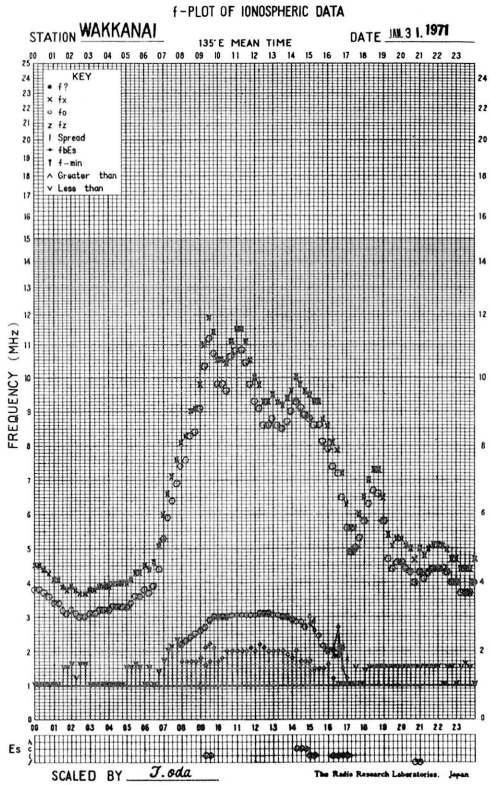

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE JAN. 29. 1971
KEY
● f?
× fx
○ fo
z fz
! Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Hama
The Radio Research Laboratories. Japan

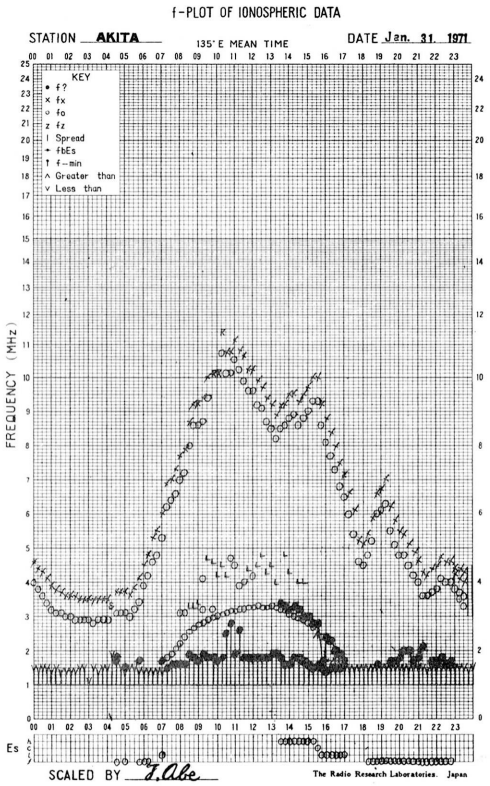

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JAN. 30. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan

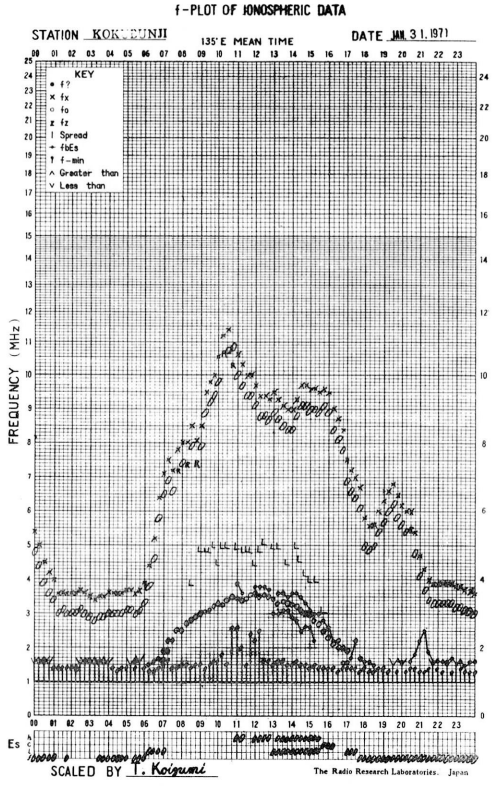

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jan. 30. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan

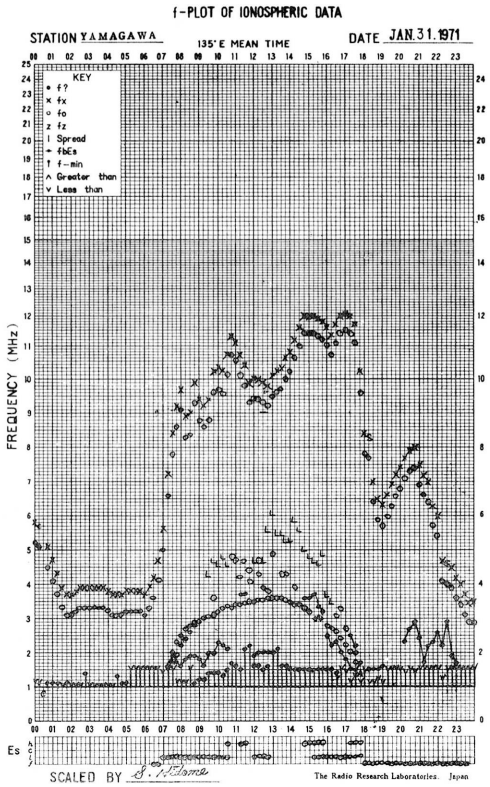

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE JAN. 30. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE JAN. 30. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Hama
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JAN. 31. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jan. 31. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE JAN. 31. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE JAN. 31. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: January 1971
Observing station: Hiraiso
Frequency: 200 MHz

	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$					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	7	6	(5)	10	7	0	0	(0)	0	0
2	9	9	(9)	q	9	0	0	(0)	0	0
3	q	q	(q)	q	q	0	0	(0)	0	0
4	q	q	(q)	q	q	0	0	(0)	0	0
5	q	6	(5)	8	5	0	0	(0)	1	0
6	10	10	(11)	10	9	0	0	(1)	1	0
7	11	10	(9)	24	10	0	1	(0)	1	1
8	16	10	(11)	14	15	1	0	(0)	1	1
9	21	46	(63)	28	32	1	1	(2)	1	1
10	34	80	(30)	45	47	1	1	(1)	1	1
11	36	64	(78)	92	52	1	0	(0)	2	0
12	149	138	(158)	35	134	1	1	(1)	1	1
13	53	26	(32)	17	38	0	1	(0)	1	1
14	21	19	(19)	25	19	1	1	(0)	1	1
15	23	28	(23)	18	25	1	0	(0)	1	0
16	16	19	(21)	9	18	1	1	(0)	0	1
17	9	7	(6)	9	8	0	0	(0)	1	0
18	9	10	(10)	11	9	0	1	(1)	0	1
19	15	20	(17)	43	16	1	1	(0)	0	1
20	57	55	(71)	65	55	1	1	(1)	2	1
21	41	44	(41)	40	47	1	1	(1)	0	1
22	41	23	(11)	10	31	0	0	(0)	0	0
23	11	16	(18)	11	13	0	1	(1)	1	1
24	10	9	(9)	19	10	0	1	(0)	1	0
25	42	26	(24)	6	29	1	1	(1)	0	1
26	7	6	(5)	7	6	0	0	(1)	0	0
27	8	8	(8)	8	8	0	0	(0)	0	0
28	9	9	(9)	9	9	0	0	(0)	0	0
29	11	19	(14)	11	14	0	1	(1)	1	0
30	10	15	(38)	11	15	0	1	(2)	1	1
31	12	15	(25)	27	14	0	0	(1)	1	0

q: quiet level, when radiometer is unstable.

SOLAR RADIO EMISSION

Flux Density

Month: January 1971
Observing station: Hiraiso Frequency: 500 MHz

Flux density 10^{-22} $Wm^{-2}(Hz)^{-1}$

UT	00-03	03-06	06-09	21-24	Day
Date					
1	26	26	(26)	26	26
2	27	27	(25)	26	27
3	26	26	(26)	25	26
4	26	26	(26)	26	26
5	27	27	(27)	26	27
6	28	28	(29)	27	28
7	28	28	(28)	30	28
8	29	30	(31)	30	30
9	33	33	(42)	31	33
10	31	33	(32)	28	32
11	28	28	(28)	32	28
12	35	35	(36)	28	34
13	28	31	(29)	28	29
14	31	31	(31)	27	30
15	33	30	(28)	29	30
16	29	31	(30)	28	30
17	30	30	(30)	26	30
18	28	29	(26)	27	28
19	28	28	(27)	29	28
20	30	29	(28)	26	29
21	29	29	(29)	30	28
22	32	32	(31)	27	31
23	31	31	(29)	32	30
24	32	30	(28)	34	31
25	41	36	(33)	29	37
26	29	28	(28)	28	29
27	29	29	(28)	29	29
28	29	29	(28)	31	29
29	31	31	(29)	28	31
30	30	30	(29)	30	29
31	32	32	(30)	30	31

Distinctive Events

(single-frequency observations)

Month: January 1971
Observing station: Hiraiso
Normal observing period: 2150 - 0750 (sunrise to sunset)

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
12	100	2305.3	2307.0	2.0	C	500	200	
14	100	0346.3	0346.6	1.0	C	350	160	
24	100	0156.0	0156.0	1.6	C	170	110	
	200	0318.0	0318.3	1.0	C	240	50	
	100	0319.0	0319.3	1.2	C	270	140	
	200	2233.8	2233.8	0.5	C	830	400	
	100	2234.3	2234.6	1.0	C	350	200	
	500	2304.7	2322.5	80	C	650	100	
	200	2305	2320	70	C	1000	100	
	100	2315	-	23	C	>1000	>500	
26	200	0615.0	0616.5	3.0	C	580	60	
	100	0615.3	0616.0	1.6	C	280	80	
30	100	0606.0	0606.3	1.0	C	280	110	

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

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

MEASURED AT HIRAISO

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

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

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

MEASURED AT HIRAISO

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jan. 1971	Whole Day Index		W W V 00 06 12 18 / 06 12 18 24	L M 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Warning 00 06 12 18 / 06 12 18 24	Principal magnetic storms Start	End	ΔH
1	4-		(4) - - 4	3 4 - 4	4 (4)(4) 4	N N N N			
2	3+		(4) - - 4	3 3 - -	4 (3)(5) 4	N N N N			
3	4°		(5) - - 4	3 - - -	4 (4)(4) 4	N N N N			
4	4•		(4) - - 4	4 4 - 4	4 (4)(4) 4	N N N N			
5	4+		(4) - - 5	4 4 - -	4 (4)(3) C	N N N N			
6	4-		(4) - - 5	3 4 - 3	4 (4) C C	N N N N			
7	4°		(4) - - 4	4 4 - 4	4 (5)(5) 4	N N N N			
8	3°		(3) - - 3	4 2 - 3	4 (3)(4) 4	N N N N			
9	3°		(2) - - 3	3 4 - -	3 (3)(4) C	N N N N			
10	3•		(2) - - 4	3 - - -	4 (4) C C	N N N N			
11	4-		(4) - - (4)	3 4 - 4	3 (4)(5) 5	N N N N			
[12]	4+		(4) - - 5	4 4 - 4	4 (3)(4) 4	N N N N			
[13]	4-		(4) - - 4	3 4 - 4	4 (3)(4)(4)	N N N N			
[14]	4•		(3) - - 5	4 3 - 5	4 (4)(4) 4	N N N N			
15	4+		(5) - - 4	5 4 - 4	4 (4)(4) 5	N N N N			
16	4+		(4) - - 4	5 4 - -	4 4 (4) 4	N N N N			
17	4-		(3) - - 4	4 - - -	4 3 (4) 4	N N N N			
18	4-		(4) - - 4	3 4 - 4	4 4 (4) 4	N N N N	09.00	24××	71γ
19	4+		(5) - - 4	4 4 - 4	4 (4)(4) 4	N N N N			
20	4+		(5) - - 3	5 5 - 4	4 5 (4) 4	N N N N			
21	4+		(4) - - 4	5 5 - 4	4 (4)(4) 4	N N N N			
22	4+		(5) - - 4	4 5 - 4	4 4 (5) 4	N N N N			
23	5-		(5) - - 4	5 4 - -	4 (4)(5) 4	N N N N			
24	4°		(4) - - 4	4 - - -	4 (4)(4) 4	N N N N			
25'	3+		(4) - - 3	3 4 - 3	3 (4)(4) 4	N N N N			
26	4-		(3) - - 4	4 4 - 4	4 (4)(4) 4	N N N N			
27*	3+		(4) - - 3	3 4 - 2	4 5 (4) 4	N U U U	04.30	---	117γ
28*	4+		(4) - - 4	4 5 - 5	4 (4) C C	N N N N	---	---	
29*	5-		(4) - - 5	5 5 - 4	4 (4)(4) 5	N N N N	--- 21.9	02××	79γ
30	5°		(5) - - 5	5 5 - -	4 (5) C C	N N N N	---	24××	
31	5•		(5) - - 5	5 - - -	4 5 (5) 4	N N N N			

GEOALERT

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

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

C = artificial accident
--- = continuing magnetic storm

SUDDEN IONOSPHERIC DISTURBANCES

(S.I.D.)

HIRAISO

Time in U.T.

Jan 1971	S W F										Correspondence		
	Drop-out Intensities (db)					Start-time	Dura-tion	Type	Imp.		Flare	Solar Noise	Mag.
	CO	LM	HA	TO	SH								
24	21	×				23.09	203	G	1+		×	×	
29		8				05.04	86	G	1-			×	
31		6				01.32	10	S	1-		×		

I N U P O

1971	S P A							Remarks
Jan.	Phase Advance (degrees)				Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	Start	End	Maximum	
6				20	2343	0003	2349	
7			8	44	0323	0433	0332	
9			13		0523	0603	0530	
9				12	2303	2336	2315	X
10	60				1856	2036	1922	
12		—	13	32	2357	0025	0002	
13		—		4	2317	2334	2320	
14			6	24	0222	0310	0236	
14				12	0518	0536	0520	
15			13	24	0223	0252	0227	
15				16	0326	0355	0330	
15	13	12	10	56	0404	0525	0408	X
15	16		6	12	2329	2350	2333	
15		—	13	24	2356	0023	0000	
16				8	0308	0335	0314	
16		—		8	0344	0405	0347	
16				16	2307	2328	2310	
17				8	0028	0054	0036	
17				12	0319	0337	0323	
17				24	0440	0523	0447	X
19	50				1937	2014	1941	
19	60				2248	2354	2300	
20		—	42*		0302	0453	0327	
20		—		4	0416	0437	0420	
20			55*		0541	0747	0625	

1971 Jan.	S P A							Remarks
	Phase Advance (degrees)				Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	Start	End	Maximum	
20		34	58		0909	1016	0930	
20	25		67		1045E	1213	1103	
20	60 *				1720	1824	1728	
21				20	0003	0034	0018	X
21	22	36	18	75	0445	0633	0454	
21			56		0631	0800	0700	
22				8	0647	0710	0650	
22			54		0732	0855	0748	
22	35		—		2055	2136	2058	
23			11	32	0014	0046	0020	X
23	30				0146	0246	0200	
23	23		19	76	0409	0530	0420	
23			18		0614	0642	0621	
23				16	0640	0718	0653	X
23				12	0730	0753	0734	
24		126	67	201	2310	0123	2341	
26				8	0148	0210	0150	
27				8	0120	0136	0123	
27				8	0147	0204	0150	
27			13	16	0248	0323	0254	
27				8	0435	0506	0438	
27				8	0511	0536	0517	
27	38	7	37	96	0550	0704	0557	
28				16	0051	0120	0100	
28				12	0207	0234	0220	

1971 Jan.	S P A							Remarks
	Phase Advance (degrees)				Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	Start	End	Maximum	
28				12	0325	0408	0336	
28				32	0723	0756	0727	x
29	22		6	24	0136	0210	0149	
29			24	10	0503	0602	0518	
29	18			16	2256	2330	2300	X
31				16	0103	0131D	0113	
31	25	36	33	104	0131E	0314	0139	X
31				72	0714	0825	0724	

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

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

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

IONOSPHERIC DATA IN JAPAN FOR JANUARY 1971

第23巻 第1号

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