F—268

IONOSPHERIC DATA IN JAPAN

FOR APRIL 1971

VOL. 23 No. 4

Issued in September 1971

Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

F — 268

IONOSPHERIC DATA IN JAPAN

FOR APRIL 1971

Vol. 23 No. 4

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_0F2, f_0F1, f_0E — The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.

f_0Es — 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_0Es.

$hpF2$ — 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 extra-ordinary 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_0E. 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_0E. 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.

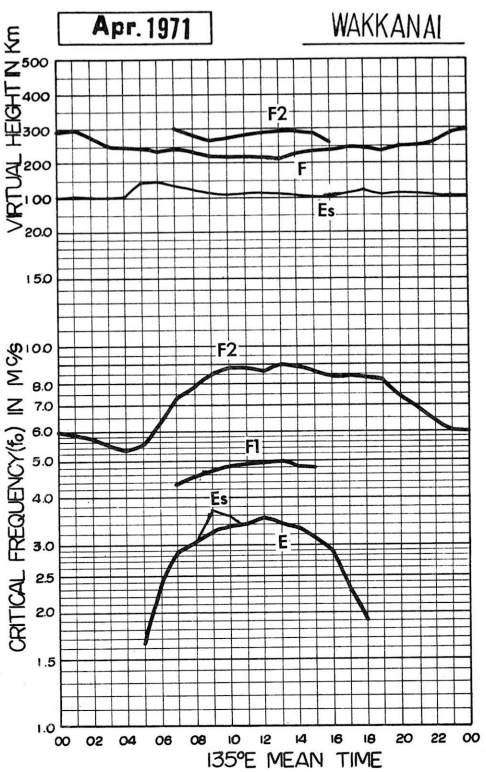
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West 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

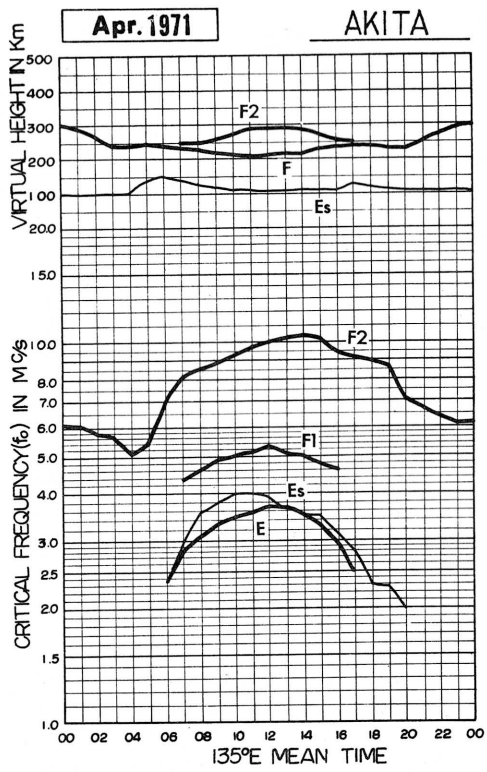
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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.

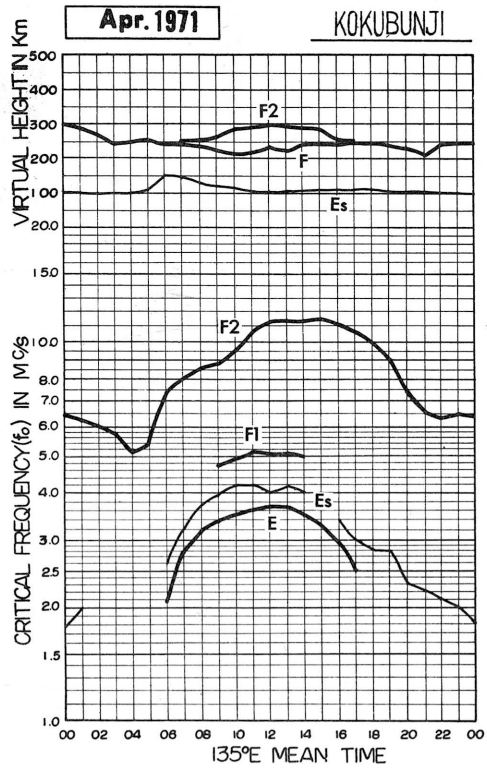
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

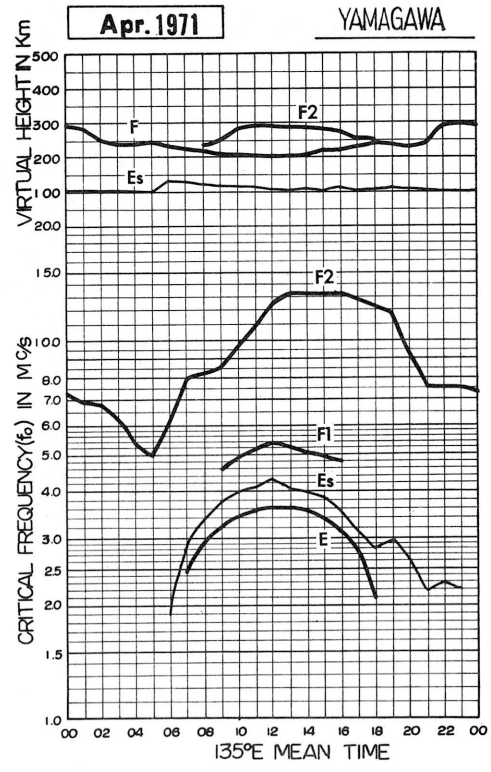
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA

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

The Radio Research Laboratories, Japan

APR. 1971 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

APR. 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												A	A	L	U 500									
2											L		L	480										
3									L	U 460			480	L	450									
4										L	L	490	L	L	L									
5								430	410	R	440	460	470	480	460	440								
6								460		460	490	500	490	490	U 480									
7									L	L	480	U 500	L		L									
8									460	L	L	L	L	L										
9								C	C	C	470	500	490	500										
10								C	C	C	C	C	C	C	C	C	C							
11								C	C	C	C	C	C	C	C									
12										460	A		L		500									
13									470	490	480	U 470	U 500	520	U 500	U 480	L							
14									460	500	490	490	500	500	500	A	A							
15									450		480	530	500	520	L									
16										L	480	L		510	500									
17								460	480	500	L													
18										L	500													
19										L		U 500	U 500		480	490								
20										500	490	L	510		460	L								
21											500	L	510	510	L		L							
22						320	360	410	430	450	460	480	490	480	470									
23								450	450	480	490	500	L	510	490	L								
24							390	430	430	460	480	490	500	500	L	490								
25								430	460	450	480		490		L	L								
26									440	480	450	480	480	510	480	L	L							
27										480	480	480	490	440	480		L							
28								L	L	490	490	490	490	480	480									
29									450	460	470	480	500	470	480									
30									460	470	460	480	480	480	480	470								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	2	7	13	16	20	17	18	17	17	5								
MED						320	375	430	450	475	480	490	490	500	480	480								
UQ								455	460	490	490	500	500	510	500	490								
LQ								430	440	460	470	480	490	480	480	470								

APR. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

APR. 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					E	110	200	260	295	315	330	325	325	330	310	300	A	215	S					
2						E	195	265	300	310	310	315	340	345	I A 320	310	280	200	E					
3						E	200	270	300	310	315	R	R	R	325	300	270	210	S					
4						E	205	270	290	305	R	R	A	340	315	300	A	225	S					
5						E	210	270	300	320	325	335	I A 340	R	A	A	A	220	S					
6						S	210	270	300	315	315	315	R	335	335	I A 320	A	230	S					
7						S	215	280	305	325	325	315	A	A	A	A	290	230	S					
8						S	215	280	300	315	A	A	350	350	345	320	290	A	S					
9						S	C	C	C	C	340	350	360	345	330	300	280	225	S					
10						C	C	C	C	C	C	C	C	C	C	C	C	C	C					
11						C	C	C	C	C	C	C	C	C	C	A	A	R	S					
12						S	240	290	310	330	340	A	A	330	330	320	290	240	S					
13						145	225	290	315	320	335	330	365	360	A	R	295	235	A					
14						S	245	290	320	335	365	365	360	355	325	300	290	A	S					
15						150	240	285	300	320	335	350	340	335	335	320	300	250	175					
16						A	225	280	305	325	335	B	A	A	340	A	A	A	A					
17						S	240	290	315	335	340	R	R	R	340	330	300	240	S					
18						170	230	295	310	335	345	350	360	340	340	320	295	255	S					
19						170	240	300	320	340	340	350	355	370	340	315	295	265	A	A				
20					E	145	240	300	325	335	350	370	365	350	340	325	300	255	195					
21						175	245	305	330	350	370	380	375	350	320	300	300	250	190	E				
22				E	E	165	230	290	310	330	335	340	350	360	330	300	290	240	190	E				
23					S	185	245	290	305	330	340	335	B	R	A	R	R	235	S	E				
24					E	175	245	295	310	335	345	350	355	350	330	315	290	230	190	S				
25					E	S	240	290	315	335	350	340	340	330	325	305	290	230	S	S				
26					E	170	240	290	315	330	335	330	B	R	330	310	290	235	S	S				
27					S	S	235	295	310	325	340	R	R	R	R	315	295	240	S	S				
28					E	S	250	295	305	330	330	I R 330	340	340	325	310	295	240	185	S				
29					E	190	240	280	305	315	325	R	B	340	330	310	290	230	S	S				
30					S	180	245	285	300	325	I R 325	325	320	I R 330	325	305	290	240	180	S				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				1	8	17	27	27	27	27	26	20	17	20	23	23	22	25	8	3				
MED				E	E	165	240	290	305	325	335	338	350	342	330	310	290	235	188	E				
UQ					E	175	240	292	315	335	340	350	360	350	338	320	295	240	190	E				
LQ					E	110	215	280	300	318	325	328	340	335	325	300	290	230	178	E				

The Radio Research Laboratories, Japan

APR. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

APR. 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	E	E	E	E	G	27	G	35	38	J X 58	J X 63	36	38	G	42	30	G	E S 15	J X 32	19	J X 31	J X 33	E S 16
2	J X 25	J X 35	J X 25	J X 23	J X 18	E	G	G	G	39	40	38	G 30	G 28	40	G 29	G 20	29	14	E	E S 15	E S 15	J X 24	E S 15
3	J X 23	E	E	E	E	E	G	32	37	41	37	G	G	G	G	G	G	G	E S 15	23	18	E	E	E
4	22	E	E	15	17	E	24	G	35	G	G	G	36	G	G	G 20	30	G	E S 16	20	E	E S 15	E	E S 17
5	E S 15	E	20	E	E	E	25	G	33	40	G	G	40	G	38	J X 43	40	29	24	J X 33	J X 30	J X 29	E S 17	E S 15
6	E S 16	E S 16	E	E S 16	E S 17	E S 15	G	30	G 26	39	40	43	G	G	G	39	40	G	E S 17	E S 16	20	E S 16	E S 16	E S 16
7	J X 22	E S 16	E	E	E	E S 15	G	30	G	40	39	38	J X 43	J X 42	44	39	G	G	E S 17	E S 15	27	J X 28	23	20
8	J X 34	J X 25	J X 25	E S 14	E	E S 15	G	G	36	36	43	36	G	G	G	G	G	32	24	E S 15	J X 23	J X 26	E S 17	J X 22
9	E S 17	E S 16	C	E	C	E S 16	C	C	C	C	G	G	G	G	G	G	G	G	20	E S 16	E S 16	E S 16	E S 15	E S 15
10	E S 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	34	31	G	E S 17	E	E S 17	J X 31	J X 23	E S 16
12	E	E	E S 15	E	E	E S 16	G	G	G	40	48	43	38	G	G	G	G 20	G 17	20	E	E	E	E	E
13	E	E	E	E	E	G	G	G	G	G	43	G	G	G	40	G 22	G 21	G 22	J X 23	J X 25	J X 21	E S 16	E S 16	E
14	E	E	E	E	E	E S 18	G	G	37	G	39	G	G	G	43	50	J X 50	39	19	E S 14	E S 16	E S 15	E	E S 15
15	E S 15	E	E	17	E	G	28	39	37	37	40	38	43	G	40	G	35	43	J X 34	20	20	J X 61	J X 35	J X 24
16	16	E	J X 31	23	J X 23	29	G	G	39	39	38	39	40	39	G	39	40	28	19	23	J X 23	J X 26	28	18
17	J X 25	19	16	J X 50	J X 30	E S 17	33	34	40	40	38	G	G	G	G 28	G 29	G 26	G 20	20	16	J X 24	E	E S 15	E S 15
18	E S 15	E	E	E	E	G	G	G	37	37	G	G	G	G	G	G	G	26	23	18	J X 28	E	E	E S 15
19	E S 15	E	E	E	E	G	G	G	35	37	G	G	G	G	G	G 21	G 20	G	29	J X 33	J X 35	J X 30	E	E S 15
20	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E S 15	E	E	E S 15
21	E S 14	E	E	E	E	23	G	G	G	40	42	G	40	G	39	G	G	G 21	G	E	E S 15	22	E S 15	E S 15
22	E	E S 14	E	15	15	20	G	32	G	G	36	G	G	G	G	G	G 27	34	24	21	J X 28	E	E S 15	E S 15
23	E S 15	E S 15	E S 15	E	E S 15	G	G	G	G	36	G	G	E B 38	G	37	G	G	G	23	E	J X 20	E S 15	E S 16	E S 15
24	E S 16	E	E	E	E	G	G	G	36	41	43	43	40	39	G	37	34	G	G	E S 15	E S 15	E S 16	E S 14	E S 15
25	E S 15	E S 15	E	E S 15	E	E S 16	G	33	G	G	G	G	G	G	G	G	G	G	E S 20	E S 23	E S 15	E S 15	E	E S 14
26	E S 15	E	E	E	E	G	G	G	G	37	G	G	E B 37	G	G	G	G	G	E S 19	20	E S 16	J X 21	26	E S 16
27	E	E	E	E S 15	E S 13	G	G	G	G	G	G	G	G	G	G	G	G	G	E S 20	E S 16	E S 16	E	E S 16	E S 15
28	E S 15	E	E	E S 14	E	G	G	G	G	G	G	G	G	G	G	G	G	G	28	22	J X 23	E S 16	26	E S 15
29	E	E S 15	E S 15	E	E	G	G	G	G	G	G	G	E B 37	G	G	G	G	G	E S 20	E S 16	E S 15	E S 16	E S 17	E S 17
30	E S 16	E	E S 13	E	E S 14	G	G	33	G	36	G	39	36	G	G	G	G	30	23	E S 15	E S 17	E	E S 15	E S 17
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	27	28	27	28	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29	29	29	29
MED	E E 15	E	E	E	E	G	G	G	G	37	36	G	E G 30	G	G	G	G 20	G	20	E E 16	18	16	E E 16	E S 15
UQ	E S 16	E E 15	15	E E 15	E E 14	E S 16	G	30	36	40	40	38	38	G	38	34	30	28	23	22	J X 23	J X 26	23	E S 16
LQ	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	E S 17	E S 15	E S 15	E	E	E S 15

The Radio Research Laboratories, Japan

APR. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

APR. 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	E	E	E	E	G	G	G	G	G	55	48	G	G	G	G	27	G	E S 15	32	E	23	21	E S 16
2	17	30	20	20	13	E	G	G	G	G	G	G	G 30	G 27	35	G 26	G 18	28	G	E	E S 15	E S 15	23	E S 15
3	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E S 15	E	17	E	E	E
4	E	E	E	E	12	E	G	G	G	G	G	G	35	G	G	G 20	28	G	E S 16	18	E	E S 15	E	E S 17
5	E S 15	E	15	E	E	E	G	G	G	A	G	G	39	G	37	33	30	G	G	30	29	20	E S 17	E S 15
6	E S 16	E S 16	E	E S 16	E S 17	E S 15	G	23	G 25	G	G	G	G	G	G	34	34	G	E S 17	E S 16	20	E S 16	E S 16	E S 16
7	E	E S 16	E	E	E	E S 15	G	25	G	G	G	G	40	39	36	33	G	G	E S 17	E S 15	E	20	20	19
8	27	18	20	E S 14	E	E S 15	G	G	G	G	38	36	G	G	G	G	G	26	G	E S 15	18	20	E S 17	E
9	E S 17	E S 16	C	E	C	E S 16	C	C	C	C	G	G	G	G	G	G	G	G	G	E S 16	E S 16	E S 16	E S 15	E S 15
10	E S 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	32	30	G	E S 17	E	E S 17	22	21	E S 16
12	E	E	E S 15	E	E	E S 16	G	G	G	G	48	43	38	G	G	G	G 19	G 17	G	E	E	E	E	E
13	E	E	E	E	E	G	G	G	G	G	G	G	G	G	35	G 22	G 21	G 18	22	20	20	E S 16	E S 16	E
14	E	E	E	E	E	E S 18	G	G	G	G	G	G	G	G	G	50	50	37	G	E S 14	E S 16	E S 15	E	E S 15
15	E S 15	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	41	G	15	19	A	E	18
16	15	E	21	15	20	27	G	G	G	G	G	G	38	38	G	35	33	27	19	16	24	26	20	15
17	19	16	E	42	20	E S 17	G	G	G	G	G	G	G	G	G 28	G 29	G 26	G 20	G	E	E	E	E S 15	E S 15
18	E S 15	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	23	G	16	27	E	E	E S 15
19	E S 15	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G 20	G 20	G	27	30	34	18	E	E S 15
20	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E S 15	E	E	E S 15
21	E S 14	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G 20	G	E	E S 15	E	E S 15	E S 15
22	E	E S 14	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G 24	G	G	G	27	E	E S 15	E S 15
23	E S 15	E S 15	E S 15	E	E S 15	G	G	G	G	G	G	G	E B 38	G	36	G	G	G	G	E	18	E S 15	E S 16	E S 15
24	E S 16	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E S 15	E S 15	E S 16	E S 14	E S 15
25	E S 15	E S 15	E	E S 15	E	E S 16	G	G	G	G	G	G	G	G	G	G	G	G	E S 20	E S 23	E S 15	E S 15	E	E S 14
26	E S 15	E	E	E	E	G	G	G	G	G	G	G	E B 37	G	G	G	G	G	E S 19	19	E S 16	18	E	E S 16
27	E	E	E	E S 15	E S 13	G	G	G	G	G	G	G	G	G	G	G	G	G	E S 20	E S 16	E S 16	E	E S 16	E S 15
28	E S 15	E	E	E S 14	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	20	E S 16	E	E S 15
29	E	E S 15	E S 15	E	E	G	G	G	G	G	G	G	E B 37	G	G	G	G	G	E S 20	E S 17	E S 15	E S 16	E S 17	E S 17
30	E S 16	E	E S 13	E	E S 14	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E S 15	E S 17	E	E S 15	E S 17
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	27	28	27	28	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29	29	29	29
MED	E 15	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E E 15	E E 16	16	E S 15	E S 15
UQ	E S 16	E E 15	E E 14	E E 14	E E 12	E S 15	G	G	G	G	G	G	E G 36	G	G	G 26	G 26	G 20	E S 17	16	20	18	E S 17	E S 16
LQ	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	E	E S 15	E	E	E S 15

APR. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	E	12	11	17	17	17	20	20	23	17	20	11	12	E_{S}^{15}	E_{S}^{14}	E	E_{S}^{14}	E	E_{S}^{16}
2	E	E	E	E	E	E	11	11	12	19	18	17	20	17	18	12	12	12	E	E	E_{S}^{15}	E_{S}^{15}	E	E_{S}^{15}
3	E	E	E	E	E	E	E	11	17	17	20	18	20	20	20	12	11	11	E_{S}^{15}	E_{S}^{15}	E	E	E	E
4	E_{S}^{12}	E	E	E	E	E	E	12	11	18	19	19	20	18	18	12	11	12	E_{S}^{16}	E	E	E_{S}^{15}	E	E_{S}^{17}
5	E_{S}^{15}	E	E	E	E	E	E	E	12	20	18	19	30	19	20	17	18	15	E_{S}^{17}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{17}	E_{S}^{15}
6	E_{S}^{16}	E_{S}^{16}	E	E_{S}^{16}	E_{S}^{17}	E_{S}^{15}	17	17	17	20	20	20	19	19	20	17	16	11	E_{S}^{17}	E_{S}^{16}	E_{S}^{17}	E_{S}^{16}	E_{S}^{16}	E_{S}^{16}
7	E_{S}^{16}	E_{S}^{16}	E	E	E	E_{S}^{15}	14	11	13	18	20	20	26	20	23	16	20	16	E_{S}^{17}	E_{S}^{15}	E_{S}^{17}	E_{S}^{15}	E_{S}^{16}	E_{S}^{16}
8	E_{S}^{16}	E_{S}^{16}	E	E_{S}^{14}	E	E_{S}^{15}	15	16	17	19	20	26	20	20	20	20	18	16	E_{S}^{17}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{17}	E_{S}^{18}
9	E_{S}^{17}	E_{S}^{16}	C	E	C	E_{S}^{16}	C	C	C	C	17	20	28	18	20	16	17	19	E_{S}^{18}	E_{S}^{16}	E_{S}^{16}	E_{S}^{16}	E_{S}^{15}	E_{S}^{15}
10	E_{S}^{16}	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	20	16	14	E_{S}^{17}	E	E_{S}^{17}	E_{S}^{14}	E	E_{S}^{16}
12	E	E	E_{S}^{15}	E	E	E_{S}^{16}	13	17	17	17	19	18	20	20	18	15	12	11	E_{S}^{17}	E	E	E	E	E
13	E	E	E	E	E	E	14	15	16	18	18	20	28	18	17	14	11	11	E	E	E	E_{S}^{16}	E_{S}^{16}	E
14	E	E	E	E	E	E_{S}^{18}	15	15	20	18	20	23	22	23	20	18	18	17	E_{S}^{12}	E_{S}^{14}	E_{S}^{16}	E_{S}^{15}	E	E_{S}^{15}
15	E_{S}^{15}	E	E	E	E	E	18	13	18	21	18	19	20	16	18	17	17	12	E	E	E	E	E_{S}^{13}	E
16	E	E	E	E	E	E	16	14	16	20	20	34	20	20	20	17	15	15	11	E	E	E	E	E
17	E	E	E	E	E	E_{S}^{17}	15	17	18	20	22	20	20	20	20	17	17	11	E_{S}^{15}	E	E	E	E_{S}^{15}	E_{S}^{15}
18	E_{S}^{15}	E	E	E	E	12	15	16	13	20	20	26	27	26	17	19	17	14	E_{S}^{16}	E	E_{S}^{15}	E	E	E_{S}^{15}
19	E_{S}^{15}	E	E	E	E	E	15	18	19	19	18	19	29	20	15	12	11	15	11	E	E_{S}^{15}	E_{S}^{15}	E	E_{S}^{15}
20	E	E	E	E	E	E	11	16	18	18	22	20	20	20	20	24	17	15	12	E	E_{S}^{15}	E	E	E_{S}^{15}
21	E_{S}^{14}	E	E	E	E	12	12	17	20	27	23	20	20	20	17	17	17	12	12	E	E_{S}^{15}	E	E_{S}^{15}	E_{S}^{15}
22	E	E_{S}^{14}	E	E	E	E	11	16	19	20	19	23	21	20	18	17	12	12	13	E	E_{S}^{15}	E	E_{S}^{15}	E_{S}^{15}
23	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E	E_{S}^{15}	E_{S}^{13}	15	12	18	19	20	20	38	20	19	20	17	15	E_{S}^{16}	E	E	E_{S}^{15}	E_{S}^{16}	E_{S}^{15}
24	E_{S}^{16}	E	E	E	E	12	18	16	20	20	23	25	20	20	28	20	18	15	16	E_{S}^{15}	E_{S}^{15}	E_{S}^{16}	E_{S}^{14}	E_{S}^{15}
25	E_{S}^{15}	E_{S}^{15}	E	E_{S}^{15}	E	E_{S}^{16}	15	17	20	26	20	27	27	24	20	19	16	17	E_{S}^{20}	E_{S}^{23}	E_{S}^{15}	E_{S}^{15}	E	E_{S}^{14}
26	E_{S}^{15}	E	E	E	E	14	16	16	18	20	20	20	37	25	26	19	20	16	E_{S}^{19}	E_{S}^{14}	E_{S}^{16}	E_{S}^{15}	E_{S}^{15}	E_{S}^{16}
27	E	E	E	E_{S}^{15}	E_{S}^{13}	E_{S}^{14}	12	14	20	20	16	17	14	20	19	24	20	16	E_{S}^{20}	E_{S}^{16}	E_{S}^{16}	E	E_{S}^{16}	E_{S}^{15}
28	E_{S}^{15}	E	E	E_{S}^{14}	E	E_{S}^{15}	15	13	17	17	20	17	20	18	17	18	15	12	12	E_{S}^{12}	E	E_{S}^{16}	E_{S}^{15}	E_{S}^{15}
29	E	E_{S}^{15}	E_{S}^{15}	E	E	12	12	12	12	17	20	18	37	21	21	12	11	13	E_{S}^{20}	E_{S}^{16}	E_{S}^{15}	E_{S}^{16}	E_{S}^{17}	E_{S}^{17}
30	E_{S}^{16}	E	E_{S}^{13}	E	E_{S}^{14}	12	16	14	17	20	20	20	20	20	20	20	20	16	12	E_{S}^{15}	E_{S}^{17}	E	E_{S}^{15}	E_{S}^{17}
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	27	28	27	28	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29	29	29	29
MED	E_{S}^{15}	E	E	E	E	E_{S}^{12}	15	15	17	19	20	20	20	20	20	17	17	14	E_{S}^{16}	E_{S}^{12}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}	E_{S}^{15}
UQ	E_{S}^{15}	E_{S}^{14}	E	E	E	E_{S}^{15}	15	16	18	20	20	22	28	20	20	20	18	16	E_{S}^{17}	E_{S}^{15}	E_{S}^{16}	E_{S}^{15}	E_{S}^{16}	E_{S}^{16}
LQ	E	E	E	E	E	E	12	12	16	18	18	19	20	19	18	16	12	12	E_{E}^{12}	E	E	E	E	E_{S}^{15}

APR. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

APR. 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	280	275	300	280	290	290	325	325	335	325	335	305	290	300	320	330	320	320	325	325	300	285	290	295
2	270	275	280	280	300F	320F	335	340	315	315	310	315	320	320	315	325	325	325	330	300	300	300	290	265
3	260F	F	F	320F	285F	300F	315	330	320	320	325	315	305	310	315	320	315	315	325	320	295	295	275	280
4	285	275	275	280	295	315	345	345	315	305	310	300	305	300	315	325	335	315	320	305	295	270	285	265
5	260	270	260	280	250	265	285	W	255	R	240	275	295	290	310	315	305	310	315	300	300	280	275	270
6	275	270	260	275	290	290	310	325	310	300	320	300	300	300	315	305	310	315	320	310	285	295	280	270
7	275	280	285	300	300	315	320	335	330	320	315	325	315	305	310	315	315	315	320	315	310	300F	290	280
8	285	270	275	290	285	290	320	325	335	325	310	320	310	310	310	320	320	320	315	315	305	295	280	275
9	270	280	I C 270	290	C	270	C	C	C	C	320	310	320	305	315	315	310	295	290	305	300	285	275	255
10	270	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	300	300	315	330	320	275	270	250	270
12	265	255	260	270	265	290	335	340	325	310	305	310	305	U R 285	310	300	315	310	310	300	290	290	275	270
13	270	270	275	265	265	275	310	310	320	330	320	315	305	300	305	315	310	315	310	300	300	295	270	260
14	260	255	265	295	305	325	310	310	305	300	300	305	310	310	315	310	315	315	315	305	280	285	280	275
15	245	250	265	275	280	290	270	300	315	295	255	290	280	295	300	305	305	310	310	295	265	I A 255	245	245
16	260	280	270	270	270	295	315	325	320	310	315	305	285	295	300	300	300	310	310	300	295	290	270	255
17	265	270	270	280	270	290	295	315	310	310	310	290	300	295	300	305	305	305	315	310	280	280	270	265
18	270	270	280	280	265	290	330	330	335	330	325	295	300	300	300	295	300	315	310	300	295	305	275	270
19	270	270	275	270	255	270	320	315	330	330	305	300	295	300	300	305	305	305	320	300	295	295	270	275
20	265	270	270	285	290	330	335	320	315	320	310	305	295	295	300	295	305	310	300	300	300	300	295	275
21	270	270	280	285	295	310	320	315	300	305	315	295	300	295	300	300	315	310	285	295	290	295	270	260
22	255	275	290	260	250	255	245	240	245	275	W	280	R	285	295	305	305	300	295	280	265	275	290	270
23	260	260	270	295	315	295	315	285	290	290	315	305	300	310	315	305	310	320	300	310	300	275	275	270
24	270	285	275F	285F	285F	310	290	265	275	265	280	285	295	310	300	310	315	315	310	310	310	290	285	275
25	265	265	270	280	285	305	290	305	315	320	310	300	300	290	315	305	310	310	310	315	305	310	285	275
26	270	275	285	285	280	310	295	320	320	320	320	310	290	305	305	305	325	315	300	295	300	310	325	275
27	265	280	280	300	300	310	315	315	310	305	310	320	300	300	305	295	315	310	285	295	310	295	295	275
28	270	280	285	290	295	310	310	315	315	310	310	320	305	310	320	310	310	295	305	290	300	280	275	265
29	270	260	270	260	280	275	280	300	320	310	320	325	310	315	315	320	325	325	335	300	275	275	275	275
30	275	285	305	285	280	310	320	335	320	325	335	325	305	295	300	290	295	310	310	325	305	270	280	280
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	27	28	27	28	27	27	27	26	28	28	27	28	28	29	29	29	29	29	29	29	29	29
MED	270	270	275	280	285	295	315	315	315	310	310	305	300	300	310	305	310	315	310	300	300	290	275	270
UQ	270	278	280	290	295	310	320	328	320	320	320	315	305	310	315	315	315	315	320	310	300	295	285	275
LQ	265	270	270	275	270	290	295	308	310	305	308	298	295	295	300	300	305	310	305	300	290	280	275	265

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

IONOSPHERIC DATA

APR. 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												A	A	L	U 360									
2											L		L	365 L										
3									L	U 370 L			375 L	L	375 L									
4										L	L	385 L	L	L	L									
5								310	350	R	375 L	370	360	345	360 L	365 L								
6								370 L		375 L	355	360	365 L	350	U 355 L									
7									L	L	370 L	U 360 L	L		L									
8									370 L	L	L	L	L	L										
9								C	C	C	395	370 L	375	370 L										
10								C	C	C	C	C	C	C	C	C	C							
11								C	C	C	C	C	C	C	C									
12										390	A		L		360 L									
13									370 L	365	395 L	U L 395	U L 370	345 L	U L 360	U L 360	L							
14									370 L	350	365	375	365 L	365 L	355 L	A	A							
15									320		375	330	340	335	L									
16										L	375	L		355 L	350 L									
17								370 L	360	360	L													
18										L	370													
19										L		U L 390	U L 365		375 L	370 L								
20										365 L	370	L	360 L		375	L								
21											380 L	L	365 L	355 L	L		L							
22						295 L	335	330	345	360	360	345	350	345	360									
23								325	365	360	360	350 L	L	345 L	350	L								
24							325	330	370	355	355	350	345 L	350	L	345 L								
25								350	370	400	375		365		L	L								
26									375	375 L	405	375	375	355 L	350	L	L							
27										375	375	365	365 L	400	360		L							
28								L	L	360 L	355	365	355	355	355 L									
29									365	370	370	355	345	385	355									
30									370	370	390	365	385	365 L	350	345								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	2	7	13	16	20	17	18	17	17	5								
MED						295 L	330	330	370	368	372	365	365	355 L	360 L	360								
UQ								360	370	375	378	375	370	365 L	360	365 L								
LQ								328	360	360	362	355	355	345	355	345 L								

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											255	275	300	285	260									
2											265		275	270										
3									260	265			270	290	265									
4										260	285	250	265	275	260									
5								310	470	R	560	425	380	350	315	300								
6								275		300	275	290	290	280	275									
7									260	260	255	260	275		280									
8									260	260	260	255	270	280										
9								C	C	C	275	275	280	295										
10								C	C	C	C	C	C	C	C	C	C							
11								C	C	C	C	C	C	C	C									
12										250	260		265		290									
13									285	275	250	270	295	300	280	265	260							
14									270	310	275	275	285	280	290	265	255							
15									305		380	350	350	350	300									
16										295	275	260		295	275									
17								300	300	280	275													
18										250	260													
19										260		295	270		290	270								
20										265	260	280	275		270	270								
21											265	275	295	280	290		265							
22						400	450	475	485	420	W	420	R	395	355									
23								360	340	335	320	300	315	310	295	290								
24							320	430	400	430	415	375	310	305	300	300								
25								280	275	265	275		285		290	290								
26									265	270	280	290	300	295	290	280	260							
27										275	280	270	285	275	295		270							
28								265	260	280	275	275	295	275	270									
29									270	275	265	285	305	305	300									
30									275	265	260	290	305	290	300	315								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	2	8	16	22	26	22	24	21	23	10	5							
MED						400	385	305	275	272	275	278	288	290	290	285	260							
UQ								395	322	295	280	295	302	305	298	300	265							
LQ								278	262	260	260	270	275	280	275	270	260							

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	260	295	275	250	245	250	245	225	235	250	A	A	215	235	220	250	225	245	225	230	250	270	260	250
2	290	325	300	270	230	225	215	225	210	235	215	205	210	200	220	235	240	250	225	230	250	240	265	305
3	325	320	270	220	230	260	230	245	225	240	200 H	210	220	210	225	235	230	255	235	225	250	250	250	260
4	270	290	290	260	240	215	215	220	210	200	245	220	200	210	230	220	225	245	230	225	250	270	270	295
5	300	280	310	290	325	300	275	260	235	A	250	215	250	240	230	240	240	250	245	260	280	275	280	295
6	305	300	305	295	260	215	230	230	225	225	240	225	215	205	215	240	250	250	240	220	265	250	260	300
7	285	280	275	255	225	225	220	240	225	230	225	200	225	240	225	235	245	250	245	225	240	250	250	275
8	300	295	300	260	225	255	250	240	220	215	215	240	210	220	215	215	245	245	245	230	240	250	265	300
9	300	275	I C 285	245	C	260	C	C	C	C	205	205	195	225	250	225	250	255	275	235	250	245	255	335
10	290	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	225	225	225	230	215	270	300	300	295
12	300	295	275	275	290	250	235	235	230	210	I A 230	240	225	220	215	235	245	250	250	230	250	250	250	260
13	280	300	270	275	290	255	250	240	225	215	205	215	205	215	240	245	235	240	250	245	245	245	255	295
14	305	290	275	240	235	225	230	245	240	215	210	210	210	205	250	A	A	250	245	240	245	250	260	280
15	335	325	280	260	275	260	260	270	230	225	220	205	235	215	245	250	245	255 A	250	250	270	I A 280	300	335
16	300	250	270	270	300	255	220	235	225	215	215	230	220	210	225	230	245	250	240	240	255	270	295	320
17	300	295	270	I A 290	275	260	240	250	245	220	210	225	215	200	235	235	245	250	245	225	230	250	280	290
18	295	285	270	250	230	245	240	230	225	210	200	215	200	195	240	210	230	245	245	225	250	240	265	275
19	270	295	270	285	300	250	225	225	230	225	210	200	200	225	205	230	230	250	245	250	260	245	250	260
20	285	295	270	255	250	240	225	220	200	215	225	200	215	205	225	225	225	240	245	245	250	245	245	265
21	280	280	270	255	245	230	225	240	220	225	220	210	225	225	220	220	225	245	260	250	245	240	275	300
22	305	265	225	260	300	295	260	260	240	235	225	250	230	240	245	200	250	250	270	265	300	265	245	260
23	305	315	295	250	245	245	250	240	230	205	205	210	220	215	215	225	240	255	260	230	230	260	265	270
24	300	275	270	250	270	270	250	230	245	250	265	250	250	210	225	240	240	240	250	240	240	245	250	275
25	295	300	290	250	275	250	240	245	240	205	200	205	225	200	235	230	240	245	250	225	240	235	250	260
26	295	275	275	250	245	225	225	245	210	220	200	225	200	250	215	235	230	235	245	255	255	250	220	250
27	290	295	270	250	235	235	225	230	245	225	225	215	205	200	225	225	200	220	260	260	245	250	230	270
28	280	270	265	250	250	235	230	235	225	215	220	210	210	215	210	230	205	245	250	250	250	280	265	275
29	270	300	280	275	275	230	225	250	225	220	205	200	210	210	210	240	245	240	235	240	265	275	265	290
30	285	265	250	245	260	250	245	230	225	210	205	220	205	210	200	240	245	250	250	220	215	250	270	280
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	27	28	27	27	27	26	27	27	28	28	28	28	28	29	29	29	29	29	29	29
MED	295	295	275	255	250	250	230	240	225	220	215	215	215	212	225	232	240	250	245	235	250	250	260	280
UQ	300	300	288	272	275	258	248	245	235	225	225	225	225	225	235	240	245	250	250	250	255	270	270	295
LQ	285	278	270	250	238	230	225	230	225	215	205	205	205	205	215	225	228	245	240	225	245	245	250	265

APR. 1971 | H'F (KM)

IONOSPHERIC DATA

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

APR. 1971 | H'ES (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

APR. 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							H1		C1	C1	C2	C2	C1	C1		C1	L1			F3	F1	F2	F2	
2	F2	F3	F2	F2	F1					C1	C1	C1	L1	L1	L2	L1	L1	C2	C1				F2	
3	F1							H1	C1	C1	C1									F1	F1			
4	F1			F1	F2		H1		C2				L1			L1	L2			F1				
5			F2				H1		H1	C1			L1		L1	L2	L1	H1	C1	F3	F3	F2		
6								L1	L1	C1	C1	C2				L1	L1				F1			
7	F1							L1		C1	C1	C1	L1	L2	L2	L2					F1	F2	F2	F1
8	F2	F2	F3						C1	C1	L1	L1						L1	H1		F1	F2		F1
9																			H1					
10																								
11																L1	L1					F2	F2	
12										C1	C2	L1	L2				L1	L1	C1					
13											C1				L1	L1	L1	L1	L1	F2	F1			
14									C1		C1				C1	C2	C2	L2	C1					
15				F1			H1	C1	C1	C1	C1	C1	C1		C1		H1	C3	C21	F1	F2	F4	F2	F3
16	F1		F3	F1	F2	L2			C1	C1	C1	C1	L1	L1		L1	L1	L2	L1	F1	F2	F2	F2	F2
17	F2	F2	F1	F6	F2		H1	H1	C1	C1	C1				L1	L1	L1	L1	C1	F1	F1			
18									C1	C1								L1	C1	F1	F2			
19									H1	C1						L1	L1		L2	L4	F3	F2		
20																								
21						H1				C1	C1		C1		C1			L1				F1		
22				C1	C1	H1		H1			C1						L1	H1	H1	C2	F2			
23										C1					L1				C1		F1			
24									H1	C1	C1	C1	C1	C1		C1	C1							
25								H1																
26										C1										L1		F1	F1	
27																								
28																			C2	C1	F1		F1	
29																								
30								H1		C1		C1	C1					H1	C1					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

APR. 1971 | TYPES OF ES

IONOSPHERIC DATA

APR. 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	62	57	58	59	51	44	67	82	87	90	91	97	I R 101	102	112	I R 108	97	88	80	77	61	57	57	54
2	51	F 51	F 52	I R 56	F 44	F 41	57	74	76	86	96	I R 98	99	103	99	94	88	91	84	S 70	67	58	55	F
3	F	F	50	46	34	35	53	71	78	88	91	102	97	96	101	100	88	91	93	76	64	60	56	56
4	59	56	55	55	49	46	62	67	77	90	96	I R 114	108	I R 108	110	98	92	86	87	70	57	57	61	58
5	57	57	53	50	42	E 42	42	45	48	I R 50	R 53	62	65	67	71	72	74	72	68	56	51	47	52	51
6	50	51	48	E 47	49	53	57	67	74	88	91	101	103	102	103	99	94	95	96	83	65	59	58	57
7	57	56	57	58	48	46	67	77	88	92	99	92	94	98	100	102	91	95	88	89	69	59	55	56
8	I R 58	54	54	53	49	51	78	I R 96	98	88	94	96	108	105	103	96	101	89	85	85	69	62	59	I R 57
9	54	F	55	49	46	49	69	88	93	99	95	86	98	91	96	99	93	91	94	97	91	67	66	55
10	68	65	I R 62	52	46	51	59	63	74	78	81	104	96	102	101	I R 114	98	92	86	69	63	61	56	54
11	C	F	F	F	F	51	68	69	79	79	92	110	113	114	125	113	108	113	I R 112	89	59	57	58	60
12	59	55	58	54	52	57	81	92	103	94	96	102	I R 112	113	109	112	106	101	95	87	74	73	68	69
13	65	62	58	57	57	58	65	79	83	88	86	87	99	101	I R 104	106	94	90	87	87	78	66	61	61
14	58	59	60	59	54	59	72	83	86	87	103	I R 106	103	106	105	104	97	91	89	86	73	69	65	63
15	F	54	61	52	48	54	I C 60	I C 68	79	68	H 69	90	94	99	C	C	C	C	C	74	I C 64	I C 62	63	64
16	I R 64	I C 64	I C 58	53	I C 50	57	73	84	89	89	102	110	108	111	124	118	109	101	102	91	72	66	I R 65	64
17	S 63	64	63	59	56	62	74	82	89	103	112	I R 111	120	123	125	114	107	108	I R 112	97	71	68	67	68
18	68	67	68	67	56	61	84	93	87	89	98	98	101	104	103	108	105	I C 100	97	I C 94	I C 80	I C 75	69	71
19	I R 69	69	69	59	61	64	85	90	87	94	96	101	I R 118	I R 124	119	118	116	108	104	95	88	69	66	69
20	67	65	66	65	57	65	78	85	86	96	98	104	105	113	114	118	108	96	101	95	88	82	74	76
21	76	74	75	72	65	69	83	88	94	94	98	100	103	99	105	113	108	98	91	104	86	78	77	75
22	73	76	75	58	52	49	54	66	59	61	I R 60	69	67	67	71	68	68	68	68	75	69	68	63	58
23	60	56	56	57	58	55	60	74	79	82	88	80	89	96	91	88	84	91	87	88	I R 69	64	66	65
24	64	65	63	61	56	67	64	61	65	71	79	86	94	94	98	98	90	91	88	83	73	65	58	56
25	57	56	57	53	47	53	69	87	98	94	80	82	91	95	96	97	93	95	96	94	79	68	65	61
26	61	62	62	58	52	57	74	82	77	83	86	88	95	99	99	102	94	88	86	91	91	87	66	59
27	59	60	59	63	48	54	70	84	87	96	97	102	103	102	108	103	94	88	88	96	91	78	74	69
28	67	68	66	63	62	69	79	81	88	98	108	97	103	102	94	82	84	86	91	86	85	I R 76	72	71
29	I R 68	I R 61	59	57	54	52	55	66	81	75	73	75	78	83	88	91	86	83	72	65	63	64	66	65
30	63	62	58	54	47	54	75	92	94	89	82	83	72	79	88	94	102	113	I R 109	89	64	56	59	58
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	29	29	29	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	30	30	30	29
MED	62	61	58	57	51	54	68	82	86	88	93	98	100	102	103	102	94	91	89	87	70	66	64	61
UQ	67	65	63	59	56	59	75	87	89	94	98	102	105	106	109	112	105	98	96	94	80	69	66	68
LQ	58	56	56	53	48	49	60	68	77	82	82	86	94	96	96	96	90	88	86	76	64	59	58	57

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										420	470	480	L	470	L	A	L							
2									L	420	470	480	500	470	430	L	L	L						
3								L	L	L	I A 480	L	L	L	460	L								
4									L	460	L	L	L 480	L	L	L	L							
5							L	370	410	I A 440	480 B	480	500	490	470	U 450	L							
6									L	500	480	500	500	510	490	480	L							
7									L	U 490	490	510	U 550	510	500	450	L	L						
8								L	L	460	500	530	550	500	480	U 500	L							
9								L	L	480	480	490	500	500	480	L	L	L						
10									L	A	L	L	A	500	U 530	L	L							
11									L	L	I A 520	530	510	510	500	L	L	L						
12								L	L	L	U 490	500 H	U 560	530	550	480	L	L						
13								L	L	480	500	560	550	520	560 H	U 500	L	L						
14								L	U 490	600 H	550	560	540	560	500	L	L	L						
15									A	A	I A 500	550	530	L	C	C	C	C						
16								L	L	U 510	580	530	530	L	500	L	L	L						
17								L	A	A	U 610	I A 510	570	510	500	L	L							
18								L	L	U 530	500	510	560	530	510	L	L	C						
19								L	L	L	L	690 H	590	U 550	510	U 480	L	L						
20								L	L	L	500	530	560	540	490	490	L	L						
21								L	L	U 500	530	560	540	510	510	500 H	L	L						
22						U 350	400	420	440	500	490	480	510	490	480	460	390	L						
23								U 450	470	500	510	U 630	560	500	500	470	410	L						
24								450	470	480	560	510	560	530 H	520	L	L	L						
25								450	470	480	480	620 H	500	500	490	U 480	L	L						
26								L	L	500	500	600 H	500	500	500 H	480	L	L						
27								L	U 450	500	500	510	500	510	490	480	460 H	L						
28								L	500	490	500	500	500	500	460	460	460	L						
29								420	430	L	480	500	490	I A 480	470	L	L	L						
30								L	460	470	480	500	550	500	500	470	U 460	L						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	1	6	10	21	27	27	27	26	27	16	5							
MED						U 350	400	435	465	490	500	510	530	505	500	480	460							
UQ								450	470	500	505	555	555	520	505	485	460							
LQ								420	440	470	480	500	500	500	480	465	410							

The Radio Research Laboratories, Japan

APR. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	240	280	320	335	345	A	A	315	A	A	205	B					
2							B	250	280	320	IA 330	340	355	355	325	305	275	210	S					
3							185	255	290	320	330	A	A	A	A	A	A	A	A					
4							190	260	290	315	IA 335	350	360	345	330	305	265	A	A					
5							195	250	290	315	335	A	A	A	A	A	285	230	A					
6							A	270	305	325	A	A	A	A	A	335	295	IA 250	A					
7							205	260	310	325	340	A	A	A	A	325	IA 280	A	A					
8							215	270	310	A	A	A	A	A	350	IA 325	295	245	A					
9							215	275	305	325	345	A	A	A	A	320	290	245	A					
10							A	275	310	A	A	A	A	A	A	315	285	240	A					
11						S	IA 220	IA 275	310	330	345	A	A	370	IA 360	335	300	255	B					
12						S	220	285	315	345	IA 350	A	A	A	350	IA 330	IA 305	265	A					
13						S	IA 230	285	310	IA 330	IA 350	IA 360	IA 365	365	355	340	310	A	A					
14						B	IA 220	280	310	335	350	360	365	370	355	A	A	A	A					
15						S	C	IC 275	305	345	IA 350	IA 360	IA 365	365	C	C	C	C	C					
16						B	240	290	315	335	350	IA 360	370	A	A	A	A	A	A	S				
17						S	225	285	315	335	350	IA 360	365	370	355	335	A	A	A	S				
18						B	235	290	315	335	350	360	365	370	350	335	310	IC 250	A	C				
19						B	235	295	325	340	IA 350	360	IA 365	IA 365	IA 360	IA 350	320	275	B	S				
20						B	235	290	325	345	355	IB 365	370	370	360	350	315	275	A	E				
21						B	245	300	325	340	355	365	370	375	IA 360	IA 350	IA 300	250	A	S				
22						S	225	285	315	340	IA 355	360	370	IA 375	360	330	290	250	A	S				
23						B	240	290	315	335	IA 350	IA 360	375	365	350	330	300	A	A	E				
24						A	240	290	320	340	350	360	365	370	IA 355	A	A	A	A	S				
25						B	240	295	320	340	IA 350	365	375	365	340	320	300	260	200	S				
26						A	240	290	330	340	350	360	370	375	355	A	A	A	A	E				
27						A	245	285	315	340	355	365	370	375	355	325	290	255	200	S				
28						B	250	290	320	340	355	365	370	370	350	325	300	255	200	S				
29						B	235	285	310	IA 340	360	A	A	A	A	IA 330	295	250	A	E				
30							180	250	290	315	IA 340	350	360	375	365	345	IA 325	300	255	A	S				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	25	30	30	28	27	20	19	19	21	22	22	19	3	4				
MED						180	235	285	312	335	350	360	370	370	355	330	298	250	200	E				
UQ							240	290	315	340	350	362	370	370	355	335	300	255	200	E				
LQ							220	270	305	325	345	360	365	365	350	325	290	245	200	E				

APR. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E	E	E_{14}^{S}	E_{16}^{B}	27	36	38	38	38	J_{50}^{X}	J_{43}^{X}	45	41	31	G	E_{17}^{B}	E_{13}^{S}	E_{13}^{S}	J_{21}^{X}	J_{28}^{X}	M_{22}
2	J_{30}^{X}	J_{20}^{X}	J_{20}^{X}	M_{21}	J_{22}^{X}	E_{12}^{S}	E_{17}^{B}	G	31	35	J_{41}^{X}	41	G	G	G	J_{38}^{X}	J_{41}^{X}	25	E_{14}^{S}	J_{32}^{X}	J_{21}^{X}	E_{14}^{S}	E_{14}^{S}	J_{27}^{X}
3	J_{21}^{X}	J_{24}^{X}	J_{28}^{X}	J_{28}^{X}	J_{23}^{X}	E	G	30	36	37	55	43	J_{45}^{X}	J_{40}^{X}	J_{45}^{X}	J_{45}^{X}	44	35	J_{27}^{X}	J_{28}^{X}	J_{29}^{X}	J_{17}^{X}	E_{14}^{S}	J_{24}^{X}
4	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E	E_{13}^{S}	E_{14}^{S}	21	G	35	35	35	G	G	G	G	G	34	J_{27}^{X}	J_{48}^{X}	J_{45}^{X}	J_{33}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	E_{19}^{B}	E	E_{18}^{B}	E	E	E_{13}^{S}	23	28	33	44	41	40	40	37	36	J_{38}^{X}	32	32	23	J_{28}^{X}	J_{23}^{X}	J_{28}^{X}	J_{43}^{X}	E_{14}^{S}
6	J_{38}^{X}	J_{28}^{X}	E_{14}^{S}	J_{19}^{X}	J_{29}^{X}	J_{27}^{X}	23	G	33	35	J_{43}^{X}	J_{44}^{X}	J_{44}^{X}	J_{46}^{X}	J_{43}^{X}	J_{31}^{G}	G	26	J_{23}^{X}	E_{14}^{S}	J_{18}^{X}	E_{14}^{S}	J_{20}^{X}	E_{14}^{S}
7	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	G	G	G	37	38	41	38	38	37	J_{39}^{X}	J_{46}^{X}	J_{46}^{X}	J_{49}^{X}	J_{43}^{X}	J_{23}^{X}	E_{14}^{S}	J_{20}^{X}	E_{14}^{S}
8	E_{14}^{S}	E_{14}^{S}	J_{18}^{X}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	G	30	36	41	J_{39}^{X}	43	40	J_{49}^{X}	G	36	G	28	19	E_{14}^{S}	J_{37}^{X}	J_{29}^{X}	J_{43}^{X}	J_{23}^{X}
9	E_{14}^{S}	E_{14}^{S}	E	E	E	E	25	31	35	36	43	37	J_{39}^{X}	42	37	G	G	29	25	J_{39}^{X}	J_{21}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
10	E_{14}^{S}	E_{14}^{S}	E	E	E_{13}^{S}	E_{14}^{S}	29	32	J_{43}^{X}	J_{45}^{X}	J_{50}^{X}	J_{46}^{X}	J_{73}^{X}	J_{50}^{X}	J_{59}^{X}	G	G	G	19	21	J_{30}^{X}	J_{33}^{X}	J_{54}^{X}	J_{18}^{X}
11	C	E_{14}^{S}	J_{26}^{X}	E	E	E_{13}^{S}	26	34	44	J_{46}^{X}	J_{53}^{X}	45	39	G	37	G	G	G	E_{19}^{B}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	J_{24}^{X}	J_{31}^{X}
12	J_{24}^{X}	J_{20}^{X}	E_{14}^{S}	E	E	E_{14}^{S}	G	G	33	G	42	40	45	J_{45}^{X}	G_{32}	38	33	G	20	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{30}^{G}
13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	26	31	35	37	38	39	39	G	G	G	G	30	J_{33}^{X}	J_{23}^{X}	J_{23}^{X}	J_{19}^{X}	E_{13}^{S}	J_{25}^{X}
14	E_{14}^{S}	E	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{18}^{B}	27	32	38	41	43	44	39	G	G	36	34	32	J_{26}^{X}	J_{26}^{X}	J_{23}^{X}	J_{24}^{X}	J_{59}^{X}	J_{74}^{X}
15	J_{38}^{X}	E	E	E	E	E_{14}^{S}	C	C	48	J_{54}^{X}	J_{50}^{X}	J_{43}^{X}	45	45	C	C	C	C	C	J_{23}^{X}	C	C	J_{38}^{X}	J_{42}^{X}
16	J_{43}^{X}	C	C	E_{13}^{S}	C	E_{18}^{B}	G	G	36	41	40	41	G	43	40	38	J_{34}^{X}	J_{34}^{X}	J_{30}^{X}	J_{26}^{X}	E_{14}^{S}	J_{30}^{X}	J_{23}^{X}	J_{30}^{X}
17	J_{24}^{X}	J_{18}^{X}	J_{36}^{X}	J_{34}^{X}	E	J_{20}^{X}	29	40	J_{53}^{X}	J_{62}^{X}	J_{46}^{X}	J_{51}^{X}	G	G	G	G	J_{44}^{X}	J_{43}^{X}	J_{28}^{X}	J_{25}^{X}	J_{19}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
18	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{18}^{B}	G	32	38	41	37	G	G	G	G	G_{27}	38	C	J_{29}^{X}	C	C	C	J_{30}^{X}	J_{28}^{X}
19	J_{38}^{X}	J_{29}^{X}	J_{23}^{X}	J_{20}^{X}	E	E_{18}^{B}	27	33	42	42	43	G	J_{46}^{X}	J_{43}^{X}	J_{39}^{X}	J_{43}^{X}	G	G	E_{21}^{B}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	J_{26}^{X}	E_{13}^{S}
20	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E_{18}^{B}	G	G	G	G	G	E_{39}^{B}	G	G	G	G	34	G	29	J_{20}^{X}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}
21	E_{14}^{S}	E_{14}^{S}	E	E	E	E_{19}^{B}	28	G	G	G	41	44	42	G	38	37	32	27	20	J_{19}^{X}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
22	E_{14}^{S}	E	E	E	E	E_{14}^{S}	28	36	45	37	37	41	44	39	G	G	G_{26}	G_{21}	21	J_{18}^{X}	J_{44}^{X}	J_{29}^{X}	J_{31}^{X}	E_{14}^{S}
23	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	E_{17}^{B}	G	G	36	40	40	41	G	G	G	G	G	29	J_{53}^{X}	J_{23}^{X}	J_{64}^{X}	J_{21}^{X}	E_{14}^{S}	E_{14}^{S}
24	E_{14}^{S}	E_{13}^{S}	E	E	E_{14}^{S}	19	G	33	38	43	44	44	43	G	37	36	35	28	21	J_{33}^{X}	J_{26}^{X}	E_{13}^{S}	J_{26}^{X}	J_{66}^{X}
25	J_{51}^{X}	J_{20}^{X}	E	E	E_{14}^{S}	E_{19}^{B}	37	G	36	36	37	G	G	G	G	G	G	G	G	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
26	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E	E	25	29	G	G	G	G	G	G	G	G	35	34	J_{36}^{X}	J_{24}^{X}	J_{19}^{X}	J_{18}^{X}	J_{33}^{X}	E_{13}^{S}	E_{13}^{S}
27	E	E	E	E	E	20	28	33	36	G	G	G	G	G	G	G	G	27	G	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}
28	E_{13}^{S}	E	E	E	E	E_{20}^{B}	G	G	G	G	G	G	G	G	G	G	G	G	G	E_{14}^{S}	E_{13}^{S}	J_{25}^{X}	E_{14}^{S}	J_{18}^{X}
29	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E_{13}^{S}	E_{18}^{B}	25	35	J_{43}^{X}	40	G	37	48	J_{54}^{X}	J_{38}^{X}	43	G	31	25	J_{29}^{X}	E_{14}^{S}	J_{21}^{X}	E_{14}^{S}	E_{13}^{S}
30	E_{13}^{S}	E_{14}^{S}	E	E	E	26	37	41	38	38	40	G	G	G	G	J_{39}^{X}	G	33	J_{30}^{X}	J_{35}^{X}	J_{39}^{X}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	29	30	29	29	30	30	30	30	30	30	29	29	29	28	29	29	28	28	30	30
MED	E_{14}^{S}	E_{14}^{S}	E_{14}^{E}	E	E	E_{18}^{E}	23	30	36	38	40	40	39	G	G	35	31	28	23	J_{23}^{X}	J_{20}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
UQ	J_{24}^{X}	E_{14}^{S}	E_{14}^{S}	E_{13}^{E}	E_{13}^{E}	E_{19}^{B}	28	33	38	41	43	43	44	J_{43}^{X}	38	38	34	32	J_{29}^{X}	J_{28}^{X}	J_{28}^{X}	J_{24}^{X}	J_{28}^{X}	J_{26}^{X}
LQ	E_{14}^{S}	E_{13}^{S}	E	E	E	E_{14}^{S}	G	G	33	35	37	G	G	G	G	G	G	G	19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}

The Radio Research Laboratories, Japan

APR. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

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

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

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_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E	E	E_{14}^{S}	E_{16}^{B}	27	35	37	38	37	43	38	43	41	28	G	E_{17}^{B}	E_{13}^{S}	E_{13}^{S}	E	E	E
2	30	17	17	E	20	E_{12}^{S}	E_{17}^{B}	G	31	33	36	36	G	G	G	34	33	24	E_{14}^{S}	20	19	E_{14}^{S}	E_{14}^{S}	18
3	E	17	23	21	17	E	G	30	35	36	54	42	44	39	38	33	38	27	25	24	22	E	E_{14}^{S}	18
4	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E	E_{13}^{S}	E_{14}^{S}	21	G	33	33	35	G	G	G	G	G	28	27	25	28	28	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	E_{19}^{B}	E	E_{18}^{B}	E	E	E_{13}^{S}	23	28	30	U_{44}^{R}	40	40	38	37	35	33	G	27	20	25	21	25	18	E_{12}^{S}
6	E	E	E_{14}^{S}	16	20	23	23	G	33	35	42	39	39	43	37	G 31	G	26	20	E_{14}^{S}	E	E_{14}^{S}	E	E_{14}^{S}
7	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	G	G	G	36	38	41	38	37	37	28	33	27	U_{49}^{R}	31	19	E_{14}^{S}	E	E_{14}^{S}
8	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	G	30	34	39	39	38	40	39	G	34	G	27	19	E_{14}^{S}	26	20	19	18
9	E_{14}^{S}	E_{14}^{S}	E	E	E	E	24	31	33	35	39	37	39	40	37	G	G	29	25	37	20	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
10	E_{14}^{S}	E_{14}^{S}	E	E	E_{13}^{S}	E_{14}^{S}	26	31	35	44	45	45	60	48	37	G	G	G	19	20	26	27	32	E
11	C	E_{14}^{S}	E	E	E	E_{13}^{S}	25	32	44	44	51	44	39	G	37	G	G	G	E_{19}^{B}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	20	18
12	20	19	E_{14}^{S}	E	E	E_{14}^{S}	G	G	33	G	41	39	44	44	G 32	36	32	G	19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{30}^{C}
13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{14}^{S}	26	31	34	37	37	39	39	G	G	G	G	29	31	20	19	E	E_{13}^{S}	22
14	E_{14}^{S}	E	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E_{18}^{B}	27	32	37	41	43	44	39	G	G	36	34	29	24	19	19	20	46	48
15	25	E	E	E	E	E_{14}^{S}	C	C	48	54	50	43	43	45	C	C	C	C	C	19	C	C	34	32
16	43	C	C	E_{13}^{S}	C	E_{18}^{B}	G	G	36	41	39	38	G	41	40	38	34	31	26	23	E_{14}^{S}	23	E	21
17	23	16	23	24	E	17	28	35	48	58	43	51	G	G	G	G	36	36	25	23	18	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
18	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	E_{18}^{B}	G	32	37	40	37	G	G	G	G	G 27	34	C	25	C	C	C	20	27
19	29	22	18	16	E	E_{18}^{B}	27	33	41	39	42	G	41	43	39	35	G	G	E_{21}^{B}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	26	E_{13}^{S}
20	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E_{18}^{B}	G	G	G	G	G	E_{39}^{B}	G	G	G	G	34	G	27	20	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}
21	E_{14}^{S}	E_{14}^{S}	E	E	E	E_{19}^{B}	28	G	G	G	40	41	40	G	38	36	32	23	20	18	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
22	E_{14}^{S}	E	E	E	E	S	28	33	42	37	37	40	43	39	G	G	G 25	G 20	21	18	40	21	28	E_{14}^{S}
23	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	E_{17}^{B}	G	G	36	40	40	41	G	G	G	G	G	29	50	21	U_{64}^{R}	19	E_{14}^{S}	E_{14}^{S}
24	E_{14}^{S}	E_{13}^{S}	E	E	E_{14}^{S}	19	G	32	36	40	43	43	43	G	37	35	31	28	20	20	23	E_{13}^{S}	E	E
25	38	E	E	E	E_{14}^{S}	E_{19}^{B}	30	G	35	36	37	G	G	G	G	G	G	G	G	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
26	E_{13}^{S}	E_{13}^{S}	E_{14}^{S}	E	E	25	29	G	G	G	G	G	G	G	G	34	34	32	23	16	17	26	E_{13}^{S}	E_{13}^{S}
27	E	E	E	E	E	20	28	32	35	G	G	G	G	G	G	G	G	G	G	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}
28	E_{13}^{S}	E	E	E	E	E_{20}^{B}	G	G	G	G	G	G	G	G	G	G	G	G	G	E_{14}^{S}	E_{13}^{S}	25	E_{14}^{S}	E
29	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E_{13}^{S}	E_{18}^{B}	25	G	42	39	G	37	43	52	37	37	G	30	25	24	E_{14}^{S}	E	E_{14}^{S}	E_{13}^{S}
30	E_{13}^{S}	E_{14}^{S}	E	E	E	25	37	40	36	38	39	G	G	G	G	36	G	32	30	27	27	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	29	29	29	29	30	30	30	30	30	30	29	29	29	28	29	29	28	28	30	30
MED	E_{14}^{S}	E_{14}^{S}	E_{13}^{E}	E	E	E_{17}^{E}	23	28	35	37	39	39	39	G	G	31	G 25	27	21	20	18	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
UQ	E_{19}	E_{14}^{S}	E_{14}^{S}	E_{13}^{E}	E_{13}^{E}	E_{19}^{B}	27	32	37	40	42	41	43	40	37	35	33	29	25	23	22	20	19	18
LQ	E_{14}^{S}	E	E	E	E	E_{14}^{S}	G	G	33	33	37	G	G	G	G	G	G	G	19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}

APR. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

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

The Radio Research Laboratories, Japan

APR. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

APR. 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	280	270	275	290	300	280	330	330	330	335	325	310	IR 305	290	305	315 R	325	330	320	310	295	285	290	295
2	280	F 275	F 285	IR 305	F 325	F 310	330	340	330	315	315	IR 320	305	315	315	320	320	330	335	S 310	310	300	290	F
3	F	F	295	335	315	310	330	320	315	310	310	315	300	300	315	325	325	320	335	320	305	285	275	280
4	270	280	275	295	300	330	345	330	325	320	290	IR 305	300	IR 300	305	310	330	325	330	320	285	265	270	270
5	265	270	265	270	250	F 270	260	275	245	IR 240	R 285	275	300	305	315	310	325	315	325	310	295	300	275	295
6	295	290	285	F 295	295	310	315	325	315	310	300	305	315	315	315	320	310	315	320	325	310	295	270	280
7	285	280	295	310	315	305	335	330	340	315	335	305	310	295	320	320	320	315	320	325	310	295	285	280
8	IR 295	285	295	300	290	290	325	IR 335	345	335	300	310	300	305	305	305	320	325	315	305	320	290	290	IR 280
9	270	F	300	305	285	285	320	320	325	325	325	295	310	305	310	315	310	305	300	315	300	285	280	260
10	270	265	IR 290	275	275	270	310	335	310	315	290	315	305	305	300	IR 310	315	320	315	310	285	275	275	270
11	C	F	F	F	F	300	340	335	325	315	300	305	305	305	310	305	310	310	IR 320	330	295	270	270	270
12	275	280	280	280	275	295	325	325	320	310	310	315	IR 300	300	295	310	305	320	315	310	300	290	285	295
13	290	275	280	280	280	290	315	320	325	330	315	300	305	305	IR 305	305	315	340	315	310	315	295	275	265
14	270	270	280	305	300	320	335	325	340	305	310	IR 310	310	300	300	310	310	320	315	315	295	290	290	275
15	F	265	275	280	285	295	IC 305	IC 310	320	315	H 280	290	290	290	C	C	C	C	C	300	IC 275	IC 260	255	255
16	IR 270	IC 285	IC 290	280	IC 285	295	330	320	330	295	305	300	295	280	300	305	305	300	310	300	305	275	IR 270	270
17	S 265	270	285	275	280	290	320	315	290	305	300	IR 320	300	295	295	305	300	305	IR 315	305	305	290	270	275
18	280	285	285	300	285	295	315	325	325	310	295	300	295	300	300	295	305	IC 310	310	IC 310	IC 300	IC 295	290	285
19	IR 285	280	290	270	260	275	305	340	315	310	305	285	IR 290	IR 295	300	300	300	305	310	305	310	300	290	275
20	285	270	290	295	295	305	330	320	295	300	310	300	295	295	300	310	305	300	305	300	305	295	280	270
21	275	270	290	295	295	295	315	320	310	315	305	305	300	300	295	295	300	315	300	300	295	280	270	265
22	265	280	295	290	260	245	240	275	275	260	IR 265	280	300	285	305	320	320	315	300	295	285	285	285	270
23	265	265	275	275	300	315	295	300	315	290	305	290	290	305	295	310	305	310	310	305	IR 300	275	275	270
24	260	275	275	285	295	305	320	295	290	305	295	305	300	305	305	310	315	320	320	305	310	295	275	270
25	270	275	280	295	290	295	300	310	315	320	325	285	310	295	295	310	305	310	315	315	320	290	285	275
26	280	280	285	295	295	315	310	330	335	310	315	295	310	305	305	305	310	310	300	310	310	315	310	275
27	270	265	295	310	310	315	320	320	320	305	300	300	300	295	305	305	305	305	295	310	315	295	285	280
28	280	295	290	285	290	315	315	320	305	315	300	305	310	310	310	305	300	310	310	300	295	IR 275	275	270
29	IR 270	IR 265	270	280	280	290	290	310	315	325	300	310	315	310	310	315	320	330	320	295	290	280	280	275
30	280	290	295	295	295	295	310	330	320	335	330	315	300	300	290	300	300	315	IR 320	325	300	275	275	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	29	29	29	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	30	30	30	29
MED	275	275	285	295	290	295	318	320	320	312	305	305	300	300	305	310	310	315	315	310	300	290	278	275
UQ	280	280	290	300	300	310	330	330	325	320	315	310	310	305	310	315	320	320	320	315	310	295	285	280
LQ	270	270	280	280	280	290	310	315	310	305	300	295	300	295	300	305	305	310	310	305	295	275	275	270

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										390	370	365	L	375	L	A	L							
2									L	400	375	370	375	375	385	L	L	L						
3								L	L	L	I A 370	L	L	L	375	L								
4									L	385	L	L	390	L	L	L	L							
5							L	325	340	I A 345	B 340	355	350	355	345	U L 355	L							
6									L	360	375	360	360	355	370	340	L							
7									L	U L 355	370	360	U L 345	355	360	360	L	L						
8								L	L	395	365	360	335	365	365	U L 340	L							
9								L	L	365	365	375	380	375	365	L	L	L						
10									L	A	L	L	A	A	U L 345	L	L							
11									L	L	I A 350	340	360	360	360	L	L	L						
12								L	L	L	U L 390	385 H	U L 340	365	335	360	L	L						
13								L	L	375	380	340	345	350	360 H	U L 340	L	L						
14								L	U L 370	345 H	345	355	355	340	365	L	L	L						
15									A	A	I A 360	325	360	L	C	C	C	C						
16								L	L	U L 375	340	350	365	L	360	L	L	L						
17								L	A	A	U L 340	I A 365	340	360	360	L	L							
18								L	L	U L 365	370	375	350	350	355	L	L	C						
19								L	L	L	L	330 H	340	U L 345	360	U L 365	L	L						
20								L	L	L	370	360	340	355	375	350	L	L						
21								L	L	U L 365	360	345	355	365	360	345 H	L	L						
22						U 280	320	335	I A 345	340	350	360	350	365	355	365	375	L						
23								U 340	350	360	365	U L 325	340	365	360	360	375	L						
24								335	350	375	340	370	350	350 H	350	L	L	L						
25								340	365	370	375	330 H	380	355	370	U L 340	L	L						
26								L	L	360	365	350 H	380	370	350 H	350	L	L						
27								L	U L 375	340	360	355	375	355	350	355	335 H	L						
28								L	345	355	365	360	360	360	380	355	350	L						
29								360	I A 360	L	375	345	385	I A 365	370	L	L	L						
30								L	380	375	375	360	345	360	340	350	U 335	L						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	1	6	10	21	27	27	27	25	27	16	5							
MED						U 280	320	338	355	365	365	360	355	360	360	352	350							
UQ								340	370	375	372	362	370	365	368	360	375							
LQ								335	345	355	355	345	345	355	352	342	335							

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

APR. 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										250	275	290	280	280	285	270	250							
2									240	260	275	275	285	280	270	270	255	245						
3								250	240	260	280	285	280	280	285	275								
4									250	270	280	280	270	280	275	255	245							
5							416	425	525	A	450	B 390	350	330	285	280	255							
6									250	285	285	290	270	280	280	275	260							
7									250	265	255	260	280	295	285	260	260	250						
8								240	235	235	270	275	295	280	270	270	265							
9								245	250	270	250	270	285	290	280	270	255	265						
10									250	250	355	280	290	280	285	265	250							
11									255	260	290	290	270	285	265	260	270	255						
12								240	255	240	255	260	285	285	290	280	255	250						
13								260	250	255	250	290	300	285	290	280	260	250						
14								255	270	290	290	285	285	300	270	260	255	245						
15									290	295	290	330	300	315	C	C	C	C						
16								250	255	290	290	270	300	270	285	260	260	250						
17								245	255	270	295	265	300	290	280	260	275	...						
18								235	240	260	265	270	300	280	290	280	265	C						
19								235	250	260	260	310	300	300	280	270	260	250						
20								240	240	265	270	285	295	295	285	270	255	245						
21								250	250	260	285	295	295	295	290	280	260	250						
22						425	460	350	365	440	445	390	330	375	305	275	260	270						
23								295	285	280	295	340	330	295	280	275	260	270						
24								295	335	310	320	295	310	290	295	270	265	255						
25								295	265	260	250	320	290	295	295	275	275	255						
26								245	250	265	260	300	300	290	290	275	260	255						
27								255	255	280	275	295	275	295	280	270	270	255						
28								245	290	280	280	285	280	270	260	270	285	255						
29								290	280	260	275	295	290	295	290	275	255	235						
30								295	260	245	260	285	310	315	310	295	285	260						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	2	22	29	29	30	30	30	30	29	29	28	20						
MED						425	435	250	255	265	278	288	292	290	285	270	260	252						
UQ								295	270	280	290	295	300	295	290	275	265	255						
LQ								245	250	260	260	275	280	280	280	270	255	250						

APR. 1971 | H'F2 (KM)

IONOSPHERIC DATA

APR. 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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	275	290	285	245	210	280	240	240	240	220	235	230	235	230	240	245	230	240	230	240	220	270	260	250
2	300	315	290	245	220	235	225	240	230	205	210	210	210	220	215	240	250	240	230	235	240	230	250	330
3	320	330	285	225	245	245	235	245	230	235	215	200	225	235	230	215	260	255	230	230	230	255	255	290
4	285	275	280	245	230	225	225	230	220	210	210	195	240	205	205	240	240	245	240	230	240	290	290	285
5	315	290	315	290	305	320	265	270	250	245	245	230	230	230	235	230	235	235	235	240	255	265	300	265
6	290	290	290	285	280	240	220	225	215	210	230	190	230	230	215	205	245	235	240	210	235	240	290	300
7	280	280	265	240	215	230	220	225	230	220	215	225	215	210	235	230	230	235	240	220	225	230	250	290
8	265	285	270	245	245	275	230	240	235	210	210	190	210	210	215	210	240	230	235	230	230	265	255	280
9	300	290	245	240	290	290	230	230	230	205	230	205	200	200	205	200	245	250	270	235	250	230	280	320
10	300	290	240	290	320	315	260	235	235	225	220	A	A	A	210	220	240	235	230	230	270	300	300	310
11	300	290	270	290	305	255	225	235	230	230	235	230	225	220	215	220	230	245	230	205	220	295	300	315
12	300	300	275	255	285	255	230	230	230	210	210	190	230	230	215	230	240	245	235	240	240	255	250	275
13	265	290	270	270	285	270	235	230	220	215	200	200	220	200	220	235	230	235	235	240	230	230	280	310
14	310	290	280	240	230	245	230	230	220	215	230	230	215	210	230	240	230	235	235	230	230	255	305	330
15	340	300	290	250	250	270	240	250	250	235	220	245	230	255	C	C	C	C	C	235	C	C	360	355
16	350	C	250	245	285	255	225	205	230	220	225	215	200	245	210	245	235	245	240	220	215	265	295	310
17	330	305	275	280	245	250	235	245	A	A	235	225	200	230	230	230	240	245	240	230	215	260	260	290
18	280	280	265	240	240	245	230	230	230	215	210	200	210	205	200	240	240	245	235	250	245	250	260	295
19	305	290	250	285	310	255	220	230	235	245	230	200	200	240	230	220	235	230	245	235	230	235	285	290
20	290	290	265	245	240	240	220	215	200	230	215	205	225	220	220	220	235	245	250	245	245	245	245	280
21	295	290	265	240	225	250	225	230	220	220	205	215	210	215	215	200	230	240	255	245	220	250	295	300
22	310	270	240	225	295	280	260	255	250	230	235	230	240	230	230	230	205	240	255	250	300	290	265	290
23	300	305	295	265	230	235	235	240	235	220	215	220	210	200	220	200	225	245	245	240	255	285	275	290
24	300	275	255	255	245	230	240	240	220	240	240	215	230	190	225	230	230	245	245	240	235	240	250	295
25	330	300	270	245	260	255	245	235	220	210	200	200	200	200	215	230	230	240	250	230	215	240	250	270
26	280	275	265	240	240	240	230	230	220	205	220	210	200	200	180	230	240	240	245	245	245	235	215	265
27	295	290	260	240	205	245	235	230	215	210	195	200	205	235	205	215	205	230	255	250	220	245	245	270
28	290	255	250	240	245	235	235	230	205	225	220	210	215	205	215	205	235	240	240	235	245	300	255	295
29	280	310	285	265	260	265	235	230	215	240	200	215	220	235	215	240	230	235	235	245	255	280	280	280
30	280	265	245	240	245	250	260	240	210	210	205	210	200	210	205	240	235	250	235	220	230	270	290	290
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	30	30	30	29	29	30	29	29	29	29	29	29	29	29	30	29	29	30	30
MED	300	290	270	245	245	250	232	230	230	220	218	210	215	220	215	230	235	240	240	235	235	255	270	290
UQ	310	300	285	265	285	270	240	240	235	230	230	225	230	230	230	240	240	245	245	240	245	270	290	310
LQ	280	280	255	240	230	240	225	230	220	210	210	200	205	205	210	215	230	235	235	230	225	240	250	280

The Radio Research Laboratories, Japan

APR. 1971 | H'F (KM)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	E	E	S	B	150	135	130	130	125	115	115	110	110	110	G	B	S	S	120	110	120
2	110	115	110	110	110	S	B	G	145	125	120	130	G	G	G	115	120	145	S	110	110	S	S	105
3	110	110	105	105	105	E	G	145	145	135	115	110	110	105	105	110	140	130	130	120	115	110	S	110
4	S	S	S	E	S	S	150	G	115	120	115	G	G	G	G	G	115	120	115	110	110	S	S	S
5	B	E	B	E	E	S	150	145	135	115	115	115	115	110	110	110	120	130	125	110	110	110	110	S
6	110	105	S	100	100	100	155	G	130	130	110	110	110	105	105	110	G	150	100	S	100	S	100	S
7	S	S	S	S	E	E	G	G	G	120	120	110	110	105	105	100	100	100	100	100	100	S	100	S
8	S	S	100	S	S	S	G	150	130	115	110	110	110	105	G	120	G	150	135	S	110	110	110	105
9	S	S	E	E	E	E	155	145	140	140	110	115	110	110	110	G	G	140	130	110	110	S	S	S
10	S	S	E	E	S	S	135	135	120	115	115	115	110	110	110	G	G	G	130	115	110	110	110	100
11	C	S	120	E	E	S	140	130	115	115	110	105	110	G	110	G	G	G	B	S	S	S	110	110
12	105	100	S	E	E	S	G	G	130	G	115	115	110	105	100	130	130	G	125	S	S	S	S	S
13	S	S	S	E	E	S	145	140	130	120	115	110	105	G	G	G	G	135	120	110	110	110	S	110
14	S	E	S	S	S	B	150	140	130	125	125	120	130	G	G	115	110	110	105	100	100	105	105	105
15	105	E	E	E	E	S	C	C	120	115	115	115	115	120	C	C	C	C	C	115	C	C	115	110
16	105	C	C	S	C	B	G	G	135	120	120	120	G	115	115	110	105	105	105	105	S	110	110	100
17	100	100	105	105	E	105	145	140	115	115	110	105	G	G	G	G	105	100	100	100	100	S	S	S
18	S	S	S	E	E	B	G	140	130	115	120	G	G	G	G	100	140	C	120	C	C	C	105	105
19	105	105	105	105	E	B	155	140	125	120	115	G	100	100	100	100	G	G	B	S	S	S	105	S
20	S	S	S	S	E	B	G	G	G	G	G	B	G	G	G	G	145	G	140	100	S	S	S	S
21	S	S	E	E	E	B	150	G	G	G	130	125	120	G	115	120	105	110	140	105	S	S	S	S
22	S	E	E	E	E	S	140	130	120	120	120	115	140	115	G	G	100	100	150	100	115	110	110	S
23	S	S	S	E	E	B	G	G	130	120	115	115	G	G	G	G	G	115	100	100	100	100	S	S
24	S	S	E	E	S	140	G	150	140	125	130	120	115	G	120	115	110	115	125	105	105	S	110	105
25	105	105	E	E	S	B	125	G	120	120	110	G	G	G	G	G	G	G	G	S	S	S	S	S
26	S	S	S	E	E	145	150	G	G	G	G	G	G	G	G	115	110	110	105	105	105	100	S	S
27	E	E	E	E	E	155	150	130	115	G	G	G	G	G	G	G	G	150	G	S	S	S	S	S
28	S	E	E	E	E	B	G	G	G	G	G	G	G	G	G	G	G	G	G	S	S	110	S	105
29	S	S	S	E	S	B	155	140	125	115	G	110	140	105	105	130	G	140	120	110	S	110	S	S
30	S	S	E	E	E	150	140	130	120	120	115	G	G	G	G	105	G	140	115	110	110	S	S	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	7	6	5	3	6	17	17	25	24	25	21	18	14	14	17	16	20	22	20	17	13	14	13
MED	105	105	105	105	105	142	150	140	130	120	115	115	110	108	110	110	110	125	120	108	110	110	110	105
UQ	110	108	110	105	108	150	150	145	135	125	120	120	115	115	110	115	125	140	130	110	110	110	110	110
LQ	105	102	105	105	102	105	140	135	120	115	115	110	110	105	105	110	105	110	105	100	100	110	105	105

The Radio Research Laboratories, Japan

APR. 1971 | H'ES (KM)

IONOSPHERIC DATA

APR. 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								H1	H2	H1	H1	H1	C2	C1	C2	C1	C2					F2	F2	F2
2	F3	F2	F2	F1	F2				H1	H1	H1	H1				H1	H2	H2		F5	F2			F2
3	F2	F4	F2	F2	F1			H2	H1	H1	C2	C2	C2	L2	L2	C2	HL22	HL12	HL21	F3	F2	F1		F2
4							H1		C2	H1	C1						C1	H2	C2	F3	F2			
5							H1	H1	H1	C2	C1	C1	C1	L1	L1	L1	C1	H1	H1	F2	F2	F1	F2	
6	F2	F2		F1	F2	F3	H1		H1	H1	L1	L1	L1	L2	L1	L1		H2	L1		F1		F1	
7										C1	C2	L2	L1	L1	L2	L1	L2	L2	L3	F3	F1		F1	
8			F1					H1	H1	C2	L1	L1	L1	L2		C1		H1	H1		F2	F2	F2	F2
9							H1	H1	H1	H1	L1	C1	L1	L2	L1			H2	H2	F4	F1			
10							H2	H1	C1	C2	C2	C2	L2	L2	L1				H1	F1	F2	F3	F3	F1
11			F1				H1	H2	C2	C2	L2	L2	L1		L1								F1	F2
12	F2	F2							H1		C2	C1	L2	L2	L1	H1	H1		H1					
13							H1	H1	H1	C1	C1	L1	L1					H2	C3	F1	F1	F1		F2
14							H1	H1	H2	H1	H1	C1	H1			C2	L2	L2	L2	F2	F1	F2	F3	F4
15	F3								C2	C3	C2	C1	C1	C1						F1			F4	F4
16	F4								H1	C1	C1	C1		C1	C1	L1	L2	L2	L3	L3		F2	F2	F2
17	F1	F1	F3	F3		L1	H2	H2	C2	C2	L1	L2					HL11	L3	L2	L2	F1			
18								H1	H1	C1	C1					L1	H1		C2				F2	F2
19	F3	F2	F2	F2			H1	H1	H2	C1	C2		L1	L2	L2	L2							F4	
20																	H1		H1	L2				
21							H1				H1	H1	C1		C1	C1	L2	L1	H1	L1				
22							H2	H1	C2	C1	C1	C1	H1	C1			L2	L2	H1	L1	F2	F2	F3	
23									H1	C1	C1	C1						C2	L3	L2	F3	F1		
24						H1		H1	H1	H2	H1	C1	C1		C1	C1	L1	C1	H1	L3	F4		F1	F2
25	F3	F1					H1		C1	C1	L1													
26						H1	H1									C1	L2	L2	L2	L1	F1	F1		
27						H1	H1	H1	C2									H1						
28																						F2		F1
29							H1	H1	H2	C1		L1	HL12	L2	L2	H2		H1	C2	L2		F1		
30						H2	H2	H2	C2	C1	C1					L2		H2	C3	L2	F3			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

APR. 1971 | TYPES OF ES

IONOSPHERIC DATA

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

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

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	64	59	59	60	52	45	68	88	93	85	91	↓102	111	109	111	112	112	93	92	↓73	61	56	56	55
2	51	51	51	55	40	38	60	79	79	83	95	↓106	↓107	108	107	↓102	99	96	91	R	61	I 58	56	53
3	51	50	56	51	36	34	56	↓73	86	85	I 97	102	113	113	108	107	98	96	96	80	64	57	58	58
4	59	58	56	56	50	46	62	72	83	92	94	113	123	110	114	111	110	94	88	↓65	55	54	57	57
5	55	57	51	50	F	40	40	46	54	56	68	71	↓75	80	90	80	85	↓79	71	58	50	51	↓51	52
6	51	50	50	49	49	48	62	70	80	86	87	107	116	119	115	111	105	↓103	↓103	98	61	58	↓60	59
7	58	59	59	59	46	45	70	79	83	86	96	101	107	114	119	122	106	↓103	↓104	91	64	58	56	59
8	↓60	56	51	51	46	48	↓75	↓102	93	88	95	112	123	126	126	120	112	106	97	86	71	61	63	59
9	56	56	58	50	49	51	↓78	86	89	87	99	96	103	101	104	111	106	94	↓101	↓105	89	70	74	67
10	73	71	71	56	50	53	↓79	↓74	71	80	88	109	111	105	108	113	114	105	↓102	80	58	59	59	52
11	↓55	F	50	49	47	47	↓74	74	75	85	97	117	130	133	142	134	124	128	127	105	58	↓51	57	57
12	56	55	55	52	50	54	↓76	100	100	108	104	113	124	131	131	130	131	116	↓105	91	↓75	73	I 73	71
13	70	66	64	54	61	61	82	90	101	81	88	100	109	111	114	113	106	↓104	98	94	↓77	65	63	63
14	62	63	65	63	59	57	R	80	86	91	109	121	121	117	114	116	110	↓105	↓102	93	↓78	73	70	71
15	64	60	61	58	56	61	63	86	79	81	84	101	115	111	112	108	101	104	96	73	65	I 61	61	↓63
16	65	71	60	52	50	51	71	↓75	88	103	109	120	122	125	131	134	119	113	116	101	R	60	61	64
17	63	66	60	60	61	61	81	88	89	107	120	120	133	134	133	126	117	123	121	100	77	75	75	72
18	73	72	74	69	58	59	89	84	82	93	103	107	113	114	112	117	111	106	↓105	96	77	74	↓70	68
19	71	71	71	60	61	62	88	88	80	89	106	111	120	131	138	137	131	125	120	↓106	86	66	I 68	71
20	69	68	I 70	63	56	59	81	80	84	97	106	↓105	115	120	127	125	116	↓105	↓108	↓104	92	76	I 78	↓75
21	80	↓80	83	↓77	64	66	86	87	96	95	96	↓105	107	105	112	119	116	↓107	↓104	102	85	I 80	I 79	I 78
22	77	79	80	68	51	49	65	76	61	67	69	↓77	88	75	81	75	67	71	78	82	73	68	65	66
23	65	61	61	61	56	49	65	79	85	88	88	93	↓104	113	110	96	94	91	93	86	68	65	69	70
24	66	↓68	61	59	52	57	68	79	87	89	95	98	108	C	C	114	106	99	94	85	↓75	64	64	69
25	61	61	58	55	48	54	74	87	↓104	93	C	97	112	119	117	114	109	114	110	112	90	79	↓74	74
26	70	71	↓78	67	57	66	84	85	80	84	89	98	↓105	108	110	113	110	96	98	99	100	81	72	70
27	70	71	71	70	50	52	77	90	91	95	101	108	116	121	121	116	101	↓103	100	↓102	94	72	I 75	75
28	I 71	71	70	65	63	73	83	77	86	101	109	107	114	110	101	90	92	93	95	90	I 86	R	73	71
29	76	62	66	60	56	55	60	70	↓75	↓77	79	90	91	94	94	94	96	86	73	66	67	67	71	69
30	66	61	62	56	50	56	↓77	96	↓100	84	79	80	79	88	95	105	110	123	113	81	60	57	60	59
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	29	30	29	30	30	30	29	30	30	29	29	30	30	30	30	29	29	29	30	30
MED	64	62	61	58	51	54	74	80	86	88	95	105	112	113	112	113	110	104	100	91	73	65	64	65
UQ	70	71	70	63	57	59	81	88	91	93	103	111	120	120	121	120	114	107	↓105	101	85	73	73	71
LQ	58	58	56	52	49	48	65	75	80	84	88	98	107	108	108	107	101	94	94	81	61	58	59	59

APR. 1971 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

APR. 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

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	L							
2								L	L	L	L	L	L	L	L		L							
3										A	A	L	A	A	L	L	L							
4								L	L	U L 490	L	L 510	L 500	L	L	L	L	L						
5								L	420	450	490	490	490	B U 510	L	L	L							
6									L	L 460	L	L		U L 490	L	L	L							
7									L	L	L	L	L			L								
8								L	L	L	L	L	L	U L 490	L	L	L							
9								L	L	L	L	L	L	L	L	L	L	L						
10										L	L	A	A	U L 500	L	L	L							
11										L	L	L	U L 510	L	U L 500	L	L	L						
12								L	L	L	L	L	L	L	L		L							
13								L	L	L	L	U L 510	L	L	U L 490	L	L							
14									L	L	L	R	L	L	A	A								
15								L		A		L	A	L	L	L	L	L						
16									L	L	L	L	L	L	L	L								
17								L		L	L	L	L 560	L	L	A	A	A	A					
18										L	L	L 520	L	L	L 540	L	L	L	A					
19										L	L	A	L	L	L	L								
20								L	L	L 460	L	L	L	L	L	L	L							
21								L	L	A	L	L	L	L	L	L	L	L						
22							L	L 440	A	490	510		L 510	L	L	L	L							
23								L	L	L	L	A	L	510	L		L							
24								L	L	L	L	L	L 550	C	C	L 490	L	L						
25								L	A	L 490	C	540	540	510	505	L	L	L						
26								L	L	L	L	L	L	L	L	L	L							
27								L	L	L	480	490	490	L	490	L	L	L						
28								L	L	L	L	L	L 490	L	L	L	L	L						
29								L	A	L	A	A	L	L	L 460	L	L	L						
30								L	L	L	L 490	L 500	L 520	510	510	L	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	1	6	4	7	10	7	7	1								
MED								440	420	475	490	510	510	U 510	500	490								
UQ										490	500	515	540	510	505									
LQ										460	485	495	490	U 495	490									

The Radio Research Laboratories, Japan

APR. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							160	250	300	R	A	R	I R 350	A	A	R	A	A	B					
2							160	250	R 290	325	A	A	A	R	345	320	290	I A 240	B					
3							180	R 260	310	340	350	A	A	A	A	330	275	A	A					
4							210	260	A	A	A	R	370	370	I A 350	I A 310	I A 280	A	B					
5							190	260	300	R 330	A	A	A	A	A	R	R	225	A					
6							200	260	300	325	R	A	A	A	R	R	R	A	A					
7							210	260	I A 290	R 325	I A 340	A	A	A	A	A	A	A	B					
8							215	280	I R 315	R	A	A	A	R	R	R	R	A	R					
9							185	300	R	325	340	A	A	A	A	R	290	245	A					
10							A	275	330	330	350	355	I A 370	I A 350	350	I R 330	I A 280	240	R					
11							I A 235	270	320	345	355	A	A	365	I R 360	340	I A 310	240	B					
12							220	290	325	345	350	355	R	A	A	A	A	A	A					
13							210	280	310	330	R	R	360	R	A	R	A	A	A					
14							210	280	325	R 345	A	A	A	A	A	A	A	A	A					
15						B	A	290	I A 310	B	A	A	A	R	R 345	R	A	A	A					
16							R	285	320	I A 330	345	A	B	A	A	A	A	A	A					
17							235	290	I A 320	345	355	A	A	A	A	355	A	A	B					
18							220	290	325	355	365	R	R	A	A	350	310	260	A					
19							200	290	330	I A 355	A	A	B	R	R	A	A	A	A					
20							R 220	285	310	R	R	B	B	A	B	B	R 310	I R 260	A					
21							R 270	290	R 335	I A 350	A	R	R	R	A	R	R 310	R 250	A					
22						B	210	R 285	A	340	A	R 375	R 380	I A 375	R	R	I R 290	250	A					
23						B	210	285	I A 315	I A 340	A	A	R	R	R	340	I A 300	A	A					
24							240	290	I R 330	365	375	380	I R 370	C	C	A	A	I A 250	R					
25						B	225	290	A	A	C	370	385	370	370	340	295	250	A					
26						170	240	290	340	R	R	I R 355	360	R	R	A	A	A	A					
27						B	235	280	320	A	R	R	I R 350	I R 350	345	320	290	250	A					
28						170	220	270	310	R 330	R	R	R	R	R 340	I R 330	330	I R 250	A					
29						B	210	290	320	R 340	R	A	A	B	B	R	I R 300	A	A					
30						B	220	290	A	345	B	R	R	B 380	360	330	295	245	150					
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	27	30	25	22	10	6	9	7	9	12	16	14	1					
MED						170	210	285	320	340	350	362	370	370	350	330	295	250	150					
UQ							222	290	325	345	355	375	370	372	360	340	310	250						
LQ							205	270	310	330	345	355	I R 360	358	345	325	290	240						

The Radio Research Laboratories, Japan

APR. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

APR. 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 24	E S 15	21	21	21	E B 14	G	G	35	36	41	42	40	J X 51	J X 41	36	J X 39	26	E B 15	E S 15	E S 15	E S 16	E S 15	E S 15
2	E S 15	J X 29	J X 24	J X 24	J X 22	21	G	G	G	36	J X 41	42	J X 41	G	J X 50	68	35	26	J X 24	J X 29	J X 54	J X 29	19	21
3	E S 15	J X 30	J X 41	J X 41	J X 24	E S 15	G	36	J X 69	J X 50	J X 101	47	J X 102	J X 54	J X 38	G	29	J X 30	J X 34	J X 27	J X 30	J X 30	21	E B 13
4	E S 15	J X 39	J X 25	M 20	E B 12	E B 12	G	30	33	40	38	G 32	J G 33	G 34	J X 38	J X 38	J X 31	27	J X 29	J X 63	J X 58	J X 33	J X 19	E S 15
5	E B 14	E B 14	E B 13	E B 13	E B 13	E B 14	24	29	35	39	40	42	41	J X 39	42	G	G	26	J X 29	J X 31	J X 39	J X 35	J X 39	J X 34
6	J X 24	E S 15	E S 15	21	J X 21	21	25	31	G	38	G	47	J X 59	J X 42	G	G	G	J X 29	J X 27	J X 24	21	20	28	20
7	20	21	E S 15	E B 13	E S 15	E B 13	G	G	30	37	40	45	J X 47	J X 64	55	J X 44	J X 54	J X 27	21	J X 39	20	22	19	22
8	J X 24	20	E B 13	E B 13	E S 15	E S 15	G	30	G	G	45	42	41	G	G	G	G	28	G 19	J X 20	18	21	J X 60	E S 15
9	E S 15	E S 15	22	E B 12	E S 15	E S 15	G	G	G	41	J X 41	J X 41	46	J X 41	J X 55	G	G	31	J X 29	J X 64	J X 74	J X 31	J X 21	E S 15
10	E S 15	E S 15	E B 13	E S 15	E S 15	E B 13	24	35	J X 44	38	45	J X 74	90	J X 43	G 17	G 26	J X 30	G 20	G 19	22	M 20	J X 31	J X 64	J X 65
11	J X 22	J X 39	J X 19	17	J X 16	E B 12	26	35	40	48	45	J X 51	J X 42	G 35	G 35	G	J X 35	G 18	18	E S 15	M 17	J X 25	J X 20	J X 22
12	J X 24	J X 27	J X 19	J X 18	E B 14	E B 13	25	35	37	46	40	41	G	41	41	J X 54	J X 41	J X 41	J X 28	J X 36	J X 29	E S 15	E S 15	E S 16
13	E S 15	E S 15	E S 15	E B 13	E B 13	E B 13	25	35	42	37	G 35	G	G	G	42	G	42	J X 54	68	J X 52	J X 51	22	20	E S 16
14	20	J X 27	E S 15	E S 15	E S 15	E B 14	25	35	37	45	47	47	45	J X 41	J X 62	J X 61	J X 65	J X 84	J X 39	J X 28	22	J X 28	J X 29	21
15	20	E S 15	E S 15	E B 15	E S 15	J X 25	28	35	J X 49	J X 60	J X 59	48	95	G 30	46	G	J X 38	31	23	19	J X 41	45	20	J X 34
16	J X 31	J X 30	J X 28	J X 35	J X 25	20	G	32	37	39	45	42	44	42	40	J X 40	J X 48	J X 55	J X 48	J X 36	J X 58	43	J X 24	J X 21
17	J X 21	J X 29	J X 29	J X 41	J X 40	E S 15	27	35	J X 48	J X 54	J X 54	49	45	44	44	J X 89	J X 120	J X 107	J X 89	J X 78	J X 29	J X 39	J X 28	J X 28
18	18	E S 15	E S 15	E S 15	17	E B 14	27	31	40	49	47	43	G 36	41	J X 49	38	38	32	48	J X 41	J X 25	J X 28	J X 54	J X 22
19	E S 15	M 22	J X 29	J X 25	J X 23	J X 17	27	36	47	42	42	J X 57	E B 40	G 32	G 30	J X 40	J X 41	J X 47	J X 38	J X 26	E S 15	J X 24	21	20
20	J X 35	E S 15	C	E S 15	E S 15	E S 15	G	G	G	G	43	E B 40	E B 43	J X 59	43	E B 40	G	G 20	J X 24	J X 38	22	20	E S 16	E S 15
21	E S 15	E B 13	E B 14	E B 13	E S 15	19	29	35	39	76	43	G	G	45	42	G	G	G	26	J X 24	21	E S 15	E S 16	E S 16
22	E S 15	E B 13	E B 14	19	E S 15	19	31	32	J X 44	40	39	J X 50	43	46	G	G	G	G	29	J X 28	J X 25	J X 21	J X 29	21
23	J X 25	21	19	E B 14	E B 14	E B 15	26	33	36	38	42	J X 49	G	G	G	42	33	J X 38	J X 32	J X 20	21	E S 15	J X 25	J X 22
24	18	20	20	E S 15	E B 13	E S 15	30	31	39	43	43	44	G	C	C	36	31	25	G	J X 16	E B 14	E B 13	E S 15	E B 14
25	M 19	M 20	J X 19	J X 22	J X 21	J X 16	27	36	J X 49	37	C	G 33	G 31	G 29	G	G	G 19	31	18	E B 14	M 21	M 20	E B 14	E B 13
26	E B 12	E B 14	E B 12	E B 13	E B 12	G	27	31	G	G	G 32	G 32	G	G	G	38	35	J X 34	J X 28	J X 39	J X 24	22	J X 25	J X 24
27	20	E S 15	E S 15	E S 15	E B 13	E B 15	30	32	G	37	G	G	G	E B 40	G	G	G	G	23	J X 24	22	22	E S 15	E S 15
28	E S 15	22	E B 13	E B 13	E S 15	G	26	G	34	G	G	G 34	G	G	G	G	34	G	J X 29	J X 28	19	E S 16	J X 25	J X 25
29	E S 15	21	E S 15	20	E B 13	E B 15	26	31	48	J X 54	J X 64	J X 74	J X 41	E B 40	E B 39	G	G	32	J X 59	J X 35	J X 29	23	J X 24	E S 15
30	E S 15	20	19	E S 15	E S 15	19	29	35	36	37	39	G	G	43	40	38	44	J X 53	J X 52	J X 46	35	J X 22	M 20	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	30	30	30	30	30	30	29	30	30	29	29	30	30	30	30	30	30	30	30	30
MED	18	20	E 15	E 15	E 15	E 15	26	32	37	39	42	42	40	41	40	U 28	34	30	J X 28	J X 28	23	22	21	20
UQ	J X 22	J X 27	J X 21	21	J X 21	17	27	35	44	46	45	48	45	J X 43	43	40	J X 41	J X 38	J X 38	J X 39	J X 35	J X 30	J X 28	J X 22
LQ	E S 15	E S 15	E S 15	E B 13	E B 14	E B 13	G	30	30	37	39	G 34	G	E G 30	G	G	G	25	23	J X 22	20	20	19	E S 15

The Radio Research Laboratories, Japan

APR. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	22	E S 15	E	E	15	E B 14	G	G	33	35	41	41	38	40	40	36	34	25	E B 15	E S 15	E S 15	E S 15	E S 15	E S 15
2	E S 15	16	14	18	20	E	G	G	G	35	39	39	39	G	44	63	33	25	20	25	22	25	E	E
3	E S 15	28	38	33	19	E S 15	G	35	45	49	A	41	102	51	38	G	29	28	26	22	29	30	E	E B 13
4	E S 15	34	E	E	E B 12	E B 12	G	30	33	40	38	G 32	G 33	G 34	37	34	29	27	19	35	41	20	E	E S 15
5	E B 14	E B 14	E B 13	E B 13	E B 13	E B 14	23	28	35	38	39	40	40	39	40	G	G	26	24	29	25	21	25	17
6	E	E S 15	E S 15	E	E	E	24	30	G	38	G	40	51	41	G	G	G	28	24	18	E	E	E	E
7	E	E	E S 15	E B 13	E S 15	E B 13	G	G	30	35	40	40	44	52	50	44	52	24	21	34	E	15	E	E
8	16	E	E B 13	E B 13	E S 15	E S 15	G	G	G	G	41	42	40	G	G	G	G	27	G 16	19	E	E	16	E S 15
9	E S 15	E S 15	E	E B 12	E S 15	E S 15	G	G	G	40	40	40	40	39	41	G	G	30	26	53	40	30	19	E S 15
10	E S 15	E S 15	E B 13	E S 15	E S 15	E B 13	24	24	40	38	39	65	86	41	E R 17	G 26	29	G 19	G 17	E	E	25	54	44
11	16	22	E	E	E	E B 12	25	33	39	46	45	51	40	G 35	E R 35	G	34	G 17	18	E S 15	E	20	20	16
12	16	16	E	E	E B 14	E B 13	25	33	35	39	39	40	G	38	36	51	40	40	25	32	24	E S 15	E S 15	E S 16
13	E S 15	E S 15	E S 15	E B 13	E B 13	E B 13	24	29	40	32	E R 35	G	G	G	40	G	40	53	65	50	30	E	E	E S 16
14	19	E	E S 15	E S 15	E S 15	E B 14	25	35	35	43	45	E R 47	43	40	61	60	65	61	32	25	E	23	28	E
15	E	E S 15	E S 15	E B 13	E S 15	24	26	34	48	58	55	E R 48	94	E B 30	44	G	35	28	19	E	40	A	E	22
16	25	26	25	35	24	17	G	31	35	38	43	40	42	40	40	38	44	54	46	33	35	30	22	17
17	E	E	25	25	34	E S 15	21	34	45	52	52	49	43	40	43	75	104	102	84	76	20	25	22	25
18	18	E S 15	E S 15	E S 15	E	E B 14	26	31	40	48	47	41	E R 36	41	40	38	37	31	45	29	19	19	40	E
19	E S 15	E	17	22	18	16	27	35	46	40	41	55	E B 40	E R 32	E R 30	39	41	42	35	25	E S 15	18	E	18
20	35	E S 15	C	E S 15	E S 15	E S 15	G	G	G	G	43	E B 40	E B 43	41	42	E B 40	G	G 19	22	25	20	E	E S 16	E S 15
21	E S 15	E B 13	E B 14	E B 13	E S 15	16	28	35	38	75	42	G	G	41	41	G	G	G	25	17	E	E S 15	E S 16	E S 16
22	E S 15	E B 13	E B 14	14	E S 15	16	30	32	44	36	38	49	42	41	G	G	G	G	25	26	25	18	16	E
23	20	E	E	E B 14	E B 14	E B 15	26	32	35	32	41	49	G	G	G	41	33	35	26	17	E	E S 15	21	20
24	E	E	E	E S 15	E B 13	E S 15	28	31	38	40	42	44	G	C	C	36	31	25	G	E	E B 14	E B 13	E S 15	E B 14
25	E	E	16	18	17	G	26	33	43	37	C	G 33	G 31	G 29	G	G	G 18	30	18	E B 14	E	E	E B 14	E B 13
26	E B 12	E B 14	E B 12	E B 13	E B 12	G	27	31	G	G	E R 32	E R 32	G	G	G	E R 38	35	32	25	38	21	17	25	22
27	E	E S 15	E S 15	E S 15	E B 13	E B 15	28	30	G	37	G	G	G	E B 40	G	G	G	G	23	24	E	E	E S 15	E S 15
28	E S 15	E	E B 13	E B 13	E S 15	G	25	G	34	G	G	E R 34	G	G	G	G	E R 34	G	25	25	E	E S 16	17	17
29	E S 15	E	E S 15	E	E B 13	E B 15	25	30	46	45	60	52	40	E B 40	E B 39	G	G	29	42	35	18	20	17	E S 15
30	E S 15	E	E	E S 15	E S 15	18	28	33	35	37	E R 39	G	G	43	40	38	42	52	61	45	34	19	E	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	30	30	30	30	30	30	29	30	30	29	29	30	30	30	30	30	30	30	30	30
MED	15	E E 14	E E 14	E E 14	E 15	E E 14	25	31	35	38	41	40	39	40	39	E G 30	32	28	25	25	18	18	16	E E 15
UQ	16	E S 15	E S 15	E 15	E S 15	E 15	26	33	40	43	43	48	43	41	41	38	40	35	32	34	25	23	21	17
LQ	E E 12	E	E	E B 13	E B 13	E B 13	G	24	30	35	39	33	G	E G 30	G	G	G	24	19	17	E	E E 15	E	E E 13

APR. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	E S 15	E S 15	13	12	14	14	15	15	15	25	28	25	25	26	25	19	14	15	E S 15	E S 15	E S 16	E S 15	E S 15
2	E S 15	13	13	E S 15	13	E S 15	14	14	14	16	25	25	25	26	26	15	15	15	14	13	E S 15	E S 15	E S 15	13
3	E S 15	E S 15	13	13	13	E S 15	14	15	15	18	26	26	26	26	19	15	15	13	12	13	13	12	14	13
4	E S 15	13	14	14	12	12	14	15	15	16	19	24	19	25	25	25	14	14	14	14	13	13	12	E S 15
5	14	14	13	13	13	14	14	14	15	15	25	27	25	28	25	15	15	15	14	13	E S 15	13	13	E S 15
6	E S 15	E S 15	E S 15	E S 15	13	E S 15	13	14	15	15	25	25	23	25	19	14	15	14	13	13	E S 15	E S 15	E S 15	E S 15
7	E S 15	E S 15	E S 15	13	E S 15	13	14	14	15	15	24	25	25	24	22	28	24	15	14	E S 15	E S 15	12	E S 15	E S 15
8	E S 15	E S 15	13	13	E S 15	E S 15	14	14	15	24	25	25	25	25	22	25	15	15	14	13	E S 15	E S 15	13	E S 15
9	E S 15	E S 15	E S 15	12	E S 15	E S 15	14	14	15	15	18	25	25	25	25	15	15	15	15	E S 15	E S 15	E S 15	13	E S 15
10	E S 15	E S 15	13	E S 15	E S 15	13	15	15	15	15	26	19	19	18	14	14	16	14	14	E S 15	14	E S 15	E S 15	14
11	14	14	14	13	13	12	14	15	15	18	26	16	26	26	25	26	17	14	15	E S 15	14	E S 15	14	14
12	13	13	13	E S 15	14	13	14	15	14	20	25	25	28	26	19	19	14	14	14	E S 15	E S 15	E S 15	E S 15	E S 16
13	E S 15	E S 15	E S 15	13	13	13	15	15	15	15	25	28	32	26	26	26	15	15	15	13	E S 15	E S 15	E S 15	E S 16
14	E S 15	13	E S 15	E S 15	E S 15	14	15	15	15	25	25	25	29	25	25	25	15	15	13	13	E S 15	E S 15	E S 15	E S 15
15	E S 15	E S 15	E S 15	13	E S 15	13	15	15	16	38	26	28	26	26	26	26	15	15	15	14	13	E S 15	E S 15	13
16	E S 16	14	E S 15	E S 15	13	E S 15	16	15	25	25	25	26	38	28	26	25	25	14	14	E S 15	E S 15	E S 15	E S 15	14
17	E S 15	13	E S 15	14	13	E S 15	15	16	25	25	26	26	27	35	25	25	17	14	15	13	13	14	E S 15	E S 15
18	E S 15	E S 15	E S 15	E S 15	14	14	15	16	17	25	32	27	33	26	25	22	15	15	14	12	14	E S 15	E S 15	E S 15
19	E S 15	14	E S 15	14	12	13	14	15	19	25	25	26	40	27	26	25	15	15	14	E S 15	E S 15	E S 15	E S 15	14
20	E S 15	E S 15	C	E S 15	E S 15	E S 15	14	15	15	27	27	40	43	26	40	40	19	14	13	13	14	E S 15	E S 16	E S 15
21	E S 15	13	14	13	E S 15	14	15	15	21	25	28	32	26	26	25	26	15	14	15	13	E S 15	E S 15	E S 16	E S 16
22	E S 15	13	14	13	E S 15	E S 15	14	14	15	26	25	26	25	29	26	16	15	14	15	13	E S 16	14	E S 15	E S 15
23	14	E S 15	13	14	14	15	14	14	16	26	26	28	27	26	19	16	15	15	15	13	E S 15	E S 15	E S 15	13
24	E S 15	13	E S 15	E S 15	13	E S 15	15	16	25	26	25	26	26	C	C	15	15	14	13	12	14	13	E S 15	14
25	E S 15	14	13	14	12	14	14	15	15	25	C	26	26	26	19	18	14	14	13	14	13	14	14	13
26	12	14	12	13	12	14	14	15	15	25	25	25	25	26	25	25	16	15	15	E S 15	E S 15	13	13	E S 15
27	E S 15	E S 15	E S 15	E S 15	13	15	14	14	16	25	25	26	26	40	15	15	13	14	15	E S 15	E S 15	E S 15	E S 15	E S 15
28	E S 15	E S 15	13	13	E S 15	14	14	16	19	26	25	26	26	26	26	19	15	16	15	E S 16	E S 15	E S 16	13	E S 15
29	E S 15	E S 15	E S 15	13	13	15	15	15	15	26	26	28	15	40	39	15	15	15	14	13	13	E S 15	13	E S 15
30	E S 15	E S 15	13	E S 15	E S 15	13	14	14	15	15	38	26	26	26	26	18	14	15	14	13	14	14	14	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	30	30	30	30	30	30	29	30	30	29	29	30	30	30	30	30	30	30	30	30
MED	E S 15	E S 15	13	14	12	14	14	15	15	25	25	26	26	26	25	20	15	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	15	15	16	25	26	27	27	26	26	25	16	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
LQ	E S 15	13	13	13	13	13	14	14	15	15	25	25	25	25	22	15	15	14	14	13	14	14	14	14

The Radio Research Laboratories, Japan

APR. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	285	270	285	300	270	275	325	330	340	330	310	295 JR	305	295	295	300	330	325	325	295 JR	295	285	275	295
2	275	280	295	325	325	290	335	350	330	315	300	305 JR	305 JR	300	305	310 JR	315	325	330	R	295 R	285 JR	280	270
3	275	270	280	335	330	295	325	330 JR	325	305	310 IA	295	310	300	305	315	325	325	330	325	315	275	285	280
4	280	295	285	295	315	315	340	345	325	315	300	285	310	295	300	315	325	340	330	330 JR	260	260	265	280
5	270 R	280	285	280	F	260 E	280 H	260	260	270	295	295	295 R	300	335	325	335	330 JR	325	300	300	275	280 JR	300
6	280	285	275	280	290	295	310	315	315	315	290	295	295	305	295	300	295	310 JR	320 JR	325	300	265	270 JR	275
7	270	275	290	320	285	290	335	335	335	300	315	300	295	290	295	305	310	310 JR	325 JR	340	310	290	280	285
8	270 JR	290	300	295	300	290	320 JR	340 JR	330	320	295	295	300	310	300	300	315	310	320	315	310	280	290	285
9	270	290	300	290	270	280	345 JR	325	330	310	310	300	300	305	300	310	320	300	305 JR	315 JR	305	270	260	265
10	265	285	310	270	260	265	340 JR	345 JR	325	325	295	300	305	290	295	295	315	325	325 JR	310	295	270	275 IA	270 IA
11	290 UE	F	280 E	285 E	285	295	350 JR	340	320	305	300	300	305	300	310	315	300	315	330	345	320	265 E	265	275
12	285	275	280	280	280	275	330 JR	340	330	335	300	290	290	300	290	305	320	320	315 JR	330	300 JR	290	285 JR	285 R
13	290	275	285	280	260	280	335	340	340	340	305	300	295	290	300	300	305	325 JR	325	320	325 JR	265	270	270
14	275	270	280	300	320	315	R	340	305	300	295	300	300	295	300	300	305	310 JR	315 JR	310	285 JR	290	285 R	280
15	265	270	260	270	285	275	320	335	315	320	290	270	290	295	285	295	305	315	325	300 R	280	270 JR	265	265 JR
16	265	285	295	300	285	295	335	330 JR	295	315	295	295	285	290	290	305	305	305	315	315	R	270	270	265
17	270 R	290	285	280	275	285	335	320	290	290	300	290	300	300	305	300	300	310	320	320	300	265	275	285
18	290	285	295	315	295	295	345	335	315	305	300	300	290	300	295	305	305	300	305 JR	320	300	295	280 JR	275
19	280	290	305	275	260	275	340	340	330	295	300	285	280	290	305	300	305	305	300	300 JR	325	285 R	270 IR	270
20	275	280	290 IC	330	310	305	335	340	320	290	300	295 JR	285	290	290	305	300	295 JR	295 JR	300 JR	305 R	275 R	275 IR	290 JR
21	275 R	285 JR	300 R	310 JR	285 R	290	325	315	315	315	295	295 JR	305	295	295	295	310	300 JR	295 JR	310 IR	305	265 IR	265 IR	275 IR
22	260 R	290 R	290	320 R	255	250	275	305	250	260	265	265 JR	320	305	320	320	330	310	295 R	305	300	270	265	260
23	265	265	275	295	305	290	310	305	305	310	290	290	280 JR	305	320	315	320	325	325	315	290	265	275	275
24	260	280 JR	295	305	305	300	325	320	300	290	295	295	290	C	C	315	305	315	330	305	320 JS	290	285	275
25	280	285	290	290	275	295	325	315	325 JR	330	C	295	290	305	300	305	310	305	320	330	320	290	295 JS	290
26	285 S	300	300 JR	315	290	310	325	355	325	310	295	295	295 JR	295	300	310	315	315	305	305	310 R	310	290	275
27	275	280	310	315	310	305	315	330	330	305	310	295	300	300	300	300	305	310 JR	305	315 JR	320	290	280 JR	265
28	280 IR	295	300	300	300	300	335	300	290	310	305	310	305	320	305	300	305	310	305	300	R	R	280	270
29	250	265	270	280	280	315	315	300	330 JR	330 JR	315	330	320	320	320	320	330	325	320	310	285 R	285	280 R	280
30	275	280	305	295	280	290	315 JR	330	350 JR	330	295	300	300	300	315	310	295	310	325	320	280	270	275	280
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	29	30	29	30	30	30	29	30	30	29	29	30	30	30	30	29	28	29	30	30
MED	275	280	290	295	285	290	325	330	325	310	300	295	300	300	300	305	310	310	320	315	300	275	275	275
UQ	280	290	300	315	305	300	335	340	330	320	305	300	305	305	305	315	320	325	325	320	312	290	280	285
LQ	270	275	280	280	275	280	320	315	305	300	295	295	290	295	295	300	305	310	305 R	305	295	270	270	270

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L	L							
2								L	L	L	L	L	L	L	L		L							
3										A	A	L	A	A	L	L	L							
4								L	L	U L 390	L	L 380	L 360	L	L	L	L	L						
5								L	360	360	350	L 365	R 365	U L 355	L	L	L							
6									L	L 410	L	L		U L 390	L	L	L							
7									L	L	L	L	L			L								
8								L	L	L	L	L	L	U L 340	L	L	L							
9								L	L	L	L	L	L	L	L	L	L	L						
10										L	L	A	A	U L 370	L	L	L							
11										L	L	L	U L 365	L	U L 370	L	L	L						
12								L	L	L	L	L	L	L	L		L							
13								L	L	L	L	U L 375	L	L	U L 385	L	L							
14									L	L	L	R	L	L	A	A								
15								L		A		L	A	L	L	L	L	L						
16									L	L	L	L	L	L	L	L								
17								L		L	L	L	L 350	L	L	A	A	A	A					
18										L	L	L 390	L	L	L 350	L	L	L	A					
19										L	L	A	L	L	L	L								
20								L	L	L 420	L	L	L	L	L	L	L							
21								L	L	A	L	L	L	L	L	L	L	L						
22							L	L 340	A	335	335		L 355	L	L	L	L							
23								L	L	L	L	A	L	370	L		L							
24								L	L	L	L	L	L 345	C	C	L 345	L	L						
25								L	A	L 390	C	350	L 360	360	L 360	L	L	L						
26								L	L	L	L	L	L	L	L	L	L							
27								L	L	L	L 395	L 390	395	L	L 350	L	L	L						
28								L	L	L	L	L	L 370	L	L	L	L	L						
29								L	A	L	A	A	L	L	L 390	L	L	L						
30								L	L	L	L 410	L 410	L 410	370	380	L	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	1	6	4	7	10	7	7	1								
MED								L 340	360	L 390	L 372	L 380	L 362	U L 370	L 370	L 345								
UQ										L 410	L 402	390	370	370	L 382									
LQ										L 360	L 342	L 370	355	358	L 355									

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									250	250	290	300	290	285	285	260	250							
2								250	240	255	285	275	265	295	280		255							
3										245	I A 280	265	I A 300	275	260	260	255							
4								230	255	250	275	310	275	260	300	260	260	240						
5								450	425	450	360	350	325	315	260	260	255							
6									260	270	290	310		280	290	260	260							
7									250	260	265	280	295			285								
8								250	250	250	270	290	295	280	295	280	275							
9								250	250	255	285	270	295	300	295	290	260	270						
10										270	250	305	A 310	280	280	275	260							
11										260	290	290	275	285	270	260	260	255						
12								245	245	250	250	275	290	295	290		270							
13								250	250	240	260	305	295	300	300	290	270							
14									250	290	285	280	290	295	290	290								
15								250		265		350	A 330	285	295	260	260	255						
16									260	270	290	285	290	270	300	290								
17								250		290	285	290	295	285	280	A 280	A	A	275					
18										260	290	285	285	280	305	280	260	250	250					
19										270	290	265	310	295	300	290								
20								240	240	250	280	295	305	295	290	270	255							
21								250	250	290	260	290	290	290	290	300	260	250						
22							340	305	305	410	395		290	320	290	260	250							
23								270	290	275	285	290	310	290	275		265							
24								260	280	260	275	290	305	C	C	270	260	250						
25								260	255	250	I C 270	305	300	285	285	285	260	260						
26								230	255	285	285	300	300	300	290	280	270							
27								250	250	285	280	300	290	300	290	280	250	280						
28								250	280	290	285	290	290	275	270	270	285	260						
29								250	280	275	I A 280	285	295	290	285	285	260	250						
30								250	240	260	270	290	280	270	275	305	290	270	240					
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	20	23	30	29	29	29	28	28	27	25	12	3					
MED							340	250	250	262	285	290	295	288	290	280	260	255	250					
UQ								255	270	285	290	300	300	295	295	288	265	265	262					
LQ								250	250	250	270	285	290	280	280	260	255	250	245					

The Radio Research Laboratories, Japan

APR. 1971 | H'F2 (KM)

IONOSPHERIC DATA

APR. 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

Hour / Day	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	290	295	240	210	260	245	240	240	240	240	250	240	240	240	240	240	240	245	215	210	250	280	250
2	300	300	295	240	210	260	230	240	210	210	205	230	230	220	255	280	240	245	235	230	245	295	260	295
3	315	350	300	245	245	250	240	245	250	I 250 A	I 230 A	220	A	A	245	210 H	210	245	230	220	220	300 A	275	280
4	285	300 A	275	245	220	220	220	225	220	220	205	200	220	230	220	230	230	230	230	230	A	310	300	300
5	310	290	290	285	320	355	255 H	255	240	240	240	210	250	240	240	215	240	240	245	245	240	300	315	295
6	295	295	290	270	250	220	230	245	220	200	210	265	280	240	215	230	240	250	240	225	210	270	300	300
7	300	300	260	240	205	260	240	240	220	215	240	200	240	305	300	250	260	240	240	240	210	250	290	290
8	290	260	270	250	250	290	240	230	240	215	200	200	205	240	210	230	240	240	245	245	215	250	265	265
9	300	290	250	230	290	295	240	240	220	240	200	200	245	205	230	260	250	250	265	260	260	260	290	310
10	315	290	250	250	325	340	250	230	240	225	210	I 220 A	I 240 A	230	225	205	230	245	230	220	220	290 A	I 300 A	I 320 A
11	290	310	270	270	260	270	220	230	230	I 245 A	240 A	I 255 A	220	210	225	210	230	245	230	200	210	350	310	310
12	275	290	270	260	275	275	220	240	225	240	210	200	200	220	210	275	250	250	240	240	245	250	280	290
13	265	290	280	240	295	270	245	240	245	210	200	200	240	210	220	250	250	260	250	255	235	240	300	310
14	320	310	270	245	230	250	230	240	240	240	250	I 245 A	240	220	I 290 A	I 280 A	260	260	245	240	235	260	290	295
15	300	310	300	250	250	290	240	240	250	I 260 A	300	280 A	I 255 A	200	250	240	250	240	240	240	300	I 315 A	345	360
16	330	290	250	300	270	250	240	240	230	210	240	220	230	205	240	240	250	265	250	235	250	310	340	300
17	300	265	300	295	300	270	240	240	250	A	A	A	230	210	250 A	A	A	A	A	270 A	220	290	300	300
18	290	280	255	225	220	260	230	225	220	I 240 A	250 A	200	215	210	220	250 A	I 245 A	250 A	I 245 A	240	220	255	300 A	290
19	290	275	250	275	340	270	230	220	240	210	215	I 215 A	220	205	240	240	260	255	250	240	210	240	300	300
20	300	290	I 265 C	245	245	250	245	230	200	205	240	205	250	205	240	250	240	245	255	240	240	240	290	290
21	295	285	250	240	230	260	240	240	235	I 230 A	210	210	200	220	220	210	240	240	250	245	215	290	300	305
22	305	280	240	215	300	300	290	250	I 270 A	250 A	240	395	240	240	210	240	210	260	255	260	250	250	300	290
23	300	300	295	260	215	250	250	240	220	220	200	I 220 A	210	240	210	260	240	255	250	240	240	290	305	290
24	300	270	250	250	250	250	240	225	235	230	205	225	215	C	C	220	230	225	245	220	230	225	260	290
25	300	285	260	230	250	260	245	230	I 220 A	205	I 205 B	195	205	230	240	225	220	245	245	225	210	220	255	280
26	275	255	245	210	220	255	220	230	210	205	205	200	205	200	200	260	240	250	250	250	245	210	260	295
27	300	285	250	235	230	250	250	230	240	210	200	215	215	200	240	200	240	250	250	250	240	240	260	290
28	290	265	250	260	250	250	240	230	230	220	210	210	200	210	205	200	240	245	240	240	250	265	290	310
29	290	315	290	260	265	250	240	240	I 255 A	250 A	I 245 A	I 245 A	240	220	205	240	220	240	250	260	275	300	295	285
30	290	260	250	240	260	250	240	240	220	205	205	200	205	260	245	260	A	A	A	240 A	260	290 A	290	300
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	29	29	28	29	29	28	28	28	30	29	30	30	30
MED	300	290	268	245	250	260	240	240	232	220	210	215	230	220	230	240	240	245	245	240	235	262	292	295
UQ	300	300	290	260	275	270	245	240	240	240	240	230	240	240	240	250	250	250	250	245	245	295	300	300
LQ	290	280	250	240	230	250	230	230	220	210	205	200	210	208	215	220	230	240	240	230	215	250	280	290

The Radio Research Laboratories, Japan

APR. 1971 | H'F (KM)

IONOSPHERIC DATA

APR. 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	S	100	100	100	B	G	G	140	140	140	125	130	110	110	110	110	105	B	S	S	S	S	S
2	S	105	100	100	100	100	G	G	G	140	120	120	110	G	120	110	120	120	105	105	105	100	100	100
3	S	100	100	100	100	S	G	140	130	125	110	110	110	105	110	G	145	100	100	125	110	110	110	B
4	S	100	110	100	B	B	G	120	120	110	100	100	100	105	105	105	100	125	110	105	105	110	110	S
5	B	B	B	B	B	B	155	150	135	130	120	115	110	110	110	G	G	135	110	105	105	100	105	100
6	100	S	S	100	100	100	140	140	G	120	G	110	110	110	G	G	G	100	100	100	100	100	100	100
7	100	100	S	B	S	B	G	G	110	140	120	110	105	100	100	100	100	100	100	100	100	100	100	100
8	100	100	B	B	S	S	G	140	G	G	110	110	110	G	G	G	G	140	100	100	100	100	100	S
9	S	S	100	B	S	S	G	G	G	130	115	110	105	105	100	G	G	140	120	105	100	105	100	S
10	S	S	B	S	S	B	140	140	120	125	120	110	110	110	100	100	110	100	100	100	100	105	105	105
11	105	100	105	125	100	B	130	125	120	110	110	110	110	110	110	G	105	100	145	S	100	105	100	105
12	105	105	105	110	B	B	150	125	125	120	120	120	G	110	100	100	100	100	100	100	100	S	S	S
13	S	S	S	B	B	B	150	130	115	120	105	G	G	G	110	G	110	130	110	105	110	110	110	S
14	100	100	S	S	S	B	150	140	140	130	120	120	120	110	110	110	110	105	100	100	100	100	100	100
15	100	S	S	B	S	140	140	140	120	115	110	110	110	100	120	G	110	140	120	100	105	105	110	105
16	100	100	100	100	100	100	G	160	140	135	130	130	115	115	110	110	105	105	100	100	100	100	100	100
17	100	110	100	100	100	S	150	140	110	110	110	105	105	105	150	125	120	120	120	115	115	100	100	100
18	100	S	S	S	100	B	170	150	125	115	110	110	110	105	110	170	140	130	115	110	110	105	105	105
19	S	105	105	100	100	110	155	130	125	120	110	105	B	100	100	140	110	110	105	105	S	100	100	100
20	100	S	C	S	S	S	G	G	G	G	150	B	B	135	140	B	G	100	100	115	100	100	S	S
21	S	B	B	B	S	140	155	145	140	120	130	G	G	150	150	G	G	G	120	100	100	S	S	S
22	S	B	B	130	S	140	140	140	120	110	110	135	140	140	G	G	G	G	140	100	110	115	100	105
23	100	100	100	B	B	B	165	140	140	140	120	110	G	G	G	130	120	110	110	100	100	S	100	100
24	100	100	100	S	B	S	140	115	140	125	125	125	G	C	C	110	115	110	G	105	B	B	S	B
25	100	105	105	100	100	100	125	115	110	105	C	100	105	100	G	G	100	115	110	B	100	100	B	B
26	B	B	B	B	B	G	150	145	G	G	100	100	G	G	G	110	110	110	100	100	100	100	100	100
27	100	S	S	S	B	B	140	140	G	110	G	G	G	B	G	G	G	G	140	105	100	100	S	S
28	S	100	B	B	S	G	150	G	155	G	G	100	G	G	G	G	E G 180	G	120	115	100	S	100	100
29	S	100	S	100	B	B	140	160	130	130	120	100	105	B	B	G	G	140	110	105	105	100	100	S
30	S	100	110	S	S	150	140	140	130	125	170	G	G	180	180	165	130	125	115	105	105	105	105	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	17	14	13	10	9	21	24	23	26	26	25	19	21	20	15	21	26	28	27	27	24	23	16
MED	100	100	100	100	100	110	150	140	125	122	120	110	110	110	110	110	110	110	110	105	100	100	100	100
UQ	100	105	105	100	100	140	150	142	140	130	120	120	110	110	120	128	120	130	120	105	105	105	105	105
LQ	100	100	100	100	100	100	140	130	120	115	110	105	105	105	102	108	105	100	100	100	100	100	100	100

The Radio Research Laboratories, Japan

APR. 1971 | H'ES (KM)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2		F2	F1	F1				H1	H1	H1	H1	H1	C1	C1	C1	C2	L1						
2		F2	F2	F2	F2	F1				H1	H1	H1	C1		H2	C2	H1	H1	L2	F3	F3	F3	F1	F2
3		F4	F3	F4	F3			H1	H1	H2	C2	C1	C3	L2	L1		H1	L2	L4	FF24	FF22	F3	F1	
4		F4	F1	F1				HL21	HL12	C2	L1	L1	L1	L1	L1	L2	L2	HL12	C3	F3	F3	F4	F2	
5							H2	H1	H1	H1	H1	C1	C1	C1	C1			H1	L2	F3	F4	F2	F3	F2
6	F1			F1	F2	F1	HL11	HL11		H1		C1	C2	C1				L2	L3	F2	F1	F1	F1	F1
7	F1	F1							C1	H1	H1	C1	L2	L2	L2	L2	L3	L2	L1	F2	F1	F2	F1	F1
8	F3	F1						H1			C1	C1	C1					HL11	L1	F2	F1	F1	F2	
9			F1							H1	C1	C1	C2	L1	L2			H1	HL21	FF21	F3	F3	F2	
10							H1	H1	H1	H1	C1	C2	C2	C1	L1	L1	C1	L1	L2	F1	F1	F4	F4	F4
11	F5	F3	F2	F1	F1		H1	H2	C2	C2	C2	C2	C1	L1	L1		L2	L1	H1		F1	F3	F3	F2
12	F3	F2	F1			H1	H2	H1	H1	H1	H1	H1		L1	L1	L3	L1	L2	L3	F3	F3			
13							H1	H1	C2	H1	L1				C1		C1	H2	L3	F3	F3	F1	F1	
14	F1	F2					HL11	HL11	H1	H1	H1	H1	H1	C1	C2	C2	C2	L2	L3	F3	F1	F3	F3	F2
15	F1					H1	H1	H1	H1	C2	C2	C1	C2	L1	H2		C2	H1	H1	F1	F3	F3	F1	F3
16	F3	F4	F3	F3	F2	F1		H1	H1	H1	H1	H1	C1	C1	C1	C1	L2	L2	L3	F3	F3	F2	F2	F2
17	F1	F1	F3	F2	F4		H1	H1	C1	C2	C2	L2	L2	L1	HL11	HL32	HL22	HL33	HL23	F5	FF23	F3	F3	F2
18	F1				F1		H1	H1	H2	C2	C2	C1	L1	L1	CL11	HL11	HL21	H2	C4	F5	F2	F3	F3	F2
19		F1	F2	F4	F2	F1	H1	H1	H1	C1	C1	C2		L1	L1	H1	C2	C3	L3	F2		F2	F1	F2
20	F3										H1			H1	H1			L1	L1	FF21	F1	F1		
21						F1	H1	H1	H1	H1	H1			H1	H1				H2	F2	F1			
22				F1		H1	H1	H1	H1	C1	C1	H1	H1	H1					H2	F3	F2	FF21	F3	F2
23	F7	F2	F1				H1	H1	H1	H1	H1	C1				H1	H1	C2	CL21	F1	F1		F2	F3
24	F1	F2	F1				H1	H1	H1	H1	H1	H1				C1	C1	L1		F1				
25	F1	F1	F4	F4	F4	L1	H1	C2	C2	L1		L1	L1	L1			L1	CL21	L2		F1	F1		
26							H2	H1			L1	L1				C1	C1	C3	L2	F3	F2	F2	C3	F3
27	F1						H1	H1		C1									H1	F3	F1	F1		
28		F1					H1		H1			L1					H1		HL11	FF11	F1		F3	F3
29		F2		F1			H1	H1	H1	H2	H2	L2	C1					H1	L3	F3	F2	F3	F3	
30		F1	F1			H1	H1	H1	H1	H1	H1			H1	H1	H1	HL22	C3	C4	F5	F4	F4	F1	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

APR. 1971 | TYPES OF ES

IONOSPHERIC DATA

APR. 1971 | HPF2 (KM) | 135° E Mean Time (G. M. T. + 9 h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	385	390	390	310	390	390	300	300	295	295	350	345	325	350	350	340	290	300	300	310	310	360	390	350
2	400	400	360	300	280	355	290	265	280	310	350	340	340	350	340	330	310	300	290	R	360	380	355	390
3	400	400	390	280	290	330	280	290	300	300	310	330	320	310	310	300	285	290	280	280	290	370	350	350
4	355	340	350	320	300	290	255	250	280	290	310	350	300	315	325	300	290	265	280	280	390	395	390	380
5	390	370	360	360	F	420	390	G	G	G	380	380	360	350	290	300	290	285	300	340	360	400	390	390
6	390	400	400	360	350	350	290	300	300	320	370	355	350	340	350	325	350	330	310	300	340	400	400	400
7	400	400	360	300	350	360	260	270	270	340	330	340	360	380	340	350	350	340	300	280	335	350	390	390
8	380	360	360	350	350	380	300	260	290	305	350	350	350	330	350	335	320	305	300	300	300	380	370	380
9	400	360	350	360	400	390	260	300	290	305	340	350	360	350	350	320	300	350	350	300	340	400	400	400
10	440	360	300	400	400	420	265	255	300	290	310	330	315	330	320	320	300	290	290	290	310	390	370	380
11	350	F	345	355	350	325	250	260	290	300	330	330	305	315	305	305	315	300	270	250	280	410	405	385
12	340	380	350	355	370	360	260	270	270	290	340	350	370	350	360	340	320	300	300	290	350	370	380	380
13	370	390	380	390	400	350	290	280	260	270	310	355	350	360	350	350	350	300	300	300	300	400	400	420
14	410	400	390	350	300	300	R	290	340	350	350	350	340	360	350	350	340	315	300	330	350	370	360	390
15	410	420	400	390	380	390	300	270	300	300	360	400	350	380	355	350	310	305	300	350	390	400	440	430
16	400	360	360	350	360	360	295	290	350	310	355	355	360	360	355	330	340	340	315	300	R	400	400	400
17	400	370	360	390	400	380	290	300	370	345	310	330	330	315	315	320	A	310	290	290	310	390	375	355
18	350	355	320	300	305	320	250	250	300	310	320	315	330	330	340	310	305	300	310	295	310	340	355	380
19	375	350	310	370	410	380	260	260	260	360	340	355	400	370	350	360	350	355	355	350	300	380	400	400
20	400	390	370	295	300	310	270	270	290	360	350	360	360	350	350	340	350	350	350	350	305	400	400	370
21	400	370	360	300	360	350	300	300	310	310	350	350	340	355	350	350	320	340	345	310	340	400	400	400
22	400	370	350	300	420	450	390	340	450	450	400	420	300	350	300	300	290	350	350	350	360	400	400	400
23	400	400	400	360	300	350	310	300	310	310	360	350	385	340	300	310	300	300	300	300	350	400	400	390
24	400	390	350	340	340	340	300	300	350	320	325	325	345	C	C	300	310	295	270	305	300	340	360	370
25	380	370	345	310	350	315	290	300	290	270	C	340	340	315	320	310	300	305	295	280	295	320	345	370
26	355	330	310	275	320	305	260	250	270	305	350	350	355	350	350	310	310	305	350	315	310	300	370	400
27	400	360	330	300	300	350	300	290	290	340	340	350	350	350	350	350	350	300	340	300	300	350	385	400
28	395	355	360	360	360	350	280	300	350	330	300	310	340	300	340	350	340	310	340	310	R	R	390	400
29	400	400	395	390	390	315	300	300	290	290	300	290	320	305	300	300	290	300	300	330	390	400	400	390
30	390	355	350	350	380	350	300	290	280	270	300	290	305	350	320	330	315	310	260	280	340	370	380	380
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	29	30	29	29	29	29	29	30	30	29	29	30	29	30	30	29	28	29	30	30
MED	400	370	360	350	350	350	290	290	290	310	340	350	342	350	340	328	310	305	300	300	322	390	390	390
UQ	400	400	380	360	390	380	300	300	310	330	350	355	360	350	350	350	340	330	340	315	350	400	400	400
LQ	380	360	350	300	305	325	260	265	280	295	310	330	325	330	320	310	300	300	290	290	300	370	370	380

IONOSPHERIC DATA

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

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

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	95	100	100	90	90	100	90	90	85	95	90	Y105R	85	100	90	110	110	100	100	J90R	100	90	90	100
2	90	90	120	90	100	105	90	85	100	100	90	J90R	J90R	100	100	Y110R	90	100	110	R	100R	100R	95	100
3	100	90	90	100	90	90	100	J90R	80	100	I90A	90	I75A	95	80	60	60	60	45	65	80	85	75	95
4	70	60	90	80	60	65	55	55	80	70	90	70	70	100	70	60	60	50	75	J50R	105	105	80	70
5	70R	80	85	90	F	F80	H155	G	G	G	100	100	Y100R	90	90	110	90	J95R	90	100	100	90	Y100R	90
6	100	90	90	110	110	110	90	90	100	100	110	105	110	100	90	125	100	Y110R	J90R	80	100	90	J90R	90
7	90	90	100	100	110	100	120	90	110	90	90	100	80	100	100	90	90	Y100R	Y140R	100	105	110	90	100
8	J100R	90	100	90	110	100	J90R	J110R	110	95	110	110	110	110	100	105	100	95	100	100	100	90	110	100
9	90	100	110	100	90	100	Y100R	90	100	95	100	90	100	110	110	90	100	100	J90R	Y100R	100	90	100R	90
10	100	100	100	90	90	80	J105R	J85R	90	60	95	65	70	90	95	80	70	60	J65R	65	90	105	I80A	I70A
11	J90F	F	100F	70F	100	80	J50R	60	60	105	75	85	90	85	70	70	85	60	55	65	85	J90F	95	70
12	100	70	65	95	85	95	J60R	50	80	100	100	90	110	110	100	100	100	100	J90R	100	Y100R	110	I110R	110
13	110	100	110	100	90	110	90	100	100	110	100	95	100	100	100	90	90	J90R	90	90	J90R	90	90	100
14	110	90	100	110	120	100	R	90	100	110	110	90	100	90	90	90	100	J95R	Y100R	110	J90R	110	120R	100
15	110	100	90	90	100	100	90	110	90	90	100	90	110	100	105	110	110	95	90	110R	90	I95R	100	J90R
16	100	100	100	110	100	100	95	J90R	90	110	105	105	120	100	105	90	120	100	105	100	R	100	100	100
17	90R	110	100	100	90	110	100	100	120	95	90	85	65	80	80	80	A	65	65	80	90	85	80	85
18	70	90	85	55	95	80	50	90	70	90	80	105	115	85	75	85	90	70	J90R	60	95	65	J95R	75
19	75	65	85	85	90	70	60	60	60	100	100	105	90	110	100	100	100	95	85	J90R	90	100R	I90R	90
20	90	100	I C90	95	100	100	80	75	80	100	90	Y100R	100	110	100	100	90	Y110R	J90R	J90R	95R	90R	I90R	Y110R
21	90R	J90R	100R	Y100R	100R	100	100	100	90	100	100	Y110R	100	105	100	110	100	Y110R	Y105R	I110R	90	I90R	I90R	I90R
22	90R	110R	90	90R	100	140	100	100	140	100	90	Y100R	100	90	90	90	100	90	110R	90	100	90	90	90
23	90	90	90	100	100	100	100	100	100	90	100	100	J95R	120	100	90	100	100	100	100	110	100	90	100
24	90	Y100R	110	110	110	110	80	90	90	85	115	90	100	C	C	80	90	60	65	95	J60S	105	85	100
25	75	85	75	95	95	85	60	75	J60R	75	C	110	105	85	95	90	75	110	65	75	65	90	J60S	90
26	70S	70	J90R	85	90	75	100	50	60	95	100	100	Y105R	100	90	90	90	95	90	85	90R	100	110	90
27	90	100	110	100	100	110	100	100	100	100	100	110	90	110	90	90	90	Y100R	100	Y100R	100	110	I100R	90
28	I95R	85	100	100	100	110	100	100	110	110	100	110	110	100	100	90	100	90	100	100	R	R	100	90
29	90	90	95	100	90	105	90	100	Y100R	Y100R	90	100	90	95	100	100	100	90	90R	110	100R	90	90R	100
30	100	105	90	110	100	110	Y100R	100	Y100R	80	110	70	115	100	125	90	60	70	60	90	105	90	90	70
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	29	30	29	29	29	29	29	30	30	29	29	30	29	30	30	29	28	29	30	30
MED	90	90	98	98	100	100	90	90	90	100	100	100	100	100	100	90	90	95	90	90	98	90	90	90
UQ	100	100	100	100	100	110	100	100	100	100	100	105	110	105	100	100	100	100	100	100	100	100	100	100
LQ	90	90	90	90	90	85	80	85	80	90	90	90	90	90	90	90	90	70	75	80	90	90	90	90

The Radio Research Laboratories, Japan

APR. 1971 | YPF2 (KM)

IONOSPHERIC DATA

APR. 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	66	60S	60S	59	52	47	50S	84	89S	74	87	108	116	120	126	120	111	108	99	93	76	61	51	I52S
2	54S	52S	53S	56	36S	32	43	64	82	79	90	106	117	122	120	116	114	110S	100	C	C	C	C	C
3	C	C	C	C	C	C	C	70	82	81	90	102	117	132	136	126	113	103	107	107	78	55	57	61
4	58	62	51	49S	47	39	47	68	J93S	83	86	104	125	132	122	131	130	I12S	92	86	I67S	54	55	J60S
5	I59S	U63S	64S	J54S	52	54S	58	64S	64	87	93C	J102C	I14C	130C	J123C	112	92	83	78	73	59	56	57	57S
6	58	56	56	55	53S	39	45	71	I88S	91	94	108	130	141	139	137	129	129	J127C	129	86	56	62	63
7	57	57	63S	58	45	40	53S	72	74	77	98	107	121C	137	150	I53S	140	129	118	S	S	J63S	59	59S
8	60	59	59	56	U51S	48	60S	85	85	85	99	117S	143	155	J164C	J161C	151S	144	138	J128C	U107S	85	80	U80S
9	70	67	I68S	56	47	43	I65S	82S	79	81	102	I14S	126	125	126	134	131	119S	I18C	133	112S	70S	80S	78S
10	71	78S	77	59	54	47	62S	78	69	81	106	111	120	132	131	J123S	132	137	134	U114S	62S	58S	58	57
11	58	I57S	I55S	F	F	50S	61S	66	76	97	104	115C	136	157S	162	156	149	156S	150	131C	92	69	65S	67S
12	71	59	59	56	49	48	63	82	98	104	114S	117	139	162	170	172	168C	J162C	143	I21S	I95C	82	76	79
13	80	72S	74S	66	59	58	I74S	I99S	93S	86S	92S	U110C	128	143	150	143	135	135S	132	128C	87	71S	71	70
14	68	65	68	68	59	45	58	79	86	U94S	108S	119	132	134	J126C	132	137S	133	J124C	I17C	I04S	U91S	79	U74S
15	J74S	64	67	71	62	J52S	69	J98S	78	82	91	I01C	134	114	U117C	127	U118C	117	I16C	I01C	U82C	J68S	68	72
16	J71S	J74S	71S	64	52S	50S	60	76S	U87C	98C	98C	117C	129	128	134	147	147	144	147C	128C	92C	83C	76C	75
17	77C	78C	72C	61	53C	48	68	82C	86	I01C	108	124	140	145	143C	147C	143C	138C	139C	127C	87C	75	81C	84
18	89	86S	86	86S	62	55	71	77	80	89C	96C	108S	122C	132C	134C	134C	133C	128C	124C	111C	I98C	82C	73C	72C
19	74C	80C	83C	65C	63C	66C	85C	84C	78C	86	108S	123	125	134	145	151	154S	145	U147S	J149S	U104S	89	87	86S
20	U86S	88S	88	85	J83S	61S	69	J90S	80	92	104	110	118	127	129S	128	125	J120S	U120S	J122S	U95S	84	U84S	I90S
21	I93S	I98S	I96S	J85S	67	U62S	71S	U93S	87S	89	93	107S	103	109R	115	117	J122S	120S	U119S	J120S	I04S	I97S	90	88S
22	J92S	I95S	I94S	U83S	J51S	J49S	U60S	U91S	80	82	101S	108S	135	111	U88R	94S	83	83	J94S	107S	U102S	U73S	73S	J77S
23	73S	U70S	65	67	49S	44	57	71	81	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	98	104	120	142	151	150	144	130	120S	I13S	97S	88	97S	I95S
25	86S	J84S	S	S	48	46	61	93	97S	99	101	115	136	152	166	168	173	164R	153S	151	146	I18S	S	S
26	S	S	S	S	75	65	78	88	78	86S	90	105	U119S	126	124	128	129	J123S	I22S	U119S	S	U88S	J85S	I92S
27	87S	88	86S	U83S	56S	J51S	J65S	80S	90S	U100S	95	112	125	139	136	U138S	135	126	J123S	S	S	S	U75S	U80S
28	82S	J83S	90	79	J66S	55	70S	70	85	J97S	106	U112S	120	117	112S	109	112	U121S	107	U108S	U87S	78	J75S	72S
29	I72S	69	70S	62	59	J53S	56	67	70	71	83	95	107	117S	103	U103S	101	J101S	U87S	J77S	69	J71S	J74S	79S
30	72S	69	68	63	58	58	J72S	95S	89	77	70	79	96	106	116	127	137	143	J123S	92S	J86S	J84S	J85S	83S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	26	25	27	28	28	29	29	28	29	29	29	29	29	29	29	29	29	26	25	27	27	27
MED	72	69S	68	63	53	50	62	80	82	86	98	108	125	132	131	132	132	128	122	118	92S	75	75	75S
UQ	81S	82S	83S	71	60	55S	70	88S	88	96	104	115	132	141	145	147	143	138	134	128	102S	84	80	82S
LQ	63	61	60	56	50	46	58	71	78	81	91	105	118	122	122	123	118	117S	107	101	82	66	64	65

APR. 1971 | FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

APR. 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											520	L	520	510	540	A	A	A						
2									L	C	500	500	510	500	500	U 480	U 450	L						
3										L	500	550	A	L	500	L	L	L						
4									L	U 460	L	U 530	490	L	500	500	460	A						
5										L	L	L	L 540	L	L	L 480	L	L						
6									L	480	L	520	L	520	510	470	L	L						
7									L	L	L	450	L	L	U 540	L	L	A						
8									L	L	L	520	L	L	L	L	L	L						
9									L	L 460	520	A	A	500	540	500	L	L	L					
10									L	L	A	L	L 540	550	L	L	L 500	L						
11										L	L	L	L 560	A	I A 530	A	L	A						
12									L	L	L	L	L	L	L 550	L	L	L						
13									L	L	L	U 520	L 580	U L 570	L	L	L	A						
14									L	L	U 530	L	L 560	540	L	L 560	L	A						
15									L	L	L	A	L	L	L	L	L	A	A					
16									L	L	L	L	L	A	L	L 540	L	L						
17									L	C	L	L	A	A	540	530	L	L						
18									L	L	500	500	L	L	570	500	L	L						
19										L	L	U 550	U L 560	L	L	L	L	A						
20										460	500	U 540	550	520	L	L	L	L	L					
21									L	L	U 510	L	510	U 550	L	L	L	L						
22										A	L	L	L	L	L	L	L	L						
23									L	C	C	C	C	C	C	C	C	C						
24								C	C	C	500	L	H 560	530	500	500	470	L						
25									390	480	500	530	540	H 530	530	510	490	L	L					
26										A	520	L	L	530	510	510	L	L						
27									L	L	L	L	480	540	L	480	L	L						
28									L	L	520	510	510	490	480	L	490	L						
29								L	L	L	L	510	U 490	U 490	U 490	470	L	L						
30								L	L	460	450	510	520	500	500	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	6	13	14	17	16	17	14	6							
MED									390	460	500	520	540	525	510	500	480							
UQ										480	520	530	560	540	540	510	490							
LQ										460	500	510	510	500	500	480	460							

The Radio Research Laboratories, Japan

APR. 1971 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S	200	280	320	335	350	A	A	A	320	A	A	A					
2							S	A	I A 265	I C 310	330	340	350	350	350	335	300	H 260	A					
3							C	200	280	320	330	345	350	A	A	A	300	I A 255	200					
4							S	220	280	310	I A 325	350	370	R 360	345	340	310	280	A					
5							S	220	280	320	335	340	A	A	A	A	A	270	190					
6							S	230	285	320	A	A	A	R	360	340	I A 300	H 250	A					
7							S	205	280	320	335	340	345	A	C	340	320	280	A					
8							S	230	I A 300	330	I A 355	C 365	C 370	375	350	330	310	I A 280	A					
9							S	230	290	320	340	355	U C 360	I A 360	I A 345	I A 330	310	I A 260	200					
10							S	220	290	330	340	350	I A 355	360	I R 350	335	I A 300	260	210					
11							S	250	300	330	350	360	A	A	A	A	A	A	A					
12							S	H 230	310	330	360	A	A	360	350	I A 340	320	H 290	C					
13							S	250	300	325	335	I A 355	370	360	A	A	A	295	210					
14							S	220	300	A	A	A	A	380	360	325	290	A	A					
15							S	250	300	330	340	I A 360	A	A	360	C 350	330	290	C 210					
16							S	220	300	330	A	A	A	A	A	A	A	A	A					
17							S	250	305	I C 330	350	A	A	A	H 375	355	I A 325	290	210					
18							S	230	I A 285	320	A	A	I R 355	365	355	340	325	290	220					
19							S	250	300	330	350	H 370	370	370	360	H 350	330	290	200					
20							S	250	300	H 335	360	R 370	380	380	370	365	330	290	220					
21							175	265	310	330	365	A	360	R 380	R	A	A	270	H 230					
22							S	245	295	340	365	370	370	375	350	335	315	270	190					
23							180	250	295	C	C	C	C	C	C	C	C	C	C					
24							C	C	C	C	350	H 355	360	I A 355	I A 345	335	315	270	A					
25							S	I A 250	I A 300	I A 330	I A 350	365	I A 370	370	370	350	320	270	210					
26							160	260	300	H 325	330	I A 350	370	360	355	A	A	280	A					
27							170	250	295	345	I A 355	360	365	370	360	340	320	280	200					
28							S	250	285	315	345	355	370	365	350	335	310	280	210					
29							S	245	290	320	335	350	R 355	R 360	350	335	310	270	215					
30							S	250	290	320	340	I A 360	365	370	360	340	305	270	205					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	28	29	27	25	22	20	20	21	22	22	25	17					
MED							172	245	295	325	340	355	365	365	355	340	312	280	210					
UQ							178	250	300	330	350	360	370	372	360	340	320	290	210					
LQ							165	220	285	320	335	350	355	360	350	335	305	270	200					

The Radio Research Laboratories, Japan

APR. 1971 | FOE (0.01 MHZ)

IONOSPHERIC DATA

APR. 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_{15}^{S}	E_{14}^{S}	E_{13}^{S}	21	J_{27}^{X}	17	E_{14}^{S}	26	31	36	39	42	41	42	40	47	J_{44}^{X}	J_{55}^{X}	23	J_{26}^{X}	J_{29}^{X}	21	E_{15}^{S}	J_{36}^{X}
2	17	25	J_{37}^{X}	J_{21}^{X}	J_{41}^{X}	J_{32}^{X}	J_{36}^{X}	J_{45}^{X}	J_{34}^{X}	E_{44}^{C}	37	42	46	39	45	39	33	17^{G}	21	C	C	C	C	C
3	C	C	C	C	C	C	C	G	31	35	43	49	J_{56}^{X}	J_{53}^{X}	41	J_{48}^{X}	34	30	17^{G}	J_{21}^{X}	J_{20}^{X}	21	J_{40}^{X}	E_{15}^{S}
4	E_{14}^{S}	E_{13}^{S}	E_{12}^{B}	E_{15}^{B}	J_{25}^{X}	J_{22}^{X}	E_{14}^{S}	25	30	35	37	33^{G}	31^{G}	34^{G}	34^{G}	26^{G}	25^{G}	109^{M}	J_{33}^{X}	J_{48}^{X}	J_{42}^{X}	30	J_{50}^{X}	J_{36}^{X}
5	J_{65}^{X}	E_{15}^{S}	E_{12}^{B}	E	E_{11}^{B}	E_{15}^{S}	E_{13}^{S}	27	33	J_{67}^{X}	41	45	40	J_{38}^{X}	39	37	J_{50}^{X}	G	25	J_{49}^{X}	J_{29}^{X}	J_{29}^{X}	J_{48}^{X}	J_{32}^{X}
6	E_{15}^{S}	21	E_{14}^{S}	E_{16}^{B}	J_{20}^{X}	J_{21}^{X}	E_{15}^{S}	G	G	G	34	41	45	35^{G}	55	27^{G}	34	22^{G}	J_{23}^{X}	J_{25}^{X}	J_{26}^{X}	22	J_{20}^{X}	E_{15}^{S}
7	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E	E_{14}^{S}	E_{13}^{S}	26	28^{G}	37	41	44	J_{45}^{X}	37	34^{G}	37	44	J_{61}^{X}	J_{84}^{X}	J_{63}^{X}	J_{52}^{X}	22	23	J_{22}^{X}
8	22	E_{15}^{S}	17	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	21	26	J_{31}^{X}	35	J_{38}^{X}	35^{G}	36^{G}	G	33^{G}	31^{G}	37	J_{38}^{X}	31	J_{30}^{X}	J_{32}^{X}	E_{15}^{S}	E_{15}^{S}	24
9	E_{13}^{S}	E_{15}^{S}	J_{29}^{X}	21	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	29	34	41	43	J_{96}^{X}	79	J_{54}^{X}	40	37	31^{G}	32	28	J_{40}^{X}	J_{49}^{X}	J_{85}^{X}	J_{61}^{X}	22
10	21	25	E_{15}^{S}	E	E_{13}^{S}	E_{14}^{S}	17	26	34	42	J_{54}^{X}	56	44	40	34^{G}	39	35	28	26	22	23	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}
11	J_{56}^{X}	J_{53}^{X}	J_{29}^{X}	J_{35}^{X}	E_{15}^{S}	E_{15}^{S}	J_{38}^{X}	29	37	34	50	48	47	J_{85}^{X}	J_{58}^{X}	63	J_{50}^{X}	J_{50}^{X}	J_{32}^{X}	J_{33}^{X}	J_{27}^{X}	21	E_{15}^{S}	E_{15}^{S}
12	E_{16}^{S}	J_{26}^{X}	J_{40}^{X}	17	J_{16}^{X}	J_{21}^{X}	J_{21}^{X}	26	34	G	G	39	37	32^{G}	30^{G}	J_{40}^{X}	J_{31}^{G}	17^{G}	27	J_{31}^{X}	22	E_{22}^{C}	J_{28}^{X}	J_{41}^{X}
13	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E_{13}^{B}	E_{14}^{B}	E_{15}^{S}	27	34	40	39	40	35^{G}	41	44	47	J_{61}^{X}	42	J_{36}^{X}	J_{62}^{X}	J_{32}^{X}	J_{21}^{X}	21	E_{15}^{S}
14	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}	E_{15}^{C}	E_{15}^{S}	E_{14}^{S}	J_{25}^{X}	33	38	40	46	45	40	39	42	J_{52}^{X}	J_{55}^{X}	J_{48}^{X}	J_{36}^{X}	21	21	19	E_{20}^{C}
15	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}	E_{13}^{S}	E_{12}^{B}	E_{15}^{S}	23	32	42	J_{53}^{X}	43	54	38	38	40	G	34	50	J_{47}^{X}	J_{61}^{X}	J_{52}^{X}	J_{39}^{X}	J_{42}^{X}	J_{50}^{X}
16	J_{32}^{X}	J_{32}^{X}	J_{21}^{X}	J_{42}^{X}	J_{28}^{X}	J_{29}^{X}	J_{42}^{X}	21^{G}	33	44	44	42	J_{45}^{X}	88	J_{54}^{X}	J_{44}^{X}	J_{50}^{X}	32	27	J_{26}^{X}	E_{13}^{S}	21	E_{15}^{S}	E_{15}^{S}
17	E_{15}^{S}	21	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}	22	27	32	38	C	45	48	J_{71}^{X}	67	41	43	34	33	J_{43}^{X}	J_{24}^{X}	20	20	J_{44}^{X}	J_{28}^{X}
18	25	J_{23}^{X}	E_{14}^{S}	E_{12}^{S}	E_{11}^{S}	E_{16}^{S}	E_{12}^{S}	20^{G}	32	37	40	39	45	49	52	45	39	35	33	J_{49}^{X}	J_{45}^{X}	J_{25}^{X}	J_{28}^{X}	J_{30}^{X}
19	J_{31}^{X}	E_{15}^{S}	E_{12}^{S}	E_{14}^{S}	E_{15}^{B}	E_{13}^{S}	20	35	39	41	45	46	46	45	47	39	41	J_{51}^{X}	J_{41}^{X}	J_{24}^{X}	E_{15}^{S}	E_{14}^{S}	22	J_{25}^{X}
20	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{B}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	J_{29}^{X}	G	37	38	G	47	48	J_{57}^{X}	J_{61}^{X}	G	J_{24}^{G}	J_{25}^{X}	21	22	J_{28}^{X}	J_{27}^{X}	J_{22}^{X}
21	E_{15}^{S}	21	E_{13}^{S}	E_{12}^{S}	E_{12}^{S}	E_{15}^{S}	24	J_{43}^{X}	41	J_{53}^{X}	40	40	38^{G}	41	44	45	J_{42}^{X}	G	G	J_{26}^{X}	J_{28}^{X}	18	J_{36}^{X}	J_{24}^{X}
22	J_{29}^{X}	E_{11}^{B}	E_{15}^{S}	E_{14}^{S}	18	J_{24}^{X}	18	38	45	60	40	G	40	42	43	89	G	G	28	J_{50}^{X}	J_{34}^{X}	J_{24}^{X}	J_{34}^{X}	J_{25}^{X}
23	J_{33}^{X}	25	E_{15}^{S}	E	E	E_{15}^{S}	20	29	36	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	40	40	35^{G}	44	52	39	37	32	25	21	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
25	E_{15}^{S}	J_{30}^{X}	J_{25}^{X}	J_{31}^{X}	E_{12}^{B}	E_{14}^{S}	E_{15}^{S}	29	32	35	40	35^{G}	J_{43}^{X}	30^{G}	30^{G}	26^{G}	21^{G}	17^{G}	23	E_{16}^{B}	E_{13}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}
26	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E_{11}^{B}	E_{13}^{B}	23	33	34	47	39	38	37^{G}	35^{G}	37	43	35	J_{37}^{X}	J_{50}^{X}	J_{36}^{X}	J_{34}^{X}	J_{23}^{X}	E_{16}^{S}	19
27	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{16}^{B}	E_{13}^{S}	G	31	38	38	40	37	39	35^{G}	35^{G}	32^{G}	21^{G}	21^{G}	G	E_{15}^{S}	24	18	21	21
28	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	23	30	35	36	36	37	45	G	24^{G}	G	G	32	J_{38}^{X}	J_{34}^{X}	J_{24}^{X}	J_{29}^{X}	23	21
29	21	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E_{12}^{S}	E_{15}^{S}	22	29	35	42	37	45	G	G	G	G	G	G	G	E_{15}^{S}	J_{23}^{X}	J_{29}^{X}	J_{32}^{X}	J_{33}^{X}
30	J_{25}^{X}	E_{13}^{S}	E_{13}^{S}	E	E_{12}^{B}	E_{14}^{S}	21	27	39	J_{56}^{X}	44	37	35^{G}	46	49	51	J_{75}^{X}	J_{52}^{X}	J_{63}^{X}	J_{39}^{X}	J_{36}^{X}	J_{39}^{X}	J_{24}^{X}	E_{15}^{S}
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	29	29	27	29	29	29	29	29	29	29	29	29	28	28	28	28	28
MED	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{E}	E_{14}^{E}	E_{15}^{S}	19	29	34	38	40	41	43	40	40	39	35	32	28	J_{30}^{X}	J_{26}^{X}	22	23	22
UQ	25	24	16	16	16	19	23	31	37	44	43	46	45	46	47	45	J_{44}^{X}	J_{50}^{X}	J_{38}^{X}	J_{44}^{X}	J_{34}^{X}	J_{28}^{X}	J_{35}^{X}	J_{29}^{X}
LQ	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{12}^{S}	E_{12}^{E}	E_{14}^{S}	E_{15}^{S}	26	32	36	38	37	37	35^{G}	34^{G}	32^{G}	31^{G}	21^{G}	23	J_{23}^{X}	22	19	E_{16}^{S}	E_{15}^{S}

The Radio Research Laboratories, Japan

APR. 1971 | FOES (0.1 MHZ)

IONOSPHERIC DATA

APR. 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 15	E S 14	E S 13	E	21	E	E B 14	G	G	36	38	42	40	40	40	47	41	41	22	25	29	E	E S 15	21
2	E	15	31	E	22	16	16	30	30	E C 44	36	40	41	38	39	36	32	G 18	19	C	C	C	C	C
3	C	C	C	C	C	C	C	G	G	35	40	46	53	49	38	43	33	30	G 17	16	E	E	22	E S 15
4	E S 14	E S 13	E B 12	E B 15	E	E	E S 14	G	G	G	36	G 33	G 31	G 31	G 34	G 26	G 25	F S 09	32	45	26	14	38	E
5	E	E S 15	E B 12	E	E B 11	E S 15	E S 13	26	32	39	40	43	39	37	38	35	33	G	25	26	22	17	40	22
6	E S 15	16	E S 14	E B 16	E	16	E S 15	G	G	G	34	39	43	E R 35	32	G 25	32	G 21	21	21	18	19	18	E S 15
7	E S 14	E S 14	E S 15	E S 15	E	E S 14	E S 13	G	G 15	36	40	43	41	E R 37	G 33	36	44	59	73	58	50	18	E	20
8	E	E S 15	E	E S 15	E S 15	E S 15	S	G	30	30	37	G 33	G 36	G	G 33	G 30	G	35	31	28	28	E S 15	E S 15	E
9	E S 13	E S 15	15	E	E S 15	E S 15	E S 15	28	33	37	39	64	61	43	38	33	G 29	31	26	21	36	35	20	E
10	E	E	E S 15	E	E S 13	E S 14	S	G	32	38	49	46	38	39	E R 34	38	31	G	G	21	22	E S 14	E S 15	E S 15
11	21	33	15	21	E S 15	E S 14	34	G	34	G	49	46	43	54	53	54	48	48	30	25	21	E	E S 15	E S 15
12	E S 16	18	31	15	15	17	18	G	G	G	G	38	E R 37	G 32	G 30	38	G 29	G 17	G 25	22	18	E C 22	E	29
13	E S 14	E S 15	E S 14	E S 15	E B 13	E B 14	E S 15	G	G	38	38	39	G 35	E R 41	43	E R 47	43	42	34	62	27	E	E	E S 15
14	E S 15	E S 15	E S 15	E S 13	E C 15	E S 15	E S 14	21	32	37	39	44	43	G	39	41	45	50	44	32	E	E	E	E C 20
15	E S 15	E S 15	E S 13	E S 13	E B 12	E S 15	22	31	35	47	43	52	38	E C 38	40	G	E R 34	43	47	61	33	38	20	22
16	26	26	17	29	26	22	40	G 21	G	42	43	42	E R 45	84	51	43	34	31	E R 27	25	E S 13	21	E S 15	E S 15
17	E S 15	E	E S 14	E S 15	E S 14	21	27	G	37	C	39	46	68	60	G	40	33	31	37	22	20	E	30	19
18	E	19	E S 14	E S 12	E S 11	E S 16	E S 12	G 20	30	G	40	39	44	49	52	44	39	34	29	46	39	18	21	18
19	20	E S 15	E S 12	E S 14	E B 15	E S 13	20	32	38	40	44	45	44	44	44	39	35	49	38	21	E S 15	E S 14	E	16
20	E S 15	E S 15	E S 15	E B 12	E S 14	E S 14	E S 15	22	G	G	E R 38	G	44	43	52	G	G	G 18	21	E	E	E	20	E
21	E S 15	E	E S 13	E S 12	E S 12	E S 15	21	33	35	38	G	39	G	G	43	43	39	G	G	17	18	17	20	E
22	E	E B 11	E S 15	E S 14	E	16	18	36	35	48	G	G	40	41	43	G	G	G	28	30	26	20	22	19
23	E	E	E S 15	E	E	E S 15	G	G	35	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	39	39	G 35	43	40	38	37	G	23	20	E S 15	E S 15	E S 15	E S 15
25	E S 15	26	19	23	E B 12	E S 14	E S 15	29	30	34	38	G 34	40	G 30	G 30	G 25	G 20	G 17	E R 23	E B 16	E S 13	E S 14	E S 15	E S 15
26	E S 15	E S 15	E S 15	E S 12	E B 11	E B 13	G	G	G	46	G	38	G 33	G 35	37	43	35	26	24	15	22	19	E S 16	E
27	E S 13	E S 15	E S 15	E S 15	E B 16	E S 13	G	G	34	33	38	35	G	G 34	G 34	G 31	G 21	G 21	G	E S 15	E	14	E	E
28	E S 15	E S 15	E S 14	E S 13	E S 13	E S 13	21	28	32	G	G	G	44	G	G 24	G	G	31	38	34	21	29	E	E
29	E	E S 15	E S 14	E S 15	E S 12	E S 15	20	27	G	37	G	40	G	G	G	G	G	G	G	E S 15	22	20	17	E
30	20	E S 13	E S 13	E	E B 12	E S 14	21	G	34	42	39	37	G 33	45	48	50	72	46	52	E S 39	32	31	20	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	26	29	29	27	29	29	29	29	29	29	29	29	29	28	28	28	28	28
MED	E S 15	E S 15	E S 14	E E 14	E E 13	E S 15	15	G	30	36	38	39	40	38	38	37	33	30	26	23	22	15	16	E E 15
UQ	E S 15	15	E S 15	E S 15	E E 15	E S 16	21	28	34	39	40	44	44	43	43	43	39	42	34	32	28	20	20	18
LQ	E	E S 14	E S 13	E E 12	E E 11	E S 14	E S 14	G	G	E G 30	35	37	G 35	E G 32	G 33	G 26	G 25	G 17	21	18	15	E E 14	E E 15	E

APR. 1971 | FBES (0.1 MHZ)

IONOSPHERIC DATA

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

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

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

APR. 1971 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

APR. 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	295	285	275	305	290	295	285	345	335	340	295	290	300	300	300	310	300	320	335	315	320	315	275	280
2	275	290	300	340	310	295	315	345	340	330	310	300	305	310	300	300	315	320	330	C	C	C	C	C
3	C	C	C	C	C	C	C	335	335	335	310	285	295	305	340	315	310	310	310	325	320	275	275	265
4	285	305	295	305	300	295	320	340	325	335	305	285	295	305	285	305	325	340	325	315	300	265	260	265
5	270	280	295	280	265	255	280	310	295	290	290	285	300	305	315	315	335	345	335	315	295	275	265	290
6	285	285	285	300	320	305	305	330	345	330	310	290	290	305	295	290	300	295	315	335	360	255	260	275
7	270	270	305	320	295	300	320	345	340	320	305	295	295	290	300	310	305	310	320	S	S	290	270	285
8	285	295	290	305	305	300	325	355	345	310	295	290	295	300	305	305	305	315	325	315	315	305	290	275
9	275	270	290	305	295	280	315	350	335	300	295	295	300	295	295	300	305	305	296	320	330	265	265	245
10	260	280	300	275	265	255	305	360	340	310	305	295	290	295	295	285	295	310	325	325	320	260	285	280
11	260	265	260	F	F	280	330	350	310	300	290	280	295	305	300	300	295	305	320	335	315	235	255	270
12	295	290	270	285	260	280	310	310	325	310	305	285	285	290	295	290	295	310	320	310	310	290	275	280
13	285	270	290	290	285	280	310	350	365	335	290	296	295	295	300	300	305	310	320	335	325	270	265	265
14	280	275	290	310	345	305	310	335	335	305	295	295	300	305	295	295	305	310	310	305	310	295	285	285
15	285	260	255	290	330	280	325	345	345	325	290	280	315	290	275	300	295	300	310	305	295	245	250	270
16	275	295	310	300	280	270	320	320	325	310	295	296	295	290	285	295	290	290	315	325	295	240	250	265
17	270	305	296	295	275	285	300	320	300	305	280	290	300	290	296	295	295	295	305	325	310	255	260	275
18	280	290	290	325	305	290	325	330	320	315	296	275	285	295	296	296	300	305	310	305	305	300	275	265
19	270	285	300	280	255	260	330	310	330	290	290	300	290	285	290	300	300	295	305	315	315	275	265	275
20	285	290	300	315	320	295	305	335	335	305	290	290	290	295	295	300	295	300	305	315	315	265	265	275
21	290	300	315	325	295	285	295	330	335	305	300	300	300	298	295	290	290	290	295	300	310	265	260	265
22	265	280	305	345	260	250	275	310	310	260	290	280	315	325	315	320	325	300	300	310	315	300	260	275
23	280	260	270	310	285	300	335	315	315	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	290	275	275	295	305	300	305	305	310	320	310	260	240	250
25	260	265	S	S	275	270	315	335	335	315	275	275	295	285	290	295	300	310	305	310	320	295	S	S
26	S	S	S	S	295	300	320	340	315	290	280	290	295	300	300	295	310	310	310	320	S	320	280	280
27	280	280	290	335	305	295	315	325	320	315	300	285	310	305	300	300	305	305	305	S	S	S	280	285
28	285	275	295	315	305	300	325	335	315	310	300	300	310	300	300	305	300	315	315	330	310	270	270	270
29	270	265	275	280	295	295	305	335	340	340	325	305	300	325	315	310	310	315	310	310	290	280	275	285
30	275	280	295	300	290	295	330	360	365	350	300	290	285	290	290	305	305	325	340	325	290	255	255	265
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	26	25	27	28	28	29	29	28	29	29	29	29	29	29	29	29	29	26	25	27	27	27
MED	280	280	290	305	295	292	315	335	335	310	295	290	295	295	295	300	305	310	310	315	310	270	265	275
UQ	285	290	300	315	305	298	325	345	340	330	305	295	300	305	300	305	305	315	320	325	320	292	275	280
LQ	270	270	285	290	278	280	305	325	320	305	290	285	290	290	290	295	295	300	305	310	305	260	260	265

The Radio Research Laboratories, Japan

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

IONOSPHERIC DATA

APR. 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											345	L	345	355	335	A	A	A						
2									L	C	360	360	360	365	360	U 360	U 375	L						
3										L	360	345	A	L	360	L	L	L						
4									L	U 380	L	U 360	410	L	360	350	355	A						
5										L	L	L	355	L	L	375	L	L						
6									L	370	L	370	L	365	365	385	L	L						
7									L	L	L	420	L	L	U 340	L	L	A						
8									L	L	L	365	L	L	L	L	L	L						
9									L	375	345	A	A	375	340	360	L	L	L					
10									L	L	A	L	335	335	L	L	325	L						
11										L	L	L	340	A	A	A	L	A						
12									L	L	L	L	L	L	345	L	L	L						
13									L	L	L	U 375	340	U 335	L	L	L	A						
14									L	L	U 360	L	355	350	L	375	L	A						
15									L	L	L	A	L	L	L	L	L	A	A					
16									L	L	L	L	L	A	L	335	L	L						
17									L	C	L	L	A	A	350	340	L	L						
18									L	L	370	380	L	L	A	360	L	L						
19										L	L	U 355	U 355	L	L	L	L	A						
20										415	385	U 360	375	385	L	L	L	L	L					
21									L	L	U 375	L	380	U 355	L	L	L	L						
22										A	L	L	L	L	L	L	L	L						
23									L	C	C	C	C	C	C	C	C	C						
24								C	C	C	370	L	340 H	360	360	360	360	L						
25									410	375	380	375	370	360 H	340	335	345	L	L					
26										A	365	L	L	370	355	345	L	L						
27									L	L	L	L	410	345 H	L	365	L	L						
28									L	L	365	365	350	390	390	L	345	L						
29								L	L	L	L	365	U 360	U 365	U 365	380	L	L						
30								L	L	A	410	385	345	350	A	A	A	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	5	13	14	17	16	14	14	6							
MED									410	375	365	365	355	360	358	360	350							
UQ										380	375	375	370	368	360	375	360							
LQ										375	360	360	345	350	340	345	345							

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

IONOSPHERIC DATA

APR. 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											300	290	280	280	280	265	250	250						
2									245	235	275	285	280	275	270	270	260	250						
3										245	275	310	295	290	270	255	250	245						
4									245	230	275	300	290	270	275	280	255	A						
5										300	295	305	295	275	270	250	250	240						
6									240	255	275	290	295	275	275	270	275	270						
7									230	290	285	260	300	305	300	270	260	250						
8									235	275	285	295	305	290	280	265	265	255						
9									235	255	280	300	290	275	295	290	275	275	280					
10									245	285	290	275	295	295	280	290	290	255						
11										280	280	295	315	290	275	265	280	260						
12									245	250	275	280	330	305	290	280	275	250						
13									220	235	250	265	305	300	280	280	275	250						
14									250	270	265	300	295	275	290	305	280	255						
15									220	285	310	290	280	290	305	290	270	270	250					
16									250	255	295	295	295	300	315	290	275	275						
17									250	I C 265	285	295	285	295	290	285	275	265						
18									230	275	275	290	300	300	300	295	280	260						
19										300	285	300	285	320	305	285	275	270						
20										260	270	280	305	300	290	290	280	260	260					
21									235	260	265	290	275	300	295	295	280	270						
22										260	290	325	275	255	290	255	255	300						
23									255	C	C	C	C	C	C	C	C	C						
24								C	C	C	265	320	335	305	280	280	255	240						
25									240	255	245 H	290	300	295	285	280	275	250	245					
26										255	285	305	300	290	290	295	275	270						
27									270	265	300	330	300	285	290	270	275	255						
28									275	270	295	295	280	270	275	285	290	265						
29								250	235	230	275	295	290	265	260	275	255	255						
30								230	225	240	235	315	315	305	315	295	290	250	240					
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	21	27	29	29	29	29	29	29	29	28	5					
MED								240	240	260	280	295	295	290	290	280	275	255	250					
UQ									250	275	290	300	300	300	295	290	280	270	260					
LQ									235	252	275	290	285	275	275	270	260	250	245					

The Radio Research Laboratories, Japan

APR. 1971 | H'F2 (KM)

IONOSPHERIC DATA

APR. 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	260	260	280	240	250	250	280	230	225	225	210	240	225	225	215	A	A	A	240	210	230	220	285	315
2	290	285	290	230	205	275	250	225	225	I,C 205	200	215H	220	200	220	215	210	230	240	C	C	C	C	C
3	C	C	C	C	C	C	C	230	220	205H	220	E,A 250	A	A	225	I,A 225	215	240	240	215	200	245	310	295
4	285	245	260	250	225	245	240	225	225	210	190H	200H	200	175H	205	210	230	I,A 240	240	245	225	250	E,A 390	295
5	320	290	250	260	270	345	250	235	230	245	220	225	200	200H	200	225	220	220	230	250	230	255	E,A 350	300
6	290	285	290	275	230	205	250	230	225	200	195H	200H	E,A 245	205	200	200	210	235	245	225	200	295	305	285
7	290	290	250	225	200H	225	225	220	220	205	200H	220	200H	190H	200	225	E,A 260	A	E,A 255	250	235	235	295	305
8	280	270	265	245	245	250	255	225	220	205H	200	205	190H	200	210	200H	235	E,A 250	250	225	220	210	250	275
9	295	295	250	220	255	300	240	220	215	220	240	A	A	225	200H	200H	225	235	250	240	225	250	295	310
10	310	285	250	220	295	335	245	225	225	240	A	E,A 250	210H	220H	205H	225	225	235	240	215	205	280	295	280
11	315	305	295	320	250	250	240	210	225	240	A	I,A 240	225	A	A	A	A	A	230	210	200	220H	325	295
12	250	265	E,A 310	250	245	250	240	225	235	210	210	200	195H	200H	205	220	220	240	235	225	230	240	280	300
13	270	295	265	240	260	270	245	230	220	210	215	200	190H	225	230	A	E,A 260	I,A 245	250	235	205	210	290	310
14	300	295	265	225	215	235	240	225	225	205	215	220	205	220	205H	220	A	A	250	240	225	225	250	275
15	280	320	315	265	215	265	240	230	210	E,A 250	225	I,A 250	200	220	215H	235	240	I,A 250	I,A 250	255	235	E,A 330	E,A 370	315
16	300	270	250	255	E,A 260	E,A 300	250	210H	230	230	225H	220	E,A 255	A	A	E,A 250	230	230	250	225	200	250	315	300
17	280	250	250	245	250	290	245	230	225	I,C 220	195H	225H	A	A	225	225	225H	240	240	225	210	250H	345	300
18	270	260	245	225	205	245	230	225	205	200	200H	200H	I,A 220	A	A	E,A 250	240	250	245	250	250	225	250	300
19	300	280	245	245	325	305	230	210	230	225	E,A 240	225	225	220	E,A 240	225	215H	A	255	240	200	220	265	300
20	275	265	250	235	220	205	240	225	220	200	210	210	210	220	A	220	200H	210H	225	245	215	215	300	295
21	275	255	240	215	210	250	250	230	225	215	205	190	220	210	240	240	255	220	250	245	220	250	300	300
22	295	265	230	200	310	355	260	245	245	I,A 235	220H	205H	225	230	E,A 240	205	205H	210H	250	260	235	215	305	285
23	275	300	295	235	190	250	225	230	230	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	205	200H	200H	200	205	225H	230	225	225H	225	215	225	260	290
25	295	300	270	225	235	275	250	240H	210	210	225	190H	200H	195H	215	205	225H	225H	245	230	215	200	250	280
26	270	245	235	205	205	220	225	225	220	A	205	190H	185H	195H	195	260	225H	220	250	235	230	220	255	270
27	290	270	245	215	240	260	235	225	225	200H	190H	165H	200	195H	185H	185H	205H	225	250	240	235	210	255	275
28	265	275	250	220	220	225	225	220	205H	210	205	190	E,A 260	200	195	220	200H	240	250	250	240	250	285	300
29	300	315	295	250	240	250	250	225	205	210	200	195	245	245	205	200	200H	215H	230	225	260	290	290	280
30	265	275	250	245	255	260	240	225	220	I,A 200	200	180H	255H	E,A 260	A	A	A	A	A	210	245	275	295	290
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	28	28	28	28	29	29	27	27	28	26	24	24	25	25	23	28	28	28	28	28	28
MED	288	278	250	238	239	250	240	225	225	210	205	202	205	205	205	220	222	232	245	235	225	234	292	295
UQ	298	295	280	250	254	278	250	230	225	224	219	222	222	221	218	225	230	240	250	245	235	250	304	300
LQ	272	265	250	222	215	245	238	225	220	205	200	198H	200H	200H	200	205	210H	222	240	225	208	220	262	282

The Radio Research Laboratories, Japan

APR. 1971 | H'F (KM)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S	S	S	100	100	100	S	145	145	125	125	125	120	120	110	110	105	100	100	105	100	100	S	100
2	105	100	100	100	100	100	100	100	100	C	125	120	115	120	110	115	110	100	110	C	C	C	C	C
3	C	C	C	C	C	C	C	G	140	130	125	115	105	105	100	100	110	110	100	100	100	100	100	S
4	S	S	B	B	100	105	S	125	125	115	100	100	100	100	100	100	100	110	105	100	100	100	100	110
5	105	S	B	E	B	S	S	145	135	120	110	105	100	100	100	100	100	G	120	105	100	100	100	100
6	S	100	S	B	110	100	S	G	G	G	100	100	100	100	100	95	110	100	100	95	95	95	95	S
7	S	S	S	S	E	S	S	160	105	120	115	110	105	100	100	120	140	120	115	105	105	100	105	105
8	105	S	100	S	S	S	100	150	105	105	105	105	105	G	100	100	170	95	130	115	110	S	S	100
9	S	S	100	110	S	S	S	145	135	125	120	110	105	115	105	100	100	140	120	110	105	100	105	110
10	105	100	S	E	S	S	150	150	125	115	105	110	105	115	100	110	110	160	125	115	105	S	S	S
11	100	100	100	100	S	S	125	130	120	115	110	110	100	100	100	95	95	95	95	95	95	95	S	S
12	S	95	100	100	100	95	95	140	130	G	G	105	100	100	100	100	100	100	125	110	105	C	105	100
13	S	S	S	S	B	B	S	140	125	105	110	105	100	110	105	105	100	125	115	105	105	105	105	S
14	S	S	S	S	C	S	S	105	145	130	130	115	115	130	125	115	105	105	105	100	100	100	95	C
15	S	S	S	S	B	S	130	125	120	110	110	110	100	100	125	G	160	130	120	110	105	105	100	100
16	100	100	100	100	100	100	100	105	150	120	110	105	100	100	100	100	100	100	100	100	S	100	S	S
17	S	100	S	S	S	100	145	145	130	C	125	100	100	105	130	115	105	145	120	110	105	95	100	100
18	95	95	S	S	S	S	S	100	150	145	140	135	115	115	110	110	155	150	125	110	100	100	100	100
19	100	S	S	S	B	S	100	140	130	120	115	110	115	115	115	120	140	110	105	105	S	S	105	100
20	S	S	S	B	S	S	S	105	G	140	150	G	140	130	125	125	G	95	110	100	95	110	105	110
21	S	105	S	S	S	S	145	125	125	125	125	120	120	160	150	140	100	G	G	125	115	105	100	100
22	120	B	S	S	125	135	140	125	120	110	120	G	155	145	130	100	G	G	120	110	110	110	105	105
23	105	100	S	E	E	S	150	140	125	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	120	110	100	115	100	120	150	110	105	100	S	S	S	S
25	S	100	100	95	B	S	S	120	100	100	100	100	100	100	100	100	100	100	135	B	S	S	S	S
26	S	S	S	S	B	B	140	130	130	110	115	105	105	100	120	170	105	105	100	100	100	100	S	100
27	S	S	S	S	B	S	G	125	110	105	100	100	160	100	100	100	100	100	G	S	105	100	100	100
28	S	S	S	S	S	S	150	150	140	140	160	120	150	G	100	G	G	150	120	110	105	105	105	100
29	105	S	S	S	S	S	130	125	130	125	150	140	G	G	G	G	G	G	G	S	105	105	105	105
30	100	S	S	E	B	S	140	130	125	115	140	155	100	150	150	135	120	115	110	105	105	100	100	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	11	7	7	7	8	16	27	27	24	28	27	28	26	28	26	25	25	26	25	24	22	20	18
MED	105	100	100	100	100	100	135	130	125	120	118	110	105	108	102	108	105	110	112	105	105	100	100	100
UQ	105	100	100	100	105	102	145	145	135	125	125	118	115	120	122	120	120	125	120	110	105	105	105	105
LQ	100	100	100	100	100	100	100	125	120	110	110	105	100	100	100	100	100	100	105	100	100	100	100	100

APR. 1971 | H'ES (KM)

IONOSPHERIC DATA

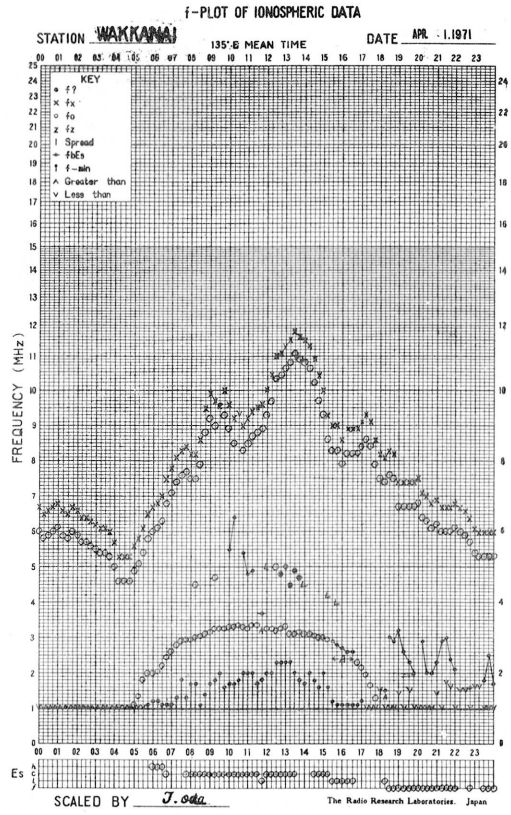
APR. 1971 | TYPES OF ES | 135° E Mean Time (G. M. T.+ 9h)

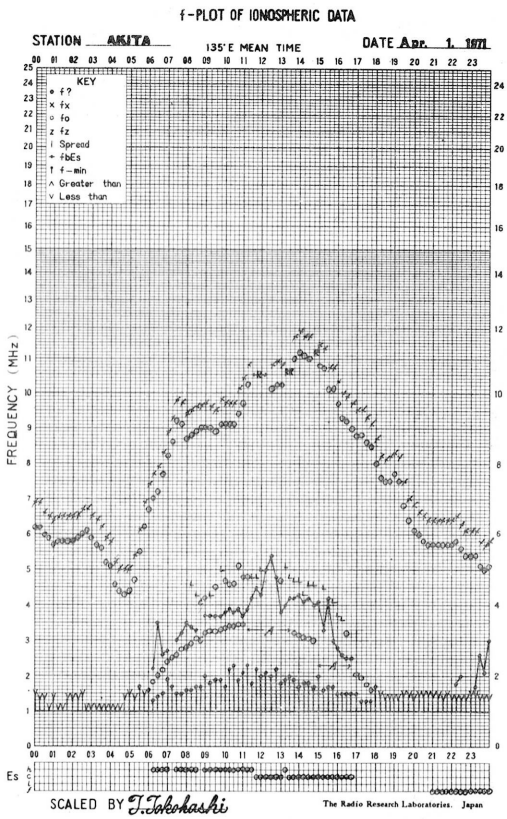
Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

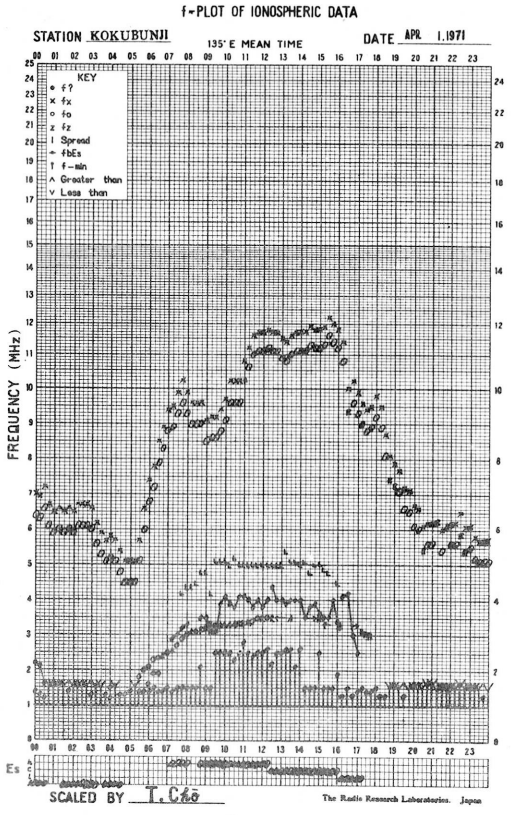
Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				F1	F4	F1		H3	H2	HL1	HL1	HL1	CL1	CL1	CL1	CL2	CL3	L4	L3	FE62	F7	F1		F3
2	F1	F4	F6	F4	F3	F3	L5	L7	L3		HL1	HL22	CL1	CL1	CL1	CL2	CL2	L1	CL2					
3									HL1	H1	H1	C2	C2	C1	L1	L2	C2	CL3	L1	F3	F1	F2	F3	
4					F1	F1		HL2	HL1	CL2	L1	L1	L1	L1	L1	L1	L1	C5	L4	F6	F6	F4	F7	FF32
5	F2							H2	H1	H2	C1	C1	L1	L1	L1	L1	L2		C2	F3	F4	F2	F4	FF21
6		F1			F1	F1					L1	LL21	LL1	LL1	L1	L1	CL1	L2	L2	F3	F2	F2	F1	
7								HL1	LL1	C1	CL1	C1	C1	L1	L1	CL1	HL1	C4	C3	F3	F3	F1	F1	F2
8	F1		F1				L1	H1	L2	L1	L1	L1	L1		L1	L1	HL1	L6	HL2	FF32	F3			F1
9			F2	F1				H2	H2	H2	C1	C3	C2	C1	C1	L1	L1	HL3	CL3	F4	FF61	F3	FF31	FF11
10	F2	F1					H1	H2	H2	C2	C2	C2	C1	CL1	L1	CL1	CL1	H1	HL1	FF41	F3			
11	F3	F5	FF21	F4			H6	H4	H3	C2	C2	C1	L2	L2	L2	L3	L3	L4	L2	F2	F2	F1		
12		F3	F6	F1	F1	F3	L2	HL22	HL1			L1	L1	L1	L1	L2	L1	L1	C1	F2	F1		F1	F3
13								H2	C1	C2	C1	L1	L1	C1	C2	L1	L2	H2	C4	F4	F3	F2	F1	
14								L1	HL12	HL21	HL1	CL1	CL1	H1	HC1	C1	C2	L3	L4	F7	F1	F1	F1	
15							H2	H2	C1	C2	C1	CL1	L1	L1	CL1		H1	H2	C2	F7	F2	F5	F4	F3
16	F3	F3	F1	F4	F3	F3	L4	L1	H1	C1	CL2	LL1	L1	L4	L2	L2	L3	L1	L1	F2		F1		
17		F1				F2	H2	H1	HL1		HL2	LL2	LL3	LL3	HL1	C1	LL1	H2	C6	F3	FF11	F1	F3	F1
18	F1	F1						L1	HL13	HL12	HL12	HL2	CL1	CL1	CL1	CL2	HL2	HL2	HL2	FF61	F8	F1	F2	F2
19	F2						L1	HL2	H3	C2	C2	C1	C1	C1	C2	C1	H1	C4	C3	F3			F1	F2
20								L1		H1	H1		HL1	H2	H2	H1		L1	L1	F1	F1	FF11	F2	F1
21		F1					H2	H4	H2	CL1	CL2	CL1	CL1	HL1	H1	HL1	L2			F1	F1	FF31	F3	F1
22	F1				F1	F3	H1	H3	C3	C2	C1		H1	H1	H1	L1			C3	FF32	FF23	FF31	F2	F2
23	F3	F2					H1	H2	H3															
24											C1	C1	L1	CL2	LC21	CL1	HCL21	CL3	L2	F4				
25		F4	F2	F6				HL22	L3	L2	L2	L1	L2	L1	L1	L1	L1	L1	H2					
26							H2	H4	HL22	CL21	CL1	L1	L1	L1	C1	HL21	L1	LC31	L2	F2	F2	F3		F1
27								H3	C2	L2	L2	L2	HL1	L1	L2	L1	L1	L1			F1	F1	F1	F1
28							H2	HL22	H2	HL11	HL1	C1	H1		L1			H1	C4	FF71	FF21	F2	F1	F1
29	F2						H2	H2	H2	H2	H1	H1									F3	F3	F4	F2
30	F5						H2	H1	H2	CL23	HL22	HL1	L1	HL1	HL2	HL3	HL6	C2	C7	F7	F8	F7	F3	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

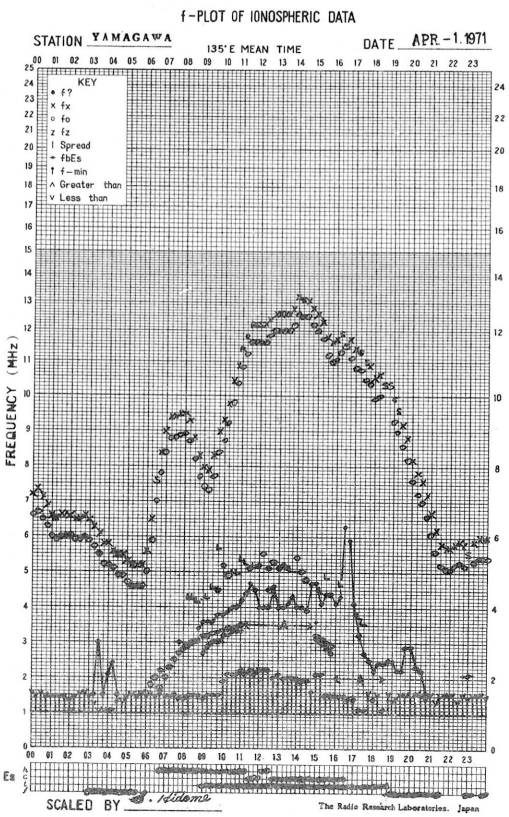
The Radio Research Laboratories, Japan

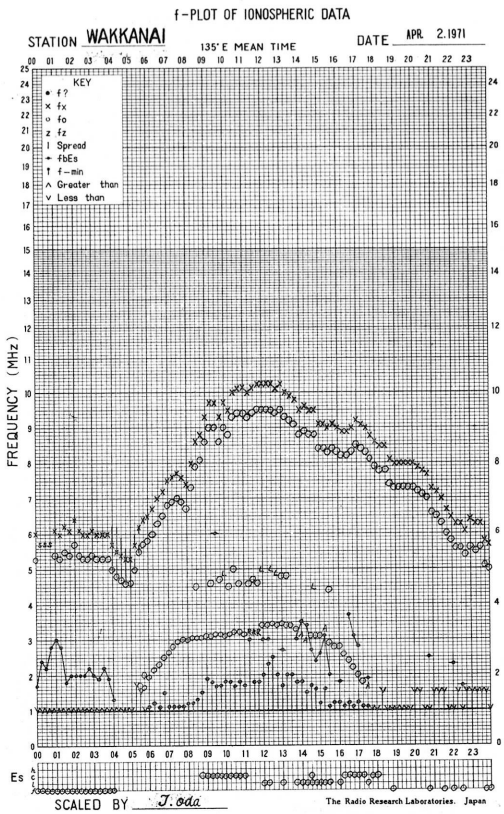
APR. 1971 | TYPES OF ES

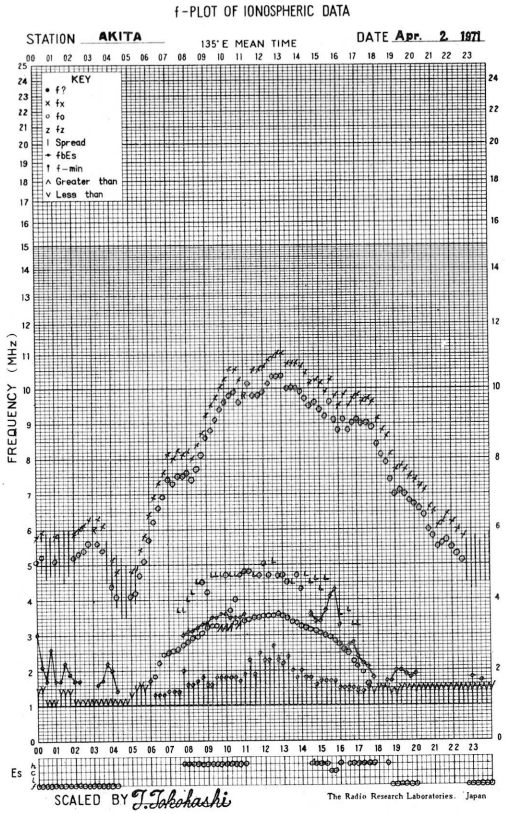

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 1.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. oda
The Radio Research Laboratories. Japan

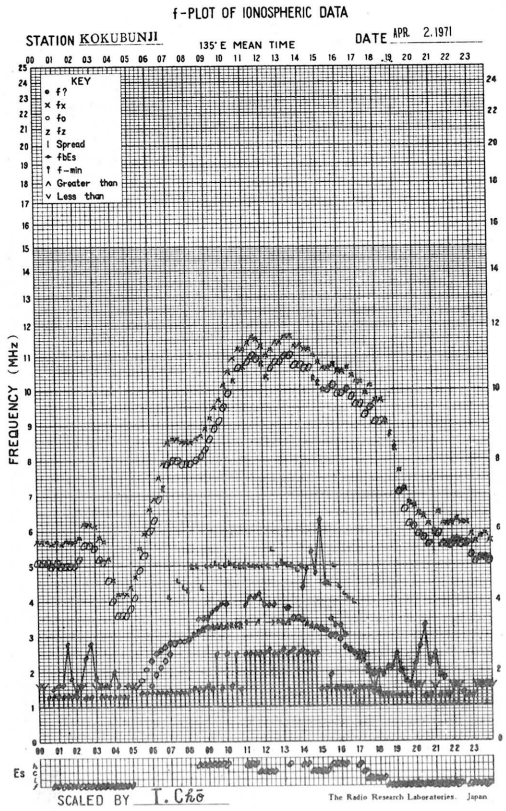

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 1. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

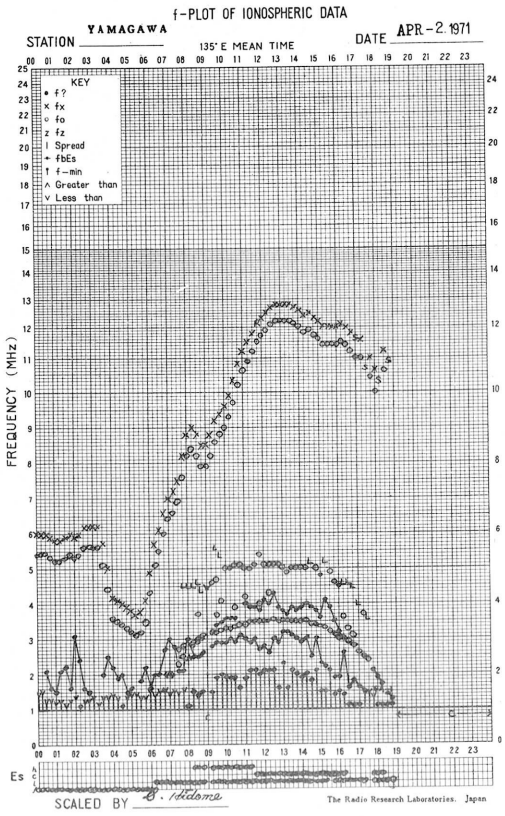

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 1.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

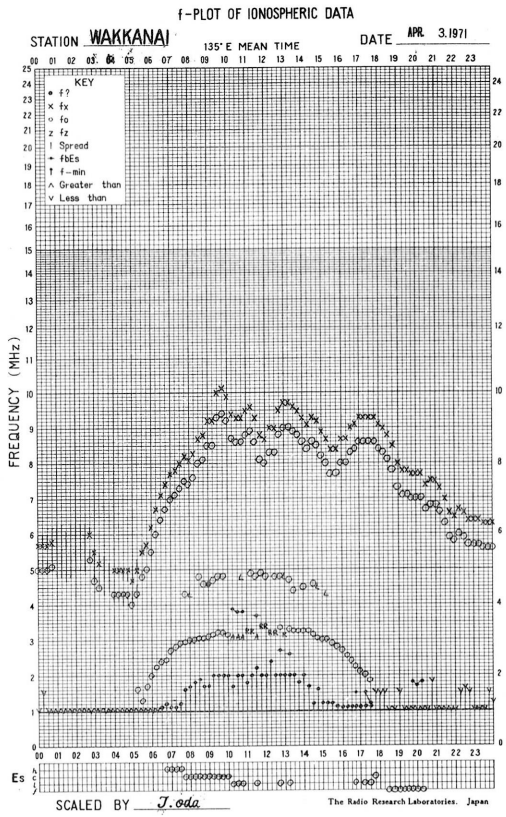

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 1. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
= fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nidome
The Radio Research Laboratories. Japan

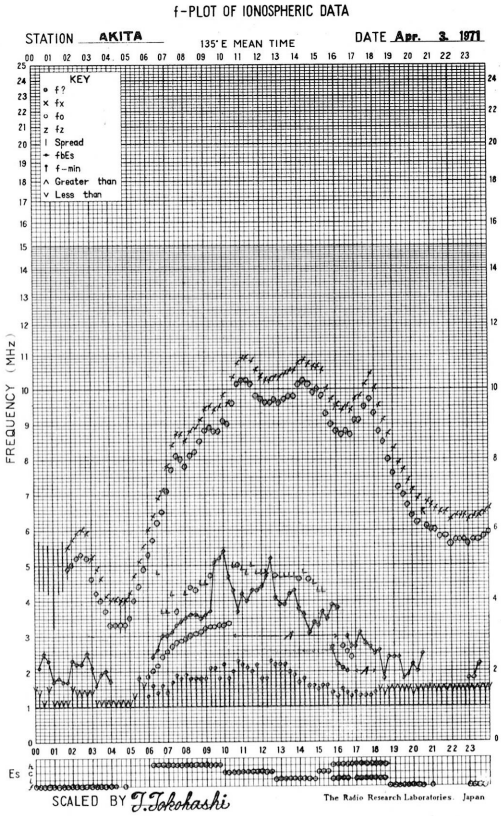

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 2.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

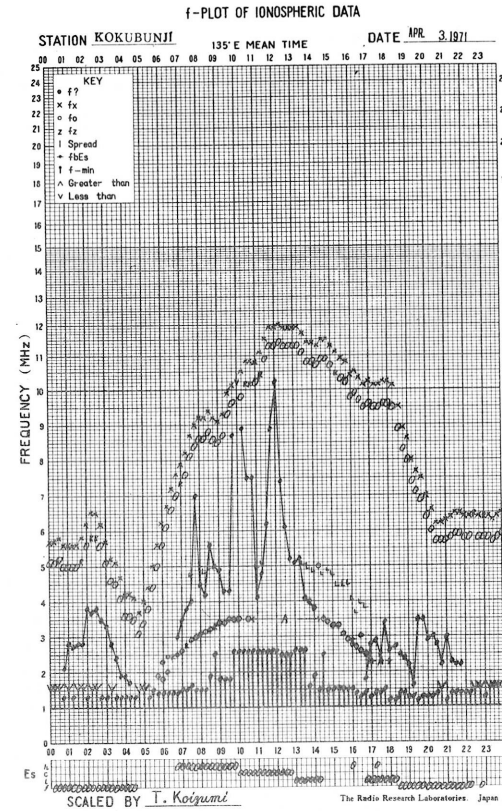

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 2. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

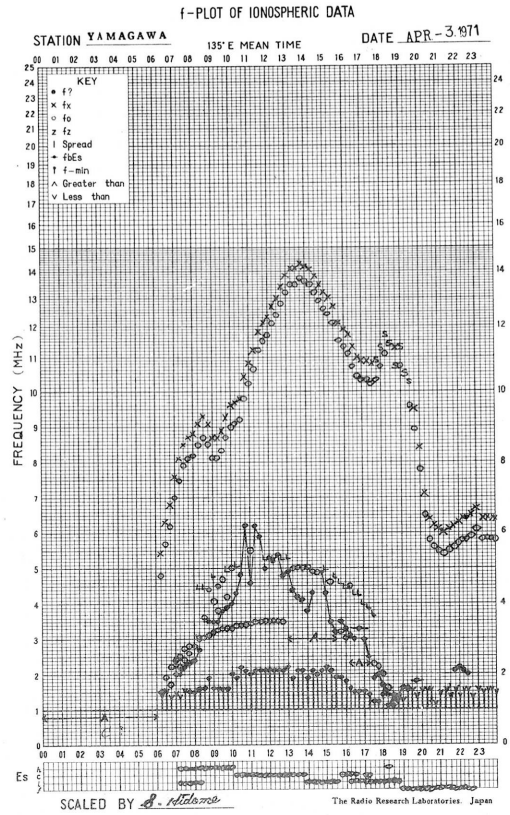

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 2.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

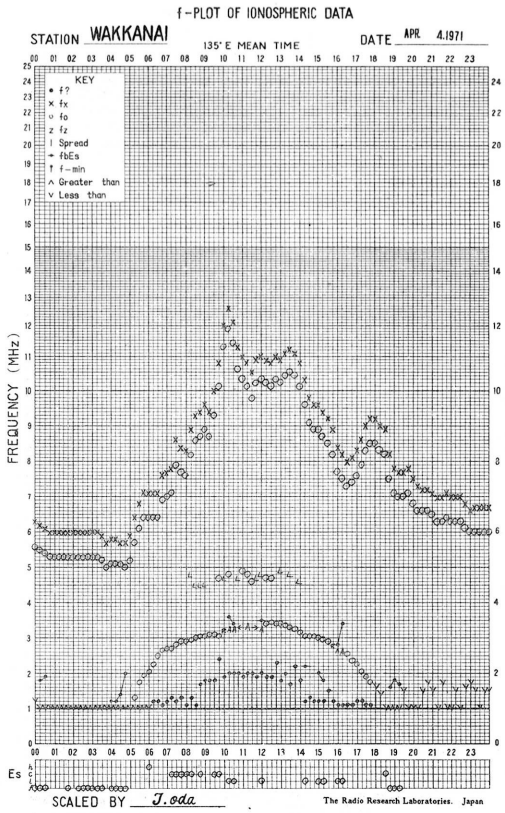

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR.-2.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Akiyama
The Radio Research Laboratories. Japan

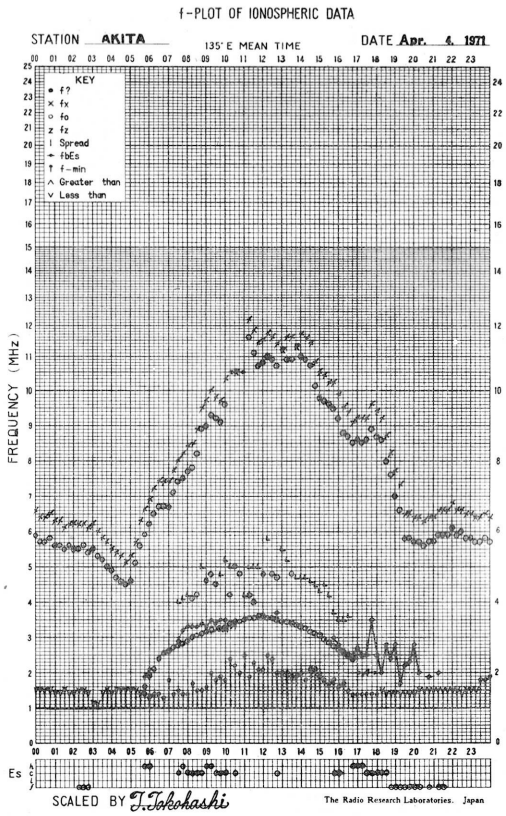

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR. 3.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

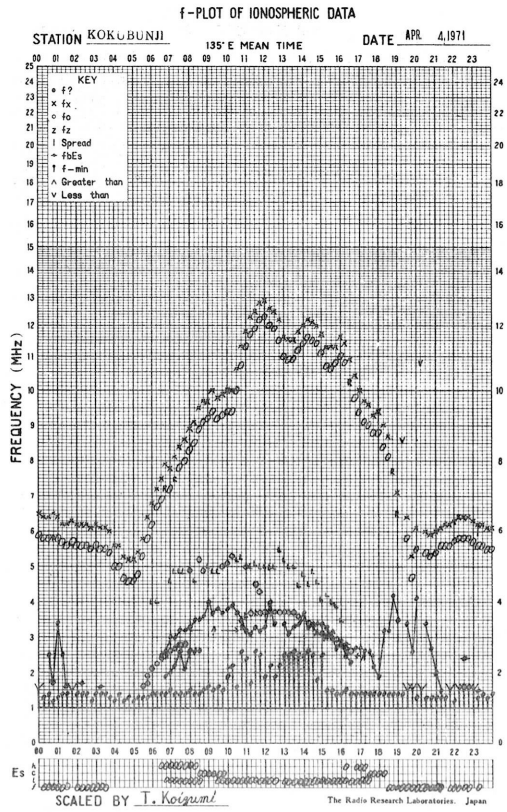

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 3. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

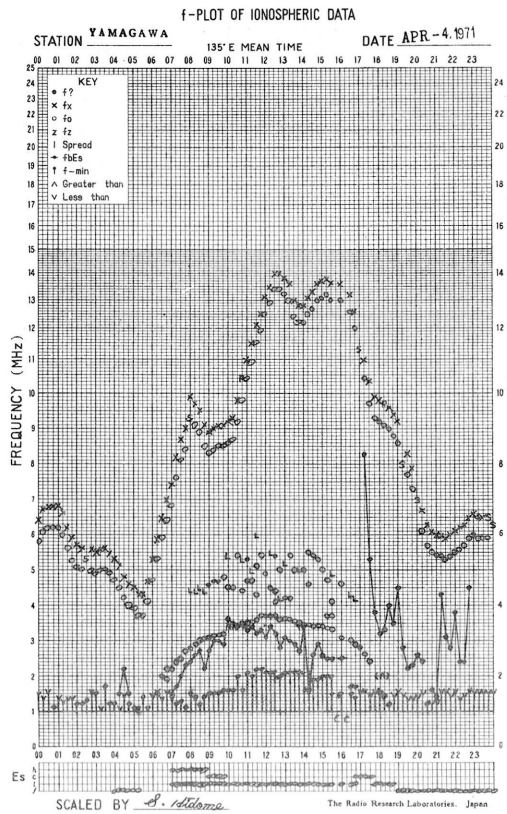

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR. 3.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR-3.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY A. Midorno
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR. 4,1971
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

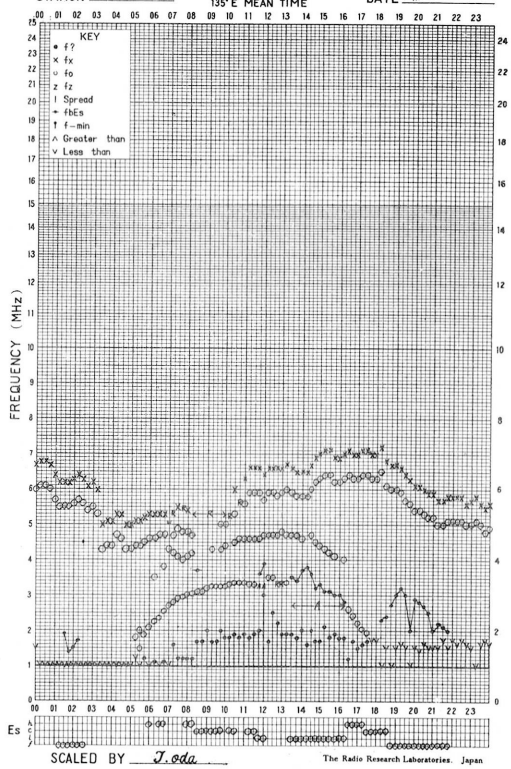

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 4, 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR. 4,1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koigumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR.-4,1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Iidoma
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 5. 1971

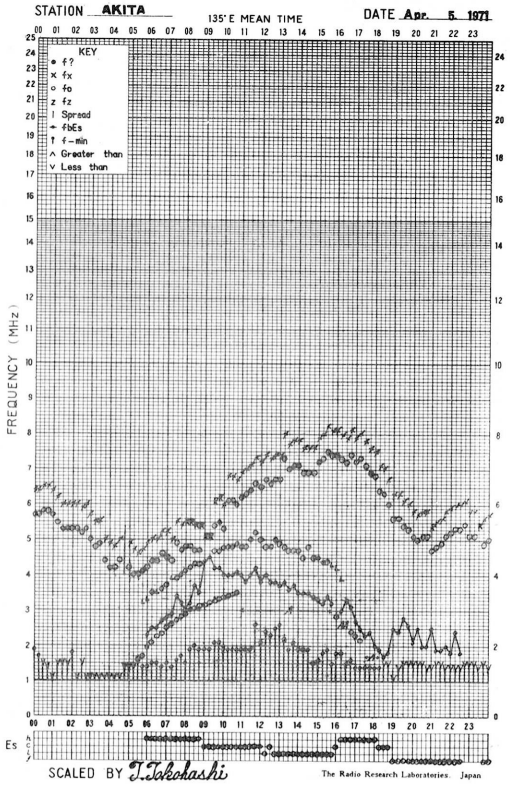


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 5. 1971

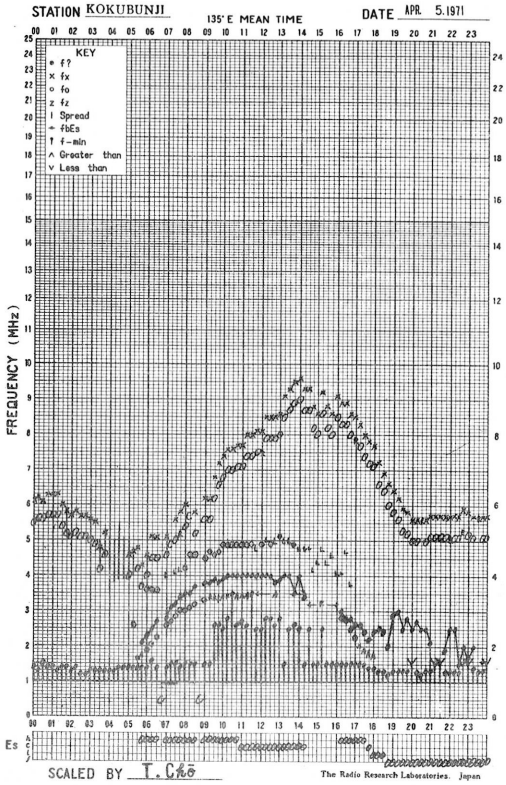


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR. 5. 1971

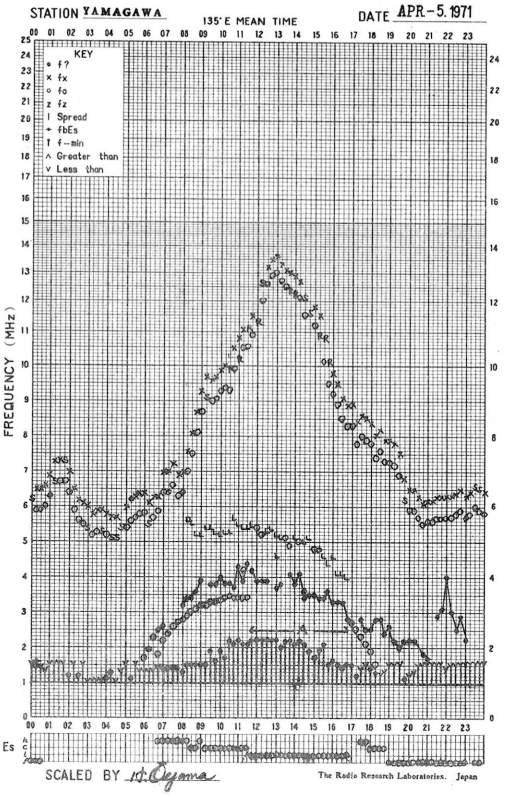


SCALED BY T. Ono

The Radio Research Laboratories. Japan

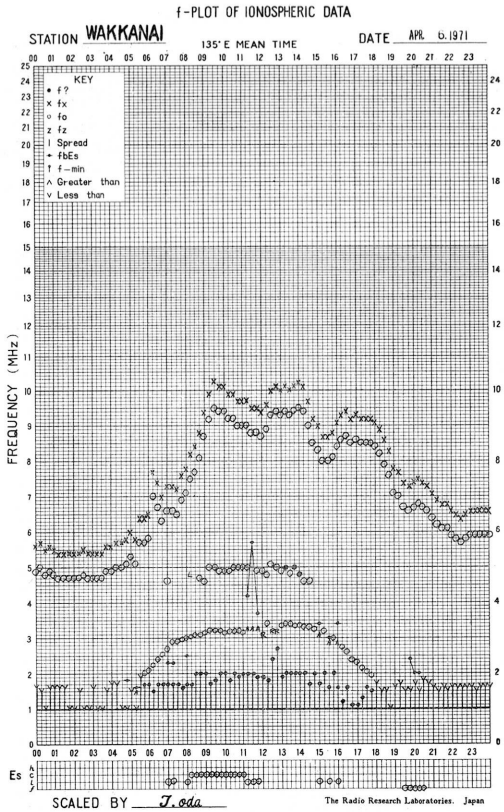
f-PLOT OF IONOSPHERIC DATA

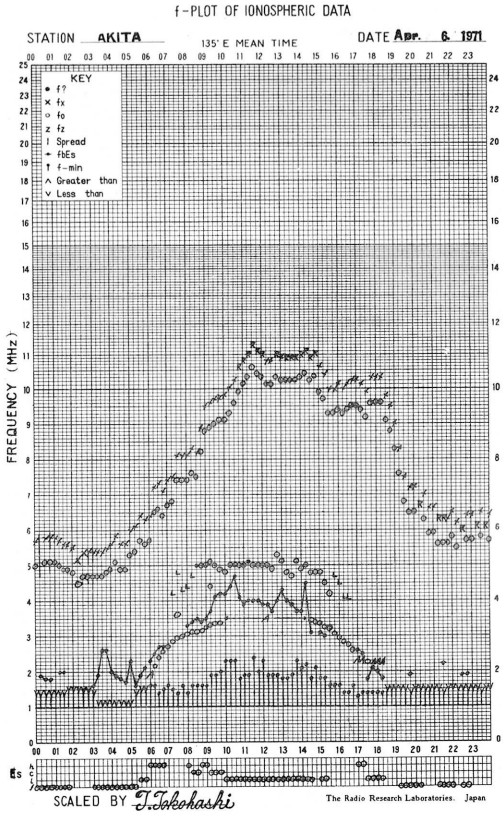
STATION YAMAGAWA 135°E MEAN TIME DATE APR.-5. 1971

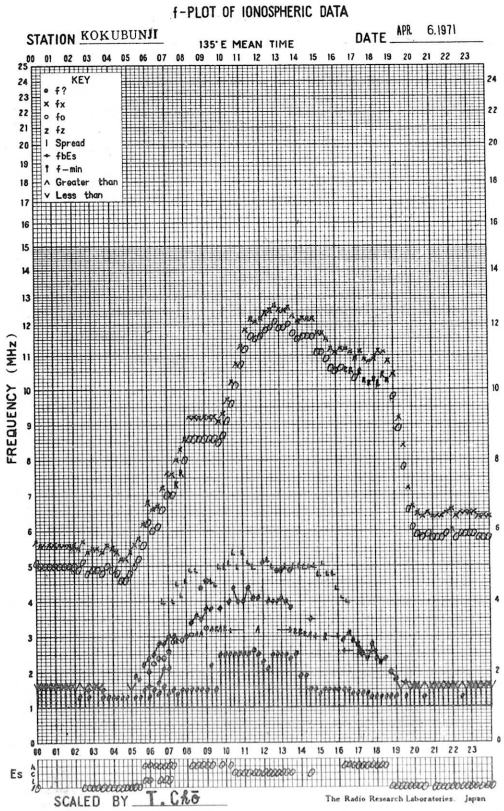


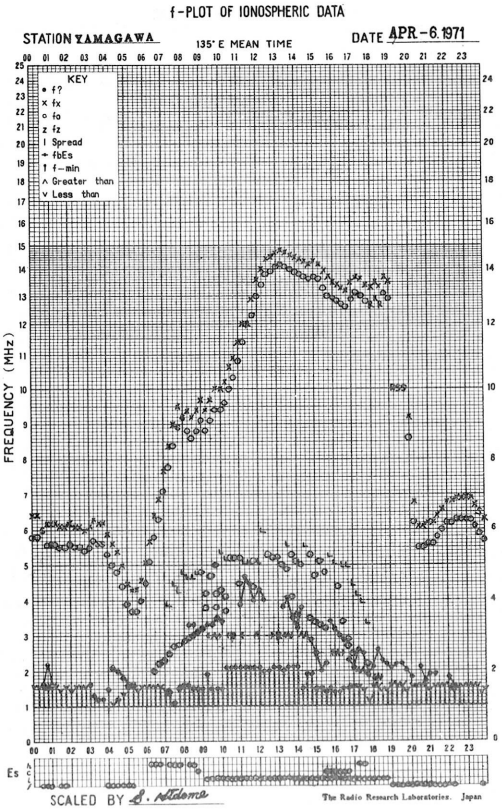
SCALED BY H. Oyama

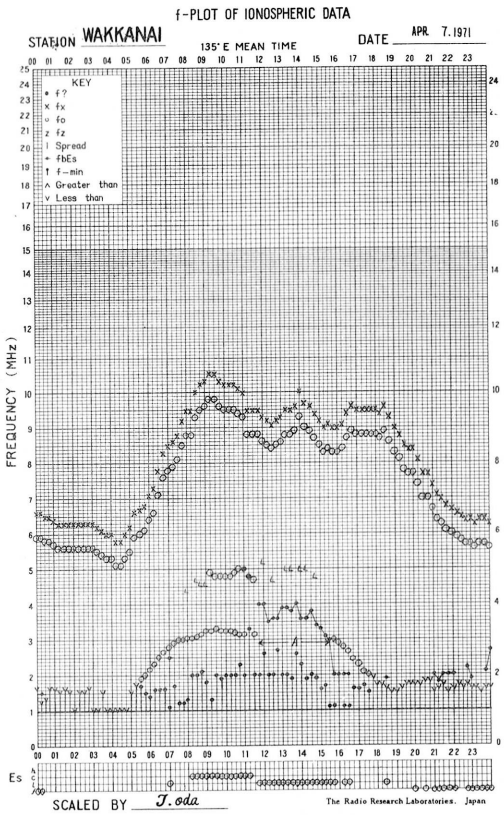
The Radio Research Laboratories. Japan

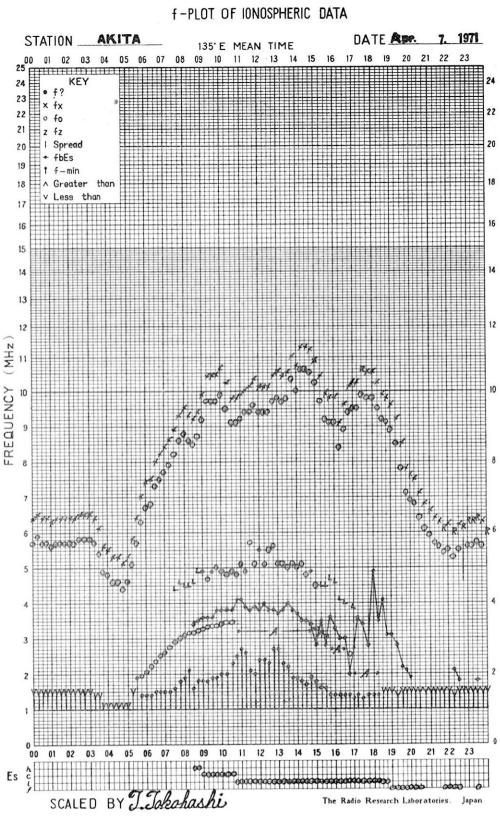

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR. 6. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

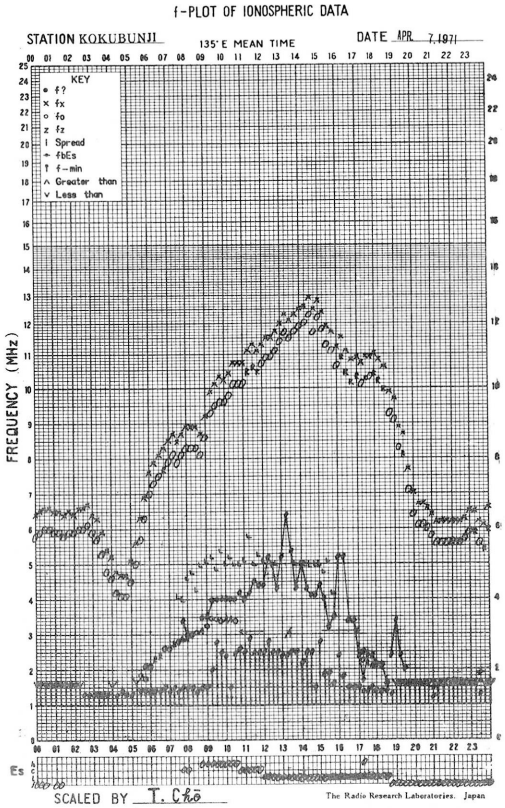

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 6. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

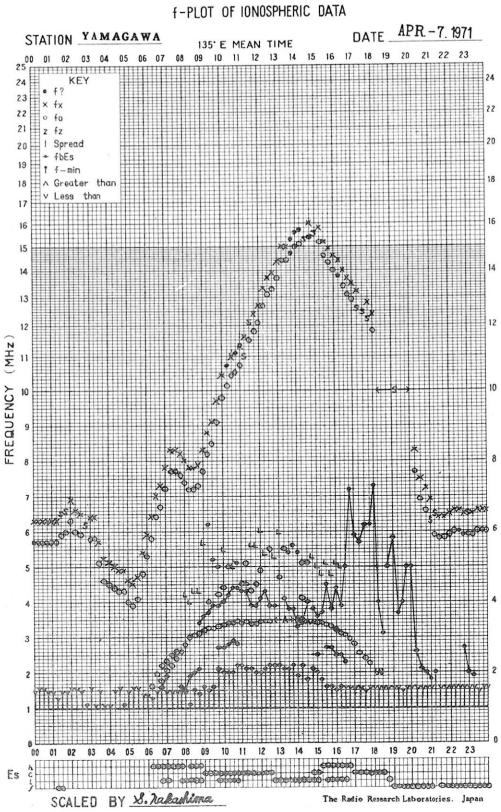

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR. 6.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ono
The Radio Research Laboratories. Japan

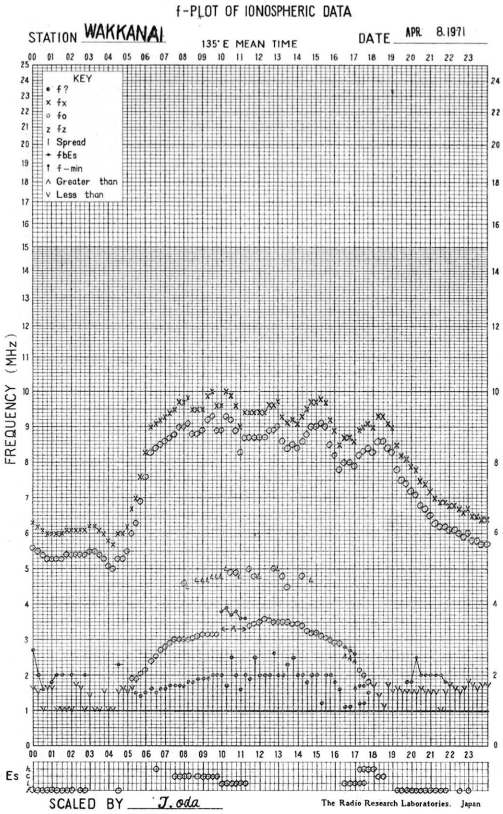

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR-6-1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nitoma
The Radio Research Laboratories. Japan

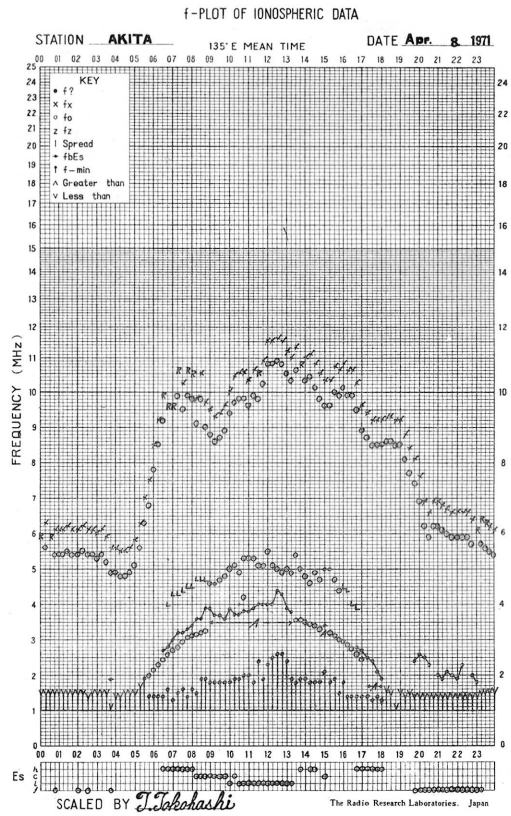

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR 7.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

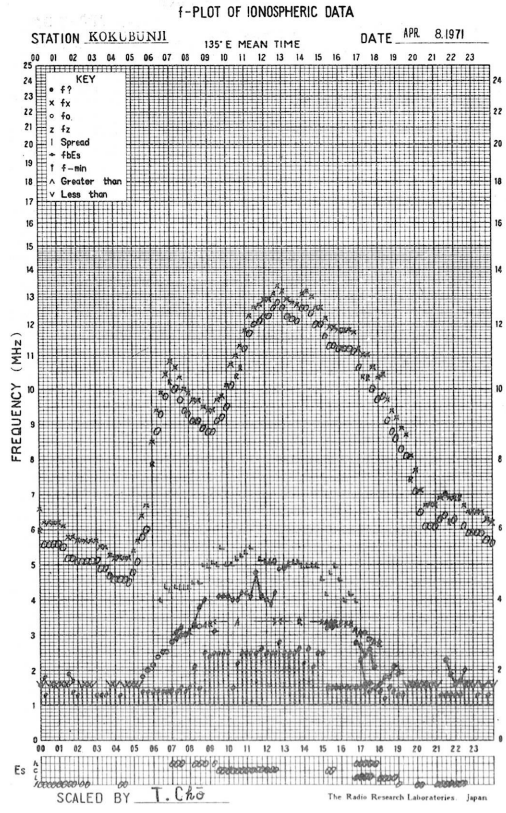

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 7. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

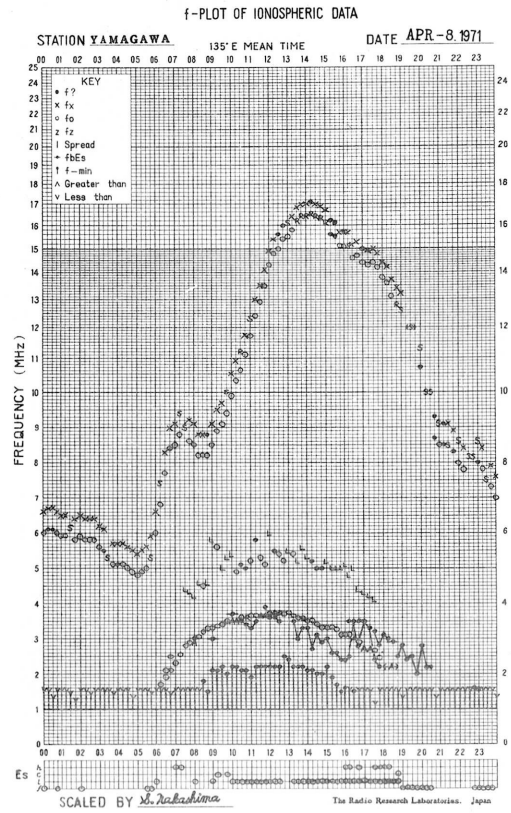

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR 7.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

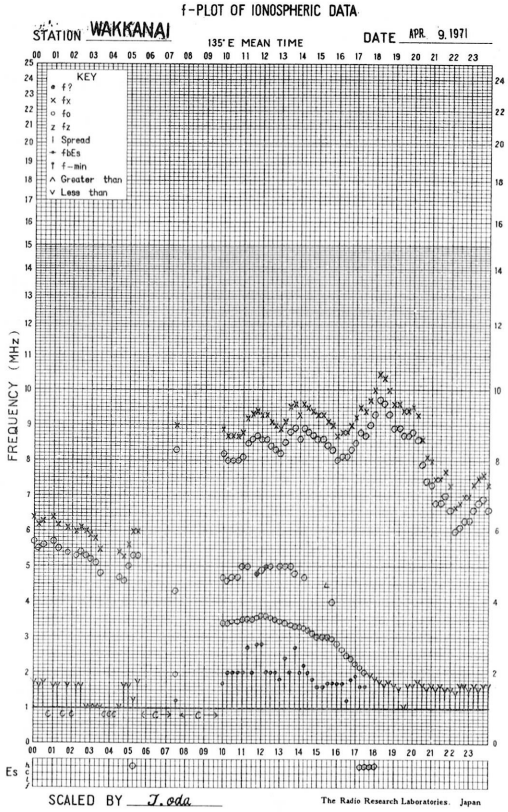

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR-7.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan

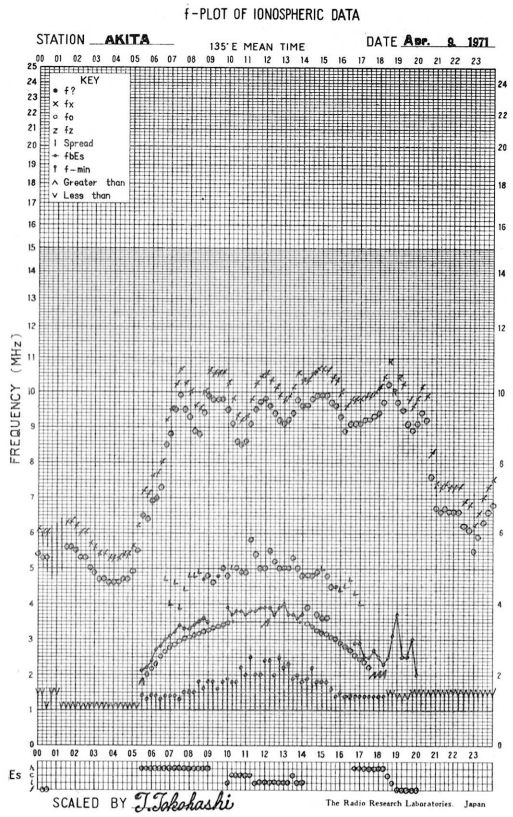

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR. 8.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

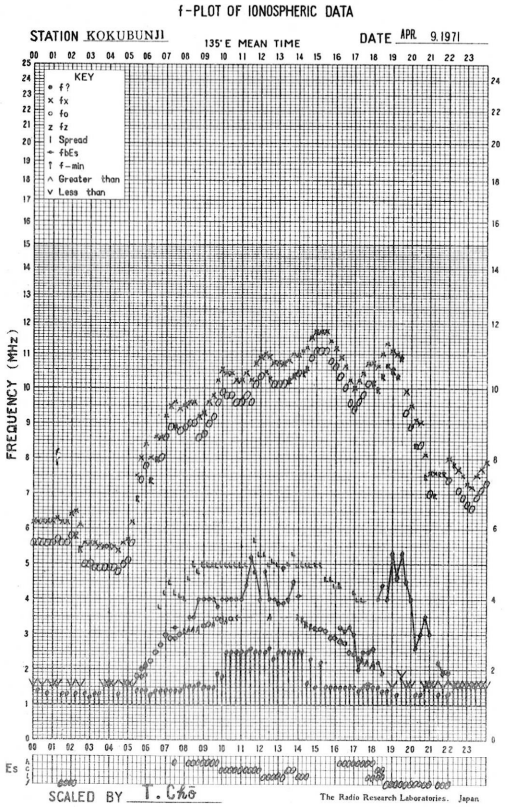

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 8 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

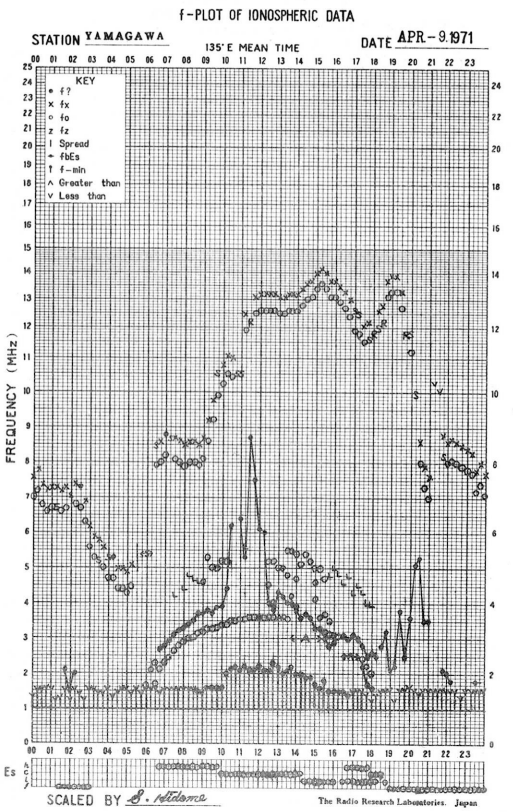

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR. 8.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

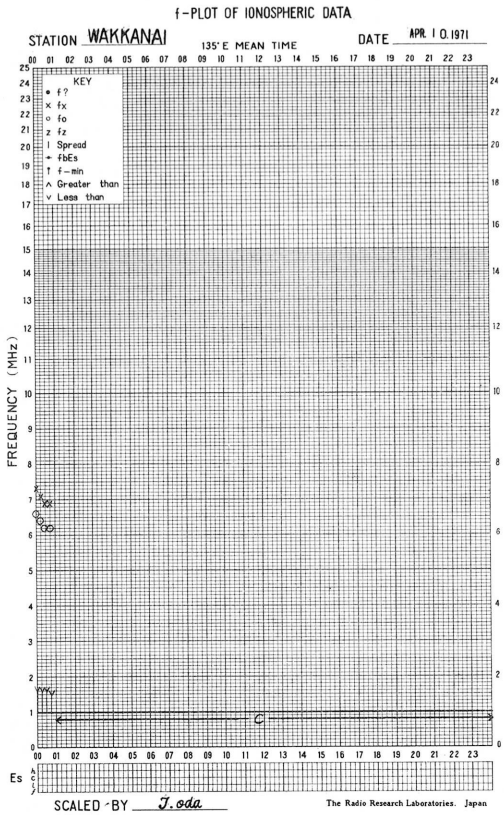

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR-8.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
† f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

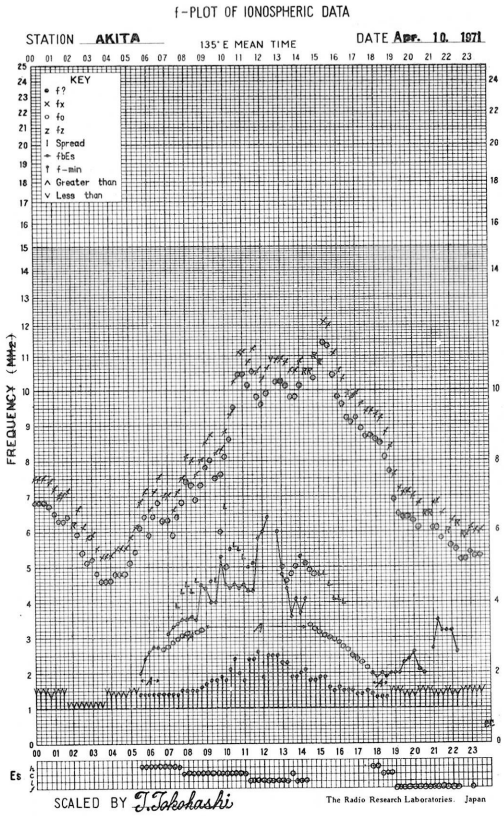

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 9.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. oda
The Radio Research Laboratories. Japan

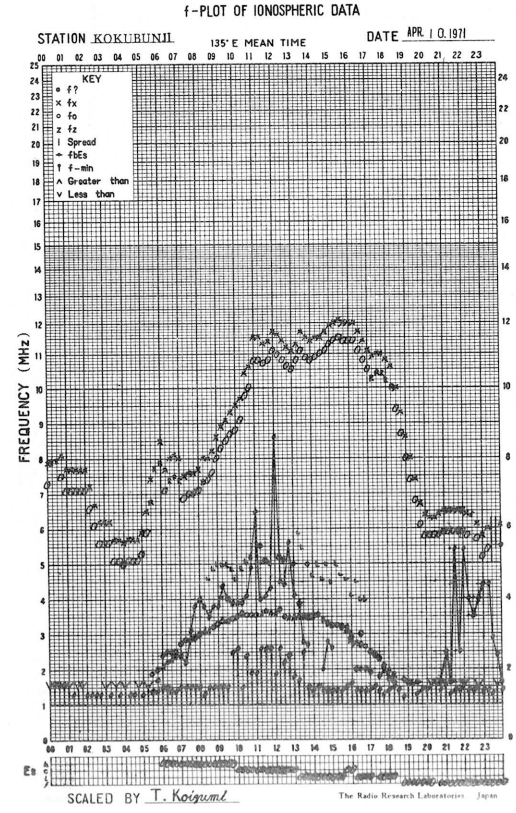

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 9. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

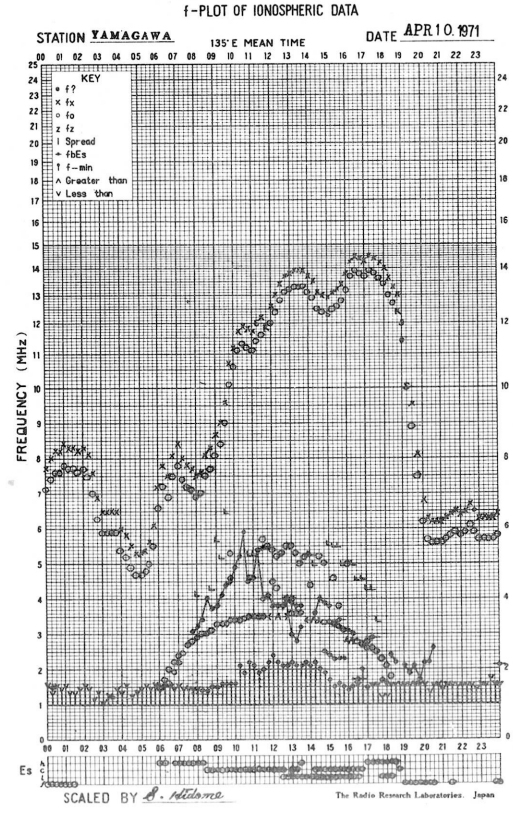

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 9.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR.-9.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nitoma
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 10. 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

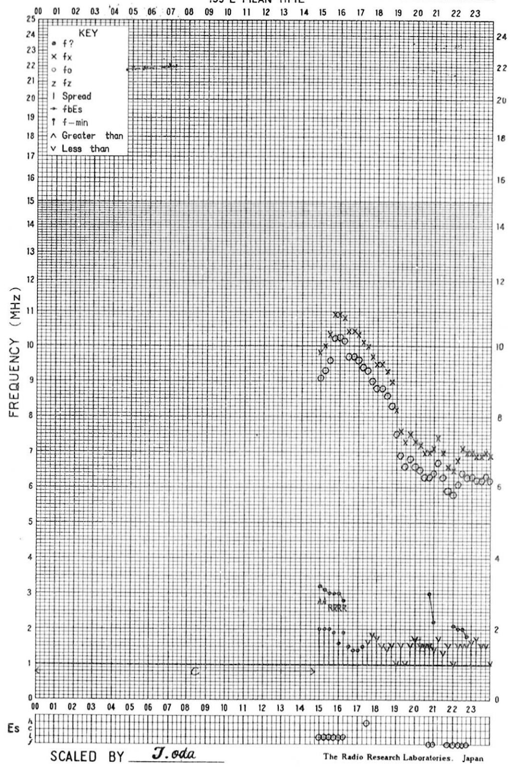

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 10. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 10. 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 APR 10 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nitoma
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 11.1971

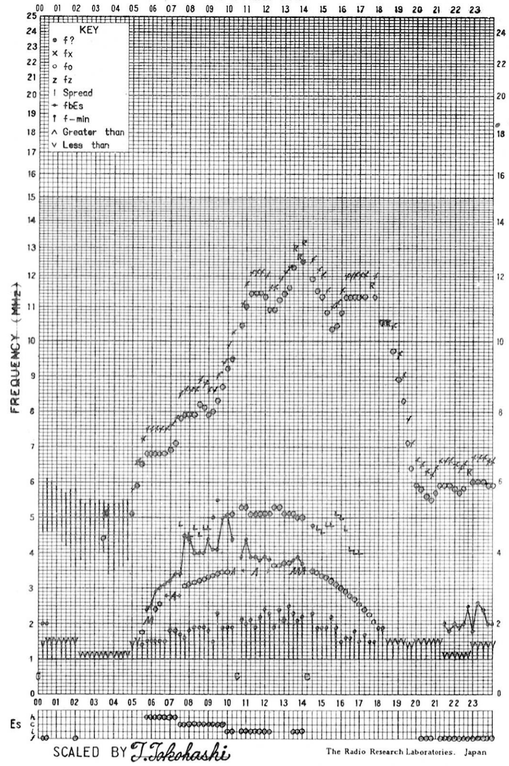


SCALED BY J. Oda

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 11. 1971

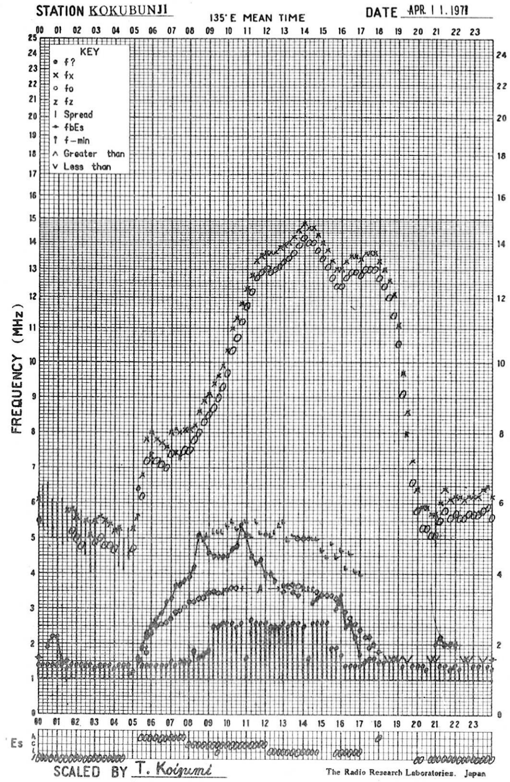


SCALED BY T. Takahashi

The Radio Research Laboratories, Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR. 11.1971

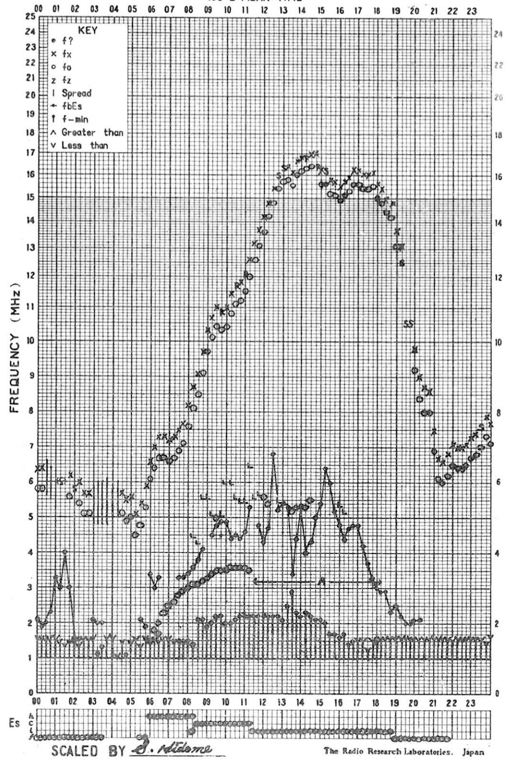


SCALED BY T. Koizumi

The Radio Research Laboratories, Japan

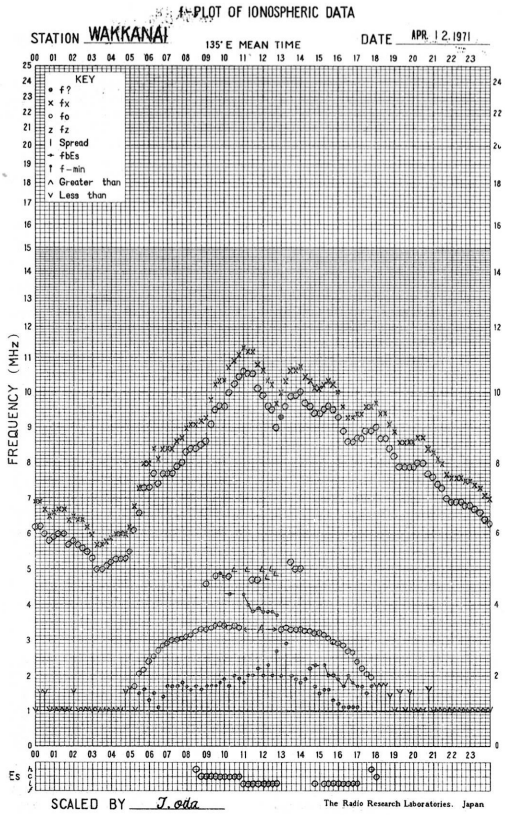
f-PLOT OF IONOSPHERIC DATA

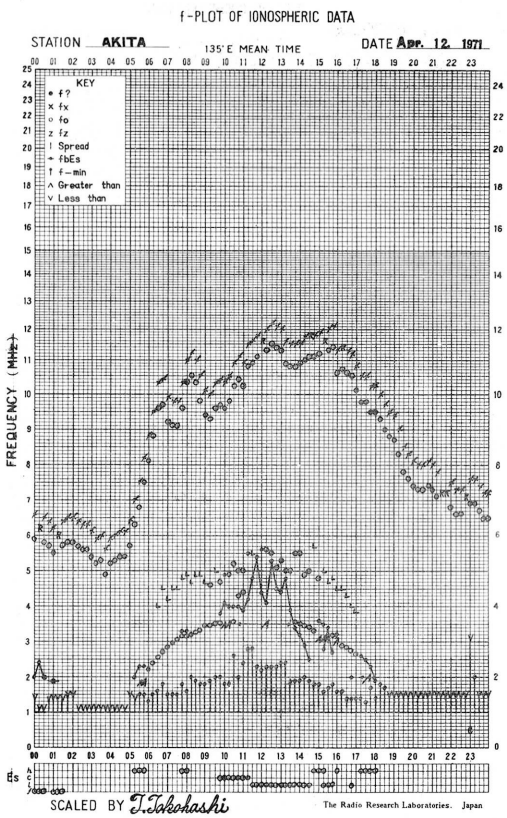
STATION YAMAGAWA 135°E MEAN TIME DATE APR. 11.1971

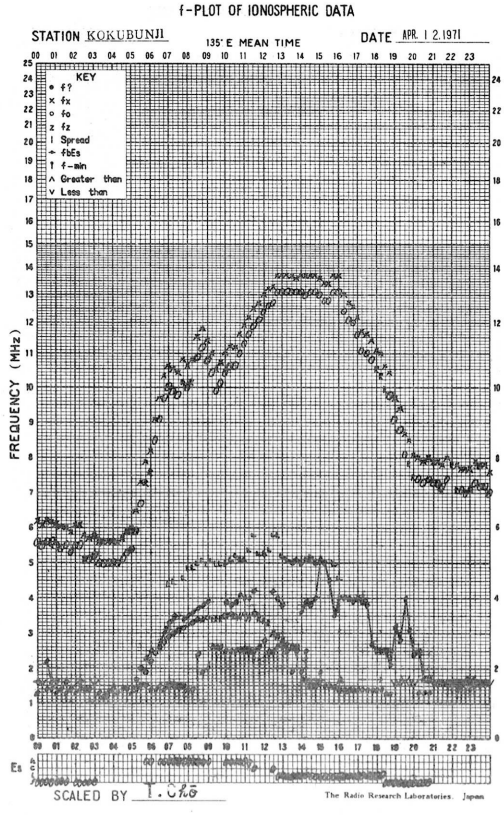


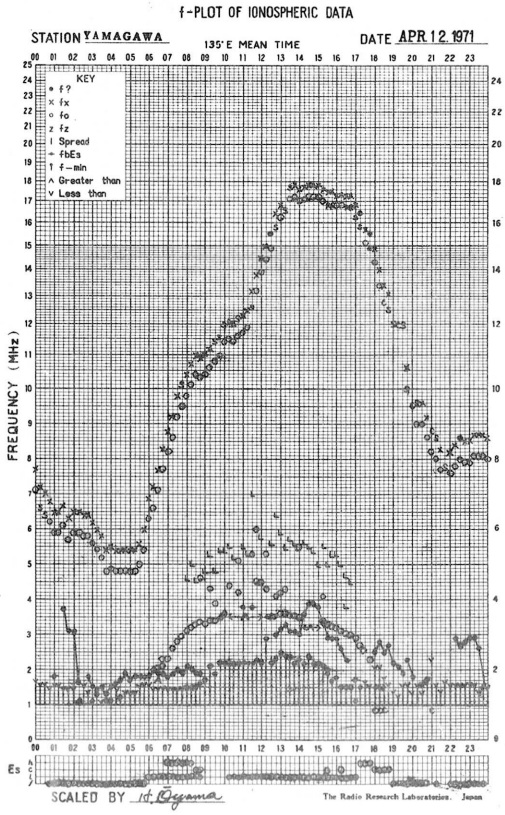
SCALED BY S. Kidome

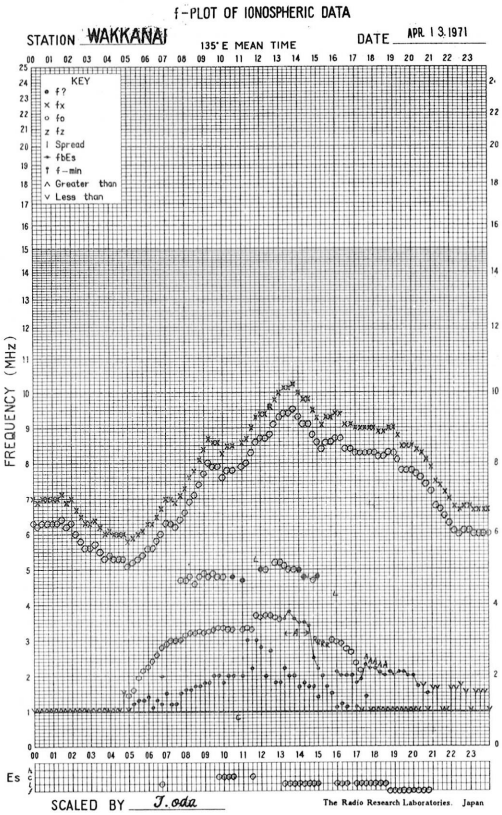
The Radio Research Laboratories, Japan

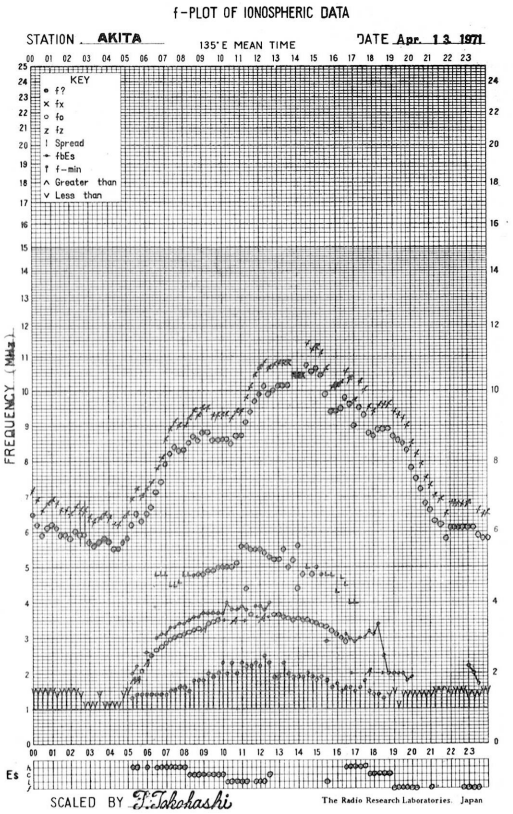

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 12. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. oda
The Radio Research Laboratories. Japan

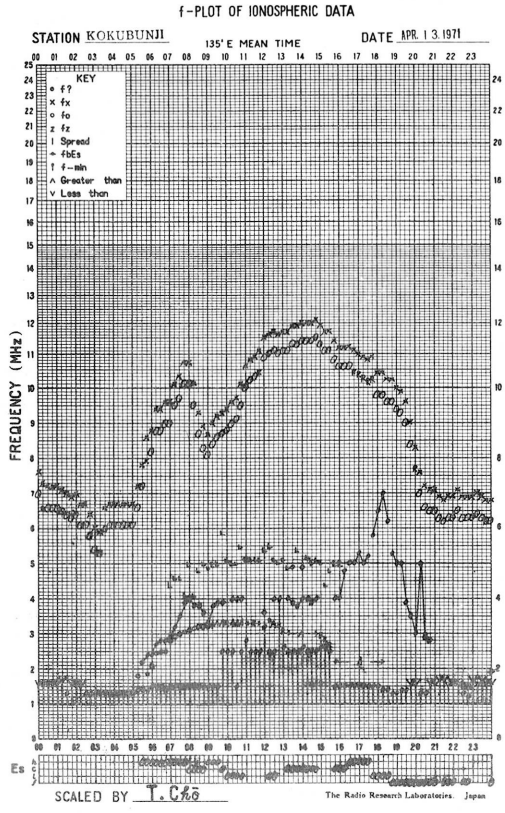

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 12. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

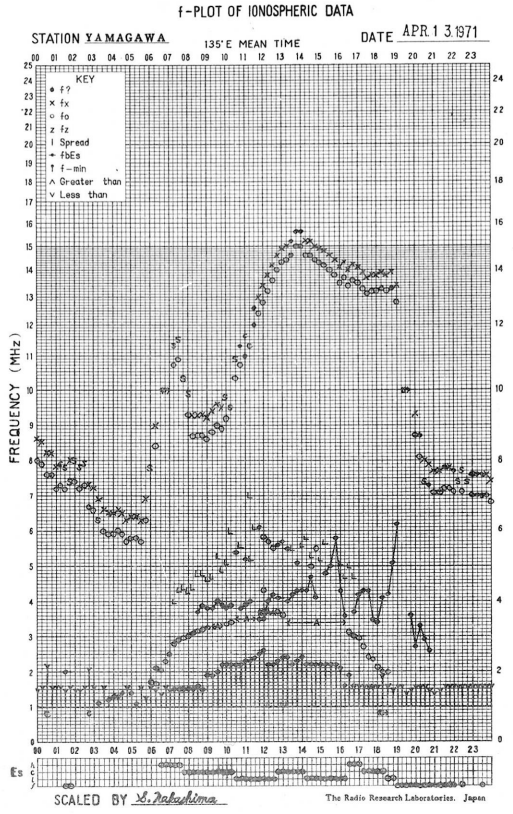

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 12. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR 12 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY H. Ogawa
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 13.1971
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

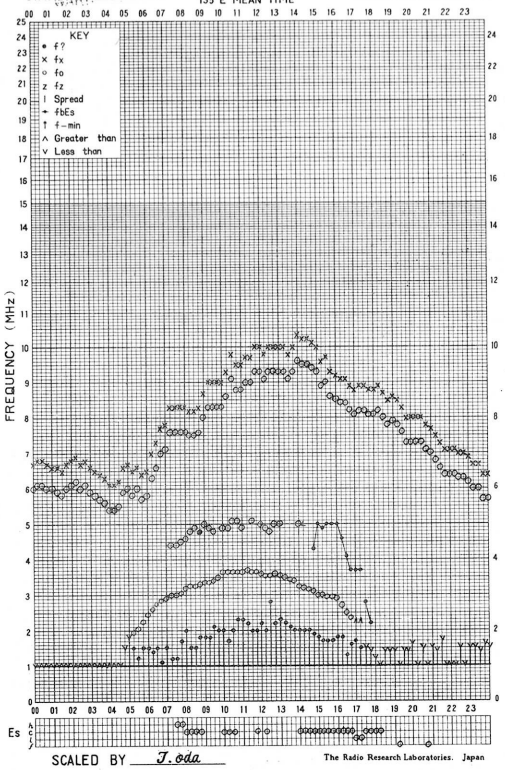

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 13. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 13.1971
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 APR. 13.1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR. 14. 1971

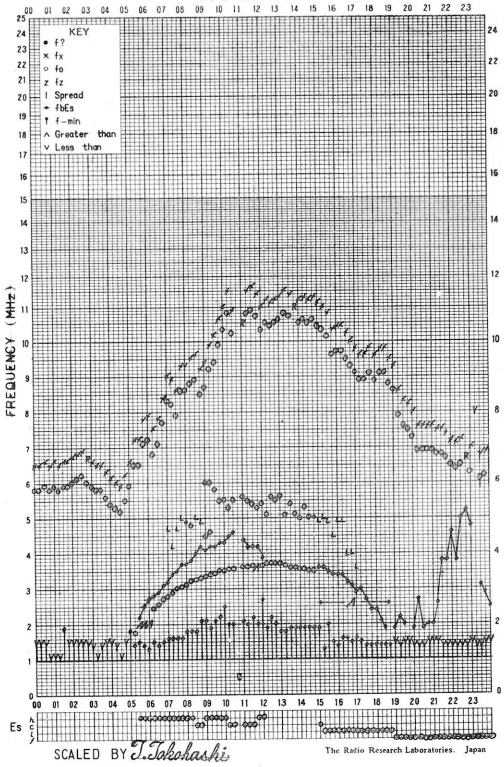


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 14. 1971

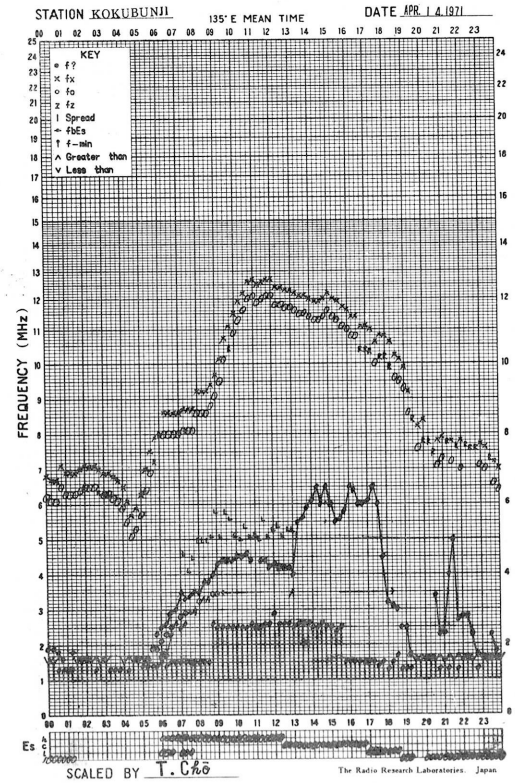


SCALED BY T. Takahashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR. 14. 1971

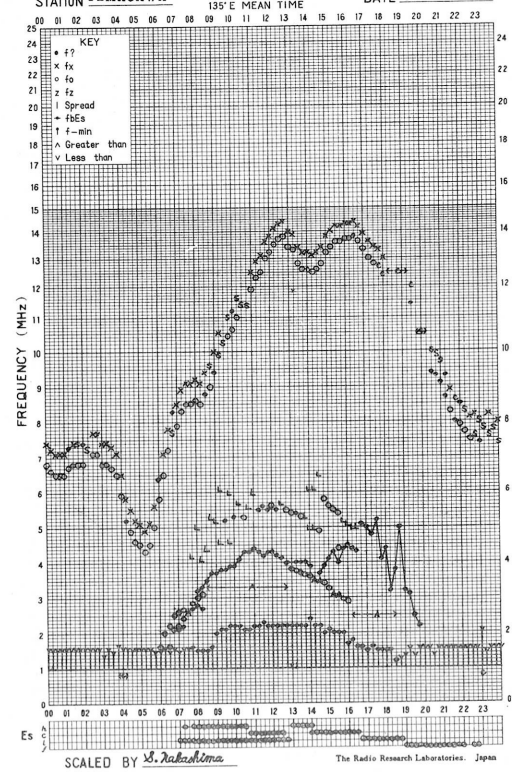


SCALED BY T. Chō

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE APR 14 1971

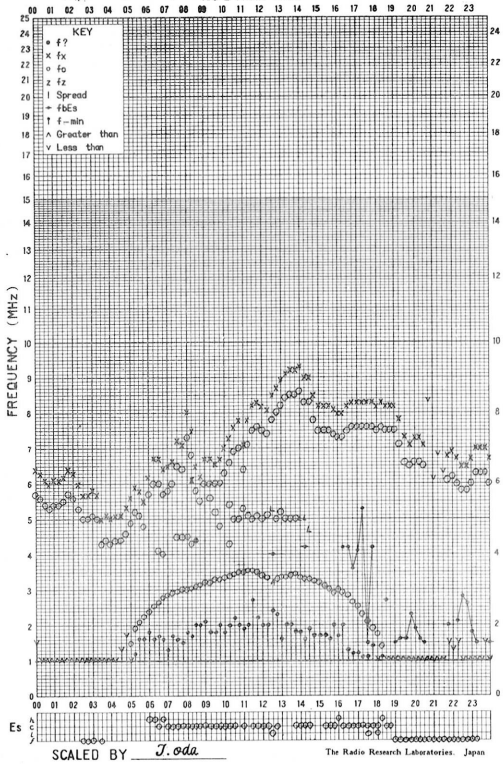


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE APR 15 1971

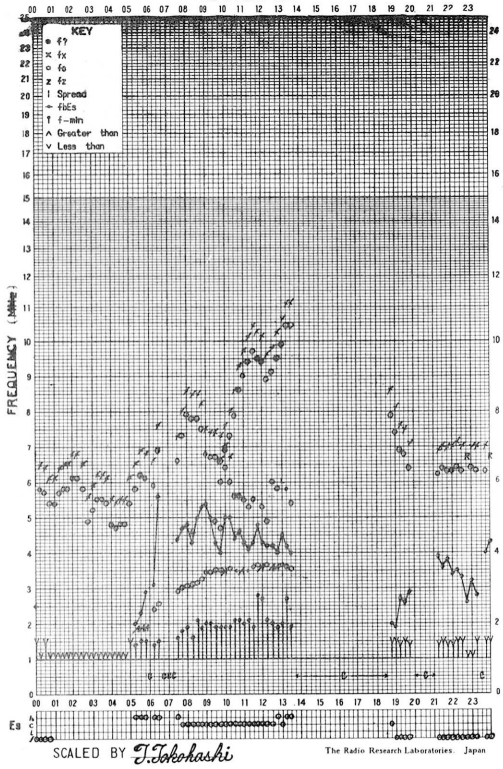


SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Apr. 15. 1971

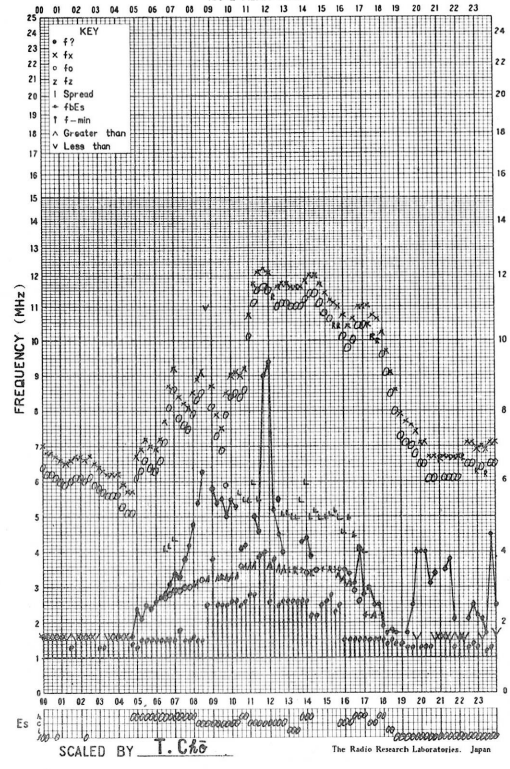


SCALED BY T. Iokohashi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE APR 15 1971

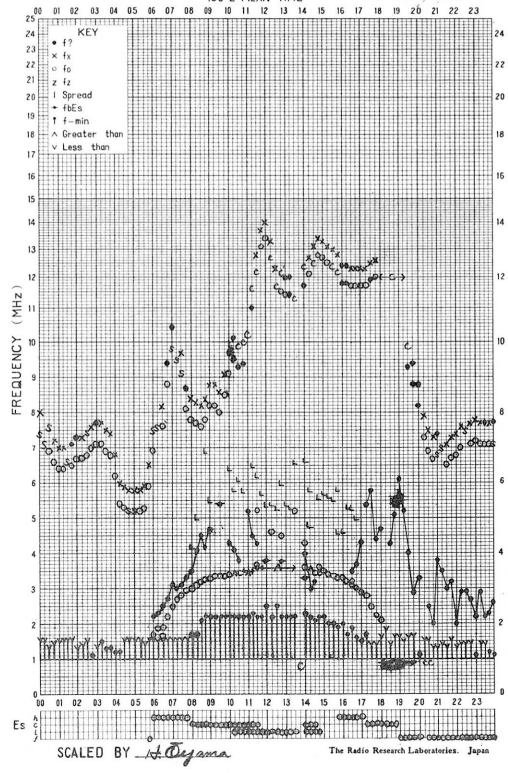


SCALED BY T. Cho

The Radio Research Laboratories. Japan

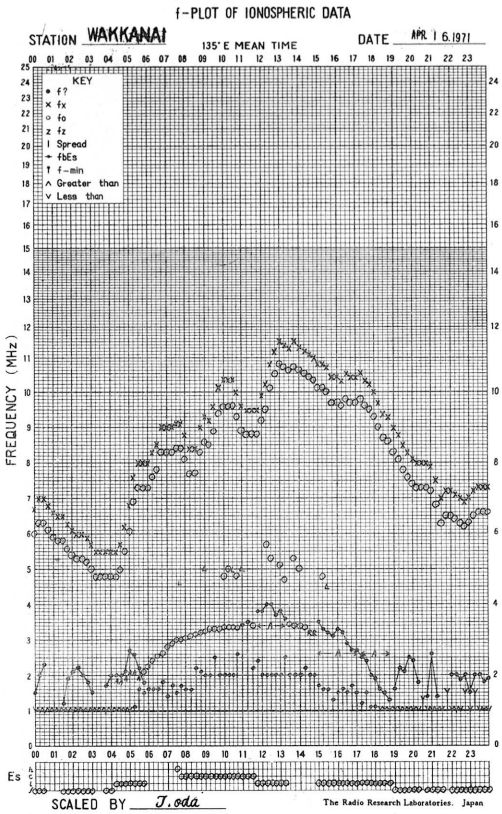
f-PLOT OF IONOSPHERIC DATA

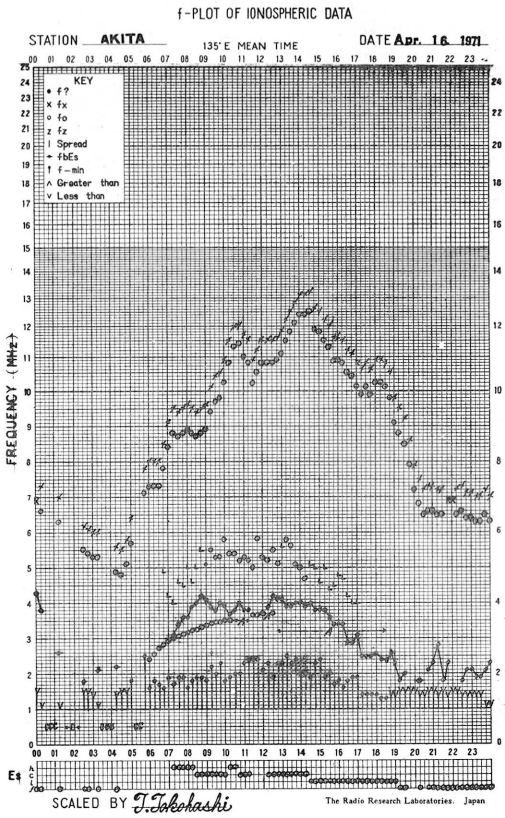
STATION YAMAGAWA 135°E MEAN TIME DATE APR 15 1971

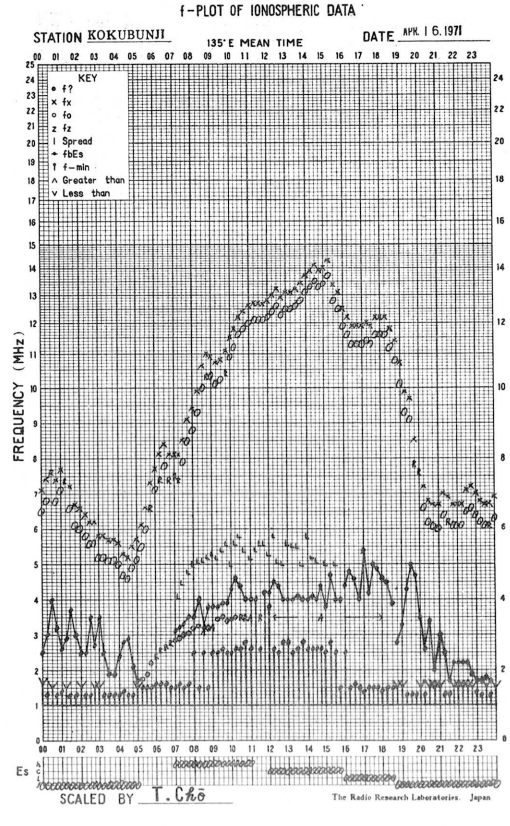


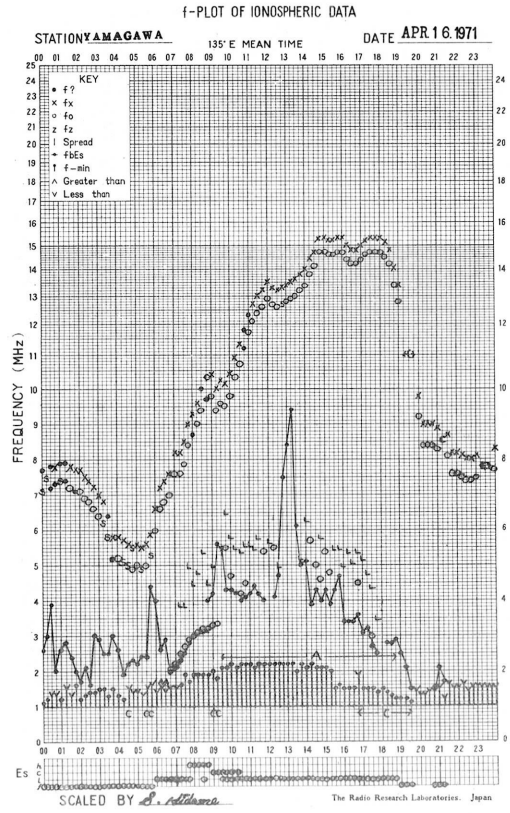
SCALED BY A. Oyama

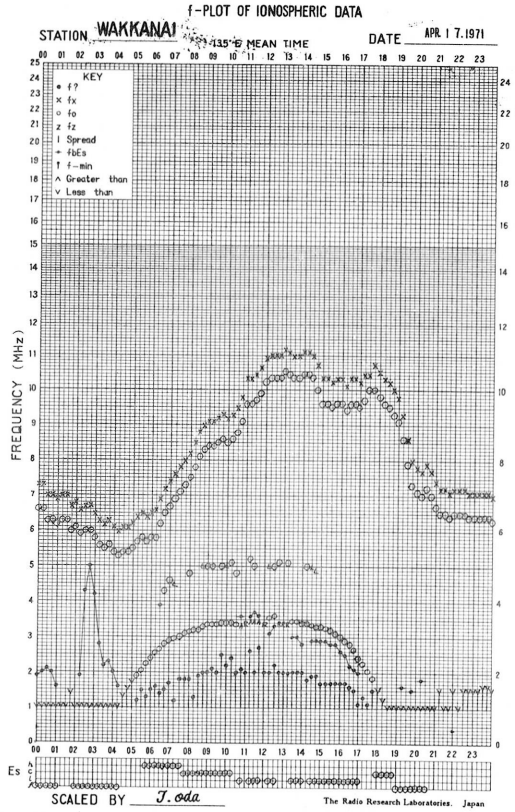
The Radio Research Laboratories. Japan

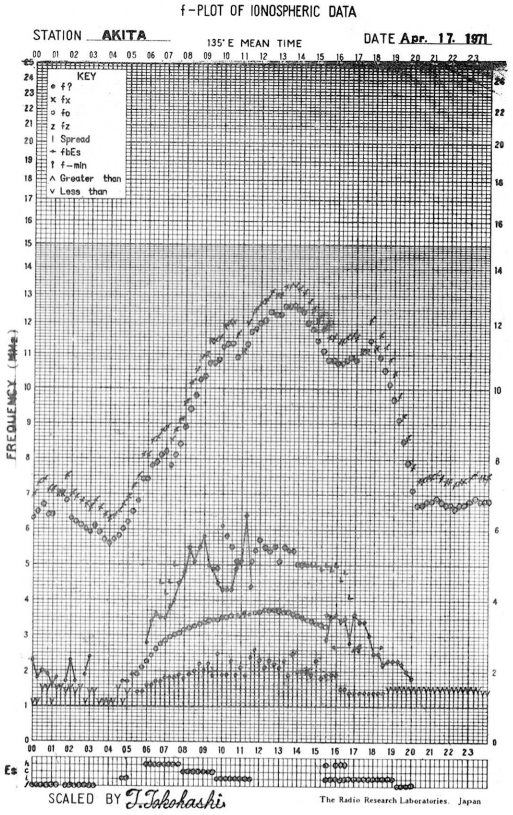

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 16.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan

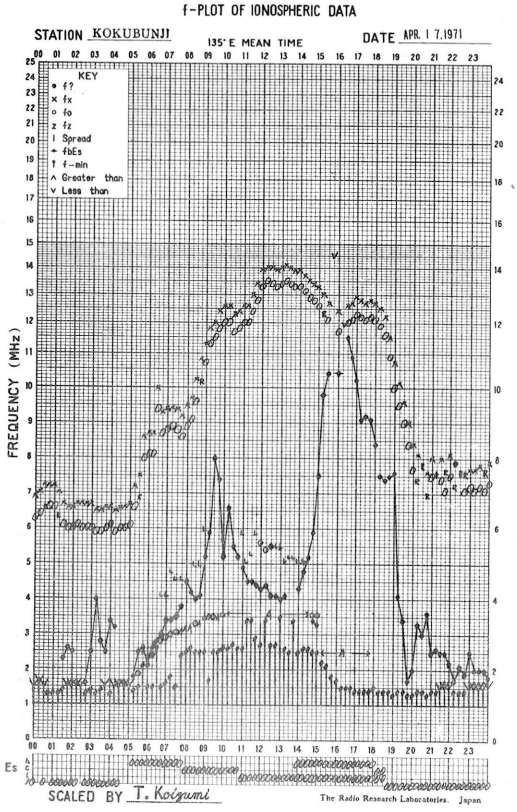

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 16. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

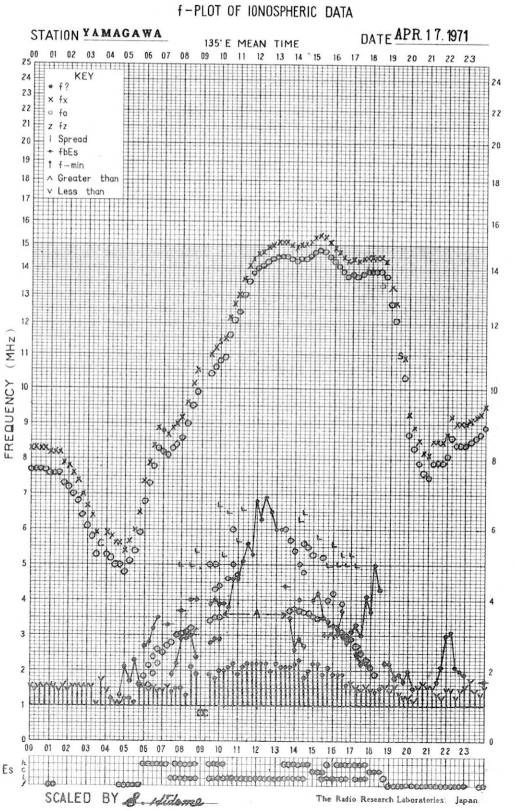

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 16.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

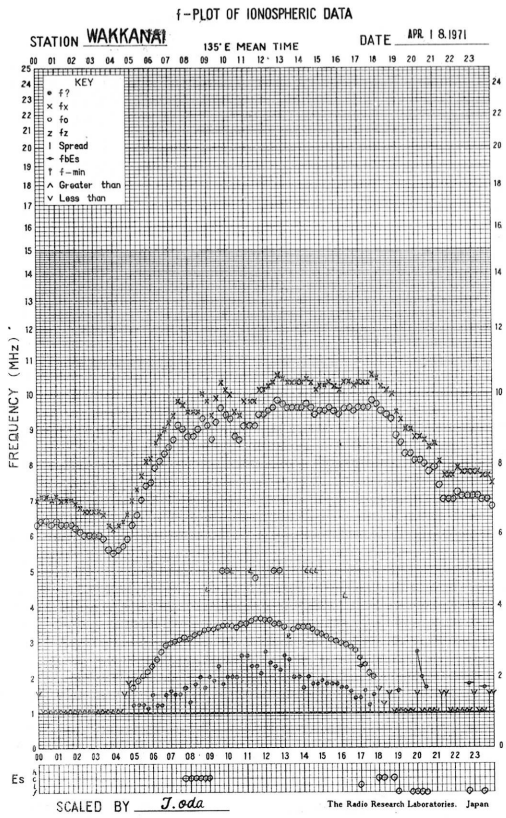

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 16.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊸ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY A. Ichikawa
The Radio Research Laboratories. Japan

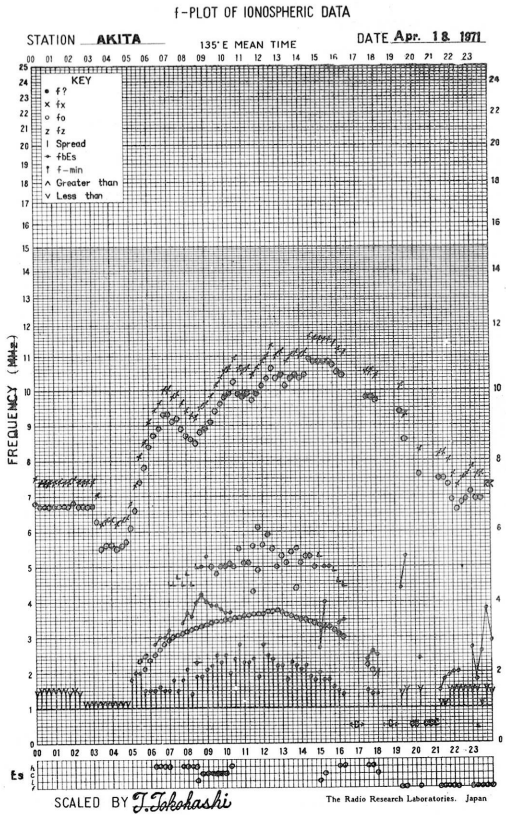

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR. 17. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

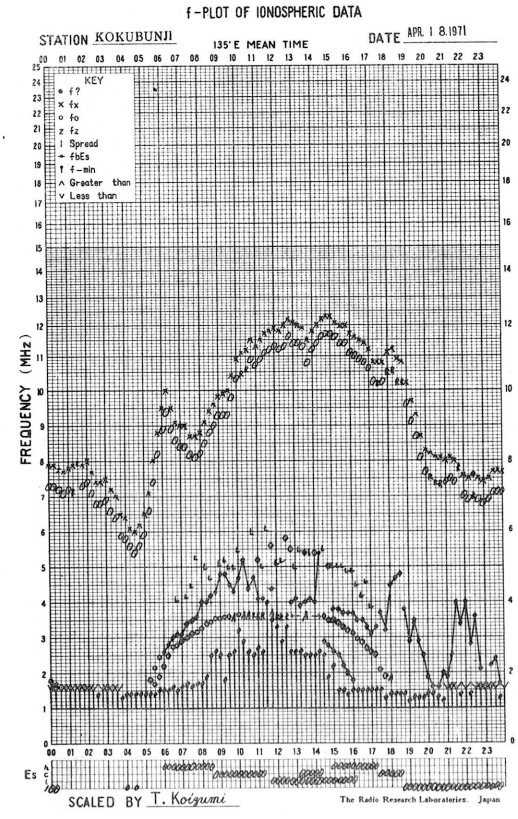

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 17. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

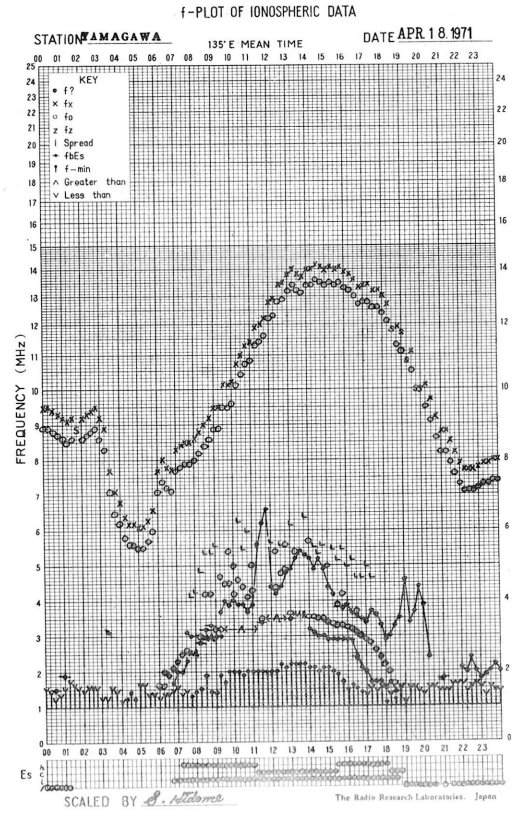

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR. 17. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan

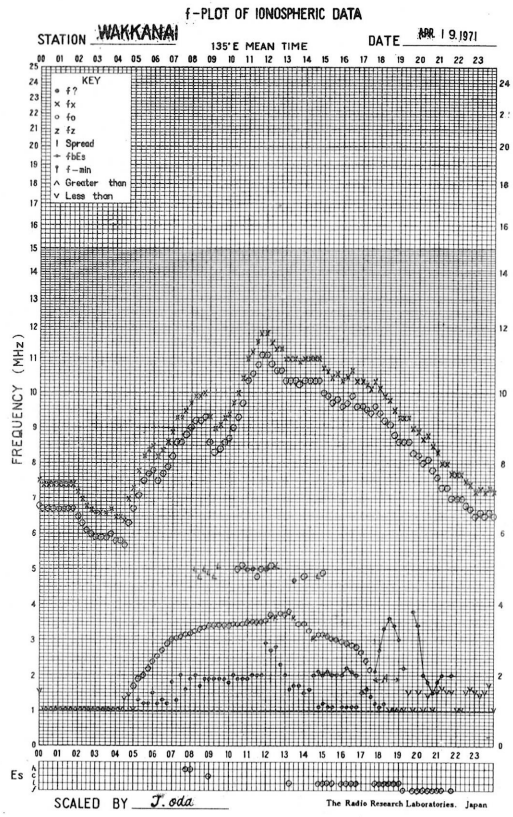

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR. 17. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Utsuma
The Radio Research Laboratories. Japan

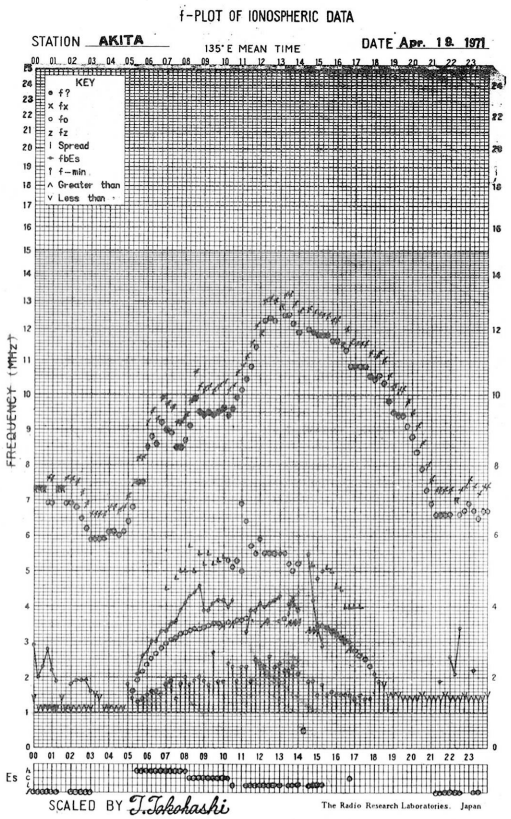

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 18.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

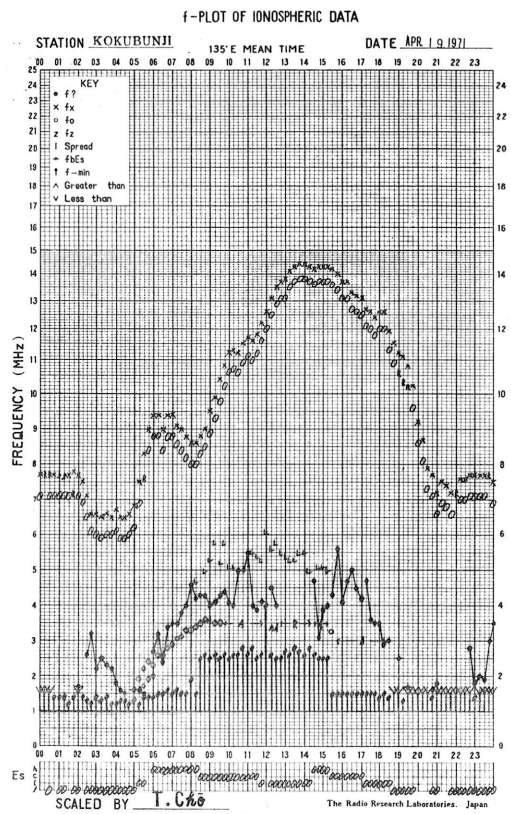

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 18. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

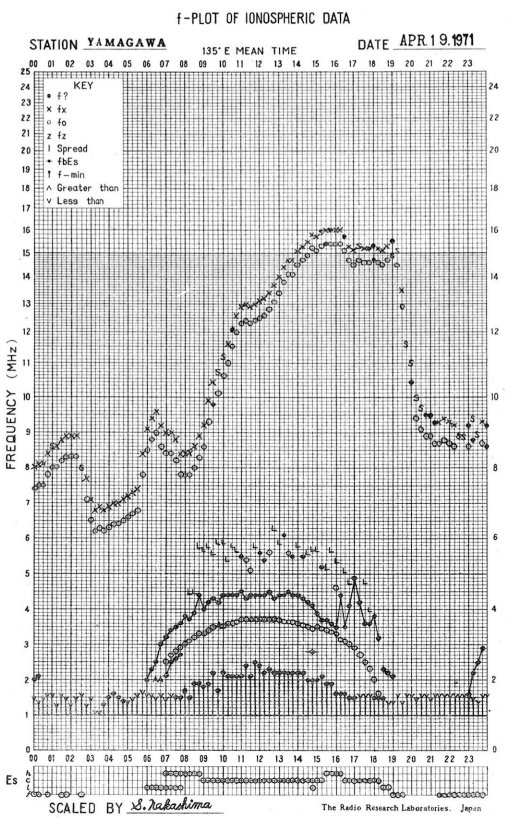

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 18.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan

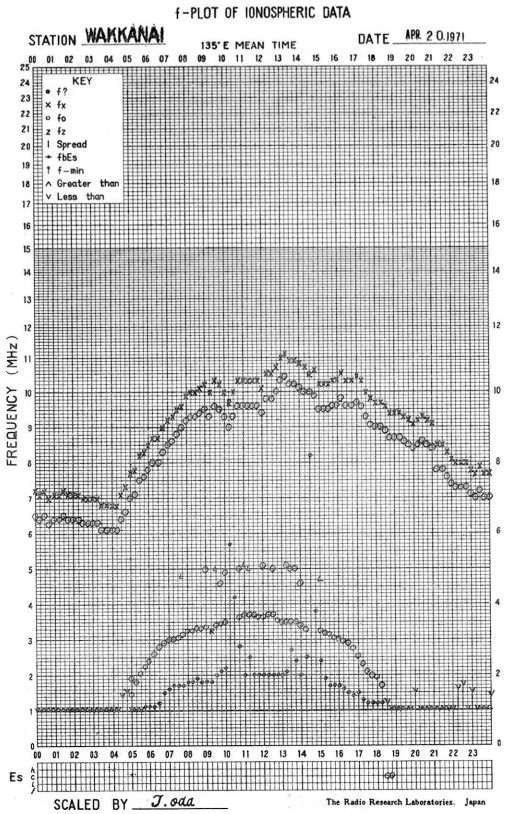

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 18. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Shibuya
The Radio Research Laboratories. Japan

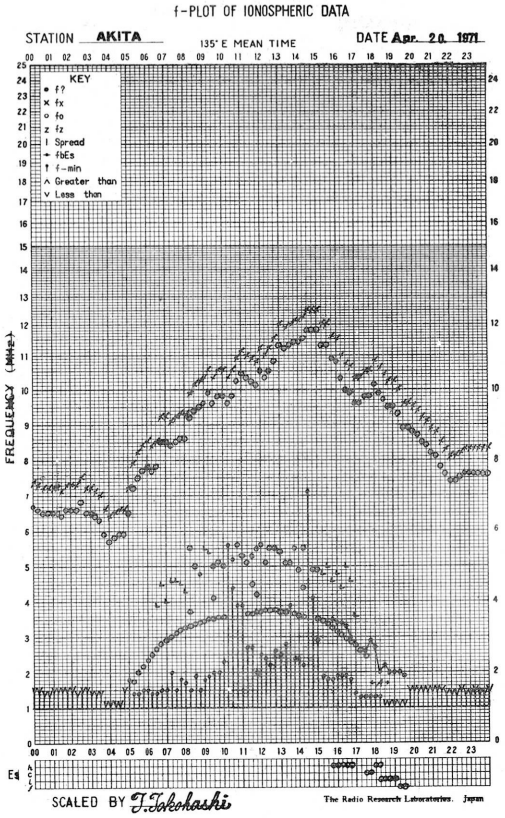

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR 19 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

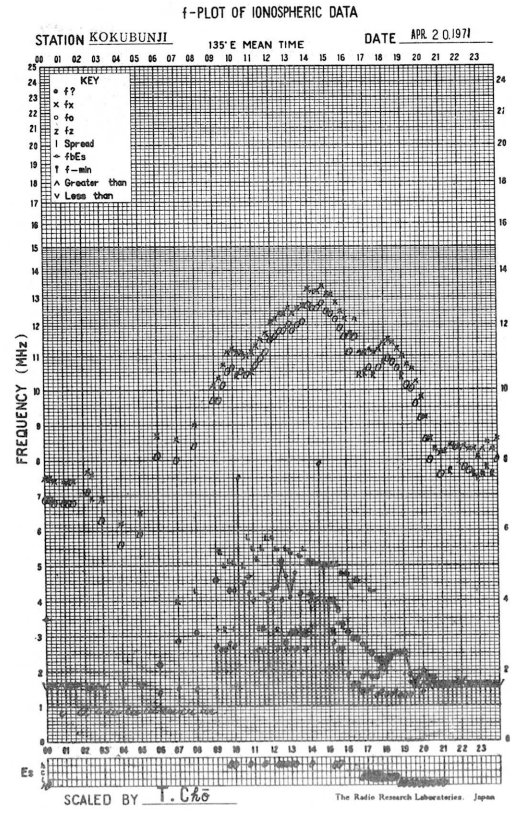

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 19. 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

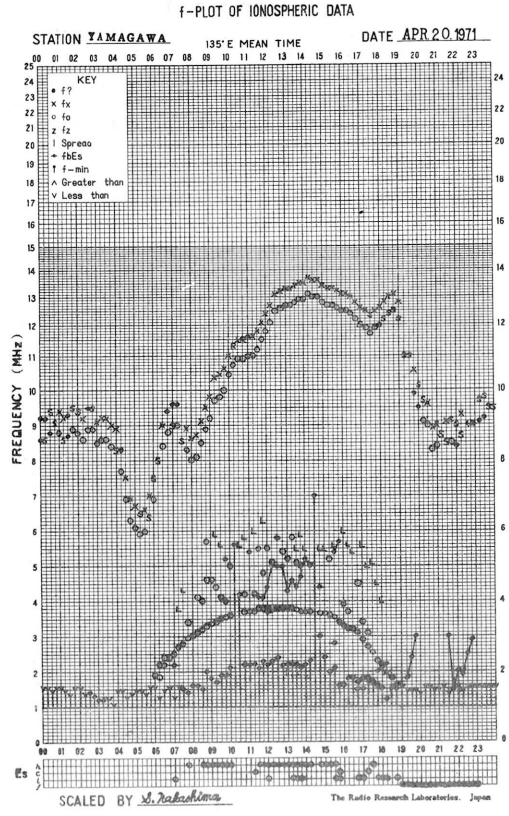

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR 19 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

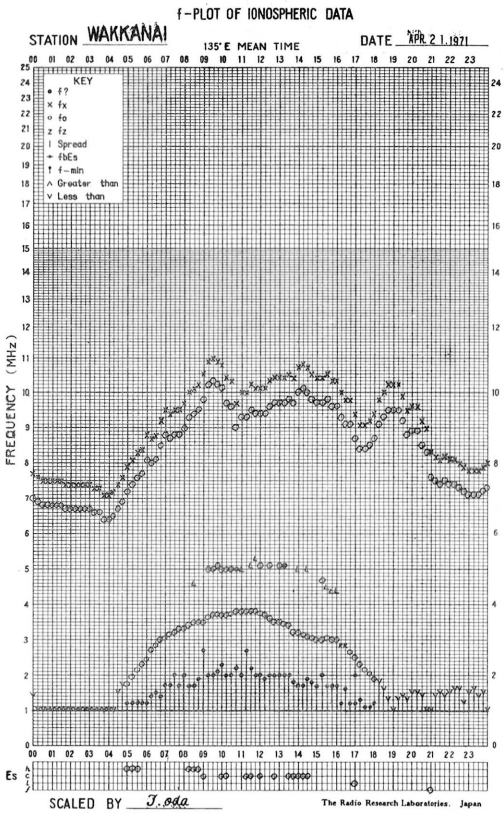

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR 19 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

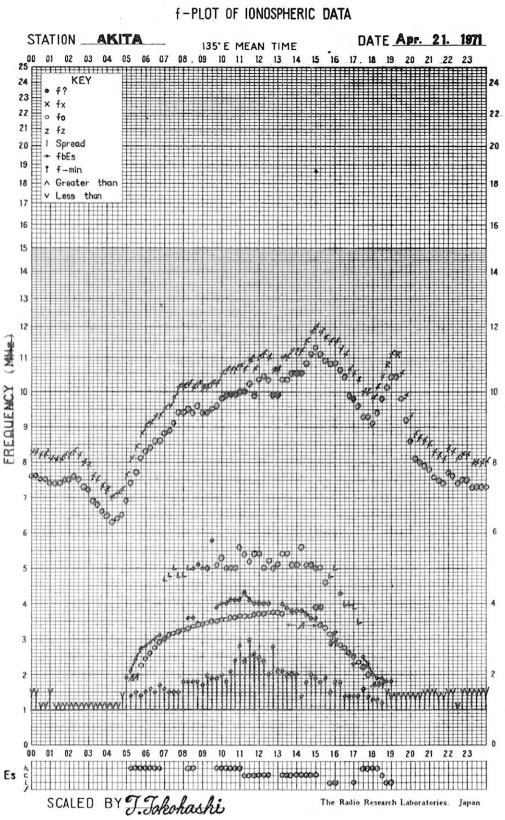

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR 20 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. ooa
The Radio Research Laboratories. Japan

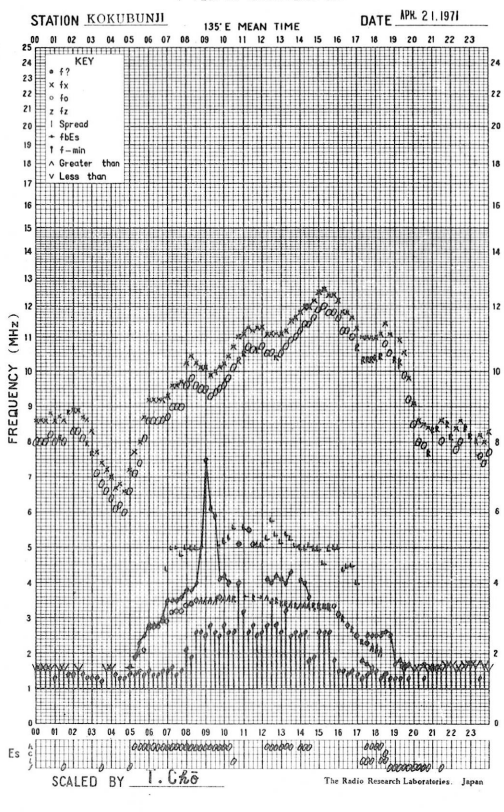

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 20. 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

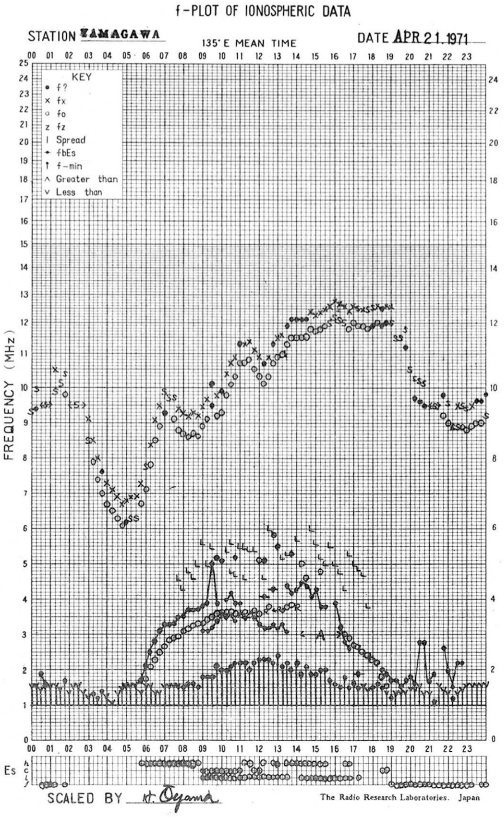

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR 20 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

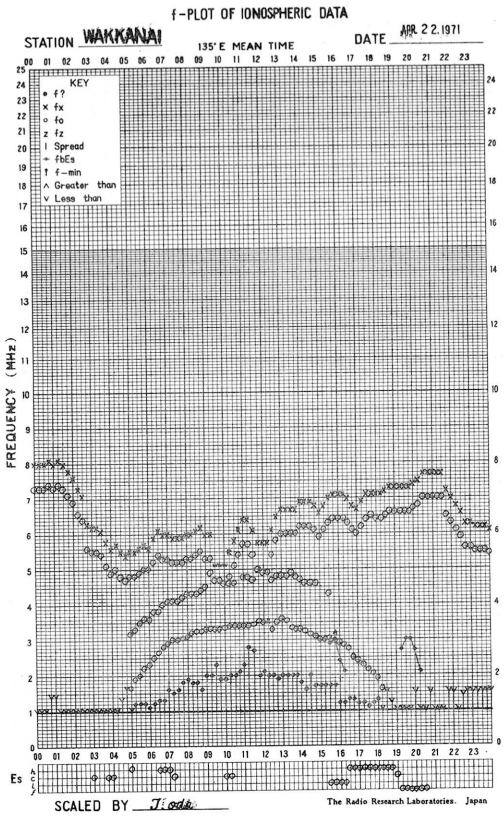

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR 20 1971
KEY
• f?
× fx
○ fo
z fz
I Spread
→ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

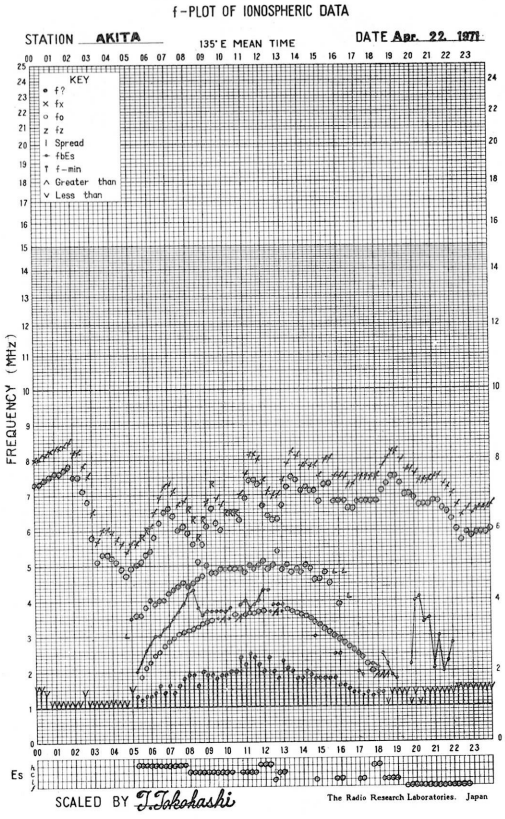

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 21. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. oda
The Radio Research Laboratories. Japan

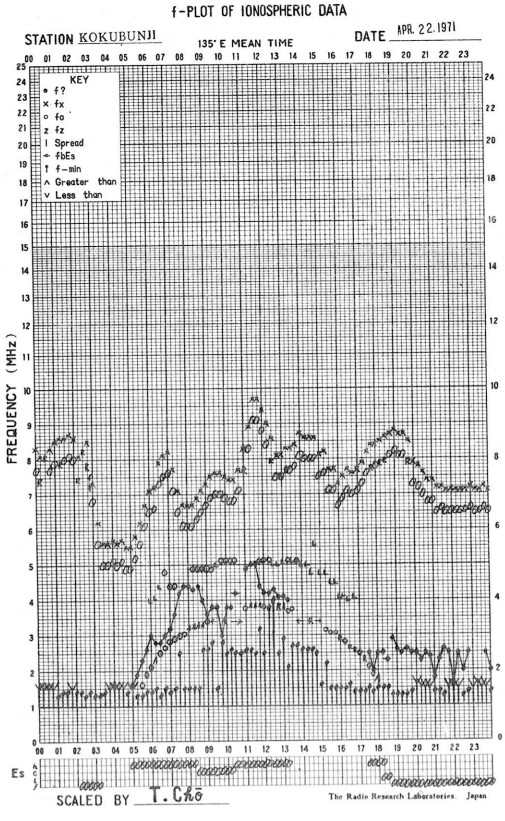

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 21. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

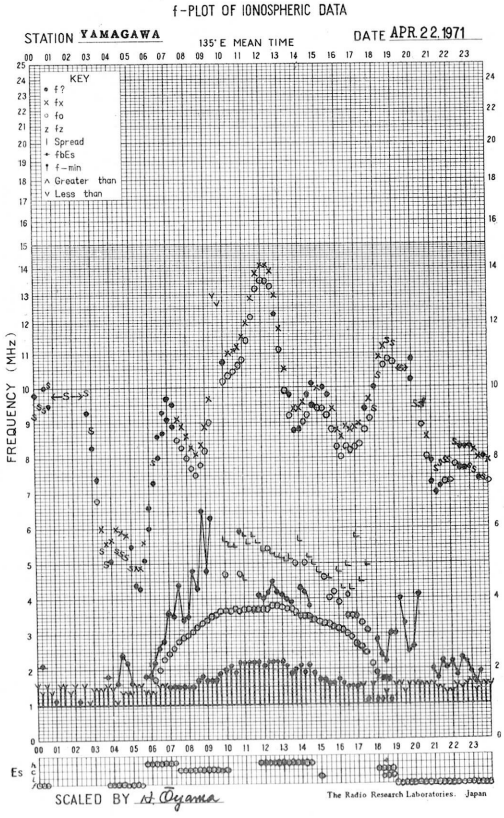

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 21. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. Ono
The Radio Research Laboratories. Japan

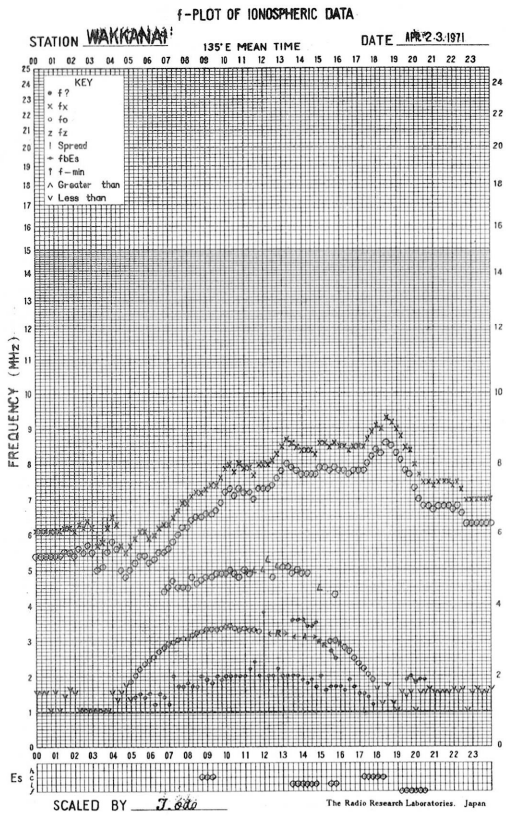

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR 21 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY K. Oyama
The Radio Research Laboratories. Japan

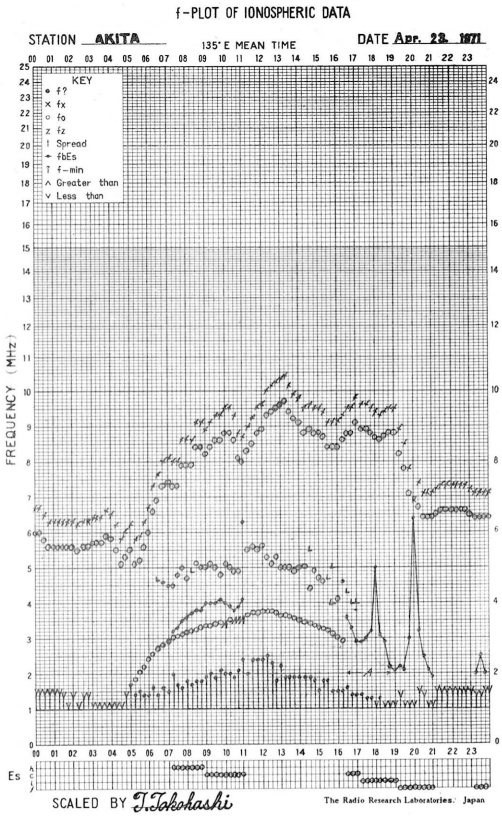

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR 22.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY Iioda
The Radio Research Laboratories. Japan

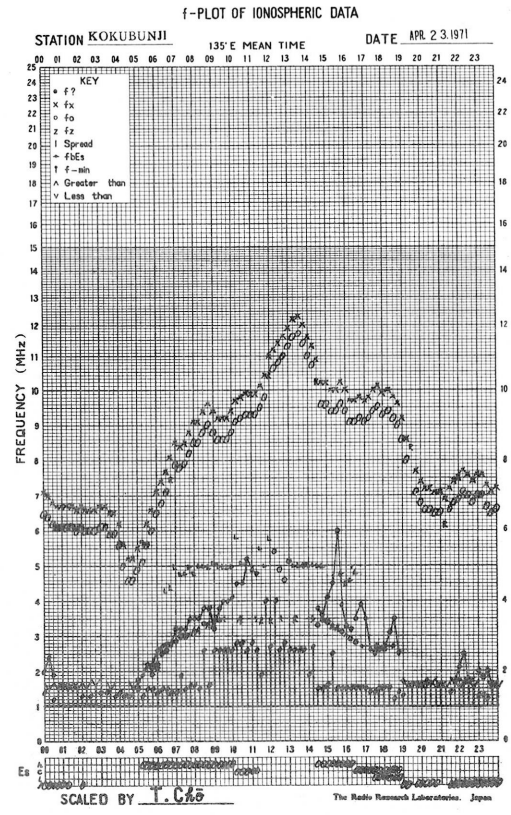

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 22. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Iokohashi
The Radio Research Laboratories. Japan

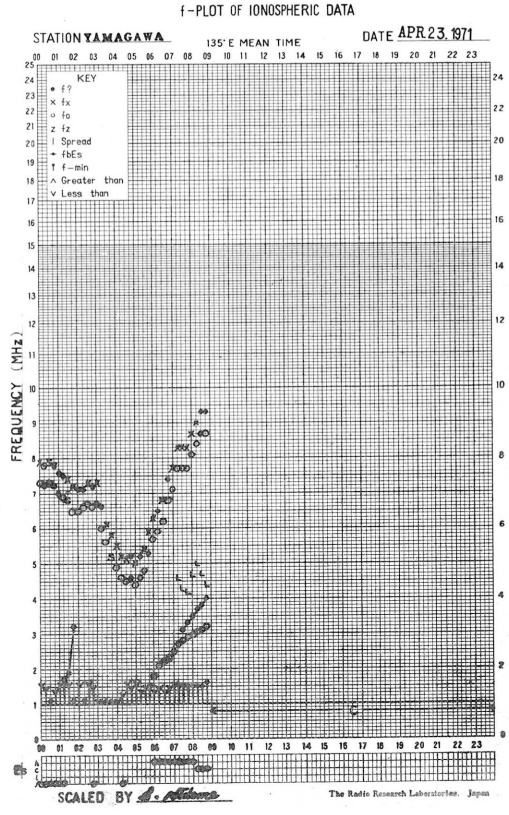

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 22.1971
KEY
• f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

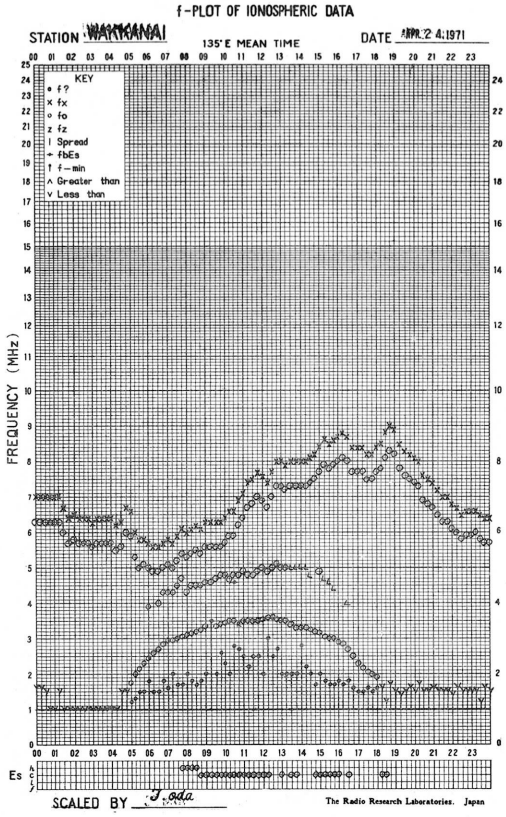

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 22. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY N. Oyama
The Radio Research Laboratories. Japan

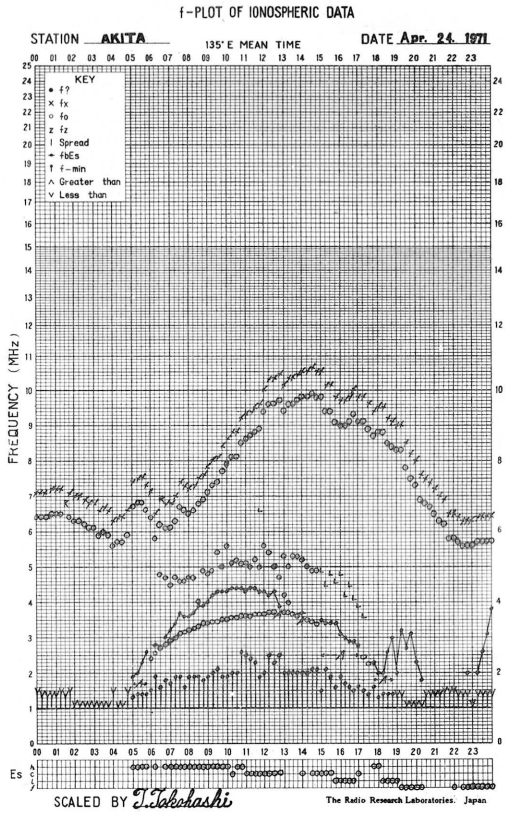

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR 2-3 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ito
The Radio Research Laboratories. Japan

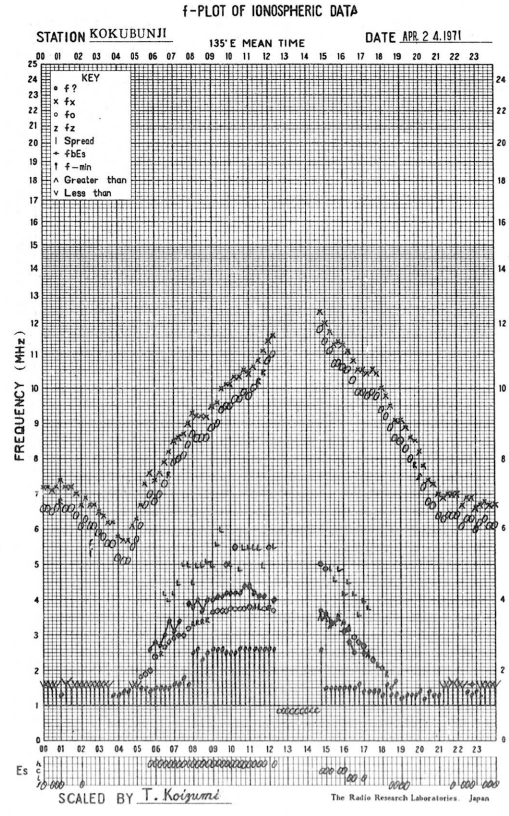

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 23. 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

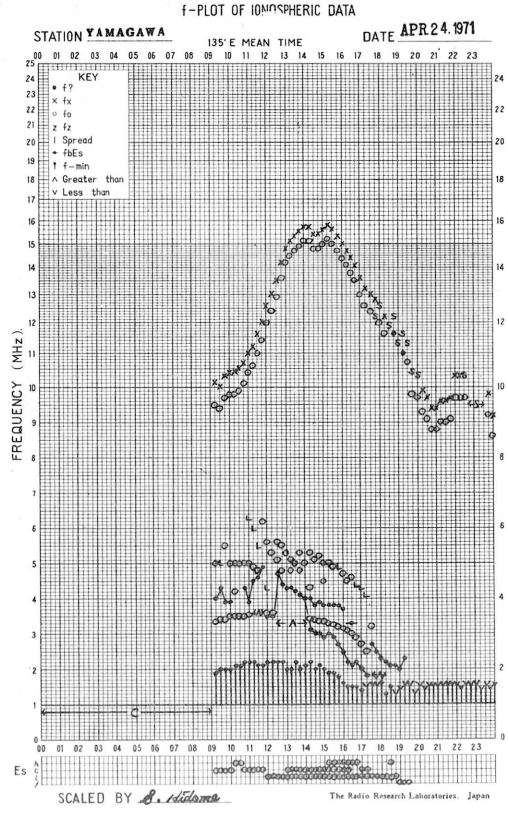

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR 2 3 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Ito
The Radio Research Laboratories. Japan

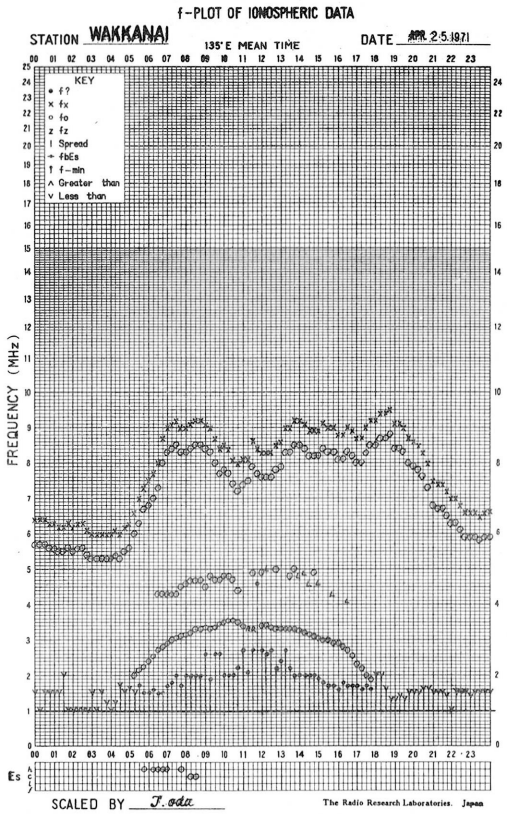

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR 23, 1971
KEY
• f?
× fx
○ fo
z fz
! Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakano
The Radio Research Laboratories. Japan

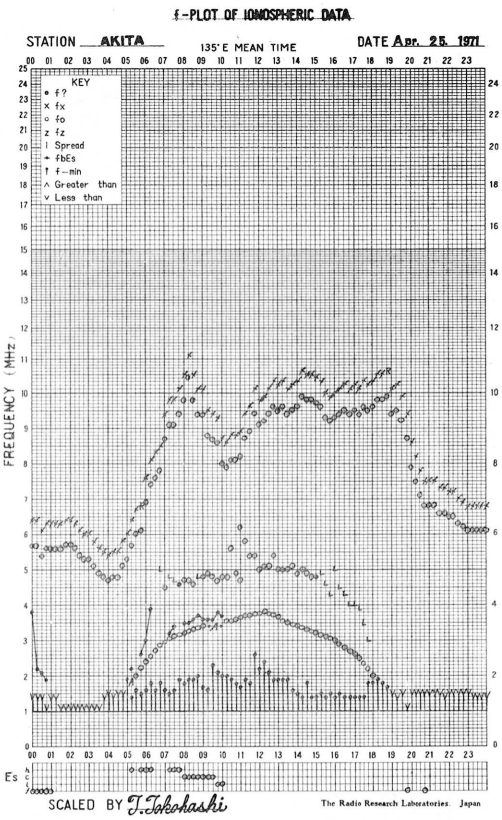

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 24. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

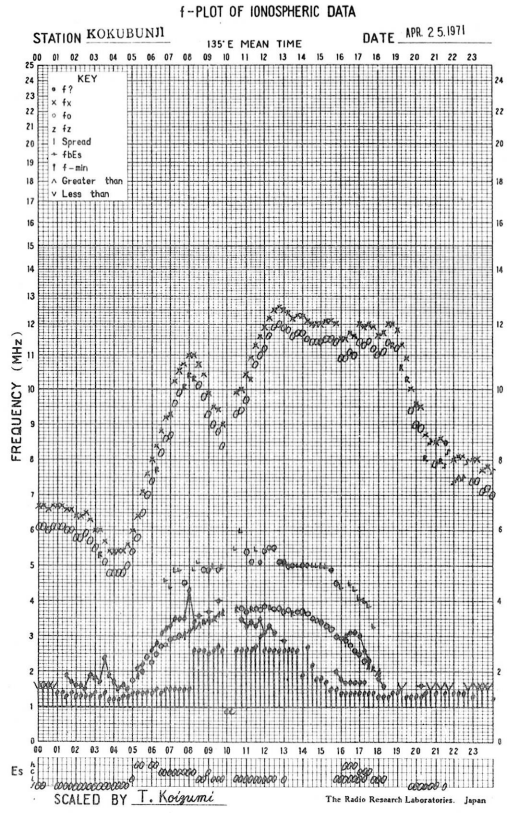

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 24. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

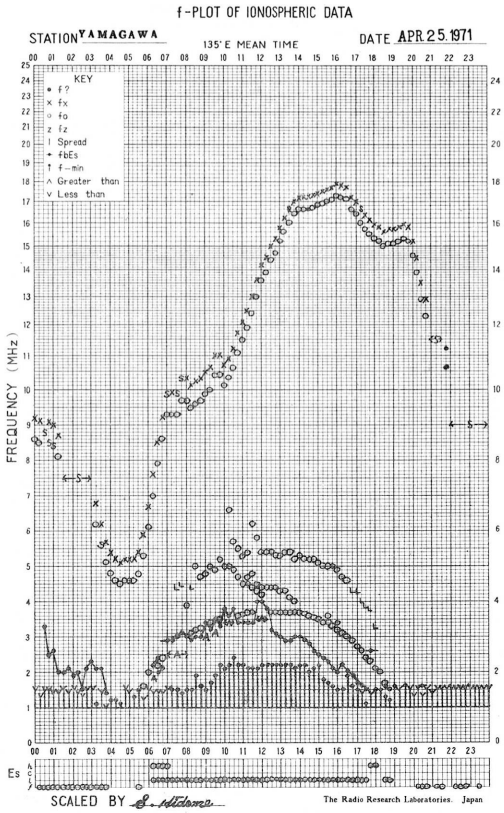

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 24. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan

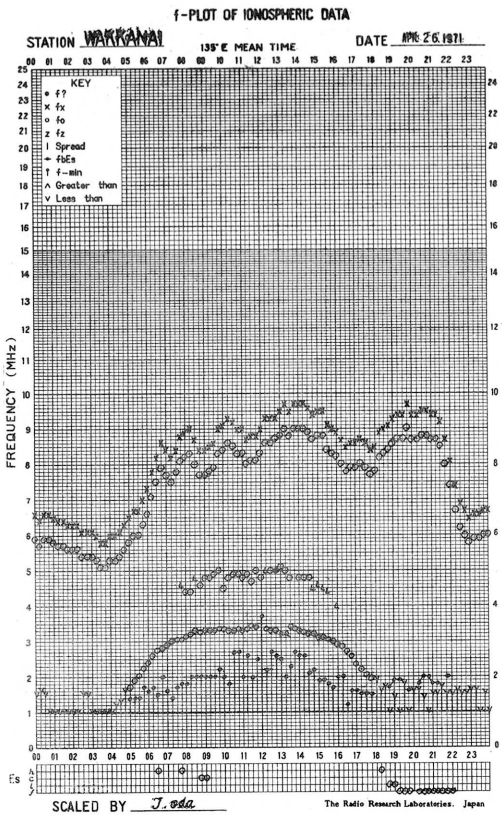

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 24. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
⊣ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nishima
The Radio Research Laboratories. Japan

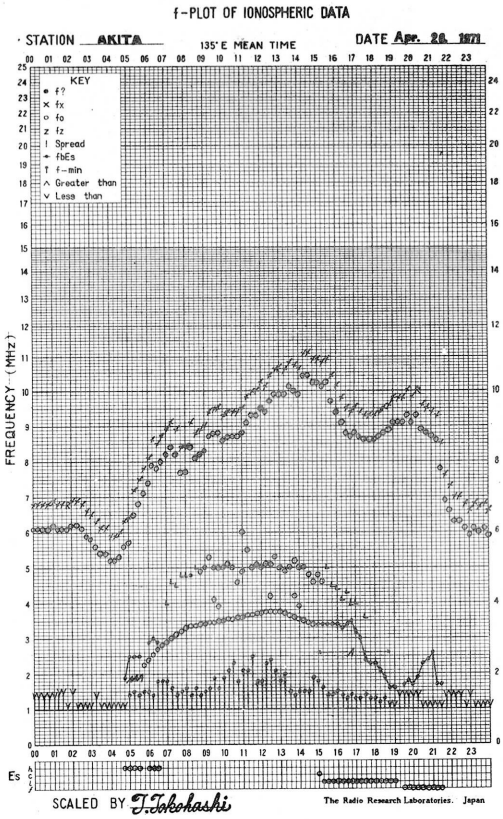

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 25. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

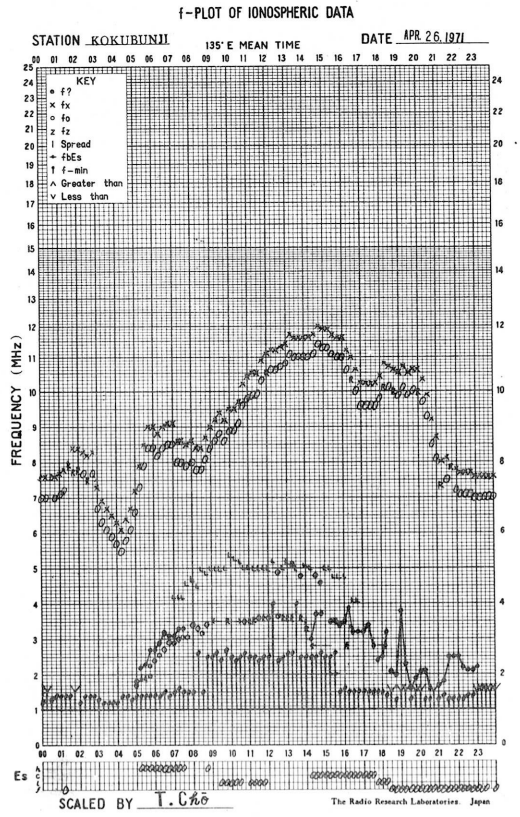

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 25. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

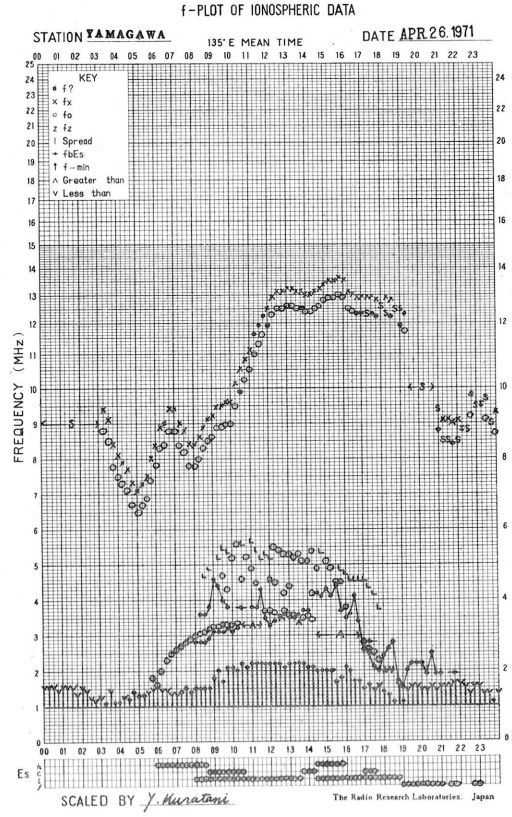

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 25. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan

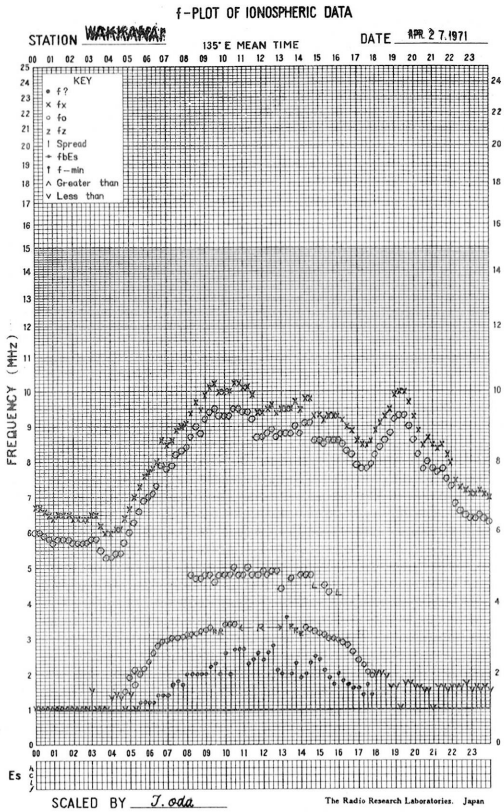

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 25. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
+ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Uchima
The Radio Research Laboratories. Japan

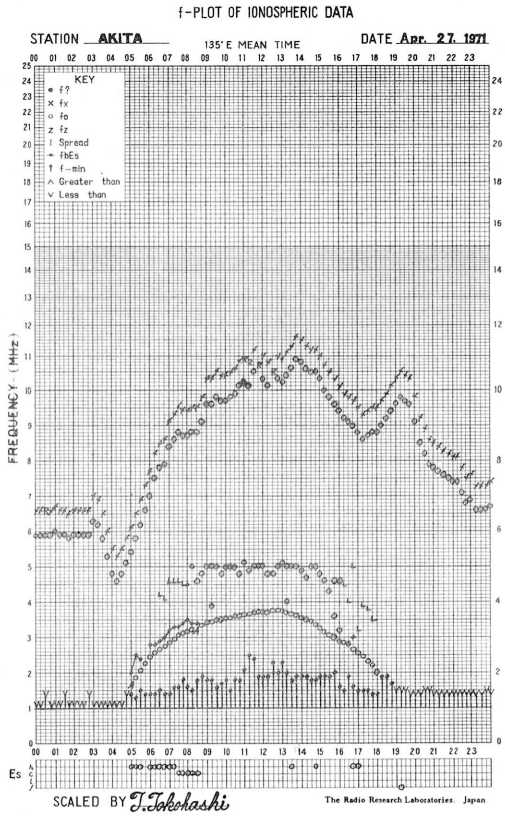

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR 26 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

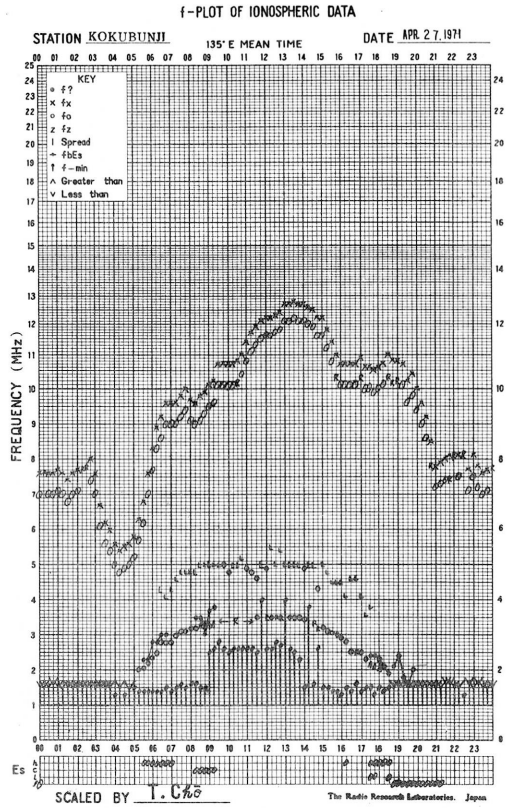

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 26, 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

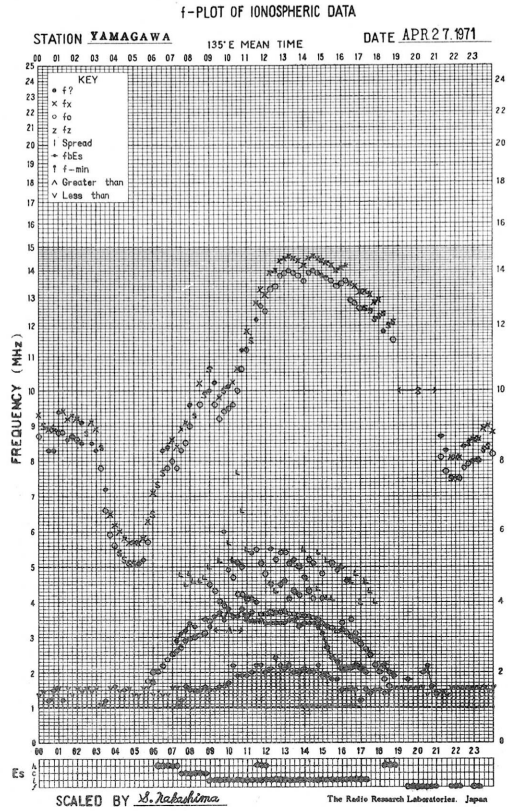

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 26, 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

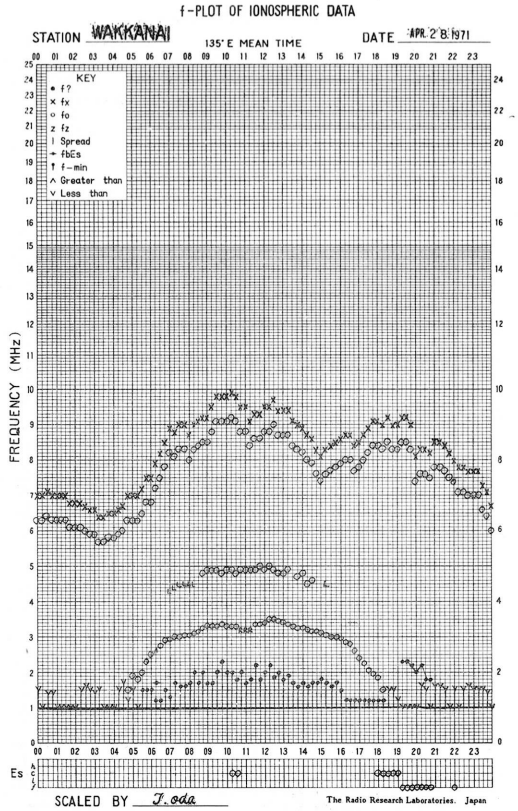

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 26. 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY Y. Murata
The Radio Research Laboratories. Japan

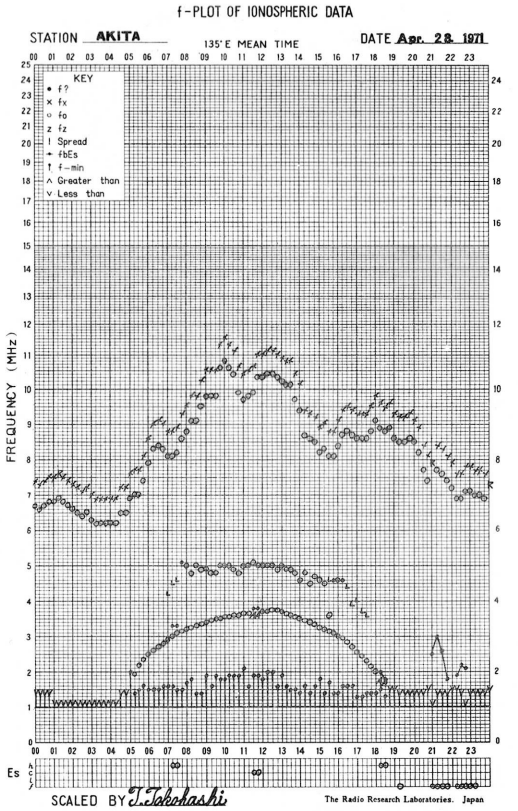

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE APR 27 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

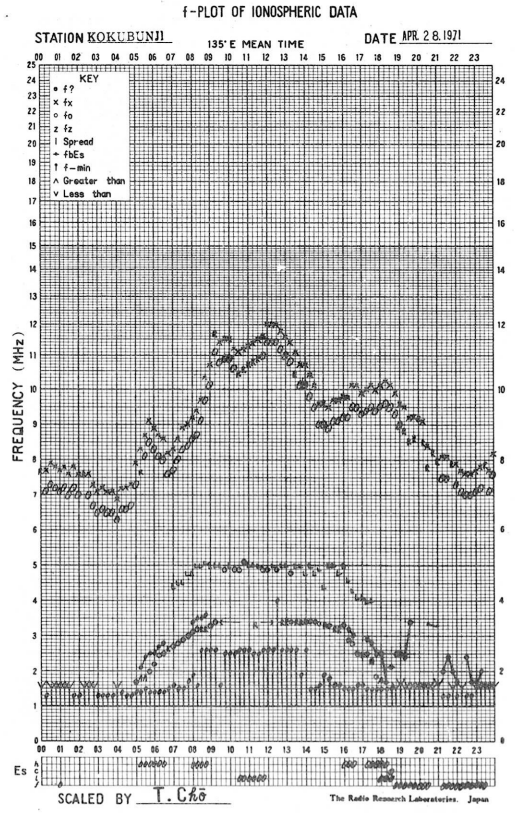

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Apr. 27. 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Tokohashi
The Radio Research Laboratories. Japan

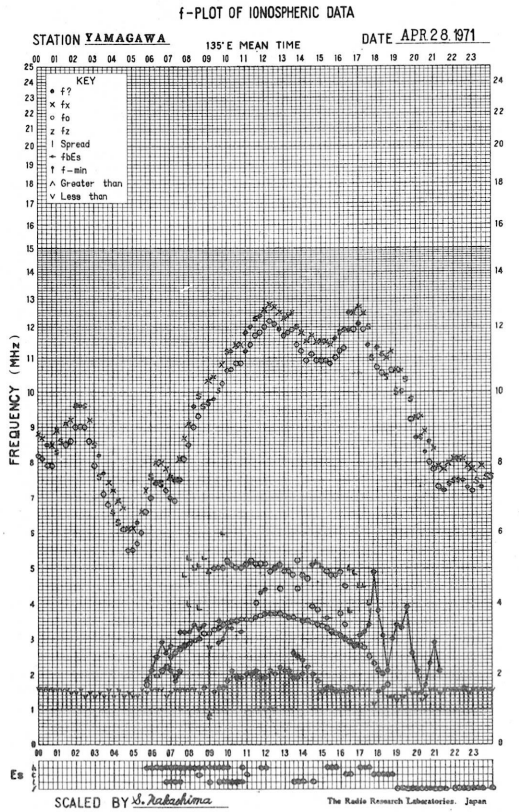

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE APR 27 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

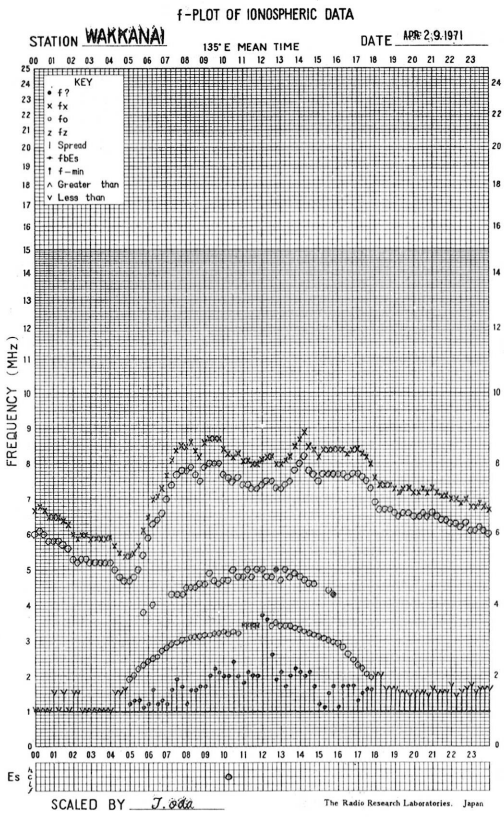

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE APR 27 1971
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

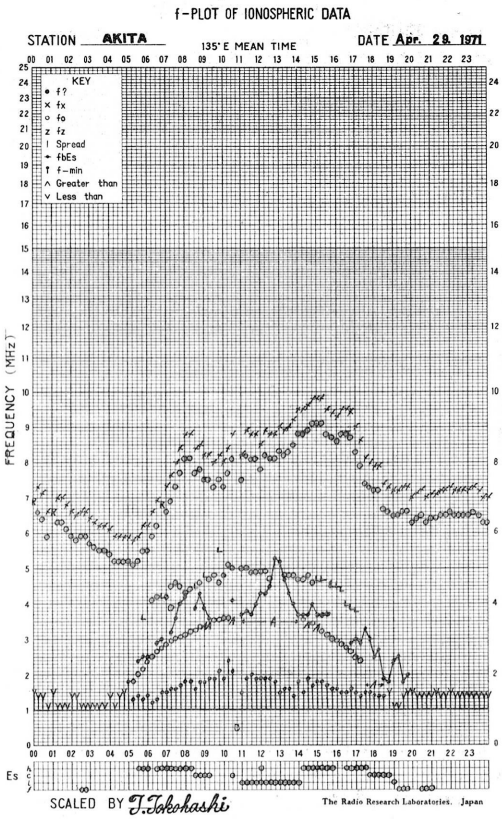

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 28. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

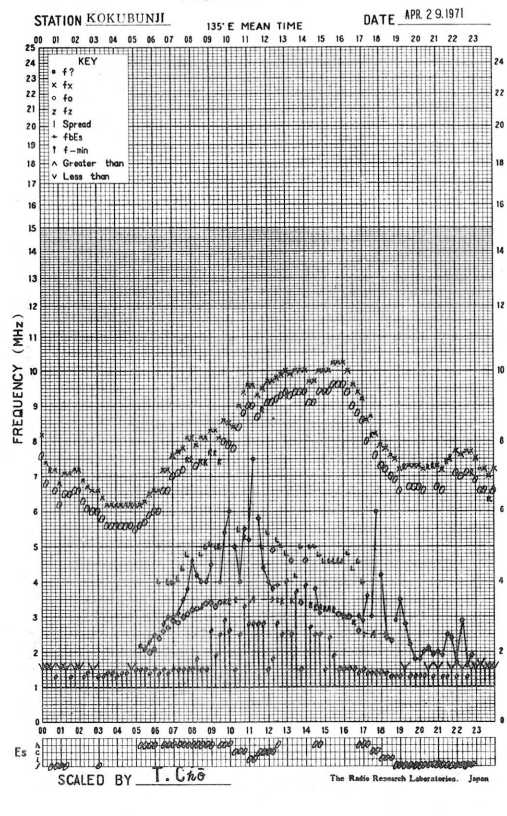

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 28. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Takahashi
The Radio Research Laboratories. Japan

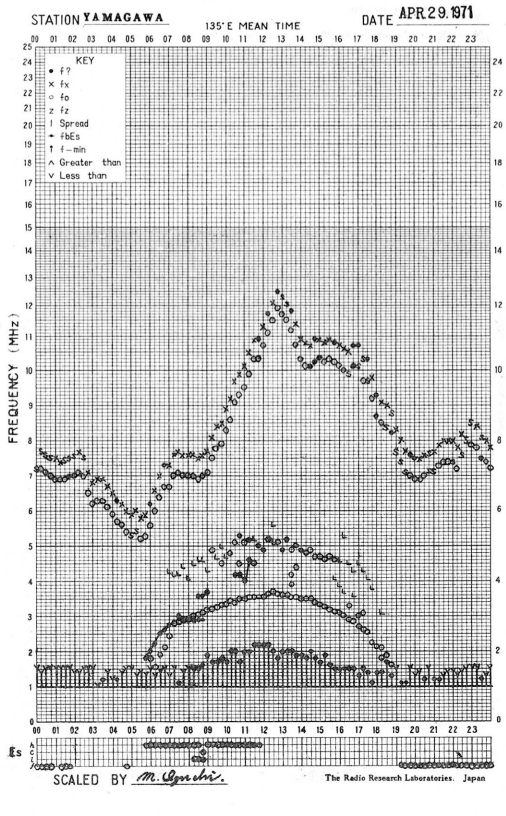

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR 28 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

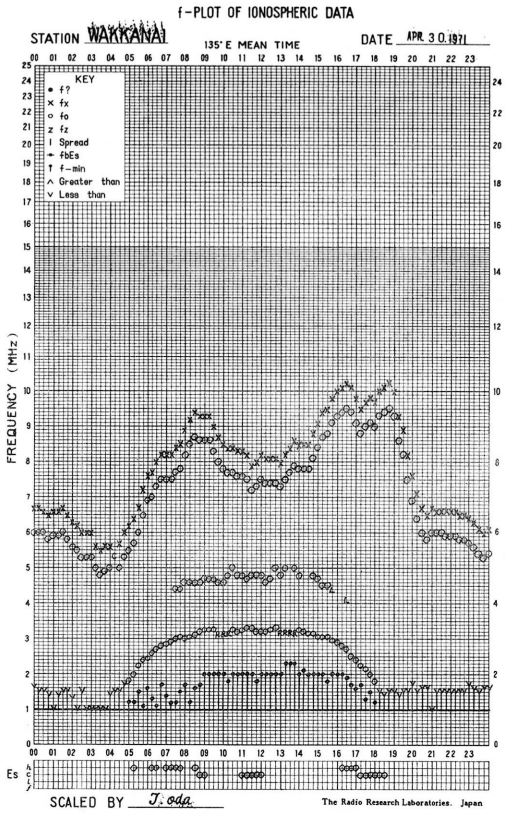

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR 28 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan

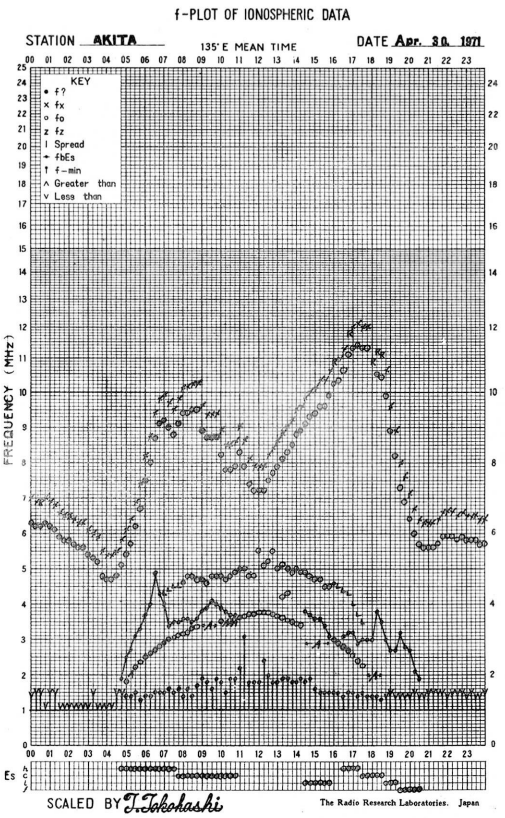

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE APR. 29. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
- fbEs
T f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan

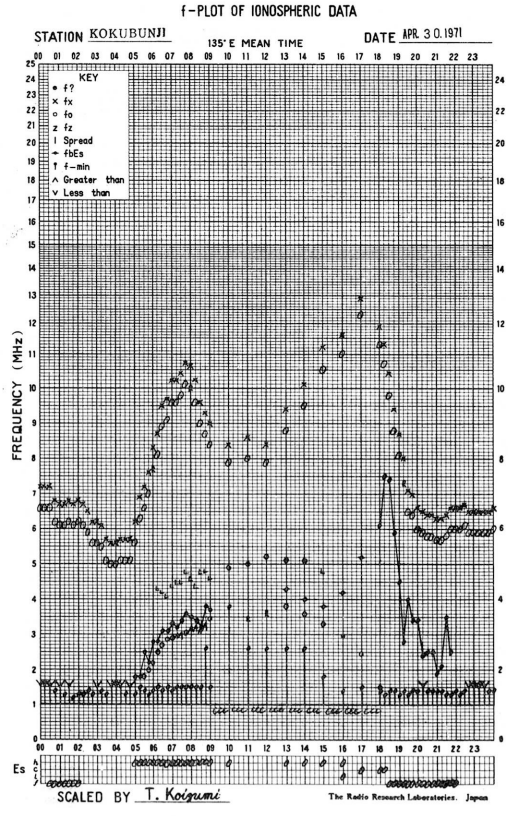

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Apr. 29. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
- fbEs
T f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Iokohashi
The Radio Research Laboratories. Japan

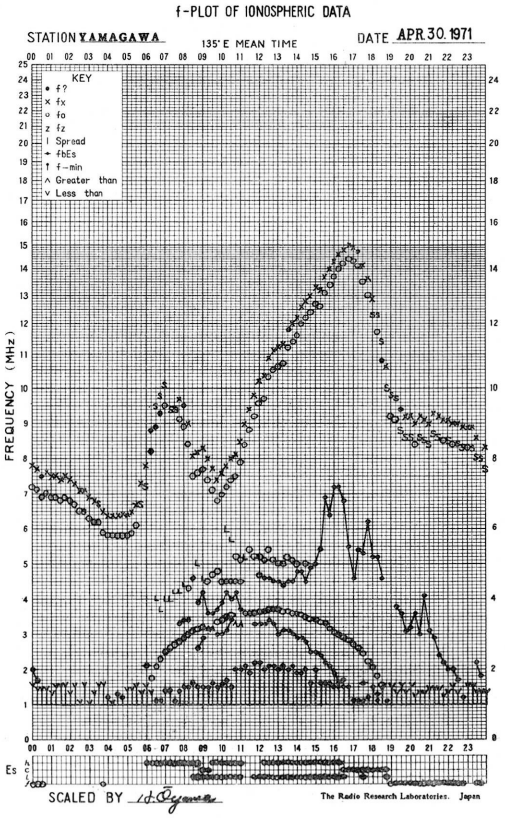

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE APR. 29. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
- fbEs
T f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE APR. 29. 1971
KEY
• f?
× fx
○ fo
z fz
| Spread
- fbEs
T f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Ayuchi.
The Radio Research Laboratories. Japan


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


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

SOLAR RADIO EMISSION

Flux Density and Variability

Month: April 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	q	q	q	q	q	0	0	0	0	0
2	(q)	6	6	6	6	(0)	0	0	0	0
3	6	6	7	7	6	0	0	0	0	0
4	7	7	7	7	7	0	0	0	0	0
5	6	6	6	6	7	0	0	0	0	0
6	5	5	6	7	6	0	0	0	0	0
7	7	6	7	7	7	1	0	0	0	0
8	8	7	6	6	7	0	0	0	1	0
9	6	6	6	7	6	0	0	1	1	0
10	9	10	9	9	9	0	1	1	1	1
11	8	8	10	11	9	1	0	2	0	1
12	9	9	9	22	10	0	0	1	1	0
13	13	15	18	17	17	1	1	1	1	1
14	9	13	15	20	14	0	0	0	1	0
15	11	9	10	9	13	0	0	1	1	0
16	9	9	7	6	9	1	0	0	1	1
17	6	5	6	7	6	0	0	0	0	0
18	7	7	6	6	7	0	1	1	0	0
19	6	5	5	6	6	1	0	0	1	0
20	8	8	8	6	8	1	1	1	0	1
21	6	6	7	5	6	0	0	1	0	0
22	5	5	5	5	5	0	0	0	0	0
23	6	6	6	6	6	0	0	1	0	0
24	6	6	6	14	6	0	0	0	0	0
25	10	8	7	10	9	0	0	0	1	0
26	11	9	8	8	9	1	1	0	0	1
27	8	8	17	14	10	0	0	0	1	0
28	12	9	9	6	11	1	0	0	0	1
29	5	5	5	5	5	0	0	0	0	0
30	5	5	5	5	5	0	0	0	0	0

Note No observations during the following periods:

2nd	0100-	0300
23rd	2000-	2210
24th	2000-	2210
25th	2000-	2210

q: quiet level, when radiometer is unstable.

SOLAR RADIO EMISSION

Flux Density

Month: April 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	23	23	22	20	23
2	21	22	22	20	21
3	23	24	22	20	22
4	21	23	22	19	21
5	19	21	21	25	20
6	26	26	28	26	26
7	26	28	30	27	27
8	26	27	25	28	26
9	29	28	28	26	28
10	26	26	27	26	26
11	26	26	25	27	26
12	27	28	28	29	27
13	29	29	31	27	29
14	28	29	28	33	28
15	32	32	30	30	32
16	32	32	32	30	32
17	29	30	32	31	30
18	33	31	30	28	31
19	28	27	27	25	28
20	26	27	30	28	27
21	27	26	25	25	27
22	28	26	q	24	26
23	24	23	q	24	24
24	26	25	24	24	25
25	25	25	24	23	25
26	25	24	24	24	24
27	25	25	28	23	25
28	23	23	23	22	23
29	24	24	25	22	24
30	22	22	22	22	22

q: quiet level, when radiometer is unstable.

Distinctive Events

(single-frequency observations)

Month: April 1971
Observing station: Hiraiso
Normal observing period: 2000 - 0910 (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	
1	200	0551.0	0551.5	2.0	C	190	15	
	100	0551.0	0551.5	1.0	C	130	50	
11	200	2148.5	2148.9	1.0	C	480	120	
14	100	2000	2330	400		70	30	noise storm
21	100	0619.6	0620.3	1.7	C	460	200	
	200	0643.5	0643.5	1.0	C	90	20	
	100	0644.0	0644.3	1.5	C	350	60	
	200	2024.0	2024.3	0.8	C	200	90	
	100	2024.0	2024.3	1.0	C	190	60	
	200	2027.5	2027.5	0.5	C	140	60	
	100	2027.5	2027.8	0.7	C	300	100	
	200	2257.5	2257.5	0.5	C	1000	400	
	100	2257.5	2257.8	0.7	C	120	40	
23	200	0709.5	0710.0	1.0	C	70	20	
	100	0709.5	0709.8	1.0	C	190	50	
	200	0856.5	0857.0	2.0	C	130	10	

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

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

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

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Apr. 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 4	4 4 (4) 4	4 3 4 4	N N N N			
2	4°		4 - 4 4	4 4 (4) 4	4 (3)(3) 4	N N N N			
3	4°		4 - 4 4	4 4 (4)(5)	4 4 (3) 4	N N N N	21.39	---	69γ
4*	3°		4 (4)(1)(3)	(4) 2 (3)(2)	4 (3)(2) 3	U U U U	---	24.00	
5*	4-		(3) - 4 4	3 3 (4) 4	4 (2)(3) 4	U U U U			
6	4°		4 - 4 (4)	4 4 (4) 4	4 (2)(3) 4	N N N N			
7'	4°		(4) - 4 4	3 4 (4) 4	4 (2)(3) 4	N N N N			
8	4-		4 - (3) 4	3 4 (4) 4	4 (2)(3) 4	N N N N			
9*	4-		4 (4) 4 (3)	4 4 (4) 3	4 5 4 4	N U U U	04.28	---	182γ
10*	4-		(3) - (3)(3)	4 4 (4)(4)	4 2 (2) 4	U U U U	---	18.00	
11*	3+		(4)(4) 4 (4)	4 2 (2)(4)	4 3 (2) 4	U U U U			
12*	4°		(4) - (4) 3	4 4 (4) 4	4 3 4 4	U N N N			
[13]	4°		(4)(4) 4 4	4 4 (4) 5	4 4 4 4	N N N N			
[14*]	4-		(4)(4)(4) 4	4 3 (4) 3	4 4 4 4	N N N N	12.43	---	156γ
[15*]	4-		4 (4) 4 3	4 3 (4) 4	4 (3)(3) 4	U U U U	---	20.00	
16*	4°		(3)(4) 4 4	4 4 (4) 4	4 4 5 4	U U U U			
17	4°		4 (4) 4 4	4 4 (4)(4)	4 4 5 4	N N N N			
18	3+		(4)(4)(4) 4	2 2 (3)(4)	4 5 4 3	N N N N			
19	4+		4 (4) 4 5	4 4 (4) 5	4 4 4 4	N N N N			
20	4+		4 (4)(5) 5	4 4 (4) 4	3 5 4 4	N N N N			
21	3+		4 (5)(2) 3	4 4 (3)(1)	4 4 4 4	N N N N			
22	3+		(3)(4) 4 4	2 4 (4)(2)	4 2 3 4	N N N N			
23	4°		4 - (5) 4	4 4 (4)(2)	4 4 4 4	N N N N			
24	4°		4 (4) 4 4	4 4 (4)(4)	4 4 4 4	N N N N			
25	4-		4 (4) 4 4	4 2 (3)(4)	4 4 4 4	N N N N			
26	4°		4 (4)(4) 4	4 4 (3) 4	4 5 5 4	N N N N			
27	4°		4 (4) 4 4	4 3 (4) 4	4 4 4 4	N N N N			
28	4°		4 (4)(4) 4	4 4 (4) 4	4 5 4 4	N N N N			
29	4-		4 (4) 4 (4)	3 3 (3) 4	4 4 4 4	N N U U			
30	3+		4 (3) 4 (5)	4 4 (3)(1)	4 4 (4) 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.

Apr	S W F								Correspondence		
1971	Drop-out Intensities (db) CO	LM	HA	TO	SH	Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag
20	×	17	×			01.06	54	Slow	1	×		
20	×	35	×			05.16	39	S	2+	×	×	

I N U B O

1971 Apr.	S P A								Remarks
	Phase Advance (degrees)					Time (U.T.)			
DATE	GBR	WWVL	NAA	NWC	NPG	Start	End	Maximum	
1	25	24	35	64	28	0553	0717	0556	X
2				12	7	0212	0246	0223	
4				16		0743	0846	0756	X
8				24		0326	0453	0354	X
11				16	8	0521	0608	0530	X
16				20		0745	0823	0752	X
17			23			0151	0236	0156	
17			13			0700	0730	0704	
17	70	19		—	11	2200	2252	2207	
20	43	74	101	128	100	0049	0251	0119	X
20		29	13	32	11	0414	0503	0426	X
20	180	113	96	198	107	0515	0710	0523	X
21				16		0616	0652	0623	X
22					13	2124	2242	2127	
22	26	65	35	—	65	2156	2311	2207	X
23			22			0536	0603	0541	
23				28		0725	0827	0734	X
24				16		0505	0553	0514	X
30			10			0153	0240	0159	
30			24			0318	0400	0323	

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, respectivery.

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

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

IONOSPHERIC DATA IN JAPAN FOR APRIL 1971

第23巻 第4号

1971年9月20日 印 刷
1971年9月25日 発 行

(不許複製非売品)

編集兼
発行人 今野清恒
東京都小金井市貫井北町4丁目2—1

発行所 郵政省電波研究所
184 東京都小金井市貫井北町4丁目2—1
電話国分寺(0423)(21)1211(代)

印刷所 有限会社 研文社
160 東京都新宿区四谷3丁目6
電話(353)8358・(351)0046