F—256

IONOSPHERIC DATA IN JAPAN

FOR MAY 1970

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

CONTENTS

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

f_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	λ/2 vertical	λ/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.

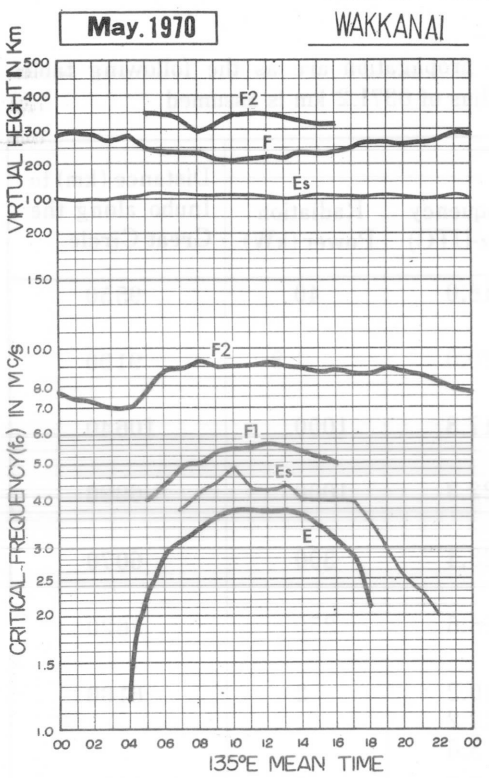
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West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

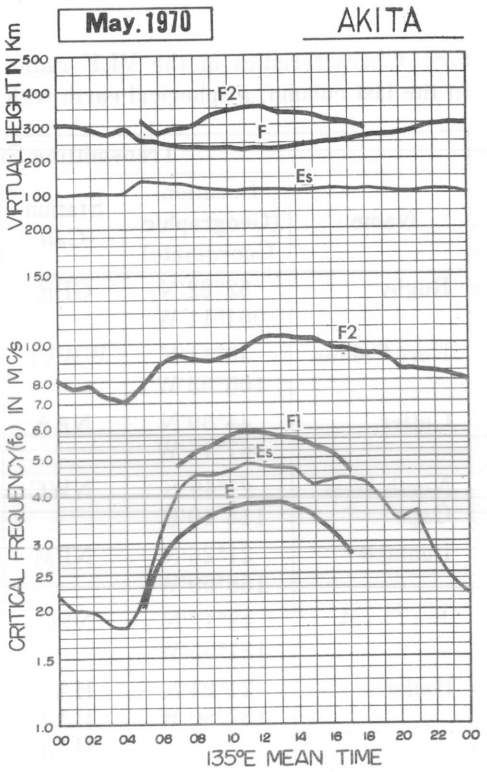
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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.

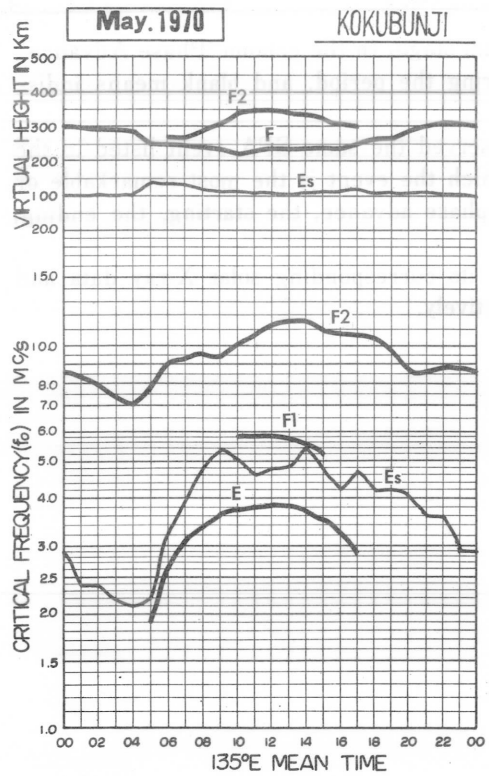
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

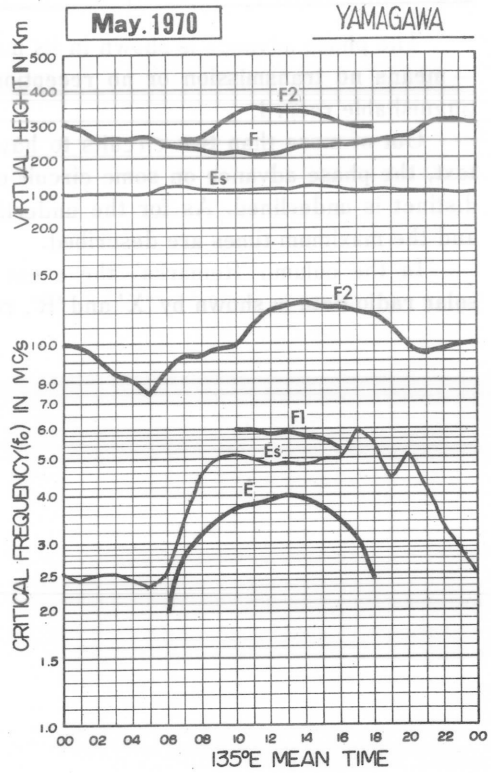
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

May 1970

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	077	074	073	070	070	078	088	088	093	090	090	090	092	090	090	087	088	086	086	090	087	085	081	079
	CNT	28	28	28	27	28	28	27	26	25	26	26	27	26	28	28	28	28	27	29	29	29	29	29	28
	Q R	008	008	005	008	010	010	020	026	021	017	010	016	014	018	014	014	012	012	012	012	007	010	009	007
foF1	MED					290	400	440	490	500	530	550	550	560	555	540	520	500	450						
	CNT					2	5	9	12	13	16	15	18	23	22	20	17	10	3						
foE	MED					118	225	290	312	340	365	380	382	380	380	370	345	315	288	210	E				
	CNT					14	25	27	26	25	27	27	26	24	22	21	18	22	22	24	6				
foEs	MED	E015E	E	E	E	E014G	G	G	038	042	044	049	043	042	044	040	040	040	040	035	J030X	J025X	023	020	E015E
	CNT	29	28	28	28	28	28	27	26	25	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29
	Q R								007	008	013	013	014	D004	D016			024	010	009	011	034	D028	D013	
f-min	MED	E	E	E	E	E	012	012	016	018	019	020	020	020	020	020	017	017	013	012	E012E	E	E	E	E
	CNT	29	28	28	28	28	28	27	26	25	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29
M (3000) F2	MED	265	265	270	270	262	280	285	285	295	285	275	275	280	280	282	285	290	290	290	290	280	270	270	270
	CNT	28	28	28	27	28	28	27	26	25	26	27	27	26	28	28	28	28	27	29	29	29	29	29	28
M (3000) F1	MED					328	315	335	350	360L	355	360	345	340	338	340	345	355	335						
	CNT					2	5	9	11	11	14	14	18	23	22	20	15	9	3						
h'F2	MED					342	350	345	335	290	312	345	345	345	340	325	320	322	345						
	CNT					2	6	9	14	21	20	22	22	23	24	24	23	14	3						
h'F	MED	280	295	278	272	278	245	240	235	230	220	210	218	220	220	230	232	240	250	260	260	260	265	275	280
	CNT	29	28	28	28	28	28	27	25	19	21	22	24	25	25	26	24	23	24	25	24	24	24	29	27
h'Es	MED	100	100	100	100	108	115	120	120	115	115	110	110	110	105	105	110	110	115	115	110	110	105	105	104
	CNT	10	12	11	11	12	9	13	22	25	27	21	22	19	20	20	20	22	27	29	26	23	19	18	12
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

May 1970

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	080	077	078	072	070	079	089	093	091	090	094	097	104	104	103	102	097	097	094	094	085	085	084	082
	CNT	30	29	29	31	31	31	31	31	31	31	31	31	29	29	29	28	29	29	29	29	27	27	26	28
	Q R	010	005	009	008	010	012	012	016	016	014	016	023	017	015	014	010	009	009	009	009	009	010	011	009
foF1	MED						375	500	480	510	540	570	590	585	565	560	535	510L	460L						
	CNT						2	5	15	16	23	28	25	24	20	25	18	15	5						
foE	MED					E	205	265	310	335	355	370	U380A	U382A	U385A	365	350	320	280	202					
	CNT					8	17	23	24	20	16	9	7	6	7	13	17	17	11	2					
foEs	MED	J022X	J020X	J020X	J018X	J018X	021	032	041	045	045	046	J048X	047	047	046	042	J044X	J044X	J043X	J038X	J034X	J036X	J028X	J024X
	CNT	30	31	31	31	31	31	31	31	31	31	30	30	28	29	28	28	29	28	29	29	29	29	29	31
	Q R	D035	D018	D015	D014	D013		D008	012	013	011	007	010	024	015	018	D027	020	029	037	038	026	046	D040	D035
f-min	MED	E014S	E014S	E014S	E014S	E014S	014	016	018	019	021	022	022	023	022	020	020	019	016	014	E014S	E014S	E014S	E014S	E014S
	CNT	30	31	31	31	31	31	31	31	31	31	30	30	28	29	28	28	29	28	29	29	29	29	29	31
M (3000) F2	MED	260	265	275	275	265	280	290	290	285	275	270	270	270	275	280	280	280	290	290	290	275	265	260	265
	CNT	30	29	29	31	31	31	31	31	31	31	31	31	29	29	29	28	29	29	29	29	27	27	26	28
M (3000) F1	MED						292	325	340	352	350	340	335	340	340	335	335	335L	335L						
	CNT						2	5	15	16	23	28	25	24	20	25	18	15	5						
h'F2	MED						312	270	285	290	325	340	350	350	335	328	325	310	298	285					
	CNT						10	25	31	30	31	31	31	30	29	28	28	28	26	17					
h'F	MED	300	300	290	275	295	255	245	240	240	230	230	225	230	235	235	240	245	252	265	270	270	282	295	300
	CNT	31	31	31	31	31	31	31	26	24	26	28	26	25	26	25	22	21	20	22	28	28	28	27	29
h'Es	MED	105	105	105	105	105	140	135	130	120	115	115	115	115	115	115	115	120	118	115	115	110	110	110	110
	CNT	22	21	20	17	17	20	23	30	31	31	27	29	26	28	23	21	27	26	28	27	27	24	20	19
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

May 1970

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	086	084	080	075	071	080	091	093	096	094	101	106	113	115	116	110	108	107	104	097	086	086	089	088
	CNT	30	30	30	31	30	28	29	29	28	30	29	30	30	31	30	30	31	31	30	29	31	31	31	30
	Q R	012	012	011	010	008	014	013	013	011	011	011	018	014	014	016	014	010	011	012	014	011	010	013	012
foF1	MED							435L	450L	U570L	520	585L	585L	590L	570L	555L	520L	495L	480						
	CNT							2	2	1	3	8	10	9	7	6	9	4	2						
foE	MED						190	262	310	340	360	375	385	390	385	375	350	325	285	220					
	CNT						11	20	16	10	10	7	7	4	6	9	14	16	9	1					
foEs	MED	J029X	024	024	022	021	022	032	039	J048X	J054X	050	046	048	048	055	048	J042X	J047X	J042X	J042X	J041X	J036X	J036X	J029X
	CNT	31	31	31	30	30	30	30	30	30	30	30	30	31	31	29	30	31	31	31	31	31	31	31	31
	Q R	021	012	008	005	011		005	006	012	018	016	017	020	017	020	030	020	031	026	032	029	017	030	028
f-min	MED	E015S	E015S	E015S	E015S	011	015	015	015	018	025	026	027	026	026	026	025	016	015	015	E015S	E015S	E015S	E015S	E015S
	CNT	31	31	31	30	30	30	30	30	30	30	30	30	31	31	29	30	31	31	31	31	31	31	31	31
M (3000) F2	MED	265	272	278	275	270	285	295	295	290	275	270	268	275	275	280	280	280	290	290	290	270	265	260	265
	CNT	30	30	30	31	30	28	29	29	28	30	29	30	30	31	30	30	31	31	30	29	31	31	31	30
M (3000) F1	MED							315L	368L	U350L	375	340L	335L	335L	345L	345L	350L	348L	U350L						
	CNT							2	2	1	3	8	10	9	7	5	9	4	1						
h'F2	MED						345	270	270	282	300	345	345	350	338	335	318	305	298	280					
	CNT						2	11	22	28	30	28	28	31	31	30	30	30	28	4					
h'F	MED	300	300	290	290	290	250	245	245	240	240	220	225	240	240	240	240	242	255	266	265	290	300	310	305
	CNT	30	31	31	31	30	30	29	29	22	20	21	19	21	18	18	20	20	18	28	30	31	31	31	31
h'Es	MED	100	100	100	100	100	140	140	130	120	115	112	110	110	110	110	110	115	120	110	110	110	110	105	105
	CNT	25	29	26	25	20	21	25	30	30	29	28	28	28	26	24	23	29	30	31	30	30	28	28	27
hpF2	MED	400	390	380	385	390	345	320	325	350	380	395	395	390	385	380	365	360	350	342	350	380	400	400	400
	CNT	30	30	30	31	30	28	29	29	28	29	27	27	29	31	30	30	31	31	30	29	31	31	31	30
ypF2	MED	095	100	100	095	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	095	100
	CNT	30	30	30	31	30	28	29	29	28	29	27	27	29	31	30	30	31	31	30	29	31	31	31	30

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

May 1970

135° E Mean Time (G.M.T. +9h)

CHAR	HR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
foF2	MED	U100S	098S	091S	084S	080	074	086	093	093	096	099	111	121	125	127	124	123	120	118S	110S	096S	094S	096S	U098S
	CNT	28	28	28	30	28	26	30	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	27	28
	Q R	017	016	014	012	014	012	017	017	013	011	014	018	018	021	020	020	020	015	014	010	016	010	016	014
foF1	MED									520	U535L	U605L	600L	580L	590L	570L	560L	530L	520L						
	CNT									2	4	12	17	20	19	19	14	7	3						
foE	MED							200	280	320	350	370	382	390	400R	390	370	340	305	240					
	CNT							24	27	29	26	23	14	15	18	26	27	27	27	22					
foEs	MED	J025X	024	J025X	J025X	J024X	023	025	035	J046X	J050X	051	050	048	049	048	050	J050X	J060X	J055X	J044X	J051X	J041X	J033X	J029X
	CNT	31	31	31	31	31	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
	Q R	007	007	014	013	008	009	005	005	022	023	017	028	014	020	011	012	022	030	036	030	034	038	038	015
f-min	MED	E015S	E015S	E014S	E011E	E011E	E012E	E015S	E015S	015	016	018	019	020	020	019	018	016	015	015	012	E015S	E015S	E015S	E015S
	CNT	31	31	31	31	31	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
M (3000) F2	MED	U270S	272S	285S	280S	270	280	300	305	290	280	260	265	270	275	275	280	285	285	285S	290S	275S	260S	260S	U260S
	CNT	28	28	28	30	28	26	30	29	29	31	31	31	31	31	31	31	31	31	30	30	31	31	27	28
M (3000) F1	MED									330	U355L	U330L	340L	350L	335L	335L	325L	335L	330L						
	CNT									2	3	12	16	19	19	15	13	7	3						
h'F2	MED								260	262	290	328	350	340	340	330	325	305	290	290					
	CNT								18	30	30	30	31	31	31	31	30	31	31	19					
h'F	MED	300	280	260	258	256	261	240	235	228	219	220	212	215	222	234	236	238	240	254	254	261	285	305	305
	CNT	31	31	31	31	30	30	30	27	24	18	23	24	23	23	20	20	19	15	22	30	30	30	29	31
h'Es	MED	100	100	100	100	100	100	125	125	115	115	110	110	110	108	120	125	120	115	115	110	105	105	100	100
	CNT	30	27	30	28	25	23	28	30	30	31	31	31	30	30	31	31	29	29	31	31	31	31	31	28
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

MAY 1970 — FOF2 (0.1 MHZ)

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI — Lat. 45° 23′ N — Long. 141° 41′ 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	73	68	66	66	69	75	6R	71	73	75	83	79	84	83	85	85	84	86	94	98	80	74	69	67
2	64	69	70	63	63	73	87	101	98	92	93H	88	95	93	96	96	103	96	95	98	87	79	74	81
3	79	78	77	73	71	77	90	96	93	90	93H	100	97	98	102	95	90	A	99	99	87	82	77	77
4	79	77	76	71	65	75	85	88H	96	90H	91	95	97	95	86	89	89	92	97	100	87	74	75	76
5	75	75	73	69	70F	79	96	88	84	87	96	100	99	96	95	91	90	93	94	99	87	86	81	86
6	83	74	74	68	69	74	87	84	84	83	83	90	90	90	86	80	79	80	83	90	86	80	71	70
7	70	70	65	63	60	69	73	67	62	59	63	62	68	73	75	72	74	70	74	76	73	71	69	71
8	66	66	64	64	63	74	92	93	96	93	93	93	90	89	89	91	90	88	88	90	87	85	80	78
9	75	74	74	68	67	78	93	107	105	108	103	103	104	95	93	96	96	95	93	95	93	88	83	78
10	75	74	73	70	74	84	84	86	94	93	93	90	95	101	93	86	88	84	85	89	90	86	84	84
11	79	80	76	74	74	86	89	84	89	91	94	96	96	100	98	94	96	90	91	90	91	90S	87	86
12	83	78	75	73	72	81	93	104	104	98	97	97	100	104	97	96	96	91	91	94	95	97	93	90
13	84	78	74	73	71	74	73	76	76	81	83	80	82	83	85	88	91	86	85	86	80	81	75	77
14	75	73	71	71	75	85	97	92	98	103	103	102	103	97	96	90	93	93	98	97	I 95S	90	83	79
15	78	75	73	72	73	73	76	73	77	75	74	83	83	87	91	83	84	88	I A 82	I A 80	83	81	83	79
16	77	75	73	70	73	86	88	93	91	92	93	90	94	96	98	97	93	93	93	91	U S 87	S 90	S 91	S
17	80	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	85	90	93	90	87	84
19	83	81	75S	76	79	84	73	63	63	63	65	68	70	71	74	77	80	80	83	83	82	77	78	80
20	75S	73	73	66	62	63	70	70	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	63	66	66	68	65	73	74	73	74	73	76	73	76	75	77
22	74	73	73	63	56	63	67	65	70	70F	76	74	74	74	76	75	77	75	77	80	83	79	80	78
23	73F	70F	71F	F	68F	81	93	94	93	83	85	91	92	91	92	91	90	89	91	90	87	86	83	83
24	81	77	74F	70F	74	90	91	C	C	93	87	86	91	87	84	81	85	85	86	93	90	88	83	80
25	77	73F	74	73	73	83	93	99	97	84	88	92	88H	93	92	93	88	88	94	91	90	89	86	U S 87
26	86	87	79	77	75	87	97	102	96	90	93	94	96	91	90	86	84	80	84	93	93	91	90	90
27	87	84	80	77	80	94	103	108	102	91	88	93	94	93	92	91	90	89	94	98	94	93S	92	85
28	85	83	84	81	83	89	88	97	98	90	92	76	79	83	86	79	74	73	78	88	86	88	80	78F
29	F	69F	63	61	53	61	64	59	56	A	W	56	63	65	68H	62	69	68	71	68	67	72	71S	69
30	65S	62	58	55E	46F	56	58	60	62	62	59	55	R	59	53	60	63	66	65	64	70	73	76	77
31	73	70	70	64F	64F	75	C	C	C	C	C	C	C	71	71	73	74	77	77	82	83	85	82	80
	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	27	28	28	27	26	25	26	26	27	26	28	28	28	28	27	29	29	29	29	29	28
MED	77	74	73	70	70	78	88	88	93	90	90	90	92	90	90	87	88	86	86	90	87	85	81	79
UQ	82	78	75	73	74	84	93	97	97	92	93	94	96	96	94	92	90	90	94	95	90	89	84	84
LQ	74	70	70	65	64	74	73	71	76	75	83	78	82	78	80	78	78	78	82	83	83	79	75	77

MAY 1970 — FOF2 (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

MAY 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								510	510	530	A	A	A	A	490		460b							
2									500	530		A	550			510								
3									510b			550		540	480									
4											L		550	550b		A								
5									U 500b	A	550	560b	560		540b	520	L							
6							440b	A	L	530b	570b	550b	560	570b	540b	L								
7						360b	410	440	480	500	510		530	I A 530b	I A 530b	500	440							
8									500	500b	L		530	550	L	U 520b								
9									L	520b	510b	530			L		460b							
10									500b	L	L	600b	560b	550	510b	540								
11									510b	560b	530b	570	560	560b	540	510								
12								L	L	U L 500b	L		560	560	530b									
13									530b	530	500b	U 580b	U 560b	570	530	530b	A							
14										510	L	550b	500	A	A	L	510b							
15							480b	480	A	A	600	540	560	550b	530b	L	A	A						
16										570		A	560	590	560	530								
17							C	C	C	C	C	C	C	C	C	C	C	C						
18							C	C	C	C	C	C	C	C	C	C	C	C						
19							410	490	500	520	530	550	550	560	A	520	A							
20					280		440	480	C	C	C	C	C	C	C	C	C	C						
21					C	C	C	C	C	A	A	540	560	560	540	A	530							
22						400	450	490	510	550	550	550	540	560	540	530b	500	460b						
23						L		500b	L		580	560	570	570	570	530b								
24								C	C	540	L	L	570	580	540		U 500b							
25					300			500b	500	L	570	600		550	560	530b								
26								500	510b		U 580b	A	590			L								
27								500b		530	560	570	570	540	540	520								
28						400b	480		A	A	A	600	I A 550b	570	530	530b								
29						370	420	440	A	A	500	510	520	520		510	500	450						
30						400	450	440	A	500	I A 510	510	510	520	520	510	480	440						
31							C	C	C	C	C	C	C	550	540	520	500							
	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	5	9	12	13	16	15	18	23	22	20	17	10	3						
MED					290	400	440	490	500	530	550	550	560	555	540	520	500	450						
UQ						400	450	500	510b	535	570	570	560	570	540	530b	500	455						
LQ						370	420	460	500	505	510	540	545	550	530	510	460	445						

MAY 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					E	190	285	305	330	345	370	375	370	345	345	340	310	270	195	E				
2					A	A	275	310	330	350	350	375	355	375	355	345	305	280	A	A				
3					E	200	270	310	335	355	355	350	I A 365	380	360	340	305	A	A	E				
4					E	200	290	310	335	360	385	375	385	385	355	350	310	290	185	S				
5					E	200	270	310	335	365	385	385	I A 370	330	A	345	310	A	A	A				
6					E	200	275	300	330	345	350	340	355	380	355	330	310	280	200	E				
7					S	210	280	310	345	360	365	350	340	355	330	300	305	275	200	S				
8					A	215	280	305	340	345	365	A	A	A	A	A	320	280	200	E				
9					S	200	290	305	335	350	380	400	390	370	370	340	305	280	200	S				
10					S	220	285	310	335	360	365	390	370	R	355	330	320	280	210	S				
11					S	230	285	315	355	385	390	395	395	375	A	A	A	280	200	S				
12					S	225	290	315	345	365	370	375	390	I A 385	380	350	320	290	215	A				
13					110	220	280	310	340	365	370	375	I A 385	I A 380	380	355	315	280	210	S				
14					S	225	280	310	345	370	380	370	365	345	330	360	320	290	200	E				
15					S	I A 225	295	320	370	385	390	395	I B 390	385	A	A	325	290	210	S				
16					A	230	290	325	350	370	390	390	395	385	A	A	320	A	230	S				
17					C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C				
18					C	C	C	C	C	C	C	C	C	C	C	C	C	C	210	S				
19					115	215	280	310	345	365	390	400	395	390	385	345	320	285	215	S				
20					A	A	280	320	C	C	C	C	C	C	C	C	C	C	C	C				
21					C	C	C	C	C	365	375	385	390	390	370	A	330	290	200	S				
22					130	230	290	320	340	355	385	385	385	400	390	345	320	290	210	S				
23					125	230	295	325	355	375	390	380	370	350	A	A	A	A	200	A				
24					145	240	300	C	C	380	390	390	385	400	390	A	A	295	230	S				
25					120	225	290	320	355	385	385	385	365	I B 380	370	350	330	300	230	S				
26					140	235	300	325	365	385	395	390	380	A	370	A	A	295	240	A				
27					130	220	300	325	350	370	380	375	375	385	390	365	315	285	210	S				
28					A	A	300	320	345	370	365	370	A	A	A	A	A	290	220	S				
29					130	230	290	320	340	380	385	385	380	350	330	R	A	A	A	A				
30					A	225	295	320	340	350	380	370	B	B	390	365	315	295	220	150				
31					A	235	C	C	C	C	C	C	C	A	380	325	300	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					14	25	27	26	25	27	27	26	24	22	21	18	22	22	24	6				
MED					118	225	290	312	340	365	380	382	380	380	370	345	315	288	210	E				
UQ					130	230	292	320	350	372	388	390	390	385	380	350	320	290	218	E				
LQ					E	210	280	310	335	355	368	375	368	355	355	340	310	280	200	E				

MAY 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	G	G	39	40	48	J X 64	51	60	J X 118	G 28	G	34	33	36	J X 31	M 71	J X 55	J X 28	E S 15
2	J X 20	J X 35	J X 33	J X 25	J X 23	J X 24	40	47	J X 63	J X 54	J X 58	M 65	43	44	J X 53	40	G	J X 51	73	73	J X 93	J X 64	E S 16	E S 15
3	E S 15	J X 23	J X 21	E	E	26	35	38	43	42	40	40	41	G 34	G	42	J X 48	J X 185	J X 143	J X 63	21	J X 28	18	E S 16
4	E S 15	18	J X 20	18	E	G	G	40	50	40	J X 68	G	G	52	42	J X 55	J X 50	40	J X 33	E S 13	E	J X 65	53	J X 63
5	J X 23	J X 30	J X 43	35	16	33	43	38	40	J X 70	G	J X 64	J X 62	J X 49	42	G 30	38	44	40	J X 25	26	E	E	J X 24
6	21	J X 25	E	E	E	G	38	J X 50	38	43	J X 71	J X 80	50	G	G	G	G	35	J X 35	J X 30	E	E	E S 15	E
7	E S 15	E	J X 23	17	E S 13	G	G	38	42	42	41	41	33	J X 73	J X 73	39	G	32	J X 43	24	17	18	E	E
8	E S 14	E	E	E	18	G	G	G	46	40	G	40	41	42	43	38	40	40	31	24	J X 24	E S 15	E S 16	E
9	E	E	E	E	E S 13	G	G	35	40	40	G	G	G	G	G	G	G	34	35	J X 35	J X 23	24	E S 15	E
10	E	E	E	E	E S 12	G	G	38	42	40	G	G	G	G	G 30	G	G	G 20	26	23	J X 23	E S 16	J X 23	E
11	E S 15	E	E	E	E S 13	G	33	G	40	45	G	42	G	42	43	39	44	44	J X 42	31	E	J X 53	E	J X 29
12	E	E	E	E	E S 15	G	G	35	41	40	41	G	G	40	G 28	G 30	G	G 20	28	18	E S 15	E S 15	E	E S 15
13	E S 15	E	E	E	G	G	G	38	41	40	49	40	43	J X 45	G	G	J X 64	45	J X 40	J X 40	E S 15	19	J X 23	E S 15
14	E	E	E	E	E S 15	G	G	38	43	44	42	41	41	J X 59	J X 66	41	47	34	33	25	J X 71	J X 63	J X 35	J X 34
15	18	J X 24	J X 24	E	E S 14	25	G	43	J X 61	J X 61	45	43	E B 47	G	39	J X 44	J X 61	J X 70	J X 94	J X 81	J X 70	41	J X 26	18
16	E S 15	22	J X 28	J X 24	J X 23	G	G	G	39	J X 55	49	J X 61	42	41	53	41	G 30	42	31	J X 36	J X 28	J X 33	J X 24	E S 18
17	J X 20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	25	E S 16	15	E	E	E S 15
19	E	E	18	E	G	G	G	51	40	40	G	G	G	J X 59	J X 84	J X 51	J X 50	J X 44	37	J X 30	J X 51	E S 15	20	E
20	E	E	E	E	J X 25	43	37	J X 51	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	J X 65	53	44	45	43	40	53	50	J X 53	J X 113	J X 43	J X 33	J X 43	19	J X 31
22	E S 15	E	E	E	G	G	G	38	49	J X 73	J X 61	42	42	G	G	G	G 23	35	30	J X 33	J X 84	E S 15	E	E
23	E S 15	E	E	J X 20	19	G	G	G	40	43	43	43	43	45	41	J X 49	J X 46	J X 40	27	J X 23	J X 33	J X 23	J X 20	E S 15
24	E	E	E	14	G	28	34	C	C	45	51	43	45	G	G	43	34	G	35	J X 35	J X 24	E	E	E S 14
25	J X 33	J X 23	J X 20	E	19	G	33	41	43	43	55	47	41	G	G	G	40	38	J X 42	31	J X 34	J X 23	J X 26	J X 25
26	J X 31	J X 30	E	18	G	G	33	36	40	45	43	M 59	45	J X 53	49	J X 45	47	35	34	J X 35	J X 33	35	J X 29	15
27	J X 25	E	E S 17	E	18	G	39	45	48	45	J X 58	J X 75	J X 53	44	43	41	J X 55	40	35	25	J X 25	19	J X 31	J X 43
28	J X 23	J X 30	J X 30	J X 23	21	25	45	50	J X 58	J X 70	J X 108	53	J X 73	J X 70	43	J X 60	J X 54	J X 50	30	21	E	E	J X 33	E
29	E	E	E	E	18	30	37	43	47	J X 65	J X 54	J X 54	42	48	38	G	M 50	42	32	24	J X 61	J X 60	J X 73	J X 51
30	J X 25	J X 30	J X 40	J X 30	23	32	44	43	J X 55	44	J X 60	46	E B 43	E B 45	G	43	J X 41	34	35	G	18	J X 30	17	23
31	E S 16	18	E	18	20	G	C	C	C	C	C	C	C	43	44	43	40	33	J X 35	J X 39	J X 73	J X 83	J X 44	J X 63
	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	28	28	27	26	25	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29
MED	E E 15	E	E	E	E G 14	G	G	38	42	44	49	43	42	44	40	40	40	40	35	J X 30	J X 25	23	20	E E 15
UQ	J X 20	J X 24	J X 22	18	19	25	37	43	48	J X 54	J X 58	54	45	J X 50	44	44	J X 50	44	J X 40	J X 35	J X 51	J X 43	J X 28	J X 25
LQ	E	E	E	E	E	G	G	36	40	41	40	40	E G 41	E G 34	G	G	G 26	34	31	24	17	E E 15	E E 15	E

MAY 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	G	G	G	G	G	62	51	58	57	G 23	G	G	G	33	30	64	18	20	E S 15
2	17	25	28	20	20	23	20	27	48	49	57	59	G	G	45	G	G	45	72	64	65	42	E S 16	E S 15
3	E S 15	E	16	E	E	16	G	G	G	G	G	G	39	G 34	G	G 24	44	A	75	52	18	26	15	E S 16
4	E S 15	12	16	12	E	G	G	G	G	G	G	G	G	G	G	53	42	G	G	E S 13	E	47	26	17
5	18	17	25	25	G	32	42	G	G	68	G	G	37	G	37	G 29	30	40	27	20	21	E	E	22
6	18	19	E	E	E	G	G	48	G	G	45	G	G	G	G	G	G	G	33	28	E	E	E S 15	E
7	E S 15	E	16	E	E S 13	G	G	G	G	G	G	G	G	60	60	G	G	G	34	20	16	E	E	E
8	E S 14	E	E	E	12	G	G	G	G	G	G	40	40	38	38	36	G	39	29	22	20	E S 15	E S 16	E
9	E	E	E	E	E S 13	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	20	E	E S 15	E
10	E	E	E	E	E S 12	G	G	G	G	G	G	G	G	G	G 30	G	G	G 18	16	20	19	E S 16	17	E
11	E S 15	E	E	E	E S 13	G	G	G	G	G	G	G	G	G	41	38	42	36	G	26	E	23	E	23
12	E	E	E	E	E S 15	G	G	G	G	G	G	G	G	39	G 28	G 23	G	G 20	G 16	17	E S 15	E S 15	E	E S 15
13	E S 15	E	E	E	G	G	G	G	G	G	G	G	40	40	G	G	60	45	G	30	E S 15	17	22	E S 15
14	E	E	E	E	E S 15	G	G	G	G	G	G	G	G	56	62	G	44	G	G	23	53	40	35	34
15	E	E	15	E	E S 14	23	G	G	58	54	G	G	E B 47	G	39	38	58	69	A	A	53	41	24	16
16	E S 15	E	22	18	17	G	G	G	G	50	G	60	G	G	45	37	G 29	32	G 20	34	26	18	19	E S 18
17	20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	G 18	E S 16	E	E	E	E S 15
19	E	E	16	E	G	G	G	G	G	G	G	G	G	49	55	50	50	44	G	G	50	E S 15	16	E
20	E	E	E	E	16	34	G	42	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	58	53	G	G	G	G	52	50	50	43	42	30	30	17	25
22	E S 15	E	E	E	G	G	G	G	46	48	50	G	G	G	G	G	G 22	19	G 13	27	17	E S 15	E	E
23	E S 15	E	E	E	G	G	G	G	G	G	G	G	G	G	40	46	42	39	G	18	18	19	16	E S 15
24	E	E	E	E	G	G	G	C	C	G	G	G	G	G	G	41	33	G	31	34	21	E	E	E S 14
25	29	17	E	E	G	G	G	G	G	G	52	G	G	G	G	G	G	G	41	28	25	20	19	20
26	25	17	E	16	G	G	G	G	G	G	G	58	G	43	G	39	47	G	G 19	32	32	26	20	15
27	17	E	E S 17	E	G	G	G	G	45	G	G	G	47	G	G	G	G	G	32	G	14	16	26	35
28	16	17	18	12	17	25	G	G	54	61	84	G	67	50	42	40	40	36	G	G	E	E	20	E
29	E	E	E	E	G	G	G	42	47	A	42	46	G	47	G	G	46	37	30	24	55	41	26	21
30	24	27	30	15	17	G	G	G	50	G	55	G	E B 43	E B 45	G	G	G	G	G	G	14	E	17	20
31	E S 16	15	E	E	17	G	C	C	C	C	C	C	C	41	G	G	G	30	34	32	50	51	25	48
	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	28	28	27	26	25	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29
MED	E F 15	E	E	E	E G 12	G	G	G	G	G	G	G	G	G	E G 23	E G 23	30	25	20	26	20	17	17	E F 15
UQ	17	16	16	E F 12	15	G	G	G	45	48	48	G	38	43	40	38	44	40	33	32	32	26	20	20
LQ	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	18	15	E	E E 15	E

MAY 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	13	12	11	13	16	18	20	17	17	17	17	11	11	12	E	E	E	E	E_{S15}
2	E	E	E	E	E	E	E	E	18	16	16	19	20	20	17	13	11	11	E	E	E	E_{S16}	E_{S16}	E_{S15}
3	E_{S15}	E_{S16}	E	E	E	E	11	12	17	18	20	20	23	27	18	12	11	14	12	E	E_{S12}	E	E	E_{S16}
4	E_{S15}	E	E	E	E	14	13	13	16	16	20	19	19	20	17	17	17	14	15	E_{S13}	E	E	E	E_{S15}
5	E	E	E	E	E	12	11	12	17	20	20	20	21	20	17	19	11	11	E	E	E_{S15}	E	E	E
6	E_{S15}	E	E	E	E	12	13	13	17	20	20	19	20	17	19	17	16	11	14	E	E	E	E_{S15}	E
7	E_{S15}	E	E	E	E_{S13}	12	13	17	18	20	22	19	20	19	17	17	17	12	14	E_{S13}	E	E	E	E
8	E_{S14}	E	E	E	E	12	12	17	18	17	20	20	20	19	17	17	17	15	13	E	E	E_{S15}	E_{S16}	E
9	E	E	E	E	E_{S13}	11	13	12	18	19	17	19	18	15	12	12	15	15	15	E_{S15}	E	E_{S16}	E_{S15}	E
10	E	E	E	E	E_{S12}	13	12	12	17	20	18	19	17	20	16	12	16	11	E	E_{S15}	E	E_{S16}	E_{S12}	E
11	E_{S15}	E	E	E	E_{S13}	11	13	12	20	20	20	23	20	16	21	18	17	11	15	E_{S11}	E	E	E	E
12	E	E	E	E	E_{S15}	14	13	17	17	17	17	18	20	20	17	17	12	13	E	E	E_{S15}	E_{S15}	E	E_{S15}
13	E_{S15}	E	E	E	E	12	13	16	18	17	18	20	20	17	20	17	17	17	14	E_{S12}	E_{S15}	E	E	E_{S15}
14	E	E	E	E	E_{S15}	15	13	16	18	17	20	20	25	20	20	20	17	13	12	E	E	E	E	E
15	E	E	E	E	E_{S14}	12	12	16	21	17	21	26	47	27	19	17	17	11	11	E_{S12}	E	E	E	E
16	E_{S15}	E	E	E	E	11	12	12	18	20	23	30	20	20	20	20	17	17	12	E_{S16}	E	E	E	E_{S18}
17	E	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	12	E_{S16}	E	E	E	E_{S15}
19	E	E	E	E	E	E	17	17	19	25	20	20	20	20	20	17	21	17	16	E_{S14}	E	E_{S15}	E	E
20	E	E	E	E	E	E	13	17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	19	20	25	26	20	20	17	17	13	12	E_{S15}	E	E	E	E_{S15}
22	E_{S15}	E	E	E	E	12	16	16	17	17	22	20	20	18	20	19	12	E	E	E_{S15}	E_{S15}	E_{S15}	E	E
23	E_{S15}	E	E	E	E	13	12	17	16	20	18	19	20	18	20	17	20	20	12	E	E	E	E	E_{S15}
24	E	E	E	E	E	E	11	C	C	17	21	20	20	19	18	17	17	12	12	E_{S14}	E	E	E	E_{S14}
25	E_{S15}	E	E	E	E	14	16	16	19	20	18	19	20	21	20	20	18	13	13	E_{S14}	E	E	E	E
26	E	E	E	E	E	12	12	12	17	22	20	22	20	20	27	20	17	15	12	E	E	E_{S15}	E	E
27	E	E	E_{S17}	E	E	12	12	17	18	18	22	22	17	18	20	17	18	17	12	E_{S12}	E	E	E	E
28	E	E	E	E	E	E	12	16	16	20	18	20	20	20	20	16	12	12	13	E_{S15}	E	E	E	E
29	E	E	E	E	E	11	16	17	20	18	20	20	20	30	20	20	17	17	12	E	E	E	E	E
30	E	E	E	E	E	11	11	11	17	20	22	20	43	45	28	23	17	12	11	E	E	E	E	E
31	E_{S16}	E	E	E	E	11	C	C	C	C	C	C	C	22	20	18	17	12	12	E	E	E	E	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	28	28	27	26	25	27	27	27	27	28	28	28	28	28	29	29	29	29	29	29
MED	E	E	E	E	E	12	12	16	18	19	20	20	20	20	20	17	17	13	12	E_{S12}	E	E	E	E
UQ	E_{S15}	E	E	E	E_{S12}	12	13	17	18	20	20	20	20	20	20	19	17	15	13	E_{S14}	E	E_{S15}	E	E_{S15}
LQ	E	E	E	E	E	11	12	12	17	17	18	19	20	18	17	17	14	11	12	E	E	E	E	E

MAY 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	265	255	250	255	260	305	295	280	300	260	290	285	290	295	295	305	305	290	305	310	300	285	265	260
2	250	260	270	285	285	290	300	300	305	285	240H	265	280	285	280	290	300	300	295	300	300	280	275	275
3	265	270	275	290	270	285	280	300	300	280	260H	280	275	275	285	285	290	A	290	305	285	275	260	260
4	265	260	270	280	270	270	300	270H	290	285H	275	275	280	295	290	290	290	290	295	300	300	265	265	265
5	265	275	275	260	255E	285	305	300	290	265	275	280	285	275	285	285	290	290	290	295	285	265	255	270
6	290	255	295	270	265	255	285	285	295	290	265	280	290	290	300	305	290	290	295	295	290	290	280	270
7	270	260	275	260	245	270	275	285	275	240	255	290	270	290	295	295	300	300	295	295	280	265	260	270
8	270	270	280	270	270	285	295	285	300	285	290	275	290	280	280	295	295	300	300	295	275	280	285	280
9	270	275	285	280	270	280	285	290	295	290	290	280	290	285	285	280	290	295	290	285	290	290	290	275
10	270	270	275	280	295	310	295	280	295	285	285	280	280	290	290	290	295	300	295	290	290	285	275	285
11	280	275	290	285	280	315	310	300	295	285	285	290	280	290	290	285	290	290	285	285	275	280S	285	280
12	275	280	280	290	280	285	285	300	295	285	275	270	275	280	280	275	290	290	285	285	280	280	280	275
13	260	255	255	245	255	275	280	275	305	285	295	290	280	290	280	290	290	300	295	290	275	275	275	260
14	265	260	265	270	290	295	285	290	290	290	290	275	280	280	280	280	285	285	295	290	285S	290	275	270
15	270	265	265	265	260	260	280	275	290	285	255	275	275	280	295	280	285	305	295A	280A	265	260	270	270
16	265	280	260	270	260	290	290	290	290	285	285	275	280	280	285	290	290	285	290	290	275S	270S	280S	S
17	265	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	275	265	270	270	265	260
19	250	250	270S	255	255	265	290	235	260	250	250	255	270	275	270	285	280	290	290	285	280	275	255	275
20	265S	260	265	270	260	255	255	260	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	255	260	260	260	255	275	290	295	290	290	295	260	255	255	260
22	255	260	275	270	260	270	265	275	270	250E	275	270	275	270	270	270	290	285	285	285	270	265	265	270
23	245E	265E	260E	F	250E	285	290	290	295	285	270	280	275	285	275	285	290	290	285	290	275	265	270	270
24	275	275	270E	270E	270	285	290	C	C	295	285	280	285	285	285	280	280	295	290	290	280	275	265	270
25	270	245E	255	275	260	265	275	280	310	285	275	280	265H	275	275	280	285	275	290	285	270	265	265	265S
26	260	275	275	275	255	265	280	285	290	285	280	275	285	280	280	290	300	285	275	285	285	270	270	280
27	285	275	280	275	275	285	285	290	285	320	280	280	285	285	285	285	290	285	285	295	285	280S	285	265
28	260	265	265	270	250	280	275	270	285	260	290	260	265	270	300	295	290	290	280	275	255	260	240	250E
29	F	255E	240	250	240	240	240	250	250	A	W	210	245	260	265H	265	285	275	295	285	265	250	270E	265
30	265S	275	275	275E	280E	255	245	265	305	265	250	215	R	245	275	250	265	290	285	270	255	250	255	260
31	260	270	270	265E	280E	280	C	C	C	C	C	C	C	265	270	280	285	300	290	285	270	265	265	265
	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	27	28	28	27	26	25	26	27	27	26	28	28	28	28	27	29	29	29	29	29	28
MED	265	265	270	270	262	280	285	285	295	285	275	275	280	280	282	285	290	290	290	290	280	270	270	270
UQ	270	275	275	278	278	285	297	290	300	285	285	280	285	288	290	290	292	298	295	295	285	280	275	275
LQ	260	260	265	265	255	265	278	275	290	265	260	270	275	275	275	280	285	288	285	285	270	265	265	262

The Radio Research Laboratories, Japan

MAY 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

MAY 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								345	335	345	A	A	A	A	365		380							
2									A	A		A	345			365								
3									375			345		350	375									
4											L		345	345		A								
5									360	A	355	340	340		335	345	L							
6							340	A	L	345	335	325	340	335	335	L								
7						330	335	350	345	360	355		340	340	340	340	375							
8									360	375	L		350	340	L	345								
9									L	350	375	360			L		370							
10									360	L	L	325	340	330	360	350								
11									375	345	360	335	340	330	350	365								
12								L	L	380	L		345	340	365									
13									340	355	395	335	340	335	350	335	A							
14										375	L	345	370	A	A	L	375							
15							345	345	A	A	320	355	325	325	340	L	A	A						
16										335		A	345	320	330	345								
17							C	C	C	C	C	C	C	C	C	C	C	C						
18							C	C	C	C	C	C	C	C	C	C	C	C						
19							350	315	340	355	360	345	345	360	A	A	A							
20					320		325	A	C	C	C	C	C	C	C	C	C	C						
21					C	C	C	C	C	A	A	345	330	340	340	A	A							
22						310	325	340	A	A	A	345	350	330	335	340	340	350						
23						L		360	L		345	355	340	325	320	A								
24								C	C	350	L	L	345	335	350		350							
25					335			350	360	L	360	350		345	320	340								
26								350	370		340	A	330			L								
27								360		360	375	350	335	350	345	350								
28						350	390			A	A	A	335	340	330	340	340							
29						305	305	360	A	A	420	380	345	350		355	355	335						
30						315	320	365	A	380	370	355	355	350	345	345	335	335						
31							C	C	C	C	C	C	C	330	335	340	340							
	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	5	9	11	11	14	14	18	23	22	20	15	9	3						
MED					328	315	335	350	360	355	360	345	340	338	340	345	355	335						
UQ						330	345	360	365	375	375	355	345	345	350	350	375	342						
LQ						310	325	345	342	345	345	335	340	330	335	340	340	335						

The Radio Research Laboratories, Japan

MAY 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

MAY 1970 | H'F2 (KM) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								360	345	400	A	300	345	325	300		275							
2									265	295		A	320			310								
3									275			325		325	300									
4											310		320	310		310								
5									290	A	350	325	315		320	310	300							
6							300	275	290	320	365	340	325	335	320	300								
7						340	345	345	390	510	465		415	375	350	325	300							
8									270	290	315		300	345	320	300								
9									260	300	270	305			325		290							
10									300	300	305	350	345	320	300	320								
11									275	305	315	320	325	320	320	300								
12								290	275	280	300		345	320	320									
13									315	350	310	350	345	340	360	330	310							
14										300	300	310	285	325	340	300	300							
15							325	325	315	360	400	360	375	340	320	320	325	A						
16										310		370	330	335	325	315								
17							C	C	C	C	C	C	C	C	C	C	C	C						
18							C	C	C	C	C	C	C	C	C	C	C	C						
19							285	470	425	465	460	425	420	395	400	360	325							
20					350		390	350	C	C	C	C	C	C	C	C	C	C						
21					C	C	C	C	C	A	450	490	440	490	390	350	350							
22						360	360	370	370	445	375	405	395	380	365	360	340	325						
23						290		280	275		365	325	345	340	350	315								
24								C	C	315	325	330	360	325	325		320							
25					335			290	275	300	360	370		350	345	325								
26								285	275		340	300	340			310								
27								275		275	325	335	330	320	325	310								
28						270	315		300	370	A	450	420	375	325	320								
29						405	445	445	490	A	W	680	465	460		420	465	365						
30						415	460	415	445	450	515	A 700	R	525	505	490	425	345						
31							C	C	C	C	C	C	C	425	410	350	330							
	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	6	9	14	21	20	22	22	23	24	24	23	14	3						
MED					342	350	345	335	290	312	345	345	345	340	325	320	322	345						
UQ						405	390	370	345	385	400	405	385	378	355	340	340	355						
LQ						290	315	285	275	300	310	325	325	325	320	310	300	335						

MAY 1970 | H'F2 (KM)

IONOSPHERIC DATA

MAY 1970 | 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	275	300	285	300	300	265	230	235	215	210	A	A	A	A	205	230	240	250	260	250	A	250	265	300
2	345	325	300	255	260	240	245	260	A	A	A	A	225	240	260	230	235	250A	A	A	A	A	265	270
3	275	290	260	250	290	245	245	235	240	220	210H	210	225	215	225	250	A	A	A	A	240	260	260	305
4	300	300	265	250	250	235	230	235H	245	210H	235H	215	220	240	240	A	A	255	260	245	220	A	300	300
5	300	295	290	300	280	260	250A	245	220	I240A	200	245	250	245	215	240	245	260A	260	250	245	275	275	290
6	270	300	260	260	290	250	260	I240A	230	220	240	250	250	210	205	250	240	250	270A	260	250	250	260	275
7	275	295	275	285	315	275	255	250	250	225	225	235	225	A	A	230	230	250	285	260	250	280	280	290
8	280	280	275	260	275	245	240	225	250	210	200	195	230	210	225	230	255	270	260	250	260	250	250	275
9	280	280	250	250	295	245	245	230	225	205	210	200	200	200	230	225	240	245	260	255A	250	245	250	250
10	275	300	270	260	260	240	225	225	250	220	200	215	215	205	230	220	235	250	250	260	250	250	265	260
11	260	275	260	250	260	240	235	225	230	250	215	210	205	205	250	225	265	250	250	250	250	265	260	270
12	260	260	260	250	260	240	230	220	225	215	205	210	210	230	220	245	225	245	260	265	270	260	260	275
13	290	295	300	300	300	250	250	230	230	210	200	210	215	220	220	240	I250A	270	260	260	255	265	275	280
14	280	300	290	270	270	240	230	230	240	210	215	205	210	I260A	I235A	250	270	250	260	250	I260A	265A	I265A	305
15	275	280	300	290	270	245	240	260	A	A	260	215	265	215	240	240	A	A	A	A	A	A	285	270
16	280	275	295	275	280	250	225	205	230	270A	250	I230A	200	230	250	230	240	250	265	260A	270	280	260	270
17	300	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	270	275	280	270	270	290
19	300	300	300	285	285	270	245	260	225	225	215	225	250	I215A	A	A	A	A	260	265	I270A	260	295	270
20	280	290	280	275	310	285	225	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	A	A	250	250	250	260	A	A	A	A	A	300A	325	300	305
22	300	300	275	250	280	260	230	230	A	A	A	225	215	200	215	230	230	240	260	275	260	265	280	275
23	300	295	290	275	260	240	250	215	205	215	210	200	220	220	225	A	275	260	250	250	260	260	280	275
24	270	275	270	250	265	250	230	C	C	230	225	220	215	205	215	240	225	245	265	A	250	250	255	280
25	300	320	300	280	300	245	240	240	230	205	I225A	190	200H	220	230	235	245	260	I270A	260	275	265	290	300
26	300	285	250	260	260	250	240	240	225	240	200	I225A	205	250	250	240	I255A	240	250	270	280	285	285	265
27	270	275	275	260	260	245	240	240	255A	225	200	240	240	215	230	240	250	280	260	260	255	270	260	A
28	300	300	300	285	280	240	210	250	A	A	A	235	A	A	250	250	260	260	270	295	310	275	345	325
29	350	325	305	300	315	260	300	I260A	A	A	205	A	250	I225A	215H	225	I240A	260	275	275	A	A	305	300
30	300	300	285	300	260	270	260	250	A	210	I210A	250	240	250	230	220	270	250	270	275	280	305	300	295
31	285	295	275	315	270	245	C	C	C	C	C	C	C	215	240	225	230	230	270	270A	A	A	300	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	28	28	28	28	27	25	19	21	22	24	25	25	26	24	23	24	25	24	24	24	29	27
MED	280	295	278	272	278	245	240	235	230	220	210	218	220	220	230	232	240	250	260	260	260	265	275	280
UQ	300	300	298	288	292	260	248	250	242	225	225	235	240	240	240	240	255	260	270	270	272	275	290	300
LQ	275	280	268	252	260	240	230	230	225	210	200	210	210	210	220	228	235	248	260	250	250	255	260	270

The Radio Research Laboratories, Japan

MAY 1970 | H'F (KM)

IONOSPHERIC DATA

MAY 1970 | 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	G	G	130	125	125	110	115	110	110	100	G	155	125	120	110	110	110	105	S
2	100	100	100	100	100	100	100	120	110	110	110	110	110	115	110	120	G	120	110	110	110	110	S	S
3	S	100	100	E	E	100	125	130	115	115	115	110	105	100	G	120	115	110	105	105	105	105	105	S
4	S	100	100	100	E	G	G	125	115	125	115	G	G	115	125	110	110	115	110	S	E	110	115	110
5	100	100	100	115	140	125	115	120	115	110	G	100	105	105	100	100	100	115	100	100	110	E	E	100
6	100	100	E	E	E	G	115	110	115	115	110	110	110	G	G	G	G	120	110	110	E	E	S	E
7	S	E	100	100	S	G	G	120	110	110	110	110	110	105	105	105	G	135	115	115	110	110	E	E
8	S	E	E	E	105	G	G	G	110	115	G	105	105	100	100	105	125	120	115	110	110	S	S	E
9	E	E	E	E	S	G	G	130	120	115	G	G	G	G	G	G	G	120	115	110	110	105	S	E
10	E	E	E	E	S	G	G	125	115	115	G	G	G	G	100	G	G	100	100	115	110	S	105	E
11	S	E	E	E	S	G	140	G	125	115	G	115	G	110	110	110	110	115	115	115	E	105	E	105
12	E	E	E	E	S	G	G	125	120	115	110	G	G	105	100	125	G	100	120	115	S	S	E	S
13	S	E	E	E	G	G	G	115	120	115	110	110	105	105	G	G	115	115	115	110	S	110	110	S
14	E	E	E	E	S	G	G	120	115	115	110	115	110	105	105	125	115	120	110	110	110	105	105	100
15	100	100	100	E	S	115	G	120	115	110	110	115	B	G	100	100	115	110	110	110	110	110	105	100
16	S	100	100	100	100	G	G	G	125	115	115	110	115	110	105	110	105	110	125	110	110	110	105	S
17	100	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	140	S	120	E	E	S
19	E	E	115	E	G	G	G	125	140	140	G	G	G	115	115	110	110	110	115	120	110	S	105	E
20	E	E	E	E	100	110	115	120	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	110	110	110	110	110	115	110	110	110	110	110	105	105	105	105
22	S	E	E	E	G	G	G	125	110	110	110	110	110	G	G	G	100	115	115	110	105	S	E	E
23	S	E	E	100	130	G	G	G	125	120	120	110	110	105	105	100	100	105	115	105	100	100	100	S
24	E	E	E	100	G	115	120	C	C	110	110	110	110	G	G	105	105	G	115	110	110	E	E	S
25	100	100	100	E	125	G	125	110	115	110	110	110	105	G	G	G	135	125	115	115	105	105	105	100
26	100	100	E	100	G	G	140	115	125	120	115	110	110	105	110	105	125	125	125	115	100	110	100	110
27	105	E	S	E	140	G	115	115	115	110	110	105	110	115	115	125	115	115	110	115	110	105	100	100
28	100	100	100	100	100	105	120	115	115	110	110	110	105	100	105	100	100	115	115	145	E	E	105	E
29	E	E	E	E	125	125	120	115	120	110	115	115	110	110	110	G	100	125	100	110	110	110	105	105
30	105	100	100	100	110	120	120	120	115	115	110	110	B	B	G	115	115	115	115	G	110	105	105	100
31	S	100	E	100	100	G	C	C	C	C	C	C	C	105	110	110	105	105	100	100	100	105	110	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	12	11	11	12	9	13	22	25	27	21	22	19	20	20	20	22	27	29	26	23	19	18	12
MED	100	100	100	100	108	115	120	120	115	115	110	110	110	105	105	110	110	115	115	110	110	105	105	102
UQ	100	100	100	100	128	120	125	125	120	115	115	110	110	110	110	118	115	120	115	115	110	110	105	105
LQ	100	100	100	100	100	105	115	115	115	110	110	110	105	105	100	105	105	110	110	110	105	105	105	100

MAY 1970 | H'ES (KM)

IONOSPHERIC DATA

MAY 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								H1	C1	C1	C2	C1	C2	C3	L1		H1	C1	C3	C2	E2	E2	F4	
2	F1	F3	F4	F2	L2	L2	H11	Ch1	C2	C2	C2	C2	C1	C1	C2	C1		C2	Ch2	Ch3	FF41	F5		
3		F1	F1			L1	C1	H1	C1	C1	C1	C1	L1	L1		Ch1	C3	L5	L5	L6	F1	F4	F1	
4		F1	F1	F1				C1	C2	C1	C1			C1	C1	C2	C3	C2	C3			F3	FF32	F2
5	F2	F2	F2	FF21	H1	C2	C4	C1	C1	C4		L1	L2	C2	L1	L1	Ch1	Ch2	L3	L1	F2			F1
6	F2	F2					C3	C2	C1	C1	C2	C2	C1					C1	C4	C3				
7			F2	F1				C1	C1	C1	C1	C1	C1	C3	C3	C1		H1	C4	C2	F1	F1		
8					L1				C1	C1		L1	L1	L1	L1	L1	C1	C2	C2	C2	F2			
9								H1	C1	C1								C1	C2	C4	F2	F1		
10								C1	C1	C1					L1			L1	L1	C2	F2		F2	
11							H1		C1	C1		C1		C1	L1	L1	L2	C2	C3	C2		F2		F3
12								C1	C1	C1	C1			L1	L1	Ch1		L1	Ch1	Ch1				
13								C1	C1	C1	C1	C1	L1	L1			C2	C3	C2	C3		F1	F2	
14								C1	C1	C1	C1	C1	C1	C2	C2	C1	C2	C1	C3	C3	F3	F4	F3	F6
15	F1	F2	F2			L1		C1	C2	C2	C1	C1			L2	L1	C2	C3	C3	C3	F4	F5	F3	F1
16		F1	F2	F1	L1				C1	C2	C1	C3	C1	C1	L1	L1	L1	L2	Ch1	C3	F4	F2	F2	
17	F1																							
18																			H11		F1			
19			F1					C1	H1	H1				C2	C2	C2	C2	C2	C2	C1	F6		F1	
20					L2	Ch2	C2	C1																
21										C2	C1	C1	C1	C1	C1	L2	C2	C4	C4	C4	F5	F3	F1	F3
22								C1	C1	C2	C1	C1	C1				L1	Ch1	Ch2	C2	F2			
23				F1	H1				C1	C1	C1	C1	C1	C2	L1	L2	L2	L3	C1	L1	F2	F2	F1	
24				F1		C1	C1			C1	C1	C1	C1			L2	L1		C2	C4	F3			
25	F2	F2	F1		C1		C1	C1	C1	C1	C2	C1	C1				H1	C1	C2	C3	F3	F2	F2	F2
26	F3	F2		F1			H1	C1	C1	C1	C1	C3	C1	L1	C1	L1	Ch1	C1	Ch1	Ch2	F4	FF11	F2	F1
27	F2				H1		C1	C1	C2	C1	C1	C1	C2	C1	C1	C1	C2	C3	C2	C2	F2	F1	F4	F5
28	F2	F2	F2	F1	L1	L1	C1	C1	C2	C3	C3	C1	L3	L2	L1	L2	L3	C2	C2	H1			F2	
29					C1	C1	C1	C1	C1	C3	C1	C1	C1	C2	C1		L2	Ch1	Ch1	L2	F6	F5	F2	F3
30	F3	F3	F3	F2	L1	C1	C1	C1	C2	C1	C2	C1				C1	C1	C1	C2		F1	F2	F1	F2
31		F1		F1	L1									L1	C1	C1	C1	L2	L4	L5	F4	F3	F4	F6
	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

MAY 1970 | TYPES OF ES

IONOSPHERIC DATA

MAY 1970 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	76	71	71	69	68	84	94	82	81	83	96	107	104	107	103	103	103	97	109	107	84	69	66	69
2	I^{A}_{67}	69	I^{R}_{72}	69	56	68	82	98	101	98	I^{R}_{104}	116	114	I^{A}_{118}	120	111	114	114	108	98	80	I^{R}_{70}	76	I^{R}_{78}
3	82	76	86	73	59	70	85	97	89	91	102	111	117^{S}	115	114	113	112	I^{A}_{114}	117	I^{A}_{100}	82	81	R	R
4	87	I^{R}_{85}	83	75	69	77	86	94	97	96	99	109	113	113	107	101	102	106	114	109	84	70	I^{R}_{69}	69
5	I^{R}_{76}	I^{R}_{76}	74	69	71	75	92	94	93	96	107	118	116	112	108	104	101	I^{C}_{103}	101	102	88	86	I^{R}_{86}	89
6	93	79	I^{R}_{82}	74	70	86	94	93	91	86	89	I^{C}_{96}	I^{C}_{106}	I^{C}_{103}	I^{C}_{97}	93	I^{A}_{89}	88	87	94	87	77	75	74
7	74	72	68	63	62	I^{R}_{68}	76	74	71	71	I^{C}_{70}	78	I^{C}_{87}	95	C	C	87	82	86	88	71	70	71	71
8	I^{R}_{70}	68	67	63	63	72	89	90	91	90	97	107	104	101	99	102	103	98	94	91	85	84	81	80
9	80	77	I^{R}_{78}	70	66	77	95	109	98	103	104	111	116	110	103	106	109	104	101	100	94	I^{R}_{91}	86	83
10	I^{C}_{80}	80	83	81	78	83	88	95	96	96	99	106	I^{R}_{108}	112	109	I^{R}_{102}	94	95	89	92	91	87	I^{R}_{84}	I^{R}_{83}
11	I^{R}_{79}	I^{R}_{80}	83	I^{R}_{79}	78	86	91	82	86	92	96	I^{S}_{107}	111	I^{S}_{112}	I^{S}_{112}	106	103	99	99	98	I^{R}_{92}	93	86	82
12	80	80	I^{R}_{81}	I^{R}_{74}	69	79	95	109	99	94	98	106	108	114	109	106	102	97	94	94	I^{R}_{97}	I^{R}_{98}	94^{S}	90
13	86	84	81	I^{R}_{76}	73	82	82	91	87	80	85	89	95	97	93	97	100^{S}	I^{A}_{94}	91	89	79	78^{S}	78	76
14	77	75	73^{S}	71	70	78	90	94	97	95	100	108	112	114	115	108	106	104	100	107	97	88	87	86
15	84	80	78	72	70	82	82	78	84	86	87	I^{A}_{89}	94	106	111	103	97	97	91	81	82	I^{R}_{82}	85	83
16	74	77	73	73	74	82	90	91	91	96	98	98	106	111	114	109	I^{A}_{106}	104	I^{R}_{94}	I^{R}_{94}	90	89	A	R
17	R	R	R	82	75	84	I^{R}_{94}	93	91	83	83	84	98	104	112	97	94	100	94	94	74	I^{R}_{80}	84^{S}	84
18	82	75	73	68	67	79	89	96	97	99	104	107	112	104	97	100	97	96	94	I^{R}_{94}	94	91	89	87
19	84^{S}	82	83	76	78	94	85	76	72	76	84	80	85	86	I^{A}_{87}	89	I^{A}_{94}	96	96	94	84	79	I^{R}_{77}	79
20	81	77	80	71	65	64	73	84	87	84	81	I^{A}_{85}	83	82	82	76	I^{A}_{79}	91	94	86	A	A	R	F
21	73^{S}	F	F	64^{S}	61	74	64	60	70	71	70	76	77	I^{A}_{76}	I^{A}_{78}	82	84	85	82	78	I^{R}_{74}	I^{R}_{76}	I^{R}_{77}	I^{R}_{76}
22	74	74^{S}	74	68	59	61	65	73	80	77	77	82	83	87	87	87	87	86	87	84	83	82	83	82
23	78	77	75	68	70	86	101	103	I^{R}_{88}	86	88	92	97	97	102	105	98	98	90	88	87	I^{R}_{86}	89	85
24	I^{R}_{82}	80	75	75	75	89	97	99	102	94	94	96	98	104	99	96	I^{R}_{96}	98	98	94	91	85	85	81
25	82	79	80	78	73	83	94	100	98	86	87	97	106	105	110	106	97	96	I^{R}_{94}	I^{A}_{90}	83	91	I^{R}_{88}	88
26	90	91	82	78	73	86	101	111	111	97	101	100	101	107	108	103	95	89	91	95	93	87	90	90
27	96	91	85	79	78	87	106	I^{R}_{102}	I^{R}_{98}	93	91	97	105	104	96	97	94	91	97	101	A	A	I^{R}_{93}	87^{S}
28	90	88	88	85	81	90	90	94	109	95	104	88	94	100	101	97	86	83	84	91	83	90	I^{R}_{84}	85
29	80	I^{R}_{76}	72	60	56	72	78	83	66	60	I^{R}_{59}	64	C	C	C	C	C	C	C	C	C	C	C	I^{A}_{72}
30	70	68	65	53	52	55	62	I^{R}_{62}	I^{A}_{60}	63	I^{A}_{61}	61	R	R	69	C	C	C	C	C	C	C	C	78
31	I^{R}_{74}	71	74	66	67	78	79	71	76	77	77	81	87	88	81	84	83	84	80	84	86	87	88	I^{R}_{84}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	31	31	31	31	31	31	31	31	31	29	29	29	28	29	29	29	29	27	27	26	28
MED	80	77	78	72	70	79	89	93	91	90	94	97	104	104	103	102	97	97	94	94	85	85	84	82
UQ	84	80	82	76	74	85	94	98	98	96	100	107	111	112	110	106	103	100	99	98	91	88	88	86
LQ	74	75	73	68	64	73	82	82	82	82	84	84	94	97	96	96	94	91	90	89	82	78	77	77

MAY 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	520	L	520	520	560	I A 600	540	570 H	L	500	L						
2								L	L	L	A	A	A	A	520	L	L 480	L						
3							L	450	A	610	570	I A 600	I A 580	L	600	I A 540	A	A						
4								L	L	A	680	I A 590	600	A	600	A	A	A						
5								A	A	560	570	560	600	580	590	540	520	C						
6							L	L	L	500	500	600	I C 580	I C 570	I C 550	I C 540	L 540	A	A						
7							L	L	470	500	540	I C 530	540	I C 560	540	C	C	L	L					
8								L	L 510	490	570	530	580	L	520	520		L	L					
9								L	470	460	510	550	550	530	L	540	530	470	L					
10							L	470	L	L	580	550	590	540	490	A	A	L						
11								L	L	530	570	S	S	S	I S 500	L	L	L	L					
12							L	L	L	L	L	L	580	570	L	L	L	L						
13							L	470	L	L	L	580	570	550	L	A	A	A						
14							L	L	L	650 H	510	A	A	A	570	540	500	L	L					
15							L	510	L	550	600	A	A	I A 560	550	510	510	A	A					
16								L	590	560	580	590	600	620	I A 580	A	A	A	A					
17							L	540	A	A	610	640	A	A	560 H	520	550	L	L					
18							L	I A 540	I A 540	550	580	640	I A 550	600	580	520	520	L						
19							A	560	560	540	520	620	I A 600	590	A	A	A	A	L					
20							500	500	500	I A 540	580	I A 570	I A 590	570	590	520	A	A	A					
21								A	I A 540	I A 560	570	600	A	A	A	A	A	L	A					
22						L	500	470	520	540	570	560	I A 590	570	570	540	510	L	L					
23						L	L	L	510	740 H	590	650	600	600	540	540	500	440	L					
24							L	L	500	540 H	550	580	570	560	580	550	520	460	L					
25						L	L	480	510	550	660 H	600	590	570	I A 560	I A 530	I A 510	I A 460	A					
26						L	L	L	I A 530	I A 550	580	600	I A 630	560	I A 560	I A 520	U L 500	500	A					
27							L	L	L	A	I A 590	640	590	550	600	550	L	A	A					
28						L	L	A	A	A	570	590	560	560	550	500	540	L	A					
29						360	420	460	480	530	540	A	C	C	C	C	C	C	C					
30						390	420	A	A	I A 490	I A 510	520	540	A	570	C	C	C	C					
31						L	U L 500	500	560	570	I A 550	610	U R 560	570	560 H	540 H	510	I A 460	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	5	15	16	23	28	25	24	20	25	18	15	5	•					
MED						375	500	480	510	540	570	590	585	565	560	535	510	460						
UQ							500	515	540	560	585	600	600	575	580	540	520	460						
LQ							420	470	500	530	550	560	565	550	540	520	500	U A 460						

MAY 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						190	250	A	A	345	370	I A 380	I A 380	I A 370	355	335	305	A	A	S				
2						B	265	305	I A 330	350	370	A	A	A	370	350	320	275	A	S				
3						185	260	305	330	355	A	A	A	A	A	I A 350	320	A	A	B				
4						A	265	I A 310	I A 340	A	A	A	A	A	375	350	310	A	A	S				
5						A	255	300	330	A	A	A	A	A	375	360	320	C	A	S				
6						195	260	300	I A 325	350	A	C	C	C	C	350	I A 320	285	A	S				
7						205	255	A	A	350	C	A	C	A	C	C	320	275	A	S				
8						205	270	315	340	355	365	I A 375	380	I A 380	I A 365	335	310	280	A	S				
9						180	255	300	330	355	A	A	A	A	355	340	320	280	A	S				
10						195	255	310	S	S	I B 380	380	S	A	A	A	A	S	S	S				
11						205	265	305	335	360	S	A	A	S	I C 355	335	305	265	A	S				
12						195	260	315	350	360	375	I B 380	I A 385	385	365	355	320	280	205	S				
13						205	260	305	345	360	370	I B 380	I A 380	380	350	A	A	275	200	S				
14						190	255	305	325	I A 350	A	A	A	A	365	350	335	A	A	S				
15					S	B	265	310	A	A	A	A	A	A	A	355	A	A	A	S				
16					S	210	270	310	345	A	A	I A 380	I A 390	A	A	A	A	A	A	S				
17					S	215	275	315	340	355	375	A	A	A	A	355	I A 320	290	A	S				
18					E	200	270	315	335	A	A	A	A	A	A	A	A	A	A	S				
19					E	210	270	315	340	I A 360	375	I A 385	395	I A 395	A	A	A	A	A	S				
20					S	A	265	A	A	A	A	A	A	A	A	A	A	A	A	S				
21					E	A	A	I A 305	I A 330	A	A	A	A	A	A	A	A	A	A	S				
22					S	A	A	I A 325	A	A	A	A	A	A	380	365	345	A	A	S				
23					S	A	275	I A 305	330	I A 345	A	A	A	A	A	A	A	A	A	S				
24					S	A	A	A	A	A	365	A	A	A	A	A	A	A	A	S				
25					E	A	A	A	A	A	A	A	A	A	A	A	330	A	A	S				
26					E	A	A	325	A	A	A	A	A	A	A	A	A	295	A	S				
27					E	A	A	A	A	A	A	A	A	I A 390	380	360	325	295	A	S				
28					E	A	A	315	340	355	A	A	A	390	375	355	320	A	A	S				
29					S	A	A	310	I A 330	355	A	A	C	C	C	C	C	C	C	C				
30					E	215	275	A	A	A	A	A	A	B	A	C	C	C	C	C				
31					S	210	275	310	335	A	A	A	A	A	A	375	A	A	A	S				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					8	17	23	24	20	16	9	7	6	7	13	17	17	11	2					
MED					E	205	265	310	335	355	370	U A 380	U A 382	U A 385	365	350	320	280	202					
UQ					E	210	270	315	340	358	375	U 380	U A 390	390	375	355	320	288						
LQ					E	195	258	305	330	350	370	U 380	U A 380	380	355	350	320	275						

MAY 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	G	G	34	37	43	G	43	J_{83}^{X}	47	G	G	35	37	J_{26}^{X}	J_{23}^{X}	J_{20}^{X}	J_{55}^{X}	J_{44}^{X}	J_{43}^{X}
2	J_{83}^{X}	J_{43}^{X}	J_{26}^{X}	J_{39}^{X}	J_{35}^{X}	22	33	J_{50}^{X}	J_{53}^{X}	J_{35}^{X}	J_{85}^{X}	J_{64}^{X}	J_{68}^{X}	J_{183}^{X}	43	43	40	37	J_{39}^{X}	J_{33}^{X}	J_{86}^{X}	J_{36}^{X}	J_{49}^{X}	J_{64}^{X}
3	E_{14}^{S}	J_{28}^{X}	E_{14}^{S}	E	J_{25}^{X}	J_{20}^{X}	G	39	J_{53}^{X}	J_{49}^{X}	J_{54}^{X}	J_{63}^{X}	J_{64}^{X}	J_{53}^{X}	45	J_{74}^{X}	J_{94}^{X}	D	J_{93}^{X}	J_{96}^{X}	J_{105}^{X}	J_{93}^{X}	J_{103}^{X}	J_{89}^{X}
4	J_{54}^{X}	J_{49}^{X}	J_{45}^{X}	J_{68}^{X}	J_{54}^{X}	J_{21}^{X}	G	36	42	J_{49}^{X}	J_{53}^{X}	J_{63}^{X}	J_{47}^{X}	J_{58}^{X}	48	J_{64}^{X}	J_{55}^{X}	J_{75}^{X}	J_{43}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	J_{40}^{X}	J_{34}^{X}	J_{29}^{X}	J_{30}^{X}	J_{34}^{X}	21	J_{44}^{X}	J_{56}^{X}	J_{53}^{X}	J_{45}^{X}	J_{51}^{X}	J_{68}^{X}	J_{61}^{X}	47	G	G	J_{44}^{X}	C	J_{50}^{X}	J_{38}^{X}	J_{20}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
6	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	G	28	35	45	39	45	C	C	C	C	42	J_{91}^{X}	J_{65}^{X}	J_{35}^{X}	J_{20}^{X}	J_{33}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
7	E_{14}^{S}	J_{18}^{X}	J_{18}^{X}	E_{14}^{S}	E_{14}^{S}	G	30	43	J_{52}^{X}	J_{52}^{X}	C	J_{49}^{X}	C	J_{40}^{X}	C	C	G	35	27	E_{14}^{S}	J_{43}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
8	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	24	G	36	J_{48}^{X}	42	J_{47}^{X}	46	G	J_{58}^{X}	42	37	44	J_{60}^{X}	J_{45}^{X}	J_{34}^{X}	J_{25}^{X}	J_{18}^{X}	J_{17}^{X}	J_{36}^{X}
9	J_{18}^{X}	E_{14}^{S}	E_{13}^{S}	J_{20}^{X}	J_{16}^{X}	21	G	34	38	42	44	J_{44}^{X}	J_{47}^{X}	43	G	G	37	39	27	22	J_{15}^{X}	J_{20}^{X}	J_{33}^{X}	E_{14}^{S}
10	C	E_{15}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	G	G	36	E_{43}^{S}	J_{50}^{X}	48	42	E_{47}^{S}	47	J_{46}^{X}	J_{68}^{X}	J_{56}^{X}	E_{29}^{S}	E_{25}^{S}	J_{42}^{X}	J_{40}^{X}	J_{28}^{X}	E_{14}^{S}	E_{14}^{S}
11	E_{14}^{S}	E_{14}^{S}	J_{15}^{X}	E_{14}^{S}	E_{14}^{S}	G	30	34	39	43	E_{45}^{S}	44	45	45	45	J_{44}^{X}	43	35	J_{29}^{X}	J_{18}^{X}	J_{40}^{X}	J_{29}^{X}	J_{28}^{X}	E_{14}^{S}
12	J_{43}^{X}	J_{38}^{X}	J_{54}^{X}	E	J_{23}^{X}	21	32	G	40	J_{50}^{X}	42	G	41	G	40	47	42	G	28	J_{28}^{X}	J_{26}^{X}	J_{18}^{X}	E_{14}^{S}	E_{14}^{S}
13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	24	34	44	45	45	45	J_{45}^{X}	46	40	J_{49}^{X}	J_{65}^{X}	J_{84}^{X}	J_{100}^{X}	J_{70}^{X}	J_{40}^{X}	J_{36}^{X}	J_{33}^{X}	E_{14}^{S}	J_{38}^{X}
14	J_{18}^{X}	J_{18}^{X}	E_{14}^{S}	J_{18}^{X}	J_{21}^{M}	G	30	40	40	45	43	J_{57}^{X}	J_{83}^{X}	J_{64}^{X}	J_{50}^{X}	G	37	J_{52}^{X}	25	J_{30}^{X}	J_{38}^{X}	J_{143}^{X}	J_{67}^{X}	J_{58}^{X}
15	J_{66}^{X}	E_{14}^{S}	J_{17}^{X}	E_{14}^{S}	E_{14}^{S}	E_{22}^{B}	35	38	43	43	J_{48}^{X}	J_{128}^{X}	J_{93}^{X}	J_{60}^{X}	J_{63}^{X}	G	J_{40}^{X}	J_{68}^{X}	J_{68}^{X}	J_{161}^{X}	J_{51}^{X}	J_{53}^{X}	J_{69}^{X}	J_{34}^{X}
16	J_{30}^{X}	J_{18}^{X}	J_{20}^{X}	E_{14}^{S}	E_{14}^{S}	G	G	34	37	42	39	43	44	J_{59}^{X}	J_{89}^{X}	J_{67}^{X}	J_{131}^{X}	J_{113}^{X}	J_{79}^{X}	J_{66}^{X}	J_{68}^{X}	J_{90}^{X}	J_{113}^{X}	J_{28}^{X}
17	J_{29}^{X}	J_{29}^{X}	J_{36}^{X}	J_{26}^{X}	J_{18}^{X}	G	36	46	J_{58}^{X}	J_{79}^{X}	47	J_{51}^{X}	J_{119}^{X}	J_{108}^{X}	41	G	38	36	26	J_{38}^{X}	J_{23}^{X}	J_{26}^{X}	J_{54}^{X}	J_{50}^{X}
18	J_{49}^{X}	J_{28}^{X}	J_{24}^{X}	J_{23}^{X}	J_{24}^{X}	J_{20}^{X}	39	J_{49}^{X}	J_{57}^{X}	45	46	J_{49}^{X}	J_{61}^{X}	54	J_{55}^{X}	J_{45}^{X}	J_{36}^{X}	29	J_{45}^{X}	J_{33}^{X}	J_{26}^{X}	J_{30}^{X}	J_{23}^{X}	E_{13}^{S}
19	J_{18}^{X}	J_{30}^{X}	J_{28}^{X}	J_{45}^{X}	J_{26}^{X}	J_{26}^{X}	41	J_{53}^{X}	44	38	G	42	J_{96}^{X}	43	J_{91}^{X}	J_{71}^{X}	J_{114}^{X}	J_{89}^{X}	J_{36}^{X}	J_{80}^{X}	J_{34}^{X}	J_{69}^{X}	J_{85}^{X}	J_{86}^{X}
20	J_{54}^{X}	J_{128}^{X}	J_{38}^{X}	J_{30}^{X}	J_{30}^{X}	J_{28}^{X}	37	J_{79}^{X}	44	J_{66}^{X}	J_{49}^{X}	J_{130}^{X}	J_{64}^{X}	J_{41}^{X}	J_{66}^{X}	39	J_{104}^{X}	J_{53}^{X}	J_{45}^{X}	J_{50}^{X}	J_{76}^{X}	J_{86}^{X}	J_{58}^{X}	J_{68}^{X}
21	J_{54}^{X}	J_{38}^{X}	J_{46}^{X}	J_{64}^{X}	J_{39}^{X}	J_{58}^{X}	J_{39}^{X}	J_{49}^{X}	J_{58}^{X}	J_{61}^{X}	J_{50}^{X}	49	53	J_{97}^{X}	J_{78}^{X}	J_{69}^{X}	J_{76}^{X}	J_{45}^{X}	J_{69}^{X}	J_{60}^{X}	J_{34}^{X}	J_{49}^{X}	J_{83}^{X}	J_{65}^{X}
22	J_{21}^{X}	J_{18}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	24	34	J_{46}^{X}	J_{51}^{X}	45	44	J_{53}^{X}	J_{106}^{X}	J_{60}^{X}	G	G	G	37	J_{28}^{X}	J_{46}^{X}	J_{27}^{X}	J_{40}^{X}	E_{14}^{S}	J_{21}^{X}
23	E_{14}^{S}	J_{19}^{X}	E_{14}^{S}	J_{16}^{X}	E_{14}^{S}	25	31	37	37	39	42	42	42	45	J_{49}^{X}	J_{41}^{X}	J_{55}^{X}	J_{38}^{X}	J_{44}^{X}	J_{34}^{X}	J_{29}^{X}	J_{29}^{X}	J_{18}^{X}	E_{14}^{S}
24	J_{23}^{X}	J_{23}^{X}	J_{20}^{X}	J_{20}^{X}	E_{14}^{S}	25	33	37	39	40	44	J_{45}^{X}	42	J_{43}^{X}	40	J_{39}^{X}	J_{44}^{X}	32	28	J_{32}^{X}	J_{25}^{X}	J_{43}^{X}	J_{21}^{X}	J_{19}^{X}
25	J_{21}^{X}	J_{20}^{X}	J_{29}^{X}	J_{24}^{X}	J_{19}^{X}	25	31	39	J_{50}^{X}	J_{45}^{X}	45	J_{44}^{X}	45	40	J_{74}^{X}	J_{58}^{X}	J_{53}^{X}	J_{53}^{X}	J_{69}^{X}	J_{104}^{X}	J_{93}^{X}	J_{89}^{X}	J_{39}^{X}	J_{24}^{X}
26	J_{63}^{X}	J_{29}^{X}	J_{25}^{X}	J_{29}^{X}	J_{28}^{X}	29	J_{50}^{X}	45	J_{60}^{X}	J_{69}^{X}	40	43	42	45	J_{60}^{X}	J_{70}^{X}	37	35	J_{54}^{X}	J_{68}^{X}	E_{14}^{S}	J_{66}^{X}	E_{14}^{S}	J_{48}^{X}
27	J_{49}^{X}	E_{14}^{S}	J_{21}^{X}	J_{26}^{X}	J_{41}^{X}	J_{35}^{X}	J_{51}^{X}	X_{43}^{X}	48	J_{70}^{X}	J_{71}^{X}	J_{53}^{X}	42	43	47	J_{48}^{X}	J_{58}^{X}	J_{65}^{X}	J_{71}^{X}	J_{89}^{X}	J_{129}^{X}	J_{119}^{X}	J_{43}^{X}	E_{14}^{S}
28	J_{39}^{X}	J_{33}^{X}	J_{53}^{X}	J_{30}^{X}	J_{26}^{X}	27	35	J_{75}^{X}	J_{71}^{X}	J_{94}^{X}	J_{90}^{X}	42	42	42	G	40	43	J_{44}^{X}	J_{38}^{X}	J_{20}^{X}	J_{18}^{X}	E_{14}^{S}	J_{28}^{X}	J_{43}^{X}
29	J_{18}^{X}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	25	36	41	J_{44}^{X}	46	47	J_{51}^{X}	C	C	C	C	C	C	C	C	C	C	J_{93}^{X}
30	J_{66}^{X}	J_{100}^{X}	J_{48}^{X}	J_{26}^{X}	J_{29}^{X}	G	38	J_{58}^{X}	J_{81}^{X}	55	J_{74}^{X}	45	43	50	J_{46}^{X}	C	C	C	C	C	C	C	C	E_{14}^{S}
31	J_{20}^{X}	J_{20}^{X}	J_{16}^{X}	E_{14}^{S}	E_{14}^{S}	G	G	J_{44}^{X}	38	44	J_{70}^{X}	J_{50}^{X}	46	44	42	42	J_{45}^{X}	J_{45}^{X}	J_{75}^{X}	J_{79}^{X}	J_{63}^{X}	J_{54}^{X}	J_{26}^{X}	J_{24}^{X}
	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	31	31	31	31	31	31	31	31	31	30	30	28	29	28	28	29	28	29	29	29	29	29	31
MED	J_{22}^{X}	J_{20}^{X}	J_{20}^{X}	J_{18}^{X}	J_{18}^{X}	21	32	41	45	45	46	J_{48}^{X}	47	47	46	42	J_{44}^{X}	J_{44}^{X}	J_{43}^{X}	J_{38}^{X}	J_{34}^{X}	J_{36}^{X}	J_{28}^{X}	J_{24}^{X}
UQ	J_{49}^{X}	J_{32}^{X}	J_{29}^{X}	J_{28}^{X}	J_{27}^{X}	25	36	J_{48}^{X}	J_{53}^{X}	J_{54}^{X}	J_{51}^{X}	J_{53}^{X}	J_{66}^{X}	J_{58}^{X}	J_{58}^{X}	J_{64}^{X}	J_{58}^{X}	J_{65}^{X}	J_{65}^{X}	J_{66}^{X}	J_{51}^{X}	J_{66}^{X}	J_{54}^{X}	J_{49}^{X}
LQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	G	E_{28}^{G}	36	40	43	44	43	42	43	40	E_{37}^{G}	38	36	J_{28}^{X}	J_{28}^{X}	J_{25}^{X}	J_{20}^{X}	E_{14}^{S}	E_{14}^{S}

MAY 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	G	G	34	37	41	G	42	68	47	G	G	35	34	23	20	E	44	22	34
2	A	24	16	25	21	22	32	45	48	52	85	57	68	A	43	41	38	37	36	29	60	31	46	48
3	E_{14}^{S}	E	E_{14}^{S}	E	E	16	G	38	49	48	48	62	64^{S}	50	43	68	82	A	86	A	34	62	A	64
4	49	29	29	36	18	21	G	36	41	49	52	59	47	54	48	62	55	70	39	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	19	30	20	30	29	21	41	56	52	40	42	42	57	47	G	G	39	C	49	34	19	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
6	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	G	28	34	44	38	43	C	C	C	C	38	A	64	32	18	30	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
7	E_{14}^{S}	E	E	E_{14}^{S}	E_{14}^{S}	G	29	36	44	49	C	44	C	40	C	C	G	35	24	E_{14}^{S}	35	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
8	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	G	G	34	41	38	47	40	G	50	39	35	41	41	28	30	20	18	15	18
9	16	E_{14}^{S}	E_{13}^{S}	15	16	20	G	33	37	41	41	43	40	40	G	G	35	35	26	19	15	18	25	E_{14}^{S}
10	C	E_{15}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	G	G	35	40^{S}	48	47	42	E_{47}^{S}	45	40	65	43	E_{29}^{S}	E_{25}^{S}	26	23	20	E_{14}^{S}	E_{14}^{S}
11	E_{14}^{S}	E_{14}^{S}	15	E_{14}^{S}	E_{14}^{S}	G	29	33	39	43	E_{45}^{S}	43	43	42	E_{45}^{S}	U_{44}^{R}	43	33	26	18	34	24	16	E_{14}^{S}
12	16	16	E_{54}^{R}	E	15	21	31	G	37	47	42	G	41	G	40	47	38	G	26	25	20	16	E_{14}^{S}	E_{14}^{S}
13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	24	29	40	42	43	44	41	41	40	42	63	80	A	E_{70}^{R}	35	31	18	E_{14}^{S}	23
14	16	15	E_{14}^{S}	15	14	G	29	37	40	43	42	57	70	63	48	G	37	42	25	28	31	32	28	23
15	39	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	E_{22}^{B}	32	38	42	43	46	A	62	59	40	G	38	65	64	24	34	29	54	25
16	20	18	E	E_{14}^{S}	E_{14}^{S}	G	G	34	37	39	39	43	43	45	76	55	A	70	69	63	47	60	A	E
17	E	E	E	E	E	G	34	45	55	76	47	50	65	92	40	G	36	33	25	35	19	20	26	31
18	30	21	20	19	17	18	36	49	54	43	45	47	59	49	48	38	35	29	42	27	E	22	18	E_{13}^{S}
19	18	E	E	17	18	24	40	50	43	38	G	42	62	43	A	67	A	80	34	74	26	18	31	64
20	34	18	20	23	E	23	35	36	40	63	48	A	59	40	40	39	A	50	42	46	A	A	46	32
21	32	29	30	38	27	54	38	49	56	59	48	49	53	A	A	68	72	42	62	52	34	32	54	42
22	E	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	24	33	43	48	43	42	49	60	43	G	G	G	37	28	38	28	22	E_{14}^{S}	E
23	E_{14}^{S}	E	E_{14}^{S}	E	E_{14}^{S}	25	31	36	37	39	42	42	42	45	44	38	35	29	28	22	E	20	E	E_{14}^{S}
24	20	E	16	15	E_{14}^{S}	24	30	35	39	40	42	44	42	43	40	38	38	32	27	29	20	19	E	18
25	E	E	E	16	16	23	30	39	38	40	42	42	43	40	59	57	53	49	69	A	33	33	28	19
26	31	22	22	22	23	27	36	45	57	63	40	42	42	44	60	55	36	35	52	61	E_{14}^{S}	50	E_{14}^{S}	28
27	30	E_{14}^{S}	17	22	39	31	32	38	45	58	71	43	42	43	44	40	40	45	71	63	A	A	33	E_{14}^{S}
28	26	21	31	19	E	25	34	62	58	78	45	42	41	42	G	G	43	43	36	18	E_{14}^{S}	24	32	E
29	E	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	25	32	39	40	44	47	U_{51}^{R}	C	C	C	C	C	C	C	C	C	C	C	A
30	18	28	36	22	20	G	34	E_{58}^{R}	A	54	A	42	43	U_{50}^{R}	42	C	C	C	C	C	C	C	C	E_{14}^{S}
31	E	19	E	E_{14}^{S}	E_{14}^{S}	G	G	34	37	44	59	50	45	44	42	42	37	44	42	38	34	38	20	E_{24}^{R}
	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	31	31	31	31	31	31	31	31	31	30	30	28	29	28	28	29	28	29	29	29	29	29	31
MED	16	E_{14}^{E}	E_{14}^{E}	14	14	21	31	38	42	43	45	43	45	45	42	40	39	42	35	29	28	22	20	E_{18}^{E}
UQ	30	20	19	20	18	24	34	44	48	50	48	50	61	50	48	56	55	57	50	46	34	33	32	30
LQ	E_{14}^{S}	E_{14}^{E}	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	G	E_{28}^{G}	34	39	40	42	42	42	42	40	G	36	34	26	22	19	18	E_{14}^{S}	E_{14}^{S}

MAY 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA | Lat. 39° 43·5 N. | Long. 140° 08·2 E | Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	18	19	20	18	22	20	20	20	21	20	19	16	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
2	E_{13}^{S}	E	E_{14}^{S}	E	E_{13}^{S}	19	14	20	20	20	24	22	20	23	20	20	19	16	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
3	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	13	20	19	19	20	20	24	24^{S}	28^{S}	26	18	14	14	14	18	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
4	E_{14}^{S}	E_{14}^{S}	E	E_{13}^{S}	E_{14}^{S}	14	15	19	20	24	20	26	21	25	22	20	19	19	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
5	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E	14	18	19	20	23	24	25	26	22	20	21	18	C	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
6	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	15	18	20	21	23	C	C	C	C	19	18	15	15	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_{14}^{S}	14	16	17	18	18	C	20	C	19	C	C	24	17	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
8	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	15	18	18	18	20	26	29	22	24	20	20	17	15	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
9	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E	E_{14}^{S}	15	15	17	18	22	24	25	23	23	18	18	20	17	15	E_{14}^{S}	E_{12}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
10	C	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	E_{13}^{S}	16	15	16	E_{35}^{S}	E_{40}^{S}	38	26	E_{47}^{S}	28	28	25	19	E_{29}^{S}	E_{25}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
11	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	15	16	18	22	30	E_{45}^{S}	32	31	E_{38}^{S}	E_{38}^{C}	22	18	17	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
12	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E	18	18	18	25	21	31	30	34	29	24	26	18	20	16	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
13	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	15	16	17	20	21	28	38	33	29	27	28	24^{S}	15	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	15	15	17	19	20	26	20	21	18	24	20	18	15	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	22	18	18	22	19	22	18	24	22	20	18	15	17	15	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	16	18	18	19	22	24	23	24	24	18	18	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
17	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	17	16	18	18	21	27	25	24	18	19	18	18	17	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
18	E_{14}^{S}	E_{13}^{S}	E	E	E	14	18	18	20	22	18	20	20	18	21	16	18	16	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}
19	E_{14}^{S}	E_{14}^{S}	E	E_{13}^{S}	E	14	15	19	20	19	20	22	20	18	20	18	17	18	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
20	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	E_{14}^{S}	14	17	15	20	20	19	20	26	20	22	21	18	14	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
21	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	14	18	18	18	22	21	27	32	23	20	21	20	18	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
22	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	18	18	18	21	29	21	20	20	20	20	18	18	16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
23	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	14	18	21	18	19	19	21	21	21	29	18	26	15	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
24	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}	15	15	15	19	21	22	23	18	18	20	18	21	14	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
25	E_{14}^{S}	E_{14}^{S}	E	E	E	16	16	14	18	19	22	20	19	20	20	20	19	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
26	E_{14}^{S}	E	E	E	E	14	18	18	19	21	21	22	25	25	20	21	20	17	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
27	E_{14}^{S}	E_{14}^{S}	E	E	E	14	17	16	18	18	23	23	19	28	23	20	19	18	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
28	E_{14}^{S}	E	E	E	E	14	18	20	18	21	21	21	19	20	18	22	16	17	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
29	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	18	18	18	20	23	20	C	C	C	C	C	C	C	C	C	C	C	E_{14}^{S}
30	E_{14}^{S}	E_{13}^{S}	E	E	E	14	18	18	19	21	21	20	24	40	19	C	C	C	C	C	C	C	C	E_{14}^{S}
31	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	16	18	19	22	21	22	23	22	19	20	19	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E	E_{14}^{S}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	31	31	31	31	31	30	30	28	29	28	28	29	28	29	29	29	29	29	31
MED	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	14	16	18	19	21	22	22	23	22	20	20	19	16	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
UQ	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	16	18	18	20	22	24	25	26	25	24	21	20	18	15	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}
LQ	E_{14}^{S}	E_{14}^{S}	E	E	E	14	15	17	18	19	21	20	20	20	20	18	18	15	14	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}

The Radio Research Laboratories, Japan

MAY 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	280	275	280	265	280	300	320	295	285	265	270	275	280	285	285	280	280	285	300	295	295	275	265	250
2	245A	260	275B	290	275	295	295	300	300	285	280B	270	270	270A	280	275	285	300	295	295	275	270B	265	275B
3	270	275	290	290	260	280	290	290	290	260	260	260	280	280	280	285	280	290A	300	300A	290	275	R	R
4	260	270B	280	285	265	275	280	275	300	285	265	270	265	270	280	280	285	280	290	295	300	260	260B	250
5	260B	270B	270	265	290	270	295	290	280	280	260	280	270	270	270	280	280	290C	290	290	290	255	260B	270
6	275	270	275B	280	260	270	290	280	295	305	265	275C	275	275C	285C	280	290A	290	290	290	290	270	265	270
7	260	265	270	255	255	280B	270	270	270	255	265C	265	270C	280	C	C	290	285	290	295	275	260	270	270
8	265B	265	270	265	260	290	305	300	295	260	270	275	275	275	270	280	295	300	295	290	275	265	265	265
9	260	265	270B	275	265	275	285	295	290	275	270	265	275	280	270	275	280	290	295	295	290	270B	270	270
10	265C	265	275	290	285	300	305	300	295	275	270	270	270B	270	285	290B	280	290	285	285	280	285	280B	270B
11	270B	265B	285	275B	270	295	315	310	280	280	275	270S	270	270S	280S	280	280	285	290	285	275	290	280	270
12	270	270	285B	280B	270	275	290	300	310	270	260	260	260	275	270	275	280	295	285	275	275B	280B	270S	260
13	260	255	255	260B	245	280	285	300	285	275	275	280	270	280	270	280	285S	290A	295	290	275	260	260	255
14	255	260	265S	275	275	290	305	295	300	270	280	270	270	280	275	270	270	280	290	290	285	280	260	265
15	270	270	270	270	270	295	295	280	260	280	270	275A	265	275	280	290	290	300	290	265	260	260B	260	270
16	265	270	275	265	275	295	300	295	295	285	290	285	270	270	280	285	280A	285	300B	275B	275	270	A	R
17	R	R	R	270	260	270	305B	280	300	280	270	255	270	280	285	280	270	285	290	290	265	250B	260S	255
18	260	265	260	265	255	265	270	280	285	285	270	260	275	270	275	280	280	285	280	285B	285	265	260	255
19	260S	255	270	275	265	280	295	265	265	275	285	265	275	275	280A	285	285A	285	300	290	275	270	260B	270
20	270	265	275	275	260	260	250	265	280	275	270	275A	275	270	265	270	270A	275	290	290	A	A	R	F
21	270S	F	F	275S	280	290	295	275	265	275	260	270	275	270A	270A	275	275	295	285	285	270B	260B	260B	255B
22	260	260S	275	280	265	265	260	270	280	275	270	275	270	270	275	290	280	290	280	290	265	260	260	265
23	260	260	265	280	270	290	305	315	290B	275	265	270	275	270	280	280	285	295	285	285	265	265B	250	260
24	270B	265	285	270	265	295	295	300	275	290	275	265	275	275	280	280	280B	290	290	290	285	270	265	255
25	260	255	260	260	260	265	280	290	295	280	265	270	275	265	270	275	280	280	280B	275A	265	265	260B	275
26	255	275	280	275	260	255	285	300	290	290	275	270	270	275	275	280	285	280	280	290	290	265	270	255
27	270	280	280	275	275	290	305	300B	290B	275	275	275	275	280	280	280	285	275	280	280	A	A	270B	270S
28	255	275	275	265	270	290	280	265	275	260	280	280	260	270	280	290	285	290	265	275	265	265	245B	245
29	240	250B	255	260	245	245	255	250	260	235	240B	245	C	C	C	C	C	C	C	C	C	C	C	265A
30	255	265	275	265	265	255	265	270B	245A	255	245A	240	R	R	245	C	C	C	C	C	C	C	C	260
31	270B	275	270	260	250	285	290	285	275	265	260	260	265	270	265	275	290	275	285	265	280	260	260	260B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	31	31	31	31	31	31	31	31	31	29	29	29	28	29	29	29	29	27	27	26	28
MED	260	265	275	275	265	280	290	290	285	275	270	270	270	275	280	280	280	290	290	290	275	265	260	265
UQ	270	270	280	278	272	290	305	300	295	280	275	275	275	280	280	282	285	290	295	290	288	270	270	270
LQ	260	260	270	265	260	270	280	275	275	268	265	265	270	270	270	275	280	285	285	285	272	260	260	255

MAY 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

MAY 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	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							Li	345	L	365	375	340	IA 340	360	340	L	340	L						
2								L	L	L	A	A	A	A	365	L	335	L						
3							Li	355	A	335	350	IA 325	IA 335	L	325	IA 345	A	A						
4								L	L	A	315	IA 340	330	A	335	A	A	A						
5								A	A	340	335	345	IA 340	330	320	325	330	C						
6						L	Li	L	360	400	320	IC 335	IC 340	IC 345	IC 340	320	A	A						
7						L	Li	330	340	335	IC 345	345	IC 340	350	C	C	L	L						
8							Li	L	UL 355	390	330	360	340	L	350	340	L	L						
9							Li	370	385	365	360	340	350	L	335	330	345	L						
10							Li	375	L	L	340	345	330	340	360	A	A	L						
11								L	L	355	340	S	S	S	IS 370	L	L	L	L					
12							Li	L	L	L	L	L	330	320	L	L	L	L						
13							Li	360	L	L	L	335	335	340	L	A	A	A						
14							Li	L	L	330	380	A	A	A	340	335	340	L	L					
15							Li	335	L	350	320	A	A	IA 325	330	355	335	A	A					
16								L	340	340	335	330	315	320	IA 335	A	A	A	A					
17							Li	340	A	A	335	320	A	A	340	345	315	L	L					
18							Li	IA 340	IA 360	355	340	315	IA 350	335	335	340	330	L						
19								A	335	315	355	370	325	IA 340	340	A	A	A	A	L				
20								335	335	360	IA 345	335	IA 330	IA 330	335	330	340	A	A	A				
21									A	IA 320	IA 330	320	300	A	A	A	A	A	L	A				
22							L	315	L 340	330	365	350	340	IA 330	335	325	320	335	L	L				
23							L	Li	L	365	285	340	305	340	325	340	335	350	335	L				
24								Li	L	365	360	365	345	350	345	320	330	330	325	L				
25							L	Li	355	355	365	305	335	330	335	IA 330	IA 335	IA 340	IA 335	A				
26							L	Li	L	IA 350	IA 350	340	335	320	345	IA 330	IA 350	UL 340	L 335	A				
27								L	L	L	A	IA 345	310	330	350	325	330	L	A	A				
28							L	Li	A	A	A	335	330	355	340	330	360	335	L	A				
29						285	325	340	350	340	350	A	C	C	C	C	C	C	C					
30						300	315	A	A	IA 385	IA 365	370	345	A	320	C	C	C	C					
31						L	UL 330	L 340	320	335	IA 335	310	UR 365	340	340	H 335	340	IA 350	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						2	5	15	16	23	28	25	24	20	25	18	15	5						
MED						292	325	340	352	350	340	335	340	340	335	335	L 335	L 335						
UQ							330	L 355	360	365	350	340	U 342	345	340	345	340	L UA 335						
LQ							315	338	335	338	335	325	330	332	330	330	332	L 335						

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MAY 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

MAY 1970 | 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							255	310	295	290	295	315	315	305	315	290	290	290						
2								300	260	290	I A 315	320	310	I A 330	300	300	290	270						
3							270	270	260	345	340	350	315	305	320	300	320	A						
4								275	265	290	365	340	340	295	320	320	305	305						
5								265	270	310	320	330	340	320	330	315	310	C						
6						300	270	280	280	290	370	I C 355	I C 330	I C 310	I C 325	325	I B 310	315						
7						350	300	350	380	450	I C 415	400	I C 365	335	C	C	285	280						
8							270	270	290	280	340	330	340	305	320	335	305	285						
9							270	280	260	290	300	340	320	320	335	330	300	280						
10							250	275	260	305	340	335	345	330	320	320	320	290						
11								250	270	330	340	S 320	320	325	320	300	295	285	280					
12							270	280	265	330	300	330	365	340	325	330	290	285						
13							285	295	280	280	300	345	355	345	310	340	A	A						
14							275	265	280	360	295	330	340	330	330	320	315	295	280					
15							280	320	340	340	355	I A 350	380	350	325	300	310	300	290					
16								265	300	325	310	340	340	350	325	300	I A 300	310	I A 280					
17	~						290	315	290	I A 320	355	405	355	I A 360	320	315	345	290	265					
18							255	265	290	310	330	350	330	340	330	325	315	300	285					
19							255	365	380	350	330	395	360	320	I A 355	350	I A 345	335	290					
20							405	380	330	355	390	I A 375	360	380	370	345	I A 365	330	280					
21								370	400	I A 420	425	400	370	A	A	370	I A 355	305	320					
22						330	350	375	340	370	380	350	380	375	355	335	340	310	290					
23						290	270	260	275	400	390	370	350	370	345	325	315	290	270					
24							265	255	275	280	330	340	360	330	340	325	340	300	275					
25						310	290	290	300	300	415	370	350	350	350	325	300	320	I A 330					
26						315	290	285	295	305	340	330	370	345	325	320	300	305	310					
27							270	265	285	290	345	355	350	325	355	335	310	290	340					
28						280	245	350	300	I A 330	335	360	390	355	330	310	340	300	290					
29						405	390	385	410	580	600	500	C	C	C	C	C	C	C					
30						400	380	I A 435	A	450	I A 500	550	I B 480	390	425	C	C	C	C					
31						255	300	305	360	400	370	415	385	360	375	360	335	290	280					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	25	31	30	31	31	31	30	29	28	28	28	26	17					
MED						312	270	285	290	325	340	350	350	335	328	325	310	298	285					
UQ						350	290	335	330	358	375	372	365	350	348	335	338	305	290					
LQ						290	270	268	270	290	325	332	340	320	320	312	300	290	280					

MAY 1970 | H'F2 (KM)

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IONOSPHERIC DATA

MAY 1970 | 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	280	305	300	310	280	250	250	230	230	230	290	230	240	235	220	245	235	250	265	240	220	250	265	345
2	360	340	270	245	245	250	240	250	245	255	A	A	A	A	235	250	240	255	255	230	255	290	350	370
3	280	280	260	230	280	250	250	240	250	255	240	275	250	220	230	250	260	275	290	285	270	285	320	330
4	330	310	290	280	270	245	235	230	245	250	290	265	255	245	265	A	A	A	265	240	225	260	305	330
5	330	295	290	305	290	245	245	260	260	210	210	230	240	250	235	240	245	270	275	250	235	290	300	310
6	275	280	270	240	295	280	250	230	230	215	230	205	230	230	240	250	A	A	280	270	260	240	290	295
7	310	290	280	310	315	260	250	245	A	A	255	230	230	235	C	C	255	265	265	250	290	295	295	300
8	295	290	290	270	290	260	250	235	230	220	225	220	245	235	240	230	250	260	245	260	260	270	275	290
9	295	285	270	250	290	250	245	245	240	220	240	220	210	215	215	240	260	250	260	260	245	255	275	280
10	290	300	270	250	245	240	245	240	235	235	235	225	230	235	220	245	255	250	255	265	280	255	270	275
11	275	290	275	250	270	240	240	240	240	235	240	225	220	230	230	245	250	265	270	250	270	275	245	270
12	290	300	290	235	275	260	235	245	240	230	225	225	210	240	250	250	250	200	265	270	280	275	265	295
13	295	300	300	290	330	290	250	245	240	230	235	225	230	225	230	A	A	A	A	270	280	280	280	320
14	310	295	295	275	280	250	245	245	240	215	200	A	A	A	250	240	250	260	260	255	265	270	300	320
15	305	290	295	280	280	245	245	240	250	220	250	A	A	260	240	245	240	265	270	255	310	315	340	295
16	295	300	285	275	280	250	240	230	230	210	210	210	230	240	A	A	A	A	A	275	310	330	290	290
17	290	295	280	260	295	270	255	250	A	A	265	255	A	A	210	230	245	250	255	250	240	310	335	335
18	320	300	295	290	300	260	240	A	A	230	235	240	250	250	250	230	230	245	270	285	270	270	280	280
19	300	305	295	270	300	265	240	250	245	205	200	230	245	230	A	A	A	A	A	280	260	260	330	320
20	320	295	290	280	310	260	245	220	220	250	250	240	245	220	240	230	A	A	A	280	A	A	A	355
21	325	290	310	320	305	310	265	A	A	A	A	255	A	A	A	A	A	A	A	300	310	330	A	A
22	300	300	280	260	300	270	255	245	240	220	200	220	245	235	220	230	240	255	270	280	290	295	300	285
23	300	300	290	265	315	255	240	230	210	205	215	205	215	215	245	240	240	240	255	270	275	285	290	290
24	285	295	290	270	295	260	245	230	225	205	210	210	215	220	220	230	245	240	260	260	250	265	295	305
25	305	330	320	295	305	255	245	240	225	230	230	230	220	220	250	245	A	A	A	A	295	320	315	300
26	350	290	270	265	305	250	245	A	A	A	215	215	195	235	A	A	240	245	270	295	255	270	290	330
27	285	275	270	270	305	245	240	235	240	235	225	205	215	230	235	225	240	A	A	300	295	300	295	290
28	320	320	320	290	290	255	230	A	A	A	245	220	215	210	240	240	250	265	280	290	300	295	340	370
29	350	340	295	300	340	285	265	240	240	250	250	A	C	C	C	C	C	C	C	C	C	C	C	A
30	310	320	290	305	275	280	255	A	A	220	230	215	250	245	230	C	C	C	C	C	C	C	C	300
31	295	305	290	295	315	255	235	240	220	230	A	A	205	240	240	240	240	235	265	290	295	315	300	330
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	26	24	26	28	26	25	26	25	22	21	20	22	28	28	28	27	29
MED	300	300	290	275	295	255	245	240	240	230	230	225	230	235	235	240	245	252	265	270	270	282	295	300
UQ	320	305	295	292	305	262	250	245	242	235	242	230	245	240	240	245	250	265	270	282	292	298	310	330
LQ	290	290	278	260	280	250	240	230	230	215	212	215	215	220	230	230	240	245	260	252	255	268	280	290

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MAY 1970 | H'F (KM)

IONOSPHERIC DATA

MAY 1970 | 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	S	S	G	G	150	130	120	G	130	115	115	G	G	150	120	120	110	110	110	105	105
2	100	105	100	105	105	150	140	130	130	120	115	115	110	115	140	140	140	130	115	110	110	110	110	110
3	S	110	S	E	100	100	G	140	115	115	115	115	110	115	120	115	115	110	110	110	110	110	105	105
4	105	105	105	105	105	110	G	140	140	115	115	115	115	110	130	115	115	110	110	S	S	S	S	S
5	105	105	105	105	105	110	130	120	120	115	110	115	110	130	G	G	130	C	115	110	100	S	S	S
6	S	S	S	S	S	G	140	130	115	125	115	C	C	C	C	140	120	115	115	115	110	S	S	S
7	S	100	100	S	S	G	140	125	115	115	C	115	C	110	C	C	G	130	120	S	110	S	S	S
8	S	S	S	S	S	150	G	140	120	125	110	115	G	110	120	155	140	130	120	115	110	110	110	110
9	105	S	S	105	110	155	G	140	130	120	110	110	105	110	G	G	140	120	120	110	110	110	110	S
10	C	S	S	S	S	G	G	135	130	120	120	120	S	110	105	110	110	S	S	120	105	110	S	S
11	S	S	100	S	S	G	E G 150	E G 145	135	130	S	125	110	120	120	115	120	120	120	120	110	115	110	S
12	110	110	105	E	110	150	140	G	135	115	120	G	110	G	130	140	140	G	140	120	115	110	S	S
13	S	S	S	S	S	145	135	125	125	125	115	120	115	125	120	115	115	120	125	120	120	115	S	110
14	110	110	S	105	110	G	140	130	125	115	120	115	115	115	120	G	140	115	120	115	110	110	110	105
15	105	S	105	S	S	B	140	140	120	120	115	110	115	105	110	G	115	110	115	115	110	110	110	105
16	105	100	105	S	S	G	G	140	140	115	115	130	120	115	110	105	110	110	110	110	110	110	110	110
17	110	110	110	110	105	G	140	130	125	120	115	115	115	110	120	G	150	135	120	110	100	110	110	105
18	100	105	100	100	100	100	135	125	120	115	115	110	110	110	110	110	110	110	120	110	105	100	100	S
19	100	105	115	105	105	110	130	125	125	120	G	130	120	140	115	115	115	115	115	115	105	110	110	110
20	105	110	105	105	110	105	130	115	115	115	115	115	110	110	115	110	115	115	110	115	110	110	110	110
21	105	105	105	105	105	115	120	110	115	115	115	120	140	120	120	120	115	110	110	110	110	110	110	110
22	105	105	S	S	S	140	140	120	115	115	115	110	110	105	G	G	G	125	120	110	110	105	S	105
23	S	100	S	100	S	140	140	130	140	140	125	120	115	115	110	110	110	110	105	105	105	110	100	S
24	100	100	100	100	S	155	140	130	130	120	115	110	110	110	115	110	105	140	115	115	110	105	105	105
25	105	100	100	100	105	140	135	120	115	115	115	115	115	115	105	105	130	115	110	115	110	110	105	105
26	110	110	100	100	100	140	115	130	115	115	120	120	115	115	110	110	120	140	115	115	S	115	S	110
27	110	S	105	105	105	105	105	115	120	115	115	115	120	140	140	130	125	120	115	110	110	110	110	S
28	100	100	100	100	110	140	130	120	115	115	110	115	120	140	G	160	130	120	115	115	110	S	115	110
29	105	S	S	S	S	140	130	130	125	120	115	115	C	C	C	C	C	C	C	C	C	C	C	110
30	105	110	110	105	105	G	130	115	115	115	115	115	115	115	110	C	C	C	C	C	C	C	C	S
31	105	105	105	S	S	G	G	120	120	120	115	110	115	120	115	130	115	110	110	105	105	100	105	110
	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	22	21	20	17	17	20	23	30	31	31	27	29	26	28	23	21	27	26	28	27	27	24	20	19
MED	105	105	105	105	105	140	135	130	120	115	115	115	115	115	115	115	120	118	115	115	110	110	110	110
UQ	105	110	105	105	110	148	140	138	130	120	115	120	115	120	120	130	135	125	120	115	110	110	110	110
LQ	105	100	100	100	105	110	130	120	115	115	115	115	110	110	110	110	115	110	110	110	108	110	105	105

MAY 1970 | H'ES (KM)

IONOSPHERIC DATA

MAY 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

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

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MAY 1970 | TYPES OF ES

IONOSPHERIC DATA

MAY 1970 | FOF2 (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J79R	J75R	J74R	70	71	79	94	91	95	96	108	123	123	119	120	124	118	114	119	108	86	71	71	71
2	71	69	78	69	58	66	81	91	99	103	113	122	126	129	134	126	122	128	A	R	77	I74R	76	81
3	F86	89	89	J81R	56	65	84	91	94	94	108	121	127	126	122	122	126	131	126	99	83	89	94	93
4	E93	92	F	79	71	74	88	95	99	102	108	116	122	126	122	111	111	121	132	109	81	J81R	J81R	80
5	85	80R	80	J80R	J74R	72	86	96	99	108	118	121	126	123	116	112	109	I108A	I109A	101	J90R	J87R	96	98
6	105	93	88	J79R	J74R	90	98	94	95	96	99	109	I117A	118	108	103	104	98	97	99	86	I80R	J80R	82R
7	80R	80	71	69	67	J76R	90	79	83	86	85	104	117	122	123	115	101	91	97	89	72	I73R	79	78
8	J76R	73	69	69	66	73	88	87	88	91	106	116	116	115	113	113	114	109	102	96	90	86	I87R	86
9	85	85	81	73	69	R	102	108	100	103	108	115	125	123	116	116	118	118	111	108	100	99	99	97
10	95	94	94	92	85	87	100	101	98	95	103	115	118	119	121	116	108	101	97	96	92	92	89	90
11	91	89	92	85	J78R	84	90	81	89	96	105	115	121	118	I115C	117	111	111	107	J105R	J104R	98	91	I85R
12	84	84	83	75	71	80	98	109	92	94	104	114	115	121	121	119	111	107	104	105	J103R	I102R	101	95
13	96	90	87	80	78	87	95	100	97	84	90	104	113	110	109	109	110	107	J103R	R	I83R	82	81	J80R
14	81	I80R	78	J76R	J74R	80	86	95	100	90	102	112	120	126	123	126	120	120	120	118	101	96	92	97
15	J93R	I95R	89	82R	71	86	84	80	91	91	98	103	106	113	121	117	109	109	103	86	81	J85R	96R	I92R
16	80	78	79	I75C	74	79	91	86	90	97	101	110	117	122	122	120	115	110	104	I102A	95	91	I89R	F88
17	U F88	F	84	J79R	79	84	102	J103R	J105R	94	94	97	109	117	123	107	101	110	109	97	83	86	88	I92R
18	80	85	77	73	69	72	88	99	97	98	100	107	113	110	107	108	103	J104R	106	J103R	90	91	90	91
19	I96R	88	84	I80R	I80R	90	95	90	84	90	95	87	96	101	104	101	110	111	109	102	90	85	90	87
20	86R	85	79	71	64	66	76	91	96	94	99	J103R	99	95	93	90	90	100	106	91	77	I77A	78	I78R
21	J75R	J77R	70R	69	63	71	A	A	80	81	I80A	I80A	I84A	86	I84A	88	93	95	91	81	80	83	85	J84R
22	83	75	70	70	64	61	70	75	86	85	85	92	98	98	99	100	96	95	90	85	83	I85R	85	86
23	85	79R	J79R	75	71	84	99	94	78	81	84	94	101	106	107	109	106	101	91	93	85	86	86	87
24	85	I82R	76	73	74	86	99	J105R	98	93	94	J103R	108	109	109	108	104	108	J108R	97	92	86	84	84
25	J85R	81	81R	79	C	C	C	C	C	C	C	C	111	111	C	C	111	102	97	96	94	92	I97R	94
26	90	J93R	I82R	75	74	80	98	108	107	104	104	107	113	115	118	110	101	102	102	J109R	100	95	I98R	101
27	J109R	J109R	100	86	85	92	100	100	96	95	104	106	113	110	105	108	104	106	J109R	109	96	95	100	98
28	100	95	97	91	90	96	99	93	111	103	103	105	109	112	115	111	98	91	90	94	86	96	93	96
29	I90R	85	85	69	68	R	99	90	F	60	R	68	R	87	86	80	78	78	81	75	75	70	62	F
30	A	J75R	66	52	56	60	64	63	A	61	64	67	I68R	76	79	78	78	79	77	67	65	68	73	J75R
31	79	74	J72R	64	64	73	79	78	78	82	I88A	92	92	94	92	90	86	85	84	88	85	88	90	88
	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	31	30	28	29	29	28	30	29	30	30	31	30	30	31	31	30	29	31	31	31	30
MED	86	84	80	75	71	80	91	93	96	94	101	106	113	115	116	110	108	107	104	97	86	86	89	88
UQ	93	90	87	80	74	86	99	100	99	97	105	115	120	122	121	117	111	110	109	105	93	92	94	94
LQ	81	78	76	70	66	72	86	87	88	86	94	97	106	108	105	103	101	99	97	91	82	82	81	82

MAY 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	U L 510	A	U L 510	L	L	L	A						
2										A	L 660	A	U L 580	L	L	L 520	L		A					
3							L	L	A	A	L	U L 650	L 590	L	A	A	A	A	A					
4									L	L	L	A	A	L	A	A	A	A						
5								L	A	A	A	A	A	L	L	L	A	A	A					
6									L	L	L	L 550	A	A	A	L	A	A						
7								L	L	L	U L 590	U L 580	L 530	L	L	L	L							
8								L	L	A	L	R	L	A	L	L	A	A						
9							L	L	L	L	U L 580	L 630	600	570	U L 550	U L 520	L	A						
10								L	A	L	L	L 620	L	A	550	500	L	L						
11									U L 570	L	L	L	L	R	C	A	L	L						
12								L	A	A	L	L	L	R	L	L	A	A						
13						L	L	A	L	A	L	R	L	L	A	A	A	A						
14								L	A	A	U L 640	L	L	L	L	L	L	A						
15									L	A	L	R	L	L 550	A	A	A	L						
16									L	L	L	L 610	600	L	A	A	L 510	A						
17								L	L	A	A	A	A	A	560	L	L	L						
18								L	A	A	A	A	A	A	A	A	L	A						
19									L	L	R 510	A	R	L	A	A	A	500						
20							L	L	A	L	L	A	A	L	A	R 510	L 490	L						
21									A	A	A	A	A	A	A	A	A	L						
22							L 460	L	L	L	L	L 590	L 580	L 580	L 560	L 510	L	A						
23							L	L	L	L	540	L 550	L 600	600	L	540	L	L						
24							L	L	L	530	640	R 570	L 610	580	L 600	550	500	L	L					
25						C	C	C	C	C	C	C	L 550	A	C	C	L	L						
26							L	L	L	A	A	R	A	A	A	L 540	L	L						
27								L	L	L	L	L	A	A	L	A	A	A						
28								A	L	A	L	L	L	U L 530	L	L	L	A						
29						L	L 410	460	A	U L 510	R	R	A	A	A	R	L	L						
30							L	440	A	520	530	A	R	B	550	570	490	U 460	L					
31							L	L	L	A	A	A	A	A	A	L	L	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	2	1	3	8	10	9	7	6	9	4	2						
MED							435	450	U 570	520	585	585	590	570	555	520	495	480						
UQ										525	640	620	600	580	560	540	505							
LQ										515	535	550	580	540	550	510	490							

The Radio Research Laboratories, Japan

MAY 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						160	255	300	A	A	A	A	A	A	A	335	315	A	A					
2						B	250	305	330	370	365	385	390	I R 390	375	350	325	275	A					
3						B	260	310	330	360	I R 380	A	A	380	380	350	320	A	A					
4						B	250	310	335	A	A	A	A	390	385	350	A	A	A					
5						A	A	A	I A 340	A	A	A	A	R	A	350	315	A	B					
6						190	260	I A 300	I A 335	A	A	A	A	A	A	360	320	265	B					
7						185	260	A	A	A	A	A	A	A	R	350	315	A	A					
8						B	280	310	A	A	A	A	R	A	A	A	A	A	A					
9						B	A	A	A	350	A	A	R	385	385	360	325	270	A					
10						B	265	310	340	365	375	380	A	A	A	A	A	A	B	B				
11						185	260	310	345	355	350	A	A	A	C	A	A	A	A					
12						200	275	A	A	A	A	A	A	A	350	355	I A 325	A	A					
13						A	A	A	A	A	A	A	A	A	A	A	325	A	A					
14						200	I R 265	I A 305	A	A	A	A	I R 380	360	360	350	330	290	A					
15						200	R 280	A	A	A	A	A	B	A	A	A	330	A	B					
16						A	A	A	A	A	A	380	A	A	A	A	A	270	A					
17						195	280	310	350	380	400	390	I A 390	A	A	A	325	285	A					
18						B	250	315	350	A	A	A	A	A	A	A	A	A	A					
19						B	260	310	A	A	A	A	B	A	390	I A 360	A	A	A					
20						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
21						A	A	A	A	360	A	A	A	A	A	A	A	A	A					
22						200	A	A	A	A	A	B	R	A	A	A	335	A	A					
23						190	I A 275	A	A	370	I R 385	390	A	A	A	A	A	A	A					
24						A	I A 280	310	A	A	R	I R 385	R	A	A	A	I R 335	I A 290	A					
25						C	C	C	C	C	C	C	A	A	C	C	A	A	A					
26						A	290	A	A	A	A	A	A	A	A	365	325	290	A					
27						A	A	A	A	A	A	A	A	A	A	360	A	A	A					
28						A	A	A	A	A	A	R	A	R	I R 350	350	330	A	A					
29						R	I A 270	I A 310	A	A	A	A	A	A	A	A	A	A	A					
30						B	A	I A 320	A	360	A	A	B	B	A	A	A	285	220					
31						180	260	I A 310	355	I A 360	I A 375	380	400	I A 385	I A 365	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						11	20	16	10	10	7	7	4	6	9	14	16	9	1					
MED						190	262	310	340	360	375	385	390	385	375	350	325	285	220					
UQ						200	278	310	350	370	382	388	395	390	385	360	330	290						
LQ						185	260	308	335	360	370	380	U 385	380	360	350	320	270						

IONOSPHERIC DATA

MAY 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	19	20M	E	E	E	G	31	37	38	40	J59X	44	46	44	44	G	J42X	J54X	J38X	J25X	J25X	J41X	J45X	J51X
2	J29X	J42X	J25X	J29X	22	20	J39X	J50X	J54X	J61X	J52X	Y15X	44	43	48	37	36	J74X	Y29X	J61X	J61X	J61X	J61X	J61X
3	J63X	J41X	J65X	J61X	J31X	J25X	32	39	J51X	J54X	54	47	45	48	85	Y11X	J74X	72	J52X	J60X	J56X	J61X	J42X	J63X
4	J38X	35	J88X	J61X	J52X	J33X	G	36	41	J61X	J55X	60	J64X	55	60	60	J62X	J89X	J25X	J29X	20	E15S	E15S	E15S
5	E12B	J24X	22	21	20	J25X	32	39	J57X	J72X	J89X	Y08X	J74X	G	49	J51X	J93X	Y10X	Y22X	J51X	J62X	25	E13B	21
6	20	20	E15S	E15S	20	G	29	J39X	J42X	J52X	44	45	Y65X	J71X	J57X	G	J59X	63	84	J34X	J25X	J29X	22	E15S
7	E15S	E15S	E12B	E	E12B	G	30	36	J48X	42	49	41	46	46	G	G	39	J42X	J38X	J21X	E12B	J42X	J52X	20
8	E15S	20	E12B	22	E15S	21	G	36	J41X	J58X	42	55	G	43	44	46	46	J52X	J75X	J31X	J52X	J25X	22	E15S
9	E12B	22	J31X	J29X	21	J24X	31	36	J42X	42	39	38	32G	G	G	G	G	J41X	J32X	J30X	J27X	E15S	E12B	J23X
10	J29X	22	21	J25X	21	23	36	37	J51X	51	J51X	43	J53X	D	J60X	J77X	J41X	J32X	25	E14B	J31X	J41X	J28X	J24X
11	24	21M	20	J15X	E	G	31	39	40	43	G	42	44	48	C	J54X	J42X	35	J54X	J53X	J48X	J61X	21	21
12	21	22	21	20	E12B	G	30	J42X	55	45	J54X	J54X	J69X	47	G	G	J52X	J49X	35	J41X	J20X	J35X	21	E15S
13	E15S	22	20	21	E15S	25	J39X	J43X	J52X	55	47	46	49	42	J65X	Y06X	70	J78X	J61X	71	23	J36X	J24X	J21X
14	J41X	J24X	J28X	J24X	J21X	G	G	39	J51X	J71X	50	43	G	G	G	G	47	J48X	J36X	J27X	J41X	J25X	Y24X	J41X
15	J71X	J29X	J25X	J24X	J29X	G	G	41	48	57	J56X	48	48	41	J61X	Y09X	Y07X	J39X	J35X	J61X	J54X	J77X	J51X	J51X
16	J41X	23	J61X	C	J24X	J21X	J51X	J60X	46	J58X	60	43	42	49	64	Y21X	J42X	J63X	J55X	Y18X	31	J62X	J59X	J63X
17	J89X	J25X	J29X	J28X	J29X	G19	G	39	43	J74X	J85X	J77X	J83X	J62X	J42X	J42X	40	47	J41X	J29X	J32X	31M	24	47
18	J41X	35	J24X	23	24	25	34	J43X	J54X	J70X	58	J55X	71	J93X	J87X	J55X	J34X	J84X	59	J42X	J61X	J42X	J25X	J29X
19	J24X	20	20	20	E15S	21	30	J54X	J54X	42	42	J61X	43	58	J55X	J67X	J58X	J42X	J42X	J52X	J61X	J42X	J35X	20
20	J51X	J61X	22	22	J29X	J35X	35	42	J84X	J54X	45	Y14X	J79X	J85X	J85X	J41X	36	35	32	J61X	J65X	J85X	J41X	J41X
21	J24X	J61X	J78X	J69X	J41X	J47X	88	Y05X	J54X	J65X	78	J96X	J94X	J60X	92	63	J62X	J42X	J29X	J60X	J88X	J25X	J61X	J64X
22	J41X	20	J24X	20	22	G	36	J42X	J42X	J42X	42	E43B	G	42	J91X	J74X	39	J48X	J45X	70	J24X	J41X	J41X	22
23	J25X	20	22	22	E12B	24	32	39	J39X	G	G	43	44	47	47	46	J41X	J38X	J28X	J24X	J25X	36	J36X	J18X
24	E12B	E13B	E14B	E12B	E	24	34	J41X	J38X	J41X	36G	41	47	45	J42X	J53X	34	31	25	20	24	24	J41X	J29X
25	J29X	J24X	24	21M	C	C	C	C	C	C	C	C	43	57	C	C	J38X	36	J42X	J21X	J32X	J79X	J84X	J22X
26	J29X	J28X	J29X	J21X	J26X	25	35	48	45	J55X	J60X	49	55	Y04X	J54X	46	G	35	J50X	59	J41X	J24X	J80X	22
27	J51X	27	J53X	24	J21X	J29X	J31X	J39X	J51X	J54X	J70X	45	65	J54X	J59X	J84X	Y29X	J85X	Y19X	J59X	J42X	J29X	J62X	J59X
28	J54X	J42X	J26X	J26X	J29X	25	J54X	J85X	J42X	J94X	45	G	48	G	G	G	39	47	Y05X	J64X	20	23	J21X	J29X
29	J32X	J24X	21	E15S	20	G	J35X	J42X	57	43	47	46	57	J65X	J54X	46	J36X	J29X	J42X	J42X	J42X	E15S	E15S	Y09X
30	Y04X	J94X	J88X	J21X	J25X	J35X	33	36	J62X	47	43	59	47	E58B	59	47	34	G	28	J22X	J53X	J32X	J30X	J30X
31	21	22	21	J25X	E12B	22	29	33	42	J58X	Y27X	61	J60X	59	79	48	J42X	J76X	J83X	J84X	J41X	J42X	J50X	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	31	31	31	30	30	30	30	30	30	30	30	30	31	31	29	30	31	31	31	31	31	31	31	31
MED	J29X	24	24	22	21	22	32	39	J48X	J54X	50	46	48	48	55	48	J42X	J47X	J42X	J42X	J41X	J36X	J38X	J29X
UQ	J41X	J32X	J28X	J25X	J26X	J25X	35	J43X	J54X	J61X	J59X	J60X	J64X	60	J64X	J67X	J58X	J68X	J60X	J60X	J54X	J42X	J52X	J49X
LQ	20	20	20	20	15	G	30	37	42	43	43	43	44	43	44	37	37	37	J34X	J28X	J25X	25	22	21

The Radio Research Laboratories, Japan

MAY 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E	E	E	E	E	G	31	36	38	40	41	43	E^{R}_{46}	44	41	G	40	54	34	25	21	28	20	30
2	E	28	19	28	18	18	35	50	54	58	51	115	43	43	48	37	35	43	A	E^{R}_{61}	45	54	41	37
3	34	29	E	45	31	17	32	37	50	54	54	47	44	48	80	110	74	65	52	58	45	30	26	29
4	35	29	28	50	34	31	G	36	40	41	49	58	64	54	55	55	60	88	22	26	E	E^{S}_{15}	E^{S}_{15}	E^{S}_{15}
5	E^{B}_{12}	E	E	E	E	20	26	38	58	65	86	55	69	G	49	50	95	A	A	49	52	E	E^{B}_{13}	E
6	E	E	E^{S}_{15}	E^{S}_{15}	E	G	28	35	40	52	43	43	A	70	57	G	58	63	80	33	25	25	E	E^{S}_{15}
7	E^{S}_{15}	E^{S}_{15}	E^{B}_{12}	E	E^{B}_{12}	G	28	35	44	42	45	41	43	42	G	G	38	33	35	19	E^{B}_{12}	30	40	E
8	E^{S}_{15}	E	E^{B}_{12}	E	E^{S}_{15}	20	G	34	30	53	40	E^{R}_{55}	G	E^{R}_{43}	43	41	45	51	75	30	18	E	E	E^{S}_{15}
9	E^{B}_{12}	E	18	26	15	20	28	34	40	40	39	E^{R}_{38}	E^{R}_{32}	G	G	G	G	41	32	20	24	E^{S}_{15}	E^{B}_{12}	16
10	27	E	14	25	17	22	25	37	51	51	51	43	53	88	40	40	35	30	25	E^{B}_{14}	31	25	18	18
11	16	E	E	15	E	G	30	39	40	43	G	42	43	E^{R}_{48}	C	54	42	32	52	43	38	25	E	E
12	E	E	E	E	E^{B}_{12}	G	29	40	52	44	53	52	50	41	G	G	52	42	30	38	19	32	E	E^{S}_{15}
13	E^{S}_{15}	E	E	E	E^{S}_{15}	23	38	43	46	52	43	E^{R}_{46}	48	42	65	87	65	75	55	A	E	E	E	E
14	E	24	15	20	16	G	G	38	51	60	49	43	G	G	G	G	45	48	35	25	41	25	25	30
15	26	15	25	E	25	G	G	36	45	55	46	E^{R}_{48}	E^{R}_{48}	41	55	65	100	33	33	54	44	55	41	30
16	29	E	E	C	19	20	45	50	24	57	55	43	42	47	57	55	43	43	34	A	25	45	58	45
17	56	E	20	24	20	G	G	39	40	68	75	73	68	55	42	42	38	40	31	26	26	25	20	45
18	E	23	18	19	18	25	32	40	51	70	58	55	68	90	80	55	30	55	E^{R}_{59}	35	55	40	25	25
19	E	E	E	E	E^{S}_{15}	19	30	51	54	41	40	59	E^{R}_{43}	52	55	65	55	40	38	49	40	29	26	E
20	E	30	E	E	25	35	34	40	54	46	44	75	58	46	70	40	35	30	26	51	56	A	35	27
21	E	40	56	40	29	44	A	A	46	64	A	A	A	58	A	63	51	40	29	50	54	E	45	60
22	20	E	E	20	E	G	32	38	40	40	E^{R}_{42}	E^{B}_{43}	G	41	40	40	39	46	45	70	E	E	E	E
23	E	E	E	E	E^{B}_{12}	23	30	38	31	G	G	42	41	44	46	45	37	36	25	E	23	20	25	16
24	E^{B}_{12}	E^{B}_{13}	E^{B}_{14}	E^{B}_{12}	E	24	28	38	37	40	E^{R}_{36}	41	45	43	41	40	31	29	25	17	15	20	26	19
25	20	E	15	E	C	C	C	C	C	C	C	C	42	55	C	C	37	35	32	16	30	30	54	E
26	25	25	25	17	19	25	32	44	44	55	60	E^{R}_{49}	55	95	54	44	G	34	50	56	E	19	55	E
27	36	E	20	E	19	26	30	37	44	51	54	E^{R}_{45}	63	52	55	53	72	55	86	18	36	25	25	53
28	35	34	25	25	20	24	50	70	40	64	44	G	E^{R}_{48}	G	G	G	39	43	75	54	E	E	E	E
29	29	19	E	E^{S}_{15}	E	G	32	40	56	42	43	45	54	55	53	45	34	29	25	40	32	E^{S}_{15}	E^{S}_{15}	E
30	A	39	33	20	20	32	30	34	A	45	43	59	E^{R}_{47}	E^{B}_{56}	51	46	33	G	28	19	29	24	19	E
31	E	E	E	16	E^{B}_{12}	22	28	33	38	52	A	61	59	55	74	47	41	68	52	56	29	29	44	30
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	30	30	30	30	30	30	30	31	31	29	30	31	31	31	31	31	31	31	31
MED	15	E	E^{E}_{14}	15	16	20	30	38	44	52	46	44	48	46	51	44	40	42	34	36	29	25	25	16
UQ	28	24	20	24	20	24	32	40	51	57	54	58	58	55	57	55	54	54	53	53	40	30	38	30
LQ	E	E	E	E	E^{E}_{12}	G	28	36	40	42	42	42	42	42	41	37	35	34	30	22	18	15	E^{E}_{12}	E

MAY 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	E 15 S	10	10	10	15	14	16	16	25	26	26	26	28	25	19	16	15	13	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
2	E 16 S	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	25	26	26	27	26	26	26	25	16	16	13	E 15 S	14	E 15 S	E 15 S	E 15 S
3	E 15 S	E 15 S	11	E 15 S	10	13	15	14	16	19	27	26	28	26	25	18	17	16	14	E 15 S	E 16 S	E 15 S	E 15 S	14
4	E 15 S	14	14	10	E 15 S	14	16	16	25	26	25	26	30	26	26	25	16	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
5	12	E 15 S	E 15 S	E 15 S	13	15	15	15	19	26	26	26	18	28	28	26	15	15	15	E 15 S	E 15 S	E 15 S	13	E 15 S
6	E 15 S	E 15 S	E 15 S	E 15 S	12	15	15	15	15	25	26	26	26	25	18	25	15	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
7	E 15 S	E 15 S	12	10	12	15	15	15	18	28	26	28	28	26	25	15	15	15	12	E 15 S	12	E 15 S	E 15 S	E 15 S
8	E 15 S	E 15 S	12	E 15 S	E 15 S	15	15	16	17	16	27	28	25	26	18	16	16	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
9	12	E 15 S	E 15 S	E 15 S	10	15	15	15	18	19	25	26	26	26	17	16	16	16	14	E 16 S	E 16 S	E 15 S	12	12
10	E 15 S	14	11	14	14	16	16	15	16	19	25	26	25	25	19	25	17	15	14	14	10	E 15 S	13	E 15 S
11	12	13	13	11	10	14	15	14	25	25	26	32	25	25	C	27	19	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
12	E 15 S	E 15 S	E 15 S	12	12	15	16	15	27	29	28	26	26	28	26	25	16	19	15	10	E 15 S	E 15 S	E 15 S	E 15 S
13	E 15 S	E 15 S	E 15 S	12	E 15 S	15	15	16	18	25	25	26	26	27	26	25	12	13	15	12	E 15 S	E 15 S	E 15 S	E 15 S
14	E 15 S	E 15 S	12	E 15 S	12	15	12	15	16	25	26	29	26	26	26	25	18	15	15	E 15 S	E 15 S	10	E 15 S	E 15 S
15	E 15 S	10	12	E 15 S	12	17	15	15	27	26	25	29	39	28	26	25	16	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
16	E 15 S	E 15 S	E 15 S	C	10	12	13	15	16	25	26	26	26	28	25	26	16	15	14	E 15 S	14	E 16 S	E 15 S	E 15 S
17	E 16 S	12	14	E 15 S	10	14	14	15	16	19	26	26	26	25	28	27	16	12	10	12	13	E 15 S	14	E 15 S
18	14	E 15 S	13	10	10	17	10	16	18	28	28	29	29	26	25	19	15	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
19	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	15	13	16	18	25	28	28	37	26	26	25	25	15	15	E 15 S	12	E 15 S	E 15 S	E 15 S
20	E 15 S	E 15 S	E 15 S	12	E 15 S	15	15	15	15	26	28	28	27	28	28	15	16	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
21	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	13	15	15	16	26	26	27	28	29	25	26	18	15	15	E 16 S	E 15 S	E 15 S	E 15 S	E 15 S
22	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	25	26	28	43	25	26	27	25	17	15	12	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
23	E 15 S	E 15 S	E 15 S	E 15 S	12	15	14	15	20	26	27	26	25	26	27	26	25	14	14	14	13	E 16 S	E 16 S	14
24	12	13	14	12	10	15	14	15	16	25	26	28	29	26	26	15	16	14	14	E 15 S	10	E 15 S	E 15 S	E 15 S
25	E 15 S	E 15 S	11	12	C	C	C	C	C	C	C	C	26	25	C	C	25	15	15	12	E 15 S	E 15 S	E 15 S	E 15 S
26	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	20	26	30	33	27	29	28	25	15	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 19 S
27	12	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	19	19	28	26	28	26	26	26	16	15	15	10	E 15 S	E 15 S	E 15 S	E 15 S
28	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	15	19	26	26	28	29	26	26	16	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
29	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	15	18	25	28	28	28	26	28	28	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
30	E 15 S	E 15 S	E 15 S	10	10	15	15	15	18	26	28	28	41	56	33	26	16	14	13	11	E 16 S	E 15 S	13	E 16 S
31	14	14	11	10	12	14	14	14	16	26	25	28	30	27	27	18	17	14	12	11	E 15 S	E 15 S	E 15 S	E 15 S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	30	30	30	30	30	30	30	30	30	31	31	29	30	31	31	31	31	31	31	31	31
MED	E 15 S	E 15 S	E 15 S	E 15 S	11	15	15	15	18	25	26	27	26	26	26	25	16	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
UQ	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S	15	15	15	20	26	28	28	28	28	27	26	17	15	15	E 15 S	E 15 S	E 15 S	E 15 S	E 15 S
LQ	13	E 15 S	12	11	10	15	14	15	16	19	26	26	26	26	25	19	16	15	14	U 12	U 12	E 15 S	E 15 S	E 15 S

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MAY 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	270B	260B	260B	260	270	275	310	320	285	285	270	275	285	285	285	290	280	290	305	310	290	270	270	255
2	270	260	265	305	295	320	320	295	295	280	265	270A	280	280	285	285	280	295	A	R	260	265B	265	250
3	275F	290	315	295B	265	280	305	310	280	235	250	270	275	280	280	280	285	290	310	305	255	255	260	250
4	255F	275	F	275	270	280	290	285	290	270	280	265	280	280	285	290	285	300	315	310	250	260B	260B	265
5	330	290B	265	275B	285B	290	280	280	285	260	275	265	265	270	275	280	280	285A	295A	290	265B	250B	255	260
6	295	280	275	295B	260B	310	305	275	275	280	265	275	275A	285	280	290	295	300	295	295	280	270B	270B	260B
7	265B	270	285	260	265	270B	265	305	280	275	250	255	275	280	285	295	305	300	290	305	265	255B	260	260
8	265B	275	280	275	275	320	305	315	300	275	275	280	275	275	285	280	285	295	300	300	290	275	270B	275
9	275	275	285	290	265	R	305	315	290	280	270	270	280	275	275	275	285	295	295	290	290	280	275	280
10	285	280	285	295	295	285	310	305	295	270	270	270	275	270	280	285	280	295	290	290	270	280	275	265
11	275	280	290	295	280B	295	320	310	290	275	275	270	275	280	275C	280	280	280	290	290B	285B	280	285	285B
12	265	275	275	285	270	275	295	310	310	255	260	265	265	265	280	280	280	285	290	290	280B	275B	270	265
13	265	260	265	265	255	300	285	300	280	300	265	275	285	280	275	275	285	290	295B	R	275B	265	265	265B
14	260	265B	300	290B	275B	300	305	305	305	285	265	270	270	270	265	270	275	280	280	295	280	270	260	260
15	260B	275B	295	270B	280	310	310	290	285	280	270	275	275	275	265	290	280A	290	300	285	260	250B	275B	285B
16	265	270	265	280C	285	280	330	290	285	275	270	270	270	270	275	275	280	280	285	290A	290	275	270B	255F
17	265F	F	290	285B	265	275	295	295B	300B	280	265	265	270	275	285	280	265	275	290	295	265	255	245	255B
18	260	275	260	265	275	265	260	295	300	275	270	270	275	280	280	280	285	285B	285	295B	280	265	260	265
19	275B	265	265	275B	265B	280	285	290	285	280	290	255	270	275	300	285	275	290	285	295	280	250	245	270
20	270B	270	280	280	265	245	275	270	290	275	265	260B	275	275	285	280	270	285	290	300	260	255A	250	260B
21	270B	265B	285B	265	275	295	A	A	265	270	270A	265A	270A	290	270A	290	280	290	300	270	260	255	250	250B
22	265	260	275	275	270	280	265	290	295	300	285	260	275	275	275	290	285	295	290	280	255	270B	255	265
23	255	270B	270B	270	270	295	320	330	320	270	260	265	265	275	275	285	285	290	290	275	270	265	265	265
24	275	275B	265	275	275	290	310	310B	300	290	255	260B	270	270	275	280	285	280	295B	290	285	260	255	255
25	260B	255	260B	265	C	C	C	C	C	C	C	C	270	270	C	C	280	295	280	280	270	260	265B	265
26	265	260B	285B	270	270	270	295	295	290	275	265	265	275	270	280	285	270	285	280	280B	285	265	275B	265
27	265B	285B	280	280	280	300	300	295	285	270	280	275	275	285	290	280	270	275	275B	285	280	270	260	265
28	265	275	280	275	265	285	290	255	280	290	255	260	270	270	285	285	295	285	280	290	255	240	250	250
29	250B	245	285	250	235	R	265	255	F	285	R	260	R	275	295	280	280	280	285	280	260	260	280	F
30	A	285B	275	270	270	265	265	260	A	260	250	250	260B	270	275	280	280	290	300	280	255	250	245	265B
31	260	265	275B	265	260	300	295	280	270	255	270A	270	260	275	275	285	280	295	285	270	270	250	260	270
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	31	30	28	29	29	28	30	29	30	30	31	30	30	31	31	30	29	31	31	31	30
MED	265	272	278	275	270	285	295	295	290	275	270	268	275	275	280	280	280	290	290	290	270	265	260	265
UQ	275	275	285	285	275	300	310	310	298	280	270	270	275	280	285	285	285	295	295	295	280	270	270	265
LQ	260	265	265	268	265	275	285	285	282	270	265	260	270	270	275	280	280	285	285	280	260	255	255	255

MAY 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

MAY 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	UL 390	A	UL 380	L	L	L	A						
2										A	L 330	A	UL 345	L	L	L 365	L		A					
3							L	L	A	A	L	UL 330	L 340	L	A	A	A	A	A					
4									L	L	L	A	A	L	A	A	A	A						
5								L	A	A	A	A	A	L	L	L	A	A	A					
6									L	L	L	L 350	A	A	A	L	A	A						
7								L	L	L	UL 330	UL 335	L 360	L	L	L	L							
8								L	L	A	L	R	L	A	L	L	A	A						
9							L	L	L	L	UL 345	L 300	L 330	L 345	UL 350	UL 345	L	A						
10								L	A	L	L	L 325	L	A	345	360	L	L						
11									UL 350	L	L	L	L	R	C	A	L	L						
12								L	A	A	L	L	L	R	L	L	A	A						
13						L	L	A	L	A	L	R	L	L	A	A	A	A						
14								L	A	A	UL 330	L	L	L	L	L	L	A						
15									L	A	L	R	L	L 350	A	A	A	L						
16									L	L	L	L 330	330	L	A	A	L 350	A						
17								L	L	A	A	A	A	A	345	L	L	L						
18								L	A	A	A	A	A	A	A	A	L	A						
19									L	L	R 380	A	R	L	A	A	A	A						
20							L	L	A	L	L	A	A	L	A	R 355	L 345	L						
21									A	A	A	A	A	A	A	A	A	L						
22							330	L	L	L	L	L 335	335	330	340	350	L	A						
23							L	L	L	L	375	365	335	325	L	335	L	L						
24							L	L	L	375	335	350 R	325	335	325	325	350	L	L					
25						C	C	C	C	C	C	C	350 L	A	C	C	L	L						
26							L	L	L	A	A	R	A	A	A	L 350	L	L						
27								L	L	L	L	L	A	A	L	A	A	A						
28								A	L	A	L	L	L	UL 375	L	L	L	A						
29						L	300	355	A	UL 355	R	R	A	A	A	R	L	L						
30							L	380	A	385	355	A	R	B	A	305	345	UL 350	L					
31							L	L	L	A	A	A	A	A	A	L	L	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	2	1	3	8	10	9	7	5	9	4	1						
MED							315	368	U 350	375	340	335	335	345	345	350	348	U 350						
UQ										380	365	350	345	362	345	355	350							
LQ										365	330	330	330	332	340	335	345							

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MAY 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

MAY 1970 | H'F2 (KM) | 135° E Mean Time (G. M. T. + 9h)

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

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								255	275	285	335	310	295	305	310	295	290	295						
2										280	340	A	315	310	310	290	300		A					
3							255	255	260	270 H	370	340	320	310	325	I A 325	310	290	250					
4									280	300	335	305	325	320	310	300	300	310						
5								275	290	315	360	315	345	345	340	340	A 390	A	A					
6									290	300	320	345	I A 365	310	310	305	300	295						
7								290	350	300	395	395	325	315	305	300	280							
8								250	285	295	340	305	340	310	305	310	305	280						
9							270	260	280	260	320	340	325	310	325	320	300	290						
10								260	250	310	340	340	330	E A 350	320	295	290	270						
11									310	300	305	345	345	310	I C 330	300	295	295						
12								270	260	245	345	345	340	345	305	315	295	280						
13						250	280	270	270	285	360	350	330	330	340	350	305	310						
14								270	280	265	390	320	345	310	300	310	305	300						
15									310	300	350	305	360	350	320	300	A	290						
16									250	330	330	350	350	325	320	310	305	285						
17								260	280	310	A 380	350	355	345	310	310	320	300						
18								A 250	260	330	325	345	345	365	360	340	290	300						
19									315	335	310	310	350	345	340	330	345	295						
20							305	320	340	345	360	370	345	250	350	345	335	310						
21									290	A 370	A	A	I A 390	350	I A 385	350	345	300						
22							380	310	310	295	360	380	380	355	340	340	310	300						
23							250	250	250	320	310	345	360	350	345	320	300	290						
24							260	270	270	300	360	330	360	345	345	320	310	300	270					
25						C	C	C	C	C	C	C	360	345	C	C	310	295						
26							250	285	290	290	340	365	350	E A 400	340	300	290	300						
27								270	260	340	345	340	350	315	350	340	350	310						
28								350	290	310	390	340	380	340	350	305	300	295						
29						440	340	350	380	360	450	460	400	380	350	350	320	305						
30							365	440	A	350	550	495	450	410	365	350	345	320	290					
31							255	290	350	320	A	370	380	350	370	340	300	320	310					
	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	11	22	28	30	28	28	31	31	30	30	30	28	4					
MED						345	270	270	282	300	345	345	350	338	335	318	305	298	280					
UQ							322	290	310	330	365	358	360	349	350	340	320	302	300					
LQ							255	260	265	290	332	325	335	310	310	300	300	290	260					

MAY 1970 | H'F2 (KM)

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IONOSPHERIC DATA

MAY 1970 | H'F (KM) | 135° E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	300	300	300	280	245	230	240	240	240	215	210	I 250	240	240	230	250	I 270	260	250	240	295	310	355
2	350	350	290	245	245	250	245	250	265	I 260	250	A	245	250	I 245	240	240	270	I 250	I R 235	300	350	330	360
3	350	290	240	270	300	255	240	240	A	A	A	250	240	A	A	A	A	A	A	250	300	320	320	350
4	345	300	290	300	300	250	230	240	220	240	280	A	A	A	I 260	A	A	A	260	250	240	295	310	310
5	295	285	285	275	255	250	240	245	A	A	A	A	A	240	285	290	A	A	A	290	290	295	315	305
6	265	255	285	245	295	240	250	250	240	I 245	210	240	I 365	A	A	240	A	A	340	285	255	280	295	300
7	300	280	275	300	305	250	245	245	255	230	230	205	220	245	240	240	250	255	285	245	250	330	360	300
8	295	295	275	295	260	265	245	245	240	I 230	220	I 225	210	A	250	250	A	A	290	255	270	295	290	290
9	295	290	295	260	295	260	240	240	240	210	220	210	230	220	210	225	230	A	255	250	250	245	270	280
10	300	290	255	245	245	240	250	230	A	A	I 220	230	A	A	225	245	245	245	255	255	300	270	270	280
11	290	275	250	240	245	245	240	240	225	240	210	240	240	I 240	C	A	250	240	270	265	290	270	245	260
12	295	295	260	245	260	250	245	245	A	A	I 270	I 290	295	210	240	230	A	A	260	290	290	280	290	300
13	295	295	295	290	305	240	250	I 250	240	I 240	240	I 260	I 260	240	A	A	A	A	280	A	240	290	300	305
14	315	300	295	270	270	250	245	245	A	A	250	205	210	210	205	240	I 245	I 270	280	250	270	250	300	300
15	350	295	290	290	280	245	250	245	260	I 270	230	I 210	I R 210	210	A	A	A	250	250	295	340	E 400	330	285
16	300	300	305	I C 295	270	245	250	240	240	A	A	210	220	I 250	A	A	A 250	A 265	270	I 280	270	300	I R 320	370
17	350	300	300	280	300	250	245	245	225	A	A	A	A	I 245	255	240	240	I 270	270	245	270	320	300	350
18	310	295	290	290	290	245	245	250	A	A	A	A	A	A	A	A	220	A	E 310	280	300	305	305	310
19	300	300	290	290	300	245	240	260	295	210	200	I 240	R	A	A	A	A	I 270	290	280	290	300	310	300
20	290	310	285	250	310	255	245	250	I 240	250	210	A	I 265	245	I 250	245	245	250	265	270	E 370	I 355	345	345
21	300	310	345	310	290	290	A	A	A	A	A	A	A	A	A	A	A	A	265	310	380	310	350	390
22	295	295	290	290	290	250	270	250	240	240	230	205	200	240	210	240	250	A	280	E 350	300	300	300	300
23	310	300	295	295	300	255	240	240	240	200	200	205	200	240	230	260	230	255	255	260	295	300	310	300
24	290	275	270	280	280	255	240	240	220	200	220	200	240	225	225	225	245	240	250	255	250	270	320	320
25	320	330	300	300	C	C	C	C	C	C	C	C	210	A	C	C	240	240	265	260	290	300	390	300
26	310	300	270	260	300	255	245	250	250	A	A	R	I 245	I 250	I 245	260	240	270	295	290	260	275	350	300
27	320	255	260	240	275	250	225	240	250	250	A	A	A	A	300	A	A	A	350	275	270	300	310	340
28	340	300	300	300	290	245	250	I 250	240	I 235	250	240	I 210	210	240	245	240	I 265	E 350	300	300	320	330	350
29	340	340	290	305	310	300	280	260	A	240	220	240	I 240	A	A	260	240	240	260	290	340	290	295	360
30	A	305	300	295	300	300	270	240	I 230	220	245	A	R	B	A	I 240	240	240	260	250	340	380	350	310
31	290	300	275	300	325	245	240	225	220	I 230	A	A	A	A	A	I 260	245	A	A	320	290	310	340	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	30	30	29	29	22	20	21	19	21	18	18	20	20	18	28	30	31	31	31	31
MED	300	300	290	290	290	250	245	245	240	240	220	225	240	240	240	240	242	255	266	265	290	300	310	305
UQ	320	300	295	298	300	255	250	250	250	242	245	240	U 245	245	250	255	248	U 270	284	290	300	312	330	348
LQ	295	290	275	260	270	245	240	240	230	225	215	208	210	220	225	240	240	240	260	250	265	285	300	300

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MAY 1970 | H'F (KM)

IONOSPHERIC DATA

MAY 1970 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

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

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

MAY 1970 | H'ES (KM)

IONOSPHERIC DATA

MAY 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1	F1					H2	H2	C2	C1	C1	H1	H1	H1	H1		H1	H2	H2	F3	F3	F4	F3	F4
2	F3	F4	F2	F5	F1	H1	H3	H2	H3	C2	C1	C2	H1	H1	H1	H1	H2	H3	C4	F3	F4	F4	F4	F4
3	F4	F6	F2	F4	F6	L1	H2	H2	C2	C2	C2	C1	C1	H1	H2	C3	C2	C3	C3	F4	F3	F3	F2	F3
4	F4	F4	F3	F4	F4	L3		C2	C1	C1	C1	C1	H2	H1	H1	H2	C2	C4	L2	F4	F1			
5		F1	F1	F1	F1	L2	C1	H1	H2	C2	C2	C2	C1		H1	H1	C3	C5	L3	F4	F3	F2		F1
6	F1	F1			F1		H1	H1	H1	C2	C1	C2	C3	C2	C1		H2	C3	C3	F5	F4	F3	F1	
7							H1	H1	C2	C1	C1	C1	C1	C1			H1	H2	L2	F2		F4	F5	F1
8		F1		F1		H1		H1	H1	C2	C1	C1		C1	H1	H1	H1	H3	C4	F5	F2	F2	F1	
9		F1	F3	F4	F2	L2	H1	H1	H1	C1	C1	C1	L1					C2	C4	F3	F3			F2
10	F4	F2	F2	F2	F2	H1	H3	H2	C2	C2	C1	C1	C1	L3	L1	L1	L2	L3	L2		F6	F4	F4	F2
11	F2	F1	F1	F1			H2	H2	H1	H1		C1	C1	C1		C2	C2	H1	L4	F4	F5	F4	F1	F1
12	F2	F2	F1	F1			H1	H1	C2	C2	C1	C2	C1	C1			H2	H2	H2	F5	F2	F5	F1	
13		F1	F1	F1		H1	H2	H2	H2	C1	C1	C1	C1	H1	C1	H2	H2	C3	C3	F5	F1	F2	F2	F2
14	F2	F3	F2	F3	F3			H1	H2	C1	C1	H1					H2	C3	L4	F3	F5	F5	F5	F3
15	F5	F3	F2	F2	F3			H1	H1	C1	C2	C1	C1	C1	C2	C2	H2	H2	C2	F3	F3	F3	F3	F3
16	F5	F2	F4		F3	L3	L5	L3	L4	C2	C1	C1	C1	C1	C2	C2	C2	C3	C3	F4	F5	F4	F4	F3
17	F4	F2	F3	F3	F2	L1		H1	H1	C2	C2	C2	C2	C2	C2	L2	HL1	HL31	CL31	F3	FF23	F4	F3	F4
18	F4	F4	F2	F2	F3	HL21	HL21	H2	C2	C2	C2	C1	C2	C3	C3	C2	C1	H3	C5	F3	F5	F5	F3	F3
19	F2	F1	F1	F1		H1	H1	H1	H2	H1	H1	H1	H1	H1	H2	C2	C2	C2	L5	F4	F3	F4	F5	F1
20	F2	F3	F1	F1	F2	L1	H1	H2	H2	H1	H1	C2	C1	C1	C2	C1	H1	H1	L2	F4	F4	F4	F3	F4
21	F2	F4	F4	F3	F3	H3	H2	C3	C2	C3	C2	C2	H2	H1	C2	C2	C2	C2	L2	F4	F4	F2	F3	F6
22	F3	F1	F3	F2	F2		H2	H2	H1	C1	C1			C1	C2	L2	H1	H2	C5	F4	F3	F2	F2	F1
23	F2	F1	F1	F1		H1	H1	H1	H1			C1	C1	L1	L2	L2	L1	L3	L3	F2	F5	FF12	FF22	F2
24						HL11	C1	C2	H1	C1	L1	H1	C1	C1	C1	L1	L1	L2	CL23	F3	F3	F4	F3	F3
25	F3	F2	F2	F2									H1	C1			C2	H1	C2	F4	F5	F4	F4	F2
26	F4	F3	F2	F2	F1	HL11	HL11	H2	H2	H1	H1	C1	H1	C3	C1	H1		H1	H2	FF32	FF21	F4	F3	F1
27	F3	F1	F3	F2	F2	L3	L3	L2	C2	H1	H1	H1	H1	H1	H2	H2	H2	H3	C3	F3	F4	F3	F3	F5
28	F5	F4	F3	F2	F4	H1	H2	H2	H1	H2	H1		H1				H1	H2	L3	F4	F1	F2	F2	F5
29	F5	F3	F2		F1		H2	H2	H2	H1	H1	H1	H1	C2	C2	C2	C2	C2	L2	F3	F5			F3
30	F4	F5	F5	F3	F4	L4	H1	H1	H2	C2	C1	C1	C1		C2	C2	C2		H2	F4	F3	F4	F3	F3
31	F1	F2	F1	F1		H1	H1	L2	C1	C1	C2	C1	C2	C2	C2	H1	C2	L3	L3	F4	F3	F4	F4	F6
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

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MAY 1970 | TYPES OF ES

IONOSPHERIC DATA

MAY 1970 | HPF2 (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	360B	390B	405B	410	390	350	300	290	320	340	400	350	350	360	350	360	350	350	310	300	350	400	395	410
2	400	410	395	325	360	300	290	325	350	350	385	370A	360	360	350	340	350	310	A	R	380	400B	390	415
3	390F	340	300	310B	390	350	300	295	350	440	420	390	360	360	370	360A	350	330	300	305	385	410	405	440
4	410F	370	F	350	390	340	340	320	345	390	390	390	380	390	350	350	360	350	300	310	400	420B	410B	400
5	395	330B	390	390B	380B	300	380	380	380	390	390	400	390	390	390	380	400	380A	350A	350	390B	440B	420	420
6	350	390	390	340B	400B	300	300	350	350	380	410	390	400A	380	390	350	350	340	355	350	380	385B	395B	400B
7	400B	390	380	400	400	390B	400	320	390	360	395	400	390	360	380	340	310	325	340	340	390	420B	420	390
8	390B	390	390	395	390	300	340	310	340	380	395	390	390	395	380	380	360	330	340	340	350	390	390B	390
9	390	390	360	350	390	R	310	305	350	360	385	395	355	360	360	360	350	320	320	330	340	370	370	370
10	355	360	330	330	310	330	305	305	315	360	380	390	370	385	360	350	345	330	330	330	380	350	370	380
11	360	360	330	310	330B	305	290	280	340	390	395	390	390	390	390C	380	380	350	340	350B	380B	380	360	390B
12	390	390	380	380	390	360	380	340	340	410	410	400	400	400	390	390	360	380	370	370	380B	385B	395	420
13	420	400	400	390	420	320	350	330	390	320	400	380	350	380	395	390	380	360	350B	R	370B	400	400	390B
14	400	400B	340	350B	350B	300	300	320	300	330	400	400	400	400	400	380	380	380	380	360	350	390	410	410
15	410B	380B	350	380B	380	300	300	340	350	380	400	395	400	400	380	350	370A	380	320	390	400	460B	408B	385B
16	390	390	400	390C	390	360	280	350	350	380	370	400	390	370	370	370	360	350	350	350A	350	355	385B	405F
17	400F	F	380	350B	385	355	320	310B	320B	350	400	395	390	370	350	360	390	370	330	320	380	415	420	420B
18	405	370	380	390	380	375	390	325	310	400	400	390	365	380	390	390	380	380B	380	350B	380	400	415	400
19	400B	400	395	385B	395B	390	320	360	350	385	350	400	400	390	350	380	390	350	380	350	380	410	450	400
20	400B	395	380	350	400	460	380	390	350	390	400	395B	390	400	380	380	400	380	340	300	400	410B	440	420B
21	400B	400B	350B	390	390	340	A	A	400	400	A	A	400A	380	400A	380	380	350	310	350	410	400	400	400B
22	400	400	390	400	400	360	400	350	350	320	380	400	400	400	390	370	380	350	350	390	400	395B	400	400
23	400	400B	395B	395	390	350	300	290	330	350	375	380	400	380	370	355	350	345	330	350	380	385	400	400
24	375	370B	380	380	370	320	300	300B	300	330	400	400B	400	385	375	360	355	355	320B	340	350	385	400	430
25	410B	420	395B	385	C	C	C	C	C	C	C	C	395	390	C	C	380	340	390	380	400	400	400B	400
26	400	400B	370B	390	400	400	350	335	340	395	390	400	400	400	390	380	390	350	390	380B	380	400	395B	400
27	430B	360B	380	380	390	340	350	340	380	390	380	395	380	380	380	380	395	395	380B	380	380	390	410	400
28	400	400	390	380	400	350	340	400	380	350	430	390	400	380	390	350	350	350	380	350	420	400	430	440
29	430B	430	360	410	500	R	400	400	F	380	R	G	R	400	360	380	390	370	360	380	400	400	370	F
30	A	380B	390	400	400	400	400	450	A	G	G	A	R	410	370	360	350	345	310	340	420	470	440	405B
31	380	400	370B	400	420	310	310	320	380	390	390A	395	400	370	375	360	350	340	345	380	360	410	410	390
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	31	30	28	29	29	28	29	27	27	29	31	30	30	31	31	30	29	31	31	31	30
MED	400	390	380	385	390	345	320	325	350	380	395	395	390	385	380	365	360	350	342	350	380	400	400	400
UQ	408B	400	390	392	400	360	380	350	365	390	400	400	400	398	390	380	380	370	370	370	400	410	412	415
LQ	390	370	360	350	380	308	300	310	335	350	385	390	380	375	360	355	350	340	320	340	375	388	395	390

MAY 1970 | HPF2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

MAY 1970 | YPF2 (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J$_{85}^{B}$	J$_{65}^{B}$	J$_{95}^{B}$	90	85	105	95	60	130	100	100	100	100	90	110	100	100	90	90	100	100	100	95	90
2	90	90	95	95	100	100	90	75	100	140	105	I$_{105}^{A}$	100	95	75	105	100	85	A	R	105	I$_{100}^{B}$	80	90
3	$_{65}^{F}$	70	80	J$_{90}^{B}$	100	100	95	100	150	75	120	85	90	90	100	I$_{95}^{A}$	100	80	70	95	115	100	90	80
4	$_{90}^{F}$	80	F	95	80	110	85	130	100	100	100	100	100	100	100	100	100	90	100	90	100	Y$_{100}^{B}$	J$_{90}^{B}$	100
5	95	Y$_{110}^{B}$	100	Y$_{100}^{B}$	Y$_{100}^{B}$	100	110	100	110	100	100	100	90	100	100	100	100	I$_{100}^{A}$	I$_{90}^{A}$	100	Y$_{100}^{B}$	Y$_{100}^{B}$	100	100
6	100	100	100	J$_{80}^{B}$	Y$_{100}^{B}$	100	100	90	100	110	110	100	I$_{90}^{A}$	100	100	100	90	100	85	100	100	I$_{105}^{B}$	J$_{95}^{B}$	10^{B}
7	100^{B}	100	100	100	100	Y$_{100}^{B}$	100	100	100	90	85	100	100	100	110	110	100	115	100	100	100	I$_{100}^{B}$	100	100
8	Y$_{100}^{B}$	100	100	95	100	100	100	100	100	110	95	90	100	95	110	100	100	110	90	100	100	100	I$_{100}^{B}$	100
9	100	100	100	100	100	R	80	95	100	100	85	95	100	115	110	120	95	105	80	90	90	90	90	80
10	90	90	70	115	90	115	75	75	130	110	115	90	100	110	95	100	140	90	95	90	100	100	80	115
11	90	90	80	90	J$_{80}^{B}$	100	70	105	105	100	95	100	100	100	I$_{100}^{C}$	110	110	100	100	Y$_{100}^{B}$	Y$_{100}^{B}$	110	90	I$_{100}^{B}$
12	100	100	100	110	100	90	100	100	100	110	110	100	100	100	100	100	100	110	110	120	Y$_{100}^{B}$	I$_{100}^{B}$	95	100
13	100	100	100	100	100	80	90	90	100	120	100	100	100	100	95	100	100	100	J$_{90}^{B}$	R	I$_{100}^{B}$	100	90	Y$_{100}^{B}$
14	100	I$_{100}^{B}$	90	J$_{90}^{B}$	Y$_{100}^{B}$	100	100	110	100	120	100	100	100	100	100	100	110	110	110	120	100	100	100	100
15	J$_{90}^{B}$	I$_{105}^{B}$	100	110^{B}	100	100	100	100	110	100	110	95	100	100	100	100	I$_{100}^{A}$	100	100	100	100	Y$_{120}^{B}$	90^{B}	I$_{105}^{B}$
16	100	100	100	I$_{100}^{C}$	100	90	100	90	90	90	120	90	100	105	105	100	105	120	100	I$_{80}^{A}$	65	95	I$_{95}^{B}$	$_{95}^{F}$
17	U$_{90}^{F}$	F	70	J$_{60}^{B}$	85	100	100	Y$_{105}^{B}$	J$_{90}^{B}$	100	110	105	100	100	95	100	110	100	80	95	110	90	100	I$_{80}^{B}$
18	95	75	110	110	90	125	110	95	135	100	100	100	95	100	100	100	100	J$_{110}^{B}$	110	90^{B}	100	90	95	100
19	I$_{90}^{B}$	100	95	I$_{100}^{B}$	I$_{95}^{B}$	100	90	120	90	105	80	120	100	100	100	100	100	100	110	90	100	100	100	100
20	100^{B}	95	100	100	100	110	100	100	100	100	100	J$_{95}^{B}$	100	100	70	100	100	110	100	100	100	I$_{100}^{A}$	120	I$_{95}^{B}$
21	Y$_{100}^{B}$	Y$_{100}^{B}$	110^{B}	100	100	100	A	A	100	90	A	A	I$_{100}^{A}$	100	I$_{90}^{A}$	100	100	110	100	90	90	100	100	Y$_{100}^{B}$
22	90	100	100	90	100	120	100	90	90	110	110	100	100	100	100	120	100	90	100	100	100	I$_{95}^{B}$	100	100
23	100	90^{B}	J$_{95}^{B}$	95	100	100	100	110	100	130	135	115	100	100	125	95	100	85	85	100	80	90	90	95
24	75	I$_{80}^{B}$	80	65	80	85	75	J$_{80}^{B}$	80	125	145	Y$_{115}^{B}$	100	105	105	110	100	100	J$_{80}^{B}$	100	100	110	100	70
25	J$_{80}^{B}$	85	95^{B}	85	C	C	C	C	C	C	C	C	95	100	C	C	100	100	100	100	100	90	I$_{95}^{B}$	100
26	100	Y$_{100}^{B}$	I$_{100}^{B}$	100	100	100	90	105	110	95	100	100	100	100	100	110	100	100	100	Y$_{110}^{B}$	100	100	I$_{100}^{B}$	100
27	Y$_{100}^{B}$	Y$_{100}^{B}$	110	110	100	100	90	100	100	90	110	95	100	110	100	110	95	95	Y$_{100}^{B}$	100	100	100	100	100
28	90	100	90	100	100	100	100	100	100	90	100	100	100	100	100	100	90	90	110	100	100	110	90	80
29	I$_{100}^{B}$	90	80	90	150	R	100	100	F	110	R	G	R	100	100	110	110	110	100	100	100	100	80	F
30	A	Y$_{110}^{B}$	100	90	90	100	90	100	A	G	G	A	R	65	75	90	90	55	85	120	90	130	105	J$_{90}^{B}$
31	90	90	J$_{80}^{B}$	95	90	100	100	90	115	80	I$_{105}^{A}$	100	95	90	100	90	95	65	100	95	100	110	90	70
	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	31	30	28	29	29	28	29	27	27	29	31	30	30	31	31	30	29	31	31	31	30
MED	95	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100
UQ	100	100	100	100	100	100	100	100	110	110	110	100	100	100	100	110	100	110	100	100	100	100	100	100
LQ	90	90	90	90	90	100	90	90	100	95	100	95	100	100	100	100	100	90	90	95	100	100	90	90

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MAY 1970 | YPF2 (KM)

IONOSPHERIC DATA

MAY 1970 | FOF2 (0.1 MHZ) | 135 E Mean Time (G. M. T.+ 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	86	85	79	U78	78	74	85	91	94	101	118	131	138	137	130	135	138	129	122	123	88	80	83	87
2	84	77	93	75	58	52	66	79	93	96	113	125	137	147	149	146	142	142	143	Y110	95	I94	I00	I06
3	111	Y113	Y101	88	A	F	J84	Y100	98	100	114	Y131	135	134	134	137	141	141	134	Y115	107	111	115	117
4	Y110	I116	I112	97	82	F	I98	101	Y103	104	110	122	130	136	131	123	127	144	I135	Y108	90	U93	I94	U93
5	Y105	Y110	Y101	U94	80	68	75	91	Y105	115	Y120	129	138	140	142	143	136	131	128	I116	I08	I08	I10	Y117
6	Y135	Y137	I116	U95	J86	U87	92	93	U97	101	110	Y122	131	129	129	129	123	Y116	116	108	89	I90	90	I98
7	I00	U97	90	80	77	J75	82	J93	109	U98	103	119	130	Y138	146	143	130	116	112	Y102	80	79	79	81
8	U82	J84	80	70	68	I70	77	78	86	89	105	115	126	132	141	Y138	128	114	108	Y105	U97	95	J98	I97
9	I92	U92	90	83	73	72	U93	I90	89	95	107	Y121	139	142	142	149	154	149	143	Y137	Y139	Y137	142	Y140
10	I137	I130	Y131	Y106	87	I84	I03	Y102	J97	98	110	Y123	132	134	141	145	135	127	Y122	116	104	U96	S	S
11	I118	I115	I113	I94	85	83	90	91	93	102	110	122	127	127	128	138	135	127	118	I120	111	I98	J96	I96
12	94	94	U92	83	74	73	90	104	92	93	105	I118	124	129	133	131	123	117	114	114	110	I08	I03	I00
13	Y100	I98	I89	82	78	C	C	C	C	85	96	115	123	125	127	124	120	123	118	107	I87	83	S	S
14	F	I98	I92	85	84	74	88	97	92	88	99	113	128	137	149	157	158	164	Y162	Y154	148	Y142	I145	I141
15	I134	I126	Y124	I112	J92	81	78	84	92	103	105	111	121	121	133	137	134	Y123	Y125	108	95	U93	88	94
16	98	93	87	I84	79	70	74	81	84	88	95	110	121	125	126	I127	121	118	I118	115	Y102	94	S	S
17	S	93	S	S	S	83	92	I00	99	98	101	110	119	128	128	122	115	128	127	I119	108	I07	I08	I07
18	104	Y101	I94	I91	F	F	87	104	101	100	99	109	118	113	Y117	Y117	119	120	Y121	Y113	91	93	Y102	Y101
19	I02	101	J94	U90	82	83	95	Y104	92	93	95	102	113	I118	113	116	125	Y124	120	115	98	100	Y104	106
20	107	100	S	87	68	63	72	100	102	98	U99	104	109	106	109	112	110	109	118	106	J85	89	U88	I90
21	I95	93	85	79	U71	71	75	83	I88	89	91	97	110	110	107	109	112	112	104	92	89	90	J98	I92
22	90	F	U83	U78	59	60	79	88	J99	90	86	95	108	110	Y118	120	114	103	J99	92	82	I85	86	90
23	I88	I84	J76	71	69	71	86	79	75	79	85	96	105	111	112	120	119	113	I110	106	I95	I91	90	U93
24	99	Y100	89	80	80	77	90	104	86	87	92	104	116	Y121	124	124	121	Y121	Y119	114	Y102	93	U89	I94
25	U97	95	I90	86	80	78	86	82	83	97	97	114	114	119	124	128	129	113	109	108	101	I93	94	93
26	I98	99	89	85	85	82	95	Y104	Y101	96	98	108	120	126	122	122	122	124	122	117	104	98	99	I00
27	S	S	I97	J90	U84	79	89	93	96	94	98	I106	112	113	111	106	109	115	110	114	110	Y101	107	Y108
28	I02	108	I00	92	I86	86	98	Y100	107	99	94	111	Y123	113	118	124	112	106	108	104	98	108	S	I117
29	Y114	I04	S	83	83	76	U77	F	F	F89	R87	86	90	104	103	97	93	92	93	98	92	78	73	75
30	72	F	74	61	55	F	73	68	59	I63	R67	76	86	101	113	112	107	105	R99	J85	J73	75	73	78
31	82	75	72	67	62	65	74	73	77	87	91	98	107	105	Y110	107	108	J99	106	107	I92	92	98	108
	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	30	28	26	30	29	29	31	31	31	31	31	31	31	31	31	31	31	31	31	27	28
MED	Y100	98	91	84	80	74	86	93	93	96	99	111	121	125	127	124	123	120	118	110	98	94	98	U98
UQ	Y108	109	Y100	91	84	82	92	100	99	100	108	122	130	134	134	138	134	128	124	118	108	100	104	Y108
LQ	91	93	86	79	70	70	75	83	86	89	94	104	112	113	114	118	114	113	110	108	90	90	88	92

MAY 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOF1 (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									A	L	L	L 580	570	L 550	L	L	L	L						
2									L	L	L	A	A	L	A	L	A	A						
3									A	A	A	A	L	L 600	L	A	A	A						
4									L	L	U L 560	L	U L 630	L 570	A	A	L	A						
5								L	L	U L 520	L	L	U L 600	L	L	L	L	A						
6								L	A	L	U L 640	L 600	L	U L 620	U L 550	A	L	L						
7								L	L	L	U L 580	570	550	U L 570	L 560	L	A	A						
8									L	L	U L 560	L 540	L 610	580	560	A	A	A						
9									L	L	L 560	U L 630	L	L	L	L 560	L 480	L						
10									A	L	U L 600	L	L	L	580	L 560	L	L	L					
11									L	L	L	L 610	570	590	L	L 570	A	L						
12								L	L	L	L	I A 570	L	L 650	L	L	L	L 350	L					
13								C	C	A	L	A	L	A	A	L	L	A						
14								L	L	A	L	A	L	L	L 570	L	L	L	A					
15									A	A	L	L	L	U L 610	L 580	L	L	L	L					
16									L	A	L	A	U L 560	U L 560	L 620	A	A	A	A					
17								L	L	A	A	A	A	L 580	L	A	A	L	A					
18								L	L	L	L	L	L 570	L	A	L	L 550	L	L					
19								L	L	A	L	L	L 630	L	L 570	A	A	L	A					
20								L	L	A	U L 620	U L 600	560	600	550	L 560	510	L	L					
21									A	A	L	L 600	580	U L 600	L 570	A	A	A	A					
22								A	A	A	A	610	U L 600	580	H 570	L 560	L 520	A	A					
23								L	L	L	U L 610	L 600	540	L	L 550	U L 550	L	A	A					
24								L	L	L	U L 630	L 570	580	H 610	L 580	L 590	U L 530	A	A					
25								L	L	U L 570	L	L 530	L 580	H 590	L 610	L 590	A	A	A					
26								L	L	L	L	L 650	600	600	590	570	560	530	L					
27									L	L	L	A	550	610	L	L 670	U L 590	520	L					
28								A	L	A	L 630	L	580	L	570	L 530	L	L	L					
29								L	L 550	A	A	R 560	560	570	A 560	H 570	A	L	A					
30								A	490	I A 510	I A 540	I A 560	A	R	L 570	L 550	L	A	A					
31								L	L	L 550	U L 630	C 650	L 580	A	550	560	A	A	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	4	12	17	20	19	19	14	7	3						
MED									520	U L 535	U L 605	L 600	L 580	L 590	L 570	L 560	L 530	L 520						
UQ										L 560	U L 630	L 610	L 600	L 605	L 580	L 570	L 555	L 525						
LQ										U 515	U L 560	L 570	L 560	L 575	L 560	L 560	L 515	L 435						

The Radio Research Laboratories, Japan

MAY 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOE (0.01 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							180	270	320	A	A	A	390R	400R	380	360H	330H	290	230					
2							195	280H	315	340	365	A	A	400R	390R	370	345	310	230					
3							S	A	320	345	360	I A 385	I A 395	400R	380R	370	340H	300	225					
4							S	A	A	350	375R	385R	I A 400	400R	390	370	335	300	210					
5							A	A	I A 330	345	365	390	390R	395R	385	365	340	295	230					
6							200	275H	315H	340	A	A	A	A	385	365	335	300	220					
7							180	270	315	A	A	A	A	A	375	360	335	295	230					
8							200	265	310	A	A	A	A	A	380	365	340	300	245					
9							200	280	I A 310	330	360	365	380	395	380	365	340	300	A					
10							190	280	320	345	365	375	380	I A 380	380	360	330	305	A					
11							220H	285	325H	360	370	I A 370	380	390H	390R	I A 365R	350	310	240					
12							180	280	320	350	375	A	R	R	I A 395	I A 375	350	320	250					
13							C	C	C	355	370	370	370	400G	395	375	350	310	245					
14							210	280	320	350	370	I R 375R	I R 385R	390R	400R	380	340	300	240					
15							200	280	330	360	370	380	B	I R 400R	U R 390R	370	350	310	245					
16							210	280	330	360	380	A	A	A	I A 400	380	345	315	250					
17							170	I A 260	I A 320	I A 360	I A 375	390	I R 395	400R	I R 390R	375	340H	305H	230					
18							180	260	320	360	370	A	A	A	A	A	A	300	A					
19							170	260	315	360	I A 375	A	A	A	400	375	345	310	240					
20							200	280	325	350	365	A	A	A	A	390	I A 350	305	240					
21							A	275	315	335	365	I A 380	400R	400R	390	370	330	I A 290	I A 240					
22							210	285	335	A	A	A	A	395	380	360	350	320	A					
23							200	285	325	340	370	385	390R	I A 390	I A 380	350	A	A	A					
24							210	285	315	I A 340	360	A	A	A	A	A	A	A	A					
25							190	I A 280	330	350	A	A	390	395	390	I R 380R	350H	315	260					
26							200	280	330	355	I A 375	A	A	A	A	A	350	I A 310	250					
27							190	280	I A 330	350	380	I A 385	405	400	385	U R 380R	340	310	230					
28							A	280	330	335	A	A	R	R	I R 385R	370H	340H	305	245					
29							220	290	320	350	I A 360	A	A	A	400	375	350H	A	A					
30							A	280	330	A	A	A	B	B	A	A	A	A	A					
31							190	270	320	355	375	395	400R	I R 405	I R 400R	I R 380R	360H	300	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							24	27	29	26	23	14	15	18	26	27	27	27	22					
MED							200	280	320	350	370	382	390	400R	390	370	340	305	240					
UQ							205	280	330	355	375	385	398R	400R	395	375	350	310	245					
LQ							185	272	315	340	365	375	382	395	380	365	340	300	230					

MAY 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

MAY 1970 | FOES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J_{29}^{X}	68^{M}	J_{79}^{X}	J_{36}^{X}	J_{40}^{X}	J_{38}^{X}	26	40	J_{57}^{X}	J_{53}^{X}	43	39	G	G	42	42	40	48	40	J_{31}^{X}	J_{38}^{X}	J_{40}^{X}	J_{33}^{X}	J_{71}^{X}
2	J_{40}^{X}	J_{24}^{X}	J_{24}^{X}	J_{27}^{X}	J_{19}^{X}	23	25	34	39	37	51	J_{75}^{X}	110^{X}	50	54	51	J_{68}^{X}	J_{54}^{X}	J_{55}^{X}	J_{32}^{X}	J_{47}^{X}	J_{72}^{X}	47	J_{84}^{X}
3	J_{63}^{X}	J_{62}^{X}	J_{71}^{X}	J_{46}^{X}	J_{86}^{X}	J_{68}^{X}	J_{50}^{X}	J_{38}^{X}	J_{64}^{X}	J_{68}^{X}	J_{77}^{X}	J_{98}^{X}	J_{57}^{X}	J_{68}^{X}	54	J_{64}^{X}	101	104^{X}	107^{M}	J_{46}^{X}	J_{49}^{X}	J_{30}^{X}	J_{33}^{X}	J_{21}^{X}
4	J_{26}^{X}	J_{64}^{X}	42^{M}	J_{42}^{X}	J_{62}^{X}	J_{40}^{X}	J_{48}^{X}	33	44	39	46	46	J_{55}^{X}	46	J_{63}^{X}	J_{88}^{X}	45	105^{M}	185^{M}	110^{X}	J_{99}^{X}	J_{41}^{X}	J_{50}^{X}	J_{29}^{X}
5	J_{25}^{X}	23	J_{31}^{X}	J_{34}^{X}	J_{23}^{X}	J_{26}^{X}	J_{39}^{X}	J_{37}^{X}	39	J_{50}^{X}	42	50	48	57	56	47	J_{50}^{X}	104^{X}	J_{89}^{X}	80^{M}	138^{X}	J_{83}^{X}	J_{25}^{X}	E_{13}^{S}
6	E_{13}^{S}	21	18	J_{23}^{X}	23	23	23	36	J_{61}^{X}	J_{46}^{X}	40	41	41	45	43	J_{84}^{X}	38	J_{46}^{X}	J_{41}^{X}	J_{44}^{X}	J_{84}^{X}	J_{30}^{X}	J_{27}^{X}	23
7	19	E_{13}^{S}	20	E	E_{11}^{B}	E_{11}^{B}	25	35	J_{42}^{X}	J_{48}^{X}	J_{49}^{X}	41	45	J_{45}^{X}	42	J_{53}^{X}	J_{96}^{X}	J_{72}^{X}	J_{79}^{X}	J_{37}^{X}	J_{39}^{X}	J_{25}^{X}	J_{29}^{X}	23
8	20	E_{13}^{S}	25	J_{21}^{X}	E_{13}^{S}	C	23	33	J_{33}^{X}	41	38	42	J_{49}^{X}	J_{55}^{X}	46	52	J_{60}^{X}	J_{67}^{X}	J_{61}^{X}	J_{72}^{X}	J_{84}^{X}	J_{87}^{X}	J_{51}^{X}	J_{27}^{X}
9	25	18	19	22	24	23	25	36	J_{48}^{X}	J_{49}^{X}	J_{51}^{X}	J_{50}^{X}	J_{54}^{X}	50	48	J_{52}^{X}	J_{57}^{X}	J_{87}^{X}	J_{74}^{X}	J_{61}^{X}	J_{99}^{X}	J_{61}^{X}	J_{86}^{X}	J_{38}^{X}
10	24	J_{25}^{X}	J_{32}^{X}	J_{29}^{X}	24	24	25	33	J_{61}^{X}	J_{48}^{X}	38	46	49	J_{64}^{X}	67	39	G	G	30	J_{29}^{X}	J_{34}^{X}	J_{89}^{X}	J_{84}^{X}	J_{22}^{X}
11	J_{21}^{X}	J_{25}^{X}	25	J_{25}^{X}	J_{29}^{X}	J_{25}^{X}	18^{G}	43	J_{52}^{X}	49	48	53	46	42	49	J_{44}^{X}	J_{63}^{X}	45	J_{48}^{X}	24	J_{62}^{X}	J_{42}^{X}	J_{64}^{X}	J_{27}^{X}
12	J_{27}^{X}	J_{23}^{X}	J_{26}^{X}	J_{25}^{X}	22	E_{13}^{S}	25	36	47	50	J_{60}^{X}	103	38^{G}	39^{G}	44	44	J_{34}^{G}	G	29	48	J_{51}^{X}	J_{26}^{X}	J_{27}^{X}	J_{24}^{X}
13	J_{26}^{X}	J_{26}^{X}	J_{23}^{X}	J_{20}^{X}	J_{22}^{X}	C	C	C	C	J_{67}^{X}	J_{83}^{X}	62^{M}	J_{76}^{X}	J_{72}^{X}	J_{75}^{X}	50	50	J_{56}^{X}	29	J_{74}^{X}	151	103^{X}	90	56
14	21	25	J_{20}^{X}	21	E_{14}^{B}	19	J_{35}^{X}	33	43	50	58	J_{74}^{X}	35^{G}	34^{G}	48	50	44	60^{M}	J_{41}^{X}	J_{36}^{X}	J_{73}^{X}	J_{64}^{X}	J_{83}^{X}	J_{33}^{X}
15	J_{66}^{X}	J_{72}^{X}	J_{51}^{X}	J_{39}^{X}	J_{30}^{X}	J_{28}^{X}	24	37	J_{67}^{X}	J_{72}^{X}	J_{71}^{X}	46	74	42	34^{G}	41	G	37	33	J_{38}^{X}	J_{35}^{X}	J_{62}^{X}	J_{83}^{X}	J_{86}^{X}
16	J_{62}^{X}	J_{51}^{X}	J_{34}^{X}	J_{30}^{X}	J_{30}^{X}	22	24	30	40	J_{76}^{X}	J_{65}^{X}	J_{69}^{X}	J_{50}^{X}	J_{49}^{X}	59	D	J_{63}^{X}	J_{69}^{X}	J_{74}^{X}	J_{61}^{X}	J_{32}^{X}	J_{87}^{X}	146	J_{63}^{X}
17	J_{25}^{X}	E_{14}^{S}	19	140^{X}	90	E_{13}^{S}	24	J_{34}^{X}	J_{36}^{X}	J_{68}^{X}	154^{M}	170	J_{62}^{X}	J_{75}^{X}	45	113^{M}	78	J_{83}^{X}	J_{73}^{X}	J_{43}^{X}	58	J_{32}^{X}	J_{28}^{X}	J_{29}^{X}
18	25	22	22	26	J_{21}^{X}	E_{13}^{S}	25	33	45	J_{63}^{X}	J_{61}^{X}	49	42	J_{61}^{X}	J_{65}^{X}	J_{76}^{X}	J_{41}^{X}	J_{33}^{X}	36	J_{65}^{X}	J_{38}^{X}	J_{27}^{X}	J_{25}^{X}	21
19	18	J_{19}^{X}	E_{15}^{S}	21	E	E_{11}^{S}	25	35	43	J_{56}^{X}	J_{51}^{X}	47	J_{51}^{X}	J_{65}^{X}	46	J_{76}^{X}	J_{61}^{X}	46	J_{47}^{X}	J_{39}^{X}	J_{56}^{X}	J_{31}^{X}	21	E_{13}^{S}
20	J_{29}^{X}	24	J_{32}^{X}	J_{24}^{X}	J_{24}^{X}	25	25	35	J_{50}^{X}	J_{88}^{X}	J_{60}^{X}	J_{86}^{X}	J_{44}^{X}	J_{46}^{X}	J_{48}^{X}	49	J_{40}^{X}	J_{46}^{X}	J_{43}^{X}	J_{32}^{X}	J_{25}^{X}	J_{52}^{X}	J_{83}^{X}	J_{61}^{X}
21	J_{74}^{X}	J_{39}^{X}	J_{42}^{X}	J_{24}^{X}	J_{24}^{X}	22	25	J_{73}^{X}	J_{84}^{X}	J_{83}^{X}	42	43	44	44	52	J_{58}^{X}	J_{58}^{X}	J_{71}^{X}	J_{86}^{X}	18	J_{32}^{X}	J_{84}^{X}	J_{33}^{X}	J_{29}^{X}
22	J_{85}^{X}	J_{96}^{X}	J_{72}^{X}	J_{36}^{X}	J_{34}^{X}	J_{28}^{X}	J_{29}^{X}	J_{54}^{X}	J_{64}^{X}	J_{77}^{X}	J_{74}^{X}	J_{53}^{X}	41	36^{G}	37^{G}	42	48	J_{53}^{X}	J_{89}^{X}	J_{84}^{X}	J_{54}^{X}	J_{34}^{X}	J_{29}^{X}	J_{36}^{X}
23	23	21	22	E_{13}^{B}	E_{13}^{B}	22	25	33	37	J_{50}^{X}	47	44	43	42	41	39	J_{47}^{X}	J_{63}^{X}	171^{M}	100^{X}	147^{X}	J_{31}^{X}	J_{62}^{X}	J_{29}^{X}
24	J_{29}^{X}	J_{32}^{X}	23	24	J_{26}^{X}	J_{20}^{X}	J_{27}^{X}	35	39	J_{54}^{X}	J_{46}^{X}	J_{42}^{X}	40	43	J_{50}^{X}	J_{50}^{X}	J_{53}^{X}	J_{62}^{X}	J_{61}^{X}	J_{58}^{X}	J_{27}^{X}	22	J_{22}^{X}	J_{25}^{X}
25	20	21	22	23	23	24	G	35	40	43	47	J_{65}^{X}	55	47	47	46	J_{88}^{X}	J_{79}^{X}	J_{54}^{X}	67	59	J_{63}^{X}	J_{66}^{X}	J_{33}^{X}
26	J_{25}^{X}	27	J_{29}^{X}	J_{24}^{X}	25	13	26	J_{43}^{X}	J_{61}^{X}	43	40	J_{50}^{X}	J_{68}^{X}	62	45	39	35^{G}	J_{40}^{X}	30	23	J_{22}^{X}	J_{37}^{X}	20	J_{29}^{X}
27	23	E_{13}^{S}	J_{24}^{X}	E_{11}^{B}	E	E_{11}^{S}	G	35	39	45	48	118^{M}	45	J_{56}^{X}	48	44	44	39	41	J_{34}^{X}	J_{24}^{X}	20	18	J_{48}^{X}
28	J_{32}^{X}	J_{63}^{X}	J_{35}^{X}	J_{28}^{X}	J_{51}^{X}	J_{52}^{X}	J_{51}^{X}	J_{53}^{X}	J_{63}^{X}	J_{79}^{X}	J_{65}^{X}	J_{47}^{X}	40^{G}	38^{G}	36^{G}	44	48	43	37	J_{37}^{X}	55^{M}	J_{76}^{X}	J_{37}^{X}	J_{37}^{X}
29	J_{30}^{X}	24	J_{36}^{X}	J_{38}^{X}	J_{29}^{X}	J_{28}^{X}	J_{34}^{X}	37	J_{54}^{X}	J_{72}^{X}	J_{94}^{X}	J_{98}^{X}	62^{M}	80	83^{M}	48	55	J_{49}^{X}	74	50	J_{26}^{X}	J_{40}^{X}	J_{21}^{X}	E_{13}^{S}
30	23	J_{37}^{X}	71	115^{X}	J_{52}^{X}	J_{62}^{X}	J_{31}^{X}	J_{70}^{X}	49	84	J_{60}^{X}	129^{X}	J_{80}^{X}	J_{57}^{X}	93^{M}	J_{50}^{X}	J_{40}^{X}	66	98^{M}	J_{34}^{X}	J_{33}^{X}	25	J_{29}^{X}	J_{38}^{X}
31	J_{24}^{X}	20	J_{24}^{X}	J_{21}^{X}	22	J_{20}^{X}	25	31	38	40	48	46	46	J_{64}^{X}	53	46	J_{71}^{X}	95^{M}	J_{69}^{X}	J_{64}^{X}	J_{62}^{X}	J_{43}^{X}	J_{29}^{X}	J_{21}^{X}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J_{25}^{X}	24	J_{25}^{X}	J_{25}^{X}	J_{24}^{X}	23	25	35	J_{46}^{X}	J_{50}^{X}	51	50	48	49	48	50	J_{50}^{X}	J_{60}^{X}	J_{55}^{X}	J_{44}^{X}	J_{51}^{X}	J_{41}^{X}	J_{33}^{X}	J_{29}^{X}
UQ	J_{30}^{X}	J_{38}^{X}	J_{36}^{X}	J_{35}^{X}	J_{30}^{X}	J_{28}^{X}	J_{29}^{X}	38	J_{61}^{X}	J_{70}^{X}	J_{63}^{X}	J_{74}^{X}	J_{56}^{X}	J_{62}^{X}	55	J_{56}^{X}	J_{62}^{X}	J_{76}^{X}	J_{76}^{X}	J_{64}^{X}	J_{68}^{X}	J_{68}^{X}	J_{65}^{X}	J_{38}^{X}
LQ	23	21	22	22	22	19	24	33	39	47	46	46	42	42	44	44	40	46	40	J_{34}^{X}	J_{34}^{X}	J_{30}^{X}	J_{27}^{X}	J_{23}^{X}

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MAY 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | FBES (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

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	23	52	48	16	36	27	26	40	52	41	41	E R 39	G	G	G	42	38	46	34	29	32	28	18	35
2	26	E	E	16	15	E	G	31	G	G	49	66	110	49	53	50	67	48	50	32	46	52	38	61
3	43	43	48	34	A	39	44	33	61	59	77	69	55	53	52	60	95	74	101	44	32	17	27	E
4	E	29	15	24	51	27	40	31	38	39	45	45	49	46	59	86	44	90	A 105		55	40	45	20
5	16	E	24	31	15	22	26	34	38	42	42	49	47	55	55	45	45	75	88	78	75	63	16	E S 15
6	E S 13	E	E	16	15	G	G	35	60	44	40	E R 41	E R 41	45	43	76	37	37	39	42	35	16	21	E
7	E	E S 13	E	E	E B 11	E B 11	22	33	40	39	44	41	42	42	42	50	87	68	50	33	39	16	17	E
8	E	E S 13	14	E	E S 13	C	G	30	30	39	38	42	41	51	45	51	59	66	59	72	56	28	25	16
9	E	E	E	E	12	E	24	33	36	45	49	49	53	48	45	49	44	42	40	51	59	43	55	24
10	E	17	25	19	E	E	23	32	43	40	E R 38	46	48	55	47	38	G	G	27	23	29	53	74	E
11	E	14	E	18	22	19	G 16	43	46	45	44	50	44	E R 42	E R 49	42	59	42	45	19	46	20	35	17
12	23	16	16	E	E	E S 15	G	33	45	49	57	64	E G 38	E G 39	43	42	G 31	G	G	47	40	17	19	17
13	21	E	17	16	17	C	C	C	C	53	49	59	52	61	72	45	44	54	27	66	A	47	64	E
14	E	E	17	13	E B 14	15	19	G	41	48	56	60	G 33	G 33	47	46	42	47	40	35	45	53	62	23
15	28	50	46	23	19	20	G	34	58	63	45	44	62	E R 42	G 34	41	G	36	31	33	26	50	52	52
16	48	35	25	28	14	E	G	G	36	64	51	63	44	45	55	98	54	67	50	36	20	28	49	45
17	18	E S 14	E	15	15	E S 13	G	29	34	55	77	67	58	45	G	111	60	50	57	40	45	15	20	19
18	E	E	E	13	E	E S 13	G	G	36	49	54	47	E R 42	58	62	41	39	27	36	60	32	21	18	E
19	E	E	E S 15	E	E	E S 11	G	33	41	52	49	44	43	58	43	67	57	41	E R 47	33	56	E	E	E S 15
20	E	E	E	16	E	E	G	32	44	72	50	43	42	43	48	48	35	40	40	31	16	25	71	23
21	23	31	29	15	E	E	23	34	53	64	42	43	44	44	50	57	55	60	64	18	20	48	22	16
22	54	55	23	25	28	19	G	50	57	76	61	45	41	G 36	G 35	42	44	50	47	75	46	20	E	20
23	E	E	E	E B 13	E B 13	E	G	32	36	48	46	44	43	E R 42	41	E R 39	47	51	A	89	A	20	34	E
24	24	20	E	14	15	E	G	32	35	47	44	E R 42	E R 40	42	48	41	39	50	58	50	25	E	17	16
25	E	E	E	E	13	15	G	32	39	G	42	45	54	46	G	45	72	51	46	57	47	25	51	20
26	E	E	E	15	E	13	G	36	48	39	E R 40	43	54	52	E R 45	38	G 32	36	30	22	17	19	E	25
27	E	E S 13	E	E B 11	E	E S 11	G	G	33	41	45	60	43	51	47	G	42	37	41	18	E	E	E	19
28	24	46	19	17	48	28	21	49	46	51	40	42	E G 40	E G 38	G 34	43	46	42	33	24	42	63	29	29
29	18	15	25	32	26	E	16	32	49	62	73	50	45	45	63	43	51	37	65	50	15	17	E	E S 15
30	E	16	25	32	19	44	24	48	44	A	60	60	57	51	50	43	38	63	74	18	21	16	19	19
31	E	E	E	E	13	15	G	G	36	37	42	46	46	63	52	45	61	70	28	48	62	42	20	E
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	E E 13	15	16	14	E E 13	G	32	41	48	45	46	44	45	47	45	44	48	46	40	40	25	22	17
UQ	23	24	24	21	19	19	23	34	48	57	52	60	52	52	52	50	58	62	58	54	51	45	47	23
LQ	E	E	E	E E 12	E E 11	E	G	31	36	40	42	43	42	42	42	42	38	38	35	30	26	17	18	E E 15

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MAY 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | F-MIN (0.1 MHZ) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E_{15}^{S}	E_{15}^{S}	E_{11}^{S}	14	E	E	E_{15}^{S}	E_{15}^{S}	16	15	18	18	20	20	19	18	15	15	15	13	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
2	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E	E	11	E_{15}^{S}	E_{15}^{S}	15	17	20	20	19	19	19	18	16	15	15	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
3	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E	12	E_{14}^{S}	E_{15}^{S}	15	17	16	20	21	19	20	19	17	15	15	15	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
4	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E	E	E_{12}^{S}	E_{14}^{S}	E_{15}^{S}	17	16	17	19	19	19	20	18	15	16	15	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}
5	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	12	E	E	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	17	18	20	19	20	18	17	15	15	15	E_{13}^{S}	E_{15}^{S}	E_{13}^{S}	E_{12}^{S}	E_{15}^{S}
6	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	12	12	E_{13}^{S}	E_{14}^{S}	15	17	18	22	21	25	20	16	16	15	15	E_{13}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}
7	E_{15}^{S}	E_{13}^{S}	14	E	11	11	E_{15}^{S}	E_{15}^{S}	16	E_{20}^{C}	18	19	23	19	18	18	17	E_{15}^{S}	16	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
8	E_{15}^{S}	E_{13}^{S}	E_{12}^{S}	E_{15}^{S}	E_{13}^{S}	C	E_{15}^{S}	E_{15}^{S}	16	15	18	20	19	20	19	17	18	15	15	E_{13}^{S}	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}
9	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	E	13	E_{15}^{S}	13	15	15	18	18	17	18	18	16	15	E_{15}^{S}	15	14	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}	E_{15}^{S}
10	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}	14	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	15	15	18	18	19	19	18	18	16	15	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
11	E_{15}^{S}	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	15	13	E_{15}^{S}	E_{14}^{S}	17	17	18	19	20	20	26	18	17	15	16	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}
12	E_{13}^{S}	E_{13}^{S}	E_{15}^{S}	E_{14}^{S}	15	E_{15}^{S}	E_{14}^{S}	15	16	17	18	20	20	22	21	16	17	19	14	14	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}
13	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	15	14	C	C	C	C	16	17	19	21	22	22	17	17	15	15	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
14	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E	14	E_{11}^{S}	E_{14}^{S}	E_{14}^{S}	15	15	19	20	21	17	18	18	16	15	15	14	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
15	E_{14}^{S}	E_{15}^{S}	E	E_{15}^{S}	E_{13}^{S}	E_{14}^{S}	E_{15}^{S}	E_{14}^{S}	19	17	18	25	41	23	19	18	16	16	14	13	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
16	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E	13	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	15	15	18	17	18	20	20	20	15	16	15	13	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
17	E_{15}^{S}	E_{14}^{S}	E_{13}^{S}	E	E	E_{13}^{S}	E_{15}^{S}	15	16	16	16	18	18	23	20	16	15	17	15	E_{13}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}
18	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}	E	13	E_{13}^{S}	E_{15}^{S}	15	15	16	17	19	20	25	18	18	17	15	14	E	E_{15}^{S}	E_{14}^{S}	E_{14}^{S}	E_{15}^{S}
19	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	15	E	E_{11}^{S}	E_{15}^{S}	15	16	17	19	19	20	25	19	18	17	15	15	12	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
20	E_{15}^{S}	E_{15}^{S}	E_{13}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	15	E_{25}^{C}	18	18	22	19	18	17	15	15	13	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}
21	E_{15}^{S}	E_{15}^{S}	14	E	12	14	E_{15}^{S}	E_{15}^{S}	17	18	20	20	22	21	18	17	18	16	15	15	E_{13}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
22	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E	E	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	16	17	22	20	18	19	18	17	15	12	13	E_{13}^{S}	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
23	E_{15}^{S}	11	13	13	13	12	E_{15}^{S}	E_{14}^{S}	15	17	18	20	19	18	19	17	21	15	14	11	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{15}^{S}
24	E_{15}^{S}	E_{12}^{S}	15	E	E	12	E_{15}^{S}	E_{15}^{S}	14	16	18	21	19	20	18	16	18	15	14	11	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
25	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	12	E	13	E_{15}^{S}	E_{15}^{S}	15	17	18	18	23	21	19	22	17	15	14	15	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
26	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	E_{13}^{S}	E	E_{15}^{S}	E_{14}^{S}	15	15	18	19	24	21	26	18	15	15	13	14	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
27	E_{15}^{S}	E_{13}^{S}	E_{11}^{S}	11	E	E_{11}^{S}	E_{15}^{S}	15	15	15	17	18	17	19	20	18	17	15	14	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
28	E_{15}^{S}	E_{15}^{S}	E_{12}^{S}	E	E	E_{12}^{S}	E_{15}^{S}	E_{14}^{S}	14	15	15	18	20	19	24	17	15	15	13	13	E_{15}^{S}	E_{12}^{S}	E_{15}^{S}	E_{13}^{S}
29	E_{14}^{S}	E_{11}^{S}	E_{13}^{S}	E	E	E_{15}^{S}	11	11	15	E_{25}^{C}	16	19	20	20	19	17	17	15	13	15	E_{12}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
30	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E	15	15	E_{15}^{S}	14	15	17	17	18	43	42	27	22	18	15	15	11	E_{11}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
31	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	12	E	E	E_{14}^{S}	14	15	16	18	16	24	25	19	21	15	15	17	15	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E_{15}^{S}	E_{15}^{S}	E_{14}^{S}	E_{11}^{E}	E_{11}^{E}	E_{12}^{E}	E_{15}^{S}	E_{15}^{S}	15	16	18	19	20	20	19	18	16	15	15	12	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
UQ	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	12	13	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	16	17	18	20	22	22	20	18	17	15	15	14	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}
LQ	E_{15}^{S}	E_{14}^{S}	E_{12}^{S}	E	E	E_{11}^{E}	E_{15}^{S}	E_{14}^{S}	15	15	17	18	19	19	18	17	15	15	14	13	E_{14}^{S}	E_{15}^{S}	E_{15}^{S}	E_{15}^{S}

MAY 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

MAY 1970 | M(3000)F2 (0.01) | 135° E Mean Time (G. M. T. + 9h)

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

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	265	265	260	U 255	270	270	295 S	315	290	260	260	275	285	290	280	285	290	300	300	300	295	250 S	255 S	255
2	255 S	245	290 S	335	285	285	320	315	300	280	265	265	275	275	280	280	285	290	300	U 295	265 S	I 260	I 260	I 260
3	275 S	U 285 S	U 305 S	305	A	F	U 295 S	U 305 S	300	270	255 S	U 265 S	275	275	275	275	285	300	295	U 300 S	265	265 S	I 260 S	I 255 S
4	U 255 S	I 275 S	I 270 S	295	270 S	F	I 285 S	290	U 280 S	270	265	265	275	285	285	280	270 S	295	A	S	260 S	U 265 S	I 265 S	U 265 S
5	U 275 S	U 285 S	U 295 S	U 300 S	295	270	275	295 S	U 285 S	285 S	U 270 S	270 S	270	270	275 S	280	285 S	290	275	I 300 S	I 270 S	U 255 S	I 255 S	U 265 S
6	U 290 S	U 305 S	I 300 S	U 295 S	U 270 S	U 305 S	335 S	305 S	U 305 S	275	265	U 270 S	275	280	280	285	295 S	U 295 S	295 S	300	270	I 260 S	275 S	I 270 S
7	I 275 S	U 280 S	285	280	265	U 265 S	295	U 295 S	280	U 300 S	255	265 S	280	U 280 S	290	295	295	290 S	300 S	U 310 S	275	260	260	270
8	U 280 S	U 285 S	285	280	290	I 300 C	310	305	320	280	270	270	270	275	285	U 285 S	295	300	295	U 295 S	U 290 S	270 S	U 275 S	I 280 S
9	I 275 S	U 305 S	300	300	280 S	280	U 310 S	I 320 S	280	295	260	U 265 S	280	295	270	280 S	290 S	300 S	295	U 290 S	U 285 S	275 S	270	U 275 S
10	I 285 S	I 290 S	U 295 S	U 300 S	285 S	I 300 S	I 300 S	U 330 S	U 290 S	260	260	U 270 S	280	275	275	280	280 S	285	U 295 S	295 S	290	U 265 S	S	S
11	I 285 S	I 300 S	I 305 S	I 300 S	300	295	310	305	285	265	260	275 S	275	275	270	280	285	285	280 S	I 285 S	285 S	I 270 S	U 260 S	I 260 S
12	265 S	275 S	U 285 S	275	270	285	305 S	315	315	255	255	I 260 S	270	270	275	275 S	275	275 S	280 S	280 S	275 S	I 275 S	I 265 S	I 260 S
13	U 260 S	I 260 S	I 265 S	260	250	C	C	C	C	290	260	280	280	275	275	275	275	285	280 S	300 S	I A 275 S	245 S	S	S
14	F	I 265 S	I 270 S	280 S	285 S	290	300 S	320 S	315	285	255	255	270	265	270	270 S	265 S	275 S	U 270 S	U 285 S	265 S	U 265 S	I 255 S	I 260 S
15	I 255 S	I 280 S	U 290 S	I 300 S	U 305 S	285	305	295	285	280	265	260	270	265	270	285	285	U 285 S	U 295 S	285	265 S	U 260 S	250 S	265 S
16	260 S	250 S	280 S	I 285 S	305 S	295 S	310 S	310 S	295	285	255	265	270 S	275	275	I 280 S	275	270 S	I 280 S	285 S	U 275 S	265 S	S	S
17	S	270 S	S	S	S	280 S	310 S	I 295 S	285	290	265	255	265	275	275	265	260 S	270 S	285 S	I 280 S	275	I 270 S	I 250 S	I 260 S
18	270 S	U 270 S	I 270 S	I 270 S	F	F	275 S	305	290 S	290	275	250	265	265 S	U 265 S	U 275 S	275 S	280 S	U 290 S	U 300 S	270 S	260 S	U 255 S	U 270 S
19	I 270 S	270 S	U 285 S	U 265 S	265	275 S	290	U 295 S	310 S	290	250	255	260	I 270 B	270	270	280	U 290 S	285 S	290 S	300 S	260 S	U 255 S	265
20	275	270 S	S	280 S	255	240 S	250	280	285 S	280 S	U 275 S	275	275	265	265	270	275	275	295 S	310	U 275 S	255	U 260 B	I 260 S
21	I 270 S	285	295 S	280	U 270 S	280	300	300	I 295 S	285	275	260	270	275	280	275	285	295	295	280 S	260	255	U 260 S	I 260 S
22	275 S	F	U 270 S	U 290 S	270	260 C	290	285	U 300 S	305	275	250	270	265	U 275 S	285 S	295 S	290	U 295 S	295	255	I 260 S	265	260
23	I 270 S	I 280 S	U 270 S	280	275	280	335	325	290	290	265	270	270	275	275	280 S	280 S	285	I 280 A	290	I 275 B	I 260 S	265	U 265 S
24	280	U 290 S	285	270	295 S	290	310	325	315	280	250	260	265	U 265 S	275	275 S	275 S	U 290 S	U 295 S	305 S	U 290 S	265	U 265 S	I 260 S
25	U 265 S	265 S	I 280 S	285 S	270	275	320	290	320 S	280	255	265 S	265	260	265	275	285	275 S	270	275 S	I 270 S	I 260 S	255 S	255 S
26	I 265 S	270 S	275	270 S	260 S	270	285	U 305 S	U 295 S	285	255	255	265	275	270	270 S	270	280	285	285 S	285	260 S	250 S	I 260 S
27	S	S	I 290 S	U 285 S	U 285 S	290	305 S	300	290	285	275	I 260 S	265	275	270	265	265	280	265 S	270 S	270 S	U 255 S	260 S	U 255 S
28	I 255 S	265	I 275 S	275 S	I 260 S	270 S	275 S	U 280 S	285	290	240	255	U 285 S	265	270	280	285 S	285	275 S	280 S	255	245 S	S	I 250 S
29	U 255 S	I 255 S	S	240	250 S	240	U 275 S	F	F	F 245	265 B	260 C	265 C	280 C	290 C	290 C	285 C	270 C	275 S	270 C	270 C	255 S	245 C	255 S
30	260 C	F	285 C	250 C	265 C	F	305 C	305 C	250 C	I A 240	255 C	265	270	275 C	275 C	285	275	285 C	280 C	U 285 S	U 245 S	240 C	245 C	255 C
31	270 C	265 C	270 C	270 C	255 C	270	290	300 C	265 C	275 C	265 C	265 C	275 C	265 C	U 270 C	270 C	285 C	U 265 C	275	290	I 275 S	255 S	255 S	275 S
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	28	30	28	26	30	29	29	31	31	31	31	31	31	31	31	31	30	30	31	31	27	28
MED	U 270 S	272 S	285 S	280 S	270	280	300	305	290	280	260	265	270	275	275	280	285	285	285 S	290 S	275 S	260 S	260 S	U 260 S
UQ	U 275 S	U 285 S	292 S	295 S	285 S	290	310 S	315	300 S	290	265	270	275	275	278	282	285	290	295 S	300 S	280 S	265 S	265 S	U 265 S
LQ	260 S	265 S	270 S	270	265	270	290	295	285	272	255	260	268	265	270	275	275	278	280 S	285 S	265 S	255 S	255 S	U 258 S

MAY 1970 | M(3000)F2 (0.01)

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IONOSPHERIC DATA

MAY 1970 | M(3000)F1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12' N Long. 130° 37' 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									A	L	L	L 345	L 350	L 365	L	L	L	L						
2									L	L	L	A	A	L	A	L	A	A						
3									A	A	A	A	L	L 325	L	A	A	A						
4									L	L	U L 355	L	U L 330	L 350	A	A	L	A						
5								L	L	U L 355	L	L	U L 335	L	L	L	L	A						
6								L	A	L	U L 330	L 335	L	U L 320	U L 345	A	L	L						
7								L	L	L	U L 335	350	365	U L 345	L 345	L	A	A						
8									L	L	U L 355	L 370	L 335	340	L 335	A	A	A						
9									L	L	L 365	U L 325	L	L	L	A	L 370	L						
10									A	L	U L 330	L	L	L	335	L 330	L	L	L					
11									L	L	L	L 330	350	340	L	L 325	A	L						
12								L	L	L	L	I A 350	L	L 325	L	L	L	L 400	L					
13								C	C	A	L	A	L	A	A	L	L	A						
14								L	L	A	L	A	L	L	L 330	L	L	L	A					
15									A	A	L	L	L	U L 320	L 335	L	L	L	L					
16									L	A	L	A	U L 350	U L 355	L 325	A	A	A	A					
17								L	L	A	A	A	A	L 335	L	A	A	L	A					
18								L	L	L	L	L	L 370	L	A	L	L 325	L	L					
19								L	L	A	L	L	L 315	L	L 350	A	A	L	A					
20								L	L	A	U L 340	U L 335	375	330	365	U L 330	L 355	L	L					
21									A	A	L	L 340	345	U L 315	A	A	A	A	A					
22								A	A	A	A	345	U L 330	340	H 340	L 330	L 335	A	A					
23								L	L	L	U L 330	L 335	L 375	L	L 355	U L 325	L	A	A					
24								L	L	L	U L 315	L 340	350	H 335	L 325	L 325	U L 345	A	A					
25								L	L	U L 335	L	L 390	A	H 340	L 315	L 310	A	A	A					
26								L	L	L	L	L 305	L 330	330	L 325	L 335	L 325	L 330	L					
27									L	L	L	A	375	L 315	L	L 320	U L 305	L 325	L					
28								A	L	A	L 325	L	345	L	L 335	L 340	L	L	L					
29								L	L 325	A	A	R 340	C 350	C 335	A	H 325	A	L	A					
30								A	C 335	A	I A 330	A	A	R	A	L 330	L	A	A					
31								L	L	C 355	U C 315	C 325	C 345	A	A	C 325	A	A	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	3	12	16	19	19	15	13	7	3						
MED									330	U L 355	U L 330	L 340	L 350	L 335	L 335	L 325	L 335	L 330						
UQ										355	U L 348	L 348	358	L 340	L 345	L 330	L 350	L 365						
LQ										345	U L 328	L 332	L 335	L 325	L 328	L 325	L 325	L 328						

MAY 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

MAY 1970 | 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									260	340	325	310	300	290	310	305	295	275						
2									255	275	325	330	E A 365	305	300	295	295	275						
3									250	290	365	340	310	330	305	325	305	280						
4									275	260	290	310	330	315	300	325	340	310						
5								280	290	285	290	330	340	340	335	310	305	300						
6								280	270	300	320	330	340	325	315	320	290	285						
7								270	285	240	310	355	335	320	305	290	300	290						
8									255	265	320	300	340	340	315	300	290	280						
9									355	275	340	370	330	310	320	325	300	280						
10									230	300	325	340	325	340	330	320	290	285	270					
11									300	320	315	330	320	325	330	320	300	280						
12								245	250	310	350	350	330	345	330	300	290	260	275					
13								C	C	255	340	330	350	320	325	310	310	290						
14								250	255	255	340	350	340	320	330	325	315	290	280					
15									290	300	315	340	340	340	340	315	300	275	265					
16									280	E A 300	330	365	340	320	330	350	300	320	290					
17								275	250	270	E A 360	340	350	340	325	A	340	340	270					
18								265	255	260	320	L 355	340	350	340	330	325	300	280					
19								250	250	270	340	390	360	330	340	335	325	280	280					
20								300	255	315	340	340	340	355	340	335	330	300	280					
21									270	300	330	370	355	330	335	340	315	290	285					
22								300	280	E A 300	E A 320	400	340	355	340	320	305	290	290					
23								230	230	300	350	355	335	330	330	330	305	270	A					
24								250	235	270	370	340	360	355	340	340	320	300	290					
25								240	265	310	360	330	330	350	350	345	300	290	290					
26								255	285	295	300	380	345	345	325	330	325	305	290					
27									255	290	320	350	325	340	325	375	340	320	300					
28								255	280	275	425	355	340	330	345	305	295	295	295					
29								410	360	375	E C 365	C 410	C 400	C 345	C 325	C 340	C 340	C 325	C 330					
30								C 305	C 410	A	A	430	375	C 345	C 325	305	315	C 295	C 300					
31								C 245	C 240	C 330	C 350	C 380	C 325	C 345	C 335	C 340	C 310	E A 360	300					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								18	30	30	30	31	31	31	31	30	31	31	19					
MED								260	262	290	328	350	340	340	330	325	305	290	290					
UQ								280	285	300	345	368	345	345	338	335	322	300	292					
LQ								250	250	270	320	330	330	322	322	310	300	280	280					

MAY 1970 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

MAY 1970 | 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	E A 350	E A 370	290	285	265	240	245	I A 245	220 H	205 H	210	235	220	230	240	250 H	I A 260	260	250	230	E A 300	330	340
2	325	325	255	210	220	250	230	225	225 H	205 H	E A 240	A	A	A	A	A	A	A	255	225	E A 290	E A 340	340	E A 360
3	300	275	250	245	A	E A 340	250	225 H	A	A	A	A	A	A	A	A	A	A	E A 300	245	265	280	300	295
4	300	275	250	240	E A 300	300	250	240	240	220	E A 240	230	E A 250	240	A	A	255	A	A	E A 350	E A 350	340	350	320
5	290	260	260	255	240	240	250	225	220	220	225	E A 250	E A 250	A	A	A	A	A	E A 305	E A 280	E A 350	E A 350	320	305
6	260	235	260	240	265	245	230	220	A	230	220	215	220 H	230	235	I A 245	240	260	270	255	270	290	310	295
7	295	265	260	260	275	290	235	230	225	220	215	205	205	220	240	A	A	A	270	250	300	295	320	305
8	290	270	255	245	255	I C 255	250	225	240	215	200	200	180 H	E A 280	250	A	A	A	280	E A 300	E A 300	290	300	280
9	280	275	250	240	250	285	255	240	230	E A 255	245	E A 260	A	E A 260	235	A	E A 255	E A 260	255	250	275	270	300	270
10	265	250	255	225	230	240	240	230	I A 220	210 H	205	235	E A 250	A	E A 250	225	235	225	255	250	250	E A 300	E A 330	260
11	260	250	250	220	260	250	225	250	E A 240	240 H	230 H	E A 255	230	215 H	A	240 H	I A 250	E A 265	265	260	255	250	300	290
12	300	285	255	255	250	260	240	240	245	240	A	A	200 H	250	220 H	240 H	210 H	230	250	E A 290	E A 290	255	280	310
13	300	290	295	280	300	C	C	C	C	A	E A 245	A	A	A	A	E A 250	E A 260	A	245	E A 280	I A 230	A	A	300
14	310	295	265	250	245	240	245	240	245	A	A	I A 210	210 H	275	255	280 H	255	I A 250	I A 250	250	270	280	E A 300	285
15	300	300	280	245	230	230	225	235	A	A	E A 240	225 H	A	210	220 H	230	230 H	245	255	245	270	E A 340	E A 350	E A 325
16	E A 325	310	290	290	230	255	230	225	210 H	A	265	A	220	225	A	A	A	A	A	275	260	295	E A 350	320
17	300	280	280	265	275	255	240	235	230	A	A	A	A	220 H	230 H	A	A	A	A	250	280	280	290	300
18	290	275	270	265	245	320	255 H	245	230	A	A	250 H	195 H	A	A	230	240	230 H	I A 250	270	270	300	300	290
19	285	290	255	250	250	260	240	235	235	I A 240	245	210 H	210 H	A	230	A	A	E A 260	I A 265	250	295	260	300	290
20	265	275	255	230	245	320	250	250	245	A	E A 255	205	220	210	E A 240	I A 230	230	E A 270	E A 280	245	250	310	A	310
21	320	290	260	265	250	250	240	E A 245	A	A	205 H	215	220	230	A	A	A	A	A	240	290	E A 360	325	310
22	E A 340	E A 340	290	275	300	325	250	A	A	A	A	220	200	215	200 H	235	E A 260	A	A	A	E A 325	320	320	310
23	300	290	260	260	280	280	245	220	210	E A 255	230	200	200	230 H	215	215 H	E A 270	A	A	E A 330	A	300	320	310
24	300	270	250	260	255	255	240	250	210	E A 250	200	200 H	210	210 H	250	230	240	A	A	270	250	255	310	320
25	310	300	280	270	270	280	235	230	225	215 H	215 H	200	I A 220	220 H	275	250	A	A	A	E A 300	E A 290	295	E A 350	325
26	300	290	250	275	270	270	250	240	E A 260	220	220 H	200 H	A	A	E A 250	210 H	230	230	250	255	250	260	300	310
27	295	270	250	255	240	245	245	240	210 H	215	215 H	I A 225	210	I A 210	250 H	230 H	240	230 H	I A 250	275	250	280	290	290
28	315	E A 320	270	275	315	290	240	A	250	A	210	200 H	205	210 H	215	240	A	E A 270	255	265	E A 310	E A 390	310	345
29	330	315	290	E A 300	315	340	260 H	230	A	A	A	E A 275	230 C	240 C	I A 245	245 C	I A 245	240 C	I A 250	300 C	260 C	270 C	300 C	325 C
30	300 C	300 C	280 C	E A 300	305 H	I A 285	260 C	A	E A 260	A	A	A	A	E A 250	A	240	210 H	A	A	245	275 C	345 C	350 C	300 C
31	295 C	285 C	275	280	300 C	280	240	225	225 C	200 H	240 C	225 C	230 C	I A 230	A	E A 250	A	A	245	270	E A 310	E A 340	320	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	30	30	27	24	18	23	24	23	23	20	20	19	15	22	30	30	30	29	31
MED	300	280	260	258	256	261	240	235	228	219	220	212	215	222	234	236	238	240	254	254	261	285	305	305
UQ	302	295	279	272	282	288	250	240	242	230	234	227	225	235	250	242	248 A	E A 260	265	270	E A 295	E A 340	325	315
LQ	290	272	255	245	245	250	240	225	222	215	212	202	205	215	225	230	232	230	250	250	255	280	300	290

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MAY 1970 | H'F (KM)

IONOSPHERIC DATA

MAY 1970 | H'ES (KM) | 135° E Mean Time (G. M. T. + 9h)

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	100	100	100	100	150	125	115	125	105	120	G	G	170	170	150	125	115	115	110	105	105	100
2	100	100	100	95	95	100	130	135	130	125	110	105	100	145	130	130	115	115	110	110	105	105	105	105
3	100	100	100	100	100	100	105	125	115	115	110	105	110	110	120	125	110	110	110	110	105	100	100	95
4	120	100	100	100	100	100	105	145	125	145	140	135	120	150	125	115	125	115	110	105	105	100	100	100
5	100	100	100	100	100	105	105	105	120	115	115	115	120	120	115	120	145	120	115	110	115	110	105	S
6	S	100	100	100	100	100	100	125	115	115	120	115	120	150	150	120	150	120	110	110	105	105	105	100
7	105	S	105	E	B	B	125	120	110	110	110	105	125	105	160	140	120	120	115	110	110	105	110	95
8	100	S	100	100	S	C	130	115	105	115	105	105	105	105	150	130	125	120	115	115	105	105	105	105
9	105	100	100	100	100	100	140	120	105	115	115	115	115	150	140	130	120	110	110	110	105	105	100	100
10	100	100	95	95	100	105	130	125	115	120	120	115	110	105	110	120	G	G	115	110	105	100	100	100
11	100	100	100	95	95	100	105	125	125	125	120	110	110	125	110	120	120	120	110	105	105	100	100	100
12	95	95	95	95	95	S	150	125	125	120	110	105	105	105	145	150	100	G	145	115	110	105	100	100
13	100	95	100	100	105	C	C	C	C	115	110	110	110	125	125	130	125	115	125	110	110	110	105	100
14	100	100	100	100	B	105	105	130	125	115	110	115	100	100	170	145	135	115	110	110	110	100	100	100
15	95	95	95	95	95	95	150	135	120	115	110	110	105	140	100	175	G	125	120	110	105	105	100	100
16	100	100	100	95	95	100	175	155	140	110	110	110	100	100	135	120	120	115	110	110	105	105	105	100
17	100	S	100	100	100	S	145	100	100	110	110	110	120	120	175	125	120	115	115	110	110	110	100	100
18	95	95	95	95	95	S	140	140	125	115	110	105	110	105	105	105	100	100	120	110	100	95	95	100
19	100	95	S	100	E	S	150	125	125	110	110	110	110	105	130	115	115	115	105	100	100	95	95	S
20	110	100	110	95	95	95	125	125	115	110	110	105	105	105	120	120	105	120	115	105	100	105	105	105
21	100	100	100	95	95	100	120	115	110	110	120	105	150	145	120	115	110	105	100	105	100	100	100	100
22	105	100	100	100	95	F 95	95	120	110	105	105	105	105	105	105	150	130	125	100	95	95	110	105	100
23	105	100	110	B	B	100	125	120	115	110	115	115	120	115	110	110	105	105	120	110	115	105	105	120
24	105	100	100	100	100	100	95	115	115	110	110	100	100	100	100	100	120	120	115	110	105	95	95	95
25	100	100	100	100	105	110	G	150	145	120	105	105	110	110	170	150	125	120	120	110	110	110	105	100
26	100	100	95	95	95	130	125	115	110	115	120	100	100	100	100	100	100	100	145	120	100	110	100	100
27	100	S	100	B	E	S	G	125	110	125	115	105	125	110	115	150	140	130	110	110	110	110	110	100
28	100	105	105	95	100	105	105	125	115	110	110	100	100	100	100	125	125	120	115	105	100	100	100	100
29	100	95	100	100	95	95	95	125	115	110	105	105	105	100	115	125	120	115	105	105	100	100	100	S
30	100	100	105	110	105	105	110	130	135	125	100	125	100	100	100	100	100	100	100	100	100	95	105	100
31	100	95	95	100	100	100	150	130	125	125	125	120	125	130	130	130	115	110	105	105	105	100	105	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	27	30	28	25	23	28	30	30	31	31	31	30	30	31	31	29	29	31	31	31	31	31	28
MED	100	100	100	100	100	100	125	125	115	115	110	110	110	108	120	125	120	115	115	110	105	105	100	100
UQ	105	100	100	100	100	105	142	130	125	120	115	115	120	125	142	135	125	120	115	110	110	105	105	100
LQ	100	98	100	95	95	100	105	120	110	110	110	105	105	105	110	118	110	110	110	105	100	100	100	100

MAY 1970 | H'ES (KM)

IONOSPHERIC DATA

MAY 1970 | TYPES OF ES | 135° E Mean Time (G. M. T. + 9h)

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

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	F8	F6	F4	F5	F7	F6	H3	H3	C5	H12	L1	C1			H1	H1	H1	H3	C4	E5	F6	E5	E5	F6
2	F6	F2	F2	F3	F1	F1	H3	H3	H1	H1	C2	C4	L3	H11	H1	H2	C4	C5	C5	F7	FF71	FF61	FF51	F6
3	F6	F6	F5	FF71	F5	F6	L6	H24	C6	C3	C4	L4	L2	C2	C1	H31	C6	C5	C4	F7	F6	E3	F4	E1
4	FF11	F7	F6	F4	F5	F7	L4	H33	H23	H1	H1	H1	C1	H1	H3	C3	C2	C7	C3	F7	FF41	F7	F4	E3
5	F2	F1	F4	F5	F3	F6	L6	L5	C2	C2	C1	C1	C1	C2	C2	C11	H11	C61	C6	FF63	FF61	F4	E3	
6		F1	F1	F1	F1	F1	L1	H5	C3	C1	C1	C1	C1	HC1	H1	C3	H1	C3	C3	F6	F6	F4	F5	F1
7	F1		F1				H31	C31	C2	C2	C2	L1	H11	L1	H1	H2	C4	C6	C4	F6	FF62	FF52	FF21	F2
8	F1		F1	F1			H11	C2	L1	C1	L1	L1	L1	L2	H11	H2	H3	C5	C3	F7	E3	F4	E5	F4
9	F2	F1	F1	F1	FF11	F1	H31	C3	L2	C22	C12	C21	C21	H1	H1	H1	C2	C3	L3	F4	F5	F6	F4	F5
10	F2	F3	F3	F2	F1	F1	H21	H2	C3	C1	C1	C1	C1	L3	C2	C1			C21	FF41	F5	E3	F5	E3
11	F1	F1	F1	F1	F2	F3	L1	H4	H1	H1	C2	C21	C1	H1	C1	C1	C3	C2	C4	F5	F7	F7	F4	E3
12	F5	F4	F2	F2	F1		H3	H3	H3	C4	C3	C3	L1	L1	H11	H12	L2		H2	F5	F5	F4	F4	E2
13	F4	F2	F2	F1	F2					C3	C2	C3	C2	H3	H3	H1	H2	C6	H3	F7	F4	FF32	F6	E3
14	F3	F2	F7	F1		F1	L42	H23	H33	C3	C2	C11	L1	L1	H11	H1	H21	C4	C3	F6	FF16	F5	F4	F5
15	F5	F3	F5	F3	F3	F4	H2	H3	C3	C3	C2	C1	C2	H11	L1	H1		H2	C4	F4	F6	F5	F5	F5
16	F5	F7	F5	F4	F2	F1	H11	H13	H22	C4	C3	C2	L1	L1	H22L	C31	C3	C6	C4	F6	F7	FF41	F5	F6
17	F8		F2	F2	F2		H2	L2	L21	C4	C4	C3	C3	C2	H1	H3	C4	C2	C4	F7	FF71	FF23	F6	F4
18	F2	F2	F2	F2	F1		H2	H2	H2	C2	C3	C2	C1	L2	L2	L2	L3	L2	C33	FF77	E5	F7	E5	E1
19	F1	F1		F1			H2	H3	H2	C2	C1	C1	C1	C3	H1	C3	C3	C3	C3	F8	F4	F2	F1	
20	FF11	F2	FF12	F2	F2	F1	H3	H3	C2	C3	C2	L2	L1	L1	C11	C1	L2	C22	C4	F6	F3	FF34	FF42	F4
21	F3	F3	F3	F2	F1	F1	C4	C3	C3	C4	C1	L1	H1	H1	C1	C3	C3	L6	L3	FF11	F3	F5	F3	E2
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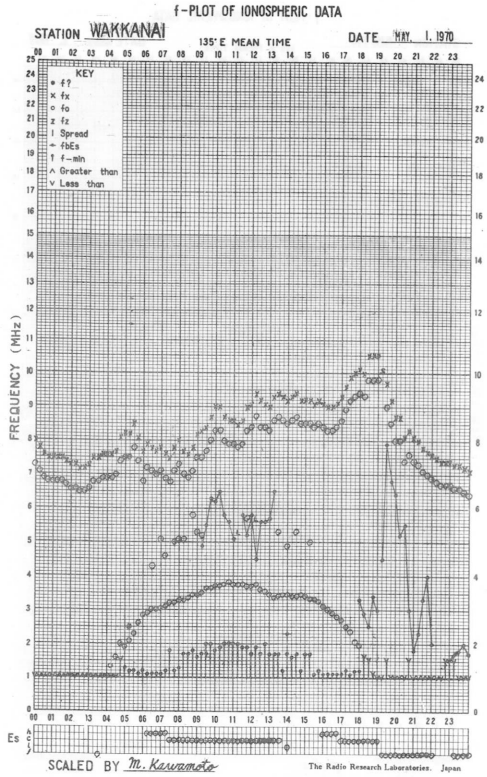
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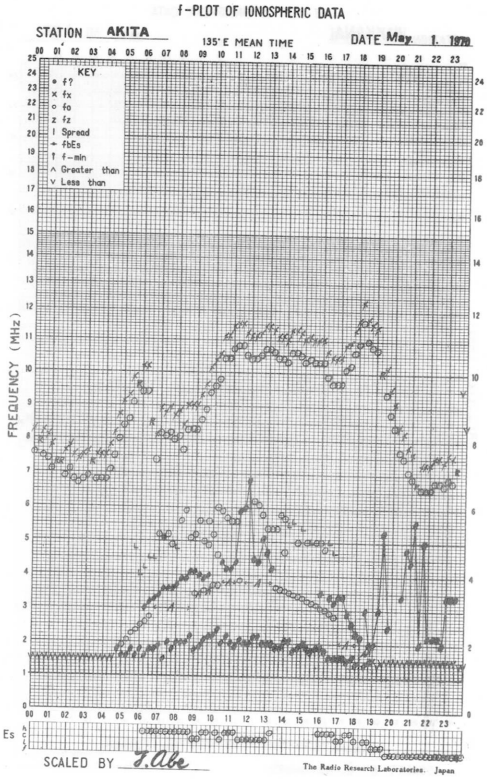
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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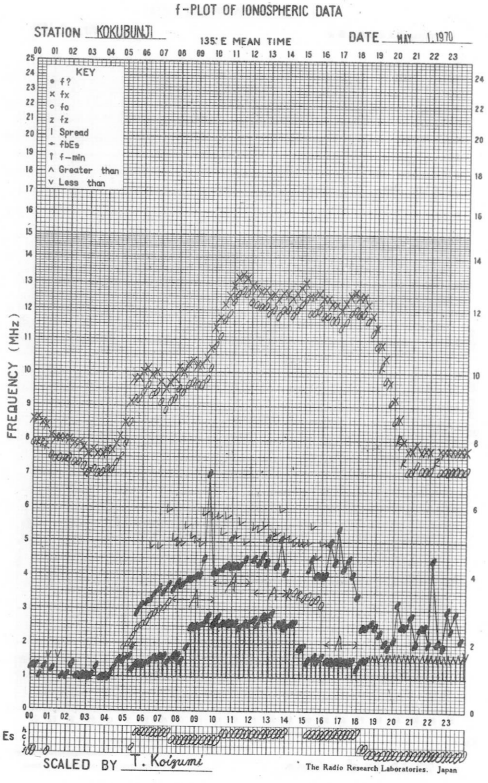
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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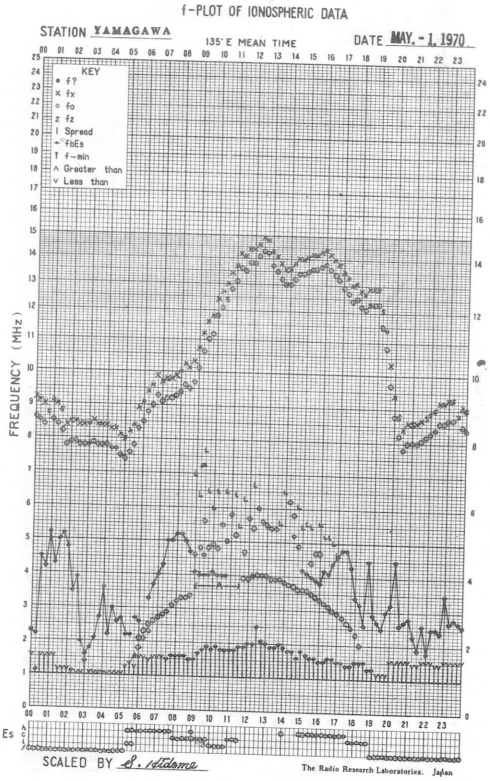
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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The Radio Research Laboratories. Japan

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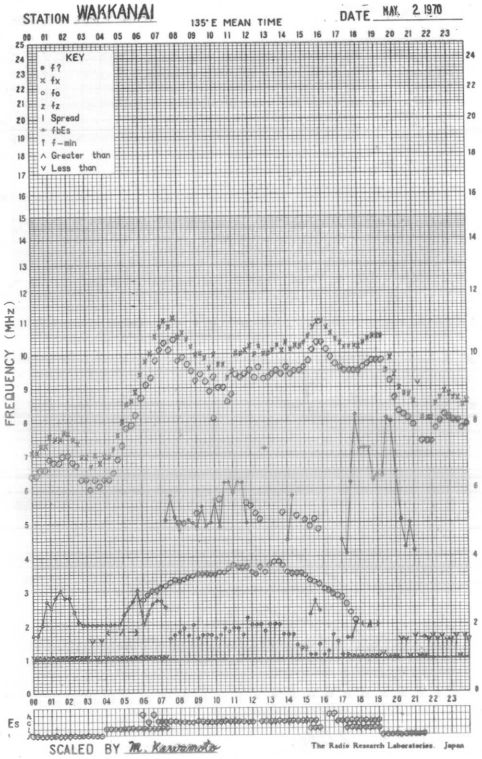

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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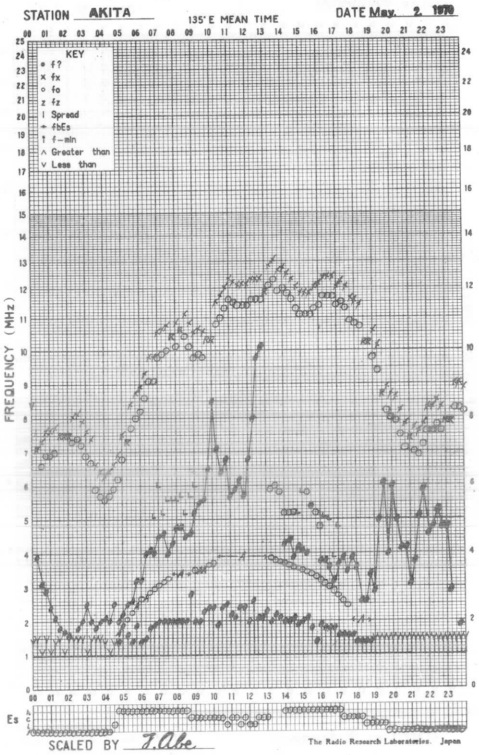

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The Radio Research Laboratories. Japan

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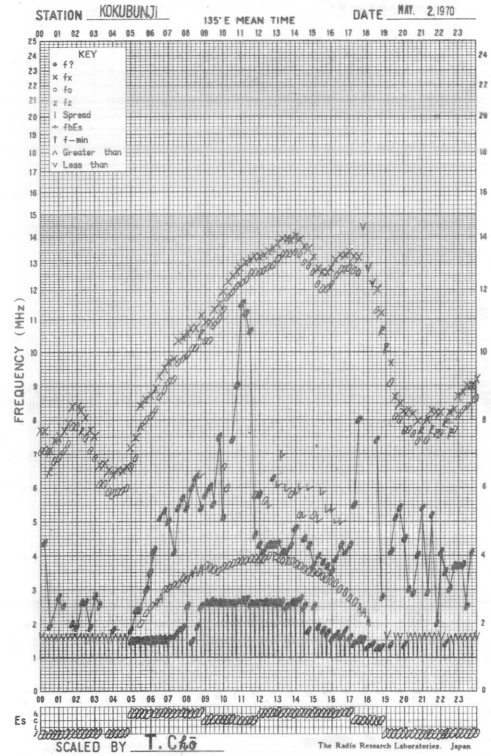

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The Radio Research Laboratories. Japan

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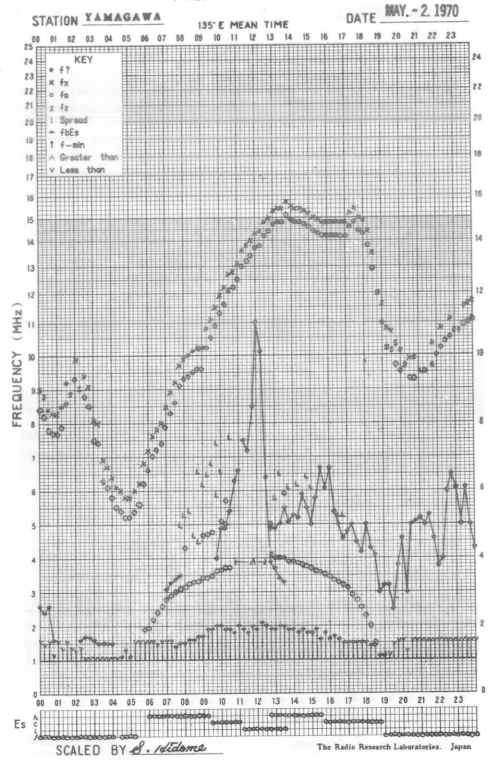

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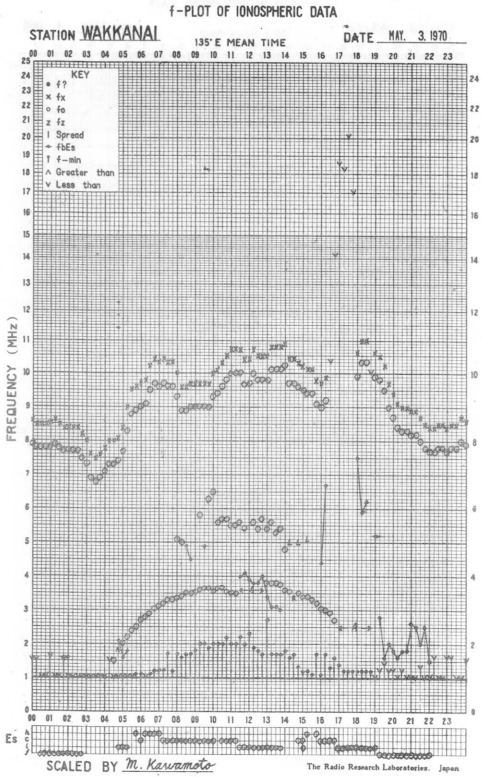
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FREQUENCY (MHz)
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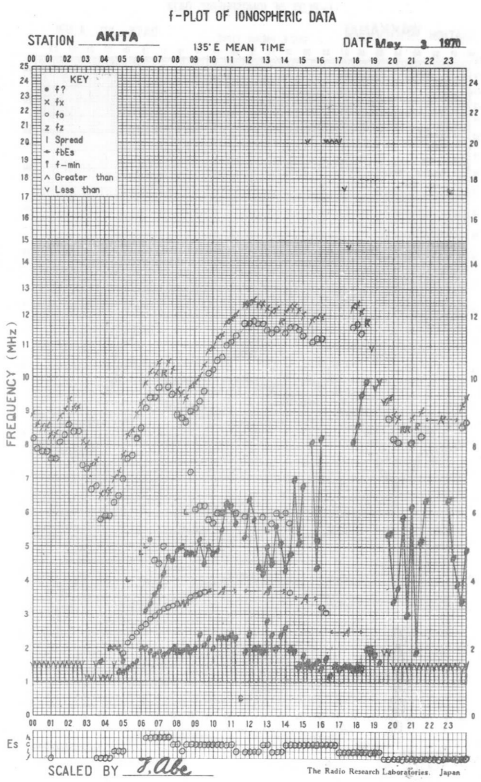
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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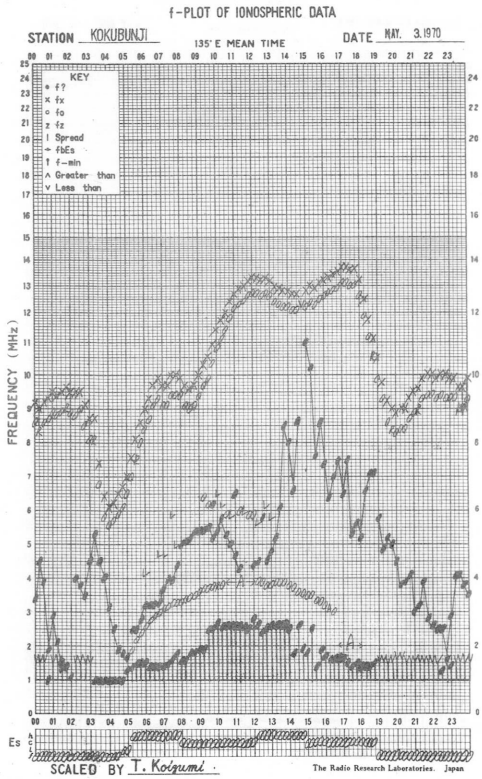
The Radio Research Laboratories. Japan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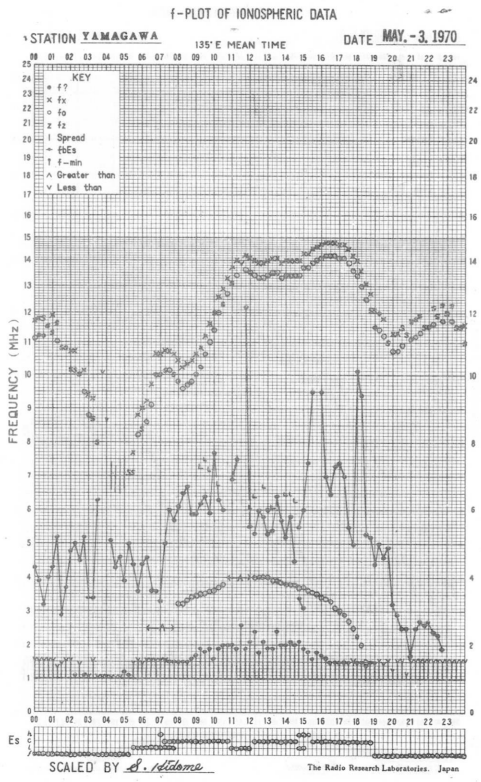
The Radio Research Laboratories. Japan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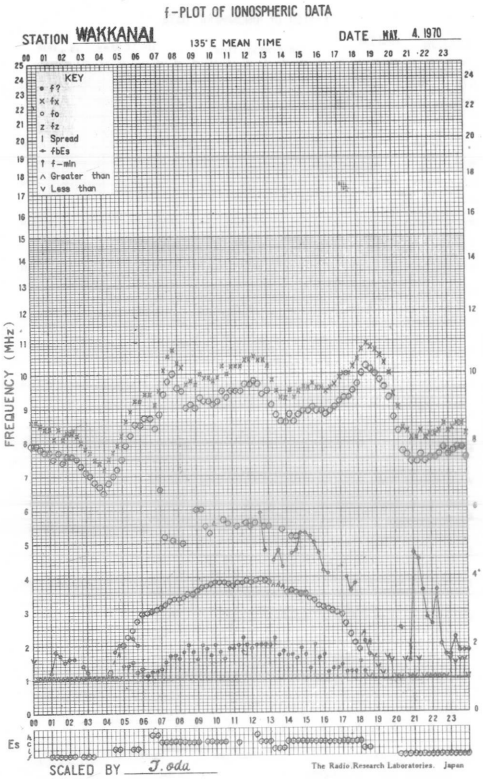
The Radio Research Laboratories. Japan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KEY
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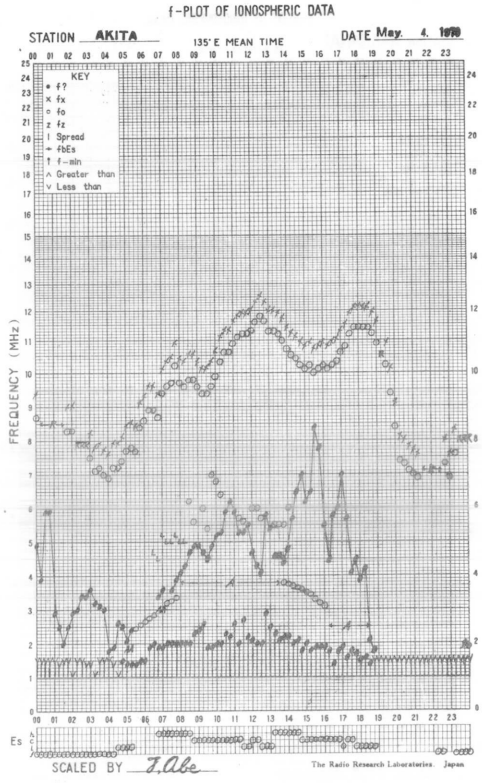
The Radio Research Laboratories. Japan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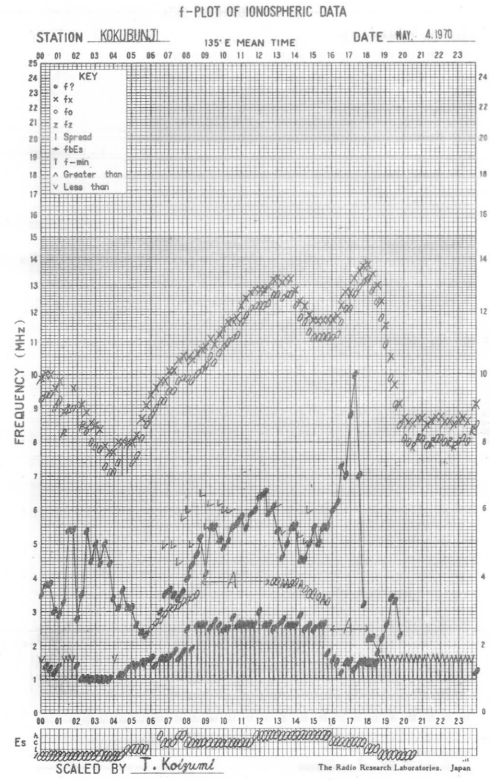
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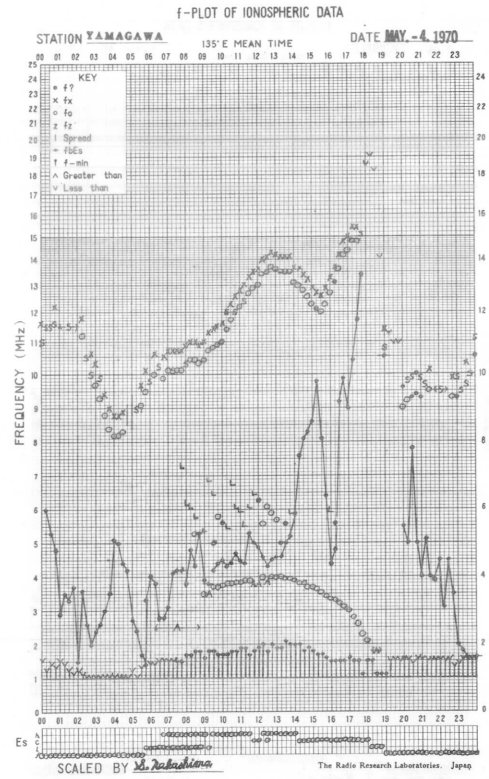
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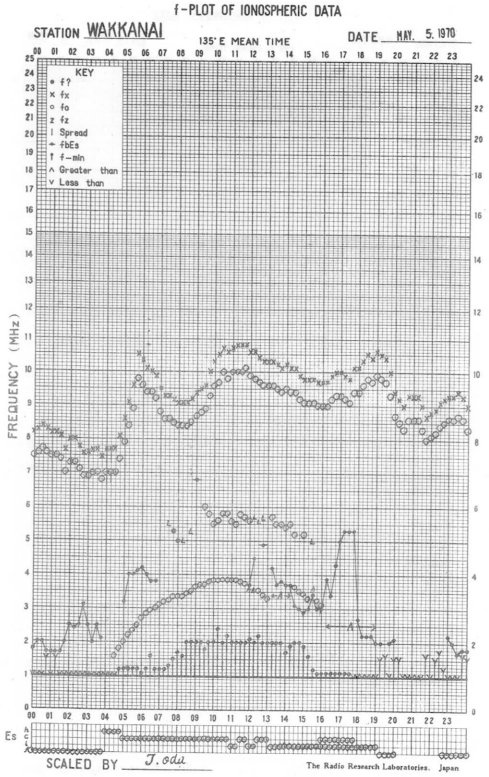
The Radio Research Laboratories. Japan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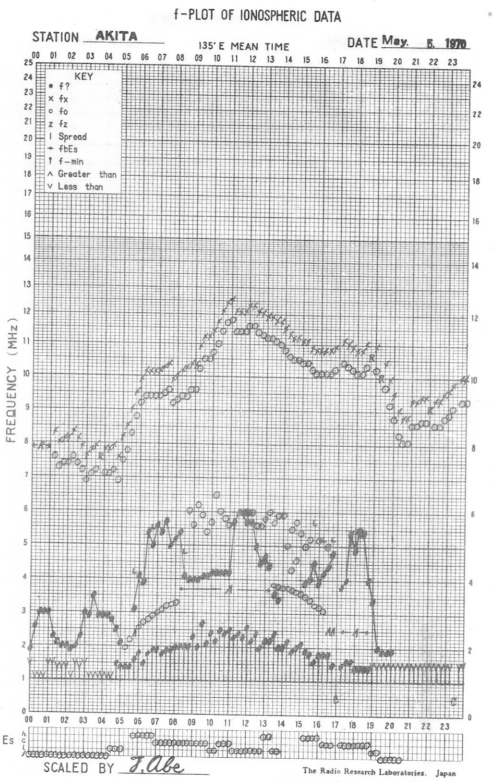
The Radio Research Laboratories. Japan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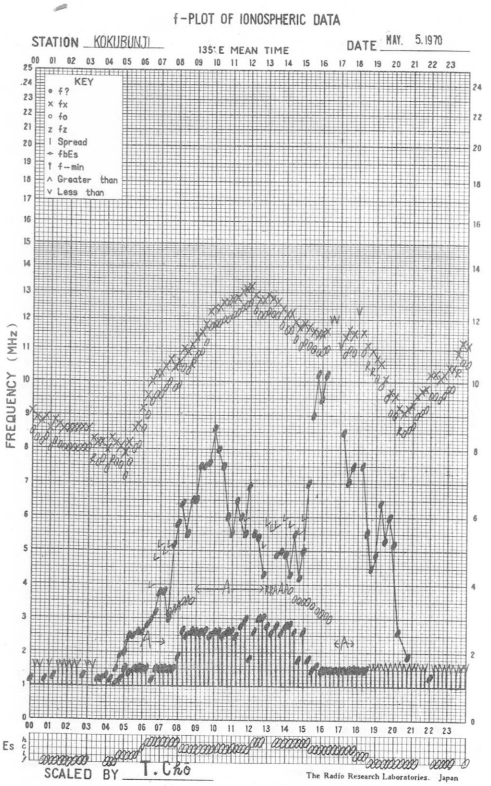
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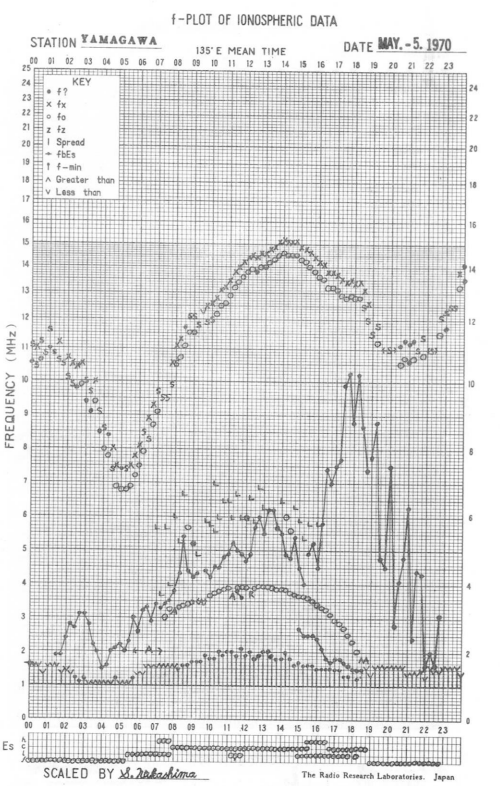
The Radio Research Laboratories. Japan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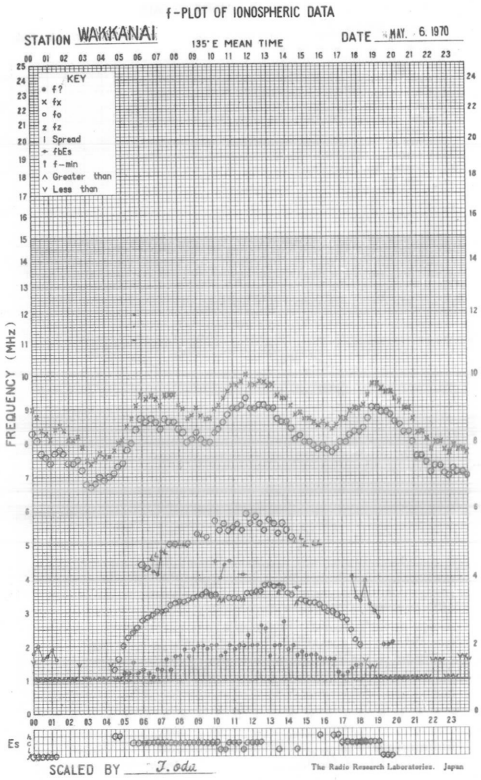
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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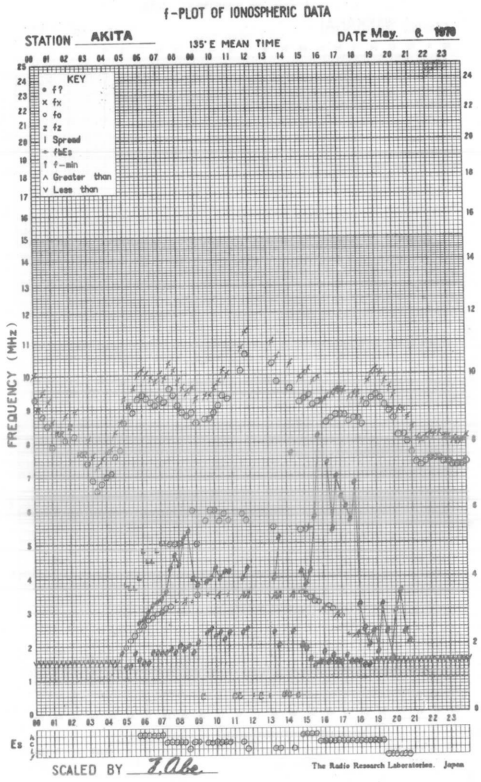
SCALED BY T. Odi
The Radio Research Laboratories. Japan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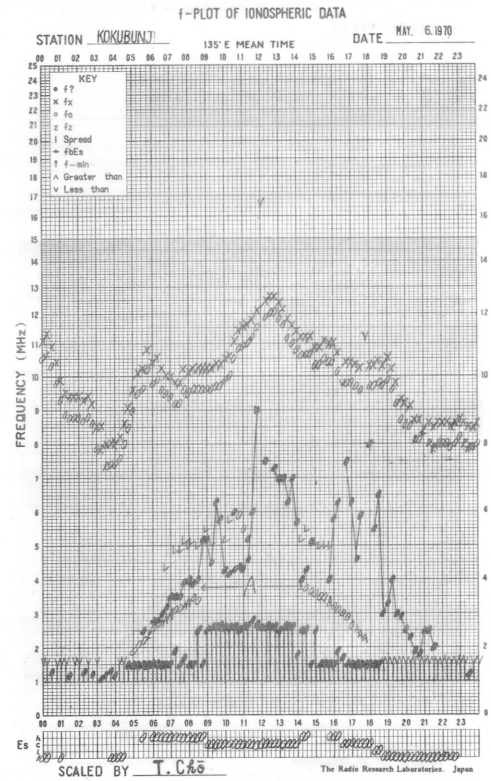
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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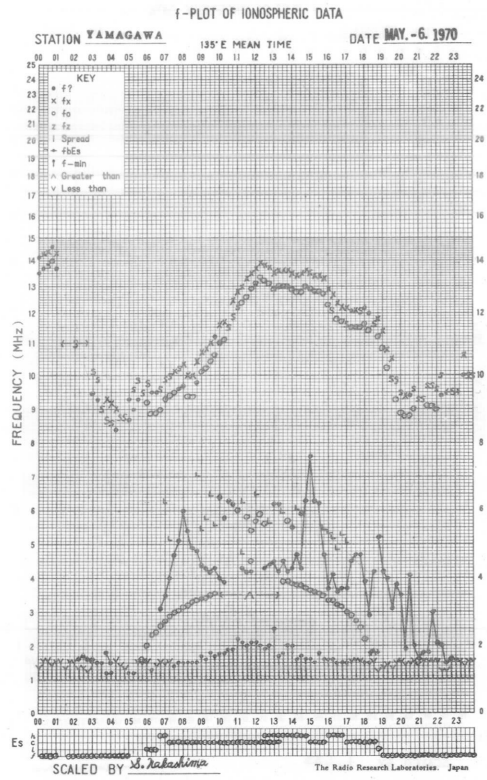
SCALED BY T. Chō
The Radio Research Laboratories. Japan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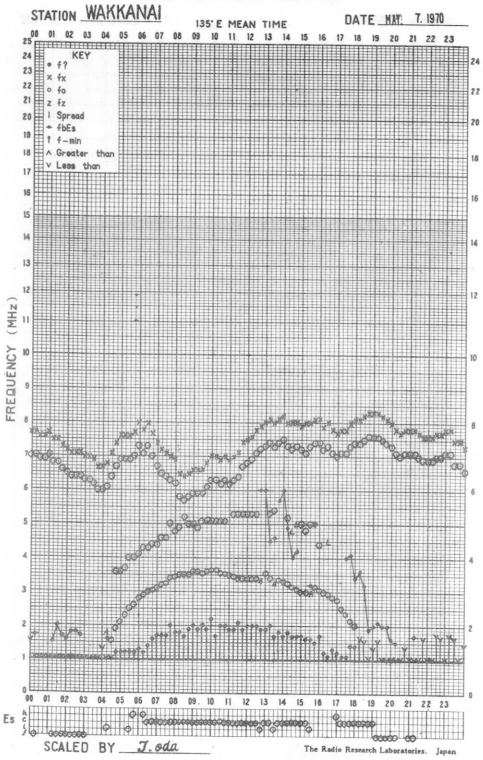
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE MAY. 7. 1970



SCALED BY T. Oda

The Radio Research Laboratories. Japan

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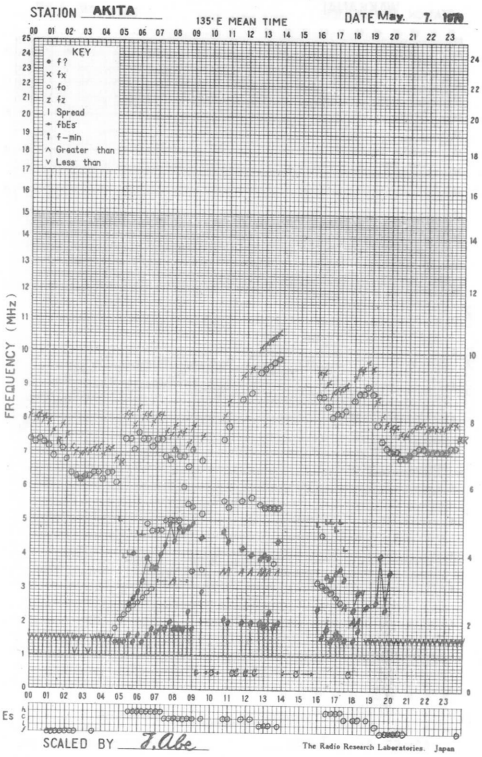

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The Radio Research Laboratories. Japan

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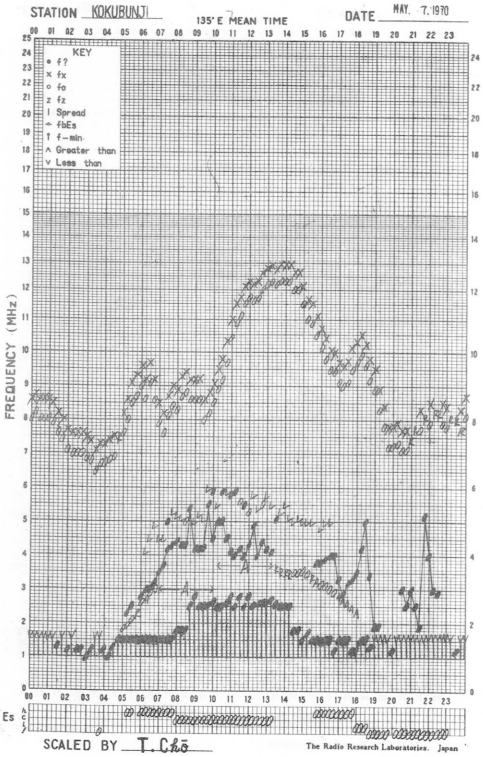

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The Radio Research Laboratories. Japan

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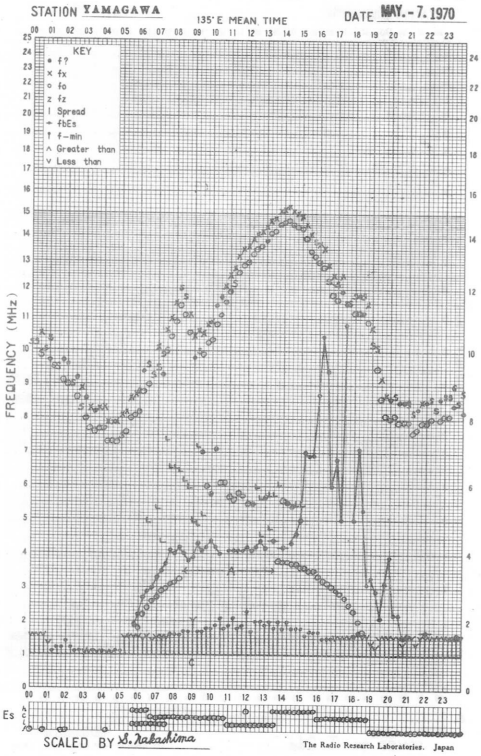
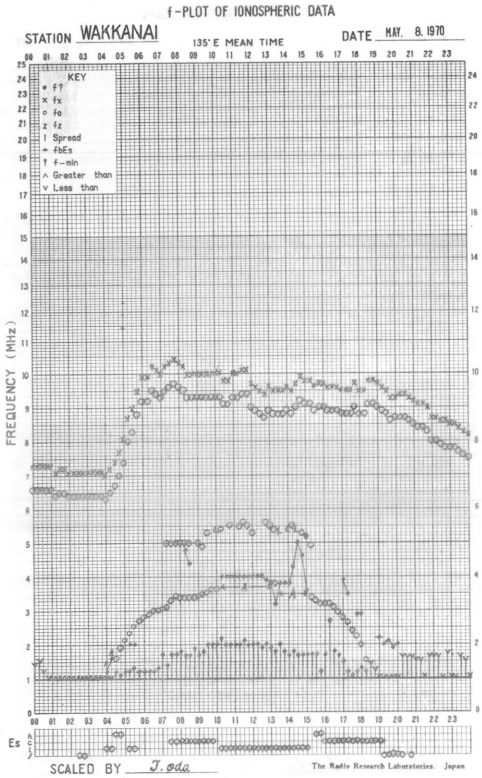


SCALED BY S. Takashima

The Radio Research Laboratories. Japan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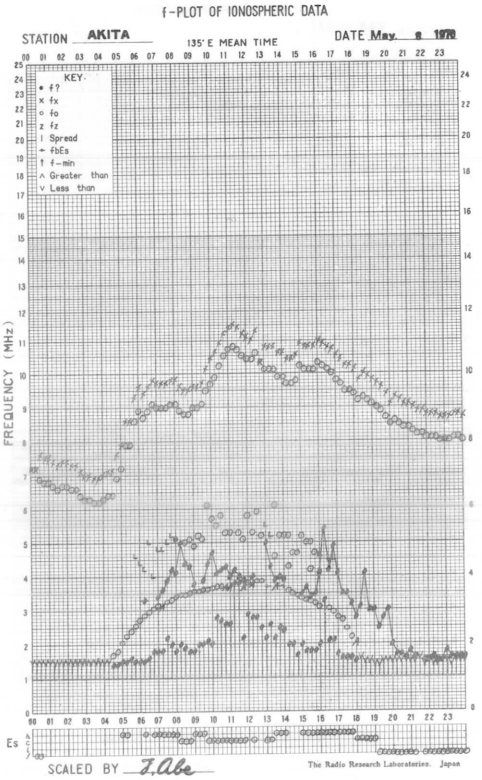
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan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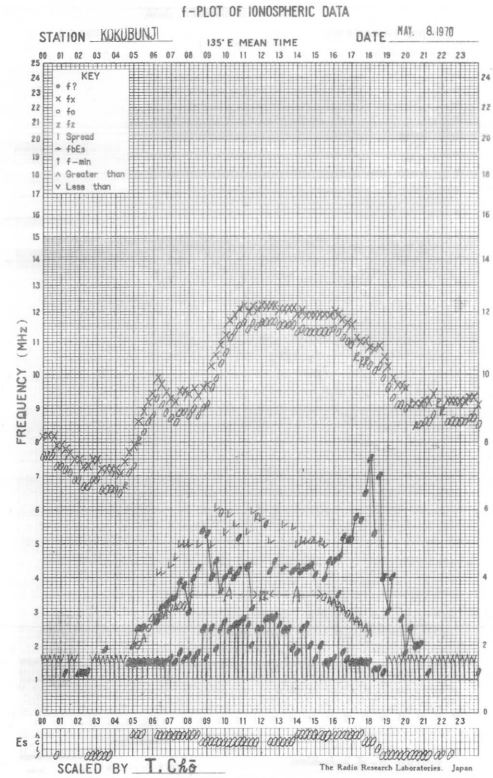
The Radio Research Laboratories. Japan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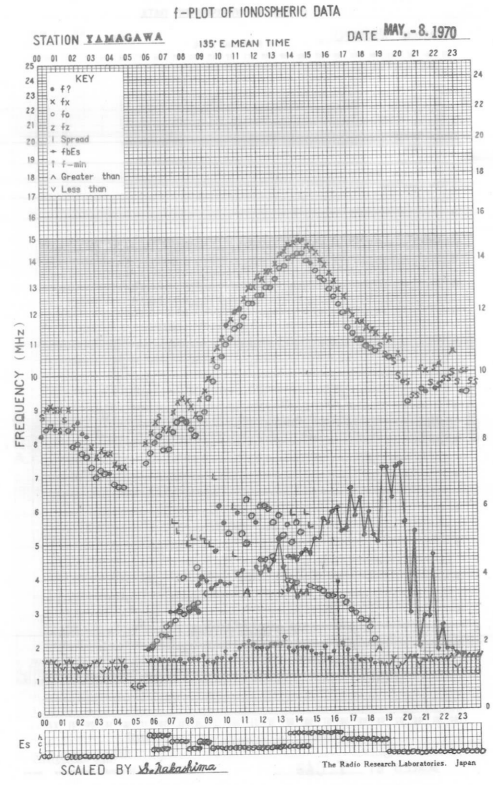
SCALED BY T. Chō
The Radio Research Laboratories. Japan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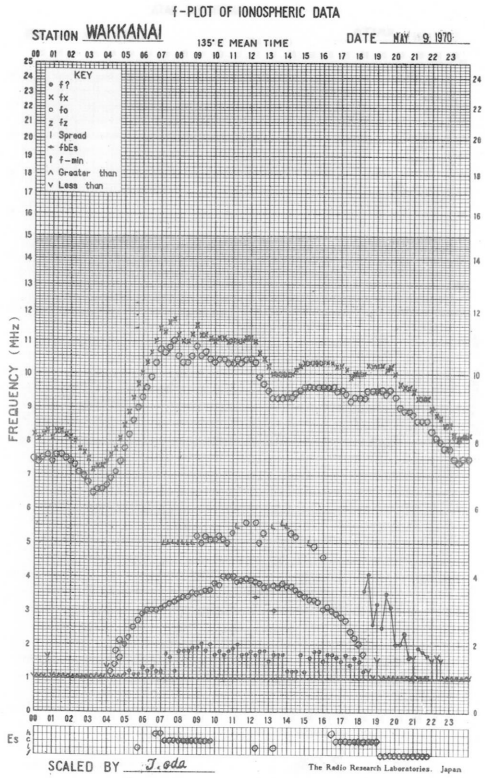
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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135°E MEAN TIME
DATE MAY 9, 1970
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○ fo
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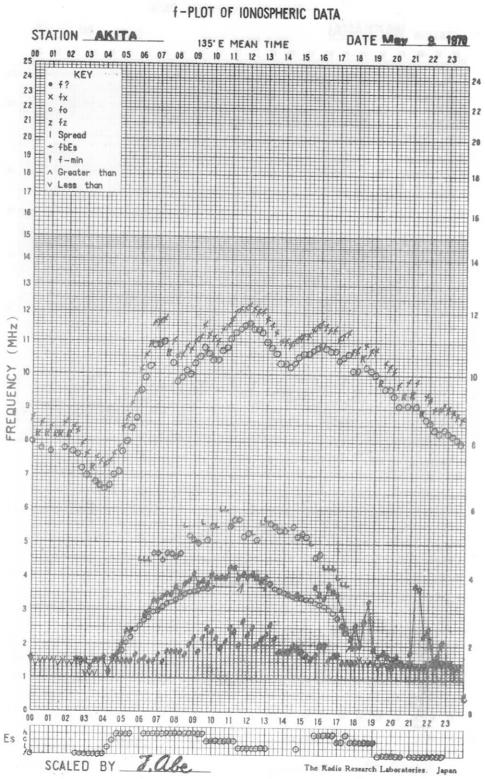
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan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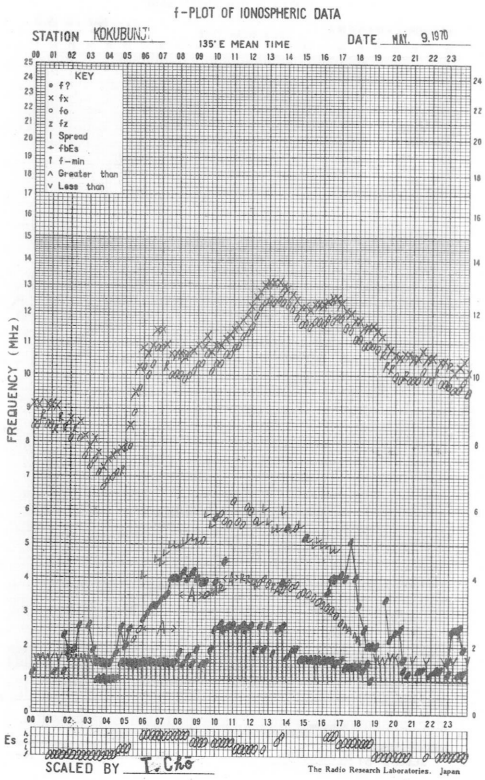
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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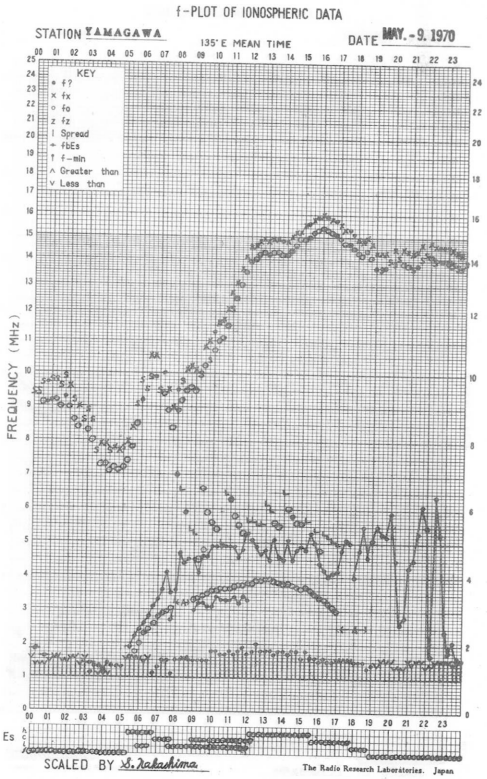
SCALED BY T. Cho
The Radio Research Laboratories. Japan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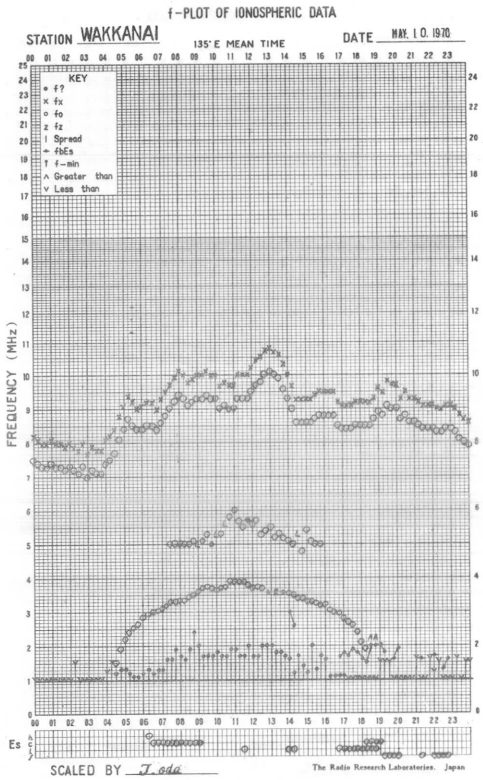
The Radio Research Laboratories. Japan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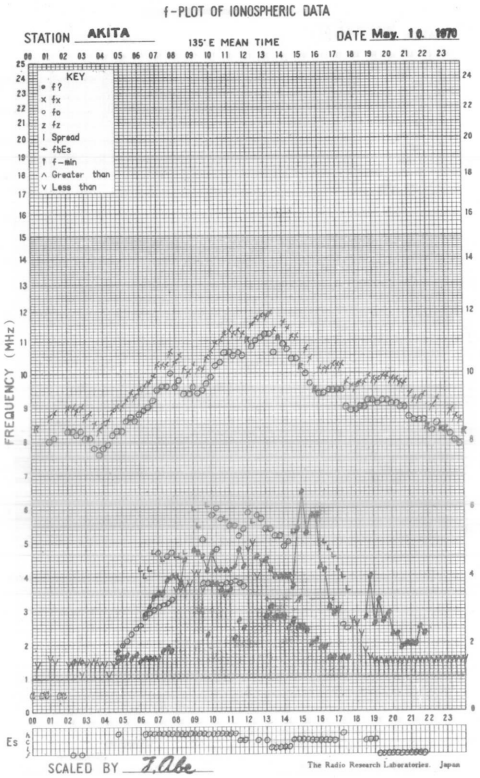
The Radio Research Laboratories. Japan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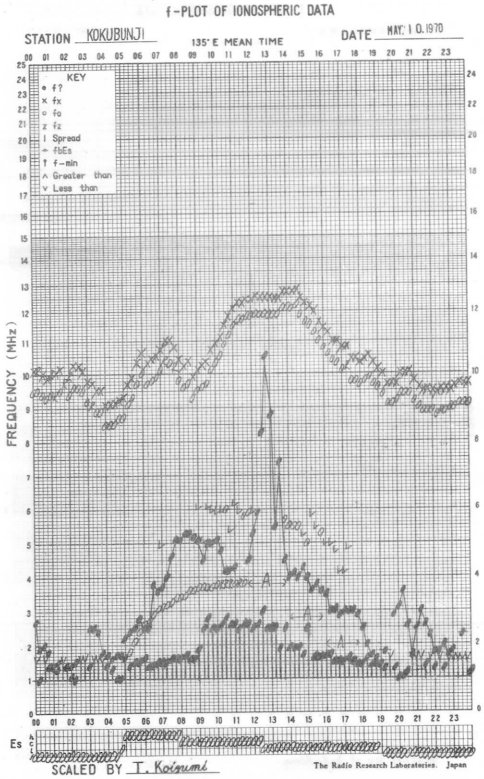
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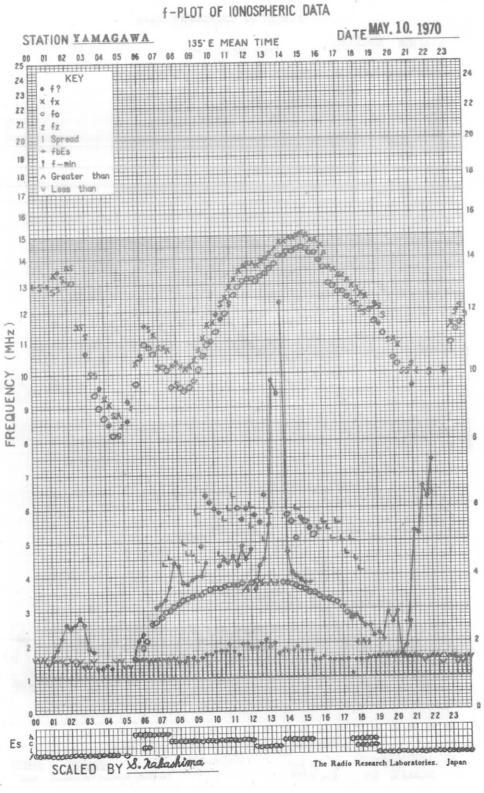
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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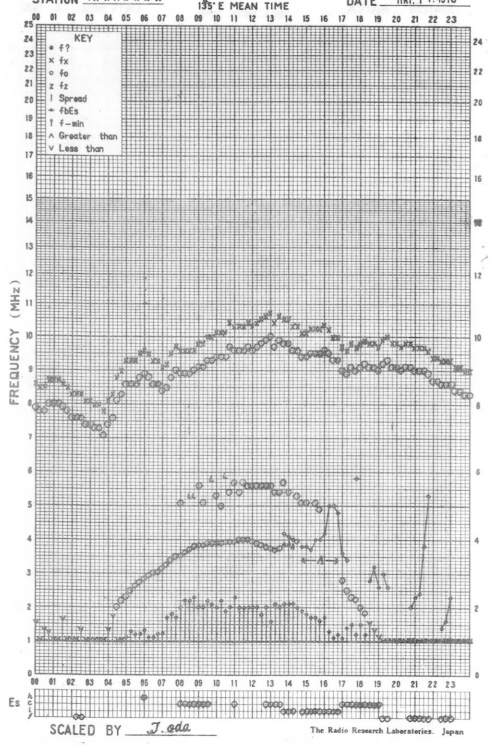

SCALED BY J. oda

The Radio Research Laboratories. Japan

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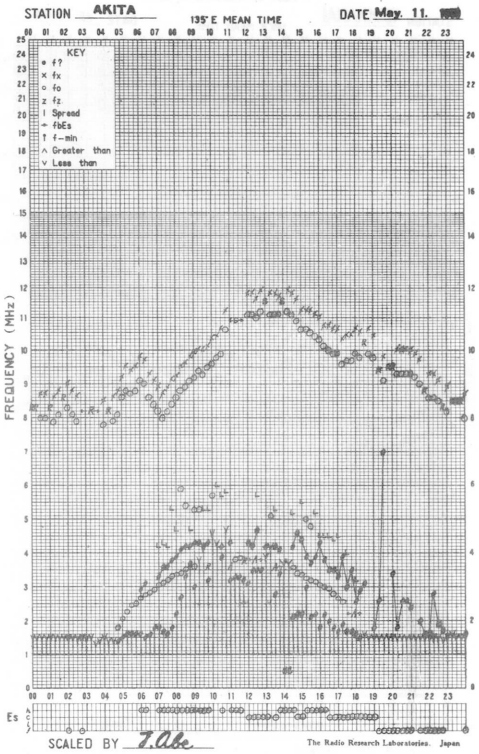

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The Radio Research Laboratories. Japan

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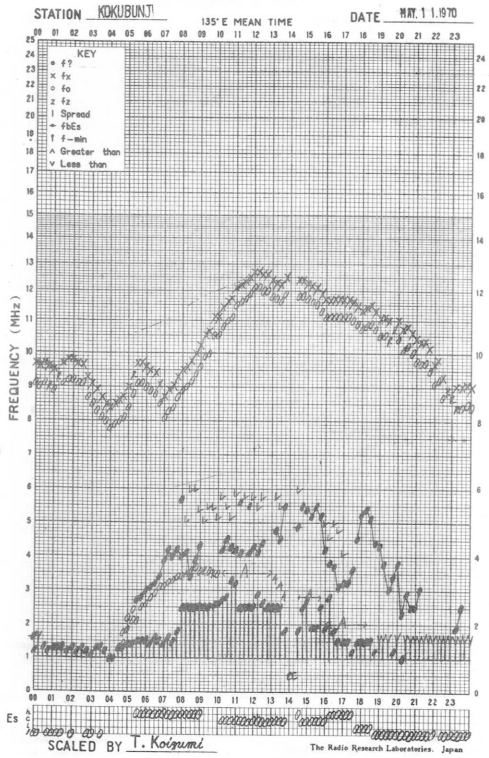

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The Radio Research Laboratories. Japan

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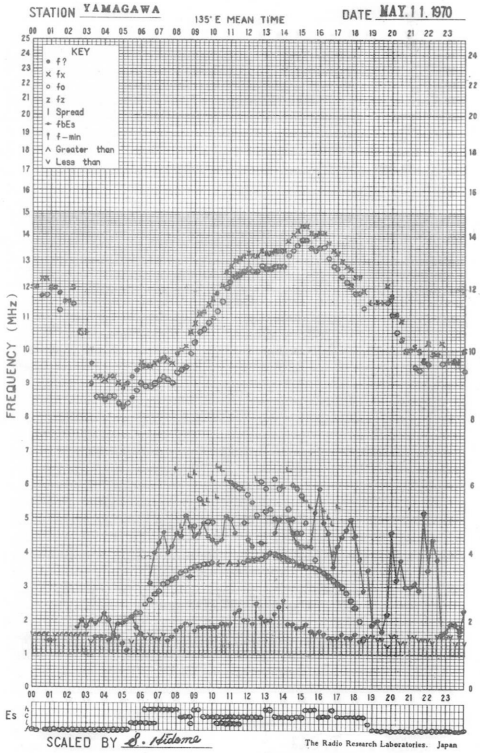
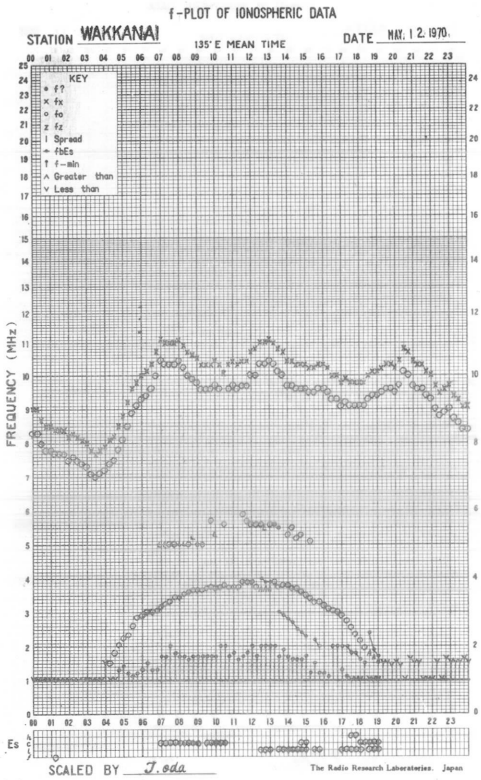


SCALED BY S. Aidama

The Radio Research Laboratories. Japan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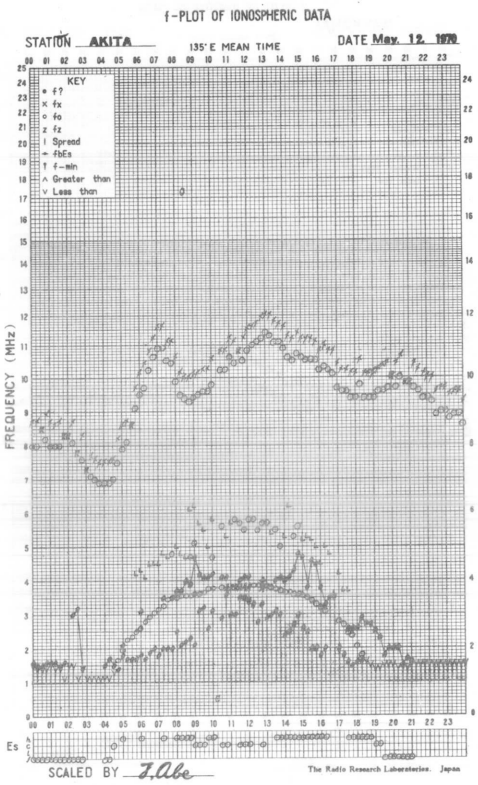
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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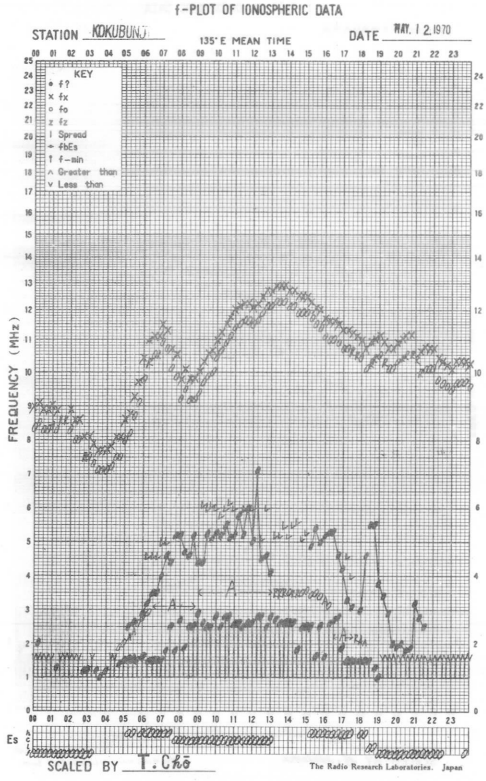
SCALED BY T. Abe
The Radio Research Laboratories. Japan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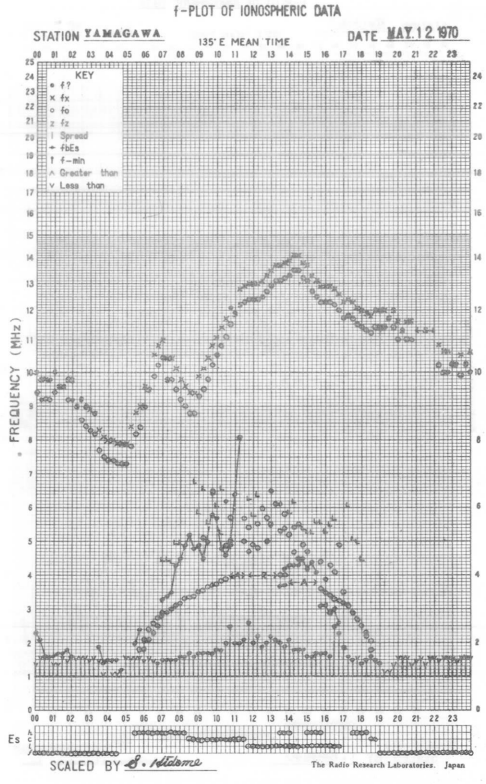
The Radio Research Laboratories. Japan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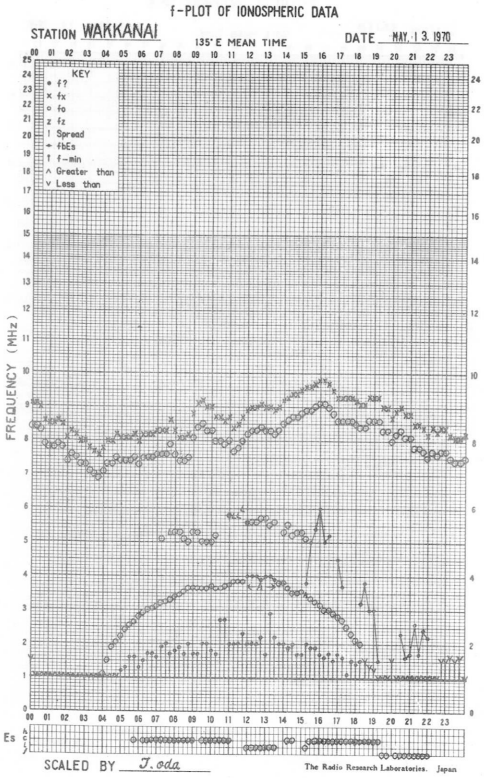
The Radio Research Laboratories. Japan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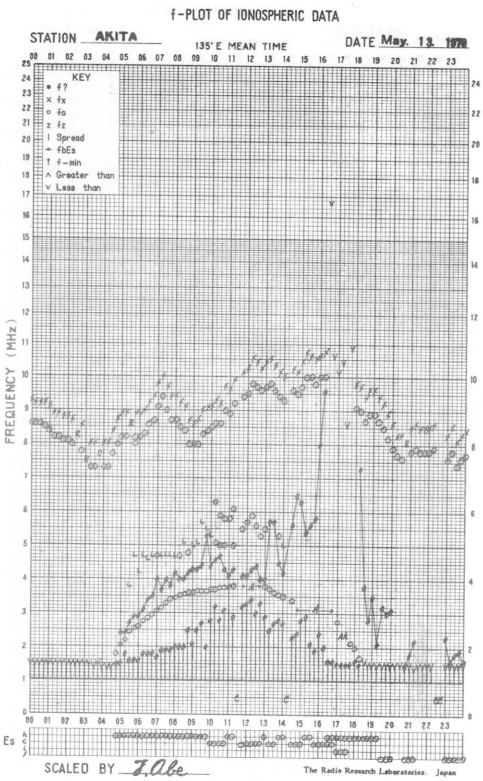
SCALED BY T. oda
The Radio Research Laboratories. Japan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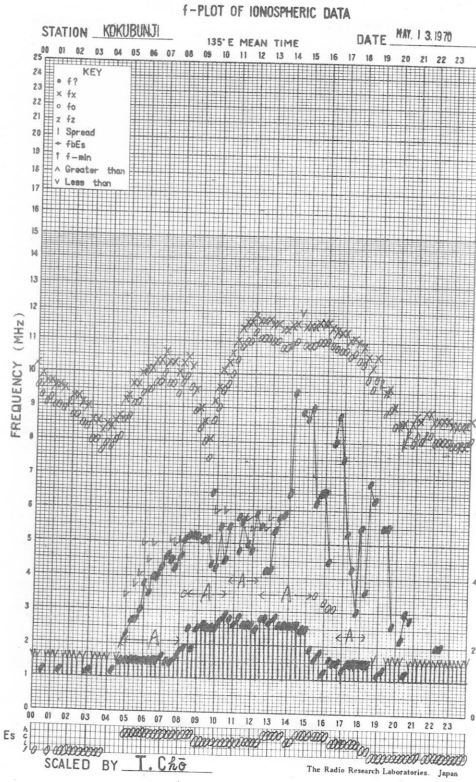
The Radio Research Laboratories. Japan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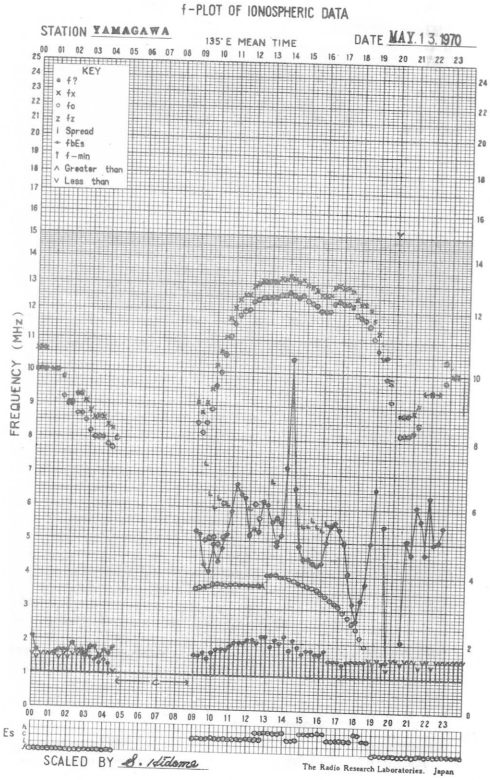
The Radio Research Laboratories. Japan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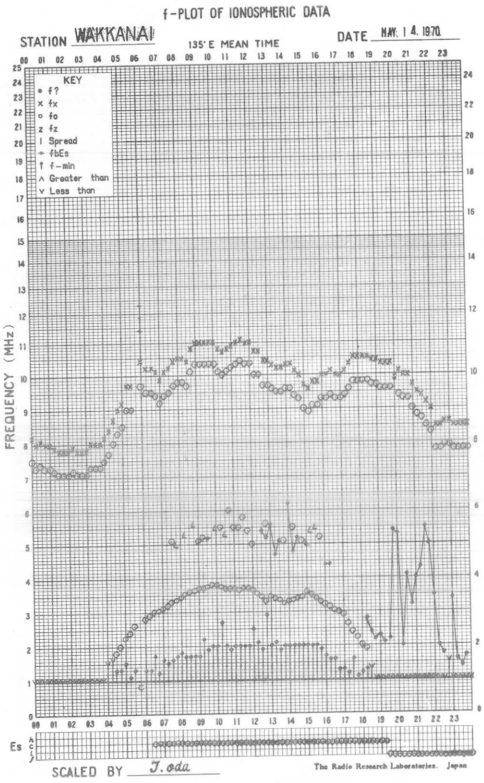
The Radio Research Laboratories. Japan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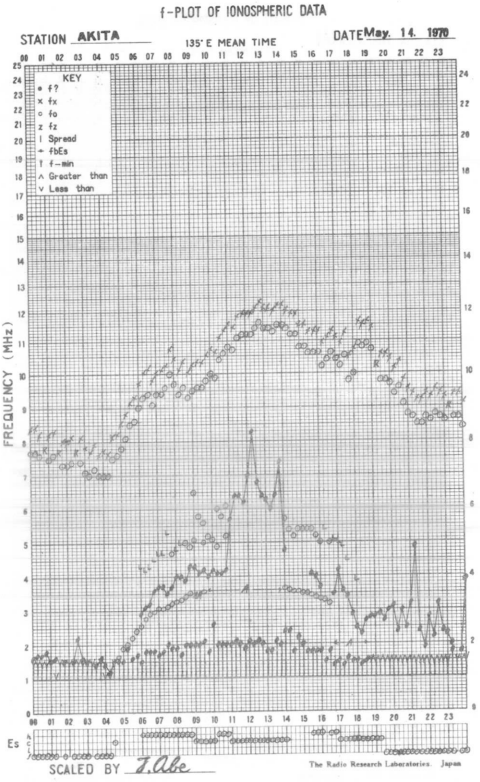
The Radio Research Laboratories. Japan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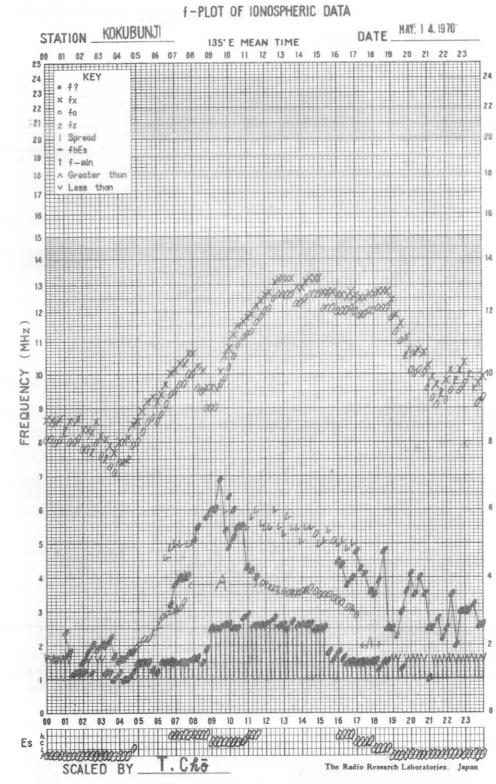
The Radio Research Laboratories. Japan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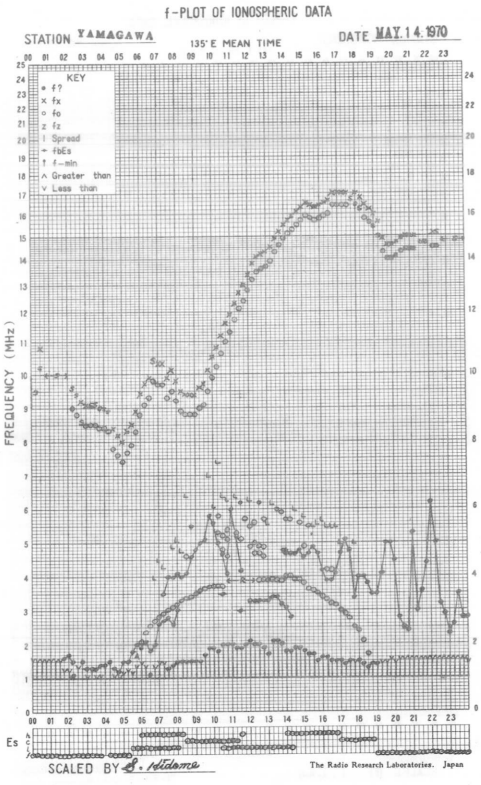
The Radio Research Laboratories. Japan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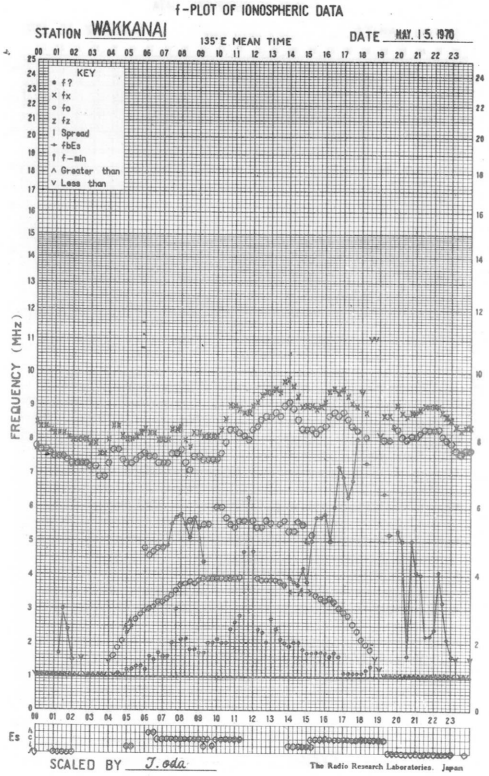
The Radio Research Laboratories. Japan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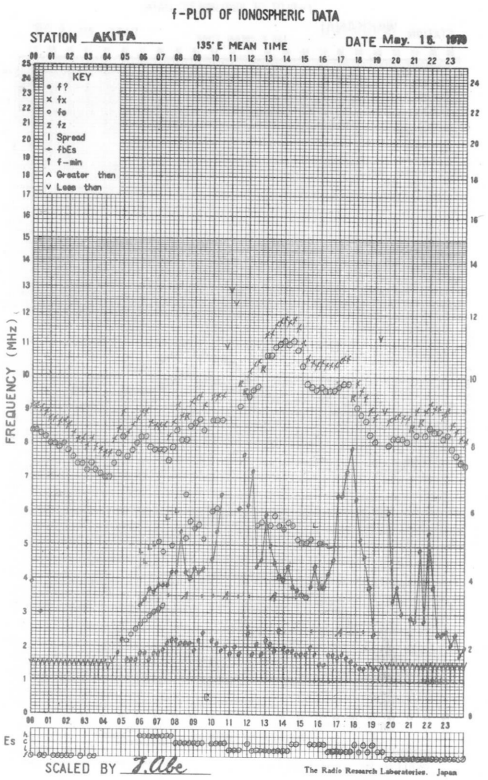
The Radio Research Laboratories. Japan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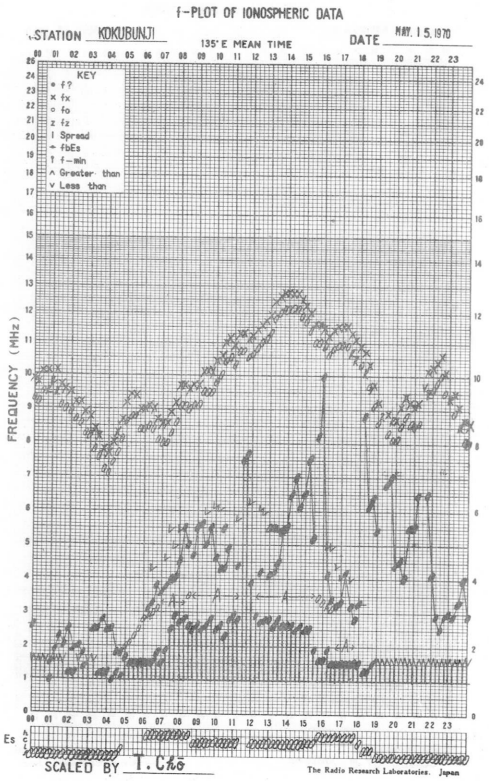
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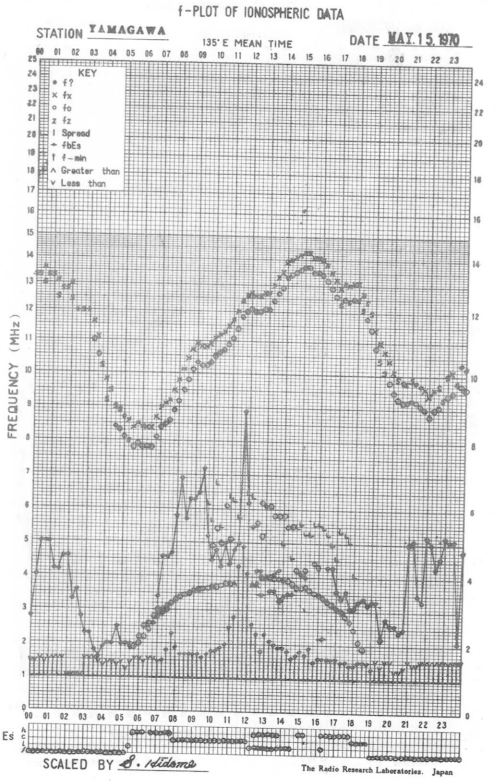
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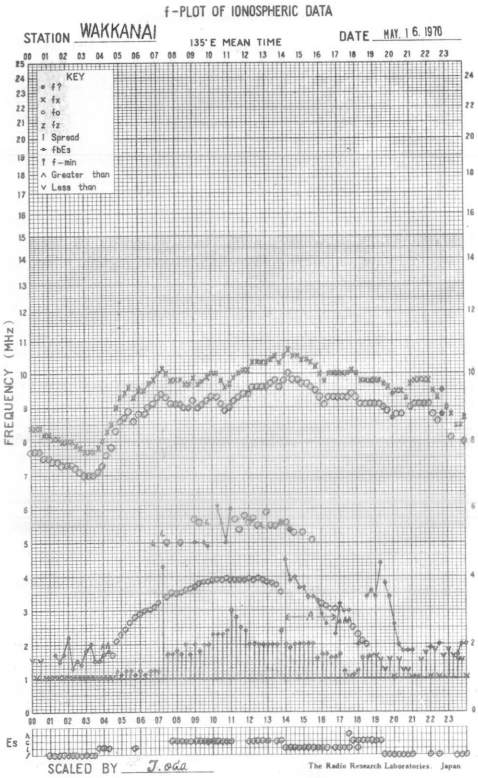
The Radio Research Laboratories. Japan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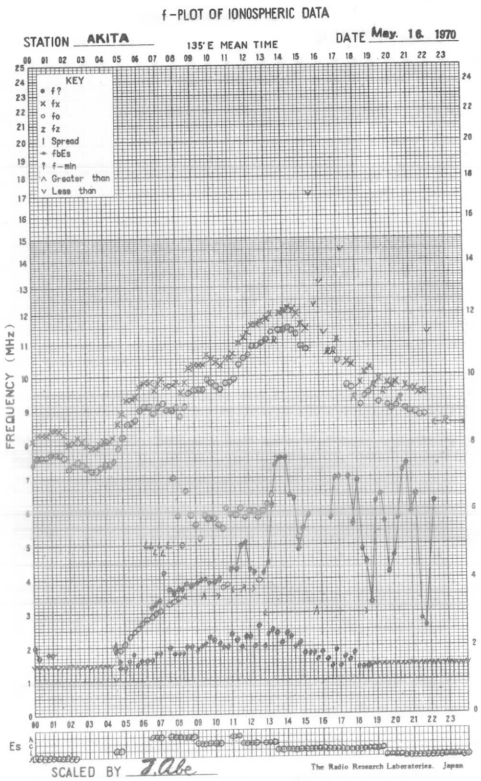
SCALED BY J. Oda
The Radio Research Laboratories. Japan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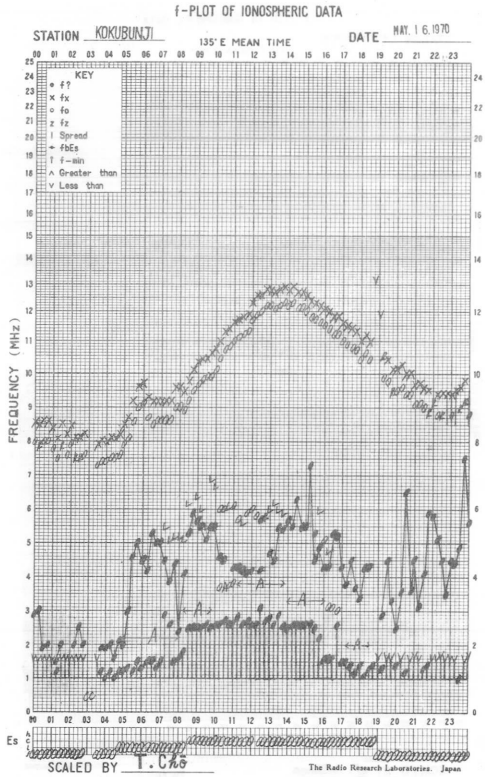
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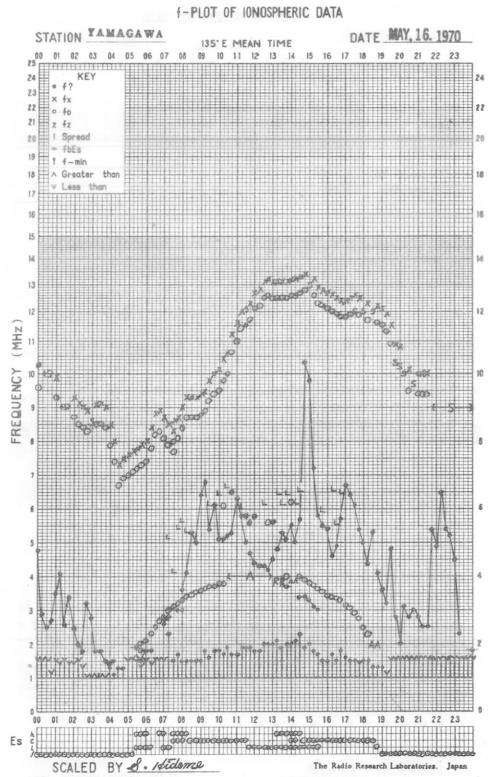
The Radio Research Laboratories. Japan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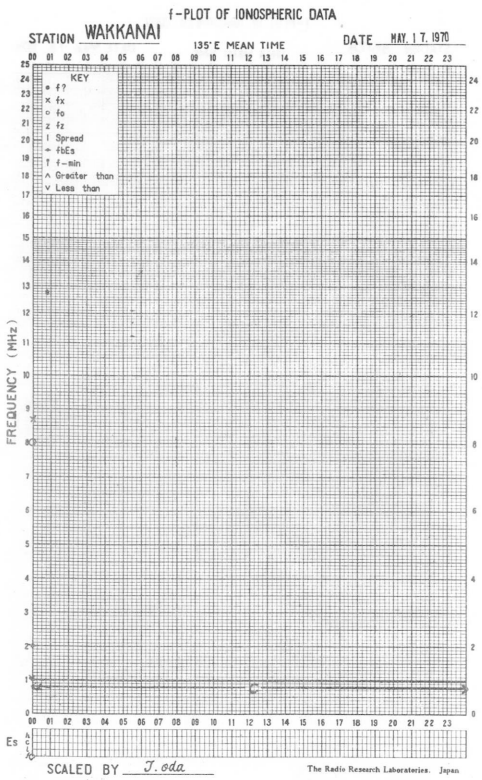
The Radio Research Laboratories. Japan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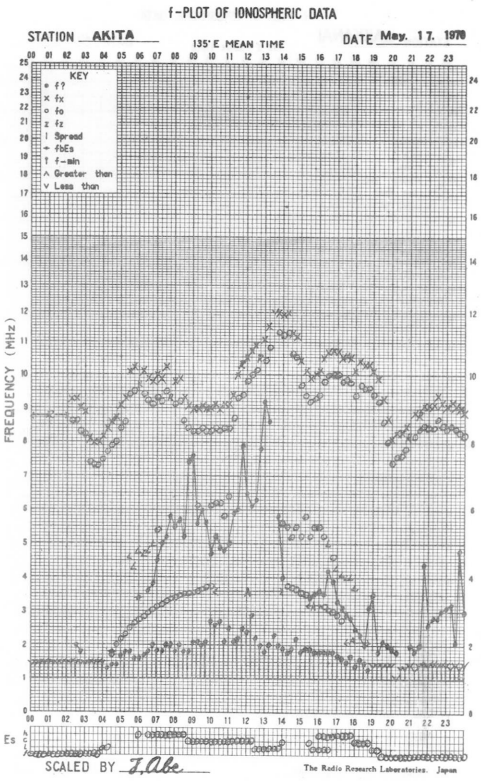
The Radio Research Laboratories. Japan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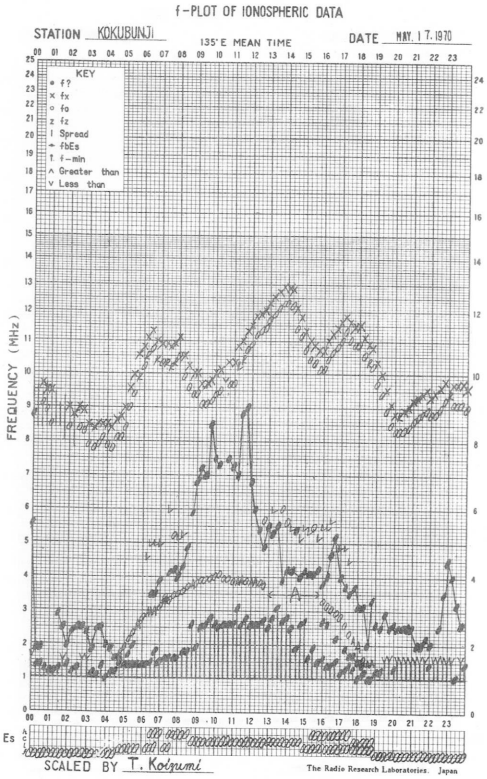
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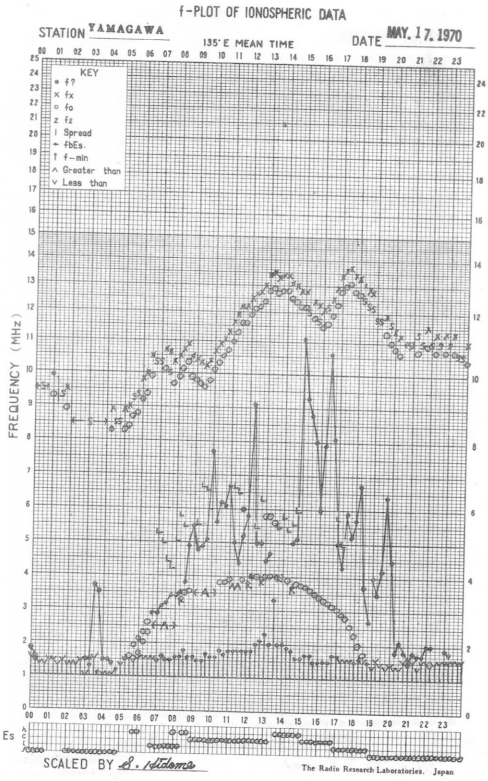
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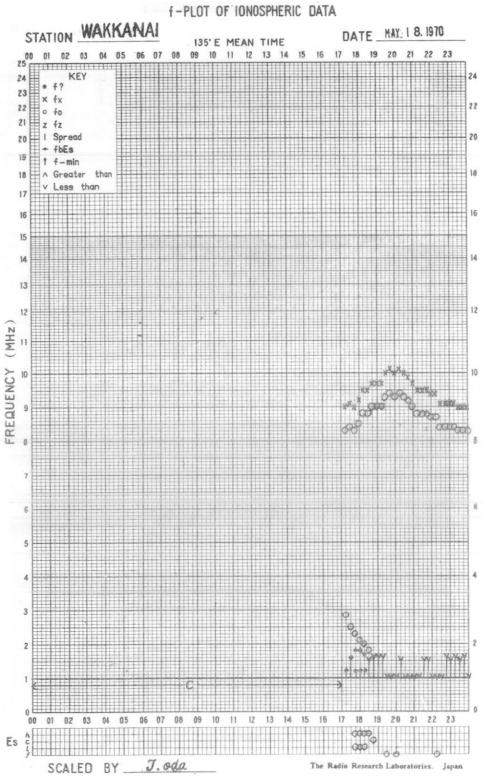
The Radio Research Laboratories. Japan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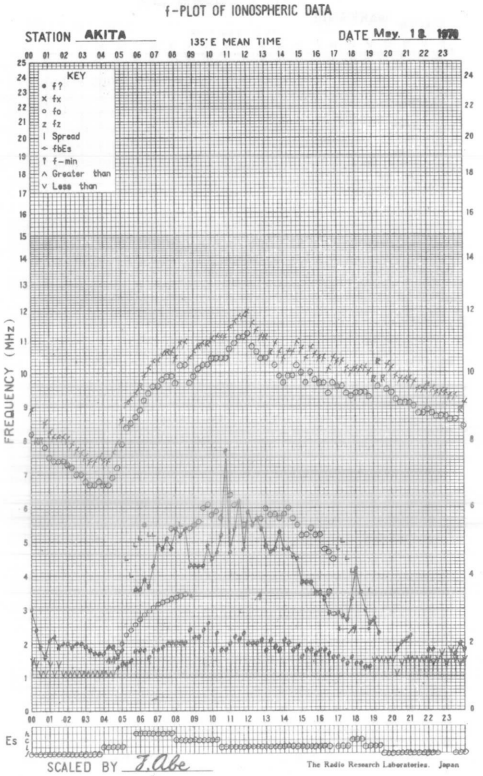
SCALED BY J. oda
The Radio Research Laboratories. Japan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DATE May. 18. 1970
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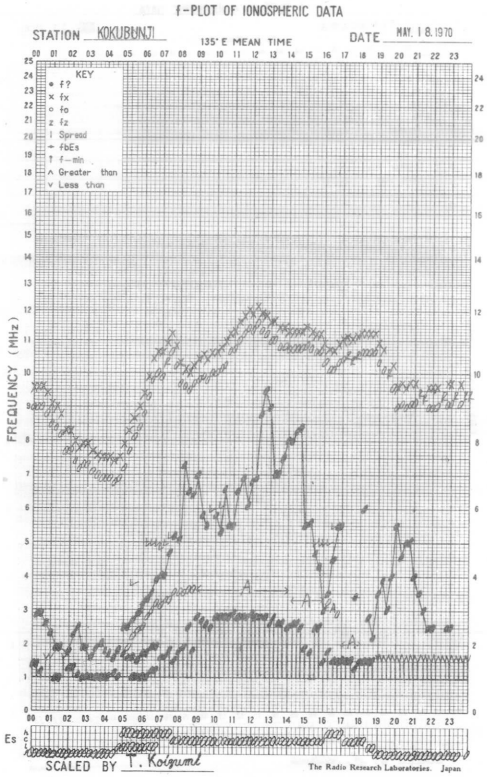
The Radio Research Laboratories. Japan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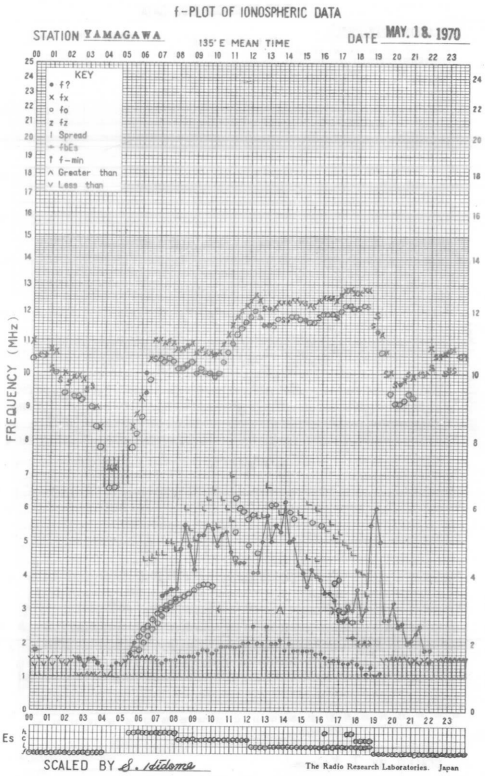
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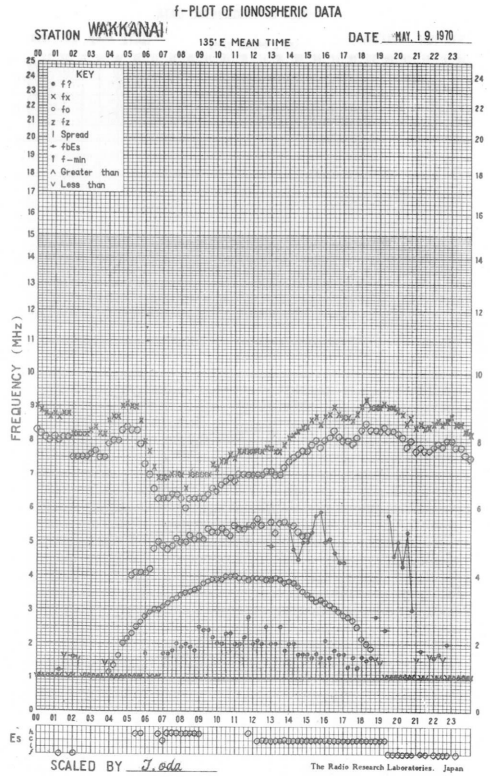
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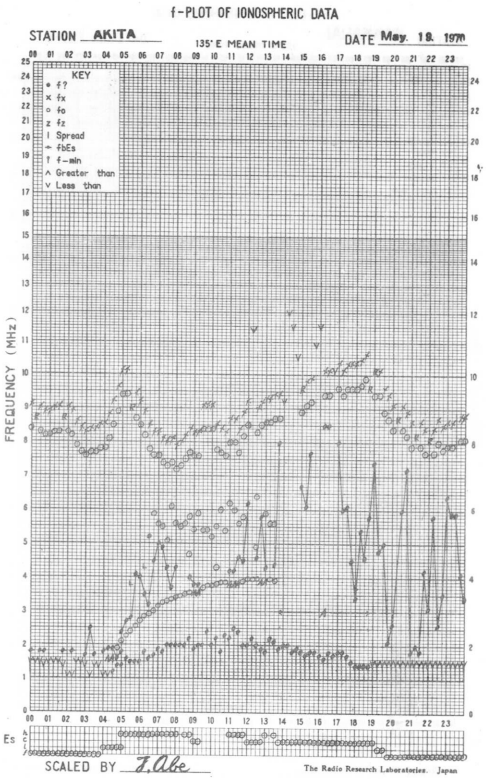
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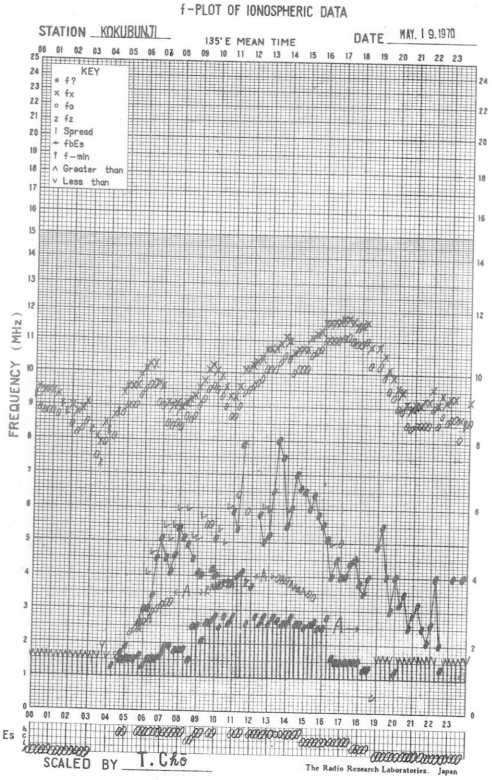
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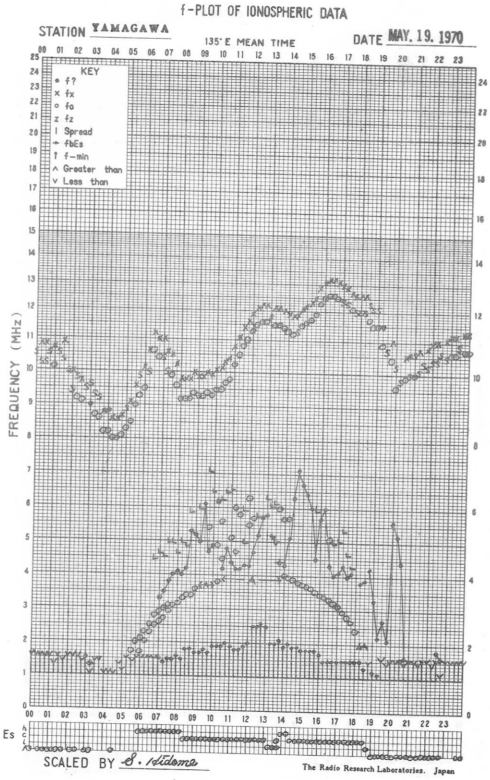
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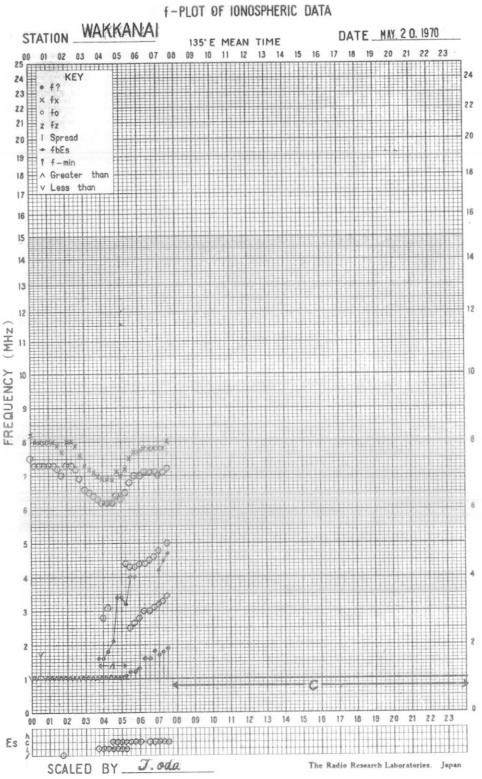
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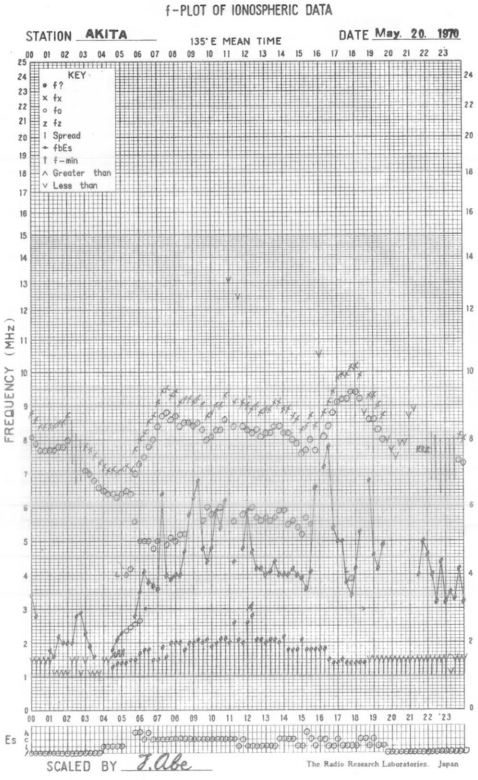
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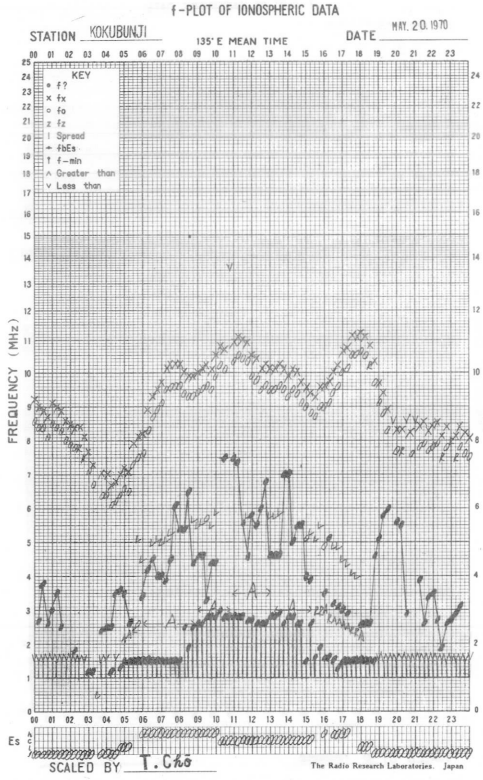
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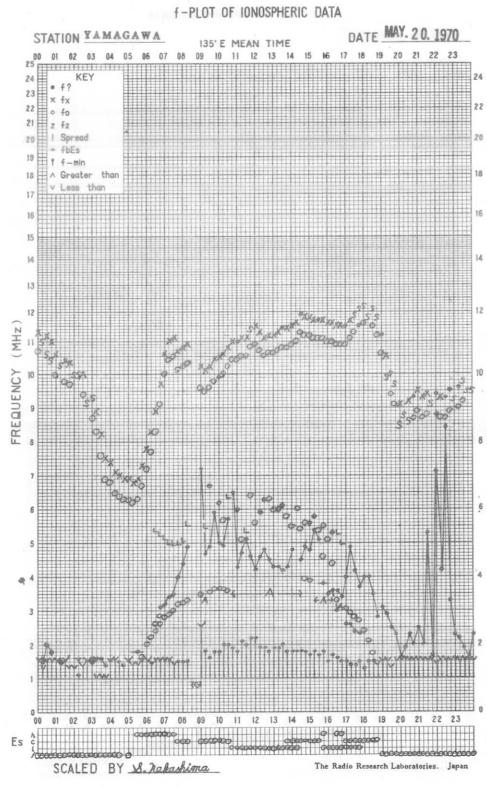
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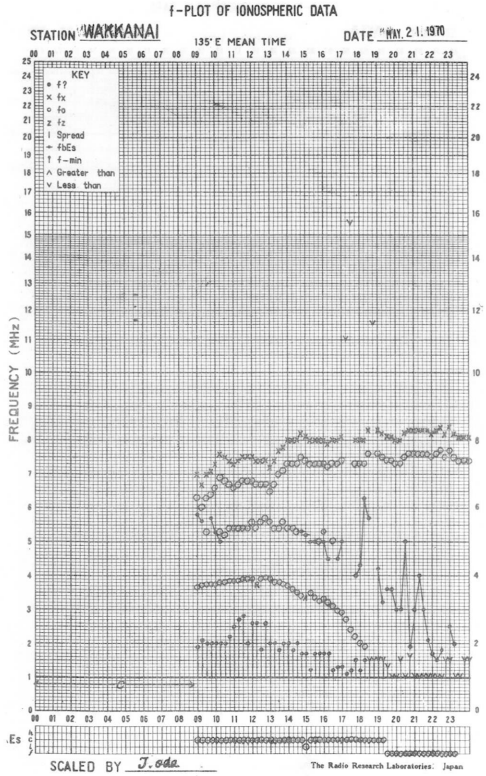
The Radio Research Laboratories. Japan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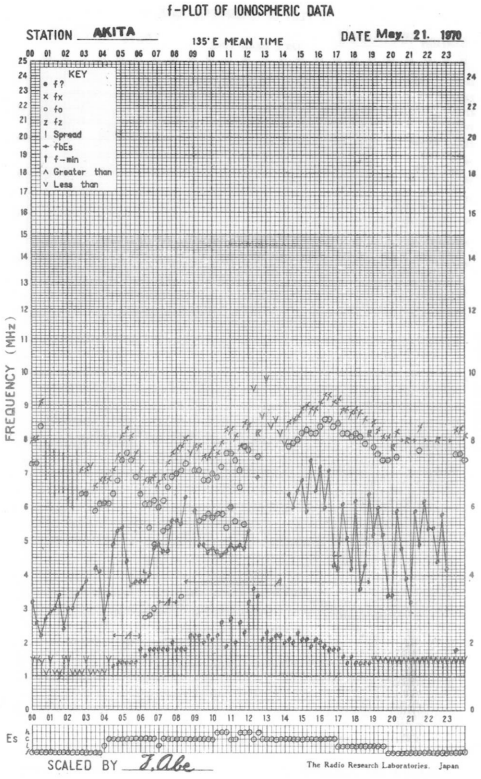
The Radio Research Laboratories. Japan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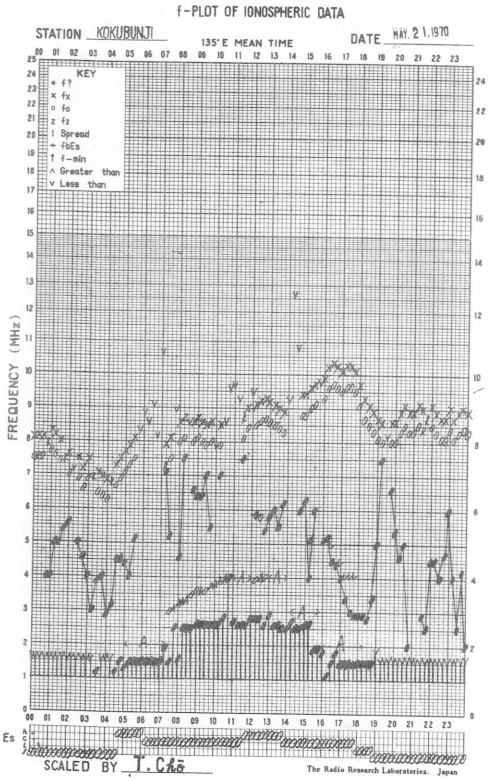
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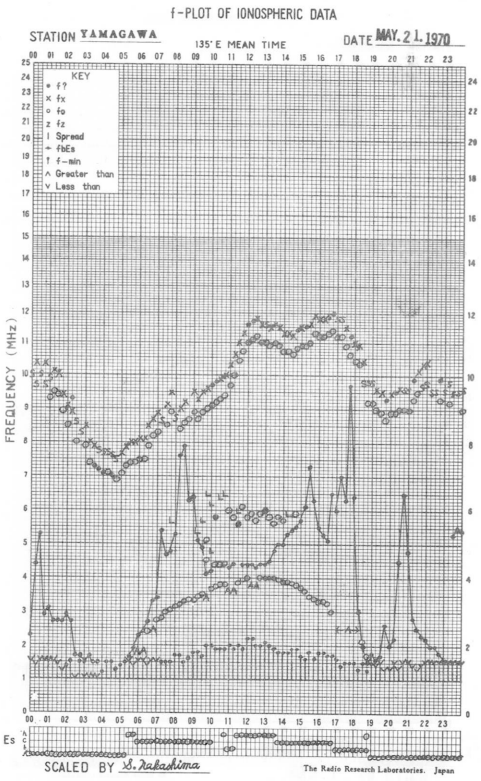
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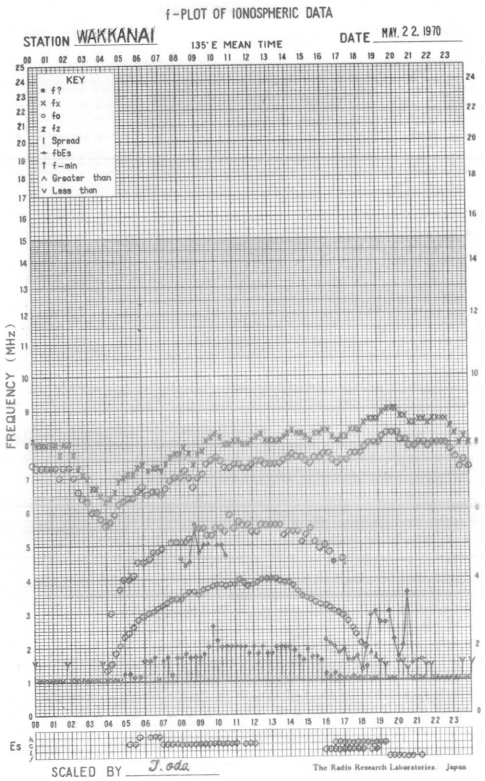
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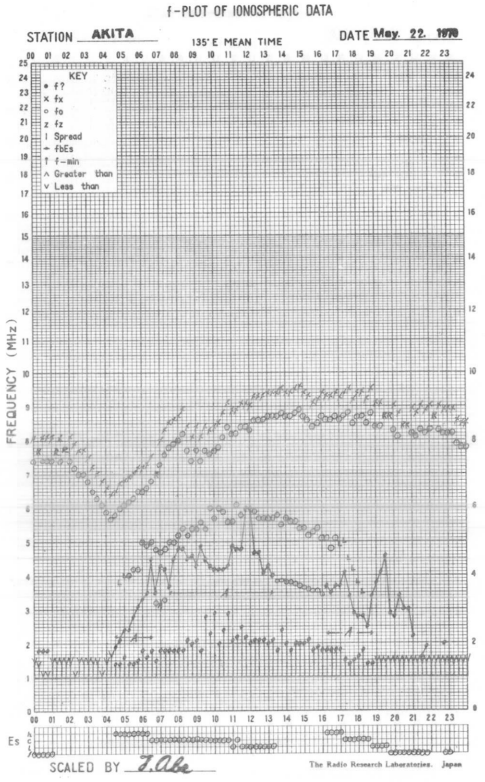
The Radio Research Laboratories. Japan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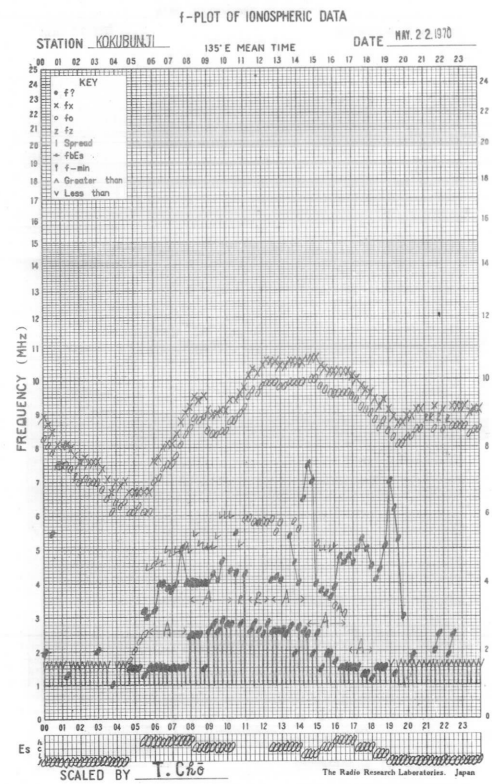
The Radio Research Laboratories. Japan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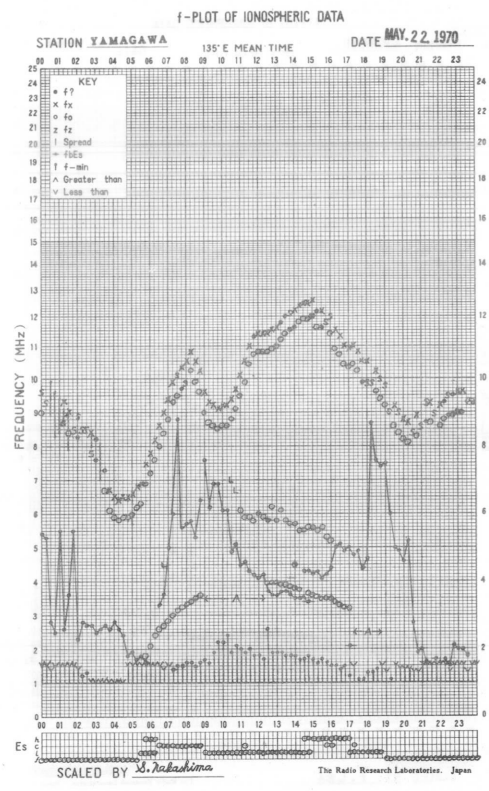
The Radio Research Laboratories. Japan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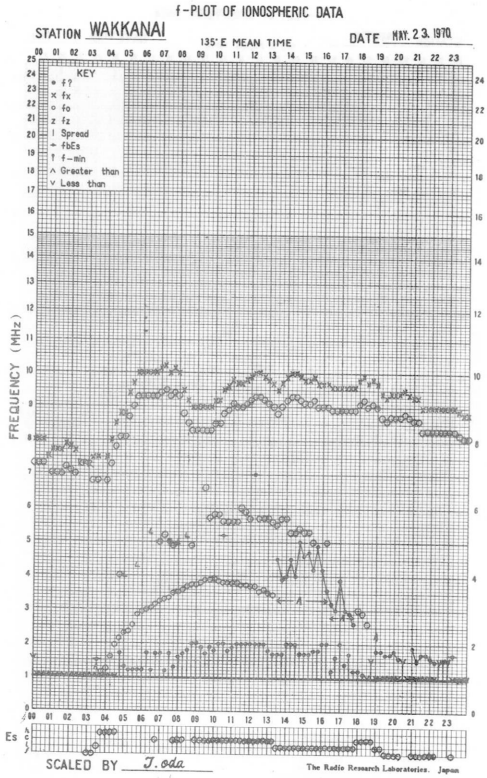
The Radio Research Laboratories. Japan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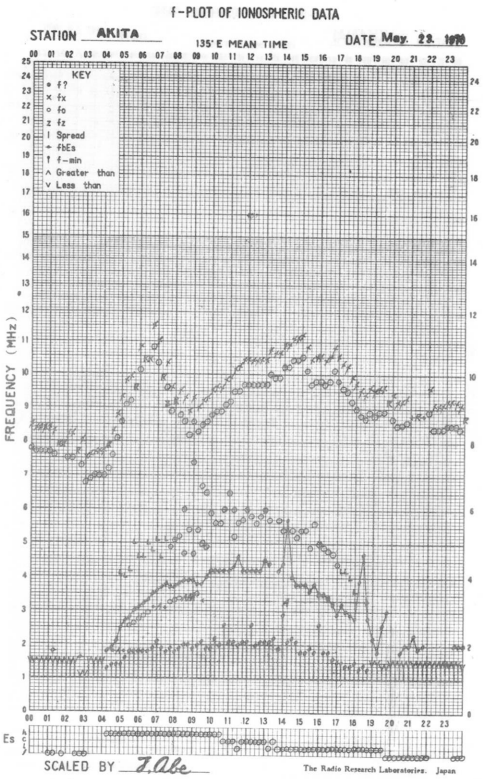
The Radio Research Laboratories. Japan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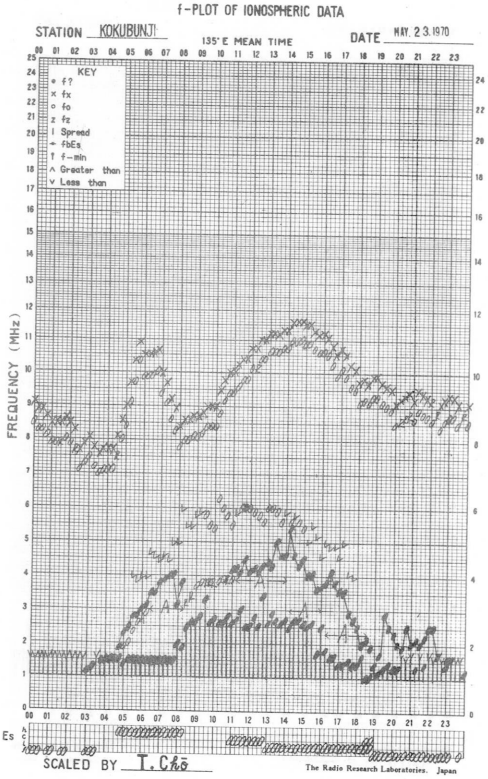
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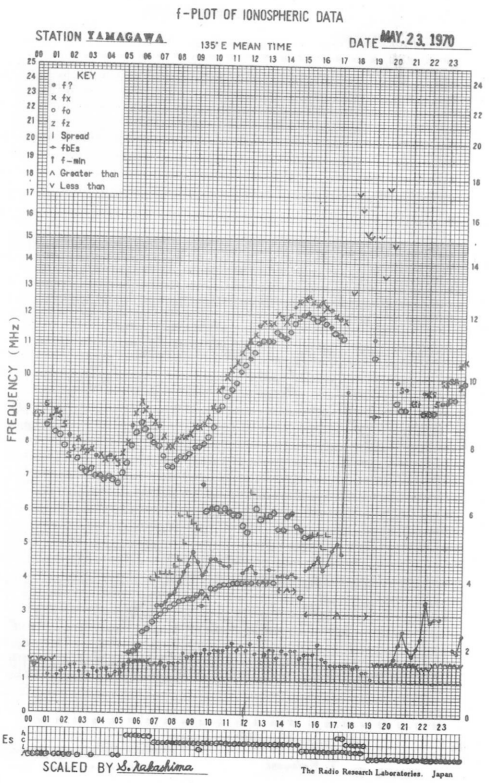
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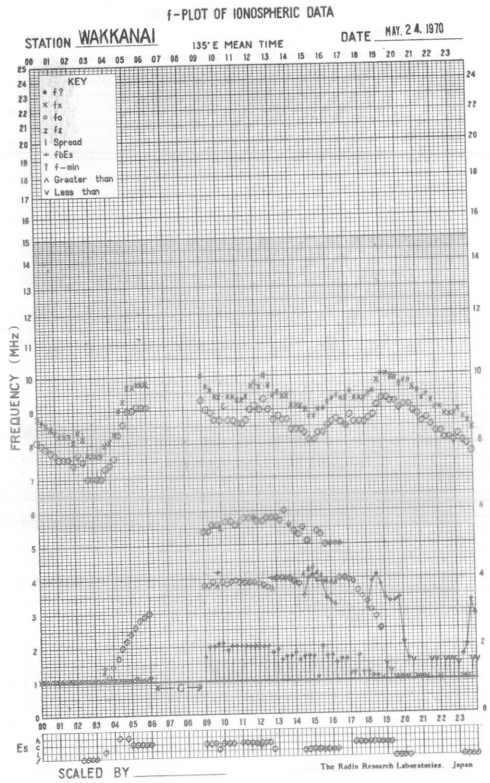
The Radio Research Laboratories. Japan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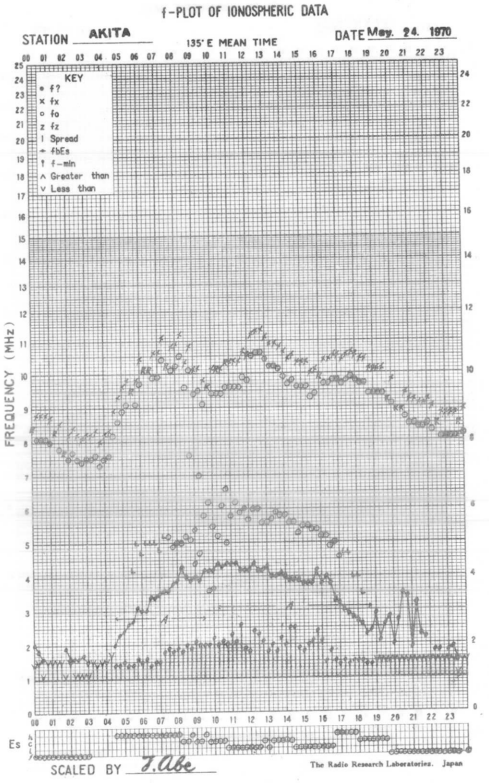
SCALED BY
The Radio Research Laboratories. Japan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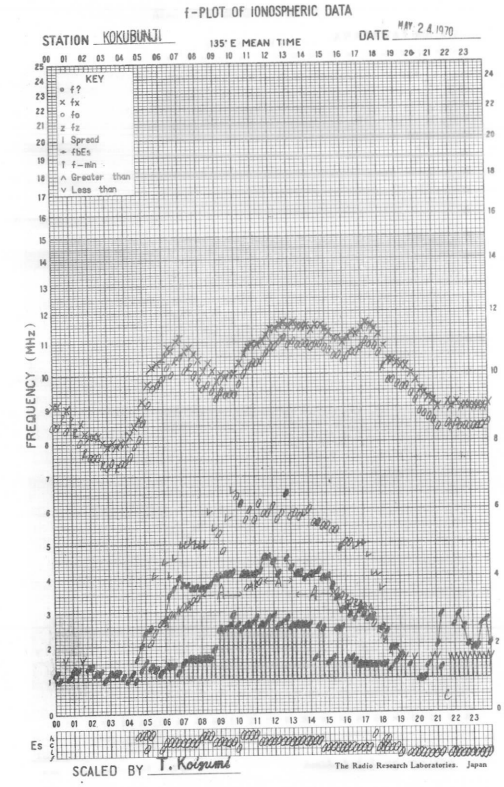
The Radio Research Laboratories. Japan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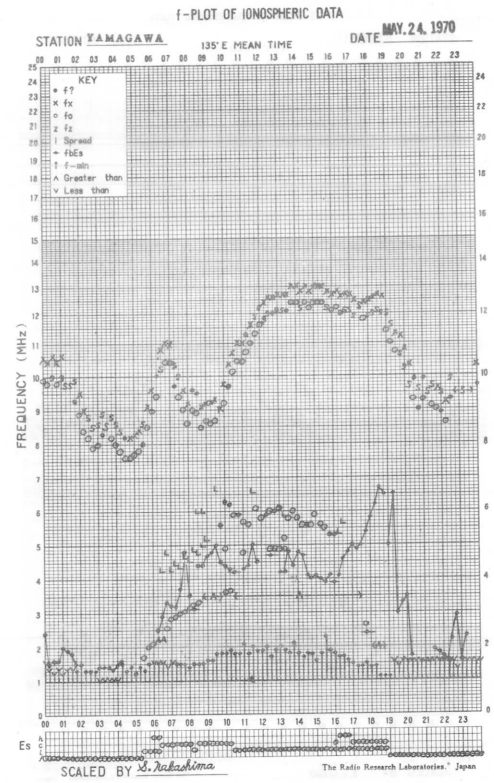
The Radio Research Laboratories. Japan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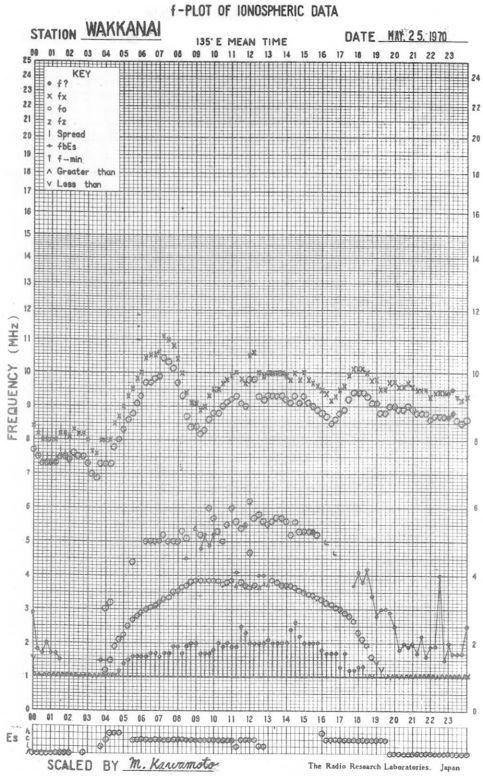
The Radio Research Laboratories. Japan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v Less than
FREQUENCY (MHz)
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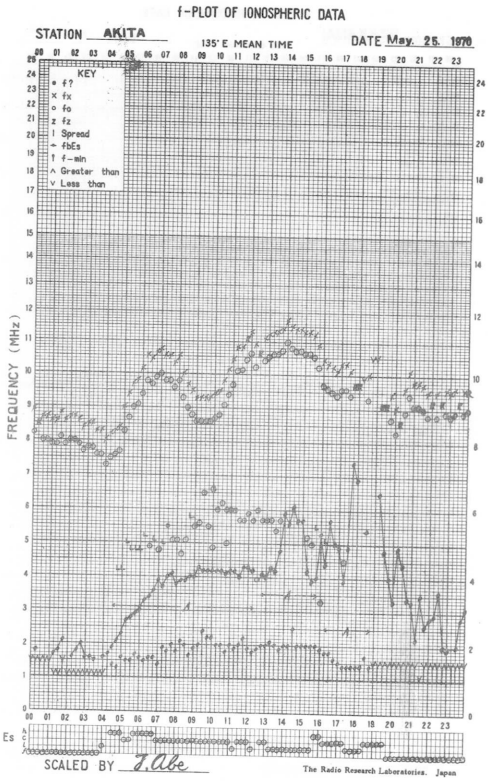
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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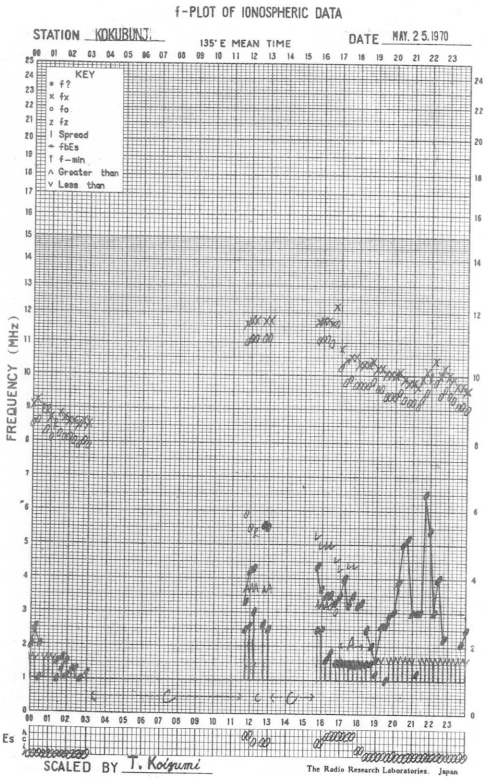
The Radio Research Laboratories. Japan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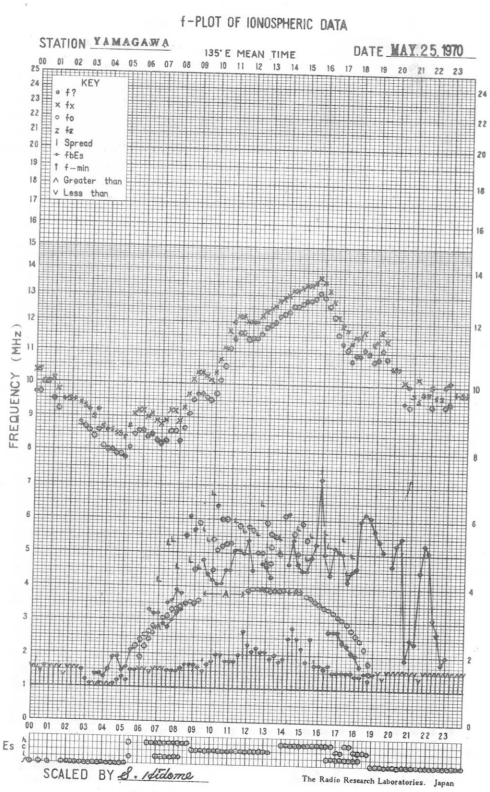
The Radio Research Laboratories. Japan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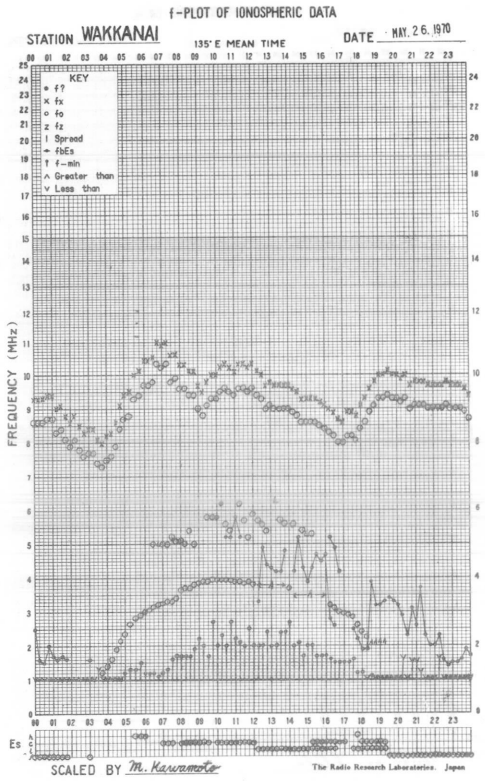
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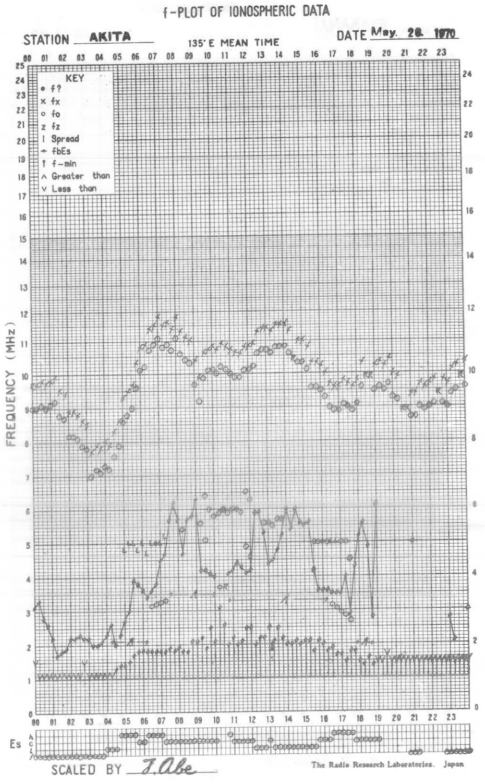
The Radio Research Laboratories. Japan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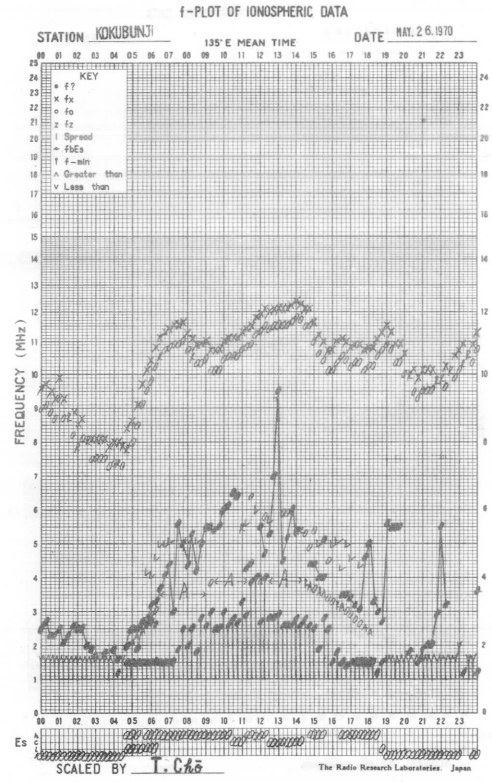
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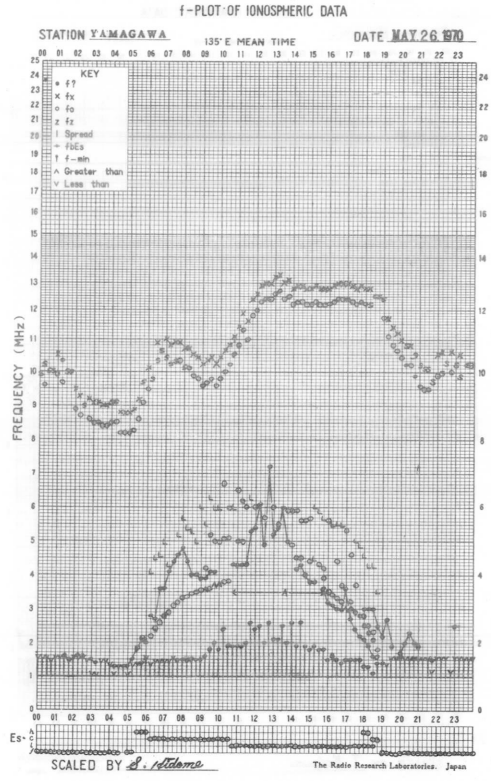
The Radio Research Laboratories. Japan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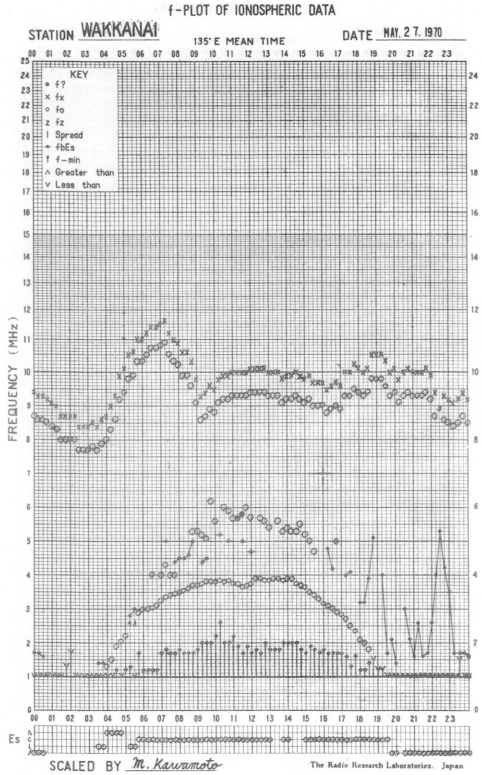
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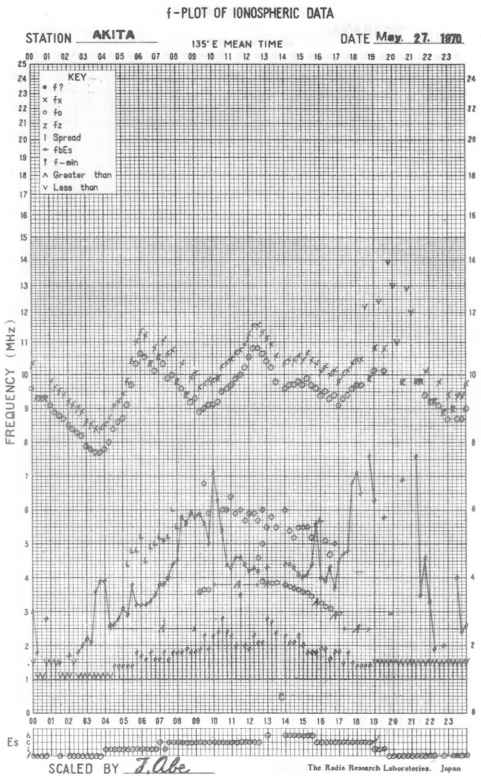
The Radio Research Laboratories. Japan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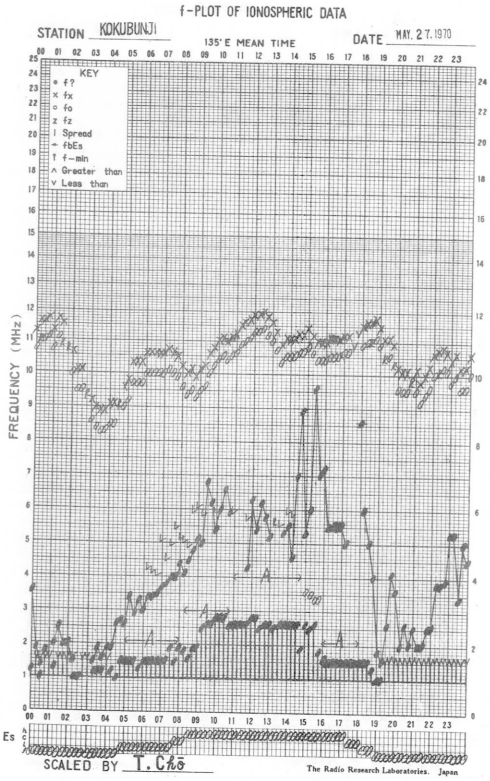
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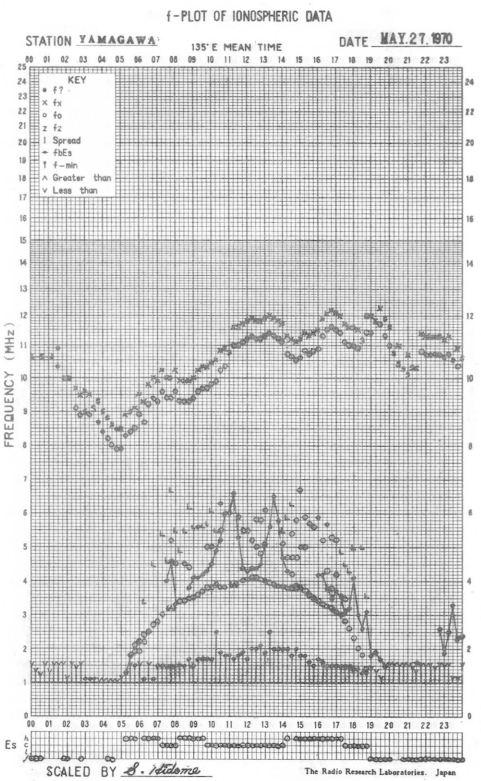
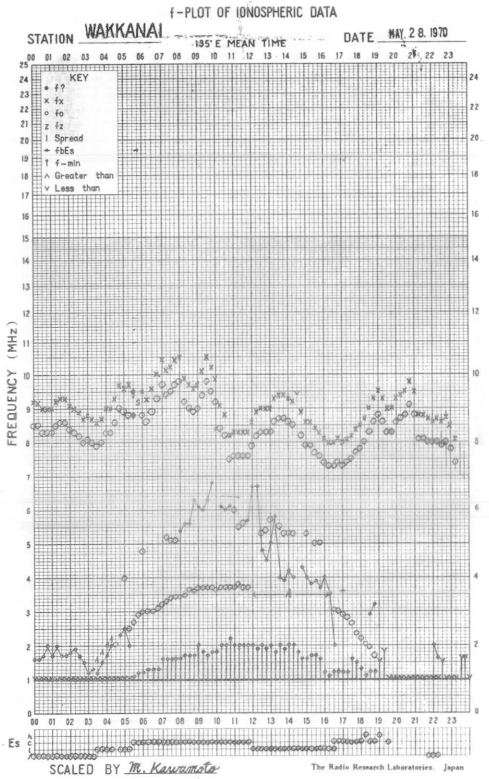
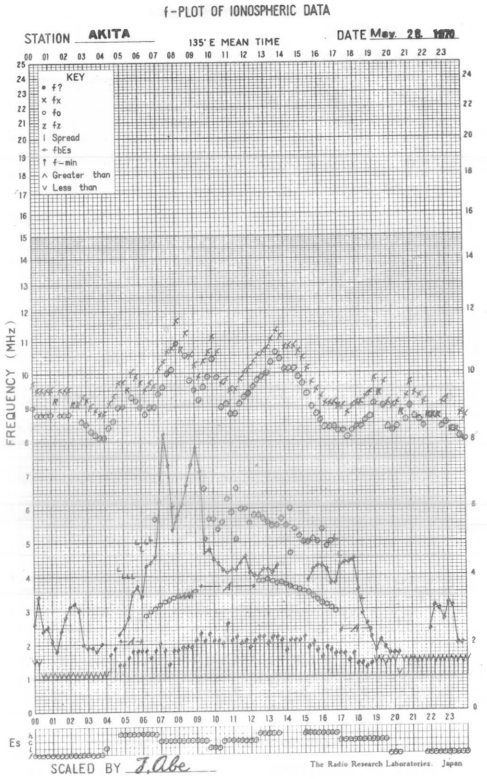
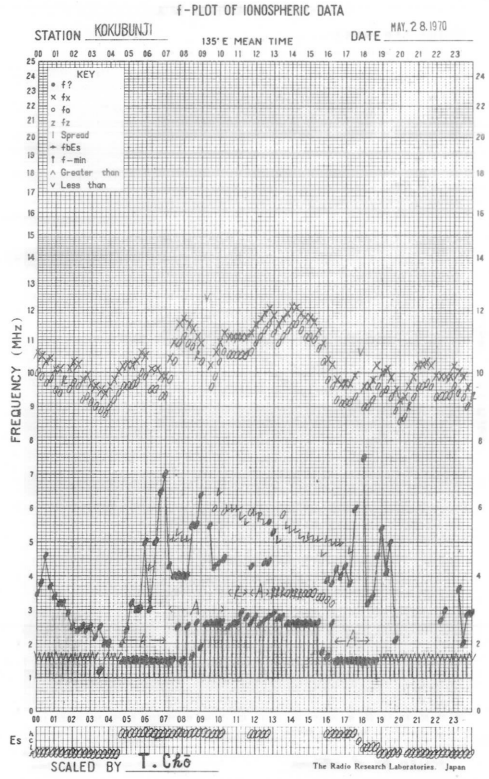
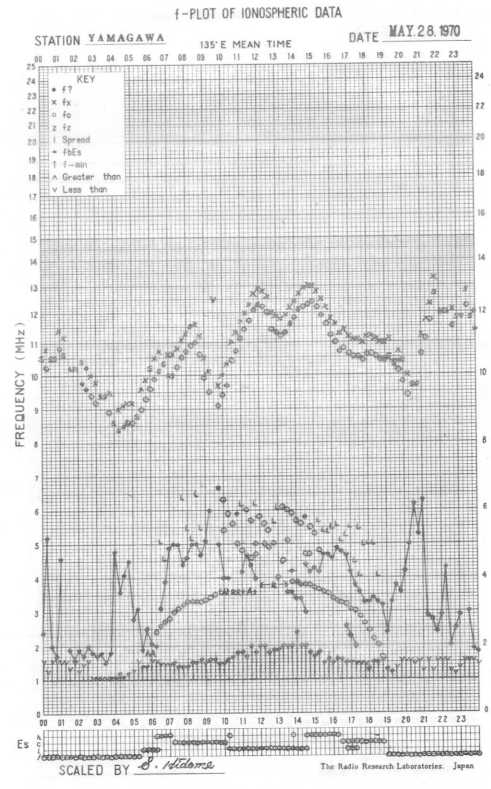
STATION KOKUBUNJI
135°E MEAN TIME
DATE MAY. 27. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan

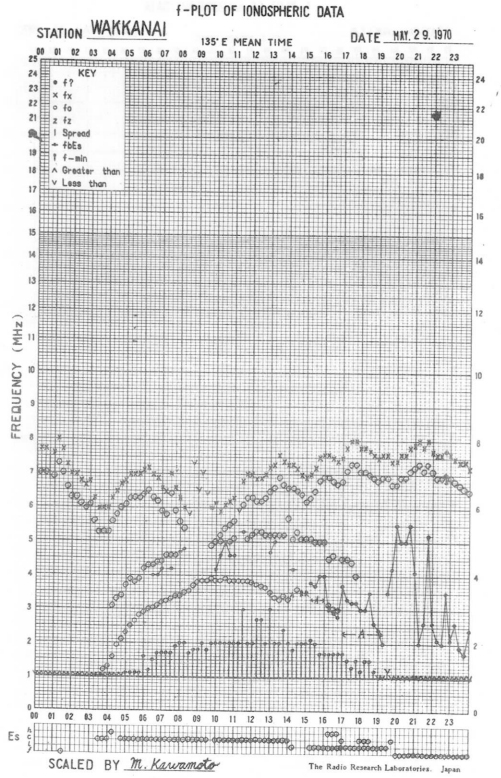

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE MAY. 27. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Itdema
The Radio Research Laboratories. Japan

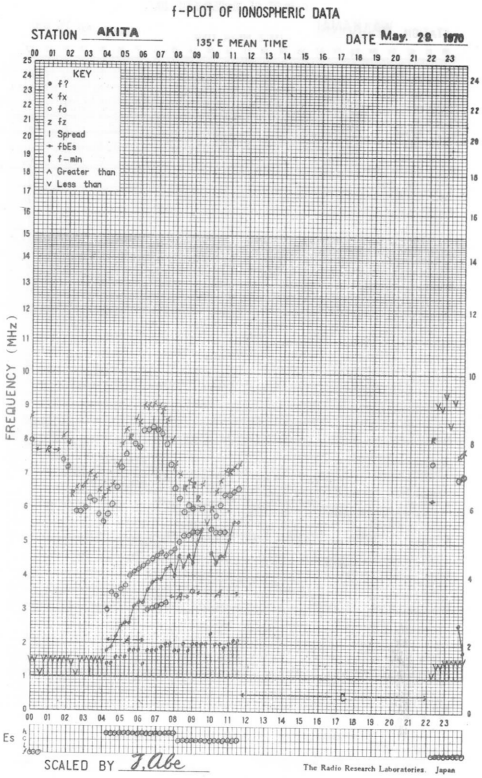

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE MAY. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan

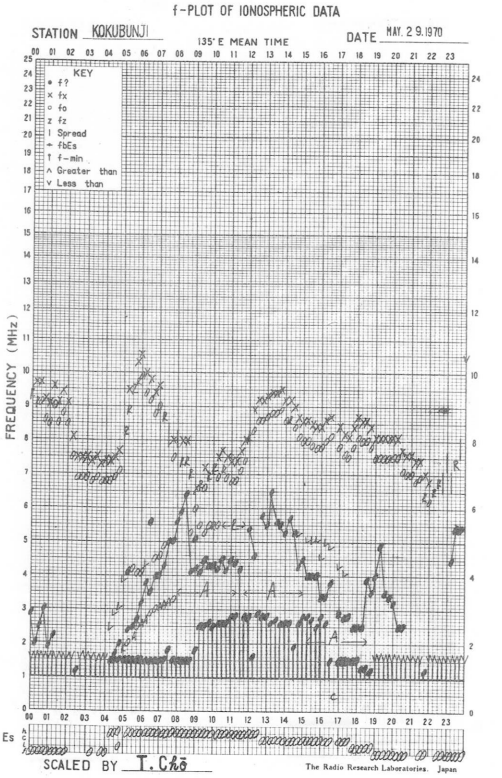

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE May. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY I. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE MAY. 28. 1970
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 MAY. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
÷ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Kitamura
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE MAY. 29. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE May. 29. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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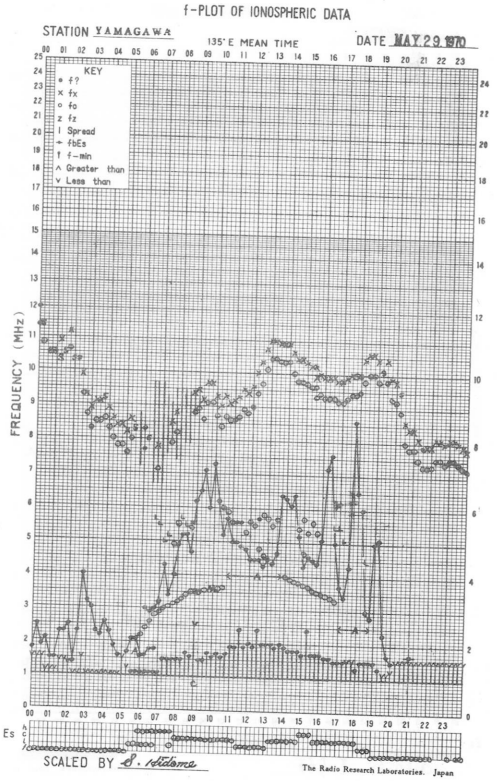
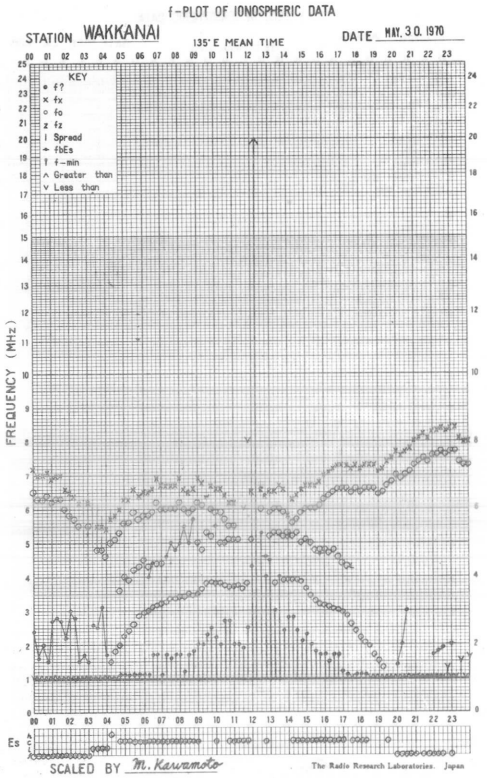
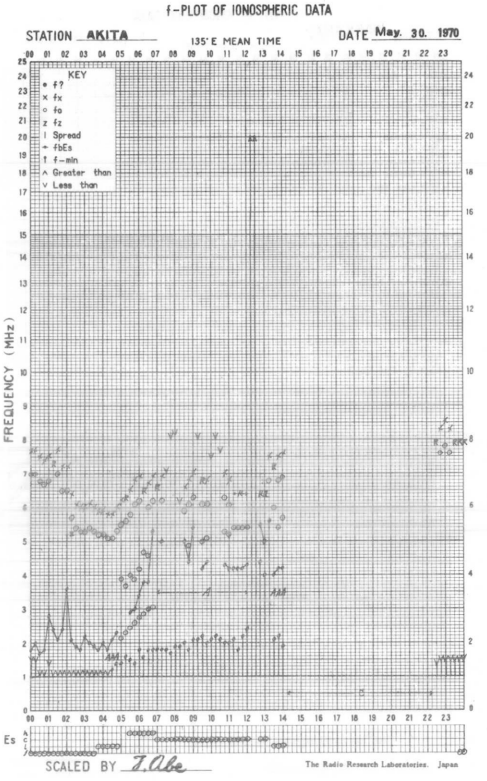
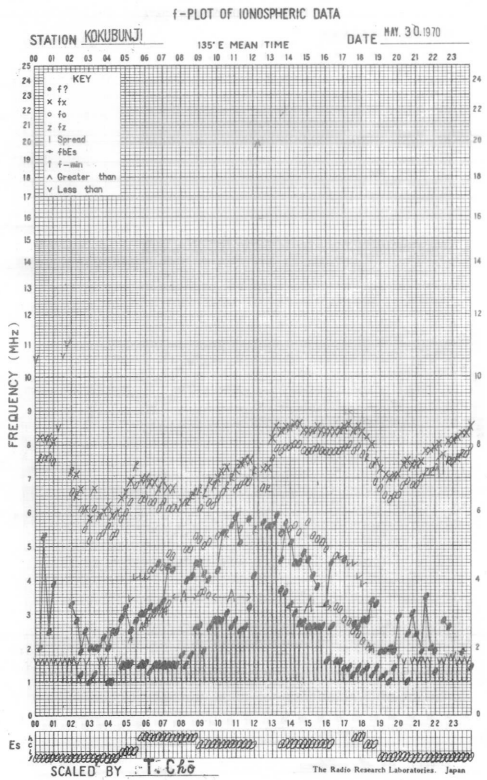
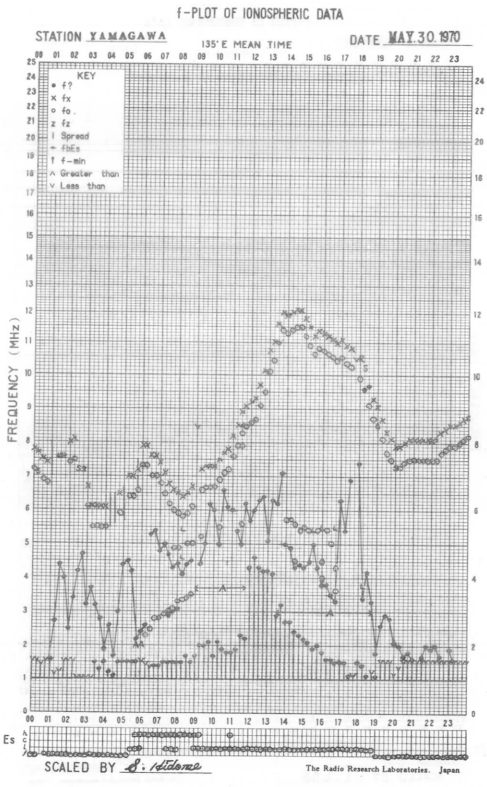
135° E MEAN TIME
DATE MAY. 29. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

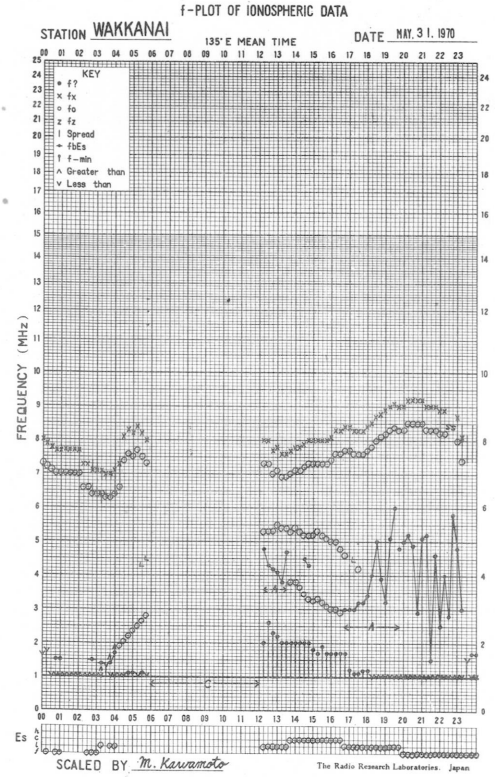

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE MAY. 29. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY S. Ishidama
The Radio Research Laboratories. Japan

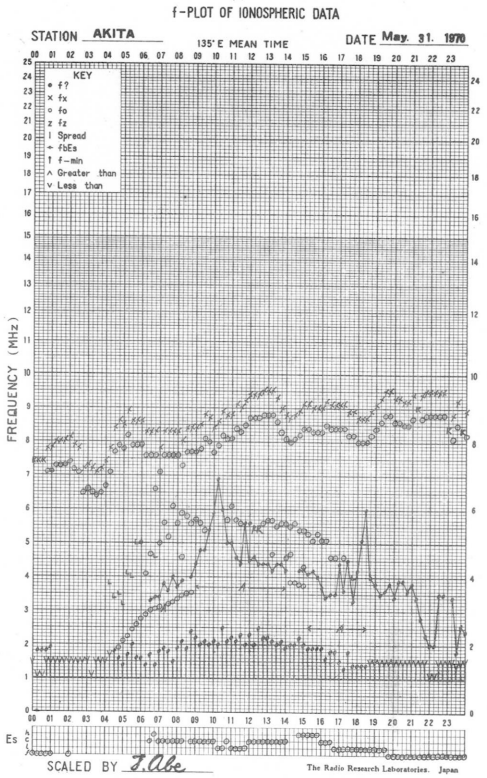

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE MAY. 30. 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⊢ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan

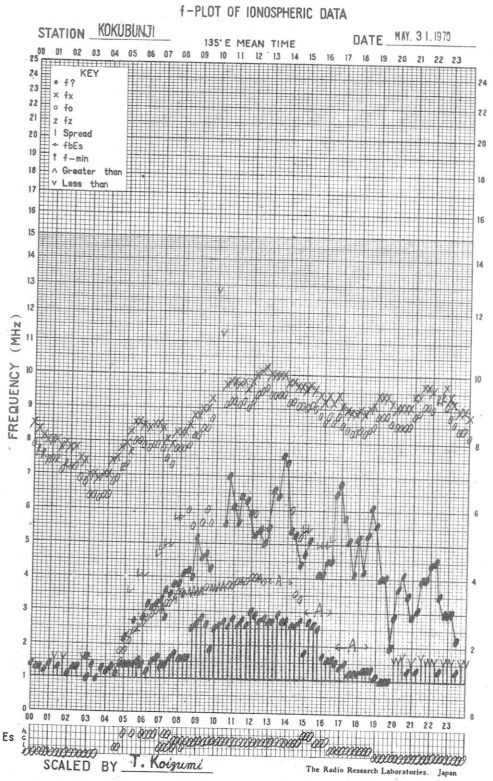

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE May. 30. 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⊢ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan

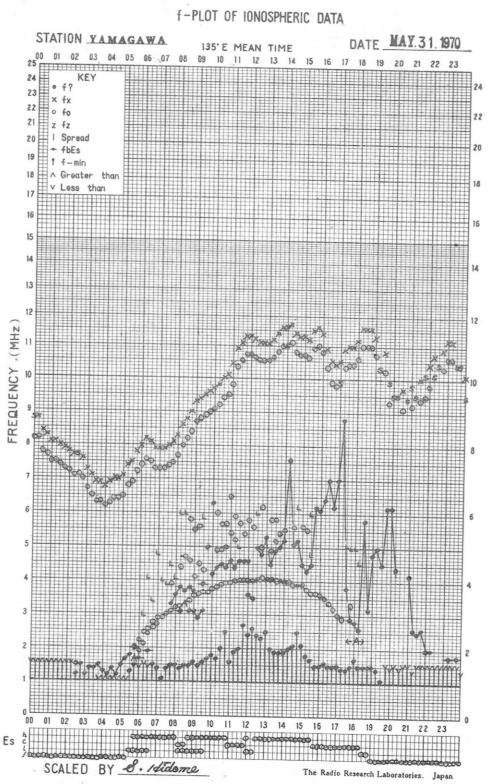

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE MAY. 30. 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⊢ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE MAY. 30. 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⊢ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Iidaka
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE MAY. 31. 1970
KEY
FREQUENCY (MHz)
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE May. 31. 1970
KEY
FREQUENCY (MHz)
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE MAY. 31. 1970
KEY
FREQUENCY (MHz)
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE MAY. 31. 1970
KEY
FREQUENCY (MHz)
SCALED BY S. Shiotama
The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: May 1970
Observing station: Hiraiso
Frequency: 200 MHz

	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$					Variability 0 to 3				
UT Date	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
1	8	9	12	23	9	0	1	1	1	1
2	20	13	15	6	18	1	1	1	0	1
3	5	5	5	5	5	0	0	0	0	0
4	5	6	6	6	6	0	0	0	0	0
5	6	5	6	5	6	0	0	0	0	0
6	5	6	5	6	5	0	0	0	0	0
7	7	7	7	7	7	0	0	0	0	0
8	7	7	7	7	7	0	0	0	0	0
9	7	6	7	7	7	0	0	0	0	0
10	7	7	7	7	7	0	0	0	0	0
11	7	7	7	8	7	0	0	0	0	0
12	9	9	9	8	9	1	0	1	0	1
13	9	8	10	7	9	0	0	0	0	0
14	7	6	6	19	7	0	0	0	1	0
15	14	8	10	6	13	1	1	1	0	1
16	6	8	6	9	7	0	1	0	1	0
17	6	6	6	6	7	0	0	0	0	0
18	6	6	6	7	6	1	0	0	1	0
19	7	7	8	6	7	1	1	0	0	1
20	6	7	7	9	6	1	1	1	1	1
21	7	7	8	9	8	0	0	0	0	0
22	32	32	23	11	24	1	0	0	1	0
23	9	8	7	8	9	1	1	1	0	1
24	7	8	7	5	7	0	0	0	0	0
25	5	6	7	6	6	0	0	0	0	0
26	6	7	7	5	6	0	0	0	0	0
27	7	7	7	7	6	0	0	1	0	0
28	6	5	6	7	6	1	0	0	0	0
29	6	6	7	6	6	0	0	0	0	0
30	5	7	6	6	6	0	1	0	0	0
31	5	6	6	6	6	0	0	0	0	0

Note No observations during the following periods:

27th 0500- 0700

SOLAR RADIO EMISSION

Flux Density

Month: May 1970
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	33	31	34	33	32
2	33	32	33	32	33
3	33	32	32	31	32
4	31	32	33	32	32
5	34	34	33	32	33
6	32	32	31	32	32
7	33	32	33	31	33
8	32	33	31	30	32
9	31	31	30	28	30
10	29	30	31	30	30
11	30	30	31	29	30
12	31	30	31	30	30
13	29	30	32	32	30
14	31	31	31	42	31
15	37	37	38	32	38
16	34	35	33	34	34
17	35	37	33	30	35
18	31	32	32	-	31
19	31	31	32	30	31
20	(30)	31	32	31	31
21	31	31	31	30	31
22	31	31	30	29	31
23	29	31	31	30	30
24	31	31	32	29	31
25	29	31	30	30	30
26	30	31	30	31	30
27	31	31	32	30	31
28	31	31	32	30	31
29	31	34	34	30	32
30	31	31	30	30	30
31	30	31	31	31	31

Note No observations during the following periods:

18th 2035- 19th 0010
20th 0130- 0310

Distinctive Events

(single-frequency observations)

Month: May 1970
Observing station: Hiraiso
Normal observing period: 1930 - 0940 (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	0035.5	0036.0	2.5	C	110	20	
4	500	0554	0614.5	29	RF	40	10	
	200	0550	0553	27	RF	2	1	
	100	0605	0610	25	RF	> 230	> 60	
8	200	2124.0	2124.2	1.0	C	510	130	
	100	2124.4	2125.0	1.2	C	290	110	
	500	2133.5	2133.5	0.5	C	20	3	
	200	2133.2	2134.8	2.0	C	2900	400	
	100	2133.8	2134.0	1.3	C	70	10	
15	500	0102.0	0102.5	1.5	C	630	200	
16	200	0345.0	0345.5	1.0	C	190	50	
18	100	2006.1	2006.5	1.0	C	> 320	> 130	
19	200	0125.5	0126.0	1.5	C	60	15	
	100	0125.4	0126.0	2.0	C	> 310	> 90	
	200	0216.0	0216.2	2.0	C	95	55	
	100	0216.5	0216.7	1.8	C	> 310	> 110	
	200	0304.0	0305.0	2.0	C	255	110	
	100	0303.8	0305.5	4.0	C	> 310	> 120	
	500	0510.0	0511.7	4.0	C	40	5	
	200	0509.0	0511.8	5.0	C	600	70	
	100	0509.8	0511.0	5.0	C	> 310	> 150	
	200	0519.5	0528.0	18.0	C	5	3	
	100	0519.0	0531	57.0	C	15	5	
20	200	2114.0	2115.0	1.5	C	100	20	
	100	2113.0	2115.2	3.5	C	> 410	> 160	
	200	2138.0	2139.5	2.5	C	50	15	
	100	2138.0	2139.0	4.2	C	> 410	> 75	
21	100	0320.9	0321.2	0.8	C	> 240	> 100	
22	100	0030.6	0032.0	2.5	C	130	35	
	200	2033.0	2039.5	8.0	C	170	10	
	100	2030.7	2033.2	4.0	C	> 220	> 90	
		2038.0	2038.4	2.7	C	> 220	> 100	
	500	2114.0	2115.0	2.5	C	260	30	
	200	2113.0	2114.2	5.0	C	40	5	
	100	2113.4	2114.3	2.8	C	> 220	> 100	
	500	2159.0	2159.9	4.0	C	80	20	
	200	2158.5	2159.0	4.5	C	90	15	
	100	2158.4	2159.1	6.0	C	> 210	> 150	
		2336.0	2337.5	4.0	C	> 210	> 35	
		2343.0	2343.6	2.2	C	> 210	> 35	

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
23	500	0050.0	0050.4	1.5	C	75	10	
	200	0050.5	0050.5	28	C	1100	5	
	100	0050.2	0050.8	0.8	C	>210	>25	
	500	0058.5	0100.0	1.5	C	55	2	
	200	no event						
	100	0056.7	0102.0	8.0	C	>210	>20	
	500	0339.0	0339.5	16.0	C	260	10	
	200	0337.0	0338.2	6.0	C	250	40	
	100	0334.0	0334.5	4.0	C	>180	>85	
		0515.8	0516.9	2.0	C	>170	>45	
		0642.0	0643.0	2.5	C	>170	>65	
	200	0647.0	0647.1	1.0	C	330	90	
	100	0645.2	0646.0	1.6	C	>170	>25	
	500	0654.5	0714.0	21.0	C	90	10	
	200	0654.0	0654.0	3.0	C	260	30	
	100	0654.3	0655.0	5.5	C	>150	>30	
		0700.7	0701.0	5.0	C	>150	>20	
		0712.5	0712.8	1.0	C	310	40	
	200	0725.0	0725.2	1.0	C	370	95	
	100	0725.8	0726.0	1.0	C	>310	>120	
	200	0745.0	0745.5	6.0	C	120	20	
	100	0745.2	0746.0	2.1	C	>310	>150	
24	500	0615.5	0615.7	1.0	C	150	45	
26	200	0450.0	0450.3	1.0	C	100	30	
	100	0450.3	0450.5	1.0	C	35	5	
	200	0729.0	0729.0	1.0	C	260	120	
27	200	2249.5	2250.0	1.0	C	100	35	
	100	2249.6	2250.6	1.0	C	>350	>95	
	200	2251.0	2251.5	1.0	C	620	40	
	100	2251.5	2252.4	1.5	C	>350	>65	
28	500	0122.5	0122.7	1.0	C	130	80	
	200	0120.0	0121.5	5.0	C	1380	60	
	100	0120.4	0120.7	4.5	C	>210	>115	
29	500	0217.5	0223.5	6.5	C	710	10	
	200	0217.8	0218.5	2.0	C	20	5	
	100	0222.0	0222.5	1.0	C	740	20	
		0335.0	0337.2	5.0	C	40	20	
	500	0605.0	0606.4	4.0	C	20	5	
30	500	0303	0311.5	19	RF	10	5	
	200	0304	0317.5	48	RF	75	25	
	100	0255	0330	130	RF	95	25	
	500	0452.0	0452.8	3.5	C	55	10	
	200	0452.6	0453.1	3.0	C	75	25	
	100	0452.0	0453.5	7.0	C	100	40	

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

MAY 1970 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	-2	5	4	10	14	20	17	ES -1	-2	4	0	-4	-2	13	16	3	10	7	8	7	1	3	-1	-11
2	-1	2	-5	-1	11	14	16	25	1	6	13	2	1	12	11	2	11	6	12	1	0	-3	-2	0
3	-18	-8	6	4	15	10	18	29	23	19	23	6	7	18	22	16	21	18	12	5	5	5	4	1
4	-2	0	0	0	6	13	13	17	0	-1	-1	0	-1	13	15	18	17	8	13	-3	5	6	0	5
5	-3	1	5	1	8	16	21	17	2	2	-3	6	8	18	18	17	6	13	13	10	8	-2	2	-2
6	3	-1	2	1	1	19	17	17	1	2	3	3	2	24	27	4	3	3	2	3	2	-6	ES -3	-4
7	7	8	3	8	10	19	19	38	22	22	14	ES 4	2	8	8	19	14	2	0	-1	5	3	2	-9
8	-2	-3	2	2	7	18	16	13	7	3	2	1	9	23	23	12	16	3	-3	0	2	-2	-2	-6
9	-5	-2	1	4	10	13	15	26	28	26	28	25	28	29	26	23	9	9	10	2	4	1	-1	-2
10	-2	2	7	8	14	20	20	27	27	27	22	24	27	23	24	16	13	17	11	7	2	-1	-4	-15
11	-7	-1	1	8	7	10	21	26	20	25	23	17	26	27	19	23	13	4	8	0	13	-4	-6	-9
12	-6	-7	2	2	6	19	15	22	18	6	3	3	14	23	17	19	13	7	-2	4	6	5	-2	0
13	-8	-8	-1	8	7	12	5	9	14	12	7	-3	-1	22	16	8	3	10	8	6	0	-2	-4	-3
14	-5	-7	-4	1	6	20	17	7	1	11	17	16	27	26	21	10	10	12	5	9	11	1	-3	0
15	-1	4	-5	-1	5	15	23	12	-1	-1	-3	1	9	30	20	5	8	8	7	-15	-2	-4	ES -28	-3
16	0	5	1	-1	6	9	12	11	13	5	4	10	25	23	23	25	19	12	10	3	4	-2	-7	-5
17	-5	0	0	5	8	8	11	5	25	7	7	-7	-6	7	7	17	12	18	12	7	6	12	3	6
18	5	6	C	6	11	18	21	25	22	17	20	22	22	28	13	13	18	12	8	11	7	1	-7	-4
19	-4	0	2	2	11	18	20	22	2	4	13	12	26	26	22	17	17	7	11	10	4	8	3	-4
20	4	-2	-2	3	7	12	14	22	25	22	6	1	16	27	8	14	12	15	ES -1	12	17	0	-5	-7
21	2	-7	3	ES 11	12	18	14	30	17	9	-5	-1	21	21	18	19	4	21	9	-1	5	1	-2	-6
22	-7	-16	-3	3	10	19	12	15	6	-2	-3	7	5	22	10	20	5	10	8	3	8	-3	-7	-4
23	-8	-10	-7	3	8	15	20	17	7	-3	-3	ES 1	15	19	12	11	5	11	4	8	3	-2	ES -6	-8
24	-4	-5	-7	4	7	12	16	22	21	23	11	2	7	15	8	16	13	17	1	2	ES 3	-6	-7	-6
25	-9	-7	-3	-4	3	6	6	-9	1	5	9	5	12	18	22	17	10	10	5	4	1	0	-6	-8
26	-13	-17	-5	1	10	16	22	22	21	20	17	19	30	26	14	14	11	6	0	-4	-6	-10	-7	-8
27	-3	-7	6	17	17	16	20	15	1	2	7	6	23	23	21	22	18	14	4	7	3	4	7	3
28	19	-2	5	7	7	8	9	13	8	12	14	-5	7	-5	15	7	4	ES -33	ES -2	ES -12	ES -33	-10	ES -24	ES -33
29	-18	-6	C	C	C	-17	ES -34	-19	-10	ES -19	-9	ES -13	-12	-6	2	6	-5	0	-5	16	1	-4	7	-3
30	ES -34	-13	ES -34	-16	-4	10	12	12	10	12	-9	-12	6	6	4	15	11	4	5	6	6	5	1	-10
31	-1	4	2	-1	5	5	14	10	15	20	11	9	5	16	21	11	5	9	6	6	-5	6	0	-11
CNT	31	31	29	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	-3	-2	1	US 3	8	15	16	17	10	7	7	US 3	9	22	17	16	11	9	7	4	4	0	-2	-4
UD	5	5	6	ES 10	14	20	21	29	25	25	23	22	27	28	24	23	18	18	12	11	11	6	4	3
LD	-18	-13	-7	ES -1	3	6	6	ES -1	-1	-2	-5	ES -7	-2	6	7	4	3	2	ES -2	-4	ES -5	-6	ES -7	-11

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

MAY 1970 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	0	-7	-2	5	6	17	19	25	26	27	26	24	22	20	22	23	18	14	14	3	7	ES -2	ES -1	ES -10
2	-12	-8	-3	8	11	14	16	22	19	20	18	18	21	21	14	17	18	17	1	3	-1	-3	-8	-13
3	-12	-5	-2	3	8	11	15	23	24	23	21	22	22	7	8	10	9	12	7	10	7	-2	-3	-8
4	-6	-3	-7	1	2	12	18	21	18	23	23	24	19	19	13	19	19	21	12	6	1	ES -5	-9	-13
5	-5	-5	-3	2	8	16	18	20	25	26	27	23	24	17	26	27	23	15	6	16	6	1	-6	-6
6	-10	-5	-1	1	8	13	18	19	25	22	22	23	23	14	22	24	21	7	4	5	3	ES -1	ES -4	ES -2
7	-10	-3	-3	3	9	14	22	13	19	23	26	20	17	10	13	20	13	10	9	6	-4	0	-11	ES -33
8	-12	-11	-2	1	8	15	18	19	25	25	26	23	27	12	20	2	18	12	2	3	3	-2	-8	-7
9	-8	-7	-3	0	8	14	19	24	24	26	26	24	26	24	20	24	17	19	9	5	4	-2	-7	-8
10	-11	-8	-1	-2	7	17	22	22	23	22	25	26	25	21	18	20	21	16	11	1	-2	-7	-9	-17
11	ES -6	-4	-5	-1	2	8	17	23	23	23	21	18	25	24	23	18	14	13	7	4	-3	-8	-9	-13
12	-11	-11	-6	2	4	12	20	18	23	23	23	22	20	21	21	21	13	12	-1	7	-2	-11	-11	-8
13	-10	-12	-5	2	7	7	17	19	22	23	19	22	19	22	17	19	17	13	-1	US 7	0	-6	-8	-15
14	-15	-14	-4	2	7	15	18	21	21	21	27	25	26	19	19	24	23	13	6	6	0	-10	ES -26	-10
15	-14	-11	ES -29	1	5	12	13	16	21	26	26	26	20	24	17	19	19	7	7	0	1	0	-8	-10
16	-15	-7	-4	-2	6	10	16	20	24	26	23	24	23	23	23	21	21	19	4	8	-3	ES -10	-8	-8
17	-11	-6	-4	2	4	10	21	25	23	23	25	29	19	23	21	27	24	15	11	6	1	1	-7	-8
18	-1	-1	-1	6	11	16	18	21	27	23	27	21	18	22	11	22	22	11	1	ES 13	7	-4	-9	-6
19	-8	-7	-3	2	7	14	18	21	27	27	20	23	21	22	22	17	22	17	6	1	3	-6	-6	-12
20	-13	-9	-1	4	8	14	14	15	26	22	22	26	20	17	25	24	22	17	11	7	-3	2	-7	-11
21	-12	-13	ES -5	4	11	10	16	18	20	20	19	21	22	20	22	21	20	13	7	3	0	-7	-7	-11
22	ES -28	-12	-3	3	9	11	20	23	22	21	20	18	21	22	21	11	19	10	6	7	-3	-7	-3	-13
23	-15	-13	-4	-3	7	16	19	22	24	22	21	22	25	24	21	11	23	11	4	9	1	-3	-3	-12
24	-13	-3	-6	0	10	12	22	16	24	23	25	22	23	22	21	18	21	12	5	4	-2	-6	-9	-13
25	-17	-17	-14	-4	6	3	12	22	25	23	22	22	23	18	25	22	22	18	7	1	0	-4	-8	-10
26	-19	-13	-8	3	12	18	21	22	21	23	23	22	27	27	20	14	8	13	3	4	-3	-7	-14	-7
27	-4	S	4	13	6	11	15	18	22	22	22	22	21	22	20	22	23	13	8	11	2	-2	1	-9
28	-11	-5	-2	2	7	8	12	19	18	20	22	16	19	8	-4	-9	2	13	ES 8	-2	-12	-5	ES -33	-13
29	-15	-8	C	C	6	7	11	12	7	14	16	17	22	11	15	11	13	7	6	2	1	-3	-12	-16
30	ES -34	-16	-20	-23	3	10	17	20	16	22	12	12	20	20	15	14	8	4	-1	5	4	-3	-7	-4
31	-5	-7	-14	ES -6	2	6	14	15	20	21	15	15	12	16	-1	1	12	15	6	6	1	-6	-5	-10
CNT	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	US -11	-8	-4	2	7	12	18	20	23	23	22	22	22	21	20	19	19	13	US 6	US 5	1	US -4	US -8	US -10
UD	-4	-3	-1	6	11	17	22	24	26	26	27	26	26	24	25	24	23	19	11	ES 11	7	1	ES -3	ES -6
LD	ES -19	-14	ES -14	-4	2	7	12	15	18	20	16	16	18	10	8	2	8	7	ES -1	ES 1	-3	ES -10	ES -14	ES -16

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

May 1970	Whole Day Index	H B 06 12 18 / 12 18 24	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	4o	4 5 3	4 3 4 4	4 5 - 4	4 4 5 5	N N N N			
2	4-	4 (4) C	3 4 4 (3)	3 4 - -	4 4 4 4	N N N N			
3	5-	5 5 (4)	4 5 5 4	(4) - - -	4 4 4 4	N N N N			
4	4-	4 4 5	3 3 4 4	3 4 - 4	4 4 4 4	N N N N			
5	4o	4 4 5	(4) 3 4 3	4 (4) - 4	4 4 4 4	N N N N			
6	4-	4 4 4	(3) 3 4 3	4 4 - 3	4 4 4 3	N N N N			
7	4o	4 4 4	(4) 5 4 4	3 3 - 5	4 4 4 (3)	N N N N			
8	4+	4 5 5	4 4 4 4	5 4 - 5	4 4 4 (3)	N N N N			
9	5-	4 5 5	4 5 5 5	5 4 - -	4 5 5 4	N N N N			
10	5-	4 4 (4)	5 5 5 5	(5) - - -	4 5 5 4	N N N N			
11	5-	4 5 4	5 5 5 5	4 4 - 4	4 5 5 4	N N N N			
12	4o	(4) 4 3	5 4 5 4	4 4 - 4	4 4 4 4	N N N N			
13	4o	4 4 4	4 4 4 5	4 3 - 4	4 4 4 4	N N N N			
14	4o	4 4 3	5 4 5 4	4 4 - 3	4 4 4 4	N N N N			
15	4-	4 4 3	(4) 3 5 3	4 (3) - 3	4 4 4 4	N N N N			
16	4o	3 5 4	(4) 4 5 4	3 3 - -	4 4 5 4	N N N N			
17	4-	4 4 (4)	4 4 3 3	(4) - - -	4 4 4 4	N N N N			
18	4+	5 5 4	4 5 4 4	(4) 3 - 4	5 4 4 4	N N N N			
19	4+	4 5 5	4 4 5 4	4 5 - 3	4 4 4 4	N N N N			
20	4o	5 5 4	4 4 4 4	3 4 - 3	4 4 4 4	N N N N			
21	4o	4 4 4	4 4 5 4	4 4 - 4	4 4 5 4	N N N N			
22	4o	4 4 4	4 3 4 4	4 4 - 4	4 4 4 4	N N N N			
23	4+	5 4 4	4 3 5 5	4 4 - -	4 5 5 5	N N N N			
24	4+	5 4 4	5 5 4 4	(4) - - -	4 4 4 4	N N N N			
25	4-	3 4 3	3 3 4 (4)	(4) 5 - (5)	3 4 5 4	N N N N			
26	4+	4 4 4	4 5 5 5	4 4 - 5	4 5 4 4	N N N N			
27	4o	4 4 3	4 3 5 4	5 4 - 4	4 3 4 5	N N N N	05.14	---	133
28	3o	3 2 2	4 4 3 3	3 3 - (2)	4 4 3 3	N N N N	---	---	
29	2+	2 3 3	2 2 2 2	3 (4) - (2)	(4) 3 4 3	N N N N	---	15xx	
30'	3o	3 3 3	2 3 3 3	3 3 - -	3 4 4 4	N N N N			
31	3+	3 3 (3)	3 4 4 4	(3) - - -	3 4 4 4	N N N N			

GEOALERT

" = PROTON FLARE
* = MAGSTORM
o = 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.

May 1970	S W F										Correspondence		
	Drop-out Intensities (db)						Start-time	Dura-tion	Type	Imp.	Flare	Solar Noise	Mag.
	CO	LM	HA	TO	HB	SH							
8	x'				27		07.05	52	Slow	2+	x		
10	12						22.57	63	Slow	1-			
11	5	7			4		04.40	39	Slow	1-			
14	x	20			14		22.28	32	G	1+	x		
15		13					02.23	xx	S	1	x	x	
15		11					02.38	24	S	1-			
15					26		09.23	44	Slow	2		x	
15					25		10.32	52	G	2			
15	x	37			28	26	22.05	35	Slow	2+			
16			9				18.30	35	Slow	1+			
17					10		04.16	26	Slow	1-		x	
22			10				00.27	xx	G	x		x	
23			x		x		03.41	11	S	x		x	
23		10			7		06.53	27	Slow	1-		x	
25					7		05.12	28	Slow	1-	x		
26		10			17	x	04.47	20	S	1+		x	
26					25		11.22	18	S	2		x	
27	12	5	x				01.15	20	S	1	x		
			x"										
29		9					02.20	40	S	1-		x	
29					x		23.59	14	S	x		x	
30	x		x				02.40	125	G	x	x	x	

I N U B O

1970	S	P	A						Remarks
May.	Phase Advance (degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
3				14	9	0002	0032	0010	
4			16	–	13	0001	0054	0015	X
4					18	1929	2010	1938	X
5		14	13		28	2100	2138	2106	
6	20	22	26	20	35	2242	2336	2250	X
7			14	8	9	0053	0123	0100	
7				10	7	0347	0425	0354	X
7					22	2030	2112	2041	
7			16	8	29	2227	2357	2247	
8	80	50	29	80	35	0703	0835	0718	X
10			34		31	1936	2025	1943	X
10	32	40	48	24	53	2256	0020	2305	
11	38	25	22	56	32	0440	0613	0458	
12	73			80		0718	0926	0742	X
12					18	1932	2003	1942	X
12		20	24		26	2204	2251	2212	
13					10	2126	2152	2132	
14		9		8	7	0039	0056	0046	
14	20	61	53	48	77	2227	2358	2247	X
15	73*	42*	38*	104*	103*	0223	0356	0248	X
15				8		0503	0520	0508	X
15				8		0718	0738	0725	
15	65					0925	1052	0934	X
15	35	99	107		135	2202	2326	2213	
16	36		–	52	44	0317	0505	0325	

1970 May.	S P A								Remarks
	Phase Advance(degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
16	20			24		0736	0830	0748	X
16	15	50	54		60	2129	2243	2145	X
17	35		26*	64	–	0417	0530	0428	X
19			10	24	13	0346	0425	0353	X
22		36	18	32	31	0028	0140	0047	X
22					16	2035	2100	2041	X
23				8	14	0006	0044	0012	
23				10	4	0103	0128	0108	
23	30		29	60	46	0340	0448	0347	
23	20			28		0658	0744	0705	
24				10	9	0358	0423	0403	
24	30			38		0617	0718	0630	X
24					13	2202	2301	2213	
25				–	11	0237	0311	0247	X
25	22	–	26	64	33	0512	0623	0530	X
25		–	40	30		0621	0722	0638	
26				16	13	0036	0103	0048	
26	25	38	26	32	34	0106	0142	0114	X
26		43	21	44	34	0240	0333	0250	X
26	40*	61	32	69*	45	0449	0610	0455	X
26	25			24		0815	0908	0827	X
26	–		23		15	2202	2258	2218	
27	–	60	26	48	38	0114	0213	0124	
28			13	28	22	0123	0158	0125	
28			16			0208	0246	0219	

1970 May.	S P A								Remarks
	Phase Advance(degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
29	15		22	60	42	0221	0321	0232	
29				12	7	0327	0353	0340	
29			15			0435	0525	0439	
29				12		0516	0541	0522	
29	20	40	15	48		0607	0710	0615	X
29			13		20	2214	2303	2225	
30	18		24*	48*	48*	0000	0123	0007	
30	45	–	29	112	77	0235	0725	0330	X
30					7	2307	2338	2311	
31			10	8	6	0052	0119	0059	
31				24	7	0244	0414	0257	X
31				4	8	2248	2322	2254	

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

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

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

IONOSPHERIC DATA IN JAPAN FOR MAY 1970

第 22 巻 第 5 号

1970年8月20日 印 刷
1970年8月25日 発 行

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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