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IONOSPHERIC DATA IN JAPAN

FOR JUNE 1970

VOL. 22 No. 6

Issued in September 1970

Prepared by

THE RADIO RESEARCH LABORATORIES

MINISTRY OF POSTS AND TELECOMMUNICATIONS

TOKYO, JAPAN

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

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

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

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

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

SYMBOLS AND TERMINOLOGY

A. IONOSPHERE

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

Terminology

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

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

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

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

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

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

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

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

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

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

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

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

a. Descriptive Letters

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

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

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

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

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

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

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

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

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

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

b. Qualifying Letters

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

the monthly tabulation sheets.

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

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

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

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

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

d. Description of Standard Types of *Es*

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

F — An *Es* trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat *Es* traces observed in the daytime are classified according to their virtual hight: *H* or *L*.

L — A flat *Es* trace at or below the normal *E* layer minimum virtual height in the day or below the night *E* layer minimum virtual height at night.

C — An *Es* trace showing a relatively symmetrical cusp at or below f_0E. This is usually continuous with the normal *E* trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)

H — An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above f_0E. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

Q — An *Es* trace which is diffuse and non-blanketing over a wide

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

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

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

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

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

e. Multiple Reflections from *Es*

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

B. SOLAR RADIO EMISSION

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

a. Time and Unit

The time is expressed as U.T.

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

b. Daily Data

Flux density

The three-hourly and daily mean values are given.

Variability

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

Variability is expressed in the following four grades:

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

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

c. Distinctive Events

The phenomena are picked up on the following criteria:

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

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

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

Descriptive type is denoted by the following symbols:

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

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

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

C. RADIO PROPAGATION CONDITIONS

a. Field Strengths of WWV and WWVH

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

±40 Hz bandwidth.

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

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

Transmitter

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

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

Receiver

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

The meaning of *Descriptive symbols* is as follows:

C : Measurement influenced by, or impossible because of, any non-propagational reasons.

S : Measurement influenced by, or impossible because of, interferences or atmospherics.

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

E : Less than the following figure.

b. Radio Propagation Quality Figures

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

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

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

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

N = normal
U = unstable
W = disturbed

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

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

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

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

(i) SWF

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

Circuits and Drop-out intensities

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

Start-time and Duration

Types

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

Importances

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

1−	1	1+
2−	2	2+
3−	3	3+

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

(ii) SPA

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

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

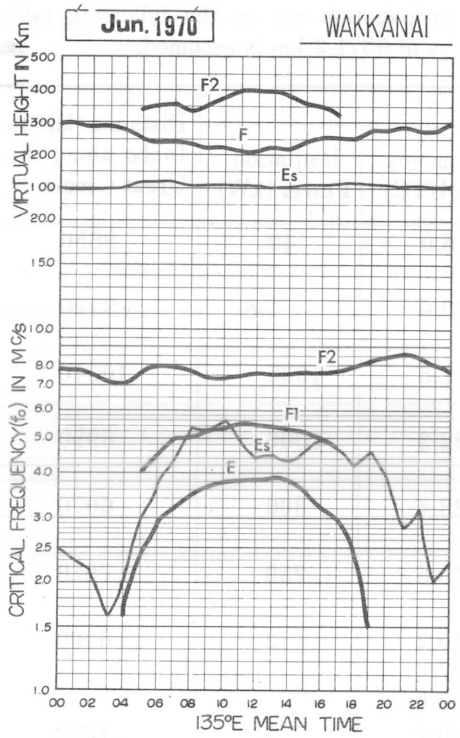
Transmitting Site					Distance (km) to Inubo along the Great Circle
Name	Location (Geographic Coordinate)	Station Call	Frequency (kHz-UTC)	Radiation Power (kW)	
Rugby	52°22′N 001°11′W	GBR	16.0	40	9550
Fort Collins	40°41′N 105°03′W	WWVL	20.0	1.8	9190
Cutler	44°39′N 067°17′W	NAA	17.8	1000	10640
North West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

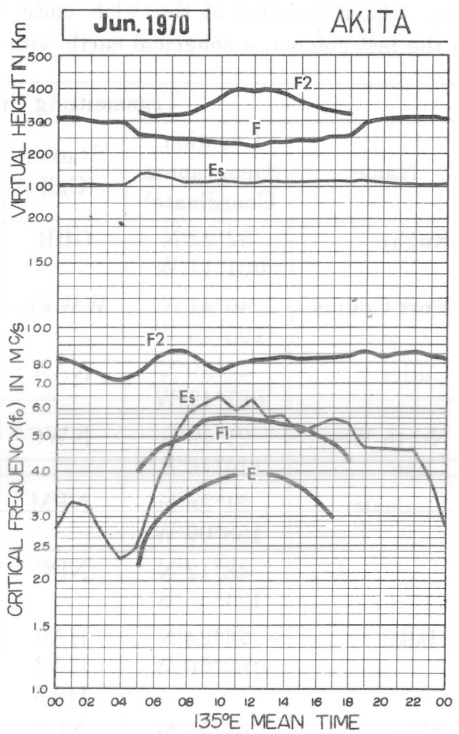
The phase advance is shown in its maximum stage. In the column 'Phase Advance', — means no transmission or no reception during the period, and blank means indistinguishable record.

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

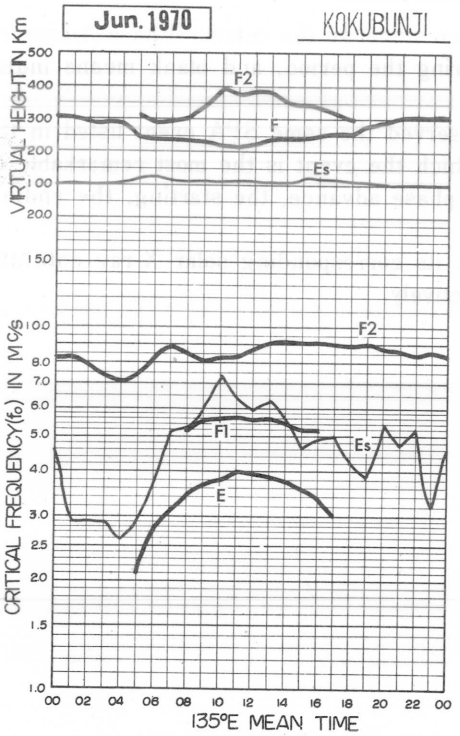
In the column 'Remarks', the event with its corresponding solar X-ray data and solar radio data is shown by 'X' and 'R', respectively.

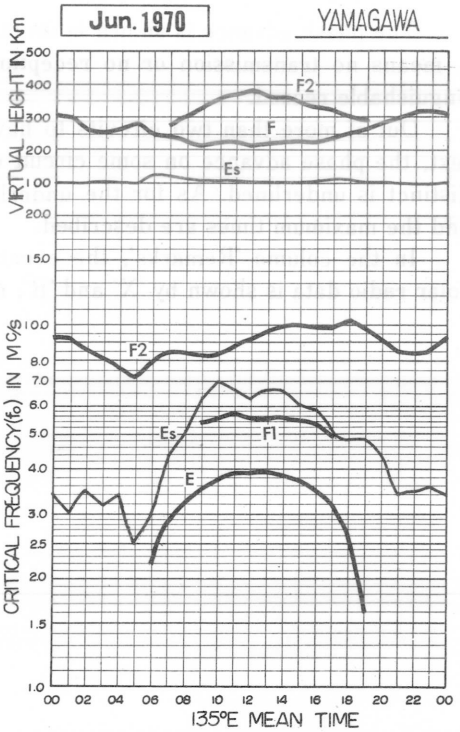
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS





IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: WAKKANAI

Jun. 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	077	074	071	070	076	079	079	077	073	073	074	076	075	075	076	075	076	078	082	084	086	084	080
	CNT	24	20	22	23	26	29	29	28	27	26	27	27	27	27	27	28	24	25	26	28	28	26	26	27
	Q R	012	006	008	010	008	009	015	019	015	015	011	003	011	012	014	011	014	014	010	013	014	012	010	007
foF1	MED					300	400	450	495	500	520	530	550	540	540	530	520	500	470	400					
	CNT					3	12	17	18	15	18	17	17	22	22	23	22	16	12	3					
foE	MED				E	160	238	295	315	345	365	380	380	382	388	375	360	320	300	235	150	E			
	CNT				25	15	26	29	29	29	29	28	26	20	16	18	20	22	24	21	14	1			
foEs	MED	J025X	J023X	J022X	016	020	030	037	043	J053X	052	J056X	050	044	045	043	046	050	J047X	J042X	J046X	J040X	J028X	J032X	020
	CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	29	29	29	30	30	30	30	30
	Q R	016	012						013	019	021	020	017	022	020		021	033	039	045	031	040	040	035	D016
f-min	MED	E	E	E	E	E	012	012	016	017	019	020	020	020	020	019	018	017	016	011	E	E	E	E	E
	CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	29	29	29	30	30	30	30	30
M (3000) F2	MED	265	270	270	270	265	270	270	275	285	275	280	275	275	270	275	280	275	280	280	280	275	270	270	270
	CNT	24	20	22	23	26	29	29	28	27	26	27	27	26	27	27	28	24	25	26	28	28	26	26	27
M (3000) F1	MED					325	335	340	350	355	360	365	355	350	350	340	340	338	338	325					
	CNT					3	12	15	15	11	16	13	15	19	21	23	20	16	8	3					
h'F2	MED					345	338	345	310	342	350	372	400	395	395	380	360	350	325	315					
	CNT					3	14	21	27	24	24	22	23	24	26	27	27	22	18	4					
h'F	MED	295	295	288	292	275	250	240	240	240	220	215	210	210	220	215	240	250	250	250	275	275	280	270	270
	CNT	28	26	28	30	27	27	23	17	13	18	16	18	21	20	24	21	18	15	14	15	19	23	23	26
h'Es	MED	100	100	100	100	105	120	120	120	110	110	110	110	110	105	105	110	110	110	110	110	110	105	105	105
	CNT	21	23	20	15	19	16	20	28	28	28	24	25	24	24	20	26	25	24	27	28	27	26	23	17
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: AKITA

Jun. 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	082	080	076	074	071	074	082	086	086	078	076	080	082	082	084	082	083	083	083	086	082	085	086	084
	CNT	26	27	27	27	27	30	30	30	30	30	28	27	26	28	29	30	29	29	29	29	28	27	26	26
	Q R	010	009	010	008	007	006	014	012	016	014	012	012	014	015	015	013	013	015	015	013	011	006	011	010
foF1	MED						400	450	480	500	550	560	555	560	550	540	530	500	480	425					
	CNT						10	19	16	18	21	21	22	20	23	24	24	19	16	6					
foE	MED					E	220	285	315	345	360	375	388	390	390	380	360	330	295	245					
	CNT					7	19	21	17	21	19	11	4	3	7	8	11	12	7	4					
foEs	MED	J028X	J033X	J032X	J026X	J023X	025	036	J048X	J058X	J062X	J065X	J059X	J063X	J056X	J057X	J051X	J053X	J056X	J054X	J046X	J046X	J046X	J046X	J039X
	CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	29	30	30	30	30	30	30	29
	Q R	D024	D015	D016	D018	D012		007	021	026	031	028	025	043	024	033	025	030	052	040	041	040	045	035	034
f-min	MED	E014S	E	E	E	E	015	015	016	018	019	022	022	021	021	020	018	017	015	014	014	E014S	E014S	E014S	E014S
	CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	29	30	30	30	30	30	30	29
M (3000) F2	MED	260	265	270	270	260	270	275	280	280	272	265	265	265	265	265	270	280	280	280	280	270	260	265	260
	CNT	26	27	27	27	27	30	30	30	30	30	28	27	26	28	29	30	29	29	29	29	28	27	26	26
M (3000) F1	MED						310	328	345	350	345	350	350	350	350	340	330	335	320	315					
	CNT						10	18	14	16	20	19	22	19	23	21	22	19	15	6					
h'F2	MED						328	308	315	320	350	370	393	392	395	380	360	340	335	320	335				
	CNT						18	30	30	27	27	25	26	26	27	27	28	29	29	29	2				
h'F	MED	305	308	295	290	295	255	230	240	240	235	223	225	222	230	230	240	240	250	255	290	300	300	305	305
	CNT	29	30	30	30	30	28	26	17	17	19	18	19	18	21	19	19	14	13	16	26	27	28	30	28
h'Es	MED	105	105	105	105	105	140	130	125	115	115	115	115	110	112	115	115	115	115	115	115	110	110	110	105
	CNT	25	27	27	27	25	21	27	29	30	30	29	28	27	24	27	24	27	28	30	30	30	29	29	25
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: KOKUBUNJI

Jun. 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	083	084	080	074	070	074	084	090	086	081	083	083	087	091	091	091	090	090	089	091	087	086	084	086
	CNT	23	23	21	27	29	30	30	28	29	23	21	27	26	25	28	29	28	27	28	28	25	24	24	25
	Q R	012	011	010	008	009	012	011	011	014	008	010	013	010	014	017	011	012	015	017	018	011	008	008	011
foF1	MED							450L	490	515L	545L	550	560	550	560	540	520L	520L	435L	420L					
	CNT							3	2	8	10	12	10	11	12	15	17	12	4	1					
foE	MED						210	275	312	345	370	380	400	U395A	390	380	360	340	300	230					
	CNT						11	20	16	13	13	8	7	8	11	12	18	19	15	4					
foEs	MED	J046X	J029X	J029X	J029X	J026X	029	036	J051X	J052X	J061X	J074X	J064X	059	J063X	J057X	046	J049X	J050X	J042X	J038X	J054X	J047X	J052X	J032X
	CNT	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	29	30	30	30	30
	Q R	D034	D018	D025	D018	009	010	010	021	032	030	039	038	031	035	031	016	026	D036	D029	D043	D032	D060	D058	D038
f-min	MED	E015S	012	012	012	012	014	015	015	015	025	025	025	026	026	025	025	015	015	014	013	012	013	E015S	013
	CNT	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	29	30	30	30	30
M (3000) F2	MED	265	270	280	275	272	285	280	290	290	270	270	265	270	270	275	280	280	280	282	280	270	265	265	265
	CNT	23	23	21	26	28	29	29	26	26	23	21	26	26	25	28	29	28	27	28	28	26	24	24	25
M (3000) F1	MED							320L	338	350L	348L	350	355	350	350	360	350L	338L	332L	300L					
	CNT							3	2	7	10	12	9	10	12	15	16	10	4	1					
h'F2	MED						310	280	290	300	338	390	375	385	380	352	350	338	312	300					
	CNT						8	25	26	27	22	22	25	25	25	28	29	26	27	21					
h'F	MED	308	300	285	285	290	250	240	240	232	230	220	215	220	240	240	238	250	260A	260	278	292	310	305	310
	CNT	30	30	30	30	30	29	26	18	16	17	12	16	13	15	20	21	19	21	24	27	28	29	30	29
h'Es	MED	100	100	100	100	100	120	125	115	110	110	110	110	110	110	110	120	115	115	110	110	105	100	100	100
	CNT	30	30	29	29	26	29	27	29	28	29	28	29	28	30	29	27	28	29	30	28	30	30	30	30
hpF2	MED	400	390	380	380	380	350	370	325	330	368	392	400	400	395	390	380	370	355	358	370	385	400	400	400
	CNT	23	23	21	27	29	30	30	26	25	22	20	20	20	23	26	28	28	26	28	28	26	24	24	25
ypF2	MED	090	090	100	100	095	100	100	100	100	110	100	100	100	095	100	098	100	100	100	100	100	100	092	090
	CNT	23	23	21	27	29	30	30	26	25	22	20	20	20	23	26	28	28	26	28	28	26	24	24	25

IONOSPHERIC DATA
LIST OF MEDIAN VALUES

OBSERVED AT: YAMAGAWA

Jun. 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	092S	092S	085S	081S	076	072	080	085	083	082	084	088	091	096	099	100	098	098	102	097S	091S	084S	084S	086S
	CNT	21	18	21	23	19	21	25	26	26	26	28	27	28	29	29	28	27	27	26	27	27	26	26	24
	Q R	020	020	015	014	011	012	005	011	012	012	014	013	007	013	012	017	022	019	016	012	011	012	012	014
foF1	MED							U380L	445	495	540L	550	570	550	550	550	540	530L	490	475L					
	CNT							1	2	4	11	13	17	22	19	23	19	15	15	2					
foE	MED							220	285	320	352	375	390	390	390	385	375	350	320	260	160				
	CNT							20	22	22	20	21	16	15	12	13	12	18	18	19	5				
foEs	MED	J034X	J030X	J035X	J032X	J034X	J025X	030	J044X	J051X	J063X	J070X	J067X	J063X	J067X	J057X	060	J059X	J049X	J048X	J043X	J044X	J034X	J035X	J036X
	CNT	27	27	26	25	26	24	26	26	25	27	28	28	29	29	29	28	27	27	27	27	27	27	27	27
	Q R	D034	D024	D018	D014	D018	D011	009	015	030	022	045	D039	D028	027	D054	040	024	018	034	032	D037	D017	D024	D029
f-min	MED	E015S	E014S	E014S	012	E	E011E	E015S	015	015	016	018	019	019	019	019	018	016	015	015	012	E015S	E015S	E015S	E015S
	CNT	27	27	26	26	26	24	26	26	25	27	28	28	29	29	29	28	27	27	27	27	27	27	27	27
M (3000) F2	MED	265S	270S	280S	235S	280	270	285	300	290	275	268	262	265	265	265	275	275	275	280	280S	275S	265S	260S	260S
	CNT	21	18	21	23	19	21	25	26	25	26	28	26	28	29	28	27	27	27	26	27	27	26	26	24
M (3000) F1	MED							U320L	375L	335	338L	348	342	355	355	340	345	340L	330	315L					
	CNT							1	1	3	10	10	12	13	11	14	15	12	13	2					
h'F2	MED							275	275	300	328	355	372	372	360	365	345	325	325	300	292				
	CNT							4	25	23	25	23	25	26	27	26	27	25	26	24	10				
h'F	MED	305	295	260	260	268	282	245	239	232	210	217	U214	U210A	220	218	228	225	228	250	270	282	294	306	318
	CNT	27	27	25	26	26	26	26	20	15	13	12	12	13	13	13	15	14	15	14	23	27	26	26	26
h'Es	MED	100	100	100	100	100	100	125	120	115	110	110	110	105	105	105	105	110	115	110	110	102	100	100	100
	CNT	27	26	26	26	24	23	26	26	24	27	28	27	29	29	28	28	27	24	26	27	26	27	27	27
hpF2	MED																								
	CNT																								
ypF2	MED																								
	CNT																								

IONOSPHERIC DATA

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

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

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	F	F	F 73	F 67	64	76	82	90	87	80	76	74	78	79	76	83	90	84	84	80	83	86	S 87	88
2	F	F	F	F	F 63	F 67	F 73	73	70	61	61	A	57	A	A	61	65	65	65	66	67	69	A	F
3	F 70	F	F 65	F	F 68	66	73	76	A	R	77	R 77	72	73	77	76	77	79	78	80	78	76	I S 75	71
4	71	68	F	F	73	79	78	76	74	64	60	I R 59	62	I R 60	63	61	A	A	A	73	74	74	69	S 67
5	63	63	61	66	S	74	R	R	73	69	73	73	77	70	70	I A 75	75	75	78	U S 83	A	F	80	77
6	74	73	F	F	F	71	88	I R 98	R	A	88	76	I A 73	75	72	73	A	A	S 75	90	92	91	85	80
7	74	74	74	73	74	80	88	94	93	91	85	75	72	75	77	79	80	82	81	87	88	85	U S 83	79
8	77	75	74	71	70	73	73	73	F 73	75	71	78	78	78	83	78	A	A	76	83	88	78	81	76
9	F 70	F	F	F 64	F 70	79	95	107	98	76	73	74	83	83	85	81	86	88	90	90	I A 94	I A 92	89	S
10	F	F	F	F	A	F	79	A	A	A	76	79	I A 82	A	84	81	80	81	A	A	90	92	89	83
11	73	70	63	61	65	69	76	74	I A 70	73	66	70	71	70	74	76	77	75	78	87	84	87	87	83
12	83	78	78	76	78	83	90	93	85	H 80	83	81	80	80	83	I A 82	83	I A 86	87	I A 86	88	F	F	F
13	F	F 83	F 80	F 80	F	93	96	101	103	96	80	80	80	83	83	85	81	I A 80	85	90	90	88	86	87
14	83	84	80	76	70	F 74	74	76	78	68	70	68	67	67	67	72	71	72	73	74	76	F	F 83	85
15	84	80	78	77	79	86	86	89	90	86	86	84	80	86	89	84	83	82	85	88	93	90	93	87
16	F	F	F	F	F 73	80	84	76	68	70	I A 69	73	69	68	73	73	75	76	77	83	86	90	91	86
17	83	83	79	80	80	83	82	83	84	77	76	75	76	76	76	A	A	78	85	89	90	A	F	U F 83
18	F	F	F 80	F 76	F 70	73	78	70	74	71	71	73	79	78	75	77	76	81	80	86	I S 94	93	I S 94	90
19	84	78	75	75	68	72	67	62	60	57	63	63	66	64	65	70	66	65	70	67	72	78	76	73
20	F 70	F	F	F 69	76	78	73	82	77	84	79	74	77	79	81	78	76	77	82	81	84	I S 87	93	83
21	80	77	76	68	64	66	66	63	F 62	65	70	73	79	77	75	74	74	77	80	89	88	U S 88	F	F 80
22	F 80	F	F	F 69	73	67	62	63	67	63	65	69	63	66	67	67	66	64	67	70	77	80	79	80
23	80	78	F 70	F	70	73	74	81	85	86	85	81	81	78	74	74	C	C	C	87	91	87	84	83
24	83	83	83	80	84	93	96	93	88	79	81	83	78	75	83	79	73	71	76	80	S	98	96	88
25	80	77	74	74	82	78	87	83	80	66	A	62	A	65	66	67	A	A	64	68	75	83	84	78
26	70	F	67	65	63	67	72	71	67	62	58	58	A	59	61	66	64	67	65	65	70	73	71	69
27	67	63	57	57	58	67	58	62	59	55	A	R	53	58	A	60	59	58	59	69	77	78	73	77
28	77	78	71	71	73	77	93	97	80	73	69	I A 69	64	61	62	63	63	64	I A 72	74	75	83	I S 84	83
29	82	73	72	67	67	80	80	77	77	A	C	C	C	C	C	A	63	I A 65	A	A	83	86	80	77
30	73	73	70	65	66	80	94	90	85	81	79	79	74	72	71	77	71	74	75	80	82	82	78	79
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	20	22	23	26	29	29	28	27	26	27	27	27	27	27	28	24	25	26	28	28	26	26	27
MED	77	77	74	71	70	76	79	79	77	73	73	74	76	75	75	76	75	76	78	82	84	86	84	80
UQ	82	79	78	76	74	80	88	92	85	80	80	78	79	78	82	79	80	81	82	87	90	90	89	84
LQ	70	73	70	66	66	71	73	73	70	65	69	70	68	66	68	68	66	67	72	74	76	78	79	77

JUN. 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						L	460	500	500	520	510	540	540	540	530	520	490	L						
2						370	A	440	A	A	510	A	I A 510	A	A	A	A	460						
3								L 550	A	A	580	530	560	520	530	530	L 480	L						
4					300	390	A	A	470	520	520	U R 500	520	500	490	520	A	A						
5							450	A	500	A	A	A	A	A	A	A	500	A						
6								470	A	A	A	A	A	A	430	A	A	A						
7							500	A	A	A	520		L 520	530	530	520	470	440						
8						430	440	L 470	500	530	A	A	530	520	I A 510	A	A	A						
9							L 440	460	A	500	500	550	540	530	530	500	490	430	400					
10								A	A	A	A	A	A	A	530	530	A	A	A					
11							450	A	A	A	A	540	550	540	530	510	480	A						
12						410	450	540	A		A	540	580	560	I A 540	A	A	A						
13								L 500	520	520	520	570	540	540	540	I A 520	510	A						
14						400	L	500	500	530	530	560	560	560	530	530	510	500						
15										L 550	550	570	I B 580	570	570	540	520							
16					330	400	460	500	510	580	A	550	560	550	540	550	530	470	A					
17								510	A	L 550	A	A	560	A	A	A	A	L 470						
18						L 400	440	A	A	A	A	570	530	540	560	530	A	470						
19						400	440	A	490	510	I A 500	540	540	550	530	520	L 520	L 470	L 400					
20								520	540	520	550	560	550	540	540	530	L 510							
21						390	470	480		520	L 550	550	540	L 560	540	520		480						
22					300		430	460	490	A	530	I A 510		530	510	L	510							
23									530	520	I A 540	550	530	A	U L 570	530	C	C	C					
24							480	490	500	510	580	560	L 570	570	A	510								
25							430	A	A	500	A	A	A	510	A	490	A	A						
26						400	430	450	480	500	520	A	A	510	510	490	470	480						
27						400	A	A	A	A	A	R	500	A	A	490	500	460	400					
28							490	460	490	520	A	A	520	520	520	500	A	A	A					
29						400		L 500	480	A	C	C	C	C	C	A	A	A						
30						L	I A 480	A	A	530	530	A	A	540	540	510	470	460	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	12	17	18	15	18	17	17	22	22	23	22	16	12	3					
MED					300	400	450	495	500	520	530	550	540	540	530	520	500	470	400					
UQ					315	400	470	500	505	530	550	560	560	550	540	530	510	475	400					
LQ					300	395	440	460	490	510	520	540	530	520	525	510	480	460	400					

The Radio Research Laboratories, Japan

JUN. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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

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	230	295	315	350	370	380	385	385	385	360	A	A	A	A	A				
2					140	220	290	305	325	355	350	355	390	390	365	330	320	280	215	S				
3				A	150	230	290	305	325	350	355	365	370	365	350	A	320	295	235	150				
4					A	225	285	310	325	350	360	370	370	355	370	365	315	280	215	A				
5				E	A	230	280	305	320	340	365	355	345	A	370	A	320	I A 290	215	A				
6				A	A	A	290	300	345	355	345	340	A	A	A	365	320	290	215	A				
7				E	A	245	300	315	335	350	380	A	355	A	380	360	320	300	230	S				
8				E	A	235	290	320	335	350	355	350	A	A	A	350	320	295	235	E				
9				E	A	225	290	305	330	365	375	375	345	A	A	340	320	295	230	E				
10				E	A	A	300	320	345	365	380	380	A	A	A	A	340	300	225	S				
11				E	180	240	295	320	335	345	370	355	I A 360	385	385	A	A	295	225	150				
12				E	175	240	295	320	355	370	370	355	370	A	A	370	330	300	A	120				
13				E	A	250	295	335	350	370	380	B 380	385	I A 400	395	380	345	305	A	A				
14				E	160	250	300	335	370	390	390	410	B	400	395	390	320	A	A	S				
15				E	A	A	A	A	A	B	R	415	B	400	A	A	A	315	250	A				
16				E	165	250	300	335	365	390	395	395	405	400	395	375	350	300	240	S				
17				E	A	245	295	315	350	370	385	400	395	385	355	325	295	A	A	A				
18				E	A	A	305	330	365	380	380	I A 380	385	I A 390	395	385	330	300	255	180	S			
19				E	A	250	300	315	340	370	380	395	380	A	A	A	A	A	A	185				
20				E	180	240	300	320	355	350	355	A	A	A	A	A	A	300	255	A				
21				E	150	225	300	320	350	365	390	390	385	385	355	325	330	300	230	S				
22				E	160	230	290	310	355	355	380	360	390	I A 390	390	375	325	295	A	A				
23				E	A	240	295	315	340	385	385	A	A	A	A	A	C	C	C	150				
24				E	150	235	290	315	345	365	390	385	385	355	335	320	A	A	A	170				
25				E	155	225	295	315	335	355	375	370	350	A	A	355	320	300	240	S				
26				E	160	225	295	320	345	350	370	380	380	385	370	A	A	300	245	145				
27				E	150	240	295	320	350	375	380	380	390	395	385	360	330	300	250	195	S			
28				E	A	215	270	315	345	370	365	365	A	A	395	360	320	295	225	150				
29				E	165	240	300	320	335	345	C	C	C	C	C	360	335	300	240	150				
30				E	170	240	300	320	355	380	I A 390	390	A	A	A	360	340	300	250	150	E			
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				25	15	26	29	29	29	29	28	26	20	16	18	20	22	24	21	14	1			
MED				E	160	238	295	315	345	365	380	380	382	388	375	360	320	300	235	150	E			
UQ				E	168	240	300	320	350	370	382	390	388	398	395	372	330	300	245	170				
LQ				E	150	225	290	315	335	350	365	360	365	385	360	345	320	295	225	145				

IONOSPHERIC DATA

JUN. 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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J X 25	J X 32	J X 20	18	20	33	37	43	45	44	J X 65	42	G	G	43	J X 38	41	J X 55	J X 33	J X 33	J X 80	J X 24	J X 48	J X 33
2	J X 71	J X 45	J X 51	J X 33	J X 48	31	44	42	J X 54	J X 66	J X 90	J X 100	M 59	J X 64	J X 86	62	J X 60	J X 68	30	J X 33	20	J X 24	J X 80	J X 53
3	J X 80	J X 75	J X 53	J X 33	G	J X 50	J X 66	J X 53	J X 94	J X 65	J X 52	50	43	44	40	40	G	G	32	J X 50	J X 54	J X 43	J X 73	20
4	J X 35	15	J X 23	E	29	J X 43	J X 58	J X 54	J X 50	43	44	42	40	40	G	43	J X 83	J X 105	J X 143	J X 53	J X 35	J X 24	J X 33	E
5	24	J X 25	E	E	20	30	40	M 62	J X 49	M 67	54	J X 70	J X 68	J X 63	J X 56	J X 80	J X 63	55	J X 71	118	J X 143	J X 63	J X 62	E
6	J X 73	J X 80	J X 65	J X 33	J X 35	J X 71	J X 75	42	M 75	J X 163	J X 104	J X 75	J X 100	J X 83	J X 50	J X 81	J X 113	J X 83	D	J X 110	J X 43	E	J X 43	E
7	E	J X 24	J X 24	J X 30	J X 33	G	48	J X 59	J X 55	J X 58	G	41	41	40	G	43	J X 74	40	J X 46	30	J X 25	J X 25	E S 15	15
8	E	J X 24	J X 23	J X 23	20	G	G	40	42	J X 50	J X 55	J X 58	J X 55	J X 45	J X 64	J X 66	J X 123	J X 113	J X 81	J X 143	J X 35	J X 26	20	J X 28
9	J X 33	E	E	E	16	G	G	46	J X 60	43	48	43	44	43	J X 45	40	50	44	J X 34	J X 34	J X 131	J X 113	J X 140	J X 63
10	J X 24	J X 78	J X 103	J X 73	J X 111	J X 55	J X 76	J X 121	J X 110	J X 105	J X 65	J X 98	J X 108	J X 98	J X 42	57	64	J X 60	J X 83	J X 101	J X 43	J X 53	J X 35	J X 31
11	19	E	E	E	G	G	44	J X 51	J X 70	J X 63	J X 59	47	41	G 36	G	40	41	47	J X 65	J X 80	J X 83	J X 35	18	E S 15
12	J X 30	19	J X 23	E	G	G	37	41	56	40	J X 83	40	G	J X 53	J X 63	J X 108	J X 163	J X 144	J X 88	J X 110	J X 43	J X 63	J X 63	J X 23
13	J X 53	J X 43	15	J X 24	18	G	G	48	50	44	G	43	43	44	43	J X 61	43	J X 80	J X 40	J X 33	J X 53	J X 31	J X 28	E S 16
14	J X 31	18	J X 26	18	G	G	G	41	46	43	J X 53	G	49	J X 63	51	48	43	J X 40	32	J X 43	J X 33	J X 64	J X 33	E
15	J X 30	J X 30	J X 32	J X 30	J X 28	J X 33	31	35	43	47	G	G	E B 64	G	J X 53	J X 58	40	42	36	J X 40	J X 53	J X 23	18	E S 16
16	E S 15	18	E	E	G	G	G	39	40	44	J X 88	45	53	G	G	G	G	41	J X 51	J X 65	J X 23	J X 25	E	E
17	E S 15	J X 20	J X 28	J X 41	J X 23	G	G	43	J X 60	J X 54	J X 68	J X 65	44	J X 65	J X 63	J X 116	J X 91	J X 141	J X 35	J X 53	E S 15	J X 110	J X 89	J X 61
18	J X 33	J X 63	J X 24	J X 30	J X 142	30	38	J X 55	J X 65	J X 93	J X 95	50	42	42	G	43	J X 66	45	32	29	20	E S 15	J X 30	E S 16
19	E	E	E	15	J X 30	30	42	J X 55	45	48	J X 61	43	42	45	43	37	34	J X 41	J X 45	J X 38	J X 41	J X 63	J X 53	J X 53
20	J X 33	E	E	E	G	G	35	47	J X 95	43	J X 56	J X 53	J X 60	40	J X 53	41	40	G	G 24	J X 25	J X 23	J X 34	J X 30	20
21	E S 17	E	19	E	20	31	35	37	J X 64	48	44	50	43	G	40	J X 51	G	35	J X 40	J X 35	19	17	E S 15	J X 21
22	J X 25	J X 23	15	E	G	30	41	38	49	J X 61	48	J X 60	G	J X 51	G	G	G 28	G	J X 30	34	38	J X 23	J X 40	J X 30
23	J X 23	J X 21	J X 20	J X 23	J X 30	G	G	G	G	49	J X 62	J X 54	J X 105	J X 89	40	41	C	C	C	J X 34	23	E	E	E
24	30	J X 28	J X 20	J X 23	21	28	34	40	44	G	G	G	41	50	M 62	J X 54	J X 60	J X 59	J X 46	38	J X 73	J X 63	J X 40	J X 21
25	20	J X 24	J X 23	18	G	30	40	J X 53	J X 62	J X 80	J X 84	J X 53	J X 81	J X 60	J X 143	48	J X 105	J X 119	40	J X 51	J X 64	J X 43	J X 21	E S 15
26	E	J X 23	J X 23	E	21	34	G	41	52	J X 58	43	J X 69	M 68	50	G	J X 44	43	43	42	J X 50	J X 35	20	18	J X 33
27	J X 53	E	E S 15	E	20	G	J X 53	50	J X 55	J X 66	J X 68	44	48	J X 60	J X 83	52	48	G	G	G	E S 15	18	E	J X 30
28	J X 30	J X 25	J X 23	E	21	30	32	43	44	J X 60	J X 61	J X 83	42	40	G	41	J X 55	J X 63	J X 78	J X 48	J X 20	19	E S 15	J X 35
29	E S 15	22	E	E	G	G	G	39	J X 51	J X 150	C	C	C	C	C	J X 74	J X 104	J X 103	J X 116	J X 100	J X 76	J X 73	J X 31	J X 24
30	J X 23	18	E	E	G	31	J X 57	J X 83	J X 81	43	J X 52	J X 58	J X 65	J X 50	43	G	41	45	J X 83	J X 63	J X 63	J X 33	J X 63	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	29	29	29	30	30	30	30	30
MED	J X 25	J X 23	J X 22	16	20	30	37	43	J X 53	52	J X 56	50	44	45	43	46	50	J X 47	J X 42	J X 46	J X 40	J X 28	J X 32	20
UQ	J X 33	J X 30	J X 24	J X 30	J X 29	31	44	J X 53	J X 64	J X 65	J X 68	J X 60	J X 64	J X 60	J X 56	J X 61	J X 74	J X 80	J X 78	J X 65	J X 63	J X 63	J X 53	J X 31
LQ	17	18	E	E	G	G	G	40	45	44	48	43	42	40	G	40	41	41	33	J X 34	J X 23	J X 23	18	E E 15

JUN. 1970 | FOES (0.1 MHZ)

IONOSPHERIC DATA

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

JUN. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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	11	15	20	24	17	20	20	18	17	17	17	17	E	E	E	E	E	E
2	E	E	E	E	E	11	11	17	17	20	17	18	20	17	17	17	24	19	16	E S 15	E	E	E S 15	E
3	E	E	E	E	E	12	E	19	20	20	21	21	20	20	20	20	20	16	11	12	E	E	E	E
4	E	E	E	E	E	23	11	20	20	21	20	30	22	21	27	21	19	20	17	E	E	E	E	E
5	E S 18	E	E	E	E	12	14	17	19	20	20	22	20	21	20	20	20	17	11	E	E	E	E	E
6	E	E	E	E	E	E	12	13	20	23	20	20	19	20	19	17	16	16	11	E	E	E	E S 15	E
7	E	E	E	E	E	E	15	17	17	18	26	22	20	17	19	19	17	17	12	E S 13	E	E	E S 15	E
8	E	E	E	E	E	16	14	12	19	19	19	20	18	18	17	19	16	11	11	E	E	E	E	E
9	E	E	E	E	E	11	16	17	18	17	20	20	17	20	17	17	17	12	11	E	E	E	E	E S 15
10	E	E	E	E	E	E	11	16	17	19	22	22	20	20	18	17	18	11	11	E S 15	E	E	E	E
11	E	E	E	E	E	11	11	14	17	20	20	18	20	20	20	17	11	12	11	E	E	E	E	E S 15
12	E	E	E	E	E	12	12	14	20	20	18	23	20	20	23	23	21	17	16	E	E	E	E	E
13	E	E	E	E	E	11	12	20	20	18	20	27	27	27	20	20	17	18	16	E	E	E	E S 13	E S 16
14	E S 16	E	E	E	E	12	17	20	28	22	30	35	44	28	22	30	20	17	12	E S 13	E	E	E	E
15	E	E	E	E	E	11	19	17	20	41	28	20	64	20	17	25	18	17	15	E	E	E	E	E S 16
16	E S 15	E	E	E	E	12	12	17	17	20	20	24	20	20	20	20	28	16	11	E S 15	E	E	E	E
17	E S 15	E	E	E	E	12	11	16	18	19	19	29	30	19	17	20	17	17	E	E	E S 15	E S 14	E	E
18	E	E	E	E	E	11	12	12	11	19	17	20	18	23	17	19	17	16	12	15	E S 14	E S 15	E S 16	E S 16
19	E	E	E	E	E	11	17	14	17	20	18	20	20	20	23	19	17	12	11	13	E	E	E	E
20	E	E	E	E	E	12	12	12	20	17	17	20	17	20	17	17	19	17	16	E	E	E	E	E
21	E S 17	E	E	E	E	13	12	12	16	19	20	20	20	20	21	18	18	11	12	E S 13	E	E	E S 15	E
22	E	E	E	E	E	12	12	17	17	17	22	18	23	17	19	18	17	16	E	E	E	E	E	E
23	E	E	E	E	E	11	11	16	12	17	20	18	20	18	17	18	C	C	C	12	E	E	E	E
24	E	E	E	E	E	11	11	16	11	17	17	20	21	19	17	17	18	12	E	11	E	E	E	E
25	E	E	E	E	E	11	11	16	16	18	17	17	17	17	17	17	17	16	11	E S 15	E	E	E	E S 15
26	E	E	E	E	E	12	12	11	17	17	19	17	24	20	17	20	18	12	11	E	E	E	E	E
27	E S 15	E	E S 15	E	E	11	12	11	15	17	19	17	17	17	18	18	17	13	11	11	E S 15	E	E	E
28	E S 15	E	E	E	E	E	11	11	17	17	18	20	19	20	19	19	17	12	11	E	E	E	E S 15	E
29	E S 15	E S 15	E	E	E	16	16	15	17	19	C	C	C	C	C	18	17	17	16	E	E	E	E	E
30	E	E	E	E	E	12	16	16	18	20	20	20	24	19	20	18	18	17	11	E	E	E	E	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	30	29	29	29	30	30	30	30	30
MED	E	E	E	E	E	12	12	16	17	19	20	20	20	20	19	18	17	16	11	E	E	E	E	E
UQ	E S 15	E	E	E	E	12	14	17	20	20	20	22	22	20	20	20	19	17	12	E E 13	E	E	E	E
LQ	E	E	E	E	E	11	11	13	17	17	18	20	19	18	17	17	17	12	11	E	E	E	E	E

The Radio Research Laboratories, Japan

JUN. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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	F	F	F 270	F 275	265	275	275	295	285	280	315	270	270	280	250	275	285	285	295	285	265	255	S 265	260
2	F	F	F	F	F 245	F 240	F 245	250	270	245	260	A	A	A	A	265	275	275	285	280	265	265	A	F
3	F 255	F	F 265	F	F 310	270	290	275	A	R	280	R 290	265	275	285	275	280	280	290	300	285	265	I S 275	270
4	260	265	F	F	245	260	260	260	270	265	250	I R 250	260	I R 280	275	260	A	A	A	280	280	290	265	S 270
5	260	270	250	260	S	270	R	R	315	275	275	275	300	265	285	I A 280	295	295	295	U S 290	A	F	275	275
6	270	260	F	F	F	275	285	I R 280	R	A	285	310	I A 290	295	275	280	A	A	S 280	280	290	285	285	290
7	285	275	275	280	285	280	260	285	290	300	295	285	275	290	285	285	290	295	295	285	295	285	U S 290	280
8	275	270	280	280	275	265	280	265	F 290	270	265	275	280	295	290	295	A	A	275	275	295	270	270	270
9	F 280	F	F	F 265	F 265	260	280	300	315	285	285	270	280	280	285	285	285	295	295	280	I A 290	I A 280	280	S
10	F	F	F	F	A	F	285	A	A	A	300	280	I A 280	A	285	280	290	285	A	A	290	285	280	295
11	275	270	270	260	275	260	290	315	I A 280	290	280	265	280	270	275	300	300	295	285	240	275	270	285	280
12	250	270	280	275	270	275	290	290	300	H 270	300	295	275	275	275	I A 275	275	I A 290	290	I A 280	275	F	F	F
13	F	F 270	F 265	F 280	F	280	290	285	290	315	285	275	280	275	290	285	290	I A 280	280	285	280	275	265	270
14	255	260	270	270	250	F 270	255	275	290	260	285	265	260	255	270	265	270	265	280	280	270	F	F 255	265
15	275	275	275	275	280	290	260	270	270	280	290	270	265	260	275	270	270	270	270	255	270	255	270	265
16	F	F	F	F	F 245	280	275	315	270	255	I A 245	260	260	265	270	260	265	280	285	265	270	255	265	265
17	265	265	255	265	275	275	255	275	285	275	265	275	275	270	265	A	A	275	275	280	280	A	F	U F 265
18	F	F	F 290	F 265	F 255	260	270	260	270	280	270	240	290	280	270	275	275	285	275	255	I S 265	250	I S 270	265
19	260	250	245	265	265	255	255	240	240	195	240	250	235	265	260	290	275	275	275	285	265	265	275	275
20	F 255	F	F	F 260	290	310	265	275	270	285	280	250	260	260	270	280	275	285	280	280	265	I S 260	270	265
21	265	250	265	260	250	260	275	270	F 285	280	275	275	290	290	275	280	270	285	280	280	275	U S 285	F	F 265
22	F 265	F	F	F 260	260	285	260	265	295	305	265	290	300	265	280	285	280	280	285	285	275	270	265	275
23	275	270	F 285	F	275	275	285	275	280	285	285	275	290	290	275	285	C	C	C	280	285	285	270	275
24	265	270	275	280	280	290	280	290	305	290	275	275	280	270	280	295	290	280	275	280	S	285	290	295
25	280	275	285	270	280	255	265	265	285	250	A	245	A	250	275	285	A	A	265	255	255	265	275	280
26	270	F	270	275	260	255	265	270	270	275	250	255	A	255	255	275	265	270	275	270	270	270	270	265
27	270	265	245	255	245	255	250	270	255	255	A	R	195	245	A	265	255	245	225	260	250	270	250	265
28	260	285	265	270	265	240	270	310	290	250	255	I A 270	260	270	270	265	270	280	I A 275	270	270	255	I S 270	270
29	275	275	280	275	275	290	255	275	285	A	C	C	C	C	C	A	260	I A 275	A	A	275	280	275	265
30	260	260	270	260	250	255	285	290	270	270	280	280	270	270	270	285	280	285	290	285	275	280	265	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	20	22	23	26	29	29	28	27	26	27	27	26	27	27	28	24	25	26	28	28	26	26	27
MED	265	270	270	270	265	270	270	275	285	275	280	275	275	270	275	280	275	280	280	280	275	270	270	270
UQ	275	272	280	275	275	280	285	290	290	285	285	278	280	280	282	285	288	285	290	285	282	285	275	275
LQ	260	262	265	260	250	260	260	268	270	260	265	262	260	265	270	272	270	275	275	270	268	265	265	265

JUN. 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						L	350	335	360	355	I A 365	355	355	355	330	325	340	L						
2						335	A	A	A	A	A	A	A	A	A	A	A	320						
3								A	A	A	A	A	340	370	340	330	L 345	L						
4					335	310	A	A	345	355	365	U R 380	340	365	360	325	A	A						
5							335	A	A	A	A	A	A	A	A	A	330	A						
6								360	A	A	A	A	A	A	340	A	A	A						
7							345	A	A	A	370		L 375	345	345	335	360	340						
8						335	350	L 360	355	A	A	A	365	350	I A 345	A	A	A						
9							L 365	A	A	380	370	365	350	340	340	345	I A 335	I A 340	375					
10								A	A	A	A	A	A	A	340	A	A	A	A					
11							A	A	A	A	A	375	340	335	340	335	355	A						
12						340	355	350	A		A	370	345	340	I A 340	A	A	A						
13								L 355	345	365	385	350	385	360	355	I A 340	340	A						
14						335	L	355	I A 355	345	I A 360	345	325	I A 345	360	A	335	340						
15										L 345	365	350	B	345	335	335	330							
16					325	335	325	340	370	315	A	365	340	345	340	325	330	340	A					
17								340	A	A	A	A	345	A	A	A	A	A						
18						L 350	340	A	A	A	A	335	360	355	330	330	A	A						
19						310	335	A	A	355	A	370	350	345	345	345	L 330	L 330	L 325					
20								345	340	365	350	355	365	360	335	340	L 335							
21						330	340	345		360	L 355	350	350	L 340	340	345		335						
22					325		A	350	A	A	340	A		360	365	L	350							
23									340	365	A	365	A	A	U L 325	340	C	C	C					
24							340	350	360	365	345	340	L 370	335	A	355								
25							345	A	A	365	A	A	A	355	A	355	A	A						
26						320	335	365	360	360	365	A	A	355	355	350	355	A						
27						325	A	A	A	A	A	R	380	A	A	355	330	330	310					
28							335	355	365	360	A	A	385	350	360	355	A	A	A					
29						350		L 360	A	A	C	C	C	C	C	A	A	A						
30						L	I A 340	A	A	360	375	A	A	A	350	355	355	A	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	12	15	15	11	16	13	15	19	21	23	20	16	8	3					
MED					325	335	340	350	355	360	365	355	350	350	340	340	338	338	325					
UQ					330	338	348	358	360	365	370	368	368	355	352	352	352	340	350					
LQ					325	322	335	345	345	355	355	350	342	345	340	332	330	330	318					

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JUN. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JUN. 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						320	310	310	310	340	310	400	390	370	445	360	310	305						
2						425	415	390	400	500	460	A	IA 600	A	A	450	400	350						
3								360	A	320	370	350	425	400	365	380	325	310						
4					345	350	365	380	350	440	500	IR 500	460	460	405	450	A	A						
5							290	310	300	A	375	A	325	310	350	A	320	320						
6								310	A	A	300	300	A	350	380	350	A	A						
7							345	300	315	290	320		L 350	370	370	340	320	310						
8						325	335	305	350	350	410	375	360	360	350	315	A	A						
9							300	260	270	270	290	390	345	350	345	320	330	300	270					
10								A	A	A	330	A	A	A	325	340	310	315	A					
11							340	300	IA 340	360	A	425	370	405	380	320	325	325						
12						310	300	315	300		A	340	380	390	350	IA 330	320	A						
13								290	295	290	310	400	365	365	350	335	325	IA 320						
14						325	370	370	345	400	390	450	455	470	425	390	360	325						
15										340	345	375	420	410	360	365	360							
16					365	310	320	295	400	440	A	435	405	450	400	420	395	345	305					
17								350	325	345	A	400	400	A 400	395	A	A	L 340						
18						320	340	300	400	A	A	500	350	370	380	375	350	325						
19						370	450	450	510	810	520	510	500	375	470	365	L 375	345	325					
20								350	380	350	370	455	410	430	380	360	360							
21						380	360	405		L 340	400	395	350	350	390	350		325						
22					345		415	420	350	350	450	370		435	390	L 360	375							
23									340	325	315	360	350	365	385	360	C	C	C					
24							310	275	270	285	375	360	360	415	350	320								
25							345	350	350	450	A	510	A	470	420	365	A	A						
26						380	370	375	395	440	520	500	A	495	475	390	405	360						
27						360	425	405	475	500	A	R	850	A	A	450	450	490	510					
28							350	300	340	445	425	A	470	460	445	445	400	A	A					
29						300		300	325	A	C	C	C	C	C	A	350	A						
30						360	320	305	A	375	360	370	400	375	420	360	325	340	A					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	14	21	27	24	24	22	23	24	26	27	27	22	18	4					
MED					345	338	345	310	342	350	372	400	395	395	380	360	350	325	315					
UQ					355	370	370	372	388	440	425	452	440	435	412	385	375	345	418					
LQ					345	320	320	300	312	332	320	370	355	365	355	340	325	315	288					

JUN. 1970 | H'F2 (KM)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUN. 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	320	300	245	270	245	250	250	220	240	245	I A 205	205	200	220	225	215	240	250	250	A	A	300	310	305
2	A	A 325	A 315	315	A	245	A	A	A	A	A	A	A	A	A	A	A	240	260	275	270	290	A	A
3	A	A	300	300	260	A	A	A	A	A	A	A	230	205	230	210	225	240	250	A	A	A	A	270
4	300	300	290	300	300	250	A	A	250	215	220	200	210	215	215	260	A	A	A	275	A 295	260	270	285
5	300	310	300	300	290	240	250	A	A	A	A	A	A	A	A	A	265	A	A	A	A	A	A	265
6	300	A	A	270	270	A	A	210	A	A	A	A	A	A	250	A	A	A	270	280	260	250	I A 260	250
7	265	290	285	285	275	240	245	A	A	I A 220	200	200	200	205	210	250	235	250	A	A 265	250	250	260	260
8	280	300	295	250	265	230	230	235	205	A	A	A	205	220	I A 250	A	A	A	A	A	260	265	280	275
9	280	285	270	270	265	235	225	A	A	220	220	200	215	215	225	220	I A 250	I A 260	255	270	A	A	A	250
10	270	A	A	300	A	A	A	A	A	A	A	A	A	A	250	A	A	A	A	A	265	270	270 A	250
11	260	275	245	300	280	250	A	A	A	A	A	200	200	215	220	240	250	A	A	A	A	A	260	260
12	300	280	270	270	270	250	230	240	I A 240	H 220	I A 220	210	200	205	I A 230	A	A	A	A	A	280	A	A	260
13	275	300	280	270	265	250	235	240	250	210	210	225	210	225	210	I A 250	250	I A 260	A 295	275	A	280	300	290
14	310	310	280	295	300	255	240	225	A	220	I A 210	225	270	A	250	A	265	240	260	I A 290	270	I A 295	300	300
15	300	280	A 300	295	260	240	225	245	225	250	235	210	I B 250	210	200	250	250	A 260	270	A	A	275	280	270
16	265	265	290	300	280	260	250	240	215	235	A	210	265	215	215	250	255	260	A	A	275	300	275	270
17	300	295	300	300	290	245	240	250	A	A	A	A	225	A	A	A	A	I A 250	250	280	260	A	A	A
18	310	A	275	270	A	250	235	A	A	A	A	215	205	220	215	250	A	A	250	300	275	285	290	275
19	300	300	305	315	300	260	265	A	A	240	I A 220	210	225	240	210	225	240	225	250	A	A	290	270	A
20	A 320	300	300	300	250	245	235	250	250	205	250	210	210	205	210	225	225	245	245	275	280	I A 300	300	260
21	280	295	295	300	275	250	255	235	250	235	200	240	215	225	225	250	230	260	A	A 275	275	260	250	315
22	300	295	270	295	260	255	I A 245	240	A	A	250	I A 225	205	240	200	220	225	230	235	265	295	290	A	A
23	295	270	270	265	250	235	235	225	200	200	I A 210	215	A	A	210	200	C	C	C	280	260	250	270	275
24	295	295	270	270	280	245	225	240	215	210	200	200	185	225	I A 210	240	A 270	A	A	285	A	A	250	250
25	245	280	300	275	265	245	240	A	A	220	A	A	A	250	A	260	A	A	A	A	A	310	275	250
26	250	295	290	290	295	255	240	250	240	225	240	A	A	270	210	225	235	A	A	A	A 300	285	270	I A 290
27	275	260	325	340	300	265	A	A	A	A	A	200	200	A	A	250	280	215	245	265	300	260	260	300
28	315	285	270	290	280	245	235	240	240	240	A	A	200	225	210	215	A	A	A	A	280	300	280	A 305
29	270	255	250	250	285	250	225	250	A	A	C	C	C	C	C	A	A	A	A	A	I A 290	I A 255	260	255
30	290	295	265	275	290	250	I A 250	A	A	225	205	A	A	A	210	220	250	A	A	A	A	270	I A 290	270
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	28	30	27	27	23	17	13	18	16	18	21	20	24	21	18	15	14	15	19	23	23	26
MED	295	295	288	292	275	250	240	240	240	220	215	210	210	220	215	240	290	250	250	275	275	280	270	270
UQ	300	300	300	300	290	250	248	245	250	235	228	215	225	225	228	250	255	260	260	280	285	292	285	290
LQ	272	280	270	270	265	245	232	235	215	215	205	200	200	212	210	220	235	240	250	272	262	260	260	260

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JUN. 1970 | H'F (KM)

IONOSPHERIC DATA

JUN. 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

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

JUN. 1970 | H'ES (KM)

IONOSPHERIC DATA

JUN. 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	F2	F2	F1	F1	I	C1	C1	C1	C1	C1	C1	C1			C1	L1	L2	L2	L2	L2	F5	F2	F2	F2
2	F3	F3	F3	F3	C3	C1	C2	C1	C2	C3	C2	C2	C1	C2	C2	C1	C1	C2	C1	C3	F1	F2	F8	F3
3	F5	F4	F6	L2		C3	C3	C2	C2	C2	C2	C2	C1	C1	C1	L1			C1	C4	F4	F4	F5	F1
4	F2	F1	F1		L1	C2	C3	C2	C2	C1	C1	C1	C1	C1		C1	C2	C3	C4	L2	F4	F2	F2	
5	F1	F2			L1	C1	C1	C2	C2	C2	C2	C2	C2	L2	C2	L2	C2	C21	C4	L2	F3	F6	F3	
6	F2	F3	F6	L2	L1	L3	C4	C1	C2	C2	C2	C2	L3	L2	L3	C2	C2	C5	C2	L2	F3		F4	
7		F2	F2	L1	L1		C1	C3	C2	C2		L1	C1	L1		H1	C1	C1	C3	C3	F2	F3		F1
8		F2	F2	L1	L1			H1	C1	C1	C2	C2	L1	L1	L2	C2	C2	C4	C4	C3	F4	F4	F1	F4
9	F2				L1			C1	C2	C1	C1	C1	C1	L1	L1	C1	C2	C3	C1	C2	F3	F2	F3	F1
10	F2	F4	F4	L4	L4	L2	C2	C5	C3	C3	C2	C3	L3	L3	L2	C21	H11	C3	C3	C5	F3	F3	F5	F4
11	F2						C2	C2	C2	C2	C3	C1	L1	L1		L1	L2	C3	C5	C4	F2	F3	F1	
12	F3	F1	F1				C1	C1	C2	C1	L2	C1		L1	L2	C2	C2	C3	L4	C4	F2	F2	F4	F2
13	F2	F4	F1	L1	L1			C1	C1	C1		C1	C1	L1	C1	C2	C1	C5	L2	L2	F4	F4	F4	
14	F2	F2	F2	L1				C1	C1	C1	C1		C1	C1	C2	C1	C2	L2	L1	C3	F2	F6	F3	
15	F3	F3	F4	L2	L2	L1	L1	L1	C11	C1					L1	L2	L2	C2	C2	L3	F3	F3	F1	
16		F1						H1	C1	C1	C2	C1	H1					C2	C4	C6	F2	F2		
17		F2	F3	L2	L2			C1	C2	C2	C3	C3	C1	C2	C3	C3	C3	L2	L2	L1		F5	F5	F3
18	F2	F5	F2	L2	L1	L1	C1	C3	C3	C2	C2	L1	C1	L1		C1	C3	C3	H1	C2	C1		F1	
19				L1	L2	C1	C2	C3	C2	C1	C1	C1	C1	L1	L2	L1	L1	L2	L3	C2	F6	F2	F2	F3
20	F3						C1	C2	C2	C1	C2	L1	L1	L1	L1	L1	L1		L1	L2	F2	F4	F3	F1
21			F1		H1	C1	C1	C1	C2	C1	C1	C1	C1		C1	C2		H1	C2	C3	F1	F1		F2
22	F2	F2	F1			C1	C3	C1	C2	C2	C2	C1		L2			L1		L2	L1	F3	F2	F4	F5
23	F2	F2	F2	L2	L1					C1	C1	L2	L2	L2	L1	L1				C2	F2			
24	F2	F2	F2	L1	H1	C1	C1	C1	C1				C1	C1	C2	C1	L2	L4	L4	C2	F5	F3	F2	F2
25	F2	F2	F2	L1		C1	C1	C2	C2	C1	C3	C1	C3	L2	L2	C1	C3	C3	C3	C3	F4	F5	F1	
26		F2	F1		H1	C1		C1	C1	C1	C1	C2	C3	C2		L1	L1	C2	C2	C4	F6	F2	F2	F3
27	F2				H1		C2	C2	C2	C1	C2	C1	C1	H2	C3	C1	C1					F1		F2
28	F3	F4	F2		L1	C1	C1	C1	C1	C2	C1	C2	L1	L1		H1	C1	C4	C4	C3	F1	F2		F3
29		F1						C1	C1	C3						C2	C2	C5	C3	C4	F6	F3	F2	F1
30	F2	F2				H1	C2	C2	C3	C1	L1	C1	L2	L2	L1		H1	C2	C3	C6	C3	F3	F4	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JUN. 1970 | TYPES OF ES

IONOSPHERIC DATA

JUN. 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	82	84	84	I R 63	68	75	82	94	91	87	88	84	90	93	85	96	100	97	81	79	74	79	83	82
2	79	80	I R 80	I R 76	66	66	78	79	82	70	A	A	A	65	I A 62	I A 68	68	68	68	63	67	70	I R 70	I R 68
3	64	68	S 68	66	71	66	72	83	91	83	I A 82	81	84	84	88	85	87	91	93	I R 86	I A 78	73	F	F
4	S 69	S 74	S 70	S 71	F	S 76	74	84	79	I A 75	67	72	72	70	I A 68	68	70	I A 72	74	78	I R 80	S 74	I A 71	S 67
5	64	63	64	64	59	S 64	91	86	69	72	75	78	A	A	76	81	82	84	88	88	87	84	I R 78	80
6	84	83	F	F	67	68	79	94	99	86	79	80	76	79	80	82	83	I A 80	I A 83	92	I R 92	89	86	83
7	78	74	F	71	67	I R 74	92	102	103	87	79	79	78	87	90	91	89	86	90	I R 88	91	I R 88	85	85
8	83	82	76	69	68	75	76	86	93	77	76	81	I A 88	86	88	91	81	I A 88	86	I R 91	82	I A 80	77	77
9	F	75	S 75	68	68	77	92	107	88	I A 80	75	81	86	89	88	95	I A 96	I R 94	I R 92	90	87	87	89	F
10	A	F	S 68	F	F	73	84	89	I R 95	R 93	80	87	93	95	I R 96	98	I C 92	88	A	A	A	F	F	F
11	81	72	68	67	66	67	84	81	78	H 69	I A 71	I A 73	81	83	81	86	86	82	80	83	82	83	F 88	87
12	85	81	80	75	75	79	89	87	85	79	82	H 82	81	84	85	87	86	88	88	84	83	F 87	F 86	F
13	F 88	F 81	78	76	F 78	86	S 93	110	94	90	85	83	86	88	90	87	88	86	90	89	87	F	90	84
14	85	F	F	74	71	S 72	74	79	74	74	73	71	I R 72	72	70	74	I A 78	77	77	77	77	80	F	S 86
15	F	83	78	75	74	75	82	86	88	87	83	84	88	90	94	92	90	89	88	91	90	87	93	87
16	83	77	76	75	74	83	91	87	68	74	75	78	79	I R 74	79	79	I A 81	I A 83	83	I A 90	I A 88	86	90	91
17	86	88	87	87	91	83	88	89	97	82	83	84	85	81	84	86	88	89	92	95	92	85	86	87
18	90	93	I R 90	86	I R 76	68	F 78	83	72	76	70	69	83	81	86	81	I A 75	84	84	87	R	A	S 95	91
19	F	F	86	76	F	74	74	69	I A 62	64	I A 65	68	70	72	73	77	73	70	69	74	74	78	77	76
20	75	73	73	75	72	75	81	90	96	92	91	93	93	91	97	91	90	89	89	91	87	85	88	87
21	86	86	84	76	73	74	81	73	71	69	I A 70	79	83	85	83	82	79	87	87	I R 93	I R 88	I R 85	86	85
22	89	85	I R 82	79	73	72	63	67	75	I A 70	I A 67	I A 65	66	71	72	73	71	68	71	73	78	77	77	79
23	80	74	74	69	72	73	75	86	86	86	86	88	88	87	85	86	84	81	88	96	91	86	89	88
24	87	89	86	84	83	86	91	98	89	81	81	83	83	83	86	86	83	77	79	86	93	91	F	I C 87
25	85	80	F 76	74	78	80	87	90	85	83	76	70	68	73	88	81	81	69	70	69	I A 79	I R 82	81	I R 80
26	76	76	I R 75	69	67	71	76	I R 74	77	66	I R 64	63	I A 61	62	69	71	66	69	72	73	73	76	75	73
27	68	68	64	F	57	65	63	67	57	I A 60	57	R	R	I R 60	61	63	I A 67	63	56	74	77	88	I R 70	74
28	73	77	82	I R 64	66	77	90	95	91	75	74	70	I A 68	I A 66	I A 64	66	A	A	73	77	I R 75	80	82	89
29	S 81	82	79	71	71	77	82	87	76	76	C	C	C	C	A	I A 70	66	73	73	82	91	85	I R 86	74
30	74	73	69	65	60	72	90	93	90	87	89	I A 90	82	82	79	81	83	79	78	I A 80	I R 80	86	83	78
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	27	27	30	30	30	30	30	28	27	26	28	29	30	29	29	29	29	28	27	26	26
MED	82	80	76	74	71	74	82	86	86	78	76	80	82	82	84	82	83	83	83	86	82	85	86	84
UQ	85	83	82	76	74	77	90	93	91	86	82	84	86	87	88	87	88	88	88	90	89	86	88	87
LQ	75	74	72	68	67	71	76	81	75	72	70	72	72	72	73	74	75	73	73	77	78	80	77	77

JUN. 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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							A	L	A	560	580	620	580	560	IA 550	IA 520	500	L 440	A					
2						IA 350	410	460	IA 480	570	A	A	A	A	IA 530	IA 510	490	A	L					
3							L	IA 510	540	A	A	A	IA 560	560	520	520	500	460	L					
4							A	A	A	A	A	520	A	A	A	A	IA 500	A	A					
5						L	420	460	L 480	A	A	A	A	A	A	IA 560	510	460	L					
6						L	L	IA 460	IA 480	H 550	A	540	570	550	540	520	500	IA 450	A					
7						L 450	A	A	A	520	IA 540	IA 560	IA 580	520	520	520	A	A	A					
8							L 500	470	IA 500	560	560	A	A	A	A	530	A	A	A					
9							L	460	470	IA 630	A	520	IA 540	530	530	A	A	IA 470	A					
10						L 560	UL 500	A	A	IA 520	600	570	IA 530	550	IA 530	H 530	C	A	A					
11						UL 460	440	470	IA 490	L	IA 520	IA 540	530	530	IA 530	520	500	A	A					
12							420	A	A	IA 580	530	550	530	IA 520	530	L	A	L	L					
13							420	480	L	540	610	580	560	IR 560	IA 540	510	500	IA 500	L					
14						L	460	520	540	550	550	IA 560	IA 550	570	550	A	A	A	A					
15							L	L	490	IA 500	600	580	IR 580	IA 580	IA 560	IA 540	520	L 490	L					
16						L	L 440	480	L	610	610	570	550	570	550	540	A	A	A					
17							L 510	L	530	600	600	570	570	590	IA 560	560	520	480	A					
18							510	A	A	A	560	A	A	580	580	550	A	A	A					
19						360	440	A	A	A	A	IA 540	560	560	550	520	H 510	L 510	A					
20							L	L	540	IA 600	560	H 590	H 590	530	530	550	520	L 480	L					
21						410	460	L 500	520	IA 530	IA 600	570	570	560	550	560	L 500	480	A					
22						350	H 500	A	A	A	A	A	A	IA 540	520	A	A	A	A					
23							UL 450	L 520	500	520	570	560	570	590	570	530	490	L 480	L 420					
24						L	L	L	530	530	550	530	A	550	L	550	480	A	L					
25						L	490	IA 480	IA 500	540	530	550	530	550	540	500	520	460	410					
26						360	IA 420	IA 450	IA 480	550	IA 530	IA 540	IA 540	530	530	IA 510	510	480	L 430					
27						L 390	IA 400	A	A	A	510	540	520	R	540	530	IA 480	460	450	L					
28						L	L	500	510	540	550	550	A	A	A	520	A	A	420					
29						L	H 450	A	A	A	C	C	C	C	A	A	L 460	IA 480	IA 430					
30						L 420	L	IA 480	IA 510	IA 580	530	A	A	540	550	530	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	19	16	18	21	21	22	20	23	24	24	19	16	6					
MED						400	450	480	500	550	560	555	560	550	540	530	500	480	425					
UQ						L 450	495	500	530	580	600	570	570	565	550	545	510	480	430					
LQ						360	420	460	UA 480	530	530	540	535	535	530	520	495	460	420					

The Radio Research Laboratories, Japan

JUN. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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					A	A	A	315	I A 335	355	A	A	A	A	A	A	A	A	A	S				
2					A	A	265	A	A	A	A	A	A	A	A	355	A	A	A	S				
3					A	I A 220	285	315	I A 335	355	A	A	A	A	A	A	A	A	A	S				
4					E	A	A	A	A	355	A	A	A	A	A	A	330	A	A	S				
5					E	215	270	A	A	A	A	A	A	A	A	A	A	A	A	A				
6					S	A	A	A	A	A	A	A	A	390	365	345	325	A	A	A				
7					E	A	A	A	I A 340	355	A	A	A	A	A	A	320	A	A	A				
8					A	225	285	320	345	A	A	A	A	A	I A 365	350	335	A	A	S				
9					A	A	275	A	345	A	A	A	A	A	A	A	A	A	A	S				
10					B	220	280	I A 320	345	360	I A 375	A	A	A	A	A	I A 325	290	A	S				
11					A	220	A	A	A	A	365	A	A	A	A	A	325	280	230	S				
12					A	A	A 280	315	355	I A 370	380	A	A	A	A	360	335	305	A	S				
13					A	210	270	320	355	I A 360	A	A	A	A	A	A	A	A	A	A				
14					E	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A				
15					E	235	I A 285	315	350	B	A	B	B	A	A	A	A	A	A	A				
16					S	225	295	320	350	I A 365	I A 380	390	395	390	380	375	A	A	A	A				
17					A	225	280	315	340	365	A	A	A	A	A	A	A	A	A	A				
18					A	A	285	315	345	I A 365	I A 375	A	A	A	A	I A 375	A	A	A	A				
19					A	A	A	315	335	A	A	A	A	395	385	375	A	A	A	S				
20					A	215	A	A	350	360	A	A	A	A	A	A	330	A	A	A				
21					A	215	I A 290	I A 325	350	365	A	A	A	A	A	A	A	295	A	A				
22					A	220	285	315	345	360	I A 365	A	A	A	A	A	A	A	A	A				
23					A	215	280	315	335	355	I A 370	A	A	395	390	375	345	300	255	A				
24					S	210	A	A	345	355	370	380	390	380	380	345	330	280	235	S				
25					S	200	270	315	330	355	370	385	I A 390	395	I A 380	365	I A 335	A	A	A				
26					A	220	285	315	335	355	A	A	A	A	A	A	A	A	A	A				
27					145	I A 235	290	315	345	A	A	A	A	390	A	A	345	310	260	A				
28					A	A	295	A	A	I A 360	375	A	A	A	A	A	A	A	A	A				
29					E	220	285	A	A	A	C	C	C	C	385	355	A	A	A	A				
30					S	I A 230	295	A	A	365	385	390	A	A	A	A	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					7	19	21	17	21	19	11	4	3	7	8	11	12	7	4					
MED					E	220	285	315	345	360	375	388	390	390	380	360	330	295	245					
UQ					E	225	285	320	350	365	378	390	392	395	385	375	335	302	258					
LQ					E	215	280	315	335	355	370	382	390	390	372	352	325	285	232					

JUN. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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	J X 31	J X 34	J X 30	J X 34	J X 18	35	J X 53	J X 50	J X 80	J X 50	J X 48	J X 68	J X 89	J X 70	J X 84	J X 81	J X 46	J X 53	J X 50	J X 37	J X 23	J X 63	J X 38	J X 66
2	J X 54	J X 43	J X 84	J X 48	J X 43	J X 40	J X 40	35	J X 63	J X 76	J X 80	J X 59	J X 90	J X 69	J X 63	J X 63	J X 50	J X 54	J X 34	22	J X 28	J X 49	J X 29	J X 18
3	J X 38	J X 40	J X 38	J X 36	J X 23	24	35	J X 60	J X 45	J X 80	J X 114	J X 66	J X 71	J X 46	J X 39	J X 40	J X 43	33	32	J X 34	J X 69	J X 86	J X 69	J X 43
4	J X 20	J X 29	J X 20	J X 38	J X 29	J X 46	J X 73	J X 56	J X 68	J X 114	J X 65	J X 47	J X 55	J X 94	J X 124	J X 86	J X 53	J X 116	J X 79	J X 65	J X 53	J X 39	J X 73	J X 68
5	J X 29	J X 23	J X 23	J X 33	J X 28	G	36	J X 48	45	54	J X 78	J X 83	J X 130	J X 150	J X 150	J X 64	J X 46	36	25	J X 29	J X 26	J X 33	J X 43	J X 43
6	J X 63	J X 33	J X 38	J X 63	J X 28	25	40	J X 70	J X 90	40	J X 50	46	J X 46	G	G	G	J X 57	J X 138	J X 148	J X 128	J X 68	J X 63	J X 66	J X 53
7	J X 58	J X 38	J X 33	J X 24	J X 19	26	49	J X 50	J X 79	45	57	J X 63	J X 63	J X 49	J X 48	45	J X 71	J X 68	J X 68	J X 70	J X 44	J X 29	J X 59	E S 14
8	E S 14	E S 13	E S 14	J X 16	J X 26	G	G	46	J X 64	J X 46	J X 84	J X 126	J X 99	J X 93	J X 58	43	J X 70	J X 98	J X 73	J X 73	J X 117	J X 113	J X 63	J X 40
9	J X 25	J X 33	J X 26	J X 26	J X 26	25	33	J X 48	J X 49	J X 79	52	J X 59	J X 86	J X 90	56	J X 53	J X 150	J X 108	J X 94	J X 21	J X 24	J X 29	J X 78	J X 93
10	J X 111	J X 48	J X 34	E	E B 14	G	35	J X 83	J X 73	J X 65	J X 66	J X 54	J X 87	J X 93	J X 64	J X 36	C	J X 54	J X 104	J X 144	J X 140	J X 74	J X 67	J X 60
11	J X 46	J X 44	J X 18	J X 24	J X 16	25	37	39	J X 73	48	J X 71	J X 86	44	J X 56	J X 67	40	43	J X 50	J X 76	J X 73	J X 58	J X 78	J X 40	E S 13
12	J X 28	J X 25	J X 42	J X 28	J X 23	25	37	J X 65	J X 60	J X 96	J X 44	J X 73	J X 108	J X 61	J X 59	J X 86	J X 73	J X 46	J X 34	23	J X 48	J X 98	J X 53	J X 48
13	J X 35	J X 37	J X 39	J X 43	J X 33	J X 24	G	43	J X 52	J X 44	J X 74	51	J X 49	J X 51	J X 81	J X 60	J X 43	J X 64	J X 30	J X 44	J X 54	J X 47	J X 73	J X 39
14	J X 21	J X 38	J X 33	J X 18	J X 24	J X 38	J X 31	36	42	52	52	58	J X 63	46	52	J X 88	J X 113	J X 164	J X 63	J X 47	J X 27	J X 141	J X 60	J X 29
15	J X 26	J X 26	J X 24	J X 26	J X 29	G	J X 33	35	44	J X 62	47	E B 48	E B 61	J X 59	J X 71	J X 63	J X 49	J X 47	J X 74	J X 78	J X 29	J X 31	J X 28	J X 23
16	E S 14	E S 14	E S 14	E S 13	E S 15	G	J X 31	36	46	49	47	43	G	G	G	G	J X 148	J X 107	J X 64	J X 113	J X 96	J X 68	J X 26	J X 31
17	J X 19	J X 23	J X 19	J X 16	J X 18	G	33	37	J X 48	J X 48	46	J X 54	45	J X 64	J X 91	J X 90	J X 53	J X 46	J X 53	J X 24	J X 24	J X 26	J X 59	J X 62
18	J X 38	J X 44	J X 47	J X 34	J X 30	J X 38	39	J X 66	J X 74	J X 93	44	J X 154	J X 188	J X 159	J X 49	45	D	J X 89	J X 55	J X 45	J X 45	J X 110	J X 39	J X 90
19	J X 49	J X 49	J X 54	J X 56	J X 45	28	40	J X 66	J X 74	J X 64	J X 70	J X 53	J X 46	G	47	G	39	42	J X 56	J X 32	J X 19	J X 44	J X 28	J X 39
20	J X 16	J X 64	J X 34	J X 29	J X 24	25	34	38	47	J X 126	J X 90	J X 54	J X 90	J X 46	40	38	G	35	J X 38	J X 38	J X 28	J X 34	J X 28	J X 36
21	J X 20	J X 23	J X 18	J X 27	J X 18	28	37	39	J X 53	J X 68	J X 80	42	44	42	J X 47	J X 50	39	G	J X 44	J X 86	J X 64	J X 29	J X 23	J X 36
22	J X 50	J X 35	J X 29	J X 24	J X 18	G	J X 53	J X 63	J X 57	J X 68	J X 76	J X 120	J X 86	J X 64	J X 46	J X 52	J X 68	J X 65	J X 63	J X 45	J X 63	J X 25	J X 18	J X 20
23	J X 43	J X 29	J X 23	J X 18	J X 14	26	G	G	47	45	J X 77	40	42	G	G	G	G	G 29	J X 26	J X 47	J X 29	J X 28	E S 14	J X 26
24	J X 24	E S 13	E	E	E S 15	G	32	38	43	38	43	45	J X 51	J X 51	J X 55	G	J X 42	J X 61	35	J X 51	J X 29	J X 43	J X 48	C
25	E S 14	J X 23	J X 27	J X 18	15	24	J X 33	J X 58	J X 60	J X 70	J X 56	J X 45	42	G	J X 90	G	J X 44	J X 58	J X 38	J X 34	J X 84	J X 26	J X 70	J X 84
26	J X 27	J X 36	J X 26	J X 21	J X 18	27	J X 45	J X 48	J X 56	J X 61	J X 58	J X 63	J X 74	J X 64	J X 61	J X 56	J X 73	J X 50	J X 38	J X 30	J X 30	J X 68	J X 20	E S 14
27	E	J X 33	J X 69	J X 43	G	34	J X 44	J X 53	J X 64	J X 88	J X 84	J X 90	45	J X 50	J X 54	45	J X 114	G	28	26	J X 20	E S 14	J X 21	E S 14
28	J X 18	J X 26	J X 40	J X 39	J X 29	25	J X 48	39	46	J X 48	J X 49	J X 63	J X 88	J X 139	J X 80	J X 54	J X 84	J X 108	J X 32	J X 46	J X 69	J X 39	J X 38	J X 44
29	E S 14	J X 75	J X 45	J X 19	J X 26	G	32	J X 58	J X 86	J X 113	C	C	C	C	J X 107	J X 98	J X 53	J X 101	J X 79	J X 66	J X 86	J X 86	J X 49	J X 26
30	J X 28	J X 28	J X 33	J X 29	E S 14	28	40	J X 59	J X 80	J X 60	J X 73	J X 94	J X 99	J X 47	47	J X 54	J X 74	J X 70	J X 88	J X 75	J X 63	J X 63	J X 48	J X 64
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	29	30	30	30	30	30	30	29
MED	J X 28	J X 33	J X 32	J X 26	J X 23	25	36	J X 48	J X 58	J X 62	J X 65	J X 59	J X 63	J X 56	J X 57	J X 51	J X 53	J X 56	J X 54	J X 46	J X 46	J X 46	J X 46	J X 39
UQ	J X 43	J X 40	J X 39	J X 36	J X 28	28	40	J X 59	J X 73	J X 79	J X 77	J X 73	J X 89	J X 70	J X 80	J X 63	J X 73	J X 98	J X 74	J X 73	J X 68	J X 74	J X 63	J X 60
LQ	J X 19	J X 25	J X 23	J X 18	J X 16	G	33	38	47	48	49	48	46	J X 46	47	38	J X 43	J X 46	J X 34	J X 32	J X 28	J X 29	J X 28	J X 26

IONOSPHERIC DATA

JUN. 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	24	32	21	29	18	35	45	47	79	44	44	47	46	48	63	57	38	38	42	33	18	38	25	31
2	48	24	60	41	35	39	33	34	52	41	A	A	A	57	A	A	44	51	31	21	26	34	24	E
3	30	29	27	28	18	24	32	59	40	79	A	63	71	44	39	39	39	32	30	31	A	48	E	25
4	E	22	E	18	21	39	62	46	60	A	60	44	55	58	A	62	50	A	37	50	53	26	A	51
5	26	15	E	26	22	G	33	44	40	52	63	57	A	A	62	57	44	35	25	20	E	19	38	31
6	59	29	31	42	22	25	38	62	58	39	50	42	43	G	G	G	40	A	A	30	30	26	34	40
7	35	25	24	20	19	26	47	49	69	39	56	58	58	45	47	42	66	65	50	34	25	23	20	E_{14}^{S}
8	E_{14}^{S}	E_{13}^{S}	E_{14}^{S}	E	22	G	G	45	62	44	51	67	A	70	58	40	60	A	48	49	50	A	19	18
9	18	26	17	16	20	24	G	42	46	A	52	45	59	45	51	53	A	64	57	18	E	18	20	68
10	A	35	18	E	E_{14}^{B}	G	35	77	73	53	48	50	57	54	54	36	C	51	A	A	A	61	49	30
11	31	35	E	14	15	G	35	36	68	41	A	A	42	52	55	40	40	49	62	59	50	33	30	E_{13}^{S}
12	25	16	23	23	21	24	32	65	57	69	42	50	43	54	50	46	70	45	30	20	39	55	22	29
13	19	22	E	35	25	16	G	42	47	44	55	51	48	E_{51}^{R}	74	49	42	61	28	40	39	34	30	26
14	15	25	E	15	18	25	31	35	42	47	48	58	61	46	45	68	A	49	52	35	23	26	36	24
15	E	21	18	20	21	G	31	35	42	60	47	E_{48}^{B}	E_{61}^{B}	58	58	60	46	34	31	21	18	24	24	20
16	E_{14}^{S}	E_{14}^{S}	E_{14}^{S}	E_{13}^{S}	E_{15}^{S}	G	26	G	43	47	46	43	G	G	G	G	A	A	47	A	A	50	24	24
17	E	18	17	15	18	G	32	35	47	44	45	45	43	45	58	40	40	39	43	22	19	23	20	20
18	26	36	32	24	26	34	32	51	69	68	43	63	55	45	47	42	A	64	45	41	32	A	34	23
19	29	22	45	22	21	28	39	60	A	59	A	54	42	G	46	G	39	37	52	30	E	20	19	E
20	E	37	18	16	17	25	31	37	44	65	42	42	43	41	40	37	G	32	26	24	E	26	20	19
21	16	17	E	18	16	28	37	38	48	62	A	42	43	42	47	49	38	G	44	E_{86}^{R}	E_{64}^{R}	23	E	24
22	30	31	21	18	16	G	31	57	54	A	A	A	57	60	45	52	67	58	58	30	63	E	E	18
23	41	27	E	15	14	26	G	G	40	44	41	40	42	G	G	G	G	G 26	21	35	21	20	E_{14}^{S}	E
24	E	E_{13}^{S}	E	E	E_{15}^{S}	G	30	34	40	38	42	42	E_{51}^{R}	49	52	G	39	52	30	E_{51}^{R}	28	18	24	C
25	E_{14}^{S}	14	17	E	13	24	30	53	50	43	45	42	42	G	40	G	41	44	33	32	A	25	48	20
26	18	20	20	18	16	25	44	48	55	46	58	56	A	48	41	56	36	34	31	28	26	E	E	E_{14}^{S}
27	E	20	28	18	G	30	42	48	50	A	44	46	45	49	43	40	A	G	28	25	19	E_{14}^{S}	E	E_{14}^{S}
28	E	25	32	31	25	25	40	35	39	42	48	52	A	A	A	48	A	A	26	42	E_{69}^{R}	31	30	31
29	E_{14}^{S}	23	25	19	15	G	32	55	68	64	C	C	C	C	A	A	40	64	48	47	48	62	19	18
30	E	21	21	E	E_{14}^{S}	28	38	51	69	60	49	A	69	40	45	42	51	70	58	A	60	39	28	24
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	29	30	30	30	30	30	30	29
MED	18	22	18	18	18	24	32	46	51	50	49	50	U52	47	48	42	44	50	42	33	U29	26	24	22
UQ	30	29	25	24	21	28	38	53	68	65	60	58	61	54	58	56	67	64	52	U46	U55	39	30	29
LQ	E	18	E	15	15	G	31	35	43	44	45	44	43	42	43	37	39	35	30	25	19	20	19	18

JUN. 1970 | FBES (0.1 MHZ)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUN. 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E S 14	E	E	E	E	17	15	19	16	20	25	21	21	21	19	22	15	18	14	E S 14	E S 14	E S 14	E S 14	E S 13
2	E S 14	E	E	E	E	14	15	15	18	22	23	21	22	19	22	18	21	15	14	E S 14	E S 14	E	E S 14	E S 14
3	E S 14	E	E S 14	E	E	15	18	18	20	18	22	21	26	21	21	18	17	14	14	E S 14	E S 14	E S 14	E S 14	E S 14
4	E S 14	E	E	E	E	14	18	16	20	20	23	24	22	21	20	24	18	14	13	E S 14	E S 13	E S 14	E S 14	E S 14
5	E S 14	E	E S 14	E	E	15	15	18	18	18	22	28	25	21	24	20	16	16	14	14	E S 14	E S 14	E S 14	E S 14
6	E S 14	E S 14	E S 14	E S 14	E S 14	15	18	18	19	19	23	22	22	21	20	19	18	16	14	14	E S 14	E S 14	E S 14	E S 14
7	E S 14	E S 14	E	E	E	18	20	19	21	23	21	22	21	20	20	23	19	15	14	14	E S 14	E S 14	E S 14	E S 14
8	E S 14	E S 13	E S 14	E S 14	E	19	15	16	19	24	23	20	20	18	20	19	19	16	14	E S 14	E S 14	E S 14	E S 13	E S 13
9	E S 14	E	E	E	E	13	15	14	19	17	21	19	19	19	19	18	19	16	14	E S 13	E S 14	E S 14	E S 13	E S 14
10	E S 14	E	E	E	14	17	17	18	18	22	21	15	21	21	19	18	C	16	15	E S 14	E S 13	E S 14	E S 14	E S 13
11	E S 14	E	E	E	E	15	14	16	18	20	24	27	26	28	27	27	17	15	15	E S 14	E S 14	E S 13	E S 13	E S 13
12	E S 14	E S 14	E S 13	E	E	14	15	18	20	19	27	34	28	27	24	22	27	16	14	14	E S 15	E S 13	E S 14	E S 14
13	E S 14	E S 14	E S 14	E	E	13	16	20	25	19	26	25	23	23	25	23	21	14	14	14	E S 14	E S 13	E S 14	E S 14
14	E	E	E	E	E	14	19	20	24	21	24	26	39	32	24	29	19	15	16	14	E S 14	E S 14	E S 14	E S 14
15	E S 14	E S 13	E	E	E	14	18	19	21	42	32	48	61	21	21	20	18	16	14	E	E S 14	E S 14	E S 14	E S 14
16	E S 14	E S 14	E S 14	E S 13	E S 15	14	14	16	21	18	18	21	18	24	16	19	18	15	13	13	E S 14	E S 13	E S 14	E S 14
17	E	E	E	E	E	15	17	15	18	18	22	20	18	21	18	21	17	16	14	14	E S 13	E S 14	E S 13	E S 13
18	E S 14	E S 13	E	E S 13	E	14	14	15	18	19	24	24	20	19	18	17	16	15	15	14	E S 13	E S 14	E S 14	E S 14
19	E S 13	E	E	E	E	14	16	15	16	18	19	23	19	18	18	14	16	15	14	E S 13	E S 14	E S 13	E S 14	E S 14
20	E S 14	E	E	E	E	15	15	15	18	22	20	18	22	19	17	18	14	15	14	14	E S 14	E S 13	E S 13	E S 14
21	E	E	E S 13	E	E	15	15	16	18	18	23	24	21	21	20	18	16	14	15	14	E	E S 14	E S 14	E
22	E S 13	E	E	E	E	15	14	16	15	18	21	24	21	22	23	18	16	15	14	14	E S 14	E S 13	E S 14	E S 13
23	E S 14	E S 13	E S 14	E	E	15	14	15	15	17	19	16	18	19	18	16	17	E	14	14	E S 14	E S 14	E S 14	E S 14
24	E S 14	E S 13	E	E	E S 15	14	15	13	18	22	27	24	20	24	22	19	17	15	15	E S 13	E S 14	E S 13	E S 14	C
25	E S 14	E S 12	E S 13	E	E S 12	12	14	13	16	18	21	21	19	19	19	18	14	15	14	14	E S 13	E S 14	E S 13	E S 14
26	E S 13	E S 14	E	E	E	15	15	17	18	18	19	18	17	19	18	15	14	14	14	13	E S 13	E S 13	E S 14	E S 14
27	E	E	E	E	E	14	19	14	16	18	18	18	16	19	18	18	15	15	14	13	E	E S 14	E S 14	E S 14
28	E S 14	E	E	E S 14	E	13	15	16	18	15	19	18	18	24	20	18	17	14	14	E	E S 14	E S 14	E S 14	E S 14
29	E S 14	E S 13	E	E	E	16	16	18	19	17	C	C	C	C	25	24	16	15	14	14	E S 14	E S 13	E S 14	E S 13
30	E S 14	E S 13	E	E	E S 14	15	14	18	18	20	25	28	23	21	21	16	19	14	14	14	E S 14	E S 14	E S 14	E S 14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	29	29	29	29	30	30	29	30	30	30	30	30	30	29
MED	E S 14	E	E	E	E	15	15	16	18	19	22	22	21	21	20	18	17	15	14	14	E S 14	E S 14	E S 14	E S 14
UQ	E S 14	E S 13	E S 13	E	E	15	17	18	20	21	24	24	23	22	22	22	19	16	14	14	E S 14	E S 14	E S 14	E S 14
LQ	E S 14	E	E	E	E	14	15	15	18	18	21	20	19	19	18	18	16	14	14	E S 13	E S 13	E S 13	E S 14	E S 13

The Radio Research Laboratories, Japan

JUN. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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	250	260	265	I^{R}_{300}	260	275	265	285	285	265	270	260	265	270	245	265	285	290	285	270	260	255	260	260
2	255	255	I^{R}_{260}	I^{R}_{260}	255	240	235	240	280	250	A	A	A	245	I^{A}_{255}	I^{A}_{265}	280	280	285	275	270	255	I^{R}_{270}	I^{R}_{260}
3	255	255	$^{S}270$	260	285	290	285	280	285	280	I^{A}_{275}	265	265	260	270	260	280	280	290	I^{R}_{295}	I^{A}_{280}	270	F	F
4	$^{S}270$	$^{S}260$	$^{S}270$	$^{S}255$	F	$^{S}265$	285	255	280	I^{A}_{275}	255	265	270	280	I^{A}_{280}	285	275	I^{A}_{290}	285	275	I^{R}_{280}	$^{S}255$	I^{A}_{265}	$^{S}270$
5	250	250	250	255	260	$^{S}290$	295	315	300	270	260	265	A	A	260	285	280	290	290	290	290	275	I^{R}_{270}	260
6	275	280	F	F	285	300	270	290	305	285	290	275	265	270	275	275	290	I^{A}_{280}	I^{A}_{280}	285	I^{R}_{290}	280	275	290
7	270	270	F	275	255	I^{R}_{270}	275	290	295	280	265	270	260	275	270	280	280	280	285	I^{R}_{290}	285	I^{R}_{290}	275	270
8	265	265	275	280	275	300	280	280	300	270	270	255	I^{A}_{270}	270	270	280	270	I^{A}_{280}	285	I^{R}_{285}	275	I^{A}_{265}	265	275
9	F	265	$^{S}275$	270	270	270	285	310	310	I^{A}_{290}	270	270	270	285	275	265	I^{A}_{285}	I^{R}_{290}	I^{R}_{290}	280	285	280	270	F
10	A	F	$^{S}280$	F	F	270	275	285	I^{R}_{295}	$^{R}290$	255	255	270	275	I^{R}_{275}	280	I^{C}_{280}	280	A	A	A	F	F	F
11	275	265	270	270	270	265	280	285	310	$^{H}265$	I^{A}_{275}	I^{A}_{250}	275	270	270	280	290	300	280	280	265	260	$^{F}270$	260
12	270	265	270	270	260	265	285	280	295	320	275	$^{H}270$	265	270	265	280	280	285	285	265	260	$^{F}275$	$^{F}250$	F
13	$^{F}275$	$^{F}270$	260	275	$^{F}265$	265	$^{S}280$	290	300	280	280	255	265	270	270	270	275	260	280	280	270	F	260	255
14	250	F	F	260	255	$^{S}250$	255	265	260	260	265	245	I^{R}_{260}	260	245	255	I^{A}_{265}	270	270	270	260	250	F	$^{S}260$
15	F	265	280	265	270	260	280	280	280	275	270	250	265	255	260	270	265	280	265	280	275	265	275	275
16	260	260	260	255	260	255	295	300	270	245	260	260	265	I^{R}_{255}	255	260	I^{A}_{265}	I^{A}_{265}	275	I^{A}_{265}	I^{A}_{265}	260	265	265
17	260	265	255	265	295	265	270	285	290	275	260	270	265	265	265	260	265	270	285	285	280	260	260	255
18	250	275	I^{R}_{275}	280	I^{R}_{270}	280	$^{F}255$	280	I^{A}_{270}	290	250	290	270	250	265	265	I^{A}_{265}	275	265	260	R	A	$^{S}265$	255
19	F	F	245	255	F	260	250	265	I^{A}_{240}	245	I^{A}_{240}	250	250	265	260	280	280	270	275	265	260	260	270	255
20	255	260	260	265	265	260	260	280	290	275	255	265	265	260	275	270	280	270	270	285	270	260	260	265
21	255	270	265	250	260	255	275	285	290	260	I^{A}_{265}	275	265	270	265	270	270	275	275	I^{R}_{280}	I^{R}_{270}	I^{R}_{255}	255	250
22	260	265	I^{R}_{260}	270	260	270	245	270	270	I^{A}_{285}	I^{A}_{270}	I^{A}_{245}	255	270	270	270	285	270	290	275	270	265	265	265
23	270	270	280	275	280	300	280	280	280	300	270	280	270	265	265	270	270	275	280	285	280	265	265	260
24	265	270	275	275	280	280	290	285	280	300	265	270	265	270	265	275	285	285	270	260	270	275	F	I^{C}_{270}
25	265	265	$^{F}255$	260	260	275	255	280	255	260	265	250	255	250	275	285	280	300	270	280	I^{A}_{255}	I^{R}_{260}	260	I^{R}_{260}
26	255	260	I^{R}_{270}	280	255	270	275	I^{R}_{250}	280	265	I^{R}_{250}	260	I^{A}_{240}	250	265	275	255	270	280	275	260	255	260	265
27	260	270	255	F	250	260	250	270	280	I^{A}_{270}	295	R	R	I^{R}_{240}	235	245	I^{A}_{245}	260	230	260	250	270	I^{R}_{250}	255
28	240	255	270	I^{R}_{270}	250	270	280	285	280	255	250	255	I^{A}_{250}	I^{A}_{250}	I^{A}_{255}	255	A	A	270	285	I^{R}_{265}	250	255	255
29	$^{S}265$	265	275	270	260	285	270	290	265	265	C	C	C	C	A	I^{A}_{265}	260	275	270	260	280	270	I^{R}_{270}	260
30	260	260	265	255	255	260	270	280	275	260	270	I^{A}_{280}	265	265	265	260	270	270	270	I^{A}_{270}	I^{R}_{265}	260	260	255
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	27	27	30	30	30	30	30	28	27	26	28	29	30	29	29	29	29	28	27	26	26
MED	260	265	270	270	260	270	275	280	280	272	265	265	265	265	265	270	280	280	280	280	270	260	265	260
UQ	270	270	275	275	270	280	280	285	295	285	270	270	270	270	270	280	280	285	285	285	280	270	270	265
LQ	255	260	260	260	258	260	260	280	275	260	258	255	260	255	260	265	265	270	270	270	262	258	260	255

JUN. 1970 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 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

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	A	340	340	325	325	335	IA 320	IA 315	320	345L	A					
2						IA 310	350	345	IA 330	315	A	A	A	A	A	A	335	A	L					
3							L	IA 320	330	A	A	A	A	335	345	325	320	335	L					
4							A	A	A	A	A	385	A	A	A	A	IA 320	A	A					
5						L	340	IA 360	375L	A	A	A	A	A	A	IA 340	335	320	L					
6						L	L	IA 350	IA 385	345H	A	370	335	350	335	330	320	IA 340	A					
7						320L	A	A	A	365	IA 355	IA 340	IA 310	365	345	325	A	A	A					
8							325L	IA 335	IA 350	340	A	A	A	A	A	365	A	A	A					
9							L	370	IA 335	IA 335	A	370	IA 360	360	A	A	A	A	A					
10						310L	UL 320L	A	A	A	315	320	IA 350	IA 350	IA 355	H 365	C	A	A					
11						UL 305L	320	340	IA 360	L	IA 360	IA 350	360	IA 360	IA 370	325	335	A	A					
12							355	A	A	IA 350	365	340	365	IA 365	A	L	A	L	L					
13							365	355	L	360	370	330	360	IB 330	IA 330	IA 335	325L	IA 325	L					
14						L	325	315	335	350	345	IA 345	IA 350	330	350	A	A	A	A					
15							L	L	355	IA 385	325	350	IB 340	IA 300	IA 305	IA 315	335	320L	L					
16						L	340L	355	L	315	315	350	365	335	350	330	A	A	A					
17							320L	L	340	335	335	355	355	335	IA 335	320	330	320	A					
18							310	A	A	A	365	A	A	335	330	330	A	A	A					
19						305	330	A	A	A	A	IA 355	340	340	345	350	H 355	320L	A					
20							L	L	350	IA 335	360	H 340	H 345	360	360	315	325	315L	L					
21						310	325	340L	340	IA 345	IA 335	350	340	340	335	325	335	320	A					
22						325	H 285	A	A	A	A	A	A	IA 350	360	A	A	A	A					
23							UL 360	335L	360	355	350	345	345	340	335	340	350	315	310					
24						L	L	L	360	375	350	370	A	IA 360	L	330	355	A	L					
25						L	330	A	A	350	360	365	380	350	335	360	335	IA 330	320					
26						330	A	A	A	340	IA 350	IA 355	IA 360	IA 355	340	IA 350	330	310	310L					
27						310L	IA 320	A	A	A	385	370	390	R	340	330	IA 335	325	275	L				
28						L	L	345	340	355	IA 350	IA 345	A	A	A	A	A	A	320					
29						L	H 335	A	A	A	C	C	C	C	A	A	365L	IA 325	IA 320					
30						310L	L	IA 350	IA 360	IA 330	A	A	A	350	340	345	A	A	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	18	14	16	20	19	22	19	23	21	22	19	15	6					
MED						310	328	345	350	345	350	350	350	350	340	330	335	320	315					
UQ						320	340	355	360	355	360	365	360	358	350	345	335	328	320					
LQ						310L	320	335	338	335	338	340	340	335	335	325	325	320	310					

The Radio Research Laboratories, Japan

JUN. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

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

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

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							285	320	IA 320	365	365	415	390	375	430	365	335	280	285					
2						430	440	405	340	450	A	A	A	A	IA 460	IA 415	380	360	310					
3							300	330	330	IA 335	IA 370	385	IA 385	400	355	365	340	320	290					
4							IA 370	390	335	A	A	400	400	380	A	A	320	IA 340	310					
5						290	300	270	275	375	405	355	A	A	A	325	325	320	290					
6						280	300	300	280	315	300	370	405	375	365	350	330	IA 330	IA 315					
7						345	300	290	290	310	310	370	410	350	350	335	340	315	300					
8							320	350	300	340	400	410	IA 350	370	355	330	355	IA 335	300					
9							300	280	255	IA 325	305	355	370	335	350	350	IA 320	310	295					
10						355	305	IA 295	IA 300	310	370	395	355	350	340	330	IC 320	320	A					
11						350	320	300	IA 300	300	A	IA 445	390	370	380	345	335	305	340					
12							300	IA 290	300	320	360	350	395	380	380	350	350	330	290					
13							280	295	285	300	360	405	380	370	A 380	330	340	350	310					
14						290	400	380	405	400	400	465	425	440	470	IA 420	IA 395	340	325					
15							300	325	290	350	365	435	390	410	385	360	350	325	340					
16						305	295	300	L 315	455	415	430	390	430	425	395	IA 380	IA 365	315					
17							350	300	320	340	410	360	385	400	380	380	360	350	310					
18							405	335	A	A	470	A	395	430	380	370	IA 380	350	320					
19						330	435	410	A	IA 490	IA 500	465	460	400	415	360	370	340	345					
20							300	290	320	340	350	375	390	390	350	360	340	350	300					
21						380	335	300	335	445	A	370	400	375	350	375	330	335	330					
22						325	440	400	370	IA 385	IA 410	IA 445	470	420	400	370	IA 380	IA 365	380					
23							305	315	295	305	350	345	375	380	380	350	325	315	325					
24						290	270	270	305	315	350	360	395	395	335	360	340	320	320					
25						285	340	335	370	390	380	425	420	440	355	315	350	305	340					
26						335	350	420	350	410	IA 470	440	IA 530	475	420	385	440	370	340					
27						360	440	380	390	A	370	R	R	IR 550	550	500	IA 470	430	540	335				
28						325	300	300	325	395	430	440	IA 445	IA 440	IA 440	450	A	A	340					
29						300	325	325	A	400	C	C	C	C	A	A	320	IA 375	350					
30						365	310	315	340	390	370	IA 355	S 390	395	380	380	345	IA 350	350	IA 335				
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						18	30	30	27	27	25	26	26	27	27	28	29	29	29	2				
MED						328	308	315	320	350	370	398	392	395	380	360	340	335	320	335				
UQ						355	350	350	338	398	410	435	410	425	418	380	370	350	340					
LQ						290	300	295	298	318	360	360	385	375	355	348	330	320	300					

JUN. 1970 | H'F2 (<M)

IONOSPHERIC DATA

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

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	340	340	280	245	295	280	I260A	I250A	I240A	240	225	240	260	I245A	A	A	240	I250A	I270A	270	300	350	325	340
2	I340A	345	I320A	315	I340A	A	250	240	I250A	245	A	A	A	A	A	A	A	A	A	275	310	335	305	290
3	340A	340	295	330	285	245	250	I240A	245	A	A	A	A	250	225	245	250	255	I255A	265	A	A	315	320
4	295	330	295	310	315	320	A	A	A	A	A	205	A	A	A	A	A	A	A	310	300	300	I330A	I330A
5	330	315	310	330	315	255	240	I240A	230	A	A	A	A	A	A	I220A	250	250	245	280	255	265	300	320
6	I310A	290	280	295	295	250	I250A	A	A	200H	I195A	210	240	200	215	230	A	A	A	290	260	280	300	310
7	305	320	295	285	310	260	A	A	A	215	I230A	A	A	230	I240A	250	A	A	A	270	275	260	270	265
8	295	295	270	245	320	255	240	A	A	230	A	A	A	A	A	250	A	A	A	295	290A	I300A	305	275
9	280	305	275	280	295	245	250	I240A	I240A	I260A	I250A	235A	I230A	230A	A	A	A	A	A	275	265	260	290	A
10	A	280	255	285	275	235	250	A	A	A	A	I220A	I230A	I235A	I230A	205H	C	A	A	A	A	A	315A	265
11	295	310A	295	295	275	250	I255A	245	I240A	235	I240A	I230A	230	I220A	I220A	265	260	A	A	A	I300A	330A	305	270
12	290	295	300	285	295	250	245	A	A	A	220	I225A	215	A	A	A	A	A	270	270	305	I295A	340A	305
13	280	305	280	300	290	260	245	I240A	I250A	230	I265A	I265A	I275A	A	A	A	A	A	255	290	285	345	330	315
14	325	350	295	260	310	265	240	250	240	240A	A	A	A	255	240	A	A	A	A	295	295	325	345	315
15	300	295	285	280	275	235	250	240	240	I240A	240	240	I235B	A	A	A	A	250	270	290	280	320	305	270
16	285	300	295	290	335	260	265	240	240	240	245	210	235	230	230	245	A	A	A	A	I315A	I330A	295	295
17	310	305	310	295	270	240	240	245	I225A	235	220	210	220	210	I220A	240	245	I250A	I260A	270	265	270	310	330
18	340	305	300	265	280	290	255	A	A	A	205	A	A	220	I230A	245	A	A	A	315	310	I330A	315	320
19	360	310	340	305	340	I275A	I255A	A	A	A	A	I235A	215	240	250	210	210H	A	A	295	290	305	290	295
20	315	330A	315	290	260	245	240	240	240	I215A	215	195H	200H	215	220	230	240	240	245	275	270	305	310	290
21	310	295	290	305	320	260	255	240	I245A	I250A	I245A	200	215	230	I230A	I240A	240	250	I255A	I270A	I280A	300	300	340
22	320	310	300	290	295	240	250H	A	A	A	A	A	A	I230A	240A	A	A	A	A	280	I300A	300	300	305
23	310	305	280	280	280	245	230	230	215	235	200	200	220	205	215	230	240	230	250	280	255	275	285	290
24	295	290	260	280	275	255	230	240	210	200	225	240	I220A	I210A	I240A	225	245	I255A	250	I305A	300	280	330	C
25	260	295	325	300	280	250	250	A	A	220	230	200	200	240	220	240	250	I245B	I265B	305	I300A	305	I310A	295
26	295	320	310	255	295	280	A	A	A	A	A	A	I225A	I220A	230	I230A	240	240	265	300	300	300	295	265
27	295	290	320	340	340	A	A	A	A	A	215	230	I205A	I200A	240	240	I240A	235	270	I310A	305	275	295	320
28	340	315	295	250	330	270	255	230	225	220	I240A	I245A	A	A	A	A	A	A	250	290	A	350	340	340A
29	260	310	265	270	305	260	230H	A	A	A	C	C	C	C	A	A	240	I240A	I240A	315	305	I295A	265	295
30	305	310	290	305	315	250	I255A	I240A	I230A	I235A	A	A	A	225	240	240	A	A	A	A	I310A	330	305	320
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	28	26	17	17	19	18	19	18	21	19	19	14	13	16	26	27	28	30	28
MED	305	308	295	290	295	255	250	240	240	235	228	225	222	230	230	240	240	250	255	290	300	300	305	305
UQ	325	320	310	305	315	262	255	U240A	U240A	240	U240A	238A	U235	235	240	245	250	250	268	300	302	330	315	320
LQ	295	295	280	280	280	245	240	240	230	220	215	208	215	215	220	230	240	240	250	275	278	280	295	290

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JUN. 1970 | H'F (<M)

IONOSPHERIC DATA

JUN. 1970 | H'ES (<M). | 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	110	105	110	110	100	130	125	120	115	120	115	115	115	115	110	105	105	105	100	100	100	110	120	115
2	115	110	110	110	120	120	125	140	115	115	120	120	120	120	120	120	120	115	115	115	115	110	110	105
3	105	105	105	100	105	140	140	120	120	115	115	115	115	115	115	110	110	120	115	110	110	110	110	105
4	105	105	110	105	120	120	115	115	115	115	115	115	115	110	115	115	125	115	115	115	110	110	105	105
5	105	110	105	100	100	G	130	115	120	115	115	110	110	110	110	115	115	115	115	110	110	105	100	100
6	110	105	105	100	110	130	120	115	110	115	110	115	110	G	G	G	130	115	115	115	110	105	110	105
7	105	100	100	100	100	140	125	115	115	120	110	110	110	105	110	140	125	115	115	115	110	110	110	S
8	S	S	S	100	105	G	G	130	115	120	115	110	110	110	115	150	125	115	115	115	110	110	110	105
9	105	100	105	105	105	105	130	115	115	115	120	115	110	115	115	135	115	115	115	110	110	110	110	110
10	110	100	100	E	B	G	130	110	115	115	115	115	115	105	105	115	C	140	115	115	115	115	110	110
11	105	100	105	105	105	150	130	130	115	120	120	110	110	110	110	120	135	125	120	120	115	115	115	S
12	105	105	110	110	110	115	125	125	115	110	120	110	110	105	145	130	125	120	120	120	110	120	120	110
13	105	105	105	105	105	110	G	125	125	115	115	115	115	115	125	115	115	115	115	110	105	110	115	105
14	110	110	110	105	105	105	105	110	130	120	120	115	120	130	120	115	110	110	110	110	110	110	110	105
15	110	105	105	105	105	G	110	140	130	115	130	B	B	115	110	110	115	120	115	115	105	100	110	110
16	S	S	S	S	S	G	105	140	125	120	120	130	G	G	G	G	115	115	115	110	110	110	105	105
17	110	110	105	105	105	G	140	130	120	120	115	115	110	110	110	110	115	110	110	110	110	100	105	100
18	110	105	105	105	105	105	135	115	115	115	115	115	110	110	115	140	110	115	110	120	110	110	110	110
19	110	105	105	100	105	130	120	115	115	115	115	110	110	G	160	G	110	155	135	120	115	110	110	105
20	105	105	100	105	105	140	140	130	120	110	110	105	105	110	110	110	G	110	105	105	100	100	100	110
21	105	105	110	110	110	140	130	130	120	115	110	115	115	115	115	115	120	G	115	115	110	110	105	105
22	105	100	100	105	105	G	105	115	115	115	115	110	110	110	110	110	105	105	105	105	105	105	105	105
23	105	100	100	100	100	155	G	G	120	115	115	120	115	G	G	G	G	110	105	120	115	110	S	110
24	105	S	E	E	S	G	140	130	120	140	120	120	120	120	135	G	145	135	135	120	120	115	115	C
25	S	110	100	105	145	145	145	125	125	115	115	115	115	G	115	G	115	115	130	115	115	110	110	110
26	105	105	105	110	140	140	125	115	115	115	115	115	115	115	115	110	105	105	105	115	110	115	110	S
27	E	105	105	105	G	140	130	130	125	115	110	110	120	120	110	115	115	G	140	115	110	S	110	S
28	110	105	105	105	105	140	130	140	130	115	115	110	105	105	110	110	115	115	105	105	115	115	110	105
29	S	105	105	105	105	G	140	120	115	115	C	C	C	C	115	120	140	115	115	110	110	110	110	105
30	105	105	105	105	S	140	130	125	115	115	115	110	110	115	120	115	115	115	115	115	115	110	105	105
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	27	27	27	25	21	27	29	30	30	29	28	27	24	27	24	27	28	30	30	30	29	29	29
MED	105	105	105	105	105	140	130	125	115	115	115	115	110	112	115	115	115	115	115	115	110	110	110	105
UQ	110	105	105	105	110	140	132	130	120	120	120	115	115	115	118	120	125	118	115	115	115	110	110	110
LQ	105	105	105	102	105	120	122	115	115	115	115	110	110	110	110	110	112	112	110	110	110	110	105	105

JUN. 1970 | H'ES (<M)

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUN. 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F6	F3	F2	L1	H2	H2	C3	C2	C1	C1	C1	C1	C1	L2	L2	L2	L2	L3	L3	F2	F2	F2	F3
2	F2	F3	F3	F2	C4	C2	H2	H1	C2	C1	C2	C1	C2	C1	C1	C1	C1	C1	C2	C1	F4	F3	F3	F1
3	F3	F4	F4	F3	L4	H1	H1	C2	C1	C2	C3	C3	C1	C1	C1	L1	L2	C2	L3	L2	F4	F2	F2	F3
4	F1	F2	F1	F1	C3	C3	C4	C2	C2	C2	C1	C1	C2	L2	C2	C2	H3	C3	C2	C3	F3	F2	F2	F3
5	F3	F1	F2	F3	L2		H2	C2	C1	C1	C2	L1	L2	L2	L2	C2	C1	C3	C2	L1	F1	F2	F3	F3
6	F3	F4	F4	F3	L2	H2	C2	C2	L2	C1	L2	C1	L1				H2	C3	C3	C3	F3	F2	F3	F3
7	F3	F2	F2	F2	L1	H1	H4	C2	C2	C1	L1	L1	L1	L2	L2	H1	H2	C3	C2	C2	F3	F2	F2	
8				F1	L2			H2	C2	C2	C2	L2	L2	L2	C2	H1	H2	C3	C3	C3	F3	F4	F2	F2
9	F3	F3	F1	F2	L3	L2	H1	C3	C2	C2	C2	C2	L2	C2	C2	H2	C3	C2	C2	L2	F1	F2	F3	F4
10	F3	F3	F2				H2	L4	C2	C2	C2	C2	C2	L2	L2	C2		H2	C3	C5	F3	F3	F4	F3
11	F3	F4	F2	F1	L1	H1	H3	H2	C2	H1	H2	C2	C1	C2	L2	C1	H2	H3	C3	C4	F3	F4	F4	
12	F2	F1	F2	F3	C3	C3	H1	H2	C1	C2	H1	C1	C2	L2	HL12	H2	H2	C3	C2	C2	F4	F4	F4	F3
13	F3	F3	F2	F4	L4	L1		H2	H2	C1	C1	C1	C1	C1	H2	C2	C2	C3	C2	L3	F3	F3	F3	F4
14	F1	F3	F2	F2	L2	L2	L2	L2	H1	C1	C1	C1	C1	H1	C1	C1	L3	L2	L3	L3	F4	F3	F3	F2
15	F2	F3	F2	F3	L2		L1	H1	H1	C1	H1			C2	L2	L2	C2	C1	C2	C2	F2	F2	F3	F3
16							L2	H1	H1	C1	C1	H1					C2	C5	C5	L3	F3	F4	F4	F3
17	F1	F2	F1	F1	L1		H1	H1	C2	C2	C1	C1	L1	L1	L2	C1	C2	L2	L3	L2	F3	F2	F2	F2
18	F3	F5	F5	F3	L4	L2	H1	C2	C2	C2	C2	C1	L2	L1	C2	H1	L3	C3	L3	C3	F5	F2	F3	F2
19	F3	F3	F4	F3	L3	H2	C2	C2	C3	C2	C2	L2	L1		H1		L3	HL22	HL32	C2	F1	F2	F3	F2
20	F1	F3	F2	F2	L1	H1	H1	H1	C1	L2	L2	L1	L1	L2	L1	L1		L1	L2	L2	F2	F3	F3	F3
21	F2	F3	F2	F2	L2	H1	H2	H2	C2	C4	L2	C1	C1	C1	C2	C2	C1		C3	C3	F2	F2	F2	F2
22	F3	F3	F3	F2	L1		HL11	C3	C3	C2	C2	L2	L2	L2	L2	L2	L3	L2	L3	L3	F4	F2	F2	F2
23	F3	F3	F2	F1	L1	H1			C1	C2	C1	C1	C1					L2	L2	C4	F3	F3		F2
24	F2						H1	H1	C2	H1	H1	H1	H2	H2	H2		H2	H2	H2	C2	F2	F2	F3	
25		F2	F2	F1	H1	H1	H1	H2	H2	C1	C2	C1	C1		C2		C2	C3	H2	C2	F3	F3	F4	F2
26	F3	F2	F3	F2	H1	H1	H2	C3	C2	C2	C1	C2	C2	C1	C1	L2	L2	L3	L2	C3	F3	F3	F1	
27		F3	F3	F2		H2	H2	H2	H3	C2	L1	L1	C1	C2	L2	C1	C3		H1	C2	F2		F1	
28	F1	F3	F5	F5	L3	H1	H2	H1	H1	C2	C2	L2	L3	L2	L2	L2	C2	C3	L3	L3	F4	F3	F4	F3
29		F2	F3	F3	L2		H1	H3	C2	C2					C2	C2	H1	C4	C4	L3	F4	F4	F2	F3
30	F2	F3	F3	F2		H2	H2	H2	C2	C2	C2	L2	L2	C1	C1	C1	C2	C3	C3	C2	F4	F3	F3	F3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratories, Japan

JUN. 1970 | TYPES OF ES

IONOSPHERIC DATA

JUN. 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	82	80	82	69	67	67	79	92	85	C	C	96	100	102	95	105	107	97	87	C	R	R	R	81
2	80	R 82	J R 86	76	R 68	68	77	84	86	I A 80	R	J R 69	68	A	A	R	R	A	70	65	71	71	73	70
3	66	69	71	61	65	66	78	91	90	85	I A 83	83	89	93	96	I A 93	95	101	100	92	74	J R 74	A	F
4	J R 77	J R 75	R	71	70	74	85	A	81	A	A	A	A	A	77	75	J R 79	A	A	R	80	R	R 75	72
5	71	64	65	J R 62	61	73	87	80	66	71	77	84	89	91	85	86	88	90	94	90	89	85	85	83
6	82	87	72	71	F 70	70	81	96	84	I A 80	73	76	82	85	88	86	89	86	88	95	91	F	J R 88	90
7	F 86	J F 87	F	J F 76	J F 74	78	94	109	97	82	A	79	I A 86	97	100	102	100	99	J R 98	I A 97	91	J R 89	F 90	F 90
8	91	F	80	78	79	83	80	95	96	72	79	83	92	91	94	100	91	98	100	99	A	I A 74	A	A
9	F	F	75	R 66	70	76	89	95	87	A	81	89	92	97	96	105	110	J R 103	97	95	91	91	88	R 86
10	85	R 86	F	F	70	73	85	I R 102	96	87	A	A	A	A	104	107	105	J R 103	99	100	F	F	F	J R 110
11	F	J F 79	F	F 65	F 67	71	83	93	82	73	78	82	90	96	94	94	93	89	86	85	81	A	F	F
12	F 85	R	F	R 80	J R 77	82	85	86	87	81	86	I A 87	87	87	89	94	90	90	87	86	85	86	84	F
13	R	J R 84	F	F 75	F	84	91	108	101	I A 86	I A 88	89	91	93	92	91	93	97	96	92	88	86	J F 84	J F 87
14	F 83	U F 79	F	F	F 69	F 67	F 72	78	J R 76	75	73	U R 74	R 76	74	74	78	82	83	82	I A 79	79	83	J F 84	U F 86
15	F 90	89	F	F 74	70	75	83	88	89	82	83	85	95	91	A	96	97	98	95	98	I A 92	95	I R 96	92
16	86	85	80	79	76	89	95	84	74	81	83	83	82	79	80	85	85	85	I R 90	95	90	92	95	95
17	F	R	91	95	90	85	90	95	96	89	89	92	91	91	I A 92	96	96	104	109	101	91	90	93	R 95
18	F	101	I R 96	87	77	75	77	84	75	75	A	74	A	A	94	88	I A 85	86	90	93	95	96	95	96
19	95	101	91	85	83	80	I R 77	80	66	A	71	75	77	78	80	85	78	75	71	79	80	78	78	R 79
20	75	75	76	71	70	J R 75	87	98	99	90	93	101	100	99	105	105	101	97	99	107	93	89	91	94
21	92	90	85	F 79	J R 82	84	90	86	69	73	79	84	87	94	93	87	88	95	99	105	88	84	89	J F 87
22	F 92	90	F 85	F 78	F 75	69	66	A	A	A	A	65	74	76	77	79	77	76	80	82	80	84	84	85
23	83	80	J R 75	73	73	77	79	83	89	83	89	91	89	93	95	95	92	90	97	98	86	91	92	91
24	92	89	91	89	81	84	92	101	86	80	84	84	84	92	90	94	90	83	84	88	S 92	93	90	F
25	F	F 86	F 77	F 74	F 80	86	86	95	92	96	90	78	81	84	99	97	97	82	75	74	86	F 81	J F 76	U F 74
26	80	F	F	U F 74	F 73	74	78	80	79	R	A	69	66	68	73	71	A	A	A	79	76	75	F	R 76
27	70	69	66	F	F 59	69	63	66	57	A	A	A	56	62	62	66	64	63	58	69	75	83	S 69	71
28	69	J F 74	79	F 55	F 55	71	99	88	93	81	77	72	A	A	65	68	67	72	74	74	79	82	J F 83	F 84
29	F	F	U F 80	F 70	F 75	F 70	81	76	78	81	85	93	90	75	76	73	75	79	80	90	90	86	81	I R 82
30	73	F	70	65	61	67	85	95	90	92	99	98	86	89	86	86	88	86	86	81	A	A	R 83	80
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	21	27	29	30	30	28	29	23	21	27	26	25	28	29	28	27	28	28	26	24	24	25
MED	83	84	80	74	70	74	84	90	86	81	83	83	87	91	91	91	90	90	89	91	87	86	84	86
UQ	88	88	85	78	77	82	89	95	92	86	88	89	91	93	95	96	96	98	98	98	91	90	90	91
LQ	76	77	75	70	68	70	78	84	78	78	78	76	81	79	78	85	84	83	81	80	80	82	82	80

The Radio Research Laboratories, Japan

JUN. 1970 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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								A	A	C	C	L 560	A	A	A	A	L	A						
2						A	A	A	A	A	L 570	A	A	A	A	A	A	A						
3								L	L	L	A	A	A	A	A	A	L	L	L					
4							A	A	A	A	A	A	A	A	L	A		A						
5							L	L	L	L 550	A	A	R 520	L 550	L 490	L	A	L	L					
6							L	L	L	A	A	L	530	H 560	L 540	A	A	L	L					
7						L	L	A	A	A	A	A	A	A	520	510	A	A	A					
8								L 490	A	L	A	A	L	L	L 550	L 490	A	A						
9							L	A	A	A	A	L 550	L 570	L 530	L	L 510	L	L						
10							L	A	L	L 510	A	A	A	A	A	510	490	L	L					
11							A	A	L	A	L 550	A	A	A	A	L	A	A	A					
12							L	L	A	A	L 560	A	L	A	L 520	L 530	A	A						
13							L	A	A	A	A	L	560	R 580	A	560	L	L 490	L					
14						L	L 490	490	540	530	R 570	A	R	A	A	A	510	L	A					
15								L	L	A	A	L	B	A	A	A	L 520	A	A					
16						L	L	L	U L 560	L 580	A	A	A	L	A	A	L	A						
17							L	L	L	A	U L 590	A	L 550	L 580	A	L 540	A	L	L					
18							L	A	L 510	L 590	A	A	A	A	A	A	A	L	L					
19						A	A	A	L 510	A	L 550	A	L 550	L 550	L 560	L 550	L	L	L					
20								L	L	L 510	A	L 560	580	570	550	L 550	L 520	L	L					
21						L	L	L	A	A	A	L 570	570	560	L 580	L 520	L 580	A	L					
22						L	L 450	A	A	A	A	L 560	A	A	L 550	L 540	L 520	L	A					
23							L	L	L 490	L	L 580	A	A	570	540	520	L 520	L	L					
24							L	L	L	L 580	L 550	L 590	A	540	H 560	540	L 500	L						
25							L	L	L 550	540	550	L 590	530	560	520	480	L 500	L	L					
26							L	A	A	A	A	550	A	A	R 530	A	A	A	A					
27						L	L 430	A	L 510	A	A	A	A	A	Z 500	510	500	L 450	L 420					
28							L		A	510	540	540	A	A	540	520	L 520	L 480	A					
29							L	L	520	L 600	550	570	L 550	A	A	A	L 530	L 490	L					
30							L	A	A	A	550	A	L 650	550	A	L 550	A	A	L					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	2	8	10	12	10	11	12	15	17	12	4	1					
MED							L 450	490	515	545	550	560	550	560	540	L 520	520	L 485	L 420					
UQ							470		545	580	L 570	L 570	570	570	550	540	L 520	L 490						
LQ							440		L 510	510	550	550	540	550	520	510	500	L 465						

The Radio Research Laboratories, Japan

JUN. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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						210	275	310	345	C	C	400	A	A	A	A	A	A	A					
2						A	260	A	A	A	A	A	I A 400	395	A	A	B	A	A					
3						A	I A 275	A	A	360	A	A	A	A	A	A	340	A	A					
4						A	A	300	A	A	A	A	A	A	I R 380	360	315	A	A					
5						B	A	A	R	A	A	A	400	I A 385	360	355	A	A	A					
6						A	A	A	A	A	A	A	A	370	380	355	325	280	A					
7						B	270	310	350	360	A	A	A	A	A	360	330	295	A					
8						190	290	315	355	A	A	A	A	A	A	350	330	290	A					
9						A	260	A	A	A	A	A	R	R 385	I R 380	I R 360	330	A	A					
10						A	280	310	A	370	A	A	A	A	A	360	I A 330	295	A					
11						210	270	315	345	A	A	A	A	B	A	I R 375	340	290	A					
12						A	A	A	A	A	A	A	A	A	R 390	380	350	300	A					
13						A	R	A	A	A	A	A	B	I B 405	400	390	360	A	A					
14						220	290	A	A	A	A	B	B	430	400	400	360	315	A					
15						220	290	335	365	B	B	B	B	A	B	A	350	310	A					
16						200	A	A	A	400	395	400	I A 405	I R 410	R 400	I A 380	B	A	A					
17						A	275	A	A	A	A	A	A	A	A	380	A	A	A					
18						A	A	A	A	A	A	A	A	A	A	A	350	300	A					
19						A	A	A	I A 345	A	R 390	A	A	A	A	A	A	A	A					
20						A	A	A	A	370	A	A	A	A	A	A	340	300	A					
21						220	280	325	350	375	375	390	I A 390	I A 380	370	355	330	A	A					
22						I A 190	270	325	340	355	A	A	A	A	A	A	A	A	A					
23						210	290	315	R	375	370	A	A	A	A	A	A	300	235					
24						A	260	310	345	375	385	390	I A 395	A	A	360	335	290	230					
25						220	265	310	340	360	I A 385	A	385	395	A	A	A	A	A					
26						A	270	310	340	360	A	R 400	I A 380	I A 380	I A 340	A	A	A	A					
27						A	A	A	350	370	375	370	395	390	385	365	340	300	230					
28						A	270	310	345	370	375	A	A	A	375	360	340	290	A					
29						A	290	340	A	A	A	I R 405	A	A	R	A	A	A	A					
30						210	290	315	A	A	A	A	A	A	A	380	350	300	225					
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						11	20	16	13	13	8	7	8	11	12	18	19	15	4					
MED						210	275	312	345	370	380	400	U A 395	390	380	360	340	300	230					
UQ						220	290	320	350	375	388	400	U A 400	400	395	380	350	300	232					
LQ						205	270	310	345	360	375	390	388	382	372	360	330	290	228					

The Radio Research Laboratories, Japan

JUN. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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	J X 53	J X 29	J X 86	J X 66	J X 30	23	40	J X 74	J X 65	C	C	44	75	J X 84	J X 119	J X 110	J X 74	J X 75	J X 69	C	35	J X 29	J X 29	J X 29
2	J X 29	J X 51	J X 74	J X 41	J X 21	J X 51	J X 77	J X 75	J X 109	J X 119	J X 57	67	60	J X 125	J X 74	46	J X 59	J X 79	J X 74	J X 29	J X 35	J X 39	J X 49	J X 30
3	22	J X 41	J X 35	J X 64	J X 41	J X 31	J X 42	J X 44	J X 57	46	J X 92	J X 88	J X 88	J X 74	J X 57	J X 129	G	J X 39	J X 29	J X 24	J X 30	J X 89	J X 119	J X 79
4	J X 54	J X 29	J X 29	J X 29	J X 29	J X 41	J X 74	J X 99	J X 105	J X 95	J X 101	J X 174	D	92	G	J X 57	J X 65	J X 42	J X 144	J X 75	41	45	J X 29	J X 29
5	J X 53	J X 42	J X 29	J X 29	21	J X 27	J X 30	J X 36	G	38	J X 79	J X 65	45	43	42	44	J X 50	J X 66	J X 40	E S 15	J X 30	J X 25	J X 24	22
6	21	24	20	20	E S 15	24	J X 41	J X 64	J X 42	J X 144	J X 84	46	39	38	44	J X 58	J X 74	J X 89	J X 58	J X 74	J X 58	J X 91	J X 87	J X 88
7	J X 50	J X 29	J X 48	J X 29	J X 19	J X 30	J X 43	J X 58	J X 52	J X 62	J X 88	J X 89	J X 88	J X 79	45	41	J X 90	J X 128	J X 83	J X 119	J X 62	J X 108	J X 89	J X 25
8	J X 50	J X 25	J X 30	J X 28	J X 29	J X 29	39	J X 49	J X 88	J X 76	J X 119	J X 58	J X 56	57	43	G	J X 52	J X 74	J X 61	J X 74	J X 109	J X 90	J X 81	J X 109
9	J X 41	J X 41	J X 25	22	29	25	J X 40	J X 61	J X 82	J X 108	J X 75	J X 62	G	44	50	40	40	36	J X 41	21	J X 21	J X 29	J X 21	J X 24
10	J X 24	J X 24	J X 24	J X 20	J X 35	30	35	J X 89	J X 135	45	D	170	J X 123	J X 124	J X 90	G 32	J X 37	37	36	J X 73	J X 89	J X 84	J X 51	J X 84
11	J X 65	J X 40	J X 30	J X 28	J X 29	29	J X 43	J X 53	J X 52	J X 58	46	J X 59	108	J X 137	J X 75	G	J X 54	75	J X 49	J X 110	J X 82	J X 120	J X 51	J X 54
12	22	J X 24	E S 15	20	J X 27	J X 74	J X 41	40	50	J X 62	J X 74	J X 109	48	J X 75	44	45	J X 54	J X 52	J X 42	J X 37	J X 29	J X 29	J X 60	J X 41
13	J X 65	J X 51	J X 52	J X 40	J X 58	J X 36	G	J X 59	J X 75	J X 88	J X 92	47	45	49	J X 64	45	49	36	J X 33	J X 43	J X 56	J X 29	J X 50	J X 38
14	J X 75	J X 42	J X 68	J X 51	22	G 18	J G 29	38	43	43	J X 54	J X 58	54	J X 73	J X 77	J X 57	48	J X 42	J X 43	D	J X 35	J X 29	J X 42	J X 77
15	J X 85	17	J X 25	J X 30	J X 30	J X 29	G	37	43	52	J X 62	E B 55	E B 78	J X 65	J X 95	J X 94	J X 44	77	J X 78	J X 61	J X 110	J X 29	J X 24	J X 29
16	J X 26	J X 24	23	E B 13	E B 14	25	34	J X 36	43	43	J X 74	60	79	46	J X 59	J X 53	43	J X 54	J X 89	J X 54	J X 54	J X 105	J X 89	J X 21
17	J X 39	J X 22	J X 25	J X 30	J X 24	23	33	41	43	61	50	J X 65	J X 57	J X 89	J X 110	45	J X 60	J X 54	J X 35	J X 36	J X 26	J X 27	J X 21	22
18	J X 54	J X 54	J X 41	J X 49	J X 30	J X 49	31	J X 49	J X 73	J X 60	90	J X 99	J X 130	J X 100	J X 74	J X 61	J X 110	J X 42	27	J X 39	J X 54	J X 61	J X 66	J X 51
19	J X 60	J X 27	J X 29	J X 29	E S 15	38	J X 51	J X 60	J X 52	J X 89	G	J X 67	46	J X 52	J X 59	J X 52	J X 44	J X 44	J X 42	J X 30	J X 84	J X 29	J X 64	J X 26
20	J X 41	J X 29	22	20	22	25	35	J X 40	45	43	J X 71	J X 50	J X 54	44	J X 42	J X 41	G 31	37	32	J X 38	J X 25	M 24	J X 24	J X 30
21	J X 34	J X 48	J X 48	J X 42	J X 30	G	40	44	J X 50	J X 72	J X 75	J X 130	J X 54	J X 59	44	44	39	J X 51	J X 39	J X 30	J X 25	J X 49	J X 89	J X 74
22	J X 74	J X 53	J X 48	J X 29	E B 13	24	36	J X 80	J X 75	90	80	J X 131	J X 74	J X 57	J X 42	J X 47	J X 39	J X 60	J X 65	J X 39	J X 61	J X 31	J X 41	J X 29
23	J X 29	22	20	J X 25	J X 21	J X 29	G	G	G	46	47	67	J X 88	J X 83	J X 57	J X 43	36	33	J X 36	J X 28	J X 67	J X 52	J X 29	J X 30
24	J X 26	24	J X 18	J X 24	22	J X 29	G 17	39	43	47	49	J X 50	J X 77	41	38	G	G	J X 49	J X 42	J X 30	J X 84	J X 169	J X 107	J X 40
25	J X 28	J X 22	J X 24	J X 24	J X 24	G 19	35	41	42	48	40	40	42	42	J X 48	40	36	J X 42	J X 53	J X 33	J X 58	J X 63	J X 74	J X 63
26	J X 50	J X 43	J X 54	J X 42	J X 30	30	J X 42	J X 84	J X 89	J X 76	80	43	J X 59	65	48	J X 75	J X 74	J X 84	J X 97	J X 57	J X 51	J X 29	J X 84	J X 19
27	20	22	J X 19	19	22	25	36	J X 61	J X 48	J X 67	107	M 67	61	J X 60	J X 89	50	47	G	30	22	J X 58	J X 29	J X 30	22
28	J X 64	J X 65	J X 28	J X 30	36	J X 34	J X 39	J X 61	J X 54	46	46	J X 53	J X 77	110	47	44	J X 49	36	J X 48	J X 30	J X 36	J X 84	J X 52	J X 66
29	J X 72	J X 30	M 21	J X 65	J X 60	J X 36	31	39	49	50	47	47	49	J X 61	J X 61	J X 79	J X 73	J X 47	J X 39	J X 85	J X 51	J X 51	J X 105	J X 61
30	J X 24	J X 42	J X 37	J X 23	J X 24	G 20	32	J X 54	J X 64	J X 75	45	78	46	J X 59	J X 89	J X 57	J X 84	J X 100	J X 45	J X 37	J X 108	J X 99	J X 104	J X 35
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	29	30	30	30	30
MED	J X 46	J X 29	J X 29	J X 29	J X 26	29	36	J X 51	J X 52	J X 61	J X 74	J X 64	59	J X 63	J X 57	46	J X 49	J X 50	J X 42	J X 38	J X 54	J X 47	J X 52	J X 32
UQ	J X 60	J X 42	J X 48	J X 41	J X 30	J X 34	J X 41	J X 61	J X 75	J X 76	J X 88	J X 88	J X 79	J X 84	J X 75	J X 57	J X 65	J X 75	J X 65	J X 73	J X 67	J X 89	J X 87	J X 63
LQ	J X 26	J X 24	J X 23	J X 23	21	24	31	40	43	46	49	50	48	49	44	41	39	J X 39	J X 36	J X 30	J X 35	J X 29	J X 29	J X 28

JUN. 1970 | FOES (0.1 MHZ)*

IONOSPHERIC DATA

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

JUN. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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	E S 15	13	E S 15	10	10	15	14	14	16	C	C	28	28	26	26	25	15	15	14	C	E S 15	E S 15	E S 15	E S 15
2	E S 15	13	E S 15	E S 15	E S 15	15	14	15	18	26	28	25	28	26	26	28	40	15	14	13	12	E S 15	E S 15	14
3	12	13	12	12	13	13	15	15	15	25	25	25	28	26	26	26	15	15	15	12	E S 15	13	12	E S 15
4	12	12	12	E S 15	E S 15	15	15	15	25	27	25	26	26	26	26	26	16	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
5	E S 15	12	E S 15	E S 15	E S 15	15	15	15	15	26	26	26	25	26	25	26	15	15	15	E S 15	13	E S 15	13	E S 15
6	E S 15	E S 15	12	E S 15	E S 15	15	15	15	15	18	27	22	26	26	26	16	14	14	14	13	13	13	E S 15	12
7	13	13	13	12	12	14	14	15	17	16	29	26	26	29	26	25	15	16	14	12	12	13	12	13
8	12	14	14	14	14	14	14	15	25	25	28	25	25	25	25	25	15	15	15	13	E S 15	E S 15	E S 15	E S 15
9	E S 15	13	E S 15	E S 15	E S 15	14	15	15	15	25	25	18	26	26	26	25	15	15	15	13	12	E S 15	13	13
10	E S 15	13	13	13	12	14	15	14	15	26	26	26	26	20	25	19	15	15	13	E S 15	13	12	12	12
11	E S 15	11	13	13	12	14	14	15	15	25	25	26	26	35	26	25	25	15	15	E S 15	E S 15	E S 15	E S 15	12
12	E S 15	12	E S 15	E S 15	13	14	14	15	25	25	25	26	25	30	25	25	26	15	15	14	13	13	E S 15	13
13	E S 15	13	E S 15	12	13	14	15	13	25	27	27	36	43	42	34	37	26	15	13	14	13	12	12	14
14	13	11	12	12	12	14	14	26	26	25	27	40	48	33	26	29	22	16	14	12	E S 15	13	12	13
15	13	13	12	12	12	13	18	20	18	43	42	55	78	28	40	25	25	16	15	13	12	E S 15	E S 15	E S 15
16	E S 15	E S 15	E S 15	13	14	15	15	15	20	25	26	26	25	25	25	30	37	15	15	14	E S 15	E S 15	E S 15	E S 15
17	E S 15	12	13	13	13	15	15	15	15	25	25	26	28	25	26	25	15	15	15	14	E S 15	E S 15	E S 15	E S 15
18	E S 15	E S 15	E S 15	E S 15	E S 15	15	15	15	15	25	22	30	25	25	25	25	15	15	15	E S 15	E S 15	E S 15	E S 15	E S 15
19	E S 15	13	13	13	E S 15	13	15	15	17	25	25	25	25	25	26	25	15	15	15	13	13	13	13	13
20	E S 15	E S 15	13	E S 15	E S 15	15	15	14	25	16	25	25	26	16	15	22	16	14	13	13	13	E S 15	E S 15	12
21	14	12	13	12	13	14	14	15	15	19	25	26	26	26	26	22	16	14	16	13	E S 15	12	13	12
22	12	13	13	13	13	14	15	14	14	15	25	25	25	26	25	23	15	15	14	13	E S 15	E S 15	E S 15	13
23	14	E S 15	E S 15	13	E S 15	14	15	15	15	16	19	15	16	18	16	19	15	14	14	12	13	14	13	14
24	12	12	12	14	12	11	13	12	15	15	16	16	26	26	16	15	15	14	14	14	13	12	13	13
25	12	12	12	13	12	12	14	14	14	14	22	16	15	26	16	17	15	14	14	12	12	13	13	12
26	E S 15	13	12	12	12	13	15	14	15	25	25	25	25	25	18	25	15	14	13	13	13	13	E S 15	E S 15
27	14	E S 15	13	E S 15	E S 15	15	15	15	15	15	15	16	19	26	18	16	15	14	14	13	12	12	13	E S 15
28	13	13	14	13	12	13	14	14	15	16	18	15	26	26	16	26	15	14	13	12	12	12	12	12
29	13	11	13	13	13	14	16	15	16	25	26	25	25	25	25	15	15	15	15	14	E S 15	13	E S 15	E S 15
30	E S 15	13	13	12	12	15	15	15	16	25	25	25	25	26	25	16	15	15	15	13	12	E S 15	E S 15	E S 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	30	30	30	30	30	30	30	30	29	30	30	30	30
MED	E S 15	12	12	12	12	14	15	15	15	25	25	25	26	26	25	25	15	15	14	13	12	13	E S 15	13
UQ	E S 15	13	E S 15	E S 15	E S 15	15	15	15	18	25	26	26	26	26	26	26	16	15	15	14	E S 15	E S 15	E S 15	E S 15
LQ	13	12	12	12	12	14	14	14	15	16	25	25	25	25	25	19	15	14	14	13	12	13	13	12

The Radio Research Laboratories, Japan

JUN. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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

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	250	290	275	280	270	305	285	280	C	C	265	265	265	250	270	280	310	285	C	R	R	R	260
2	255	250	J R 270	265	R 255	245	235	260	260	I A 275	R	J R 260	250	A	A	R	R	A	I A 295	270	255	270	265	255
3	260	250	280	270	260	305	260	285	290	270	I A 280	A	265	260	270	I A 265	275	290	300	315	270	J R 270	A	F
4	J R 260	J R 265	R	255	255	270	265	A	A	A	A	A	A	A	285	285	J R 275	A	A	R	280	R	R 265	265
5	255	260	250	J R 260	265	290	340	320	325	270	275	275	280	285	275	280	285	290	290	290	290	270	275	280
6	275	285	295	270	F 285	300	295	315	325	I A 305	280	255	280	265	280	285	290	285	280	285	285	F	J R 275	275
7	F 265	J F 270	F	J F 300	J F 260	275	285	305	315	285	A	265	I A 265	270	285	285	290	280	J R 285	I A 295	290	J R 275	F 275	F 290
8	275	F	295	280	280	300	270	295	330	320	260	245	285	280	270	290	275	285	285	295	A	I A 265	A	A
9	F	F	285	R 290	270	290	305	305	310	A	270	280	270	280	265	285	300	J R 285	300	285	285	285	280	R 285
10	285	R 300	F	F	285	290	275	I R 295	325	265	A	A	A	A	275	275	280	J R 285	290	290	F	F	F	J R 310
11	F	J E 265	F	F 275	F 270	295	295	310	330	285	280	260	265	280	275	300	300	300	295	275	270	A	F	F
12	F 280	R	F	R 290	J R 270	295	285	290	285	280	280	I A 275	285	285	280	285	280	280	285	270	270	260	260	F
13	R	J R 275	F	F 270	F	285	285	290	300	I A 270	I A 270	250	275	270	275	270	270	270	280	275	265	265	J F 255	J F 275
14	F 255	U F 260	F	F	F 275	F 265	F 255	280	J R 275	265	270	U R 260	R 270	270	255	270	280	285	285	I A 280	255	240	J F 270	U F 265
15	F 265	285	F	F 280	275	295	290	285	285	280	255	255	255	255	A	270	270	265	265	265	I A 260	255	I R 270	275
16	265	270	265	265	270	280	310	335	270	270	275	265	I R 265	270	270	270	270	270	I R 260	275	280	260	260	265
17	F	R	255	280	290	280	280	280	285	280	280	270	275	275	I A 265	265	275	275	285	295	265	255	250	R 265
18	F	275	I R 290	285	285	255	270	305	290	260	A	270	A	A	270	285	I A 275	285	265	265	255	265	255	265
19	255	270	265	260	265	270	I R 250	265	245	A	250	265	275	270	275	280	295	280	275	280	265	260	255	275 R
20	265	265	275	275	255	J R 265	275	295	305	255	245	265	260	255	270	275	280	275	280	300	280	255	255	260
21	260	265	265	F 265	J R 260	265	280	315	295	275	270	280	280	285	280	280	275	285	275	290	290	250	250	J F 260
22	F 275	270	F 285	F 265	F 275	290	255	A	A	A	A	245	270	275	275	290	285	285	270	280	260	260	260	270
23	275	275	J R 285	285	285	310	290	285	310	265	260	265	265	270	285	285	280	270	270	295	275	265	265	265
24	265	280	275	C	C	C	C	C	C	280	280	270	I A 265	285	270	280	290	290	275	275	S 285	275	275	F
25	F	F 280	F 270	F 270	F 285	285	255	260	255	270	280	270	270	265	285	285	300	280	275	270	275	F 265	J F 265	U F 260
26	265	F	F	U F 275	F 285	285	250	A	A	A	A	260	270	250	275	275	A	A	A	275	265	265	F	R 275
27	270	260	290	F	F 260	285	260	290	285	A	A	A	230	245	250	260	265	260	245	260	255	270	S 245	255
28	I A 250	J F 270	305	F 290	F 255	280	330	280	290	295	255	265	A	A	255	270	260	280	285	270	260	270	J F 270	F 265
29	F	F	U F 300	F 285	F 280	F 265	280	305	260	255	265	275	295	270	275	275	270	265	285	280	290	280	265	I R 270
30	265	F	275	265	275	270	270	275	265	250	270	275	260	270	280	270	285	280	280	285	A	A	R 265	260
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	21	26	28	29	29	26	26	23	21	26	26	25	28	29	28	27	28	28	26	24	24	25
MED	265	270	280	275	272	285	280	290	290	270	270	265	270	270	275	280	280	280	282	280	270	265	265	265
UQ	272	275	290	285	282	290	290	305	310	280	280	270	275	280	280	285	288	285	285	290	285	270	270	275
LQ	258	262	270	265	260	270	260	280	275	265	260	260	265	265	270	270	275	275	275	272	260	260	255	260

JUN. 1970 | M(3000)F2 (0.01)

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IONOSPHERIC DATA

JUN. 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

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	A	C	C	L 365	A	A	A	A	L	A						
2						A	A	A	A	A	L 340	A	A	A	A	A	A	A						
3								L	L	L	A	A	A	A	A	A	L	L	L					
4							A	A	A	A	A	A	A	A	L	A		A						
5							L	L	L	L 345	A	A	R 375	L 355	L 390	L	A	L	L					
6							L	L	L	A	A	L	375	H 360	L 330	A	A	L	L					
7						L	L	A	A	A	A	A	A	A	365	350	A	A	A					
8								L 330	A	L	A	A	L	L	L 320	L 360	A	A						
9							L	A	A	A	A	L 355	L 340	L 360	L	L 355	L	L						
10							L	A	L	L 375	A	A	A	A	A	360	355	L	L					
11							A	A	L	A	L 370	A	A	A	A	L	A	A	A					
12							L	L	A	A	L 340	A	L	A	L 370	L 350	A	A						
13							L	A	A	A	A	L	345	R 345	A	340	L	L 330	L					
14						L	L 315	345	350	360	R 325	A	R	A	A	A	A	L	A					
15								L	L	A	A	L	B	A	A	A	L 335	A	A					
16						L	L	L	U L 355	L 335	A	A	A	L	A	A	L	A						
17							L	L	L	A	U L 325	A	L 355	L 340	A	L 350	A	L	L					
18							L	A	L 370	L 340	A	A	A	A	A	A	A	L	L					
19						A	A	A	L 340	A	355	A	L 360	L 340	L 325	L 325	L	L	L					
20								L	L	410	A	375	345	355	360	L 345	L 340	L	L					
21						L	L	L	A	A	A	A	340	340	L 330	L 360	L 310	A	L					
22						L	325	A	A	A	A	L 345	A	A	L 355	L 330	L 345	L	A					
23							L	L	L 380	L	345	A	A	330	370	365	L 325	L	L					
24							L	L	L	L 345	L 360	340	A	390	H 355	350	L 340	L						
25							L	L	L 345	350	380	L 335	395	340	365	385	L 340	L	L					
26							L	A	A	A	A	370	A	A	R 360	A	A	A	A					
27						L	L 320	A	L 330	A	A	A	A	A	Z 365	A	A	L 340	L 300					
28							L		A	390	370	390	A	A	345	335	L 330	L 315	A					
29							L	L	A	L 305	345	335	A	A	A	A	L 330	L 335	L					
30							L	A	A	A	370	A	L 305	355	A	L 330	A	A	L					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	2	7	10	12	9	10	12	15	16	10	4	1					
MED							L 320	338	L 350	L 348	350	355	350	350	360	L 350	L 338	L 332	300					
UQ							322		L 362	375	370	370	375	358	365	360	L 340	L 338						
LQ							L 318		L 342	L 340	340	L 340	340	340	L 338	L 338	L 330	L 322						

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JUN. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JUN. 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								300A	330	C	C	390B	380	350	390	355	330	230						
2						450	450A	410	390	A	590	450A	480	A	A	R	R	A						
3								340	300	320	IA 345	A	400A	380	350	IA 375	350	300	275					
4							400A	A	A	A	A	A	A	A	360	355		A						
5							250	270	270	430	380	360	345	345	345	350	330	315	290					
6							290	280	250	IA 290	350A	380	355	385	330	355	320	310	280					
7						310	280	280	280	310	A	A	IA 385	375	320	320	320	IA 310	EA 330					
8								310	260	310	400A	350	350	370	345	320	330	310						
9							260	250	290	A	400	350	380	340	350	340	290	290						
10							290	IA 295	280	280H	A	A	A	A	330	320	310	295	280					
11							280	275	265	310	365	360	390A	340	355	340	310	330A	290					
12							305	260	290	310	400	IA 370	340	365	370	345	345	300						
13							245	270	300	A	IA 370	325	375	355	330	370	355	320	280					
14						380	395	330	375	380	410	440	410	420	450	405	370	320	290	A				
15								290	300	300	410	350	B	400	A	345	350	EA 390	EA 380					
16						280	280	250	360	400	400A	400	IA 385	390	400	380	345	320						
17							280	340	290	335	380	380	380	390	IA 395	365	345	330	300					
18							330	300	350	440	A	440	A	A	350	345	A	345	290					
19						350	350	400A	490	IA 480	460	EA 450	405	390	390	350	305	305	300					
20								290	380	290	400	355	380	375	345	345	320	310	300					
21						310	280	270	250	340A	380	330	375	335	340	330	350	330	300					
22						290	410	A	A	A	A	520	400	400	380	360	350	320	320					
23							250	255	300	360	355	320	370	355	330	330	325	310	300					
24							255	270	275	350	310	380	IA 395	350	350	340	305	295						
25							350	300	350	355	320	400	385	405	325	315	305	300	310					
26							405	A	A	A	A	430	440	480	400	A 380	A	A	A					
27						300	390	370	510	A	A	A	650	505	505	440	430	400	440					
28							260		320	320	420	420	A	A	470	420	425	355	325					
29							270	280	380	420	400	355	330	390	370	EA 400	380	350	310					
30							275	305	340	390A	345	350	400	390	390A	360	360	360A	300					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						8	25	26	27	22	22	25	25	25	28	29	26	27	21					
MED						310	280	290	300	338	390	375	385	380	352	350	338	312	300					
UQ						365	350	310	355	390	400	410	400	390	390	368	350	330	305					
LQ						295	270	270	280	310	355	350	375	355	342	340	320	302	290					

IONOSPHERIC DATA

JUN. 1970 | H'F (<M)

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	330	310	300A	280	260	250	250	A	A	C	C	240	A	A	A	A	290A	I260A	300A	C	A	340	300	300
2	350	350	315	300	340	A	A	A	A	I350A	300	A	A	A	A	A	A	A	E360A	290	340	325	290	300
3	310	320	300	290	290	250	260	250	240	230	A	A	A	A	A	I235A	240	260A	260	245	240	315	E400A	E390A
4	320	310	290	300	310	260	A	A	A	A	A	A	A	A	210H	A	360	A	A	A	290	320	300	300
5	375	360	300	340	300	260	240	250	220	200H	A	A	220	230	230	260	A	290A	250	250	250	280	295	295
6	300	250	240	260	280	250	250	250	230	A	A	180H	200	200H	245	A	A	A	250	260	240	300	310	A
7	290	280	270A	250	290	260	270	A	A	A	A	A	A	A	220	230	I250A	I250A	I265A	I280A	260	310	280	260
8	300	280	270	290	280	230	240	260A	A	I230A	I205A	I205A	A	A	240	210	A	A	280	300	I260A	290	400A	340
9	300	300	250	250	300	245	240	I260A	A	A	A	260	230	240	I255A	240	250	210	265	255	270	280	270	270
10	290	250	255	265	280	240	240	A	250	220	A	A	A	A	A	225	220	245	260A	290A	290A	350A	310	270
11	290	290	280	290	275	250	A	A	E250A	I255A	220	A	A	A	A	240	A	A	A	E350A	340	I320A	290	310
12	270	290	280	265	280	250	240	240	A	A	240	I205A	210	I240A	240	260	A	I270A	270	265	290	300	355	340A
13	290	310	295	290	290	250	240	A	A	A	A	A	R	260	A	210	I250A	245	260	270	280	275	E370A	275
14	350	370	310	310A	290	260	245	230	230	230	A	A	A	A	A	A	A	I275A	A	A	320	310	310	330
15	350A	260	260	270	255	255	240	230	220	A	A	300A	B	A	A	A	A	A	A	310	I300A	310	290	270
16	305	305	280	290	290	260	240	230	210	205H	A	A	I280A	240	I250A	A	260	A	A	290	310	320	350	295
17	320	300	300	280	240	245	245	240	240	I245A	205H	A	290A	270	I250A	240	I255A	290A	260	260	260	300	320	305
18	350	310	290	250	265	240	240	I245A	240	320A	A	A	A	A	A	A	A	260A	250	290	330	290	340	350
19	350	300	270	290	300	I295A	A	A	250	I245A	220	I220A	240	A	E320A	E290A	240	270	255	295	310	300	310	320
20	340	310	290	260	300	260	250	240	240	200	A	200	205	215	205	225	230	250	240	260	260	280	310	300
21	300	290	290	310	305	270	250A	I240A	A	A	A	A	290A	I265A	240	250A	255	I265A	I260A	270	240	340	I355A	370A
22	320	320A	290	270	280	250	250	A	A	A	A	280	A	A	210	290A	250	I250A	I290A	290	295	320	340	310
23	290	280	260	290	260	240	230	200	200	220	210	A	A	240A	205	205	225	230	270	260	300A	305	300	310
24	300	290	270	270	260	255	230	245	210	220	250A	240	A	195	185H	220	220	I260A	270	275	310A	270	300A	350A
25	270	275	295	290	275	230	230	240	225	255A	195	180H	200	220	210	220	205	210	260	280	290	340A	300	350A
26	320	330	300	280	250	270	250	A	A	A	A	210	I220A	I230A	240	I235A	A	A	A	300	300	310	340	290
27	290	290	260	300	340	260	260	A	A	A	A	I210A	I215A	I215A	240	I260A	I275A	240	250A	290	310A	280	300	320
28	I375A	350A	245	220	340	275	255	260	A	220	225	200	A	A	260	260A	240	230	I250A	260	320A	370A	330A	330
29	320	255	240	270	300	240H	240	220	I250A	310A	260	260	A	A	A	A	270A	260A	I250A	310	350	270	E400A	315
30	290	290	290	300	300	255	240	A	A	A	200	I225A	250	240	I250A	280	A	A	270	270	A	A	290	350
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	29	26	18	16	17	12	16	13	15	20	21	19	21	24	27	28	29	30	29
MED	308	300	285	285	290	250	240	240	232	230	220	215	220	240	240	238	250	260A	260	278	292	310	305	310
UQ	340	310	295	290	300	260	250	250	242	I255A	245	250	250	240	249	260	258A	265A	270	290	310	320	335	335
LQ	290	280	260	265	275	245	240	230	220	220	205	202	210	218	210	225	235	245	250	260	260	290	300	295

The Radio Research Laboratories, Japan

JUN. 1970 | H'F (<M)

IONOSPHERIC DATA

JUN. 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

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	110	100	110	110	100	150	130	120	115	C	C	130	110	110	100	100	100	100	100	C	100	100	100	100
2	100	100	100	100	110	120	120	120	110	110	120	120	120	110	115	120	110	110	110	100	100	110	100	100
3	100	100	100	100	100	100	130	120	110	130	110	110	110	110	110	110	G	110	110	110	100	100	100	100
4	100	100	100	100	100	120	120	115	110	110	110	110	110	110	G	130	130	115	110	110	110	110	100	100
5	110	110	110	100	100	105	110	110	G	130	110	110	130	130	140	130	110	110	110	S	100	100	100	100
6	100	100	100	100	S	130	115	110	115	105	105	105	110	115	150	130	120	115	110	110	110	110	110	100
7	100	95	90	90	100	115	120	115	110	110	110	105	105	105	110	120	115	110	110	100	105	105	105	100
8	100	90	95	95	100	105	130	120	110	110	110	110	110	110	120	G	130	120	110	110	110	110	110	110
9	100	100	100	100	110	130	120	110	110	110	110	110	G	160	140	140	130	120	110	110	100	100	100	100
10	100	100	100	100	100	140	140	115	110	110	125	115	105	105	105	105	105	130	110	110	105	105	105	105
11	100	100	100	95	100	140	120	115	115	110	110	110	110	110	110	G	130	115	110	110	110	110	110	110
12	100	100	S	100	100	110	100	130	110	110	110	110	140	140	140	140	130	115	110	110	105	100	100	100
13	110	100	100	100	100	100	G	110	110	105	105	110	130	130	125	130	120	115	110	105	105	100	115	110
14	110	105	100	100	100	105	105	110	105	130	110	110	125	130	130	120	115	115	110	110	105	105	110	105
15	105	105	100	95	95	95	G	130	130	115	110	B	B	110	110	110	130	120	110	100	100	100	100	100
16	100	100	100	B	B	150	100	110	110	135	115	110	110	145	130	130	130	110	110	110	110	110	100	100
17	100	100	100	100	100	150	140	130	110	110	110	110	110	110	110	120	110	110	105	105	100	100	100	100
18	100	100	100	100	100	100	130	120	110	110	110	110	110	110	110	120	110	120	130	110	110	100	100	100
19	100	100	100	100	S	120	115	110	110	110	G	110	110	110	110	100	100	105	100	110	105	100	100	100
20	100	100	100	100	100	150	140	110	110	115	105	105	105	105	105	105	105	130	125	100	100	95	95	105
21	100	100	100	100	100	G	125	120	120	110	110	110	110	110	110	110	110	105	105	100	100	100	100	100
22	95	100	100	100	B	130	130	110	110	110	110	110	110	110	110	110	110	110	100	100	100	100	100	100
23	100	100	100	100	100	100	G	G	G	110	110	100	105	110	105	110	100	140	115	110	105	110	95	95
24	95	90	90	100	100	100	105	120	125	115	110	110	110	110	110	G	G	125	120	110	110	105	105	105
25	105	105	100	100	100	100	125	120	120	110	120	110	110	125	110	110	110	110	110	110	105	105	105	100
26	100	100	100	100	105	130	125	110	110	110	110	145	110	110	110	105	110	100	100	100	100	100	100	100
27	100	100	100	100	100	145	140	120	120	110	110	110	110	115	125	125	125	G	115	110	105	105	105	105
28	105	105	100	100	95	125	125	115	115	110	110	105	105	100	130	125	125	125	110	100	110	95	105	105
29	105	105	105	105	105	105	150	140	130	130	130	140	140	130	130	120	130	115	110	105	100	100	100	100
30	100	100	100	100	100	100	140	110	110	110	110	110	110	110	100	130	115	115	110	110	110	105	100	100
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	29	26	29	27	29	28	29	28	29	28	30	29	27	28	29	30	28	30	30	30	30
MED	100	100	100	100	100	120	125	115	110	110	110	110	110	110	110	120	115	115	110	110	105	100	100	100
UQ	105	100	100	100	100	130	130	120	115	115	110	110	110	125	130	130	130	120	110	110	110	105	105	105
LQ	100	100	100	100	100	100	118	110	110	110	110	110	110	110	110	110	110	110	110	100	100	100	100	100

JUN. 1970 | H'ES (KM)

IONOSPHERIC DATA

JUN. 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	FF 23	F 4	F 4	FF 43	F 2	H 1	H 2	H 2	C 2			H 1	C 2	C 1	C 1	L 2	L 2	L 3	L 3		F 3	F 3	F 2	F 3
2	F 6	F 5	F 4	F 5	F 2	H 3	H 4	H 2	L 2	C 1	H 1	H 1	H 1	C 2	C 2	H 1	C 1	C 2	C 3	F 5	F 6	F 5	F 2	F 3
3	F 2	F 3	F 6	F 6	F 5	L 3	H 2	H 2	C 1	H 1	C 2	C 2	C 2	C 2	C 1	C 2		C 2	C 2	F 4	F 5	F 3	F 5	F 5
4	F 4	F 5	F 2	F 3	F 3	H 2	H 3	C 3	C 2	C 2	C 2	C 2	C 2	C 2		H 2	H 3	C 2	C 3	F 4	F 5	F 5	F 5	F 5
5	F 5	F 5	F 5	F 2	F 1	L 2	L 2	L 2		H 1	C 1	C 2	H 1	H 1	H 1	H 1	C 2	C 3	C 2		F 4	F 2	F 2	F 1
6	F 2	F 1	F 1	F 1		H 1	C 3	C 2	C 1	C 2	C 2	C 2	C 1	C 1	H 1	H 2	H 3	C 3	C 3	F 3	F 4	F 4	F 5	F 3
7	F 3	F 2	F 3	F 2	F 2	C 2	C 3	C 3	C 2	C 2	C 2	C 2	C 2	C 2	C 1	C 1	C 3	C 2	C 4	F 3	F 4	F 4	F 3	F 3
8	F 3	F 2	F 2	F 2	F 2	L 1	H 2	H 3	C 2	C 1	C 1	C 1	C 1	C 1	H 1		H 2	H 2	L 2	F 3	F 3	F 3	F 3	F 3
9	F 5	F 4	F 2	F 2	FF 21	H 1	H 1	C 2	C 2	C 2	C 2	C 2		H 1	H 1	H 1	H 2	H 1	L 3	F 2	F 4	F 4	F 3	F 2
10	F 2	F 2	F 2	F 2	F 4	H 1	H 1	C 2	C 2	C 2	HC 22	HC 22	C 2	C 2	C 1	L 1	L 2	HL 21	LH 33	FF 43	F 3	F 4	F 6	F 4
11	F 4	F 4	F 4	F 4	F 2	H 3	H 2	C 3	C 2	C 2	C 2	C 2	C 2	C 2	C 2		H 2	C 2	C 3	F 5	F 3	F 3	F 3	F 6
12	F 1	F 2		F 2	F 4	L 2	L 3	H 1	C 1	C 1	C 1	C 2	C 1	H 1	H 1	H 1	H 2	C 2	C 3	F 4	F 5	F 1	F 3	F 6
13	F 3	F 3	F 2	F 3	F 2	L 2		C 2	C 2	C 2	C 1	C 1	H 1	H 1	H 2	H 1	H 2	C 2	C 4	F 3	F 6	F 3	FF 51	F 4
14	F 3	F 6	F 3	F 4	F 2	L 1	L 2	C 1	C 1	HC 11	C 1	C 1	H 1	H 1	H 2	H 1	C 2	C 2	CL 21	FF 43	F 4	F 2	F 4	F 3
15	F 3	F 1	F 4	F 4	F 2	L 1		H 1	H 1	C 1	C 1			C 2	C 2	C 2	H 2	H 2	C 3	F 4	F 4	F 2	F 2	F 5
16	F 2	F 2	F 1			H 1	L 1	L 1	C 1	H 1	C 1	C 2	C 2	H 1	H 1	H 1	H 1	C 2	C 2	F 3	F 3	F 3	F 3	F 2
17	F 4	F 2	F 2	F 3	F 2	HL 11	H 1	H 1	C 1	C 2	C 1	C 2	C 1	C 1	C 2	H 1	C 2	C 2	L 2	F 4	F 2	F 3	F 3	F 2
18	F 3	F 3	F 5	F 4	F 4	L 2	HL 11	H 2	C 1	C 2	C 2	C 1	C 2	C 2	C 2	H 1	C 2	H 2	H 1	F 4	F 4	F 3	F 5	F 5
19	F 4	F 2	F 5	F 4		H 3	C 2	C 3	C 2	C 3		C 2	C 1	C 2	C 2	C 2	C 2	L 2	L 3	F 2	F 3	F 3	F 3	F 6
20	F 5	F 4	F 1	F 2	F 2	HL 11	H 1	C 1	C 1	C 1	C 2	C 1	C 1	C 1	C 1	C 2	L 2	HL 12	HL 22	F 3	F 3	F 2	F 2	F 4
21	F 4	F 4	F 4	F 4	F 4		H 2	H 2	H 2	C 2	C 2	C 2	C 1	C 2	C 1	C 2	C 1	C 3	C 4	F 4	F 4	F 4	F 4	F 4
22	F 5	F 5	F 4	F 3		H 2	H 3	C 4	C 3	C 2	C 2	C 2	C 2	C 2	C 1	C 2	C 2	L 3	L 4	F 5	F 5	F 4	F 6	F 4
23	F 4	F 2	F 2	F 2	F 2	L 1				C 1	C 2	C 2	C 2	C 2	CL 12	CL 22	L 2	HL 11	CL 42	FF 42	F 4	FF 23	F 4	F 3
24	F 4	F 3	F 1	F 2	F 2	L 3	L 1	H 1	H 2	C 2	C 2	C 2	C 2	C 1	C 1			H 4	C 3	F 4	F 3	F 4	F 3	F 6
25	F 3	F 2	F 2	F 1	F 2	L 2	HL 23	H 2	H 2	C 2	H 1	C 1	C 1	H 1	C 1	C 1	C 2	C 1	C 3	F 4	F 3	F 5	F 4	F 4
26	F 4	F 4	F 4	F 4	F 5	H 2	H 2	C 4	C 3	C 2	C 2	H 1	C 2	C 2	C 2	C 2	C 2	L 3	L 4	F 5	F 4	F 5	F 2	F 2
27	F 1	F 2	F 1	F 1	F 1	H 1	H 1	H 3	H 2	C 2	C 3	C 2	C 2	C 2	H 1	H 2	H 2		C 3	F 4	F 6	F 3	F 4	F 2
28	F 6	F 6	F 4	F 4	F 4	HL 32	H 2	C 3	C 2	C 2	C 2	C 1	C 2	L 2	H 1	H 1	H 2	H 1	CL 33	F 3	FF 33	F 3	F 4	F 5
29	F 4	F 2	F 1	F 4	F 5	L 2	H 1	H 2	HL 22	HL 11	HL 11	H 1	H 1	H 2	H 2	HL 21	H 2	C 2	C 2	F 4	F 4	F 3	F 5	F 5
30	F 1	F 2	F 3	F 2	F 2	L 1	H 1	C 2	C 3	C 2	C 1	C 1	C 1	C 1	C 2	H 2	C 2	C 2	C 2	F 4	F 5	F 6	F 3	F 3
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

JUN. 1970 | TYPES OF ES

IONOSPHERIC DATA

JUN. 1970 | HPF2 (<M) | 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	410	430	330	370	370	360	300	345	350	C	C	400	400	390	400	390	370	300	380	C	R	R	R	410
2	440	410 R	400 J R	400	450 R	480	495 I A	420	410	365 I A	R	A	G	A	A	R	R	A	340 I A	380	430	400	400	400
3	410	430	380	380	400	300	400	380	350	400	380 I A	A	A	400	400	400 I A	400	350	310	300	400	440 J R	A	F
4	400 J R	395 J R	R	400	410	380	440	A	A	A	A	A	A	A	380	380	380 J R	A	A	R	370	R	400 R	380
5	400	410	400	400 J R	400	340	280	300	290	G	400	380	380	350	380	400	350	350	310	350	360	380	350	365
6	400	350	305	390	380 F	320	300	300	280	310 I A	355	405	360	400	360	370	340	340	350	350	350	F	375 J R	380
7	390 F	380 J F	F	310 J F	400 J F	370	345	305	300	350	A	A	400 I A	385	360	350	350	350 I A	350 J R	315 I A	350	380 J R	370 F	350 F
8	375	F	330	370	360	320	360	320	270	310	420	420	380	380	390	350	380	350	350	350	A	400 I A	A	A
9	F	F	350	350 R	390	340	320	310	300	A	400	390	400	390	390	360	340	340 J R	350	350	350	350	380	380 R
10	380	340 R	F	F	355	350	400	340 I R	300	370	A	A	A	A	370	370	360	350 J R	345	350	F	F	F	310 J R
11	F	395 J F	F	355 F	360 F	320	310	300	280	350	380	400	400	390	400	350	350	350	310	385 I A	400	A	F	F
12	380 F	R	F	360 R	400 J R	350	380	340	380	365	390	400 I A	380	380	390	390	350	350	355	380	400	400	430	F
13	R	390 J R	F	390 F	F	350	380	345	310	385 I A	390 I A	420	380	370	360	380	380	360	350	350	380	380	430 J F	370 J F
14	255 F	260 J F	F	F	275 F	265 F	255 F	280	275 J R	265	270	260 J R	G	420	450	405	370	350	320	370 I A	410	440	410 J F	405 J F
15	395 F	350	F	355 F	370	320	330	330	330	360	420	410	400	410	A	400	400	400	400	400	390 I A	400	400 I R	380
16	440	410	400	400	400	350	310	270	400	400	395 I A	400	400 I R	400	400	400	400	400	395 I R	400	380	400	420	400
17	F	R	400	380	350	350	380	380	350	370	400	400	400	400	405 I A	400	400	375	380	340	400	400	440	420 R
18	F	380	350 I R	350	350	420	400	310	350	450	A	G	A	A	400	380	400 I A	380	400	400	420	410	400	400
19	420	400	400	400	400	400	430 I R	410	G	A	G	A	G	400	400	380	350	360	380	390	400	400	410	400 R
20	410	410	400	390	400	400 R	400	330	310	410	430	380	410	410	380	375	360	360	360	320	350	420	420	410
21	405	390	400	400 F	405 J R	380	350	300	310	370	385	360	385	350	350	370	360	360	360	330	330	440	435 I A	430 J F
22	380 F	380	350 F	395 F	355 F	320	445	A	A	A	A	G	410	400	400	370	380	360	365 I A	350	400	400	400	400
23	350	400	380 J R	380	360	300	300	320	330	380	390	395	390	370	350	350	355	370	350	320	370	405	390	405
24	385	370	355	350	350	305	340	305	305	360	340	390	400 I A	360	370	360	350	335	360	370	360 S	370	370	F
25	F	370 F	395 F	400 F	355 F	350 F	400	400	405	380	350	410	395	410	350	350	320	330	370	380	380	405 F	400 J F	420 U F
26	390	F	F	350 U F	330 F	330	440	A	A	A	A	G	G	G	400	400	A	A	A	380	400	400	F	400 R
27	400	400	350	F	420 F	400	400	A	G	A	A	A	A	A	G	440	430	405	450	385	420	380	425 S	430
28	435 I A	390 J F	295	305 F	410 F	355	280	350	330	330	420	420	A	A	G	420	425	370	350	370	400	400	375 J F	390 F
29	F	F	305 U F	360 F	370 F	410 F	360	305	400	350	400	380	350	400	400	A	400	400	360	390	350	390	400	400 I R
30	400	F	390	400	395	390	400	380	400	410	400	400	430	395	390	400	380	A	370	380	A	A	400 R	410
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	21	27	29	30	30	26	25	22	20	20	20	23	26	28	28	26	28	28	26	24	24	25
MED	400	390	380	380	380	350	370	325	330	368	392	400	400	395	390	380	370	355	358	370	385	400	400	400
UQ	410	405	400	400	400	380	400	350	350	385	400	408	400	400	400	400	400	370	375	382	400	405	420	410
LQ	382	375	350	355	355	320	310	305	300	350	380	385	380	380	370	365	350	350	350	350	360	385	385	380

JUN. 1970 | HPF2 (<M)

IONOSPHERIC DATA

JUN. 1970 | YPF2 (<M) | 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	90	90	80	85	90	135	100	100	150	C	C	100	100	50	100	90	90	110	110	C	R	R	R	90
2	90	R 90	J R 90	100	R 80	90	I A 140	80	90	I A 85	R	A	G	A	A	R	R	A	I A 100	100	80	90	50	100
3	90	80	100	100	100	100	100	100	130	100	I A 115	A	A	90	90	I A 85	90	90	90	90	100	J R 80	A	F
4	J R 100	J R 95	R	100	90	100	100	A	A	A	A	A	A	A	100	100	J R 100	A	A	R	110	R	R 100	100
5	100	90	100	J R 100	100	110	80	100	100	G	80	100	110	90	110	100	100	100	90	90	90	110	90	85
6	80	100	95	100	F 100	90	100	100	70	I A 90	95	105	90	95	110	75	80	110	100	70	100	F	J R 75	105
7	F 105	J F 90	F	J F 85	J F 100	80	75	75	70	100	A	A	I A 90	95	90	80	100	I A 100	J R 100	I A 90	70	J R 80	F 80	F 60
8	75	F	80	70	80	90	130	80	75	140	80	90	100	70	100	90	100	100	100	100	A	I A 95	A	A
9	F	F	100	R 100	100	100	80	90	100	A	90	100	80	100	110	90	100	J R 110	100	100	100	100	60	R 110
10	100	R 100	F	F	95	100	90	I R 95	100	105	A	A	A	A	120	100	90	J R 95	70	100	F	F	F	J R 65
11	F	J F 100	F	F 100	F 90	85	100	70	75	100	100	100	100	90	100	100	100	90	100	I A 95	100	A	F	F
12	F 100	R	F	R 90	J R 100	90	100	100	100	95	110	I A 100	110	120	110	100	100	100	95	100	100	100	80	F
13	R	J R 90	F	F 100	F	100	120	95	90	I A 115	I A 95	150	80	105	90	110	105	90	80	120	115	120	J F 80	J F 80
14	F 80	U F 125	F	F	F 90	F 95	F 95	110	J R 75	105	60	U R 60	G	75	95	90	105	100	130	I A 105	100	85	J F 80	U F 70
15	F 110	95	F	F 90	105	90	100	140	120	120	80	100	80	100	A	100	100	100	100	100	I A 100	100	I R 95	100
16	70	90	100	100	100	100	90	110	100	120	I A 90	80	I R 90	100	100	100	100	100	I R 105	100	100	100	100	100
17	F	R	100	100	100	100	100	100	100	110	100	100	100	100	I A 105	100	100	105	100	100	100	100	60	R 90
18	F	100	I R 95	90	100	100	100	100	100	100	A	G	A	A	100	100	I A 100	100	100	100	100	100	110	100
19	100	100	100	100	80	100	I 3 100	90	G	A	G	A	G	100	100	100	90	120	100	100	100	100	100	R 100
20	110	100	100	100	100	J R 100	100	110	90	190	115	115	115	135	115	100	110	110	90	95	90	100	90	90
21	90	90	100	F 95	J R 95	120	150	60	135	130	110	110	95	90	70	100	110	90	110	80	95	110	I A 85	J F 70
22	F 75	90	F 75	F 105	F 100	100	95	A	A	A	A	G	90	100	100	110	100	100	I A 100	100	100	100	100	100
23	100	100	J R 100	110	120	100	100	80	110	120	110	105	110	100	100	95	100	135	95	90	105	95	100	90
24	90	80	90	100	90	95	130	90	100	115	130	120	I A 100	70	130	95	100	115	130	105	S 70	80	100	F
25	F	F 80	F 80	F 80	F 70	100	145	80	120	115	120	70	100	90	90	90	90	130	105	110	80	F 95	J F 95	U F 80
26	80	F	F	U F 100	F 90	90	105	A	A	A	A	G	G	G	100	90	A	A	A	110	100	100	F	R 100
27	100	100	100	F	F 100	100	100	A	G	A	A	A	A	A	G	60	70	95	110	100	80	95	S 80	80
28	I A 90	J F 80	65	F 105	F 90	95	70	150	90	90	130	80	A	A	G	55	75	100	75	110	90	80	J F 100	F 90
29	F	F	U F 90	F 90	F 80	F 90	120	105	115	130	100	100	100	100	100	A	100	100	130	100	100	100	100	I R 100
30	100	F	100	100	95	100	90	110	100	110	100	100	80	95	110	90	110	A	100	100	A	A	R 100	100
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	21	27	29	30	30	26	25	22	20	20	20	23	26	28	28	26	28	28	26	24	24	25
MED	90	90	100	100	95	100	100	100	100	110	100	100	100	95	100	98	100	100	100	100	100	100	92	90
UQ	100	100	100	100	100	100	105	105	110	120	112	105	100	100	110	100	100	110	105	100	100	100	100	100
LQ	85	90	90	90	90	90	95	80	90	100	90	95	90	90	100	90	90	100	95	95	90	92	80	80

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JUN. 1970 | YPF2 (<M)

IONOSPHERIC DATA

JUN. 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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J S 95	S 93	I S 97	I S 88	70	66	79	78	76	85	96	101	106	112	113	113	109	110	105	92	J S 84	U S 83	I S 88	U S 92
2	90	90	87	76	I S 76	74	77	83	83	72	65	69	77	80	78	82	83	78	76	71	J S 75	80	I S 80	78
3	U S 75	S 73	80	57	56	58	70	S 80	89	91	I A 90	87	100	105	104	109	S 113	115	I A 106	I S 97	I S 86	77	77	80
4	77	I S 84	J S 85	S 75	C	C	77	U S 90	I C 91	89	93	A	A	98	96	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	92	96	91	90	I A 94	97	J S 103	102	I S 91	S 83	I S 85	J S 84
6	I S 85	86	I S 82	S 71	67	68	78	100	77	73	72	80	91	95	99	96	99	99	103	J S 97	105	U S 83	J S 81	86
7	93	S	F	F	F	F	S 82	105	J S 98	I A 77	I A 80	88	94	103	107	109	110	109	J S 109	S 113	J S 99	S 94	U S 96	U S 98
8	I S 102	I S 101	S 103	S 85	77	S 73	79	S 92	103	86	80	80	92	100	99	106	107	110	R 113	98	90	S 74	74	77
9	S	S	S	U S 77	S	S 72	S 84	I A 90	83	78	82	95	96	101	113	124	123	109	J R 104	105	I S 102	I S 100	I S 100	I S 101
10	103	I S 100	J S 97	90	83	79	90	104	S 98	81	I A 84	95	105	112	113	S 113	110	109	S 111	J S 103	I S 94	J S 85	83	F
11	S	S	I S 91	U S 81	F	F	S 80	S 92	79	79	84	88	100	104	101	100	103	100	A	I S 90	91	85	S 85	S
12	F	F	S	F	S	C	C	84	85	84	85	88	93	94	I A 96	98	98	89	88	92	S 87	J S 84	S 82	S
13	S 92	S	S	F	F	F	S 80	101	90	83	I A 85	94	98	96	92	94	101	106	100	I S 97	S 97	S 94	S 94	S 94
14	I S 99	I S 103	S 107	S 108	82	C	C	74	78	73	74	82	81	79	80	82	I A 83	88	R 89	C 82	C 78	S 84	C 87	S 84
15	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	91	97	85	83	R 88	94	R 96	92	J S 99	103	103	I S 98	J S 88	92	I S 94
17	I S 100	I S 101	J S 101	I S 98	S 90	81	J S 88	94	S 99	89	88	92	U S 95	S 99	104	R 109	C	C	C	C	C	C	C	C
18	C	C	C	C	F 70	S 72	S 81	C	C	C	82	80	89	102	105	99	92	93	105	I S 102	I S 97	I S 95	99	106
19	I S 110	I S 111	I S 95	F 77	F	71	81	79	I A 71	70	I A 72	75	80	85	92	J S 98	R 85	82	77	U S 82	81	I S 75	J S 79	77
20	I S 76	I S 78	I S 76	S 72	71	J S 74	84	104	90	81	89	93	92	U R 91	108	112	R 111	111	105	S 109	I S 92	S	S	J S 98
21	S	S	U S 83	81	79	S 78	S 93	S 86	83	R	V 90	93	89	105	I A 102	105	110	S 113	106	J S 103	90	88	91	I S 98
22	I S 97	J S 98	U S 84	I S 83	80	78	U S 80	S 84	80	72	67	76	R 89	106	110	J R 122	J R 129	J R 123	110	99	I S 90	S 83	84	79
23	84	S 86	80	80	77	75	79	83	80	91	82	83	91	98	101	100	94	S 96	100	S 98	S 90	91	S 93	I S 92
24	S 99	S 100	I S 95	U S 90	86	79	85	88	86	81	78	82	90	91	97	103	96	94	R 93	S 97	I S 95	S 92	86	S 90
25	S	S	S	88	85	81	73	84	93	99	100	89	88	93	103	110	107	91	S 89	I S 94	I S 102	J S 102	J S 73	S 80
26	78	76	S 78	S 82	70	67	S 73	86	77	S 81	75	I A 76	78	73	74	76	73	79	92	S 97	S 83	S 74	S 73	S 74
27	S 73	U S 80	73	58	57	S 61	S 81	81	72	56	R 54	I A 56	59	R 62	64	66	67	70	67	S 70	S 74	76	U S 72	S 74
28	79	S 79	78	60	54	55	74	S 84	82	I A 87	88	89	I A 92	I A 89	86	80	82	85	83	90	91	S 92	87	I S 91
29	S 94	96	90	J S 87	71	66	I A 71	79	84	91	100	102	91	82	81	85	85	90	91	90	S 94	I S 82	S 78	I A 86
30	S 87	F	J S 81	S 74	F	S 65	71	80	78	C 87	I A 95	R 95	I A 86	I R 91	93	R 97	96	U S 98	J R 88	80	S 80	U S 80	81	J S 82
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	21	18	21	23	19	21	25	26	26	26	28	27	28	29	29	28	27	27	26	27	27	26	26	24
MED	S 92	S 92	S 85	S 81	76	72	80	85	83	82	84	88	91	96	99	100	98	98	102	S 97	S 91	S 84	S 84	S 86
UQ	S 99	U S 100	S 95	S 88	81	78	S 82	92	90	89	90	93	94	102	104	109	110	109	105	S 102	U S 98	S 92	S 91	U S 94
LQ	S 79	S 80	S 80	74	70	66	77	81	78	77	76	80	87	89	92	92	88	90	89	90	S 85	S 80	S 79	80

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IONOSPHERIC DATA

JUN. 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								L	L	L 600	A	A	L 550	560	H 570	A	U L 520	L	L					
2								450	I A 490	480	510	540	I A 530	A	A	A	A	A	A					
3								A	A	A	A	A	550	I A 550	550	A	A	A	A					
4								A	C	A	A	A	A	A	A	C	C	C	C					
5							C	C	C	C	C	C	540	550	H 550	I A 540	A	A	L	L				
6								L 440	L	L 450	L	580	I A 560	550	550	540	A	U L 480	A					
7								L	A	A	I A 570	560	I A 550	520	520	L 530	H 480	L	A					
8								L	A	L	L 570	L	H 690	530	530	510	L 500	L 470	L					
9							L	A	A	L	A	I A 540	L 550	L 510	L 540	H 520	L 500	A	A					
10							L	L	L	U L 660	A	530	550	A	A	L 510	U L 540	L	L					
11								A	L	A	L	L 550	530	L 540	540	A	L	A	A					
12									L	L	550	I A 580	A	I A 570	I A 550	L 540	L 520	L	A					
13								L	L	A	A	570	L 590	550	I A 570	L 580	L 540	L 500	L					
14								L	L 500	L 520	540	A	560	A	A	A	A	490	A					
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	H 590	L	500	L	I A 580	A	I A 560	580	L 550	L	L				
17							L	L	L	A	U L 680	A	600	A	I A 580	I A 560	C	C	C	C				
18								C	C	C	H 590	A	I A 580	L	L 550	A	U L 550	L 520	L					
19							U L 380	A	A	A	A	A	A	I A 550	I A 560	I A 540	570	A	A					
20								L	A	L 620	L 550	L	L 580	600	550	H 570	A	500	L					
21								A	L	A	A	L 610	A	A	A	A	A	L 520	A					
22								L	500	L 530	520	L 600	550	570	I A 560	A	A	L	L	L				
23								L	L	L 540	L	590	I A 560	A	580	L 560	U L 560	490	A					
24								L	L	L	U L 560	U L 590	550	U L 570	H 540	520	L	490	L	L				
25								L	L	L 600	A	L 600	L 560	540	I A 550	540	L 530	A	L 500	A				
26								A	A	A	L 540	I A 540	I A 540	550	L 570	530	L	480	L 450	L				
27								L	470	510	510	I A 510	R 520	R 510	510	R 510	510	490	L	L				
28								L	A	A	A	A	A	A	H 590	540	H 530	490	A	A				
29								L	L	L	L 560	L 570	L 540	L 580	H 570	H 540	L 520	500	L	A				
30								L	L	A	A	A	A	A	560	A	L	L 500	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	2	4	11	13	17	22	19	23	19	15	15	2					
MED							U L 380	445	495	540	550	570	550	550	550	540	530	490	475					
UQ									500	600	570	590	560	570	570	550	545	500						
LQ									480	515	540	540	540	540	545	525	515	490						

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JUN. 1970 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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							A	290	330	355	370	A	A	A	A	A	A	A	A	A				
2							190	290	320	340	370	390 R	400 R	400 R	385	365	355	320	260	A				
3							220	285	320	355	380	390	375	375	360	A	A	A	250	A				
4							A	A	325 I C	360	385	390 I A	380 I A	385 I A	380	C	C	C	C	C				
5							C	C	C	C	C	C	395	390	380	360	340	305	240	160				
6							200	280	320	340	355	A	A	A	390	370	335	300	250	S				
7							220	280	320	345	365	375	385	A	A	A	350	320	260	A				
8							210	285	330	355 I A	370	A	A	A	A	A	330	300	260	A				
9							A	290	320	355	A	A	A	A	A	A	335	300	A	A				
10							210	280	320	A	A	A	A	A	A	A	A	A	255	A				
11							220	290	320	A	A	A	A	A	A	A	A	A	A	A				
12							A	290	A	A	380 U R	385 I R	390 U R	390 R	400 U R	380	370	320	270	A				
13							A	A	A	350	370 I A	A	A	390	R	A	375	320	A	A				
14							C	A	A	A	A	A	B	R	R	R	380	340	A	A				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	A	A	400 R	R	R	R	395	375 R	335	270	S				
17							220	290	335	360	385	390 I A	395	395	380	A	C	C	C	C				
18							230	C	C	C	385	400	390 R	390 R	385	375	355	330	270	A				
19							220	285	330	365	370	380	390	385	360	A	A	A	A	A				
20							230	285	345	A	A	A	A	A	A	A	A	A	A	A				
21							220	280	325	365	380	390	395	380	385	360	350 I A	320	220	A				
22							230	290	325	355	380	400	A	A	A	A	A	A	270	A				
23							220 H	290 H	320	350	380 I A	380	380	A	A	A	A	A	260	A				
24							190	280 H	330	350	375 I A	390	390	A	A	A	340	310	270	180				
25							215	290	320	350	365	A	A	A	A	360	A	A	A	B				
26							220	280 H	315	340	370 H	380	390 R	A	A	A	345	320 H	270	165				
27							220	280	320	335	370	385 I R	400 R	400 R	390 R	380 H	350	320	270	155				
28							210	275	320	350	390	400	400	405	410 I A	400 I A	380	300	260	A				
29							A	A	A	A	A	A	A	A	A	375	355	310	250	S				
30							210	290	325	355 C	380	A	A	R	395	380	350	320	260	160				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							20	22	22	20	21	16	15	12	13	12	18	18	19	5				
MED							220	285	320	352	375	390	390	390	385	375	350	320	260	160				
UQ							220	290	330	355	380	395	395	398	390	380	370	320	270	165				
LQ							210	280	320	348	370	382	388	385	380	362	340	305	252	160				

JUN. 1970 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 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

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	J^{X}_{29}	J^{X}_{39}	J^{X}_{22}	E^{B}_{12}	23	25	J^{X}_{42}	J^{X}_{51}	J^{X}_{63}	J^{X}_{68}	J^{X}_{93}	J^{X}_{47}	43	43	J^{X}_{61}	47	J^{X}_{42}	J^{X}_{35}	J^{X}_{28}	J^{X}_{31}	J^{X}_{29}	J^{X}_{22}	J^{X}_{25}
2	22	23	J^{X}_{52}	J^{X}_{36}	J^{X}_{57}	J^{X}_{38}	29	J^{X}_{52}	$^{M}134$	J^{X}_{64}	J^{X}_{74}	J^{X}_{59}	J^{X}_{57}	57	J^{X}_{88}	J^{X}_{72}	J^{X}_{61}	J^{X}_{74}	J^{X}_{58}	J^{X}_{60}	J^{X}_{85}	J^{X}_{84}	J^{X}_{52}	J^{X}_{36}
3	J^{X}_{33}	J^{X}_{37}	J^{X}_{41}	J^{X}_{37}	J^{X}_{41}	J^{X}_{25}	27	J^{X}_{50}	J^{X}_{61}	J^{X}_{70}	$^{M}107$	$^{M}104$	J^{X}_{83}	$^{M}93$	J^{X}_{127}	J^{X}_{167}	J^{X}_{90}	J^{X}_{104}	J^{X}_{109}	J^{X}_{88}	J^{X}_{84}	J^{X}_{33}	J^{X}_{26}	J^{X}_{30}
4	J^{X}_{25}	J^{X}_{39}	J^{X}_{31}	J^{X}_{38}	C	C	J^{X}_{51}	J^{X}_{51}	C	J^{X}_{70}	J^{X}_{88}	D	D	$^{M}190$	J^{X}_{109}	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	51	J^{X}_{57}	42	J^{X}_{86}	J^{X}_{116}	J^{X}_{108}	J^{X}_{62}	17	J^{X}_{30}	J^{X}_{32}	J^{X}_{24}	20
6	18	J^{X}_{21}	22	22	E^{B}_{15}	J^{X}_{28}	25	32	36	40	J^{X}_{49}	J^{X}_{65}	J^{X}_{182}	J^{X}_{73}	G	48	J^{X}_{54}	J^{X}_{46}	J^{X}_{84}	J^{X}_{71}	J^{X}_{83}	J^{X}_{61}	J^{X}_{60}	J^{X}_{34}
7	J^{X}_{33}	J^{X}_{26}	J^{X}_{26}	J^{X}_{29}	J^{X}_{25}	J^{X}_{35}	J^{X}_{34}	J^{X}_{44}	J^{X}_{57}	J^{X}_{133}	95	J^{X}_{67}	J^{X}_{88}	J^{X}_{144}	J^{X}_{50}	45	J^{X}_{52}	J^{X}_{57}	$^{M}103$	J^{X}_{126}	J^{X}_{50}	J^{X}_{36}	J^{X}_{29}	J^{X}_{33}
8	J^{X}_{30}	J^{X}_{28}	J^{X}_{61}	J^{X}_{34}	J^{X}_{39}	J^{X}_{25}	30	J^{X}_{53}	J^{X}_{85}	J^{X}_{108}	J^{X}_{69}	J^{X}_{58}	41	J^{X}_{62}	40	36	J^{X}_{35}	43	30	J^{X}_{31}	J^{X}_{41}	J^{X}_{46}	J^{X}_{52}	J^{X}_{50}
9	J^{X}_{64}	J^{X}_{51}	J^{X}_{88}	J^{X}_{35}	J^{X}_{72}	26	34	$^{M}104$	71	42	J^{X}_{85}	J^{X}_{78}	54	50	48	40	40	54	J^{X}_{48}	J^{X}_{38}	J^{X}_{64}	J^{X}_{24}	J^{X}_{28}	J^{X}_{34}
10	J^{X}_{28}	J^{X}_{28}	J^{X}_{28}	43	J^{X}_{43}	J^{X}_{24}	J^{X}_{70}	J^{X}_{49}	J^{X}_{48}	J^{X}_{46}	J^{X}_{99}	J^{X}_{49}	J^{X}_{62}	$^{M}79$	J^{X}_{89}	J^{X}_{38}	J^{X}_{66}	J^{X}_{44}	38	21	J^{X}_{24}	25	J^{X}_{33}	J^{X}_{52}
11	J^{X}_{52}	J^{X}_{74}	J^{X}_{64}	J^{X}_{42}	J^{X}_{36}	J^{X}_{37}	J^{X}_{34}	J^{X}_{52}	J^{X}_{58}	J^{X}_{68}	J^{X}_{70}	J^{X}_{67}	J^{X}_{67}	J^{X}_{50}	J^{X}_{58}	J^{X}_{62}	J^{X}_{49}	J^{X}_{73}	143	J^{X}_{88}	J^{X}_{74}	J^{X}_{53}	J^{X}_{44}	J^{X}_{59}
12	J^{X}_{64}	J^{X}_{50}	J^{X}_{41}	23	J^{X}_{31}	C	J^{C}_{46}	J^{X}_{53}	39	44	43	96	J^{X}_{56}	J^{X}_{69}	J^{X}_{103}	50	48	J^{X}_{53}	J^{X}_{44}	J^{X}_{34}	J^{X}_{28}	J^{X}_{34}	J^{X}_{63}	J^{X}_{31}
13	$^{M}86$	J^{X}_{53}	J^{X}_{44}	J^{X}_{38}	J^{X}_{75}	J^{X}_{35}	J^{X}_{44}	J^{X}_{45}	J^{X}_{49}	J^{X}_{78}	J^{X}_{95}	J^{X}_{128}	J^{X}_{107}	57	J^{X}_{79}	45	44	J^{X}_{50}	J^{X}_{49}	J^{X}_{32}	J^{X}_{21}	J^{X}_{29}	J^{X}_{27}	J^{X}_{60}
14	J^{X}_{59}	E^{S}_{15}	J^{X}_{34}	J^{X}_{43}	J^{X}_{40}	C	C	J^{X}_{41}	J^{X}_{46}	J^{X}_{50}	43	54	48	57	J^{X}_{102}	91	D	J^{X}_{49}	J^{C}_{73}	J^{C}_{60}	J^{C}_{52}	J^{C}_{36}	J^{C}_{28}	J^{C}_{85}
15	J^{C}_{76}	J^{C}_{24}	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	39	47	G	44	66	J^{X}_{67}	J^{X}_{103}	59	45	36	27	J^{X}_{22}	J^{X}_{37}	J^{X}_{52}	J^{X}_{74}
17	J^{X}_{28}	J^{X}_{29}	J^{X}_{29}	J^{X}_{29}	J^{X}_{22}	E^{B}_{15}	J^{X}_{29}	36	J^{X}_{57}	J^{X}_{62}	J^{X}_{62}	J^{X}_{75}	J^{X}_{63}	J^{X}_{61}	J^{X}_{77}	J^{X}_{101}	C	C	C	C	C	C	C	C
18	C	C	C	C	J^{X}_{51}	J^{X}_{26}	30	C	C	C	J^{X}_{52}	J^{X}_{67}	J^{X}_{106}	J^{X}_{67}	J^{X}_{60}	$^{M}108$	J^{X}_{119}	35	37	J^{X}_{48}	J^{X}_{37}	J^{X}_{35}	J^{X}_{51}	J^{X}_{61}
19	J^{X}_{51}	J^{X}_{61}	J^{X}_{42}	J^{X}_{26}	J^{X}_{38}	J^{X}_{21}	J^{X}_{35}	J^{X}_{48}	J^{X}_{87}	J^{X}_{62}	$^{M}88$	J^{X}_{99}	J^{X}_{74}	J^{X}_{75}	J^{X}_{77}	J^{X}_{111}	$^{M}79$	J^{X}_{62}	J^{X}_{74}	J^{X}_{61}	J^{X}_{35}	J^{X}_{29}	J^{X}_{30}	J^{X}_{32}
20	J^{X}_{29}	J^{X}_{26}	J^{X}_{35}	J^{X}_{36}	J^{X}_{34}	J^{X}_{25}	27	34	J^{X}_{74}	J^{X}_{83}	J^{X}_{51}	J^{X}_{51}	J^{X}_{58}	J^{X}_{86}	J^{X}_{41}	J^{X}_{44}	J^{X}_{83}	J^{X}_{36}	J^{X}_{36}	J^{X}_{83}	J^{X}_{36}	J^{X}_{61}	J^{X}_{36}	J^{X}_{31}
21	24	23	22	21	J^{X}_{20}	22	J^{X}_{27}	J^{X}_{48}	J^{X}_{44}	J^{X}_{76}	J^{X}_{76}	J^{X}_{55}	J^{X}_{68}	J^{X}_{84}	J^{X}_{177}	J^{X}_{84}	J^{X}_{60}	J^{X}_{101}	J^{X}_{105}	J^{X}_{74}	J^{X}_{37}	J^{X}_{21}	J^{X}_{99}	J^{X}_{84}
22	J^{X}_{64}	J^{X}_{32}	J^{X}_{28}	J^{X}_{24}	24	21	27	39	40	61	49	J^{X}_{61}	67	54	J^{X}_{110}	71	J^{X}_{57}	J^{X}_{47}	J^{X}_{39}	J^{X}_{29}	J^{X}_{44}	J^{X}_{23}	17	J^{X}_{33}
23	J^{X}_{24}	25	25	22	23	20	26	31	41	46	50	J^{X}_{60}	J^{X}_{63}	J^{X}_{92}	J^{X}_{71}	J^{X}_{60}	J^{X}_{65}	J^{X}_{48}	J^{X}_{53}	J^{X}_{50}	J^{X}_{53}	J^{X}_{34}	J^{X}_{39}	J^{X}_{29}
24	J^{X}_{34}	J^{X}_{30}	J^{X}_{24}	J^{X}_{22}	J^{X}_{28}	J^{X}_{20}	J^{X}_{20}	31	G	42	38	41	47	J^{X}_{77}	43	41	37	41	J^{X}_{46}	28	$^{M}115$	J^{X}_{38}	37	J^{X}_{97}
25	J^{X}_{38}	J^{X}_{52}	J^{X}_{49}	J^{X}_{29}	22	J^{X}_{26}	25	35	35	69	J^{X}_{99}	J^{X}_{65}	J^{X}_{55}	47	J^{X}_{61}	46	J^{X}_{77}	61	J^{X}_{33}	J^{X}_{55}	J^{X}_{67}	J^{X}_{33}	J^{X}_{29}	J^{X}_{53}
26	J^{X}_{36}	J^{X}_{29}	25	J^{X}_{39}	J^{X}_{34}	J^{X}_{27}	26	J^{X}_{63}	J^{X}_{65}	J^{X}_{69}	J^{X}_{99}	$^{M}160$	82	J^{X}_{74}	176	71	J^{X}_{60}	G	$^{G}17$	24	$^{M}140$	J^{X}_{73}	J^{X}_{62}	J^{X}_{29}
27	J^{X}_{21}	J^{X}_{40}	35	30	23	J^{X}_{19}	30	37	J^{X}_{50}	51	47	J^{X}_{72}	55	J^{X}_{82}	47	J^{X}_{58}	45	G	G	20	E^{S}_{15}	20	22	22
28	J^{X}_{84}	J^{X}_{37}	J^{X}_{26}	J^{X}_{29}	J^{X}_{23}	J^{X}_{19}	J^{X}_{37}	J^{X}_{50}	82	J^{X}_{97}	J^{X}_{107}	152	J^{X}_{104}	141	J^{X}_{54}	53	J^{X}_{59}	J^{X}_{49}	J^{X}_{67}	J^{X}_{57}	J^{X}_{63}	J^{X}_{45}	J^{X}_{28}	J^{X}_{44}
29	J^{X}_{53}	J^{X}_{60}	J^{X}_{84}	J^{X}_{60}	J^{X}_{33}	J^{X}_{86}	143	J^{X}_{40}	J^{X}_{84}	J^{X}_{52}	J^{X}_{65}	J^{X}_{59}	J^{X}_{64}	J^{X}_{51}	J^{X}_{46}	41	40	J^{X}_{58}	39	$^{M}46$	J^{X}_{83}	J^{X}_{77}	$^{C}91$	J^{X}_{86}
30	J^{X}_{61}	J^{X}_{51}	J^{X}_{44}	67	J^{X}_{53}	$^{M}36$	25	35	40	J^{C}_{68}	J^{X}_{110}	J^{X}_{98}	$^{M}95$	J^{X}_{88}	J^{X}_{101}	J^{X}_{76}	J^{X}_{52}	G	J^{X}_{49}	J^{X}_{53}	J^{X}_{36}	J^{X}_{31}	J^{X}_{35}	J^{X}_{61}
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	26	26	26	24	26	26	25	27	28	28	29	29	29	28	27	27	27	27	27	27	27	27
MED	J^{X}_{34}	J^{X}_{30}	J^{X}_{35}	J^{X}_{32}	J^{X}_{34}	J^{X}_{25}	30	J^{X}_{44}	J^{X}_{51}	J^{X}_{63}	J^{X}_{70}	J^{X}_{67}	J^{X}_{63}	J^{X}_{67}	J^{X}_{67}	60	J^{X}_{59}	J^{X}_{49}	J^{X}_{48}	J^{X}_{48}	J^{X}_{44}	J^{X}_{34}	J^{X}_{35}	J^{X}_{36}
UQ	J^{X}_{60}	J^{X}_{50}	J^{X}_{44}	J^{X}_{38}	J^{X}_{41}	J^{X}_{32}	J^{X}_{35}	J^{X}_{51}	J^{X}_{71}	J^{X}_{70}	J^{X}_{95}	J^{X}_{97}	J^{X}_{83}	J^{X}_{84}	J^{X}_{101}	J^{X}_{85}	J^{X}_{72}	J^{X}_{60}	J^{X}_{70}	J^{X}_{60}	J^{X}_{70}	J^{X}_{46}	J^{X}_{52}	J^{X}_{60}
LQ	J^{X}_{26}	J^{X}_{26}	J^{X}_{26}	J^{X}_{24}	J^{X}_{23}	J^{X}_{21}	26	36	41	48	50	J^{X}_{58}	J^{X}_{55}	57	J^{X}_{47}	45	48	42	36	28	J^{X}_{33}	J^{X}_{29}	J^{X}_{28}	J^{X}_{31}

The Radio Research Laboratories, Japan

IONOSPHERIC DATA

JUN. 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	E	E	E	15	E_{12}^{B}	14	23	33	47	53	64	78	44	43	42	56	44	37	31	25	24	26	18	E
2	E	E	15	15	44	15	25	42	64	41	48	47	57	56	74	70	59	62	52	58	25	17	28	18
3	21	18	17	32	32	18	G	48	57	64	A	73	45	69	51	64	87	103	A	88	65	30	19	29
4	20	39	28	25	C	C	35	45	C	64	67	A	A	64	86	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	49	54	G	58	A	87	32	15	24	17	E	E
6	E	16	E	E	E_{15}^{B}	17	23	G	35	37	47	53	63	50	G	48	53	42	62	65	50	37	35	28
7	18	18	E	17	18	16	29	40	49	A	A	55	74	43	50	45	G	45	103	98	25	20	19	19
8	23	18	42	22	17	19	27	39	77	39	43	46	41	44	40	36	31	24	G	22	27	32	27	36
9	52	16	56	16	50	16	22	A	48	G	69	67	47	48	46	37	G	47	40	37	36	17	19	20
10	18	E	19	30	33	E	30	35	40	40	A	49	48	71	79	38	41	33	37	20	20	17	16	32
11	42	54	25	30	35	29	29	44	52	60	56	46	47	44	51	53	46	50	A	65	53	48	35	50
12	E	50	E	E	15	C	C 26	24	38	42	43	67	55	61	A	43	43	37	40	21	19	18	20	20
13	E	16	26	20	36	30	27	31	41	70	A	49	48	46	59	44	42	40	34	19	E	19	E	28
14	42	E_{15}^{S}	E	15	23	C	C	34	42	44	42	55	48	56	64	79	A	40	69	C 20	E	30	C 25	C 26
15	C 52	C 16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	E_{39}^{R}	47	G	44	62	58	78	53	44	34	26	19	28	34	73
17	E	E	16	21	18	E_{15}^{B}	20	G	50	54	49	72	52	57	60	89	C	C	C	C	C	C	C	C
18	C	C	C	C	33	20	G	C	C	C	43	62	64	51	51	89	52	G	E_{37}^{R}	31	29	35	41	33
19	51	36	30	15	19	17	30	47	A	53	A	70	72	71	67	67	54	59	65	52	32	26	24	20
20	19	24	24	34	17	E	G	31	50	44	44	42	52	58	41	43	74	34	35	52	30	53	29	25
21	E	E	E	E	E	E	G	45	43	59	72	54	64	78	A	80	55	48	44	49	29	17	74	54
22	52	19	19	20	13	E	G	35	39	52	47	50	50	44	91	59	54	40	25	27	E_{44}^{S}	18	16	E
23	E	16	E	14	14	14	G	G	37	40	47	49	59	87	44	44	42	36	49	44	46	16	20	20
24	16	15	E	15	15	15	15	G	G	G	E_{38}^{R}	E_{41}^{R}	45	47	42	40	G	39	41	23	A	18	19	44
25	E	41	14	E	13	E	G	G	G	50	60	46	48	44	56	45	41	51	31	49	48	31	23	18
26	18	17	E	22	20	14	25	53	62	54	51	A	69	50	46	49	37	G	G 17	22	49	53	30	22
27	18	29	18	16	16	16	G	32	43	46	43	A	49	50	47	49	40	G	G	19	E_{15}^{S}	E	E	E
28	55	27	19	14	16	15	28	43	54	A	77	57	A	A	46	52	34	41	63	42	48	45	20	E_{44}^{S}
29	51	36	36	15	17	36	A	36	37	39	44	42	53	47	41	40	40	44	37	45	29	19	67	A
30	51	37	35	21	26	26	G	32	G	C 62	A	92	A	E_{88}^{R}	49	76	49	G	47	53	36	31	20	41
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	26	26	26	24	26	26	25	27	28	28	29	29	29	28	27	27	27	27	27	27	27	27
MED	18	18	18	16	18	16	23	35	43	50	50	54	52	52	51	50	44	40	40	37	29	26	20	26
UQ	46	32	26	22	32	18	28	44	52	60	74	71	64	63	64	68	54	48	57	52	47	32	30	U_{36}
LQ	E	16	E	15	15	E_{14}^{E}	G	31	38	40	44	46	48	47	44	44	40	35	32	22	24	18	19	20

JUN. 1970 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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 S 15 13	E S 15 13	E S 15 15	13	12	12	15	14	15	15	15	18	18	19	17	17	17	16	14	11	E S 15 15	E S 15 15	E S 15 15	E S 15 15
2	E S 15 15	E S 15 15	E S 12 15	E	E	E	E S 15 15	E S 14 15	15	16	17	18	18	18	19	17	22	16	16	14	E S 15 15	E S 15 15	E S 15 15	E S 15 15
3	E S 15 15	E S 15 13	E S 15 13	E	E	E	E S 15 15	E S 15 15	16	19	19	19	20	20	17	17	17	15	15	11	E S 15 15	E S 15 15	E S 15 15	E S 15 15
4	E S 15 15	E S 15 15	E S 15 13	15	C	C	E S 15 15	E S 15 15	C	17	18	18	18	17	18	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	19	18	17	17	16	15	15	11	E S 15 15	E S 15 15	E S 15 15	E S 15 15
6	E S 15 15	E S 15 15	E S 15 12	12	15	E	E S 15 15	15	15	17	16	17	17	19	17	18	16	14	14	E S 15 15	E S 15 15	E S 15 15	E S 15 15	E S 15 15
7	E S 15 15	E S 15 15	E S 15 15	13	11	11	E S 15 15	15	15	17	19	20	19	18	19	18	16	15	15	12	E S 15 15	E S 15 15	E S 15 15	E S 15 15
8	E S 15 15	E S 14 15	E S 15 15	E	12	E	E S 15 15	12	16	15	17	18	16	19	17	17	14	14	12	E S 13 15	E S 14 15	E S 15 15	E S 15 15	E S 15 15
9	E S 15 15	E S 15 15	E S 14 15	12	E	E	E S 15 15	14	15	15	17	18	17	18	19	19	18	15	14	13	E S 15 15	E S 13 13	E S 15 15	E S 13 13
10	E S 13 13	E S 15 15	E S 13 13	15	E	E	E S 12 12	E S 12 12	11	15	16	19	18	19	22	24	17	15	15	13	15	E S 14 15	E S 15 15	E S 14 15	E S 15 15
11	E S 15 15	E S 15 15	E S 12 12	13	E	13	E S 15 15	E S 15 15	15	16	17	16	18	19	18	15	15	15	15	11	E S 13 13	E S 12 12	E S 14 15	E S 15 15
12	E S 15 15	E S 11 15	E S 15 15	12	E	C	E C 15	15	18	15	18	19	19	18	19	18	21	14	14	14	E S 13 13	E S 15 15	E S 15 15	E S 15 15
13	E S 15 15	E S 14 15	E S 14 15	E	E	E	E S 15 15	15	16	16	20	28	24	27	26	20	18	15	15	E S 15 15	E S 15 15	E S 15 15	E S 15 15	E S 15 15
14	E S 15 15	E S 15 15	E S 14 15	E S 12 12	E	C	C	16	20	E C 30	24	33	46	25	24	30	20	15	18	E S 15 15	E S 15 15	E S 15 15	E S 15 15	E S 14 15
15	E S 15 15	E S 14 15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	20	20	21	22	20	20	31	31	15	15	E S 15 15	E S 15 15	E S 15 15	E S 14 15	E S 15 15
17	E S 15 15	E S 15 15	15	13	15	15	E S 15 15	12	16	16	16	26	25	19	19	21	C	C	C	C	C	C	C	C
18	C	C	C	C	13	E S 14 15	E S 15 15	C	C	C	17	20	19	18	21	19	16	15	16	E S 14 15	E S 13 13	E S 15 15	E S 15 15	E S 15 15
19	E S 15 15	E S 13 13	13	11	E	12	E S 15 15	15	15	17	16	18	20	22	19	18	15	15	15	E S 12 15	E S 15 15	E S 15 15	E S 15 15	E S 15 15
20	E S 15 15	E S 15 15	E S 15 15	E S 14 15	E	E S 15 15	11	12	15	15	18	18	19	20	19	19	16	15	13	11	E S 15 15	E S 15 15	E S 15 15	E S 15 15
21	E S 15 15	E S 15 15	E S 14 15	15	E S 15 15	E S 15 15	E S 15 15	15	15	18	18	19	20	20	21	18	16	15	16	13	E S 15 15	E S 15 15	E S 15 15	E S 15 15
22	E S 15 15	12	13	E	E	15	E S 15 15	11	15	16	16	19	20	19	20	19	15	15	15	14	E S 15 15	E S 15 15	E S 11 15	E S 13 13
23	E S 15 15	E S 11 15	E S 12 15	E	E	11	E S 15 15	15	15	16	16	20	20	18	18	17	16	15	14	E S 15 15	E S 15 15	E S 15 15	E S 15 15	E S 15 15
24	E S 15 15	E	E S 15 15	E	E	E	11	11	14	15	17	19	19	20	21	18	16	15	15	13	E S 15 15	E S 13 13	E S 15 15	E S 15 15
25	E S 15 15	E S 15 15	12	E	E	E S 13 13	11	11	15	15	15	16	19	20	20	17	16	18	15	16	E S 16 15	E S 11 15	E S 15 15	E S 15 15
26	E S 15 15	E S 13 13	E S 15 15	E	E	11	E S 15 15	15	15	15	18	25	19	17	18	18	16	15	13	11	E S 15 15	E S 14 15	E S 14 15	E S 15 15
27	E S 11 15	E	E S 14 15	E	E	E	E S 15 15	11	15	16	16	15	19	19	19	18	15	15	14	14	E S 15 15	12	E S 14 15	E S 14 15
28	E S 15 15	12	12	E	E	E	13	14	15	15	23	20	23	22	21	20	18	15	11	11	E S 15 15	E S 15 15	E S 15 15	E S 15 15
29	E S 15 15	E S 15 15	E S 14 15	11	12	12	E S 15 15	15	16	16	19	19	19	18	21	19	15	16	15	E S 15 15	E S 15 15	E S 15 15	E S 15 15	E S 15 15
30	E S 15 15	E S 13 15	E S 15 15	12	13	11	E S 15 15	15	15	16	20	28	26	25	26	21	19	15	16	15	E S 15 15	E S 15 15	E S 12 15	E S 15 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	26	26	26	24	26	26	25	27	28	28	29	29	29	28	27	27	27	27	27	27	27	27
MED	E S 15 15	E S 14 15	E S 14 12	12	E	E 11	E S 15 15	15	15	16	18	19	19	19	19	18	16	15	15	12	E S 15 15	E S 15 15	E S 15 15	E S 15 15
UQ	E S 15 15	E S 15 15	E S 15 15	13	12	12	E S 15 15	15	16	16	19	20	20	20	21	19	18	15	15	15	E S 15 15	E S 15 15	E S 15 15	E S 15 15
LQ	E S 15 15	E S 15 13	E S 15 13	E	E	E	E S 15 15	12	15	15	16	18	19	18	18	17	16	15	14	12	E S 15 15	E S 15 15	E S 14 15	E S 15 15

The Radio Research Laboratories, Japan

JUN. 1970 | F-MIN (0.1 MHZ)

IONOSPHERIC DATA

JUN. 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

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	260	280	295	285	280	305	305	265	275	265	260	260	265	265	270	265	275	300	275	260	250	255	270
2	265	265	275	255	250	245	240	255	275	305	250	255	265	275	A	285	295	275	295	275	265	250	260	270
3	265	260	305	270	255	265	290	285	290	280	270	245	260	270	265	265	275	295	295	275	280	255	255	260
4	255	270	280	295	C	C	260	285	270	265	260	A	A	275	275	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	265	275	280	270	275	280	285	290	290	265	270	270
6	280	290	300	285	300	290	295	335	310	300	295	265	265	270	275	285	285	285	285	295	320	280	270	265
7	260	S	F	F	F	F	280	320	315	270	260	245	250	270	265	270	280	300	295	305	290	280	280	265
8	270	275	280	295	295	295	290	285	305	280	265	250	250	270	265	275	275	275	290	275	300	265	245	260
9	S	S	S	285	S	275	290	315	315	310	250	280	275	265	265	285	295	285	280	270	270	270	270	270
10	270	270	300	275	280	270	295	310	295	255	260	260	260	275	270	275	280	270	285	290	290	270	275	F
11	S	S	270	295	F	F	305	325	310	290	270	260	270	270	275	275	270	280	A	280	265	270	255	S
12	F	F	S	F	S	C	C	275	295	285	290	265	270	260	260	270	275	280	280	275	270	265	250	S
13	270	S	S	F	F	F	265	320	300	255	265	270	265	270	260	255	260	275	270	260	270	260	255	245
14	250	260	285	300	270	C	C	260	280	275	265	270	270	260	255	A	275	275	280	280	250	240	255	260
15	S	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	275	285	275	245	265	265	270	260	250	275	275	270	270	265	260
17	260	270	285	285	280	270	290	290	295	280	260	255	265	255	260	260	C	C	C	C	C	C	C	C
18	C	C	C	C	255	260	280	C	C	C	295	260	260	265	280	275	270	265	275	270	260	255	245	245
19	265	295	285	255	F	250	265	265	A	245	270	260	270	275	270	280	290	285	275	280	285	265	260	255
20	260	260	270	255	265	265	275	300	335	250	265	265	260	240	260	275	275	275	275	290	280	S	S	255
21	S	S	260	260	265	270	295	325	275	R	290	285	270	275	270	270	280	285	285	285	285	250	265	260
22	275	290	275	275	275	265	280	270	285	285	315	235	280	265	275	265	270	270	290	295	280	265	260	255
23	270	275	275	265	285	290	305	315	275	295	270	265	255	265	265	280	275	270	280	275	265	265	260	265
24	260	280	285	290	290	290	295	300	315	295	295	255	255	255	265	270	280	275	270	290	275	285	275	255
25	S	S	S	285	295	295	285	260	270	265	280	265	265	260	265	280	280	275	270	260	285	315	265	260
26	255	270	270	295	285	255	275	300	260	260	280	280	295	275	265	275	255	260	275	280	280	255	255	255
27	245	275	300	260	245	270	285	285	320	240	210	220	235	250	245	255	260	270	280	240	255	255	250	245
28	260	265	300	285	250	270	295	325	290	285	285	270	270	275	270	265	270	275	275	270	265	260	275	270
29	265	280	295	300	295	275	285	265	245	260	260	275	275	260	265	280	280	280	285	280	285	255	245	260
30	265	F	270	270	F	265	280	300	255	260	260	R	245	265	265	275	275	285	290	280	255	255	265	255
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	21	18	21	23	19	21	25	26	25	26	28	26	28	29	28	27	27	27	26	27	27	26	26	24
MED	265	270	280	285	280	270	285	300	290	275	268	262	265	265	265	275	275	275	280	280	275	265	260	260
UQ	270	280	295	295	288	280	295	315	310	285	285	270	270	275	270	278	280	282	290	288	285	270	270	265
LQ	260	265	275	268	260	265	280	275	275	260	260	255	258	260	265	270	270	272	275	275	265	255	255	255

IONOSPHERIC DATA

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

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

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L 325	A	A	375	355	340 H	A	U L 340	L	L					
2								A	I A 335	375	A	365	A	A	A	A	A	A	A					
3								A	A	A	A	A	365	A	A	A	A	A	A					
4								A	C	A	A	A	A	A	A	C	C	C	C					
5							C	C	C	C	C	C	365	A	325 H	I A 340	A	A	L	L				
6								L 375	L	L 430	L	A	A	A	340	A	A	A	A					
7								L	A	A	A	A	A	385	A	L 335	355 H	L	A					
8								L	A	L	L 335	L	315 H	360	350	355	L 340	L 340	L					
9							L	A	A	L	A	I A 345	L 355	A	L 350	H 345	L 340	A	A					
10							L	L	L	U L 335	A	A	345	A	A	L 365	U L 340	L	L					
11								A	L	A	L	L 345	360	L 355	A	A	L	A	A					
12									L	L	360	A	A	I A 320	A	L 350	L 330	L	A					
13								L	L	A	A	340	L 320	360	I A 320	L 330	L 335	L 325	L					
14								L	L 340	L 325	350	A	355	A	A	A	A	325	A					
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	H 340	L	420	L	I A 340	A	I A 345	A	L 310	L	L				
17							L	L	L	A	U L 300	A	A	A	A	I A 320	C	C	C	C				
18								C	C	C	H 345	A	A	L	A	A	A	L 325	L					
19							U L 320	A	A	A	A	A	A	A	A	I A 350	A	A	A					
20								L	A	L 325	L 375	L	A	A	360	H 330	A	340	L					
21								A	L	A	A	L 345	A	A	A	A	A	A	A					
22								L	335	A	345	L 330	A	L 350	A	A	A	L	L	L				
23								L	L	L 350	L	340	I A 375	A	L 330	L 330	U L 320	335	A					
24								L	L	L	U L 355	U L 340	365	U L 350	H 370	355	L	330	L	L				
25								L	L	335	A	L 330	345	370	A	335	L 335	A	L 320	A				
26								A	A	A	A	A	A	A	L 335	A	L	335	L 310	L				
27								L	A	375	380	I A 350	R 325	A	355	A	345	330	L	L				
28								L	A	A	A	A	A	A	H 340	A	H 360	325	A	A				
29								L	L	L	L 330	L 335	A	L 345	H 355	H 370	L 345	325	L	A				
30								L	L	A	A	A	A	A	330	A	L	L 345	A	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	1	3	10	10	12	13	11	14	15	12	13	2					
MED							U L 320	L 375	335	L 338	348	342	355	355	340	345	L 340	330	L 315					
UQ									338	375	360	348	365	360	355	352	345	335						
LQ									335	L 325	335	L 338	345	L 348	330	332	L 335	325						

JUN. 1970 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JUN. 1970 | H'F2 (<M) | 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								245	360	320	355	E A 380	355	355	370	340	325	280	260					
2								380	360	330	485	450	420	375	A	370	335	350	310					
3								260	310	325	A	E A 450	385	350	375	365	370	E A 360	A					
4								250	C	350	350	A	A	355	A	C	C	C	C					
5							C	C	C	C	C	C	340	355	350	370	A	A	300	255				
6								250	240	240	300	400	380	360	350	340	325	315	300					
7								260	270	A	A	405	E A 420	350	340	340	305	310	A					
8								290	300	H 250	380	390	425	340	350	340	325	320	275					
9							270	I A 275	255	300	I A 360	350	360	335	350	325	290	275	275					
10							270	260	270	400	A	365	370	340	350	325	320	325	310					
11								255	290	325	355	335	355	330	340	345	310	295	A					
12									300	285	335	390	350	365	I A 360	350	320	300	295					
13								250	250	E A 350	A	355	350	345	355	385	360	325	300					
14								350	340	360	410	380	400	420	420	A	A	340	E A 350					
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	350	345	300	450	390	395	380	390	370	320	290				
17							280	280	305	300	380	E A 380	400	400	400	E A 410	C	C	C	C				
18								C	C	C	340	405	410	370	335	I A 345	350	355	330					
19							340	315	A	450	A	E A 470	E A 420	380	370	340	320	340	370					
20								280	250	420	340	340	360	450	390	335	330	325	300					
21								250	325	310	330	350	370	355	A	370	325	310	300					
22								300	335	365	310	490	365	325	E A 350	330	305	295	290	260				
23								255	340	310	380	375	395	E A 420	350	340	330	335	300					
24								250	260	290	310	390	385	360	375	340	325	325	295	290				
25								250	325	350	315	400	360	375	375	325	320	300	345	320				
26								280	A	310	355	I A 375	E A 350	380	430	395	425	395	330	290				
27								315	305	550	725	A	575	500	505	450	445	395	380	350				
28								280	295	A	E A 355	360	A	A	375	380	380	350	E A 330	295				
29								340	390	350	355	320	345	400	405	360	350	340	310	300				
30								275	275	355	I A 350	A	A	A	355	360	340	315	290	300				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	25	23	25	23	25	26	27	26	27	25	26	24	10				
MED							275	275	300	328	355	372	372	360	365	345	325	325	300	292				
UQ							310	290	330	355	370	395	405	382	390	370	350	345	322	300				
LQ							270	250	270	310	335	352	355	350	350	340	320	310	295	290				

JUN. 1970 | H'F2 (<M)

IONOSPHERIC DATA

JUN. 1970 | H'F (<M) | 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	265	300	270	220	230	255	250	225	240	A	A	A	215	220	210H	I A 240	250	240	260	260	290	340	325	290
2	305	305	255	260	E A 350	340H	260H	A	I A 255	235	A	250	I A 235	A	A	A	A	A	A	E A 360	305	300	320	280
3	310	310	255	250	E A 340	300	250	A	A	A	A	A	210	A	A	A	A	A	A	E A 375	E A 330	300	310	315
4	340	330	290	265	I C 280	I C 300	260	I A 255	C	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	E A 265	I A 220	200H	I A 255	A	A	E A 250	250	250	260	300	300
6	300	270	240	240	250	260	245	225	220	195	E A 260	A	A	A	240	A	A	A	A	290	275	260	310	330
7	310	285	260	260	270	280	250	260	A	A	A	A	A	200	A	E A 270	220H	A	A	E A 330	255	290	280	300
8	300	290	280	255	275	250	240	E A 250	A	220	200H	225H	185H	225	215	225	220H	225H	230H	255	245	290	345	340
9	325	280	A	255	A	275	240	A	A	200H	A	A	E A 240	A	E A 245	225H	230	A	A	280	280	255	270	275
10	280	280	250	275	275	285	E A 250	235	240	225	A	A	E A 260	A	A	210	E A 240	225	E A 275	255	250	260	270	E A 360
11	E A 350	300	260	270	290	290	240	A	E A 280	A	A	E A 250	E A 250	225	I A 225	A	A	A	A	A	320	E A 310	350	340
12	280	E A 350	F 260	F 240	245	I C 250	C 245	240	240	220H	225	A	A	A	A	250H	E A 250	230H	A	255	275	300	300	285
13	260	300	245	245	E A 305	300	245	245	240	A	A	240	E A 250	220	A	220	230	E A 250	250	265	275	290	300	E A 350
14	E A 350	305	285	240	250	C	C	240	E A 250	A	225	A	230	A	A	A	A	E A 250	A	275	280	E A 350	325	310
15	E A 325	275	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	205H	235H	200	200H	A	A	A	A	275	270	270	275	310	335	I A 365
17	320	320	290	260	220	250	240	240	A	A	E A 250	A	A	A	A	A	C	C	C	C	C	C	C	C
18	C	C	C	C	320	305	250	C	C	C	200H	I A 210	A	E A 260	A	A	A	240	I A 260	290	305	305	370	355
19	335	290	240	250	290	250	E A 275	A	A	A	A	A	A	A	A	I A 215	A	A	A	320	290	300	340	330
20	350	330	310	315	325	310	250	240	A	215	210	200H	A	I A 215	230	E A 240	A	230	E A 280	270	260	E A 380	350	320
21	290	260	255	300	300	300	250	I A 235	240	A	A	A	A	A	A	A	A	A	I A 265	280	260	320	E A 400	375
22	330	275	255	300	270	270	250	250	250	A	A	E A 250	A	200H	A	A	A	E A 250	245	250	E S 290	290	300	310
23	300	290	270	290	255	250	240	230	225H	200	I A 215	E A 250	A	A	225	235	225H	230	A	270	300	295	305	315
24	305	280	255	240	245	250	240	220	205H	205	200H	200H	210	220	200H	225	225	E A 250	A	270	I A 300	270	250	I A 290
25	280	E A 380	250	255	245	250	210	225	210	E A 250	A	230H	E A 250	205	A	E A 250	230H	A	250H	A	290	240	215H	300
26	305	300	280	260	250	275	245	A	A	A	A	A	A	A	E A 250	A	220H	225	240	265	E A 300	A	330	320
27	350	300	270	275	345	300	245	245	A	240	220	A	A	I A 225	E A 275	A	240	225	250	290	300	275	305H	340
28	E A 375	305	225	260	330	320	265	I A 255	A	A	A	A	A	A	225H	I A 230	215H	A	A	A	310	300	300	325
29	320	E A 300	260	250	240	300	I A 245	230	220H	200H	240	200H	A	E A 240	195H	205H	215H	A	250	I A 270	250	250	A	A
30	E A 330	305	280	275	300	300	240H	230	215	A	A	A	A	A	A	A	A	230	A	A	320	310	305	350
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	25	26	26	26	26	20	15	13	12	12	13	13	13	15	14	15	14	23	27	26	26	26
MED	305	295	260	260	268	282	245	239	232	210	217	U 214	U A 210	220	218	228	225	228	250	270	282	294	306	318
UQ	326	305	280	275	298	300	250	246	242	222	232	250	E A 250	222A	232A	238A	235	250	262A	284	300	305	332	340
LQ	300	281	255	250	250	250	240	230	220	200	205	200H	210	215	210H	222	220H	228	250	262	264	270	300	300

The Radio Research Laboratories, Japan

JUN. 1970 | H'F (<M)

IONOSPHERIC DATA

JUN. 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	100	100	100	100	B	100	125	115	115	115	110	105	105	105	105	105	130	105	100	100	100	100	95	110
2	110	110	105	105	105	105	140	125	115	120	115	125	125	140	120	120	120	115	115	115	105	105	100	100
3	100	100	100	95	95	100	150	120	115	115	110	110	110	105	130	105F	105	110	110	105	100	100	100	100
4	100	100	100	100	C	C	100	120	C	115	110	110	105	170	115	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	120	115	140	115	115	110	110	105	100	100	100	100
6	100	95	100	100	B	115	120	125	125	115	105	105	100	100	G	140	125	125	115	115	110	105	105	105
7	100	95	95	95	105	115	120	115	115	110	105	105	105	125	105	120	150	130	120	115	110	105	100	100
8	100	95	105	100	100	105	140	120	115	105	110	105	100	100	100	100	100	100	125	100	105	105	105	105
9	105	100	100	100	100	110	110	110	110	120	105	105	110	105	105	100	150	125	110	105	100	105	105	100
10	100	100	100	100	100	105	120	120	110	105	100	105	105	100	100	100	100	100	125	125	110	100	100	100
11	100	100	100	100	100	100	120	120	110	105	105	105	100	100	100	100	100	115	110	100	100	100	100	105
12	105	105	105	100	100	C	C 100	100	130	125	130	120	110	110	125	145	125	125	115	110	100	100	100	100
13	100	100	100	100	100	95	95	95	100	110	105	120	100	115	110	140	125	115	110	110	105	105	110	105
14	100	S	100	100	100	C	C	100	105	105	105	110	135	125	110	110	110	110	105	100	100	95	95	105
15	105	95	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	105	140	G	145	130	130	125	120	120	110	110	110	105	105	105
17	100	105	100	100	100	B	105	130	110	115	110	105	110	110	105	105	C	C	C	C	C	C	C	C
18	C	C	C	C	100	100	140	C	C	C	125	120	115	120	115	110	110	135	150	120	105	105	105	100
19	100	100	100	100	100	105	120	120	115	110	110	105	105	105	105	100	100	100	100	100	100	100	100	100
20	100	100	100	100	100	100	150	115	110	105	105	105	105	100	100	100	100	100	100	100	100	100	100	100
21	100	100	100	100	100	100	130	115	120	110	110	110	105	105	105	105	110	125	105	100	100	100	100	100
22	100	100	100	100	100	100	150	125	125	115	115	110	105	100	100	100	100	100	100	105	110	110	100	105
23	100	95	95	95	105	95	150	150	125	115	110	110	105	105	100	100	100	100	120	100	100	100	95	95
24	105	100	95	95	95	95	100	170	G	115	110	120	110	105	105	105	145	125	115	115	110	105	95	100
25	100	100	100	100	95	95	140	125	140	115	105	105	105	110	110	110	105	105	105	115	110	100	100	100
26	105	105	100	100	100	105	150	115	110	110	110	110	110	105	115	105	145	G	105	120	100	100	100	95
27	95	105	100	100	125	95	130	140	120	105	115	120	120	125	135	130	130	G	G	120	S	105	100	100
28	100	100	100	100	100	100	125	115	110	110	105	110	105	105	100	125	100	120	110	110	100	95	95	105
29	100	105	105	105	100	100	100	100	100	100	100	100	125	100	100	150	130	120	115	105	105	100	100	100
30	100	100	100	100	100	100	150	125	130	110	105	110	105	105	100	105	105	G	120	110	105	100	100	100
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	26	26	24	23	26	26	24	27	28	27	29	29	28	28	27	24	26	27	26	27	27	27
MED	100	100	100	100	100	100	125	120	115	110	110	110	105	105	105	105	110	115	110	110	102	100	100	100
UQ	100	100	100	100	100	105	140	125	122	115	110	110	110	115	115	122	128	125	115	115	110	105	100	105
LQ	100	100	100	100	100	100	110	115	110	105	105	105	105	105	100	100	100	102	105	100	100	100	100	100

The Radio Research Laboratories, Japan

JUN. 1970 | H'ES (KM)

IONOSPHERIC DATA

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

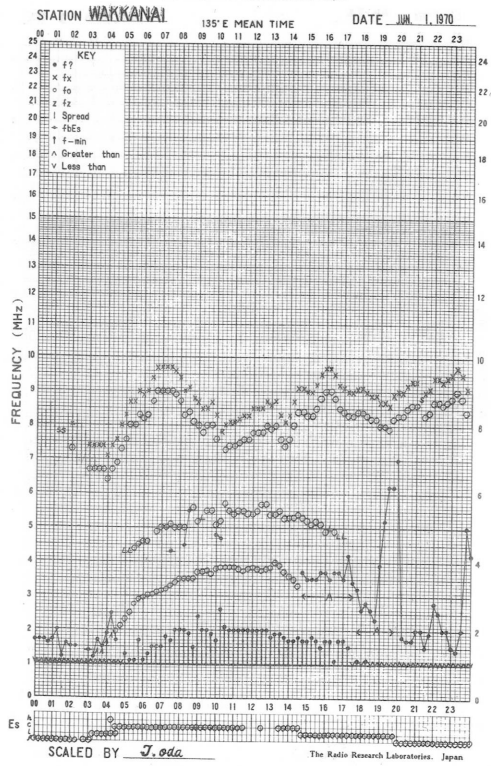
Station YAMAGAWA Lat. 31° 12·1′ N Long. 130° 37·1′ E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

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	F 1	F 2	F 2	F 1		FF 11	H 2	C 4	C 2	C 3	C 4	L 4	L 1	L 1	L 1	L 3	HL 12	L 3	L 3	L 6	F 7	F 5	F 5	FE 22
2	F 2	F 2	F 4	F 4	F 5	F 5	H 2	H 3	C 3	C 1	C 2	H 2	H 2	H 1	H 3	C 3	C 2	C 4	C 2	C 4	F 3	F 4	F 4	F 4
3	F 5	F 4	F 4	F 4	F 4	F 2	HL 11	C 4	C 5	C 3	C 3	C 4	C 2	C 4	HC 12	C 2	C 4	C 3	C 6	L 6	F 4	F 4	F 3	F 5
4	F 4	F 3	F 3	F 3			L 4	CL 21		C 2	C 3	C 4	C 3	HC 12	C 3									
5													C 2	C 3	H 1	C 3	C 4	C 4	C 4	L 1	F 4	F 4	F 2	F 1
6	F 1	F 2	F 1	F 1		F 3	C 2	H 2	H 2	C 1	C 3	C 3	L 2	L 2		H 2	H 3	H 2	C 4	C 6	F 6	FF 41	F 5	F 4
7	F 4	F 2	F 2	F 2	F 3	FF 21	CL 31	CL 31	C 3	C 4	C 2	C 2	C 4	HL 22	L 2	CL 11	H 1	H 2	C 4	C 4	FF 41	FF 22	F 2	F 2
8	F 3	F 2	FF 32	F 3	F 4	F 3	H 3	C 3	C 3	C 2	C 1	C 2	L 1	L 1	L 1	L 1	L 2	LH 33	HL 12	LC 33	FF 53	F 4	FE 42	F 4
9	FF 41	F 3	F 5	F 3	F 6	F 3	C 3	C 5	C 3	C 1	C 3	C 3	C 2	C 2	C 2	L 1	HH 11	H 3	C 3	L 3	F 4	F 3	FF 52	F 5
10	F 3	F 2	F 4	F 5	F 7	F 1	C 4	C 3	C 3	L 2	L 4	L 1	L 2	L 4	L 3	L 2	L 3	L 3	HL 32	HL 22	FF 31	F 3	F 3	F 4
11	F 5	F 4	F 5	F 6	F 4	F 4	CL 31	C 4	C 2	C 3	C 3	C 2	L 2	L 1	L 2	L 4	L 2	CL 45	LL 43	L 6	F 5	F 5	F 7	FF 73
12	F 3	F 5	F 2	F 1	F 3		L 5	LH 43	HL 12	HL 12	H 1	C 2	C 2	C 2	H 2	H 1	HL 11	HL 21	CL 22	CL 22	F 4	FE 42	FF 31	F 2
13	F 3	F 6	F 5	F 5	F 4	F 3	L 2	L 2	L 2	C 5	C 2	CL 21	L 2	C 1	CL 21	HL 11	HL 11	C 2	CL 21	CL 21	FF 21	FF 41	FF 32	FF 41
14	F 5		F 3	F 6	F 4			L 3	C 2	C 2	C 1	CL 1	H 1	H 1	C 2	C 3	C 4	C 2	C 4	L 2	FF 34	F 4	F 3	FE 23
15	FF 23	F 2																						
16										L 1	HL 11		H 1	H 1	H 1	H 2	C 2	C 2	C 3	C 3	F 3	F 3	F 3	F 7
17	F 2	F 1	F 2	F 3	F 1		LH 11	CL 32	CL 22	C 3	C 2	C 2	C 2	C 2	C 2	C 3								
18					F 6	F 5	HL 31				H 2	C 2	C 3	C 1	C 2	C 4	C 3	H 1	HC 11	C 3	F 5	F 5	F 6	F 5
19	F 5	F 5	F 7	F 4	F 3	FF 12	C 3	C 3	C 3	C 3	C 4	C 3	C 2	C 2	C 2	L 3	L 3	L 3	L 5	L 5	F 6	F 4	F 3	F 3
20	F 6	F 8	F 5	F 6	F 7	F 2	HL 11	C 2	C 3	C 2	C 1	L 1	L 2	L 3	L 1	L 1	L 6	L 2	L 4	L 4	F 6	F 6	F 7	F 6
21	F 2	F 1	F 2	F 1	F 1	F 1	HL 21	C 2	C 2	C 2	C 5	C 2	C 2	C 5	C 5	C 4	C 3	HL 22	L 3	L 4	F 7	F 3	F 3	F 5
22	F 5	F 4	F 5	F 4	F 2	F 1	H 1	H 3	H 2	C 4	C 2	C 2	C 2	L 1	L 3	L 3	L 4	L 3	L 3	CL 45	FF 36	FF 31	F 4	FE 21
23	F 2	F 2	F 2	F 2	F 1	FF 11	HL 21	H 2	H 2	C 2	C 2	C 2	C 2	C 2	L 1	L 2	LL 31	LH 31	CL 32	L 4	F 8	F 2	F 3	F 5
24	FF 24	F 2	F 2	F 1	F 2	F 3	L 2	H 1		C 1	C 1	C 1	C 1	C 1	C 1	C 1	H 1	HL 22	C 2	C 6	F 4	F 4	F 3	F 5
25	F 4	F 6	F 6	FF 31	F 3	F 2	HL 22	H 3	H 1	C 4	C 3	C 2	C 2	C 1	C 3	C 2	C 2	C 5	L 4	C 5	F 3	F 6	F 6	F 4
26	FF 22	FF 31	F 1	F 4	F 3	F 2	HL 21	C 5	C 4	C 3	C 3	C 3	C 2	CH 22	CC 22	C 2	LH 21		L 1	CL 32	F 3	F 5	F 6	F 8
27	F 3	F 7	F 6	FF 22	FF 24	F 2	HL 31	H 2	C 3	C 2	C 1	C 2	C 1	C 1	H 1	H 1	H 1			C 1		F 1	F 2	F 2
28	F 4	F 3	F 3	F 2	F 3	F 3	CL 41	C 3	C 3	C 3	C 3	C 2	C 3	C 3	L 1	HL 21	LH 21	HL 21	CL 31	CL 42	F 5	F 4	F 5	FF 24
29	FF 52	FF 41	FF 42	FF 32	FF 31	F 4	LL 51	L 5	LH 31	LH 31	LH 21	L 1	HL 22	L 2	L 2	HL 11	H 2	C 3	C 3	C 4	F 5	F 5	F 4	F 6
30	F 7	F 7	F 7	F 6	F 5	F 4	HL 13	H 2	H 2	C 4	C 4	C 2	C 2	C 2	LC 11	C 5	C 2		C 1	C 3	F 5	F 4	F 4	F 6
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

JUN. 1970 | TYPES OF ES

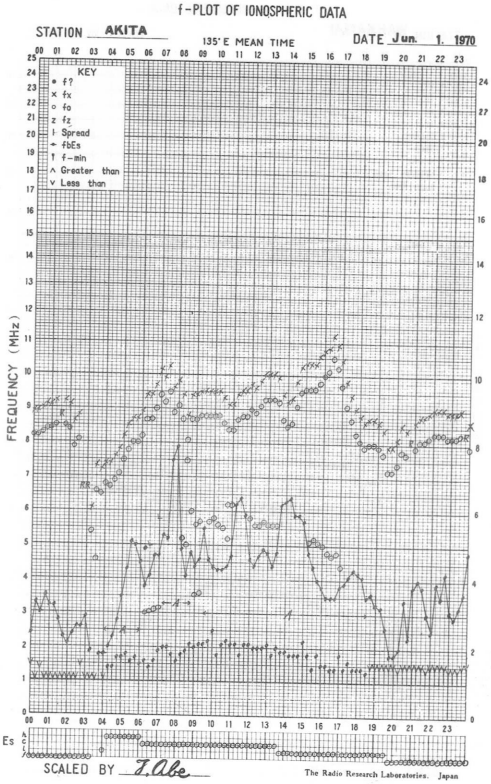
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 1, 1970



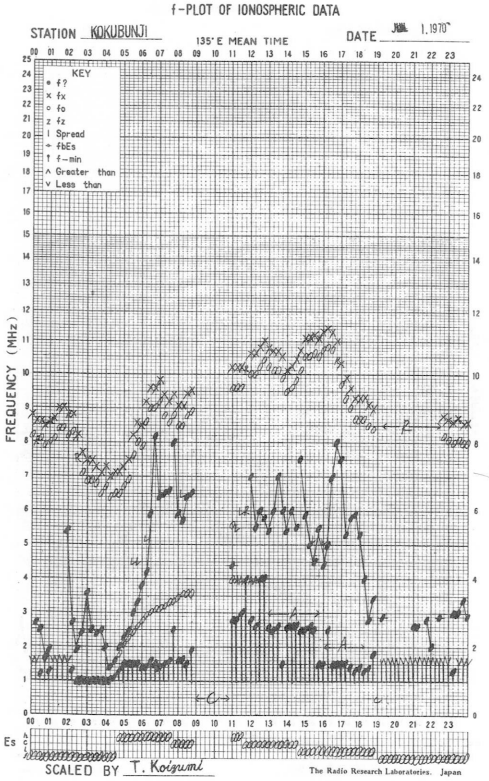
f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jun. 1. 1970



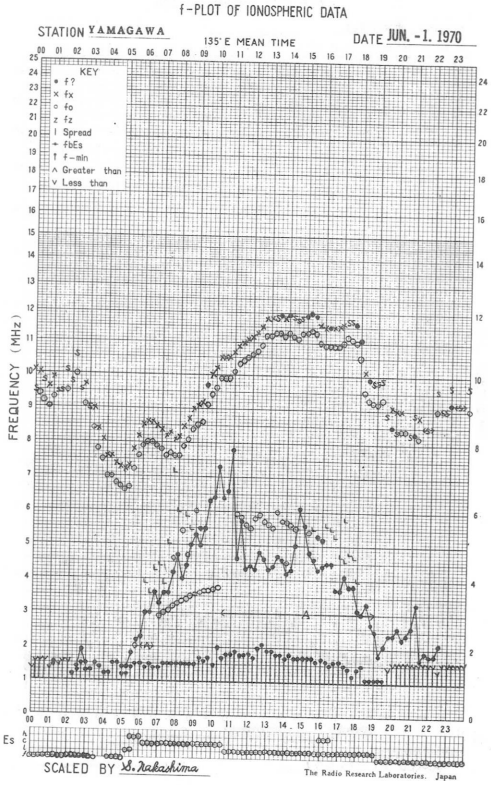
f-PLOT OF IONOSPHERIC DATA

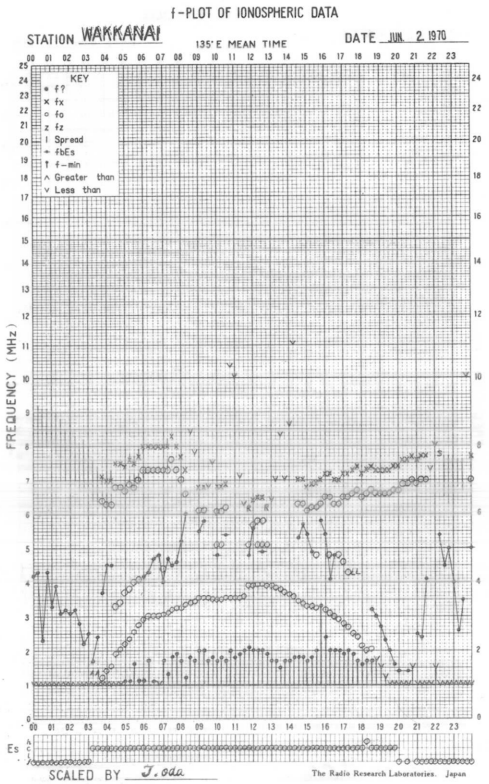
STATION KOKUBUNJI 135°E MEAN TIME DATE JUN. 1, 1970

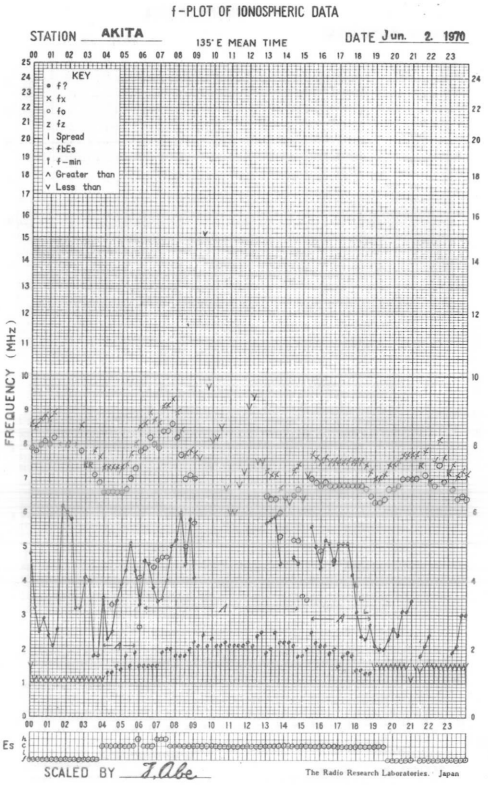


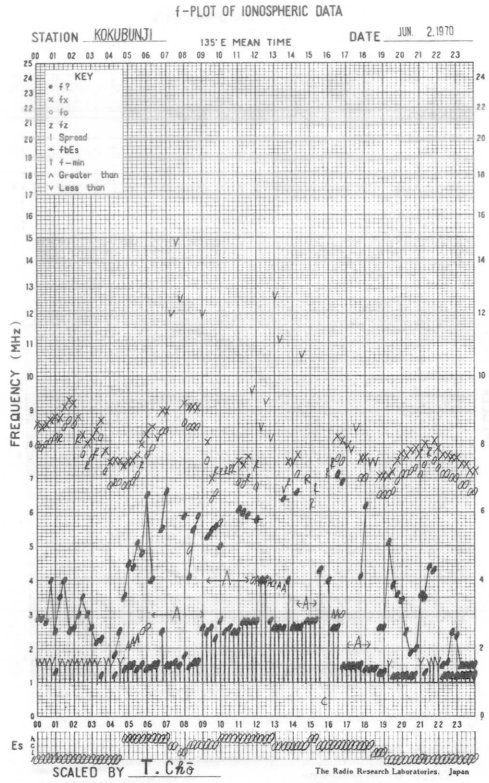
f-PLOT OF IONOSPHERIC DATA

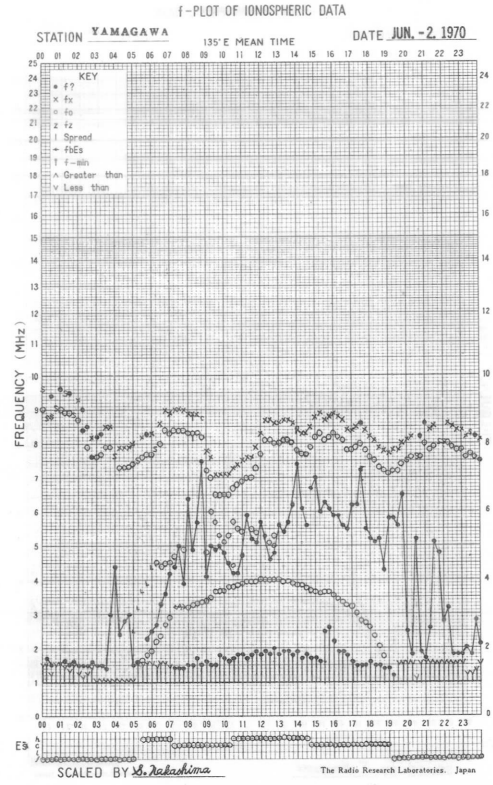
STATION YAMAGAWA 135°E MEAN TIME DATE JUN. -1. 1970

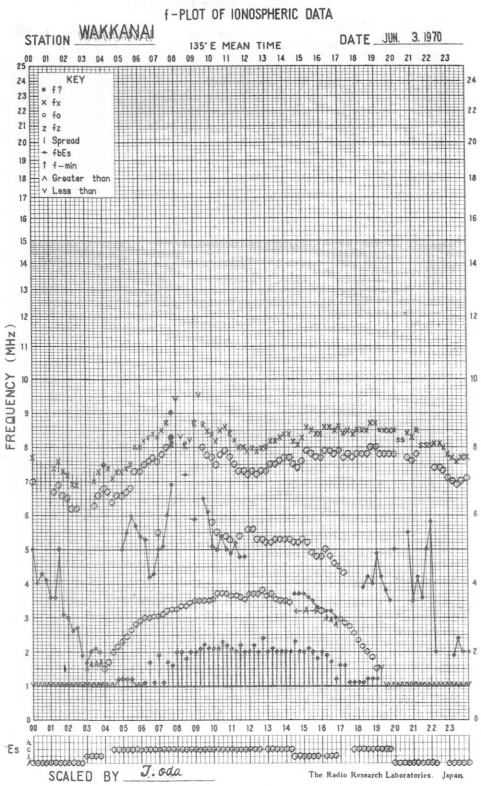


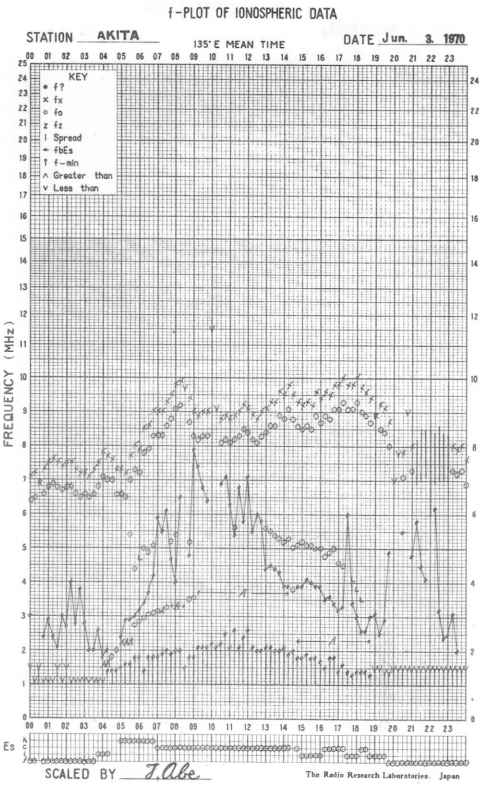

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JUN. 2, 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. oda
The Radio Research Laboratories. Japan

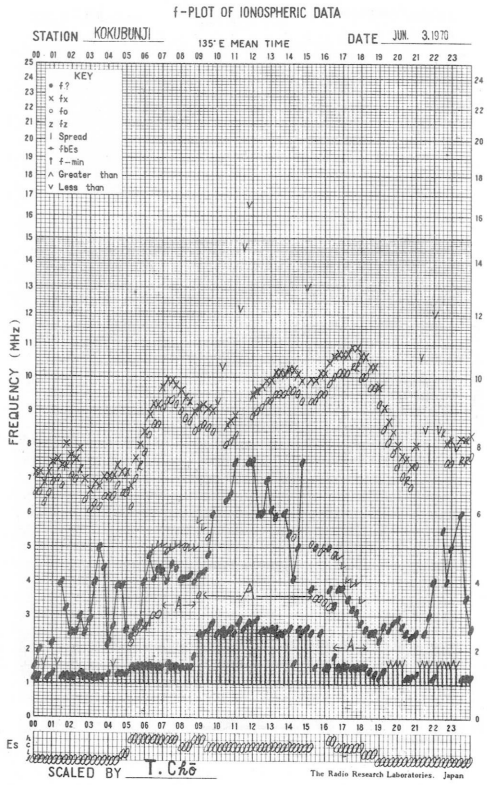

f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jun. 2, 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan

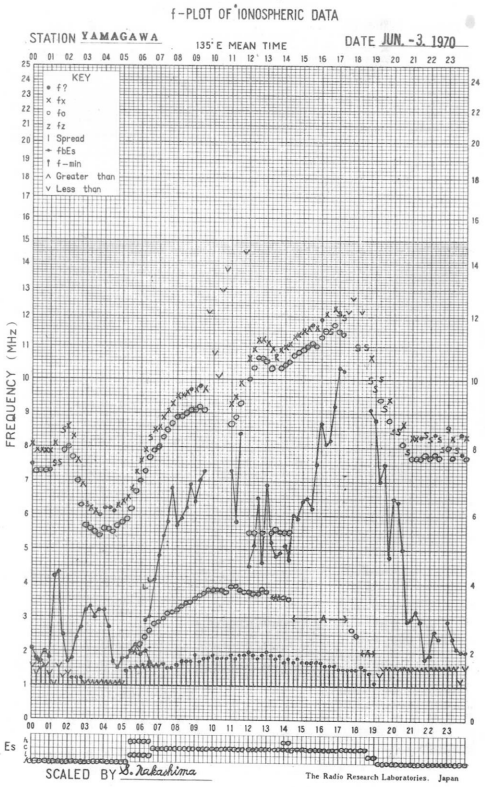

f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE JUN. 2, 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan

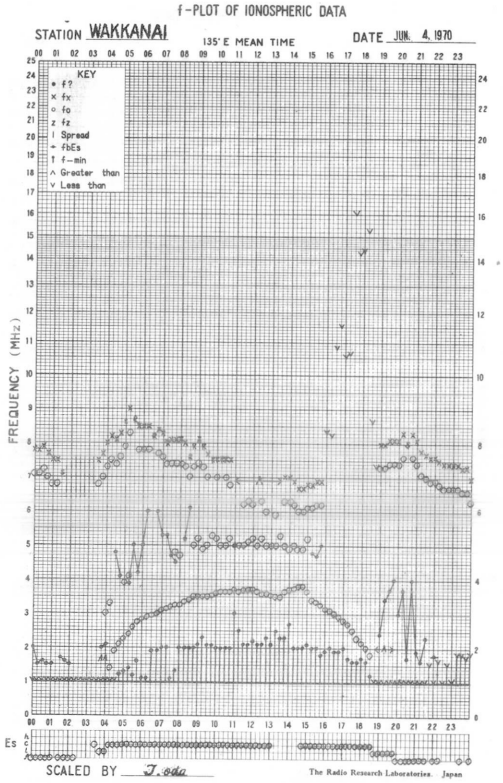

f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE JUN. -2, 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan

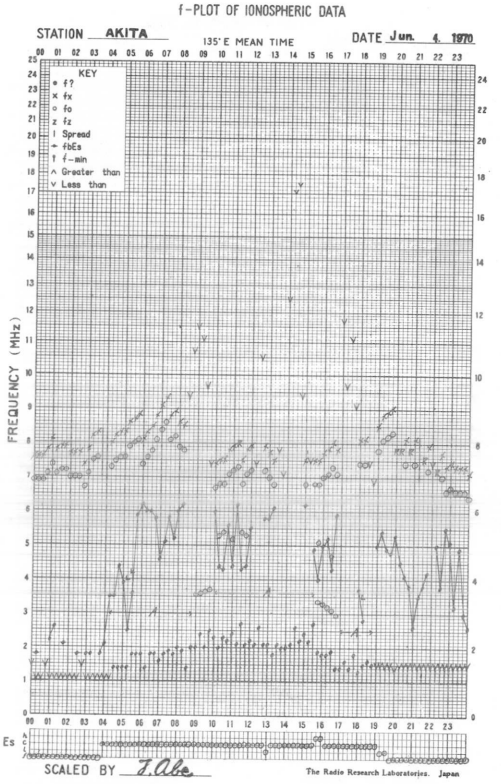

f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JUN. 3. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY J. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jun. 3. 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 JUN. 3. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Chō
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135°E MEAN TIME
DATE JUN. -3. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Takashima
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE JUN. 4, 1970
KEY
• f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
T f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Jun. 4, 1970
KEY
• f?
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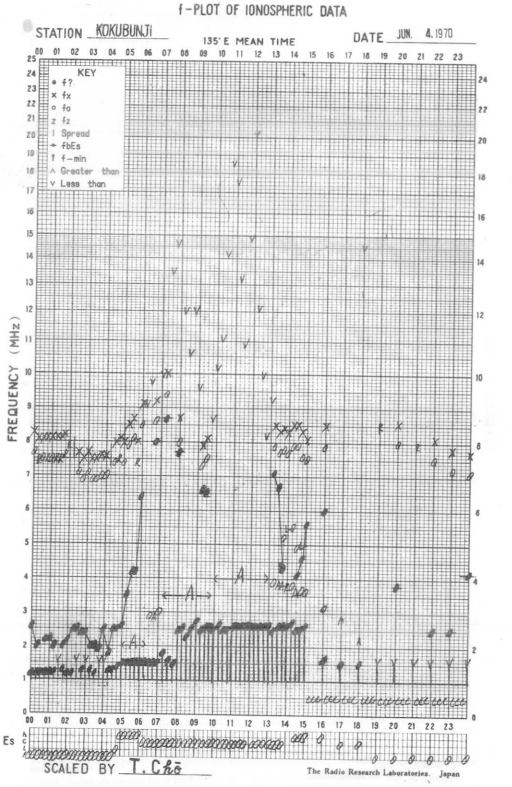
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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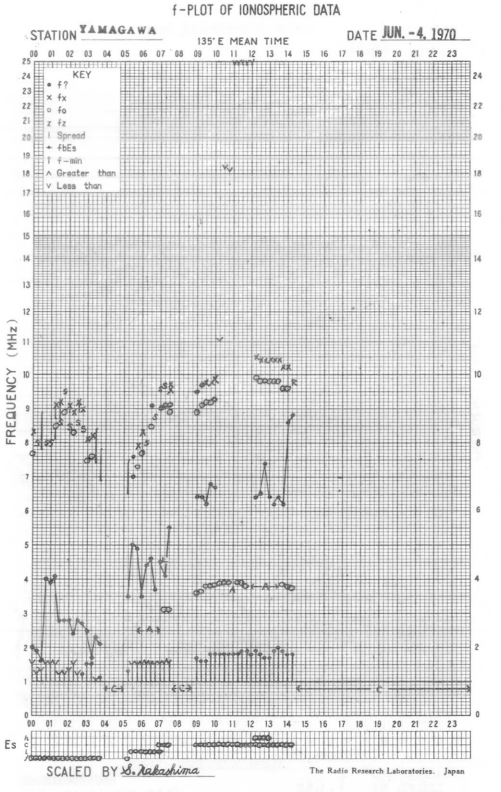
SCALED BY T. Chō
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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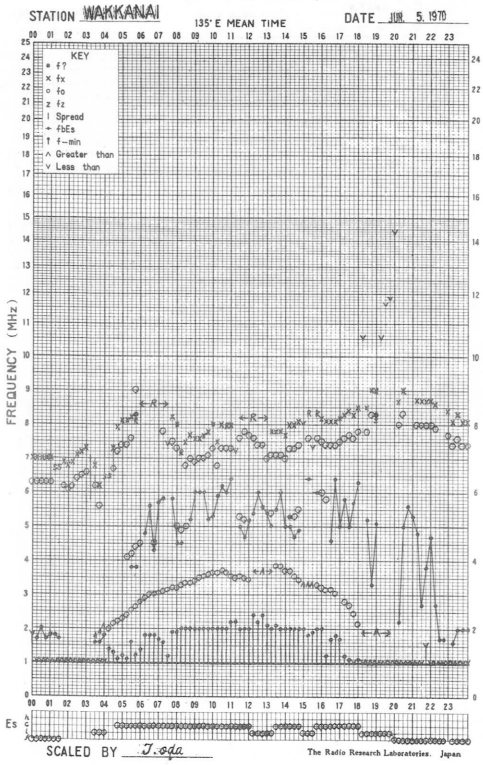
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 5, 1970



SCALED BY T. Oda

The Radio Research Laboratories. Japan

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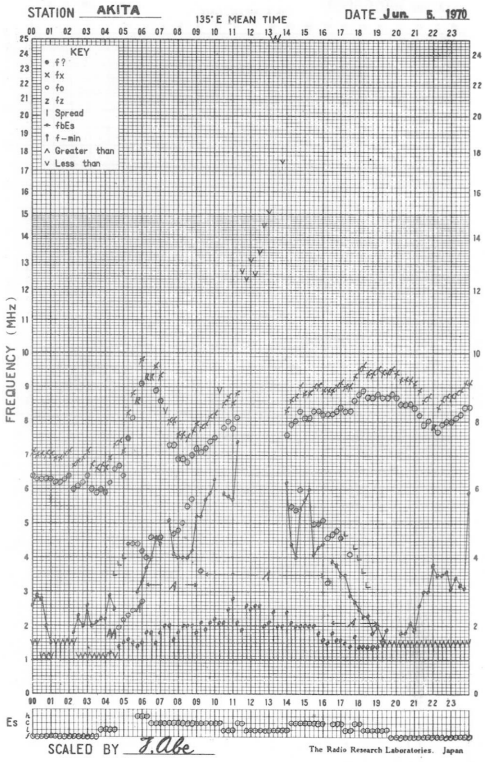

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The Radio Research Laboratories. Japan

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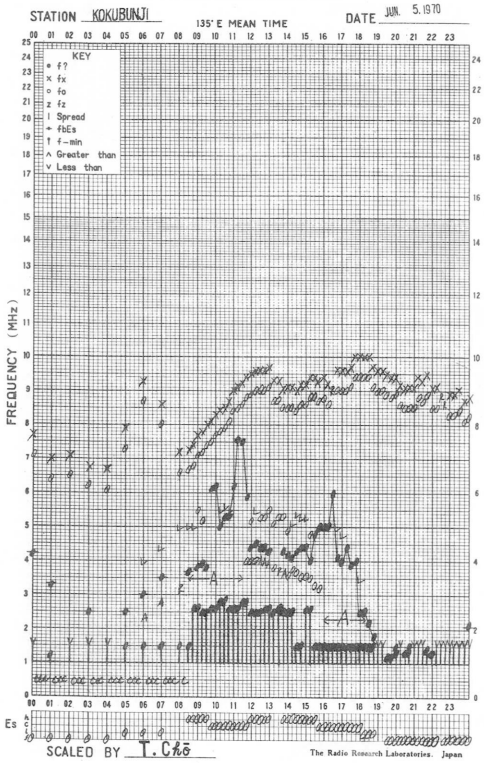

SCALED BY T. Ono

The Radio Research Laboratories. Japan

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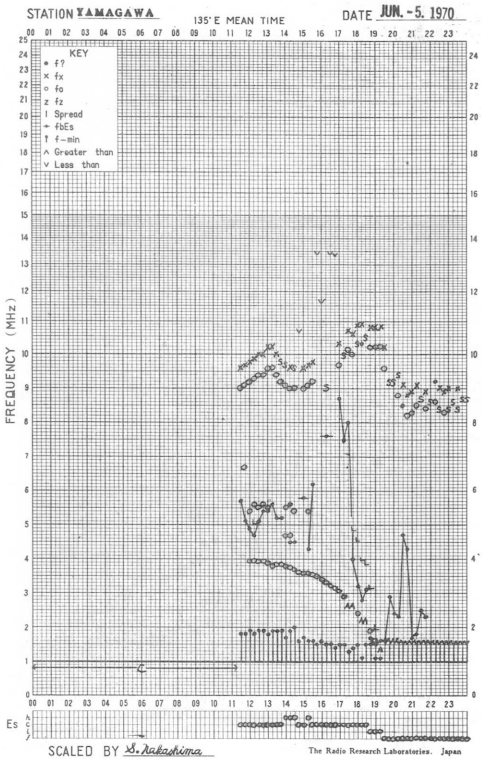
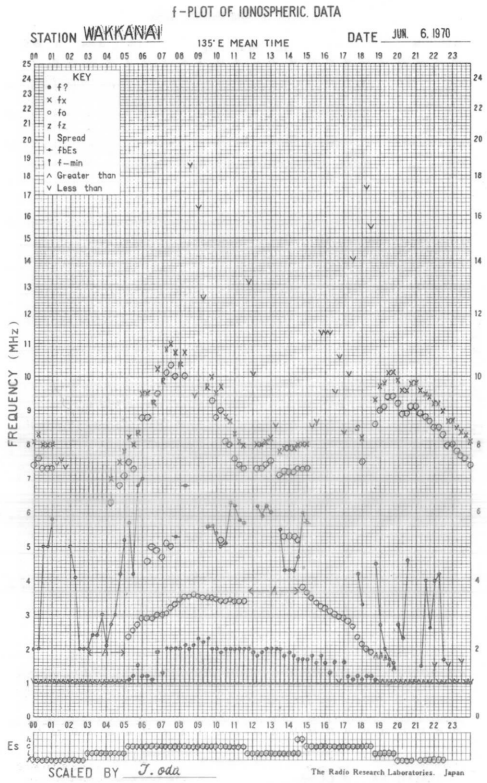


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan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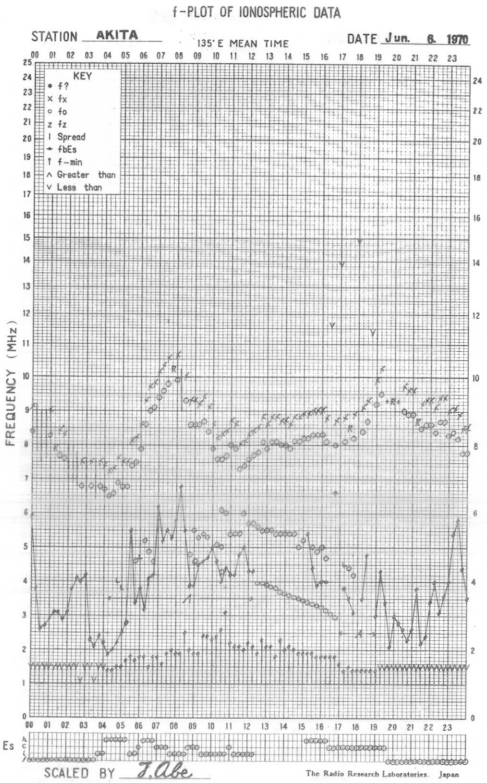
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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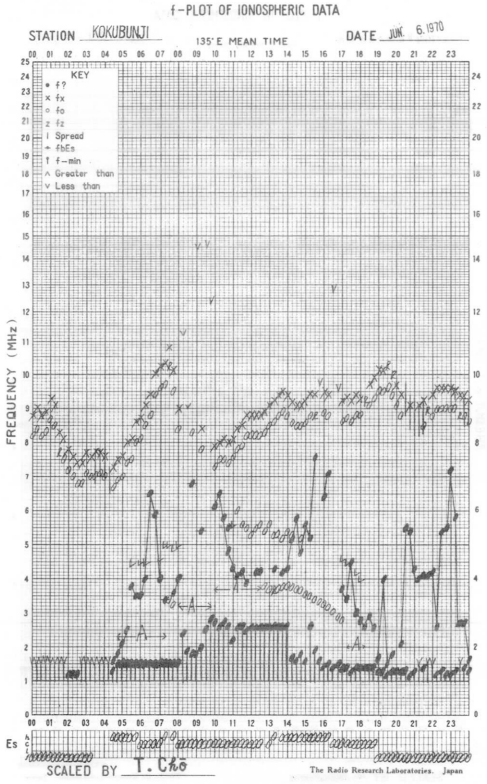
The Radio Research Laboratories. Japan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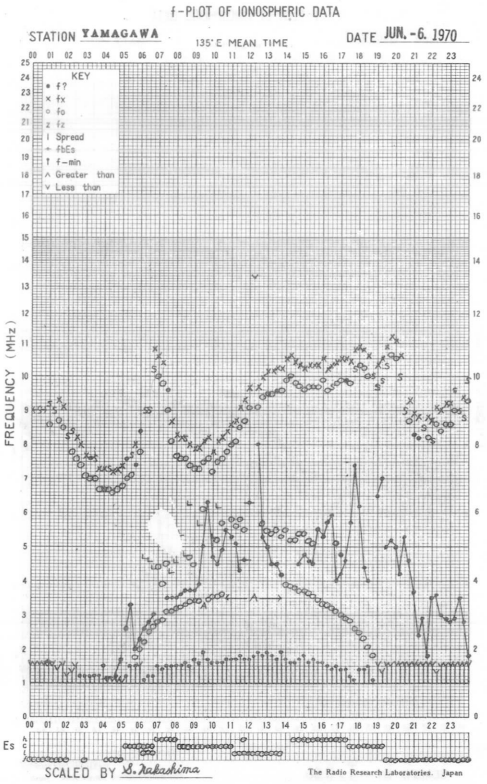
The Radio Research Laboratories. Japan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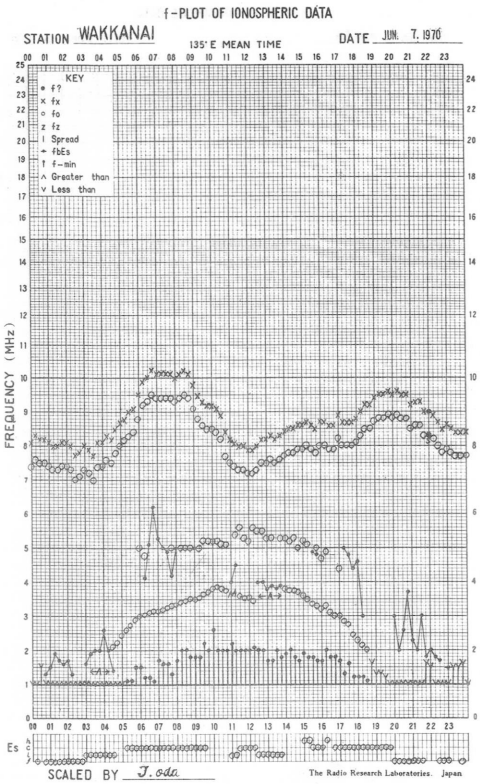
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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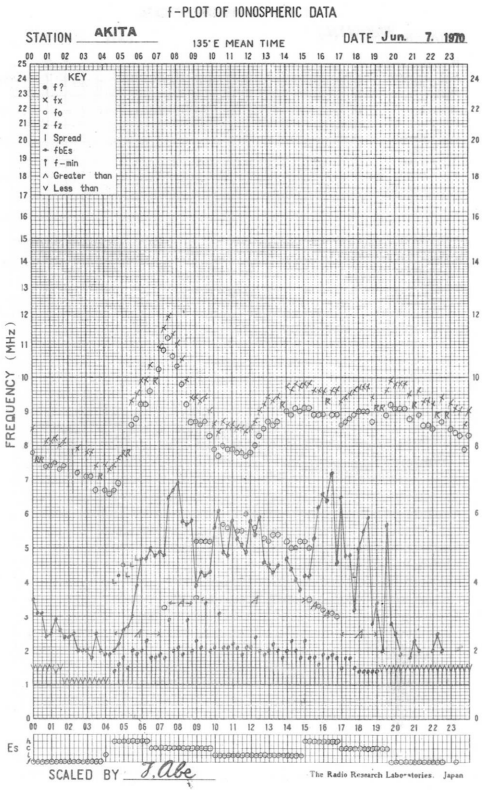
SCALED BY T. oda
The Radio Research Laboratories. Japan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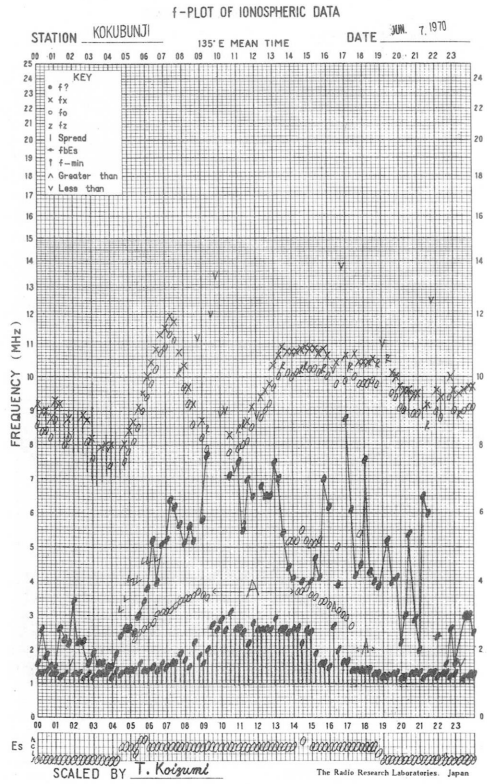
SCALED BY T. Abe
The Radio Research Laboratories. Japan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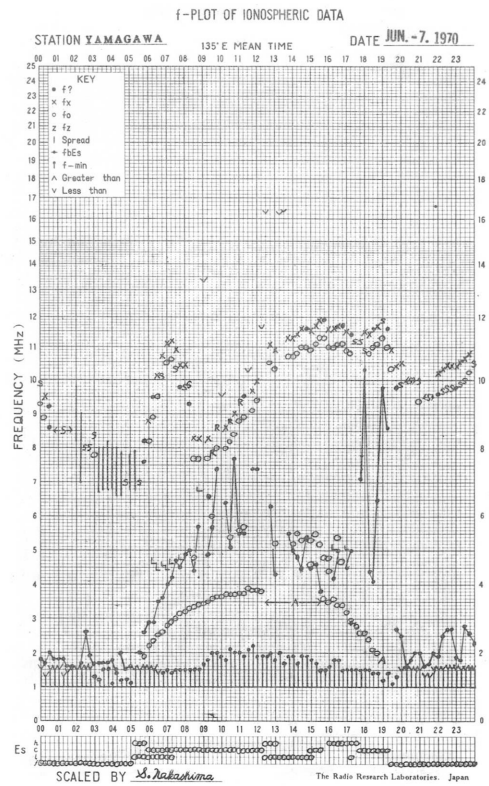
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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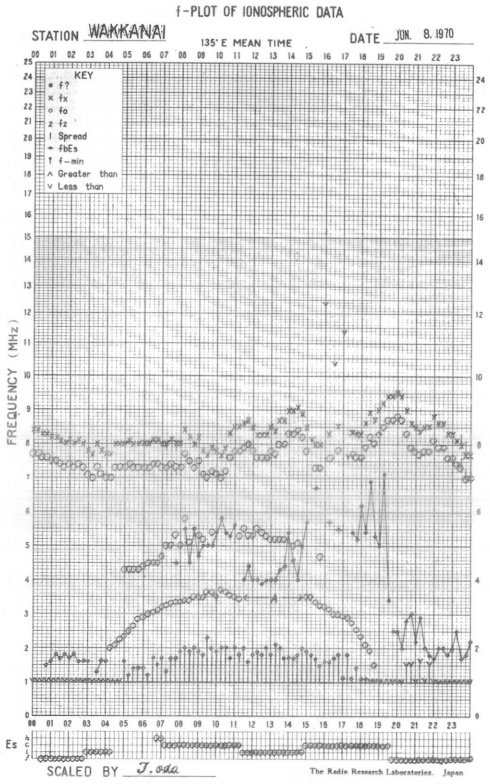
The Radio Research Laboratories. Japan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STATION WAKKANAI
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DATE JUN. 8. 1970
KEY
FREQUENCY (MHz)
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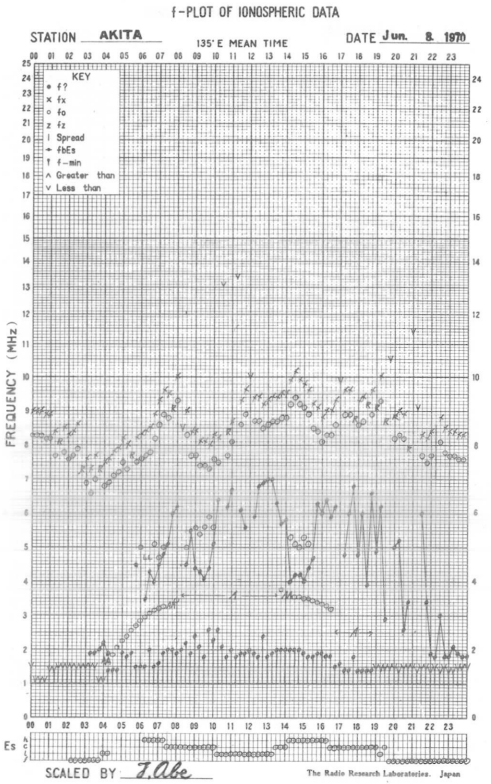
SCALED BY T. Oda
The Radio Research Laboratories. Japan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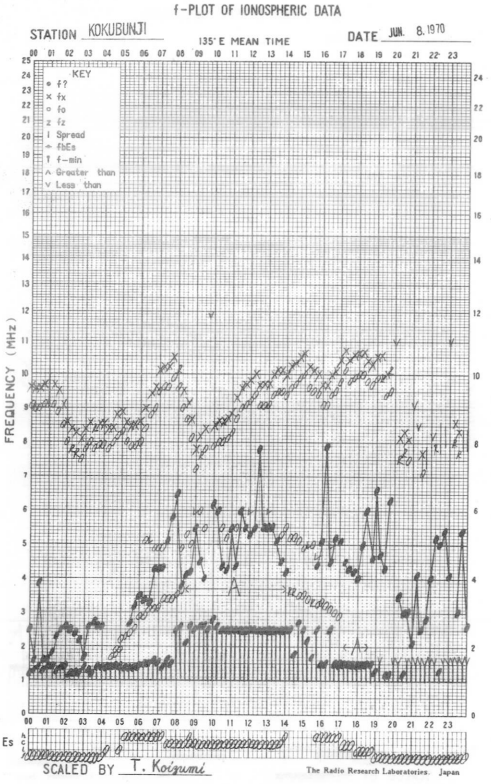
The Radio Research Laboratories. Japan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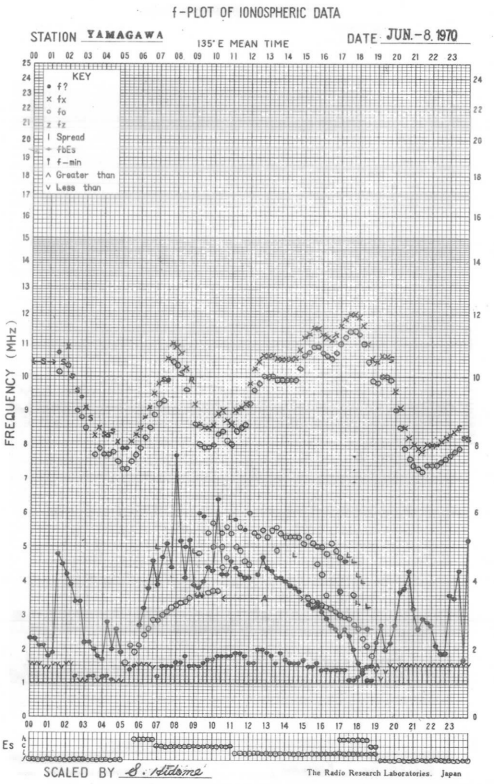
The Radio Research Laboratories. Japan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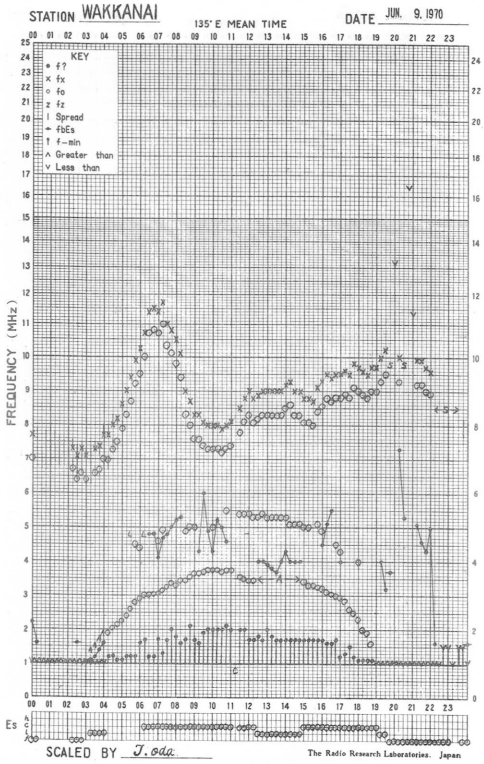
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 9. 1970



SCALED BY T. Oda

The Radio Research Laboratories. Japan

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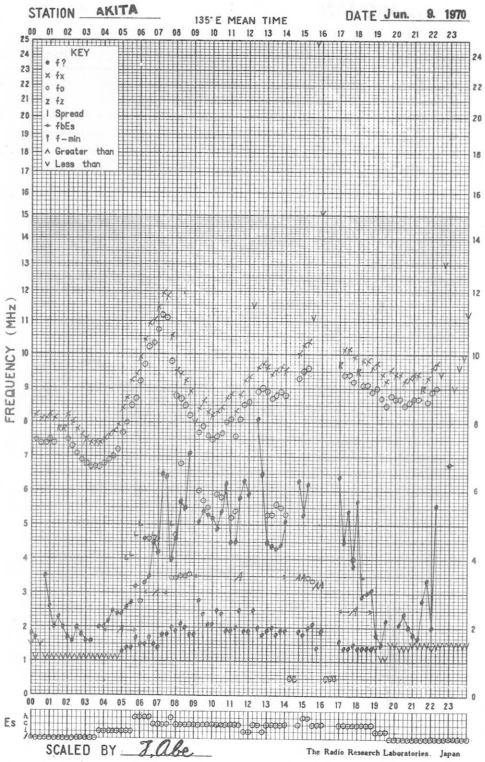

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The Radio Research Laboratories. Japan

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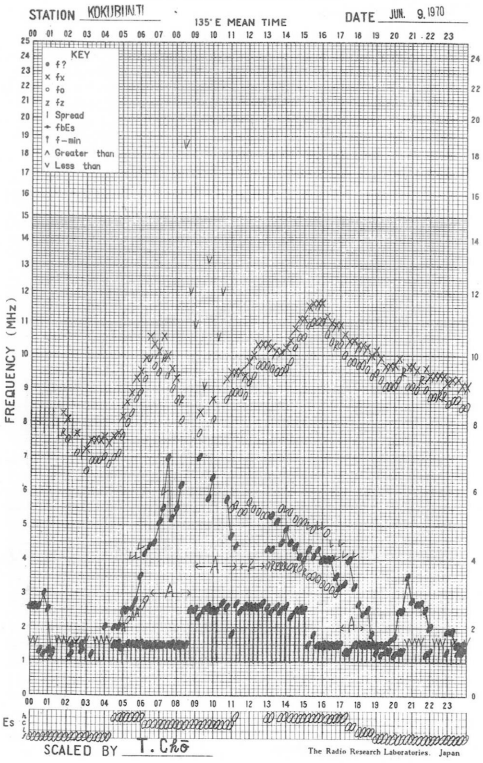

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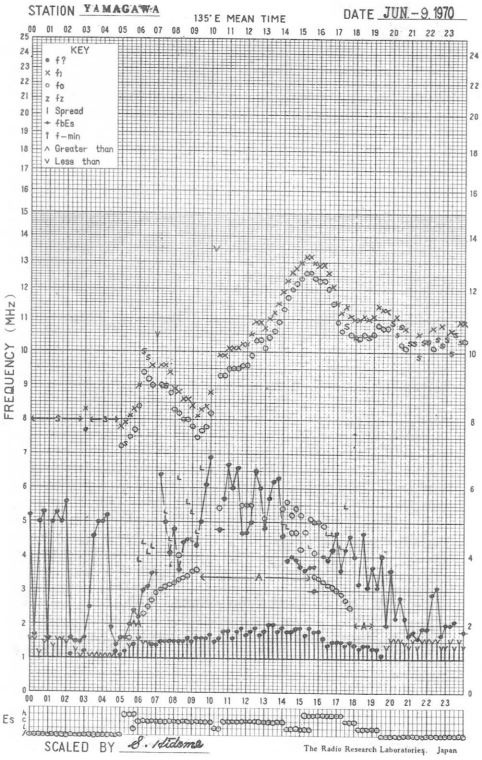
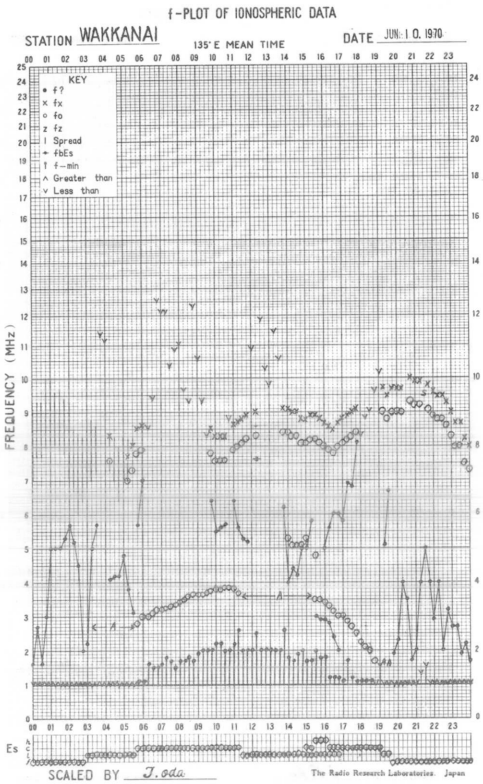


SCALED BY S. Nitoma

The Radio Research Laboratories. Japan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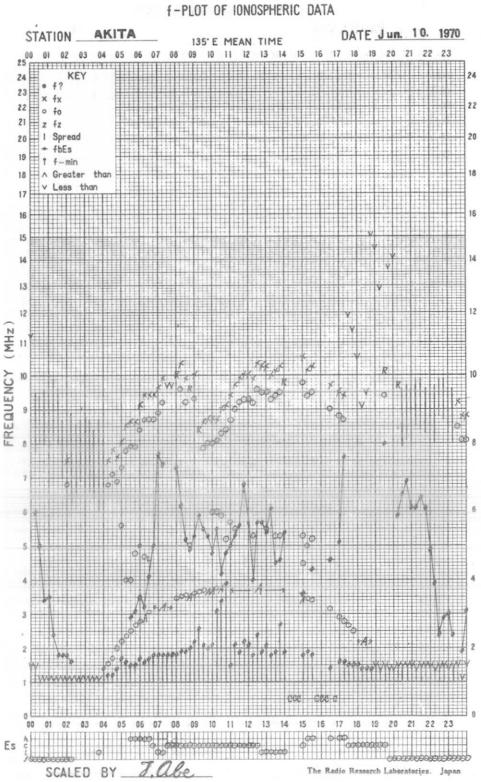
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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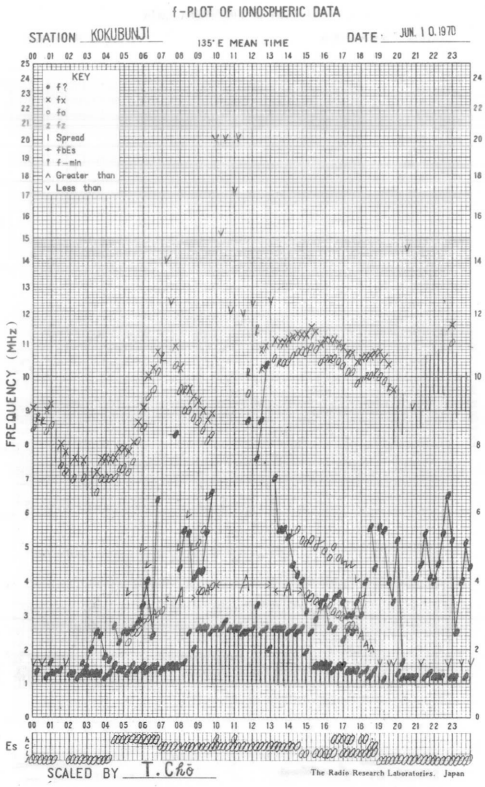
SCALED BY T. Abe
The Radio Research Laboratories. Japan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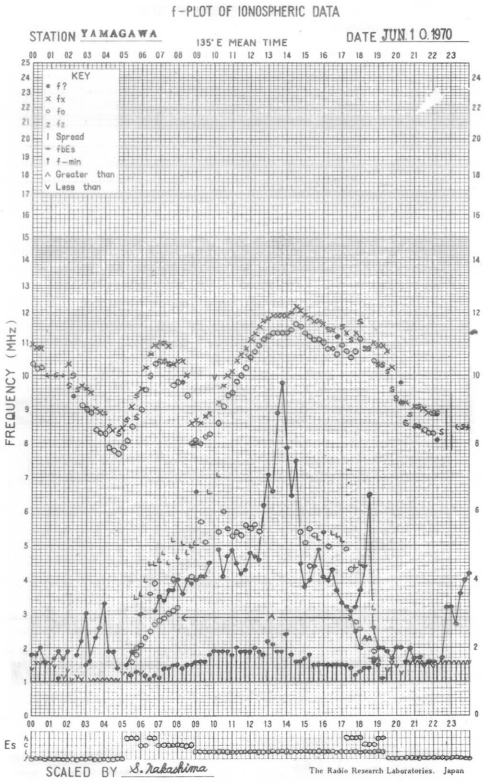
SCALED BY T. Cho
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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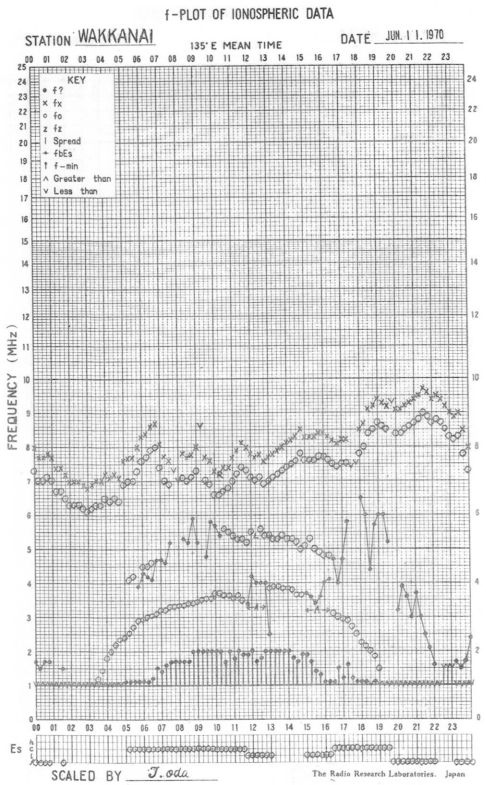
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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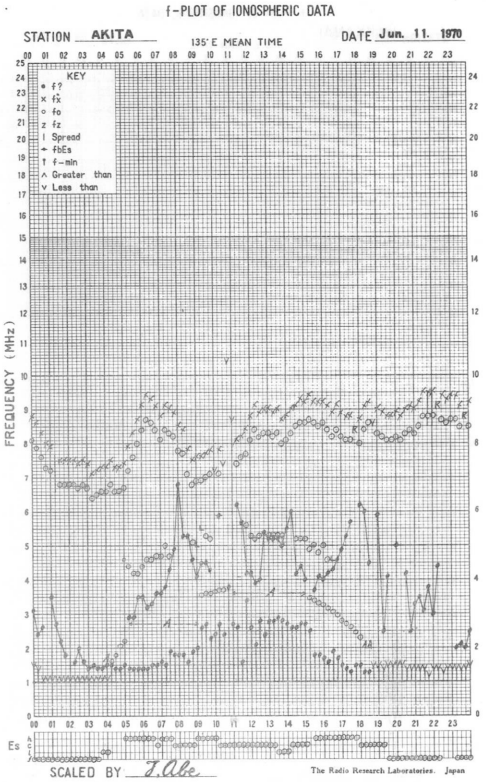
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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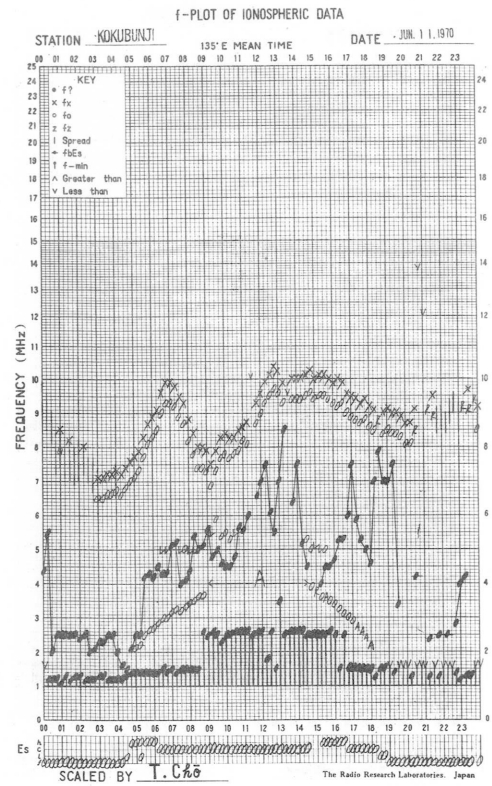
SCALED BY T. Abe
The Radio Research Laboratories. Japan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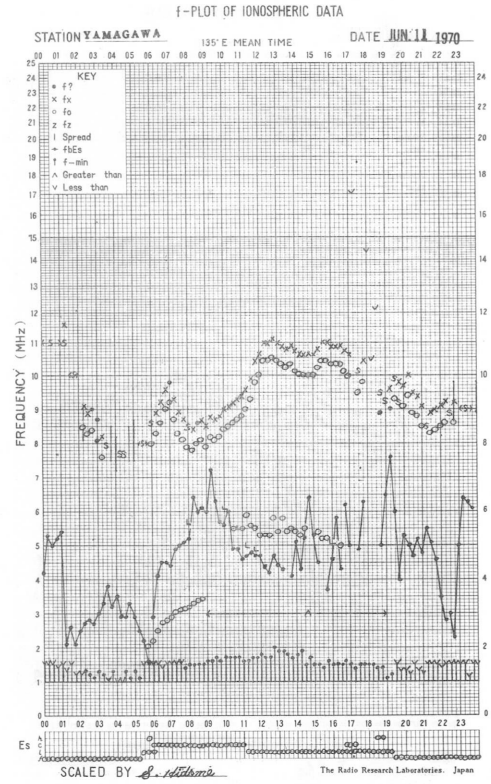
SCALED BY T. Cho
The Radio Research Laboratories. Japan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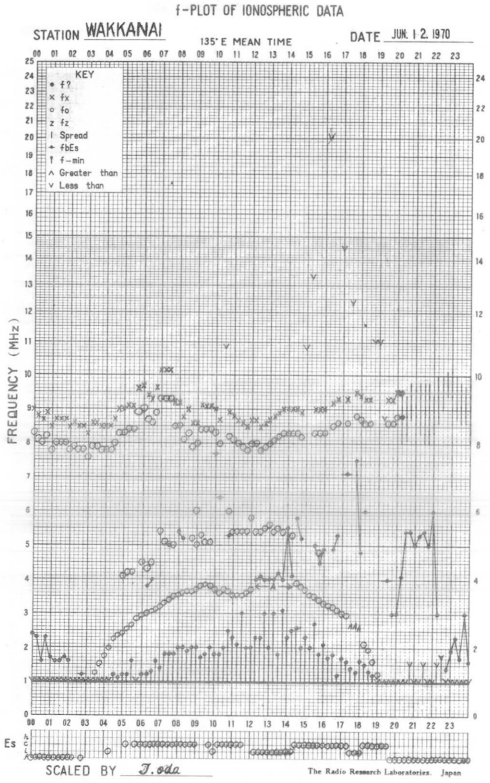
SCALED BY S. Ishimaru
The Radio Research Laboratories. Japan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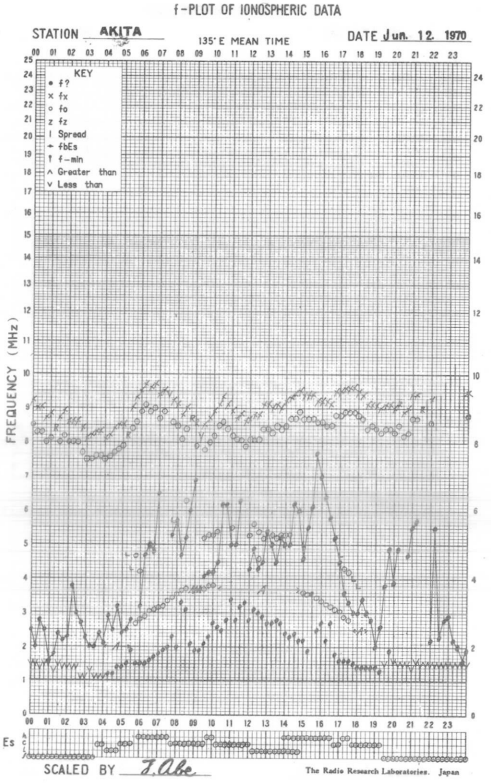
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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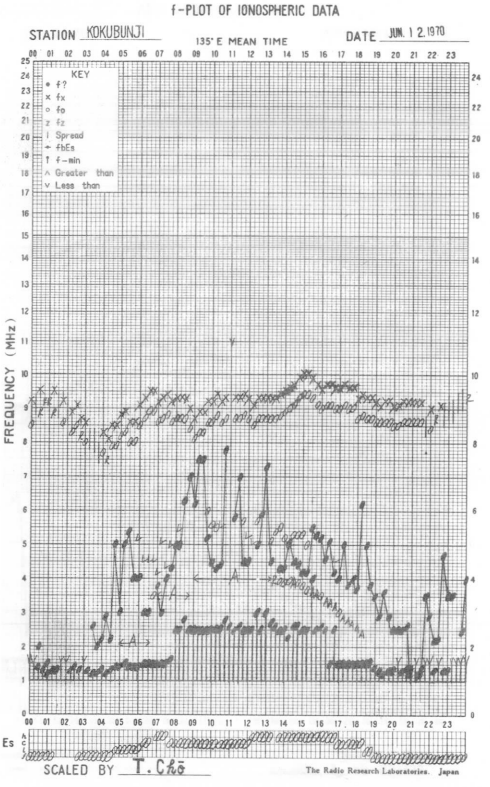
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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FREQUENCY (MHz)
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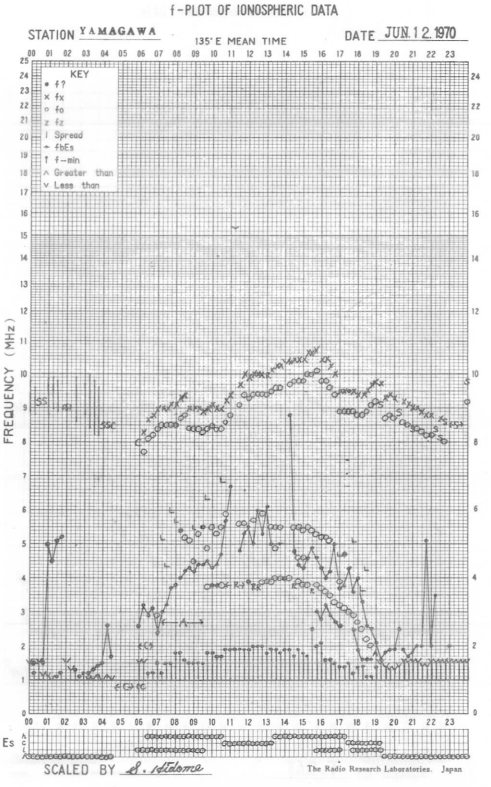
SCALED BY T. Chō
The Radio Research Laboratories. Japan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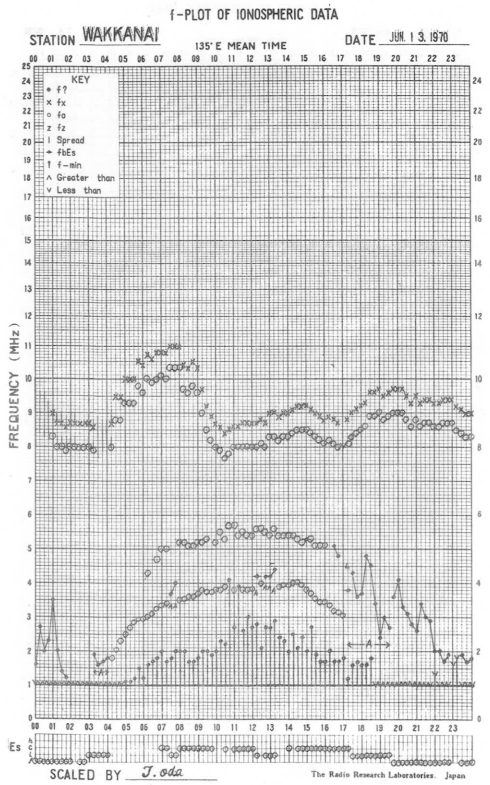
The Radio Research Laboratories. Japan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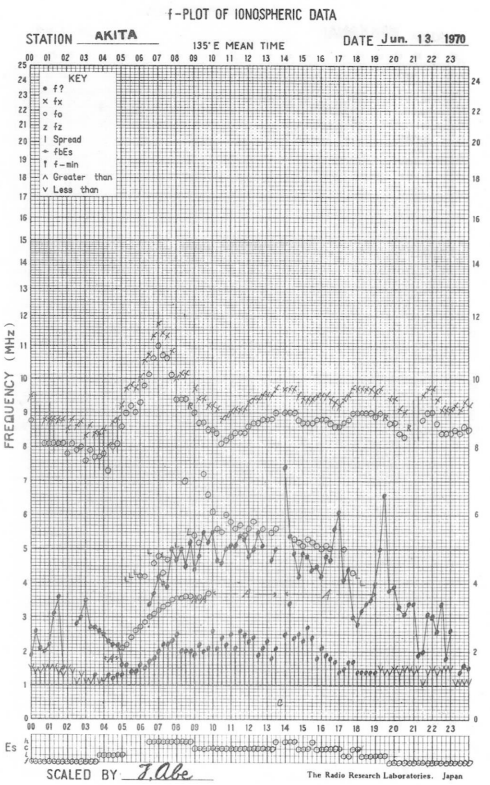
SCALED BY T. oda
The Radio Research Laboratories. Japan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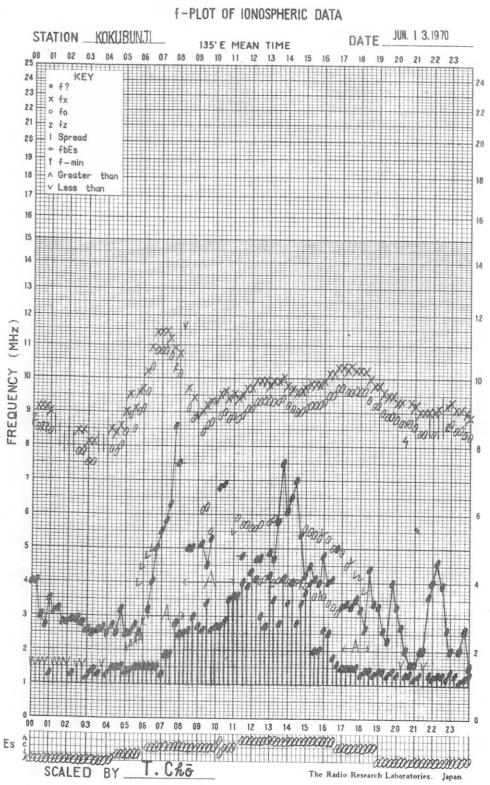
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE JUN. 13.1970
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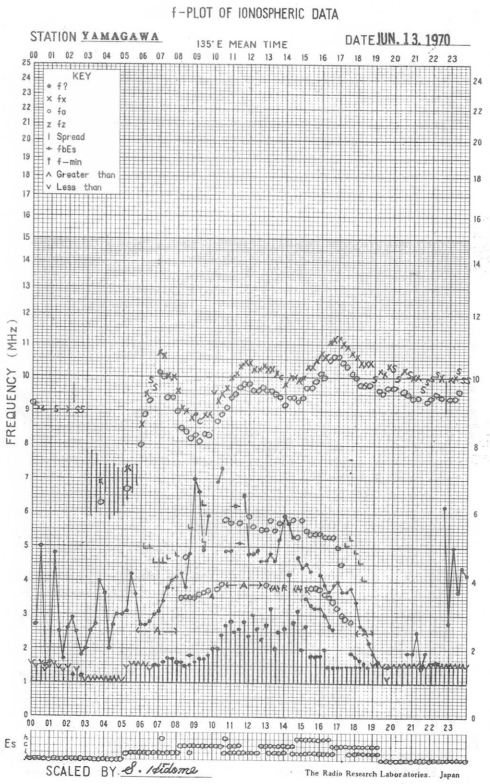
SCALED BY T. Cho
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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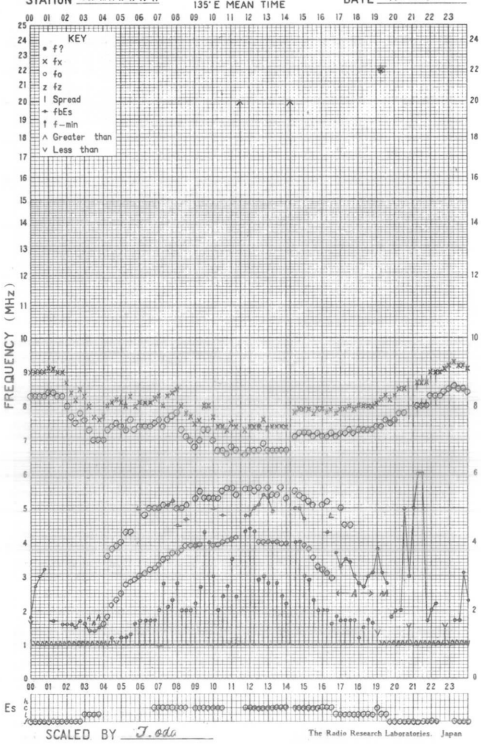

SCALED BY T. Oda

The Radio Research Laboratories. Japan

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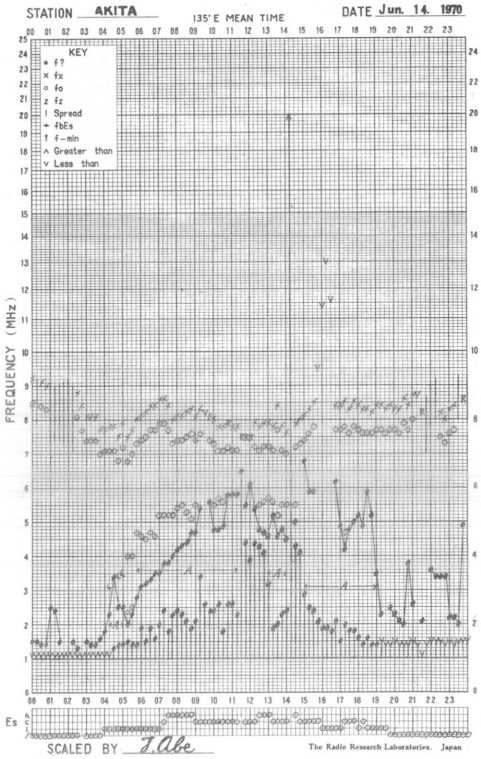

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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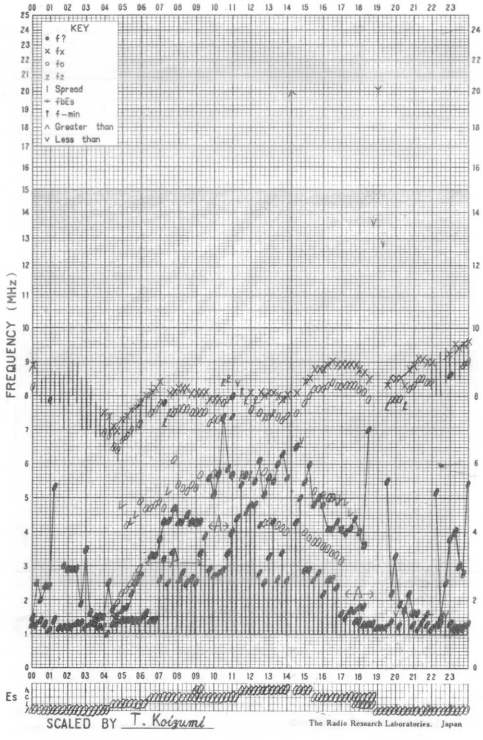

SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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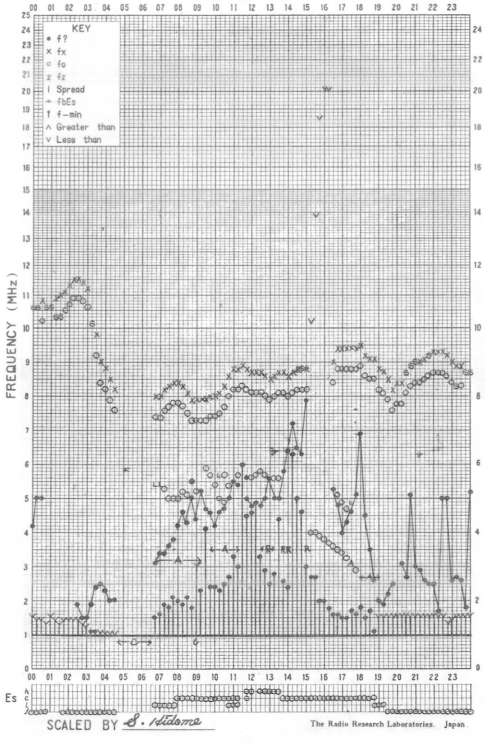

SCALED BY S. Ishitomi

The Radio Research Laboratories. Japan

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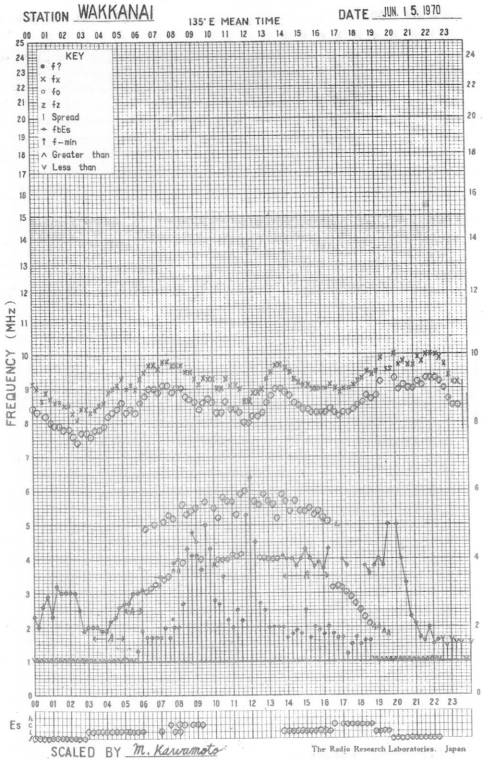

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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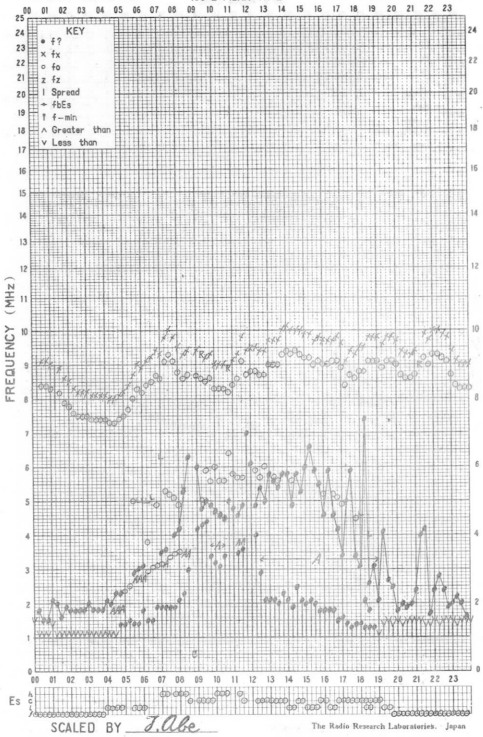

SCALED BY I. Abe

The Radio Research Laboratories. Japan

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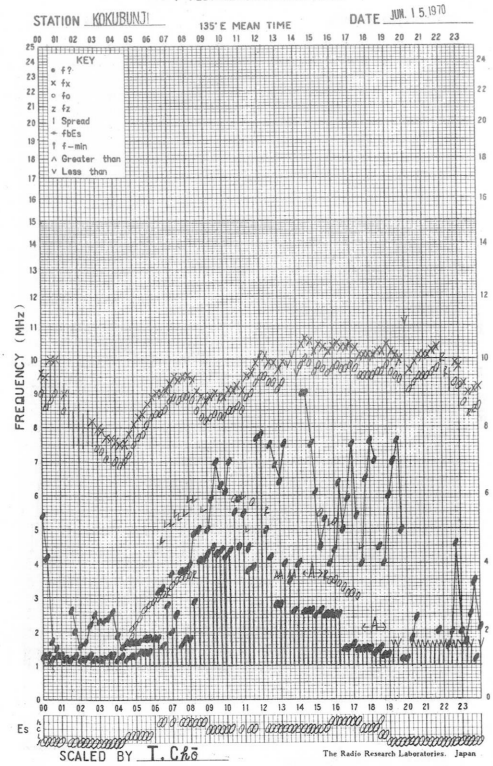

SCALED BY T. Chō

The Radio Research Laboratories. Japan

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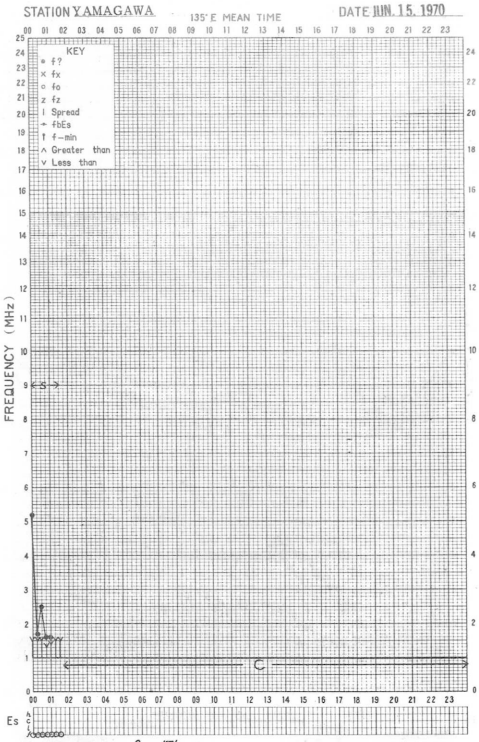

SCALED BY S. Uchoma

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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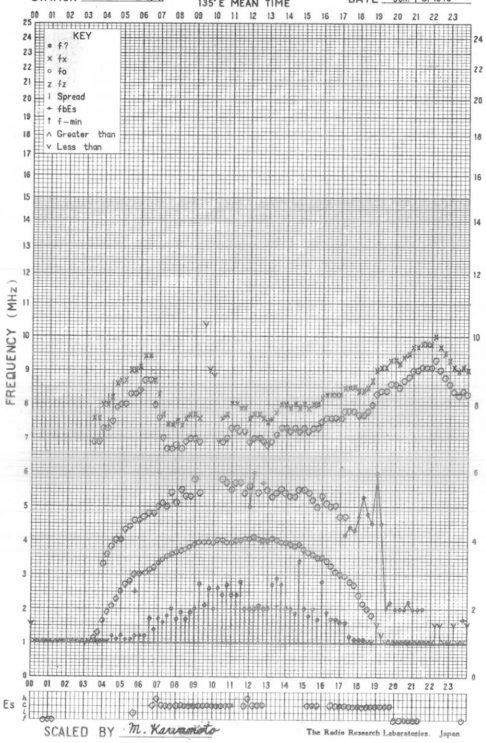

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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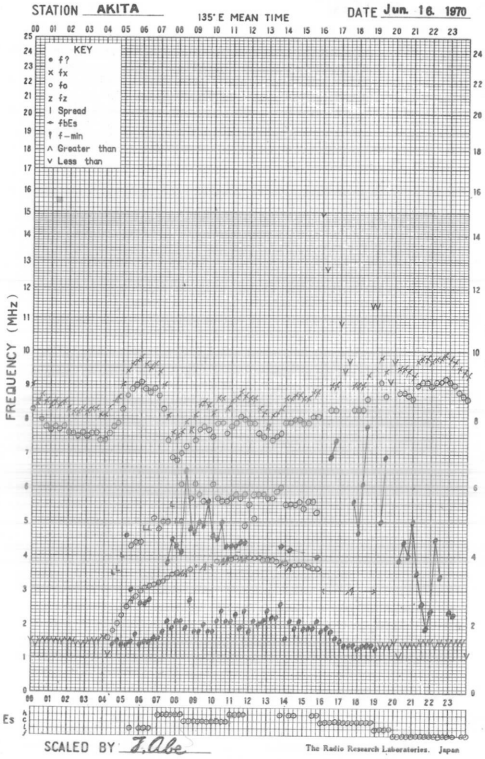

SCALED BY T. Abe The Radio Research Laboratories. Japan

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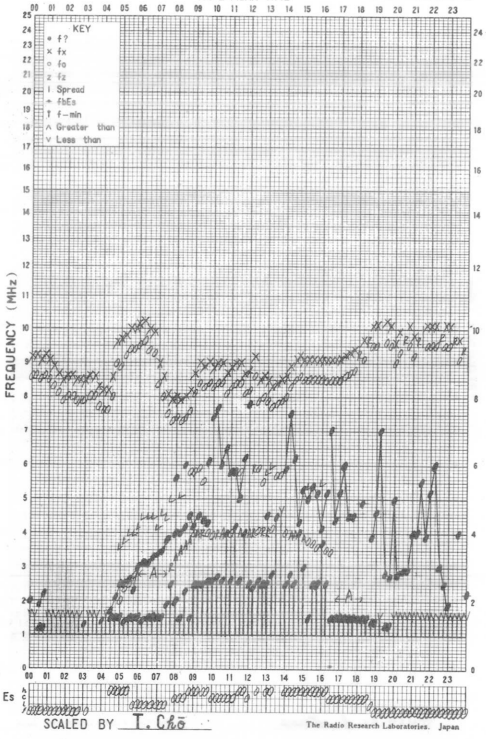

SCALED BY T. Chō The Radio Research Laboratories. Japan

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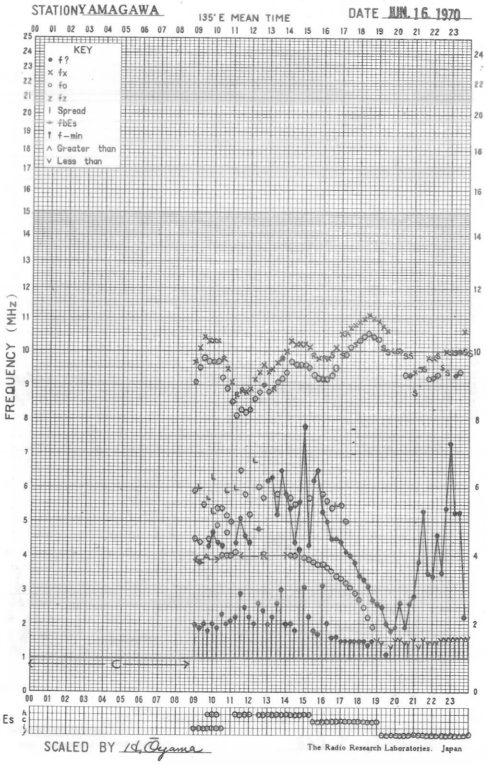

SCALED BY H. Ōyama The Radio Research Laboratories. Japan

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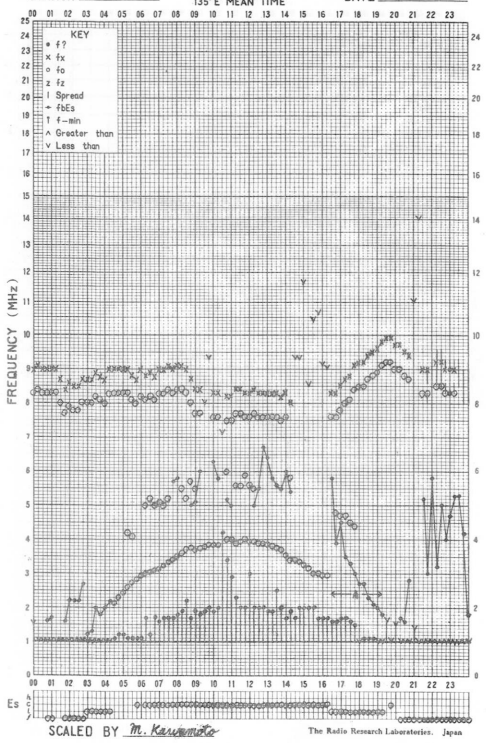

SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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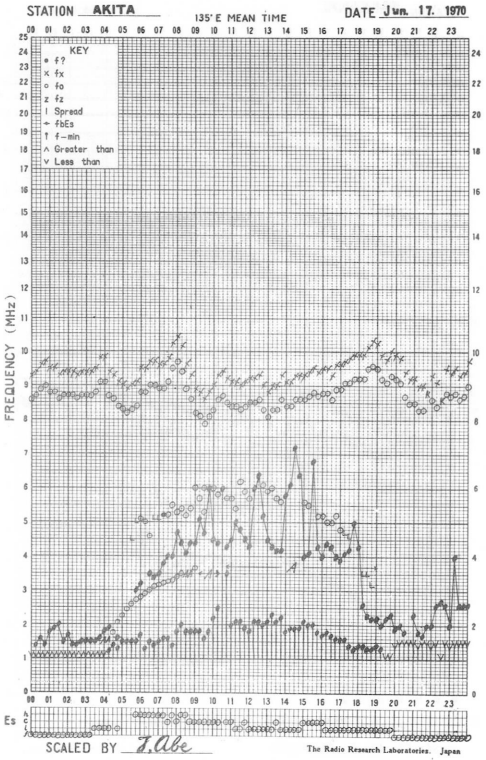

SCALED BY I. Abe The Radio Research Laboratories. Japan

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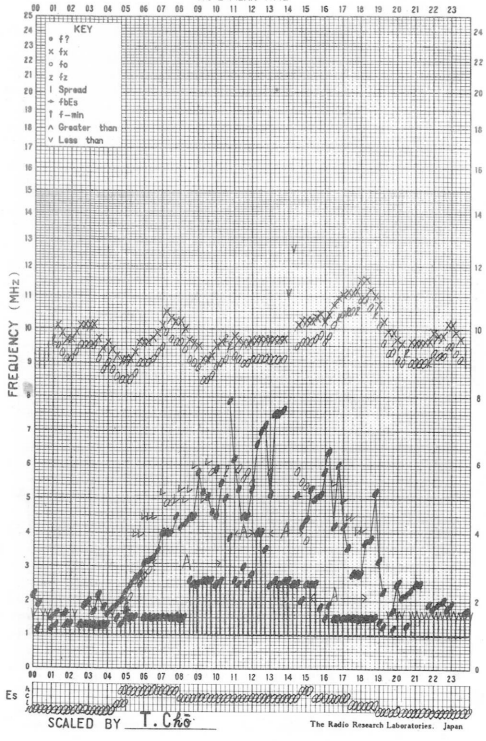

SCALED BY T. Cho The Radio Research Laboratories. Japan

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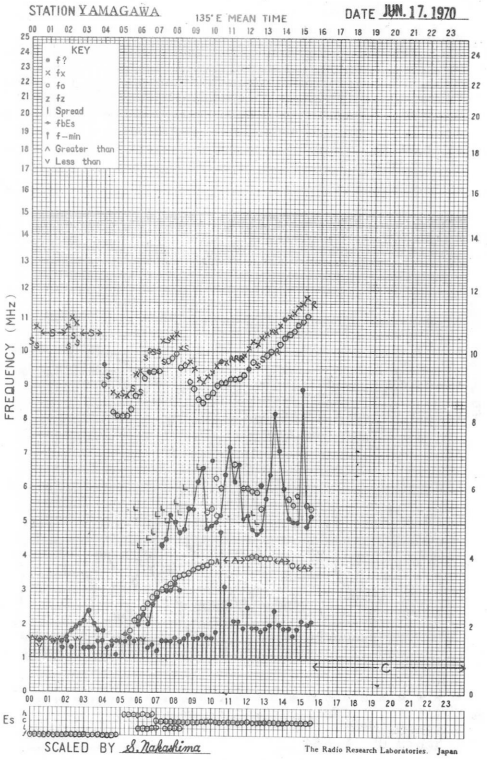
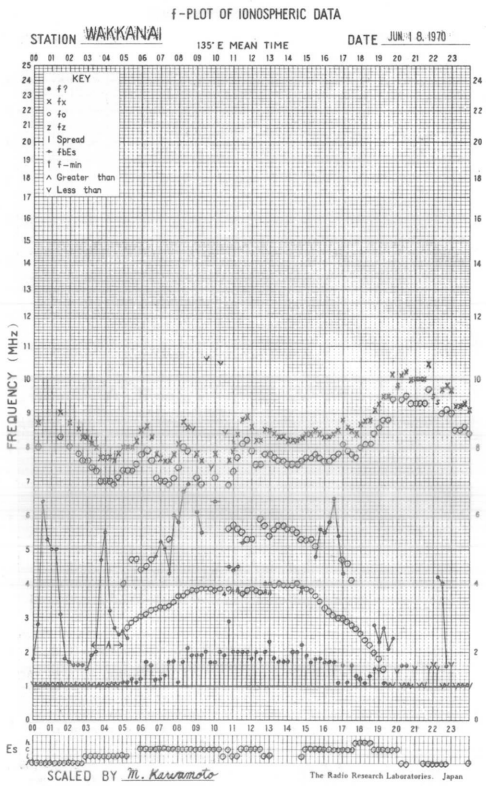


SCALED BY S. Nakashima The Radio Research Laboratories. Japan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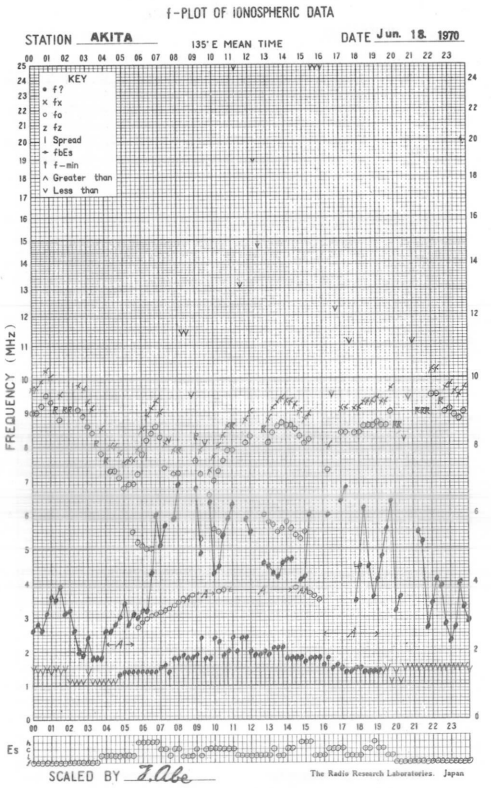
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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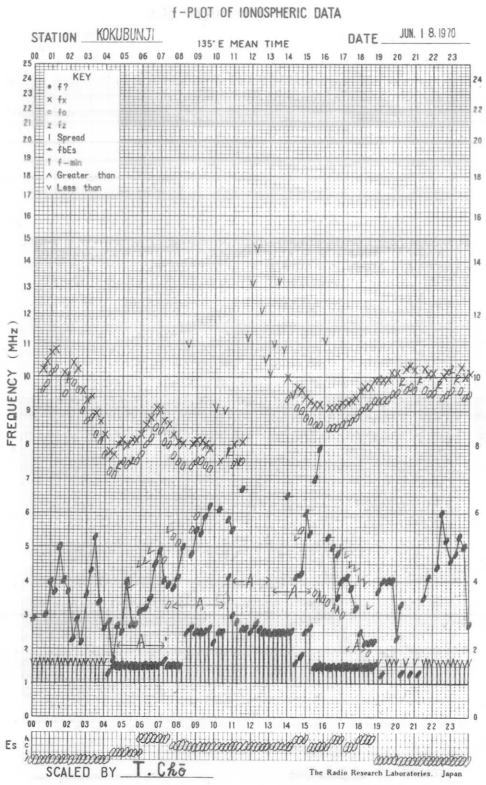
SCALED BY I. Abe
The Radio Research Laboratories. Japan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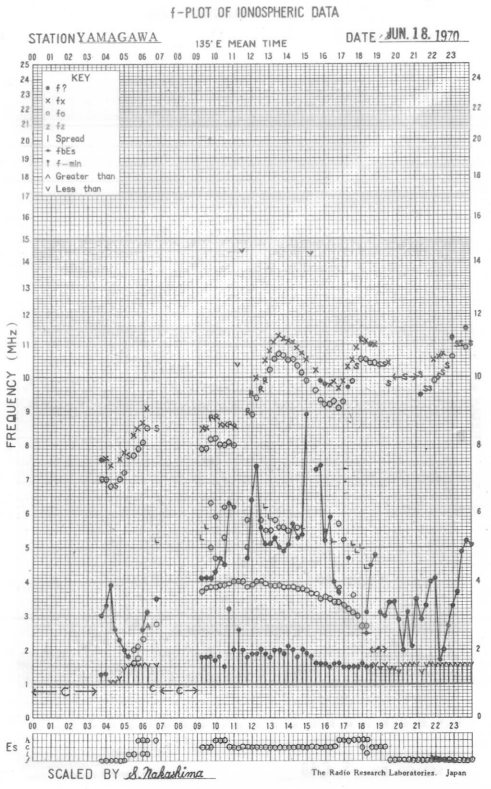
SCALED BY T. Chō
The Radio Research Laboratories. Japan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SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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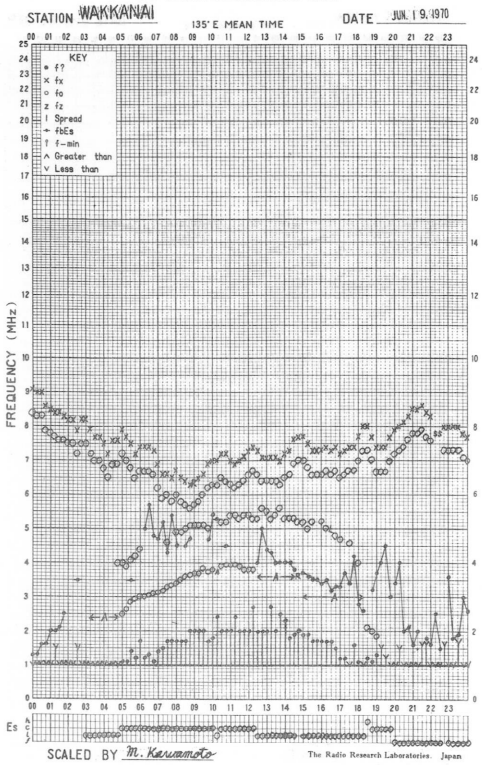

SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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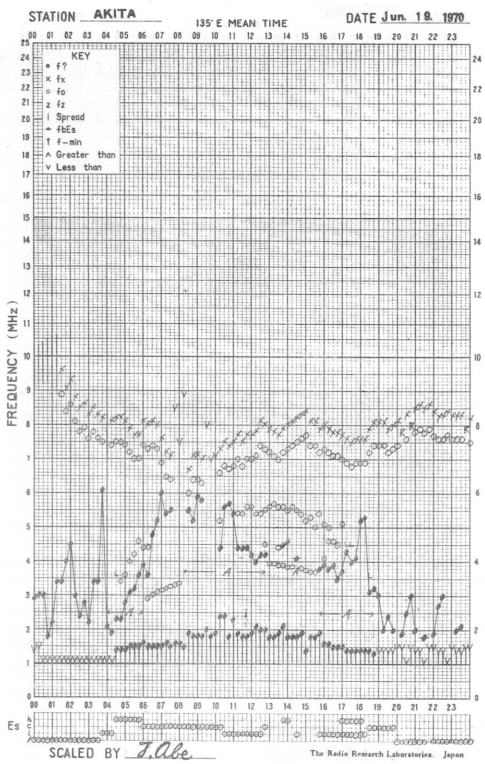

SCALED BY T. Abe

The Radio Research Laboratories. Japan

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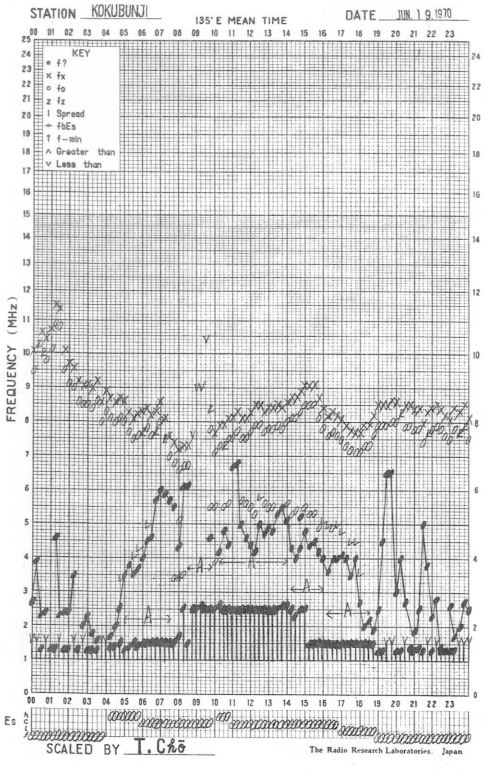

SCALED BY T. Chō

The Radio Research Laboratories. Japan

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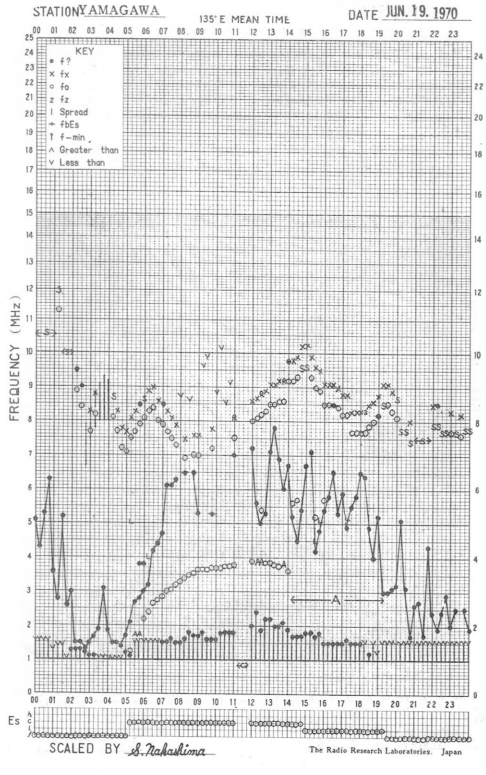
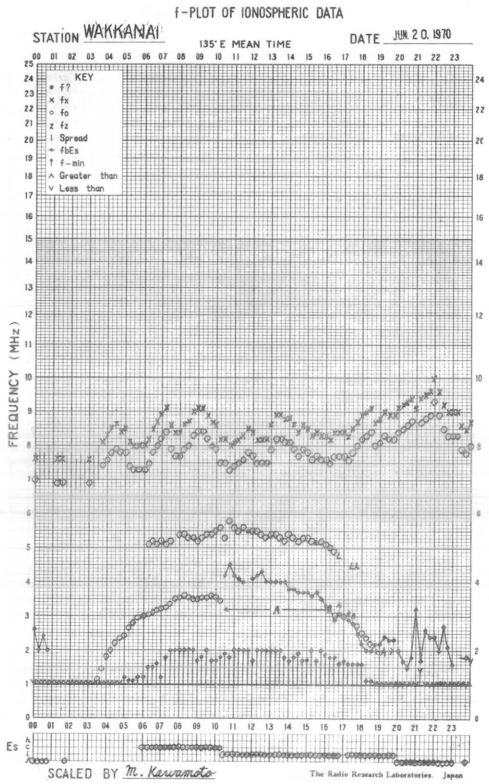


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan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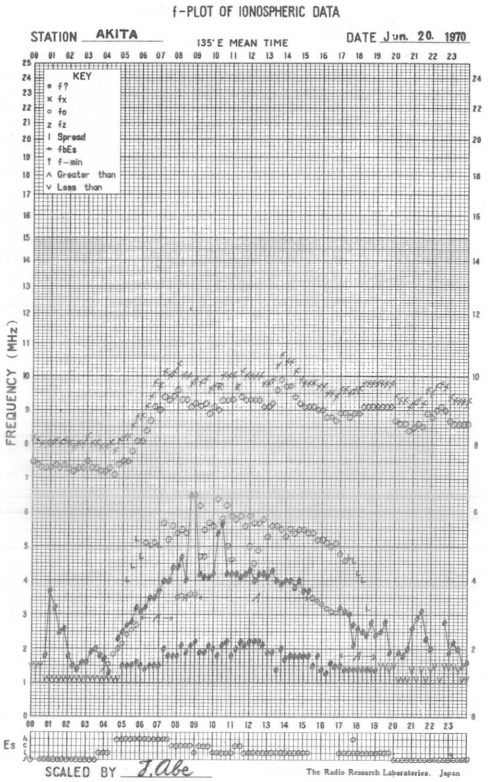
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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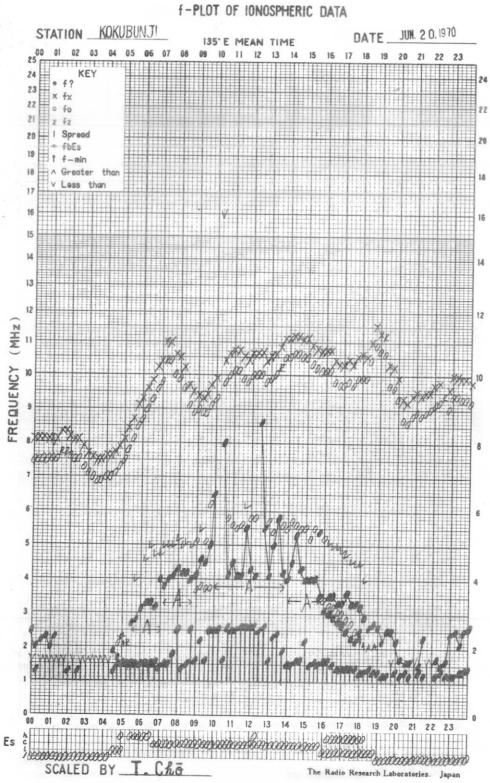
SCALED BY T. Abe
The Radio Research Laboratories. Japan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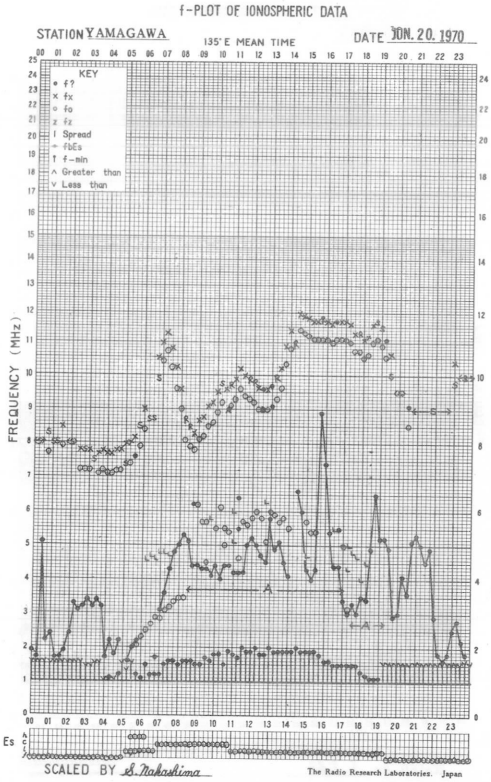
The Radio Research Laboratories. Japan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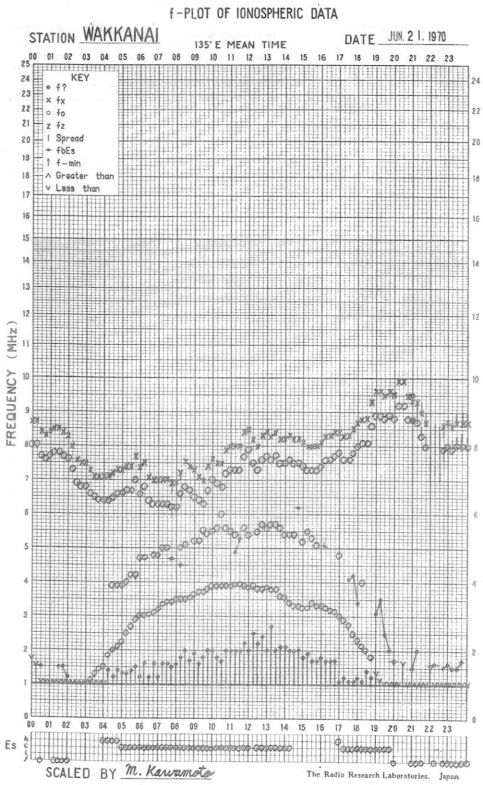
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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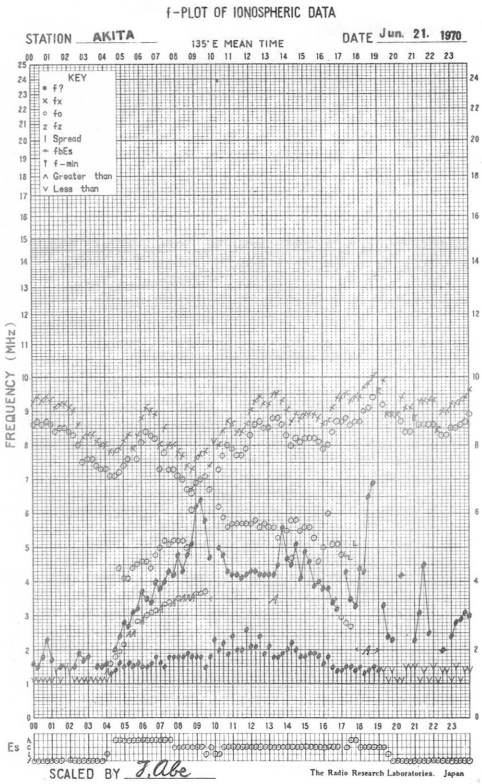
SCALED BY M. Kawamoto
The Radio Research Laboratories. Japan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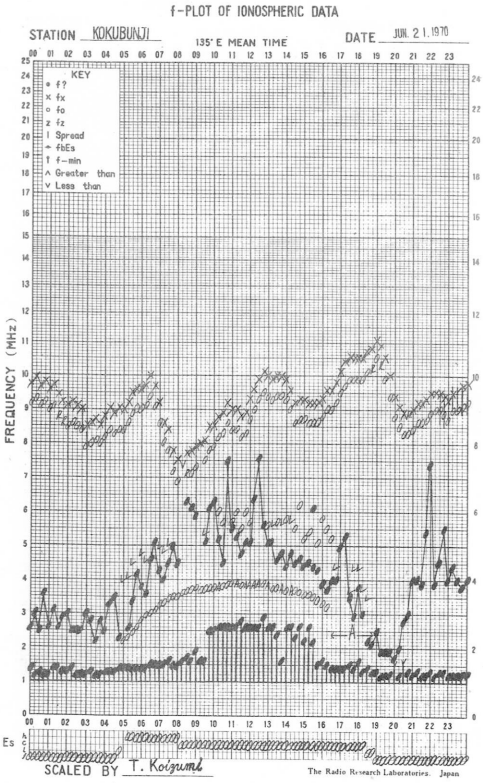
The Radio Research Laboratories. Japan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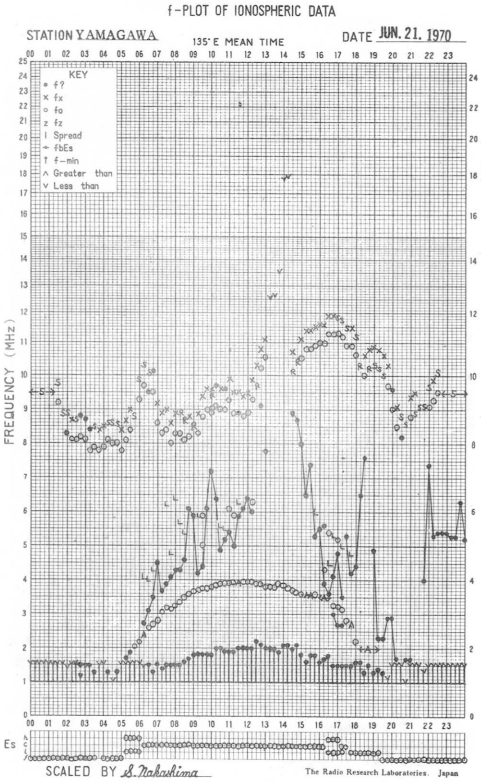
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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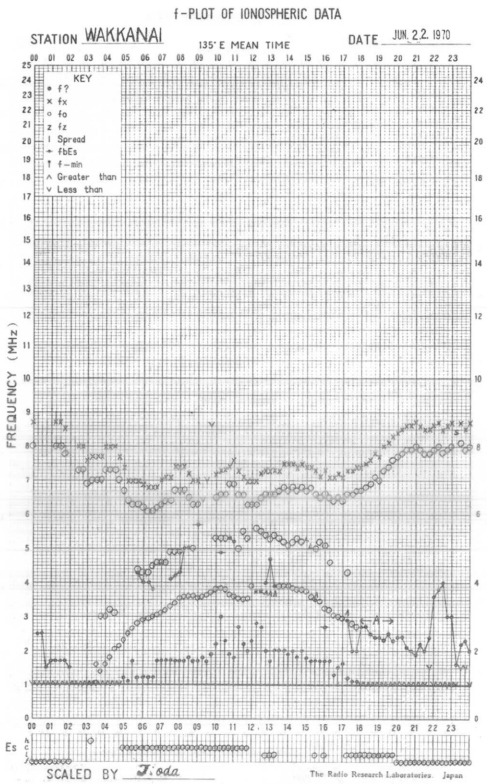
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan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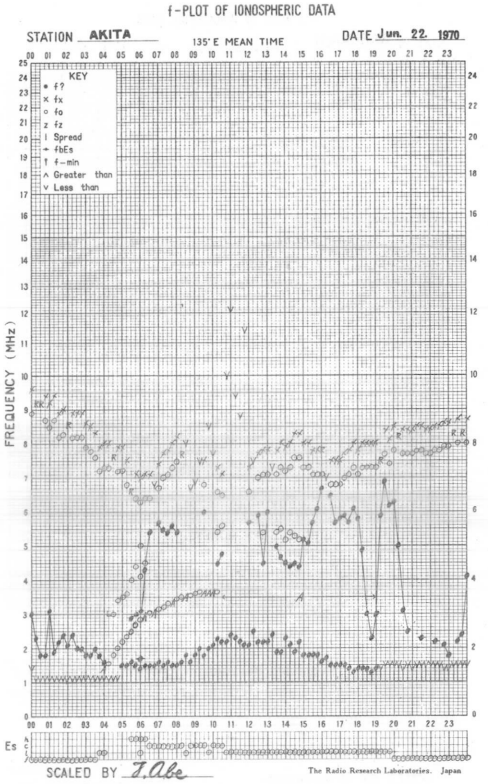
SCALED BY T. Oda
The Radio Research Laboratories. Japan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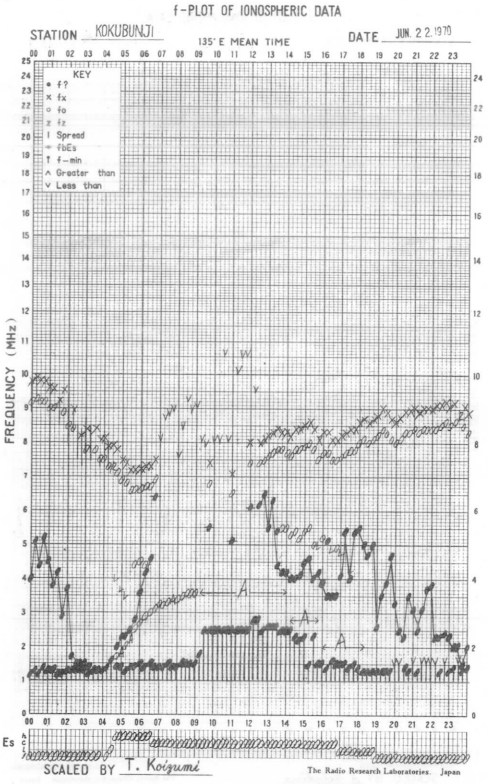
SCALED BY T. Abe
The Radio Research Laboratories. Japan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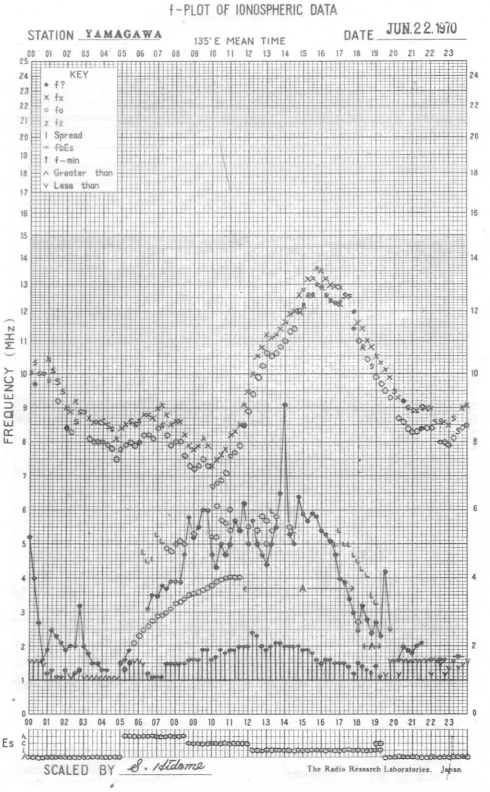
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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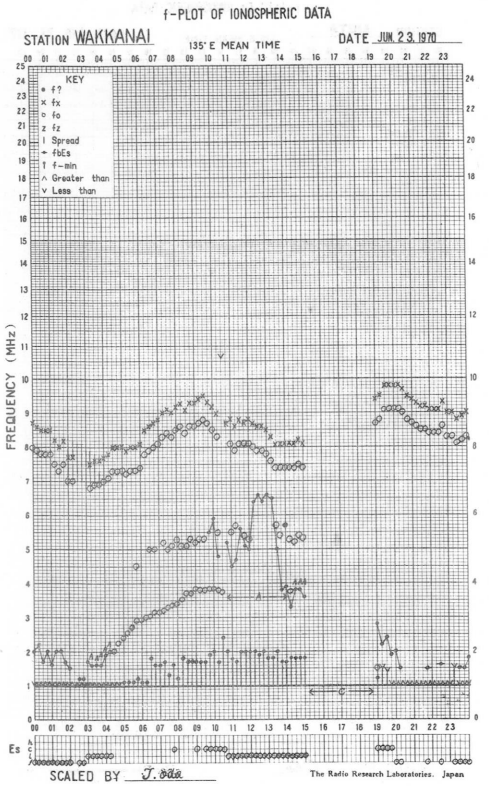
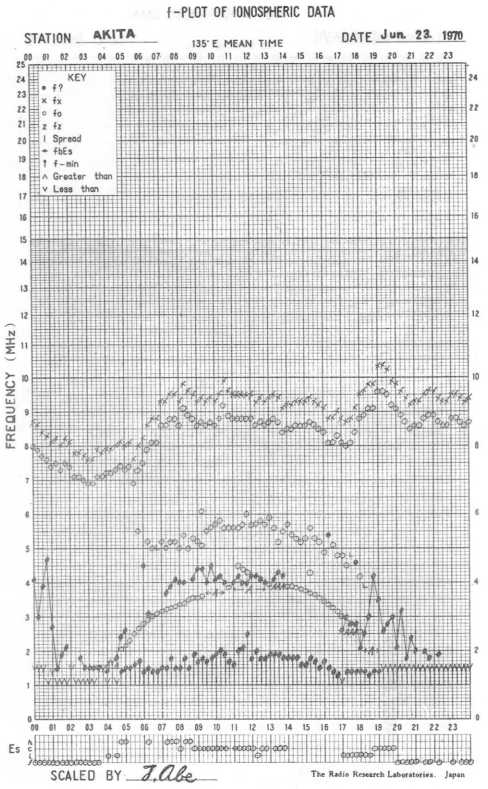
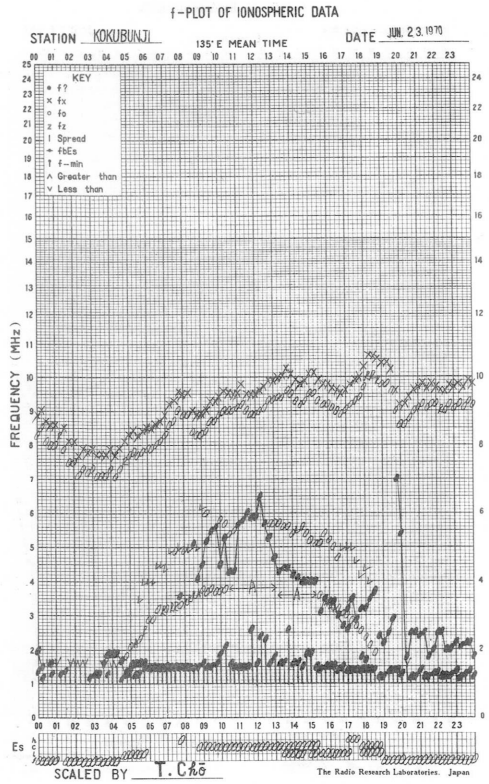
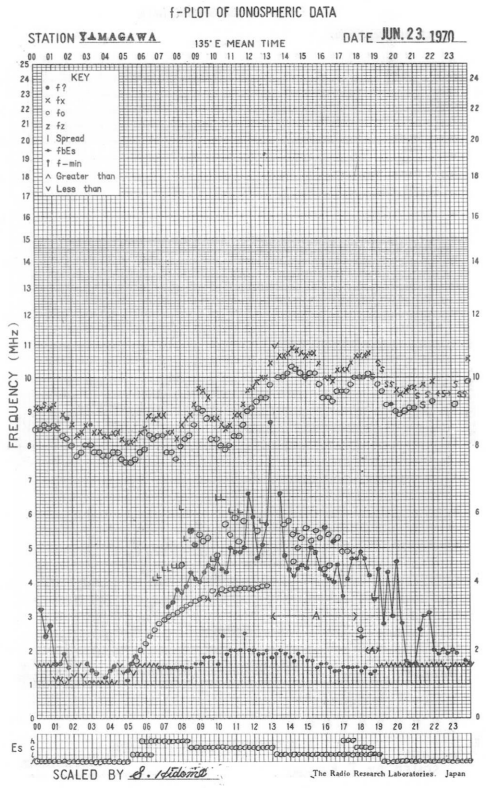
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JUN. 23. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135°E MEAN TIME
DATE Jun. 23. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135°E MEAN TIME
DATE JUN. 23. 1970
KEY
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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135°E MEAN TIME
DATE JUN. 23. 1970
KEY
FREQUENCY (MHz)
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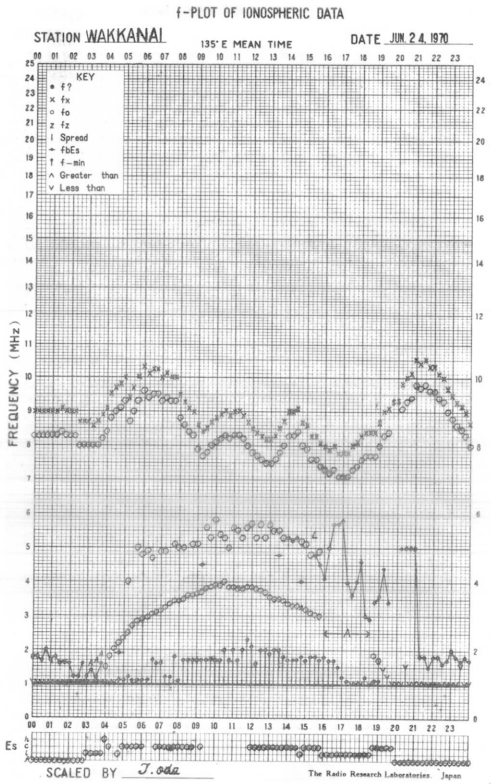
SCALED BY S. Hitomi
The Radio Research Laboratories. Japan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STATION WAKKANAI
135° E MEAN TIME
DATE JUN. 24. 1970
KEY
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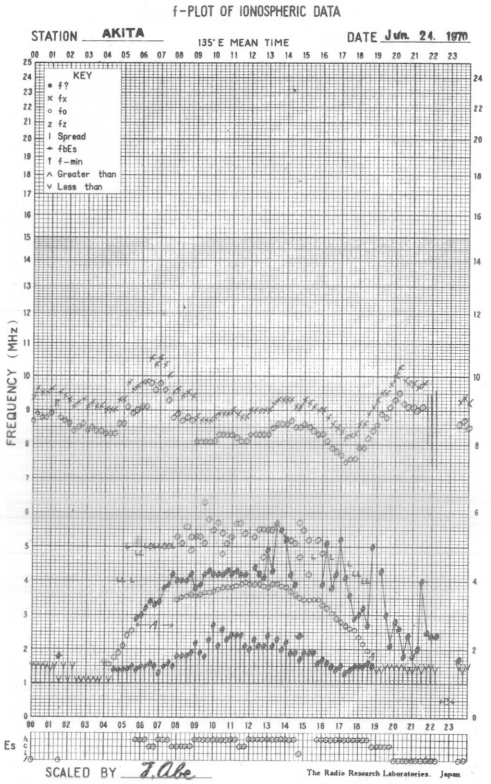
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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DATE Jun. 24. 1970
KEY
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○ fo
z fz
| Spread
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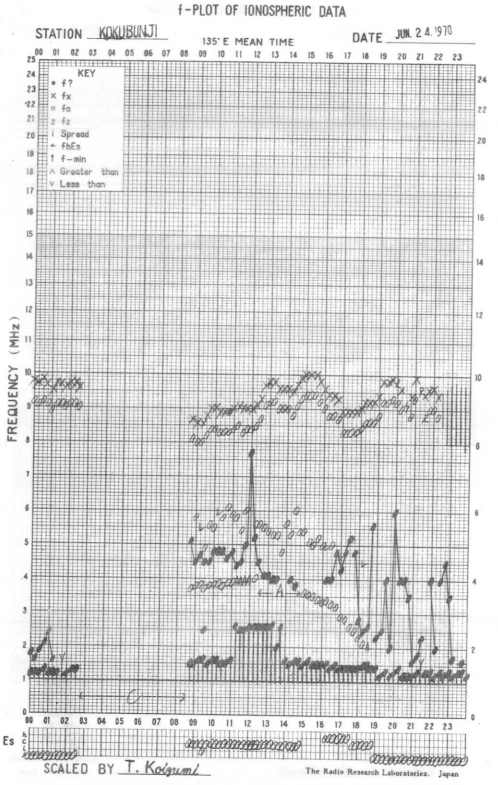
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE JUN. 24. 1970
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○ fo
z fz
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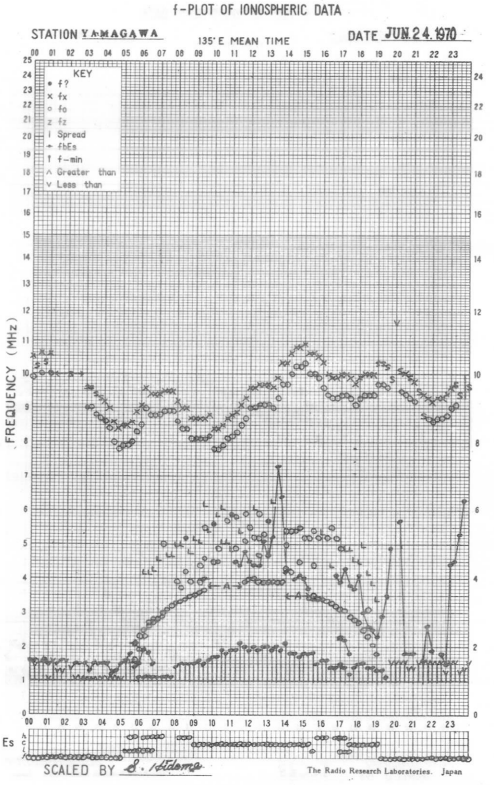
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koigumi
The Radio Research Laboratories. Japan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STATION YAMAGAWA
135° E MEAN TIME
DATE JUN. 24. 1970
KEY
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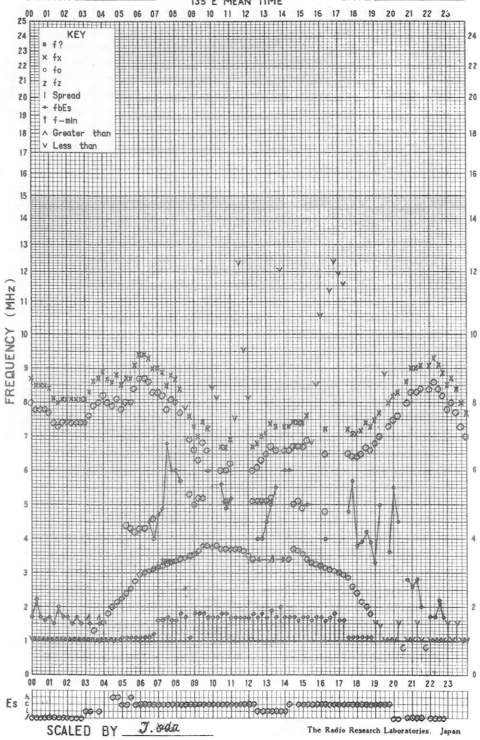
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Shidama
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 25, 1970



SCALED BY J. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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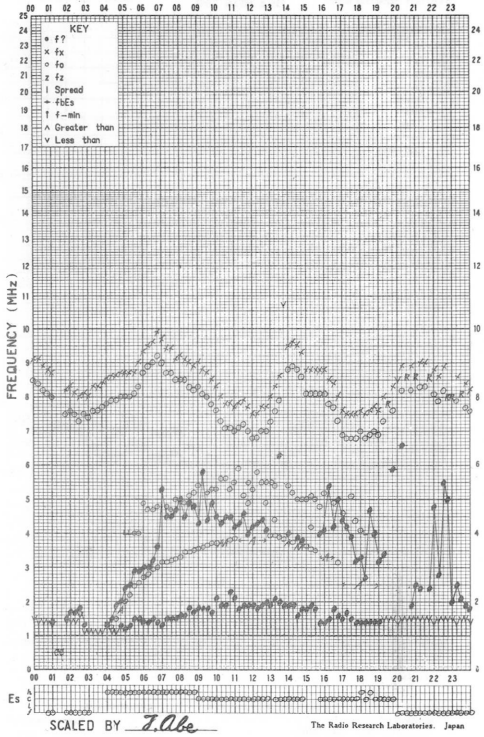
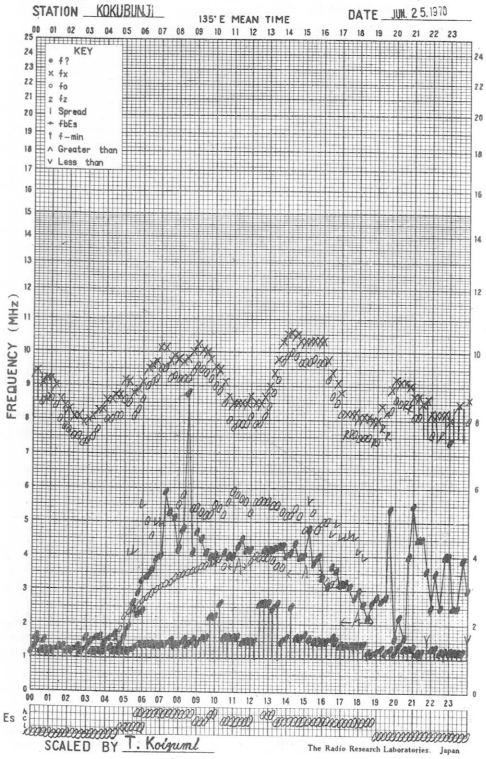


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JUN. 25. 1970

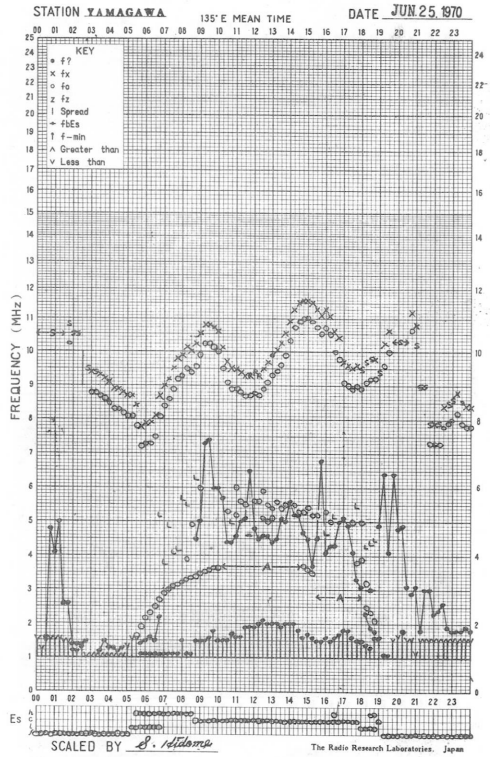


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

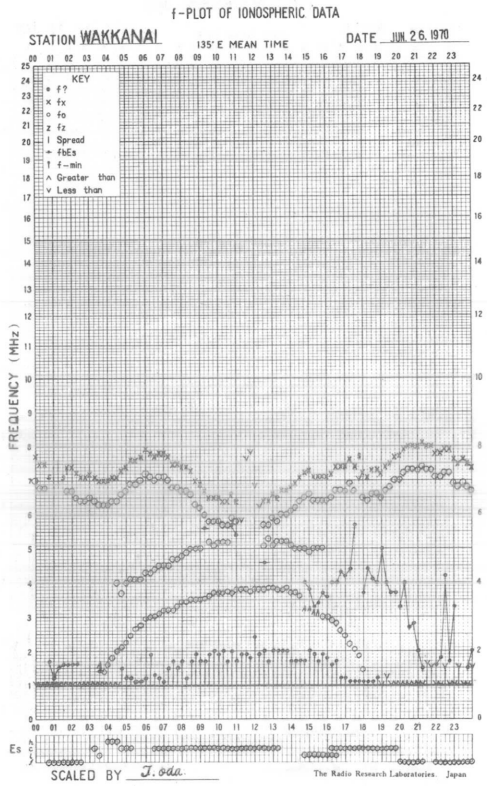
f-PLOT OF IONOSPHERIC DATA

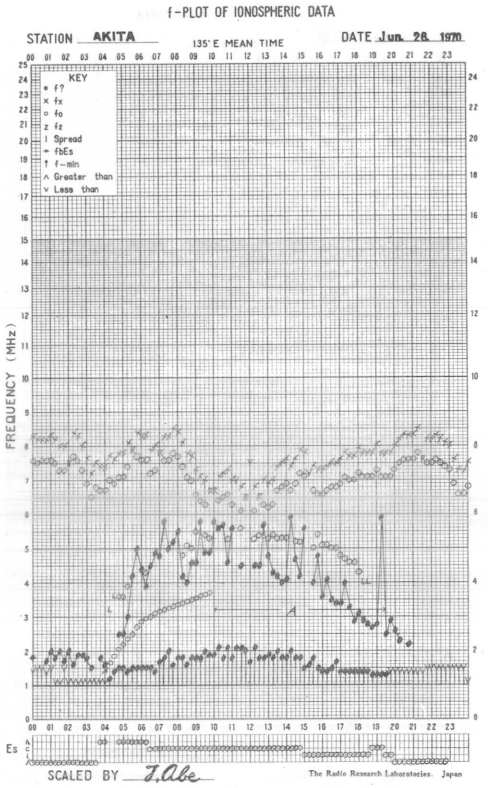
STATION YAMAGAWA 135°E MEAN TIME DATE JUN. 25, 1970

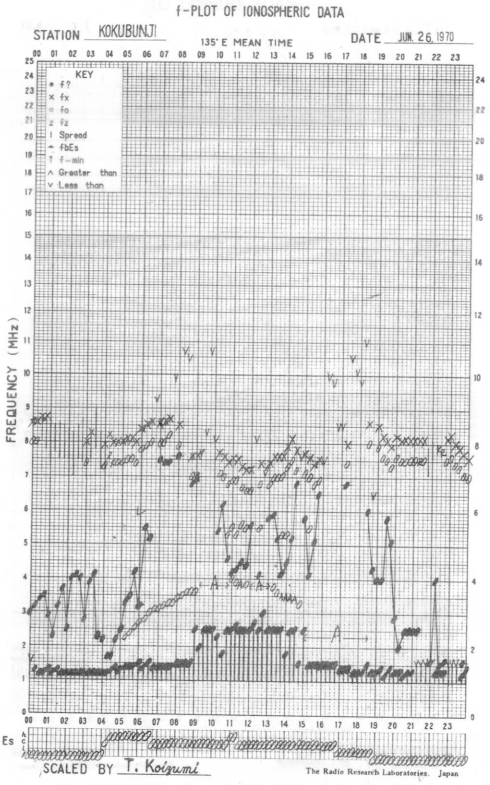


SCALED BY S. Hitomi

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135° E MEAN TIME
DATE JUN. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION AKITA
135° E MEAN TIME
DATE Jun. 26. 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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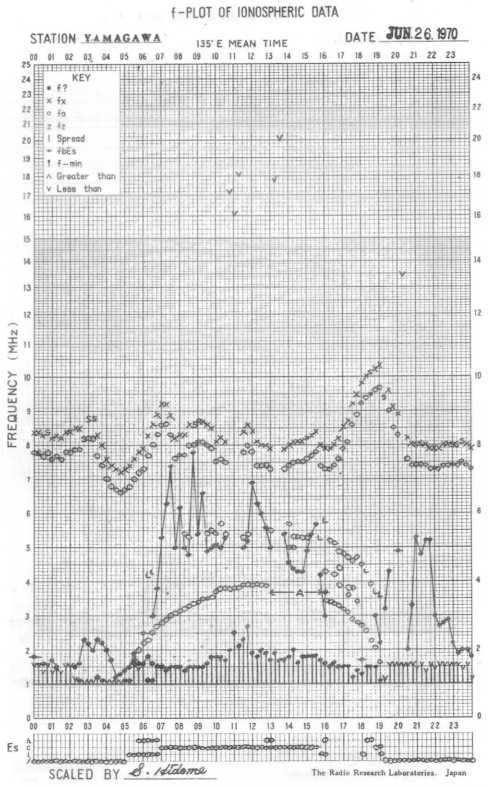
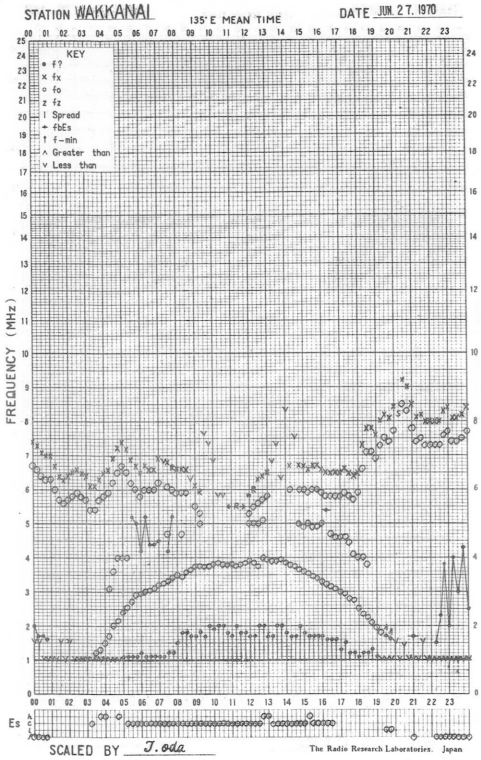
STATION KOKUBUNJI
135° E MEAN TIME
DATE JUN. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koigumi
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
135° E MEAN TIME
DATE JUN. 26. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
← fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Hidema
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN 27. 1970

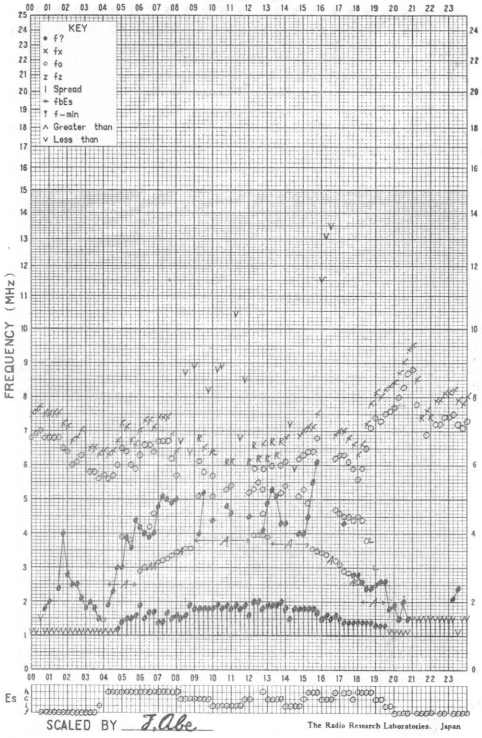


SCALED BY T. Oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jun. 27. 1970

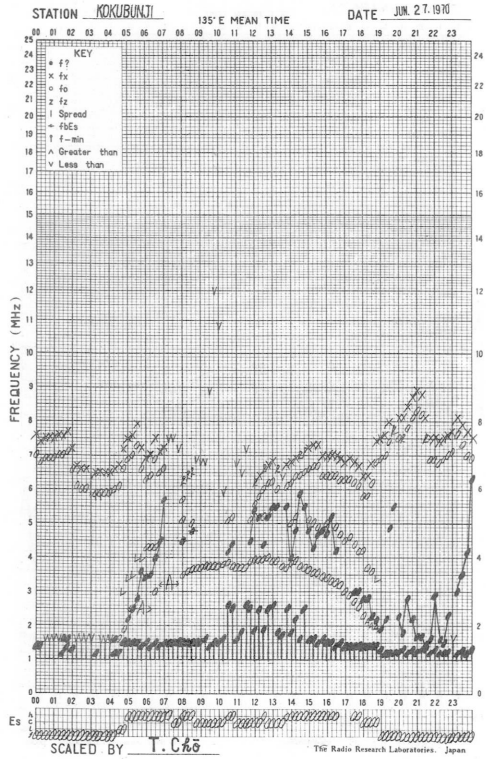


SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JUN. 27. 1970

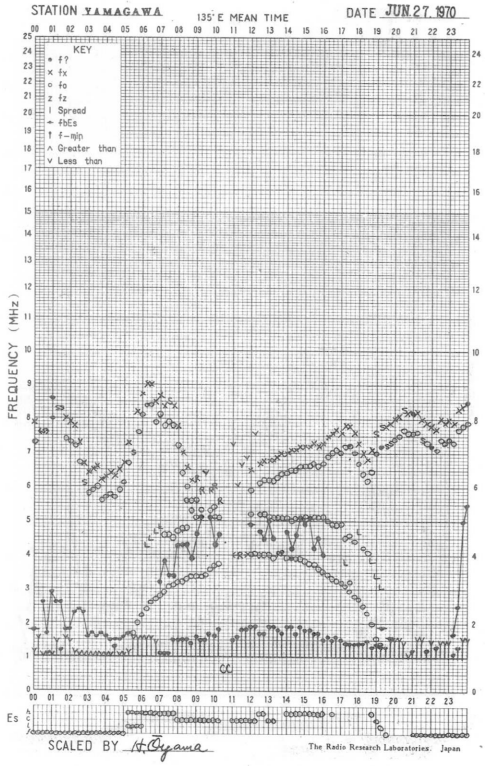


SCALED BY T. Cho

The Radio Research Laboratories. Japan

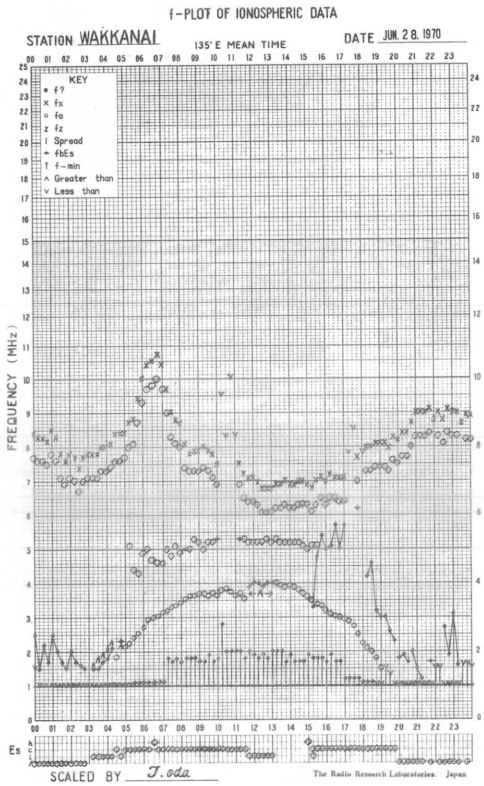
f-PLOT OF IONOSPHERIC DATA

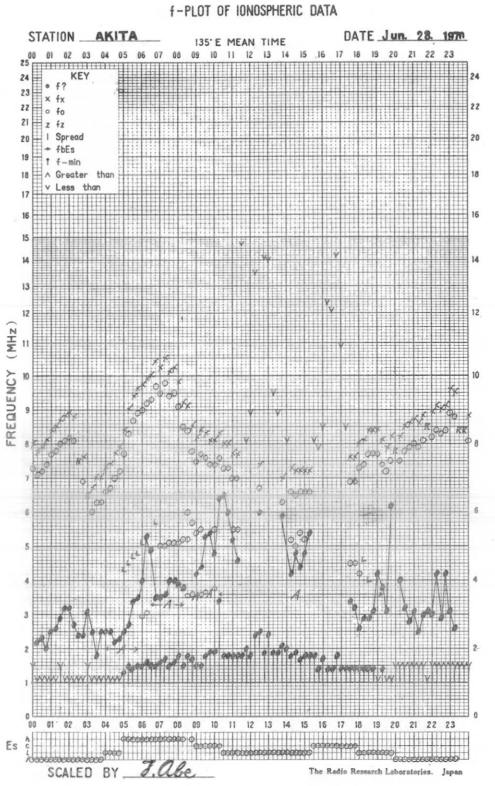
STATION YAMAGAWA 135°E MEAN TIME DATE JUN. 27. 1970



SCALED BY H. Oyama

The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION WAKKANAI
135°E MEAN TIME
DATE JUN. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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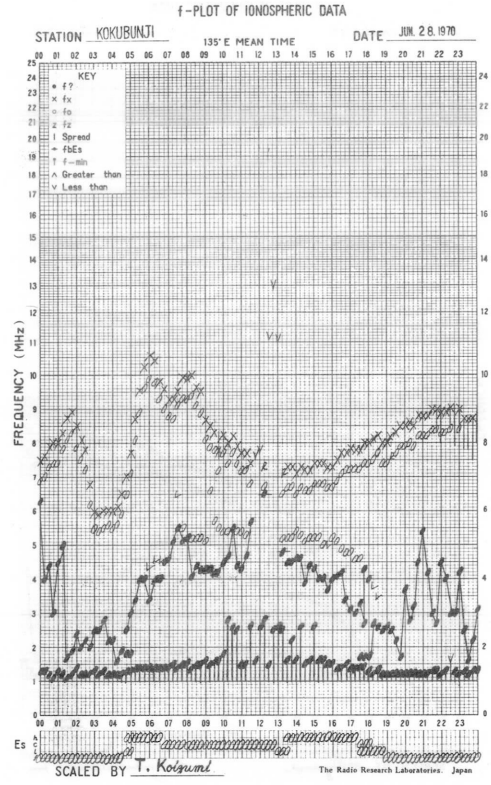
135°E MEAN TIME
DATE Jun. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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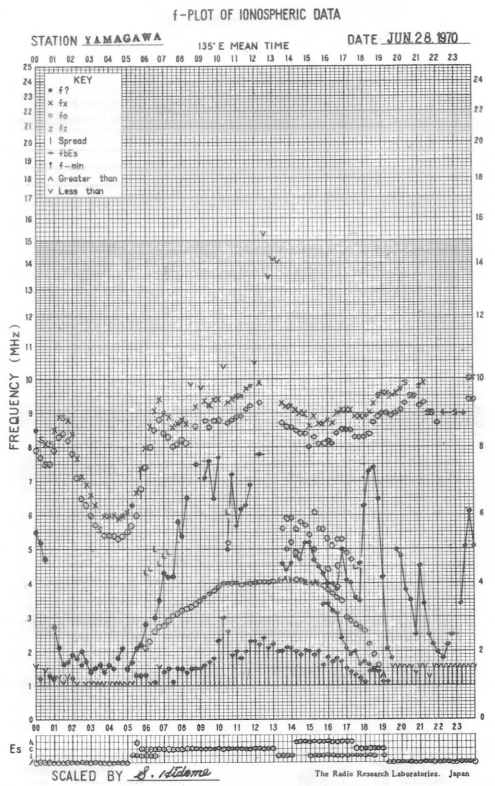
STATION KOKUBUNJI
135°E MEAN TIME
DATE JUN. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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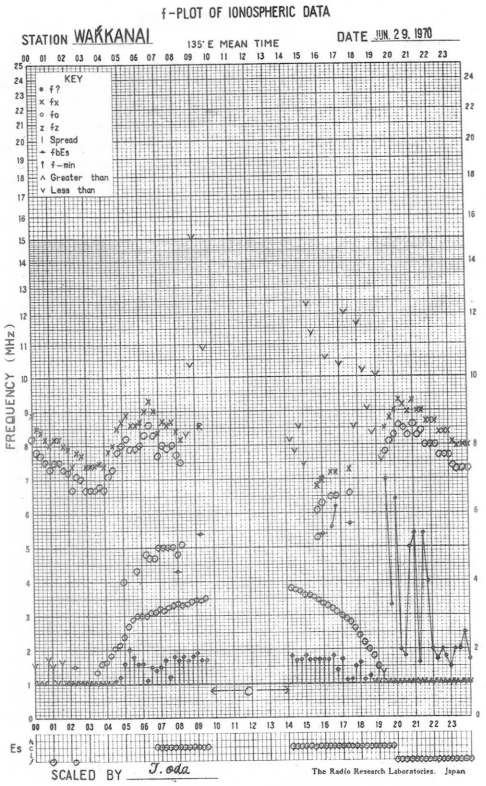
135°E MEAN TIME
DATE JUN. 28. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
⌁ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Hidema
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
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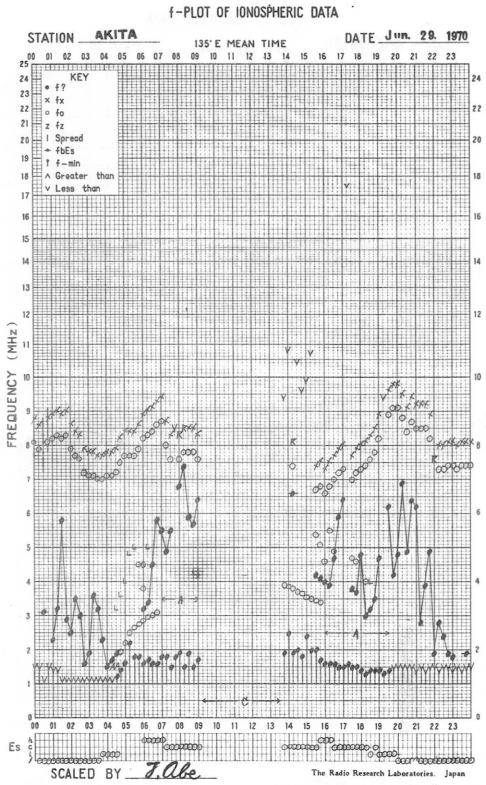
135° E MEAN TIME
DATE JUN. 29. 1970
KEY
* f?
× fx
○ fo
z fz
! Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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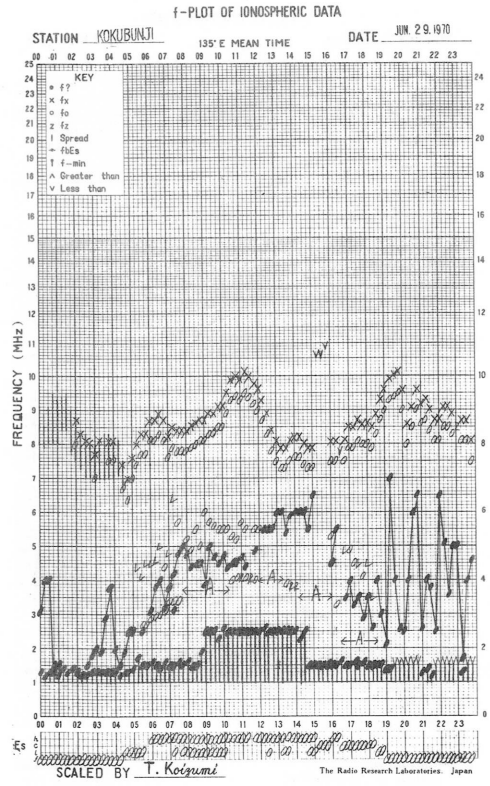
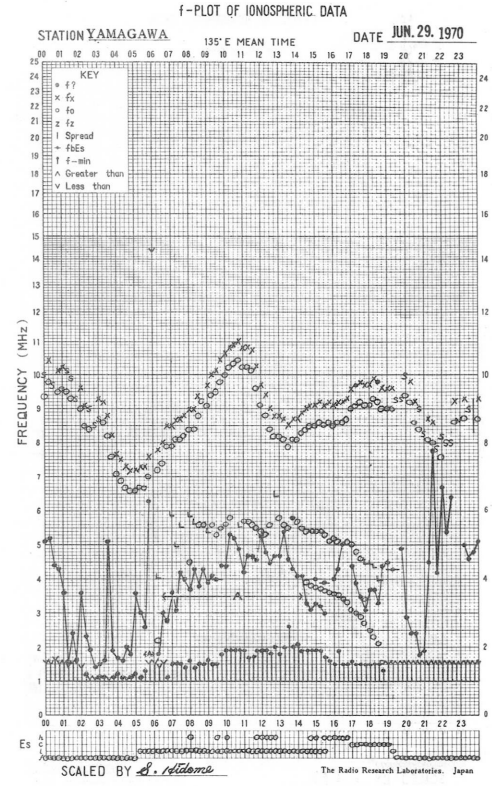
STATION AKITA
135° E MEAN TIME
DATE Jun. 29. 1970
KEY
* f?
× fx
○ fo
z fz
! Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION KOKUBUNJI
135° E MEAN TIME
DATE JUN. 29. 1970
KEY
* f?
× fx
○ fo
z fz
! Spread
– fbEs
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY T. Koizumi
The Radio Research Laboratories. Japan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○ fo
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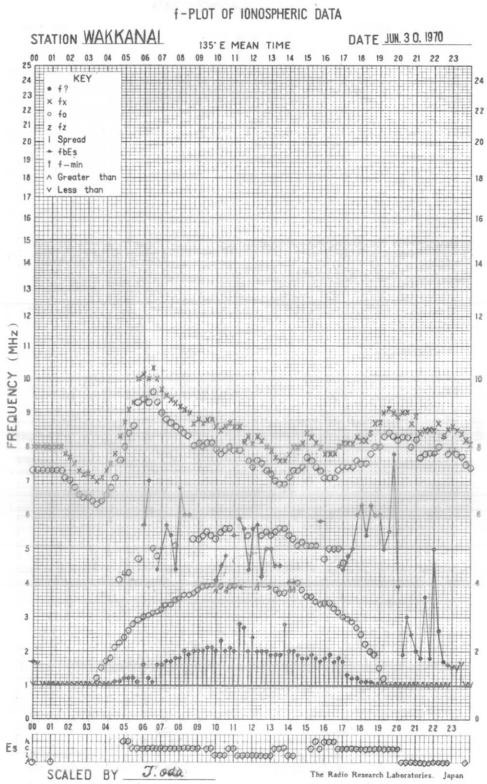
↑ f-min
^ Greater than
v Less than
FREQUENCY (MHz)
Es
SCALED BY S. Ishioka
The Radio Research Laboratories. Japan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DATE JUN. 30. 1970
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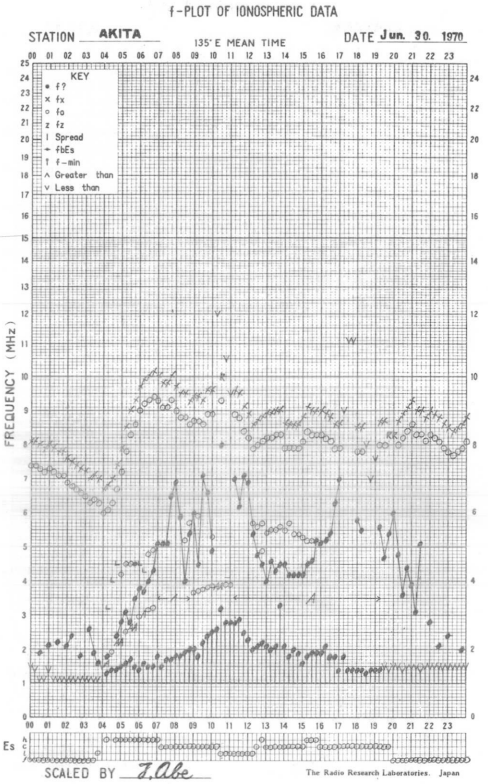
× fx
○ fo
z fz
| Spread
→ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Oda
The Radio Research Laboratories. Japan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○ fo
z fz
| Spread
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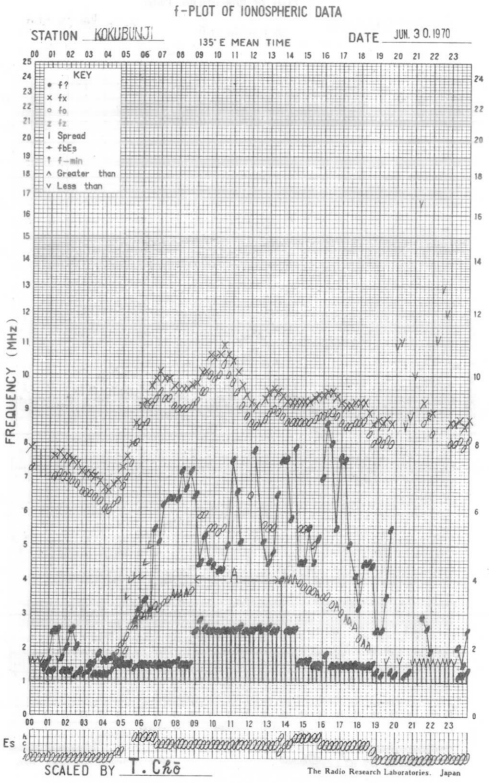
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Abe
The Radio Research Laboratories. Japan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DATE JUN. 30. 1970
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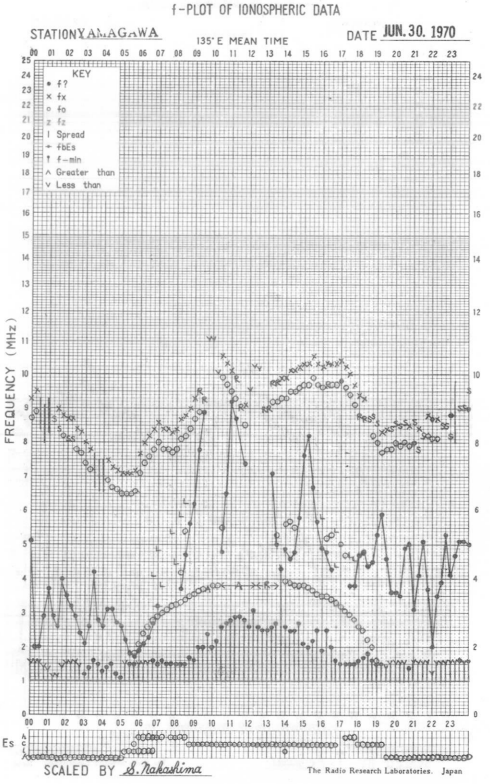
× fx
○ fo
z fz
| Spread
→ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY T. Cho
The Radio Research Laboratories. Japan


f-PLOT OF IONOSPHERIC DATA
STATION YAMAGAWA
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DATE JUN. 30. 1970
KEY
* f?
× fx
○ fo
z fz
| Spread
→ fbEs
↑ f-min
∧ Greater than
∨ Less than
FREQUENCY (MHz)
Es
SCALED BY S. Nakashima
The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

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

	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$					Variability 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	6	6	5	7	6	0	0	0	0	0
2	8	7	8	5	7	0	0	0	0	0
3	5	5	6	6	5	0	0	0	0	0
4	5	6	6	6	6	0	0	0	0	0
5	6	6	7	6	6	0	0	0	0	0
6	5	6	6	7	6	0	0	0	0	0
7	6	6	6	6	6	0	0	0	0	0
8	6	6	6	6	6	0	0	0	1	0
9	6	5	6	6	6	0	0	0	0	0
10	6	5	5	6	6	1	0	0	1	0
11	5	6	6	7	6	0	0	1	0	0
12	6	5	5	7	6	0	1	1	1	0
13	6	6	6	7	6	1	1	1	0	1
14	5	11	28	9	13	0	0	1	0	1
15	7	10	17	18	11	1	1	2	1	1
16	19	20	20	17	19	1	1	1	1	1
17	17	19	33	13	22	1	1	1	1	1
18	11	9	7	6	10	1	1	1	1	1
19	6	11	11	8	8	1	1	1	1	1
20	7	6	5	5	7	1	1	0	1	1
21	5	6	5	5	5	0	0	1	1	0
22	7	5	5	5	6	0	0	0	0	0
23	5	5	5	5	5	0	0	0	0	0
24	5	6	6	5	6	0	0	0	0	0
25	6	5	6	5	6	0	0	0	0	0
26	5	5	5	5	5	0	0	0	0	0
27	5	5	5	5	5	1	0	0	1	0
28	6	6	7	6	6	0	0	0	1	0
29	6	9	10	8	8	1	1	1	0	1
30	10	10	12	7	10	1	0	0	0	0

Note No observations during the following periods:

7th 0538- 0630
29th 0115- 0215

Flux Density

Month: June 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	32	30	29	32
2	29	28	32	29	29
3	30	32	30	27	30
4	28	29	28	30	28
5	30	29	29	30	30
6	29	29	28	28	29
7	30	29	29	29	29
8	28	28	30	31	29
9	28	27	27	30	28
10	29	29	30	32	29
11	30	31	29	31	30
12	31	32	32	30	31
13	32	32	32	33	31
14	33	36	35	33	34
15	34	36	35	34	34
16	38	36	34	-	32
17	33	34	37	33	35
18	31	32	30	31	32
19	31	31	28	32	30
20	34	33	30	30	32
21	30	29	31	29	30
22	33	33	29	28	31
23	30	29	28	27	29
24	29	27	27	33	28
25	33	31	32	29	32
26	28	29	28	30	28
27	30	30	29	28	29
28	30	29	28	30	29
29	31	34	31	34	31
30	33	32	32	31	33

Note No observations during the following periods:

6th 2310- 7th 0020
16th 1920- 17th 0005
29th 0215- 0300

Distinctive Events

(single-frequency observations)

Month: June 1970
Observing station: Hiraiso
Normal observing period: 1920 - 1000 (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	0217.0	0217.2	2.0	C	240	90	
	100	0217.2	0217.9	1.5	C	>450	>170	
2	200	0624.5	0633.0	19.5	C	130	20	
	100	0622	0639.3	123	C	300	20	
	500	0745.5	0750.7	9.0	C	60	20	
3	200	2034.0	2034.2	5.0	C	150	20	
	100	2033.5	2034.0	6.5	C	360	100	
8	200	0303.5	-	7.0	C	(20)	(2)	* 0304.5-06
	100	0306.0	0306.5	4.0	C	80	30	
	200	1944.0	1944.0	1.0	C	1000	290	
		2109.3	2109.8	0.7	C	280	80	
9	200	2222.6	2222.7	0.5	C	210	80	
	100	2223.0	2223.3	1.0	C	230	100	
10	200	0127.0	0127.1	0.5	C	100	50	
	100	0127.0	0127.5	1.0	C	>250	>140	
	200	0225.6	0225.8	1.5	C	190	40	
	100	0226.0	0227.5	1.7	C	>270	>110	
		0244.5	0244.5	4.0	C	50	5	
	200	2222.5	2222.5	0.5	C	20	10	
	100	2223.0	2223.0	1.0	C	310	140	
11	200	0106.0	0107.0	4.0	C	140	40	
	100	0106.0	0106.3	5.0	C	310	25	
	200	0633.0	0633.0	1.5	C	330	50	
12	200	0308.5	0310.5	2.5	C	230	25	
	500	0521.5	0521.5	0.5	C	50	20	
	200	0521.0	0521.0	0.4	C	760	330	
	500	0524.5	0524.7	1.0	C	50	15	
	200	0524.0	0524.1	1.0	C	840	35	
	500	0529.3	0530.0	1.0	C	570	210	
	200	0528.8	0529.0	1.0	C	360	50	
		0824.8	0825.8	2.0	C	160	35	
	100	0825.5	0826.4	1.5	C	60	10	
	200	1925.0	1925.0	1.5	C	410	25	
	100	1925.0	1925.4	5.0	C	>400	>170	
	200	1937.0	1937.5	3.0	C	480	55	
	100	1937.0	1939.0	5.0	C	>400	>200	
	200	2111.5	2111.5	0.5	C	530	55	
	100	2111.7	2112.0	0.8	C	390	165	
		2202.2	2202.4	1.0	C	>400	>230	
		2245.0	2245.7	2.0	C	>400	>190	

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
13	500	0227.0	0302.6	40.0	C	240	20	1st peak
			0312.5		C	170		2nd peak
	200	0227.8	0227.8	1.0	C	280	40	
	100	0227.8	0227.9	1.2	C	390	290	
	200	0259.0	0300.0	5.0	C	1000	30	
	100	0259.5	0300.0	15.5	C	390	45	
	500	0412.0	0414.0	3.0	C	560	140	
	200	0412.0	0416.0	5.5	C	200	5	
	100	0413.5	0413.8	1.5	C	>400	>240	
		0416.0	0416.4	1.5	C	>400	>190	
	500	0442.4	0444.4	13.6	C	(280)	(25)	* 0444.5-45.7
	200	0447.0	0447.0	1.0	C	770	230	
	100	0447.0	0447.5	3.0	C	400	170	
	500	0504.5	0514.0	14.5	C	140	30	
		0702.5	0702.6	8.0	C	400	20	
	200	0702.0	0704.0	7.0	C	1100	70	
	100	0702.5	0703.5	5.5	C	>390	>220	
	200	0754.0	0756.0	3.5	C	(90)	(10)	* 0704.8-06.0
	100	0754.0	0755.0	3.0	C	390	160	
	200	0819.5	0823.0	5.5	C	330	25	
	100	0817.0	0820.3	5.5	C	>390	>250	
		0822.8	0823.2	2.2	C	>390	>220	
		0922.4	0922.9	2.0	C	>270	>150	
		2102.0	2102.4	1.0	C	300	120	
	500	2209.5	2209.7	2.5	C	160	20	
	200	2209.0	2210.5	2.0	C	220	90	
	100	2210.3	2211.0	1.0	C	70	50	
14	500	0017.7	0018.0	1.3	C	590	220	
	200	0018.0	0018.0	1.0	C	110	35	
	100	0018.0	0018.8	3.0	C	50	15	
	500	0216.0	0217.4	3.5	C	190	35	
		0220.5	0222.0	2.5	C	80	30	
	100	0721.2	0721.5	2.0	C	>250	>85	
	500	2310.8	2310.8	1.0	C	360	190	
19	500	0104.0	0105.0	3.0	C	120	20	
21	200	2327.8	2328.0	1.0	C	170	55	
	100	2333.3	2333.3	2.0	C	390	60	
23	200	0031.5	0032.0	1.5	C	1100	560	
	100	0031.7	0032.5	3.3	C	300	170	
25	200	0716	0745	43	RF	15	5	
	100	0710	0745	90	RF	35	20	
26	100	0130.5	0131.3	1.0	C	>390	>75	
27	500	0813.7	0814.3	1.0	C	390	120	
		2119.3	2120.7	2.7	C	420	160	
	200	2119.4	2119.5	2.5	C	470	10	
	100	2119.5	2119.7	1.7	C	340	10	

Date	Frequency	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$		Remarks
	MHz	UT	UT	minutes		peak	mean	
27	200	2213.0	2213.2	1.5	C	200	25	
	100	2212.6	2213.0	3.0	C	50	10	
	200	2310.8	2312.5	3.2	C	190	65	
	100	2310.5	2312.4	3.0	C	> 510	> 220	
	200	2317.0	2318.0	3.5	C	150	15	
	100	2316.7	2318.3	2.0	C	180	55	
28	500	0103.5	0107.0	6.5	C	900	180	
	200	0103.5	0106.0	7.0	C	420	55	
	100	0101.5	0106.3	7.0	C	> 400	> 170	
	200	0110	0121	38	RF	10	5	
	100	0108	0121	36	RF	40	15	
	200	0259.8	0302.0	8.0	C	550	10	
	100	0259.0	0302.3	9.0	F	320	-	
		0313	0323	35	RF	20	5	
	500	1954.6	2009.8	36.9	C	300	30	
	200	1954.5	2002.0	47.0	C	340	15	
	100	1953.0	2001.5	38.0	C	> 390	> 100	1st peak
			2017.0			60		2nd peak
30	200	0006.0	0006.0	2.0	C	2600	340	
	100	0004.5	0005.0	2.0	C	> 400	> 300	
	200	0017.0	0017.0	1.0	C	20	10	
	100	0017.0	0017.6	1.0	C	> 400	> 130	
	500	0023.5	0023.8	2.0	C	260	80	
	200	0020.0	0023.5	5.5	C	470	15	
	100	0021.0	0024.0	4.5	C	60	20	
	200	0026.0	0027.2	2.0	C	250	15	
	100	0026.0	0026.5	2.0	C	400	150	
	200	0046.0	0049.6	3.5	C	30	10	
	100	0047.0	0048.5	3.5	C	30	20	
	200	0124.0	0125.7	4.0	C	40	10	
	100	0124.0	0125.4	4.0	C	280	50	
		0140	0250	180	RF	60	20	
	500	0213.0	0213.7	2.0	C	490	120	
	200	0212.5	0214.5	2.5	C	25	10	
	100	0212.5	0213.5	3.0	C	250	40	
	500	0706	0711.5	42	RF	80	15	
	200	0709.5	0714.5	5.0	C	180	80	
	100	0709.5	0710.6	5.0	C	> 400	> 170	
	200	0714	0730	> 140	RF	110	(25)	sunset
	100	0715	0735	78	RF	100	50	

* Interrupted by calibration.

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

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

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

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

RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

Jun. 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	3+	4 4 3	3 3 4 3	(4)(4) - (3)	4 4 4 5	N U U U	03.05	21xx	60γ
2	4-	3 4 4	3 4 4 3	3 (4) - 4	3 4 4 4	U U U U			
3	4-	3 3 4	(4) 4 4 3	4 4 - (4)	4 4 4 4	N N N N			
4	3+	(4) 3 4	3 3 4 3	3 (3) - (3)	4 4 (3) 4	N N N N			
5	4-	4 3 (4)	3 (4) 4 4	3 4 - 4	4 4 4 4	N N N N			
6	4-	4 4 4	4 3 4 4	(3) 4 - -	4 4 4 4	N N N N			
7	5-	4 4 3	5 5 5 5	(5) - - -	4 4 5 4	N N N N			
8	4-	(5) 4 (4)	4 4 4 3	3 (3) - (3)	4 4 4 4	N N N N			
9	4o	3 5 (4)	4 5 5 4	3 (4) - 4	5 4 4 4	N N N N			
10	4-	4 4 4	4 4 4 3	4 4 - (3)	4 4 4 4	N N N N			
11	4+	4 4 (5)	(4) 5 (5)(4)	(4) 4 - 4	4 4 4 4	N N N N			
12	4+	4 5 4	4 5 5 5	(4)(4) - 4	4 4 4 4	N N N N			
13	4-	4 4 4	4 4 4 (3)	3 3 - -	(3) 4 4 3	N N N N			
14	4o	4 4 (5)	3 5 4 4	(4) - - -	3 4 4 4	N N N N			
15	4o	4 4 4	3 (5) 4 4	4 (4) - 4	3 4 4 4	N N N N			
16	4o	4 4 4	4 4 4 5	3 4 - 5	4 4 4 4	N N N N			
17	4+	4 5 (4)	4 5 (5) 5	3 4 - 4	4 5 4 4	N N N N	07.51	---	
18	4o	4 4 4	5 3 4 3	4 5 - 3	4 4 4 4	N N U U	08.28	---	86γ
19	4-	4 4 4	(3) 3 4 4	3 4 - 4	4 4 4 4	U N N N	---	09xx	
20'	4-	3 3 C	4 4 4 3	4 4 - -	4 4 4 (4)	N N U U			
21	3o	2 3 (4)	(3) 3 4 3	(3) - - -	4 4 4 4	U U U U			
22	4+	(5) 5 5	3 3 4 5	4 3 - 5	4 4 4 4	N N N N			
23'	5-	4 4 4	5 5 4 5	5 4 - 5	4 4 4 4	N N N N			
24	5-	4 4 5	5 5 (5) 5	5 3 - 5	(4) 4 4 5	N N N N			
25	4+	4 5 5	5 4 4 3	4 5 - 3	4 4 4 4	N N N N			
26	3+	4 4 4	3 3 3 (2)	3 5 - 3	3 4 4 4	N N N N			
27*	3o	3 3 3	(2) 2 3 (3)	3 (4) - -	3 3 3 3	N U U U	06.06	24xx	105γ
28	3o	(3) 3 3	3 3 4 3	(3) - - -	4 4 4 4	U U U U			
29	4o	3 3 (3)	4 5 (4) 5	4 5 - 4	4 4 4 4	N N N N			
30	4o	4 4 (4)	(4) 4 4 4	4 5 - 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.

Jun. 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							
7			8		22		07.06	38	S	2-		x	
12			7				03.17	23	Slow	1			
12			15'		5		06.20	45	Slow	2-	x	x	
12					6		06.43	21	Slow	1-			
12					6		11.39	13	S	1-		x	
12					11		14.42	20	Slow	1-			
13		9					01.40	20	Slow	1-			
13		4					02.43	15	Slow	1-		x	
13		13			6		03.41	27	Slow	1		x	
13					4		05.05	13	S	1-	x	x	
13					14		06.59	21	S	1	x	x	
13					22		12.30	13	S	2-		x	
13					4		12.54	16	Slow	1-		x	
13					15		13.25	66	G	1+	x		
13	10						21.18	12	Slow	1-	x		
13	23				23		22.03	32	S	2		x	
	16"												
13					7		22.38	32	S	1-			
14	x				36		00.12	28	S	3	x	x	
	23"												
14	12"	12					02.26	17	Slow	1-	x		
14	8"						03.04	26	Slow	1-			
14		x			8		04.13	13	S	1-			
14	26				46		05.06	20	S	3+		x	
14					13		05.28	48	Slow	1	x		
14					7		12.20	20	S	1-		x	
14					7		13.20	30	Slow	1-	x	x	
14	18"		x		15		17.10	10	S	2+		x	
14	11"		13		15		17.31	29	Slow	2-			
14	8"		15				20.58	12	S	2			
15						x	00.14	28	S	x			
15	25				x	x	01.43	22	Slow	2			
	15"												
15	30	10			x	x	02.38	50	Slow	3			
	26"												
15					14		13.17	30	S	1	x	x	
16	12"						04.30	25	S	2			
16					11		05.40	40	S	1	x	x	
16					18		06.58	28	S	1+		x	
17	22	x	x		26		01.25	43	S	2+		x	
	18"												
18	25		x	x			01.42	55	S	2	x	x	
20	18		13				02.30	30	S	2-		x	
28					19		01.06	37	S	2-	x	x	
28	35				5		20.00	48	S	2+		x	
29					13		12.11	52	S	1		x	
30		x			11		04.35	17	Slow	1			

INUBO

1970 Jun.	S P A								Remarks
	Phase Advance(degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
1				—	7	0013	0036	0018	
1	23		12	—	40	0114	0210	0122	
1				16	7	0319	0356	0325	
1				20		0744	0827	0800	X
1	26					0936	1030	0947	
2	30			64	15	0622	0830	0650	X
5		19			33	1915	2034	1944	X
6		35	29		47	1918	2039	1928	X
7			19	32	29	0022	0125	0037	X
7	60	22		96	28	0707	0854	0717	X
7	27	20	24	20	24	2312	0000	2320	X
9					10	0042	0151	0104	
9	—		74			0955	1132	1006	
10			12	40	13	0436	0547	0447	X
11	14	23	26*	32*	40*	2257	0029	2317	X
12				8	7	0034	0047	0040	X
12	12		19	16	8	0145	0219	0200	X
12	20		32	52	35	0313	0418	0323	X
12			11	16		0536	0602	0541	X
12	42		21	72*	22*	0620	0800	0630	X
12					15	1928	2006	1940	X
12		9	15		18	2035	2105	2039	X
12		14			18	2119	2225	2144	
12		13	21	16	27	2240	2352	2254	
13	23	16	32*	35*	40*	0058	0226	0150	

1970 Jun.	S P A								Remarks
	Phase Advance (degrees)					Time (U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
13				4		0243	0259	0249	
13	20	13	10	20	35	0300	0342	0308	X
13	15	9	6	24	23	0353	0411	0359	X
13	16		10	29	24	0411	0442	0419	X
13	28*		9*	40*	25*	0444	0605	0450	X
13	20			20		0606	0637	0612	X
13	79	40	34	80	26	0700	0819	0707	X
13	20			8		0820	0847	0826	X
13	59		58	0		0921	1017	0929	X
13	60		42			1232	1330	1234	X
13	40		32			1336	1430	1341	
13		17	19		22	1900	1932	1908	
13					10	2007	2045	2014	
13		14	12		31	2122	2155	2130	
13	48*	58*	70*	16	125*	2155	2352	2209	
14	93	78	106	145	138	0015	0122	0020	
14	35	33*	53*	64*	68*	0150	0400	0234	
14				28	19	0408	0445	0415	
14	160*	40	97	177*	141*	0507	0654	0511	X
14				8*		0657	0728	0718	
14				12*		0735	0811	0752	
14		14	46		24	1904	1959	1916	
14	24	36			56	2059	2204	2105	
14	25	42*	49*	104*	92*	2248	0116	2335	
15	28	14	32	—	41	0139	0220	0156	

1970 Jun.	S P A								Remarks
	Phase Advance(degrees)					Time(U. T.)			
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
15	75*	29	42*	—	90*	0227	0402	0304	X
15		—		16	11	0534	0559	0538	X
15		—		22*		0600	0644	0622	X
15				16		0745	0821	0750	
15	46		58			1311	1353	1328	X
15		19*	18		26	1839	1946	1851	X
15	10		19*	8	40*	2217	0117	2322	X
16	15		10	48	14	0146	0246	0155	X
16			8	12	7	0335	0402	0340	X
16	13	—	9	48*	26*	0410	0539	0441	X
16	45		22	62	22	0542	0654	0555	X
16	50	23	15	58	29	0657	0808	0704	X
16					6	2111	2144	2116	
16					4	2216	2248	2225	
16					6	2304	2344	2309	
17	50	63	51	108	101	0125	0300	0132	X
17	23		19	35	26	0418	0510	0422	X
17				24*		0552	0653	0610	
17		17	21		44	1901	2007	1909	X
17		12		20	24	2326	0033	2334	X
18	37	36	26	80	70	0143	0322	0150	
18		10			15	1850	1956	1904	
18		7		12	13	2341	0026	2352	X
19				4	7	0110	0148	0116	
19		18	30		31	1917	2016	1930	X

1970 Jun.	S P A								
	Phase Advance (degrees)					Time (U. T.)			Remarks
DATE	GBR	WWVL	NAA	NWC	HA2	Start	End	Maximum	
19		17*		8	46*	2201	0030	2245	
20	33	18	29	82*	74*	0217	0406	0237	X
20			26			0357	0455	0408	
25			29		47	1832	2016	1848	X
26				16	7	0220	0247	0230	X
26				8		0727	0755	0733	X
26		19			17	2038	2132	2049	
27		7		16	10	0111	0157	0123	
27				8		0534	0602	0543	
27				16		0743	0816	0750	X
28	30	53	35	80	65	0105	0222	0113	
28				8	4	0305	0335	0313	
28		54	122		141	1952	2156	2008	X
29		—		8		0608	0646	0613	X
30		15	15	20	15	0005	0053	0022	X
30		14	14	35	18	0125	0159	0135	X
30		21	13	40	28	0215	0322	0223	
30	35		17	70	48	0437	0614	0445	X
30				8		0640	0709	0648	X
30				24		0709	0759	0717	

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.

このdataから IHH

IONOSPHERIC DATA IN JAPAN FOR JUNE 1970

第22巻 第6号

1970年9月20日 印 刷
1970年9月25日 発 行

(不許複製非売品)

編集兼発行人 今野清恒
東京都小金井市貫井北町4丁目2−1

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

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