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IONOSPHERIC DATA IN JAPAN

FOR JUNE 1987

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CONTENTS

RADIO RESEARCH LABORATORY
MINISTRY OF POSTS AND TELECOMMUNICATIONS
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BRIEFING

This Series contains data on ionosphere (I), solar radio emission (S) and radio propagation (P) obtained at the following stations under the Radio Research Laboratory, Ministry of Posts and Telecommunications of Japan.

Station	Geographic		Geomagnetic		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.5'N	141°41.2'E	35.3°N	206.5°	Vertical Sounding (I)
Akita	39°43.5'N	140°08.0'E	29.5°N	205.9°	" (I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	" (I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	" (I)
Okinawa	26°16.9'N	127°48.4'E	15.3°N	196.0°	" (I)
Hiraiso	36°22.0'N	140°37.5'E	26.3°N	206.8°	Radio Receiving (S, P)
Inubo	35°42.2'N	140°51.5'E	25.6°N	207.0°	" (P)

A. IONOSPHERE

Ionospheric observations are carried out at five stations in Japan by means of vertical sounding method.

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily *f*-plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction (Second Edition) 1972" and its revision of chapters 1-4, published in July 1978.

a. Characteristics of Ionosphere

fxI	Top frequency of spread *F* trace
foF2 *foF1* *foE* *foEs*	Ordinary wave critical frequency for the *F2*, *F1*, *E* and *Es* including particle *E* layers respectively
fbEs	Blanketing frequency of the *Es* layer, e.g. the lowest ordinary wave frequency visible through *Es*
fmin	Lowest frequency which shows vertical ionospheric reflections
M(3000)F2 *M(3000)F1*	Maximum usable frequency factor for a path of 3000 km for transmission by *F2* and *F1* layers respectively
h'F2 *h'F* *h'E* *h'Es*	Minimum virtual height on the ordinary wave for the *F2*, whole *F*, *E* and *Es* layers respectively
Types of *Es*	See below A. b. (iii)

b. Symbols

(i) 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 *fmin*.

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 in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

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.

K Presence of particle *E* layer.

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.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

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 Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets.

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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-electronic component.

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple traces is indicated after the type letter.

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below normal *E* layer minimum virtual height or below the particle *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. 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.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces

present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km associated with high absorption and large *fmin*.

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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.

B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 100, 200 and 500 MHz at Hiraiso. Observation equipments are: a pair of crossed doublet antennas with a 6-meter and a 10-meter parabolic reflectors for 500 MHz and for 100 and 200 MHz, respectively, and three appropriate receivers. Each pair of crossed doublet antennas is used as a polarimeter. Observations are feasible almost from sunrise to sunset.

Time is expressed in hours, minutes and tenths of minutes U.T. and the unit of flux density is 10^{-22} Wm^{-2} Hz^{-1} for both components of polarization.

All symbols and terminology in the table of data are used in accordance with the "Descriptive Text of Solar-Geophysical Data, NOAA" and "Instruction Manual for Monthly Report of Solar Radio Emission, WDC-C2".

a. Daily Data at Hiraiso

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 mean flux level is counted.

Daily data with parentheses mean that observation time does not exceed one third of the period.

b. Outstanding Occurrences at Hiraiso

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.

Type is denoted by numerical code and letter symbol in parallel as follows:

SGD Cord	Letter Symbol	Morphological Classification
1	S	Simple 1
2	S/F	Simple 1F
3	S	Simple 2
4	S/F	Simple 2F
5	S	Simple
6	S	Minor
7	C	Minor+
8	S	Spike
20	GRF	Simple 3
21	GRF	Simple 3A
22	GRF	Simple 3F
23	GRF	Simple 3AF
24	R	Rise
25	R	Rise A
26	FAL	Fall
27	RF	Rise and Fall
28	PRE	Precursor
29	PBI	Post Burst Increase
30	PBI	Post Burst Increase A
31	ABS	Post Burst Decrease
32	ABS	Absorption
40	F	Fluctuations
41	F	Group of Bursts
42	SER	Series of Bursts
43	NS	Onset of Noise Storm
44	NS	Noise Storm in progress
45	C	Complex
46	C	Complex F
47	GB	Great Burst
48	C	Major
49	GB	Major+

Flux density is the increase of flux over the level at which daily flux is calculated, or the increase of flux over the underlying burst when the event is superposed on another burst of long duration.

Polarization is expressed by the polarization degree and sense as follows:

R or L	right- or left-handed polarization,
W, M or S	weak, moderate or strong polarization,
0	almost zero or unable to detect polarization due to small increase of flux,
00	polarization degree of less than 1 percent.

The following symbols may be attached after numerical values in table, if necessary.

D	greater than, or later than,
E	less than, or earlier than,
U	approximate, or uncertain.

C. RADIO PROPAGATION

a. H.F. Field Strength at Hiraiso

Field strength observation of 15 MHz standard waves transmitted from WWV and WWVH stations which are located respectively at Fort Collins, Colorado and Kauai, Hawaii, is carried out at Hiraiso. In order to avoid interference among the same frequency waves, the upper sideband of WWV or WWVH with the audio tone 660 Hz is picked up by the use of a narrow band pass filter with 80 Hz bandwidth. Particulars of the transmitters and the receiver are summarized in the following table.

Characteristics	Transmitter		Receiver
Station Call	WWV	WWVH	
Location	Fort Collins, Colorado	Kauai, Hawaii	Hiraiso, Ibaraki
latitude	40°41'N	22°00'N	36°22'N
longitude	105°02'W	159°46'W	140°38'E
Distance	9150 km	5910 km	–
Carrier Power	10 kW	10 kW	–
Power in each sideband	625 W	625 W	–
Modulation	50 %	50 %	–
Antenna	λ /2 vertical	λ /2 vertical	4.5 m vertical rod
Bandwidth	–	–	80 Hz for upper sideband
Calibration	–	–	Every an hour

The tabulated *field strength* in dB above one microvolt per meter is the peak average of the incident upper sideband field intensity in 45 seconds after the universal time indicated on the table. Abbreviated symbols are as follows:

CNT	number of observed values,
MED	median,
UD	value of the uppermost decile when they are ranked according to magnitude,
LD	value of the lowest decile when they ranked according to magnitude,
U	uncertain,
E	less than,
C	influenced by, or impossible because of, any artificial accident,
S	influenced by, or impossible because of, interferences or atmospherics.

b. Radio Propagation Quality Figures at Hiraiso

The tabulated six-hourly quality figures are calculated for standard waves WWV transmitted from Fort Collins and WWVH transmitted from Kauai.

Quality figures expressing radio propagation conditions are ranged over five grades as follows:

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

Whole day quality figure ranged in grades of 1o, 1+, 2–, 2o, 2+, 3–, 3o, 3+, 4–, 4o, 4+, 5–, 5o stands for an average of six-hourly ones of the two circuits. Abbreviated symbols are as follows:

C	artificial accident,
S	propagational accident,
U	inaccurate.

Radio propagation conditions which can be described with a code in the following

N	normal,
U	unstable,
W	disturbed

are forecast 12 hours in advance and broadcast six times per hour from JJY station.

Data on a *geomagnetic storm* correlated with a radio propagation disturbance are tabulated from observation at Kakioka Magnetic Observatory, Japan Meteorological Agency. *Time* (U.T.) is expressed in unit of hour and minute (or tenth of hour), and *range* in nanotesla. When they are uncertain quantitatively, /'s are used to replace the numerical values. Continuation of a geomagnetic storm is denoted by - - -.

c. Phase Variations in OMEGA Radio Waves at Inubo

Variations in phase and in phase deviation are monthly depicted for four OMEGA radio waves received at Inubo. Particulars of transmitting stations concerned which relate to the measurement are given in the table below.

In each of the four figures, variations in phase (ϕ) and those in phase deviation ($\triangle\phi$) are shown in the lower part and the upper one, respectively. Variations in phase (ϕ) are expressed by relative values at intervals of 30 minutes within every day (U.T.) (48 dots). An increasing value in this case denotes a phase delay. On the other hand, variations in phase deviation ($\triangle\phi$) are expressed by values at intervals of 30 minutes within every day (U.T.) (48 dots), deviated from average values at the same time for the six quietest days within the month concerned. A negative value in this case denotes a phase advance.

When a polar cap phase anomaly (PCPA) is detected on the Aldra-Inubo and/or the North Dakota-Inubo circuit[s], PCPA's detected only on the Aldra-Inubo circuit are listed, in principle, below the four figures. The list mentions the start, the end, and the maximum times of a PCPA in a form of day/hour & minute in U.T. and its maximum phase deviation as a negative value.

The following letters may be attached to values, if necessary.

D	greater than,
E	less than,
U	uncertain or doubtful.

d. Sudden Ionospheric Disturbances

(i) Short Wave Fade-out (SWF) at Hiraiso

The table of short wave fade-out (SWF) is prepared from the record of field intensities measured at Hiraiso.

Drop-out intensities of the 10 MHz, the 20 MHz, and the 25 MHz waves are respectively distinguished by marks ', '', and ''' from these of the 15 MHz wave for WWV and WWVH. Values of *start*, *duration*, *type*, and *importance* are obtained from data of the circuit whose drop-out intensity in dB is underlined as $\underline{xx}$. When these quantities are not given correctly, they are accompanied by the following symbols.

D	greater than,
E	less than,
U	uncertain or doubtful.

Types of fade-out are as follows:

S	sudden drop-out and gradual recovery,
SL	slow drop-out taking 5 to 15 minutes and gradual recovery,
G	gradual and irregular in both drop-out and recovery.

Importance of fade-out is scaled according to its amplitude into nine ascending grades as 1–, 1, 1+, 2–, 2, 2+, 3–, 3, 3+.

Correspondence of solar optical flare, solar radio burst, and geomagnetic crochet to SWF is marked by X in accordance with interchange messages of IUWDS and observations at Hiraiso.

In table (i) SWF, *date* indicates the day to which *start-time* of event belongs.

(ii) Sudden Phase Anomaly (SPA) at Inubo

Data of sudden phase anomaly (SPA) are prepared from the records of phase measurement of VLF radio waves received at Inubo. The transmitting stations are listed in the following table.

Phase advance is shown in unit of degree at its maximum stage. No transmission or no reception during the period is indicated by —, and indistinguishable record is spaced out, and multi-peak event is marked by *.

Out of more than two circuits on which the same SPA event is observed, the *phase advance* on the circuit on which the SPA is the most remarkable or distinct is underlined. As for the underlined, *phase advance*, *start*, *end*, and *maximum times* are obtained.

In table (ii) SPA, *date* indicates the day to which *start-time* of event belongs.

The following letters may be attached to the value, if necessary.

D	greater than,
E	less than,
U	uncertain or doubtful.

Transmitting Stations						
Name	Location (Geographic Coordinate)		Call Sign	Frequency (kHz)	Radiation Power (kHz)	Arc Distance from Inubo (km)
Rugby	52°22′N	001°11′W	GBR	16.0	60	9550
North West Cape	21°49′S	114°10′E	NWC	22.3	1000	6990
Norway	66°25′N	013°08′E	Ω/N	13.6	10	7820
North Dakota	46°22′N	098°20′W	Ω/ND	13.6	10	9140
Hawaii	21°24′N	157°50′W	Ω/H	13.6	10	6100
La Reunion	20°58′S	055°17′E	Ω/LR	13.6	10	10970

IONOSPHERIC DATA

JUN. 1987 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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	X 50	X 49	47																	X 66	X 67	X 65	62
2	58	X 54	X 52	56																	X 64	X 62	X 55	X 47
3	X 46	X 41	X 41	X 44																	X 72	X 69	70	66
4	65	X 57	X 50	X 49	52																X 73	X 74	X 71	X 67
5	X 63	X 60	X 55	X 52	53																X 73	X 71	X 65	X 62
6	X 61	X 57	X 54	X 52																	X 78	X 76	X 74	X 70
7	X 64	X 65	X 54	X 49																	X 60	65	65	63
8	57	58	57	56																	X 57	X 62	X 58	X 56
9	58	56	57	X 46																	X 74	X 78	X 65	X 58
10	X 55	X 54	X 50	48																	X 69	X 74	X 68	X 66
11	X 64	X 53	X 52	51																	A	A	A	64
12	A	A	X 45	50	50																X 74	X 65	X 57	57
13	58	50	50	47																	X 66	X 67	X 62	X 60
14	X 56	54	52	52																	X 67	X 68	X 67	X 62
15	X 56	X 52	X 51	X 53																	X 74	X 71	X 68	67
16	64	59	56	52																66	X 80	X 74	71	64
17	61	58	58	57	54					66											X 71	X 74	X 74	69
18	X 65	66	66	64						67											X 77	X 78	X 75	X 64
19	X 61	X 59	X 58	60																	X 88	X 84	X 73	X 75
20	X 62	56	51	X 50																	X 70	X 67	A	66
21	62	57	54	53	48																X 82	X 71	X 61	X 57
22	X 57	X 57	X 56	X 56																	X 77	79	66	64
23	60	60	59	60	52																X 78	X 75	X 65	A
24	55	58	57	52	50																X 75	71	65	63
25	A	A	A	55	52																S	X 77	X 73	X 60
26	X 57	57	57	X 55																	X 82	X 76	X 72	X 66
27	60	X 60	X 57	X 60		53															73	83	72	59
28	X 54	58	56	63																	X 68	X 70	X 65	62
29	59	X 50	X 50	X 52																	X 72	A	X 64	X 54
30	A	X 52	X 52	A	55	55															X 66	X 67	65	60
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	28	29	29	9	2				2										1	28	28	28	29
MED	X 60	X 57	X 54	52	52	54				66										66	X 73	X 71	X 66	X 63
UQ	X 62	58	57	56	53																X 77	X 76	X 72	66
LQ	X 57	X 54	X 51	50	50																X 68	X 67	X 65	X 60

JUN. 1987 | FXI (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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	43	42	F 40	39	40	A	A	A	A	A	A	A	55	51	47	49	47	A	A	59	60	58	F
2	F	47	45	F	51	43	51	A	A	49	R	49	R	50	50	45	48	46	46	A	57	55	48	40
3	39	34	34	37	41	42	45	50	A	A	56	52	48	52	54	51	H 48	52	53	57	65	62	F	F
4	F 50	50	43	42	F 44	42	48	49	50	60	61	A	50	51	52	56	53	53	A	61	66	67	64	60
5	56	53	48	45	F	48	50	52	A	52	53	49	50	53	53	54	49	50	49	57	66	64	58	55
6	54	50	47	45	41	46	46	A	43	45	50	47	49	47	47	49	48	48	53	62	71	69	67	63
7	57	58	47	42	34	39	45	R	48	A	A	A	A	A	A	50	49	47	50	50	53	F	F	F
8	F	F	F	F	44	48	53	A	55	A	A	47	47	48	48	47	47	48	52	55	50	55	51	49
9	F	F 49	J 43	39	41	54	50	A	A	A	A	54	50	53	51	52	54	55	62	64	67	71	58	51
10	48	47	43	F 38	44	47	54	56	58	62	56	53	51	55	49	52	52	A	52	55	62	67	61	59
11	57	46	45	F 45	41	45	A	67	64	61	54	58	57	A	A	51	A	53	A	A	A	A	A	F
12	A	A	38	F 43	F 43	47	A	A	A	A	57	A	A	A	A	A	A	48	A	60	67	58	50	F
13	F 48	F 43	F 40	F 37	S 40	A	A	A	A	A	49	R	A	R	48	50	49	50	48	A	59	60	55	53
14	49	F 47	F 45	F 45	37	40	42	A	47	A	A	A	R	R	46	47	47	A	C	51	60	61	60	55
15	49	45	44	46	44	43	42	A	49	A	58	56	51	49	48	50	A	A	A	59	67	64	61	F
16	F	F	F	F 45	43	55	52	A	A	54	64	57	54	51	51	50	46	50	53	F 66	73	67	F 64	F
17	F 54	F	F	F	F	51	52	A	A	F 59	A	69	51	49	52	60	55	49	50	57	64	67	67	F 62
18	58	F 57	F 57	F 57	59	H 45	52	H 48	A	F 58	58	50	52	48	49	49	52	52	57	63	70	71	68	57
19	54	52	51	F 50	49	48	52	58	58	58	58	56	56	64	58	58	60	61	67	H 78	81	77	66	68
20	55	F 49	F 44	43	47	55	A	54	71	A	49	49	A	49	A	A	50	A	A	A	63	60	A	F
21	F	F	F 40	F 43	F 39	45	58	A	63	66	50	A	52	53	A	A	A	A	A	66	75	64	54	50
22	50	50	49	49	48	52	55	65	64	54	56	54	60	63	63	57	50	47	50	59	70	F 69	F	F
23	F	F	F	F	F 41	53	62	56	53	59	A	53	51	55	50	51	A	A	A	63	71	68	58	A
24	F	F	F	F	F 43	48	52	A	A	H 57	52	53	A	A	A	A	A	60	A	A	68	F 64	F 62	F 57
25	A	A	A	F 48	F 39	50	52	62	A	A	A	A	A	52	53	55	58	57	55	61	S	70	66	53
26	50	F 50	F 50	48	46	53	54	R	55	53	51	53	56	59	57	52	53	57	60	67	75	69	65	59
27	F 49	53	50	53	49	F 41	49	A	A	A	A	R	A	48	A	A	A	A	A	A	F 68	F	F	F
28	47	F 49	F 48	F 56	53	44	48	A	A	A	51	A	A	52	A	A	48	46	49	A	61	63	58	F 54
29	F 50	43	43	45	49	45	50	53	64	63	63	57	41	55	52	53	53	50	53	63	65	A	57	47
30	A	45	45	A	F	F	46	A	A	A	52	52	55	50	A	A	54	A	55	55	59	60	F	F
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	19	22	24	24	27	28	25	12	15	16	20	20	19	24	21	23	23	22	19	22	28	26	23	18
MED	50	49	45	45	43	46	51	55	55	58	55	53	51	52	51	51	50	50	53	60	66	64	60	55
UQ	54	50	48	48	48	50	52	60	64	60	58	56	54	55	53	54	53	53	55	64	70	69	64	59
LQ	49	45	43	42	41	43	48	51	50	54	51	50	50	49	49	50	48	43	50	57	60	60	58	51

JUN. 1987 | FOF2 (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	430	430	410	A	380	A					
2							360	A	A	A	420	420	420	430	420	A	380	380	A					
3							A	410	A	A	A	440	440	430	430	420		370	A					
4							370	400	A	A	430	A	450	430	430	410	410	A	A					
5							A	A	A	A	430	A	440	440	430	410	410	390	A					
6					250	310	A	A	410	410	420	430	430	420	420	400	400	390	A					
7						300	350	360	400	A	A	A	A	A	A	410	400	380	330					
8						330	370	A	A	A	A	420	440	440	420	410	400	A	340					
9						330	A	A	A	A	A	A	A	440	A	420	A	380						
10						L	A	A	A	440	430	430	440	430	430	420	A	A	320					
11						360	A	A	A	A	440	H 440	A	A	A	A	A	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						A	A	A	A	A	430	430	A	420	420	410	400	380	A					
14						320	A	A	410	A	A	A	430	420	420	410	400	A	C					
15								A	A	A	A	440	A	A	430	420	A	A	A					
16							A	A	A	A	A	440	440	440	430	410	410	370	A					
17						A	A	A	A	A	A	A	450	450	440	410	410	L 380	L 360					
18							390		A	A	A	A	440	430	430	420	410	390	340					
19						L 350	390	U A 400	A	430	440	440	440	440	440	420	H 410	H 390	350					
20						340	A	A	A	A	A	440	A	430	A	A	400	A	A					
21					260	330	A	A	A	A	430	A	440	A	A	A	A	A	A					
22							390	A	A	A	440	450	A	A	430	420	420		A	L				
23						330	390	410	430	A	A	440	A	A	L 450	420	A	A	A					
24							A	A	A	420	430	A	A	A	A	A	A	A	A	A				
25						L 350	A	A	A	A	A	A	A	A	420	A	400	380						
26						330	360	420	A	A	A	A	440	430	430	420	400	A	A	L 300				
27							360	A	A	A	A	430	A	420	A	A	A	A	A	A				
28							A	A	A	A	A	A	A	A	A	A	400	360	330	A				
29							380	410	400	A	430	440	430	420	430	A	410	A	A					
30							L 380	A	A	A	A	A	A	440	A	A	410	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					2	12	12	7	5	4	12	15	15	20	20	19	19	14	7	1				
MED					255	330	375	410	410	425	430	440	440	430	430	410	400	380	340	L 300				
UQ						345	390	410	410	435	435	440	440	440	430	420	410	390	345					
LQ						325	360	400	400	415	430	430	435	425	420	410	400	380	330					

JUN. 1987 | FOF1 (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					S	200	235	265	300	305	310	B	A	A	A	A	280	A	200	S				
2					S	200	245	285	300	305	305	A	B	A	315	A	A	245	S	S				
3					S	200	245	290	300	305	310	310	B	B	A	A	A	A	A	S				
4					S	200	250	280	300	310	315	310	B	A	A	A	A	270	200	S				
5					A	205	250	290	300	310	320	B	A	A	A	A	295	A	200	S				
6					S	200	250	285	300	305	310	315	320	A	A	A	A	255	210	E				
7					E	200	230	260	285	305	310	315	A	310	A	A	A	250	205	A				
8					125	205	255	295	305	310	315	320	A	A	320	310	295	245	200	A				
9					S	195	255	275	300	305	310	B	B	305	A	A	260	A	205	S				
10					S	200	240	280	305	310	315	320	330	330	A	A	A	245	205	S				
11					S	200	255	275	305	315	320	330	325	320	A	310	295	255	205	S				
12					S	215	250	285	300	315	315	B	310	A	A	A	A	A	210	S				
13					S	210	250	285	305	310	315	B	A	A	315	305	A	A	210	S				
14					S	200	250	280	300	310	315	320	A	A	A	300	275	245	C	S				
15					S	205	250	275	300	310	320	325	310	305	A	A	A	250	205	S				
16					A	A	255	280	300	310	320	320	A	A	A	305	A	250	205	S				
17					S	220	250	285	305	315	325	325	325	325	315	295	A	250	205	A				
18					S	220	260	290	300	310	315	325	H 330	A	A	305	290	250	205	S				
19					S	220	255	H 290	305	315	320	R	A	A	310	A	A	250	215	A				
20					S	210	240	275	300	310	315	315	A	A	A	A	A	255	200	E				
21					S	220	250	280	300	305	310	305	305	335	325	305	285	245	205	E				
22					140	200	245	290	305	310	325	325	B	A	A	300	290	A	A	S				
23					S	210	250	285	305	B	A	A	A	A	A	A	A	A	200	S				
24					S	205	250	285	305	315	320	A	A	A	A	A	290	255	210	S				
25					S	205	255	290	300	315	B	330	B	A	A	A	300	255	A	S				
26					S	205	H 250	285	295	320	325	325	320	300	A	A	A	A	A	140				
27					S	205	255	285	300	310	315	R 315	A	A	A	A	A	A	200	A				
28					S	S	240	H 290	300	305	310	A	A	A	A	A	A	A	A	S				
29					S	S	220	285	300	315	325	325	325	A	A	A	A	A	195	S				
30					S	185	250	280	300	310	315	A	A	A	A	A	A	A	A	S				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					3	27	30	30	30	29	28	19	10	8	6	9	11	17	22	4				
MED					125	205	250	285	300	310	315	320	322	315	315	305	290	250	205	E				
UQ					132	210	255	290	305	315	320	325	325	328	320	305	295	255	205	E 140				
LQ					E 125	200	245	280	300	305	310	315	310	305	315	300	282	245	200	E				

JUN. 1987 | FOE (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	60	31	JA 76	JA 54	47	43	52	JA 73	JA 98	JA 135	JA 88	JA 70	JA 93	41	51	33	40	JA 53	JA 67	60	50	28	28	ES 17
2	35	ES 17	E	ES 17	20	26	33	52	55	JA 70	43	42	EB 35	40	JA 53	42	32	35	42	64	40	27	24	JA 52
3	42	40	32	29	ES 15	26	49	40	71	JA 96	62	39	40	EB 35	34	35	33	35	58	53	45	35	39	30
4	35	26	22	23	ES 16	33	37	40	54	JA 63	41	JA 65	EB 35	36	35	40	38	55	JA 61	60	47	40	40	23
5	22	31	ES 15	ES 16	33	27	45	60	66	56	40	57	35	37	40	42	G	40	50	40	40	31	28	26
6	ES 16	ES 16	E	ES 16	ES 15	26	50	JA 60	43	40	43	55	35	38	43	43	35	37	48	17	20	E	ES 15	ES 15
7	ES 17	E	ES 16	20	20	24	32	34	38	52	53	70	70	61	73	43	29	G	31	42	50	JA 63	56	30
8	50	25	ES 15	E	G	G	35	56	62	JA 93	54	35	38	36	G 28	G 25	40	44	40	JA 50	JA 46	JA 33	JA 33	JA 32
9	JA 37	JA 46	JA 27	JA 26	ES 16	31	JA 45	JA 68	JA 67	JA 66	JA 118	52	JA 59	JA 44	JA 53	JA 52	JA 55	35	56	63	JA 59	JA 25	ES 16	26
10	26	ES 16	ES 16	ES 16	19	28	38	JA 48	JA 52	40	39	36	G	G	43	42	JA 58	58	JA 58	JA 32	JA 48	36	JA 83	33
11	31	25	JA 51	JA 29	32	29	JA 64	JA 63	JA 64	43	53	40	52	JA 87	JA 99	JA 68	JA 52	JA 98	JA 197	JA 126	JA 146	JA 142	JA 89	JA 43
12	JA 73	JA 63	JA 29	32	JA 33	42	JA 94	JA 93	JA 138	JA 74	JA 65	66	62	JA 67	78	75	64	57	67	JA 60	35	42	30	31
13	ES 15	36	30	34	ES 15	JA 54	61	JA 170	70	JA 64	JA 50	40	JA 67	42	G	G 27	36	40	41	JA 53	27	27	JA 27	ES 16
14	E	ES 16	ES 16	24	ES 16	33	38	JA 59	38	JA 59	56	60	39	35	33	G	39	53	C	37	35	31	25	28
15	20	22	27	ES 13	ES 16	25	39	JA 57	JA 49	JA 88	JA 60	39	51	52	43	33	57	JA 57	JA 65	JA 47	41	32	26	JA 63
16	JA 63	JA 73	JA 63	JA 53	JA 52	31	40	JA 60	JA 65	JA 49	JA 88	42	38	35	34	G 29	32	35	JA 38	JA 28	JA 31	JA 26	22	ES 15
17	JA 63	JA 63	JA 36	JA 32	ES 18	JA 43	JA 51	JA 76	JA 65	JA 43	JA 83	JA 68	41	40	43	39	32	G	32	44	JA 46	JA 25	26	JA 30
18	JA 25	JA 26	JA 28	24	ES 17	31	35	JA 40	JA 61	JA 58	JA 54	50	G	41	36	35	35	33	JA 45	JA 35	JA 47	JA 49	JA 29	JA 32
19	JA 32	JA 24	JA 31	27	JA 23	30	35	41	57	41	41	37	36	35	40	34	33	G	G	52	31	26	20	E
20	ES 16	27	ES 16	ES 15	ES 17	31	JA 68	JA 63	JA 55	JA 126	47	34	57	36	50	JA 72	42	70	JA 110	JA 100	JA 56	JA 61	JA 83	JA 83
21	70	41	JA 53	30	26	32	JA 51	62	64	JA 60	JA 94	60	41	48	61	JA 86	JA 142	JA 160	JA 95	JA 88	JA 73	27	34	39
22	26	E	23	ES 15	G	G	38	48	JA 53	JA 53	41	42	JA 56	51	38	G	G 28	30	43	JA 46	32	33	36	28
23	40	ES 16	31	E	ES 16	27	32	JA 50	36	JA 59	JA 86	43	JA 58	JA 50	36	35	JA 67	JA 76	JA 68	42	26	JA 48	JA 60	JA 83
24	JA 61	JA 48	JA 29	JA 35	JA 60	JA 48	44	JA 63	JA 33	40	40	JA 61	JA 69	JA 57	JA 77	JA 90	JA 70	JA 70	JA 130	JA 147	JA 83	JA 68	JA 64	43
25	JA 82	JA 69	JA 57	43	33	28	JA 40	JA 68	JA 116	JA 87	JA 93	JA 70	56	55	JA 43	JA 63	G 29	30	JA 74	JA 60	JA 45	JA 25	26	23
26	22	ES 16	21	ES 16	17	G	G	39	52	JA 53	JA 50	44	36	36	39	41	41	JA 65	38	26	JA 51	50	JA 53	34
27	23	24	22	26	ES 15	37	33	54	JA 69	55	JA 51	40	JA 77	JA 50	JA 59	JA 58	JA 97	JA 90	JA 90	JA 130	JA 57	JA 68	JA 66	25
28	18	31	JA 28	JA 26	JA 28	JA 28	52	JA 69	JA 197	JA 67	JA 70	JA 127	JA 87	JA 56	JA 88	54	JA 44	JA 28	JA 46	57	JA 50	JA 36	JA 33	21
29	ES 16	18	20	ES 16	ES 16	29	36	39	JA 56	47	41	41	40	44	36	44	JA 36	JA 51	51	JA 83	JA 36	JA 123	JA 71	JA 51
30	JA 61	JA 56	JA 51	JA 53	JA 35	25	32	JA 61	JA 72	JA 77	JA 74	JA 57	JA 63	JA 64	JA 61	JA 64	40	JA 91	JA 97	JA 28	JA 35	JA 26	JA 50	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	30	30	30	30	30	30	30	30	29	30	30	30	30	30
MED	32	26	28	25	18	29	40	JA 60	JA 63	JA 59	54	47	46	42	43	42	40	43	JA 56	JA 52	JA 46	33	33	30
UQ	JA 60	41	JA 32	JA 32	32	33	51	JA 63	JA 70	JA 74	JA 74	61	JA 62	JA 52	59	JA 58	JA 55	JA 65	JA 68	JA 63	JA 51	JA 49	JA 56	JA 39
LQ	20	17	16	ES 16	ES 16	26	35	43	53	49	43	40	36	36	36	34	33	35	42	40	35	27	26	23

JUN. 1987 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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 60	18	E S 16	18	19	33	A A 52	A A 73	A A 98	A A 135	A A 88	A A 70	A A 93	38	41	31	40	36	A A 67	A A 60	37	20	19	E S 17
2	E S 16	E S 17	E	E S 17	15	G	32	A A 52	A A 55	42	40	37	E B 35	37	35	42	G	34	35	A A 64	31	20	17	23
3	20	26	17	19	E S 15	G	40	39	A A 71	A A 96	48	G	38	E B 35	33	31	30	32	46	46	37	26	22	E S 16
4	E S 16	19	E S 16	E S 16	E S 16	31	35	39	46	50	40	A A 65	E B 35	32	30	37	34	45	A A 61	50	40	E S 16	18	E S 16
5	E S 16	20	E S 15	E S 16	24	G	43	45	A A 66	46	G	46	35	36	38	37	G	28	44	30	24	21	18	18
6	E S 16	E S 16	E	E S 16	E S 15	G	39	A A 60	G	G	40	40	G	37	39	37	32	31	40	G	16	E	E S 15	E S 15
7	E S 17	E	E S 16	16	18	23	G	G	37	A A 52	A A 53	A A 70	A A 70	A A 61	A A 73	35	29	G	30	30	40	19	18	19
8	E S 17	17	E S 15	E	G	G	33	A A 56	51	A A 93	A A 54	35	37	35	G 28	G 25	39	40	33	46	40	26	18	24
9	25	E S 16	E S 16	E S 15	E S 16	29	40	A A 68	A A 67	A A 65	A A 118	46	46	40	48	41	46	33	47	54	46	22	E S 16	E S 16
10	E S 15	E S 16	E S 16	E S 16	G	26	38	42	50	G	39	G	G	G	35	36	50	A A 53	G	28	30	28	20	18
11	19	E S 16	E S 16	E S 16	21	28	A A 64	60	62	44	43	38	A	A A 87	A A 99	46	A A 52	50	A A 197	A A 126	A A 146	A A 142	A A 89	24
12	A A 73	A A 63	E S 16	17	22	35	A A 94	A A 93	A A 138	A A 74	52	A A 66	A A 62	A A 67	A A 78	A A 75	A A 64	38	A A 67	53	28	40	20	17
13	E S 15	17	18	20	E S 15	A A 54	A A 61	A A 170	A A 70	A A 64	38	38	A A 67	40	G	G 27	29	34	34	A A 53	19	19	17	E S 16
14	E	E S 16	E S 16	E S 16	E S 16	29	37	A A 59	36	A A 59	A A 56	A A 60	39	35	33	G	38	A A 53	C	30	29	18	E S 16	E S 15
15	E S 16	E S 16	E S 16	E S 13	E S 16	G	35	A A 57	44	A A 88	47	G	47	47	40	G	A A 57	A A 57	A A 65	34	34	22	17	47
16	18	46	35	33	38	25	40	A A 60	A A 65	46	54	40	38	35	34	G 28	30	34	38	27	30	24	E S 16	E S 15
17	E S 17	40	26	25	E S 18	40	51	A A 76	A A 65	46	A A 83	64	40	40	G	37	30	G	32	42	45	17	18	E S 16
18	23	20	22	E S 15	E S 17	30	33	38	A A 61	53	45	45	G	37	34	34	33	32	29	34	46	19	21	20
19	20	20	17	E S 16	17	G	35	40	50	G	40	37	36	35	33	34	30	G	G	47	24	16	E S 16	E
20	E S 16	E S 15	E S 16	E S 15	E S 17	30	A A 68	52	50	A A 126	45	G	A A 57	36	A A 50	A A 72	35	A A 70	A A 110	A A 100	40	50	A A 83	18
21	45	18	22	17	G	30	41	A A 62	53	46	40	A A 60	40	45	A A 61	A A 86	A A 142	A A 160	A A 95	40	48	20	E S 17	24
22	16	E	E S 17	E S 15	G	G	38	44	51	47	40	40	54	45	36	G	G 28	28	36	23	19	E S 17	16	17
23	15	E S 16	E S 17	E	E S 16	G	G	40	G	44	A A 86	40	46	45	35	34	A A 67	A A 76	A A 68	33	17	36	46	A A 83
24	41	47	23	17	21	45	40	A A 63	A A 83	40	40	47	A A 69	A A 57	A A 77	A A 90	A A 70	55	A A 130	A A 147	48	54	51	32
25	A A 82	A A 69	A A 57	36	17	27	40	50	A A 116	A A 87	A A 93	A A 70	A A 56	50	40	47	G 26	G	51	46	30	20	16	E S 16
26	E S 16	E S 16	E S 16	E S 16	16	G	G	38	44	50	47	44	G	G	35	34	30	50	36	24	51	46	50	23
27	16	17	E S 15	14	E S 15	32	G	A A 54	A A 69	A A 55	A A 51	40	A A 77	38	A A 59	A A 58	A A 97	A A 90	A A 90	A A 130	48	65	42	E S 17
28	E S 17	18	17	22	20	25	46	A A 69	A A 197	A A 67	46	A A 127	A A 87	50	A A 88	A A 54	36	26	28	A A 57	30	26	32	E S 16
29	E S 16	E	E S 15	E S 16	E S 16	24	30	36	39	45	40	39	G	41	36	41	35	40	40	60	53	A A 123	27	25
30	A A 61	35	35	A A 53	29	G	G	A A 61	A A 72	A A 77	50	48	45	41	A A 61	A A 64	34	A A 91	34	24	31	24	46	E S 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30
MED	17	17	E S 16	E E 16	E G 16	26	38	A A 55	58	51	46	42	42	39	38	37	34	37	40	46	36	22	18	17
UQ	23	20	18	18	19	30	43	A A 62	A A 70	A A 74	A A 54	A A 60	A A 62	45	A A 59	47	50	A A 55	A A 67	A A 57	46	36	32	23
LQ	E S 16	E S 16	E S 16	E S 15	E S 15	G	33	40	46	45	40	38	35	35	34	31	30	31	34	30	29	19	17	E S 16

JUN. 1987 | FBES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FMIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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 17	E S 12	E S 16	E	E S 14	12	17	18	19	23	25	31	20	21	27	20	19	19	E S 12	E S 15	E	E	E S 17	E S 17
2	E S 16	E S 17	E	E S 17	E S 12	E S 15	17	17	17	20	26	26	35	22	24	20	18	17	E S 19	E S 16	E	E S 17	E	E S 15
3	E S 17	E	E	E	E S 15	12	17	18	25	22	20	25	31	35	24	21	19	20	17	E S 16	E	E	E S 16	E S 16
4	E S 16	E S 16	E S 16	E S 16	E S 16	E S 17	18	19	20	25	27	23	35	30	27	23	19	19	17	E S 15	E	E S 16	E	E S 16
5	E S 16	E	E S 15	E S 16	E	17	16	19	20	23	22	32	26	22	19	19	17	18	E S 18	E S 14	E S 17	E S 17	E	E
6	E S 16	E S 16	E	E S 16	E S 15	17	18	18	25	22	25	20	20	22	22	20	19	18	17	E	E	E	E S 15	E S 15
7	E S 17	E	E S 16	E	E	12	18	18	20	20	20	21	25	20	26	20	18	18	11	10	E S 15	E	E S 16	E S 16
8	E S 17	E	E S 15	E	10	17	17	18	19	20	18	26	23	26	19	17	18	16	10	10	E S 16	E S 16	E S 16	E S 17
9	E S 16	E S 16	E S 16	E S 15	E S 16	16	20	19	20	20	22	33	32	24	24	22	18	18	18	E S 15	E	E S 16	E S 16	E S 16
10	E S 15	E S 16	E S 16	E S 16	E S 13	16	17	22	19	25	25	30	30	19	20	18	18	16	16	E S 16	E S 16	E	E S 16	E S 16
11	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	23	21	24	25	30	24	25	20	20	16	17	E S 13	E S 16	E S 16	E S 16	E S 15
12	E S 16	E S 16	E S 16	E	E S 16	E S 17	17	19	19	25	25	32	30	27	26	20	17	18	E S 18	E S 17	E	E S 15	E S 17	E
13	E S 15	E	E	E	E S 15	12	19	19	19	22	26	32	27	24	26	20	19	16	16	E S 16	E	E	E S 15	E S 16
14	E	E S 16	E S 16	E S 16	E S 16	16	16	18	19	19	23	23	19	23	25	23	18	20	C	E S 16	E	E S 16	E S 16	E S 15
15	E S 16	E S 16	E S 16	E S 13	E S 16	16	18	22	22	25	22	25	24	20	20	20	20	17	E S 17	E S 11	E	E	E	E
16	E	E	E S 16	E	E	E	18	19	20	18	21	28	25	20	19	21	18	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15
17	E S 17	E S 16	E S 15	E S 16	E S 18	16	18	18	19	23	25	25	26	30	26	18	17	19	16	E	E	E	E S 17	E S 16
18	E S 16	E	E S 16	E S 15	E S 17	12	16	16	19	20	25	26	20	28	26	22	18	17	16	E S 16	E	E S 16	E S 16	E S 16
19	E S 15	E S 16	E S 16	E S 16	E S 16	16	17	18	20	17	25	25	25	30	20	19	20	17	13	E	E S 15	E	E S 16	E
20	E S 16	E S 15	E S 16	E S 15	E S 17	16	16	16	20	18	22	22	20	21	20	20	19	19	E S 17	E	E	E	E S 18	E
21	E S 17	E	E	E	E S 16	11	18	20	20	23	24	26	22	23	26	23	20	17	E S 18	E	E S 16	E	E S 17	E S 17
22	E	E	E S 17	E S 15	11	17	18	20	20	22	25	29	33	25	26	25	19	18	11	E S 17	E	E S 17	E	E S 15
23	E	E S 16	E S 17	E	E S 16	12	17	18	19	30	26	23	26	28	24	20	19	16	16	E S 16	E S 16	E	E S 16	E S 16
24	E S 15	E S 16	E S 16	E S 15	E S 17	16	17	18	19	25	25	26	28	25	22	20	20	18	17	E S 17	E S 17	E S 12	E S 16	E S 16
25	E	E	E	E S 16	E S 16	16	18	18	19	21	33	23	34	25	25	20	20	16	16	E S 16	E S 15	E S 16	E	E S 16
26	E S 16	E S 16	E S 16	E S 16	E S 11	16	18	19	20	20	20	20	24	22	30	20	18	18	17	E	E	E	E S 17	E S 17
27	E	E	E S 15	E	E S 15	E S 17	17	17	20	19	23	27	30	27	25	19	18	17	17	E S 17	E S 16	E S 11	E S 13	E S 17
28	E S 17	E S 17	E S 11	E S 16	E S 17	E S 16	17	18	24	26	25	20	26	25	24	21	20	16	16	E S 15	E S 16	E S 16	E S 16	E S 16
29	E S 16	E	E S 15	E S 16	E S 16	E S 16	16	17	19	20	24	25	26	27	24	20	18	18	16	E S 15	E S 16	E S 16	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	17	18	25	25	26	26	22	25	20	16	16	17	E S 16	E S 15	E	E S 16	E S 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30
MED	E S 16	E S 16	E S 16	E S 15	E S 16	16	17	18	20	22	25	26	26	24	24	20	18	18	16	E S 15	E E 15	E E 12	E S 16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 16	16	18	19	20	25	25	28	30	27	26	21	19	18	17	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E S 15	E	E S 15	E	E S 13	12	17	18	19	20	22	23	24	22	22	20	18	16	16	E E 10	E	E	E S 15	E S 15

JUN. 1987 | FMIN (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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 285	285	F 290	295	350	A	A	A	A	A	A	A	310	315	290	315	285	A	A	310	305	305	F
2	F 295	300	F	335	280	335	A	A	305	R	280	R	295	295	275	300	305	305	A	315	320	310	300
3	295	295	300	325	365	355	310	335	A	A	340	325	310	305	315	315	H 290	325	310	300	305	305	F	F
4	F 300	320	300	300	F 320	290	310	335	300	325	345	A	290	290	305	330	340	320	A	310	300	300	305	310
5	310	320	310	300	F	290	320	330	A	325	340	A	270	305	315	335	305	305	290	305	305	305	310	310
6	315	310	295	290	285	310	305	A	260	260	295	295	295	270	275	295	310	275	285	300	285	285	285	300
7	285	300	295	295	280	280	310	R	275	A	A	A	A	A	A	285	295	315	320	320	300	F	F	F
8	F	F	F	F	295	290	305	A	310	A	A	295	255	275	275	290	280	295	305	305	365	310	305	280
9	F	F 290	F 285	305	305	335	310	A	A	A	A	335	300	290	A	295	295	310	315	305	300	325	320	300
10	295	295	305	F 315	305	275	300	310	315	320	305	320	355	310	265	290	A	A	315	310	305	300	310	305
11	320	310	290	F 290	285	265	A	320	A	345	290	325	310	A	A	A	A	A	A	A	A	A	A	F
12	A	A	305	F 295	F 290	295	A	A	A	A	325	A	A	A	A	A	A	290	A	300	300	325	300	F
13	F 290	F 280	F 300	F 310	S 325	A	A	A	A	A	270	R	A	R	265	275	285	305	290	A	305	310	295	300
14	290	F 295	F 290	F 290	290	290	270	A	285	A	A	A	R	R	280	275	275	A	C	295	300	295	310	300
15	325	285	300	315	340	330	330	A	285	A	325	325	280	305	270	300	A	A	A	300	300	305	315	F
16	F	F	F	F 290	295	310	290	A	A	295	315	335	320	295	285	300	270	295	285	F 290	305	315	F 300	F
17	F 300	F	F	F	F	320	A	A	A	F 300	A	A	300	250	290	325	310	330	285	315	305	295	300	F 305
18	320	F 315	F 320	F 315	330	H 295	315	H 305	A	F 315	330	300	290	260	265	275	290	300	305	295	305	300	320	315
19	315	305	300	F 320	290	285	285	325	325	325	325	305	265	305	285	310	300	300	275	H 285	300	290	305	310
20	310	F 295	F 305	295	300	330	A	A	310	A	285	280	A	265	A	A	300	A	A	A	290	305	A	F
21	F	F	F 275	F 280	F 280	280	320	A	310	335	320	A	290	285	A	A	A	A	A	290	305	310	315	320
22	300	295	295	305	290	310	310	330	325	335	315	295	305	310	315	335	285	295	285	305	305	F 320	F	F
23	F	F	F	F	F 290	345	340	335	300	335	A	315	280	325	280	295	A	A	A	300	310	315	340	A
24	F	F	F	F	F 290	A	315	A	A	H 325	325	320	A	A	A	A	A	A	A	A	315	F 295	F 290	F 300
25	A	A	A	F 285	F 335	290	290	315	A	A	A	A	A	A	285	295	325	320	A	285	S	300	320	335
26	295	F 280	F 305	295	315	325	340	R	340	315	295	300	285	315	305	290	290	300	305	290	300	290	295	310
27	F 300	305	280	300	305	F 315	285	A	A	A	A	R	A	275	A	A	A	A	A	A	F 285	F	F	F
28	285	F 290	F 270	F 305	360	305	A	A	A	A	305	A	A	A	A	A	295	295	310	A	305	310	325	F 315
29	F 320	305	315	300	330	330	290	320	325	315	315	330	355	310	290	320	325	300	320	A	315	A	330	315
30	A	290	295	A	F	F	345	A	A	A	A	A	370	365	A	A	330	A	335	325	310	300	F	F
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	19	22	24	24	27	27	23	11	14	16	19	17	19	22	20	22	22	20	18	21	28	26	23	18
MED	300	295	300	300	300	305	310	325	310	322	315	315	295	300	285	295	298	300	305	300	305	305	310	308
UQ	315	305	305	308	328	328	320	332	325	330	325	325	310	310	305	315	310	312	315	305	308	310	318	315
LQ	295	F 290	290	F 290	290	290	295	318	285	310	300	295	282	275	275	290	290	295	285	295	300	300	300	300

JUN. 1987 | M(3000)F2 (0.01)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F1 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	A	A	A	A	365	A	A	A					
2							A	A	A	A	375	390	405	370	380	A	370	A	A					
3							A	A	A	A	A	410	385	385	370	355		A	A					
4							A	A	A	A	A	A	400	380	370	A	A	A	A					
5							A	A	A	A	400	A	390	380	370	365	355	335	A					
6					300	355	A	A	365	365	A	395	395	390	380	375	375	335	A					
7						325	355	365	A	A	A	A	A	A	A	345	325	330	A					
8						335	A	A	A	A	A	400	380	350	380	360	A	A	A					
9						A	A	A	A	A	A	A	A	A	A	A	A	335						
10						L	A	A	A	375	395	420	405	385	375	350	A	A	355					
11						345	A	A	A	A	A	H 380	A	A	A	A	A	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						A	A	A	A	A	390	395	A	A	375	360	350	A	A					
14						A	A	A	370	A	A	A	A	280	280	365	A	A	C					
15								A	A	A	A	395	A	A	360	355	A	A	A					
16							A	A	A	A	A	A	375	395	380	360	340	A	A					
17						A	A	A	A	A	A	A	A	A	375	A	360	L 345	A					
18							335		A	A	A	A	405	395	395	355	345	320	345					
19						L 335	A	A	A	395	A	380	415	370	370	360	H 315	H 325	320					
20						A	A	A	A	A	A	410	A	395	A	A	350	A	A					
21					305	A	A	A	A	A	395	A	A	A	A	A	A	A	A					
22							A	A	A	A	385	400	A	A	375	360	355		A	L				
23						350	335	A	375	A	A	A	A	A	L 370	355	A	A	A					
24							A	A	A	435	400	A	A	A	A	A	A	A	A	A				
25						L 340	A	A	A	A	A	A	A	A	A	A	350	340						
26						340	375	A	A	A	A	A	365	370	370	355	350	A	A	A				
27							335	A	A	A	A	A	A	A	A	A	A	A	A	A				
28							A	A	A	A	A	A	A	A	A	A	A	360	A	A				
29							345	345	A	A	A	400	405	A	370	A	345	A	A					
30							L 365	A	A	A	A	A	A	A	A	A	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					2	8	7	2	3	4	7	12	12	13	18	16	15	9	3					
MED					302	340	345	355	370	385	395	398	398	380	372	360	350	335	345					
UQ						348	360		372	415	398	405	405	390	380	362	355	340	350					
LQ						335	335		362	370	388	392	382	370	370	355	345	330	332					

JUN. 1937 | M(3000)F1 (0.01)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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	A	A	A	A	A	355	350	405	340	350	A					
2							300	A	A	360	R	420	R	385	385	470	360	360	315					
3							325	305	A	A	300	315	365	375	350	355		300	A					
4							330	300	A	300	265	A	430	390	380	310	295	320	A					
5							305	A 300	A	315	310	A	450	365	355	315	350	305	A					
6					340	320	335	A	505	500	385	415	400	450	450	400	350	400	365					
7						405	325	R	420	A	A	A	A	A	A	390	355	325	300					
8						340	340	A	A	A	A	405	560	440	485	400	395	350	325					
9						265	300	A	A	A	A	310	375	395	A	375	355	305						
10						355	325	320	335	300	350	345	300	360	485	330	A	A	290					
11						435	A	A	A	265	400	335	355	A	A	A	A	A	A					
12						325	A	A	A	A	A	A	A	A	A	A	A	355	A					
13						A	A	A	A	A	430	R	A	R	450	410	390	335	335					
14						390	440	A	400	A	A	A	R	R	435	440	410	A	C					
15								A	385	A	310	325	425	380	460	365	A	A	A					
16							315	A	A	360	A 300	300	340	395	400	370	450	350	350					
17						280	A	A	A	355	A	A	380	550	390	305	325	280	345					
18							320		A	A	300	380	395	500	460	425	355	340	300					
19						350	355	300	300	310	325	350	430	330	370	340	340	300	355					
20						285	A	A	295	A	420	420	A	450	A	A	355	A	A					
21					350	365	310	A	A	275	365	A	400	390	A	A	A	A	A					
22							305	255	300	305	355	385	A	325	305	295	385		350	290				
23						265	275	285	355	300	A	360	420	325	405	360	A	A	A					
24							325	A	A	315	340	350	A	A	A	A	A	A	A	A				
25						320	350	A 300	A	A	A	A	A	A	395	380	305	315						
26						280	280	R	295	A	370	400	400	335	350	375	350	A	315	295				
27							350	A	A	A	A	R	A	430	A	A	A	A	A	A				
28							A	A	A	A	370	A	A	A	A	A	400	350	235	A				
29							345	305	295	350	300	325	405	345	375	325	305	335	300					
30							270	A	A	A	A	A	320	475	A	A	320	A	265					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					2	15	22	9	11	14	18	17	13	22	20	22	21	18	15	2				
MED					345	325	325	300	335	312	345	350	400	388	392	375	355	335	315	292				
UQ						360	340	305	392	355	370	400	425	440	450	400	385	350	348					
LQ						282	305	300	293	300	300	325	365	355	362	340	340	305	300					

JUN. 1987 | H'F2 (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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	285	280	280	265	245	A	A	A	A	A	A	A	A	A	215	A	A	A	A	A	265	260	245
2	265	250	265	245	250	240	A	A	A	A	A 255	215	200	A 245	A 245	A	235	A	A	A	A	250	230	A 300
3	295	A	290	265	200	220	A	A	A	A	A	205	200	200	215	210	215	A	A	A	A	250	300	250
4	250	250	250	250	225	A	A	A	A	A	A	A	195	200	205	A	A	A	A	A	A	255	270	250
5	245	250	230	250	250	245	A	A	A	A	200	A	210	220	A 240	A 240	210	245	A	A	250	250	240	265
6	250	235	265	270	275	245	A	A	215	230	A	A 230	210	205	A 250	A 230	235	245	A	H 255	250	265	285	250
7	295	275	245	265	H 310	A 265	240	205	A	A	A	A	A	A	A	235	220	220	A	A	A	300	260	250
8	290	275	260	245	250	250	A	A	A	A	A	230	225	230	210	210	A	A	A	A	A	260	255	305
9	290	270	270	265	250	A	A	A	A	A	A	A	A	A	A	A	A	A 250	A	A	A	240	205	245
10	210	250	240	260	235	230	A	A	A	200	A 240	200	200	225	215	A 245	A	A	215	280	280	265	255	250
11	245	240	265	270	270	235	A	A	A	A	A	200	A	A	A	A	A	A	A	A	A	A	A	260
12	A	A	265	270	295	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A 255	A	265	280
13	250	300	250	260	H 255	A	A	A	A	A	230	215	A	A	215	205	205	A	A	A	250	250	270	250
14	265	250	265	255	260	A	A	A	A 220	A	A	A	A	205	210	235	A	A	C	295	275	275	245	250
15	230	250	255	245	205	240	A 250	A	A	A	A	200	A	A	A	215	A	A	A	A 280	A	250	250	A
16	225	A	A	A	A	245	A	A	A	A	A	A	235	205	205	200	210	A	A	260	250	250	245	225
17	260	A	300	280	245	A	A	A	A	A	A	A	A	A	200	A	205	220	A	A	A	255	245	250
18	255	275	255	250	235	H 250	250	A	A	A	A	A	200	210	200	225	245	255	A 255	A 280	A	250	245	230
19	245	250	260	235	240	235	A	A	A	205	A	225	200	210	A 235	225	H 200	235	250	A	250	230	235	250
20	220	250	230	280	H 265	A	A	A	A	A	A	195	A	200	A	A	A 250	A	A	A	A	A	A	260
21	A	260	300	295	270	A	A	A	A	A	210	A	A	A	A	A	A	A	A	A	A	220	225	255
22	250	250	255	250	250	235	A	A	A	A	225	205	A	A	220	220	205	210	A	A	245	220	215	250
23	270	265	270	280	250	240	225	A	210	A	A	A	A	A	205	200	A	A	A	A	235	A 265	A	A
24	A	A	290	280	300	A	A	A	A	200	225	A	A	A	A	A	A	A	A	A	A	A	A	A
25	A	A	A	A	A	225	A	A	A	A	A	A	A	A	A	A	225	220	A	A	275	250	225	215
26	265	275	255	255	250	240	220	A	A	A	A	A	230	225	235	220	245	A	A	A	A	A	A	250
27	250	255	250	255	H 250	A	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	220
28	265	270	300	255	200	A 245	A	A	A	A	A	A	A	A	A	A	A	225	A	A	285	255	255	240
29	240	255	240	250	250	225	230	A 255	A	A	A	A 225	200	A	220	A	A 250	A	A	A	A	A	250	260
30	A	A	A	A	260	225	220	A	A	A	A	A	A	A	A	A	H 220	A	A	245	265	285	A	235
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	23	27	27	28	20	8	2	3	4	7	12	12	13	17	16	16	10	3	7	13	23	23	27
MED	250	255	260	260	250	240	235	230	215	202	225	210	200	210	215	220	220	230	250	280	250	250	250	250
UQ	265	272	270	270	265	245	250		218	218	235	225	218	225	235	232	240	245	252	280	275	265	260	258
LQ	245	250	250	250	242	232	222		212	200	218	200	200	205	205	210	208	220	232	258	250	250	238	245

JUN. 1987 | H'F (KM)

IONOSPHERIC DATA

JUN. 1987 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

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

JUN. 1987 | H'E (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	125	120	115	125	125	115	115	105	105	105	105	105	105	105	105	125	120	120	115	110	110	105	S
2	105	S	E	S	150	130	125	115	110	105	110	105	B	105	125	105	140	120	115	110	110	110	105	105
3	100	100	100	100	S	130	125	120	115	110	110	115	105	B	105	105	100	110	115	110	110	105	110	125
4	100	100	100	105	S	125	125	120	115	110	110	105	B	105	105	105	135	120	120	115	110	105	105	105
5	100	100	S	S	100	130	120	120	110	110	115	110	105	100	100	100	G	100	115	115	110	110	110	105
6	S	S	E	S	S	130	125	120	120	115	115	110	115	105	105	100	105	150	125	130	115	E	S	S
7	S	E	S	100	130	120	115	115	110	115	110	110	110	110	105	105	105	G	120	115	110	110	105	105
8	100	100	S	E	G	G	125	120	110	110	110	115	110	110	105	105	130	125	120	120	110	110	110	105
9	105	105	100	105	S	125	125	115	110	110	110	110	110	110	105	110	105	105	125	120	110	115	S	105
10	105	S	S	S	135	130	125	120	115	120	120	125	G	G	105	105	125	120	125	115	115	110	105	105
11	105	105	105	105	105	130	120	120	115	115	115	110	110	110	105	120	130	120	120	120	120	110	110	105
12	105	105	105	100	100	130	120	115	110	110	110	105	105	105	105	105	105	105	115	110	110	110	105	105
13	S	100	100	100	S	125	120	115	105	110	110	110	105	105	G	105	105	105	120	110	110	105	105	S
14	E	S	S	105	S	130	125	120	125	110	110	105	110	105	105	G	125	125	C	120	110	110	105	105
15	105	105	105	S	S	145	130	120	125	110	115	115	110	105	105	115	120	120	120	115	110	110	110	110
16	110	105	100	125	105	100	125	115	115	115	110	115	115	115	105	105	105	125	115	120	115	110	115	S
17	120	105	100	100	S	130	125	125	120	120	110	105	120	120	120	110	110	G	130	115	110	110	110	110
18	105	105	105	110	S	135	135	125	115	110	105	105	G	105	105	140	135	125	125	120	110	110	105	105
19	105	105	100	105	105	140	130	125	115	120	120	120	115	110	110	110	110	G	G	110	115	110	125	E
20	S	105	S	S	S	130	120	110	110	105	110	110	110	105	105	100	100	115	110	105	120	115	105	105
21	105	100	100	100	115	125	120	115	110	105	110	110	155	135	125	125	110	115	115	115	115	110	105	105
22	105	E	105	S	G	G	125	115	110	110	110	115	110	105	105	G	105	130	115	115	115	110	105	105
23	105	S	100	E	S	135	125	120	110	115	105	105	110	105	105	105	120	115	115	105	105	105	105	105
24	105	105	105	125	125	130	125	115	110	175	170	110	105	105	120	120	115	115	110	110	110	110	110	110
25	105	105	100	100	105	120	120	120	115	110	105	110	110	105	105	105	105	130	115	110	100	105	105	110
26	115	S	115	S	130	G	G	125	120	115	110	110	115	105	105	100	100	100	115	115	105	105	105	105
27	100	100	150	115	S	120	125	115	105	115	110	110	100	105	105	110	100	115	110	110	110	105	105	105
28	105	100	100	105	100	100	130	125	110	115	110	105	105	105	105	105	135	105	105	115	110	110	105	110
29	S	110	105	S	S	135	125	125	125	125	120	110	120	105	105	100	105	110	115	105	105	105	105	105
30	105	100	100	100	100	125	130	110	110	110	110	110	105	105	120	100	100	120	120	100	105	120	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	24	22	22	19	15	27	29	30	30	30	30	30	26	28	29	28	29	27	28	30	30	29	28	25
MED	105	105	100	105	105	130	125	120	110	110	110	110	110	105	105	105	110	120	115	115	110	110	105	105
UQ	105	105	105	108	128	130	125	120	115	115	115	110	115	110	105	110	125	122	120	115	115	110	110	105
LQ	105	100	100	100	102	125	120	115	110	110	110	105	105	105	105	105	105	110	115	110	110	105	105	105

JUN. 1987 | H'ES (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI Lat. 45° 23.5' N, Long. 141° 41.2' E Sweep 1 MHz to 25 MHz in 24sec 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 6	F 2	F 2	F 3	C 2	C 2	C 3	C 4	C 6	C 4	C 3	C 3	L 2	L 1	L 2	L 2	CL 11	CL 32	C 3	C 5	F 5	F 2	F 2	
2	F 2				C 1	C 2	C 2	C 4	C 2	C 2	C 2	L 1		L 2	C 1	L 1	HL 11	C 3	C 4	C 6	F 5	F 2	F 2	F 3
3	F 2	F 4	F 2	F 2		C 2	C 2	C 2	C 2	C 4	C 2	C 1	C 1		L 2	L 2	L 2	L 2	CL 24	C 4	F 5	F 4	F 4	F 1
4	F 2	F 2	F 1	F 2		C 2	C 2	C 1	C 2	C 2	C 1	C 3		L 1	L 1	L 2	HL 22	C 1	C 5	C 6	F 3	F 3	F 4	F 2
5	F 2	F 3			L 2	CL 21	C 3	C 2	C 3	C 2	C 1	C 1	L 1	L 2	L 1	L 2		L 2	C 2	C 2	F 4	F 3	F 2	F 2
6						C 2	C 3	C 3	C 2	C 1	C 2	C 2	C 1	L 1	L 2	L 2	L 2	H 2	C 2	C 1	F 1			
7				F 1	C 1	C 2	C 2	C 2	C 1	C 2	C 2	C 3	C 2	C 3	L 2	L 2	L 1		C 3	L 3	F 5	F 2	F 3	F 2
8	F 2	F 2					C 2	C 2	C 2	C 4	C 3	C 1	C 2	C 2	L 1	L 1	C 2	C 3	C 3	CL 63	F 7	F 3	F 4	F 3
9	F 4	F 3	F 2	F 2		C 2	C 4	C 3	C 5	C 3	C 4	C 2	C 2	C 2	C 2	C 2	C 4	CL 22	C 6	C 6	F 7	F 7		F 2
10	F 2				C 1	C 3	C 4	C 2	C 2	C 1	C 2	C 1			L 2	L 2	CL 23	C 3	C 2	C 4	F 6	F 5	F 3	F 3
11	F 2	F 2	F 3	F 2	L 2	C 2	C 3	C 3	C 4	C 2	C 2	C 1	C 2	C 3	L 3	C 2	C 3	C 5	C 6	C 5	F 5	F 5	F 5	F 4
12	F 5	F 7	F 2	F 2	L 2	C 4	C 5	C 5	C 6	C 3	C 2	C 3	C 3	L 3	L 3	L 4	L 2	L 3	C 6	C 5	F 7	F 4	F 4	F 2
13		F 2	F 2	F 2		C 3	C 3	C 4	C 3	C 3	C 1	C 1	C 4	C 2		L 2	L 3	L 3	C 4	L 6	F 2	F 4	F 3	
14				F 2		C 4	C 4	C 5	C 2	C 5	C 2	C 2	C 2	C 2	L 2		C 3	C 4		C 3	F 7	F 3	F 2	F 4
15	F 2	F 2	F 2			C 2	C 3	C 3	C 3	C 3	C 2	C 1	C 1	C 2	L 1	CL 12	CL 31	C 4	C 6	L 4	F 7	F 7	F 3	F 4
16	F 3	F 5	F 5	FF 15	CL 12	LH 11	C 2	C 6	C 3	C 2	C 2	C 1	C 1	C 1	C 2	L 2	L 2	C 3	C 4	L 4	F 5	F 4	F 3	
17	FF 13	F 5	F 4	F 2		CL 21	C 2	C 6	C 4	C 2	C 4	C 4	C 2	C 2	C 2	C 2	C 2		C 5	L 5	F 5	F 3	F 2	F 3
18	F 3	F 3	F 4	F 2		C 3	C 4	C 2	C 3	C 3	C 2	C 2		L 2	C 2	H 2	C 2	C 2	C 4	C 3	F 4	F 3	F 3	F 3
19	F 4	F 5	F 2	F 2	L 2	C 1	C 3	C 3	C 2	C 2	C 1	C 1	C 1	L 1	C 2	C 2	C 2			L 5	F 7	F 2	F 1	
20		F 3				C 2	C 4	C 3	C 4	C 5	C 2	C 1	L 1	L 1	L 2	L 2	L 2	C 5	C 5	C 7	C 6	F 5	F 6	F 3
21	F 4	F 3	F 4	F 2	C 1	C 3	C 3	C 3	C 2	C 2	C 2	C 2	HC 11	H 1	C 1	C 3	C 4	C 2	C 5	C 3	F 6	F 1	F 2	F 4
22	F 2		F 2				C 3	C 4	C 2	C 2	C 1	C 1	C 2	C 2	L 2		L 1	CL 11	CL 42	C 4	F 2	F 1	F 1	F 2
23	F 2		F 2			C 1	C 1	C 2	C 2	C 2	C 3	C 2	C 2	L 2	L 2	L 2	CL 33	CL 42	C 6	L 4	F 2	F 7	F 6	F 5
24	F 4	F 4	F 4	FF 23	CL 12	C 5	C 4	C 6	C 4	HC 11	HC 11	C 2	L 2	L 2	CL 31	CL 22	C 4	C 2	C 7	L 7	F 3	F 6	F 6	F 7
25	F 6	F 4	F 3	F 4	L 2	C 2	C 4	CL 21	C 3	C 3	C 3	C 2	C 2	C 2	L 2	L 3	L 2	CL 12	L 3	CL 43	F 5	FF 21	F 3	F 1
26	F 2		F 1		C 1			C 2	C 2	C 2	C 2	C 1	C 1	C 1	L 2	L 2	L 2	L 3	CL 33	C 2	F 7	F 4	F 4	F 4
27	F 2	FF 21	F 1	F 2		C 3	C 2	C 2	C 3	C 3	C 2	C 1	L 2	L 1	LL 12	CL 22	LL 32	CL 32	C 6	L 7	F 7	F 4	F 5	F 4
28	F 2	F 3	F 5	F 2	L 1	L 3	C 4	C 6	C 5	C 3	C 2	C 5	L 3	L 2	L 3	L 2	CL 12	L 2	L 2	C 5	F 5	F 4	F 7	F 1
29		F 1	F 2			C 2	C 2	C 3	C 2	C 2	C 1	C 1	C 1	C 3	L 2	L 3	L 2	CL 32	C 3	L 4	F 4	F 5	F 4	F 3
30	F 5	F 5	F 5	F 4	L 2	C 3	C 2	C 6	C 3	C 3	C 2	C 2	C 2	C 3	CL 32	L 3	L 4	CL 53	CL 14	L 5	F 7	F 6	F 7	F 2
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. 1987 | TYPES OF ES

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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	55	56	58	58	48																65	65	63	X 58
2	62	59	57	50	54															60	69	64	62	54
3	X 46	46	44	46	44																X 70	64	64	59
4	60	58	58	62	53																72	A	78	76
5	64	59	55	X 54	44																73	65	64	63
6	59	62	55	54	52	53		60													X 76	X 77	X 71	X 69
7	X 63	X 67	68	48	A																X 60	X 58	60	62
8	56	57	59	53	53																X 63	60	59	A
9	59	60	60	59	59	56															A	71	70	69
10	62	58	X 48	X 42	X 44																72	69	A	A
11	A	58	A	55	A	52															87	72	70	A
12	A	54	48	51	49																66	A	A	52
13	A	A	50	48	40																72	66	A	A
14	59	54	54	50	50																X 68	X 65	64	62
15	59	54	55	48	45	53															X 71	X 71	68	68
16	66	64	A	56	56	57															X 77	X 70	A	A
17	A	62	62	68	59																72	74	73	69
18	68	61	60	58	53	56	59														X 76	X 74	72	69
19	60	54	55	X 52	56					72											95	83	89	75
20	63	X 55	54	X 51	X 51			77													A	69	66	A
21	60	61	59	56	52																78	X 76	X 61	X 54
22	X 50	54	54	51	50	55															80	X 69	X 62	X 59
23	X 58	60	59	59	58	59		83													X 83	74	68	60
24	59	62	56	53	51																X 70	X 61	65	64
25	59	60	61	60	58																82	75	79	60
26	53	56	54	59	58																77	72	72	68
27	60	58	58	58	57																70	68	65	62
28	A	A	61	61	62	62	68														69	70	64	62
29	55	54	51	56	56					73											X 67	X 64	68	68
30	58	56	52	54	52	59															X 67	X 62	60	62
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	28	28	30	28	10	2	3		2										1	28	28	26	24
MED	59	58	56	54	52	56	64	77		72										60	72	69	66	62
UQ	62	60	59	58	56	59		80													77	73	71	68
LQ	58	54	54	51	50	53		68													X 68	64	63	60

JUN. 1987 | FXI (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43.5' N, Long. 140° 03.0' E | Sweep 1 MHz to 25 MHz in 24sec 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 46	F 46	F 47	F	F 36	47	A	A	A	A	A	A	56	A	59	51	52	A	50	A	F 57	F	F	52
2	F	F	F	F 41	F 44	47	56	A	A	A	A	A	A	53	53	49	51	51	48	F 52	F 58	F	F	F 44
3	40	F 39	F 36	F	F	42	46	50	54	58	A	51	51	55	61	A	57	56	57	A	64	F	F	F
4	F	F	F	F	F	A	A	A	56	66	56	A	51	A	60	66	61	56	55	A	F	A	F	F
5	F	F 50	F 49	48	F 35	47	53	69	56	59	57	A	54	59	60	59	54	50	51	58	F 64	F 58	F	F 54
6	F	F	F	F 43	F	F	50	F 53	E G 44	43	A	A	A	A	54	53	50	50	57	65	70	71	65	63
7	57	61	F	F	A	A	A	A	A	A	A	48	49	A	53	54	54	57	A	52	54	52	F	F
8	F 50	F	F	F	F 44	49	56	A	56	A	A	A	A	A	A	46	A	A	57	61	57	F 51	F	A
9	F	F	F	F	F	F	47	51	57	61	60	A	A	A	A	A	A	63	69	A	A	F	F	F
10	F 52	F 48	42	36	38	48	A	58	68	66	63	56	50	55	57	56	63	56	50	58	F 64	F	A	A
11	A	F	A	F	A	F	A	A	A	A	A	A	A	A	A	54	56	53	A	A	F	F 65	F	A
12	A	F	F	F	F	47	53	A	A	A	A	A	A	52	51	A	A	53	A	A	F 59	A	A	F
13	A	A	F	F	F	A	A	A	A	A	A	A	A	51	53	53	51	54	52	A	F 64	F	A	A
14	F	F	F	F 40	F	A	A	A	A	A	A	A	A	A	51	54	A	A	A	A	62	59	F	F 54
15	F 49	F 46	F	F	F 36	F 46	49	A	56	62	59	56	A	51	56	55	56	55	A	60	65	65	F 57	F
16	F	F	A	F	F	F 50	54	60	A	A	A	A	59	A	52	53	55	57	64	70	71	64	A	A
17	A	F	F	F	F	43	51	57	A	A	72	68	A	50	60	62	68	56	50	57	F	F 65	F	F
18	F 58	F 52	F 50	F 49	F 44	F 49	F 49	H 52	66	63	55	A	56	54	55	57	56	56	58	69	70	68	F 62	F 61
19	F 52	F 46	F 47	46	F 46	52	56	66	69	F 63	56	56	56	71	72	66	60	65	68	80	F	F	F	F
20	F	49	F 46	45	45	50	60	F 70	75	A	A	A	A	A	51	A	A	A	A	A	A	F	F	A
21	F	F	F	F	F	44	52	64	A	A	A	A	A	59	61	64	A	A	A	A	F	70	55	48
22	44	F	F	F 42	F	F 46	57	64	61	A	A	54	55	64	67	61	52	48	A	59	F	63	56	53
23	52	F	F	F	F 49	F 50	58	F 74	67	58	A	A	A	A	59	54	53	53	62	75	77	F	F	F
24	F	F	F 46	F 45	F	H 44	52	A	A	A	A	A	53	A	A	68	66	53	A	60	64	55	F	F
25	F	F	F	F	F	49	59	64	R 60	A	A	A	A	A	58	62	64	60	A	70	F 73	F 66	F	F 51
26	F	F	F	F	F	56	43	48	58	52	A	A	62	58	60	57	56	62	67	75	F 68	F	F	F
27	F	F	F	F	F	42	48	A	A	A	A	A	A	A	A	A	52	52	52	58	F	F	F	F
28	A	A	F	F	F	F	F 60	56	A	A	A	A	50	56	60	60	54	52	46	54	F	F	F	F
29	F	F	F 43	F 48	F 47	54	48	55	61	F 67	66	57	54	56	59	63	64	A	58	63	61	58	F	F
30	F	F	F	F	F	F	49	A	A	A	54	A	A	61	55	56	55	56	57	57	61	56	F 51	F
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	9	9	11	11	21	23	17	16	12	10	8	14	16	25	25	24	24	20	20	20	16	6	9
MED	F 51	F 48	F 46	F 45	F 44	47	52	58	59	62	58	56	54	56	53	56	56	56	57	60	64	64	56	F 53
UQ	F 52	F 50	F 47	47	F 46	50	56	64	66	66	63	56	56	59	60	62	60	56	60	70	69	66	F 62	F 54
LQ	F 46	F 46	F 43	F 42	F 37	46	49	53	56	58	56	52	51	52	53	54	52	52	50	58	60	57	55	51

JUN. 1987 | FOF2 (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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	A	A	A	A	A	A	A	A	A	A	A	A					
2							360	A	A	A	A	A	A	A	410	410	400	360	L					
3								L 410	A	A	A	440	440	A	440	A	390	A	A					
4							A	A	A	A	A	A	R 450	A	A	A	A	380	A					
5							L	A	420	A	440	A	450	A	430	A	A	A	A					
6						320	360	380	440	A	A	A	A	A	A	A	390	380	320					
7							A	A	A	A	A	A	440	A	430	A	A	A	A					
8							370	A	A	A	A	A	A	A	A	A	A	A	A					
9							370	A	420	A	A	A	A	A	A	A	A	380	320					
10							A	A	A	A	A	450	440	440	A	A	400	A	L					
11						A	A	A	A	A	A	A	A	A	A	440	A	400	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	420	400	380	340					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15							A	A	A	A	440	440	A	A	430	430	410	A	A					
16						L	L 400	410	A	A	A	A	A	A	430	420	410	A	A					
17							A	A	A	A	A	A	A	440	A	430	410	360	L 340					
18							A	420	A	A	A	A	A	440	440	420	420	A	A					
19							A	A	A	A	A	A	A	A	A	A	A	A	A					
20							L 390	400	A	A	A	A	A	A	450	A	A	A	A					
21							A	A	A	A	A	A	A	A	A	A	A	A	A					
22							360	A	A	A	A	A	460	A	440	A	400	370	A					
23							A	390	A	A	A	A	A	A	A	A	A	A	A					
24						L	A	A	A	A	A	A	A	A	A	A	A	A	A					
25						320	380	A	A	A	A	A	A	A	A	A	A	A	A					
26								400	A	A	A	A	A	A	420	A	A	390	A					
27						310	A	A	A	A	A	A	A	A	A	A	A	380	A					
28							A	A	A	A	A	A	450	A	A	A	410	A	A					
29							L	400	410	A	440	A	A	A	A	A	A	A	340					
30						L	L	A	A	A	440	A	A	A	430	420	400	380	L 340					
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	8	8	4		4	3	7	3	11	8	12	11	6					
MED						320	370	400	420		440	440	450	440	430	420	400	380	340					
UQ						320	385	410	430		440	445	450	440	440	430	410	380	340					
LQ						315	360	395	415		440	440	440	440	430	420	400	375	320					

JUN. 1987 | FOF1 (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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						200	235	275	300	310	335	A	A	A	A	A	A	235	A	S				
2						195	235	280	305	325	A	A	A	A	A	A	A	A	A	S				
3						205	250	280	305	325	A	A	A	A	A	A	A	A	A	S				
4						200	250	A	305	A	A	A	A	A	A	A	A	A	200	S				
5						A	245	A	A	A	A	A	A	A	A	A	A	A	A	S				
6						195	240	A	A	A	A	A	A	A	A	A	A	245	A	S				
7						A	235	A	A	315	A	A	A	A	A	A	A	A	A	S				
8						195	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
9						A	240	270	305	315	325	A	A	A	A	A	A	A	A	S				
10						A	240	275	300	320	330	345	A	A	A	A	A	245	A	S				
11						A	240	A	305	320	A	A	A	A	340	330	300	255	A	S				
12						A	A	290	300	315	315	A	A	A	A	A	A	A	A	S				
13						S	235	280	300	A	A	A	A	A	A	A	A	A	A	S				
14						200	235	285	A	315	330	A	A	A	A	A	A	255	A	S				
15						200	235	A	305	325	340	345	A	A	A	A	A	260	205	S				
16						200	230	285	305	310	320	A	A	A	A	A	A	A	A	S				
17						200	245	295	305	325	340	355	A	345	A	A	A	265	205	S				
18						200	240	295	310	315	340	A	A	A	A	A	290	265	A	S				
19						A	240	235	A	A	340	A	A	A	A	A	A	A	205	S				
20						200	235	A	A	A	A	A	A	A	A	A	280	255	205	S				
21						A	245	260	295	305	A	A	A	A	A	310	235	245	A	S				
22						205	220	A	A	A	A	340	A	A	A	A	A	A	A	S				
23						A	A	295	305	310	A	A	A	A	A	A	A	A	A	S				
24						A	A	A	A	A	A	A	A	355	345	315	295	255	A	S				
25						S	A	A	A	A	340	A	A	A	A	A	A	A	A	S				
26						A	A	A	305	A	A	320	A	A	A	A	A	255	A	S				
27						195	A	A	305	315	315	A	A	A	A	310	290	255	A	S				
28						185	235	290	305	A	A	A	A	A	A	A	A	A	A	S				
29						S	235	270	A	325	A	345	A	A	A	A	A	A	A	S				
30						205	C	A	A	315	335	A	A	A	A	A	280	250	205	S				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						16	22	16	18	13	13	6		2	2	4	7	14	6					
MED						200	238	282	305	315	335	345		350	342	312	290	255	205					
UQ						200	240	290	305	325	340	345				322	292	255	205					
LQ						195	235	275	300	315	325	340				310	282	245	205					

JUN. 1987 | FOE (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43.5' N, | Long. 140° 08.0' E | Sweep 1 MHz to 25 MHz in 24sec 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	JA 28	JA 46	JA 53	JA 64	JA 50	JA 48	JA 64	JA 50	JA 85	JA 84	JA 87	JA 123	JA 93	JA 66	JA 56	JA 48	JA 42	JA 84	JA 52	JA 115	JA 44	JA 34	JA 44	JA 24
2	JA 53	ES 15	JA 18	ES 15	ES 16	JA 37	36	JA 55	JA 60	JA 80	JA 100	JA 109	JA 90	JA 66	JA 38	JA 35	JA 53	JA 32	26	JA 32	JA 44	JA 33	JA 24	JA 33
3	JA 20	ES 15	JA 26	JA 18	ES 15	JA 25	27	JA 44	JA 48	JA 71	JA 84	JA 120	JA 54	JA 50	JA 64	JA 164	JA 29	JA 54	JA 56	JA 76	JA 50	JA 50	JA 54	JA 32
4	JA 34	JA 54	ES 15	ES 15	JA 28	JA 53	JA 33	JA 73	JA 66	JA 64	JA 65	JA 56	JA 45	JA 70	JA 66	JA 52	JA 64	JA 50	JA 53	JA 136	JA 65	JA 84	JA 84	JA 54
5	JA 42	JA 29	JA 24	JA 29	JA 25	25	JA 44	JA 80	JA 120	JA 53	JA 50	JA 84	JA 44	JA 59	JA 50	JA 50	JA 54	JA 44	JA 39	JA 50	JA 50	JA 54	JA 46	JA 41
6	JA 29	JA 31	JA 20	ES 16	ES 15	24	JA 41	JA 58	JA 52	JA 50	JA 86	JA 76	JA 170	JA 70	JA 63	JA 54	JA 42	JA 44	JA 50	JA 43	JA 44	JA 31	JA 18	ES 15
7	ES 16	ES 15	ES 15	ES 15	JA 37	JA 64	JA 64	JA 76	JA 60	JA 73	JA 53	JA 66	JA 50	JA 84	JA 84	JA 77	JA 66	JA 54	JA 74	JA 56	JA 41	JA 44	JA 50	JA 60
8	JA 48	JA 29	JA 31	JA 23	JA 21	27	JA 36	JA 60	JA 60	JA 60	JA 76	JA 123	JA 116	JA 120	JA 84	JA 75	JA 58	JA 84	JA 77	JA 53	JA 56	JA 53	JA 84	JA 64
9	JA 74	JA 36	JA 24	JA 21	ES 15	23	30	40	G	JA 47	JA 64	JA 121	JA 84	JA 80	JA 107	JA 110	JA 64	JA 31	JA 40	JA 83	JA 84	JA 50	JA 50	JA 37
10	JA 33	JA 27	JA 33	JA 32	JA 27	JA 29	JA 63	JA 61	JA 53	JA 50	JA 68	JA 43	JA 48	JA 41	JA 61	JA 50	JA 50	JA 44	JA 36	JA 86	JA 83	JA 53	JA 117	JA 132
11	JA 84	JA 85	JA 65	JA 44	JA 61	JA 53	JA 62	JA 77	JA 96	JA 74	JA 58	JA 67	JA 114	JA 73	JA 114	JA 38	JA 60	JA 44	JA 116	JA 87	JA 87	JA 84	JA 50	JA 86
12	JA 83	JA 64	JA 44	JA 25	JA 34	JA 44	JA 52	JA 87	JA 107	JA 116	JA 97	JA 103	JA 122	JA 66	JA 64	JA 65	JA 76	JA 58	JA 75	JA 77	JA 102	JA 76	JA 78	JA 44
13	JA 68	JA 52	JA 44	JA 34	JA 30	JA 47	JA 85	JA 108	JA 111	JA 162	JA 135	JA 83	JA 63	JA 82	JA 62	JA 44	JA 50	JA 44	JA 36	JA 106	JA 84	JA 84	JA 63	JA 113
14	JA 46	JA 29	JA 29	JA 32	JA 37	JA 49	JA 65	JA 78	JA 100	JA 103	JA 94	JA 141	JA 136	JA 56	JA 59	JA 58	JA 78	JA 81	JA 91	JA 77	JA 44	JA 34	JA 25	JA 24
15	JA 24	JA 26	JA 25	JA 21	JA 26	24	JA 46	JA 60	JA 53	JA 50	JA 43	JA 82	JA 81	JA 77	JA 50	JA 36	JA 44	JA 46	JA 87	JA 45	JA 50	JA 49	JA 82	JA 84
16	JA 64	JA 60	JA 64	JA 50	JA 26	27	33	JA 44	JA 107	JA 101	JA 117	JA 79	JA 98	JA 83	JA 38	JA 33	JA 37	JA 45	JA 74	JA 50	JA 65	JA 74	JA 102	JA 85
17	JA 103	JA 78	JA 43	JA 53	JA 78	JA 44	JA 60	JA 84	JA 110	JA 96	JA 59	JA 60	JA 120	41	JA 50	JA 65	JA 36	33	28	JA 24	JA 48	JA 50	JA 52	JA 33
18	JA 24	JA 24	JA 36	JA 25	ES 15	28	JA 44	JA 46	JA 54	JA 75	JA 70	JA 70	JA 45	JA 41	JA 39	JA 38	JA 46	JA 76	JA 48	JA 31	JA 32	JA 32	JA 20	JA 37
19	JA 24	JA 44	JA 24	JA 24	JA 25	26	JA 40	JA 50	JA 130	JA 70	JA 46	JA 72	JA 110	JA 50	JA 84	JA 77	JA 97	JA 65	JA 42	JA 42	JA 84	JA 53	JA 82	JA 21
20	JA 44	JA 31	ES 15	ES 15	JA 29	24	32	JA 49	JA 83	JA 106	JA 126	JA 129	JA 103	JA 105	JA 97	JA 103	JA 85	JA 120	JA 134	JA 105	JA 88	JA 50	JA 64	JA 77
21	JA 52	JA 65	JA 77	JA 85	JA 30	30	JA 56	JA 66	JA 105	JA 96	JA 97	JA 104	JA 84	JA 50	JA 65	JA 88	JA 88	JA 107	JA 107	JA 120	JA 108	JA 64	JA 110	JA 33
22	JA 25	JA 24	JA 24	JA 21	JA 20	25	JA 36	JA 72	JA 57	JA 84	JA 78	JA 61	JA 44	JA 60	JA 46	JA 54	JA 46	JA 45	JA 69	JA 47	JA 64	JA 35	JA 32	JA 53
23	JA 32	JA 18	JA 18	JA 46	JA 25	JA 44	JA 50	JA 44	JA 53	JA 58	JA 113	JA 135	JA 94	JA 108	JA 84	JA 52	43	JA 53	JA 46	JA 33	JA 32	JA 44	JA 54	JA 52
24	JA 44	JA 52	JA 77	JA 34	JA 29	23	JA 54	JA 123	JA 112	JA 114	JA 115	JA 87	JA 77	JA 63	JA 98	JA 84	JA 84	JA 109	JA 80	JA 31	JA 38	JA 30	JA 52	JA 50
25	JA 78	JA 77	JA 51	JA 53	JA 46	JA 30	30	JA 64	JA 89	JA 102	JA 140	JA 114	JA 176	JA 84	JA 82	JA 66	JA 62	JA 66	JA 142	JA 98	JA 64	JA 41	JA 52	JA 24
26	JA 50	JA 24	JA 21	JA 24	JA 18	JA 26	30	JA 44	JA 76	JA 73	JA 74	JA 55	JA 53	JA 54	JA 44	JA 52	JA 55	31	JA 54	JA 30	JA 84	JA 52	JA 65	JA 54
27	JA 65	JA 21	JA 35	JA 54	JA 51	27	JA 46	JA 88	JA 87	JA 97	JA 108	JA 65	JA 54	JA 60	JA 157	JA 65	JA 70	32	JA 61	JA 34	JA 85	JA 53	JA 64	JA 53
28	JA 84	JA 76	JA 53	JA 48	JA 42	G	JA 46	JA 50	JA 85	JA 186	JA 169	JA 126	JA 65	JA 66	JA 54	JA 65	JA 54	JA 64	JA 86	JA 53	JA 54	JA 50	JA 42	JA 41
29	JA 29	ES 15	ES 15	ES 16	ES 15	22	32	JA 54	JA 46	JA 53	JA 97	JA 53	JA 50	JA 87	JA 66	JA 64	JA 77	JA 66	JA 50	JA 32	JA 52	JA 50	JA 50	JA 50
30	JA 60	JA 52	JA 47	JA 46	JA 20	G	EC 24	JA 76	JA 120	JA 77	JA 65	JA 73	JA 92	JA 54	35	36	JA 50	32	26	JA 52	JA 76	JA 28	JA 24	JA 44
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	JA 45	JA 31	JA 30	JA 27	JA 26	27	JA 45	JA 60	JA 84	JA 73	JA 85	JA 82	JA 84	JA 66	JA 64	JA 56	JA 54	JA 52	JA 55	JA 52	JA 60	JA 50	JA 52	JA 47
UQ	JA 65	JA 54	JA 47	JA 46	JA 37	JA 44	JA 60	JA 77	JA 107	JA 101	JA 108	JA 120	JA 110	JA 82	JA 84	JA 75	JA 70	JA 66	JA 80	JA 86	JA 84	JA 53	JA 78	JA 60
LQ	JA 29	JA 24	JA 21	JA 21	JA 20	24	33	JA 50	JA 54	JA 60	JA 65	JA 66	JA 53	JA 54	JA 50	JA 48	JA 46	JA 44	JA 42	JA 34	JA 44	JA 35	JA 44	JA 33

JUN. 1987 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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	20	29	19	E S 15	18	42	A A 64	A A 50	A A 85	A A 84	A A 87	A A 123	45	A A 66	52	42	40	A A 84	46	A 115	39	29	19	E S 15
2	28	E S 15	E S 15	E S 15	E S 16	29	34	A A 55	A A 60	A A 80	A A 100	A A 109	A A 90	47	37	33	36	28	24	28	37	22	E S 15	E S 15
3	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	26	36	45	54	A A 84	36	38	45	34	A A 164	29	43	41	A A 76	26	30	29	23
4	18	33	E S 15	E S 15	E S 15	A A 53	A A 83	A A 73	45	54	47	A A 56	37	A A 70	54	46	52	36	43	A A 136	46	A A 84	41	28
5	E S 15	E S 15	18	20	E S 15	22	30	58	35	43	41	A A 84	37	46	40	45	45	40	33	40	22	31	23	E S 15
6	E S 15	18	E S 15	E S 16	E S 15	21	32	32	34	46	A A 86	A A 76	A A 170	A A 70	45	46	36	29	23	43	30	30	E S 15	E S 15
7	E S 16	E S 15	E S 15	E S 15	A A 37	A A 64	A A 64	A A 76	A A 60	A A 78	A A 53	45	40	A A 84	35	44	40	42	A A 74	45	30	32	22	18
8	E S 15	26	20	E S 15	E S 15	24	30	A A 60	42	A A 60	A A 76	A A 123	A A 116	A A 120	A A 84	44	A A 58	A A 84	38	50	E S 15	40	30	A A 64
9	30	22	E S 15	E S 15	E S 15	22	29	40	G	44	56	A A 121	A A 84	A A 80	A A 107	A A 110	A A 64	29	30	A A 83	A A 84	32	36	19
10	24	E S 16	19	E S 15	19	29	A A 63	44	47	46	56	37	37	39	46	49	35	40	24	42	E S 15	20	A A 117	A A 132
11	A A 84	26	A A 65	E S 15	A A 61	35	A A 62	A A 77	A A 96	A A 74	A A 58	A A 67	A A 114	A A 73	A A 114	36	52	34	A A 116	A A 87	70	50	44	A A 86
12	A A 83	21	21	E S 15	22	34	42	A A 87	A A 107	A A 116	A A 97	A A 103	A A 122	40	48	A A 65	A A 76	51	A A 75	A A 77	29	A A 76	A A 78	27
13	A A 68	A A 52	35	23	22	A A 47	A A 35	A A 108	A A 111	A A 162	A A 135	A A 83	A A 63	46	50	38	34	32	29	A A 106	E S 15	40	A A 63	A A 113
14	19	E S 15	29	E S 15	20	A A 49	A A 65	A A 78	A A 100	A A 103	A A 94	A A 141	A A 136	A A 56	46	51	A A 78	A A 81	A A 91	A A 77	32	21	E S 15	E S 15
15	E S 16	20	E S 15	E S 15	E S 15	23	39	A A 60	46	48	41	38	A A 81	46	36	33	31	43	A A 87	43	34	39	20	41
16	38	40	A A 64	28	E S 15	23	31	35	A A 107	A A 101	A A 117	A A 79	46	A A 83	35	32	34	42	50	46	50	38	A A 102	A A 85
17	A A 103	30	29	21	E S 15	40	43	55	A A 110	A A 96	49	49	A A 120	36	45	35	36	28	25	20	22	34	34	23
18	E S 15	E S 15	20	E S 15	E S 15	22	40	40	43	50	46	A A 70	45	39	36	36	38	52	47	23	30	29	E S 16	E S 15
19	20	E S 15	E S 15	E S 15	E S 15	24	40	44	42	46	46	46	46	45	60	50	46	46	36	32	38	36	E S 15	E S 15
20	E S 16	E S 15	E S 15	E S 15	E S 15	22	28	38	61	A A 106	A A 126	A A 129	A A 103	A A 105	35	A A 103	A A 85	A A 120	A A 134	A A 105	A A 88	20	38	A A 77
21	25	35	20	20	E S 15	23	45	46	A A 105	A A 96	A A 97	A A 104	A A 84	46	50	53	A A 88	A A 107	A A 107	A A 120	48	50	38	26
22	E S 15	E S 15	E S 15	E S 15	E S 15	23	34	42	46	A A 84	A A 78	50	40	47	37	48	32	28	A A 69	43	33	E S 15	E S 15	E S 15
23	25	E S 15	E S 15	E S 15	E S 15	23	38	34	44	47	A A 113	A A 135	A A 94	A A 108	47	51	43	40	33	29	30	29	E S 16	E S 16
24	23	20	26	22	18	23	50	A A 123	A A 112	A A 114	A A 115	A A 87	46	A A 63	A A 98	64	52	43	A A 30	27	35	E S 15	20	37
25	42	40	18	34	33	22	28	60	44	A A 102	A A 140	A A 114	A A 176	A A 84	55	51	50	44	A A 142	64	42	E S 15	42	22
26	33	18	E S 15	E S 15	E S 15	20	28	37	51	47	A A 74	A A 55	50	46	40	50	41	30	35	28	48	30	38	29
27	30	20	E S 15	24	38	22	42	A A 88	A A 87	A A 97	A A 108	A A 65	A A 54	A A 60	A A 157	A A 65	45	29	50	30	28	30	45	39
28	A A 84	A A 76	40	25	E S 15	G	44	48	A A 85	A A 186	A A 169	A A 126	37	51	46	44	31	41	38	26	44	30	E S 15	22
29	E S 15	E S 15	E S 15	E S 16	E S 15	21	32	30	36	46	36	46	46	46	52	57	58	A A 66	23	21	31	E S 16	18	22
30	40	24	24	21	E S 15	G	E C 24	A A 76	A A 120	A A 77	37	A A 78	A A 92	46	35	36	31	32	25	44	20	E S 16	E S 15	34
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	24	20	18	E S 15	E S 15	23	40	52	56	A A 78	A A 81	A A 78	A A 58	49	46	47	42	42	42	44	32	30	26	23
UQ	38	29	24	21	19	34	50	A A 76	A A 100	A A 101	A A 108	A A 114	A A 103	A A 73	54	53	52	51	A A 75	A A 77	44	38	41	39
LQ	E S 16	E S 15	E S 15	E S 15	E S 15	22	30	40	44	47	49	50	45	46	37	38	35	32	30	29	28	21	E S 16	E S 15

JUN. 1987 | FBES (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FMIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA | Lat. 39° 43.5' N, Long 140° 08.0' E | Sweep 1 MHz to 25 MHz in 24sec in automatic operation

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

JUN. 1937 | FMIN (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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 295	F 310	F 315	F	F 360	295	A	A	A	A	A	A	280	A	305	300	325	A	A	A	F 310	F	F	290
2	F	F	F	F 305	F 320	340	315	A	A	A	A	A	A	280	295	275	295	300	295	F 300	F 330	F	F	F 290
3	300	F 280	F 305	F	F	355	325	315	315	A	A	290	290	310	310	A	330	300	305	A	295	F	F	F
4	F	F	F	F	F	A	A	A	315	335	335	A	285	A	300	305	320	310	310	A	F	A	F	F
5	F	F 335	F 300	355	F 300	315	305	350	355	335	345	A	290	305	295	320	325	300	305	295	F 310	F 335	F	F 315
6	F	F	F	F 295	F	F	335	F 340	G	A	A	A	A	A	310	305	305	280	300	295	280	290	285	285
7	280	300	F	F	A	A	A	A	A	A	A	270	285	A	285	310	315	330	A	325	285	275	F	F
8	F 290	F	F	F	F 295	310	310	A	325	A	A	A	A	A	A	A	A	A	330	325	335	F 295	F	A
9	F	F	F	F	F	F	315	325	335	320	A	A	A	A	A	A	A	310	315	A	A	F	F	F
10	F 310	F 330	320	320	315	310	A	330	325	340	335	315	270	285	280	310	330	335	310	310	F 295	F	A	A
11	A	F	A	F	A	F	A	A	A	A	A	A	A	A	A	235	320	285	A	A	F	F 320	F	A
12	A	F	F	F	F	310	325	A	A	A	A	A	A	290	A	A	A	A	A	A	F 300	A	A	F
13	A	A	F	F	F	A	A	A	A	A	A	A	A	280	285	295	285	310	305	A	F 315	F	A	A
14	F	F	F	F 305	F	A	A	A	A	A	A	A	A	A	280	295	A	A	A	A	305	290	F	F 310
15	F 305	F 300	F	F	F 315	F 350	345	A	300	310	290	310	A	255	305	310	320	315	A	300	300	310	F 330	F
16	F	F	A	F	F	F 290	330	335	A	A	A	A	315	A	290	285	285	310	305	310	310	315	A	A
17	A	F	F	F	F	A	315	A	A	A	295	320	A	235	295	310	325	330	310	310	F	F 290	F	F
18	F 315	F 305	F 300	F 315	F 305	F 305	F 345	H 290	325	340	325	A	300	295	305	305	310	305	295	280	310	315	F 320	F 320
19	F 325	F 300	F 295	300	F 310	325	285	315	330	F 330	320	285	270	300	310	305	300	280	275	310	F	F	F	F
20	F	295	F 320	305	300	285	285	F 295	315	A	A	A	A	A	300	A	A	A	A	A	A	F	F	A
21	F	F	F	F	F	330	275	300	A	A	A	A	A	300	295	310	A	A	A	A	F	310	325	310
22	295	F	F	F 305	F	F 295	340	330	355	A	A	300	270	300	315	310	330	315	A	295	F	330	320	320
23	305	F	F	F	F 320	F 320	340	F 335	355	335	A	A	A	A	320	A	305	295	305	310	325	F	F	F
24	F	F	F 295	F 295	F	H 295	A	A	A	A	A	A	285	A	A	A	335	315	A	300	310	315	F	F
25	F	F	F	F	F	290	320	A	R 350	A	A	A	A	A	A	305	295	310	A	A	F 315	F 305	F	F 325
26	F	F	F	F	F	370	355	290	330	285	A	A	305	280	290	280	305	310	300	320	F 330	F	F	F
27	F	F	F	F	F	310	A	A	A	A	A	A	A	A	A	A	300	305	A	295	F	F	F	F
28	A	A	F	F	F	F	F 350	335	A	A	A	A	270	305	300	315	300	340	310	305	F	F	F	F
29	F	F	F 310	F 315	F 320	350	290	300	330	F 330	325	310	290	295	305	A	320	A	320	315	320	310	F	F
30	F	F	F	F	F	F	345	A	A	A	325	A	A	330	305	305	305	335	335	320	315	295	F 300	F
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	9	9	11	11	20	21	15	16	10	9	8	14	16	23	21	24	23	18	19	20	16	6	9
MED	F 302	F 300	F 305	F 305	F 315	310	325	325	328	332	325	305	285	295	300	305	312	310	305	310	310	310	320	F 310
UQ	F 310	F 310	F 315	F 315	F 320	335	340	335	342	335	335	312	290	302	305	310	325	315	310	312	F 318	315	F 325	F 320
LQ	295	F 300	F 300	F 302	F 302	295	310	300	315	320	320	288	270	280	292	295	300	300	300	298	300	292	300	290

JUN. 1987 | M(3000)F2 (0.01)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F1 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
2							A	A	A	A	A	A	A	A	390	380	A	360	L					
3								A	A	A	A	410	415	A	360	A	380	A	A					
4							A	A	A	A	A	A	R 400	A	A	A	A	A	A					
5							L	A	380	A	A	A	370	A	A	A	A	A	A					
6						520	A	380	380	A	A	A	A	A	A	A	A	350	360					
7							A	A	A	A	A	A	375	A	360	A	A	A	A					
8							370	A	A	A	A	A	A	A	A	A	A	A	A					
9							355	A	385	A	A	A	A	A	A	A	A	365	A					
10							A	A	A	A	A	355	405	405	A	A	330	A	L					
11						A	A	A	A	A	A	A	A	A	A	355	A	360	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	A	360	345	355					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15							A	A	A	A	A	395	A	A	385	365	360	A	A					
16						L	L 365	365	A	A	A	A	A	A	395	380	345	A	A					
17							A	A	A	A	A	A	A	405	A	370	A	395	L 405					
18							A	A	A	A	A	A	A	405	375	380	A	A	A					
19							A	A	A	A	A	A	A	A	A	A	A	A	A					
20							L 345	A	A	A	A	A	A	A	350	A	A	A	A					
21							A	A	A	A	A	A	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	380	A	360	A	375	380	A					
23							A	390	A	A	A	A	A	A	A	A	A	A	A					
24						L	A	A	A	A	A	A	A	A	A	A	A	A	A					
25						335	370	A	A	A	A	A	A	A	A	A	A	A	A					
26								A	A	A	A	A	A	A	A	A	A	340	A					
27						335	A	A	A	A	A	A	A	A	A	A	A	370	A					
28							A	A	A	A	A	A	395	A	A	A	365	A	A					
29							L	375	390	A	420	A	A	A	A	A	A	A	355					
30						L	L	A	A	A	410	A	A	A	395	330	380	350	L 375					
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	5	4	4		2	3	7	3	9	7	8	10	5					
MED						335	365	378	382		415	395	395	405	375	380	370	360	360					
UQ						428	370	385	388			402	402	405	390	380	380	370	L 375					
LQ						335	L 355	370	380			375	378	405	360	368	360	350	355					

JUN. 1987 | M(3000)F1 (0.01)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	400	A	A	350	355	A	A					
2							295	A	A	A	A	A	A	405	360	420	360	330	310					
3								305	330	A	A	380	400	350	330	A	300	315	A					
4							A	A	325	290	305	A	430	A	A	310	295	295	A					
5							300	A 245	260	290	290	A	380	350	325	310	295	A	300					
6						300	260	265	G	A	A	A	A	A	355	350	350	380	300					
7							A	A	A	A	A	470	H 400	A	400	345	320	295	A					
8							295	A	310	A	A	A	A	A	A	A	A	A	280					
9							315	305	300	295	A	A	A	A	A	A	A	290	270					
10							A	290	300	270	A	325	465	400	375	350	290	295	275					
11						400	A	A	A	A	A	A	A	A	A	390	A	370	A					
12						295	295	A	A	A	A	A	A	400	A	A	A	A	A					
13							A	A	A	A	A	A	A	430	A	360	390	325	300					
14							A	A	A	A	A	A	A	A	A	A	A	A	A					
15							260	A	350	315	345	350	A	490	350	345	325	310	A					
16						290	280	280	A	A	A	A	340	A	390	390	365	330	A					
17							A	A	A	A	295	300	A	600	355	320	275	285	280					
18							250	370	295	275	305	A	375	390	345	345	330	A	A					
19							300	290	280	300	350	400	420	335	A	310	345	335	340					
20							345	310	A 300	A	A	A	A	A	370	A	A	A	A					
21							A	335	A	A	A	A	A	355	350	320	A	A	A					
22							270	270	265	A	A	A	410	350	300	335	300	335	A					
23							275	260	250	300	A	A	A	A	325	A	355	360	315					
24						350	A	A	A	A	A	A	400	A	A	A	A 275	A 305	A					
25						335	290	A	275	A	A	A	A	A	A	335	335	300	A					
26								385	A	A	A	A	345	400	390	A	355	310	305					
27						330	A	A	A	A	A	A	A	A	A	A	A	330	A					
28							245	300	A	A	A	A	455	A	350	320	345	285	A					
29							L 310	340	290	300	300	345	385	375	355	A	A	A	290					
30						245	250	A	A	A	330	A	A	295	355	355	345	295	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						8	17	15	15	9	8	7	14	15	18	19	21	21	13					
MED						315	290	300	300	295	305	350	400	390	355	345	335	310	300					
UQ						342	300	322	318	300	338	390	420	402	370	352	355	330	305					
LQ						292	260	275	278	290	298	335	380	350	345	320	300	295	280					

JUN. 1987 | H'F2 (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	A	275	230	220	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	250	260
2	A	270	245	245	250	250	A	A	A	A	A	A	A	A	230	210	A	230	235	A 270	A	270	225	255
3	270	270	275	245	220	230	220	A	A	A	A	200	200	A	220	A	205	A	A	A	260	A	A	A 300
4	290	A	245	240	270	A	A	A	A	A	A	A	195	A	A	A	A	A	A	A	A	A	A	A
5	225	225	260	205	260	240	245	A	210	A	A	A	H 200	A	A	A	A	A	A	A	260	250	A 270	250
6	285	275	260	275	295	230	A	230	200	A	A	A	A	A	A	A	A	230	240	A	A	A 290	280	260
7	295	270	225	220	A	A	A	A	A	A	A	A	A	A	240	A	A	A	A	A	A 290	A	A 295	275
8	260	A	260	245	275	245	245	A	A	A	A	A	A	A	A	A	A	A	A	A	210	A	A	A
9	A	A 260	260	245	240	220	225	A	200	A	A	A	A	A	A	A	A	205	A	A	A	A	A	255
10	A	245	235	260	260	A	A	A	A	A	A	220	200	200	A	A	A	A	230	A	255	260	A	A
11	A	A 250	A	285	A	A	A	A	A	A	A	A	A	A	A	220	A	A	A	A	A	A	A	A
12	A	260	A	275	A 275	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	230	A	A	A
14	260	260	A	280	A 285	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	245	240	260
15	235	A 270	250	205	245	230	A	A	A	A	A	210	A	A	210	220	210	A	A	A	A	A	225	A
16	A	A	A	A	H 260	250	230	A	A	A	A	A	A	A	205	200	A	A	A	A	A	A 255	A	A
17	A	A	A	A 280	230	A	A	A	A	A	A	A	A	210	A	200	A	H 195	225	245	260	A	A	250
18	240	250	270	245	245	230	A	A	A	A	A	A	A	200	200	200	A	A	A	275	250	A 250	240	235
19	230	270	250	260	260	235	A	A	A	A	A	A	A	A	A	A	A	A	A	270	A	A	A	220
20	225	240	235	255	265	220	245	A	A	A	A	A	A	A	220	A	A	A	A	A	A	270	A	A
21	A 300	A	295	A 290	275	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A 250
22	260	290	270	245	240	250	A	A	A	A	A	A	210	A	A	A	220	235	A	A	A 270	210	235	240
23	A 275	260	270	270	240	250	A	220	A	A	A	A	A	A	A	A	A	A	A	A	A	A	270	245
24	A	A 290	A	A	270	230	A	A	A	A	A	A	A	A	A	A	A	A	A	250	245	240	295	A
25	A	A	275	A	A	240	210	A	A	A	A	A	A	A	A	A	A	A	A	A	A 270	230	A	235
26	A	280	275	260	230	H 215	210	A	A	A	A	A	A	A	A	A	A	230	A	260	A	A	A	A
27	A	A 265	255	A	A	255	A	A	A	A	A	A	A	A	A	A	A	220	A	A	A	A	A	A
28	A	A	A	A	285	225	A	A	A	A	A	A	220	A	A	A	210	A	A	270	A	A 260	245	225
29	240	235	235	240	240	245	A	220	215	A	200	A	A	A	A	A	A	A	225	245	A	250	245	250
30	A	A	A	A 270	255	220	230	A	A	A	205	A	A	A	200	210	200	A	205	A	240	240	290	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	16	20	21	24	25	21	9	3	4		2	3	6	3	8	7	5	7	6	8	12	14	14	17
MED	260	262	260	250	260	235	230	220	205		202	210	200	200	215	210	210	230	228	265	258	250	248	250
UQ	288	270	270	272	270	250	245	225	212			215	210	205	225	215	210	230	235	270	265	260	280	260
LQ	238	250	245	242	240	230	220	220	200			205	200	200	202	200	205	212	225	248	242	240	240	240

JUN. 1987 | H'F (KM)

IONOSPHERIC DATA

JUN. 1987 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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						S	110	105	105	105	105	105	100	A	A	A	105	105	S	S				
2						S	110	105	105	105	A	A	A	A	A	A	A	105	A	S				
3						S	110	110	105	105	105	105	105	105	A	A	A	105	110	S				
4						S	110	105	105	105	105	105	105	A	105	100	105	110	E S 120	S				
5						A	110	105	105	105	105	105	105	A	A	A	A	A	A	S				
6						S	110	105	105	105	105	100	A	A	A	A	A	A	E S 120	S				
7						S	110	105	105	105	100	105	105	105	A	A	A	A	110	S				
8						E S 125	110	105	105	105	105	A	A	A	A	A	A	A	A	S				
9						S	110	110	105	105	100	100	105	105	105	A	A	A	A	S				
10						S	105	105	105	110	105	105	105	A	A	A	A	100	A	S				
11						A	110	105	105	105	105	105	A	105	105	105	105	105	S	S				
12						S	105	105	105	105	105	105	A	A	105	105	105	A	110	S				
13						S	110	105	105	105	105	105	100	105	E S 120	105	A	A	A	S				
14						S	110	105	105	105	105	105	105	100	A	A	110	110	A	S				
15						S	105	105	105	105	105	105	105	105	105	A	105	105	110	S				
16						E S 120	110	105	105	105	100	100	100	100	105	A	A	A	A	S				
17						S	110	105	105	105	105	105	105	105	105	105	105	110	110	S				
18						S	110	105	105	105	105	100	105	A	A	A	105	110	110	S				
19						110	110	105	105	105	105	105	105	105	105	A	A	A	110	S				
20						S	110	105	105	105	105	105	100	105	105	A	105	110	S	S				
21						S	110	105	105	105	105	105	105	105	A	105	105	105	E S 120	S				
22						S	105	105	105	105	105	105	105	100	A	A	A	A	A	S				
23						S	110	105	105	105	105	105	105	105	A	A	A	A	A	S				
24						S	110	105	105	105	105	105	A	105	105	105	105	110	S	S				
25						S	110	105	105	105	105	105	105	105	A	A	A	A	A	S				
26						A	A	105	105	105	105	105	105	105	105	A	A	105	115	S				
27						105	110	105	105	105	105	105	100	105	A	110	105	110	S	S				
28						E S 120	110	105	105	105	105	105	105	105	105	105	105	A	A	S				
29						S	105	105	105	105	105	105	105	105	A	A	A	A	A	S				
30						S	C	105	105	105	105	105	A	A	105	100	105	110	110	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						5	28	30	30	30	29	28	23	20	14	10	14	16	12					
MED						E S 120	110	105	105	105	105	105	105	105	105	105	105	108	110					
UQ						E S 120	110	105	105	105	105	105	105	105	105	105	105	110	114					
LQ						108	110	105	105	105	105	105	105	105	105	105	105	105	110					

JUN. 1987 | H'E (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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	120	115	120	125	120	120	110	105	105	105	105	100	100	105	110	115	110	110	110	110	105	100
2	105	S	100	S	S	130	120	115	110	105	100	100	100	100	100	100	105	110	125	95	95	110	105	100
3	100	S	100	95	S	100	140	120	115	110	105	105	120	105	100	100	100	110	110	110	100	110	110	105
4	105	100	S	S	100	130	120	115	110	105	105	105	105	105	110	110	105	110	110	110	110	110	105	105
5	100	100	100	100	100	140	130	120	120	110	110	105	105	100	100	100	100	100	100	110	100	110	105	105
6	100	100	100	S	S	130	130	110	110	105	105	100	100	100	100	100	130	140	125	110	110	115	110	S
7	S	S	S	S	120	120	115	110	110	110	110	105	110	105	105	105	105	105	110	110	105	105	105	105
8	100	100	100	100	100	135	125	115	110	105	105	100	100	100	100	100	100	100	100	100	105	110	105	105
9	105	100	100	135	S	130	125	110	G	110	110	105	105	105	105	100	100	100	100	100	100	115	110	105
10	130	100	100	100	100	125	110	110	110	110	105	110	105	100	100	100	100	110	100	115	105	110	110	105
11	100	100	100	100	100	100	115	105	105	105	105	105	100	105	110	135	125	125	110	110	115	105	105	105
12	100	100	100	100	120	130	120	110	110	110	105	105	100	105	105	105	105	105	115	115	115	110	110	105
13	100	100	100	100	100	120	120	115	110	105	105	105	105	105	105	105	105	100	100	105	105	105	105	105
14	100	100	95	100	100	125	120	110	110	110	105	105	105	105	100	100	120	120	110	110	110	110	105	100
15	100	100	105	100	120	145	125	120	110	110	110	115	105	105	105	100	110	110	110	110	105	105	105	105
16	100	100	100	100	100	130	130	120	110	105	105	105	105	105	105	100	100	100	100	100	95	100	105	105
17	105	100	100	100	100	135	125	115	110	110	105	105	105	105	105	110	110	135	130	120	110	110	105	105
18	100	105	95	95	S	140	125	120	110	105	105	100	105	100	100	100	130	110	110	110	105	105	100	105
19	100	100	100	100	100	120	120	115	110	110	110	105	105	105	105	100	100	110	125	110	110	110	110	105
20	105	105	S	S	105	130	120	110	105	105	105	105	105	105	105	100	125	115	110	110	105	110	105	105
21	100	100	95	100	100	130	120	110	110	105	105	105	105	110	125	120	115	110	110	110	110	110	105	105
22	100	100	100	100	100	145	125	115	115	105	105	105	105	105	105	100	100	100	100	105	110	105	105	105
23	100	100	100	105	105	120	120	120	110	110	105	105	105	105	105	105	125	115	115	100	100	105	105	105
24	100	95	100	100	95	125	110	110	105	105	105	105	105	130	120	120	120	110	110	110	105	105	105	105
25	105	100	105	100	100	95	130	115	110	110	110	105	105	105	100	100	100	100	100	100	100	100	110	100
26	100	100	100	100	100	100	140	120	110	110	110	110	110	105	105	105	100	130	115	110	110	110	105	100
27	100	135	135	120	95	110	120	115	110	110	105	105	105	105	100	115	110	115	110	110	110	110	105	100
28	100	100	95	95	110	G	120	125	110	110	110	105	105	105	105	105	105	100	100	100	110	110	110	100
29	100	S	S	S	S	140	125	110	115	110	110	110	105	105	100	100	100	100	100	100	105	105	100	110
30	100	100	100	95	105	G	C	110	105	105	110	105	100	100	115	120	120	125	120	115	105	110	115	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	29	26	26	24	24	28	29	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29
MED	100	100	100	100	100	130	120	115	110	110	105	105	105	105	105	100	105	110	110	110	105	110	105	105
UQ	100	100	100	100	105	132	125	120	110	110	110	105	105	105	105	105	120	115	115	110	110	110	110	105
LQ	100	100	100	100	100	120	120	110	110	105	105	105	105	100	100	100	100	100	100	100	105	105	105	105

JUN. 1987 | H'ES (KM)

IONOSPHERIC DATA

JUN. 1987 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 08.0' E Sweep 1 MHz to 25 MHz in 24sec 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 3	F 5	FF 22	FF 22	FF 12	C 5	C 4	C 4	C 4	C 3	C 4	C 4	C 3	L 4	L 4	L 3	C 2	C 4	C 2	C 4	F 6	F 6	F 2	F 2
2	F 3		F 1			C 5	C 5	C 4	C 4	C 3	L 3	L 2	L 3	L 2	L 2	L 2	L 3	C 2	CL 21	L 3	F 5	F 2	F 2	F 3
3	F 2		F 1	F 2		L 1	H 1	C 3	C 3	C 2	C 2	C 2	C 1	C 2	L 2	L 4	L 3	C 3	C 3	CL 26	F 3	F 4	F 4	F 3
4	F 2	F 4			F 2	C 3	C 4	C 3	C 3	C 3	C 3	C 3	C 1	L 4	C 3	C 2	C 5	C 3	C 3	C 5	F 7	F 6	F 4	F 6
5	F 3	F 2	F 3	F 2	F 1	HL 11	C 3	C 5	C 1	C 2	C 2	C 3	C 1	L 2	L 2	L 2	L 3	L 3	L 3	CL 24	F 3	F 3	F 4	F 3
6	F 2	F 3	F 1			C 2	C 2	C 2	C 2	C 2	C 3	C 2	L 3	L 4	L 3	L 2	CL 13	HL 12	C 1	C 4	F 4	F 3	F 3	
7					F 5	C 3	C 5	C 4	C 3	C 4	C 2	C 2	C 2	C 2	L 2	L 2	L 3	L 3	C 6	C 6	F 4	F 3	F 2	F 2
8	F 2	F 3	F 3	F 2	F 2	H 2	C 2	C 3	C 2	C 3	C 3	L 4	L 3	L 3	L 3	L 3	L 4	L 4	L 2	L 3	F 2	F 6	F 2	F 5
9	F 3	F 2	F 2	F 1		C 2	C 2	C 2		C 2	C 3	C 3	C 3	C 3	C 5	L 4	L 5	L 4	L 2	L 4	F 4	FF 22	F 6	F 3
10	F 3	F 2	F 3	F 2	F 2	C 2	C 4	C 3	C 2	C 2	C 4	C 1	C 1	L 2	L 2	L 3	L 3	C 2	L 2	CL 63	F 2	F 7	F 7	F 4
11	F 3	F 3	F 7	F 3	F 4	L 3	C 4	C 5	C 4	C 4	C 3	C 2	L 3	C 3	C 2	H 1	C 2	C 3	C 5	C 7	F 6	F 5	F 5	F 5
12	F 3	F 5	F 2	F 2	F 4	C 4	C 3	C 5	C 3	C 4	C 5	C 5	L 3	L 2	C 2	C 5	C 5	L 3	C 7	C 6	F 6	F 7	F 7	F 7
13	F 4	F 6	F 3	F 4	F 2	C 5	C 4	C 5	C 5	C 4	C 3	C 4	C 2	C 2	C 3	C 3	L 2	L 3	L 3	L 2	F 2	F 6	F 5	F 5
14	F 2	F 2	F 3	F 2	F 2	C 4	C 5	C 4	C 6	C 3	C 3	C 4	C 4	C 2	L 3	L 3	C 4	C 6	CL 53	C 6	F 3	F 3	F 2	F 2
15	F 2	F 2	F 2	F 1	F 1	H 2	C 3	C 4	C 2	C 2	C 2	C 1	C 3	C 2	C 1	L 1	C 1	C 2	C 5	C 4	F 4	F 5	F 3	F 3
16	F 3	F 4	F 4	F 4	F 1	C 2	C 3	C 2	C 6	C 4	C 3	C 4	C 2	C 3	C 1	L 3	L 3	L 2	L 5	L 7	F 3	F 3	F 3	F 3
17	F 3	F 3	F 3	F 2	F 2	H 5	C 2	C 5	C 5	C 4	C 2	C 2	C 3	C 1	C 2	C 1	C 2	H 2	C 3	C 4	F 3	F 6	F 3	F 2
18	F 1	F 2	F 3	F 2		H 2	C 3	C 2	C 2	C 3	C 2	C 3	C 2	L 2	L 2	L 2	C 3	C 4	C 3	C 6	F 4	F 4	F 2	F 2
19	F 4	F 2	F 1	F 2	F 2	C 1	C 2	C 3	C 2	C 2	C 2	C 3	C 3	C 2	C 3	L 3	L 3	CL 33	C 3	C 3	F 3	F 4	F 2	F 2
20	F 2	F 2			F 2	C 1	C 2	C 4	C 3	C 3	C 4	C 3	C 3	C 3	C 2	L 4	C 5	C 4	C 6	C 5	F 5	F 3	F 5	F 5
21	F 3	F 4	F 2	F 3	F 2	C 2	C 4	C 2	C 4	C 5	C 5	C 2	C 2	C 1	CL 22	C 3	C 6	C 4	C 5	C 7	F 4	F 7	F 3	F 3
22	F 2	F 2	F 2	F 1	F 1	H 2	C 3	C 2	C 2	C 4	C 3	C 3	C 2	C 2	L 2	L 2	L 2	L 2	L 2	L 2	F 2	F 1	F 2	F 2
23	F 3	F 2	F 1	F 2	F 1	C 1	C 3	C 2	C 3	C 2	C 3	C 3	C 2	C 3	L 2	L 3	CL 22	CL 23	CL 32	L 3	F 2	F 5	F 2	F 5
24	F 7	F 2	F 4	F 3	F 2	C 3	C 2	C 4	C 4	C 3	C 2	C 3	L 2	C 2	C 4	C 3	C 2	C 2	C 4	C 3	F 2	F 2	F 2	F 6
25	F 6	F 5	F 7	F 5	F 3	L 2	C 1	C 3	C 4	C 3	C 3	C 5	C 4	C 4	L 3	L 3	L 4	L 2	L 3	L 5	F 4	F 2	F 5	F 3
26	F 4	F 2	F 2	F 2	F 1	L 2	HL 12	C 2	C 3	C 3	C 4	C 4	C 2	C 2	C 2	L 2	L 3	C 2	C 4	C 7	FF 73	F 7	F 6	F 4
27	F 7	F 2	FF 12	FF 26	F 4	C 1	C 2	C 4	C 3	C 3	C 4	C 3	C 2	C 2	L 3	C 3	C 3	C 3	C 6	C 7	F 4	F 2	F 6	F 5
28	F 3	F 4	F 3	F 3	F 2		C 3	C 3	C 3	C 3	C 3	C 3	C 1	C 3	C 2	C 3	C 2	L 4	L 3	L 3	F 3	F 6	F 2	F 3
29	F 2					H 1	C 2	C 1	C 2	C 2	C 1	C 2	C 1	C 3	L 3	L 5	L 4	L 4	L 3	L 2	F 4	F 2	F 2	F 2
30	F 4	F 4	F 4	F 2	F 1			C 2	C 3	C 3	C 1	C 3	L 3	L 2	C 1	C 1	C 1	C 3	C 2	C 6	F 2	FF 21	F 2	F 5
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. 1987 | TYPES OF ES

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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	X 63	X 60	X 67	X 56	X 41															C	A	58	S	A
2	54	52	X 51	X 49	C															X 63	X 60	X 53	53	52
3	53	49	X 46	X 44	X 44															X 72	X 74	X 63	59	62
4	61	59	54	52	47															X 67	72	72	X 66	X 66
5	S	A	58	S	41															X 66	X 67	X 59	S	A
6	X 55	A	50	50	50															A	X 75	X 77	X 74	X 75
7	X 68	S	X 60	X 43	A															X 56	A	S	X 56	X 57
8	60	55	55	X 45	X 46															X 78	X 61	X 53	X 52	X 51
9	53	50	49	52	51	51														U X 78	X 66	62	61	61
10	60	59	57	49	50															X 64	A	62	A	A
11	A	A	58	51	45															X 82	X 84	X 77	X 60	63
12	70	73	X 51	52	50															X 78	A	60	58	A
13	A	A	A	50	47															X 73	X 70	A	A	A
14	A	54	A	47	45															X 55	X 64	A	A	A
15	60	60	56	A	48															X 71	X 74	X 66	A	X 59
16	A	59	61	56	59	53														A	A	X 73	X 55	A
17	59	60	59	A	O X 41															X 59	71	X 70	67	67
18	65	59	61	X 50	53															X 73	X 73	X 73	X 66	66
19	X 56	X 50	51	57	47															X 91	X 80	75	A	A
20	A	A	X 54	A	53		66													X 76	A	X 76	68	66
21	61	A	A	56	53	50														A	X 69	73	73	A
22	A	S	X 43	49	45															O X 64	X 72	X 70	67	X 57
23	56	57	53	56	54	56	65													X 92	X 75	X 59	60	A
24	A	A	59	X 42	45															X 64	X 77	X 61	X 58	X 60
25	62	64	64	61	57	53														X 83	X 82	X 74	X 66	69
26	73	66	60	62	X 63															X 88	X 62	X 65	68	62
27	A	66	59	55	52															A	X 67	X 62	65	67
28	A	A	X 52	57	60			54	68											X 68	X 64	62	56	56
29	X 45	52	47	52	47															X 70	X 71	X 68	X 64	X 63
30	X 56	57	52	55	49															X 67	S	X 59	58	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	20	20	27	26	28	5	2	1	1											25	23	27	23	20
MED	60	59	55	52	48	53	66	54	68											X 71	X 71	X 65	61	62
UQ	62	60	59	56	53	53														X 78	X 74	X 73	66	66
LQ	56	53	51	49	45	51														X 64	X 66	X 60	58	58

JUN. 1987 | FXI (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1937 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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	58	54	61	50	35	43	56	A	A	A	A	A	56	68	I C 66	54	50	43	I C 50	C	A	F	S	A
2	F	F	45	43	I C 40	48	A	A	A	A	A	A	A	A	61	54	52	51	52	58	54	S 47	F	F
3	F 42	F 42	40	38	38	43	46	51	59	62	53	51	54	56	64	63	64	59	56	66	68	S 57	F	F 55
4	F 50	F	F	F 42	F 38	44	A	A	A	A	53	51	54	53	65	A	76	60	58	61	F 64	U F 65	U S 60	U S 60
5	S	A	F 50	S	F 33	44	60	J R 83	58	J R 58	56	53	61	68	73	J S 75	71	56	58	60	U S 62	S 53	I S 54	A
6	S 49	A	F	F	F	50	J S 54	R 52	A	A	A	A	52	54	I C 57	I C 56	53	60	64	A	69	71	68	69
7	62	I S 62	54	37	A	A	A	56	68	A	A	A	59	A	60	59	61	66	A	50	A	I S 51	S 50	51
8	F	F 47	J F 45	39	J S 40	43	55	62	55	57	E G 44	52	56	53	55	51	51	59	67	72	55	47	46	45
9	F	F	F 43	F 38	F 37	F 43	46	52	61	62	53	49	R 50	55	55	59	74	S 77	73	U S 72	60	F 52	F 52	F
10	F 52	F	F 47	F 38	F 35	49	53	A	77	67	58	59	A	A	A	A	69	61	56	58	A	F 54	A	A
11	A	A	F	F 42	F 37	42	65	A	A	A	A	60	65	66	58	59	62	A	63	76	J R 73	71	S 54	F 56
12	F 60	F 63	45	F 43	F 43	A	58	54	A	A	A	A	A	A	A	53	A	A	67	72	A	F 53	F 50	A
13	A	A	A	F 41	F 35	A	39	A	A	A	A	A	A	54	R 59	A	54	60	61	67	S 64	A	A	A
14	A	F 45	A	F 40	F 36	39	54	55	A	A	A	A	A	A	A	53	54	43	48	U A 49	58	A	A	A
15	F 51	F 50	F	A	F	44	46	A	64	61	60	58	59	57	60	63	65	64	59	65	68	60	A	53
16	A	F	F	F 49	F 45	F 45	60	63	68	A	A	A	53	58	56	63	A	A	A	A	A	67	49	A
17	F	F	F	A	35	A	A	A	A	A	A	A	59	A	A	74	R 70	A	56	53	F 65	64	F 58	F 54
18	F 54	F	F 52	J R 44	F 45	51	51	A	75	A	A	53	54	A	67	68	67	62	A	67	S 67	67	60	F 57
19	50	44	F 41	F 46	F 37	47	53	61	65	65	55	55	A	A	34	73	64	69	75	85	S 74	F 67	A	A
20	A	A	48	A	F 43	42	F 59	A	A	74	A	A	62	58	A	55	64	65	69	70	A	70	F 62	F 57
21	F 50	A	A	F 49	F 43	F 42	47	74	86	48	52	54	A	A	A	A	A	A	62	A	S 63	F 65	F 66	A
22	A	S	37	F 42	F 36	44	55	58	63	A	A	A	54	66	69	70	J R 57	53	A	58	S 66	64	F 57	51
23	F 47	F 50	F 44	F 45	F 44	F 50	F 59	75	R 55	A	51	A	A	R 61	I C 63	58	56	58	71	86	69	Z 53	F	A
24	A	A	F	36	F 35	41	A	Z 70	58	A	A	A	51	53	65	J R 75	70	65	A	58	71	55	52	54
25	F 53	F 53	F 50	F	F 46	F 45	78	Z 63	58	A	50	R 52	A	A	64	68	67	64	71	77	76	68	S 60	F
26	F 63	F 56	F	F	57	46	E G 39	59	58	A	A	55	A	59	63	63	60	69	74	82	56	59	F 57	F 53
27	A	F 56	F	F	F 39	44	53	57	A	A	A	A	A	A	56	J R 62	57	53	A	A	61	56	F	F 58
28	A	A	J S 46	F 49	F 51	53	52	F 48	F 58	A	C	C	C	C	67	74	73	54	50	62	58	F 52	F 46	F 50
29	S 39	F 41	F 39	F 45	F 39	42	48	59	64	59	V 58	62	55	63	68	77	74	74	69	64	65	62	58	57
30	50	F 46	F 42	F 46	F 40	45	48	57	55	50	52	55	60	65	63	61	57	61	60	61	I S 56	53	F 48	F 52
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	14	18	22	27	26	25	20	19	11	13	15	13	13	24	26	27	25	24	25	24	27	20	17
MED	F 50	F 50	F 45	F 42	F 39	44	53	58	61	61	53	54	56	58	63	62	64	60	62	65	64	59	56	F 54
UQ	F 56	F 56	50	F 46	F 43	47	58	63	66	64	56	56	59	65	66	70	70	65	69	72	68	66	60	F 57
LQ	50	F 45	F 42	F 39	F 36	43	48	54	58	53	52	52	54	56	53	58	56	56	56	58	59	53	50	52

JUN. 1937 | FOF2 (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1937 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	C	420	H 390	L 370	C					
2						A	A	A	A	A	A	A	A	A	A	U A 420	390	L	A					
3							A	L 410	A	A	430	440	U A 450	440	420	H 420	U A 420	370	A					
4						A	A	A	A	A	A	440	U A 440	A	U A 450	A	U A 420	A	L 350					
5							U A 340	A	A	A	U A 460	440	430	430	A	A	A	380	A					
6						A	A	A	A	A	A	A	A	A	C	C	410	360	300					
7						A	A	A	A	A	A	A	440	A	U A 440	410	400	L 370	A					
8							370	A	A	420	440	A	450	440	A	420	390	360	L 330					
9								410	U A 420	U A 420	440	A	450	440	430	420	350	370	L 310					
10						L	L	A	A	A	450	450	A	A	A	A	390	370	L 320					
11						L 310	A	A	A	A	A	A	U A 470	450	440	420	A	A	320					
12						A	A	A	A	A	A	A	A	A	A	U A 430	A	A	A					
13						A	A	A	A	A	A	A	A	U A 440	A	A	A	A	A					
14						L 310	A	A	A	A	A	A	A	A	A	U A 430	U A 400	L 380	340					
15						A	A	A	A	A	A	440	U A 460	440	440	420	410	A	L					
16						310	380	A	U A 420	A	A	A	A	440	430	A	A	A	A					
17						A	A	A	A	A	A	A	A	A	A	A	U A 410	A	L					
18							400	A	A	A	A	A	A	A	A	430	410	A	A					
19							L 390	A	420	440	450	440	A	A	H 440	U A 420	430	A	A					
20							A	A	A	A	A	A	U A 460	U A 450	A	A	A	A	A					
21							A	A	420		450	450	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	U A 460	A	430	A	A	A	A					
23						L	L	A	A	A	A	A	A	450	I C 440	430	410	A	A					
24							A	A	A	A	A	A	450	A	A	A	A	A	A					
25						L	360	390	U A 450	A	A	460	A	A	U A 440	440	A	A	340					
26							390	A	A	A	A	U A 450	A	440	A	U A 430	U A 400	A	A					
27						L	A	A	A	A	A	A	A	A	A	A	A	A	A					
28								A	420	A	C	C	C	C	A	420	A	L	360					
29							270	A	U A 430	440	440	A	440	A	A	420	U A 410	360	330					
30							L 390	U A 390	U A 430	L	440	450	440	440	430	H 420	410	370	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	9	4	8	4	9	10	13	12	12	18	18	11	10					
MED						L 310	380	400	U A 420	430	440	445	450	440	440	420	410	370	330					
UQ						L 310	390	410	U A 430	440	450	450	U A 460	445	440	430	410	370	340					
LQ						310	360	390	420	420	440	440	440	440	430	420	390	365	320					

JUN. 1937 | FOF1 (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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						165	235	280	300	315	A	A	A	A	C	A	285	240	C					
2						185	235	275	305	315	A	A	A	A	A	A	A	A	A					
3						165	220	285	305	310	320	A 325	A	A	A	320	285	A	A					
4						180	240	230	305	315	A	345	A	A	320	290	A	A	A					
5						185	245	280	310	330	330	A	A	A	A	A	A	260	A					
6						150	A 280		A	A	A	A	A	A	C	C	290	250	195					
7						A	230	270	305	315	330	A	A	A	A	A	295	245	135					
8						170	245	270	295	320	A	A	A	A	A	A	285	240	A					
9						B	A 275		305	315	325	335	340	335	325	A	295	245	A					
10						165	230	260	295	315	A	A	A	A	A	A	A	A	A					
11						165	230	A	A	A	A	A	A	355	335	315	295	A	A					
12						180	A 270		305	320	330	A	A	A	A	A	295	250	A					
13						A	240	275	305	315	A	A	A	A	A	A	A	A	A					
14						195	A 280		310	320	330	A	A	A	A	A	A	A	A					
15						185	240	280	305	320	335	335	A	A	A	A	A	A	A					
16						180	240	280	300	315	A	A	A	A	A	A	A	A	A					
17						200	A 275		310	320	A	340	A	330	A	A	A	270	A					
18						170	245	235	310	A	A	A	A	A	A	A	300	270	A					
19						190	225	265	310	330	335	A	A	A	A	A	300	275	200					
20						B	235	285	305	A	A	A	U A 340	A	335	320	290	255	195					
21						180	235	265	300	A	340	A	A	A	335	315	285	255	A					
22						A	235	275	305	A	A	A	A	A	A	A	A	A	A					
23						A	235	270	300	315	A	A	A	A	C	320	295	U A 250	A					
24						A	A	A	A	A	A	A	370	360	340	325	290	255	A					
25						185	245	230	305	A	A	A	A	A	A	A	270	A	A					
26						A	240	270	315	320	A	A	A	A	A	A	A	A	A					
27						A	235	270	300	315	A	A	A	A	330	320	295	A	A					
28						B	235	275	A	315	C	C	C	C	A	315	A	R	A					
29						A	225	275	A	A	A	340	U A 335	A	330	310	A	A	A					
30						A	225	270	295	315	A	A	360	A	345	315	295	245	U A 200					
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	24	28	25	21	9	6	5	4	9	11	17	15	5					
MED						180	235	275	305	315	330	338	340	345	335	315	295	250	195					
UQ						135	240	280	305	320	335	340	360	358	335	320	295	258	200					
LQ						165	230	270	300	315	330	335	U A 340	332	330	315	285	245	195					

JUN. 1987 | FOE (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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	JA 24	JA 40	JA 43	JA 23	JA 31	JA 39	JA 46	JA 70	JA 81	JA 130	JA 114	68	JA 52	JA 58	C	JA 48	G 26	JA 41	C	C	JA 52	JA 49	JA 50	JA 90
2	EB 15	JA 42	JA 21	JA 30	C	JA 42	JA 59	JA 51	JA 75	JA 86	JA 66	49	52	JA 64	JA 86	JA 43	33	JA 29	JA 36	JA 51	JA 42	JA 26	JA 25	JA 66
3	JA 19	JA 17	JA 26	22	19	21	JA 39	JA 39	JA 51	JA 51	JA 47	JA 67	JA 100	JA 52	JA 47	G 29	JA 51	JA 84	JA 70	37	JA 75	JA 47	JA 51	JA 52
4	JA 51	JA 46	JA 51	JA 29	JA 33	32	59	JA 84	JA 107	JA 89	JA 50	G	44	JA 51	JA 52	83	JA 52	JA 52	23	JA 50	JA 51	JA 82	JA 33	JA 63
5	JA 52	JA 65	JA 26	28	JA 23	31	JA 42	67	JA 56	JA 64	JA 74	JA 48	JA 49	41	JA 85	67	68	36	JA 47	JA 30	28	JA 65	JA 51	JA 86
6	JA 65	JA 51	JA 46	28	JA 21	JA 42	JA 52	JA 64	JA 110	JA 140	97	88	JA 82	JA 61	C	C	JA 46	32	JA 46	JA 64	JA 52	JA 24	JA 28	JA 30
7	25	22	19	JA 40	JA 83	JA 52	JA 63	JA 65	JA 65	JA 85	JA 134	97	JA 44	56	JA 82	JA 62	37	52	JA 88	JA 47	JA 81	JA 61	JA 59	JA 50
8	JA 51	26	JA 44	JA 27	JA 18	JA 30	29	JA 54	JA 85	JA 51	JA 40	JA 69	42	40	JA 80	38	31	30	JA 25	JA 52	JA 40	JA 65	36	JA 59
9	JA 33	JA 33	24	21	24	19	31	33	JA 49	JA 50	39	JA 49	42	45	37	33	32	32	JA 26	JA 30	JA 46	JA 34	JA 26	JA 47
10	JA 52	JA 82	JA 51	JA 29	JA 43	22	JA 38	88	JA 58	JA 50	JA 77	JA 80	JA 74	JA 92	JA 99	JA 80	JA 52	JA 51	JA 45	JA 30	JA 82	JA 98	JA 89	JA 112
11	JA 65	JA 109	JA 24	JA 33	25	25	JA 52	85	85	JA 86	JA 101	JA 81	JA 53	45	36	39	JA 63	JA 84	JA 82	JA 29	JA 39	JA 55	JA 77	JA 52
12	JA 45	JA 36	JA 29	JA 29	JA 26	58	JA 65	JA 69	JA 100	JA 120	JA 167	JA 219	JA 175	136	113	JA 87	JA 80	JA 103	JA 65	76	JA 135	JA 97	32	JA 62
13	JA 65	59	JA 51	JA 26	JA 27	JA 54	JA 51	86	JA 111	JA 140	JA 139	JA 142	93	JA 104	JA 83	91	JA 90	71	JA 62	JA 51	JA 29	JA 85	59	58
14	JA 109	JA 34	JA 53	JA 50	JA 27	27	JA 43	JA 50	63	JA 96	60	JA 110	JA 120	JA 112	JA 75	65	55	JA 30	JA 32	JA 145	JA 49	JA 81	JA 78	JA 83
15	20	JA 49	JA 53	JA 59	JA 26	JA 36	JA 44	JA 58	JA 63	JA 77	JA 78	JA 53	JA 61	JA 51	JA 42	JA 35	JA 46	JA 42	JA 49	JA 37	JA 24	JA 28	JA 84	JA 102
16	JA 74	JA 50	JA 54	JA 34	JA 24	JA 30	JA 41	JA 60	JA 51	JA 91	JA 209	104	JA 66	JA 50	JA 48	JA 52	73	JA 139	JA 163	JA 85	JA 103	JA 50	JA 82	JA 73
17	JA 52	JA 60	JA 85	58	JA 50	JA 59	JA 85	JA 109	118	JA 128	JA 149	JA 111	JA 52	JA 75	JA 85	71	48	JA 78	JA 30	JA 82	JA 85	JA 52	JA 51	JA 62
18	JA 50	JA 44	JA 31	25	JA 35	JA 35	JA 50	JA 95	JA 91	JA 117	JA 101	JA 57	58	JA 73	JA 56	JA 47	41	JA 53	JA 124	JA 85	JA 55	JA 52	JA 25	JA 32
19	JA 29	24	EB 14	JA 23	EB 14	23	30	JA 84	36	41	JA 53	JA 52	JA 111	JA 121	35	42	G	JA 53	JA 48	JA 85	JA 65	JA 84	JA 82	JA 96
20	JA 82	JA 87	JA 84	JA 83	JA 87	JA 29	JA 48	JA 78	JA 90	JA 109	90	JA 87	JA 65	JA 63	JA 71	JA 82	JA 84	JA 61	JA 68	JA 79	JA 114	JA 77	JA 61	JA 80
21	JA 83	JA 53	JA 102	JA 43	JA 24	JA 36	JA 49	JA 71	JA 66	JA 49	JA 46	JA 51	JA 78	JA 110	JA 81	JA 79	JA 119	JA 70	JA 90	84	JA 85	JA 41	JA 50	JA 83
22	57	JA 43	49	JA 51	JA 52	JA 33	JA 50	JA 50	JA 62	JA 73	JA 101	JA 84	JA 50	JA 53	JA 46	JA 50	JA 52	48	71	JA 62	JA 49	JA 79	JA 64	JA 24
23	JA 60	JA 46	35	JA 48	24	JA 23	37	JA 62	JA 71	JA 93	JA 88	JA 106	JA 112	JA 49	C	37	39	JA 45	JA 46	JA 47	JA 62	JA 51	JA 32	JA 89
24	JA 82	JA 87	JA 50	JA 23	JA 42	JA 82	JA 98	JA 62	JA 84	JA 65	JA 103	JA 86	44	JA 53	JA 80	72	JA 54	JA 61	JA 86	JA 57	JA 38	JA 64	JA 28	JA 43
25	JA 49	JA 65	JA 53	JA 34	JA 21	21	30	38	JA 62	JA 140	JA 63	JA 52	JA 126	72	JA 44	52	JA 58	53	JA 51	JA 56	24	JA 30	JA 42	JA 32
26	JA 45	JA 33	JA 32	JA 31	JA 27	JA 31	33	JA 50	JA 86	JA 87	JA 82	JA 75	JA 81	JA 45	71	JA 32	JA 51	JA 41	JA 52	JA 84	JA 128	30	JA 64	JA 52
27	JA 83	JA 35	JA 58	JA 47	JA 22	JA 29	JA 39	JA 51	JA 77	JA 85	JA 170	JA 183	130	JA 97	JA 77	67	JA 61	JA 59	66	JA 79	JA 31	JA 84	JA 43	JA 43
28	JA 53	JA 52	JA 31	JA 32	JA 25	27	35	JA 52	JA 49	JA 105	C	C	C	C	JA 84	JA 35	JA 56	JA 53	JA 30	JA 50	JA 82	JA 42	JA 52	JA 51
29	JA 33	JA 29	JA 26	JA 20	23	JA 27	JA 31	JA 48	JA 53	JA 63	JA 51	JA 65	JA 88	JA 51	JA 57	39	JA 50	35	JA 24	JA 19	JA 18	20	JA 22	JA 18
30	JA 24	JA 21	JA 19	JA 27	JA 18	JA 30	34	JA 49	JA 49	48	JA 40	JA 115	G	37	G	37	36	35	JA 35	JA 27	JA 47	JA 42	JA 21	JA 25
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	29	30	30	30	30	30	29	29	29	29	27	29	30	30	29	29	30	30	30	30
MED	JA 52	JA 47	JA 44	JA 30	JA 25	JA 30	JA 44	JA 62	JA 68	JA 86	JA 82	JA 80	JA 65	JA 56	JA 71	52	JA 52	JA 52	JA 49	JA 52	JA 52	JA 52	JA 50	JA 58
UQ	JA 65	JA 60	JA 53	JA 43	JA 33	JA 39	JA 52	JA 78	JA 86	JA 109	JA 103	JA 104	JA 93	JA 75	JA 82	72	JA 61	JA 61	JA 70	JA 79	JA 82	JA 79	JA 64	JA 83
LQ	JA 33	JA 33	JA 26	JA 26	JA 23	27	35	JA 50	JA 56	JA 64	JA 53	JA 53	JA 50	JA 50	JA 46	39	39	36	JA 35	JA 37	JA 39	JA 41	JA 32	JA 43

JUN. 1987 | FOES (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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	16	28	28	16	21	37	44	AA 70	AA 81	AA 130	AA 114	AA 68	47	49	C	36	G 21	31	C	C	AA 52	41	35	AA 90
2	EB 15	39	19	EB 14	C	41	AA 59	AA 51	AA 75	AA 86	AA 66	AA 49	AA 52	AA 64	52	42	31	29	36	33	28	24	20	23
3	EB 14	EB 13	19	18	EB 13	20	37	36	45	46	41	41	45	39	37	G 27	42	35	47	29	24	43	30	26
4	32	33	21	19	19	29	AA 59	AA 84	AA 107	AA 89	45	G	44	49	45	AA 83	42	40	21	39	32	19	29	26
5	US 24	AA 65	EB 14	20	20	26	34	63	50	57	46	40	38	39	63	58	61	24	42	23	23	36	46	AA 86
6	28	AA 51	26	18	EB 12	37	44	42	AA 110	AA 140	AA 97	AA 88	50	48	C	C	39	26	24	AA 64	42	18	24	21
7	EB 13	EB 14	EB 13	25	AA 83	AA 52	AA 63	50	60	AA 85	AA 134	AA 97	39	AA 56	44	39	32	32	AA 88	35	AA 81	19	22	25
8	25	EB 13	27	EB 14	EB 14	19	27	43	49	38	35	45	40	40	50	37	30	29	22	43	18	33	EB 14	27
9	22	25	EB 13	EB 14	EB 14	15	27	32	42	42	38	44	38	41	34	31	32	29	25	30	26	21	19	33
10	27	25	31	21	23	18	33	AA 88	52	49	42	43	AA 74	AA 92	AA 99	AA 80	32	32	24	20	AA 82	32	AA 89	AA 112
11	AA 65	AA 109	ES 15	EB 13	EB 14	18	40	AA 85	AA 85	AA 86	AA 101	49	47	42	34	37	54	AA 84	27	19	29	39	26	37
12	42	26	24	22	18	AA 58	40	42	AA 100	AA 120	AA 167	AA 219	AA 175	AA 136	AA 113	43	AA 80	AA 103	60	66	AA 135	42	22	AA 62
13	AA 65	AA 59	AA 51	20	EB 13	AA 54	36	AA 86	AA 111	AA 140	AA 139	AA 142	AA 93	44	50	AA 91	42	52	50	35	20	AA 85	AA 59	AA 58
14	AA 109	EB 15	AA 53	22	16	25	40	42	AA 63	AA 96	AA 60	AA 110	AA 120	AA 112	AA 75	43	40	27	28	UA 27	33	AA 81	AA 78	AA 83
15	EB 13	28	35	AA 59	20	UA 32	41	AA 58	44	59	54	41	46	39	34	32	36	36	30	24	23	17	AA 84	41
16	AA 74	31	37	20	EB 13	24	33	43	42	AA 91	AA 209	AA 104	51	37	38	47	AA 73	AA 139	AA 163	AA 85	AA 103	38	41	AA 73
17	33	33	37	AA 58	17	AA 59	AA 85	AA 109	AA 118	AA 128	AA 149	AA 111	49	AA 75	AA 85	64	41	AA 78	25	40	27	30	24	33
18	25	18	19	EB 14	24	29	36	AA 95	63	AA 117	AA 101	49	48	AA 73	50	39	39	47	AA 124	59	45	46	16	EB 15
19	EB 13	EB 13	EB 14	EB 14	EB 14	G	27	52	35	38	44	39	AA 111	AA 121	35	42	G	43	39	29	31	EB 14	AA 82	AA 96
20	AA 82	AA 87	42	AA 83	23	22	42	AA 78	AA 90	47	AA 90	AA 87	46	45	AA 71	45	48	45	50	26	AA 114	24	47	46
21	32	AA 53	AA 102	21	15	28	40	52	40	40	35	39	AA 78	AA 110	AA 81	AA 79	AA 119	AA 70	54	AA 84	49	22	33	AA 83
22	AA 57	20	29	28	25	21	45	45	46	AA 73	AA 101	AA 84	46	43	35	49	47	44	AA 71	53	32	21	38	EB 14
23	EB 14	24	EB 15	20	EB 15	21	35	49	43	AA 93	46	AA 106	AA 112	39	C	34	37	43	43	38	53	21	20	AA 89
24	AA 82	AA 87	29	16	EB 15	29	AA 93	43	51	AA 65	AA 103	AA 86	41	51	51	UY 72	50	61	AA 86	53	33	47	EB 14	18
25	23	27	31	26	17	G	26	33	45	AA 140	46	43	AA 126	AA 72	44	42	51	50	27	42	EB 15	26	31	22
26	EB 15	23	21	25	EB 15	27	32	43	43	AA 87	AA 82	45	AA 81	38	52	43	40	33	52	23	50	18	43	40
27	AA 83	48	33	18	EB 13	20	37	42	AA 77	AA 85	AA 170	AA 183	AA 130	AA 97	47	66	55	52	AA 66	AA 79	25	30	28	29
28	AA 53	AA 52	20	27	EB 14	22	25	40	40	AA 105	C	C	C	C	46	G 30	42	G 23	21	25	23	31	23	EB 13
29	17	18	19	EB 13	EB 14	21	19	43	43	34	40	47	39	46	53	35	41	29	21	15	EB 14	EB 14	19	EB 13
30	EB 14	15	EB 14	EB 14	EB 13	23	31	39	43	36	37	37	G	35	G	33	34	32	27	24	41	19	18	EB 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	29	30	30	30	30	30	29	29	29	29	27	29	30	30	29	29	30	30	30	30
MED	26	28	25	20	EB 15	24	37	47	50	AA 86	AA 66	49	48	48	50	42	41	38	39	35	32	28	28	33
UQ	AA 57	AA 51	33	25	20	32	44	AA 70	AA 81	AA 105	AA 103	AA 97	AA 81	AA 73	58	58	50	52	54	53	50	39	43	AA 73
LQ	EB 15	18	19	EB 14	EB 14	20	32	42	43	47	44	43	44	40	38	36	34	29	25	25	24	19	20	22

JUN. 1987 | FBES (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FMIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

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

JUN. 1987 | FMIN (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Day \ Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	295	315	315	310	310	350	A	A	A	A	A	265	285	I C 280	285	295	285	C	C	A	F	S	A
2	F	F	320	310	I C 315	335	A	A	A	A	A	A	A	A	300	295	290	285	305	325	325	S 310	F	F
3	F 300	F 305	320	315	330	350	345	305	325	325	295	270	270	270	315	295	310	320	295	320	325	S 325	F	F 300
4	F 280	F	F	F 305	F 320	325	A	A	A	A	305	270	270	270	295	A	320	310	310	305	F 300	U F 295	U S 290	U S 305
5	S	A	F 330	S	F 300	320	320	J R 335	340	J R 290	295	270	305	290	300	J S 290	320	315	320	320	U S 325	S 320	S	A
6	S 285	A	F	F	F	345	J S 310	R 320	A	A	A	A	A	A	C	C	270	300	325	A	290	295	275	285
7	285	S	360	300	A	A	A	A	A	A	A	A	300	A	295	305	305	320	A	320	A	I S 310	S 285	290
8	F	F 290	J F 290	315	J S 305	330	290	325	290	315	G	265	285	295	A	275	285	305	325	340	340	285	290	285
9	F	F	F 300	F 305	F 325	F 330	340	285	330	330	335	A	R 220	285	270	280	285	S 315	320	U S 345	325	F 295	F 285	F
10	F 290	F	F 300	F 315	F 300	320	300	A	325	335	300	305	A	A	A	A	320	320	315	320	A	F 300	A	A
11	A	A	F	F 285	F 305	300	350	A	A	A	A	280	305	300	290	290	315	A	290	300	J R 320	335	S 315	F 290
12	F 295	F 320	305	F 300	F 305	A	335	325	A	A	A	A	A	A	A	230	A	A	A	A	A	F 280	F 275	A
13	A	A	A	F 290	F 305	A	A	A	A	A	A	A	A	260	R 275	A	275	295	310	320	S 330	A	A	A
14	A	F 305	A	F 295	F 295	285	310	330	A	A	A	A	A	A	A	305	305	290	285	A	300	A	A	A
15	F 300	F 305	F	A	F	335	305	A	315	A	290	300	290	270	290	295	315	315	315	315	325	340	A	305
16	A	F	F	F 300	F 290	F 285	320	315	305	A	A	A	285	285	270	280	A	A	A	A	A	325	335	A
17	F	F	F	A	325	A	A	A	A	A	A	A	300	A	A	295	R 295	A	330	A	F 310	290	F 300	F 290
18	F 290	F	F 310	J R 350	F 320	325	290	A	330	A	A	A	265	A	290	300	315	320	A	A	S 315	330	295	F 305
19	320	315	F 310	F 300	F 325	350	300	305	325	315	315	275	A	A	300	300	280	285	285	305	S 310	F 310	A	A
20	A	A	A	A	F 295	335	F 280	A	A	295	A	A	300	295	A	270	290	320	315	315	A	310	F 290	F 290
21	F 280	A	A	F 300	F 300	F 325	250	305	345	365	255	265	A	A	A	A	A	A	295	A	S 315	F 295	F 300	A
22	A	S	300	F 305	F 305	320	340	315	325	A	A	A	240	295	300	320	J R 300	310	A	A	S 335	315	F 305	320
23	F 305	F 305	F 305	F 305	F 320	F 315	F 315	335	R 265	A	295	A	A	R 280	I C 280	280	280	285	300	325	335	Z 325	F	A
24	A	A	F	305	F 310	315	A	Z 330	295	A	A	A	255	A	295	J R 305	330	A	A	A	325	A	315	300
25	F 295	F 295	F 285	F	F 310	F 280	350	Z 350	335	A	230	R 265	A	A	295	300	305	290	300	315	325	325	S 310	F
26	F 305	F 305	F	F	345	365	G	320	355	A	A	275	A	285	315	290	295	295	305	320	A	315	F 275	F 290
27	A	F 305	F	F	F 300	300	325	325	A	A	A	A	A	A	285	A	A	A	A	A	315	300	F	F 305
28	A	A	J S 315	F 295	F 315	335	350	A	F 295	A	C	C	C	C	290	300	325	305	285	325	345	F 285	F 310	F 315
29	S 315	F 310	F 320	F 340	F 325	355	295	300	325	295	V 315	325	275	295	290	300	305	320	325	330	325	330	315	320
30	315	F 325	F 305	F 305	F 320	350	280	325	305	290	285	280	290	315	305	300	285	315	320	330	I S 335	340	F 295	F 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	16	13	17	22	27	26	24	18	18	10	13	13	17	16	22	24	26	23	22	19	23	26	19	17
MED	F 295	F 305	F 310	F 305	F 310	325	312	322	325	315	295	275	285	285	292	295	302	310	310	320	325	310	295	F 300
UQ	F 305	F 310	320	F 315	F 320	335	340	330	330	330	305	280	300	295	300	300	315	318	320	325	328	325	310	305
LQ	F 288	F 305	F 300	F 300	F 302	315	292	305	305	295	285	270	265	275	285	282	285	292	295	315	315	F 295	288	F 290

JUN. 1987 | M(3000)F2 (0.01)

IONOSPHERIC DATA

JUN. 1987 | M(3000)F1 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	A	A	A	A	C	350	H 390	L 365	C					
2						A	A	A	A	A	A	A	A	A	A	A	390	L	A					
3							A	L 365	A	A	A	385	A	380	365	H 390	A	A	A					
4						A	A	A	A	A	A	400	A	A	A	A	A	A	L 385					
5							A	A	A	A	A	400	390	385	A	A	A	370	A					
6						A	A	A	A	A	A	A	A	A	C	C	A	365	350					
7						A	A	A	A	A	A	A	350	A	A	A	365	A	A					
8							380	A	A	350	395	A	350	355	A	390	395	365	L 365					
9								395	A	A	395	A	380	A	385	395	390	375	L 365					
10						L	L	A	A	A	350	A	A	A	A	A	365	355	L 385					
11						L 360	A	A	A	A	A	A	A	355	395	365	A	A	350					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
14						L 350	A	A	A	A	A	A	A	A	A	A	A	L 345	350					
15						A	A	A	A	A	A	395	A	385	390	395	A	A	L					
16						345	A	A	A	A	A	A	A	390	355	A	A	A	A					
17						A	A	A	A	A	A	A	A	A	A	A	A	A	L					
18							A	A	A	A	A	A	A	A	A	350	A	A	A					
19							L 370	A	395	370	A	405	A	A		A	395	A	A					
20							A	A	A	A	A	A	A	A	A	A	A	A	A					
21							A	A	A		420	395	A	A	A	A	A	A	A					
22							A	A	A	A	A	A	A	A	385	A	A	A	A					
23						L	L	A	A	A	A	A	A	395	C	365	330	A	A					
24							A	A	A	A	A	A	355	A	A	A	A	A	A					
25						L	375	395	A	A	A	365	A	A	A	A	A	A	365					
26							365	A	A	A	A	A	A	365	A	A	A	A	A					
27						L	A	A	A	A	A	A	A	A	A	A	A	A	A					
28								A	A	A	C	C	C	C	A	385	A	L	380					
29							365	A	A	395	395	A	390	A	A	330	A	380	390					
30							L 350	A	A	L	385	400	385	400	415	H 395	365	350	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	6	3	1	3	6	8	7	9	7	11	9	9	10					
MED						L 350	368	395	395	370	395	398	380	385	385	385	390	365	365					
UQ						L 355	375	395		382	395	400	388	390	392	392	390	370	L 385					
LQ						348	365	330		360	385	390	352	365	375	365	365	355	350					

JUN. 1987 | M(3000)F1 (0.01)

IONOSPHERIC DATA

JUN. 1987 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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						315	255	A	A	A	A	A	425	375	I C 300	370	355	365	C					
2						E A 280	A	A	A	A	A	A	A	A	345	355	355	L 345	E A 320					
3							A 265	345	290	285	335	410	405	405	310	330	300	285	A					
4						270	A	A	A	A	325	405	410	405	345	A	275	295	295					
5							285	250	E A 280	E A 350	360	410	325	360	E A 340	E A 335	A	305	E A 290					
6						E A 265	A	E A 295	A	A	A	A	A	E A 430	I C 350	I C 330	405	310	270					
7						A	A	A	A	A	A	A	340	A	350	315	310	280	A					
8							340	280	E A 365	310	G	430	370	345	E A 360	380	370	305	265					
9								370	285	285	280	E A 355	655	375	400	375	325	285	265					
10						280	310	A	265	270	335	330	A	A	A	A	280	280	285					
11						320	235	A	A	A	A	385	320	335	360	360	E A 320	A	315					
12						A	260	300	A	A	A	A	A	A	A	335	A	A	A					
13						A	B	A	A	A	A	A	A	430	395	A	395	E A 360	E A 320					
14						355	310	285	A	A	A	A	A	A	A	325	335	345	355					
15						280	E A 345	A	290	A	E A 370	340	360	405	365	335	305	300	290					
16						350	275	290	305	A	A	A	375	360	405	370	A	A	A					
17						A	A	A	A	A	A	A	340	A	A	E A 360	280	A	280					
18							360	A	280	A	A	E A 460	415	A	360	325	300	305	A					
19							335	E A 325	290	315	320	400	A	A	300	310	370	345	320					
20							A	A	A	325	A	A	335	350	A	395	A	310	E A 310					
21							A 460	E A 305	240		455	420	A	A	A	A	A	A	A					
22							E A 270	300	290	A	A	A	505	340	320	285	E A 335	325	A					
23						285	270	255	380	A	350	A	A	380	C	385	385	345	310					
24							A	265	E A 360	A	A	A	455	E A 495	350	E Y 370	280	A	A					
25						L 340	240	220	280	A	580	425	A	A	350	330	315	E A 355	310					
26							G	280	250	A	A	405	A	375	330	350	335	315	310					
27						L 320	290	290	A	A	A	A	A	A	375	A	A	A	A					
28								A	325	A	C	C	C	C	350	315	280	315	360					
29							L 330	335	290	350	315	300	400	355	E A 345	315	310	275	260					
30							355	295	330	L 355	375	385	355	315	330	335	365	300	280					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						12	20	18	18	9	13	15	17	18	23	25	24	23	20					
MED						300	294	287	289	312	342	402	375	368	350	332	317	303	292					
UQ						330	340	302	U 308	350	375	412	415	392	360	370	360	332	314					
LQ						280	265	230	280	285	325	370	340	350	330	325	295	298	278					

JUN. 1987 | H'F2 (KM)

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IONOSPHERIC DATA

JUN. 1987 | H'F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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 280	A 295	260	255	280	A	A	A	A	A	A	A	A	A	C	E A 260	H 205	245	C	C	A	A	A	A
2	275	A	255	265	C	A	A	A	A	A	A	A	A	A	A	A	220	250	A	E A 260	A 250	A 275	320	E A 295
3	265	260	260	265	240	230	A	A	A	A	A	220	A	220	235	H 210	A	A	A	A 255	A 250	E A 280	E A 305	285
4	E A 345	A	275	255	260	A	A	A	A	A	A	190	A	A	A	A	A	A	215	E A 285	E A 300	280	E A 310	A 275
5	245	A	220	290	290	A 260	A	A	A	A	A	210	210	215	A	A	A	230	A	260	245	E A 270	A	A
6	E A 350	A	A	320	295	A	A	A	A	A	A	A	A	A	C	C	A	225	E A 255	A	E A 315	275	330	305
7	305	260	205	E A 325	A	A	A	A	A	A	A	A	260	A	A	A	235	A	A	E A 295	A	310	E A 315	325
8	E A 345	305	E A 310	255	265	235	230	A	A	E A 260	205	A	E A 255	235	A	230	210	240	240	E A 245	225	E A 365	300	E A 345
9	E A 325	E A 335	260	255	215	215	225	215	A	A	205	A	215	A	205	210	220	230	235	240	A 240	280	305	A
10	A 280	A 265	E A 310	E A 285	E A 295	240	E A 255	A	A	A	E A 255	A	A	A	A	A	240	E A 255	E A 240	250	A	E A 295	A	A
11	A	A	265	305	285	245	A	A	A	A	A	A	A	E A 250	205	235	A	A	E A 270	260	A 255	A 245	A 265	E A 340
12	E A 305	245	E A 290	E A 295	270	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 320	A
13	A	A	A	E A 300	265	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 270	220	A	A	A
14	A	280	A	A 320	290	E A 260	A	A	A	A	A	A	A	A	A	A	A	E A 270	E A 255	A	E A 320	A	A	A
15	260	A 290	E A 320	A	255	A	A	A	A	A	A	210	A	215	205	205	A	A	A	A 265	A 250	225	A	E A 325
16	A	E A 330	E A 295	300	295	265	A	A	A	A	A	A	A	205	E A 250	A	A	A	A	A	A	A 260	A	A
17	A	E A 360	A	A	265	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 255	A	290	A 275	290	E A 325
18	A 305	285	270	220	285	260	A	A	A	A	A	A	A	A	A	A 265	A	A	A	A	A	E A 270	275	250
19	255	265	255	285	255	230	230	A	205	225	A	190	A	A	H 175	A	H 215	A	A	E A 270	A 265	255	A	A
20	A	A	A	A	A 295	245	A	A	A	A	A	A	A	A	A	A	A	A	A	A 260	A	260	A	A
21	A	A	A	E A 310	260	E A 275	A	A	A	225	190	215	A	A	A	A	A	A	A	A	E A 310	300	265	A
22	A	325	A	E A 305	E A 320	255	A	A	A	A	A	A	A	A	220	A	A	A	A	A	E A 245	260	E A 270	255
23	270	305	280	285	255	260	A	A	A	A	A	A	A	195	C	235	E A 275	A	A	E A 255	E A 260	250	335	A
24	A	A	A 315	295	280	E A 285	A	A	A	A	A	A	E A 250	A	A	A	A	A	A	A	A 255	A	260	300
25	A 300	310	A	285	270	235	230	210	A	A	A	235	A	A	A	A	A	A	E A 240	E A 265	235	250	E A 305	300
26	285	290	295	280	220	A 225	A 240	A	A	A	A	A	A	230	A	A	A	A	A	245	A	265	A	E A 355
27	A	E A 335	E A 335	E A 300	270	235	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A 260	E A 330	E A 310	E A 285
28	A	A	265	315	255	235	210	A	A	A	C	C	C	C	A	210	A	225	220	260	230	A 320	270	255
29	280	270	275	235	255	235	235	A	A	205	205	A	210	A	A	220	A	225	215	235	240	230	260	255
30	260	255	265	270	250	220	E A 240	A	A	205	215	200	220	200	190	H 180	E A 240	E A 265	E A 250	240	A	235	290	295
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	19	20	22	27	28	21	9	2	1	5	6	8	7	9	8	11	9	11	12	19	21	25	20	18
MED	272	279	266	275	266	238	230	212	205	215	205	210	215	215	205	215	218	232	E A 240	A 250	A 245	262	U 284	U 276
UQ	A 292	A 305	E A 295	295	285	252	A 235			225	210	218	U 236	225	220	234	230	246	E A 255	A 262	A 253	A 278	E A 312	E A 325
LQ	268	265	260	262	255	235	230			205	205	195	212	205	198	210	215	228	222	244	240	252	270	265

JUN. 1987 | H'F (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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		E A		C					
							115	110	110	115	115		115	110		110	125	110						
2						130	115	110	110	115	110	110	A	A	A	A	A	A	A					
3						E A									A	E A			A					
						140	115	110	115	110	110	110	110	110		130	110	110						
4						E A							A	A										
						135	115	110	110	110	110	110			110	115	115	115	115					
5						130	115	115	115	115	115	110	110	110	A	A	A	E A	A					
																		140						
6						E B									C	C								
						135	110	115	110	105	110	110	110	110			110	110	120					
7						A						A												
							110	110	110	110	110		110	110	115	110	110	110	120					
8						E A									A	A	E A		A					
						140	110	110	110	115	110	110	110	110			145	110						
9						B													A					
							115	110	110	110	110	110	110	115	110	110	265	110						
10						130	110	110	110	110	110	105	105	A	A	A	A	A	A					
11						125	110	110	A															
									120	110	110	110	110	110	110	110	110	110	115					
12						B									A									
						130	110	105	105	110	110	105	110	110		110	110	115	120					
13						125	115	105	110	110	115	110	105	110	A	A	A	A	A					
14						125	110	105	110	110	110	105	A	A	A	A	A	A						
																			115					
15						E B									A	A	A	A	A					
						145	115	110	105	110	105	110	110	110										
16						130	115	115	110	110	110	110	110	105	110	A	A	A	A					
17						E A										A	A		A					
						130	115	110	110	110	105	110	105	115	110			115						
18						125	110	110	105	110	110	A	A	105	110	A	E A	110	A					
																	135							
19						130	110	110	115	110	110	110	110	110	110	110	110	115	120					
20						B						A												
							115	110	110	110	110		105	110	110	115	115	115	125					
21						E B													A					
						125	115	110	110	105	115	110	110	115	110	110	110	110						
22						A																		
							110	115	110	110	105	110	110	A	A	A	A	A	A					
23						A									C		E A		A					
							110	110	110	110	110	110	110	115		115	135							
24						A					A	A												
							110	110	110	110			115	110	110	115	110	110	115					
25						120	115	105	110	110	110	105	115	110	115	110	105	115	A					
26						A									A									
							115	110	110	110	110	110	110	115		115	110	110	110					
27						130	115	110	110	105	110	110	110	110	115	115	E B	110	A					
																	120							
28						B					C	C	C	C	A	A	A	A	A					
							115	110	110	110														
29						A	E A											A	A					
							135	110	110	110	110	115	120	110	110	115	110							
30						135	115	110	110	110	110	110	120	A	110	110	115	110	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						20	30	30	30	30	28	24	25	23	15	17	20	20	10					
MED						128	115	110	110	110	110	110	110	110	110	110	110	110	118					
UQ						132	115	110	110	110	110	110	110	110	110	115	116	115	120					
LQ						125	110	110	110	110	110	110	110	110	110	110	110	110	115					

JUN. 1987 | H'E (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	105	100	105	100	120	120	115	115	115	110	110	110	110	C	110	105	115	C	C	110	110	110	110
2	B	110	105	110	C	125	125	115	115	110	110	105	110	105	100	110	105	100	100	100	105	105	120	110
3	140	105	100	95	100	140	125	120	115	110	120	110	105	110	110	105	115	110	110	110	110	110	115	105
4	105	105	105	105	105	130	125	115	115	105	105	G	180	110	115	110	110	115	115	115	115	115	110	110
5	105	110	110	110	105	130	120	115	115	115	110	115	115	110	105	105	105	130	110	115	105	115	115	110
6	105	105	105	110	125	120	120	115	110	105	110	110	105	105	C	C	130	150	125	110	115	115	115	110
7	105	105	110	120	110	105	115	110	110	110	110	105	115	110	105	105	130	115	115	115	110	110	110	105
8	105	105	100	105	105	110	125	115	115	115	115	110	120	110	105	105	140	115	110	100	100	115	115	105
9	105	105	105	105	100	105	120	125	115	115	120	110	120	120	125	115	135	120	105	110	120	115	115	110
10	105	110	100	100	120	125	120	115	115	110	110	110	105	105	100	100	100	100	105	100	110	115	110	105
11	105	105	110	105	125	120	115	110	110	110	110	110	115	120	E G 160	125	115	110	115	115	110	105	105	105
12	100	100	100	100	105	120	115	110	105	110	110	105	105	110	110	130	115	120	110	105	115	130	110	105
13	105	105	105	105	145	120	120	115	110	110	115	110	105	105	105	105	105	100	105	105	105	115	115	115
14	105	105	100	105	130	125	120	115	115	115	110	105	105	105	105	105	110	110	110	110	105	115	115	105
15	115	100	105	100	110	135	120	115	115	105	110	110	110	110	110	105	105	105	105	105	105	110	110	110
16	110	110	105	105	110	125	120	120	110	110	110	110	105	110	110	110	105	105	100	105	100	100	110	110
17	100	105	105	105	100	130	120	115	120	105	110	110	110	110	110	105	115	110	110	115	110	105	105	115
18	115	115	100	100	115	125	125	115	110	105	110	110	105	100	110	110	135	115	115	130	110	105	110	110
19	100	105	B	105	B	150	120	110	130	115	110	115	110	105	115	110	G	125	115	110	115	110	115	110
20	105	110	110	110	110	110	115	115	115	110	110	105	110	110	135	135	125	115	120	115	110	110	110	110
21	105	100	105	105	105	120	120	115	115	110	135	115	110	115	120	120	115	110	115	115	115	115	105	110
22	110	105	105	105	100	110	120	120	115	115	110	105	110	105	105	105	105	100	105	105	105	110	110	105
23	105	110	100	105	110	130	120	115	110	110	110	110	110	125	C	165	130	120	115	115	115	115	110	110
24	110	110	105	100	105	110	110	110	105	105	105	110	135	125	120	125	120	115	110	110	110	105	120	100
25	100	105	100	95	95	100	150	125	120	110	115	115	110	110	110	110	110	115	105	100	105	100	110	110
26	105	105	100	100	105	105	160	120	110	110	110	110	110	115	105	110	110	110	110	110	110	105	105	105
27	105	105	105	110	105	130	120	115	110	110	110	110	110	110	110	115	110	110	110	110	100	110	105	105
28	105	105	105	105	105	120	130	115	120	110	C	C	C	C	105	105	105	105	105	115	115	115	110	110
29	105	110	110	105	105	110	105	115	110	115	115	115	115	115	115	115	110	110	105	110	105	105	110	105
30	105	105	105	125	115	130	125	115	120	120	115	110	G	110	G	120	135	125	120	110	115	110	110	110
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	28	30	30	30	30	30	29	28	28	29	26	29	29	30	29	29	30	30	30	30
MED	105	105	105	105	105	120	120	115	115	110	110	110	110	110	110	110	110	112	110	110	110	110	110	110
UQ	105	110	105	105	112	130	125	115	115	115	115	110	115	110	115	115	125	115	115	115	115	115	115	110
LQ	105	105	100	100	105	110	120	115	110	110	110	110	105	105	105	105	105	110	105	105	105	105	110	105

JUN. 1987 | H'ES (KM)

IONOSPHERIC DATA

JUN. 1987 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1 MHz to 25 MHz in 24sec 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 2	F 3	F 3	F 3	F 2	CL 21	C 3	C 3	C 3	C 3	C 2	C 2	C 1	C 2		C 2	L 1	C 2			F 2	F 3	F 3	F 3
2		F 3	F 4	F 2		C 3	C 3	C 2	C 3	C 2	C 2	L 2	L 2	L 2	L 2	L 2	L 2	L 3	L 4	F 3	F 4	F 3	FF 32	F 3
3	F 2	F 2	F 2	F 3	F 2	HL 11	C 2	C 3	C 2	C 2	C 2	C 2	C 2	C 2	L 1	L 2	C 3	C 2	L 4	F 3	F 4	F 4	F 4	F 4
4	F 4	F 5	F 4	F 4	F 3	CL 31	C 3	C 4	C 3	C 2	C 2		HL 11	L 2	C 2	C 4	C 2	C 3	C 2	F 4	F 3	F 3	F 3	F 2
5	F 2	F 3	F 2	F 1	F 1	C 3	C 3	C 4	C 3	C 3	C 2	C 1	C 2	C 2	L 3	L 3	L 3	HL 13	CL 43	FF 23	F 2	FF 42	F 6	F 6
6	F 5	F 4	F 4	F 3	F 1	C 4	C 4	C 4	C 2	C 3	C 3	C 3	C 2	L 2			H 3	H 2	H 3	F 3	F 4	F 4	F 5	F 4
7	F 2	F 2	F 1	F 5	F 4	L 3	C 5	C 4	C 3	C 3	C 2	L 2	C 2	C 2	C 3	C 2	H 2	C 3	C 4	F 3	F 3	F 3	F 3	F 4
8	F 5	FF 21	F 4	F 4	F 2	LC 21	C 2	C 3	C 3	C 2	C 1	C 2	C 2	C 2	L 3	L 2	HL 12	C 3	L 2	F 4	F 4	F 5	F 2	F 5
9	F 5	F 4	F 2	F 2	F 3	L 1	C 1	C 2	C 2	C 2	C 1	C 2	C 1	C 1	C 1	C 1	CL 12	C 3	L 3	F 2	FF 13	FF 23	F 3	F 5
10	F 5	F 5	F 4	F 3	FF 21	C 3	C 4	C 3	C 2	C 3	C 2	C 2	C 3	L 4	L 4	L 2	L 3	L 3	L 3	F 2	FF 51	F 4	F 5	F 4
11	F 3	F 5	F 2	F 2	FF 11	C 2	C 4	C 4	C 4	C 3	C 3	L 3	C 2	H 2	H 1	H 2	C 3	C 4	C 3	F 3	F 4	F 3	F 4	F 3
12	F 4	F 5	F 5	F 3	F 3	C 4	C 4	C 3	C 3	C 3	C 4	C 3	C 3	C 2	C 2	HC 23	C 3	C 5	C 4	F 5	FF 35	FF 24	F 3	F 3
13	F 3	F 3	F 5	F 3	F 1	C 4	C 5	C 4	C 3	C 3	C 3	C 3	C 3	C 3	L 3	L 2	L 3	L 5	L 4	F 5	F 2	F 6	F 5	F 3
14	F 3	F 2	F 3	FF 21	F 3	C 3	C 2	C 3	C 3	C 3	C 3	C 3	L 3	L 3	L 3	L 3	L 2	LH 21	CL 32	F 5	F 4	F 4	F 4	F 3
15	F 2	F 4	F 4	F 3	F 4	H 2	C 2	C 4	C 3	C 3	C 3	C 2	C 2	C 2	L 2	L 2	L 4	L 4	L 3	F 4	F 4	F 2	F 3	F 4
16	F 4	F 4	F 3	F 4	F 2	C 4	C 4	C 4	C 3	C 3	C 2	C 3	C 2	C 2	C 2	L 3	L 4	L 4	L 4	F 4	F 5	F 5	FF 32	F 4
17	F 4	F 5	F 5	F 3	F 4	HL 42	C 5	C 4	C 3	C 3	C 2	C 2	C 3	C 3	C 4	L 3	L 2	C 4	L 3	F 5	F 5	F 4	F 3	F 5
18	F 5	FF 22	F 2	F 2	FF 42	C 2	C 3	C 4	C 3	C 3	C 3	L 2	L 2	C 3	C 2	L 2	HL 22	C 3	CL 22	FF 24	F 3	F 2	F 3	F 3
19	F 3	F 2		F 2		H 1	H 3	C 2	C 2	C 2	C 2	C 2	C 2	C 3	C 2	C 2		H 3	C 3	F 5	F 4	F 3	F 4	F 4
20	F 5	F 4	F 5	F 5	F 4	L 3	C 4	C 4	C 3	C 2	C 3	L 2	C 2	C 2	H 3	H 2	H 3	C 2	C 3	F 3	F 3	F 4	F 4	F 4
21	F 5	F 4	F 5	F 3	F 3	C 4	C 4	C 5	C 2	C 2	H 1	C 1	C 3	C 2	H 4	C 3	C 3	C 4	CL 33	F 3	FF 32	F 4	F 3	F 5
22	F 3	F 3	F 4	F 5	F 4	L 2	C 4	C 3	C 3	C 3	C 2	C 3	C 3	L 2	L 2	L 3	L 3	L 3	L 4	F 3	F 2	F 4	F 4	F 2
23	F 2	F 4	F 3	F 3	F 3	CL 21	C 4	C 4	C 3	C 2	C 2	C 3	C 3	C 2		H 1	HL 22	CL 43	CL 24	FF 34	FF 42	FF 23	FF 13	F 4
24	F 3	F 4	F 4	F 2	F 3	L 4	C 4	C 3	C 3	C 3	L 3	L 2	H 1	H 2	H 3	H 2	C 3	C 4	C 4	F 5	F 5	F 5	F 1	F 2
25	F 4	F 3	F 4	F 3	F 2	L 1	H 2	H 2	C 2	C 3	C 3	C 2	C 2	C 3	C 2	C 3	C 4	C 3	L 4	F 4	F 2	FF 23	FF 42	F 5
26	F 4	F 4	F 3	F 3	F 3	L 3	H 3	HL 32	C 3	C 3	C 2	C 2	C 2	C 2	L 1	C 2	C 3	C 3	C 5	F 4	F 3	F 3	F 4	F 4
27	F 5	F 5	F 4	FF 23	F 2	C 2	C 3	C 3	C 4	C 3	C 3	C 3	C 3	C 3	C 2	C 3	C 5	C 4	C 4	F 4	F 4	FF 24	F 4	F 5
28	F 4	F 5	F 2	F 4	F 2	H 3	C 2	C 3	C 2	C 2					L 3	L 2	L 3	L 3	L 3	FF 24	FF 24	FF 32	F 2	F 3
29	F 3	F 3	F 4	F 3	F 2	L 2	LH 22	C 3	C 2	C 2	C 2	C 2	C 2	C 2	C 1	C 2	C 3	L 3	L 3	F 2	F 2	F 2	F 2	F 2
30	F 3	F 2	F 2	FF 12	F 2	C 3	C 3	C 3	C 2	C 2	C 2	C 2		L 2		C 2	H 2	H 3	CL 22	FF 23	FF 22	F 4	F 3	F 2
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. 1987 | TYPES OF ES

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec 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	75	A	75	65	59	41															X 70	O X 64	A	A
2	A	S	49	44	44	X 44															X 64	X 62	S	S
3	S	44	47	A	37	X 41															X 79	X 65	X 58	U X 50
4	X 54	60	S	46	46	44															X 75	X 64	S	70
5	60	65	65	46	A	40															A	70	X 69	47
6	60	55	50	44	43	S															X 74	X 73	X 66	X 72
7	X 76	X 75	X 75	S	A	X 37															S	A	X 59	X 59
8	X 57	X 53	60	X 51	X 48	X 44															X 59	X 55	X 54	X 53
9	60	57	55	X 47	X 44	X 44															A	X 47	A	58
10	57	60	58	X 45	X 43	X 42															X 73	X 66	A	A
11	A	63	60	62	55	X 46															X 84	X 79	A	40
12	58	A	44	47	47	45															A	A	59	60
13	A	A	A	45	42	X 49															X 82	X 49	X 47	A
14	A	47	48	46	53	X 56															X 66	X 61	50	49
15	A	S	56	A	50	O X 45															X 77	X 69	X 68	X 64
16	X 56	S	X 54	A	55	58															X 83	X 74	X 68	U X 68
17	63	63	69	69	59	53															X 81	X 80	S	S
18	S	S	S	66	X 62	O X 51															X 87	A	S	X 58
19	S	U X 55	S	S	S	S															X 90	X 78	O X 68	X 71
20	A	S	A	S	S	A															X 89	S	S	O X 61
21	X 60	59	X 56	X 49	55	S															X 66	A	S	S
22	X 57	X 47	A	A	O X 41	X 47															S	X 67	A	A
23	66	60	61	48	X 44	48															A	A	S	A
24	A	A	X 51	57	58	A															O X 73	X 67	A	X 57
25	X 56	X 53	55	55	48	S															X 83	X 64	S	S
26	S	S	X 53	S	S	S															X 85	O X 72	66	64
27	A	60	60	59	57	50	67	86													X 69	X 69	O X 53	65
28	70	62	55	60	59	56															X 72	X 56	47	45
29	53	55	A	45	33	X 32															X 81	X 70	X 62	X 59
30	X 59	X 57	X 55	X 50	X 49	X 42															X 64	X 59	X 52	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	18	20	23	22	25	23	1	1													24	24	16	20
MED	60	58	56	48	48	X 45	67	86													X 76	X 66	X 59	X 59
UQ	63	61	60	59	55	50															X 83	X 71	X 67	X 64
LQ	X 57	54	52	46	44	X 42															X 70	X 62	X 52	52

JUN. 1987 | FXI (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec 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	A	F	F	F	F 30	46	50	A	A	A	A	A	80	A	66	63	S 61	70	80	64	58	A	A
2	A	S	F	F	F	J S 38	45	55	A	56	54	A	54	64	75	70	65	68	69	57	58	56	S	A
3	A	F	F	A	F	S 35	42	53	61	50	52	53	59	62	75	74	73	75	71	67	S 73	59	S 52	44
4	S 48	F	S	F	F	F	51	A	55	60	57	58	66	75	88	90	79	69	A	A	S 69	J S 58	S	F
5	F	F	F	F	A	F	A	68	58	A	56	61	A	77	88	R 98	95	85	76	64	A	F	S 62	F
6	F	F	F	F	F	S	49	48	A	A	A	A	A	53	52	63	74	74	64	59	68	67	60	U S 66
7	70	69	69	A	A	S 31	A	68	A	A	A	55	A	A	A	71	A	A	S 61	59	S	A	S 53	S 53
8	51	47	F	45	42	38	A	A	A	55	49	60	62	67	60	60	68	74	32	73	53	49	48	47
9	F	F	F	41	38	38	49	51	58	62	53	50	53	56	A	63	73	84	87	63	A	S 41	A	F
10	F	F	F	39	37	36	42	67	78	56	A	A	A	57	80	84	70	55	50	55	67	S 60	A	A
11	A	F	F	F	F	S 40	53	A	A	A	A	A	76	73	79	77	73	70	66	A	78	S 73	A	F
12	F	A	F	F	F	F	52	A	A	A	60	61	60	66	74	31	84	82	72	54	A	A	F	F
13	A	A	A	F	F	43	52	A	52	A	A	A	A	A	A	77	80	80	83	82	76	43	41	A
14	A	F	F	F	F	50	53	A	A	A	A	A	A	A	62	63	57	53	54	53	60	55	F	F
15	A	S	F	A	F	S 39	A	A	S 61	55	60	H 56	59	63	72	31	87	79	80	78	S 71	63	U S 62	58
16	S 50	A	S 48	A	F	F	S 50	S 56	78	A	53	51	52	A	A	A	A	A	78	69	S 77	S 68	S 62	S 62
17	F	F	F	F	F	F	A	A	A	71	61	55	A	A	A	A	38	75	69	60	J S 75	J S 74	S	S
18	S	S	S	F	S 56	S 45	S 47	A	70	A	49	A	A	A	83	A	80	A	76	80	81	A	S	J S 52
19	S	U S 49	I S 44	S	S	S	49	A	60	61	63	A	74	77	80	76	73	79	S 86	S 88	84	S 72	S 62	S 65
20	A	S	A	S	A	A	J S 53	J R 73	S 61	A	57	A	70	55	55	61	74	82	79	79	83	A	U S 55	S 55
21	S 54	F	S 50	J S 43	F	36	S 33	A	50	S 55	53	51	55	63	74	74	69	59	67	60	J S 60	A	A	S
22	J S 51	J S 41	A	A	35	J S 41	47	A	A	56	A	A	61	73	A	82	83	H 75	A	A	S	J S 61	A	A
23	F	U F 51	F	40	38	U F 40	53	66	A	A	50	55	A	68	65	75	A	90	90	J S 78	A	A	S	A
24	A	A	J S 45	S 48	J S 48	A	A	A	51	A	A	J R 60	A	61	75	34	32	A	A	A	S 67	J S 61	A	A
25	J S 50	J S 47	J S 47	J S 44	J S 40	S	S	S 49	S 51	A	A	54	56	H 68	71	73	77	83	39	85	S 77	J S 58	S	S
26	S	S	J S 52	S	S	S	A	J R 70	A	A	51	57	64	63	66	72	73	77	35	85	79	66	J F 60	F
27	A	F	F	F 50	F	F	F 55	J F 74	53	A	47	A	A	A	74	31	83	73	74	S 67	63	63	47	F
28	F	F	F 48	F	F	F	43	54	61	A	50	R	52	61	71	82	30	J R 73	65	64	66	S 50	F	F
29	F	F	A	F	F	26	37	55	65	53	58	52	58	59	65	76	87	88	80	78	75	64	56	53
30	53	51	49	44	43	36	42	52	A	A	A	A	60	A	57	55	64	64	61	59	58	S 53	J S 46	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	7	9	9	9	17	22	17	17	12	19	16	18	22	23	27	27	26	27	26	24	23	14	10
MED	S 51	49	S 48	44	40	38	49	55	60	56	53	55	60	64	74	75	74	75	74	67	70	S 60	S 56	S 54
UQ	54	51	S 50	45	S 43	S 40	52	68	61	60	58	59	64	73	77	31	32	82	81	79	77	S 65	S 62	S 62
LQ	S 50	S 47	S 47	41	38	36	43	52	53	55	50	52	55	61	65	68	72	69	66	59	64	56	S 48	52

JUN. 1987 | FOF2 (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	A	A	A	A	A	U A 470	A	A	A	390	L 330	A				
2							A	A	A	A	A	A	U A 440	A	A	A	U A 430	U A 400	A	A				
3							A	A	410	A	440	450	450	450	U H 440	A	440	390	A	A				
4							L	A	A	U A 450	A	A	450	A	A	A	A	A	A	A				
5							A	A	A	A	A	U A 460	A	A	A	A	A	A	360					
6									A	A	A	A	A	450	440	R 430	400	390	A	A				
7							A	A	A	A	A	R 450	A	A	A	A	A	A	L	A				
8							A	A	A	U L 440	A	A	450	450	450	440	410	390	350					
9							L	L	L 420	430	U A 450	450	450	450	A	430	A	400	L					
10							L	A	A	U A 430	A	A	A	U A 470	440	430	420	L 400	L 400	L				
11								A	A	A	A	A	A	480	450	450	420	410	360	A				
12								A	A	A	A	A	A	450	A	430	410	400	350					
13								A	U A 430	A	A	A	A	A	A	A	A	A	360					
14								A	A	A	A	A	A	A	A	A	A	U A 410	A					
15							A	A	L 410	440	450	450	450	450	A	430	410	390	R 380					
16							L	400	A	A	450	450	R 450	A	A	A	A	A	A	A				
17							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18								A	U A 410	A	A	A	A	A	A	A	A	A	A	A				
19								A	U A 420	A	A	A	U A 460	U A 480	450	U A 450	A	400	A	A				
20							A	A	A	A	A	A	450	450	460	440	A	A	A	L				
21								A	L 400	440	440	U A 470	450	450	450	U A 440	A	400	360	A				
22							L	A	A	A	A	A	460	A	A	A	A	A	A	A				
23							L 330	A	A	A		L 460	A	U A 450	A	A	A	A	A	A				
24							A	A	410	A	A	A	A	U A 460	U A 450	U A 430	A	A	A	A				
25									L	A	A	450	U A 450	430	A	H 440	420	A	A	A				
26									A	A	430	450	A	450	450	A	A	A	L 370	L				
27							L 330	370	L 410	A	A	A	A	A	A	A	A	A	A	A				
28								390	A	A	440	440	450	450	440	430	410	390	L 330	L				
29								370	410	A	A	U A 460	440	A	440	420	A	A	A	A				
30								L 390	A	A	A	A	460	A	440	440	410	400	L 360					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	5	10	6	7	12	15	17	13	15	11	15	12					
MED							L 330	390	410	440	440	450	450	450	450	430	410	400	360					
UQ								390	420	U 440	450	460	450	460	450	440	420	400	375					
LQ								370	410	430	440	450	450	450	440	430	410	390	355					

JUN. 1987 | FOF1 (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec 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	250	285	305	320	330	A	A	A	A	A	A	A	S				
2							210	255	290	300	A	A	A	A	A	A	A	A	A	S				
3							200	A	295	300	310	A	A	A	A	A	A	A	A	S				
4							A	250	290	300	A	A	A	A	A	A	A	A	A	S				
5							A	250	300	315	330	A	A	A	A	A	A	A	215	S				
6							H 200	250	290	310	330	A	A	A	350	330	R 300	H 280	230	S				
7							A	250	290	A	325	340	A	A	A	U A 310	300	A	A	S				
8							A	240	285	A	A	A	A	A	A	A	A	A	A	S				
9							170	235	A	A	A	A	A	A	A	A	A	A	A	S				
10							A	240	A	A	A	A	A	A	A	A	A	A	A	S				
11							A	250	A	A	A	A	A	A	A	A	A	U A 275	A	S				
12							A	A	A	A	A	A	A	A	A	A	A	280	220	S				
13							A	A	A	A	A	A	A	A	A	A	A	A	A	S				
14							A	A	A	A	A	A	A	A	A	A	A	A	A	S				
15							S	A	A	325	A	A	A	A	A	A	A	A	A	S				
16							A	A	300	305	325	A	A	A	A	A	A	A	A	S				
17							A	A	300	320	340	A	A	A	A	A	A	A	A	S				
18							A	A	A	A	A	A	A	A	A	A	A	300	230	S				
19							200	250	300	320	340	A	A	A	A	A	A	280	235	S				
20							180	250	295	305	330	A	A	350	350	340	300	270	230	S				
21							S	A	290	A	A	A	A	U A 360	350	335	300	285	235	S				
22							S	A	A	310	320	A	A	A	A	A	A	A	A	A				
23							A	A	A 290	300	A	A	A	R 360	345	330	305	H 270	A	A				
24							A	A	A	A	A	A	A	A	A	A	U A 300	275	A 235	A				
25							170	260	300	A	325	A	A	345	U A 340	320	A	A	A	A				
26							A	A	A	A	A	320	A	A	A	A	A 300	A	A	S				
27							S	245	A	300	A	A	U A 360	A 355	345	A 310	A	A	A	A				
28							A	250	285	A	A	A	A	A	A	330	295	A	220	A				
29							A	270	A	A	A	A	A	A	A	A	A	A	A	S				
30							A	A	A	A	A	A	A	A	A	A	A	270	240	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							7	16	16	14	11	3	1	5	6	8	8	10	10					
MED							200	250	290	305	325	330	U A 360	355	343	330	300	273	230					
UQ							200	250	300	315	330	335		A 360	350	332	300	280	235					
LQ							175	248	290	300	322	325		350	345	315	300	270	220					

The Radio Research Laboratory, Japan

JUN. 1987 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec 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	JA 51	JA 69	JA 44	JA 53	JA 34	ES 16	JA 40	JA 52	JA 78	JA 123	JA 151	JA 88	JA 104	50	JA 94	JA 141	JA 71	JA 51	JA 33	JA 33	JA 45	JA 43	JA 115	JA 64
2	JA 70	JA 68	JA 65	JA 46	JA 36	JA 31	JA 41	JA 63	JA 88	JA 79	JA 81	JA 76	JA 54	JA 75	JA 63	JA 61	JA 64	JA 54	JA 43	50	54	JA 26	JA 36	JA 49
3	JA 41	JA 23	JA 54	JA 52	JA 34	JA 31	JA 40	JA 63	JA 44	76	49	49	JA 42	JA 54	42	JA 75	JA 54	JA 35	JA 54	JA 37	JA 27	JA 64	JA 42	JA 55
4	JA 46	JA 48	JA 69	JA 46	JA 30	JA 44	27	JA 110	JA 65	JA 90	JA 70	JA 82	JA 94	JA 64	JA 72	JA 64	JA 104	JA 64	JA 115	JA 74	JA 51	JA 83	JA 51	JA 83
5	JA 83	JA 45	JA 44	JA 49	JA 48	JA 65	JA 78	JA 59	JA 61	JA 83	89	JA 130	JA 114	JA 56	JA 154	71	JA 63	JA 48	JA 47	JA 24	JA 80	JA 43	JA 61	JA 84
6	JA 65	JA 42	JA 24	JA 29	JA 33	22	27	JA 39	JA 88	120	JA 146	JA 115	JA 155	JA 61	41	40	32	33	JA 54	JA 53	JA 36	JA 26	JA 21	20
7	JA 65	JA 25	27	JA 50	JA 72	JA 65	JA 54	JA 65	JA 111	JA 105	JA 70	JA 51	JA 79	JA 83	JA 144	JA 131	JA 102	JA 167	JA 183	JA 194	JA 147	JA 81	JA 52	JA 48
8	JA 46	JA 53	JA 44	JA 40	JA 38	JA 42	JA 53	JA 65	JA 62	JA 54	JA 83	JA 72	JA 53	JA 43	42	JA 40	JA 42	JA 61	JA 60	JA 53	JA 18	ES 16	JA 18	JA 26
9	JA 41	JA 25	JA 36	JA 24	ES 16	ES 16	27	JA 38	JA 36	JA 47	JA 51	JA 70	37	43	JA 64	JA 41	JA 70	JA 54	JA 41	JA 25	JA 87	JA 38	JA 51	JA 41
10	JA 53	JA 25	JA 25	JA 24	JA 59	JA 21	JA 37	JA 64	JA 73	JA 49	JA 72	JA 113	JA 115	JA 72	JA 47	JA 44	JA 31	JA 36	JA 41	JA 40	30	JA 18	JA 81	JA 86
11	JA 64	JA 41	JA 62	JA 70	JA 51	JA 41	JA 45	JA 64	JA 65	JA 166	JA 123	JA 92	JA 74	JA 46	43	JA 47	JA 40	30	JA 32	JA 89	JA 85	JA 77	JA 65	JA 32
12	JA 106	JA 80	JA 32	JA 30	JA 32	JA 21	JA 35	JA 65	JA 75	JA 93	JA 100	JA 54	JA 69	JA 60	JA 82	JA 44	JA 44	30	JA 54	JA 64	JA 112	JA 145	JA 51	JA 80
13	JA 75	JA 63	JA 65	JA 32	JA 22	JA 46	JA 42	JA 88	JA 60	JA 84	JA 153	JA 145	JA 162	JA 144	JA 162	JA 89	JA 75	JA 87	JA 64	JA 38	JA 64	JA 25	JA 87	JA 60
14	JA 64	JA 52	JA 36	JA 24	JA 22	JA 18	JA 23	JA 78	JA 62	JA 90	JA 111	JA 75	JA 62	JA 57	JA 64	JA 70	JA 51	JA 44	JA 45	JA 33	JA 30	JA 52	JA 33	JA 38
15	JA 74	JA 65	JA 55	JA 74	JA 25	JA 25	JA 64	JA 89	JA 208	JA 104	JA 80	JA 54	JA 55	45	JA 51	JA 47	45	JA 40	JA 39	JA 35	JA 22	24	JA 20	JA 21
16	JA 32	JA 54	JA 46	JA 55	JA 23	ES 16	JA 32	JA 46	71	JA 150	JA 77	JA 103	JA 89	JA 92	154	JA 133	JA 155	JA 204	JA 83	JA 103	JA 113	JA 51	JA 42	JA 75
17	JA 35	JA 54	JA 48	40	JA 33	JA 29	JA 54	JA 75	JA 88	JA 89	JA 90	JA 83	JA 89	JA 110	JA 196	JA 102	95	JA 70	JA 78	JA 53	70	JA 56	JA 53	56
18	48	JA 74	JA 49	JA 30	JA 23	21	25	JA 83	JA 64	101	46	75	JA 92	JA 149	JA 104	JA 115	JA 104	JA 105	JA 77	JA 59	JA 84	JA 89	JA 81	JA 74
19	JA 23	JA 51	JA 22	JA 22	JA 53	JA 36	29	JA 82	JA 87	73	JA 76	JA 79	JA 59	JA 82	JA 45	JA 66	JA 60	39	JA 42	JA 60	JA 64	JA 51	31	31
20	JA 85	91	JA 65	70	JA 44	JA 53	JA 50	JA 64	JA 64	JA 90	69	JA 134	JA 72	42	46	51	JA 63	JA 89	JA 84	26	JA 26	56	24	JA 32
21	JA 51	JA 45	JA 50	JA 25	JA 28	JA 51	JA 51	JA 99	JA 53	41	JA 81	89	JA 78	41	43	44	JA 84	JA 47	45	53	JA 79	JA 103	57	JA 77
22	JA 41	JA 49	JA 52	51	JA 34	JA 25	JA 32	JA 84	JA 141	120	JA 90	JA 98	JA 154	JA 130	JA 155	JA 80	JA 50	JA 55	JA 81	JA 130	JA 60	JA 82	JA 110	JA 140
23	JA 50	JA 25	JA 38	JA 34	JA 50	JA 30	25	JA 58	JA 132	JA 112	JA 62	JA 64	JA 71	53	54	JA 69	JA 95	JA 93	64	JA 74	JA 110	JA 107	JA 34	JA 50
24	JA 64	JA 80	JA 61	JA 41	JA 45	JA 80	JA 164	JA 162	JA 103	JA 80	JA 56	JA 69	JA 66	JA 82	JA 65	JA 71	JA 110	JA 163	JA 87	JA 82	33	38	JA 147	JA 83
25	JA 51	JA 29	JA 18	19	JA 25	23	G	G	JA 44	JA 53	JA 68	JA 78	JA 104	37	JA 56	39	JA 42	JA 74	JA 47	JA 85	JA 50	JA 25	JA 33	JA 25
26	JA 26	JA 33	JA 33	JA 30	JA 36	JA 20	JA 50	JA 41	JA 88	JA 65	JA 85	JA 90	JA 83	JA 60	JA 65	JA 83	JA 80	JA 60	JA 41	JA 19	JA 22	JA 17	JA 74	JA 50
27	JA 52	JA 40	JA 32	JA 17	JA 25	JA 25	JA 31	JA 41	JA 50	JA 88	JA 75	JA 66	JA 68	JA 95	JA 61	JA 125	JA 74	JA 72	JA 75	JA 110	JA 50	JA 37	JA 28	JA 84
28	JA 78	JA 65	JA 51	JA 22	JA 18	20	JA 30	JA 33	JA 80	JA 160	JA 133	JA 105	JA 47	JA 36	JA 54	35	32	JA 43	24	JA 21	JA 18	JA 17	JA 52	JA 84
29	JA 51	JA 20	JA 40	JA 60	JA 30	JA 30	JA 35	JA 30	JA 53	JA 66	JA 82	JA 122	JA 50	JA 81	JA 54	JA 53	JA 53	JA 74	JA 64	JA 65	JA 51	JA 33	JA 29	JA 25
30	JA 20	JA 40	ES 16	JA 17	JA 16	ES 16	JA 30	JA 44	JA 80	JA 76	JA 196	JA 140	JA 87	JA 127	JA 74	JA 36	JA 39	30	26	18	22	JA 34	JA 21	JA 21
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	JA 51	JA 48	JA 44	JA 37	JA 33	JA 27	JA 36	JA 64	JA 72	JA 83	JA 81	JA 82	JA 76	JA 60	JA 64	JA 65	JA 63	JA 54	JA 54	JA 53	JA 51	JA 43	JA 51	JA 52
UQ	JA 65	JA 65	JA 54	JA 51	JA 44	JA 42	JA 50	JA 82	JA 88	JA 105	JA 100	JA 105	JA 94	JA 33	JA 94	JA 83	JA 84	JA 74	JA 77	JA 74	JA 80	JA 77	JA 65	JA 80
LQ	JA 41	JA 33	JA 32	JA 24	JA 25	21	JA 29	JA 44	JA 61	JA 73	JA 70	JA 70	JA 59	JA 46	JA 47	JA 44	JA 44	JA 40	JA 41	JA 33	JA 30	JA 26	JA 31	JA 32

JUN. 1987 | FOES (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec 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	50	AA 69	30	34	28	ES 16	27	46	AA 78	AA 123	AA 151	AA 88	AA 104	47	AA 94	64	45	31	24	29	40	26	AA 115	AA 64
2	AA 70	24	ES 16	ES 16	ES 16	18	35	51	AA 88	49	51	AA 76	44	61	48	57	43	40	40	40	52	17	ES 16	AA 49
3	AA 41	ES 16	17	AA 52	25	25	34	42	35	49	40	39	37	41	37	52	41	30	48	32	24	34	33	25
4	29	ES 16	40	ES 16	22	30	21	AA 110	43	45	50	52	40	52	52	57	65	42	AA 115	AA 74	40	24	51	50
5	ES 16	20	24	21	AA 48	21	AA 78	55	57	AA 83	51	46	AA 114	54	87	70	56	44	25	19	AA 80	25	ES 16	18
6	17	ES 16	ES 16	ES 16	ES 16	ES 16	24	32	AA 88	AA 120	AA 146	AA 115	AA 155	37	40	40	32	30	51	52	34	25	ES 16	ES 16
7	25	ES 16	25	AA 50	AA 72	ES 16	AA 54	63	AA 111	AA 105	AA 70	42	AA 79	AA 83	AA 144	31	AA 102	AA 167	24	50	24	AA 81	30	41
8	40	29	40	28	28	18	AA 53	AA 65	AA 62	44	47	53	37	38	38	32	36	31	26	22	18	ES 16	ES 16	19
9	18	ES 16	ES 16	ES 16	ES 16	ES 16	25	33	31	40	45	42	37	39	AA 64	38	53	30	33	20	AA 87	25	AA 51	40
10	23	ES 16	ES 16	ES 16	ES 16	20	31	41	50	43	AA 72	AA 113	AA 115	47	41	32	31	32	30	20	21	ES 16	AA 81	AA 86
11	AA 64	37	40	23	25	33	35	AA 64	AA 65	AA 166	AA 123	AA 92	63	43	41	41	36	30	31	AA 89	64	61	AA 65	22
12	30	AA 80	25	25	19	ES 16	32	AA 65	AA 75	AA 93	60	UA 46	50	42	62	39	38	G	32	40	AA 112	AA 145	42	51
13	AA 75	AA 63	AA 65	ES 16	ES 16	25	32	AA 88	43	AA 84	AA 153	AA 145	AA 162	AA 144	AA 162	59	58	43	33	25	52	22	ES 16	AA 60
14	AA 64	ES 16	25	ES 16	ES 16	ES 16	20	AA 78	AA 62	AA 90	AA 111	AA 75	AA 62	AA 57	56	61	50	41	41	28	25	21	ES 16	30
15	AA 74	ES 16	ES 16	AA 74	22	25	AA 64	AA 89	36	41	39	42	38	39	49	39	38	38	33	25	21	18	ES 16	ES 16
16	ES 16	AA 54	29	AA 55	ES 16	ES 16	25	30	67	AA 150	39	40	40	AA 92	AA 154	AA 133	AA 155	AA 204	41	55	61	51	42	ES 16
17	21	35	34	23	ES 16	29	AA 54	AA 75	AA 88	64	55	50	AA 89	AA 110	AA 196	AA 102	82	64	51	35	65	55	53	52
18	47	51	28	ES 16	ES 16	ES 16	24	AA 83	41	AA 101	43	AA 75	AA 92	AA 149	54	AA 115	51	AA 105	65	55	63	AA 89	30	30
19	ES 16	17	ES 16	ES 16	ES 16	ES 16	29	AA 82	42	49	58	AA 79	46	43	39	45	49	32	41	60	55	51	ES 16	ES 16
20	AA 85	20	AA 65	24	AA 44	AA 53	44	45	52	AA 90	50	AA 134	35	42	44	40	46	74	75	24	25	AA 56	ES 16	19
21	51	30	29	23	ES 16	ES 16	28	AA 99	31	34	40	47	37	40	39	44	65	38	35	40	34	AA 103	AA 57	53
22	22	ES 16	AA 52	AA 51	23	ES 16	23	AA 34	AA 141	54	AA 90	AA 98	43	66	AA 155	71	47	47	AA 81	AA 130	51	51	AA 110	AA 140
23	31	ES 15	ES 16	ES 16	ES 16	25	25	54	AA 132	AA 112	39	37	AA 71	45	52	60	AA 95	72	63	58	AA 110	AA 107	18	AA 50
24	AA 64	AA 80	22	31	21	AA 80	AA 164	AA 162	31	AA 80	AA 56	57	AA 66	47	45	43	82	AA 163	AA 87	AA 82	33	29	AA 147	AA 83
25	ES 16	23	ES 16	ES 16	ES 16	ES 16	G	G	35	AA 53	AA 68	39	46	36	53	37	36	67	43	28	22	20	ES 16	25
26	20	26	25	24	18	ES 16	AA 50	40	AA 88	AA 65	40	41	49	34	45	54	46	59	31	17	ES 16	ES 16	26	25
27	AA 52	30	25	ES 16	ES 16	ES 16	24	35	37	AA 88	44	AA 66	AA 68	AA 95	57	73	64	72	38	62	25	ES 16	24	33
28	34	40	32	17	ES 16	ES 16	22	26	45	AA 160	35	36	37	36	37	35	32	29	24	19	ES 16	ES 16	37	32
29	ES 16	ES 16	AA 40	ES 16	ES 16	ES 16	34	27	37	48	48	46	39	48	42	33	49	73	51	48	40	28	20	21
30	20	ES 16	ES 16	ES 16	ES 16	ES 16	25	35	AA 80	AA 76	AA 196	AA 140	40	AA 127	35	34	35	30	26	18	ES 15	ES 16	ES 16	ES 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	30	22	25	19	ES 16	ES 16	30	54	54	AA 73	51	52	48	47	50	44	48	42	39	38	37	26	28	31
UQ	AA 52	37	34	28	23	25	44	AA 82	AA 80	AA 101	AA 72	AA 88	AA 79	AA 66	64	61	64	72	51	55	61	55	51	51
LQ	20	ES 16	ES 16	ES 16	ES 16	ES 16	24	35	37	49	43	42	39	40	41	38	38	31	31	24	24	18	ES 16	19

IONOSPHERIC DATA

JUN. 1987 | FMIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1 MHz to 25 MHz in 24sec 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 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	17	17	20	20	24	19	17	17	14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
2	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	15	18	18	20	22	19	17	17	16	17	E S 16	E S 16	E S 16	E S 16	E S 16
3	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	14	16	16	18	23	20	21	18	16	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
4	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	17	18	19	25	20	21	19	17	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
5	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	20	24	20	21	20	21	17	16	15	13	E S 16	E S 16	E S 16	E S 16	E S 16
6	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	18	18	18	17	19	18	16	14	E S 16	E S 16	E S 16	E S 16	E S 16
7	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	15	18	17	18	20	16	15	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
8	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	17	18	17	17	17	17	17	16	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
9	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	15	15	16	16	17	16	17	17	15	15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
10	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	16	17	17	18	18	16	15	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
11	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	19	18	28	18	17	17	15	16	15	E S 16	E S 16	E S 16	E S 16	E S 16
12	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	17	18	20	17	18	17	15	15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
13	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	17	17	17	20	17	16	16	15	15	E S 16	E S 16	E S 16	E S 16	E S 16
14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	15	16	18	19	17	21	17	16	15	15	E S 16	E S 16	E S 16	E S 16	E S 16
15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	15	16	18	19	24	20	17	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	18	18	19	18	17	17	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	15	17	20	20	16	16	18	19	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
18	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	18	17	17	16	20	20	17	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
19	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	17	16	20	20	25	30	19	19	17	18	13	E S 16	E S 16	E S 16	E S 16	E S 16
20	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	17	18	20	16	17	16	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
21	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	16	16	19	17	22	20	16	16	15	13	E S 16	E S 16	E S 16	E S 16	E S 16
22	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	15	16	17	17	20	17	19	17	18	17	14	E S 16	E S 16	E S 16	E S 16	E S 16
23	E S 16	E S 15	E S 16	E S 16	E S 16	E S 16	14	14	15	16	17	20	17	17	18	17	17	16	12	E S 16	E S 16	E S 16	E S 16	E S 16
24	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	13	16	17	17	20	20	17	17	17	17	16	E S 16	E S 16	E S 16	E S 16	E S 16
25	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	21	17	17	20	16	16	15	E S 15	E S 16	E S 16	E S 16	E S 16	E S 16
26	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	16	20	22	17	16	17	16	14	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
27	E S 16	E S 16	E S 16	E S 16	E S 16	E S 15	E S 16	14	16	17	16	17	19	22	21	17	17	16	17	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
28	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	17	23	19	18	17	16	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
29	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	17	17	17	20	18	16	16	17	16	E S 16	E S 16	E S 16	E S 16	E S 16
30	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	18	17	20	20	16	16	16	15	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	16	17	18	19	19	18	17	16	16	16	E S 16	E S 16	E S 16	E S 16	E S 16
UQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	16	17	17	20	20	20	20	17	17	16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16
LQ	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	E S 16	15	16	16	17	17	17	17	16	16	15	14	E S 16	E S 16	E S 16	E S 16	E S 16

JUN. 1987 | FMIN (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F2 (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 25 MHz in 24sec 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	A	F	F	F	F 335	335	A	A	A	A	A	A	305	A	A	300	S 295	290	325	330	295	A	A
2	A	S	F	F	F	S	300	A	A	265	270	A	275	A	300	300	285	295	320	315	310	340	S	A
3	A	F	F	A	F	S 315	345	340	345	A	290	275	295	280	285	295	295	305	325	290	S 330	315	S 325	295
4	S 310	F	S	F	F	F	345	A	310	325	300	275	270	275	295	310	315	290	A	A	S 330	J S 325	S	F
5	F	F	F	F	A	F	A	350	A	A	305	295	A	270	A	R 305	310	325	300	295	A	F	S 335	F
6	F	F	F	F	F	S	355	290	A	A	A	A	A	285	300	300	310	315	310	280	295	285	275	U S 270
7	280	295	335	A	A	S 290	A	340	A	A	A	300	A	A	A	310	A	A	S 320	320	S	A	S 340	S 300
8	315	275	F	300	310	315	A	A	A	320	A	310	290	315	300	235	310	315	330	355	320	295	290	310
9	F	F	F	315	340	355	345	360	325	330	365	250	275	295	A	295	285	315	345	325	A	S 330	A	F
10	F	F	F	320	310	320	295	345	370	355	A	A	A	265	310	335	340	345	300	300	315	S 335	A	A
11	A	F	F	F	F	S 350	350	A	A	A	A	A	A	275	290	285	315	290	295	A	320	S 340	A	F
12	F	A	F	F	F	F	325	A	A	A	340	305	285	280	275	285	310	325	345	335	A	A	F	F
13	A	A	A	F	F	315	325	A	345	A	A	A	A	A	A	285	295	300	295	325	340	335	290	A
14	A	F	F	F	F	350	375	A	A	A	A	A	A	A	305	A	315	300	305	320	325	335	F	F
15	A	S	F	A	F	S 305	A	A	S 335	310	315	H 305	290	285	270	285	300	305	275	305	S 310	315	U S 290	310
16	S 320	A	S 310	A	F	F	S 340	S 305	370	A	300	295	270	A	A	A	A	A	315	280	S 295	S 310	S 305	S 295
17	F	F	F	F	F	F	A	A	A	340	A	270	A	A	A	A	305	295	305	295	J S 300	J S 330	S	S
18	S	S	S	F	S 320	S 310	S 320	A	350	A	315	A	A	A	285	A	300	A	290	300	310	A	S	J S 310
19	S	U S 305	I S 320	S	S	S	335	A	330	310	310	A	290	270	280	280	275	280	S 295	S 300	320	S 310	S 355	S 290
20	A	S	A	S	A	A	J S 290	J R 340	S 330	A	335	A	315	290	280	285	290	305	A	305	325	A	U S 290	S 295
21	S 295	F	S 280	J S 305	F	S	S 335	A	340	S 300	320	255	265	285	295	315	310	305	330	335	J S 310	A	A	S
22	J S 305	J S 310	A	A	285	J S 340	330	A	A	320	A	A	280	285	A	300	300	H 305	A	A	S	J S 290	A	A
23	F	U F 305	F	285	300	U F 300	320	340	A	A	340	255	A	300	235	275	A	295	325	J S 320	A	A	S	A
24	A	A	J S 315	S 290	J S 325	A	A	A	350	A	A	J R 260	A	280	285	310	A	A	A	A	S 305	J S 325	A	A
25	J S 295	J S 300	J S 310	J S 300	J S 305	S	S	S 365	S 360	A	A	295	275	H 280	295	265	285	285	315	325	S 325	J S 335	S	S
26	S	S	J S 300	S	S	S	A	J R 370	A	A	255	270	290	295	230	305	310	300	295	310	305	305	J F 310	F
27	A	F	F	F 330	F	F	F 320	J F 325	340	A	310	A	A	A	290	295	305	295	310	S 305	300	285	330	F
28	F	F	F 300	F	F	F	315	340	345	A	300	R	270	255	265	235	295	J R 285	290	310	335	S 330	F	F
29	F	F	A	F	F	305	285	345	355	340	325	355	295	275	290	275	300	320	310	305	335	310	310	310
30	300	315	315	305	315	320	310	345	A	A	A	A	290	A	320	280	295	310	325	310	310	S 320	J S 285	S
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	7	9	9	9	15	22	15	16	11	17	16	17	21	22	25	26	26	26	26	24	23	14	10
MED	S 302	305	S 310	305	310	315	328	340	345	320	310	285	285	280	290	295	300	302	310	310	318	S 320	S 308	S 298
UQ	S 312	308	S 315	315	320	338	345	348	352	335	325	302	290	290	300	305	310	315	325	325	328	S 332	S 330	310
LQ	295	298	S 300	300	305	308	315	340	332	310	300	265	275	275	280	285	295	295	295	300	308	308	S 290	S 295

JUN. 1987 | M(3000)F2 (0.01)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | 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 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	A	A	A	A	A	A	A	A	A	A	345	L 365	A				
2							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
3							A	A	355	A	410	390	400	A	U H 385	A	A	385	A	A				
4							L	A	A	A	A	A	400	A	A	A	A	A	A	A				
5							A	A	A	A	A	A	A	A	A	A	A	A	360					
6									A	A	A	A	A	400	385	R 370	375	360	A	A				
7							A	A	A	A	A	R 390	A	A	A	A	A	A	L	A				
8							A	A	A	A	A	A	400	400	375	365	365	360	355					
9							L	L	L 370	395	A	A	400	400	A	385	A	360	L					
10							L	A	A	A	A	A	A	A	385	370	380	L 350	L 350	L				
11								A	A	A	A	A	A	A	400	A	380	365	340	A				
12								A	A	A	A	A	A	375	A	370	365	375	A					
13								A	A	A	A	A	A	A	A	A	A	A	A					
14								A	A	A	A	A	A	A	A	A	A	A	A					
15							A	A	L 355	385	400	A	400	375	A	370	365	A	A					
16							L	350	A	A	400	420	R 420	A	A	A	A	A	A	A				
17							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
18								A	A	A	A	A	A	A	A	A	A	A	A	A				
19								A	A	A	A	A	A	A	400	A	A	350	A	A				
20							A	A	A	A	A	A	410	400	A	A	A	A	A	L				
21								A	400	385	375	A	390	390	375	A	A	355	A	A				
22							L	A	A	A	A	A	A	A	A	A	A	A	A	A				
23							L 365	A	A	A		L 390	A	A	A	A	A	A	A	A				
24							A	A	380	A	A	A	A	A	A	A	A	A	A	A				
25									L	A	A	L	A	420	A	H 385	370	A	A	A				
26									A	A	420	355	A	365	A	A	A	A	L 350	L				
27							L 350	A	L 365	A	A	A	A	A	A	A	A	A	A	A				
28								345	A	A	410	410	410	410	385	370	365	370	L 355	L				
29								365	380	A	A	A	410	A	A	390	A	A	A	A				
30								L 360	A	A	A	A	395	A	395	335	365	350	L 360					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	4	7	3	6	6	11	10	9	10	9	12	8					
MED							L 358	355	370	385	405	390	400	400	385	370	365	360	L 355					
UQ								362	380	390	410	410	410	400	395	385	375	368	360					
LQ								348	L 360	385	400	390	400	375	385	370	365	350	L 350					

JUN. 1987 | M(3000)F1 (0.01)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F2 (KM) | 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 25 MHz in 24sec 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							270	A	A	A	A	A	A	300	A	A	335	330	285	250				
2							A 330	E A 350	A	450	475	A	410	A	310	E A 345	360	315	230	A 285				
3							A	280	270	A	440	450	370	380	335	310	315	300	270	285				
4							255	A	300	305	370	A	375	380	330	285	E A 300	320	A	A				
5							A	255	A	A	E A 370	330	A	370	A	E A 300	290	280	290					
6									A	A	A	A	A	400	350	345	310	290	E A 295	A				
7							A	E A 310	A	A	A	370	A	A	A	340	A	A	275	F A 300				
8							A	A	A	330	A	A	380	325	355	380	320	300	270					
9							260	250	280	300	270	520	440	400	A	370	340	295	250					
10							370	270	250	270	A	A	A	460	330	230	280	280	350	290				
11								A	A	A	A	A	A	380	330	310	315	305	310	A				
12								A	A	A	A	340	400	375	A	330	300	280	240					
13								A	290	A	A	A	A	A	A	A	A	300	290					
14								A	A	A	A	A	A	A	A	A	A	355	305					
15							A	A	275	330	335	325	380	370	360	335	295	285	300					
16							260	320	A 230	A	380	400	475	A	A	A	A	A	260	A				
17							A	A	A	E A 300	A	435	A	A	A	A	A	E A 340	300	E A 300				
18								A	255	A	A 320	A	A	A	345	A	320	A	E A 360	A 315				
19								A	295	320	E A 350	A	340	375	310	345	380	330	300	295				
20							E A 295	265	E A 300	A	310	A	330	400	400	390	335	E A 350	A	250				
21								A	255	310	340	510	460	390	340	300	A	320	280	255				
22							L 250	A	A	E A 340	A	A	395	E A 375	A	A 350	305	280	A	A				
23							290	A 285	A	A		430	A	320	380	A 375	A	A 320	260	A 275				
24							A	A	270	A	A	500	A	405	345	300	E A 430	A	A	A				
25									250	A	A	385	425	360	325	365	330	A 350	275	250				
26									A	A	505	385	360	355	360	320	320	A 330	295	260				
27							290	260	280	A	395	A	A	A	335	E A 355	A 305	E A 370	275	E A 350				
28								280	285	A	385	R	445	425	385	325	295	305	320	255				
29								290	270	A	E A 310	490	380	400	350	350	305	305	275	E A 275				
30								280	A	A	A	A	370	A	300	405	330	335	280					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							10	13	16	10	15	14	17	21	20	24	23	26	26	16				
MED							272	275	271	312	370	415	380	380	342	337	315	306	281	268				
UQ							295	285	285	330	390	490	425	400	353	360	331	325	300	A 292				
LQ							260	265	255	300	U 309	370	370	365	330	310	302	295	275	254				

JUN. 1987 | H'F2 (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F (KM) | 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 25 MHz in 24sec 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 A 320	A	285	E A 305	E A 280	200	260	A	A	A	A	A	A	A	A	A	A	E A 240	A 220	A	E A 255	280	A	A
2	A	205	270	E S 285	265	A 285	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	225	E S 280	A
3	A	205	A 295	A	A	E A 260	A	A	E A 240	A	210	200	190	A	195	A	A	200	A	A	240	E A 250	E A 275	E A 265
4	A 305	255	E A 300	295	E A 255	A	235	A	A	A	A	A	220	A	A	A	A	A	A	A	A 265	A 250	E A 330	E A 300
5	E S 300	A 280	260	E A 255	A	E A 270	A	A	A	A	A	A	A	A	A	A	A	A	235	H 240	A	E A 300	245	A 280
6	A 315	280	280	300	300	245	220	235	A	A	A	A	A	H 175	225	E A 270	H 230	H 215	A	A	290	A 290	S 310	S 310
7	A 305	S 255	A 230	A	A	E S 320	A	A	A	A	A	E A 250	A	A	A	A	A	A	225	A	295	A	E A 345	E A 355
8	A	A	E A 300	A	E A 295	E A 280	A	A	A	A	A	A	H 190	H 195	A 225	220	E A 240	E A 230	E A 230	230	220	E S 270	E S 295	E A 300
9	E A 280	E S 250	E S 300	S 255	E S 250	S 240	A 230	E A 240	H 200	A 230	A	A	200	H 190	A	A 230	A	230	A	240	A	E A 275	A	E A 270
10	E A 250	E S 295	E S 290	E S 250	E S 250	E A 250	A	A	A	A	A	A	A	A	E A 250	230	205	A 235	E A 245	E A 250	E A 250	215	A	A
11	A	A	E A 300	E A 275	A	E A 260	A 250	A	A	A	A	A	A	A	220	A	210	220	F A 250	A	E A 300	E A 250	A	E A 300
12	E A 250	A	E A 260	A	E A 265	E S 250	E A 275	A	A	A	A	A	A	E A 250	A	E A 240	E A 270	215	A	E A 250	A	A	A	A
13	A	A	A	E S 300	S	A 240	E A 280	A	A	A	A	A	A	A	A	A	A	A	A	250	250	240	E S 300	A
14	A	E S 260	E A 300	E S 290	E S 275	230	H 215	A	A	A	A	A	A	A	A	A	A	A	A	250	250	240	E S 320	A
15	A	250	265	A	A 250	E A 320	A	A	E A 240	E A 250	200	A	200	230	A	A	E A 255	A	A	255	240	240	255	235
16	255	A	245	A	255	260	235	225	A	A	195	195	190	A	A	A	A	A	A	A	A	E A 300	E A 320	280
17	A 270	A	E A 310	275	255	E A 265	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 300	275	E A 300	E A 320
18	E A 320	E A 350	E A 280	250	240	270	240	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 300	A	A 220	A 255
19	240	A 280	260	S 250	270	245	A 250	A	A	A	A	A	A	A	H 175	A	A	255	A	A	265	E A 290	E S 270	S 275
20	A	255	A	280	A	A	A	A	A	A	A	A	H 180	240	A	E A 285	A	A	A	255	230	A	S 280	290
21	A	E A 325	A 300	A 265	335	350	E A 275	A	200	205	240	A	200	220	240	A	A	A	A	A	A 260	A	A	A
22	290	275	A	A	E A 310	225	230	A	A	A	A	A	E A 280	A	A	A	A	A	A	A	E A 300	A 305	A	A
23	A 300	S 270	310	310	280	E A 270	245	A	A	A	H 200	H 200	A	A	A	A	A	A	A	A	A	A	S 280	A
24	A	A	A 290	300	260	A	A	A	H 200	A	A	A	A	A	A	A	A	A	A	A	245	240	A	A
25	300	310	260	260	285	250	200	200	230	A	A	H 185	A	H 175	A	205	A 220	A	A	A	225	220	300	A 320
26	270	290	A 295	225	250	250	A	210	A	A	205	E A 275	A	230	A	A	A	A	A 250	245	225	205	A 260	A 295
27	A	A 305	A 305	250	255	295	245	A	A 250	A	A	A	A	A	A	A	A	A	A	A	260	255	240	E A 300
28	E A 300	E A 350	320	A 300	E S 275	245	230	225	A	A	190	175	180	175	215	225	205	225	225	245	225	205	E A 300	E A 350
29	E S 300	250	A	S 230	E S 270	E S 290	A	H 210	E A 250	A	A	A	H 190	A	A	H 225	A	A	A	A	A 255	A 250	250	E A 265
30	E A 270	E S 260	245	240	S 245	E S 280	E A 230	E A 260	A	A	A	A	A 225	A	H 180	H 190	A 230	H 220	240	H 235	220	215	E S 300	E S 295
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	19	22	26	23	24	27	18	8	8	3	7	7	12	10	9	10	9	11	9	12	24	24	22	20
MED	U A 270	262	U 275	262	256	U 242	234	218	U 218	U A 218	200	192	192	200	218	220	U A 218	222	A 230	245	244	U 236	E E 288	E A 295
UQ	A 301	A 288	A 295	288	272	E E 280	A 248	232	E A 245	A 235	208	U 212	205	230	225	E A 240	E A 240	230	A 240	250	A 268	U A 264	E E 300	E A 305
LQ	U A 255	252	260	248	250	240	230	210	200	218	198	190	190	H 175	195	220	210	218	225	240	232	225	252	U 258

JUN. 1987 | H'F (KM)

IONOSPHERIC DATA

JUN. 1987 | H'E (KM) | 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 25 MHz in 24sec 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							S 110	110	110	110	110	110	110	A	A	A	A	A	S					
2							S 110	110	110	110	105	A	A	A	A	A	A	A	S					
3							S 110	110	105	110	105	110	110	110	110	A	A	A	S					
4							S 110	105	105	110	110	110	105	105	110	110	110	S	S					
5							S 110	110	110	110	110	110	110	A	A	A	A	A	S					
6							E S 120	110	110	105	105	110	105	105	110	110	110	110	110	S				
7							S 110	105	110	110	110	105	110	110	105	110	110	110	S					
8							E S 120	110	110	110	110	110	105	105	105	A	A	A	S					
9							S 110	110	105	105	105	105	105	110	105	A	A	A	S					
10							E S 120	105	105	105	105	105	A	A	A	A	A	A	S					
11							S 120	110	105	A	A	A	A	A	105	105	105	A	110	S				
12							E S 120	110	105	105	105	105	105	105	105	105	105	110	105	S				
13							E S 120	110	105	105	105	105	105	110	105	105	105	105	A	S				
14							E S 125	110	105	105	105	105	105	105	A	A	A	A	A	S				
15							S 110	105	105	105	105	105	110	110	105	A	A	A	S					
16							S 110	105	105	105	105	110	105	105	105	A	A	A	S					
17							S 110	110	105	105	110	110	105	110	110	110	110	110	S					
18							115	110	110	105	105	105	105	A	A	A	A	110	115	S				
19							E S 120	110	110	105	110	110	110	A	A	A	A	110	110	S				
20							E S 125	110	110	110	105	105	A	105	105	105	105	105	115	S				
21							S 110	105	105	105	105	105	105	110	110	105	105	110	115	S				
22							S 105	105	105	105	105	105	105	105	105	105	A	A	A	A				
23							A	A 105	105	105	105	105	105	105	105	105	A	E A 125	A	A				
24							A 105	100	A	105	105	105	105	105	A	A	A	A	E A 125	A				
25							S 105	105	105	105	105	105	105	105	A	105	110	105	105	A				
26							A 105	105	105	105	105	105	110	105	105	105	110	110	A	S				
27							S 110	105	105	105	105	105	105	110	110	105	105	105	115	A				
28							120	110	105	105	105	105	105	A	A	E A 120	A	A	110	A				
29							110	110	105	105	105	110	105	105	105	105	105	A	A	S				
30							E S 120	105	105	105	A	A	A	A	A	A	A	E A 120	E A 120	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							13	29	30	23	28	28	25	23	19	21	13	15	14					
MED							E S 120	110	105	105	105	105	105	105	105	105	105	110	110					
UQ							E S 120	110	110	105	110	110	110	110	110	105	110	110	115					
LQ							E S 120	110	105	105	105	105	105	105	105	105	105	108	110					

JUN. 1987 | H'E (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'ES (KM) | 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 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	100	100	95	95	S	130	120	115	110	110	110	105	105	100	100	100	100	100	100	100	110	110	110
2	105	105	100	100	100	105	125	115	110	110	105	105	105	100	105	100	100	100	100	100	100	110	105	115
3	110	145	105	105	105	110	110	110	115	110	110	110	115	110	110	105	100	100	100	100	100	105	100	110
4	110	100	100	100	105	105	130	115	110	110	110	110	115	110	110	110	110	110	105	105	105	115	115	110
5	100	100	100	110	130	130	120	115	115	110	110	120	105	105	110	100	100	100	120	100	100	100	110	105
6	135	110	105	105	110	100	130	120	110	110	105	110	110	130	140	130	E G 170	140	120	115	110	110	115	110
7	105	105	105	120	140	105	115	115	110	110	110	110	105	105	105	105	125	115	110	110	110	105	105	100
8	100	100	100	100	100	100	120	110	110	115	110	105	115	110	110	110	105	100	100	100	100	S	100	100
9	105	105	100	100	S	S	125	110	115	110	105	105	125	120	105	110	100	100	100	100	100	100	100	100
10	100	100	100	100	100	115	120	115	105	105	105	105	100	100	100	100	100	100	100	100	100	100	100	105
11	100	105	105	100	100	100	125	115	105	100	100	100	100	100	105	105	105	150	120	110	110	105	105	105
12	100	100	100	100	100	100	120	110	110	105	105	110	105	105	105	110	110	150	120	110	105	105	100	100
13	100	100	100	100	140	115	120	110	115	110	110	110	105	105	105	105	105	105	100	100	100	100	100	105
14	100	100	100	100	100	100	125	110	110	105	105	105	105	105	100	100	100	100	100	100	100	100	100	110
15	110	105	105	105	110	140	120	115	110	140	110	110	110	120	110	105	105	105	105	100	100	105	110	105
16	105	105	105	105	110	S	130	120	110	110	110	110	110	110	110	105	100	100	100	100	95	95	95	105
17	100	100	100	95	100	130	120	115	115	110	110	110	110	105	105	110	110	110	105	105	105	100	100	100
18	100	100	95	100	100	105	115	110	110	105	105	105	105	100	105	100	150	120	115	110	110	110	110	105
19	105	100	105	105	105	105	120	115	115	115	110	110	110	105	105	105	105	145	125	115	110	110	110	110
20	110	105	105	105	105	115	115	110	110	110	110	110	105	170	140	130	120	115	110	110	110	105	105	105
21	100	100	100	100	105	115	120	115	130	115	105	105	105	140	135	125	115	125	120	110	110	110	110	110
22	100	100	100	100	95	100	125	110	110	105	105	105	105	105	100	100	100	105	105	100	100	125	115	105
23	105	105	105	105	100	100	130	120	110	105	110	115	105	145	160	135	120	115	145	100	100	105	105	105
24	105	105	105	105	105	100	110	105	105	105	115	115	105	105	125	125	120	115	115	110	105	100	105	105
25	105	105	105	110	105	100	G	G	125	110	110	110	105	145	115	125	115	110	105	105	100	100	110	105
26	105	100	100	100	100	100	125	120	110	110	110	105	105	105	105	110	110	110	110	105	105	105	105	95
27	100	95	95	95	125	125	125	115	115	105	105	110	120	115	110	105	110	105	125	105	105	100	105	105
28	105	105	100	95	100	100	115	125	110	105	105	105	105	105	105	175	E G 180	100	145	100	120	115	110	120
29	110	105	105	105	105	120	125	120	110	110	105	105	110	105	105	110	105	100	100	100	100	100	100	100
30	100	110	S	100	100	S	125	115	105	105	100	100	100	100	125	105	100	150	130	130	115	115	105	115
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	29	26	29	29	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30
MED	105	102	100	100	105	105	120	115	110	110	110	110	105	105	105	105	105	103	108	102	102	105	105	105
UQ	105	105	105	105	105	115	125	115	115	110	110	110	110	115	110	110	112	115	120	110	110	110	110	110
LQ	100	100	100	100	100	100	120	110	110	105	105	105	105	105	105	105	100	100	100	100	100	100	100	105

JUN. 1987 | H'ES (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | TYPES OF ES | 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 25 MHz in 24sec 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 7	F 7	F 5	F 5	F 3		C 3	C 5	C 6	C 4	C 4	C 5	C 6	C 2	L 7	L 2	L 3	L 2	L 2	L 4	F 7	FF 23	F 4	F 7
2	F 4	FF 12	F 2	F 2	F 2	F 7	C 4	C 5	C 6	C 3	C 2	C 3	L 2	L 3	L 3	L 4	L 3	L 3	L 2	L 3	F 6	FF 13	F 4	FF 27
3	F 6	F 1	F 3	F 5	F 7	FF 44	C 3	C 5	C 2	C 4	C 2	C 1	C 1	C 2	C 2	C 4	L 3	L 3	L 2	L 5	F 6	F 5	F 8	FF 15
4	F 7	F 4	F 5	F 3	FF 24	FF 31	C 3	C 7	C 3	C 3	C 2	C 2	C 1	C 2	C 2	C 4	C 4	C 4	C 3	C 4	F 6	F 3	F 6	F 5
5	F 2	F 5	F 2	FF 15	FF 41	FF 41	C 4	C 3	C 5	C 5	C 2	CC 22	C 3	C 3	CL 36	L 4	L 5	L 5	CL 13	L 4	F 5	F 3	FF 44	FF 32
6	FFF 15	F 2	F 2	F 2	F 2	F 1	C 3	C 3	C 4	C 4	C 6	C 4	C 3	HC 11	H 1	H 1	H 1	H 2	C 6	C 7	F 7	FF 72	F 4	F 2
7	F 6	F 3	F 7	FF 62	FFF 12	F 1	C 5	C 6	C 7	C 6	C 5	C 2	C 3	C 4	C 5	CH 43	C 6	C 6	C 4	C 6	F 7	F 6	F 7	F 7
8	F 8	F 7	F 7	F 4	F 4	F 3	C 6	C 7	C 5	C 4	C 3	C 4	C 1	C 2	C 2	C 1	L 3	L 4	L 4	L 4	F 3		F 2	F 5
9	F 2	F 2	F 2	F 3			C 4	C 3	C 2	C 3	C 3	C 3	C 1	C 1	C 5	C 2	L 3	L 4	L 5	L 4	F 5	F 7	F 8	F 6
10	F 4	F 2	F 2	F 2	F 3	F 6	C 4	C 6	C 6	C 3	C 5	C 7	C 6	L 4	L 4	L 2	L 2	L 3	L 4	L 3	F 6	F 1	F 6	F 7
11	F 8	F 8	F 6	F 6	F 4	F 5	C 7	C 5	C 7	L 5	L 5	L 4	L 3	L 2	C 3	C 4	C 3	HL 12	C 4	C 4	F 6	F 6	F 5	F 3
12	F 4	F 5	F 4	F 5	F 3	F 2	C 5	C 7	C 6	C 5	C 3	C 2	C 2	C 3	C 4	C 2	C 2	H 3	C 3	C 5	F 5	F 7	F 6	F 5
13	F 6	F 6	F 7	F 3	FF 21	F 2	C 6	C 5	C 5	C 4	C 5	C 6	C 4	C 5	C 5	C 4	C 7	C 6	L 4	L 6	F 5	F 5	F 3	F 8
14	F 6	F 3	F 5	F 2	F 2	F 2	C 4	C 7	C 5	C 5	C 6	C 4	C 5	C 3	L 4	L 6	L 4	L 5	L 4	L 6	F 6	F 6	F 4	F 7
15	F 6	F 4	F 4	F 4	F 6	F 2	C 7	C 5	C 3	HC 12	C 2	C 2	C 2	C 1	C 3	C 2	L 3	L 6	L 3	L 6	F 7	F 4	FF 11	FF 12
16	FF 23	FF 43	FF 14	F 3	F 2	F 1	CL 51	C 4	C 5	C 4	C 2	C 2	C 2	C 4	C 5	C 6	L 6	L 4	L 4	L 5	F 7	F 5	F 6	FF 22
17	F 4	FF 33	F 4	F 4	F 4	FF 32	C 6	C 6	C 7	C 3	C 4	C 3	C 3	C 5	C 5	C 6	C 5	C 6	C 6	C 7	F 7	F 7	F 7	F 3
18	F 7	F 7	F 3	F 1	F 2	F 2	C 5	C 7	C 4	C 7	C 2	C 4	C 7	L 5	L 3	L 4	HL 13	C 4	C 4	C 6	F 4	F 7	F 2	F 6
19	F 2	F 5	F 2	F 2	F 3	F 2	C 5	C 6	C 2	C 2	C 3	C 4	C 1	L 2	L 2	L 3	L 3	H 2	C 2	C 4	FF 32	FF 42	F 3	F 3
20	F 3	F 3	F 4	F 6	F 4	FF 15	C 6	C 6	C 4	C 4	C 3	C 4	L 2	H 1	H 2	H 2	C 3	C 4	C 6	C 7	F 7	F 5	F 3	F 7
21	F 7	F 3	F 7	F 4	FF 12	F 2	C 5	C 5	C 2	C 2	C 3	C 3	C 2	H 1	H 2	H 2	C 5	C 3	C 4	C 7	F 6	F 7	F 7	FF 23
22	F 8	F 5	F 6	F 5	F 4	F 3	CL 31	C 7	C 7	C 5	C 4	C 3	C 3	C 4	C 4	C 6	L 4	LL 54	LL 74	L 3	F 8	FF 16	F 4	F 6
23	F 6	F 2	F 2	F 4	F 7	F 3	CL 13	CL 62	C 6	C 6	C 1	C 1	C 4	H 2	H 3	H 4	CL 52	CL 63	CL 55	L 7	F 6	FF 25	FF 22	F 4
24	F 3	FF 33	F 3	FF 23	F 2	F 3	L 6	C 3	C 2	L 3	CC 32	CC 23	CC 32	C 3	CL 22	CL 32	CL 72	CL 72	CL 62	L 7	F 5	F 6	FF 24	FF 34
25	FF 21	F 2	F 1	F 1	F 2	F 1			H 2	C 5	C 4	C 3	C 3	H 1	CL 42	C 1	CL 21	C 5	C 5	L 5	F 5	F 7	FF 32	F 4
26	F 5	F 3	F 2	F 3	F 3	F 2	CL 42	CL 42	C 7	C 6	C 3	C 3	C 2	C 2	C 2	C 3	CL 41	CL 42	CL 22	L 1	F 4	F 2	F 4	F 4
27	F 3	F 4	F 4	F 2	FF 21	F 2	C 4	C 4	C 3	C 6	C 4	C 4	C 2	C 5	C 3	C 5	C 6	C 4	CC 25	L 6	F 5	F 4	FF 44	FF 21
28	FF 22	F 5	F 3	F 3	F 1	F 1	C 3	C 2	C 3	C 4	C 3	C 3	C 2	CL 12	L 2	HL 11	HL 12	L 2	H 2	L 4	F 1	F 1	F 5	FF 26
29	F 3	F 4	F 7	F 2	F 2	F 5	C 6	C 4	C 4	C 4	C 5	C 2	C 2	C 3	C 2	C 1	C 6	L 6	L 6	L 6	F 6	F 5	F 6	F 5
30	F 4	F 2		F 2	F 1		C 3	C 4	C 5	C 5	L 6	L 4	L 2	L 5	CL 21	L 2	L 3	HL 22	HL 12	C 1	FF 11	FF 11	F 1	F 2
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. 1987 | TYPES OF ES

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FXI (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec 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	X 59	X 58	59	X 51	X 46	43															X 60	X 53	48	A
2	A	57	55	46	38	38															X 74	X 59	X 41	33
3	35	35	31	33	A	31															A	X 63	X 54	A
4	60	60	55	41	40	34															X 80	X 74	64	62
5	70	68	68	47	40	37	57														X 80	X 76	X 58	X 56
6	X 51	48	60	48	X 47	X 44															X 71	X 72	X 64	69
7	71	70	58	A	A	A															X 73	X 64	61	60
8	A	A	57	54	50	X 44															X 64	X 59	X 59	X 61
9	61	60	61	57	X 50	X 47															A	X 62	X 60	X 53
10	56	58	56	47	40	37															X 79	X 64	U X 44	X 39
11	A	47	46	45	43	37															X 87	X 66	48	A
12	50	60	60	46	47	42															X 54	X 60	A	A
13	A	56	42	40	42	X 43															X 82	X 52	X 49	X 46
14	32	45	53	47	48	45															X 70	X 57	X 44	40
15	33	A	C	C	C	C															C	C	C	C
16	C	C	C	C	C	C															X 87	X 77	72	67
17	68	61	62	59	58	50	57														U X 93	X 77	X 59	X 57
18	59	60	57	54	51	50															X 96	X 74	66	A
19	40	A	63	54	A	A															A	A	A	X 60
20	64	66	63	A	46	43															X 91	X 58	X 60	X 57
21	62	64	54	52	51	50															X 60	X 56	52	A
22	A	61	48	39	40	38															X 62	X 60	X 57	60
23	62	60	58	42	47	50															X 61	X 57	X 58	X 58
24	X 56	56	59	X 48	X 48	X 51															X 83	X 70	X 60	X 57
25	X 55	54	53	58	X 51	X 43															X 87	X 56	X 55	X 54
26	58	60	58	52	38	37															X 95	X 86	X 60	X 53
27	X 56	58	56	61	58	X 56															X 93	X 84	X 70	62
28	47	48	52	43	43	X 41															X 60	X 50	X 45	X 36
29	A	A	A	U X 36	A	X 32															X 85	A	X 71	X 71
30	63	65	68	60	56	60															X 66	X 50	X 48	45
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	25	27	26	24	26	2														26	27	27	23
MED	58	60	57	48	47	43	57														X 80	X 62	X 58	X 57
UQ	62	61	60	54	50	50															X 87	X 73	X 60	60
LQ	50	56	54	43	41	37															X 64	X 57	X 48	X 50

JUN. 1987 | FXI (0.1 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOF2 (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S 53	52	F	45	S 40	F	42	52	A	A	A	A	64	87	79	30	85	82	89	R 88	54	U S 47	F	A
2	A	F	F	F	F	F	42	65	70	A	A	A	A	80	35	R 37	87	90	30	63	68	U S 53	35	F
3	F	F	F	F	A	F	41	53	A	A	53	61	73	A	34	39	86	90	R 86	88	A	57	U S 48	A
4	F	F	F	F	F	F	44	52	60	A	60	65	74	84	93	A	84	A	84	79	S 74	68	F	F
5	F	F	F	F	F	F	F 48	R 60	A	A	73	66	A	102	A	R 128	R 132	118	93	90	S 74	70	U S 52	S 50
6	S 45	F	F	F	41	38	43	49	R 56	C	U R 61	R 63	R 63	55	65	81	87	A	U R 77	R 74	S 65	S 66	58	F
7	F	F	F	A	A	A	A	63	A	A	59	68	72	87	89	89	104	91	79	64	67	58	F	F
8	A	A	F	F	F	S 38	43	60	A	A	A	A	A	A	71	77	85	94	91	67	58	53	53	55
9	F 52	F	F	F 48	44	41	42	53	65	54	54	52	A	60	69	77	85	R 97	A	A	A	56	54	S 47
10	F	F	F	F	F 31	F 28	38	73	66	54	56	54	54	68	91	91	64	54	55	R 65	73	S 58	S 38	S 33
11	A	F	F	F	F	F	R 44	56	54	60	72	84	97	108	106	R 107	104	96	93	84	81	60	S 42	A
12	F	F	F	F	F	F	44	A	A	A	A	A	A	88	94	108	113	100	68	52	S 48	54	A	A
13	A	F	F	F	F	37	49	53	A	A	A	A	A	A	92	108	113	110	117	U R 117	U S 76	46	43	40
14	F	F	F	F	F	F	43	50	55	A	A	A	A	A	65	72	70	R 73	A	62	64	S 51	38	F
15	F	A	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	C	A	A	A	60	72	83	95	89	82	R 83	81	71	F	F
17	F	F	F	F	F	F	F	57	U R 74	54	A	A	A	67	81	88	R 85	93	90	89	S 87	71	S 53	51
18	F	F	F	F	F	F	43	52	70	50	A	53	57	70	85	87	83	85	92	92	S 90	S 68	F	A
19	F	A	F	F	A	A	44	50	A	A	A	70	77	80	80	82	85	91	U R 105	A	A	A	A	54
20	F	F	F	A	F	F	53	54	R 62	A	R 66	62	72	55	56	64	77	82	R 92	93	85	52	S 54	S 51
21	F	F	F	F	F	F	R 42	49	59	56	56	48	56	67	80	80	82	75	R 61	57	54	50	F	A
22	A	F	F	F	F	F	42	52	62	57	58	A	A	82	93	104	108	R 110	U R 92	A	56	S 54	U S 51	F
23	F	F	F	F	F	F	48	60	69	57	A	A	84	87	84	90	100	111	R 100	U R 85	55	S 51	J S 52	52
24	S 50	F	F	U S 42	S 42	45	53	58	49	E G 46	A	56	62	76	84	90	86	83	83	83	77	64	54	51
25	S 49	F	F	F	45	37	49	53	51	51	A	52	62	A	73	79	81	91	R 99	93	81	S 50	S 49	48
26	F	F	F	F	F	F	48	65	A	A	A	60	A	A	72	83	86	80	88	S 94	89	80	54	47
27	S 50	F	F	F	F 48	S 50	54	53	58	67	57	46	54	71	90	102	105	A	38	90	87	78	S 64	F
28	F	F	F	F	F	S 35	47	59	54	54	A	50	50	56	66	77	82	84	R 84	80	54	S 44	39	S 30
29	A	A	A	S 30	A	S 26	36	56	60	R 54	A	61	A	A	71	A	88	93	94	90	79	A	65	65
30	F	F	F	F	F	F	36	56	56	57	65	57	60	70	66	61	64	70	R 73	69	60	44	42	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	1		4	7	10	26	27	19	14	13	19	17	22	28	27	29	26	27	26	26	27	21	14
MED	S 50	52		44	42	38	44	54	60	54	59	60	63	74	80	87	86	90	88	84	74	56	52	50
UQ	S 52			46	44	41	48	60	66	57	65	64	73	87	90	90	100	96	92	90	81	67	54	52
LQ	S 49			S 36	40	35	42	52	56	54	56	52	57	67	71	80	83	82	81	67	58	51	S 42	S 47

JUN. 1987 | FOF2 (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOF1 (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16'·9 N, Long. 127° 48'·4 E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	A	A	A	A	A	A	460	430	430	400	L					
2								A	A	A	A	A	A	A	A	A	A	A	A					
3								L	A	A	440	440	A	A	A	A	A	A	A	A				
4							L	L	A	A	U L 440	A	U A 450	A	A	A	A	A	A					
5								A	A	A	440	A	A	A	A	A	A	L 400	A					
6								L	U L 410	C	440	A	450	U A 450	A	420	420	A	A	A				
7							A	L	A	A	460	460	460	450	A	430	430	410	L					
8								L	A	A	A	A	A	A	A	430	A	400	340					
9								L	L 420	A	A	L 450	A	440	440	A	A	A	A	A				
10								U L 480	L	U L 430	L 460	440	450	A	A	A	A	L 440	L 380					
11								A	L	A	440	460	L 460	A	L 470	440	430	410	U L 380	L				
12								A	A	A	A	A	A	A	440	440	420	L 400	L					
13								L	A	A	A	A	A	A	A	A	A	A	A	A				
14								L	U L 420	A	A	A	A	A	A	A	A	A	A	A				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	A	A	A	A	A	A	420	A	A	L				
17								L	A	430	A	A	A	A	430	A	A	420	380	A				
18								L	A	A	A	440	A	A	440	440	430	A	A					
19								A	A	A	A	A	U A 450	A	A	A	420	410	A	A				
20								A	A	A	A	A	450	460	440	U A 440	430	A	U L 380					
21								L	L 440	U L 430	440	450	440	450	440	440	420	L 410	L					
22								A	A	U L 430	A	A	A	450	450	440	A	A	A	A				
23								U L 400	420	A	A	A	A	A	A	A	A	A	A	A				
24								L	L	460	A	U A 450	A	A	A	A	A	U A 400	A	A				
25								L	L	L	A	450	A	A	450	440	A	A	A					
26								L	A	A	A	A	A	A	A	U A 450	A	A	U L 400					
27							L	L	L 430	L 430	440	L 440	450	U A 460	A	A	A	A	A					
28								L 380	U L 410	L 420	A	440	450	440	440	430	420	400	U L 430	L				
29								A	A	A	A	A	A	A	A	A	A	A	A					
30								L	L 410	L 420	A	460	460	460	A	A	A	L 410	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	8	8	9	12	11	9	11	13	11	13	7					
MED								U L 400	L 420	L 430	440	450	450	450	440	440	420	410	U L 380					
UQ								U L 440	L 425	430	440	455	455	460	450	440	430	410	U L 390					
LQ								L 390	L 410	L 425	440	440	450	450	440	430	420	400	380					

JUN. 1987 | FOF1 (0.01 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FOE (0.01 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec 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							S	230	A	A	A	A	A	A	A	A	A	A	A	A				
2							S	230	A	A	A	A	A	A	A	A	A	A	A	A				
3							S	A	A	A	A	A	A	A	A	A	A	A	A	A				
4							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
5							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
6							S	A	A	C	U A 325	A	U A 355	A	A	R 330	310	A	230	A				
7							S	A	A	A	A	330	340	R 350	360	340	300	275	230	A				
8							S	220	A	A	A	A	A	A	A	A	A	A	A	S				
9							R 185	A	A	A	A	A	A	A	A	A	A	A	A	A				
10							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
11							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
12							S	A	A	A	A	A	A	A	A	A	A	270	220	S				
13							S	A	A	A	A	A	A	A	A	A	A	A	A	S				
14							S	A	A	A	A	A	A	A	A	A	A	A	A	S				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	R 320	A	A	A	R 340	A	310	A	A	A				
17							S	230	A	R 310	A	A	R 340	A	335	A	A	A	A	S				
18							A	A	A	A	A	A	A	R 370	R 375	340	R 325	A	A	A				
19							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20							A	A	A	A	A	A	365	R 370	350	325	R 320	A	A	A				
21							A	A	A	A	A	A	A	A	350	A	315	A	A	A				
22							S	A	A	A	A	A	A	A	A	A	A	A	A	S				
23							S	230	280	300	A	A	A	R 350	R 350	R 330	300	280	220	S				
24							S	240	280	315	A	A	A	R 350	A	A	A	A	A	S				
25							180	230	A	A	330	A	R 345	350	A	340	310	280	220	A				
26							S	A	A	A	R 330	A	A	A	A	A	A	R 280	A	S				
27							S	A	A	A	U A 335	A	355	R 355	345	320	A	A	A	S				
28							S	A	A	A	A	A	A	A	A	A	305	270	220	A				
29							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30							R 190	A	A	A	A	A	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							3	7	2	3	5	1	6	7	8	7	9	6	6					
MED							R 185	230	280	310	330	330	350	R 350	350	330	310	273	220					
UQ							R 188	230		312	330		355	R 362	355	340	315	280	230					
LQ							182	230		305	R 325		R 340	R 350	342	328	305	270	220					

JUN. 1987 | FOE (0.01 MHZ)

IONOSPHERIC DATA

JUN. 1987 | FOES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16·9' N, Long 127° 48·4' E Sweep 1 MHz to 25 MHz in 24sec 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	JA 24	JA 36	JA 30	20	23	ES 16	JA 35	JA 40	JA 77	JA 72	JA 85	JA 90	JA 144	JA 75	JA 50	JA 35	34	33	JA 24	JA 25	JA 27	JA 30	JA 30	JA 54
2	JA 41	JA 52	JA 30	JA 25	JA 30	JA 30	JA 36	JA 50	JA 74	JA 76	JA 108	JA 80	JA 76	JA 80	JA 74	JA 84	JA 64	JA 56	JA 44	JA 28	JA 53	JA 30	JA 30	JA 50
3	JA 64	JA 26	JA 70	JA 53	JA 32	22	JA 31	JA 40	JA 56	JA 85	JA 76	JA 56	JA 57	JA 87	JA 76	JA 64	JA 83	JA 75	JA 77	JA 50	JA 87	JA 41	JA 30	JA 36
4	JA 33	JA 26	JA 26	23	22	22	23	JA 36	JA 76	JA 170	JA 57	JA 108	JA 86	JA 86	JA 89	JA 127	JA 103	JA 108	JA 77	JA 37	JA 54	JA 86	JA 51	JA 31
5	JA 33	JA 37	JA 36	JA 22	JA 26	JA 54	JA 144	JA 70	JA 186	JA 108	JA 112	JA 58	JA 84	JA 78	JA 140	JA 108	JA 85	JA 88	JA 103	JA 76	JA 50	JA 48	JA 65	JA 28
6	JA 25	JA 25	JA 27	JA 22	JA 21	22	JA 22	JA 31	JA 40	C	JA 47	JA 45	43	48	46	38	35	JA 104	JA 57	JA 52	JA 64	JA 32	19	ES 16
7	19	JA 25	JA 50	JA 84	JA 84	JA 105	JA 64	JA 53	JA 87	JA 144	JA 46	G	G	42	52	40	JA 42	34	28	JA 21	JA 24	JA 50	JA 30	JA 36
8	JA 74	JA 62	JA 35	JA 34	JA 26	ES 16	JA 27	31	JA 106	JA 166	JA 82	JA 156	JA 127	JA 145	JA 110	JA 60	JA 64	JA 64	JA 35	JA 35	JA 40	JA 25	JA 26	JA 25
9	ES 16	ES 16	ES 16	ES 16	JA 21	JA 22	24	JA 26	JA 42	JA 75	JA 88	JA 65	JA 68	JA 78	JA 88	JA 62	JA 76	JA 138	JA 164	JA 128	JA 86	JA 26	JA 21	JA 22
10	JA 25	JA 26	JA 26	JA 27	JA 26	JA 53	JA 26	JA 40	JA 64	JA 54	JA 40	JA 42	JA 71	JA 111	JA 104	JA 78	JA 77	JA 57	JA 39	JA 37	JA 27	22	ES 16	JA 25
11	JA 52	JA 50	JA 28	JA 37	JA 37	JA 50	JA 37	JA 84	JA 41	JA 89	JA 75	JA 56	JA 57	JA 65	JA 56	JA 44	JA 50	JA 43	JA 39	JA 33	JA 50	JA 45	JA 37	JA 37
12	JA 31	JA 32	JA 54	JA 40	JA 26	JA 29	JA 36	JA 84	JA 111	JA 98	JA 145	JA 164	JA 208	JA 170	42	JA 38	JA 36	31	25	JA 20	JA 20	JA 42	JA 84	JA 87
13	JA 36	JA 29	JA 25	JA 25	JA 26	JA 25	JA 26	32	JA 110	JA 85	JA 84	JA 82	JA 101	JA 168	JA 106	JA 85	JA 110	JA 86	JA 86	JA 129	JA 50	JA 31	JA 30	JA 25
14	JA 84	JA 40	JA 32	JA 24	18	20	22	JA 28	32	JA 170	JA 137	JA 88	JA 90	JA 74	JA 73	JA 54	JA 54	JA 70	JA 79	JA 40	JA 32	JA 30	JA 26	JA 25
15	JA 22	JA 40	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	C	JA 78	JA 90	JA 110	JA 65	JA 76	JA 87	40	JA 60	JA 66	JA 75	JA 65	JA 50	JA 52	JA 42
17	JA 30	JA 25	JA 27	JA 34	JA 40	JA 30	JA 25	JA 40	JA 113	JA 144	JA 180	JA 161	JA 110	JA 85	JA 88	JA 88	JA 95	JA 77	JA 38	JA 53	JA 40	JA 30	22	20
18	JA 26	JA 26	JA 26	JA 26	ES 16	22	JA 26	JA 52	JA 53	JA 65	JA 101	JA 87	JA 68	JA 57	47	JA 64	36	JA 87	JA 50	JA 60	JA 84	JA 50	JA 138	JA 84
19	JA 26	JA 76	JA 85	JA 78	JA 63	JA 65	JA 78	JA 41	JA 164	JA 77	JA 87	JA 66	JA 72	JA 78	JA 77	JA 78	JA 42	JA 54	JA 50	JA 89	JA 146	JA 161	JA 84	JA 38
20	JA 40	JA 85	JA 62	JA 84	JA 50	JA 31	JA 32	JA 87	JA 118	JA 138	JA 93	JA 88	G	44	52	45	41	JA 50	JA 40	JA 51	JA 26	JA 32	JA 42	JA 42
21	JA 32	JA 41	JA 42	JA 26	JA 28	JA 87	JA 40	JA 35	JA 54	JA 50	JA 84	JA 43	JA 44	JA 42	40	JA 65	38	JA 54	JA 110	JA 32	JA 27	JA 84	JA 36	JA 65
22	JA 50	JA 33	JA 40	JA 40	JA 25	JA 26	JA 34	JA 65	JA 64	JA 112	JA 162	JA 183	JA 196	JA 60	JA 64	JA 56	JA 50	JA 64	JA 104	JA 100	JA 39	JA 25	JA 25	JA 75
23	JA 32	JA 40	JA 26	JA 26	JA 35	JA 40	JA 40	28	JA 40	JA 60	JA 138	JA 170	JA 74	JA 120	JA 87	JA 54	JA 65	JA 80	JA 90	JA 145	JA 30	JA 40	JA 25	JA 52
24	JA 25	JA 22	20	20	ES 16	ES 16	20	27	34	50	JA 64	JA 104	JA 85	JA 65	JA 58	JA 70	JA 65	JA 48	JA 48	JA 54	JA 49	JA 83	JA 40	JA 52
25	JA 24	JA 20	JA 36	JA 25	ES 16	ES 16	G	30	38	41	JA 144	JA 67	50	JA 79	42	40	JA 77	JA 65	JA 35	JA 32	JA 26	JA 22	JA 30	JA 25
26	JA 42	JA 42	JA 36	JA 53	JA 30	JA 25	22	32	JA 65	JA 136	JA 84	JA 102	JA 144	JA 130	JA 138	JA 52	JA 53	JA 46	JA 28	JA 35	JA 38	19	JA 22	JA 21
27	JA 30	JA 22	JA 26	JA 26	ES 16	ES 16	20	JA 27	JA 43	JA 64	38	JA 38	41	JA 46	JA 77	JA 61	JA 92	JA 96	JA 87	21	JA 27	JA 75	JA 21	JA 38
28	JA 26	JA 26	JA 24	23	JA 24	23	23	JA 31	JA 43	JA 81	JA 186	JA 71	JA 86	JA 50	JA 47	JA 45	36	35	JA 40	JA 30	JA 30	JA 22	ES 16	JA 60
29	JA 33	JA 26	JA 38	JA 26	JA 54	JA 65	JA 32	JA 54	JA 110	JA 84	JA 109	JA 140	JA 84	JA 170	JA 154	JA 94	JA 57	JA 79	JA 58	JA 50	JA 65	JA 84	JA 42	JA 54
30	JA 22	JA 26	JA 23	JA 24	ES 16	ES 16	G	JA 32	JA 32	JA 41	JA 80	JA 54	JA 55	JA 54	JA 74	JA 60	JA 47	JA 42	JA 58	JA 36	JA 23	23	JA 36	JA 26
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	28	28	28	28	28	28	27	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	JA 31	JA 29	JA 30	JA 26	JA 26	JA 25	JA 26	JA 38	JA 64	JA 34	JA 85	JA 82	JA 76	JA 78	JA 74	JA 61	JA 54	JA 64	JA 57	JA 40	JA 40	JA 32	JA 30	JA 37
UQ	JA 40	JA 40	JA 39	JA 38	JA 34	JA 45	JA 36	JA 52	JA 108	JA 124	JA 112	JA 104	JA 101	JA 87	JA 83	JA 78	JA 77	JA 80	JA 85	JA 60	JA 54	JA 50	JA 42	JA 52
LQ	JA 25	JA 26	JA 26	JA 24	21	21	22	JA 31	JA 42	JA 64	JA 76	JA 56	JA 57	JA 57	JA 52	JA 45	JA 41	JA 48	JA 39	JA 32	JA 27	JA 26	JA 25	JA 25

JUN. 1987 | FOES (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FBES (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec 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	ES 16	25	ES 16	ES 16	ES 16	ES 16	35	38	AA 77	AA 72	AA 85	AA 90	52	70	38	35	34	33	24	22	20	25	25	AA 54
2	AA 41	23	ES 16	22	20	18	36	50	56	AA 76	AA 108	AA 80	AA 76	UA 45	60	50	50	UA 42	40	25	50	28	ES 16	ES 16
3	20	18	ES 16	ES 16	AA 32	ES 16	30	34	AA 56	AA 85	41	40	52	AA 87	62	64	66	50	60	40	AA 87	35	30	AA 36
4	ES 16	22	21	ES 16	ES 15	ES 16	20	29	44	AA 170	35	57	45	66	80	AA 127	80	AA 108	74	34	42	58	50	20
5	24	33	28	20	25	ES 16	24	50	AA 186	AA 103	41	50	AA 84	73	AA 140	106	84	37	72	50	40	40	30	18
6	ES 16	20	ES 16	ES 16	ES 16	ES 16	20	30	38	C	40	45	41	45	46	38	35	AA 104	57	47	40	18	ES 16	ES 16
7	ES 16	20	22	AA 84	AA 84	AA 105	AA 64	30	AA 87	AA 144	40	G	G	42	50	38	41	30	28	20	ES 16	23	25	32
8	AA 74	AA 62	30	24	21	ES 16	26	30	AA 106	AA 166	AA 82	AA 156	AA 127	AA 145	48	36	UA 42	30	28	32	29	20	22	20
9	ES 16	ES 16	ES 16	ES 16	17	ES 16	20	26	33	44	58	44	AA 68	40	42	45	70	64	AA 164	AA 128	AA 86	22	ES 16	22
10	ES 16	22	ES 16	ES 16	ES 16	23	24	32	40	34	38	37	38	50	71	71	53	36	30	29	24	ES 16	ES 16	ES 16
11	AA 52	30	22	24	20	18	28	45	36	49	40	42	40	54	42	39	42	37	30	22	41	43	29	AA 37
12	24	19	22	22	19	20	30	AA 84	AA 111	AA 93	AA 145	AA 164	AA 203	65	37	38	33	30	24	13	ES 16	17	AA 84	AA 87
13	AA 36	25	ES 16	ES 16	20	ES 16	22	30	AA 110	AA 85	AA 84	AA 82	AA 101	AA 168	61	60	85	80	46	75	48	30	25	19
14	20	26	30	ES 16	ES 16	ES 16	19	26	28	AA 170	AA 137	AA 88	AA 90	AA 74	52	46	52	66	AA 79	30	29	30	25	20
15	ES 16	AA 40	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	C	AA 78	AA 90	AA 110	58	58	50	35	60	50	22	51	33	35	32
17	22	20	26	30	20	20	23	35	63	41	AA 180	AA 161	AA 110	50	39	48	51	31	32	43	35	25	ES 16	ES 16
18	ES 16	20	20	ES 16	ES 16	ES 16	24	36	50	47	AA 101	40	48	57	42	39	34	45	40	60	46	50	24	AA 84
19	ES 16	AA 76	18	27	AA 63	AA 65	33	40	AA 164	AA 77	AA 87	58	45	48	47	49	36	34	44	AA 89	AA 146	AA 161	AA 34	24
20	20	ES 16	30	AA 84	ES 16	ES 16	27	38	48	AA 133	48	58	G	44	41	44	39	43	32	51	ES 16	25	24	24
21	22	20	22	ES 16	ES 16	ES 16	30	24	33	38	35	38	38	38	38	39	36	39	32	29	27	ES 16	ES 16	AA 65
22	AA 50	ES 16	25	ES 16	ES 16	ES 16	26	38	48	40	48	AA 183	AA 196	38	40	40	46	63	83	AA 100	39	ES 16	ES 16	ES 16
23	ES 16	20	25	20	20	20	23	25	38	51	AA 138	AA 170	63	53	52	46	55	64	90	73	30	30	20	33
24	ES 16	22	ES 16	ES 16	ES 16	ES 16	19	27	34	41	AA 64	45	48	64	52	57	58	40	48	40	49	44	19	40
25	ES 16	ES 16	20	18	ES 16	ES 16	G	27	35	41	AA 144	41	48	AA 79	42	38	65	65	50	25	ES 16	20	ES 16	25
26	34	ES 16	23	28	22	ES 16	21	30	AA 65	AA 136	AA 84	51	AA 144	AA 130	61	45	50	45	25	25	30	ES 16	ES 16	ES 16
27	24	ES 16	ES 16	ES 16	ES 16	ES 16	17	24	36	39	38	38	37	46	64	48	49	AA 96	44	20	24	63	ES 16	20
28	ES 16	20	ES 16	ES 16	ES 16	ES 16	23	27	30	40	AA 186	40	41	40	39	39	36	30	30	22	28	ES 16	ES 16	18
29	AA 33	AA 26	AA 38	ES 16	AA 54	ES 16	26	37	50	46	AA 109	48	AA 84	AA 170	52	AA 94	40	73	58	50	60	AA 84	29	40
30	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	G	29	30	32	46	40	38	43	50	46	44	37	40	24	ES 16	ES 16	ES 16	ES 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	28	28	28	28	28	28	27	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	20	20	20	ES 16	16	ES 16	24	30	48	51	AA 78	50	52	57	50	46	46	43	44	32	35	25	22	22
UQ	24	25	25	23	20	18	29	38	AA 71	AA 103	AA 108	AA 88	AA 90	73	60	50	55	64	58	50	43	40	29	36
LQ	ES 16	18	ES 16	ES 16	ES 16	ES 16	20	27	36	41	41	40	41	45	42	39	36	36	30	24	24	18	ES 16	18

JUN. 1987 | FBES (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | FMIN (0.1 MHZ) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec 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	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	15	18	16	21	23	22	24	22	16	15	14	14	ES 16	ES 16	ES 16	ES 16
2	ES 16	ES 15	ES 16	ES 16	ES 16	ES 16	ES 16	17	15	20	25	22	27	24	20	20	21	15	14	14	ES 16	ES 16	ES 16	ES 16
3	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	15	18	22	26	26	22	15	20	15	14	14	ES 16	ES 16	ES 16	ES 16
4	ES 16	ES 16	ES 16	ES 16	ES 15	ES 16	ES 14	14	17	16	20	20	24	24	22	20	20	14	14	14	ES 16	ES 16	ES 16	ES 16
5	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	16	17	20	22	26	24	24	19	19	14	14	14	ES 16	ES 16	ES 16	ES 16
6	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	22	C	22	23	28	22	20	23	20	15	14	14	ES 16	ES 16	ES 16	ES 16
7	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	14	15	15	24	22	28	22	28	22	21	16	15	14	ES 16	ES 16	ES 16	ES 16
8	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	15	22	25	25	26	24	19	18	16	15	14	ES 16	ES 16	ES 16	ES 16	ES 16
9	ES 16	ES 16	ES 16	ES 16	ES 15	ES 16	14	14	16	18	19	20	17	22	24	24	17	20	13	15	ES 16	ES 16	ES 16	ES 16
10	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	13	13	20	21	24	24	24	25	17	19	14	16	14	ES 16	ES 16	ES 16	ES 16
11	ES 16	ES 16	ES 16	ES 16	ES 15	ES 16	14	14	15	20	24	24	28	27	27	20	22	17	14	14	ES 16	ES 16	ES 16	ES 16
12	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	13	13	16	18	20	24	24	25	21	17	13	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16
13	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	15	19	22	22	23	24	21	18	18	15	ES 16	ES 16	ES 16	ES 16	ES 16
14	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	15	15	26	22	25	26	27	25	16	20	14	ES 16	ES 15	ES 16	ES 16	ES 16
15	ES 16	ES 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	C	21	22	25	22	27	22	22	17	14	16	ES 16	ES 16	ES 16	ES 15
17	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	16	18	22	22	24	22	24	21	20	17	14	ES 16	ES 15	ES 15	ES 16	ES 16
18	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	13	14	15	16	19	20	19	20	19	19	16	13	13	ES 16	ES 16	ES 16	ES 16
19	ES 16	ES 16	ES 16	ES 16	ES 15	ES 15	15	14	14	16	19	26	26	22	23	22	20	17	14	13	ES 16	ES 16	ES 16	ES 16
20	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	13	13	14	13	22	23	24	23	22	22	20	16	13	13	ES 16	ES 16	ES 16	ES 16
21	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	13	14	14	18	18	21	21	24	21	21	21	19	15	14	ES 15	ES 16	ES 16	ES 16
22	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	15	15	23	24	22	25	23	22	22	15	14	ES 16	ES 16	ES 16	ES 16	ES 16
23	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	16	23	14	22	30	19	22	18	19	16	15	ES 16	ES 16	ES 16	ES 16	ES 15
24	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	13	18	20	22	20	27	19	19	16	15	ES 16	ES 16	ES 15	ES 16	ES 16
25	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	15	23	20	24	24	25	25	27	22	16	15	14	ES 16	ES 16	ES 16	ES 16
26	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	16	14	16	22	23	22	25	22	20	18	15	16	ES 16	ES 16	ES 16	ES 16	ES 16
27	ES 16	ES 16	ES 16	ES 16	ES 16	ES 15	ES 15	13	14	14	20	21	22	24	23	20	20	20	16	ES 15	ES 16	ES 16	ES 16	ES 16
28	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	17	24	25	26	23	23	23	16	17	13	13	ES 16	ES 16	ES 16	ES 16
29	ES 15	ES 16	ES 16	ES 16	ES 15	ES 16	15	15	18	21	22	24	24	24	24	22	21	21	16	16	ES 16	ES 16	ES 16	ES 16
30	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	14	16	21	21	23	24	26	26	22	21	16	14	14	ES 16	ES 16	ES 16	ES 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	28	28	28	28	28	28	27	29	29	29	29	29	29	29	29	29	29	29	29	29	29
MED	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	15	18	21	22	24	24	24	21	20	16	14	14	ES 16	ES 16	ES 16	ES 16
UQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	15	16	20	22	24	26	24	25	22	21	17	15	ES 16	ES 16	ES 16	ES 16	ES 16
LQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	14	14	14	16	19	21	22	22	22	20	18	15	14	14	ES 16	ES 16	ES 16	ES 16

JUN. 1987 | FMIN (0.1 MHZ)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F2 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S 285	305	F	310	S 310	F	315	305	A	A	A	A	295	310	305	300	305	300	315	R 330	325	U S 360	F	A
2	A	F	F	F	F	F	320	355	340	A	A	A	A	285	295	R 295	285	310	335	315	325	U S 360	315	F
3	F	F	F	F	A	F	340	360	A	A	285	315	285	A	285	290	290	310	R 300	300	A	315	U S 280	A
4	F	F	F	F	F	F	340	325	335	A	290	270	270	280	295	A	295	A	310	310	S 325	300	F	F
5	F	F	F	F	F	F	F 365	R 360	A	A	320	265	A	275	A	R 310	R 320	320	315	335	S 305	335	U S 305	S 310
6	S 300	F	F	F	305	300	350	325	R 305	C	U R 305	R 300	R 315	300	285	295	235	A	U R 280	R 285	S 290	S 305	285	F
7	F	F	F	A	A	A	A	335	A	A	290	310	305	310	290	290	300	330	350	295	300	295	F	F
8	A	A	F	F	F	S 330	315	325	A	A	A	A	A	A	295	290	305	320	350	330	310	300	290	290
9	F 280	F	F	F 310	340	340	345	330	355	350	305	290	A	285	280	285	295	R 315	A	A	A	310	325	S 320
10	F	F	F	F	F 340	F 340	315	355	365	340	305	295	305	270	305	340	320	285	310	R 305	330	S 355	S 330	S 350
11	A	F	F	F	F	F	R 350	365	315	310	275	280	285	300	295	R 300	300	315	310	310	320	360	S 320	A
12	F	F	F	F	F	F	340	A	A	A	A	A	A	285	275	295	315	345	340	325	S 290	305	A	A
13	A	F	F	F	F	325	365	350	A	A	A	A	A	A	280	295	300	300	315	U R 340	U S 355	295	290	300
14	F	F	F	F	F	F	360	330	335	A	A	A	A	A	295	305	285	R 285	A	320	330	S 335	290	F
15	F	A	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	C	A	A	A	285	285	290	305	310	290	R 315	315	310	F	F
17	F	F	F	F	F	F	F	335	U R 350	335	A	A	A	280	285	295	R 290	290	305	315	S 320	325	S 290	295
18	F	F	F	F	F	F	360	335	355	330	A	275	265	265	290	295	285	290	305	305	S 335	S 340	F	A
19	F	A	F	F	A	A	365	330	A	A	A	285	280	280	270	275	280	285	U R 280	A	A	A	A	285
20	F	F	F	A	F	F	350	350	R 345	A	R 310	280	310	310	275	275	290	290	R 310	335	365	305	S 275	S 295
21	F	F	F	F	F	F	R 355	315	315	340	330	290	260	270	285	285	315	320	R 280	315	315	310	F	A
22	A	F	F	F	F	F	330	325	345	315	310	A	A	285	295	300	305	R 325	U R 345	A	305	300	U S 315	F
23	F	F	F	F	F	F	355	315	365	350	A	A	285	285	285	285	300	325	R 310	U R 305	310	S 295	J S 300	300
24	S 300	F	F	U S 310	S 320	355	365	365	365	G	A	300	285	290	285	290	290	290	300	315	310	310	305	295
25	S 235	F	F	F	320	310	365	365	350	315	A	280	290	A	280	280	290	285	R 315	335	360	S 300	S 305	280
26	F	F	F	F	F	F	355	355	A	A	A	285	A	A	285	295	315	320	285	S 315	315	325	295	295
27	S 280	F	F	F	F 300	S 300	305	360	310	345	340	335	270	280	290	300	275	A	295	300	310	300	S 310	F
28	F	F	F	F	F	S 340	360	355	380	360	A	260	250	265	270	280	290	295	R 305	350	340	S 330	320	S 335
29	A	A	A	S 300	A	S 325	320	350	350	R 340	A	305	A	A	275	A	295	305	320	320	310	A	290	290
30	F	F	F	F	F	F	360	310	330	300	330	280	265	290	295	305	280	300	R 320	335	340	320	310	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	1		4	7	10	26	27	19	14	13	19	17	22	28	27	29	26	27	26	26	27	21	14
MED	S 285	305		310	320	328	350	335	345	338	305	285	285	285	285	295	295	303	310	315	313	310	305	295
UQ	S 300			310	330	340	360	355	355	345	320	300	295	290	295	300	305	320	318	330	330	332	S 315	S 310
LQ	S 280			S 305	308	310	330	325	332	315	290	280	270	280	280	288	290	290	300	305	310	300	290	290

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | M(3000)F1 (0.01) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	A	A	A	A	A	A	390	395	390	395	L					
2								A	A	A	A	A	A	A	A	A	A	A	A					
3								L	A	A	385	410	A	A	A	A	A	A	A	A				
4							L	L	A	A	U L 395	A	A	A	A	A	A	A	A					
5								A	A	A	375	A	A	A	A	A	A	A	A					
6								L	U L 390	C	400	A	400	A	A	405	390	A	A	A				
7							A	L	A	A	385	385	395	385	A	395	A	385	L					
8								L	A	A	A	A	A	A	A	395	A	385	395					
9								L	L 380	A	A	A	A	385	385	A	A	A	A	A				
10								U L 290	L	U L 395	L 390	410	420	A	A	A	A	L 365	L 340					
11								A	L	A	385	400	L 415	A	A	395	A	A	U L 370	L				
12								A	A	A	A	A	A	A	395	385	390	L 360	L					
13								L	A	A	A	A	A	A	A	A	A	A	A	A				
14								L	U L 390	A	A	A	A	A	A	A	A	A	A	A				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	A	A	A	A	A	A	335	A	A	L				
17								L	A	420	A	A	A	A	415	A	A	380	380	A				
18								L	A	A	A	410	A	A	395	385	370	A	A					
19								A	A	A	A	A	A	A	A	A	370	355	A	A				
20								A	A	A	A	A	410	A	385	A	385	A	U L 370					
21								L	L 350	U L 385	410	400	410	390	385	385	390	A	L					
22								A	A	U L 395	A	A	A	415	400	385	A	A	A	A				
23								U L 385	390	A	A	A	A	A	A	A	A	A	A	A				
24								L	L	385	A	A	A	A	A	A	A	A	A	A				
25								L	L	L	A	410	A	A	385	410	A	A	A					
26								L	A	A	A	A	A	A	A	A	A	A	U L 375					
27							L	L	L 360	L 370	395	L 395	420	A	A	A	A	A	A					
28								L 395	U L 400	L 380	A	420	400	410	395	395	380	375	U L 315	L				
29								A	A	A	A	A	A	A	A	A	A	A	A					
30								L	L 390	L 390	A	390	390	A	A	A	A	L 380	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	8	3	9	10	9	5	10	11	9	9	7					
MED								U L 335	L 390	L 383	390	405	410	390	392	395	385	380	U L 370					
UQ								L 390	U L 390	L 395	395	410	415	410	395	395	390	385	378					
LQ								U L 338	L 370	L 382	385	395	400	385	385	385	380	L 365	U L 355					

JUN. 1987 | M(3000)F1 (0.01)

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IONOSPHERIC DATA

JUN. 1987 | H'F2 (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long 127° 43.4' E Sweep 1 MHz to 25 MHz in 24sec 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 270	A	A	A	A	A	A	300	330	310	310	275					
2								A	A	A	A	A	A	330	A	A	A	300	260					
3								260	A	A	430	390	A	A	A	A	A	A	A	A				
4							260	250	270	A	330	420	405	385	355	A	A	A	340					
5								260	A	A	300	425	A	370	A	325	235	270	300					
6								250	300	C	320	355	310	470	390	320	290	A	A	A				
7							A	270	A	A	435	320	365	310	A	340	230	260	240					
8								260	A	A	A	A	A	A	360	330	315	280	240					
9								295	255	250	380	445	A	405	370	350	350	310	A	A				
10								250	220	275	370	405	570	430	330	270	300	400	320					
11								245	320	335	345	385	365	335	325	310	290	275	280	260				
12								A	A	A	A	A	A	335	360	310	280	235	235					
13								245	A	A	A	A	A	A	A	A	A	A	A	A				
14								280	230	A	A	A	A	A	A	A	A	A	A	A				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	A	A	A	A	A	A	300	A	A	270				
17								280	A	290	A	A	A	A	360	A	A	330	280	A				
18								275	220	A	A	475	500	440	345	325	340	345	310					
19								255	A	A	A	A	355	320	380	375	350	340	285	A				
20								245	265	A	320	A	305	355	440	400	340	320	300					
21								315	285	280	315	350	475	400	345	320	285	285	260					
22								A	A	320	A	A	A	380	360	290	A	A	A	A				
23								300	235	A	A	A	A	A	A	A	A	A	A	A				
24								220	225	G	A	A	A	A	A	A	A	340	A	A				
25								220	270	350	A	525	A	A	375	360	A	A	A					
26								220	A	A	A	A	A	A	A	335	A	340	335					
27							255	230	310	265	300	320	500	375	335	320	285	A	305					
28								255	235	275	A	500	610	465	400	365	330	320	275	240				
29								270	230	310	A	340	A	A	400	A	310	310	290					
30								290	310	330	305	410	420	360	350	340	350	340	300	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							2	25	16	12	12	15	12	17	19	19	18	19	19	4				
MED							258	260	270	300	325	405	412	380	360	330	305	310	285	260				
UQ								275	292	332	375	435	500	405	373	345	340	340	302	265				
LQ								245	235	275	310	352	360	360	345	320	285	282	268	250				

JUN. 1987 | H'F2 (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'F (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	S 270	A	S 270	260	260	210	240	A	A	A	A	A	A	A	210	200	A 220	A 225	240	240	220	A	A	A
2	A	A	S 260	A 270	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	250	A	210	S 260	S
3	A 260	A	E S 280	E S 260	A	S	E A 260	A	A	A	A	210	A	A	A	A	A	A	A	A	A	A 240	A	A
4	260	305	250	215	290	290	235	220	A	A	200	A	A	A	A	A	A	A	A	265	250	A	A	315
5	255	310	250	255	250	295	250	A	A	A	A	A	A	A	A	A	A	A	A	260	285	245	250	285
6	S 280	A	260	S	255	E S 270	225	200	A	C	200	A	A 240	A	A	200	A	A	A	A	A	A	E S 310	S
7	S 280	270	250	A	A	A	A	A	A	A	A 240	210	A 240	A	A	210	A	A 230	220	A 260	250	A 260	A	A
8	A	A	A	A 270	A 255	S 250	A 250	A 230	A	A	A	A	A	A	A	A 240	A	A 220	A 220	A 230	A 250	E A 270	A	E A 290
9	300	280	270	250	240	230	230	215	215	A	A	A	A	220	A	A	A	A	A	A	A	260	245	260
10	290	290	250	230	260	A 290	245	240	A	200	200	200	190	A	A	A	A	A	A 250	235	240	205	190	250
11	A	320	305	290	275	265	255	A	A	A	A 225	A 220	200	A	A	200	A	A	250	245	255	230	A 275	A
12	300	300	265	270	230	245	250	A	A	A	A	A	A	A	190	A 215	220	200	205	235	260	255	A	A
13	A	A	E S 300	S	A 275	250	225	230	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
14	A	A	A	E S 300	250	200	A 230	210	215	A	A	A	A	A	A	A	A	A	A	A	A 250	A 240	A	A
15	S	A	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	C	A	A	A	A	A	A	A 220	A	A	A	A	A	A	A
17	A 260	E A 275	A 245	A	A	A 260	A 240	A	A	A	A	A	A	A	190	A	A	200	A	A	A	A 215	E S 305	S 280
18	300	285	280	230	240	250	225	A	A	A	A	200	A	A	A 250	230	200	A	A	295	250	235	255	A
19	280	A	250	255	A	A	245	A	A	A	A	A	A	A	A	A	A 250	A 255	A	A	A	A	A	305
20	300	280	250	A	255	260	245	A	A	A	A	A	190	A	A 250	A	A	A	A 250	255	200	A	330	330
21	300	300	A 335	310	310	275	245	200	200	A 245	200	200	200	205	215	220	215	A	A 250	250	245	250	310	A
22	A	230	A 230	E S 275	S	230	230	A	A	A	A	A	A	190	A 220	A	A	A	A	A	A	270	S 260	E S 270
23	E S 290	290	A	A	A	250	230	210	A	A	A	A	A	A	A	A	A	A	A	A	A 250	A	E A 300	A
24	E S 290	E A 305	S 280	255	260	215	210	210	200	A 240	A	A	A	A	A	A	A	A	A	A	A	A	260	A
25	E S 300	S 270	E A 290	245	240	225	215	205	210	A	A	205	A	A	A	210	A	A	A	A 245	210	A 240	E S 265	A
26	A	S 260	A 260	A	A	S	225	205	A	A	A	A	A	A	A	A	A	A	220	A 260	A 250	220	210	E S 270
27	300	300	300	285	270	250	240	205	A 250	A	A 230	200	190	A	A	A	A	A	A	245	250	A	260	250
28	295	305	290	295	270	225	245	210	200	A	A	200	A	205	220	220	A 230	215	A 230	245	215	205	250	270
29	A	A	A	335	A	295	A 260	A	A	A	A	A	A	A	A	A	A	A	A	270	280	A	280	290
30	275	280	260	240	250	255	230	230	200	200	A	A 230	205	A	A	A	A	A 240	A	230	225	220	255	330
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	19	24	21	19	23	26	15	8	4	7	10	8	4	8	10	7	8	10	18	19	18	19	14
MED	285	288	261	258	255	250	239	210	205	220	200	202	200	205	213	212	A 220	A 222	235	250	250	239	258	278
UQ	300	301	280	278	270	265	245	225	215	A 242	A 228	210	222	212	A 235	220	A 225	A 235	A 250	260	250	252	U 275	305
LQ	268	278	250	248	250	230	230	205	200	200	200	200	190	198	200	200	218	208	220	245	232	220	252	270

JUN. 1987 | H'F (KM)

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IONOSPHERIC DATA

JUN. 1987 | H'E (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec 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							S	110	105	105	105	105	A	A	A	A	105	105	A	A				
2							S	110	A	A	A	A	A	A	A	A	A	A	A	A				
3							S	110	105	105	105	105	A	A	A	A	A	A	A	A				
4							S	105	A	A	A	A	A	A	A	A	A	A	A	A				
5							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
6							S	A	110	C	A	A	A	A	A	110	110	A	105	A				
7							S	105	105	A	105	110	110	110	110	110	110	110	110	A				
8							S	110	105	A	A	A	A	A	A	A	A	A	A	S				
9							105	A	A	A	A	A	A	A	A	A	A	A	A	A				
10							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
11							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
12							S	A	A	A	A	A	A	A	105	115	A	100	100	S				
13							S	110	105	A	A	A	A	A	A	A	A	A	A	S				
14							S	110	105	A	A	A	A	A	A	A	A	A	A	S				
15							C	C	C	C	C	C	C	C	C	C	C	C	C	C				
16							C	C	C	C	110	105	105	105	110	A	A 120	A	A	A				
17							S	110	105	105	105	105	105	105	105	A	A	A	A	S				
18							A	A	A	A	A	A	A	100	100	100	105	105	100	A				
19							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
20							A	A	A	A	A	A	105	105	105	105	105	105	A	A				
21							A	A	A	A	A	A	A	A	105	A	105	105	A	A				
22							S	105	105	105	A	A	A	110	A	A	A	A	A	S				
23							S	110	105	110	105	A	A	110	110	110	110	110	105	S				
24							S	110	110	110	110	A	A	105	A	A	A	A	A	S				
25							115	110	105	A	110	110	110	110	A	110	110	110	110	A				
26							S	110	110	110	110	105	105	A	A	105	105	105	A	S				
27							S	A	A	A	A	A	100	105	105	105	A	A	A	S				
28							S	A	A	A	A	A	A	A	A	A	100	100	100	A				
29							A	A	A	A	A	A	A	A	A	A	A	A	A	A				
30							105	A	A	A	A	A	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							3	14	13	7	9	7	7	10	9	9	11	10	7					
MED							105	110	105	105	105	105	105	105	105	110	105	105	105					
UQ							110	110	105	110	110	108	108	110	110	110	110	110	108					
LQ							105	110	105	105	105	105	105	105	105	105	105	105	100					

JUN. 1987 | H'E (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | H'ES (KM) | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec 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	S	120	125	120	115	115	115	100	100	100	100	120	120	110	100	100	100	100	110
2	105	105	100	100	100	115	125	120	110	110	110	110	100	100	100	100	100	100	100	100	100	100	110	110
3	110	110	110	110	105	110	125	120	115	115	115	115	110	105	100	100	100	100	100	100	110	100	100	100
4	100	95	95	95	95	100	130	120	110	105	105	105	105	105	105	105	105	105	100	100	100	100	100	100
5	100	95	95	100	100	105	110	110	105	105	100	100	100	100	100	100	100	100	100	100	95	105	105	105
6	100	100	110	110	110	110	110	110	125	C	135	110	145	135	140	E G 155	145	120	120	110	110	110	100	S
7	110	110	110	110	110	110	110	120	115	110	115	G	G	E G 160	140	145	135	120	125	110	110	110	110	110
8	100	100	100	100	105	S	120	120	115	110	115	110	110	110	110	110	105	105	105	100	100	100	100	100
9	S	S	S	S	105	105	115	110	110	105	100	100	100	105	105	110	100	100	100	100	100	100	100	95
10	110	105	105	100	110	105	110	105	105	105	105	105	105	100	100	100	100	100	100	95	95	100	S	100
11	105	105	105	105	105	105	105	105	105	100	100	100	100	100	100	100	100	100	100	110	105	105	100	100
12	100	100	100	100	100	100	115	105	105	105	105	105	100	100	120	115	105	115	150	115	105	105	100	100
13	100	100	100	100	100	100	120	115	115	110	110	110	110	110	100	100	100	100	100	100	100	100	100	100
14	110	100	100	100	100	100	130	125	115	110	110	100	100	100	100	100	100	100	100	100	100	100	100	100
15	120	110	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	C	115	115	115	120	120	110	140	100	110	100	100	100	100	100
17	100	100	100	100	100	100	100	115	115	115	110	110	110	115	110	110	110	110	105	100	100	100	100	100
18	100	100	100	100	S	110	110	105	100	100	100	100	100	150	155	120	120	120	115	105	105	105	110	105
19	100	105	105	100	100	100	100	110	105	105	105	105	105	100	100	100	100	100	115	110	105	105	105	105
20	105	105	105	100	100	100	105	100	100	105	105	105	G	155	150	130	130	115	110	105	105	105	105	105
21	100	100	95	95	105	105	105	105	105	105	105	100	105	105	140	105	120	115	105	105	105	105	100	105
22	110	110	110	110	110	110	120	115	115	115	110	105	105	125	110	105	105	125	125	120	100	110	105	110
23	110	105	100	100	110	110	125	125	120	115	115	105	140	135	135	130	125	120	115	110	100	100	105	110
24	100	100	100	100	S	S	150	E G 170	150	140	115	100	110	120	130	100	120	125	120	100	110	110	110	110
25	100	100	100	100	S	S	G	130	125	130	120	125	135	120	125	140	120	115	115	110	110	110	100	100
26	105	105	100	100	100	100	130	120	115	115	115	115	115	110	110	120	115	120	110	100	100	100	100	100
27	95	95	95	95	S	S	125	110	105	130	145	105	120	115	115	115	105	105	105	125	110	105	100	105
28	100	100	100	100	95	100	115	105	110	105	105	105	105	105	100	125	150	135	120	100	95	95	S	105
29	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	100	100	100	100	100	100	100	100	105
30	100	100	100	100	S	S	G	105	110	105	105	105	105	100	100	100	100	100	100	95	100	105	105	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	28	28	27	27	23	22	26	28	28	27	29	28	27	29	29	29	29	29	29	29	29	29	27	28
MED	100	100	100	100	100	105	115	111	110	110	110	105	105	105	110	105	105	105	105	100	100	100	100	102
UQ	108	105	105	100	105	110	125	120	115	115	115	110	110	120	125	118	120	120	115	110	105	105	105	105
LQ	100	100	100	100	100	100	110	105	105	105	105	102	100	100	100	100	100	100	100	100	100	100	100	100

JUN. 1987 | H'ES (KM)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

JUN. 1987 | TYPES OF ES | 135° E Mean Time (G.M.T. + 9 h)

Station OKINAWA Lat. 26° 16.9' N, Long. 127° 48.4' E Sweep 1 MHz to 25 MHz in 24sec in automatic operation

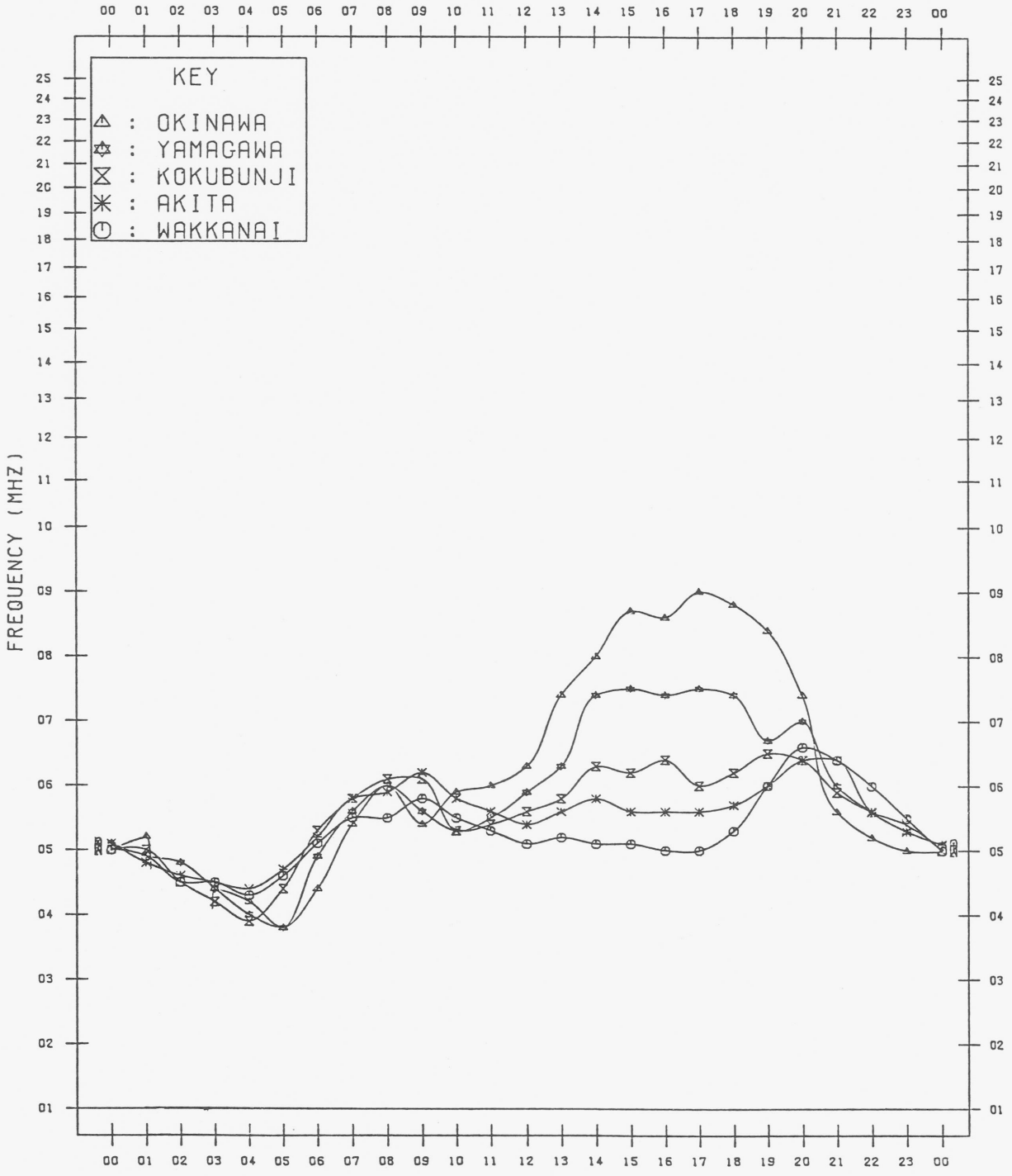
Hour / Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 2	F 4	F 2	F 1	F 1		C 4	C 3	C 4	C 5	C 7	C 4	L 3	L 5	L 2	L 2	C 2	C 1	L 2	L 2	F 8	F 4	F 4	F 7
2	F 7	F 5	F 2	F 2	F 4	F 2	C 6	C 6	L 6	L 6	L 6	L 6	L 3	L 2	L 4	L 4	L 3	L 4	L 4	L 2	F 3	F 2	F 4	F 2
3	F 3	F 4	F 3	F 3	F 7	F 4	C 3	C 4	C 6	C 4	C 2	C 2	L 4	L 4	L 6	L 3	L 5	L 4	L 5	L 6	FF 34	F 6	F 5	F 3
4	F 5	F 6	F 4	F 3	F 2	F 3	C 2	C 4	L 3	L 4	L 2	L 3	L 3	L 4	L 6	L 6	L 7	L 7	L 7	L 7	F 7	F 8	F 5	F 6
5	F 4	F 7	F 4	F 3	F 2	F 2	L 2	L 4	L 6	L 5	L 3	L 3	L 4	L 5	L 5	L 8	L 6	L 7	L 6	L 6	F 6	FF 27	FF 23	FF 32
6	F 2	F 2	F 5	F 2	F 2	F 2	L 1	L 1	C 1		HL 11	L 2	HL 11	HL 21	HL 11	H 1	H 1	CL 51	C 6	L 7	F 5	F 6	F 1	
7	F 2	F 3	F 4	F 7	F 3	F 6	L 5	C 2	C 6	L 7	C 2			H 1	H 2	H 1	H 1	C 2	C 1	L 1	F 3	F 3	F 4	F 6
8	F 3	F 3	F 4	F 2	F 4		C 3	C 2	C 3	L 3	L 5	L 5	L 6	L 6	L 3	L 3	L 4	L 2	L 4	L 4	F 5	F 4	F 2	F 4
9					F 4	F 3	C 2	L 2	L 3	L 4	L 4	L 3	L 4	L 2	L 3	L 4	L 6	L 6	L 3	L 4	F 7	F 4	F 2	F 6
10	F 1	F 4	F 3	F 4	F 2	F 7	L 2	L 3	L 3	L 3	L 2	L 1	L 2	L 4	L 5	L 5	L 4	L 4	L 5	L 4	F 3	F 3		F 2
11	F 4	F 4	F 5	F 7	F 5	F 4	L 7	L 7	L 2	L 4	L 3	L 2	L 1	L 3	L 3	L 2	L 4	L 4	L 3	L 2	F 7	F 6	F 4	F 4
12	F 4	F 5	F 6	F 7	F 3	F 3	C 5	L 4	L 7	L 8	L 7	L 5	L 5	L 3	C 1	C 2	L 1	C 1	H 1	C 2	F 2	F 4	F 6	F 8
13	F 8	F 5	F 2	F 2	F 2	F 2	C 2	C 2	C 7	L 4	L 5	L 4	L 5	L 7	L 4	L 6	L 7	L 7	L 7	L 5	F 7	F 5	F 4	F 6
14	FF 16	F 4	F 5	F 2	F 1	F 1	C 1	C 1	C 1	L 4	LL 16	L 5	L 7	L 5	L 4	L 2	L 4	L 4	L 7	L 7	F 8	F 7	F 4	F 3
15	F 2	F 7																						
16											C 5	C 2	C 3	C 3	C 3	L 3	HL 12	L 8	LL 26	L 3	F 5	F 6	F 6	F 7
17	F 5	F 2	F 7	F 7	F 5	F 3	L 4	C 3	C 4	C 6	C 5	C 4	C 5	C 3	C 1	L 3	L 4	L 3	L 5	L 7	F 7	F 3	F 2	F 1
18	F 4	F 5	F 3	F 4		F 3	L 2	L 6	L 5	L 4	L 5	L 3	L 4	H 2	H 2	C 3	C 1	C 4	C 4	L 7	F 6	F 4	F 6	F 7
19	F 2	F 4	F 3	F 4	F 4	F 5	L 6	L 5	L 6	L 4	L 6	L 4	L 2	L 3	L 3	L 4	L 3	L 3	CL 64	L 5	F 5	F 5	F 7	F 4
20	F 4	F 3	F 5	F 4	F 5	F 4	L 4	L 3	L 4	L 4	L 3	L 3		H 2	H 1	C 2	C 2	C 4	L 4	L 7	F 4	F 7	F 5	F 5
21	F 5	F 3	F 2	F 2	F 3	F 2	L 4	L 2	L 3	L 2	L 3	L 2	L 2	L 2	H 1	LH 31	C 2	C 3	L 3	L 7	F 7	F 4	F 3	F 7
22	F 5	F 7	F 6	F 4	F 2	F 2	CL 13	C 6	C 6	C 3	L 4	L 5	L 5	C 1	L 2	L 2	L 3	CL 24	CL 44	CL 74	F 7	F 4	F 3	F 3
23	F 2	F 4	F 4	F 3	FF 13	FF 13	C 3	C 2	C 3	C 6	C 6	L 3	HL 32	H 3	H 3	H 3	C 6	C 7	C 6	LL 33	F 5	F 6	F 2	F 3
24	F 2	F 2	F 1	F 1			H 2	H 1	H 2	H 2	C 3	L 3	L 2	C 2	CL 23	L 4	CL 52	CL 31	CL 53	L 7	F 7	F 3	F 4	F 5
25	F 1	F 1	F 4	F 3				C 1	C 1	CL 11	C 2	C 1	H 1	C 4	CL 11	H 1	C 5	C 6	C 5	L 3	F 3	F 2	F 2	F 2
26	F 4	F 4	F 2	F 3	F 4	F 2	C 2	C 2	C 6	C 6	C 3	C 4	C 5	L 4	L 4	C 2	C 4	C 3	L 2	L 3	F 4	F 3	F 2	F 2
27	F 4	F 3	F 4	F 4			C 1	L 2	L 3	CL 12	HL 12	L 2	C 1	C 1	C 4	C 3	L 4	L 4	L 7	C 1	F 2	F 4	F 2	F 3
28	F 2	F 2	F 2	F 1	F 2	F 1	C 2	L 3	L 2	L 4	L 5	L 2	L 3	L 2	L 2	CL 22	H 1	H 1	CL 43	L 3	F 6	F 2		F 3
29	F 6	F 5	F 5	F 2	F 3	F 2	L 2	L 3	L 3	L 3	L 3	L 2	L 4	L 3	L 3	L 3	L 2	L 4	L 3	L 4	F 4	F 3	F 4	F 3
30	F 2	F 2	F 3	F 2				L 2	L 1	L 1	L 3	L 2	L 2	L 2	L 3	L 3	L 4	L 3	L 3	L 3	F 1	F 1	F 3	F 2
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. 1987 | TYPES OF ES

The Radio Research Laboratory, Japan

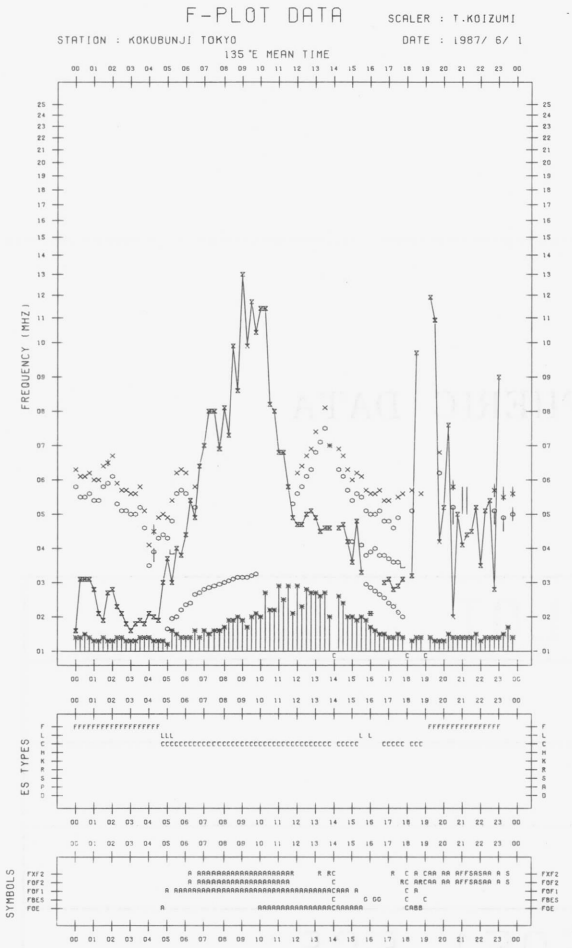
MONTHLY MEDIAN VALUES OF FOF2

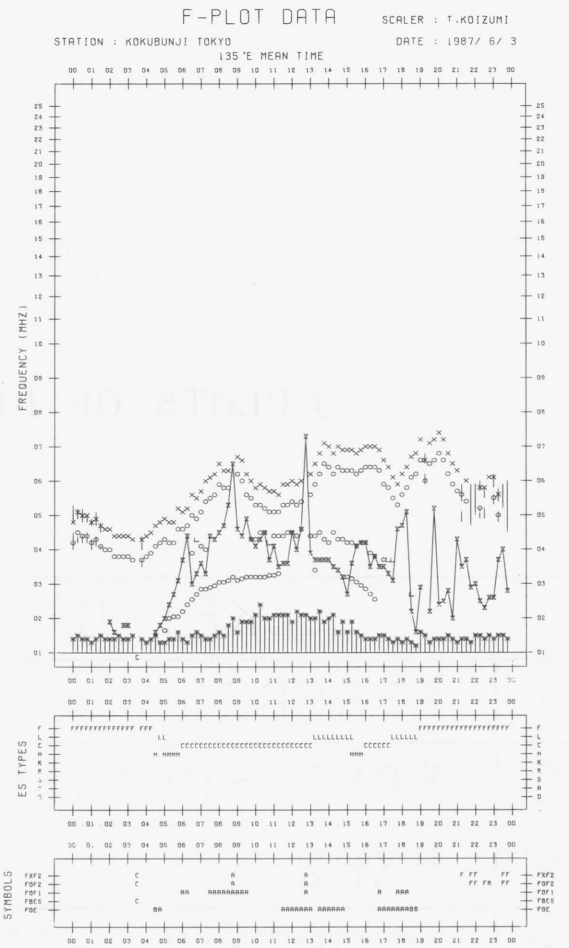
135 °E MEAN TIME JUN. 1987

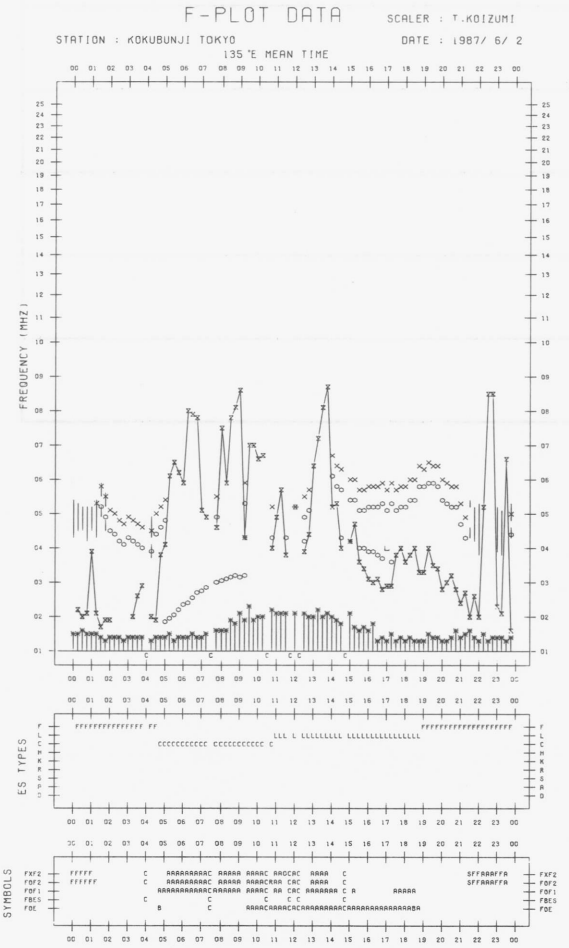


f-PLOTS OF IONOSPHERIC DATA

KEY OF F-PLOT	
I	SPREAD
○	FOF2, FOF1, FOE
×	FXF2
✳	DOUBTFUL FOF2, FOF1, FOE
⊠	FBES
⌊	ESTIMATED FOF1
↑, ↓	FMIN
∧	GREATER THAN
∨	LESS THAN


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 1
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 3
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE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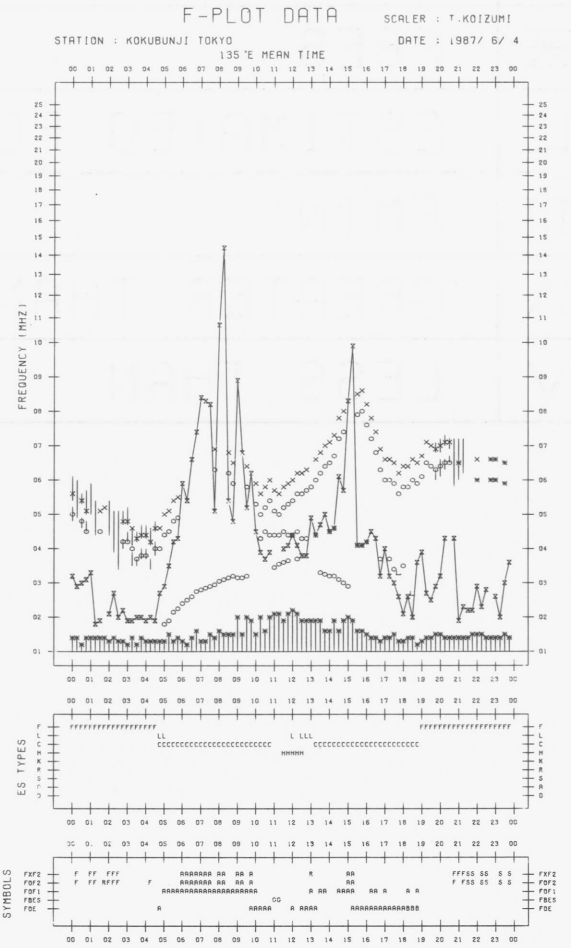
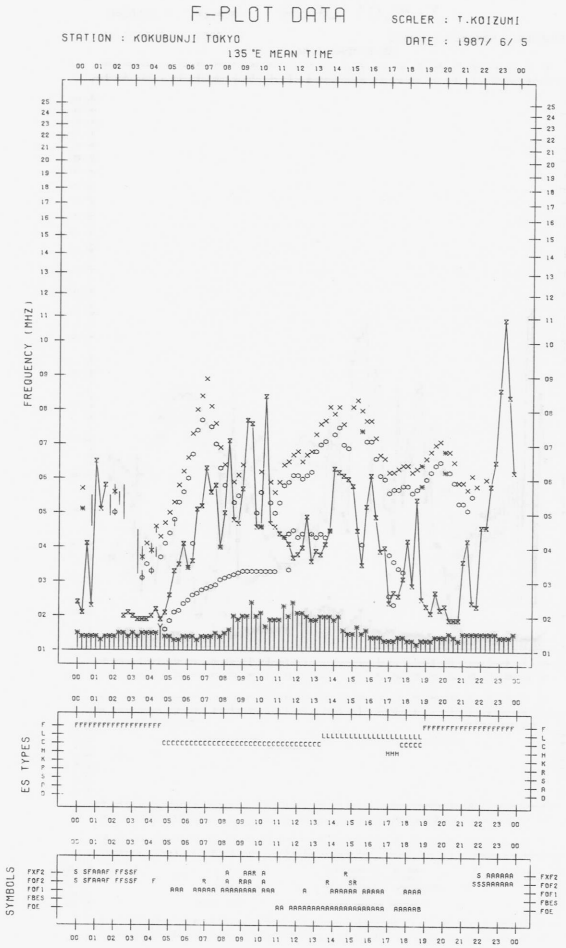
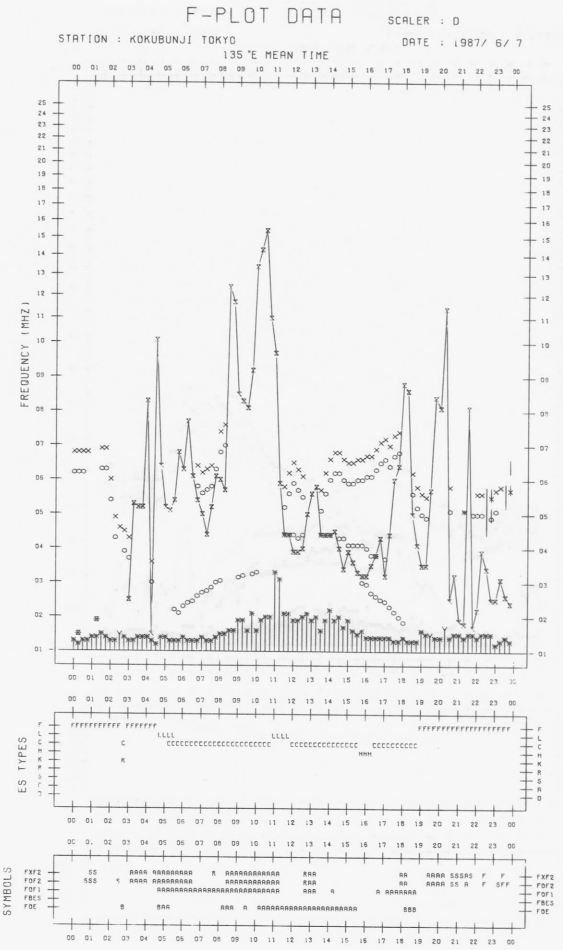
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 2
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 4
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 5
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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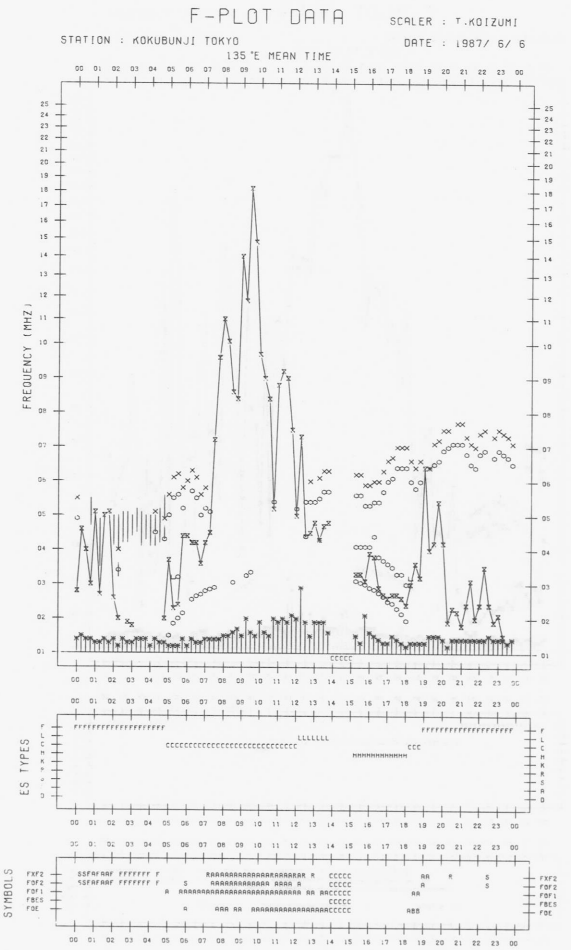
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 7
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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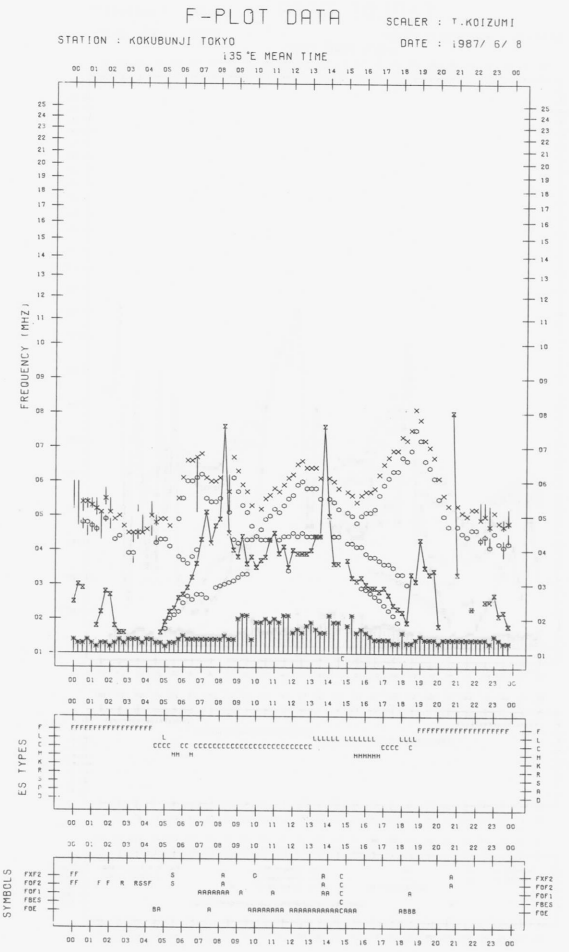
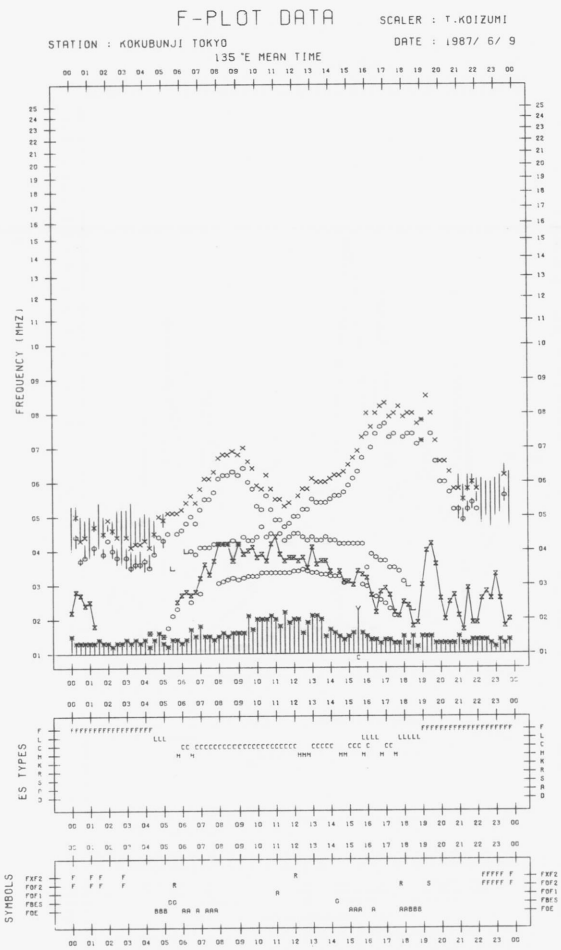
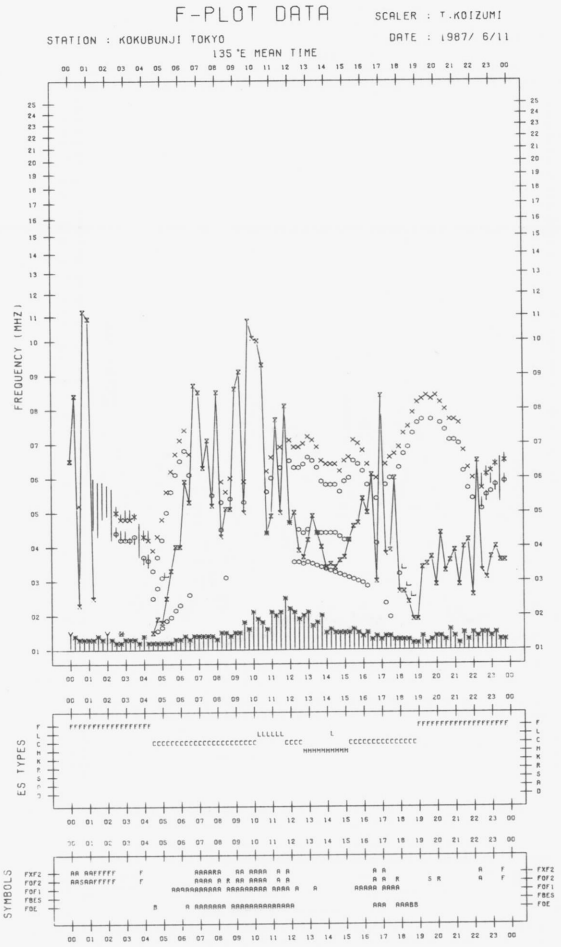
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 6
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 8
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/ 9
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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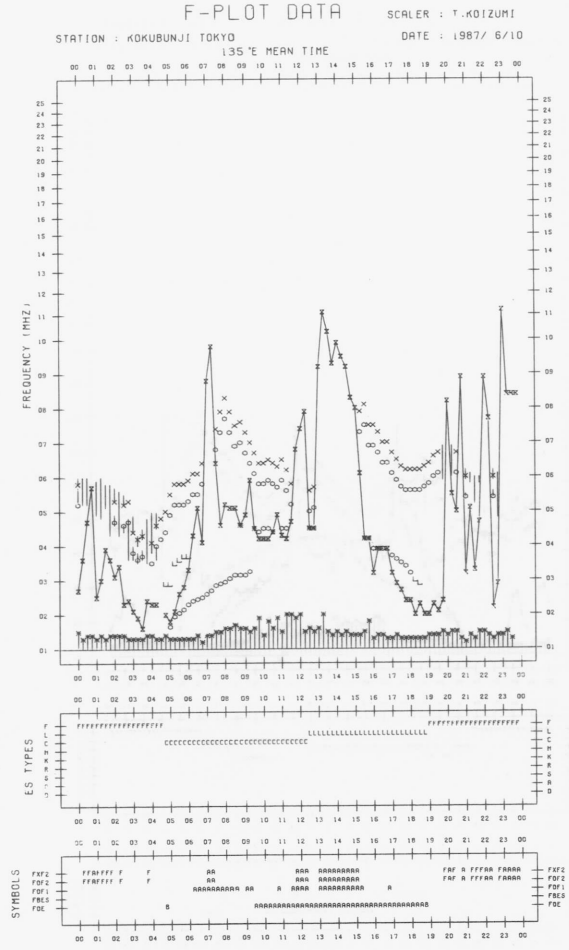
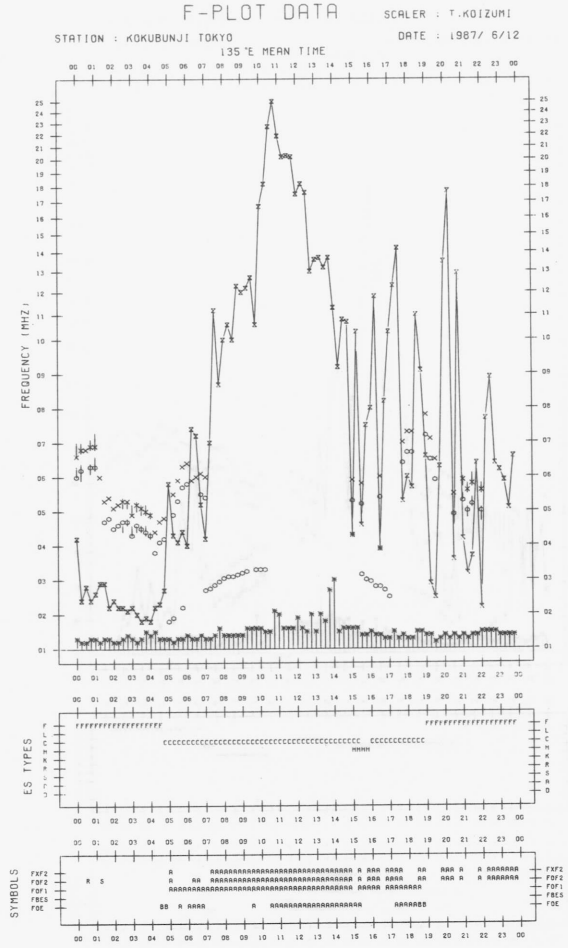
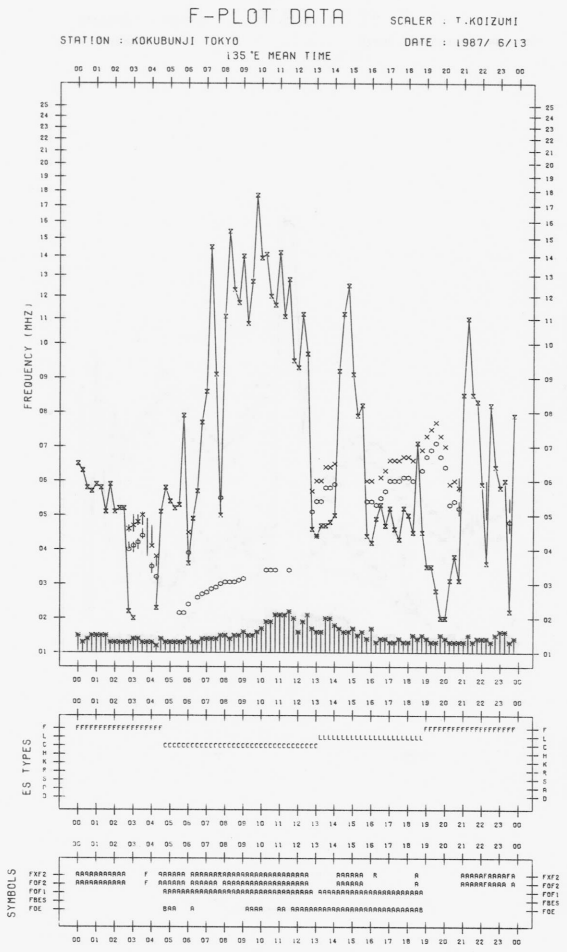
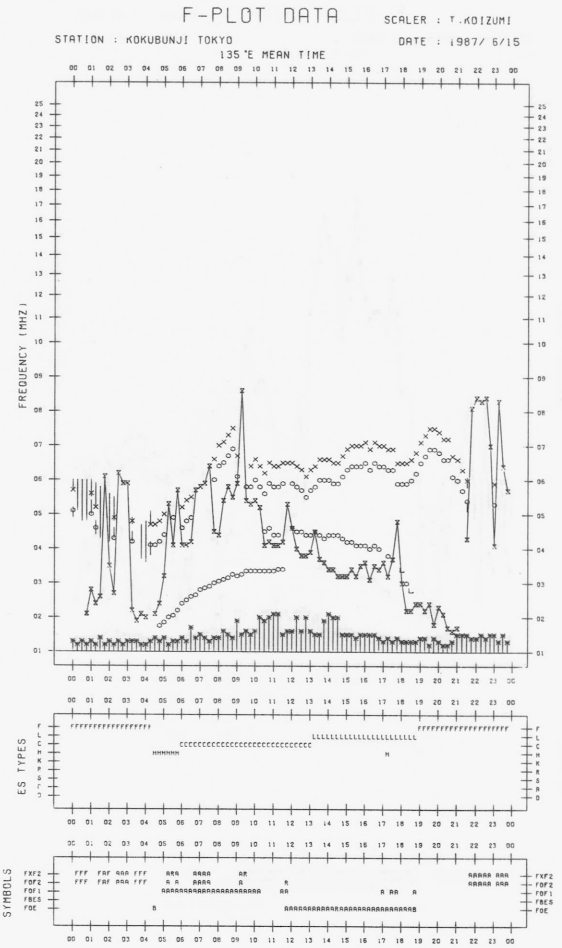
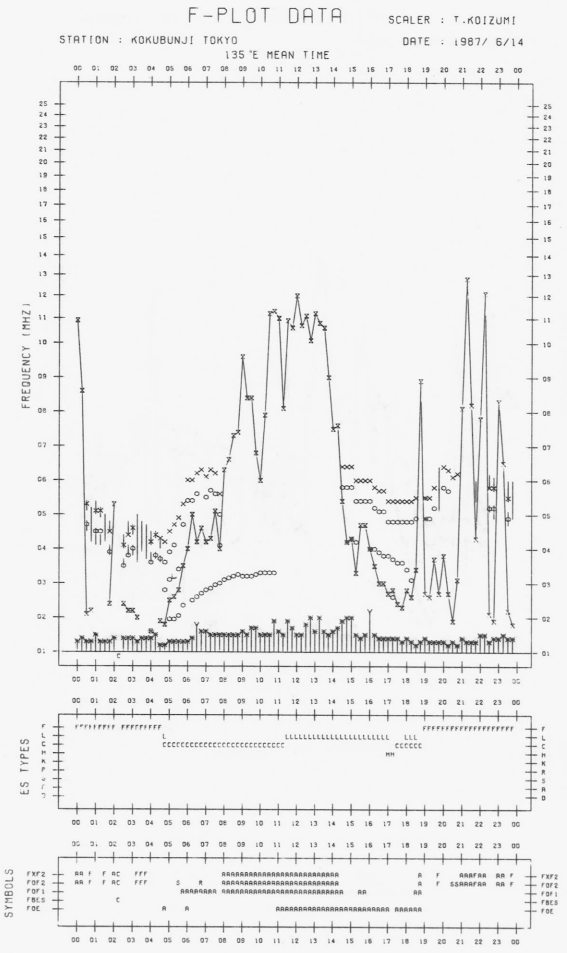
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/11
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

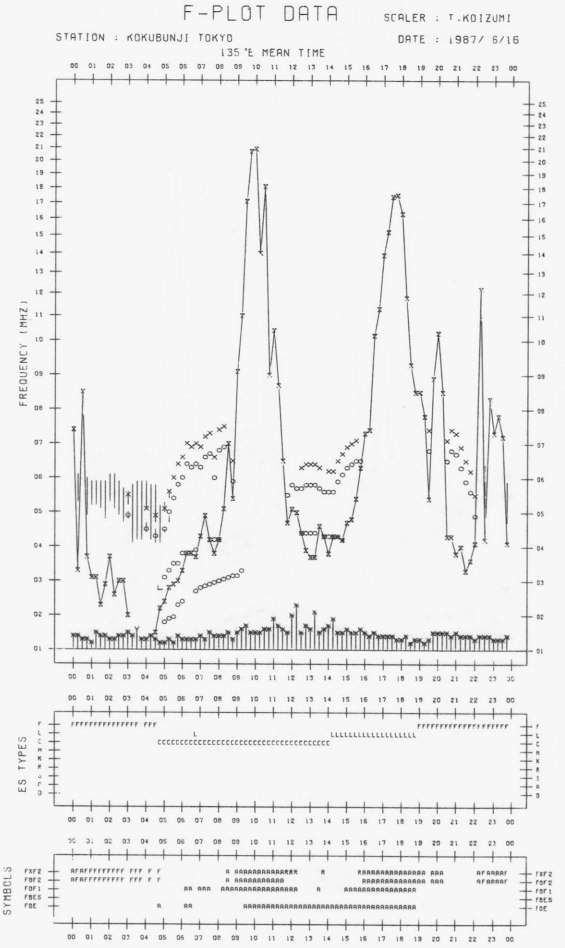

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/10
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

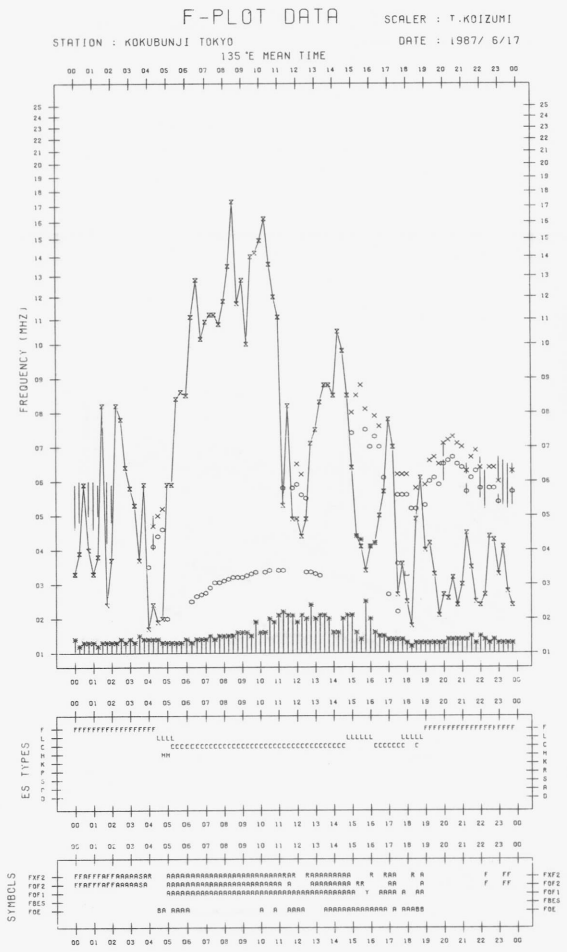

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/12
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

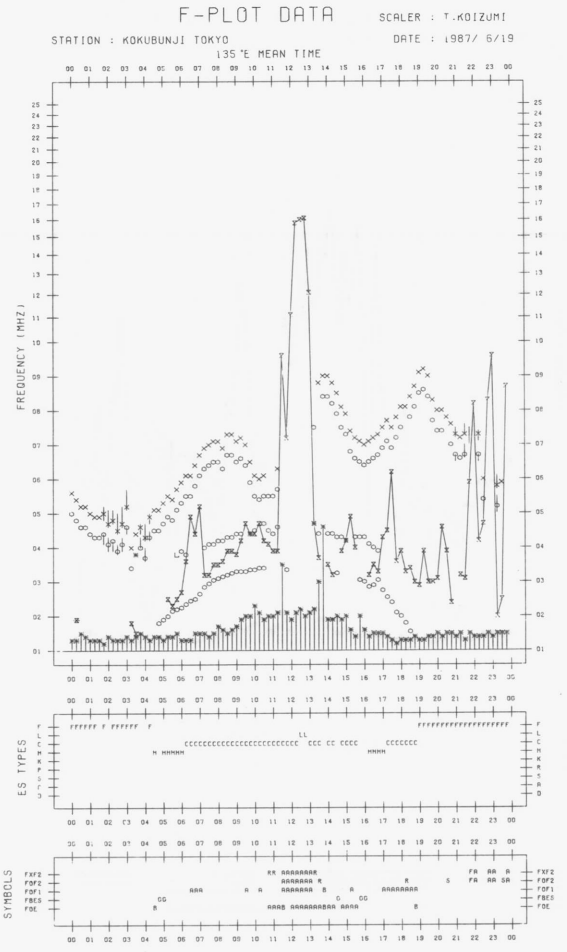

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/13
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE

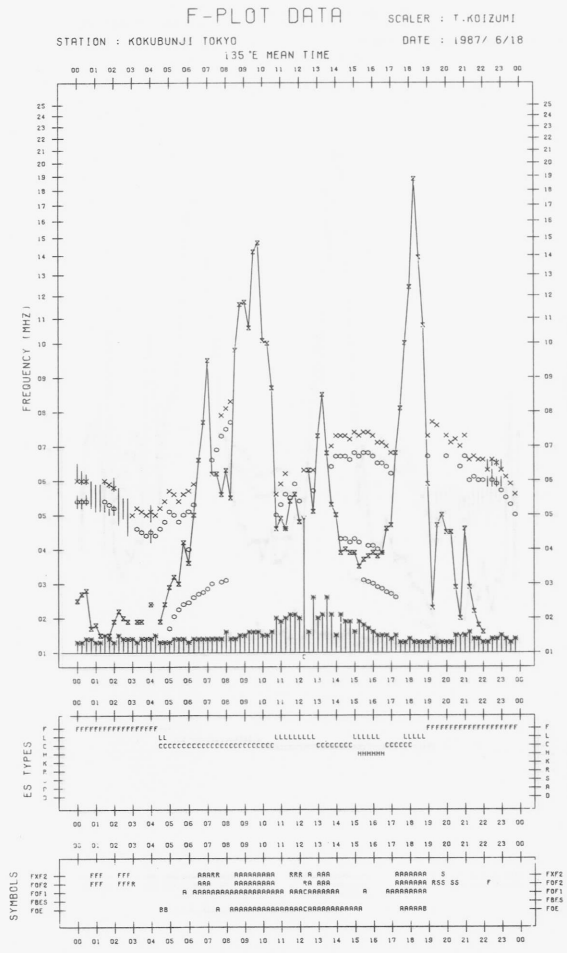

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/15
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE

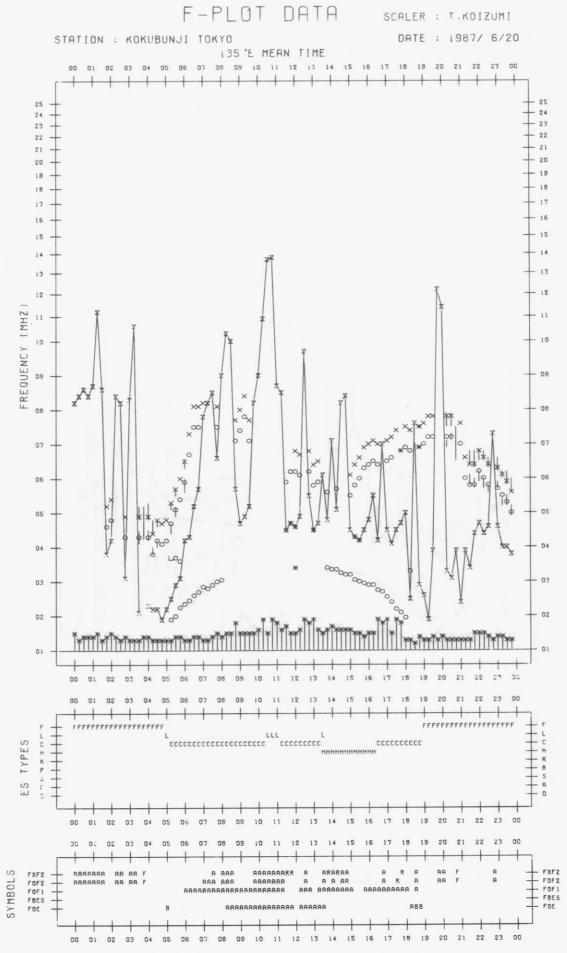

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/14
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE

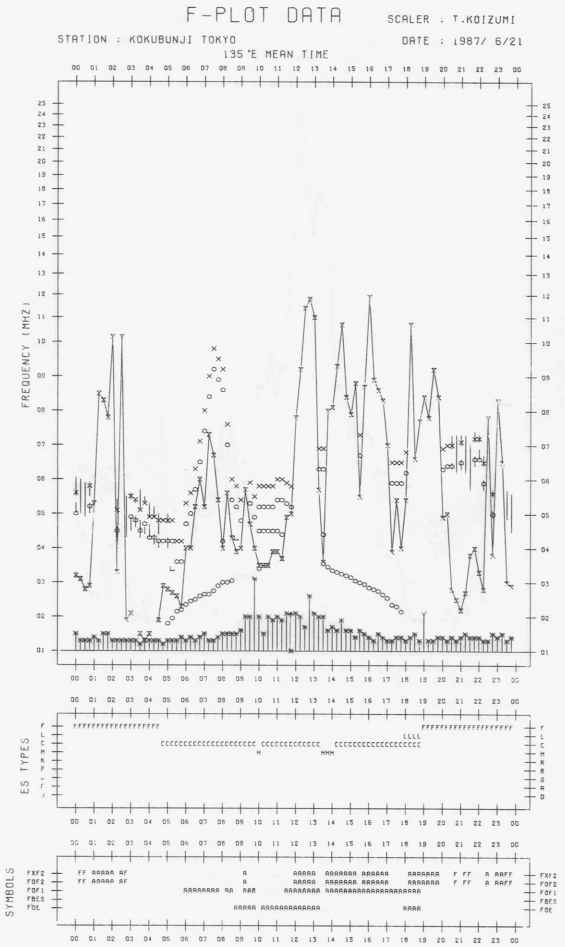

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/16
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE

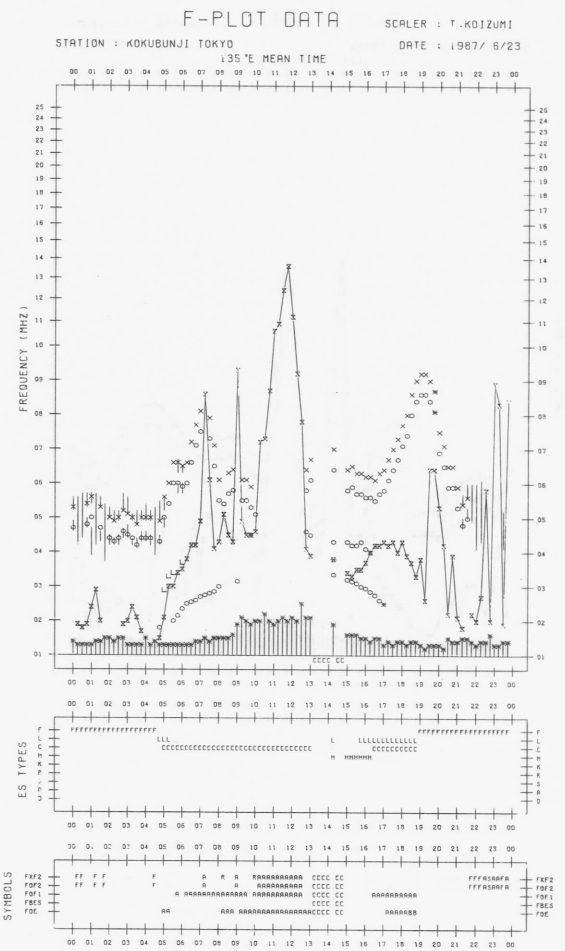

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/17
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

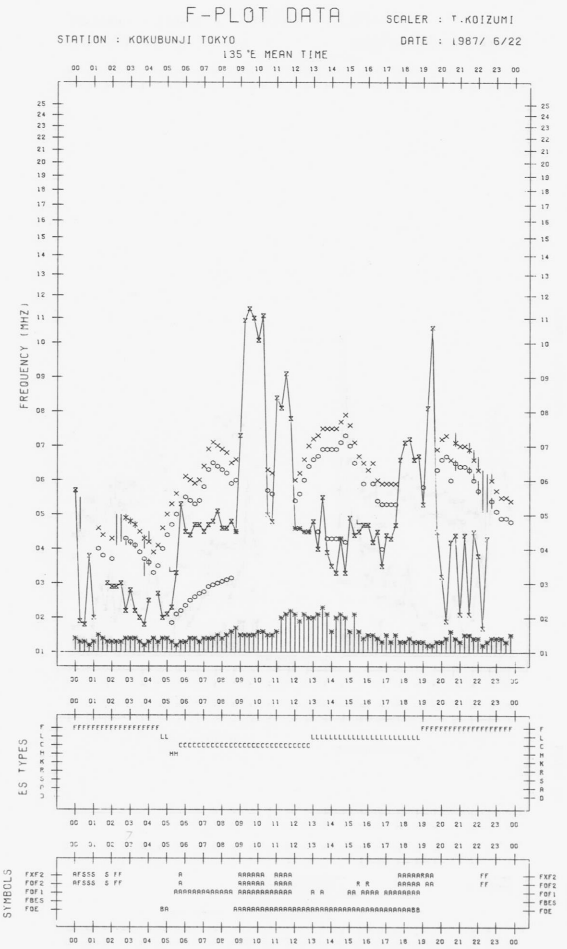

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/19
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

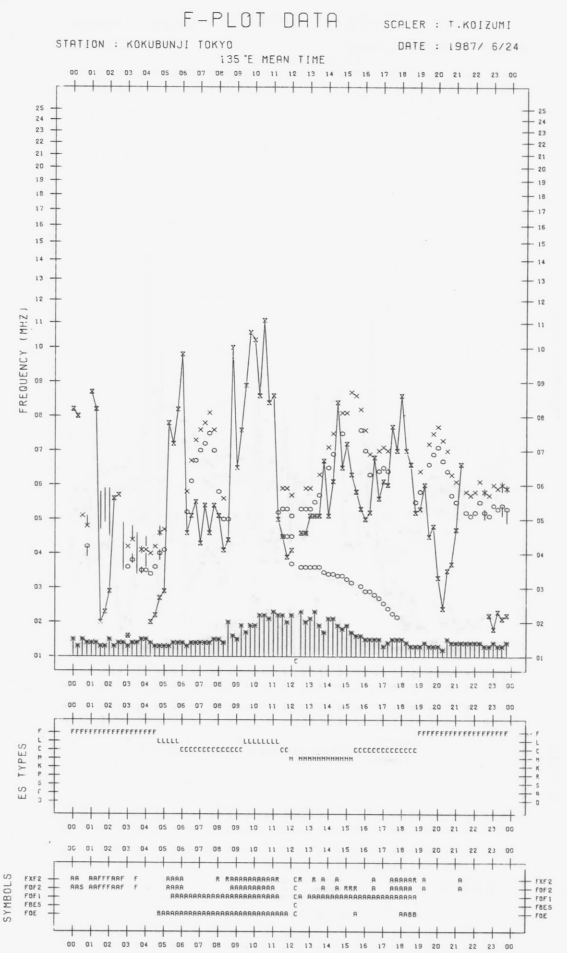

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/18
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

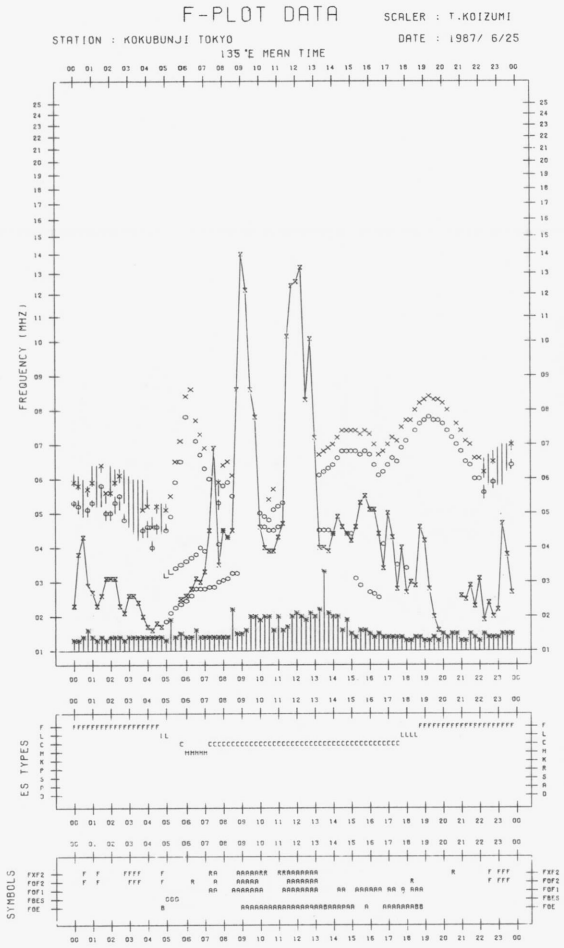

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/20
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

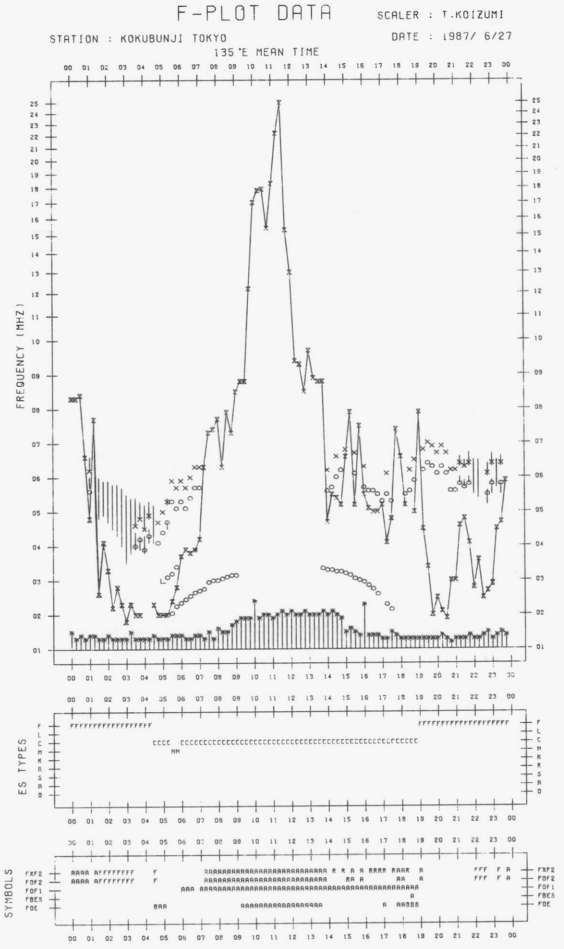

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/21
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

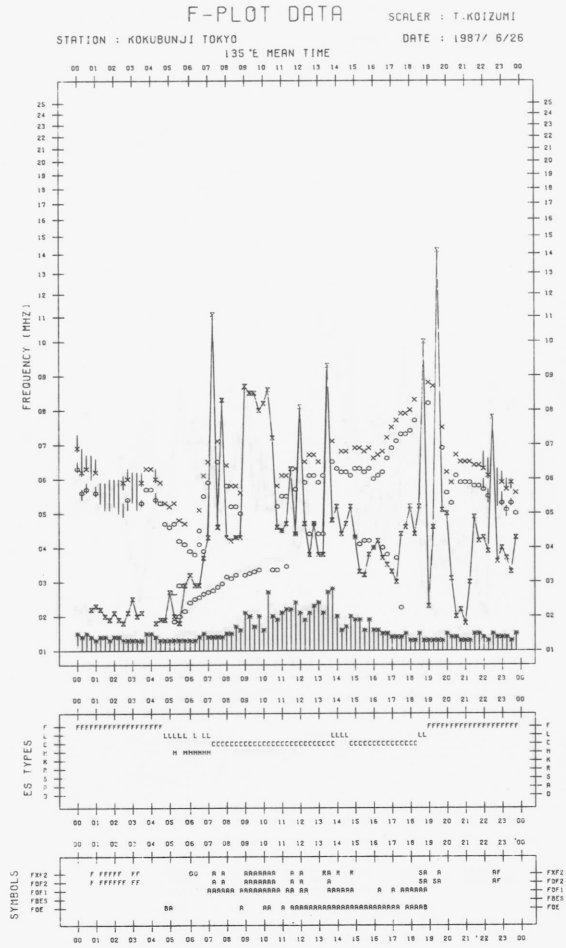

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/23
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

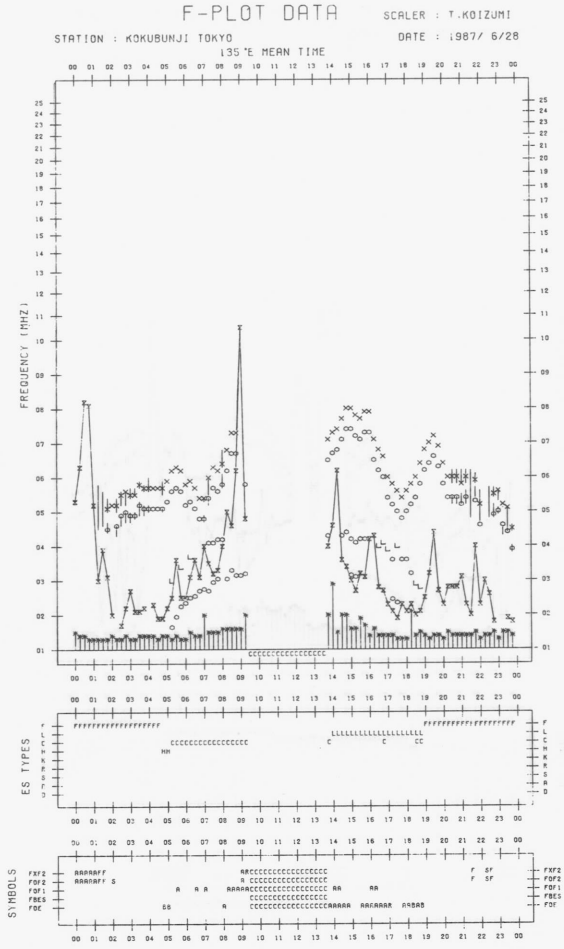

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/22
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

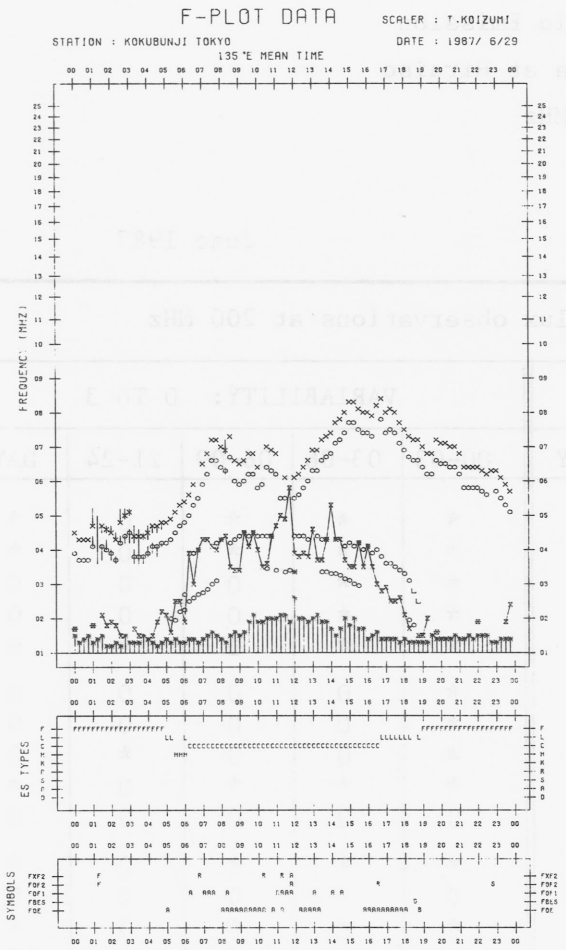

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/24
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

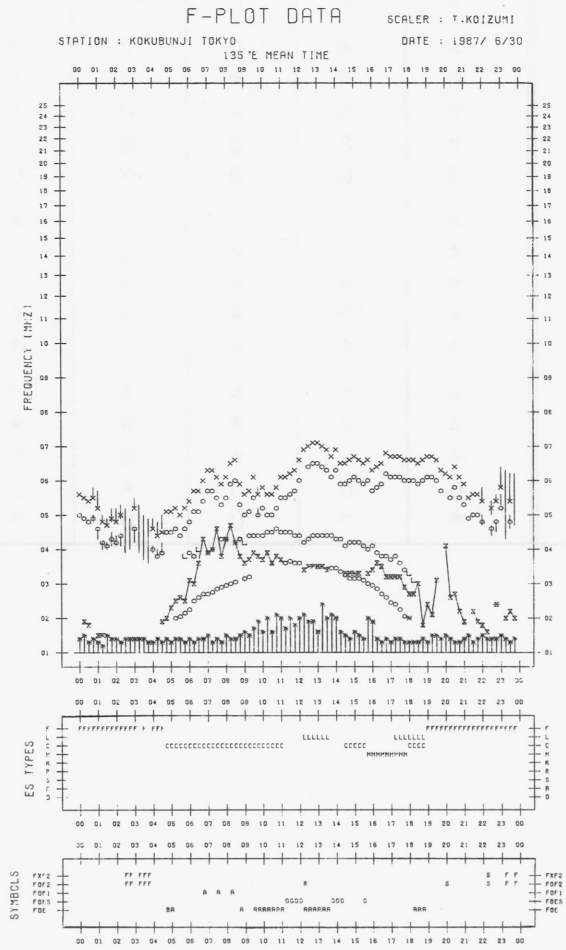

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/25
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/27
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/26
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/28
135 °E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/29
135 'E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI TOKYO
DATE : 1987/ 6/30
135 'E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

B. Solar Radio Emission

a. Daily Data at Hiraiso

200 MHz

Hiraiso June 1987

Single-frequency total flux observations at 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	8	8	8	7	8	*	*	*	0	*
2	7	7	7	7	7	*	*	*	0	*
3	7	8	7	7	7	*	*	0	0	0
4	7	7	7	7	7	*	*	0	0	0
5	8	7	7	7	7	*	*	0	*	0
6	8	8	7	7	8	*	0	0	0	0
7	q	8	8	7	8	*	0	0	0	0
8	7	8	8	8	8	*	0	0	*	0
9	q	7	7	7	7	*	*	*	0	*
10	7	7	7	8	7	0	0	0	0	0
11	q	q	q	8	8	*	*	*	0	*
12	8	8	8	8	8	0	*	0	0	0
13	8	8	8	8	8	*	*	*	0	*
14	q	q	q	8	8	*	*	*	*	*
15	8	8	8	8	8	*	*	0	0	*
16	8	8	8	8	8	*	*	0	0	*
17	8	8	8	8	8	0	*	*	*	*
18	8	8	8	8	8	*	*	*	0	*
19	8	8	8	8	8	*	0	0	0	*
20	8	8	8	8	8	0	0	0	*	0
21	q	q	8	q	8	*	*	0	*	*
22	q	q	q	6	q	*	*	*	0	*
23	6	q	q	q	q	*	*	*	*	*
24	q	q	q	q	q	*	*	*	*	*
25	q	q	q	q	q	*	*	*	*	*
26	q	q	q	q	q	*	*	*	*	*
27	q	q	q	7	q	*	*	*	*	*
28	q	q	8	7	8	*	*	*	0	*
29	7	8	7	7	7	0	0	0	*	0
30	7	8	7	7	7	*	*	0	0	*

Notes: 1. (q) likely quiet.

2. (*) interference.

B. Solar Radio Emission

a. Daily Data at Hiraiso

500 MHz

Hiraiso June 1987

Single-frequency total flux observations at 500 MHz					
FLUX DENSITY: 10^{-22} Wm^{-2}Hz^{-1}					
UT	00-03	03-06	06-09	21-24	DAY
DATE					
1	28	27	26	27	27
2	26	26	26	27	26
3	27	27	27	26	27
4	26	26	26	27	26
5	27	27	-	27	27
6	(27)	-	-	27	27
7	27	27	26	27	27
8	27	27	26	27	27
9	27	27	26	-	27
10	28	28	27	29	28
11	29	29	28	29	29
12	29	28	28	28	28
13	q	28	28	(29)	28
14	29	29	28	27	29
15	27	28	28	28	28
16	28	28	27	-	28
17	28	28	27	-	28
18	q	27	27	28	27
19	28	28	28	-	28
20	27	27	27	27	27
21	27	27	-	-	27
22	28	29	29	29	29
23	29	29	29	29	29
24	29	-	-	-	29
25	28	28	28	27	28
26	29	28	28	28	28
27	28	28	28	27	28
28	26	26	26	-	26
29	26	26	25	25	26
30	26	26	26	-	26

Notes: 1. No observations during the following periods.

1st	1938 - 2136	19th	1950 - 2350
2nd	0000 - 0013	21st	0528 - 0951
5th	0508 - 0950	21st	1950 - 2342
6th	0100 - 0950	24th	0215 - 0950
9th	1945 - 2345	24th	1950 - 2345
13th	1945 - 2245	25th	2307 - 2345
16th	1950 - 2343	28th	1955 - 2348
17th	2035 - 18th 0010	30th	1950 - 2350

2. (q) likely quiet.

B. Solar Radio Emission

b. Outstanding Occurrences at Hiraiso

Hiraiso June 1987

Single-frequency observations

Normal observing period: 1925 - 0955 U.T. (sunrise to sunset)

JUN 1987	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
			No outstanding occurrences.					

RADIO PROPAGATION

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

JUN 1987 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	ES -23	ES -23	ES -23	ES -23	-5	-8	ES -23	ES -23	ES -23	ES -3	ES -8	ES -8	ES -2	ES -8	ES -8	-1	3	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23
2	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-2	ES -23	ES -1	ES -2	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23
3	ES -23	ES -23	ES -23	-5	-8	-2	-5	4	9	4	4	6	ES 7	0	7	9	3	ES -23	-5	ES -23	-8	-8	ES -23	ES -23
4	ES -23	-8	-6	-6	-2	4	4	7	6	9	3	2	-6	-6	5	13	ES -23	ES -23	ES -23	0	ES -23	-2	ES -23	ES -23
5	-14	ES -23	-8	-8	-3	2	3	-1	4	0	ES -2	ES 0	ES 8	-3	-4	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23	-8	ES -23
6	ES -23	ES -23	ES -23	ES -23	-8	4	0	ES -23	-2	ES 0	-2	7	-1	ES -23	ES -8	ES -2	ES -2	-2	ES -23	ES -23	ES -23	ES -23	ES -23	ES -23
7	ES -8	ES -2	ES -23	ES -22	ES -22	ES -22	ES -22	ES 1	ES 2	ES -22	ES -22	ES 1	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22	ES -22
8	ES -24	ES -3	ES -24	ES -24	-6	-1	-2	5	3	5	9	-3	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
9	ES -3	ES -9	ES -24	ES -24	1	1	2	11	13	14	11	11	ES -15	-4	2	-2	-5	-9	-9	3	3	0	ES -9	ES -9
10	ES -9	ES -6	ES -9	-11	-1	ES -3	5	8	5	-1	8	5	7	8	11	-2	5	5	2	4	-3	3	2	ES -20
11	-3	-6	-9	ES -24	ES -24	-2	4	9	8	3	ES 1	ES 7	ES 0	ES -3	7	-2	ES -24	-7	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
12	ES -24	ES -24	ES -24	-7	-7	6	1	7	5	-3	ES -6	ES -3	ES -6	2	8	ES -24	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -6
13	ES -24	ES -24	ES -3	ES -7	-6	3	1	ES -9	ES -9	ES -9	ES -9	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
14	ES -24	ES -24	ES -24	ES -24	ES -24	2	3	-2	4	7	7	5	4	-3	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
15	ES -9	ES -24	-6	-6	-6	1	3	7	10	11	7	6	-3	8	7	-3	-9	ES -24	4	3	ES -24	ES -24	ES -24	ES -24
16	ES -24	-9	-6	-9	3	4	12	1	6	7	ES -24	ES -9	1	3	10	10	-3	0	3	10	12	ES -24	-3	ES -24
17	ES -24	ES -24	-9	1	-3	4	8	11	11	16	1	-6	-1	-6	12	0	ES -24	-9	-11	ES -24	ES -24	ES -24	ES -24	-3
18	3	-3	-4	-4	2	2	8	10	8	9	-3	-5	-2	9	3	7	-5	ES -24	-6	-3	-9	-1	0	ES -24
19	ES -9	2	4	-9	4	4	-2	ES -3	ES -6	ES -6	ES 3	ES 0	-1	ES -3	ES -24	-9	ES -24	ES -24	ES -24	ES -24	4	1	ES 2	ES -24
20	ES -24	ES -24	ES -24	ES -24	ES -24	-9	-3	3	11	10	5	5	0	5	-3	-3	-9	ES -24	2	-2	-9	ES -24	ES -24	ES -24
21	7	-3	ES -9	ES -24	-6	6	0	ES -9	ES -9	ES -9	ES -9	ES -9	ES -1	1	3	7	-3	-6	-2	-7	ES -24	-3	2	-6
22	ES -24	-9	2	-3	-1	7	7	8	7	11	-3	-3	ES -3	ES -3	8	2	-3	ES -15	-3	12	10	8	-1	4
23	ES -24	ES -9	3	-9	-2	6	7	-6	6	11	13	11	4	2	13	0	-6	-6	ES -24	-9	-1	ES -24	4	0
24	-3	-6	-6	ES -24	ES -24	-4	ES -9	ES -24	2	14	5	1	ES -3	9	11	0	-1	6	-2	2	3	4	ES -6	ES -9
25	ES -24	ES -24	ES -24	-9	2	6	9	12	11	7	2	ES -3	ES -6	-3	5	-2	-6	0	0	ES -24	2	1	-3	-3
26	-5	ES -23	-8	ES -23	3	6	-6	3	12	9	8	2	ES -24	ES -6	-1	-6	-6	-2	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
27	ES -24	ES -24	ES -24	-9	-6	-1	-6	ES -15	ES -15	ES -15	ES -15	ES -15	ES -2	ES -9	-1	ES -2	-6	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24
28	ES -24	ES -24	ES -24	ES -24	-7	-15	1	-3	-3	-9	ES -7	ES -9	ES -24	ES -24	ES -24	-9	6	-2	ES -24	-7	2	4	0	1
29	-9	ES -24	ES -24	ES -24	ES -15	7	7	ES -3	ES 2	ES -3	ES 3	ES 1	ES -6	1	ES 2	-3	-9	-3	0	6	-9	0	1	-9
30	-6	ES -24	ES -24	-6	-1	3	4	8	12	17	2	-6	ES -4	ES -24	6	C	C	C	C	C	C	2	ES -24	ES -9
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	30	30	30
MED	ES -23	ES -23	ES -16	US -10	-6	2	2	2	5	4	US 2	ES 0	ES -2	US -3	2	US -2	US -6	US -15	US -23	US -23	US -23	US -23	ES -23	ES -23
UD	-3	ES -3	2	-4	3	6	8	11	12	14	9	7	ES 7	8	11	9	3	0	2	6	4	4	2	0
LD	ES -24	ES -24	ES -24	ES -24	ES -24	ES -15	ES -22	ES -23	ES -15	ES -15	ES -15	ES -9	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24	ES -24

RADIO PROPAGATION

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

JUN 1987 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	-1	-1	5	19	22	19	26	19	20	19	19	13	5	1	-8	-1	9	16	12	12	6	0	2	-1
2	-1	0	8	8	16	25	21	22	19	18	27	19	18	-1	-8	-8	3	5	10	13	6	8	7	5
3	5	5	8	10	17	21	23	23	24	20	11	8	11	5	-2	-8	12	8	11	9	6	6	4	0
4	-1	6	6	5	18	15	24	22	21	23	16	14	12	10	0	-3	14	13	10	5	10	4	-2	-2
5	0	5	9	12	17	17	25	27	24	18	15	16	17	13	3	-3	5	7	1	10	16	13	7	-2
6	-2	5	13	17	17	21	24	23	24	19	14	17	10	16	15	13	23	11	5	6	13	2	3	8
7	6	4	-3	7	9	16	19	23	26	16	9	ES 1	ES -22	ES -22	ES -22	ES -22	ES -22	6	7	11	2	6	0	0
8	3	-2	2	8	14	15	18	21	20	5	6	ES -24	ES -24	ES -24	ES -24	ES -24	3	-3	7	6	15	7	9	8
9	4	1	4	7	14	21	25	26	24	21	23	18	13	14	11	8	2	7	7	12	15	12	US 6	7
10	5	6	8	7	14	19	28	27	23	18	14	18	16	13	10	10	13	14	3	11	16	12	8	7
11	4	3	8	16	21	22	26	27	30	28	27	22	17	14	15	15	-9	-7	2	17	16	10	8	12
12	2	-2	-2	0	9	18	23	23	24	26	18	14	15	7	4	ES -7	11	2	3	9	10	5	8	8
13	3	2	3	11	17	21	19	21	24	25	23	19	18	19	12	15	2	5	4	9	13	3	2	7
14	-3	1	4	4	7	19	19	26	23	19	19	18	15	9	12	6	12	5	12	14	17	6	6	6
15	4	12	12	13	16	22	24	22	21	18	19	16	14	9	10	6	-4	5	8	7	10	12	9	2
16	2	1	3	11	13	16	25	27	26	21	22	22	16	7	5	-5	18	14	15	18	12	6	2	3
17	5	6	5	7	14	14	19	23	24	21	19	24	18	6	-6	-2	-2	12	16	7	9	14	6	9
18	3	11	5	14	17	29	26	24	23	22	25	23	21	18	14	3	2	7	17	11	12	10	8	7
19	15	7	11	19	19	22	22	27	29	27	25	30	26	10	3	10	3	7	8	17	11	12	12	12
20	12	7	6	4	11	14	22	17	22	22	16	14	7	2	4	3	-2	8	2	17	13	21	18	7
21	6	6	14	11	19	19	27	24	23	26	21	11	12	14	8	8	11	13	3	16	13	12	0	8
22	2	6	7	15	22	21	23	23	18	10	6	14	17	5	-6	-15	-9	8	10	14	14	12	12	9
23	1	2	4	11	16	19	23	21	26	23	23	22	19	16	10	5	6	8	4	12	11	14	7	12
24	1	4	14	13	18	25	27	24	23	21	24	26	24	18	16	10	17	16	7	6	11	17	7	3
25	3	1	3	12	19	22	27	22	21	26	22	27	20	18	15	12	3	4	17	18	6	9	3	0
26	4	-2	-1	18	14	20	22	20	25	24	22	22	23	17	22	23	18	13	2	17	10	16	8	2
27	-3	-2	3	4	6	19	19	22	16	23	22	23	14	20	15	ES -9	ES -24	12	4	13	17	16	4	-3
28	-9	-3	5	8	14	22	22	22	18	18	25	20	9	-4	ES -24	ES -24	ES -24	2	2	18	12	14	3	7
29	6	5	9	12	17	19	20	23	24	19	12	10	16	4	2	-6	-1	6	-3	16	16	18	8	4
30	11	6	12	15	17	21	23	28	26	23	19	2	6	4	C	C	C	C	C	C	11	17	11	8
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	30	30	30	30
MED	3	4	6	11	16	20	23	23	24	21	19	18	16	10	5	3	3	7	7	12	12	12	7	7
UD	11	7	13	18	21	25	27	27	23	26	25	26	23	18	15	15	18	14	16	18	16	17	12	12
LD	-3	-2	-1	4	9	15	19	20	18	16	9	2	5	-4	ES -22	ES -22	ES -22	2	2	6	6	3	0	-2

C. Radio Propagation

b. Radio Propagation Quality Figures at Hiraiso

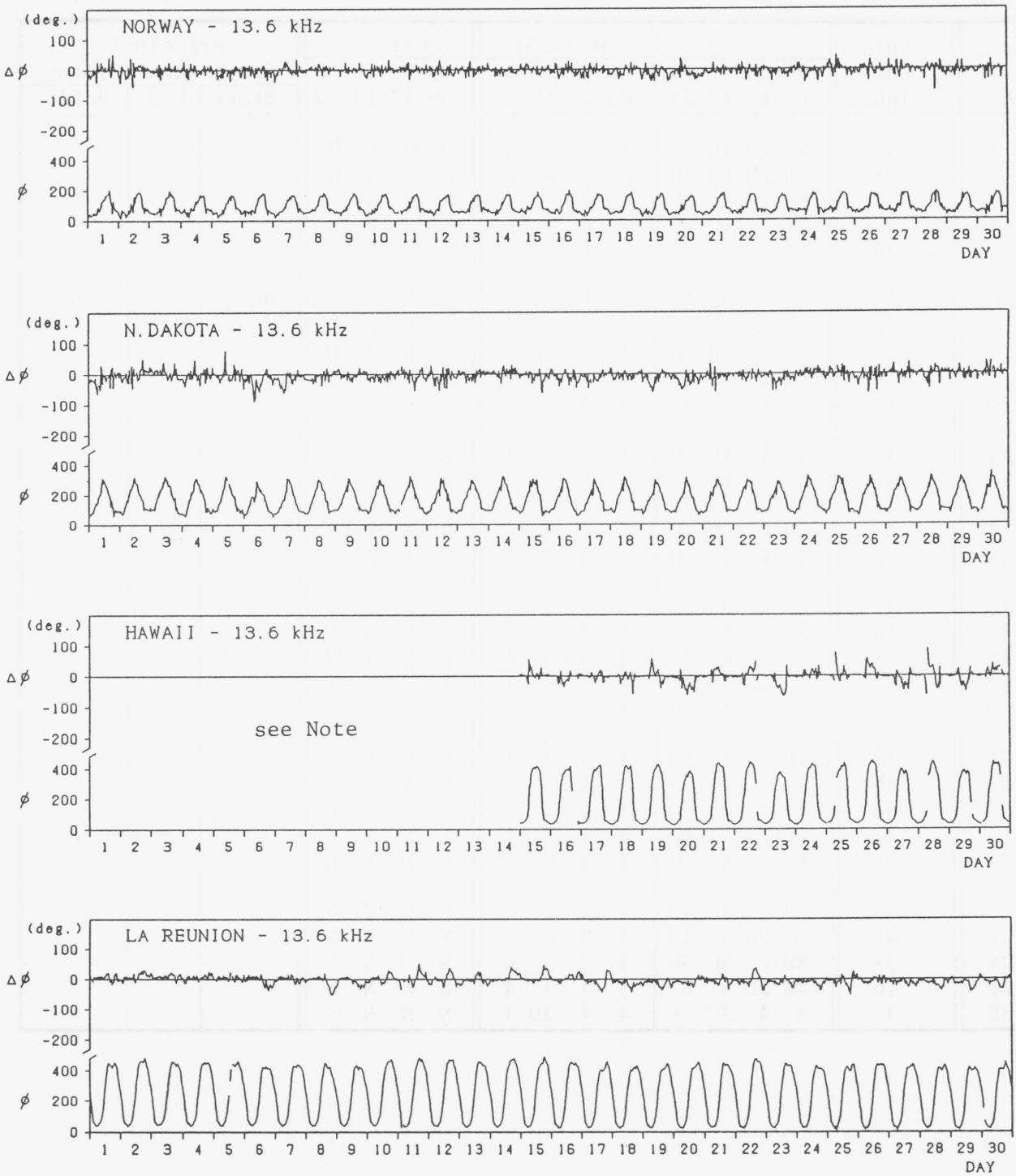
Hiraiso — Time in U.T.

Jun. 1987	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Conditions 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start	End	Range
1	3+	3U 2U 4U 4U	4 4 4 3	U U U U			
2	3+	2U 2U 2U 4U	4 4 4 4	N N N N			
3	4o	4 4 4 5U	4 4 4 4	N N N N			
4	4o	4 4 4U 5U	4 4 4 3	N N N N			
5	4o	4 4 3U 4U	4 4 4 4	N N N N			
6	4-	3U 4 3U 4U	4 4 4 4	N N N N	05.8	---	96
7	3o	2U 3U 2U 4U	4 3 2U 3	U U U U	---	24.0	
8	3+	3U 4 2U 4U	4 3 2U 4	U U U U			
9	4o	3U 5 4 5	4 4 4 4	N N N N			
10	4o	3U 4 5 5	4 4 4 4	N N N N			
11	4o	4U 4 4U 4U	4 4 4 4	N N N N			
12	4o	4 4 4U 4U	3 4 4 4	N N N N			
13	4-	4U 3U 2U 4U	4 4 4 4	N N N N			
14	4-	3U 4 3U 4U	4 4 4 4	N N N N			
15	4o	4 4 4 4U	4 4 4 4	N N N N			
16	4+	5 4 5 5U	4 4 4 4	N N N N			
17	4o	5 4 4 4U	4 4 4 4	N N N N			
18	4+	5 4 4 5	4 4 4 4	N N N N			
19	4o	4 4U 3U 4U	4 5 4 4	N N N N			
20	4o	3U 4 4 5U	4 4 3 4	N N N N			
21	4o	4U 3U 4 5U	4 4 4 4	N N N N			
22	4o	4 4 4 5	4 4 3 4	N N N N			
23	4o	4 4 4 5U	4 4 4 4	N N N N			
24	4+	4U 3 5 5	4 4 5 4	N N N N			
25	4+	4 4 4 5U	4 4 5 4	N N N N			
26	4o	4U 4 4 4U	4 4 5 4	N N N N			
27	4-	4 2U 4U 4U	3 4 4 4	N N N N			
28	3+	3U 3 3U 5U	4 4 2 4	N N N N			
29	4o	4U 3U 4 5	4 4 4 4	N N N N			
30	4-	4 4 3U S	4 4 3U 4	N N N N			

C. Radio Propagation

c. Phase Variations in OMEGA Radio Waves at Inubo

Inubo June 1987



Note: As for HAWAII - 13.6 kHz, no record during April 18 - June 15, due to the maintenance of transmitter.

Polar Cap Phase Anomaly (PCPA) on Norway-Inubo Circuit

NONE

C. Radio Propagation

d. Sudden Ionospheric Disturbance

(i) Short Wave Fade-out (SWF) at Hiraiso

Hiraiso Time in U.T.

Jun. 1987	S W F						Correspondence		
	Drop-out Intensities (dB) CO HA 1) 2)	Start	Duration	Type	Imp.		Solar Flare	Solar Noise	Geomag. Crochet
			None						

Notes CO: Colorado(WWV) HA: Hawaii(WWVH) 1): Australia 2): London

(ii) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Jun. 1987	S P A							
	Phase Advance (degrees)					Time (U.T.)		
Date	GBR	Ω/LR	NWC	Ω/H	Ω/ND	Start	End	Maximum
11		41	46	—		0156	0447	0246
26			10			0311	0356	0330

IONOSPHERIC DATA IN JAPAN FOR JUNE 1987
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2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184 JAPAN.