

# IONOSPHERIC DATA IN JAPAN

FOR AUGUST 1986

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## BRIEFING

This Series contains data on ionosphere (I), solar radio emis-

sion (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 atmospheric.
- 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  $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$  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 <sup>+</sup>
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 <sup>+</sup>

*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
	WWV	WWVH	
Station Call	Fort Collins, Colorado	Kauai, Hawaii	Hiraiso, Ibaraki
Location			
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	$\lambda / 2$ vertical	$\lambda / 2$ 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 10, 1+, 2-, 20, 2+, 3-, 30, 3+, 4-, 40, 4+, 5-, 50 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 ( $\phi$ ) and those in phase deviation ( $\Delta\phi$ ) are shown in the lower part and the upper one, respectively. Variations in phase ( $\phi$ ) 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 ( $\Delta\phi$ ) 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 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 (kW)	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
Aldra	66° 25'N	013° 09'E	$\Omega$ /N	13.6	10	7820
North Dakota	46° 22'N	098° 21'W	$\Omega$ /ND	13.6	10	9140
Haiku	21° 24'N	157° 50'W	$\Omega$ /H	13.6	10	6100
La Reunion	20° 58'S	055° 17'E	$\Omega$ /LR	13.6	10	10970

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation												
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 50	52	47	A	A																X 69	A	A	A
2	50	X 42	X 38	X 37	X 37																X 57	X 53	X 53	X 47
3	50	50	40	40	43																X 76	X 70	X 59	X 50
4	X 49	X 43	X 43	X 41	X 39																X 63	59	X 50	58
5	50	48	X 42	X 38	X 41																X 65	A	A	X 53
6	X 46	X 40	X 39	X 40	X 40																X 64	X 61	X 60	57
7	55	X 50	X 45	44	39																72	76	59	A
8	A	45	45	47	45																X 73	X 69	X 58	X 43
9	X 44	X 47	X 48	X 50	X 50																67	A	X 53	X 44
10	X 44	48	X 44	X 42	X 40																X 58	X 58	X 60	X 55
11	X 51	X 52	X 52	X 55	X 54																X 59	X 57	54	57
12	A	A	A	44	35																X 64	X 64	X 57	X 51
13	X 41	X 40	X 40	X 40	X 40																c	c	c	c
14	C	C	C	C	C																X 57	60	59	56
15	47	A	X 42	44	41																X 66	X 65	X 55	A
16	46	A	43	X 39	42																X 64	X 62	A	A
17	51	50	50	47	50																X 70	X 70	X 62	A
18	50	47	45	42	43																X 70	X 67	X 63	X 58
19	X 45	X 45	X 45	X 44	X 45																58	60	57	58
20	51	45	39	36	36																X 59	X 57	X 53	X 48
21	X 46	X 44	X 42	X 47	X 51																X 63	X 63	X 61	X 54
22	X 47	X 49	43	40	36																X 67	X 64	X 59	X 55
23	52	50	50	47	A																X 68	X 60	X 57	X 52
24	X 41	X 41	X 39	X 38	X 40																X 66	X 64	X 61	X 59
25	X 44	X 39	X 38	X 37	X 38																X 60	X 61	X 51	X 48
26	X 44	X 43	X 49	47	48																X 62	63	A	57
27	X 41	X 41	X 41	50	50																X 66	X 58	X 57	X 47
28	X 41	X 41	X 41	X 43	X 32																X 74	72	60	A
29	A	46	44	40	40																X 60	X 63	X 63	X 51
30	X 44	X 41	X 42	X 41	X 40																X 74	X 71	X 50	X 44
31	X 41	X 38	X 40	X 40	X 42																X 57	X 57	X 58	X 51
CNT	27	27	29	29	28																20	30	25	23
MED	X 46	X 45	X 43	X 42	X 40																X 64	X 64	X 59	X 54
UQ	50	48	X 45	47	45																X 68	X 67	X 61	X 58
LQ	X 44	X 41	X 40	X 40	X 39																X 60	X 60	X 57	X 51

AUG. 1986

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

FOF2 (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station	WAKKANAI																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	43	F	F	A	A	43	43	46	52	A	A	A	50	48	A	49	46	50	48	57	62	A	A	A
2	F	35	31	30	30	A	A	A	50	A	E	G	43	44	44	45	45	51	49	56	50	46	46	40
3	F	F	F	F	F	41	42	A	46	A	51	A	A	A	A	A	A	A	53	63	69	63	52	43
4	42	36	36	34	32	34	38	43	A	52	50	A	A	55	46	44	A	52	61	66	56	F	43	F
5	F	F	35	31	34	40	49	48	A	A	A	A	A	A	A	A	A	A	A	A	58	A	A	46
6	39	33	32	33	33	38	44	53	45	R	50	46	49	46	48	47	50	50	48	58	57	54	53	F
7	F	43	38	F	F	36	44	51	A	A	56	51	48	45	A	A	42	44	45	A	F	F	F	A
8	A	F	38	F	F	40	41	47	A	A	52	50	48	54	49	43	A	49	55	66	66	62	51	36
9	37	40	41	43	43	48	53	53	59	48	48	45	50	48	47	45	47	45	46	51	F	A	46	37
10	37	F	37	35	33	36	42	51	57	A	46	50	50	50	50	50	51	52	50	50	51	51	53	48
11	44	45	45	48	47	53	40	44	43	48	53	52	49	53	47	45	A	49	46	52	50	F	A	F
12	A	A	A	F	28	A	A	A	A	A	A	A	44	42	42	A	A	A	A	57	57	50	44	38
13	34	33	33	33	33	36	42	48	51	49	A	A	46	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	43	48	50	50	49	48	52	A	48	46	50	F	F	F	F
15	F	A	35	F	F	42	45	A	A	A	A	A	49	48	46	47	43	46	50	59	58	48	A	A
16	F	A	F	32	F	33	39	A	54	A	A	49	A	53	51	49	A	48	51	57	55	A	A	F
17	F	F	F	F	F	43	51	A	A	A	53	A	49	52	49	50	51	54	60	63	63	55	A	F
18	F	F	F	35	36	41	43	48	A	A	54	51	52	45	43	45	49	54	62	63	60	56	51	43
19	38	38	38	37	38	39	44	49	53	55	50	48	46	48	48	48	50	53	47	51	53	F	F	F
20	F	F	F	F	F	32	39	A	47	A	50	44	45	45	47	45	45	44	44	52	50	46	46	41
21	39	37	35	40	44	48	H	48	50	58	58	50	51	48	43	51	55	58	56	56	56	54	47	43
22	40	42	F	F	29	31	35	40	A	41	W	42	44	47	42	43	44	40	45	60	57	52	48	F
23	F	F	F	F	A	31	36	A	A	43	A	A	50	48	44	47	49	49	53	61	53	50	45	37
24	34	34	32	31	33	35	49	44	48	50	50	51	64	58	51	50	50	51	50	59	57	54	52	43
25	37	32	31	30	31	32	38	44	43	C	C	C	C	C	C	C	49	47	43	53	54	44	41	37
26	37	36	42	F	F	39	44	45	A	46	49	44	47	47	45	45	44	44	53	55	F	A	F	F
27	34	34	34	F	F	33	35	A	44	49	A	56	46	60	51	46	45	45	46	59	51	50	40	38
28	34	34	34	36	25	35	A	A	51	60	58	57	55	46	46	A	47	51	57	67	F	F	A	A
29	A	F	F	F	33	36	41	42	49	48	52	50	51	53	50	44	46	47	44	53	56	56	44	38
30	37	34	35	34	33	30	44	43	47	53	57	50	53	57	54	53	A	59	63	67	64	43	37	30
31	34	31	33	33	35	37	42	50	43	49	49	44	47	49	50	50	49	48	46	50	50	51	44	A
CNT	17	22	27	21	27	28	27	20	19	16	21	21	26	28	25	24	21	27	28	28	27	20	19	18
MED	37	36	35	34	33	38	42	48	49	49	50	50	49	48	47	47	47	49	50	57	56	51	46	39
UQ	39	38	36	36	36	41	44	50	52	52	53	51	50	53	50	50	50	52	54	62	58	54	51	43
LQ	34	34	32	33	32	34	40	44	46	47	49	45	46	46	45	45	45	46	46	52	52	47	44	37

AUG. 1986

FOF2 (0.1 MHz)



# IONOSPHERIC DATA

AUG. 1986

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		24		sec in		automatic operation	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																				
1							360	390	U A	A	A	A	A		A	A		U A	A																									
2						A	A	A	390	A	420	420	410	410	400	U A	A	A	A																									
3							A	A	400	A	410	A	A	A	A	A	A	A	A																									
4							340	360	A	U A	410	410	A	A	A	U A	A	A	A																									
5							350	370	A	A	A	A	A	A	A	A	A	A	A																									
6							290	350	370	400	400	410	420	420	420	410	400	380	360	300																								
7							310	350	A	A	A	A	A	420	U A	420	A	A	390	350	300																							
8							350	A	A	A	420	A	A	420	410	400	L	A	A	A																								
9							340	370	390	410	420	420	420	H	420	H	420	400	390	370	L	A																						
10							350	370	U A	U A	400	A	410	A	420	420	410	400	380	360	290	L																						
11							330	370	400	410	410	430	430	H	H	L	400	A	350	A																								
12						A	A	A	A	A	A	A	U A	410	400	400	A	A	A	A																								
13							370	A	A	A	A	A	420	C	C	C	C	C	C	C																								
14						C	C	C	C	U A	410	410	A	410	410	420	U A	390	A	A	A																							
15							A	A	A	A	A	A	420	420	400	400	370	360	A																									
16							A	A	A	A	A	A	A	U A	410	A	A	A	A	290																								
17							A	A	A	A	420	A	420	410	410	400	380	340																										
18							A	380	A	A	410	420	420	420	420	400	A	A																										
19							L	340	370	390	400	420	430	420	410	410	400	380	330																									
20							340	A	390	A	410	420	410	410	400	400	380	340	300	L																								
21							390	400	400	U A	410	410	420	410	A	390	370	340																										
22							H	310	360	A	390	400	400	400	400	390	A	350	L	280																								
23							A	A	390	A	A	A	A	410	400	390	370	340																										
24							L	320	400	400	420	420	U A	410	420	430	420	350	A																									
25							U A	310	360	A	C	C	C	C	C	C	370	320	L																									
26							A	A	390	U A	410	410	410	410	400	370	360	340																										
27							A	U A	400	400	A	420	420	A	400	A	390	A																										
28							A	A	U A	400	A	410	410	420	A	A	380	A																										
29							U A	390	A	400	430	420	410	400	400	L	L	L																										
30							A	U A	400	400	420	420	410	A	400	A	A	A																										
31							360	390	400	410	420	400	410	U A	U A	400	330	A	A																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																				
CNT						2	14	14	16	15	20	16	23	26	21	21	17	15	6																									
MED						300	340	370	400	400	410	420	420	410	410	400	380	350	295																									
UQ						350	370	400	405	420	420	420	420	410	400	380	360	300	L																									
LQ						330	360	390	400	410	415	410	410	400	390	370	340	290																										

AUG. 1936

FOF1 (0.01 MHZ)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986      F0E (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 24 sec		in automatic operation		
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
1						A	A	A	290	300	305	305	305	305	305	300	280	230	185					S								
2						150	205	245	275		A	300	305		A	A	A	295	275	230	175			E								
3						155	220	255	285	300	300		A	A	A	A	A		230	170				E								
4						155	215	260	275	285		A	A	A	A	A	300	275		175				E								
5						A	235	260	285	300	305	310	310	300		A	A	A	A	A				E								
6						140	210	240	280	285	310		A	A	A	305	295	260	220		A			E								
7						S	215	255	285	300	305	305	300	305	300		A	A	A	165				E								
8						160	220	255	285	300		A	A	A	315	310	300	270	230		A			E								
9						155	220	255		A	A	A	310	320	315	305	300	280	240		A			E								
10						145	220	265	290	300	300	300		A	A	305	300	280	225	165				E								
11						S	215	260	290	300	300	315	305	300	300	295		A	A	A												
12						155	210	245	275	290	295		A	A	A	305	295	275	225	180												
13						140	215	245	270		A	A	A	A	C	C	C	C	C	C												
14						C	C	C	C	290	300		A	305	310		295	265	215		A											
15						140	205	250	275		A	A	A		A	310	305	290		225												
16						A	210	260	285	295	295	305		A	A	A	A	A	A	A												
17						140	205	250	275		A	A	A		A	A	A	260	210		A											
18						A	195		A	A	A	A	305	315	310		A	U A	290	260	220			A								
19						S	205	225		A	305	A	A	310		A	A	A	260	205	120											
20						130	215	250	290	300		A	300	300		A	A	A	A	A	A											
21						A	200	255	285	300	305	310	300		A	300	285	275		A	S											
22						A	195		A	A	A	300		A	300	300	300	285	255	215	150											
23						150	200	245	265	295	300	300		A	A		290		A	215	155											
24						E	205	230	260	285	290		A	A		295	295	285	250	205	145											
25						130	200	245	270		C	C	C		C	C	C	C	A	A	150											
26						S	200	230	265	290	300	295		A	A	A	A	270	205	130												
27						S	200	235	260	290	290	290		A	A	A	A	A	A	S												
28						S	190	235	265		A	300	295		A	A	A	A	A	205				S								
29						E	210		A	280	300	300	305		A	305	295		A	250	200			S								
30						E	195	225		A	295	300	305	305	295		A	A	A	A	A											
31						S	190	230	265		A	300	305	300	300	295	285	250	200		S											
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
CNT						17	29	26	25	21	21	18	13	14	15	16	18	20	13	9												
MED						140	205	248	275	300	300	305	305	305	300	295	268	218	165					E								
UQ						155	215	255	285	300	300	305	310	310	305	300	275	228	175					E								
LQ						130	200	235	270	290	300	300	300	300	298	288	260	205	150					E								

AUG. 1986      F0E (0.01 MHz)

# IONOSPHERIC DATA

AUG. 1986

FOES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station	WAKKANAI																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	31	J A	J A	J A	J A	J A	J A	42	43	42	J A	J A	74	J A	J A	J A	36	40	J A	J A	J A	J A	J A	J A
2	35	J A	44	28	39	E S	J A	J A	J A	J A	J A	J A	37	34	43	40	44	55	J A	J A	J A	J A	J A	J A
3	35	36	27	35	J A	51	21	J A	J A	40	56	42	J A	J A	J A	103	57	38	58	J A	56	55	J A	J A
4	28	24	E	14	21	24	29	33	J A	J A	J A	J A	58	J A	J A	43	42	J A	J A	J A	J A	25	J A	J A
5	40	29	32	31	33	34	G	40	J A	J A	J A	J A	143	111	126	J A	J A	J A	J A	J A	J A	J A	J A	J A
6	23	E S	E S	E	18	22	30	40	32	40	G	34	36	34	G	33	33	J A	J A	J A	J A	19	28	34
7	E S	12	35	32	31	E S	15	20	32	56	57	75	52	44	38	42	53	95	56	63	36	60	35	83
8	J A	55	40	30	E	15	27	33	J A	44	52	J A	65	51	J A	53	58	G	G	34	J A	J A	J A	J A
9	21	22	20	E S	16	24	26	28	36	33	32	36	37	37	G	G	40	G	35	38	J A	J A	J A	J A
10	E	33	26	40	27	G	33	37	42	51	42	55	36	42	25	G	G	G	G	25	33	40	30	J A
11	J A	33	24	22	E S	11	21	22	30	30	31	G	G	G	G	G	35	J A	68	40	J A	J A	J A	J A
12	J A	J A	J A	45	40	31	J A	50	50	67	84	67	54	48	43	40	35	53	100	221	82	110	83	60
13	30	E S	E S	E S	E	20	27	J A	45	50	J A	58	J A	94	J A	63	43	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	G	42	J A	58	36	G	34	40	J A	J A	J A	J A	J A	J A
15	J A	J A	J A	31	31	29	25	42	60	J A	J A	J A	J A	68	34	G	G	G	G	31	21	42	J A	J A
16	31	J A	51	42	34	32	32	42	J A	55	J A	J A	60	46	J A	72	57	54	52	J A	70	57	35	J A
17	J A	50	28	29	J A	41	30	22	J A	43	71	173	76	50	52	53	40	33	32	50	32	26	28	J A
18	36	32	27	E S	16	28	22	J A	J A	J A	J A	J A	70	J A	63	40	G	G	G	36	37	43	J A	J A
19	22	21	26	24	21	23	J A	J A	63	57	32	G	32	34	G	34	33	36	G	24	28	J A	J A	J A
20	J A	J A	J A	40	19	17	27	34	J A	J A	J A	55	58	44	G	34	J A	43	42	J A	40	40	J A	J A
21	32	25	E S	E S	E	36	29	J A	40	40	G	42	40	J A	48	40	40	35	G	31	29	31	43	J A
22	22	21	21	20	21	19	24	35	47	35	G	34	G	G	37	33	38	28	23	18	30	27	E S	
23	30	31	E S	15	19	35	30	33	J A	55	56	35	J A	60	53	44	38	G	40	31	32	J A	J A	
24	E	30	26	22	E S	15	19	26	34	35	33	33	35	41	G	G	G	30	J A	J A	J A	J A	J A	J A
25	J A	E	37	30	32	24	32	35	40	C	C	C	C	C	C	C	C	29	30	20	J A	J A	J A	J A
26	27	27	34	34	25	20	31	J A	J A	J A	J A	J A	J A	J A	J A	J A	33	G	36	60	J A	J A	J A	J A
27	J A	J A	E S	32	J A	33	38	28	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28	26	40	29	30	23	20	50	60	J A	J A	J A	J A	J A	J A	J A	J A	34	J A	51	53	J A	J A	J A	J A
29	J A	J A	J A	J A	28	38	31	G	32	40	46	38	36	35	G	34	30	G	G	E S	E S	E S	E S	E S
30	E S	E S	E S	E S	E	23	15	35	33	48	32	G	G	G	35	J A	J A	J A	J A	J A	J A	J A	J A	J A
31	E S	E S	E S	E S	E S	28	22	25	G	G	32	35	G	G	37	40	J A	J A	J A	J A	J A	J A	J A	J A
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	30	30	30	30	30	30	30	30
MED	30	30	27	26	24	24	32	43	49	43	48	47	40	37	37	40	44	J A	J A	J A	J A	J A	J A	J A
UQ	J A	J A	J A	J A	32	31	42	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
LQ	22	22	16	16	18	20	28	35	40	33	36	34	34	G	G	25	33	30	32	30	30	33	30	27

AUG. 1986

FOES (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

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 24		sec in		automatic operation		
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	17	25	19	A A 75	A A 81	25	31	37	40	A A 123	A A 90	A A 74	47	38	A A 66	42	G	37	31	21	26	A A 83	A A 76	A A 53	
2	20	18	17	E S 16	E S 14	A A 73	A A 83	A A 85	G	A A 62	38	G	35	34	38	40	40	47	40	35	27	20	18	20	
3	24	25	17	19	26	G	39	A A 56	37	A A 55	40	A A 103	57	38	A A 53	A A 56	A A 55	A A 73	50	31	25	E S 16	E	18	
4	17	E S 15	E	E	17	G	26	G	A A 59	41	35	A A 84	A A 53	48	31	40	A A 58	37	36	22	33	40	21	20	
5	30	18	18	19	16	15	G	G	A A 83	A A 83	A A 78	A A 127	A A 143	A A 111	A A 126	A A 66	A A 94	A A 53	A A 75	A A 86	30	A A 70	A A 71	20	
6	E	E S 13	E S 16	E	15	G	G	G	G	G	G	G	34	33	33	G	G	G	G	20	16	17	18	18	
7	E S 12	16	16	19	E S 15	G	30	48	A A 57	A A 75	44	43	37	42	A A 53	A A 95	33	23	24	A A 60	26	35	16	A A 63	
8	A A 55	22	18	E	14	26	31	40	A A 52	A A 65	38	44	44	G	G	34	A A 49	38	50	16	16	16	E S 16	E S 16	
9	E S 13	E S 12	E S 13	E S 16	E S 16	G	G	30	30	30	36	36	G	G	G	G	G	G	G	29	31	33	A A 70	40	E S 16
10	E	22	17	19	18	G	33	37	40	A A 51	35	43	36	34	25	22	G	G	G	G	27	33	20	E	28
11	19	E S 15	17	E S 11	12	19	28	G	G	G	G	G	G	G	G	G	34	A A 68	30	30	45	25	35	A A 64	20
12	A A 80	A A 50	A A 45	30	18	A A 50	A A 50	A A 67	A A 84	A A 67	A A 54	A A 48	41	32	G	A A 53	A A 100	A A 221	A A 32	19	35	19	19	19	
13	E S 15	E S 15	E S 14	E S 16	E	G	G	33	42	47	A A 94	A A 63	36	G	G	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	G	41	43	G	G	34	39	A A 64	40	35	24	22	20	24	21	
15	16	A A 58	16	18	17	20	40	A A 60	A A 60	A A 71	A A 76	A A 68	34	G	G	G	27	G	33	30	36	22	A A 50	A A 63	
16	17	A A 51	23	18	19	22	37	A A 55	45	A A 60	A A 60	44	A A 72	41	45	45	A A 70	40	24	37	29	A A 72	A A 61	18	
17	18	17	E	19	E	20	38	A A 71	A A 173	A A 76	40	A A 52	37	34	G	31	33	31	22	18	30	E S 17	A A 52	19	
18	26	17	17	E S 16	18	22	32	33	A A 70	A A 63	40	G	G	G	34	36	41	48	27	16	19	25	19	E S 14	
19	E S 16	E S 12	E S 11	E	E S 13	22	G	33	30	G	32	33	G	33	31	32	24	G	G	30	20	31	23	E	19
20	30	E S 15	21	17	14	23	30	A A 50	35	A A 58	39	G	G	33	36	38	30	28	20	29	30	E	E	17	
21	22	E S 15	E S 16	E S 12	E	30	24	30	G	G	41	G	41	33	40	G	G	27	29	17	27	30	16	E S 15	
22	17	15	15	E	E	17	G	30	A A 47	31	G	33	G	G	37	G	37	G	21	17	20	19	E S 11	18	
23	E	17	E S 15	15	A A 35	27	31	A A 55	A A 56	34	A A 60	A A 53	43	34	G	34	26	30	40	34	40	17	21	E S 15	
24	E	20	19	12	E S 15	15	G	34	35	G	G	35	41	G	G	G	G	41	45	34	20	32	30	27	
25	E S 15	E	27	25	26	23	31	34	40	C	C	C	C	C	C	C	28	22	G	28	32	24	33	20	
26	17	15	17	17	15	15	30	42	A A 50	G	41	36	40	40	38	29	G	30	51	42	45	A A 70	E S 15	25	
27	17	18	E S 12	12	19	28	G	A A 96	40	38	A A 63	35	40	43	32	40	30	40	40	31	18	24	19	23	
28	18	29	E S 15	20	16	20	A A 50	A A 60	40	33	41	G	35	32	43	A A 53	31	38	21	45	37	29	A A 63	A A 63	
29	A A 64	30	13	16	19	22	G	27	39	45	37	G	33	G	32	30	G	G	E S 16	E S 16	15	15	E S 16	E S 15	
30	E S 15	E S 15	E S 15	E	E S 12	15	34	33	40	G	G	G	G	G	48	30	A A 85	37	30	40	28	20	15	E S 15	
31	E S 16	E S 12	E S 16	E S 16	17	E S 15	23	G	G	31	G	G	G	36	40	38	41	35	38	25	E S 15	17	37	A A 61	
	00	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	29	29	29	30	30	30	30	30	30	30	30	
MED	17	17	16	16	16	20	30	36	40	43	40	36	36	33	34	34	32	33	30	28	28	22	19	20	
UQ	22	22	18	19	18	23	34	A A 55	A A 56	A A 63	A A 54	A A 52	41	38	40	40	A A 55	40	40	35	33	35	40	25	
LQ	E E 15	E S 15	E S 15	E E 12	E E 14	15	G	30	35	G	35	G	G	G	G	29	G	22	22	22	19	20	18	17	

The Radio Research Laboratory, Japan

AUG. 1986

FBES (0.1 MHz)



# IONOSPHERIC DATA

AUG. 1986

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

AUG. 1986

FMIN (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation																							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	F	F	A	A	325	325	280	345	A	A	A	A	285	A	310	310	325	310	315	310	A	A	A
2	F	315	315	315	335	A	A	A	325	A	G	G	250	270	290	290	295	335	325	325	300	305	310	300
3	F	F	F	F	F	335	330	335	A	315	A	A	A	270	A	A	A	A	300	305	310	310	330	300
4	290	315	305	325	310	315	265	295	A	315	310	A	A	325	290	280	A	305	310	315	330	F	280	F
5	F	F	F	290	315	320	330	335	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	305
6	310	320	310	305	305	310	295	350	310	R		280	305	280	290	305	305	335	305	320	315	305	300	F
7	F	325	315	F	F	290	305	A	A	A	A	350	335	305	250	A	A	265	320	290	A	F	F	F
8	A	F	310	F	F	300	285	320	A	A	A	345	300	280	330	345	285	A	305	A	305	305	320	350
9	300	300	295	300	300	300	320	345	360	290	335	255	295	275	275	290	305	300	315	295	F	A	305	320
10	320	F	295	315	305	290	290	335	345	A	280	310	330	300	300	320	320	330	340	340	315	300	320	310
11	295	310	310	320	310	365	325	320	280	290	345	325	315	345	285	310	A	305	315	320	300	310	A	F
12	A	A	A	F	320	A	A	A	A	A	A	A	A	280	240	250	A	A	A	A	300	320	300	300
13	315	320	335	305	305	335	320	335	350		A	A		270	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	300	270	325	330	305	280	325	A	320	325	335	280	F	F	F
15	F	A	300	F	F	310	290	A	A	A	A	A	A	305	310	280	310	300	305	320	325	340	310	A
16	F	A	F	295	F	340	A	A	360	A	A	300	A	285	330	305	A	290	330	320	315	A	A	F
17	F	F	F	F	F	305	310	320	A	A	A	370	A	305	315	305	305	325	335	325	315	320	325	A
18	F	F	F	315	315	335	330	325	310	A	A	335	350	365	310	260	290	305	335	320	315	315	335	330
19	315	310	310	305	310	305	340	335	320	355	345	335	290	310	295	310	320	360	340	295	300	F	F	F
20	F	F	F	F	F	275	310	300	A	305	A	335	270	305	265	310	305	315	320	320	305	310	315	315
21	305	310	300	300	320	335	H	320	310	295	330	360	340	345	305	A	315	325	325	335	305	295	325	295
22	285	300	F	F	310	295	285	325	A	285	W	285	270	285	250	260	320	295	295	320	315	325	335	F
23	F	F	F	F	A	310	305	A	A	280	A	A	A	320	335	280	305	305	295	315	315	305	310	310
24	295	275	295	290	305	315	335	340	320	345	310	295	330	325	325	320	330	335	305	315	315	320	340	300
25	325	305	290	300	290	280	290	335	325	C	C	C	C	C	C	C	325	325	300	305	325	320	305	315
26	305	300	310	F	F	305	295	A	A	315	305	250	320	320	310	320	320	295	A	310	F	A	F	F
27	295	295	295	F	F	335	335	A	295	305	A	340	305	335	365	325	335	315	310	320	315	310	300	300
28	300	295	300	320	360	320	A	A	340	330	345	350	360	320	315	A	305	320	325	330	F	F	A	A
29	A	F	F	F	305	335	360	345	330	A	325	280	335	320	330	305	315	320	295	290	320	330	310	290
30	300	295	310	305	325	335	340	325	295	315	350	330	325	340	335	340	A	330	310	315	345	300	305	300
31	315	290	285	320	315	325	310	320	300	305	335	325	275	310	320	330	325	345	315	300	300	320	335	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	22	27	21	27	28	26	18	19	14	21	21	25	28	24	24	21	27	26	28	27	20	19	18
MED	300	310	305	305	315	315	320	330	320	310	335	310	305	310	298	308	315	320	315	315	315	312	310	305
UQ	315	320	310	320	325	332	330	335	342	330	345	335	330	322	322	320	325	332	325	320	320	322	330	315
LQ	295	295	298	300	305	305	295	320	302	290	310	280	290	282	280	298	305	305	305	305	302	308	302	300

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AUG. 1986

M(3000)F2 (0.01)

# IONOSPHERIC DATA

AUG. 1986

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 24		sec in		automatic operation	
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1							A	A	A	A	A	A	A	A	A	A	375	A	A							
2						A	A	A	385		405	405	390	365	375		A	A	A	A						
3							A	A	A	A	A	A	A	A	A	A	A	A	A	A						
4						345	360		A	A	400		A	A	A	365	A	A	A	A						
5						360	380		A	A	A	A	A	A	A	A	A	A	A	A						
6					345	340	365	390	425	405	405	400	405	390	<sup>H</sup> 375	370	355	<sup>L</sup> 395								
7					330	340		A	A	A	A	A	425		A	A	A	355	340	345						
8							A	A	A	A	A	A	A	405	390	370		A	A	A						
9						350	350	385	415	390	400	<sup>H</sup> 405	<sup>H</sup> 380	355	375	365	<sup>L</sup> 350		A							
10						A	A	A	A		390		385	380	365	365	370	335	370							
11						355	350	375	390	415	420	<sup>H</sup> 400	<sup>H</sup> 415	<sup>L</sup> 380	345		A	A	A							
12					A	A	A	A	A	A	A	A		375	360		A	A	A	A						
13							A	A	A	A	A	A	405		C	C	C	C	C	C						
14					C	C	C	C	400		A	A	400	390	355		A	A	A	A						
15						A	A	A	A	A	A	A	385	380	400	365	365	335		A						
16						A	A	A	A	A	A	A	A	A	A	A	A	A	A	A						
17						A	A	A	A	A	A	A	380	370	370	375	340		A							
18						A	370		A	A	A	425	415	380	380		A	A	A							
19						<sup>L</sup> 360	345	385	395	390	395	405	395	365	350	340	365									
20						A	A	A	A	A		385	390	390		A	A		<sup>L</sup> 340	350	335					
21							335	360	375		A	400		A	390	A	360	350	350							
22						<sup>H</sup> 350	360		A	385	415	400	380	375	355	340		A	<sup>L</sup> 330		A					
23							A	A	A	375	A	A	A		365	375	A	365	A							
24						<sup>L</sup> 370			A	375	380	380		A	345	370	355	370		A						
25						A	A	A	C	C	C	C	C	C	C	C	355	<sup>L</sup> 375								
26							A	A	410		A	390		A	A	A	365	345		A						
27							A	A	A	A	400		A	A	375		A	345		A						
28						A	A	A	375		A	400	400	380		A	A	330		A						
29								A	A	390	370	355	365	370	<sup>L</sup> 350	<sup>L</sup> 335		<sup>L</sup> 335		<sup>L</sup> 335						
30						A		A	370	375	355	390	365		A	350		A	A							
31							335	360	355	385	355	375		A	A	A	A	A								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT						2	9	10	7	13	12	16	18	20	18	14	17	10	4							
MED					338	350	355	385	385	390	400	395	380	370	362	355	350	<sup>L</sup> 358								
UQ					360	365	385	400	405	402	405	390	380	370	365	355	382									
LQ					345	345	368	375	388	382	385	368	365	350	340	335	340									

AUG. 1986

M(3000)F1 (0.01)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

H<sup>o</sup>F<sub>2</sub> (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 2.4 sec in automatic operation										
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23									
1							350	375	280		A	A	A	A	415	A	350	340	300	290														
2						A	A	A		305	A	G	G	575	485	425	400	370	A	A														
3							A	A		345	A		A	A	470	A	A	A	A	A														
4							495	365		A	350	350		A	A	325	405	450		A	330	280												
5							295	320		A	A	A	A	A	A	A	A	A	A	A	A													
6							335	370	275	355	R	345	435	355	455	400	355	345	295	255														
7							400	350	A	A	A		280	305	365	480	A	A	515	330	350													
8							380	310		A	A		300	355	430	310	285	400	A	325	A													
9							290	290	300	375	310	530	380	425	450	405	350	325	L	270														
10							350	300	260	A	455	370	340	370	365	340	310	295	245															
11							295	335	450	380	300	325	345	290	400	315	A	300	270															
12						A	A	A	A	A	A	A		450	605	575	A	A	A	A														
13							300	280	350	A	A	A		450	C	C	C	C	C	C														
14						C	C	C	C	400	445	320	340	360	400	320		A	310	230														
15							A	A	A	A	A	A		365	350	385	355	310	340	295														
16							A	A	255	A	A	365	A	400	315	A	A	A	270															
17							300	A	A	A	265	A	380	340	350	350	310	285																
18							270	325	A	A	300	315	265	380	560	405	335	A																
19							250	295	290	275	300	310	400	350	380	330	310	250																
20							370	A	350	A	315	455	395	475	350	355	310	300	270															
21							300	375	300	265	300	305	360	A	345	305	265																	
22							435	325	A	435	W	465	500	400	560	500	320	365	L	325														
23							A	A	450	A	A		340	320	440	360	325	300																
24							255		305	300	335	385	275	300	335	350	300	A																
25							400	300	350	A	C	C	C	C	C	C	C	300	265															
26							A	A	340	360	530	330	350	350	305	315	340																	
27							A	380	350	A	280	350	290	275	325	300	305																	
28							A	A	300	290	275	275	265	340	350	A	350	300																
29								300	A	325	410	330	325	315	355	L	315	265																
30							265		350	320	280	325	335	290	300	300	A	270																
31							300	400	335	300	340	425	330	345	310	300	A	260																
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23									
CNT						2	17	15	19	15	22	21	25	28	24	23	21	23	13															
MED						368	350	300	305	350	305	355	355	355	372	350	315	300	230															
UQ						370	325	352	378	350	435	400	420	415	380	340	325	295																
LQ						290	300	295	310	300	315	335	325	340	328	310	278	270																

AUG. 1986

H<sup>o</sup>F<sub>2</sub> (KM)



# IONOSPHERIC DATA

AUG. 1936

H\*F (KM)

135° E Mean Time (G.M.T. + 9 h)

Station Hour Day	WAKKANAI				Lat. 45° 23' 5" N				Long. 141° 41' 2" E				Sweep 1 MHz to 25 MHz in 24 sec in automatic operation													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	250	255	260	A	A	A	A	A	A	A	A	A	A	A	A	210	A	A	260	235	A	A	A			
2	280	250	265	270	245	A	A	A	210	A	205	200	200	230	255	A	A	A	A	265	250	265	250	265		
3	A	235	265	275	270	225	A	A	A	A	A	A	A	A	A	A	A	A	A	265	250	235	205	250		
4	250	245	250	265	265	235	240	220	A	A	200	A	A	A	220	A	A	A	A	255	A	A	295	280		
5	A	250	250	255	270	230	205	215	A	A	A	A	A	A	A	A	A	A	A	255	A	A	255	255		
6	240	250	270	250	265	245	225	230	205	200	200	200	200	200	225	205	230	215	215	250	250	275	265	250		
7	230	240	240	245	255	245	250	A	A	A	A	A	A	200	A	A	A	250	245	250	A	275	A	205	A	
8	A	A	260	225	245	A	A	A	A	A	A	A	A	200	205	215	A	A	A	250	245	245	205	240		
9	250	265	260	265	245	230	220	205	200	200	200	200	220	215	210	215	220	A	A	A	A	A	A	250		
10	255	265	275	255	285	225	A	A	A	A	225	A	200	200	225	210	210	220	225	240	A	A	265	245	250	
11	260	255	250	220	250	225	215	225	210	215	200	200	190	200	205	250	A	A	A	A	255	A	A	255		
12	A	A	A	A	290	A	A	A	A	A	A	A	A	200	245	A	A	A	A	285	260	250	250	250		
13	255	250	245	245	260	220	245	A	A	A	A	A	215	C	C	C	C	C	C	C	C	C	C	C		
14	C	C	C	C	C	C	C	C	C	200	A	A	205	205	235	A	A	A	A	250	275	250	300	290		
15	280	A	255	295	260	235	A	A	A	A	A	A	210	205	195	205	215	215	A	255	A	255	A	A		
16	270	A	315	285	250	250	A	A	A	A	A	A	A	A	A	A	A	A	A	A	250	A	A	255		
17	255	250	230	250	240	250	A	A	A	A	A	A	230	210	210	200	250	A	255	H	235	250	225	A	255	
18	A	285	275	250	250	235	A	235	A	A	A	195	195	250	205	A	A	A	255	230	245	245	250	200		
19	235	240	235	255	245	255	215	255	205	205	195	200	200	195	200	H	240	235	225	A	250	300	295	250	250	
20	A	210	260	270	300	A	A	A	A	A	A	200	195	H	200	A	A	230	225	225	260	A	270	215	220	240
21	250	250	295	260	225	245	215	245	200	220	A	220	A	205	A	225	230	250	245	245	290	250	280	285		
22	285	250	275	280	275	250	200	H	250	A	195	200	200	210	200	250	245	A	245	290	250	250	240	215	300	
23	280	255	255	260	A	A	A	A	A	220	A	A	A	A	250	200	A	230	A	A	A	A	270	270	245	
24	280	295	305	300	270	255	245	240	A	200	200	210	A	245	220	225	210	A	A	A	250	A	250	260		
25	250	260	A	A	A	A	A	A	A	C	C	C	C	C	C	C	215	215	260	270	A	A	250	A	265	
26	255	270	245	255	250	250	250	A	A	A	A	200	A	A	A	200	215	A	A	A	A	A	A	225	250	
27	300	300	270	255	235	A	215	A	A	A	A	215	A	A	205	A	250	A	A	A	250	250	255	270	300	
28	295	A	285	250	205	255	A	A	A	205	A	200	200	195	A	A	250	A	265	A	A	260	A	A		
29	A	A	280	270	270	250	230	225	A	A	235	225	210	200	215	215	230	230	255	280	240	225	240	290		
30	250	290	270	265	220	210	A	A	A	205	200	235	200	210	A	240	A	A	A	265	A	220	245	235	255	
31	260	295	295	260	255	220	245	240	205	205	205	230	240	A	A	A	A	A	A	270	260	240	A	A		
CNT	25	25	23	27	27	23	15	12	7	13	12	16	18	20	18	14	17	11	12	20	22	21	20	25		
MED	255	255	260	260	255	245	225	232	205	205	200	200	200	202	215	215	230	225	255	252	250	250	250	255		
UQ	230	270	275	270	270	250	245	242	208	205	205	222	210	215	225	240	235	238	262	265	260	260	268	265		
LQ	250	250	250	250	245	228	215	222	202	200	200	200	200	200	205	205	215	218	235	250	250	240	222	250		

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H\*F (KM)

The Radio Research Laboratory, Japan

### IONOSPHERIC DATA

AUG. 1986

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 24		sec in		automatic operation					
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					A	A	110	105	105	105	100	105	105	105	110	120	105	110		S				
2						125	110	105	105	110	105	105	105	A	A	105	110	110	110		E			
3						115	115	105	105	105	105	105	A	A	A	A	A	105	115		E			
4						120	110	110	105	105	105	105	A	A	A	105	105	A	115		E			
5						A	105	110	105	105	105	105	105	105	105	105	105	105		A	E			
6						120	120	105	105	105	105	105	A	A	105	105	110	110	115		E			
7						S	115	115	105	105	105	105	105	110	110	A	A	A	110		E			
8						S	130	110	110	110	105	105	110	A	105	105	105	105	110	110		E		
9						110	110	110	105	105	A	105	110	110	105	115	105	110		A	E			
10						125	110	105	110	105	105	105	A	A	115	115	110	110	110		E			
11						S	110	105	105	105	110	105	105	110	110	110	105	A	A					
12						130	110	105	105	105	105	105	A	A	115	105	110	110	115					
13						120	115	105	105	105	A	A	A	C	C	C	C	C	C					
14						C	C	C	C	110	110	110	110	110	105	110	110	110		A				
15						120	115	110	105	105	A	A	A	105	110	105	110	110		A				
16						A	120	110	105	105	105	105	105	A	A	A	A	A	A					
17						130	110	105	105	A	A	A	A	A	A	A	105	105	A					
18						A	110	105	105	105	105	105	105	105	A	A	115	105	A					
19						S	110	105	105	105	105	105	105	105	105	A	A	110	125					
20						125	110	110	110	105	105	110	105	A	A	A	A	A	A					
21						A	110	110	105	110	105	105	110	105	105	105	110	105		S				
22						A	110	105	105	A	105	A	105	110	110	110	110	115	120					
23						S	130	115	110	110	110	105	105	A	A	105	A	A	115	120				
24						E	120	110	105	105	110	110	A	105	110	110	110	115	120					
25						130	110	110	105	C	C	C	C	C	C	C	A	A	125					
26						S	110	105	105	105	105	105	A	A	A	A	110	110	125		S			
27						S	120	110	110	110	105	105	105	105	A	A	A	A	S					
28						S	130	115	110	110	110	110	105	A	A	110	A	120	S					
29						E	125	115	110	110	115	110	105	110	110	A	105	110	S					
30						E	110	110	A	105	105	110	110	105	105	A	A	A	A					
31						S	115	105	110	A	110	110	105	110	105	105	110	110	S					
CNT						14	29	30	29	27	26	26	18	17	19	17	19	22	15					
MED						125	110	110	105	105	105	105	105	105	105	105	110	110	115					
UQ						130	115	110	110	108	105	110	105	110	110	110	110	110	120					
LQ						120	110	105	105	105	105	105	105	105	105	105	105	105	110					

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H°E (KM)

The Radio Research Laboratory, Japan

### IONOSPHERIC DATA

AUG. 1936

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 24		sec in		automatic operation	
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		110	105	105	105	105	105	105	110	120	115	110	105	110	125	115	120	130	125	115	120	115	110	110	105	
2		105	115	100	105	S	120	115	110	115	110	105	105	105	105	105	125	120	110	110	105	115	105	105	100	
3		100	100	100	110	115	120	115	115	115	105	105	105	105	105	105	125	115	115	110	110	110	E	105		
4		105	105	E	135	125	120	120	115	105	105	110	105	105	100	105	120	120	115	115	115	110	105	105	105	
5		100	105	100	105	100	110	G	125	120	115	110	110	110	105	105	105	105	105	115	110	110	110	110	105	
6		105	S	S	E	125	120	120	120	115	105	G	105	105	105	G	145	120	120	115	115	115	110	105	105	
7		S	105	100	100	S	150	125	115	115	110	115	105	105	110	110	105	105	120	110	115	110	110	115	105	
8		105	105	105	E	130	120	115	115	110	105	105	110	105	G	G	130	120	115	110	105	105	105	105	105	
9		105	105	105	S	110	115	120	115	110	115	170	165	160	G	G	125	G	125	115	110	115	105	105	105	
10		E	100	100	100	100	G	120	120	115	105	110	105	105	100	105	105	105	G	115	110	105	105	105	105	
11		105	115	100	S	100	135	120	120	120	G	G	G	G	G	G	110	105	105	110	115	115	110	110	115	
12		105	105	105	100	110	125	120	115	105	105	105	105	105	100	170	120	110	110	115	110	110	105	105	100	
13		100	S	S	S	E	135	125	115	110	105	105	100	100	C	C	C	C	C	C	C	C	C	C	C	
14		C	C	C	C	C	C	C	C	C	G	110	110	115	G	110	125	110	110	105	105	105	115	100	100	
15		100	105	105	100	100	120	115	110	105	105	105	100	105	G	G	100	100	100	110	110	110	105	105	105	
16		100	100	100	100	100	100	120	115	110	105	105	105	105	105	105	105	100	115	100	115	115	110	110	105	
17		110	110	120	105	115	130	115	105	105	100	100	100	100	100	155	100	120	115	110	110	105	S	100	100	
18		100	100	100	S	110	110	110	105	105	105	105	G	G	G	105	130	120	110	105	105	105	105	100	105	
19		105	105	100	105	100	125	115	105	110	G	105	105	G	105	105	105	105	115	115	120	115	110	105	105	
20		105	115	105	125	125	125	115	115	115	105	105	G	105	105	105	105	105	110	105	110	110	110	110	105	
21		100	105	S	S	E	110	115	115	125	G	120	115	110	110	110	110	G	120	115	115	115	115	110	S	
22		120	125	125	120	125	115	115	110	105	105	G	105	G	G	130	140	120	135	120	115	110	100	S	105	
23		100	105	S	130	125	120	120	110	110	110	105	105	105	105	G	100	105	125	115	110	110	110	110	S	
24		E	105	105	105	S	100	125	110	110	110	110	105	G	G	G	125	115	115	115	110	110	110	110	105	
25		110	E	105	105	105	125	120	115	115	C	C	C	C	C	C	C	105	105	125	110	110	110	110	105	
26		105	105	105	105	105	145	120	115	110	110	110	105	105	105	105	105	G	120	115	115	120	110	S	105	
27		105	105	S	100	100	125	125	110	110	110	105	105	110	105	100	100	100	100	100	100	110	110	105	105	
28		100	100	100	100	100	130	120	115	115	115	110	110	105	105	105	110	105	120	110	105	105	100	100	105	
29		100	100	105	105	100	100	G	120	115	115	115	115	105	G	110	110	G	G	S	S	115	125	S	S	
30		S	S	S	E	125	125	120	120	100	120	G	G	G	110	105	105	105	100	100	120	100	110	105	S	
31		S	S	S	S	105	115	120	G	G	105	115	G	G	150	140	130	125	120	115	115	115	105	105	105	
CNT		25	25	22	21	25	29	28	29	29	26	26	25	24	20	22	28	26	28	29	29	30	29	26	26	
MED		105	105	105	105	105	120	120	115	110	105	108	105	105	105	105	110	108	115	115	110	110	110	105	105	
UQ		105	105	105	105	125	125	120	115	115	110	110	110	108	108	110	125	120	120	115	115	115	110	110	105	
LQ		100	105	100	100	100	115	115	110	110	105	105	105	105	105	105	105	105	110	110	110	110	110	105	105	

AUG. 1936

H°ES (KM)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986      TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station WAKKANAI				Lat. 45° 23' S				Long. 141° 41' 2" E				Sweep 1 MHz to 25 MHz in 24 sec in automatic operation												
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F3	F3	F7	F4	L3	L4	C4	C3	C2	C3	C3	C2	C1	C3	C3	CL22	C4	C3	C2	C3	F5	F3	F3
2	F2	FF12	F2	F2		C4	C5	C3	C2	C3	C2	C1	C2	L3	L3	C2	C3	C2	C4	C4	F3	F3	F2	F3
3	F4	F3	F2	F3	FF31	C3	C5	C4	C2	C5	C3	C5	L3	L2	L4	L3	CL23	C5	C5	C7	F3	F2		F2
4	F2	F2		F1	F2	C2	C4	C2	C4	C2	C2	C3	L2	L3	L1	C3	C3	CL33	C4	C3	F3	F3	F2	F3
5	F4	F3	F2	F2	F3	L1		C2	C4	C3	C4	C4	C4	C5	C4	C3	C4	C3	CL62	C5	F3	F5	F4	F3
6	F2				F1	C1	C2	C2	C2	C3		C1	L1	L1		H1	C3	C2	C2	C1	F2	F3	F2	F2
7		F2	F2	F2		H2	C3	C4	C3	C2	C2	C2	C3	C3	C3	L3	L2	CL13	C4	C5	F4	F3	FF11	F4
8	F6	F4	F2		F1	C3	C3	C3	C4	C3	C2	C3	L2			C3	C4	C5	C7	L2	F2	F3	F1	F2
9	F1	F2	F2		F1	C3	C3	C2	C3	C1	HL12	H1	HL12			C1		C2	CL22	C5	F5	F5	F5	F2
10		F4	F2	F3	F2		C4	C3	C2	C2	C2	C2	L3	L3	L2	L1	L5		C5	C4	F5	F3	F2	F5
11	F3	F2	F2		F2	C2	C2	C2	C2							C2	C4	L3	L3	F5	F3	F5	F2	FF22
12	F5	F4	F6	F4	FF12	C4	C4	C4	C4	C3	C3	C3	L3	L2	HL22	C3	C5	C6	C5	F5	F3	F2	F3	F3
13	F2					C1	C2	C3	C2	C2	L4	L4	L2											
14										C4	C2		C1		C2	C2	C2	C5	L5	F5	F4	FF13	F3	F2
15	FF22	FF42	F1	F2	F2	C2	C4	C4	C6	C3	L4	L3	L5		L5	L5	L5	L5	CL32	F3	F3	F3	F5	F5
16	F2	F5	F5	F4	F3	L3	C5	C5	C4	C4	C3	C3	C4	L2	L4	L4	L4	CL23	L4	FF23	FF23	F5	F4	F3
17	F3	F3	F1	F3	F2	C2	C6	C3	C3	L4	L4	L3	L3	L3	HL12	L2	C2	C3	CL21	F2	F3		F3	F3
18	F4	F2	F2		F1	L2	C4	C2	C4	C4	C4				L2	CL23	CL42	C6	L6	F2	F4	F5	F3	F1
19	F2	F1	F2	F1	F2	C5	C2	C4	C2		C3	C2		C3	C3	L2	L2	C3	C3	F2	F4	F4	F2	F2
20	F6	F1	F4	F2	F1	C3	C3	C4	C3	C3	C3		C1	L5	L5	L4	L5	CL13	L5	F4	F5	F1	F2	F2
21	F4	F1				L3	C3	C3	C2		C2	C1	C2	C1	C2	C2		C2	C3	F2	F3	F4	F2	
22	F2	F1	F1	F1	F1	L1	C2	C4	C4	L2		L2			C2	H1	CL42	CL21	C3	F2	F2	F3		F2
23	F2	F3		F5	F5	C4	C4	C4	C4	C2	C5	C3	L2	L2		L3	L2	C3	C3	F4	F5	F3	F5	F5
24		F3	F2	F1		L1	C2	C3	C4	C2	C1	C2	L2				C2	C4	C6	F6	F2	F5	F5	F3
25	F2		F4	F5	F4	C4	C4	C4	C4								L2	L2	C2	F6	F4	F4	F6	F5
26	F2	F2	F4	F2	F1	C1	C3	C4	C4	C3	C2	C2	L2	L3	L3	L2		C4	C5	F6	FF13	F7		F2
27	F2	F2		F2	F3	C3	C1	C3	C3	C3	C2	C2	C3	C2	L2	L3	L4	L3	L3	F4	F3	F3	F2	F3
28	F2	F7	F2	F2	F1	C2	C3	C3	C2	C1	C2	C2	C2	L2	L4	C4	L2	C5	C4	F3	F4	F4	F4	F6
29	F5	F5	F2	F2	F4	L3		C2	C2	C2	C2	C2	C2		C2	L2					F1	F1		
30					F1	C1	C4	C5	L3	C2				C2	C3	L2	L6	L3	L3	FF13	F3	F2	F1	
31					F1	C1	C2			L2	C2			H1	H2	C2	C3	C4	C6	F3	FF22	F2	F5	F6
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

AUG. 1986      TYPES OF ES



# IONOSPHERIC DATA

AUG. 1986

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 24 sec in		automatic operation		
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	X	A	A	A	A																X	X	X	A		
	46																					69	70	50	47	
2		47	43	43	40	44															X	A	X	A	49	
																						61	50			
3		48	43	40	39	40															A	73	65	63	63	
4		58	49	50	50	43															X	A	62	62	58	
																						77				
5		56	53	48	40	37															X	69	62	63	58	
																						65				
6		59	50	40	41	39															X	X	X	60	59	
																						63	61			
7		58	59	53	49	39															X	78	76	64	A	
																						70				
8		40	A	A	42	40	40	54													X	75	64	53	41	
																						73				
9		44	45	44	45	52	49														X	61	63	68	60	
																						58				
10		50	47	47	50	46	48	52													X	56	56	53	54	
																						53				
11		51	52	54	56	59															X	X	A	A	53	
																						67	53			
12	A	A	48	48	A																	68	73	67	63	51
13		43	41	43	44	45	43														X	68	69	67	63	
																						67				
14		52	52	47	40	38															A	A	A	53	49	
15		48	49	42	46	43	49														X	X	62	50	A	
																						74	72			
16		52	A	52	49	X															X	X	54	50	53	
						39																65	65			
17		49	A	49	56	49	49	72													X	A	53	52		
																						71	68			
18	A	43	47	48	48	48															X	77	68	54	A	
																						78				
19		48	45	48	45	49	48														X	X	A	56	53	
																						57	56			
20		53	52	40	40	35															X	59	63	63	60	
																						58				
21	A	A	A	50	51	52															X	X	60	57	53	
																						62	59			
22		52	52	50	X	A															X	X	X	A	X	
					39																	65	63	59		37
23	X	43	47	41	50	44															X	68	A	A	50	
																						74				
24		45	43	40	39	40	44														X	X	X	57	52	
																						67	66	58		
25	X	A	A	X																	X	X	X	X	X	
	42			40	41																	59	57	56	50	46
26	X	A	47	49	50	49															X	X	X	A	50	
	45																					71	62	60		
27	X	43	47	49	46	40															X	62	62	53	52	
	41																					65				
28		49	45	50	52	A															X	67	52	A	A	
																						76				
29		50	50	A	40	47	45														X	X	X	X	X	
																						66	71	60	49	48
30	X	X	X	X	X																X	X	A	X	X	
	47	43	40	42	36																	85	78		37	38
31	X	X	X	X	X																X	63	65	63	A	A
	38	38	38	38	39																					
	00	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	23	26	30	27	13	1	2													29	28	25	24	25	
MED	48	47	47	44	43	48	52	63													X	X	62	55	52	
UQ	52	51	49	49	48	49															X	72	63	63	58	
LQ	45	43	41	40	39	45															X	X	X	52	49	
																						63	60	58		

AUG. 1986

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986      FOF2 (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 24 sec in automatic operation										
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	40	A	A	A	A	35	A	50	59	57	A	A	A	52	53	A	54	51	53	63	64	44	F	A	
2	F	F	F	F	F	36	46	42	61	46	A	A	A	50	43	49	A	A	60	55	A	44	A	F	
3	F	F	F	F	F	35	40	48	A	58	51	50	46	A	49	46	A	51	55	A	F	F	F	F	
4	F	F	F	F	F	30	H	50	50	52	56	A	64	59	66	50	57	61	73	71	A	F	F	F	
5	F	F	F	F	F	29	37	42	61	54	A	A	A	A	55	53	49	47	50	59	F	F	F	F	
6	F	F	F	F	F	33	34	43	61	50	44	54	47	51	49	46	53	56	57	56	57	54	55	F	F
7	F	F	F	F	F	33	46	50	A	A	55	52	E G	43	47	43	44	43	A	53	64	F	F	F	A
8	F	A	A	F	F	F	A	F	53	A	A	52	57	57	47	45	45	51	57	67	69	F	F	F	
9	F	F	F	F	F	38	46	57	64	57	46	46	52	51	57	49	52	55	47	52	55	F	F	F	
10	F	F	F	F	F	F	F	A	A	43	53	52	54	53	56	56	57	55	47	50	F	F	F	F	
11	F	F	F	F	F	41	44	45	47	53	56	52	52	50	A	46	A	48	52	61	47	A	A	F	
12	A	A	F	F	A	33	A	A	A	51	A	A	A	A	49	A	C	A	A	F	F	F	F	F	
13	F	F	F	F	F	37	44	50	50	49	A	H	49	49	50	52	49	A	43	52	61	F	F	F	F
14	F	F	F	F	F	32	43	42	45	A	A	53	52	50	52	55	A	A	A	A	A	A	A	F	F
15	F	F	F	F	F	F	A	A	A	A	A	A	H	A	A	A	A	A	A	57	68	66	F	F	A
16	F	A	F	F	33	32	40	51	61	A	A	A	50	55	55	54	56	53	51	59	59	46	42	F	
17	F	A	F	F	F	51	62	58	56	A	A	A	A	A	51	50	54	61	70	65	F	A	F	F	
18	A	F	F	F	F	36	47	49	56	51	60	A	46	46	41	47	50	A	71	72	F	F	F	A	
19	F	F	F	F	F	F	50	57	56	56	52	55	50	50	52	54	56	54	52	51	50	A	F	F	
20	F	F	F	F	F	25	30	43	50	65	63	54	A	A	47	55	56	47	44	47	52	F	F	F	F
21	A	A	A	F	F	F	40	46	52	60	66	51	49	52	50	53	58	68	60	56	53	52	F	F	F
22	F	F	F	F	A	A	38	44	A	A	A	A	49	49	44	A	45	46	50	59	57	53	A	31	
23	F	F	F	F	F	29	35	42	47	A	A	55	53	56	50	55	56	57	61	68	59	F	A	A	F
24	F	F	F	F	F	F	48	51	48	54	53	56	58	64	54	56	54	55	54	61	60	52	F	F	
25	36	A	A	F	F	32	46	A	A	53	51	54	60	67	63	53	50	46	53	51	50	44	40		
26	39	A	F	F	F	52	49	51	51	56	51	47	54	49	A	A	A	54	65	56	54	A	F		
27	35	F	F	F	F	A	A	49	54	57	58	54	54	52	48	48	50	A	59	F	52	F	F	F	
28	F	F	F	F	A	A	A	47	A	A	A	53	42	46	49	53	58	66	70	61	45	F	A	A	
29	F	F	A	F	F	F	42	43	47	44	49	53	52	54	53	50	A	A	A	60	65	54	43	42	
30	41	37	34	36	30	34	44	A	51	58	57	55	52	64	66	58	57	64	67	79	72	A	31	32	
31	32	32	32	32	33	37	46	50	51	H	49	47	46	A	57	55	50	52	50	57	F	F	A	A	
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	13	10	11	9	8	20	24	25	25	20	20	20	24	25	29	26	22	23	27	28	19	14	5	5	
MED	37	37	34	32	32	34	44	50	51	54	54	52	52	52	52	52	54	53	54	60	57	52	43	40	
UQ	41	38	36	34	33	36	46	51	56	57	56	54	53	55	55	55	56	57	60	66	62	54	44	42	
LQ	36	33	32	32	30	32	41	46	49	50	52	50	49	50	49	49	49	50	52	56	54	46	42	32	

AUG. 1986      FOF2 (0.1 MHz)

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	370	A	A	A	A	420	A	A	390	A	A					
2						L	340	370	380	410		A	A	A	A	A	A	A	A					
3						L	370		A	A	430	430	420	A	400	400	A	A	A					
4							370		A	410	A	A	410	430	420	400	390	A	300					
5						L	A		A	A	A	A	A	A	A	A		L	L					
6						L	340	400							410	390								
7						L	340	370	400	420	420	430	430	430	420	380	A	360	L					
8						L	370		A	A	420	A	430	420	A	400	390	A	A					
9						A	A	A	A	A	A	A	430	430	L	400	A	A	A					
10						L	350	380	390	A	430	430	420	430	410	410	380	L	L					
11						A	A	A	A	A	A	430	410	420	410	400	380	350	L	L				
12						L	370		A	400	420	430	420	430	A	A	A	A	L					
13						A	A	A	A	A	A	A	A	A	A	A	C	A	A					
14						A	A	A	A	410	A	440	430	430	H	410	400	A	L	L				
15						L	320		A	A	A	A	A	A	A	A	A	A	A					
16						A	A	A	A	A	A	430	A	A	A	A	A	A	A					
17						L	A	A	A	A	A	A	A	420	420	400	360	340	L					
18						L	340		A	420	A	A	A	A	A	420	A	A						
19						L	L	A	A	410	A	A	430	410	410	400	A	A						
20						L	370		A	A	A	430	430	410	420	400	370	L						
21						L	A	A	A	A	A	A	A	410	400	400	380	L						
22						L	320		A	A	A	A	A	A	A	A	A	A	A					
23						A	A	A	A	A	A	430	430	410	420	400	380	A						
24						L	A		A	400	420	420	430	410	L	410	A	A	A					
25						A	A	A	A	A	A	420	420	410	A	390	A	L						
26						L	320	350	400	410	400	410	430	420	410	A	A	A						
27						A	A	390		A	A	A	A	A	410	400	L	A						
28						A	A	A	A	A	A	A	430	A	A	400	380	330						
29						L	A		A	410	410	420	420	420	A	A	A	A	A					
30						A	A		A	400	420	420	430	420	410	A	L	A						
31						L	A		A	390	L	420	420	A	A	A	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							8	11	9	12	10	16	20	19	17	19	12	7	1					
MED							340	370	390	410	420	430	430	420	410	400	380	340	300					
UQ							340	370	400	410	420	430	430	430	420	400	390	355						
LQ							320	370	380	400	420	420	420	410	410	400	380	335						

AUG. 1986

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation																							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	A	A	A	A	315	330	330	325	310	A	275	230	A					
2						S			A	A	A	A	A		A	300		A	A	S				
3						S	A	A	A	A	A	A	A	A	A	300	260		A	S				
4						S	A	A	A	A	A	A	A	A	A	A		270		A	S			
5						S	A	A					A	A	A	A	A	A	A	A				
6						S	A	A	A	A	A	A	A	A	A	300	265	235		S				
7						S	A	A							A	A	A	A	S					
8						S	A	A	A	A	A	A	A	A	A	300		230		S				
9						S	A	A	A	A	A	315		A	A	320		A	A	240				
10						S		A	280	305	A	A	A	A	A	A	260	240		A				
11						S			A	A	A	A	A	A	A	A	A	A	A	A				
12						S	A	A	A	A	A	A	A	A	A	300	I C	270		A	S			
13						S		A	A	A	A	A	A	A	330	A	300	275	230		A			
14						S	A	A	A	A	A	A	A	A	320	305		A	A	A				
15						S	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
16						S	A		A	A	A	A	A	A	A	A	A	A	A	A				
17						S	A	A	A	A	A	A	A	A	A	A	A	A		225		S		
18						S	A	A	A	A	A	A	A	A	A	300	255		A	S				
19						S	A	A	A	A	A	A	A	A	315		250		A	S				
20						S	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
21						S	A		A	A	A	A	A	A	A	A	A	A	A	S				
22						S	A		A	A	A	A	A	A	A	A	250	210		S				
23						S	A	A	A	A	A	A	A	A	A	A	A	210		S				
24						S	A		A	A	A	A	A	A	320	305	280	255	215		S			
25						S	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
26						S			A	A	A	A	A	A	A	280	255	210		S				
27						S	A		A	A	A	A	A	A	A	A	A	A	A	S				
28						S	A	A	A	A	A	A	A	A	A	A	A	A	A	S				
29						S		A	A	A	A	A	A	A	A	A	A	A	A	S				
30						S		A	A		A								A	S				
31						S			A	A	A	A	A	A	A	A	255	205		S				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						8	9	6	4	3	4	4	7	7	11	14	12							
MED						200	240	272	302	315	318	328	325	310	300	258	223							
UQ						202	250	280	305	318	325	330	330	318	300	270	232							
LQ						200	235	260	295	312	312	320	322	308	290	255	210							

AUG. 1986

FOE (0.01 MHz)



IONOSPHERIC DATA

AUG. 1986

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 24 sec in		automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 65	J A 84	J A 64	J A 50	J A 52	J A 24	J A 74	J A 42	36	J A 60	J A 76	J A 72	J A 72	39	J A 44	J A 64	J A 41	J A 54	J A 39	J A 30	J A 41	J A 64	J A 64	J A 52
2	J A 34	J A 26	J A 24	E S 15	E S 15	22	J A 41	J A 38	J A 40	J A 46	J A 65	J A 64	J A 66	J A 50	J A 54	J A 50	J A 70	J A 76	J A 41	J A 60	J A 77	J A 36	J A 96	J A 40
3	J A 20	E S 16	J A 23	J A 39	J A 18	J A 27	J A 30	J A 33	J A 74	J A 54	J A 35	J A 44	J A 44	J A 90	J A 36	J A 36	J A 46	J A 60	J A 54	J A 126	J A 87	J A 54	J A 96	J A 64
4	J A 20	J A 20	J A 20	J A 18	J A 23	J A 29	28	J A 36	J A 53	J A 46	J A 109	J A 95	J A 50	J A 54	J A 43	J A 54	36	J A 66	J A 64	J A 84	J A 102	J A 74	J A 53	J A 66
5	J A 52	J A 34	J A 36	J A 24	J A 24	J A 29	J A 28	J A 50	J A 46	J A 136	J A 52	J A 85	J A 26	J A 136	J A 109	J A 66	J A 103	J A 52	J A 36	J A 24	J A 128	J A 198	J A 100	J A 78
6	J A 50	J A 49	J A 19	J A 28	J A 18	J A 26	J A 36	J A 46	J A 50	J A 46	J A 47	J A 50	J A 40	J A 74	J A 51	G	J A 46	J A 36	J A 46	J A 53	J A 108	J A 73	J A 46	J A 50
7	J A 44	J A 50	J A 36	J A 23	E S 15	20	J A 38	J A 34	J A 56	J A 64	J A 36	J A 50	42	G	J A 54	J A 75	J A 97	J A 66	J A 77	J A 24	J A 44	J A 44	J A 50	J A 63
8	J A 64	J A 74	J A 52	J A 27	J A 50	J A 32	J A 70	J A 47	J A 54	J A 72	J A 88	J A 66	J A 48	J A 47	J A 65	J A 36	J A 50	J A 41	J A 52	J A 44	J A 32	J A 73	J A 41	J A 18
9	J A 28	J A 20	J A 20	J A 21	E S 15	J A 21	22	J A 29	J A 35	J A 54	J A 46	G	J A 50	J A 64	J A 35	J A 38	J A 35	G	22	J A 29	J A 36	J A 64	J A 49	J A 49
10	E S 15	J A 43	J A 18	J A 24	J A 21	22	J A 38	J A 40	J A 47	J A 52	J A 54	J A 46	J A 50	J A 54	J A 36	J A 64	G	G	J A 25	J A 24	J A 29	J A 44	J A 32	J A 28
11	J A 40	J A 28	J A 26	J A 25	J A 18	E S 16	37	J A 42	J A 52	J A 42	35	J A 41	J A 42	J A 66	J A 59	J A 44	J A 48	J A 41	J A 132	J A 76	J A 64	J A 64	J A 87	J A 108
12	J A 85	J A 53	J A 42	J A 42	J A 44	J A 25	J A 46	J A 59	J A 88	J A 129	J A 61	J A 85	J A 69	J A 60	J A 50	J A 50	C	J A 87	J A 86	J A 132	J A 70	J A 50	J A 108	J A 36
13	J A 26	J A 20	J A 18	J A 27	E S 16	J A 84	J A 36	J A 44	J A 46	J A 50	J A 66	J A 50	J A 37	J A 30	J A 52	J A 29	J A 50	J A 31	J A 40	J A 46	J A 50	J A 84	J A 40	J A 35
14	J A 25	J A 50	J A 25	J A 20	J A 24	J A 32	J A 32	J A 34	J A 50	J A 115	J A 86	J A 76	J A 57	J A 53	J A 46	J A 54	J A 137	J A 92	J A 134	J A 122	J A 87	J A 108	J A 30	J A 29
15	J A 29	J A 29	J A 24	J A 25	J A 30	J A 27	J A 54	J A 53	J A 82	J A 88	J A 90	J A 47	J A 64	J A 66	J A 78	J A 58	J A 116	J A 65	J A 34	J A 26	J A 28	J A 56	J A 64	J A 65
16	J A 29	J A 76	J A 41	J A 29	J A 24	J A 20	J A 29	J A 46	J A 54	J A 80	J A 87	J A 70	J A 54	J A 44	J A 65	J A 54	J A 54	J A 24	J A 29	J A 52	J A 31	J A 32	J A 84	J A 80
17	J A 49	J A 82	J A 34	J A 40	J A 40	20	J A 29	J A 48	J A 45	J A 54	J A 75	J A 104	J A 78	J A 70	J A 57	J A 38	J A 46	J A 40	J A 23	J A 25	J A 76	J A 64	J A 63	J A 44
18	J A 50	J A 31	J A 24	J A 25	J A 20	J A 26	J A 36	J A 44	J A 52	J A 65	J A 54	J A 66	J A 62	J A 49	J A 50	J A 39	J A 54	J A 82	J A 106	J A 84	J A 54	J A 24	J A 30	J A 47
19	J A 26	J A 34	J A 24	J A 23	J A 22	J A 26	J A 38	J A 60	J A 86	J A 54	J A 74	J A 41	J A 42	J A 46	G	35	J A 31	J A 38	J A 86	J A 20	J A 40	J A 64	J A 47	J A 84
20	J A 41	J A 33	J A 18	E S 16	J A 26	J A 21	J A 26	J A 46	J A 46	J A 72	J A 50	J A 88	J A 57	J A 39	J A 41	J A 31	J A 30	J A 32	20	J A 24	J A 52	J A 84	J A 86	J A 84
21	J A 64	J A 76	J A 52	J A 29	J A 28	J A 44	J A 42	J A 37	35	J A 47	J A 44	J A 50	39	J A 51	J A 49	J A 43	J A 40	J A 44	J A 28	J A 19	J A 18	J A 29	J A 34	J A 42
22	J A 24	E S 15	J A 23	J A 18	J A 43	J A 36	J A 38	J A 32	J A 56	J A 46	J A 54	J A 48	J A 49	J A 47	J A 38	J A 41	J A 44	J A 31	J A 31	J A 24	J A 30	J A 29	J A 70	J A 34
23	J A 21	E S 16	E S 15	E S 15	E S 16	20	J A 32	J A 44	J A 54	J A 56	J A 72	J A 36	J A 46	J A 38	J A 44	J A 33	J A 30	J A 36	25	J A 30	J A 123	J A 76	J A 41	J A 51
24	J A 24	J A 24	J A 21	J A 29	J A 22	J A 27	25	J A 36	J A 44	33	J A 32	J A 43	J A 31	G	38	J A 50	J A 44	J A 42	J A 29	J A 52	J A 41	J A 30	J A 61	
25	J A 32	J A 53	J A 44	J A 33	J A 24	J A 24	J A 43	J A 54	J A 46	J A 56	J A 46	J A 44	J A 41	J A 46	J A 54	J A 46	J A 54	J A 29	22	E S 16	E S 16	J A 29	J A 56	J A 34
26	J A 65	J A 44	J A 26	J A 43	J A 30	J A 24	G	J A 32	J A 41	J A 51	J A 54	J A 38	J A 37	J A 41	J A 74	J A 54	J A 124	J A 84	J A 172	J A 53	J A 112	J A 51	J A 53	J A 42
27	J A 26	J A 44	J A 29	J A 44	J A 25	J A 24	J A 44	J A 48	J A 44	J A 50	J A 52	J A 55	J A 76	J A 60	J A 60	J A 33	J A 33	J A 36	J A 66	J A 66	J A 64	J A 84	J A 36	J A 64
28	J A 70	J A 52	J A 24	J A 34	J A 54	J A 34	J A 46	J A 65	J A 128	J A 154	J A 130	J A 67	J A 50	J A 204	J A 86	J A 37	J A 33	J A 44	J A 44	J A 44	J A 64	J A 53	J A 42	J A 76
29	J A 24	J A 85	J A 24	J A 64	J A 34	J A 21	G	J A 41	J A 46	J A 36	J A 36	J A 40	J A 54	J A 41	J A 54	J A 66	J A 65	J A 66	J A 65	J A 38	J A 24	J A 16	J A 24	J A 20
30	E S 15	E S 15	J A 24	J A 25	J A 18	J A 20	J A 40	J A 85	J A 57	J A 46	J A 36	J A 40	G	40	J A 41	J A 38	J A 44	J A 37	J A 52	J A 32	J A 41	J A 24	J A 16	
31	E S 16	J A 25	J A 21	J A 20	J A 22	E S 16	G	J A 32	J A 32	J A 32	J A 34	J A 35	J A 45	J A 61	J A 54	J A 65	J A 64	J A 52	J A 46	J A 79	J A 50	J A 50	J A 76	J A 36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31
MED	J A 29	J A 34	J A 24	J A 25	J A 24	J A 24	J A 36	J A 44	J A 50	J A 54	J A 54	J A 50	J A 50	J A 50	J A 51	J A 43	J A 47	J A 44	J A 42	J A 44	J A 52	J A 54	J A 50	J A 49
UQ	J A 50	J A 52	J A 33	J A 34	J A 30	J A 28	J A 42	J A 48	J A 55	J A 63	J A 74	J A 68	J A 60	J A 62	J A 53	J A 54	J A 64	J A 66	J A 66	J A 63	J A 76	J A 73	J A 73	J A 64
LQ	J A 24	J A 24	J A 21	J A 22	J A 13	J A 21	J A 28	J A 35	J A 44	J A 46	J A 45	J A 41	J A 42	J A 41	J A 42	J A 36	J A 36	J A 30	J A 24	J A 32	J A 41	J A 38	J A 36	

AUG. 1986

FOES (0.1 MHZ)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	29	A A 84	A A 64	A A 50	A A 52	19	A A 74	39	32	45	A A 76	A A 72	A A 72	37	43	A A 64	34	48	33	23	23	32	E S 15	A A 52	
2	22	E S 15	E S 15	E S 15	E S 15	18	25	30	30	35	A A 65	A A 64	A A 66	47	42	42	A A 70	A A 76	34	50	A A 77	20	A A 96	22	
3	E S 15	E S 16	E S 15	E S 15	E S 15	20	28	28	A A 74	48	35	40	37	A A 90	36	34	A A 46	42	43	A A 126	41	30	18	E S 15	
4	E S 15	E S 15	E S 15	E S 15	E S 15	27	25	30	40	35	42	A A 95	35	35	35	35	36	42	21	51	A A 102	E S 15	E S 15	32	
5	40	20	19	E S 15	E S 15	20	23	40	33	A A 136	45	A A 85	A A 96	A A 136	37	41	32	25	21	E S 16	E S 15	25	23	E S 15	
6	30	E S 15	E S 15	E S 15	E S 15	18	25	30	32	34	40	35	35	35	34	G	40	30	25	20	20	20	E S 15	30	
7	24	29	21	E S 15	E S 15	19	31	31	A A 56	A A 64	35	50	38	G	43	37	34	A A 66	36	19	25	33	E S 15	A A 63	
8	E S 15	A A 74	A A 52	22	E S 15	22	A A 70	41	46	A A 72	A A 88	43	38	40	35	34	40	36	31	21	20	25	18	E S 15	
9	E S 16	E S 15	E S 15	E S 15	E S 15	17	22	28	31	41	35	G	36	35	35	32	30	G	21	20	20	38	22	28	
10	E S 15	21	E S 15	E S 15	E S 15	18	34	38	46	A A 52	43	41	38	35	35	32	G	G	21	E S 15	25	E S 15	E S 15	E S 15	
11	19	18	E S 15	E S 15	E S 15	E S 16	24	33	43	33	35	35	39	38	A A 59	40	A A 48	26	22	45	30	A A 64	A A 87	E S 15	
12	A A 85	A A 53	19	E S 15	A A 44	22	A A 46	A A 59	A A 88	45	A A 61	A A 85	A A 69	A A 60	43	A A 50	C	A A 87	A A 86	33	31	26	E S 15	18	
13	E S 15	E S 15	E S 15	E S 15	E S 16	18	35	38	43	37	A A 66	41	36	29	G	23	G	A A 50	28	23	35	26	22	E S 15	E S 15
14	E S 15	25	E S 15	E S 15	E S 15	17	23	22	33	40	A A 115	A A 86	46	44	44	44	43	A A 137	A A 92	A A 134	A A 122	A A 87	A A 108	25	23
15	E S 15	E S 15	E S 15	21	23	23	A A 54	A A 53	A A 82	A A 88	A A 90	37	A A 64	A A 66	A A 73	A A 58	A A 116	A A 65	32	22	22	33	E S 15	A A 65	
16	E S 15	A A 76	23	18	E S 15	E S 16	26	43	45	A A 80	A A 87	A A 70	47	35	36	33	31	23	23	45	30	24	E S 15	18	
17	20	A A 82	18	23	E S 15	E S 15	25	48	40	40	A A 75	A A 104	A A 78	A A 70	42	34	44	37	21	25	42	A A 64	28	23	
18	A A 50	25	23	E S 15	E S 15	E S 15	31	30	40	36	45	A A 66	36	34	37	35	45	A A 82	22	30	20	E S 15	20	A A 47	
19	20	18	E S 15	E S 15	E S 15	24	31	34	52	42	43	35	36	37	G	32	30	26	30	E S 15	E S 15	A A 64	21	E S 15	
20	23	18	E S 15	E S 16	18	18	25	43	41	42	46	A A 88	A A 57	37	37	30	28	24	19	20	44	E S 15	27	E S 15	
21	A A 64	A A 76	A A 52	A A 15	25	25	25	30	31	35	43	40	36	45	38	34	36	41	23	E S 16	E S 15	E S 15	23	E S 15	
22	E S 15	E S 15	20	E S 15	A A 43	A A 36	28	31	A A 56	A A 46	A A 54	A A 48	37	44	34	A A 41	42	29	30	20	21	24	A A 70	21	
23	E S 15	E S 16	E S 15	E S 15	E S 16	E S 16	30	37	43	A A 56	A A 72	34	40	35	35	32	29	32	23	30	20	A A 76	A A 41	E S 15	
24	E S 15	E S 15	E S 15	E S 15	E S 15	18	25	33	40	32	31	32	36	G	G	34	45	36	40	28	33	41	27	20	
25	27	A A 53	A A 44	24	E S 15	E S 15	37	A A 54	45	A A 56	45	40	35	37	42	34	43	25	20	E S 16	E S 16	28	20	28	
26	E S 15	A A 44	E S 15	20	E S 15	E S 16	G	31	37	32	34	35	36	35	37	A A 54	A A 124	A A 84	18	30	28	32	A A 53	30	
27	E S 15	23	E S 15	20	E S 15	E S 15	A A 44	A A 46	37	47	51	44	44	43	35	30	28	34	A A 66	35	20	E S 15	19	23	
28	E S 15	25	E S 15	20	A A 54	A A 34	A A 46	42	A A 128	A A 154	46	A A 67	39	42	43	33	32	25	38	42	35	29	A A 42	A A 76	
29	E S 16	E S 15	A A 84	A A 15	E S 15	E S 15	G	28	44	34	34	35	37	33	45	47	A A 65	A A 66	A A 65	25	20	E S 16	21	E S 15	
30	E S 15	E S 15	22	E S 15	E S 15	E S 15	A A 38	A A 85	43	35	35	35	G	36	35	41	34	40	37	35	30	A A 41	E S 16	E S 16	
31	E S 16	19	19	E S 15	18	E S 16	G	30	31	31	33	35	42	A A 61	49	53	39	43	19	32	25	35	A A 76	A A 36	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	
MED	E S 16	19	E S 15	E S 15	E S 15	18	28	34	43	42	45	41	38	37	37	34	40	36	25	28	25	28	21	21	
UQ	24	36	22	19	18	22	36	42	46	A A 56	A A 66	A A 66	46	44	43	42	A A 46	56	36	35	32	36	28	30	
LQ	E S 15	E S 15	E S 15	E S 15	E S 15	E S 16	25	30	37	35	35	35	36	35	35	32	32	26	21	20	20	20	E S 15	E S 15	

The Radio Research Laboratory, Japan

AUG. 1986

FBES (0.1 MHz)

# IONOSPHERIC DATA

AUG. 1986

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

AUG. 1986

FMIN (0.1 MHz)



### IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	320	A	A	A	A	340	A	320	335	345	A	A	A	305	305	A	325	A	325	315	345	345	F	A	
2	F	F	F	F	F	320	335	245	355	365	A	A	A	300	290	290	A	A	345	330	A	300	A	F	
3	F	F	F	F	F	350	340	320	A	350	335	345	255	A	325	300	A	310	305	A	F	F	F	F	
4	F	F	F	F	F	305	340	345	315	345	340	A	310	300	320	290	305	305	310	330	A	310	F	F	
5	F	F	F	F	F	315	350	310	345	330	A	340	A	A	A	335	320	330	305	300	320	F	F	F	
6	F	F	F	F	F	310	300	300	355	340	285	330	280	300	290	270	290	315	335	345	305	315	305	F	F
7	F	F	F	F	F	305	310	330	A	A	345	A	G	295	305	280	280	A	300	310	F	F	F	A	
8	F	A	A	F	F	F	A	F	335	A	A	305	305	335	320	290	285	315	305	315	345	F	F	F	
9	F	F	F	F	F	340	320	330	340	365	295	270	315	285	320	305	305	340	340	305	310	F	F	F	
10	F	F	F	F	F	F	F	F	355	350	A	300	320	300	315	300	320	325	340	350	320	310	F	F	F
11	F	F	F	F	F	345	330	305	A	320	350	325	325	325	A	325	A	310	310	330	325	A	A	F	
12	A	A	F	F	A	335	A	A	A	340	A	A	A	A	320	A	C	A	A	F	F	F	F	F	
13	F	F	F	F	F	330	340	330	355	355	345	A	H	295	310	310	310	A	320	305	310	F	F	F	
14	F	F	F	F	F	315	350	340	A	A	A	325	305	320	305	320	A	A	A	A	A	A	F	F	
15	F	F	F	F	F	F	A	A	A	A	A	A	H	A	A	A	A	A	A	315	330	335	F	F	A
16	F	A	F	F	355	360	310	335	375	A	A	A	295	310	320	310	330	330	315	325	335	330	315	F	
17	F	A	F	F	F	F	320	355	360	340	A	A	A	A	325	305	310	325	320	340	F	A	F	F	
18	A	F	F	F	F	340	345	335	350	335	360	A	305	310	G	290	300	A	320	340	F	F	F	A	
19	F	F	F	F	F	F	340	355	345	355	330	340	310	300	300	325	340	350	355	325	290	A	F	F	
20	F	F	F	F	F	335	285	305	320	355	340	350	A	A	295	325	340	330	340	335	325	F	F	F	
21	A	A	A	F	F	F	355	305	330	320	360	335	325	305	300	305	315	340	345	315	295	290	F	F	
22	F	F	F	F	A	A	340	330	A	A	A	A	300	320	305	A	310	295	300	315	315	345	A	290	
23	295	335	F	F	F	325	335	305	310	A	A	325	330	340	285	320	320	320	315	325	350	F	A	F	
24	F	F	F	F	F	F	345	350	330	330	315	315	320	355	315	320	325	325	310	325	335	325	F	F	
25	325	A	A	295	F	310	340	A	A	A	330	310	280	300	330	345	335	340	330	315	315	325	305	300	
26	310	A	E	F	F	F	350	325	335	385	345	330	290	310	330	A	A	A	315	320	335	340	A	F	
27	325	F	F	F	F	F	355	A	A	310	325	335	320	340	300	350	330	320	325	A	320	F	F	F	
28	F	F	F	F	A	A	A	330	A	A	315	A	345	320	280	300	320	325	335	340	330	335	F	A	A
29	F	F	A	F	F	F	355	360	345	305	290	325	305	310	315	350	A	A	A	300	330	335	285	300	
30	310	310	300	335	345	350	345	A	320	345	335	330	295	330	350	345	320	310	310	330	325	A	310	310	
31	315	305	225	320	330	360	340	310	350	300	345	295	260	A	335	A	345	335	320	315	340	F	F	A	A
CNT	13	10	11	9	8	20	24	25	22	20	20	19	24	25	22	25	22	22	27	28	19	14	5	5	
MED	320	310	F	F	310	330	340	340	330	340	340	335	320	305	310	315	310	320	325	315	320	330	332	305	300
UQ	F	F	F	F	340	350	345	350	350	348	345	328	318	320	325	325	330	340	335	330	338	345	F	310	310
LQ	310	310	F	F	305	312	312	320	320	330	322	322	308	295	300	300	300	310	310	310	315	315	310	305	300

The Radio Research Laboratory, Japan

AUG. 1986

M(3000)F2 (0.01)



### IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation															
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1								A	A	390	A	A	A	A	395	A	A	380	A	A								
2						L		380	410	430	395		A	A	A	A	A	A	A	A								
3								L			A	A							A	A	A							
4											395		420		430		420	400										
5											A	405	A	A	410	370	385	375		A	A	370						
6								L			A		A	A	A	A	375	A										
7											375	370	390	420	A	415	400	390	400	375	A	370	L					
8								L			380		A	A	405		400	420		375	360		A	A				
9											A	A	A	A	A		395	375	L									
10								L			370	375	405	A	395	435	430	360	390	380	395							
11											A	A	A	A	A		425	390	395	375	375	375	L	L				
12								L			A	A	A	395	370	410	420	410	A	A	A	400	L					
13											A	A	A	A	A	A	A	A	A	C	A	A						
14											A	A	A	390	A	A	385	380	395	370	A	370	L					
15											385	L	A	A	A	A	A	A	A	A	A	A	A	A				
16													390															
17								L			A	A	A	A	A	A	400	370	360	390	390	L						
18											350		A	A	A	A	A	A	350		A	A						
19								L			L	L	A	380	A	A	415	425	380	375		A	A					
20											L	A	A	A	A	410	420	415	380	375	375		L					
21											360						380	A	370	385		L						
22																												
23																												
24																												
25																												
26																												
27																												
28																												
29																												
30																												
31																												
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT							8	9	9	11	9	11	19	18	15	19	10	6	1									
MED							375	380	395	395	405	400	400	390	380	375	375	372	370									
UQ							382	400	405	408	410	410	420	410	392	378	385	390										
LQ							365	375	390	385	395	390	382	380	372	362	370	370										

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M(3000)F1 (0.01)

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### IONOSPHERIC DATA

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H<sup>o</sup>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 24 sec		in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	295	290	280	A	A	A	360	350	A	310	A	280					
2						300	280	590	250	275	A	A	A	A	400	380	A	A	255					
3							270	320	A	270	305	320	555	A	345	400	A	340	A	320				
4								285	320	295	300	A	315	345	300	375	340	320	280					
5							350	270	320	A	300	A	A	A	300	330	310	250	295					
6							370	250	305	460	365	450	370	390	495	380	310	275	260					
7							310	295	A	A	295	A	G	405	365	455	465	A	305					
8							A	A	300	A	A	355	345	305	340	415	400	320	305					
9							320	290	275	260	400	480	355	405	310	340	345	270						
10							350	240	A	A	380	325	380	340	365	315	295	275	245					
11							260	360	A	330	290	320	330	330	A	335	A	330	290					
12							A	A	A	300	A	A	A	A	340	A	C	A	A					
13							A	280	270	280	290	A	360	395	360	340	340	A	295	290				
14							260	290	A	A	A	320	360	340	350	310	A	A	A					
15							A	A	A	A	A	365	A	A	A	A	A	A	295					
16							350	295	230	A	A	A	A	345	320	320	290	275	270					
17							310	A	265	295	A	A	A	A	335	355	330	280						
18							270	265	285	310	275	A	400	370	G	400	A	A						
19							260	250	A	265	305	300	355	375	370	310	280	260						
20							350	320	250	290	290	A	A	405	320	280	300	255						
21								355	275	310	250	310	340	350	370	345	320	255						
22								300	A	A	A	A	375	345	380	A	A	340	300					
23								360	340	A	A	300	300	305	400	320	300	300						
24								250	300	310	345	330	320	260	320	310	300	280	A					
25								275	A	A	A	320	350	400	335	290	260	290	270					
26								255	255	320	245	295	320	410	340	310	A	A	A					
27								A	345	310	A	310	300	365	275	310	300	275						
28							A	300	A	A	380	A	295	345	410	360	320	280						
29								250	300	390	405	330	350	350	340	A	A	A	A					
30								A	325	270	300	300	355	300	260	275	300	280						
31								280	270	310	300	400	540	A	300	A	270	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	17	24	20	20	19	19	23	24	29	24	20	21	14					
MED						300	280	290	295	295	300	325	355	345	340	338	305	280	290					
UQ						350	310	320	310	355	358	398	368	370	378	325	300	300						
LQ						270	260	272	272	295	315	335	338	310	310	298	270	270						

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H<sup>o</sup>F2 (KM)

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# IONOSPHERIC DATA

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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 24 sec in automatic operation																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A	A	A	A	A	250	A	A	225	A	A	A	A	210	A	A	A	A	A	255	225	A	240	A	
2	A	255	280	260	275	235	225	195	200	210	A	A	A	A	A	A	A	A	A	A	A	270	A	A	
3	260	245	230	250	215	225	A	225	A	A	200	A	220	A	200	220	A	A	A	A	A	250	255		
4	240	245	270	245	230	A	235	235	A	210	A	A	200	210	205	230	A	A	240	A	A	245	270	A	
5	A	A	245	220	270	255	200	A	225	A	A	A	A	A	A	A	205	230	250	250	230	A	A	250	
6	A	250	255	260	260	245	220	230	205	200	A	200	200	220	220	235	A	230	A	255	250	245	235	A	
7	A	A	A	250	275	240	A	225	A	A	200	A	215	200	A	A	A	A	A	250	A	A	195	A	
8	270	A	A	A	260	A	A	A	A	A	A	A	205	A	215	205	A	A	A	250	220	225	230	240	
9	260	270	275	280	230	225	225	220	210	A	200	195	200	235	200	220	205	225	220	255	275	A	A	A	
10	220	255	220	225	280	240	A	A	A	A	A	A	205	200	220	210	220	220	220	225	250	245	260	235	
11	260	260	240	250	220	230	235	A	A	200	240	200	200	210	A	A	A	200	225	A	A	A	A	295	
12	A	A	A	280	A	A	A	A	A	A	A	A	A	A	A	A	C	A	A	A	A	A	230	240	
13	255	250	250	265	260	250	A	A	A	A	A	A	210	200	200	220	A	230	255	A	A	A	240	240	
14	275	A	250	260	265	A	235	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
15	280	275	E S 290	A	A	A	A	A	A	A	A	A	230	A	A	A	A	A	A	225	220	A	245	A	
16	245	A	A	250	240	230	240	A	A	A	A	A	A	220	220	210	220	230	A	A	240	A	265	260	
17	235	A	275	A	250	240	230	A	A	A	A	A	A	A	A	A	A	A	240	220	A	A	A	A	
18	A	A	A	260	250	240	A	210	A	225	A	A	200	210	A	A	A	A	255	230	240	215	240	A	
19	225	250	255	270	230	255	A	A	A	A	A	200	200	200	200	220	230	A	230	220	270	A	270	275	
20	A	245	245	260	290	275	240	A	A	A	A	A	A	A	A	220	210	225	240	245	A	260	A	250	
21	A	A	A	275	A	250	240	240	210	215	A	A	220	A	A	220	A	A	240	240	270	275	A	250	
22	290	270	260	280	A	A	A	245	220	A	A	A	200	A	225	A	A	A	A	260	245	220	A	A	
23	295	240	280	250	230	250	A	A	A	A	A	205	A	205	220	210	240	A	275	240	220	A	A	260	
24	290	290	290	300	285	270	225	A	A	200	200	200	220	205	240	240	A	A	A	245	245	A	A	260	
25	A	A	A	A	280	280	A	A	A	A	A	A	220	A	A	220	A	230	250	250	240	245	255	A	
26	255	A	250	250	260	255	235	220	225	205	200	220	200	240	A	A	A	A	245	255	240	A	A	A	
27	250	A	270	275	225	225	A	A	A	A	A	A	A	A	A	205	230	A	A	A	250	220	250	A	
28	280	A	280	245	A	A	A	A	A	A	A	A	A	A	A	225	A	230	250	235	230	A	A	A	
29	290	E S 320	A	E S 310	240	220	210	230	A	200	200	220	A	210	A	A	A	A	A	270	240	215	285	280	
30	260	275	A	250	225	235	A	A	A	210	215	225	225	220	225	A	A	A	A	240	200	A	270	250	
31	290	E A 300	E A 300	265	260	220	220	230	220	200	200	200	A	A	A	A	A	A	255	A	240	215	A	A	
CNT	21	18	22	26	25	25	16	12	8	12	9	11	17	16	13	16	8	10	16	21	22	14	19	15	
MED	260	255	255	260	260	240	232	225	215	205	200	200	205	210	220	220	220	230	242	245	240	245	250	250	
UQ	280	272	278	272	270	250	238	230	225	210	200	220	220	220	220	222	230	230	252	255	250	250	270	260	
LQ	250	250	245	250	230	230	222	220	208	200	200	200	200	202	200	210	208	225	235	235	230	220	240	245	

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H\*F (KM)

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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 24 sec in		automatic operation			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1						S	A	105	105	105	105	100	105	105	105	105	105	105	A										
2						S	110	110	105	105	105	105	105	105	105	105	110	110		S									
3						S	S	105	A	A	A	A	A	A	A	A	105	A	S										
4						S	115	105	105	105	105		A	A	A	A	A	110	110		S								
5						S	110	110	110	110	105	105	105	105	105	A	A	A	110										
6						S	110	105	105	100	100	100	A	A	100	105	105	110		S									
7						S	110	110	105	105	105	105	105	105	110	105	105	A	S										
8						S	110	110	105	105	105	105	105	A	A	105	110	110		S									
9						S	110	A	A	A	A	110	A	A	105	A	A	100		S									
10						S	110	105	105	105	105	105	105	105	105	105	105	105		S									
11						S	S	110	105	A	100	105	105	105	105	110	110	105	A										
12						S	110	105	105	105	105	105	A	A	110	105	110	110	I C	S									
13						S	S	110	105	105	A	A	A	A	A	110	110	110		S									
14						S	A	A	A	100	105	105	105	105	105	110	110	110		S									
15						S	A	110	105	100	105	A	A	A	A	A	105	105		S									
16						S	S	110	105	105	105	105	105	105	105	A	A	A	A										
17						S	S	105	105	105	A	A	A	A	A	A	A	105		S									
18						S	S	105	105	A	A	A	A	A	A	105	105	110		S									
19						S	S	110	105	105	105	A	105	105	105	105	105	110		S									
20						S	115	110	105	110	105	105	105	105	105	105	A	A	S										
21						S	S	105	105	105	105	105	110	105	105	100	A	105		S									
22						S	S	110	105	105	A	A	A	A	100	A	105	115		S									
23						S	S	110	110	105	105	105	105	A	A	105	110	110		S									
24						S	S	110	105	105	105	105	A	A	105	105	110	110		S									
25						S	S	110	110	105	105	105	105	105	105	105	A	A	S										
26						S	S	105	105	105	105	105	105	105	105	105	110	110		S									
27						S	110	110	105	105	105	105	105	A	A	A	A	A	S										
28						S	S	110	110	110	110	105	105	105	110	105	110		S	S									
29						S	S	110	110	105	105	A	A	A	A	A	A	A	S										
30						S	S	110	110	105	100	105	100	110	105	105	110	110		S									
31						S	110	105	105	105	105	105	105	100	105	105	105		S	S									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT							12	29	28	27	25	22	19	16	21	21	22	21	1										
MED							110	110	105	105	105	105	105	105	105	105	110	110	110										
UQ							110	110	105	105	105	105	105	105	105	105	110	110											
LQ							110	105	105	105	105	105	105	105	105	105	105	105											

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H'E (KM)



# IONOSPHERIC DATA

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H°ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	AKITA																							Lat.	39° 43' S		N	Long.	140° 08' 0		E	Sweep	1		MHz to	25		MHz in	24		sec in	automatic operation		
	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	105	100	100	105	105	100	100	105	110	120	110	115	120	130	135	120	135	130	130	100	110	110	110	105																				
2	100	105	105	S	S	125	120	115	120	105	105	105	105	130	130	125	110	110	110	105	105	110	105	105																				
3	105	S	120	105	110	105	105	105	100	100	105	100	100	95	100	140	120	120	110	110	110	105	105	105																				
4	100	100	100	120	125	120	120	110	110	110	105	100	100	100	100	100	130	115	110	110	110	105	105	105																				
5	100	105	100	100	100	100	110	115	115	110	110	110	105	105	105	105	110	100	120	110	110	110	105	105																				
6	105	105	105	105	100	120	115	110	110	110	105	105	100	125	120	G	125	115	115	110	110	110	105	100																				
7	100	100	95	95	S	130	115	125	115	110	115	110	110	G	110	110	110	105	105	105	105	110	110	105																				
8	105	100	100	100	100	105	110	110	110	110	105	105	105	100	100	140	120	115	110	105	105	105	100	100																				
9	100	100	100	100	S	110	120	105	105	100	100	G	125	120	145	100	100	G	125	110	110	105	105	105																				
10	S	105	100	105	105	145	120	120	110	110	110	105	105	105	110	105	G	G	120	100	100	110	105	105																				
11	100	100	100	100	100	S	135	120	110	100	120	110	110	110	105	115	115	130	105	105	105	105	110	105																				
12	105	100	105	105	105	135	120	110	110	110	105	105	100	105	110	125	C	110	110	110	110	105	105	100																				
13	100	100	95	100	S	105	120	110	110	105	100	95	95	100	100	100	115	115	110	110	110	110	105	105																				
14	100	100	105	105	100	100	100	155	110	110	105	110	110	110	120	115	110	110	110	105	105	105	100	100																				
15	100	120	100	95	95	95	110	110	105	105	105	100	100	100	95	95	105	105	105	105	105	110	105	105																				
16	105	100	100	100	100	100	120	110	110	105	105	105	105	110	105	105	100	105	100	100	100	100	110	105																				
17	105	105	110	105	110	130	115	110	105	110	100	100	100	100	100	100	100	115	105	100	105	105	105	100																				
18	100	100	100	100	100	120	110	105	105	100	100	100	100	100	100	105	140	120	115	110	105	105	100	100																				
19	100	100	100	100	105	120	110	110	110	110	105	105	105	105	G	110	130	115	110	110	110	110	105	105																				
20	100	100	105	S	120	130	120	110	110	110	110	105	105	110	105	105	105	105	105	120	100	110	110	105																				
21	105	105	105	105	115	115	115	120	120	120	120	115	110	110	110	110	115	115	120	100	100	110	110	105																				
22	105	S	125	120	120	115	110	110	110	110	105	100	100	100	140	130	120	130	120	100	105	105	105	105																				
23	115	S	S	S	S	130	120	120	110	110	105	110	105	105	105	110	110	130	120	110	110	110	110	110																				
24	110	110	110	105	100	100	120	115	110	120	105	105	100	100	G	140	120	125	110	110	105	105	105	105																				
25	105	105	105	100	105	105	120	115	115	110	110	105	105	105	105	105	105	105	110	S	S	110	110	100																				
26	105	105	105	105	100	95	G	120	110	110	110	110	110	110	140	130	120	120	115	120	115	110	110	110																				
27	110	100	100	100	100	105	120	110	110	110	105	105	105	100	100	100	100	100	125	120	110	110	110	105																				
28	105	100	100	100	100	105	120	110	110	110	110	105	110	110	120	120	120	110	110	110	105	105	100	100																				
29	110	105	105	100	105	120	G	110	110	110	110	100	100	100	100	100	100	95	95	100	100	S	110	110																				
30	S	S	125	130	125	130	120	120	110	120	125	110	G	145	145	140	135	125	120	100	100	100	105	S																				
31	S	130	125	120	115	S	G	120	110	110	110	110	145	140	135	130	125	115	110	110	110	105	105	100																				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																				
CNT	28	27	30	28	26	29	28	31	31	31	31	30	30	30	29	30	29	29	31	30	30	30	31	30																				
MED	105	100	102	102	105	115	120	110	110	110	105	105	105	105	105	110	115	115	110	105	105	108	105	105																				
UQ	105	105	105	105	110	125	120	120	110	110	110	110	110	110	120	130	120	120	120	110	110	110	110	105																				
LQ	100	100	100	100	100	105	110	110	110	108	105	100	100	100	100	105	110	110	110	105	105	105	105	100																				

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H°ES (KM)

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# IONOSPHERIC DATA

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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 24 sec in automatic operation									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F4	F3	F7	F4	F5	L3	L4	C4	C2	C2	C3	C2	C2	C1	H2	C4	H2	C3	CL6	F2	F5	F4	F2	F3
2	F2	F2	F2			C3	C3	C3	C1	C2	C3	CH1	C2	C2	C2	C2	C4	C3	C7	F4	F5	F2	F3	F4
3	F2		F1	F2	F1	L2	C4	C3	L4	L3	L1	L2	L2	L4	L3	HL12	CL3	CL4	CL6	FF3	F3	F4	F3	F2
4	F2	F2	F1	F1	F1	C4	C2	C2	C2	C2	C2	L3	L2	L2	L2	L3	C2	C2	C2	F2	F3	F2	F2	F3
5	F4	F4	F3	F2	F2	L2	C1	C3	C1	C4	C2	C3	C3	C3	C2	L2	CL2	L2	C1	F1	F2	F4	F3	F3
6	F5	F3	F2	F1	F1	C2	C3	C3	C2	C1	C2	C1	L2	CL12	C1		C3	C3	C3	F3	F4	F3	F3	F3
7	F2	F4	F2	F2		C2	C3	C2	C4	C3	C1	C2	C1		C2	C2	C2	L3	L3	F2	F4	F7	F2	F5
8	F3	F4	F7	F4	F2	L3	C5	C4	C3	C3	C3	C2	C2	L2	L1	H1	C2	C3	C3	F3	F2	F3	F3	F2
9	F2	F1	F1	F1		C1	C1	L2	L2	L2	L2		CL11	CL11	H1	L2	L3		C2	F3	F6	F5	F5	F4
10		F4	F2	F1	F2	H1	C4	C3	C2	C2	C2	C2	C2	C2	C1	C1			C2	F2	F3	F2	F2	F2
11	F3	F2	F2	F1	F1		HL21	C3	C3	LC11	C1	C1	C2	C2	C3	C2	C1	C1	L2	F3	F3	F7	F3	F3
12	F3	F3	F3	F2	F4	HC21	C6	C4	C3	C3	C4	C3	L4	L4	C3	C2		C3	C4	F3	F5	F2	F2	F2
13	F2	F2	F1	F2		L1	C4	C3	C2	C2	L2	L3	L3	L1	LC21	L1	C2	C2	C2	F3	F2	F2	F2	F2
14	F5	F4	F2	F2	F2	L3	L3	HL22	CL32	C4	C3	C2	C3	C2	C2	C3	C5	C5	C4	F4	F4	F4	F7	F3
15	F2	FF22	F2	F3	F3	L2	CL32	C3	C5	C4	C3	L2	L3	L4	L4	L4	C4	C4	C5	F3	F4	F5	F2	F5
16	F2	F4	F3	F2	F2	L1	CL31	CL31	C3	C4	C4	C3	C2	C1	C2	L2	L4	L2	L4	F3	F3	F2	F2	F2
17	F3	F4	F2	F2	F3	C1	C2	C4	C3	C2	L4	L3	L3	L3	L3	L3	L3	C2	L3	F4	F5	F4	F4	F3
18	F3	F5	F5	F2	F2	C1	C6	C2	C3	L3	L2	L2	L2	L2	L2	H2	C3	C6	C3	F2	F2	F3	F2	F5
19	F4	F2	F2	F2	F1	C4	C3	C3	C3	C2	C2	L1	C2	C1		C2	C2	C3	C3	F1	F3	F6	F4	F4
20	F4	F4	F2		F2	C2	C2	C3	C3	C2	C2	C2	C3	C2	C2	C2	L2	L1	C2	F2	F4	F4	F3	F3
21	F4	F3	F4	F2	F2	C3	C2	C3	C2	C2	C2	C2	C1	C2	C2	C1	CL22	C3	CL22	F2	F2	F3	F3	F2
22	F1		F2	F2	F4	C5	C4	C2	C3	C3	L2	L2	L2	L3	H1	CL23	C3	C3	C5	F4	F2	F2	F3	F3
23	F2					C1	C4	C4	C3	C3	C5	C1	C3	L2	L2	C2	C2	C4	C4	F6	F2	F3	F6	F2
24	F2	F2	F2	F2	F2	L5	C3	C3	C2	C2	C2	C1	L2	L1		H1	C2	C3	C4	F4	F4	F6	F4	F5
25	F7	F5	F4	F5	FF22	L2	C6	C5	C2	C3	C2	C3	C2	C2	C3	C2	L5	L3	C1			F2	F7	F5
26	F3	F6	F3	F3	F2	L1		C4	C2	C2	C1	C1	C1	C2	HC11	C3	C3	C3	C2	F6	F4	F3	F3	F4
27	F2	F3	F1	F2	F2	L1	C5	C3	C3	C2	C2	C2	C2	L3	L3	L2	L2	CL22	CL32	F2	F3	F1	F2	F2
28	F2	F3	F2	F3	F2	L2	C3	C4	C3	C3	C3	C2	C2	C3	C2	C1	C3	C2	C3	F4	F5	F3	F3	F3
29	F2	F3	F4	F3	F2	C1		C2	C3	C1	C1	L2	L2	L2	L2	L2	L4	L5	L4	F3	F2		F2	F2
30			F2	F2	F1	C1	C5	C4	C4	C1	C1	C1		H1	H1	H2	H2	C3	C5	F3	F2	F3	F1	
31		F3	F3	F2	F2			C3	C3	C2	C1	C1	H3	H3	H3	C5	C3	C6	C3	F4	F2	F2	F3	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratory, Japan

AUG. 1986

TYPES OF ES

# IONOSPHERIC DATA

AUG. 1986

FXI (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		ROKUBUNJI TOKYO												Lat. 35 42.4 N		Long. 139 29.3 E		Sweep 1 MHz to 20 MHz in 20 sec in		automatic operation					
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		X 46		S 41	X 32	A														S 19	X 67	A	A	A	
2		S	S		37	35	36														X 59	A 47	X 46	X 46	
3		4.0	4.1	S 35	X 37	Y 36															X 87	X 60	60	59	59
4		6.0	X 46	X 42	46	X 38				55											X 87	X 64	X 52	X 54	X 54
5		A	A	X 49	X 41	X 34															X 71	X 67	X 62	X 56	X 42
6		S	S		43	40	X 37														X 64	X 65	X 65	X 63	X 48
7		A	S	X 38	X 37	X 38															S 75			S	A
8		S	A	A	A	A															X 75	X 71	X 55	X 44	X 42
9		X 4.0	X 4.0	3.8	4.0	X 3.8															X 59	X 56	S	S	X 56
10		S	X 4.0	X 4.0	X 3.9	X 3.9															X 55	X 57	X 47	S	S
11		X 4.9	X 4.9	X 4.7	X 5.0	X 4.2															X 74	X 63	X 51	X 50	A
12		A	X 4.2	X 3.9	X 3.9	X 3.8															0 65	X 65	S	S	S
13		U 4.0	X 4.2	X 4.2	X 3.6	X 3.7															X 66	X 65	S	X 59	X 54
14		X 5.1	X 4.7	X 4.7	X 4.1	X 3.9															X 72	X 61	A	A	S
15		X 3.6	U 3.6	X 3.5	X 3.5	X 3.3															X 80	X 76	X 47	0 41	S
16		S	X 4.1	4.0	X 3.7	X 3.6															X 68	X 67	X 47	X 45	X 42
17		X 4.0	X 4.1	X 3.9	3.6	4.0	4.0														X 77	X 62	X 48	A	4.0
18		X 3.9	X 4.1	0 4.1	4.2	4.0															X 90	X 70	S	S	S
19		A	X 4.0	X 4.1	X 4.0	3.9															X 62	X 52	S	S	X 44
20		0 4.2	X 4.2	A 3.7	X 3.2	X 3.2															X 60	X 57	X 52	X 51	X 3.9
21		X 3.8	X 4.4	U 3.9	X 3.6	X 4.2	4.0														X 59	X 56	X 56	X 54	S
22		X 5.0	X 4.9	X 5.0	A 4.0	X 4.0															X 70	X 66	X 61	X 39	X 37
23		X 3.8	X 4.3	X 4.1	4.0	3.6															X 84	X 71	X 46	X 40	X 41
24		X 4.1	X 4.0	X 3.8	X 4.0	X 4.0															X 77	U 71	X 51	0 46	S
25		X 4.5	X 4.1	4.0	A	A															X 60	X 59	X 56	A	X 46
26		X 4.7	X 4.1	X 4.2	X 4.2	X 4.2															X 76	X 72	X 53	X 45	S
27		A	X 4.1	X 4.0	X 4.0	X 3.5															X 69	A	A	S	S
28		S 4.4	A	X 4.6	S 2.7																X 76	X 63	X 41	X 35	X 38
29		U 3.8	X 3.9	U 3.8	A 3.8	X 3.8															X 75	X 68	X 55	X 45	X 46
30		X 4.5	X 4.3	X 4.2	X 4.1	X 3.7															U 104	X 64	S	X 34	X 37
31		X 3.7	X 3.8	X 3.7	X 4.0	X 3.6															X 70	X 75	X 42	X 37	X 39
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		21	24	29	26	28	2				1										29	28	22	20	19
MED		X 4.1	X 4.1	X 4.0	X 4.0	X 3.8	4.0				55										X 71	X 65	X 52	X 46	X 42
UQ		X 4.6	X 4.3	X 4.2	X 4.1	X 4.0															X 77	X 70	X 56	X 54	X 47
LQ		X 3.9	X 4.0	X 3.8	X 3.6	X 3.6															X 64	X 60	X 47	X 40	X 40

AUG. 1936

FXI (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

FOF2 (0.1 MHz)

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

Station **R**OKUBUNJI **T**OKYO Lat. 35 42.4 N Long 139 29.3 E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	S 40	F	A	S 26	A	A	A	52	A	S 64	J 51	A	A	A	A	64	66	59	58	I 66	S 61	A	A	A	
2	A	I 32	S	F	F	F	32	S 44	60	50	46	E 44	A	A	52	55	A	60	62	S 61	53	A	S 41	S 40	S 40
3	F	S 35	29	31	S 30	S 31	38	48	59	61	51	46	A	53	50	52	47	51	66	J 81	S 54	F	F	F	
4	F	S 40	S 36	F	S 32	S 32	S 37	49	55	F 42	51	51	69	A	R 80	59	S 63	69	82	S 81	58	46	48	48	
5	A	A	S 43	35	28	33	47	52	54	54	A	A	A	A	65	64	54	58	53	59	65	S 61	S 56	S 50	S 36
6	S	S	F	F	31	32	S 46	54	60	R 49	51	51	54	S 50	E 44	55	61	63	61	S 58	59	59	57	S 42	
7	A	S	32	S 31	S 32	S 35	44	50	51	60	56	A	E 42	50	48	A	49	49	57	S	S 69	F	S	A	
8	S	A	A	A	A	S 30	42	A	A	65	59	50	68	64	49	48	48	A	A	S	S 69	65	49	38	36
9	S 34	S 34	F	F	S 32	S 36	44	59	60	S 56	R 45	49	49	54	52	61	59	62	52	S 53	S 50	A	S	S 50	
10	I 44	S 34	S	F	S 33	S 33	S 45	S 61	A	54	50	51	50	60	59	64	65	65	55	49	51	S 41	S	S	
11	S 43	S 43	41	44	S 36	41	S 44	S 46	51	A	65	H 48	56	48	52	A	A	49	57	68	57	S 45	44	A	
12	A	S 36	S 33	S 33	S 32	S 35	46	A	A	A	R 58	A	R 53	61	56	56	49	49	48	S 59	I 58	S	S	S	
13	U 34	S 36	S 36	F	31	36	48	55	50	51	49	49	53	59	50	54	A	50	50	60	59	S 56	S 53	48	
14	S 45	S 41	S 41	S 35	S 33	S 35	44	45	44	R 55	S 54	A	58	56	54	59	63	70	73	S 66	S 55	A	A	S	
15	S 30	U 28	S	F	F	F	S 36	47	49	A	A	A	A	A	55	A	51	54	55	S 66	S 74	S 70	U 41	S 35	I 35
16	I 35	S 35	F	S 31	S 30	S 31	45	62	53	50	J 47	54	A	53	65	60	62	55	54	62	S 61	41	39	S 36	
17	S 34	S 35	S 33	F	F	F	S 45	61	68	49	A	A	A	A	A	54	55	S 62	S 72	71	S 56	S 42	A	F	
18	S 33	S 35	S 35	F	S 34	S 35	50	54	49	57	61	52	46	E 45	J 43	49	53	64	79	S 84	S 64	S	S	I 39	S
19	A	S 34	S 35	S 34	F	34	54	58	59	53	60	60	55	50	55	65	64	59	58	56	46	S	S	S 38	
20	S 36	A	S 31	26	26	S 29	S 41	58	70	S 66	59	56	56	58	65	60	56	49	49	54	S 51	S 46	J 45	S 33	
21	U 32	S 38	U 33	F	S 36	F	S 43	S 45	S 53	56	63	55	50	A	60	59	62	S 74	S 66	53	50	J 50	S 48	A	
22	44	S 43	S 44	A	S 34	S 35	43	48	44	J 45	A	A	51	51	45	45	50	54	A	64	S 60	S 55	S 33	31	
23	32	S 37	S 35	F	F	S 33	44	44	57	58	65	63	49	57	63	60	63	68	73	J 78	S 65	40	34	35	
24	S 35	S 34	S 32	S 34	S 34	S 34	48	45	49	54	58	60	61	53	59	A	A	60	A	71	U 65	S 45	40	S	
25	F	35	F	A	A	S 34	52	A	A	A	A	A	62	65	79	C	C	56	56	54	53	S 50	A	S 40	
26	S 41	S 35	S 36	S 36	S 36	S 38	49	55	53	J 53	54	51	A	54	53	51	55	56	60	70	S 66	S 47	S 39	A	
27	A	S 35	S 34	S 34	S 29	S 31	41	51	54	65	61	55	62	49	62	54	55	A	60	63	S	A	A	S 46	I 46
28	S 38	A	S 40	S	21	25	36	54	61	55	63	A	A	A	47	54	A	66	73	70	S	57	35	29	32
29	U 32	S 33	U 32	A	S 32	S 31	S 43	47	A	49	49	R 54	R 54	58	62	55	A	47	57	69	S 62	49	39	S 40	
30	S 39	S 37	S 36	S 35	31	34	47	54	A	56	R 56	61	57	68	71	61	58	64	J 75	U 98	S 58	A	28	31	
31	31	S 32	31	S 34	S 30	S 35	48	56	S 60	S 49	51	50	49	57	65	62	57	50	59	64	S 69	J 36	S 31	33	
	00	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	24	22	16	22	28	29	29	23	27	26	20	22	26	28	26	25	29	28	30	29	21	19	20	
MED	S 35	S 35	S 35	S 34	S 32	S 34	44	52	54	55	55	52	54	54	58	56	58	59	60	S 66	S 59	S 46	S 39	S 37	
UQ	S 40	S 37	S 36	S 35	S 34	S 35	47	56	60	53	60	56	58	59	64	60	62	64	64	S 69	S 71	S 64	S 50	S 46	S 41
LQ	S 32	S 34	S 32	S 31	S 30	S 32	43	48	50	50	51	50	50	51	50	54	54	51	56	58	S 55	S 41	S 34	S 34	

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AUG. 1986

FOF2 (0.1 MHz)



# IONOSPHERIC DATA

AUG. 1936

FOF1 (0.01 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station		ROKUBUNJI TOKYO												Lat. 35 42.4 N, Long. 139 29.3 E												Sweep 1 MHz to 20 MHz in 20 sec in automatic operation											
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
1							A	370	A	420	A	A	A	A	A	410	400	L	L																		
2							340	U A 390	400	400	440	A	A	U A 440	420	A	U A 400	350	L																		
3							370	400	A	440	440	A	440	420	440	390	370	310	L																		
4							L U A 330	A U A 440	430	420	440	A	A	430	410	390	370	L																			
5							340	430	L U A 400	440	A	A	A	A	U A 450	420	400	370	L																		
6							350	380	A	430	420	A	430	U A 440	440	400	U A 390	A	L																		
7							L	380	L U A 400	440	A	A	420	430	A	A	A	360	310	L																	
8							L	A	A	420	A	U A 440	440	440	430	410	U A 400	A	A																		
9							L	390	L U A 410	420	440	440	440	420	410	400	390	L	A																		
10							L	L	A	A	A	U A 440	A	450	440	430	400	A	L	L																	
11							390	A	A	430			440	430	A	A	A	A	A																		
12							A	A	A	A	A	A	440	U A 430	420	U A 400	390	A	A																		
13							L	A	A	420	A	420	420	430	420	A	A	350	A																		
14							A	340	L U A 410	420	A	A	U A 440	430	A	U A 410	400	350	L																		
15							L	A	A	A	A	A	A	U A 430	A	410	A	A	A																		
16							A	A	420	A	A	A	A	R 430	H 430	400	A	A	A																		
17							A	390	A	430	A	A	A	A	A	A	380	A	A																		
18							A	L 390	L U A 430	420	440	440	450	450	410	410	U A 380	A	A																		
19							U A 340	L 390	L U A 400	410	U A 440	440	440	430	410	400	390	360	L	A																	
20							350	A	U A 400	U A 420	420	440	440	430	410	400	390	U L 350	L																		
21							A	L U A 410	420	430	430	430	A	U A 410	400	370	340	L	L																		
22							A	350	380	J R 410	A	A	U A 420	420	410	400	370	A	A																		
23							L	A	400	420	U A 430	A	A	440	430	400	380	350	L	A																	
24							L	L	L U A 400	440	U A 430	U A 440	U A 430	450	420	A	A	A	A																		
25							L	A	A	A	A	A	U A 440	U A 440	U A 450	C	C	350	L																		
26							L	L	U A 400	A	480	U A 440	A	430	U A 440	410	L 380	L	A																		
27							A	A	420	430	430	U A 420	410	410	400	L	A	A	A																		
28							A	L 380	L 400	L 410	U A 420	A	A	A	460	430	A	L 350																			
29							A	A	A	410	430	A	A	430	410	A	A	A	A																		
30							L	A	A	A	440	440	440	H 440	420	U A 400	A	A																			
31							L	A	L U A 420	U A 440	430	L 430	430	A	A	A	A	A																			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23													
CNT							6	14	16	23	18	14	19	25	24	22	18	15	3																		
MED							340	385	400	420	430	440	440	430	420	400	390	350	L 310																		
UQ							350	L 390	410	425	440	440	440	440	430	410	400	360	L 315																		
LQ							U A 340	L 370	400	420	430	430	430	430	410	400	380	350	L 310																		

AUG. 1936

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

AUG. 1986

FOE (0.01 MHz)

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

Station	ROKUBUNJI TOKYO				Lat.	35 42' 4" N				Long.	139 29' 3" E				Sweep	1 MHz to 20 MHz		in 20 sec		in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	A	A	A	U A 320	330	330	330	330	310	A	280	250	180					
2						S	A	A	A	A	A	A	U A 340	340	330	305	A	A	S					
3						S	A	A	A	A	A	A	A	A	330	A	280	A	A					
4						S	A	250	A	A	A	A	A	A	320	300	A	A	A					
5						S	A	U A 260	U A 290	U A 310	A	A	A	A	A	A	A	A	A					
6						S	A	A	A	A	A	A	A	U A 350	U A 330	A	A	A	A					
7						S	A	A	285	300	A	A	A	340	A	A	A	240	A					
8						S	A	A	A	A	A	A	A	R	R 325	305	285	A	A					
9						S	A	A	A	A	A	U R 330	335	345	330	300	290	A	A					
10						S	A	255	285	300	A	A	A	A	A	310	A	A	A					
11						S	A	A	290	305	A	A	A	A	A	315	285	A	A					
12						S	H 200	250	A	A	A	A	A	A	A	310	280	240	A					
13						S	200	A	A	A	A	A	A	A	330	325	300	275	240	A				
14						S	205	250	A	A	A	A	A	A	335	320	300	A	A	165				
15						S	A	A	A	A	A	A	A	A	A	A	A	A	A					
16						S	210	A	A	A	A	A	A	A	A	A	A	A	A					
17						S	A	A	A	A	A	A	A	A	A	A	A	A	A					
18						S	A	A	A	A	A	A	A	U A 345	U A 340	U A 325	295	275	A	A				
19						S	A	A	A	A	A	A	A	330	A	295	260	220	A					
20						S	A	A	A	A	A	A	A	A	A	R	A	A	S					
21						S	A	250	290	300	315	330	330	315	A	A	A	230	S					
22						S	175	235	260	A	A	A	A	A	U A 320	U A 295	A	225	S					
23						S	A	A	A	295	A	A	A	A	A	A	280	220	S					
24						S	190	240	A	A	A	A	A	330	310	290	260	230	S					
25						S	A	A	A	A	A	A	A	A	A	C	C	A	S					
26						S	180	240	A	A	A	A	A	A	A	285	265	A	S					
27						S	195	A	A	A	A	A	A	340	A	295	265	230	S					
28						S	A	A	A	A	A	A	A	A	330	A	A	A	S					
29						S	A	A	A	300	315	A	A	A	A	A	A	A	S					
30						S	A	240	270	300	310	325	335	A	A	290	260	230	H S					
31						S	A	A	A	A	A	A	330	A	300	285	250	210	S					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							8	10	7	9	4	4	7	12	14	17	15	12	2					
MED							198	250	285	300	315	330	335	338	325	300	275	230	172					
UQ							202	250	290	305	322	330	338	340	330	305	280	240						
LQ							185	240	278	300	312	328	330	330	320	295	262	222						

AUG. 1986

FOE (0.01 MHz)

# IONOSPHERIC DATA

AUG. 1986

FOES (0.1 MHz)

135° E Mean Time (G.M.T. + 9 h)

Station	Rokubunji				Tokyo				Lat. 35° 42' 4" N				Long. 139° 29' 3" E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation								
	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		22	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
2		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
3		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
4		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
5		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
6		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
7		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
8		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
9		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
10		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
11		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
12		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
13		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
14		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
15		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
16		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
17		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
19		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
20		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
21		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
23		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
24		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
25		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
26		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
27		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
29		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
30		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
31		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
CNT		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31
MED		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
UQ		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
LQ		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A

AUG. 1986

FOES (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

FBES (0.1 MHz)

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

Station		Tokyo		Lat.	Long		Sweep		MHz to		MHz in		sec in		automatic operation																				
R0KUBUNJI TOKYO				35 42' 4" N	139 29' 3" E		1		20		20		20																						
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	A A	40	24	A A	A A	A A	29	A A	40	51	A A	A A	A A	34	G	25	30	26	47	31	A A	A A	A A	64								
2		A A	33	E S	15	15	E S	15	20	30	39	30	32	34	50	42	44	36	A A	63	40	32	25	26	A A	105	28	21	E S	16					
3		E S	16	E S	15	24	20	26	25	26	31	49	40	36	A A	67	36	43	44	32	34	28	31	41	30	44	23								
4		E S	16	20	20	E S	E S	15	16	33	44	44	40	33	40	49	A A	77	G	26	32	33	30	19	18	30	E S	16	17	E S	16				
5		A A	76	A A	58	16	17	E S	E S	16	22	31	35	44	A A	77	113	A A	140	50	45	33	31	29	25	19	25	16	19	19					
6		E S	15	21	21	15	E S	15	18	25	29	46	34	34	46	40	44	34	32	39	44	28	41	21	E S	16	32	17							
7		A A	49	19	17	E S	E S	15	19	33	29	35	44	51	63	40	38	46	A A	90	45	25	17	34	25	45	23	A A	52						
8		20	A A	84	A A	59	A A	65	A A	54	27	24	A A	90	A A	99	40	50	44	41	34	G	27	34	40	A A	80	A A	79	30	18	23	E S	16	27
9		25	17	E S	16	E S	E S	15	15	23	29	30	31	33	G	25	37	36	23	G	G	G	25	44	34	E S	A A	49	30	29					
10		23	21	19	21	E S	E S	16	28	56	A A	51	48	44	47	37	34	34	G	30	44	27	17	E S	16	19	E S	E S	16	26					
11		E S	16	E S	15	E S	E S	15	15	16	24	35	44	A A	83	40	36	37	36	44	A A	60	A A	84	43	50	39	24	26	19	A A	80			
12		A A	80	E S	15	E S	15	19	23	E S	A A	52	44	A A	84	113	49	A A	76	40	43	40	40	37	35	29	48	E S	16	E S	16	E S	16		
13		E S	16	25	16	E S	E S	15	15	24	41	44	34	46	36	34	35	36	44	A A	58	29	41	17	27	23	E S	16	E S	15					
14		E S	15	E S	15	E S	E S	15	20	E S	16	30	29	33	40	47	A A	71	44	38	49	41	34	26	G	32	31	A A	A A	53	20				
15		E S	16	22	E S	16	17	E S	16	17	25	43	A A	82	A A	84	108	113	A A	76	43	60	34	40	40	51	18	34	24	22	28				
16		E S	16	17	E S	E S	16	E S	15	24	43	47	40	E A	47	46	A A	67	37	34	36	44	40	36	30	19	28	21	17						
17		19	22	E S	16	20	27	E S	16	34	29	55	41	A A	89	A A	64	A A	76	A A	80	A A	84	46	34	44	27	20	22	24	A A	53	25		
18		20	E S	15	21	E S	E S	15	20	34	34	40	40	36	40	27	G	37	35	41	38	40	50	44	42	22	28	27							
19		A A	52	18	16	E S	E S	15	25	34	30	36	35	44	40	37	G	30	33	32	29	27	32	42	17	24	22	25							
20		25	A A	50	E S	15	24	16	20	29	40	40	42	40	40	38	36	35	G	29	32	27	23	31	22	21	26	22							
21		E S	16	19	23	E S	E S	15	20	29	29	41	40	35	35	39	A A	76	41	30	27	G	19	23	17	28	20	A A	50						
22		20	20	E S	14	A A	54	20	25	41	34	31	35	A A	55	A A	64	42	36	41	34	31	44	A A	64	48	33	20	22	E S	15				
23		E S	16	E S	14	E S	E S	15	15	24	37	36	38	43	43	45	34	36	31	26	G	32	40	E S	16	21	19	21	18						
24		22	E S	15	25	17	E S	E S	15	21	25	33	44	43	44	43	36	36	A A	65	A A	81	51	A A	64	25	30	E S	E S	16	19				
25		23	17	25	A A	A A	43	A A	42	19	27	A A	54	A A	66	A A	61	A A	76	A A	65	44	44	45	C	C	34	25	33	E S	16	22	A A	63	20
26		20	23	E S	15	20	17	25	21	25	40	E A	53	41	44	A A	71	40	44	34	34	24	31	35	20	23	19	A A	44						
27		A A	50	E S	15	E S	17	16	E S	15	24	44	47	39	35	44	42	G	24	36	34	50	A A	64	44	E S	A A	A A	E S	E S	16				
28		E S	16	A A	64	24	26	E S	E S	15	25	32	36	36	42	A A	116	A A	124	A A	84	G	43	A A	74	32	39	25	22	23	24	E S	15		
29		24	25	24	A A	49	16	E S	15	25	36	A A	50	G	29	G	29	49	51	34	34	44	A A	54	44	40	21	20	24	22	28				
30		27	E S	E S	E S	E S	16	20	20	24	35	A A	74	45	50	40	40	35	38	40	43	50	25	32	44	A A	32	18	E S	16					
31		E S	16	29	17	E S	15	16	27	26	29	44	39	44	40	35	37	50	53	49	40	30	24	18	29	25	18								
CNT		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED		20	20	16	17	E S	16	17	25	34	44	40	44	44	42	37	36	35	38	34	30	30	22	24	22	20									
UQ		25	24	21	22	20	20	32	42	50	44	50	A A	64	A A	52	44	44	44	45	44	42	34	31	28	27	28								
LQ		E S	16	E S	15	E S	E S	15	E S	16	24	29	36	37	38	40	38	36	34	32	32	28	25	20	19	20	18	16							

The Radio Research Laboratory, Japan

AUG. 1986

FBES (0.1 MHz)



# IONOSPHERIC DATA

AUG. 1986

FMIN (0.1 MHz)

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

Station		Rokubunji Tokyo			Lat.	35 42.4 N			Long	139 29.3 E			Sweep	1 MHz to 20 MHz		in 20 sec		in automatic operation							
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
2		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
3		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
4		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
5		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
6		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
7		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
8		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
9		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
10		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
11		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
12		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
13		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
14		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
15		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
16		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
17		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
18		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
19		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
20		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
21		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
22		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
23		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
24		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
25		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
26		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
27		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
28		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
29		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
30		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
31		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31
MED		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
UQ		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S
LQ		E S	E S	E S	E S	E S	E S														E S	E S	E S	E S	E S

AUG. 1986

FMIN (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1986

M(3000)F2 (0.01)

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

Station	Rokubunji Tokyo																														
Hour	Lat. 35 42' 4" N Long. 139 29' 3" E Sweep 1 MHz to 20 MHz in 20 sec in automatic operation																														
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	F	A	S	A	A	A	330	A	S	A	A	A	A	A	300	330	320	320	I	S	S	A	A	A						
2	A	I	S	F	F	F	300	330	355	330	335	G	A	A	300	320	A	320	330	320	S	320	A	300	290	S	270				
3	F	S	320	320	335	340	290	340	320	320	350	355	240	A	310	310	325	275	300	310	J	S	S	F	F	F					
4	F	310	S	300	F	310	S	305	280	S	300	335	280	F	290	265	300	A	R	325	320	290	S	290	315	320	310	295	S	285	290
5	A	A	S	320	340	315	310	325	310	300	320	A	A	A	A	330	320	300	335	300	315	320	315	S	S	305	S	290			
6	S	S	F	F	310	280	310	320	345	325	R	305	310	325	320	R	G	290	310	320	310	310	320	320	325	S	330				
7	A	S	295	300	S	305	320	300	325	315	330	340	A	G	300	270	A	320	290	320	S	330	F	S	A						
8	S	A	A	A	A	325	295	A	A	340	335	260	300	315	275	280	305	A	A	S	S	S	345	330	320	320					
9	310	S	300	F	F	S	330	345	320	320	330	330	R	265	265	290	300	310	305	330	330	320	S	300	A	S	S	350			
10	I	S	S	F	S	F	S	S	S	A	310	295	300	R	260	300	285	320	325	330	330	325	325	305	S	S	S				
11	310	275	S	290	310	S	310	310	S	330	280	330	A	340	345	H	310	300	290	A	A	285	305	335	330	300	S	270	A		
12	A	315	S	300	295	S	300	320	A	245	A	A	R	A	295	R	320	305	320	325	320	300	320	S	I	S	S	S			
13	U	S	S	320	F	310	300	S	335	355	345	320	325	275	310	325	280	315	A	325	320	290	S	S	I	S	S	275			
14	290	S	295	280	S	300	285	310	350	355	270	R	290	R	A	325	330	305	300	320	320	340	S	330	360	S	A	A	S		
15	S	U	S	F	F	F	340	355	340	A	A	A	A	A	A	325	A	290	330	320	320	S	325	340	S	330	U	S	I	S	
16	I	S	280	F	310	S	300	310	S	345	355	S	330	325	A	310	A	290	325	320	330	325	320	315	345	S	320	305	310		
17	S	S	S	F	F	F	S	320	330	350	330	A	A	A	A	A	300	315	320	S	320	S	330	S	330	S	320	A	F		
18	S	S	S	F	S	S	S	310	350	350	310	325	350	340	P	285	G	R	290	300	310	310	S	S	J	S	S	S	I	S	
19	A	310	S	310	285	S	F	320	340	340	340	330	335	325	340	285	300	330	330	335	330	320	300	S	S	S	S	315			
20	S	A	S	325	315	265	275	S	320	S	340	320	330	315	305	320	330	340	320	330	320	310	S	330	J	S	S	310	325		
21	U	S	S	U	S	F	300	S	F	340	S	300	S	300	325	335	335	315	A	330	320	320	340	S	S	310	310	J	S	S	A
22	280	290	S	325	A	280	S	S	A	340	290	J	R	315	A	A	310	315	260	265	S	305	320	A	300	320	S	310	325	275	
23	270	300	S	300	F	F	305	S	340	335	340	325	340	325	330	290	325	310	305	320	315	J	S	320	340	280	270	S	S		
24	265	S	285	280	265	S	280	S	300	340	340	320	330	335	325	340	300	320	A	A	345	A	330	U	S	330	320	290	S	S	
25	F	310	F	A	A	S	340	A	A	A	A	A	A	A	A	300	300	S	C	C	340	325	320	320	310	A	310				
26	310	305	300	310	290	S	290	S	325	350	340	A	275	300	A	320	325	315	320	320	315	310	310	S	310	S	310	A			
27	A	275	290	S	330	S	300	S	330	325	330	320	325	325	320	340	310	325	320	325	A	330	330	S	A	A	S	I	S	295	
28	S	A	S	S	S	310	320	325	330	340	335	340	A	A	A	300	305	A	325	330	330	S	350	310	290	285					
29	U	S	S	U	S	A	S	S	S	365	A	300	275	300	R	A	325	315	350	A	320	320	320	S	330	S	320	280	S	290	
30	S	285	305	285	S	300	300	320	350	340	A	340	R	325	320	325	325	340	315	305	J	S	315	350	340	A	295	305			
31	285	300	S	310	310	S	300	350	330	345	355	S	350	S	310	320	300	310	325	340	345	320	320	315	S	350	J	S	S	280	300
CNT	20	24	22	16	22	28	28	29	23	26	24	20	21	26	27	26	25	29	28	30	29	21	19	20							
MED	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
UQ	310	310	310	328	315	320	340	350	340	335	338	325	325	320	325	320	330	325	330	330	S	340	S	320	310	S	318				
LQ	288	292	290	300	S	300	S	320	320	318	320	302	288	300	300	295	300	305	320	315	320	315	S	305	S	282	S	285			

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M(3000)F2 (0.01)

# IONOSPHERIC DATA

AUG. 1986

M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station		ROKUBUNJI TOKYO										Lat. 35° 42' 4" N		Long. 139° 29' 3" E		Sweep 1		MHz to 20		MHz in 20		sec in		automatic operation	
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								A	375	A	380	A	A	A	A	A	370	350	L	L					
2																									
3																									
4								L	A	A	A														
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
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27																									
28																									
29																									
30																									
31																									
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	13	12	16	11	10	14	19	19	16	12	12	2					
MED								360	360	365	380	400	380	380	380	370	372	360	360	348					
UQ								360	375	385	390	400	410	390	390	380	380	370	360						
LQ								345	350	360	370	380	375	370	372	360	365	352	350						

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M(3000)F1 (0.01)

# IONOSPHERIC DATA

AUG. 1986

H<sup>+</sup>F<sub>2</sub> (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	ROKUBUNJI TOKYO				Lat.	35 42' 4" N							Long	139 29' 3" E											Sweep	1 MHz to 20		MHz in 20		sec in		automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
1							A	230	A	285	A	A	A	A	A	320	280	280	280																	
2							315	250	285	315	G	A	A	370	335	A	285	280	250																	
3							345	290	255	270	600	A	360	415	335	425	355	285																		
4							350	430	E A	350	F	270	390	420	455	325	A	285	305	330	315	260														
5							290	335	280	345	A	A	A	300	305	335	290	325	285																	
6							325	290	260	395	375	360	330	330	G	355	295	270	270																	
7							330	L	280	350	275	310	A	A	G	375	A	A	E A	355	290															
8							355	L	A	A	255	295	435	320	300	415	405	350	A	A																
9							300	285	275	290	405	490	485	365	340	295	310	260	E A	295																
10							355	E A	290	E A	250	A	E A	325	365	E A	380	465	330	355	305	295	265	235												
11							350	295	A	265	A	310	365	385	A	A	E A	375	E A	325																
12							435	A	A	295	A	390	300	280	305	315	310	280																		
13							260	245	285	350	E A	350	445	375	300	380	320	A	285	E A	305															
14							235	255	440	330	A	A	315	300	E A	355	320	305	275	235																
15							235	285	A	A	A	A	A	325	A	375	320	310	E A	300																
16							250	305	300	A	335	A	405	305	300	300	275	265																		
17							305	275	250	305	A	A	A	A	A	350	305	290	255																	
18							255	265	315	305	275	290	400	G	R	380	335	300	275																	
19							270	270	290	305	290	315	315	400	360	290	270	270	250																	
20							450	305	280	265	290	305	340	345	300	280	275	290	255																	
21							240	355	320	290	290	295	360	A	305	300	310	250	235																	
22							A	250	365	395	R	A	A	350	345	545	465	375	310	A																
23							275	365	290	305	285	275	E A	325	350	325	320	310	280	265																
24							250	265	320	315	290	305	285	405	325	A	A	E A	295	A																
25							250	A	A	A	A	A	335	350	295	C	C	270																		
26							255	270	275	A	410	345	A	335	320	340	305	290	275																	
27							300	E A	315	285	285	340	285	335	L	315	315	E A	A	275																
28							255	295	255	295	280	A	A	A	405	350	A	275																		
29							225	255	A	360	435	E A	355	E A	375	310	305	290	A	E A	345	E A	300													
30							270	A	265	E A	335	305	325	295	270	275	310	E A	325																	
31							270	230	270	355	330	375	350	300	E A	235	275	310																		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
CNT						2	22	29	23	26	23	19	22	26	26	26	25	29	24																	
MED						352	272	278	288	304	292	335	335	345	324	320	308	285	266																	
UQ						315	302	315	330	370	408	375	365	380	350	318	310	282																		
LQ						250	265	275	285	288	305	313	310	305	300	295	275	255																		

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H<sup>+</sup>F<sub>2</sub> (KM)



# IONOSPHERIC DATA

AUG. 1986

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 20 MHz in 20 sec in automatic operation																								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	265	280	A	E A 295	A	A	A	235	A	E A 250	A	A	A	A	A	205	200	H 240	E A 270	E A 255	220	A	A	A	
2	A	E A 315	280	280	280	265	E A 260	A	185	180	200	A	A	A	220	A	A	E A 255	E A 250	240	A	E A 300	300	260	
3	295	265	245	E A 295	225	E A 320	235	225	200	A	230	195	A	230	230	A	245	A	A	230	E A 255	E A 320	A	260	
4	260	250	295	245	245	275	A	A	A	E A 250	190	240	A	A	200	215	A	E A 240	230	225	235	270	280	285	
5	A	A	235	215	285	240	200	240	H E A 250	A	A	A	A	A	A	225	230	H 225	E A 255	245	250	230	245	275	
6	270	255	275	265	265	250	H 225	215	A	200	195	A	E A 255	A	H 210	210	A	A	A	E A 280	250	230	235	250	
7	A	315	275	290	255	255	E A 275	220	225	A	A	A	190	180	A	A	A	225	235	255	225	E A 270	250	A	
8	250	A	A	A	A	A	235	A	A	E A 250	A	A	A	190	H 220	H 215	A	A	A	255	210	230	255	E A 310	
9	E A 300	285	295	285	225	H 235	225	240	195	H 190	H 185	H 175	H 180	H 185	225	200	215	215	H A	E A 255	250	A	E A 300	225	
10	245	255	270	E A 285	300	270	235	A	A	A	A	A	A	H 185	H 170	230	215	A	225	H 230	220	235	245	275	265
11	255	260	265	255	225	H 255	220	H E A 275	A	A	A	205	195	185	A	A	A	A	A	255	230	E A 270	285	A	
12	A	240	255	270	E A 275	240	A	A	A	A	A	A	E A 250	A	A	A	A	A	A	E A 305	255	260	225	265	
13	285	315	230	260	250	225	225	A	A	A	210	A	190	180	230	230	A	A	240	A	260	250	255	255	260
14	245	260	275	260	290	245	A	175	H 195	A	A	A	A	A	230	A	A	E A 250	H 225	225	230	210	A	A	E A 325
15	285	E A 325	285	290	275	240	210	A	A	A	A	A	A	A	A	A	225	A	A	A	235	220	220	E A 330	E A 345
16	300	260	260	265	275	240	235	H A	A	E A 245	A	A	A	195	190	E A 255	A	A	A	260	205	E A 265	255	255	
17	275	275	250	280	E A 325	250	A	235	H A	E A 265	A	A	A	A	A	A	A	E A 245	A	A	210	215	230	A	305
18	265	265	290	260	260	275	A	235	E A 250	E A 270	195	215	190	190	220	A	A	A	A	235	230	285	255	250	
19	A	265	265	275	265	E A 280	A	220	E A 250	195	A	225	215	185	H 185	230	230	245	A	E A 255	270	E A 300	280	265	
20	280	A	260	E A 315	280	E A 310	E A 255	A	A	A	E A 260	E A 260	E A 250	200	235	225	235	220	E A 250	265	245	255	260	E A 240	
21	240	265	E A 350	300	255	240	A	225	A	A	215	225	230	A	A	220	H 205	H 230	H 235	E A 250	260	E A 310	265	A	
22	300	E A 315	235	A	325	E A 320	A	E A 240	220	E A 300	A	A	A	245	A	225	E A 250	A	A	E A 290	250	235	240	315	
23	325	255	270	255	260	255	240	A	E A 275	E A 235	A	A	A	A	H 190	235	215	255	A	A	230	210	260	E A 355	295
24	E A 320	295	E A 350	300	290	255	225	215	230	A	A	A	A	200	245	A	A	A	A	235	225	240	270	300	
25	295	280	345	A	A	290	A	A	A	A	A	A	A	A	A	A	C	C	A	250	270	245	265	A	265
26	255	280	275	255	270	280	220	225	A	A	E A 240	A	A	A	A	245	E A 240	H 200	A	240	225	255	260	A	
27	A	295	290	235	230	220	245	A	A	A	200	E A 260	A	H 185	235	250	A	A	A	225	A	A	265	275	
28	290	A	E A 285	210	250	270	A	260	E A 250	205	A	A	A	A	225	A	A	A	250	220	205	E A 255	E A 320	305	
29	E A 310	E A 330	E A 300	A	265	220	A	A	A	190	190	H A	A	190	H 220	A	A	A	A	240	230	230	325	E A 330	
30	E A 325	270	285	250	275	255	240	E A 265	A	A	A	E A 245	E A 250	H 175	E A 245	A	A	A	A	275	230	230	A	E A 305	275
31	315	E A 375	315	255	270	245	230	240	H A	E A 235	A	A	A	H 200	E A 240	A	A	A	A	255	245	225	E A 265	A	275
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	25	27	29	27	28	29	19	18	12	16	11	11	13	19	18	16	12	13	13	31	29	26	25	26	
MED	275	270	272	262	266	250	230	230	U 209	E A 235	198	U 210	192	190	H 224	220	U 224	225	240	238	230	U 244	260	270	
UQ	295	292	288	283	279	265	238	238	E A 250	E A 250	211	234	250	208	232	226	E A 248	235	252	250	250	E A 270	285	U 290	
LQ	260	260	260	255	252	240	225	220	198	195	192	200	H 190	H 185	220	215	222	225	H 232	230	220	232	255	260	

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H'F (KM)

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### IONOSPHERIC DATA

AUG. 1986

H<sup>o</sup>E (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	Rokubunji Tokyo																							
Lat.	35° 42' 4" N																							
Long	139° 29' 3" E																							
Sweep	1																							
MHz to	20																							
MHz in	20																							
sec in	automatic operation																							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						S	A	A	A	A	105	105	105	110	120	A	120	105	130					
2						S	115	105	105	A	A	A	A	105	110	105	105	110	S					
3						S	A	A	A	A	A	A	A	A	E A 130	A	105	A	A					
4						S	115	105	105	A	A	A	A	A	E A 125	105	110	110	120					
5						S	115	105	105	115	110	110	105	A	A	A	A	A	A					
6						S	115	105	105	100	105	A	A	A	A	105	105	105	115					
7						S	115	110	105	110	110	110	110	110	105	A	A	E A 130	A					
8						S	A	110	105	105	A	A	A	A	A	110	105	105	110	120				
9						S	A	A	A	A	A	A	E A 110	125	105	115	110	105	110	A				
10						S	115	105	105	100	100	105	A	A	A	E A 130	A	A	A					
11						S	110	105	110	A	115	A	A	A	A	110	110	110	A					
12						S	120	105	105	A	A	A	A	A	105	105	110	110	120					
13						S	120	105	105	A	A	A	A	E A 120	110	110	110	110	115					
14						S	120	120	115	A	115	105	105	105	105	105	105	110	E S 120					
15						S	115	110	105	A	A	A	A	A	110	105	105	110	A					
16						S	110	105	105	105	A	A	A	A	A	A	A	A	A					
17						S	115	115	110	A	A	A	A	A	A	A	A	A	A					
18						S	115	110	A	A	A	A	A	A	A	A	A	A	A					
19						S	115	105	105	105	A	A	A	125	A	A	E A 125	105	A					
20						S	110	105	105	A	A	A	105	A	A	A	A	A	S					
21						S	120	110	105	115	E A 120	E A 125	105	105	105	110	A	105	S					
22						S	115	105	105	115	A	A	A	A	A	A	A	110	S					
23						S	125	110	105	105	105	105	A	A	A	A	A	120	110	S				
24						S	120	105	105	105	A	A	A	E A 125	120	120	105	115	S					
25						S	A	105	105	105	105	105	105	105	A	C	C	A	S					
26						S	E A 130	110	105	105	105	105	A	A	A	105	105	115	S					
27						S	115	105	105	105	105	A	A	A	115	115	115	115	S					
28						S	120	115	105	105	105	A	A	105	105	105	110	115	S					
29						S	125	110	105	120	A	A	A	A	A	A	A	A	S					
30						S	125	120	115	110	A	A	105	105	A	A	105	110	S					
31						S	A	105	105	115	110	E A 115	105	105	105	E A 125	105	115	S					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							25	28	27	20	16	12	11	14	15	18	21	23	8					
MED							115	105	105	105	105	105	105	105	105	103	105	105	110	120				
UQ							120	110	105	115	110	109	106	112	114	110	110	111	120					
LQ							115	105	105	105	105	105	105	105	105	105	105	110	115					

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H<sup>o</sup>E (KM)

# IONOSPHERIC DATA

AUG. 1986

H<sup>o</sup>ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station		ROKUBUNJI TOKYO											Lat. 35 42.4 N		Long. 139 29.3 E		Sweep 1 MHz to 20 MHz in 20 sec in automatic operation										
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1		105	105	105	105	105	105	100	100	100	125	115	110	120	115	115	120	105	140	120	115	115	110	110	105		
2		105	100	115	110	125	125	115	115	110	105	105	135	150	130	135	115	115	110	110	105	105	105	105	105		
3		105	105	105	105	105	105	105	105	155	100	100	100	100	165	100	100	140	95	120	110	110	105	105	100		
4		100	100	100	100	125	125	115	110	105	110	105	100	100	100	105	120	110	110	125	105	105	105	105	100		
5		100	100	100	105	105	125	120	160	120	115	115	110	105	105	105	105	100	100	100	100	110	105	105	105		
6		105	100	100	100	115	115	115	115	115	105	105	100	100	125	125	115	120	110	110	110	110	110	105	100		
7		100	95	100	100	100	120	115	120	115	110	110	110	115	120	110	105	105	155	105	100	105	110	110	110		
8		105	100	100	100	100	100	105	115	110	110	105	105	105	105	105	150	120	110	110	110	110	105	100	100		
9		95	95	110	95	S	S	105	100	100	105	100	100	160	155	100	G	125	115	110	105	105	105	105	100		
10		100	100	100	100	100	S	120	115	110	110	110	110	105	105	105	105	105	105	105	115	100	95	110	105		
11		105	95	95	100	95	S	110	120	120	110	110	110	110	105	105	125	120	110	105	105	105	105	105	105		
12		105	105	105	100	100	105	120	120	110	105	105	105	105	105	110	130	125	120	110	105	105	105	105	105		
13		100	95	95	100	100	130	120	115	110	105	100	95	110	130	135	125	115	115	110	110	105	110	105	105		
14		105	105	100	100	100	105	120	120	115	115	110	110	115	130	120	115	115	115	G	105	105	105	100	100		
15		100	100	100	95	115	95	115	110	110	105	105	100	100	100	110	120	110	110	105	100	100	100	105	100		
16		100	100	100	100	S	120	150	115	110	110	105	105	105	105	105	105	100	100	100	100	100	100	100	100		
17		105	105	105	105	105	105	115	115	105	105	100	100	100	100	100	100	100	115	115	100	100	100	105	105		
18		105	130	125	125	110	115	110	105	105	105	100	100	105	160	155	125	125	115	110	110	105	105	100	100		
19		100	100	100	100	125	120	115	115	105	105	105	105	105	105	105	150	135	115	110	110	120	110	105	105		
20		100	100	100	125	115	125	110	110	110	105	105	105	110	105	105	105	105	100	100	100	100	110	115	110		
21		110	105	110	110	110	115	115	125	120	120	120	125	115	110	110	115	105	140	125	125	115	115	110	105		
22		105	105	110	120	125	125	120	115	110	115	100	105	105	105	130	135	100	130	120	115	110	110	110	105		
23		105	110	105	145	100	145	130	120	115	110	110	110	105	105	105	105	110	125	115	115	110	110	110	110		
24		110	105	105	105	110	S	130	125	110	105	100	100	100	140	165	130	120	120	115	110	105	110	110	105		
25		105	100	100	105	105	100	125	115	110	110	105	105	105	105	105	C	C	105	105	105	115	115	110	110		
26		110	105	95	105	105	105	125	120	115	110	110	110	105	100	140	140	125	125	125	120	115	110	110	105		
27		105	100	100	100	100	S	125	110	110	110	110	105	100	100	105	160	125	120	110	105	105	115	110	110		
28		105	100	100	100	100	120	115	115	115	115	110	105	105	115	G	125	110	115	110	110	110	105	105	105		
29		100	100	100	100	100	105	120	110	110	105	105	100	100	100	100	95	95	95	95	95	95	95	110	110		
30		105	105	105	S	125	120	120	115	115	115	115	110	125	135	125	125	120	115	115	100	100	100	140			
31		100	125	125	125	115	110	110	115	110	115	115	115	125	160	130	125	120	115	110	110	110	105	105	105		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT		31	31	31	30	29	26	31	31	31	31	31	31	31	31	30	29	30	31	30	31	31	31	31	31		
MED		105	100	100	100	105	115	115	115	110	110	105	105	105	105	108	120	115	115	110	110	105	105	105	105		
UQ		105	105	105	105	115	125	120	120	115	112	110	110	110	128	130	125	125	120	115	110	110	110	110	105		
LQ		100	100	100	100	100	105	112	110	110	105	105	100	102	105	105	105	105	110	105	105	105	105	105	100		

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H<sup>o</sup>ES (KM)

# IONOSPHERIC DATA

AUG. 1986

TYPES OF ES

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

Station		R0KUBUNJI TOKYO		Lat. 35 42' 4" N				Long. 139 29' 3" E				Sweep 1 MHz to 20 MHz in 20 sec in automatic operation													
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F	F	F	F	F	L	L	L	L	CL	C	C	C	CL	CL	CL	L	H	C	FF	FF	F	F	FF	
2	F	F	FF	FF	FF	C	C	C	C	L	LH	HL	HL	H	HL	C	C	C	C	F	F	F	F	F	
3	F	F	F	F	F	L	L	L	HL	L	L	L	L	HL	LH	L	H	L	CL	FF	FF	F	F	F	
4	F	F	F	F	FF	CL	C	C	C	CL	L	L	L	L	L	C	C	C	C	F	F	F	F	F	
5	F	F	F	F	F	C	C	HC	C	CL	C	C	C	L	L	L	L	L	L	F	F	F	F	F	
6	F	F	F	F	FF	C	C	C	C	C	C	L	L	CL	CL	C	C	C	C	F	F	F	F	F	
7	F	F	FF	F	F	C	C	C	C	CL	CL	CL	CL	C	C	L	L	HL	LC	F	F	F	F	F	
8	F	F	F	F	F	L	L	C	C	C	L	L	L	L	L	H	H	C	C	F	F	F	F	F	
9	F	F	FF	F	F	L	L	L	L	L	L	L	HL	HL	L	L	H	C	L	F	F	F	F	F	
10	F	F	F	F	F	C	C	C	C	C	C	C	L	L	L	L	L	L	LC	FF	F	F	FF	F	
11	FF	F	F	F	F	C	C	C	CL	C	CL	LL	LL	L	L	H	H	C	L	F	F	F	F	F	
12	F	F	F	F	F	LC	C	C	C	L	L	L	L	L	C	H	H	H	C	F	F	F	F	F	
13	F	F	F	F	F	C	CL	C	C	L	L	L	CL	CL	HL	HL	C	C	C	F	F	F	F	F	
14	F	F	F	F	F	L	C	CL	CL	CL	C	C	C	H	C	C	C	C	F	F	F	F	F	F	
15	F	F	F	F	FF	L	C	C	C	L	L	L	L	L	C	C	C	C	L	F	F	F	F	F	
16	F	F	F	F	C	H	C	C	C	C	L	L	L	L	L	L	L	L	L	F	FF	F	F	F	
17	FF	FF	FF	FF	F	L	C	CL	CL	L	L	L	L	L	L	L	L	CL	CL	F	F	F	F	F	
18	F	FF	F	F	F	CL	C	C	L	L	L	L	L	HL	HL	H	H	C	C	F	F	F	F	F	
19	F	F	F	F	FF	C	C	C	C	C	L	L	L	L	L	HL	HL	C	CL	FF	FF	FF	F	F	
20	F	F	F	F	F	CL	C	C	C	LL	L	L	C	L	L	LL	LL	L	L	F	F	FF	FF	F	
21	F	F	F	F	F	C	C	C	C	CL	CL	CL	C	C	C	CL	L	H	HL	FF	FF	FF	F	F	
22	F	F	F	F	F	C	C	C	C	C	L	L	L	L	HL	HL	L	H	C	F	F	F	F	F	
23	F	F	F	F	F	H	C	C	C	C	C	C	L	L	L	L	L	C	C	F	F	F	F	F	
24	F	F	F	F	F	C	C	C	C	C	L	L	L	HL	HL	HL	CL	C	L	F	F	F	F	F	
25	F	F	F	FF	FF	L	CL	C	C	C	C	C	C	C	L	L	L	L	F	FF	F	F	F	F	
26	FF	FF	F	FF	FF	LL	CL	C	C	C	C	C	L	L	HL	H	C	C	C	F	F	F	F	F	
27	F	F	F	F	FF	H	C	C	C	C	C	L	L	L	LL	HHL	HL	C	L	F	F	FF	F	F	
28	F	F	F	F	F	CL	C	C	C	C	C	L	L	L	C	H	C	C	C	F	F	F	F	F	
29	F	F	F	F	F	LC	C	C	C	L	L	L	L	L	L	L	L	L	L	F	F	F	FF	F	
30	F	F	F	F	FF	CL	C	CL	CL	CL	C	C	C	C	C	HL	HL	H	C	F	F	F	F	FF	
31	FF	FF	FF	FF	F	L	L	C	C	CL	CL	CL	C	C	HC	H	HL	C	C	F	F	F	F	F	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																									
MED																									
UQ																									
LQ																									

The Radio Research Laboratory, Japan

AUG. 1986

TYPES OF ES



# IONOSPHERIC DATA

AUG. 1986

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 24 sec		in automatic operation		
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	47	X 45	X 48	X 39	X 21	X 29															X 71	U 45	X A	X A		
2	A	A	A	A	A	A																X 65	X 55	X 50	X 47	
3	X 46	X 48	X 46	X 40	X 32	X 31																X 53	X 55	X 49	X 47	
4	A		X 50	X 48	X 40	X 37	X 36															X 66	X 61	X 67	X 64	
5	X 62	X 58	X 50	X 44	X A	X 36																A	S 60	X A	X 53	
6	X 50	X 46	X 43	X 38	X 37	X 40																X 71	X 71	X 52	X 38	
7	A	X 34	X 35	X 34	X 33	X 31																X 63	X 44	X 40	X 44	
8	X 42	X 44	X 38	X 37	X 37	X 35																X 59	X A	X 60	X 58	
9	X 54	X 45	X 42	X 37	X 40	X 28																X 54	X 52	X 49	X 58	
10	A	X 40	X 43	X 40	X 37	X 40																X 52	X 46	X 52	X 50	
11	X 48	X 45	X 42	X 45	X 36	X 36																X 79	U 55	X A	X 50	
12	U 45	X 39	X 37	U 35	X 37	X 36																C	C	C	C	
13	C	C	C	C	C	C																X 71	X A	X A	U 49	
14	X 48	X 47	X 49	X 44	X 42	X 40																U 46	X A	X A	X A	
15	A	A	X 36	X 33	X 31	X 28																X 71	X 44	X 40	X 39	
16	X 41	X 40	X 39	X 39	X 35	X 35																X 66	X A	X 39	X 39	
17	X 40	X 41	X 37	X 35	X 36	X 36																X 63	X 54	X 40	X A	
18	X 50	X 47	X 39	X 40	X 39	X 36	X 50															X 82	X 75	X 73	X A	
19	X 44	X 41	X 40	X 40	X 41	X 40																X 72	X 59	X 60	X 50	
20	S	X 48	A	S	X 45	X 40	X 41															X 65	X 70	X 60	X 45	
21	X 34	A	A	X 36	X 36	X 31																X 70	X 64	C	X 59	
22	S	X 54	X 54	X 38	X 36	X 47																X 69	X 61	S	S	
23	A	S	X 45	X 33	X S	X 36																X 94	X 80	X A	X A	
24	X 45	X 41	X 40	X 45	X 43	X S																X 85	X 78	X 45	X 39	
25	X 38	X 36	X 34	X 32	X 35	X 30																X 66	X 61	X 45	X 40	
26	S 42	X 36	X 37	X 40	X 38	X 36																X 83	X A	X A	X A	
27	A	A	X 40	X 45	X 36	X A																X 62	X 45	X 44	X A	
28	A	X 44	X 46	X 52	X 30	X A																S 73	X 36	X 36	X 36	
29	X 36	X 37	X 39	X 39	X 36	X 31																X 64	X 56	X 49	X 48	
30	X 45	X 46	X 39	X 41	X 36	X 33																X 56	X 32	X A	X 33	
31	X 32	X 34	X 33	X 38	X 33	X A																X 74	X A	X 35	X 36	
	00	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	25	27	28	27	25	2														7	29	21	20	23	
MED	45	44	40	39	36	36	46															X 72	X 66	X 55	X 47	
UQ	48	47	46	40	38	36																X 84	X 71	X 60	X 51	
LQ	40	40	38	36	34	31																X 70	X 61	X 45	X 40	

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FXI (0.1 MHz)

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation												
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23								
1	U	F	J	S	J	S	23	35	50	50	48	49	48	50	52	54	62	69	71	75	73	65	39	A	A							
2	A	A	A	A	A	A	38	67	46	47	44	A	47	51	A	A	A	73	70	S	53	59	49	44	41							
3	J	S	F	F	F	S	24	A	52	62	52	49	E	G	50	50	53	62	63	66	87	67	47	49	43	F						
4	A	F	F	F	F	F	A	56	A	A	49	52	60	73	A	67	68	73	93	84	60	55	F	F								
5	F	F	F	F	A	30	42	50	53	50	49	63	57	63	53	59	58	61	69	61	A	S	A	F								
6	F	F	F	F	F	F	36	48	56	52	A	55	59	51	57	62	61	57	A	A	65	65	46	32								
7	A	28	F	F	F	27	25	40	43	55	A	53	46	51	A	55	54	56	63	71	62	57	38	34	F							
8	F	F	F	F	F	F	31	44	A	A	50	50	A	A	A	60	59	56	67	A	53	A	F	F								
9	F	F	F	F	F	22	37	52	56	55	57	47	51	58	63	71	75	71	71	54	48	46	43	F								
10	A	F	F	F	F	F	39	61	H	49	53	A	53	53	58	58	66	73	73	56	56	46	40	F	F							
11	F	F	U	F	F	F	28	28	39	44	55	U	H	R	R	59	47	A	A	53	57	71	78	U	S	U	S	A	U	F	39	
12	U	S	U	S	U	F	F	33	S	53	71	A	A	A	61	77	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	49	A	54	67	69	A	A	52	A	54	60	65	A	A	U	S	43					
14	F	S	F	F	F	36	34	41	43	A	52	A	A	61	66	65	A	69	78	92	74	S	39	A	A	A						
15	A	A	F	F	F	F	35	45	A	A	A	R	A	60	59	63	73	71	72	75	65	38	34	33								
16	U	F	U	F	U	F	F	25	F	26	43	H	53	A	52	49	49	53	66	75	70	H	65	S	64	60	A	U	S	U	S	33
17	F	F	F	U	S	F	F	38	60	52	46	50	54	55	54	57	61	64	71	70	61	57	48	34	A							
18	F	F	33	F	F	F	40	49	54	A	58	49	47	46	45	47	53	68	79	76	69	F	A	A								
19	F	F	30	30	F	F	37	52	59	55	59	A	66	A	U	R	64	70	73	79	76	66	J	S	S	F	39					
20	S	F	A	S	F	F	F	S	A	A	A	A	A	A	75	74	71	H	56	50	51	59	65	55	39	33						
21	28	A	A	F	30	F	35	46	60	54	60	55	54	60	64	A	74	72	70	63	58	I	C	52	53	49						
22	S	J	F	F	31	30	F	S	45	H	46	J	S	54	A	A	49	46	50	65	63	63	55	S	S	S						
23	A	S	F	F	S	F	40	51	66	77	60	A	52	65	77	78	76	76	79	88	74	A	A	F	38							
24	39	35	34	F	F	S	40	44	51	60	56	55	52	51	52	66	68	65	73	79	S	U	S	F	34							
25	32	30	S	26	27	24	36	51	49	57	A	A	A	A	A	A	88	80	64	53	60	55	39	34								
26	36	30	31	34	32	30	41	61	57	54	51	53	56	53	56	57	58	63	65	78	77	A	A	A								
27	A	A	F	F	F	A	A	50	60	64	53	63	56	48	53	65	69	66	70	65	56	39	38	A								
28	A	F	F	F	F	A	32	64	A	53	56	59	61	62	61	63	72	74	36	98	67	30	30	30								
29	30	31	33	33	30	25	39	50	50	A	A	A	59	64	66	61	55	56	73	86	58	50	43	42								
30	39	40	33	31	30	27	37	66	57	61	60	60	63	76	67	61	58	74	93	113	50	26	A	27								
31	26	28	27	32	27	A	37	52	65	S	52	55	A	55	60	68	76	71	59	68	84	68	A	29	F							
CNT	13	13	17	21	17	14	27	30	24	22	22	22	26	26	24	24	29	29	29	28	29	20	16	15								
MED	36	33	31	30	27	26	38	51	55	53	53	54	56	59	59	62	68	68	71	66	60	48	38	34								
UQ	39	39	33	33	30	28	40	56	60	57	58	58	60	65	66	68	72	73	76	78	65	53	43	40								
LQ	32	30	F	F	26	24	36	46	50	50	49	49	51	51	56	60	58	63	67	61	55	39	34	33								

AUG. 1986

FOF2 (0.1 MHz)

The Radio Research Laboratory, Japan

IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	L	A	U	A	630	620	400	A	390	340	L			
2								L	L	L	L	A	A	U	A	A	A	A	A	A	A			
3								A	L	L	L	L	L	L	L	L	L	L	L	L	A			
4								A	L	A	A	A	L	L	A	A	L	400	370	L	L			
5								L	L	L	A	L	L	L	L	L	L	L	L	L	L			
6								L	L	L	A	L	U	A	L	A	L	A	A	A	A			
7								A	L	A	L	L	L	A	L	U	A	L	L	L	L			
8								A	A	L	L	L	A	A	A	A	L	L	L	L	A			
9								L	L	L	L	L	L	L	U	L	U	A	U	A	L			
10								L	U	L	U	A	A	U	A	L	A	L	L	L				
11								L	L	A	L	L	L	L	A	A	L	A	A	A	A			
12								L	L	A	A	A	U	A	A	C	C	C	C	C	C			
13								C	C	C	A	A	A	A	A	A	A	A	A	A	A			
14								A	L	A	A	U	A	A	A	A	A	A	380	330				
15								A	A	A	A	A	A	A	U	A	A	A	370	A				
16								L	A	L	A	U	A	A	A	L	L	L	L	A				
17								A	A	A	L	L	L	L	L	L	L	L	L	L				
18								L	L	A	L	L	L	L	L	L	L	L	L	L				
19								L	L	L	L	L	L	L	L	L	L	L	L	L				
20								L	L	L	L	L	L	L	L	L	L	L	L	L				
21								A	A	L	L	L	L	L	L	L	L	L	L	L				
22								A	A	L	L	L	L	L	L	L	L	L	L	L				
23								L	L	L	L	L	L	L	L	L	L	L	L	L				
24								A	L	L	L	L	L	L	L	L	L	L	L	L				
25								A	L	U	A	A	A	A	A	A	A	A	A	A				
26								L	A	L	L	A	A	L	A	L	L	L	L	L				
27								A	A	U	A	A	A	U	L	L	L	L	L	L				
28								A	A	L	L	A	A	U	A	L	L	L	L	L				
29								A	A	A	A	A	L	U	A	L	L	L	L	L				
30								L	A	L	L	U	L	L	L	L	L	L	L	L				
31								L	L	L	L	A	A	U	A	U	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	4	14	18	15	14	18	19	17	19	19	19	7					
MED							L	365	390	410	420	430	430	430	420	410	400	380	330					
UQ							L	375	390	420	430	440	440	440	430	420	400	380	340					
LQ							L	355	380	410	420	430	430	430	420	410	400	370	330					

AUG. 1986

FOF1 (0.01 MHz)

The Radio Research Laboratory, Japan

### IONOSPHERIC DATA

AUG. 1986      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 24 sec in automatic operation		
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
1							A	U	A			A	R	A	A	U	A	A	A										
2							S	A		A	A	A		A															
3							S																						
4							S	R																					
5							S																						
6							S	A																					
7							S	A																					
8							S																						
9							S	A																					
10							S	R																					
11							A																						
12							S	A																					
13							C	C																					
14							S																						
15							S	A																					
16							S																						
17							S																						
18							S																						
19							S	A																					
20							S	A																					
21							S																						
22							S																						
23							S																						
24							S	A																					
25							S	A																					
26							S	A																					
27							S	A																					
28							S																						
29							S																						
30							S																						
31							S																						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
CNT								18	15	13	13	10	10	14	14	11	18	18	12										
MED								210	260	290	305	312	332	330	330	310	290	252	190										
UQ								220	270	300	310	330	345	340	330	320	300	265	205										
LQ								200	255	290	300	300	320	330	320	308	280	245	170										

AUG. 1986      FOE (0.01 MHz)



### IONOSPHERIC DATA

AUG. 1936
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 24 sec in automatic operation											
	Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
1		38	J A	J A	J A	J A	J A	J A	J A	38	37	34	46	50	J A	J A	J A	J A	G	23	J A	J A	J A	J A
2		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	45	49	67	99	160	200	34	41	41	29	25
3		J A	J A	J A	J A	E S	J A	J A	J A	J A	J A	J A	J A	37	37	36	34	32	19	G	29	J A	40	19
4		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	34	J A	J A	J A	J A
5		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
6		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
7		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
8		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
9		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	39	38	55	78	50	35	25	25	25	73
10		J A	J A	J A	J A	E S	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
11		J A	J A	E S	E S	E S	E S	22	29	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
12		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	C	C	C	C	C	C	C	C
13		C	C	C	C	C	C	C	C	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
14		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
15		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
16		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
17		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	G	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
19		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
20		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
21		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
23		J A	J A	J A	J A	J A	E S	21	30	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
24		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
25		J A	J A	J A	J A	J A	E S	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
26		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
27		J A	J A	J A	J A	E S	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
29		E S	E S	E S	J A	E S	E S	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
30		J A	J A	J A	J A	E S	E S	E S	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
31		J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	31	31	31	31	31	30	30	30	30	30	30	30	29	30	30
MED	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
UQ	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
LQ	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A

AUG. 1936
FOES (0.1 MHz)
The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

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 24		sec in		automatic operation								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	27	ES 16	28	26	ES 16	ES 16	23	23	34	36	G	46	44	37	35	38	51	G	G	ES 16	20	31	AA 51	AA 44	
2	AA 41	AA 52	AA 44	AA 41	AA 50	AA 38	20	27	29	32	40	AA 143	45	43	AA 67	AA 99	AA 160	51	29	22	31	ES 16	ES 16	ES 16	
3	29	ES 16	ES 16	ES 16	ES 16	ES 16	AA 53	21	23	27	31	33	37	G	35	34	G	G	16	29	40	17	ES 16	33	24
4	AA 46	ES 16	20	ES 16	20	ES 16	AA 54	33	AA 62	AA 48	46	34	40	57	AA 39	36	G	32	25	19	27	25	ES 16	ES 16	
5	21	35	35	20	AA 64	ES 16	G	G	32	35	45	40	42	39	40	35	36	27	22	18	AA 87	34	AA 84	ES 16	
6	21	19	19	ES 16	20	ES 16	24	29	31	33	AA 65	36	43	41	54	33	50	44	AA 73	AA 62	29	ES 16	ES 16	ES 16	
7	AA 50	ES 16	ES 16	ES 16	ES 16	18	32	40	30	AA 82	35	G	40	AA 55	36	39	32	31	64	40	40	27	ES 16	29	
8	ES 16	26	ES 16	24	21	ES 16	27	40	AA 157	AA 140	35	41	AA 121	AA 177	AA 75	51	39	36	51	AA 77	33	AA 83	25	27	
9	23	23	ES 16	ES 16	ES 16	ES 16	27	31	29	32	35	36	G	G	37	43	44	42	28	25	18	ES 16	21	30	
10	AA 52	ES 16	18	ES 16	ES 16	ES 16	18	33	39	41	AA 57	43	44	40	48	37	32	32	40	37	ES 16	20	20	ES 16	
11	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	21	28	32	45	38	40	36	36	AA 73	AA 75	30	51	36	44	42	33	AA 84	26	
12	ES 16	26	ES 16	18	ES 16	ES 16	18	25	38	AA 77	AA 77	AA 81	45	56	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	48	AA 77	48	51	52	AA 85	AA 137	50	AA 57	49	42	37	AA 83	AA 84	20	
14	ES 16	ES 16	17	ES 16	ES 16	ES 16	28	AA 62	34	AA 95	AA 100	43	48	50	AA 105	55	32	22	ES 16	29	AA 82	AA 65	AA 51		
15	AA 36	AA 34	23	20	ES 16	ES 16	19	33	AA 79	AA 91	AA 76	56	AA 75	44	42	43	42	34	33	42	26	ES 16	18	ES 16	
16	ES 16	ES 16	ES 16	24	ES 16	ES 16	19	37	34	AA 52	37	43	44	45	35	34	31	24	46	ES 16	ES 16	AA 84	25	ES 16	
17	ES 16	ES 16	ES 16	ES 16	ES 16	18	19	56	40	40	44	40	G	16	36	37	34	32	61	62	49	37	20	18	AA 61
18	20	ES 16	17	ES 16	ES 16	ES 16	29	34	AA 79	34	35	33	40	39	43	45	50	30	64	54	42	AA 84	AA 41		
19	21	ES 16	ES 16	ES 16	ES 16	ES 16	26	31	31	40	44	AA 86	38	AA 85	43	38	34	30	21	18	17	ES 16	18	ES 16	
20	ES 16	20	AA 53	24	ES 16	ES 16	ES 16	33	AA 87	AA 110	AA 92	AA 100	AA 159	G	41	36	30	G	28	27	ES 16	ES 16	ES 16	18	
21	ES 16	AA 54	AA 46	ES 16	17	ES 16	ES 16	40	53	38	33	33	35	35	45	AA 79	30	42	66	29	19	C	ES 16	ES 16	
22	S	ES 16	29	ES 16	28	ES 16	29	44	41	35	43	45	AA 84	AA 87	34	34	32	30	38	53	41	20	S	ES 16	
23	AA 62	ES 16	ES 16	19	ES 16	ES 16	ES 16	29	34	43	58	AA 63	48	44	49	58	40	26	33	19	32	AA 89	AA 55	22	
24	ES 16	25	ES 16	20	ES 16	21	26	25	30	35	40	49	38	36	34	36	32	34	30	30	17	21	19	ES 16	
25	ES 16	28	20	19	20	ES 16	ES 16	33	35	43	AA 81	AA 111	AA 123	AA 130	AA 136	AA 92	75	64	42	48	21	ES 16	25	ES 16	
26	21	ES 16	20	20	ES 16	ES 16	ES 16	24	38	35	34	50	52	36	52	37	37	34	33	31	32	AA 52	AA 51	AA 80	
27	AA 53	AA 55	ES 16	ES 16	ES 16	AA 41	AA 52	47	40	50	46	47	47	41	40	33	G	63	40	50	50	25	ES 16	AA 65	
28	AA 60	19	ES 16	20	ES 16	AA 56	20	55	AA 87	32	35	48	53	44	G	33	60	58	61	40	42	20	ES 16	ES 16	
29	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	36	46	AA 89	AA 122	AA 70	38	43	40	37	36	30	24	22	25	18	ES 16	ES 16	
30	ES 16	ES 16	18	ES 16	ES 16	ES 16	ES 16	24	40	34	38	G	G	35	35	G	G	34	25	18	ES 16	ES 16	AA 35	ES 16	
31	ES 16	ES 16	24	20	21	AA 51	ES 16	28	36	39	39	AA 77	51	44	44	68	48	49	45	55	50	AA 51	20	21	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	29	30	30	30	30	30	30	30	30	31	31	31	31	31	30	30	30	30	30	30	30	29	29	30	
MED	21	ES 16	17	ES 16	ES 16	ES 16	19	31	37	40	43	46	44	43	42	38	36	34	33	34	29	21	20	17	
UQ	AA 36	26	23	20	20	ES 16	26	37	46	51	62	66	51	50	52	58	48	50	46	48	40	42	AA 51	29	
LQ	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	ES 16	27	32	35	35	38	38	36	36	34	31	30	28	19	18	ES 16	ES 16	ES 16	

The Radio Research Laboratory, Japan

AUG. 1986

FBES (0.1 MHz)

# IONOSPHERIC DATA

AUG. 1986

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

AUG. 1986

FMIN (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

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	MHz to 25		MHz in 24		sec in		automatic operation								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	U F	295	J S	350	S	305	315	350	330	320	305	290	280	305	285	290	295	295	305	320	340	360	A	A		
2	A	A	A	A	A	A	330	390	370	310	270	A	275	295	A	A	A	320	330	320	330	325	305	305		
3	J S	F	F	F	S	335	A	315	345	335	325	G	310	270	285	290	285	280	340	350	310	295	300	F		
4	A	F	F	F	F	F	A	350	A	A	A	280	275	285	A	300	215	280	335	355	310	310	F	F		
5	F	F	F	340	A	315	335	350	340	300	A	325	305	315	300	305	300	310	335	325	A	335	A	F		
6	F	F	F	F	F	F	335	345	355	325	A	310	330	285	300	320	325	335	A	A	315	345	345	310		
7	A	320	F	320	350	320	360	325	355	A	340	270	335	A	310	295	295	335	350	355	350	315	340	F		
8	F	F	F	F	F	F	320	305	A	A	340	300	A	A	A	300	270	310	345	A	350	A	F	F		
9	F	F	F	F	F	320	350	345	355	325	335	285	285	285	285	295	315	315	325	350	320	305	290	F		
10	A	F	F	F	F	F	335	375	345	H	360	A	300	310	325	300	305	300	335	330	350	315	300	F	F	
11	F	F	U F	F	F	305	305	335	330	335	U H	R	P	340	275	A	A	290	280	310	325	U S	U S	A	U F	
12	U S	U S	U F	F	F	F	285	320	340	A	A	A	285	335	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	A	A	A	315	325	A	A	A	A	315	310	330	A	A	U S	325	
14	F	S	F	315	305	325	355	360	A	325	A	A	310	320	305	A	295	305	345	370	335	A	A	A		
15	A	A	320	295	360	340	355	345	A	A	A	A	310	315	295	300	325	325	325	345	315	295	305			
16	U F	U F	U F	F	F	F	350	345	H	350	A	335	305	275	275	305	315	315	H	305	295	S	350	A	U S	U S
17	F	F	F	U S	F	F	315	315	330	285	365	345	320	305	320	285	305	310	295	330	340	320	335	345	310	A
18	F	F	320	F	F	F	350	355	340	A	370	345	295	270	220	275	285	310	330	330	345	F	A	A		
19	F	F	315	315	340	325	325	340	345	320	A	305	A	U R	295	300	310	330	340	350	J S	290	S	F	335	
20	S	F	A	S	F	F	300	355	A	A	A	A	A	320	325	350	320	H	320	315	305	315	335	345	320	
21	305	A	A	F	335	F	340	345	340	340	350	325	295	315	310	A	295	330	A	325	310	I C	295	285	285	
22	S	F	F	320	A	F	S	A	H	330	305	A	315	A	A	275	260	280	305	315	315	345	S	S	S	
23	A	S	F	F	S	F	C	335	335	370	A	A	280	290	305	320	315	300	315	340	365	A	A	300		
24	305	315	295	F	F	S	325	350	335	335	365	320	300	285	320	320	325	305	320	340	S	U S	F	325		
25	310	315	305	S	325	315	290	345	350	335	340	A	A	A	A	A	320	350	360	360	335	345	335	295		
26	320	335	320	325	310	300	340	370	375	380	335	A	A	320	330	315	310	335	300	335	370	A	A	A		
27	A	A	F	F	F	A	A	350	340	345	350	340	340	270	310	325	325	A	330	345	340	320	290	A		
28	A	F	F	F	F	A	310	360	A	350	310	340	335	320	325	315	320	305	325	355	315	335	300	300		
29	300	320	335	335	335	320	360	370	340	A	A	A	305	305	320	325	325	305	330	360	345	310	300	295		
30	280	325	320	340	315	315	325	380	395	335	335	325	310	340	330	325	300	275	325	365	370	325	A	315		
31	305	305	315	345	370	A	350	335	375	R	305	325	A	325	315	310	330	345	320	340	345	380	A	295	F	
00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	13	13	17	21	15	14	25	29	24	21	18	19	25	26	24	24	28	28	28	28	29	20	16	15		
MED	305	315	320	335	335	318	335	350	340	335	335	310	305	305	305	308	300	310	330	340	340	322	300	305		
UQ	320	320	325	340	345	325	350	360	355	345	340	325	320	320	318	320	320	330	340	352	350	335	322	318		
LQ	305	305	315	315	315	305	325	335	338	325	320	295	285	285	298	295	295	302	315	322	315	308	292	300		

AUG. 1986

M(3000)F2 (0.01)



IONOSPHERIC DATA

AUG. 1986

M(3000)F1 (0.01)

135° E Mean Time (G.M.T. + 9 h)

Station	YAMAGAWA				Lat. 31° 12' N				Long. 130° 37' E				Sweep 1		MHz to 25		MHz in 24		sec in		automatic operation			
	Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
1								L	L	370	380	415	A	A	370	405	375	A	335	350	L			
2							L	L	340	390	385	380	A	A	A	A	A	A	A	A	365	A		
3							A	L	350	385	400	380	395	405	405	395	360	H	360	355	A	A		
4							A	L	A	A	A	A	395	L	395	A	A	L	380	375	365	L		
5								L	L	370	A	A	A	A	370	A	L	A	370	L	380			
6								L	L	370	390	A	L	A	A	A	L	A	A	A	A	A		
7								A	L	380	A	L	395	A	A	L	A	L	360	365				
8									A	A	L	A	A	A	A	A	A	A	A	A		A		
9								L	L	390	L	405	405	L	395	L	395	A	A	A	L			
10								L	A	A	A	A	A	A	A	A	L	380	L	375	L			
11								L	L	380	A	390	405	415	395	A	A	A	A	A	A	A		
12								L	A	A	A	A	A	A	A	C	C	C	C	C	C	C		
13							C	C	C	A	A	A	A	A	A	A	A	A	A	A	A			
14									A	L	A	A	A	A	A	A	A	A	A	340	365			
15									A	A	A	A	A	A	A	A	A	A	A	A	A			
16							L	A	L	370	A	A	A	A	A	A	415	365	375	350	A			
17									A	A	A	405	350	430	355	390	385	A	A	A				
18								L	A	A	390	420	420	A	A	A	A	A	A	A				
19								L	L	375	A	A	A	365	A	A	A	375	350	L				
20								A	A	A	A	A	A	A	H	420	A	390	380	360	L			
21								A	A	A	H	395	375	385	375	A	A	355	A	A				
22								A	A	400	A	A	A	A	A	380	350	345	360	A				
23							L	L	C	A	A	A	A	A	A	A	A	A	335	A				
24								A	L	355	A	A	L	375	355	380	335	350	340	A				
25								A	L	A	A	A	A	A	A	A	A	A	A					
26								L	A	L	L	A	A	L	A	L	A	A	A	A				
27							A	A	A	A	A	A	A	A	U	L	375	A	380	L	350	A	A	
28								A	A	L	L	A	A	A	L	385	390	A	A	A				
29								A	A	A	A	A	L	385	A	A	L	380	350	L	L			
30								L	A	L	L	U	L	L	370	L	375	L	355	L	A	L		
31								L	L	A	L	370	A	A	A	A	A	A	A	A	A			
CNT											1	3	9	11	12	10	11	12	10	16	15	14	4	
MED										L	L	L	L	L	L	L	L	L	L	L	L	L	L	
UQ										340	355	375	390	392	400	385	385	390	380	360	355	365		
LQ										372	380	395	400	405	405	405	395	385	375	360	372			

AUG. 1986

M(3000)F1 (0.01)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986

H<sup>o</sup>F<sub>2</sub> (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 24 sec		in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								240	280	320	355	A	420	355	370	335	325	310	285	245				
2							L	300	225	245	L	480	A	A	475	395	A	A	A	285	260	245		
3							A	295	255	290	320	G	375	445	410	335	335	335	250	225				
4							A	260	A	A	A	A	405	390	E	A	A	320	350	340	270			
5								270	270	370	A	A	305	350	310	315	340	340	305	265				
6								270	255	305	A	A	355	320	425	A	305	300	290	A	A			
7							A	270	A	305	505	305	A	300	370	360	290							
8								A	A	A	320	390	A	A	A	A	350	315				A		
9								280	250	290	300	425	430	490	350	325	300	280	250					
10								230	250	280	A	A	375	350	320	345	340	305	280					
11							L	265	265	300	280	290	470	A	A	A	380	E	A	285	255			
12							L	295	250	A	A	A	365	295	C	C	C	C	C	C	C			
13							C	C	C	A	A	A	325	295	A	A	A	A	E	A	340			
14								A	320	A	A	A	340	305	310	A	E	A	295	245				
15								A	A	A	E	A	350	A	320	335	350	290	280	265				
16								240	245	255	A	305	365	445	440	320	295	295	290	285	A			
17								240	275	345	350	330	375	355	320	310	E	A	E	A	275			
18								240	285	A	250	300	405	460	630	445	380	305	265					
19								290	265	280	310	A	305	A	330	300	300	270	250					
20								240	A	A	A	A	A	295	280	270	300	300	280					
21								A	290	295	280	315	365	330	315	A	310	265	A					
22								A	310	370	A	340	A	A	430	500	400	290	270					
23							U	L	240	285	280	240	A	A	430	350	315	300	295	290	270			
24								240	275	285	260	E	A	320	370	410	320	295	290	290	270			
25								250	270	280	A	A	A	A	A	A	E	A	310	265				
26								250	250	250	320	A	A	340	A	330	320	280	300					
27							A	A	270	280	275	290	300	270	340	305	290	A	255					
28								A	A	265	340	290	A	305	290	320	310	E	A	315	290			
29								A	A	A	A	A	355	330	310	280	305	335	265					
30								240	230	290	280	330	325	275	280	290	330	325	270					
31								275	330	330	310	A	A	340	315	A	270	A	270					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	19	23	20	18	19	23	26	22	22	28	27	24	4				
MED							L	240	250	265	288	308	350	355	340	320	320	309	290	269	245			
UQ								270	278	278	312	320	382	398	410	350	340	338	308	278	250			
LQ								240	240	250	278	280	302	325	305	310	300	299	281	262	235			

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AUG. 1986

H<sup>o</sup>F<sub>2</sub> (KM)

IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 300	E S 280	A 250	A 245	S 300	E S 255	A 220	A 240	A 200	195	A	A	A 245	A 200	A 245	A	A	225	225	245	225	A 230	A	A
2	A	A	A	A	A	A	240	210	205	195	A	A	A	A	A	A	A	A	A	A	245	245	250	250
3	E A 330	275	255	E S 230	E S 270	E S 270	A	220	195	H 175	H 170	H 185	200	205	180	200	H 230	210	A	A	225	250	E A 310	E A 295
4	A	210	E A 250	210	E A 300	E S 300	A	A	A	A	A	220	E A 240	A	A	215	210	E A 240	E A 250	225	240	E A 270	E S 270	E S 290
5	A	E A 320	E A 300	250	A	E S 300	250	240	220	A	A	E A 290	A	E A 270	A	H 200	A	210	220	240	A	E A 260	A	240
6	E A 320	E A 280	E A 280	E S 260	E A 350	E S 290	E A 250	E A 240	220	205	A	H 190	A	A	A	E A 240	A	A	A	A	E A 275	220	195	E S 255
7	A	E S 270	E S 320	E S 300	S 250	E A 280	E A 250	A	H 200	A	H 200	205	A	A	H 180	A	230	180	A	240	250	E A 280	E S 250	E A 260
8	E S 280	E A 310	E S 275	E S 320	E A 290	E S 250	A	A	A	A	H 180	A	A	A	A	A	A	A	E A 270	A	230	A	E A 270	E A 270
9	E A 270	A	E S 350	E S 300	E S 255	E S 245	E A 250	E A 250	215	H 200	H 195	H 200	H 190	H 190	H 190	A	A	A	E A 235	230	240	E S 255	E A 290	E A 290
10	A	E S 300	E A 300	E S 260	E S 320	E S 290	240	A	A	A	A	A	A	A	A	A	230	220	E A 240	E A 270	250	250	E A 280	E S 265
11	250	245	250	230	E S 265	E S 275	250	230	230	A	230	230	195	H 215	A	A	185	A	A	A	235	E A 255	A	E A 325
12	270	E A 265	E S 300	A 260	E S 280	E S 280	245	240	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	A	E A 280	255	A	A	250
14	E S 275	E S 280	E S 260	270	260	230	225	215	A	210	A	A	A	A	A	A	A	250	240	205	E A 245	A	A	A
15	A	A	E A 315	E A 275	225	E S 265	245	245	A	A	A	A	A	A	A	A	A	A	A	A	255	215	200	E A 295
16	E S 275	E S 275	E S 275	E S 350	E S 295	E S 255	225	A	225	A	A	A	A	A	195	245	215	210	A	235	205	A	E A 315	300
17	E S 295	E S 280	260	275	280	275	255	A	A	A	A	210	170	185	205	205	225	A	A	E A 280	250	220	265	A
18	E S 305	S 270	S 285	E S 250	E S 260	E S 255	220	A	A	A	220	200	190	A	A	A	A	A	A	A	E A 250	S	A	A
19	S	E S 290	E S 285	E S 275	E S 255	E S 275	E A 260	A	220	A	A	A	270	A	A	A	E A 220	225	215	220	255	235	A 260	230
20	E S 290	E A 235	A 295	E A 250	E S 250	E S 290	250	A	A	A	A	A	A	A	H 180	E A 235	220	210	A	E A 255	260	200	210	E A 350
21	E S 260	A	A 305	E A 245	E S 205	245	A	A	A	195	220	215	215	A	A	220	A	A	A	245	245	I C 265	280	280
22	S	S 305	250	E S 270	A	E S 280	265	A	A	E A 205	A	A	A	A	195	240	260	250	A	A	E A 240	E A 260	S	S 295
23	A	295	280	A	E S 270	E S 300	230	250	A	A	A	A	A	A	A	A	A	235	A	235	215	A	A	E A 290
24	S	E A 320	E S 310	A	E S 280	E A 245	A	240	E A 235	A	A	A	205	200	195	A	230	A	A	240	215	E A 240	E A 300	250
25	E S 270	A	E A 350	E A 280	E A 300	E S 270	230	225	A	A	A	A	A	A	A	A	A	A	A	E A 240	280	240	230	E A 250
26	E A 290	E S 270	E A 300	E A 280	E S 280	E S 280	S 240	230	A	220	215	H	A	A	H 180	E A 250	A	A	A	230	230	A	A	A
27	A	A	305	275	200	A	A	A	A	A	A	A	A	A	210	200	180	A	A	E A 260	E A 280	E A 265	E S 300	A
28	A	E A 280	E S 260	210	E S 300	A	E A 270	A	A	220	215	A	A	A	A	200	225	A	A	A	225	215	E S 250	E S 295
29	E S 300	E S 290	E S 265	240	S 240	E S 270	235	230	A	A	A	A	E A 250	A	A	230	A	A	A	255	240	220	230	E A 250
30	E S 300	E S 270	E A 270	E S 270	E S 250	S 250	S 255	230	A	215	E A 250	225	190	230	215	220	220	A	E A 250	215	190	E S 250	A	E S 310
31	E S 320	E S 300	A	E A 260	E A 250	A	E A 240	230	A	A	E S 245	A	A	A	A	A	A	A	A	250	225	A	A	A
CNT	20	24	26	27	26	25	26	15	12	11	12	11	11	12	10	15	14	13	12	23	29	22	19	23
MED	E S 290	E S 280	E S 280	E S 270	E S 268	E S 275	242	230	220	202	202	208	195	205	195	222	220	218	229	235	235	E S 250	E S 270	E S 280
UQ	E E 300	E E 295	E E 300	E E 280	E E 290	E S 290	250	238	228	215	220	221	215	218	200	235	230	240	250	246	248	E A 260	E A 298	E S 290
LQ	E S 270	E S 270	E E 260	U 230	E S 250	E S 255	235	225	210	199	H 195	200	190	188	190	210	212	210	221	228	225	225	U 225	241

AUG. 1936

H\*F (KM)

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### IONOSPHERIC DATA

AUG. 1986 H<sup>o</sup>E (KM)

135° E Mean Time (G.M.T. + 9 h)

Hour Day	Station YAMAGAWA				Lat. 31° 12' 1" N				Long. 130° 37' 1" E				Sweep 1 MHz to 25 MHz in 24 sec in automatic operation												
	00	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	105	A	105	A	105	105	A	A	A	E	A	S					
2							S		115	105	105	105	105	105	105	105	105	105	A	S					
3							S	A	A	A	A	A	120	105	105	115	105	110	120	S					
4							S		110	A	105	105	105	105	105	110	110	110	120	S					
5							S	E	C	125	105	105	105	105	105	105	105	A	A	A	S				
6							S		110	105	105	105	105	A	A	A	A	A	A	115	S				
7							S		110	105	A	A	105	A	105	A	A	110	110	A	S				
8							S		110	105	105	105	105	105	A	A	A	H	H	110	S				
9							S		110	A	A	A	A	110	110	110	115	110	A	A	S				
10							S		110	110	110	110	110	110	105	110	105	A	A	A	S				
11							A		110	105	105	105	105	105	A	110	105	105	A	A	A				
12							S		110	105	115	115	115	105	105	C	C	C	C	C	C				
13							C	C	C	105	110	105	105	110	105	105	110	110	E	S	S				
14							S	E	S	120	105	105	105	105	105	105	105	105	A	A	S				
15							S		115	105	105	105	105	105	105	105	105	105	105	A	S				
16							S		110	105	105	105	105	105	A	A	A	E	A	A	S				
17							S		115	105	115	A	A	120	A	110	105	A	A	A	S				
18							S		110	115	110	A	A	110	A	A	A	110	110	S					
19							S	A	A	105	105	110	110	110	A	A	A	A	A	A					
20							S	A	A	A	A	A	A	A	H	A	A	110	110	A					
21							S		110	110	110	110	A	A	A	A	A	A	A	A					
22							S		110	105	105	105	105	105	105	A	A	105	110	S					
23							S		115	110	110	110	110	110	110	110	110	110	115	S					
24							S	A	A	A	A	110	110	A	A	A	110	110	115	S					
25							S	A	A	A	A	A	105	105	105	105	A	A	A	A	S				
26							S		110	105	105	105	105	105	105	A	A	105	110	E	S	S			
27							S		110	105	110	105	A	A	A	A	A	105	105	S	S				
28							S		115	105	110	105	105	105	110	105	110	110	115	A	S				
29							S	S	120	110	A	A	A	A	A	A	A	A	A	A	S				
30							S		105	105	105	105	105	A	110	110	110	105	105	S	S				
31							S		110	110	105	105	105	105	105	105	105	105	110	S	S				
CNT											24	23	23	23	22	23	21	16	16	21	18	7			
MED											110	105	105	105	105	105	105	105	105	110	115				
UQ											114	108	110	108	105	110	110	110	110	110	121				
LQ											110	105	105	105	105	105	105	105	105	105	115				

AUG. 1986 H<sup>o</sup>E (KM)



### IONOSPHERIC DATA

AUG. 1986

H<sup>+</sup>ES (KM)

135° E Mean Time (G.M.T. + 9 h)

Station	YAMAGAWA																							
	Lat. 31° 12' 1" N												Long. 130° 37' 1" E											
Hour	Sweep 1 MHz to 25 MHz in 24 sec in automatic operation																							
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	105	100	105	105	105	105	125	125	130	E G 150	145	145	140	120	110	105	G	135	125	115	105	110	105
2	105	100	100	100	100	100	120	115	110	105	105	105	140	130	120	115	110	105	105	105	105	105	110	105
3	105	105	105	105	S	105	105	105	105	105	105	100	150	E G 145	135	E G 170	E G 155	100	125	110	115	115	105	105
4	100	100	100	110	100	100	115	115	110	105	105	110	105	105	105	110	G	120	115	110	110	105	105	105
5	105	100	100	100	100	100	150	G	130	125	120	115	110	110	110	110	100	100	100	100	100	100	110	105
6	100	100	100	100	100	100	120	120	115	115	110	110	100	100	100	100	130	120	115	110	110	105	110	105
7	100	100	100	100	105	100	115	110	105	100	100	G	100	105	100	100	110	120	100	100	100	100	100	100
8	100	100	100	100	100	105	115	115	110	105	105	105	105	G	100	100	100	130	130	110	110	105	105	105
9	100	100	100	100	120	115	110	110	100	100	100	150	G	130	125	115	105	100	100	100	100	100	100	100
10	105	100	100	S	100	100	140	120	115	115	110	110	105	105	105	105	100	100	100	100	100	100	100	105
11	105	105	S	S	S	S	140	135	120	115	110	105	105	145	120	115	115	135	130	120	115	105	105	105
12	105	105	110	105	100	125	125	130	115	115	110	105	110	105			c	c	c	c	c	c	c	c
13	c	c	c	c	c	c	c	c	c			110	105	105	105	105	115	115	110	110	105	105	105	105
14	105	105	105	105	105	105	140	140	120	115	115	110	100	115	115	110	105	110	125	110	100	100	100	100
15	95	100	95	95	95	125	120	115	110	110	110	105	105	105	110	105	105	105	105	105	105	105	105	105
16	105	125	110	100	100	100	125	110	105	105	105	105	100	100	125	100	150	100	100	110	105	100	105	100
17	95	95	115	105	105	125	140	110	110	115	115	115	105	125	120	155	145	100	100	120	95	130	125	105
18	105	105	100	105	130	130	100	110	110	105	165	160	120	165	105	130	125	115	115	110	110	110	110	105
19	110	105	120	130	125	130	115	110	115	110	110	105	110	105	105	100	105	100	105	140	105	100	100	115
20	105	100	100	100	105	100	105	105	105	105	105	105	105	G	105	100	155	130	100	100	115	110	110	105
21	110	110	105	110	115	120	130	115	110	110	110	105	105	160	110	105	100	100	100	95	100	c	s	115
22	110	110	110	105	115	110	120	110	110	110	110	110	105	110	105	105	135	130	120	115	115	115	115	110
23	110	105	120	100	105	S	130	115	120	115	110	110	115	115	110	110	110	170	120	110	110	110	105	105
24	105	100	105	100	100	100	105	115	130	130	120	110	125	145	155	140	130	120	115	110	110	110	105	S
25	105	105	100	100	100	S	105	100	100	115	110	115	105	105	105	100	100	100	100	100	120	115	110	105
26	110	110	100	100	105	105	110	105	105	140	140	105	105	105	100	100	125	125	120	120	115	110	110	105
27	105	105	100	100	S	120	115	110	110	105	105	100	100	100	100	100	G	110	105	105	105	105	105	105
28	100	100	100	100	125	130	130	115	110	115	110	110	115	110	G	125	110	110	100	100	105	105	100	105
29	S	S	S	100	S	S	105	105	105	100	100	100	100	100	100	100	100	100	100	95	95	95	S	S
30	100	105	100	100	S	S	S	120	115	120	120	170	170	160	120	G	140	125	120	115	100	100	100	100
31	100	100	120	120	120	115	125	120	110	110	105	105	105	105	130	125	125	120	115	110	110	110	105	105
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	28	25	25	29	29	30	31	31	30	30	30	29	29	28	29	30	30	30	29	28	28
MED	105	105	100	100	105	105	120	115	110	110	110	108	105	106	110	108	110	110	108	110	105	105	105	105
UQ	105	105	108	105	115	120	130	120	115	115	111	110	115	130	120	115	130	120	120	110	110	110	110	105
LQ	100	100	100	100	100	100	110	110	105	105	105	105	105	105	105	100	105	100	100	100	100	100	102	105

AUG. 1986

H<sup>+</sup>ES (KM)

# IONOSPHERIC DATA

AUG. 1986

TYPES OF ES

135° E Mean Time (G.M.T. + 9 h)

Station Hour Day	YAMAGAWA																							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F1	F3	F5	F4	F2	LC22	CHL11	CL11	CL12	H1	HL13	HC32	HC21	CL22	CL43	CL41		HL22	L1	FF21	F3	F7	F7
2	F7	F5	F3	F6	F6	F5	CL31	C3	C2	C3	C3	C4	H2	C2	C3	C5	C7	C6	L2	L3	F4	F3	F1	F2
3	F4	F2	F2	F2		FF21	L6	L3	L2	L2	L2	L2	HL11	H1	H1	HL12	HL12	L1	CL43	L7	FF22	F2	F7	F5
4	F6	F3	F4	F1	F4	F2	C6	C6	CL72	C5	C3	C1	C2	C5	C4	C2		C3	C3	C6	F5	F3	F2	F4
5	F6	F6	F7	F4	F5	F2	H2		H2	C2	C2	C1	C3	C2	C2	C2	L3	L4	L3	L3	F4	F3	F7	F3
6	F4	F4	F3	F2	F6	F2	C6	C4	C2	C3	C3	C2	L3	L3	L3	LH22	H3	CL41	C7	C7	F3	F2	F1	F4
7	F3	F2	F2	F1	F4	F4	C4	C5	C2	L3	L2		L2	C2	L3	L2	C3	C2	L4	L4	F4	F4	F2	F2
8	F2	F6	F3	F4	F4	F2	C5	C5	C6	C5	C2	C5	C4	L4	L5	L5	H2	H3	C6	C7	F7	F5	F3	F4
9	F5	F6	F4	F2	F1	F2	C6	C3	L2	L2	L1	HL11		H1	C1	C3	C3	L4	L4	L3	F3	F2	F3	F5
10	F5	F2	F3		F2	F2	H3	C6	C4	C4	C4	C3	C3	C2	C3	C2	L3	L4	L4	L4	F2	F6	F4	F2
11	F2	F1				H3	H4	C2	C4	C2	C2	C2	HCL11	C5	C5	C1	HCL33	CL45	CL35	FF33	F4	F7	F5	
12	F2	F5	F2	F3	F2	FF22	CL21	C2	C3	CL72	CL51	CL41	C3	C2										
13										C4	CL41	C4	C3	C4	C5	C6	C4	C5	C7	L5	F3	F3	F4	F3
14	F2	F2	F2	F2	F2	F2	H1	HL31	C6	C2	C7	C5	L23	C3	C4	C5	C3	L3	CL33	L1	F5	F8	F5	F7
15	F6	F5	F3	F3	F3	FF11	C3	C5	C6	C6	C3	C5	C3	C3	C3	C3	C3	C4	L5	L5	F6	F2	F3	F2
16	FF12	F1	FF22	F4	F2	F2	CL43	C7	C3	C5	C3	C2	C3	L2	CL12	L3	HL12	L2	L5	L2	F3	F4	FF35	F3
17	F3	F2	FF11	F2	F2	FF42	HL22	C4	C5	CL31	CL42	CL23	L1	CL11	CL21	H1	HL22	L6	L5	CL28	F6	FF15	FF13	F6
18	F6	F2	F3	F1	F5	F2	L1	C5	C2	C3	HL11	HL11	C1	HL21	LH31	CL31	C5	C4	C7	F7	F4	F5	F6	F5
19	F5	F4	FF12	F3	F1	F2	C7	L3	L3	C4	C4	C4	C3	C5	L2	L3	L2	L4	L4	FF13	F3	F2	F2	F1
20	F2	F4	F3	F3	F1	F2	L2	L4	L6	L4	L6	L5	L6		L3	L2	H1	H1	L7	F6	FF32	F1	F3	F3
21	F1	F7	F6	F2	F2	F2	C2	C4	C4	C3	C1	L2	L1	HL11	C3	CL71	L3	L8	L6	F5	F3			F2
22	F4	F4	F7	F3	F7	F2	C6	C4	C3	C3	C4	C4	C5	C3	L2	L2	H2	H2	C6	F7	F7	F4	F7	F5
23	F7	F2	F1	F4	F2		H3	C6	C3	C3	C5	C3	C5	C2	C4	C4	C3	HH12	C6	F7	F7	F5	F7	F7
24	F5	F8	F2	F6	F2	F4	L7	CL13	HL22	HL23	H2	C3	HL21	HL11	HL11	H2	H1	C3	C4	F5	F3	F5	F4	
25	F2	F7	F3	F2	F4		L1	L3	L4	CL43	CL62	C6	C6	C6	C5	L5	L7	L7	L3	L6	FF52	F1	F6	F3
26	F7	F2	F4	F3	F5	F7	C3	C4	C4	HC32	HC21	C4	C4	C3	L4	L2	C3	C4	C7	C7	F6	F7	F4	F7
27	F7	F6	F3	F2		F7	C6	C5	C6	C4	C5	L3	L4	L3	L3	L2		C7	C7	C7	F6	F7	F2	F6
28	F8	F7	F2	F3	FF22	F6	C4	C6	C4	C2	C2	C4	C4	C2		C1	C4	C7	L6	L5	F4	F4	F3	F2
29				F4			C1	C4	C7	L5	L6	L7	L2	L3	L4	L3	L4	L4	L5	L4	F4	F2		
30	F2	F3	F3	F1			C3	C5	C2	C2	C2	H1	HL11	H1	C1		H1	C3	C5	C3	F1	F2	F5	F6
31	F3	F1	F3	F6	F3	F6	C1	C3	C4	C2	C3	C6	C4	C4	C3	C3	C6	C5	C6	C5	F6	F6	F3	F5
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
UQ																								
LQ																								

The Radio Research Laboratory, Japan

AUG. 1986

TYPES OF ES

# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	49	X 48	X 54	A	A	A															X 69	X 42	33	A	
2	A	A	A	30	30	30															90	71	X 48	X 48	
3	40	42	40	40	34	29															X 48	X 52	X 48	X 48	
4	X 42	A	32	30	31	35															X 74	X 62	X 64	X 58	
5	X 58	X 56	X 50	X 44	X 38	X 34	X 38														X 66	X 60	X 48	X 48	
6	45	52	45	40	39	X 37															75	74	42	A	
7	X 33	X 33	X 31	30	35	33															X 51	X 42	X 39	X 36	
8	X 35	31	A	A	A	A															X 53	X 48	X 58	X 60	
9	47	47	48	44	C	35															X 53	X 47	X 46	X 46	
10	40	A	33	30	A	31	39														X 57	X 50	X 48	A	
11	A	37	40	37	28	X 27															X 77	X 57	X 55	X 45	
12	44	A	36	38	30	30															X 77	X 73	X 48	A	
13	A	38	40	37	36	31															X 66	X 62	X 48	A	
14	40	42	40	41	38	44															A	A	A	A	
15	X 33	32	32	34	30	27															X 65	X 53	X 44	X 41	
16	X 39	X 38	X 38	X 32	X 31	X 31															X 88	X 84	X 60	A A	
17	35	40	36	A	32	33															X 79	X 65	X 62	A X 36	
18	40	40	36	36	32	28															X 78	X 98	X 50	30 22	
19	A	A	33	34	35	35	37														X 89	X 98	X 76	65 64	
20	54	47	A	X 35	X 33	A	X 35														X 72	X 81	X 55	X 31 A	
21	A	X 34	X 32	A	33	X 33	X 37														X 94	X 98	X 56	X 56 57	
22	X 53	49	56	X 39	A	X 33	X 42														X 66	X 55	U 47	U 46 43	
23	32	42	47	A	A	A	A														108	68	A	X 38 38	
24	38	A	40	X 37	33	X 35	X 38														X 95	X 64	X 37	36 36	
25	35	X 35	33	32	31	30	X 37														X 88	83	A	57 36	
26	40	39	X 38	X 36	X 35	X 32	X 35														0 88	X 84	U 54	X 38 37	
27	38	36	37	X 41	32	30	A														X 93	A	A	X 41 40	
28	41	42	44	45	32	X 26	X 36														X 117	A	A	X 36 F	
29	38	36	43	35	35	31	X 36														U 101	X 51	X 47	X 46 46	
30	X 44	X 47	X 40	X 38	X 36	X 33	X 40														U 120	X 70	X 44	X 36 36	
31	X 35	X 33	X 33	X 33	X 33	A	X 34														X 99	A	A	A 38	
CNT	26	25	28	26	25	26	13														16	27	25	27 22	
MED	40	40	39	36	33	32	X 37														X 91	X 69	X 54	X 46 42	
UQ	44	47	44	40	35	X 34	X 38														X 100	X 82	X 62	X 48 48	
LQ	38	36	33	33	31	30	X 36														X 84	X 60	X 47	X 38 36	

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FXI (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986      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 24 sec		in automatic operation											
	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	S	4.2	4.8	A	A	A	31	53	48	48	A	4.8	5.2	A	5.6	6.1	6.8	7.7	8.3	8.8	S	S	F	A						
2	A	A	A	F	F	F	33	56	49	44	A	5.4	5.2	5.4	6.2	6.7	7.4	8.2	7.8	8.0	R	F	F	U	S	4.2					
3	F	F	F	F	F	F	27	56	58	46	E	G	E	G	5.1	5.4	5.0	6.4	7.7	8.5	8.3	6.5	4.2	4.6	4.2	F					
4	S	A	F	F	F	F	37	55	54	R	4.8	5.3	A	A	A	8.4	8.8	7.9	9.4	9.5	8.2	6.8	5.6	5.8	S	5.2					
5	5.2	5.0	4.4	3.8	3.2	2.8	3.2	5.9	5.2	4.9	5.4	6.2	6.5	6.6	7.3	7.7	8.0	9.0	8.8	7.6	6.0	5.4	F	J	S	4.2					
6	F	F	F	F	F	3.1	3.2	5.0	5.8	R	5.2	5.1	5.5	5.9	7.3	8.0	8.2	7.8	5.7	A	A	F	F	F	F	A					
7	2.7	2.7	2.5	F	F	F	3.2	R	5.2	J	R	4.7	5.0	5.5	6.3	6.5	7.0	7.9	9.0	8.1	5.6	4.5	3.6	3.3	3.0						
8	2.9	F	A	A	A	A	4.8	R	7.5	A	4.8	A	6.4	7.7	8.5	8.6	8.4	R	R	8.0	5.7	4.7	4.2	F	F						
9	F	F	F	F	C	F	3.4	5.6	R	5.4	R	6.1	6.4	7.0	8.4	8.1	8.5	8.8	R	9.0	8.7	A	4.7	4.1	4.0	4.0					
10	F	A	F	F	A	F	6.0	5.4	A	5.4	5.4	J	R	5.0	A	6.8	7.7	9.0	R	8.3	8.3	6.8	S	5.1	4.4	4.2	A				
11	A	F	F	F	F	2.1	3.1	4.9	6.0	6.1	A	5.9	6.1	5.2	A	A	5.9	6.9	8.0	8.6	S	7.1	F	4.9	F						
12	F	A	F	F	F	F	2.7	5.4	R	6.0	5.5	5.4	5.5	7.2	8.4	8.9	9.4	7.6	7.9	8.0	A	S	7.1	6.7	4.2	A					
13	A	F	F	F	F	F	3.2	4.9	5.1	A	5.3	6.7	9.0	10.0	10.0	U	R	A	A	6.0	R	6.1	6.0	5.6	F	A					
14	F	F	F	F	F	F	3.7	4.5	4.4	5.4	5.6	A	6.9	7.4	8.1	7.8	8.4	10.0	10.6	6.6	A	A	A	A	A						
15	2.7	F	F	F	F	F	3.0	J	R	5.1	A	A	A	A	A	7.0	7.2	7.8	8.7	8.6	7.5	6.9	5.9	4.7	3.8	3.5					
16	3.3	3.2	3.2	2.6	2.5	2.5	3.5	5.2	5.2	A	5.2	5.1	5.2	A	7.6	7.8	8.0	8.2	8.1	8.2	7.8	S	5.4	A	A						
17	F	F	F	A	F	F	3.5	R	4.8	R	5.1	A	R	5.2	6.8	7.8	R	R	8.5	7.9	9.0	8.7	6.8	S	5.9	5.6	A	3.0			
18	F	F	F	F	F	F	3.2	5.3	5.3	6.6	5.4	A	4.8	4.8	5.1	A	5.7	7.1	7.4	J	A	S	9.2	S	4.4	F	F				
19	A	A	F	F	F	F	F	E	2.7	A	5.8	6.1	6.2	A	8.4	8.9	8.1	7.7	9.0	R	10.4	R	8.8	S	9.2	7.0	F	F			
20	F	F	A	U	S	2.9	A	2.9	6.5	5.6	R	5.1	5.4	5.9	7.1	8.4	8.0	7.5	7.0	5.5	5.6	6.6	S	7.5	S	4.9	S	A			
21	A	2.8	2.6	A	F	S	2.2	2.7	3.1	5.0	5.3	A	R	5.8	6.1	7.3	7.7	8.0	9.0	R	9.7	9.0	8.9	8.8	J	S	9.2	5.0	5.0	F	
22	4.7	F	F	F	3.3	A	2.7	U	S	3.6	4.8	R	5.2	4.6	5.7	6.1	6.2	4.9	5.5	5.1	5.9	8.5	7.6	6.0	4.9	S	4.1	S	4.0	S	3.7
23	F	F	F	A	A	A	5.0	R	J	R	6.5	A	E	G	4.4	6.1	7.1	9.0	9.3	8.9	8.7	10.3	R	F	F	A	3.2	F	F		
24	F	A	F	J	S	3.1	F	2.9	3.2	5.3	6.0	6.1	6.6	5.0	5.3	6.1	6.5	7.6	8.1	8.6	9.0	8.9	5.8	3.1	F	F	F	F			
25	F	2.9	F	F	F	F	3.1	5.0	5.2	5.8	6.0	J	R	5.4	7.1	8.7	8.5	9.1	10.4	10.4	9.0	8.2	F	A	F	F	F	F			
26	F	F	3.2	3.0	2.9	2.6	2.7	6.3	5.3	5.2	5.3	5.5	A	5.5	5.5	6.1	6.8	7.5	7.0	8.2	7.8	S	4.8	3.2	F	F	F	F			
27	F	F	F	S	F	F	A	4.7	7.5	A	5.7	6.2	6.8	J	R	5.3	6.4	7.7	8.4	R	9.4	R	9.7	8.7	A	A	3.5	S	3.4		
28	F	F	F	F	F	S	U	S	U	R	7.2	5.2	5.9	6.0	5.9	7.0	8.0	8.0	8.4	8.3	8.6	10.4	J	S	11.1	A	A	S	F		
29	F	F	F	F	F	F	3.0	5.0	5.7	5.2	R	5.7	5.7	6.7	7.7	7.8	8.0	7.7	7.8	U	R	U	S	9.5	4.5	4.1	4.0	4.0			
30	3.8	4.1	3.4	3.2	3.0	2.7	3.4	6.3	5.0	5.5	6.2	6.0	7.4	8.4	7.5	7.1	7.6	8.9	U	R	S	11.9	11.4	6.4	S	3.8	3.0	S	3.0		
31	F	2.7	2.7	2.7	2.7	A	2.8	5.6	5.7	5.7	6.1	6.2	6.1	5.9	7.6	8.8	8.4	8.4	9.5	9.3	A	A	A	A	F	F	F	F	F		
CNT	8	9	9	9	7	10	27	30	30	23	26	25	28	27	30	29	30	30	30	30	27	23	22	19	11						
MED	3.4	3.2	3.2	3.1	2.7	2.7	3.2	5.2	5.4	5.4	5.4	5.7	6.4	7.3	7.7	7.8	8.0	8.6	8.3	8.2	6.0	4.6	4.0	3.7							
UQ	4.2	4.1	3.4	3.3	3.0	2.8	3.4	5.6	5.8	5.8	6.0	6.1	7.1	8.4	8.1	8.5	8.7	9.0	9.5	8.8	7.3	5.4	4.2	4.1							
LQ	2.8	2.8	2.6	2.9	2.6	2.5	3.0	5.0	5.2	5.0	5.3	5.4	5.4	5.7	6.5	7.5	7.6	7.9	7.8	6.7	5.0	4.1	3.2	3.2							

AUG. 1986      FOF2 (0.1 MHz)

The Radio Research Laboratory, Japan



# IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation				
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L	A	430	U A	A	A	A	400	390	A					
2								L	L	L	A	A	A	A		430	410	A	380	A				
3								L	L	L		430	430	430	430	430	410	400	380	L				
4							L	L	A	L	U A	A	A	A	A	410	410	380	A					
5								L	L	L		L			U A	430	430	410	380	L	A			
6								L	L	L		420	420	430	U A	440	420	420	410	A	A	A		
7								A	A		L		410	430	430	430	420	410	400	370	L			
8							A		330	A	A	A	A	A	430	430	A	A	A	A	A			
9								L	L	L		420	430	450	440	440	440	420	A	390	A	A		
10								L	A	A	A	A	A	A	A	U A	430	A	L	L	A			
11								L	L	L	A	U A	460	440	440	A	A	400	A	L				
12								L	L	L	A	A	A	U A	420	A	A	A	A	A	A			
13								L	A	A	U A	420	440	A	A	A	A	A	A	A				
14								L	A	A	A	A	A	A	A	A	A	U A	400	A				
15								A	A	A	A	A	A	A	A	A	A	A	A	A	A			
16								L	L	A	L	L	U A	420	A	A	A	A	380	L				
17								L	A	A		430	430	A	430	420	420	U A	400	A	A			
18								A	L	410	420	A	430	U A	420	U A	420	A	400	A				
19								A	A	A	L	430	A	A	A	U L	440	410	400	380	L			
20								L	L	U L	420	420	440	440	440	420	420	410	L	L				
21									A	A	A	A	440	440	430	420	420	400	L	L				
22								L	A	A	L	410	430	430	440	420	410	390	370	L	L			
23								L	L	L	A	440	420	A	A	A	A	A	A					
24								L	L	L		420	L	U L	450	430	430	420	420	L	L			
25								L	L	L	A	U L	430	U L	450	440	420	410	A	A				
26								L	L	L	A	A	A	A	A	420	400	L	A					
27								A	A	A	420	430	430	L	A	A	A	400	A	A				
28								A	A	400	A	430	A	440	U A	450	U A	430	A	A	L			
29								L	L	A	U	L	U L	430	430	420	400	370	L					
30								L	L	A	L	U L	440	U L	430	440	430	420	410	380				
31								L	L	A	A	440	440	L	430	420	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1		6	14	14	20	19	18	20	18	16						
MED							330			410	420	430	430	440	430	420	400	380						
UQ										L	420	430	440	440	440	430	420	410	395					
LQ										410	420	430	430	430	420	410	400	380						

AUG. 1986

FOF1 (0.01 MHz)

# IONOSPHERIC DATA

AUG. 1986      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 24 sec		in automatic operation			
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							S		R	A	A	A		R	R	R		R	A	A					
2							S		A	A	A	A		R	R	R		R	A	A					
3							S		A	A	A	A		R	R	R		R	A	A					
4							S		A	A	A	A		R	R	R		R	A	A					
5							S		A	A	A	A		R	R	R		R	A	A					
6							S		A	A	A	A		R	R	R		R	A	A					
7							S		A	A	A	A		R	R	R		R	A	A					
8							S		R	A	A	A		R	R	R		R	A	A					
9							S		A	A	A	A		R	R	R		R	A	A					
10							A	U	R	A	A	A	R	A	A	A	A	A	A	A	A	A	A	A	
11							S		R	A	A	A		R	R	R		R	A	A					
12							S		A	A	A	A		R	R	R		R	A	A					
13							S		A	A	A	A		R	R	R		R	A	A					
14							S		A	A	A	A		R	R	R		R	A	A					
15							S		A	A	A	A		R	R	R		R	A	A					
16							S		A	A	A	A		R	R	R		R	A	A					
17							S		A	A	A	A		R	R	R		R	A	A					
18							S		A	A	A	A		R	R	R		R	A	A					
19							S		A	A	A	A		R	R	R		R	A	A					
20							A	U	A	U	A	A	A	A	A	A	A	U	A	A	U	A	A	A	
21							U	R	U	R	A	A	A	A	A	A	A	U	A	A	U	A	A	A	
22							A																		
23							A																		
24							A																		
25							A																		
26							A																		
27							A																		
28							A																		
29							A																		
30							A																		
31							A																		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								7	8	5	7	7	7	9	11	13	16	10	5						
MED								210	260	290	320	330	340	340	330	320	300	260	205						
UQ								218	270	290	320	332	345	345	338	325	300	270	210						
LQ								202	250	290	308	322	338	335	325	310	292	260	200						

AUG. 1986      FOE (0.01 MHz)

IONOSPHERIC DATA

AUG. 1986

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

AUG. 1986

FOES (0.1 MHz)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986      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 24 sec		in automatic operation											
Hour	Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1		30	34	29	AA	AA	AA																			
2		AA	AA	AA	AA	ES	ES	ES																		
3		ES	ES	ES	ES	ES	ES																			
4		ES	AA	ES	ES	ES	ES																			
5		ES		ES	ES	ES	ES																			
6		30	17	ES	ES	ES	ES																			
7		ES	ES	ES	ES	ES	ES																			
8		24	ES	AA	AA	AA	AA																			
9		ES	25	26	26	C																				
10		ES	AA	ES	AA	ES																				
11		AA	20	ES	ES	ES																				
12		ES	AA	ES	ES	ES																				
13		AA	41	ES	ES	ES																				
14		21	ES	ES	ES	ES																				
15		ES	ES	ES	ES	ES																				
16		22	ES	ES	ES	ES																				
17		25	ES		AA	ES																				
18		ES	ES	20	20	20																				
19		AA	AA	20	ES	ES																				
20		28	18	AA	AA	AA																				
21		AA	33	19	21	AA																				
22		ES	16	26	30	16	AA																			
23		21	21	30	AA	AA	AA																			
24		ES	AA	AA	ES	ES	ES																			
25		ES	ES	ES	ES	ES																				
26		ES	ES	ES	ES	ES																				
27		20	18	19	ES	18	AA																			
28		ES	16	20	22	20	ES																			
29		20	18	25	18	ES	ES																			
30		ES	ES	ES	ES	ES	ES																			
31		ES	ES	ES	ES	ES	AA																			
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT		31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED		ES	16	18	19	ES	ES	ES																		
UQ		26	26	26	19	18	18	20	31	40	57	48	52	50	49	48	49	49	44	50	49	42	34	26	32	
LQ		ES	ES	ES	ES	ES	ES																			

The Radio Research Laboratory, Japan

AUG. 1986      FBES (0.1 MHz)



# IONOSPHERIC DATA

AUG. 1986

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

AUG. 1986

FMIN (0.1 MHz)

### IONOSPHERIC DATA

AUG. 1986

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 24 sec		in automatic operation								
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	F	S	320	A	A	A	355	365	365	345	A	280	300	A	275	285	280	300	325	345	S	S	F	A				
2	A	A	A	F	F	F	365	365	365	365	A	295	290	285	290	300	310	315	320	R	F	F	U	S				
3	F	F	F	F	F	F	335	355	380	370	G	G	305	295	260	275	300	310	355	360	310	305	310	F				
4	S	A	F	F	F	F	335	365	370	365	R	310	A	A	A	305	320	280	305	325	340	315	295	295	S			
5	335	320	340	330	310	305	310	355	365	305	295	290	315	310	295	290	285	310	330	330	315	335	F	J	S			
6	F	F	F	F	F	320	320	340	345	305	R	295	290	290	295	295	290	325	305	A	A	F	F	F	A			
7	295	315	320	F	F	F	310	345	365	J	R	340	295	290	290	290	295	290	305	335	360	340	320	335	335	315		
8	310	F	A	A	A	A	320	365	R	A	280	A	280	285	280	290	295	315	R	R	360	350	295	310	F	F		
9	F	F	F	F	C	F	350	350	R	330	R	335	275	265	280	275	290	305	315	R	A	330	305	310	325			
10	F	A	F	F	A	F	F	375	350	A	340	315	J	R	A	350	285	285	310	R	330	340	325	305	335	A		
11	A	F	F	F	F	335	340	365	365	360	A	330	345	305	A	A	280	290	305	350	S	F	325	F	F			
12	F	A	F	F	F	F	335	340	365	R	335	305	290	290	305	315	335	300	305	325	A	S	345	345	A			
13	A	F	F	F	F	F	345	355	370	A	320	285	300	315	300	320	U	R	A	A	335	335	325	340	F	A		
14	F	F	F	F	F	F	380	375	365	335	330	A	310	310	310	R	290	295	325	360	365	A	A	A	A			
15	335	F	F	F	F	F	320	J	R	A	A	A	A	A	300	295	295	335	350	335	335	320	340	315	315			
16	305	310	310	325	320	360	360	365	345	A	305	335	320	A	300	295	310	305	320	335	345	355	A	A	A			
17	F	F	F	A	F	F	355	355	360	R	A	R	290	295	280	285	285	290	325	320	330	S	340	340	A	300		
18	F	F	F	F	F	F	365	355	340	365	350	A	270	760	295	A	305	325	310	J	A	S	S	F	F			
19	A	A	F	F	F	F	335	A	360	345	320	A	295	315	310	285	310	315	R	R	S	340	340	F	F			
20	F	F	A	U	S	S	A	310	370	355	R	325	305	295	305	305	320	330	320	295	320	S	S	S	A			
21	A	305	305	A	F	S	340	350	355	360	340	A	345	310	310	310	300	295	315	R	310	320	330	J	S	330	290	F
22	285	295	F	F	A	315	U	S	320	345	R	345	305	325	320	345	255	300	275	280	340	355	335	315	S	S	S	
23	F	F	F	A	A	A	A	340	350	360	R	J	R	A	G	295	280	310	315	315	300	335	F	F	A	295	F	
24	F	A	F	J	S	F	345	345	350	350	360	365	340	290	310	290	300	320	325	335	360	370	305	F	F	F		
25	F	310	F	F	F	F	340	380	345	345	335	J	R	270	280	310	325	305	315	355	325	340	F	A	F	F		
26	F	F	345	335	310	325	315	365	365	345	340	310	R	A	310	310	310	310	320	300	315	345	355	295	F	F		
27	F	F	F	S	F	F	A	300	340	A	350	320	325	J	R	R	300	320	330	R	320	345	A	A	285	295	S	
28	F	F	F	F	F	S	U	S	U	R	300	320	325	310	310	315	355	360	P	315	310	325	J	S	A	A	S	F
29	F	F	F	F	F	F	330	360	360	345	R	300	285	300	295	310	300	305	U	R	U	S	310	290	300	300		
30	315	330	295	330	335	335	350	365	360	345	330	300	305	345	320	310	280	295	U	R	S	345	S	285	S	300		
31	F	315	335	335	370	A	340	375	350	350	335	305	325	270	290	325	345	345	335	365	A	A	A	A	F	F		
00	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	9	9	9	7	10	27	30	30	23	26	25	28	27	30	29	30	30	30	27	23	22	19	11				
MED	308	315	320	335	320	330	340	355	360	345	325	300	298	305	295	295	310	315	330	340	325	335	310	310				
UQ	325	320	335	340	338	345	352	365	365	360	335	310	312	310	310	310	315	325	335	350	345	S	330	312				
LQ	300	310	310	330	312	315	320	345	345	335	300	290	290	288	290	290	295	305	320	332	315	305	295	300	S			

The Radio Research Laboratory, Japan

AUG. 1986

M(3000)F2 (0.01)

# IONOSPHERIC DATA

AUG. 1936

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 24 sec in				automatic operation			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
1								L	L	L	A	420	A	A	A	A	400	360	A												
2								L	L	L	A	A	A	A	A	A	A	370	A												
3								L	L	L	395	420	420	420	430	415	A	380	L												
4						L	L	A	L	A	A	A	A	A	A	415	390	370	A												
5							L	L	L	L	405	L	395	420	A	390	390	395	L	A											
6							L	L	L	430	430	395	A	405	415	390	A	A	A												
7							A	A	440	L	440	420	440	450	440	400	405	L													
8						A	420	A	A	A	A	A	395	405	A	A	A	A	A												
9							L	L	L	390	370	365	385	410	385	355	A	345	A	A											
10							L	A	A	A	A	A	A	A	A	A	A	L	L	A											
11							L	L	L	365	A	A	385	410	A	A	400	A	L												
12							L	L	L	A	A	A	A	A	A	A	A	A	A	A											
13							L	A	A	A	A	A	A	A	A	A	A	A	A												
14								L	A	A	A	A	A	A	A	A	A	A	A												
15							A	A	A	A	A	A	A	A	A	A	A	A	A	A											
16							L	L	A	L	L	A	A	A	A	A	A	395	L												
17							L	A	A	420	420	A	395	405	390	A	A	A													
18							A	L	410	420	A	440	A	A	A	A	A	A	A												
19							A	A	A	L	405	A	A	A	U L	375	400	385	370	L											
20							L	L	U L	380	415	375	385	375	370	370	380	L	L												
21								A	A	A	A	A	395	385	395	380	355	350	L	L											
22							L	A	A	L	415	395	360	375	415	380	385	350	L	L											
23							L	L	L	A	410	430	A	A	A	A	A	A													
24							L	L	L	380	L	U L	400	420	395	380	355	L	L												
25								L	L	L	A	U L	420	390	375	380	365	A	A												
26							L	L	L	A	A	A	A	A	A	380	375	L	A												
27							A	A	A	405	420	420	L	A	A	A	375	A	A												
28							A	A	400	A	420	A	400	A	A	A	A	A	L												
29								L	L	A	L	U L	390	420	395	405	400	410	L												
30							L	L	A	L	U L	385	395	385	405	405	365	370	L												
31								L	L	A	A	A	385	375	395	380	A	A													
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
CNT								1		6	11	12	18	16	14	17	16	14													
MED							420		395	405	420	395	402	395	390	385	370														
UQ								410	418	420	420	420	420	405	405	395	395														
LQ								380	400	390	385	385	385	385	380	370	350														

AUG. 1936

M(3000)F1 (0.01)

# IONOSPHERIC DATA

AUG. 1986

H\*F2 (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 24 sec in automatic operation							
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1								245	235	255	L	A	450	380	A	430	480	365	320	310					
2								240	245	275	L	U L	A	370	420	410	365	340	A	290	325				
3								260	225	265	G	G	390	375	490	380	310	290	245						
4							270	250	250	285	350	A	A	A	320	290	370	310	250						
5							260	245	390	400	340	320	360	380	335	330	275	250	240						
6							260	255	350	400	360	390	360	330	315	260	A	A	A						
7							A	250	280	510	L	480	375	375	375	360	300	265	240						
8						A	310	235	A	A	A	A	435	360	A	A	A	A	240						
9							250	270	285	300	350	370	340	370	345	320	290	250	A						
10							210	260	A	300	A	A	A	A	350	360	290	280	250	230					
11							245	250	265	A	310	290	360	A	A	A	385	330	295						
12							270	250	290	350	400	350	320	305	275	310	310	290	A						
13							250	A	A	345	355	310	290	A	A	A	A	290							
14							250	315	325	A	A	A	310	320	330	355	275	240							
15							A	A	A	A	A	A	A	A	A	A	A	A	A	A					
16							230	280	A	L	320	310	A	A	A	A	305	300	280						
17							245	A	A	375	300	A	335	330	330	370	240	A							
18							A	280	260	275	A	560	A	410	A	A	300	A							
19							A	250	280	305	A	350	290	295	325	300	270	255							
20							225	250	280	340	345	345	295	300	285	275	305	325							
21							280	A	290	330	290	290	305	300	285	275	255								
22							275	270	A	320	320	280	600	360	450	380	265	250							
23							255	280	245	A	G	355	390	310	290	300	300								
24							250	265	265	250	U L	330	390	345	360	320	290	285							
25							255	280	300	455	355	310	310	310	285	250	250								
26							230	225	265	A	A	A	330	360	330	315	275	A							
27							A	A	A	280	305	300	A	A	A	290	A	240							
28							A	A	A	A	290	A	265	280	290	A	A	260							
29							220	225	265	A	290	A	265	280	290	A	A	260							
30							250	280	310	290	320	320	320	300	300	310	250								
31							245	230	275	300	325	320	275	290	315	350	310								
32							260	245	290	310	A	320	365	345	290	255	265								
CNT							1	21	28	22	23	23	23	24	25	24	25	25	22	2					
MED							270	250	250	278	320	340	350	338	330	322	305	290	250	235					
UQ							260	262	285	350	385	385	362	365	342	350	305	290							
LQ							240	245	265	300	310	320	302	310	295	290	275	250							

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H\*F2 (KM)



IONOSPHERIC DATA

AUG. 1986

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 24 sec in automatic operation									
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	305	285	220	A	A	A	250	235	215	200	A	185	A	A	A	A	215	235	A	230	215	210	265	A	
2	A	A	A	295	255	245	215	200	200	200	A	A	A	A	A	A	A	A	A	290	250	235	270	260	
3	250	285	285	240	250	250	260	250	A	200	210	200	200	215	195	A	A	A	210	215	250	270	245	265	
4	260	A	290	S	325	300	250	A	A	A	A	A	A	A	A	205	220	220	A	245	260	260	270	300	
5	275	265	235	240	260	S	250	230	240	210	190	230	A	A	A	A	A	A	A	A	220	250	A	A	
6	S	A	270	240	250	S	280	250	E A	260	A	A	200	200	200	225	A	A	190	210	A	A	A	A	
7	S	S	S	S	250	240	E A	270	A	A	190	200	200	200	200	200	235	220	220	210	205	240	250	S	
8	A	S	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	220	240	225	E	S	
9	295	285	305	290	C	245	230	220	230	A	200	255	255	200	190	200	245	A	A	A	A	230	250	255	235
10	340	A	250	S	A	330	245	215	A	A	A	A	A	A	A	A	A	A	A	250	240	A	265	250	265
11	A	240	265	210	S	300	245	240	220	A	A	A	A	200	A	A	220	A	245	240	200	260	250	300	
12	270	A	275	225	250	S	255	245	A	A	A	A	A	A	A	A	A	A	A	A	290	210	235	A	
13	A	250	250	300	275	S	230	215	A	A	A	A	A	A	A	A	A	A	A	280	255	240	250	A	
14	285	295	290	255	250	225	210	215	220	A	A	A	A	A	A	A	A	A	A	215	A	A	A	A	
15	280	S	E S	290	S	E S	E A	260	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E S	
16	E A	E S	E S	E S	E S	290	265	210	210	240	A	230	A	A	A	A	A	230	A	250	215	205	A	A	
17	S	E S	A	A	E S	290	250	220	215	A	A	200	190	A	A	A	E A	245	A	A	A	230	230	240	A
18	S	E S	E A	A	A	A	A	A	A	220	A	A	A	200	A	A	A	A	A	A	220	200	S	S	
19	A	A	320	280	270	270	240	S	A	A	A	210	A	A	A	205	220	220	270	A	250	245	225	205	280
20	300	295	A	270	280	A	250	210	210	200	200	E A	250	205	220	E A	265	240	220	200	230	250	220	195	230
21	A	A	E A	A	280	220	220	250	A	A	A	A	200	235	220	190	205	215	250	230	210	205	280	300	
22	295	325	250	225	A	270	275	235	A	A	200	230	A	235	200	230	235	225	240	235	235	A	A	275	
23	A	350	265	A	A	A	A	245	A	A	A	200	190	A	A	A	A	A	260	225	A	A	A	350	
24	300	A	A	250	300	215	235	240	225	220	215	205	200	205	205	200	235	A	250	240	210	260	300	300	
25	300	275	265	295	290	S	250	210	200	A	A	A	210	200	240	215	205	A	A	245	245	A	265	A	
26	300	300	A	270	250	S	S	220	A	A	A	A	A	A	A	230	A	A	A	260	A	200	A	A	
27	A	E A	A	240	A	A	A	A	A	A	210	200	210	A	A	A	A	A	A	235	A	A	A	A	
28	S	A	E A	210	S	S	A	A	A	200	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
29	A	A	250	220	250	240	240	230	190	H	200	A	A	A	200	230	200	205	210	E A	245	210	205	A	
30	290	250	295	265	240	280	250	220	210	A	A	215	250	240	210	200	210	A	250	210	210	A	325	310	
31	315	300	260	250	255	A	250	225	215	200	A	A	215	220	200	210	A	A	265	235	A	A	A	A	
CNT	18	21	23	23	20	18	26	22	14	12	12	13	13	12	12	15	13	11	13	23	24	21	19	15	
MED	294	285	262	250	260	250	244	222	218	200	205	200	200	210	204	208	220	225	245	235	228	235	260	285	
UQ	300	300	285	271	282	270	250	240	225	200	212	222	210	228	220	228	220	232	250	245	248	250	275	300	
LQ	280	272	250	240	250	240	230	215	210	200	200	200	200	200	200	200	210	218	235	222	212	205	250	265	

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H\*F (KM)

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# IONOSPHERIC DATA

AUG. 1986

H<sup>°</sup>E (KM)

135<sup>°</sup> 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	24	sec in	automatic operation			
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1							S	105	100	105	A	A	105	105	105	105	105	105	100	A					
2							S	110	110	110	110	110	110	110	110	110	110	110	A	A					
3							S	A	A	A	110	110	110	110	110	A	A	A	A	A					
4							S	110	A	A	A	105	105	105	105	105	A	110	110	S					
5							S	A	A	A	110	110	110	110	110		A	A	A	A					
6							S	110	A	A	A	A	A	A	A	110	110	110	110	A					
7							S	A	A	110	A	A	A	A	110	A	A	A	110	A					
8							S	105	105	105	105	A	A	A	A	105	A	A	A	A					
9							S	A	A	A	A	105	105	A	A	A	A	A	A	A					
10							A	105	A	A	A	100	A	A	A	A	A	A	A	A					
11							S	110	110	105	A	A	A	A	110	110	105	A	A	S					
12							S	A	A	A	110	A	A	A	A	A	A	A	A	A	S				
13							S	A	A	A	A	110	110	110	110	110	110	110	110	S					
14							S	110	A	A	110	110	110	A	A	A	A	A	A	S					
15							S	105	A	105	105	105	105	105	105	105	105	105	A	A					
16							S	A	A	A	A	A	A	A	A	A	A	A	A	A					
17							S	A	105	A	105	A	A	105	A	A	A	A	A	A					
18							S	A	A	A	A	A	A	110	A	110	110	110	110	A					
19							S	A	A	A	A	A	A	A	A	A	A	A	A	A					
20							A	A	A	A	A	A	A	A	A	A	105	A	A	A					
21							115	105	A	A	A	A	A	100	100	100	110	A	A	A					
22							110	105	105	105	105	105	105	105	105	100	A	105	110	A					
23							105	105	105	105	110	110	105	105	110	105	A	A	A	A					
24							A	110	A	A	A	A	A	115	105	110	110	115	B						
25							A	A	A	A	A	A	A	A	A	A	A	A	A	A					
26							A	105	A	A	A	A	A	A	A	105	105	105	105	A					
27							A	105	A	A	A	A	A	A	A	A	A	A	A	A					
28							A	A	105	105	105	105	105	105	A	105	105	105	A	A					
29							A	A	A	A	A	A	A	A	A	A	A	A	A	A					
30							110	110	A	A	105	105	110	105	110	105	110	A	A	A					
31							110	A	A	A	A	A	A	A	A	105	110	110	110	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT							15	13	11	11	13	13	13	14	18	15	14	10							
MED							110	105	105	105	105	105	105	105	103	105	105	110	110						
UQ							110	110	110	110	110	110	110	110	110	110	110	110	110						
LQ							105	105	105	105	105	105	105	105	105	105	105	105	110						

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AUG. 1986

H<sup>°</sup>E (KM)

IONOSPHERIC DATA

AUG. 1986

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 24 sec in				automatic operation					
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	100	100	100	100	100	100	125	120	120	120	110	105	140	120	120	130	E G	165	130	115	110	115	110	105	100
2	100	100	100	100	S	S	100	110	110	110	115	135	135	125	120	115	110	110	105	105	100	100	100	100	
3	105	105	100	100	100	105	100	100	100	160	150	G	160	120	125	165	140	110	110	100	100	100	S	105	
4	105	100	100	100	100	115	110	110	105	115	115	110	110	110	110	110	145	115	120	110	110	110	105	105	
5	110	110	110	110	110	100	110	110	E G	150	135	130	120	125	125	120	115	110	110	110	100	100	110	105	105
6	110	110	110	110	110	110	110	115	110	110	115	110	110	110	145	E G	160	130	125	115	110	110	110	110	110
7	110	110	110	110	110	S	110	110	110	125	110	110	130	110	125	110	110	110	125	110	110	100	S	100	
8	100	100	100	100	100	100	115	115	115	115	115	105	100	110	105	115	125	125	120	110	S	S	S	110	
9	105	100	100	100	C	115	115	105	105	100	150	150	140	105	115	145	105	105	105	105	100	S	S	S	
10	105	100	100	100	100	95	100	115	105	105	110	115	105	105	105	100	100	100	105	105	100	100	105	105	
11	110	100	105	110	100	100	100	115	115	115	110	110	125	125	115	110	110	105	105	105	110	105	100	100	
12	100	100	100	100	100	100	100	120	110	110	110	100	105	110	110	105	110	110	105	105	105	105	100	100	
13	100	100	100	100	100	100	100	120	110	110	110	110	110	110	110	110	110	110	110	105	105	105	110	105	
14	105	100	100	105	100	100	S	145	135	115	115	110	110	110	110	110	105	105	105	105	100	100	105	100	
15	105	115	105	105	105	110	110	115	100	115	115	115	115	115	115	115	115	115	105	105	105	105	105	105	
16	105	110	105	105	105	105	110	110	110	110	105	110	110	110	105	100	100	100	110	110	110	110	105	105	
17	110	110	110	110	110	110	105	110	115	110	120	110	100	125	150	110	130	125	120	100	100	110	110	130	
18	110	110	110	110	105	110	110	110	110	110	110	135	E G	150	E G	160	140	140	125	120	115	110	110	110	
19	105	105	100	105	105	100	120	105	105	100	105	100	100	105	105	105	105	100	100	100	95	95	100	100	
20	100	100	100	100	100	100	100	100	155	150	105	100	105	100	100	100	140	100	130	95	100	110	100	105	
21	105	105	100	100	100	100	100	115	115	105	105	100	100	100	E G	G	G	G	95	100	S	S	S	S	
22	105	105	105	105	105	100	105	115	110	110	110	110	E G	165	E G	170	155	120	100	150	120	105	105	105	110
23	100	100	100	100	100	115	115	115	115	120	110	125	120	110	110	110	110	105	110	105	105	100	100	100	
24	S	100	100	105	100	S	S	150	145	140	125	125	120	120	140	G	155	125	110	110	110	110	110	105	
25	100	S	105	100	100	100	100	145	120	100	115	110	115	110	105	115	105	100	110	100	110	125	100	115	
26	110	110	110	110	110	110	110	110	115	110	145	140	100	100	105	115	160	130	120	110	110	110	110	110	
27	110	110	110	S	110	110	110	110	115	110	110	110	110	110	100	100	100	110	110	110	105	105	110	105	
28	110	100	100	100	100	110	110	110	110	115	115	115	115	125	140	130	120	115	110	100	100	100	100	100	
29	105	105	105	100	100	100	100	100	125	110	100	160	105	100	100	100	100	100	100	100	100	100	100	S	
30	S	S	100	S	S	S	S	120	115	110	110	G	G	155	G	G	140	115	110	110	100	100	S	100	
31	100	100	S	S	S	110	S	150	110	105	100	100	100	150	150	150	115	110	110	110	110	110	110	110	
CNT	29	29	30	28	27	28	27	31	31	31	31	29	30	31	30	28	30	30	31	31	29	28	25	28	
MED	105	100	100	100	100	102	110	115	110	110	110	110	110	110	114	111	110	110	110	105	105	105	105	105	
UQ	110	110	105	108	105	110	110	118	115	115	115	122	125	122	132	122	130	120	115	110	110	110	110	110	
LQ	100	100	100	100	100	100	100	110	110	110	110	110	105	110	105	108	105	105	105	100	100	100	100	100	

AUG. 1986

H°ES (KM)

The Radio Research Laboratory, Japan

# IONOSPHERIC DATA

AUG. 1986      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 24 sec in automatic operation

Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 6	F 6	F 6	F 6	F 5	F 5	CL 22	C 3	C 4	C 2	L 5	L 1	H 2	C 6	C 3	C 2	H 1	H 2	C 4	L 2	F 3	F 2	F 2	F 6
2	F 7	F 7	F 5	F 3			L 2	C 2	C 2	C 2	CH 12	HH 31	H 2	H 3	C 2	C 2	C 5	C 2	L 6	L 4	F 4	F 3	F 3	F 3
3	F 3	F 2	F 2	F 2	F 2	F 2	L 4	L 2	L 5	HL 22	HL 11		HL 11	CL 12	CL 12	HL 22	HL 22	CL 32	CL 32	L 3	F 2	F 2		F 5
4	F 2	F 6	F 4	F 3	F 8	FF 22	L 2	C 2	L 4	CL 21	CL 42	C 7	C 7	C 6	C 3	C 2	HL 11	C 2	C 2	L 7	F 4	F 4	F 3	F 4
5	F 2	F 6	F 1	F 3	F 2	F 2	L 1	L 2	HL 11	HL 11	C 1	C 2	C 2	C 1	C 2	C 3	L 4	L 2	L 4	L 4	F 2	F 4	F 3	F 4
6	F 6	F 4	F 3	F 2	F 2	F 3	L 3	C 3	L 3	L 2	L 2	L 2	L 2	L 2	HL 21	H 1	C 1	C 4	C 6	L 7	F 3	F 4	F 3	F 6
7	F 2	F 2	F 2	F 2	F 2		L 2	L 5	L 2	C 2	L 2	L 2	CL 11	L 1	C 1	L 2	L 2	L 2	C 1	L 1	F	F 2		F 1
8	F 6	F 3	F 7	F 6	F 7	F 6	L 5	C 5	C 5	C 7	C 3	L 6	L 3	L 3	L 4	C 7	CL 33	CL 62	CL 42	L 1				F 2
9	F 3	F 3	F 6	F 4		F 3	C 2	L 2	L 2	L 2	HL 11	H 1	H 1	LH 11	LH 12	HL 11	L 2	L 2	L 7	L 5	F 4			
10	F 3	F 3	F 2	F 3	F 3	F 2	L 2	C 2	L 6	L 6	L 3	C 3	L 4	L 4	L 3	L 3	L 5	L 3	L 4	L 5	F 7	F 3	F 4	F 3
11	F 3	F 5	F 2	F 1	F 3	F 3	L 5	C 3	C 3	C 3	CL 31	CL 32	CL 21	CL 21	C 3	C 4	C 2	L 4	L 3	L 3	F 1	F 4	F 3	F 5
12	F 7	F 6	F 5	F 2	F 2	F 3	L 2	CL 21	CL 42	CL 31	CL 31	L 3	L 3	L 2	L 3	L 5	L 5	L 6	L 7	L 6	F 7	F 1	F 7	F 7
13	F 7	F 4	F 2	F 2	F 2	F 4	L 3	CL 31	CL 42	CL 21	CL 41	CL 31	C 5	C 2	C 6	C 3	C 5	C 7	C 5	L 7	F 5	F 3	F 3	F 3
14	F 5	F 2	F 2	F 2	F 2	F 3		H 1	HL 31	CL 31	C 4	C 4	C 5	L 4	L 4	L 3	L 7	L 5	L 4	L 7	F 6	F 4	F 6	FF 74
15	F 2	F 1	F 1	F 2	F 2	F 2	L 6	C 6	L 6	C 5	C 6	C 7	C 4	C 4	C 4	C 4	C 5	C 4	L 7	L 7	F 5	F 4	F 3	F 2
16	F 4	F 2	F 3	F 2	F 2	F 5	L 3	L 2	L 4	L 3	L 3	L 3	L 2	L 5	L 4	L 3	L 3	L 3	LL 32	F 5	F 3	F 3	F 2	F 6
17	F 7	F 2	F 7	F 7	F 2	F 1	L 3	LL 13	C 4	L 5	C 2	L 2	L 4	C 2	HL 12	L 2	CL 33	CL 35	CL 35	F 5	F 5	F 2	F 4	CF 24
18	F 2	F 4	F 2	F 5	F 6	F 4	L 2	L 6	L 2	L 5	L 2	HL 22	HL 11	H 1	HL 11	H 5	C 5	C 6	C 6	F 7	F 6	F 4	F 3	F 5
19	F 5	F 5	F 5	F 4	F 2	F 2	C 2	L 7	L 6	L 4	L 3	L 6	L 5	L 5	L 2	L 3	L 3	L 7	L 6	F 6	F 5	F 5	F 2	F 3
20	F 5	F 5	F 5	F 3	F 2	F 6	F 4	L 5	HL 22	HL 11	L 2	L 4	L 2	L 2	L 3	L 4	HL 21	L 2	HL 33	F 3	F 2	F 1	F 1	F 4
21	F 4	F 6	F 8	F 4	F 6	F 7	F 3	C 3	C 4	L 3	L 5	L 4	L 2	L 2	H 1				L 3	F 4				
22	F 2	F 4	F 5	F 4	F 5	F 7	F 4	C 3	C 4	C 4	C 2	H 1	H 1	H 1	H 1	C 2	L 3	H 1	C 2	F 7	F 7	F 3	F 5	F 1
23	F 7	F 7	F 8	F 8	F 4	FF 23	FF 14	C 2	C 3	C 3	CL 51	CL 11	C 2	C 4	C 3	C 3	C 3	L 6	CL 53	F 3	F 6	F 6	F 3	F 3
24		F 5	F 4	F 2	F 3			HL 11	HL 22	HL 22	CL 12	CL 12	CL 11	CL 11	HL 12		HL 11	C 3	C 7	FF 43	FF 32	FF 21	FF 42	F 4
25	F 2		F 2	F 2	F 2	F 2	F 1	HL 11	CL 22	L 3	CL 31	CL 33	CL 21	CL 11	L 2	CL 13	L 2	L 5	CL 15	F 5	FF 14	FF 24	F 1	FF 12
26	F 2	F 3	F 4	F 4	F 3	F 3	F 2	L 3	C 3	L 4	HL 21	HL 21	L 6	L 3	L 3	C 2	H 1	C 2	C 4	F 7	F 7	F 5	F 2	F 2
27	F 2	F 2	F 1		F 2	F 3	F 6	L 5	C 5	L 5	L 1	L 3	L 2	L 1	L 4	L 5	L 2	LL 11	LL 21	F 5	F 5	F 6	F 3	F 5
28	F 2	F 3	F 4	F 3	F 1	F 2	F 3	L 6	L 3	C 1	C 4	C 2	C 2	C 2	HL 21	C 3	C 5	C 6	L 2	F 5	F 4	F 7	F 8	F 8
29	F 4	F 4	F 5	F 2	F 1	F 1	F 1	L 4	CL 11	L 1	L 3	HL 11	L 1	L 1	L 3	L 3	L 2	L 3	L 3	F 1	F 2	F 2	F 1	
30			F 2		F 2		C 3	C 2	CL 42	CL 21				HL 11			H 1	CL 21	CL 33	FF 12	F 4	F 4	F 5	F 4
31	F 1	F 2			F 2		HC 22	L 2	L 2	L 5	L 4	L 2	L 2	HL 12	HL 11	H 1	C 4	C 6	C 7	F 5	F 7	F 6	F 5	F 5
	00	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																								

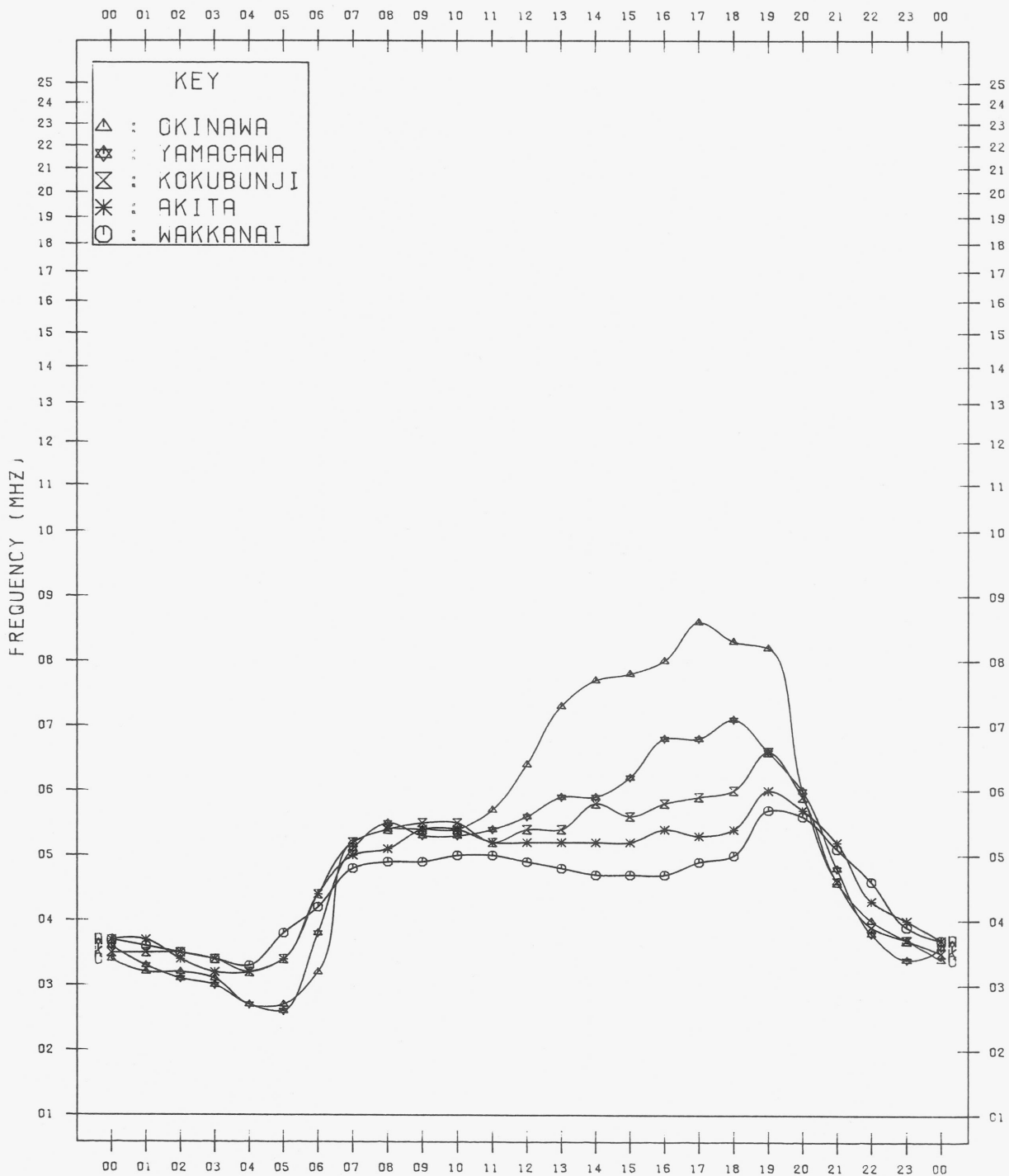
AUG. 1936      TYPES OF ES



# MONTHLY MEDIAN VALUES OF FOF2

135°E MEAN TIME

AUG. 1986



*f*-PLOTS OF IONOSPHERIC DATA

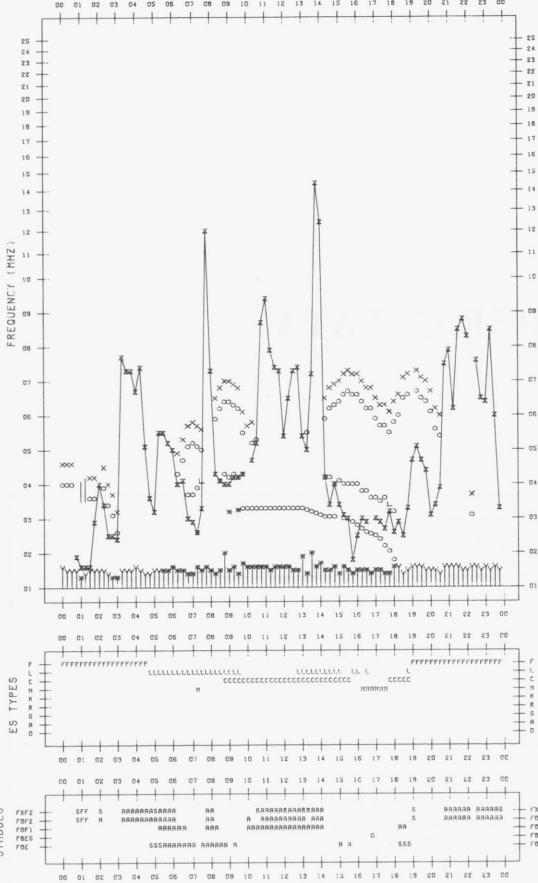
KEY OF F-PLOT	
I	SPREAD
○	F <sub>0</sub> F <sub>2</sub> , F <sub>0</sub> F <sub>1</sub> , F <sub>0</sub> E
×	F <sub>X</sub> F <sub>2</sub>
*	DOUBTFUL F <sub>0</sub> F <sub>2</sub> , F <sub>0</sub> F <sub>1</sub> , F <sub>0</sub> E
⊗	FBES
L	ESTIMATED F <sub>0</sub> F <sub>1</sub>
* <sub>1</sub>	F <sub>MIN</sub>
^	GREATER THAN
v	LESS THAN

F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/ 1

135°E MEAN TIME

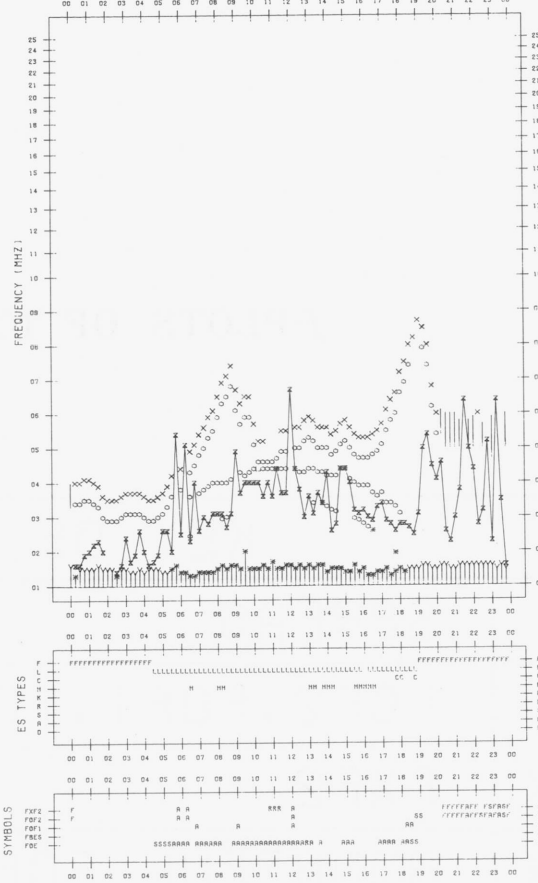


F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/ 3

135°E MEAN TIME

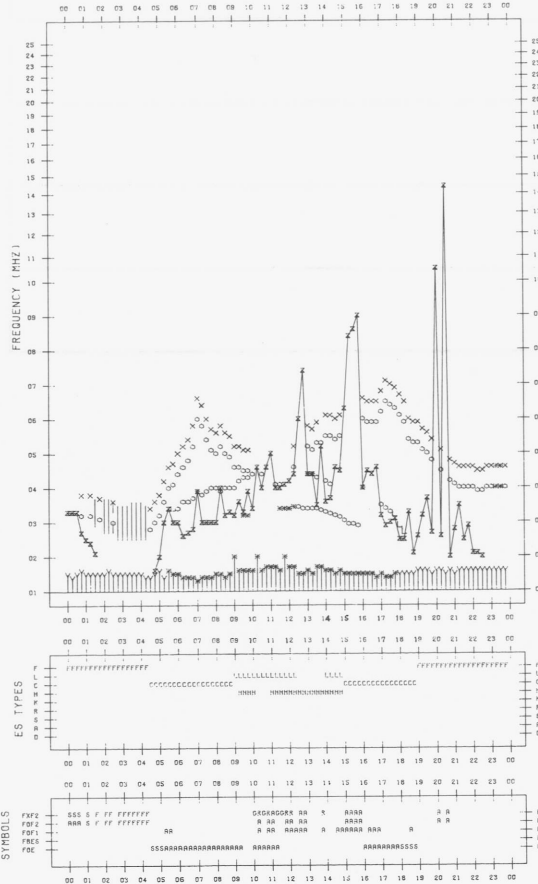


F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/ 2

135°E MEAN TIME

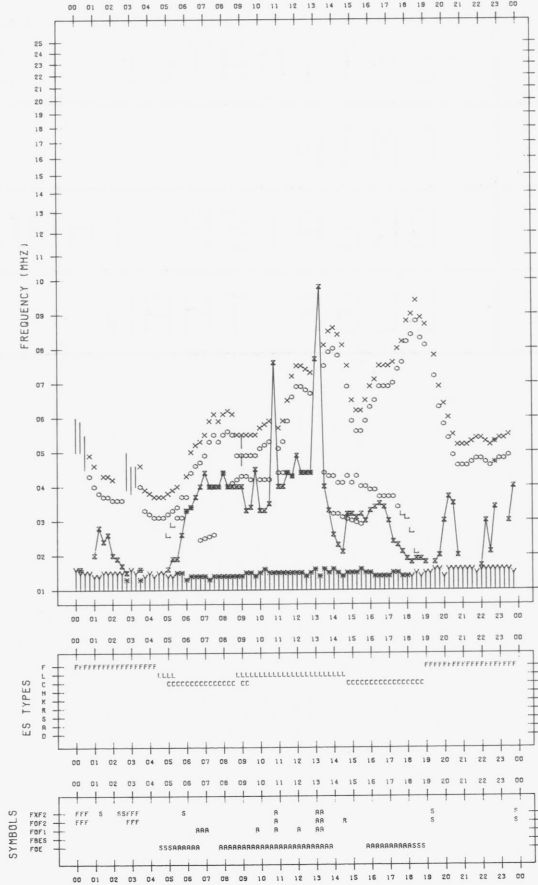


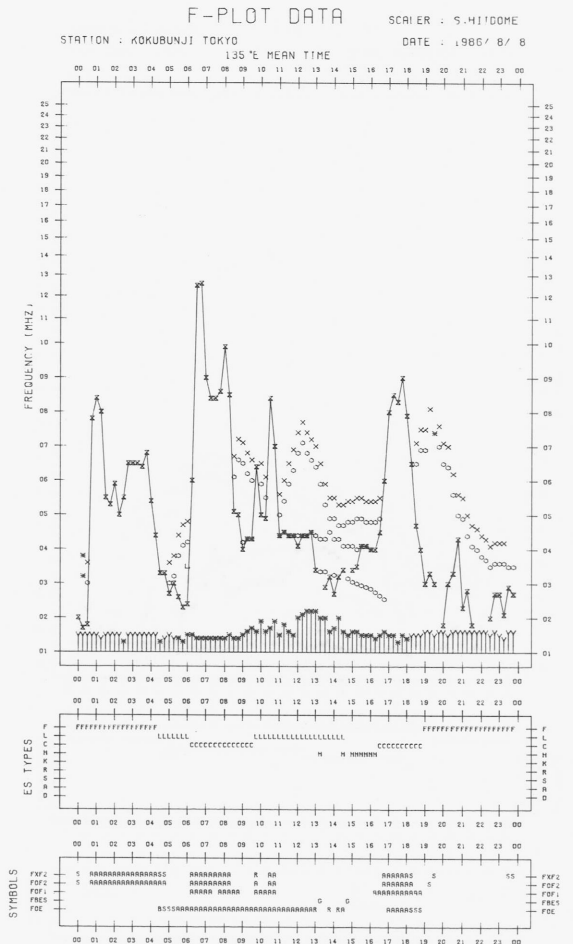
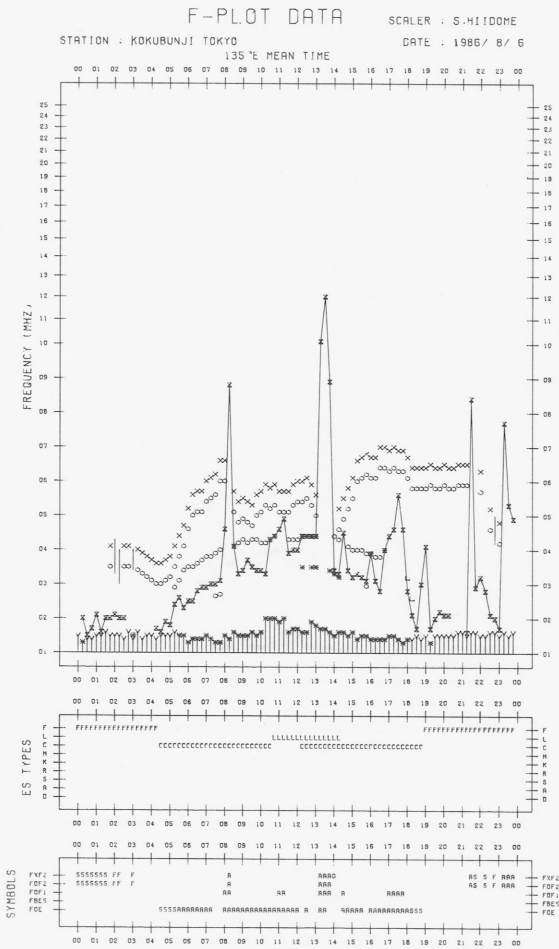
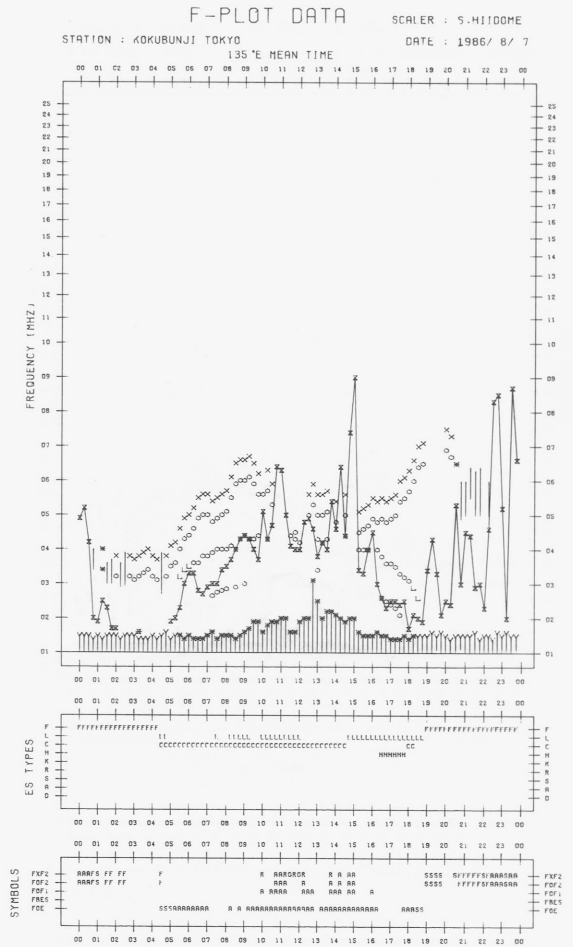
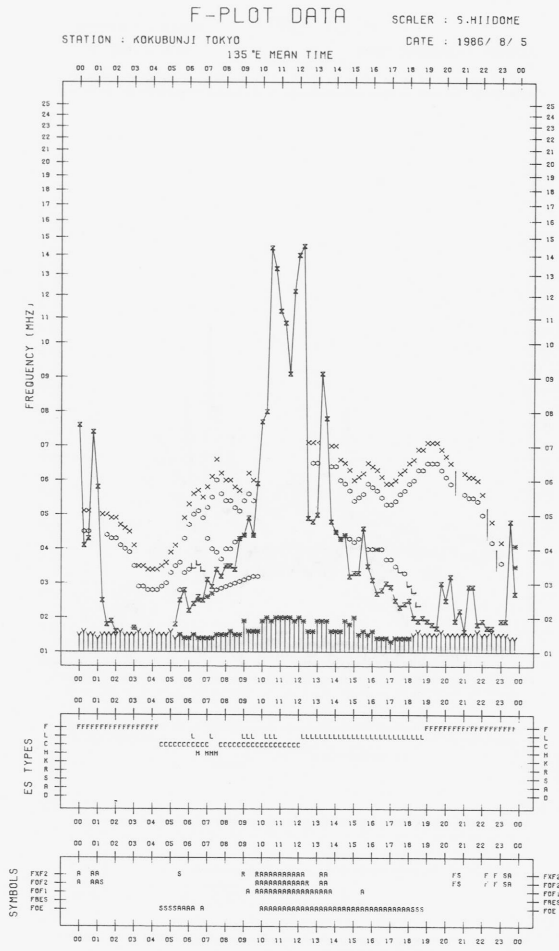
F-PLOT DATA

SCALER : S.HIIDOME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/ 4

135°E MEAN TIME







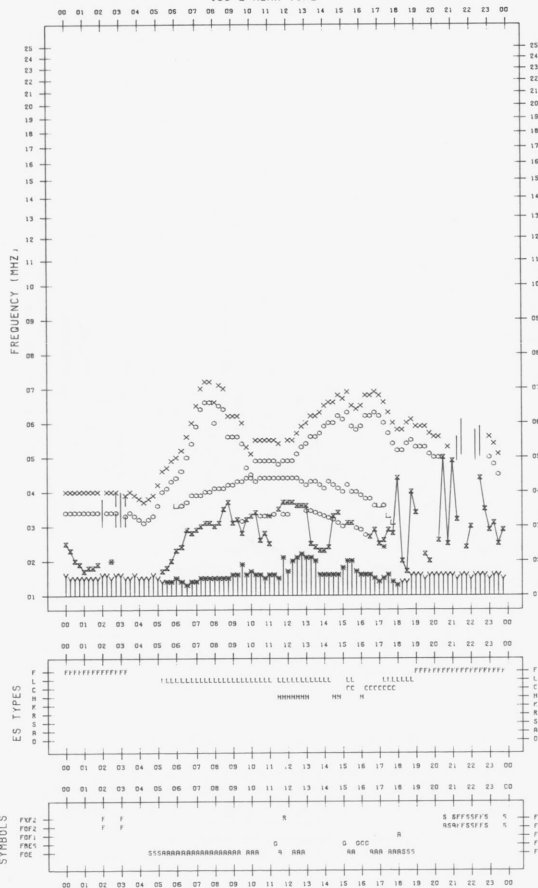
F-PLOT DATA

SCALER : 5.HI100ME

STATION : KOKUBUNJI TOKYO

DATE : 1986/ 8/ 9

135°E MEAN TIME



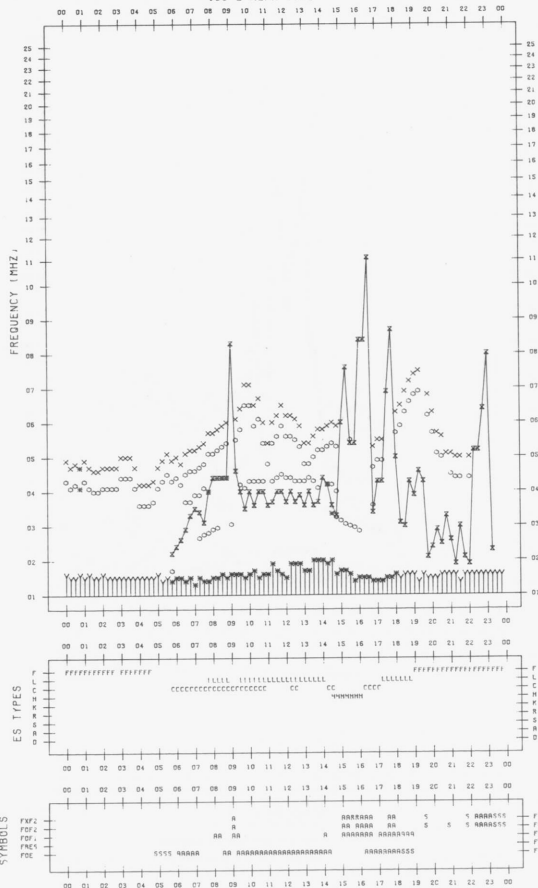
F-PLOT DATA

SCALER : 5.HI100ME

STATION : KOKUBUNJI TOKYO

DATE : 1986/ 8/11

135°E MEAN TIME



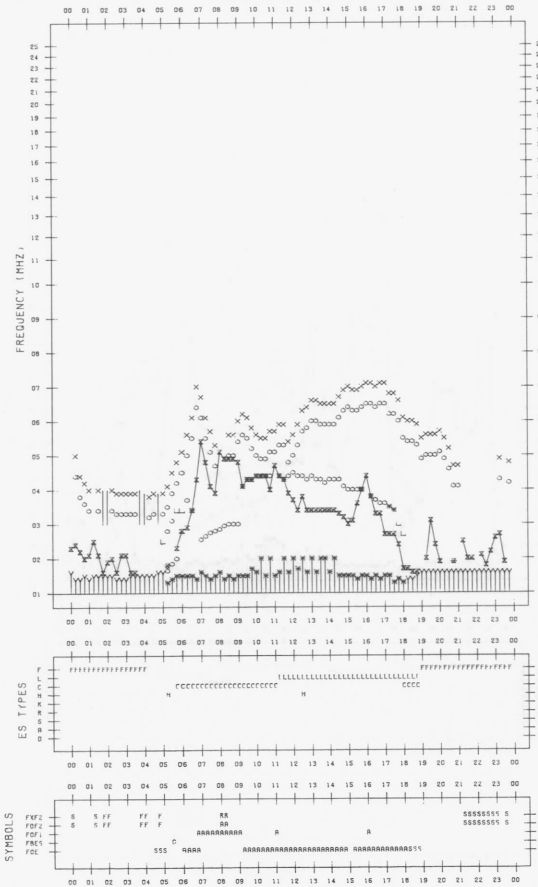
F-PLOT DATA

SCALER : 5.HI100ME

STATION : KOKUBUNJI TOKYO

DATE : 1986/ 8/10

135°E MEAN TIME



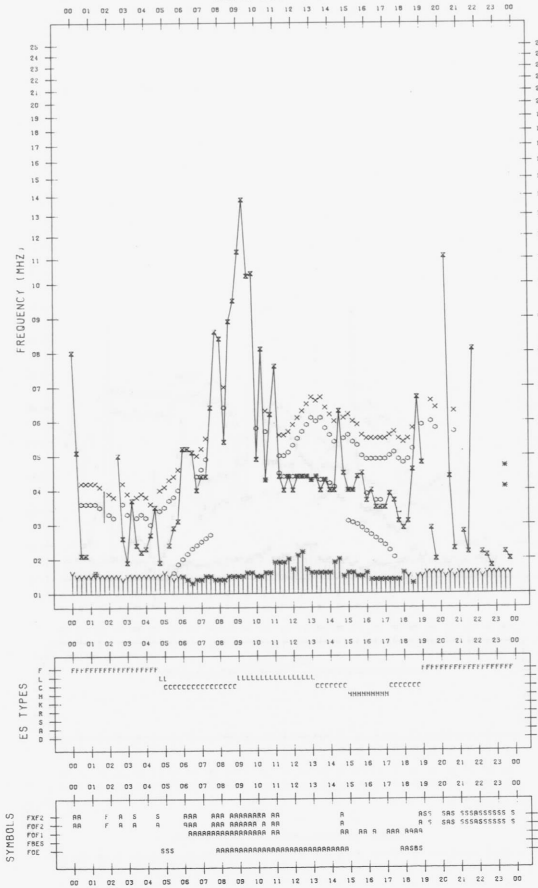
F-PLOT DATA

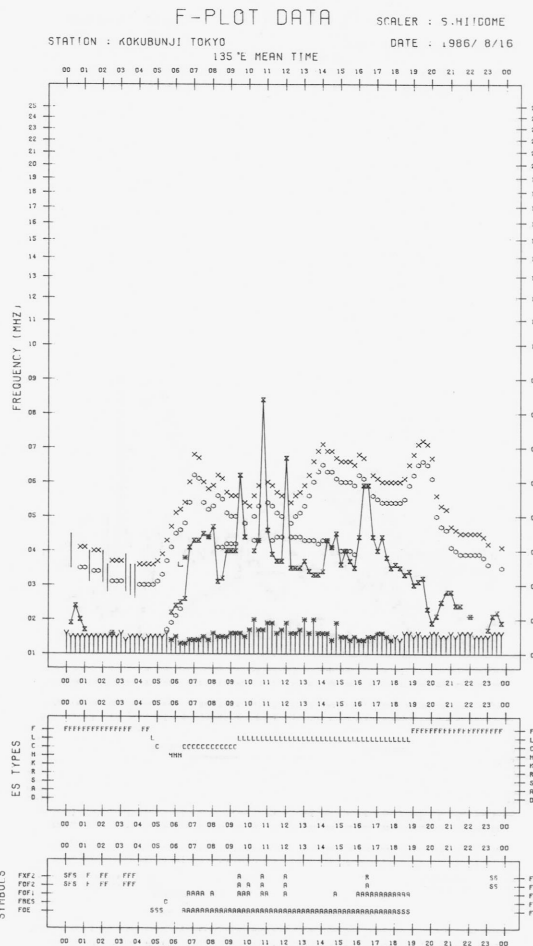
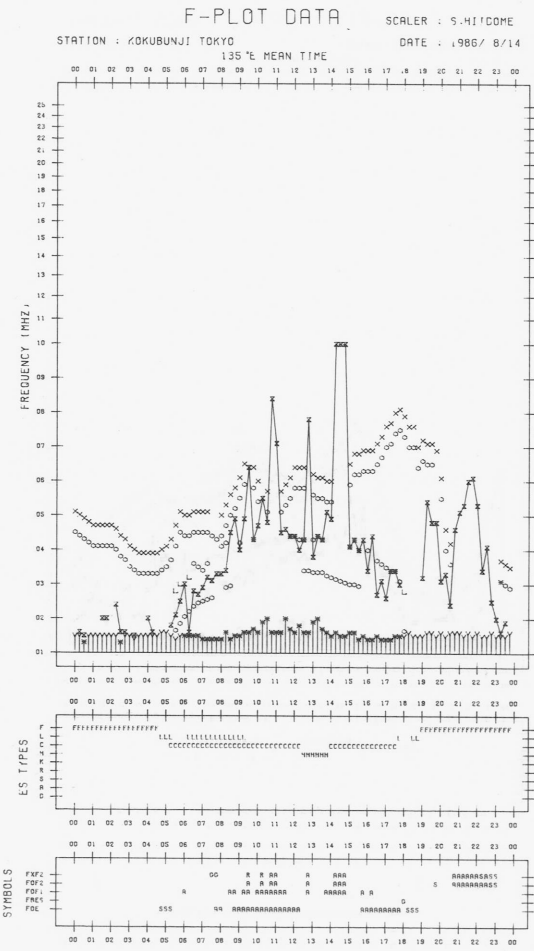
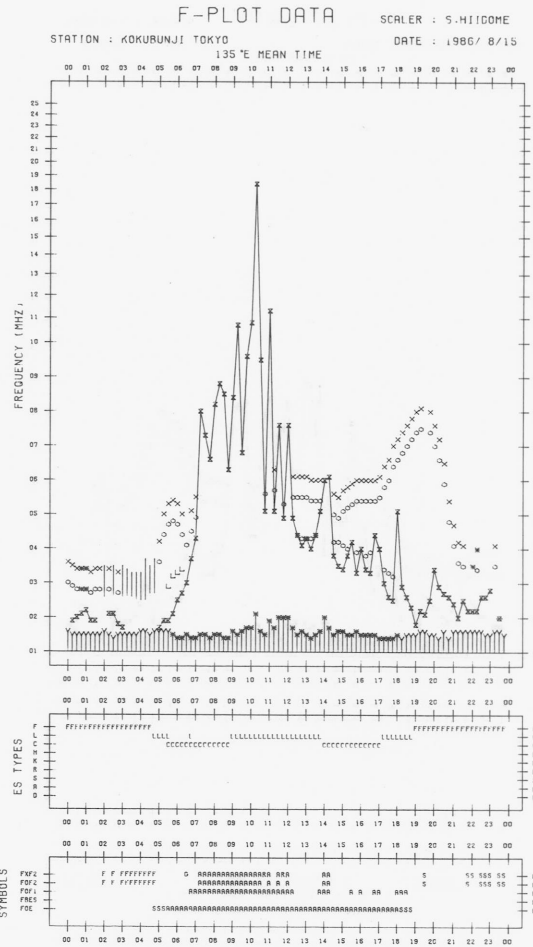
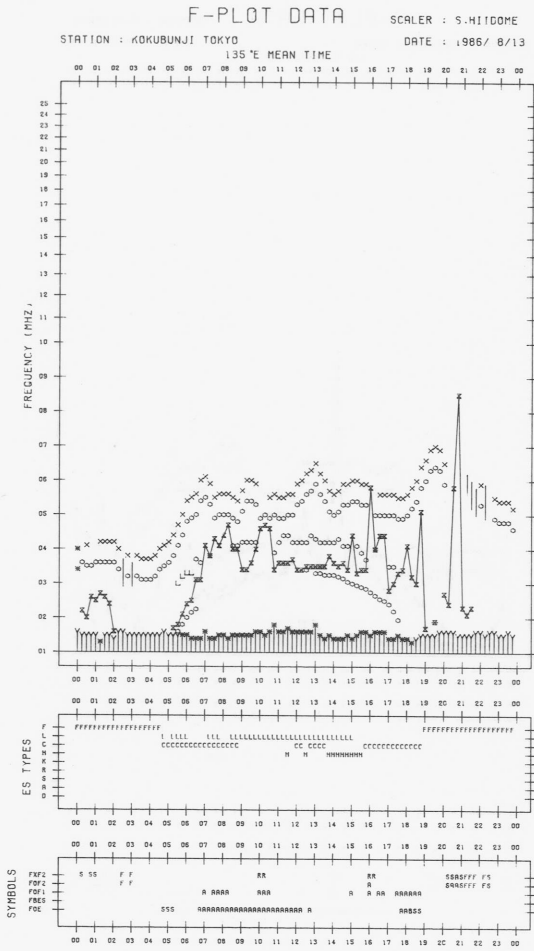
SCALER : 5.HI100ME

STATION : KOKUBUNJI TOKYO

DATE : 1986/ 8/12

135°E MEAN TIME



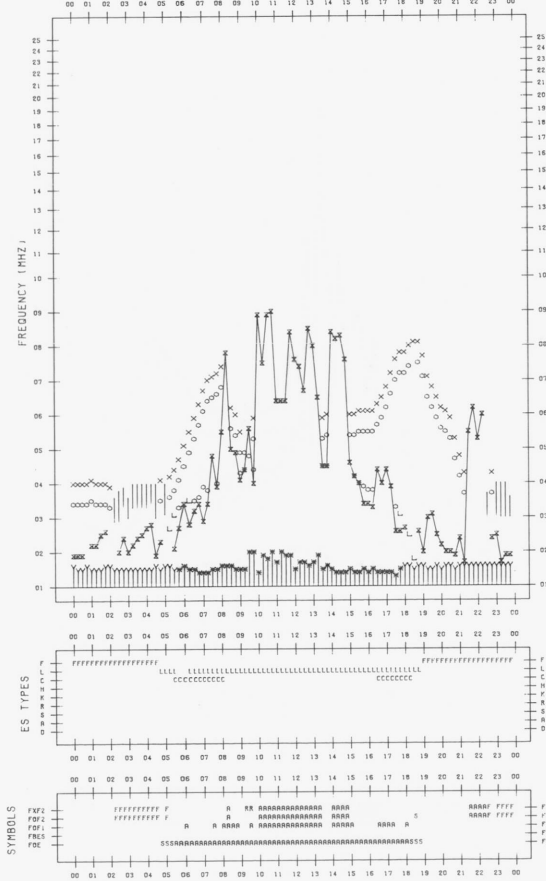


F-PLOT DATA

SCALER : S.HI100ME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/17

135°E MEAN TIME

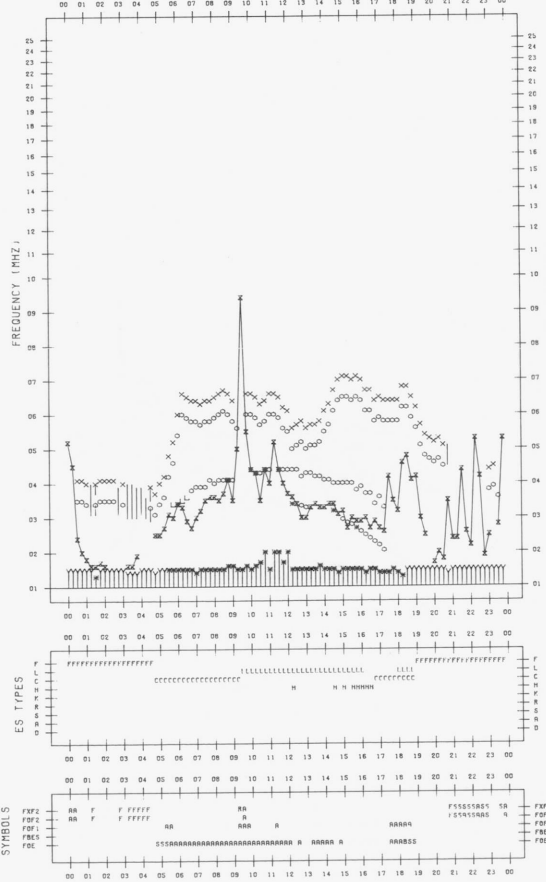


F-PLOT DATA

SCALER : S.HI100ME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/19

135°E MEAN TIME

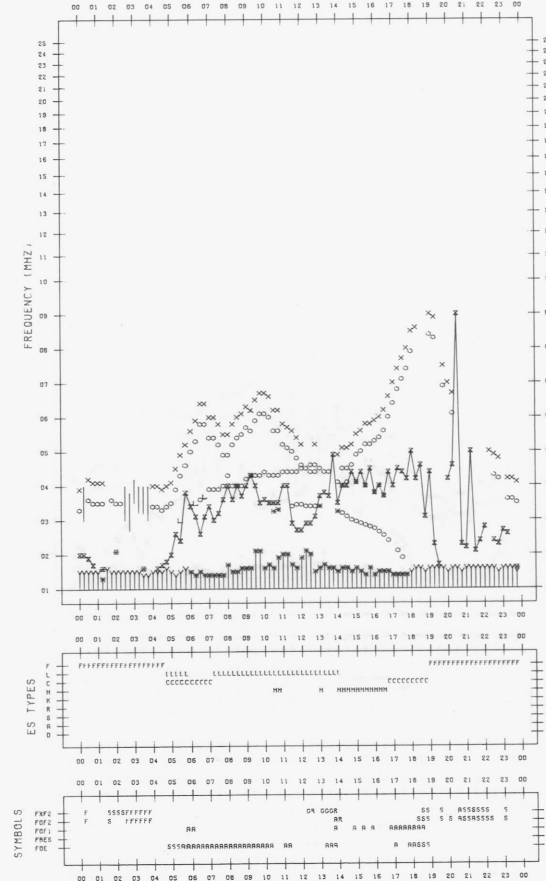


F-PLOT DATA

SCALER : S.HI100ME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/18

135°E MEAN TIME

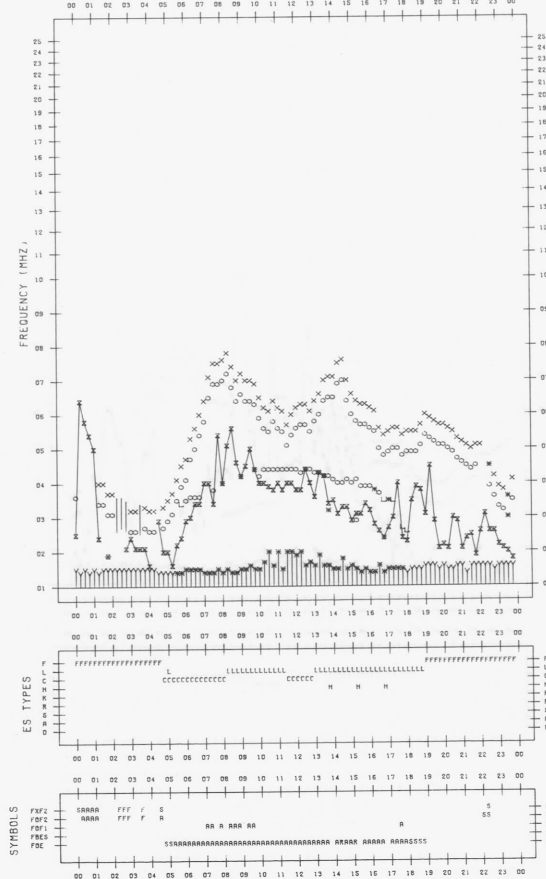


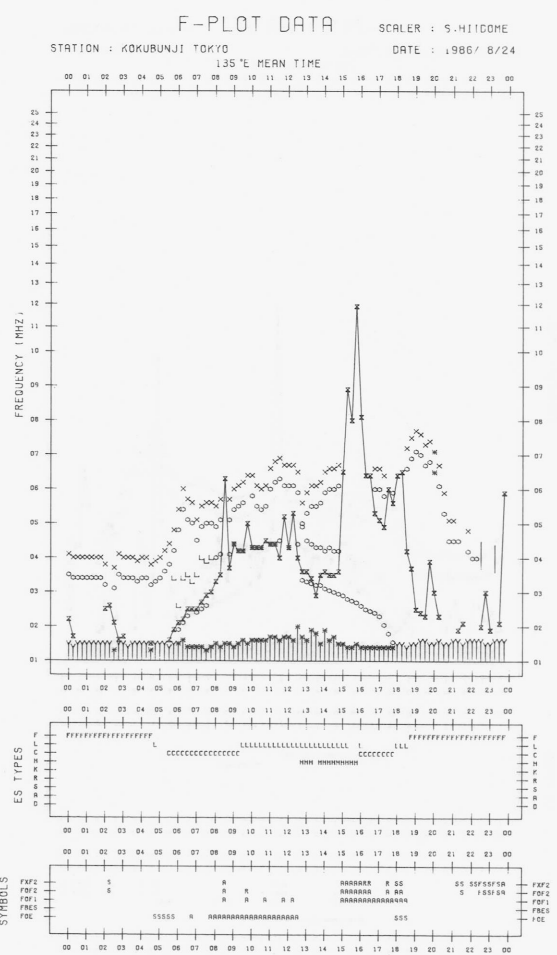
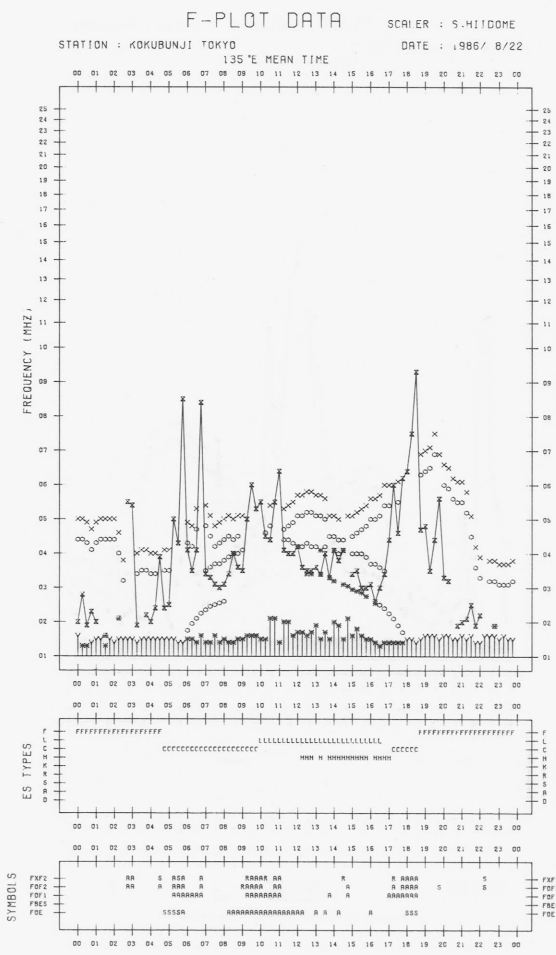
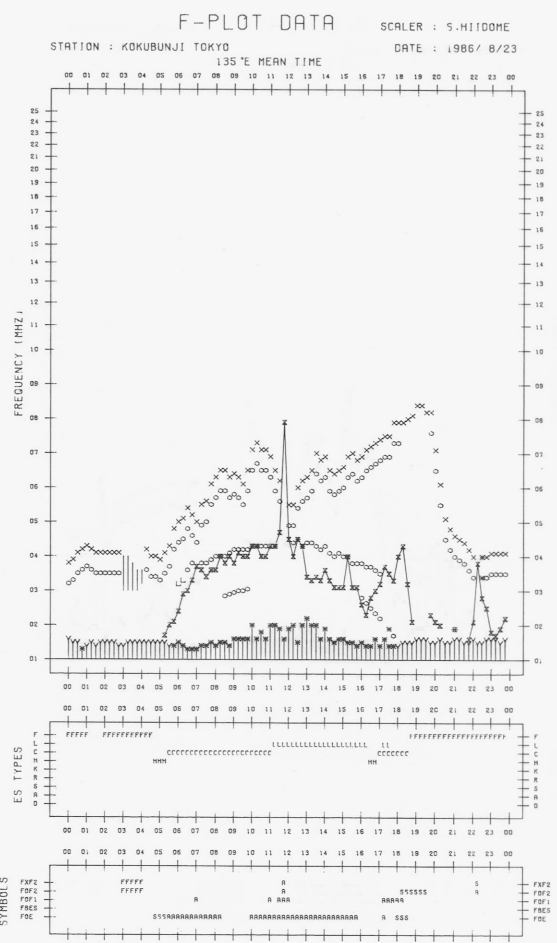
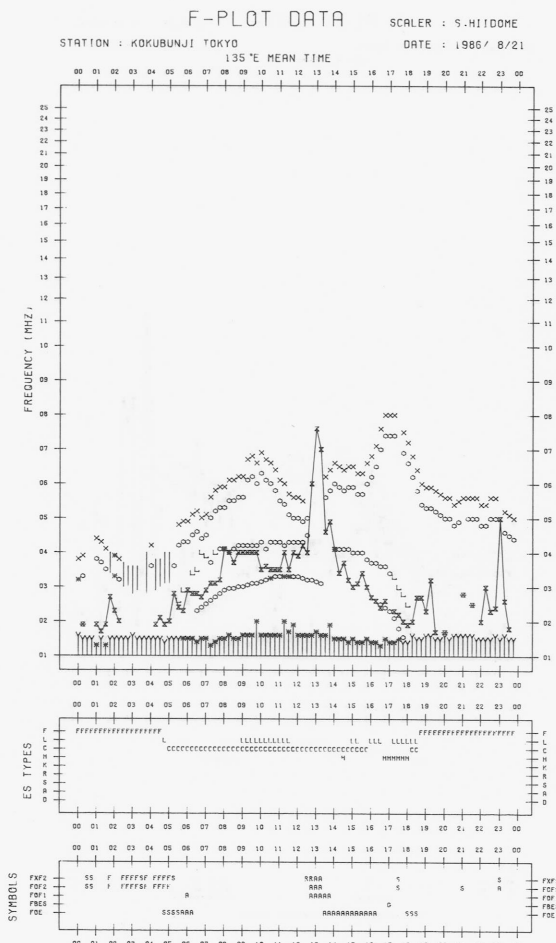
F-PLOT DATA

SCALER : S.HI100ME

STATION : KOKUBUNJI TOKYO DATE : 1986/ 8/20

135°E MEAN TIME

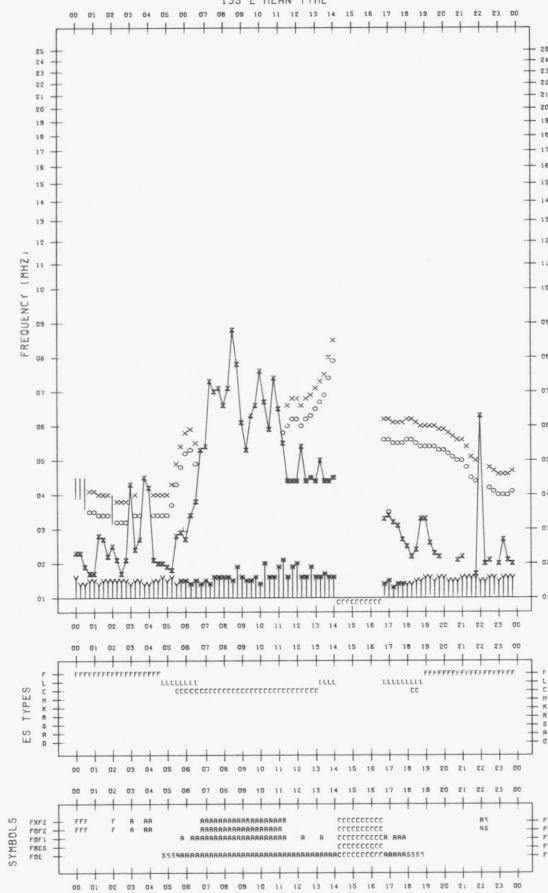






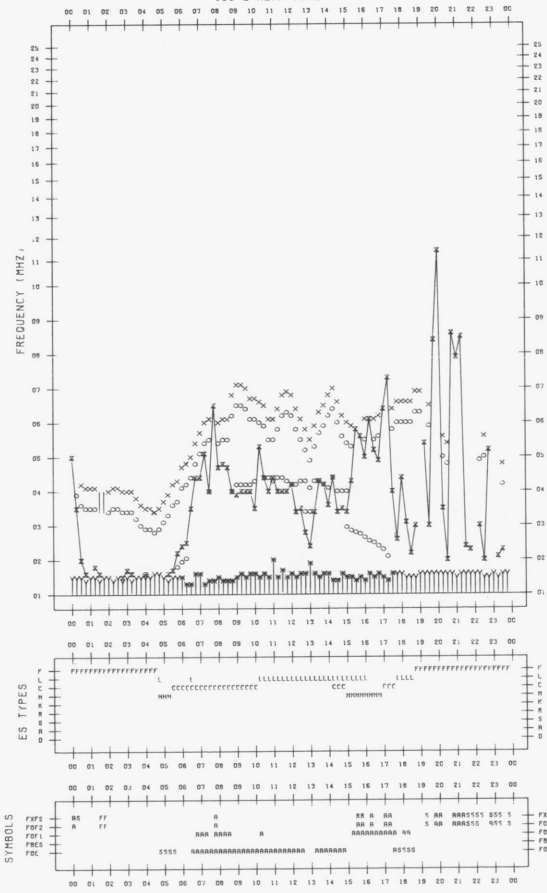
F-PLOT DATA

SCALER : 5.HI100ME  
STATION : KOKUBUNJI TOKYO  
DATE : 1986 / 8/25  
135°E MEAN TIME



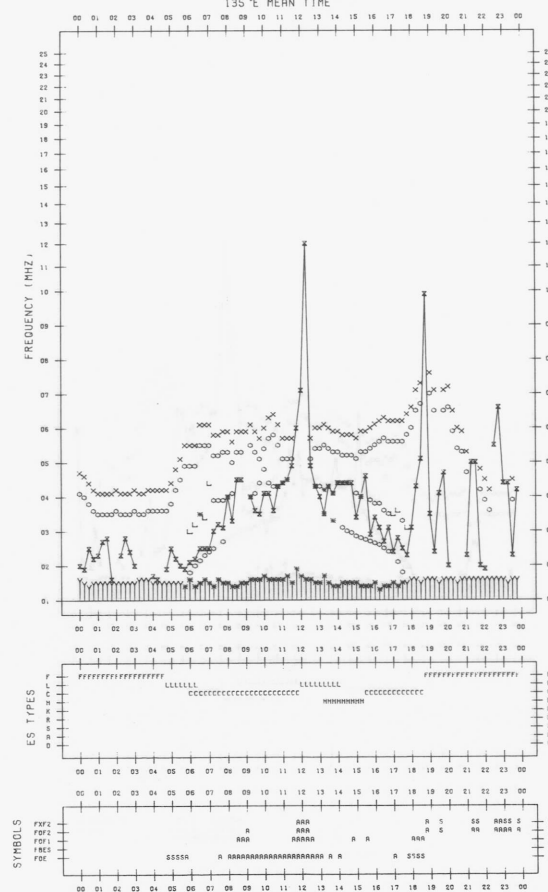
F-PLOT DATA

SCALER : 5.HI100ME  
STATION : KOKUBUNJI TOKYO  
DATE : 1986 / 8/28  
135°E MEAN TIME



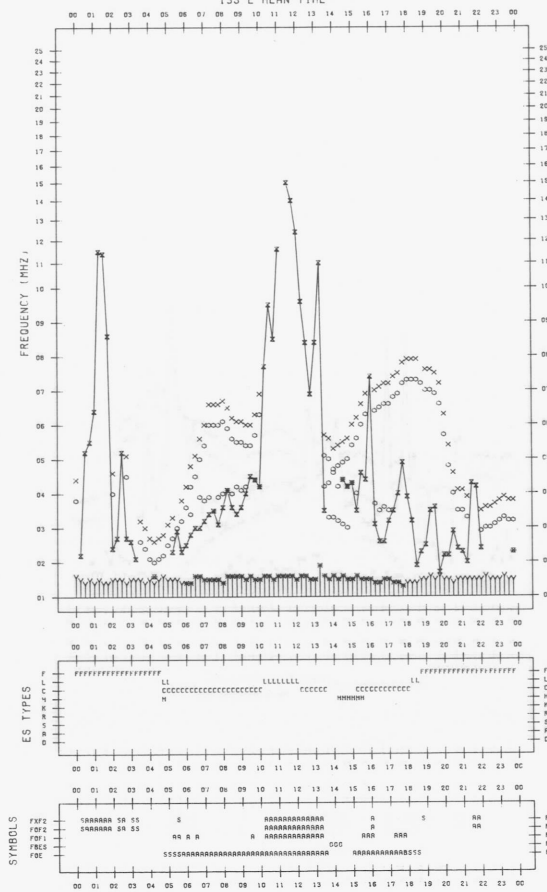
F-PLOT DATA

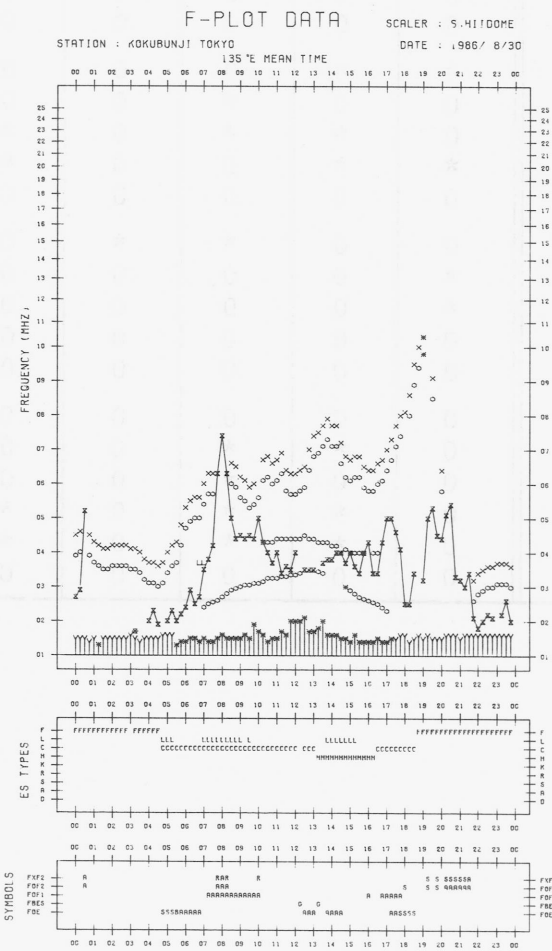
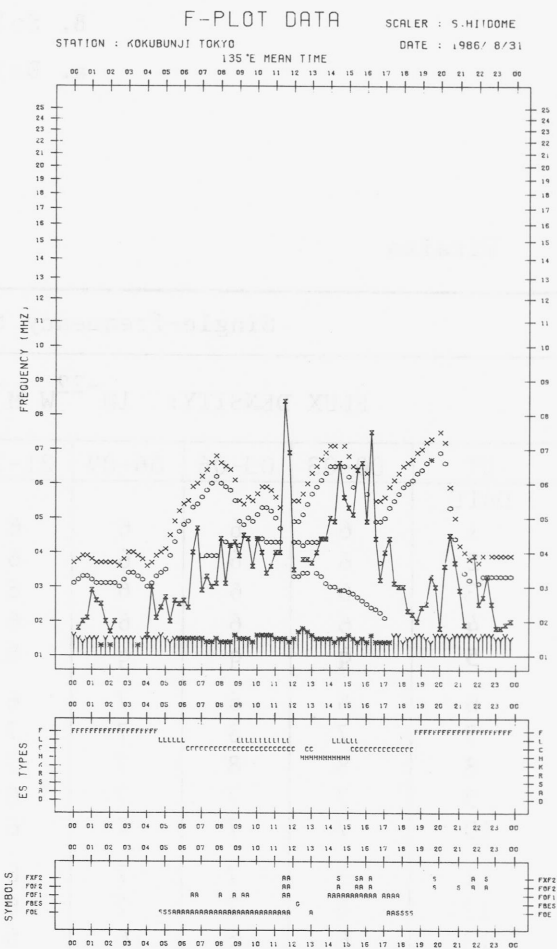
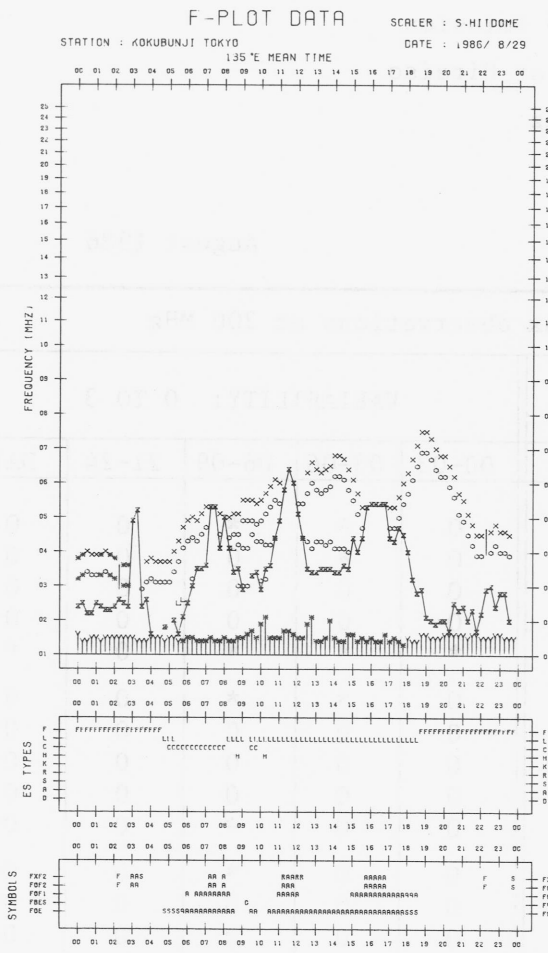
SCALER : 5.HI100ME  
STATION : KOKUBUNJI TOKYO  
DATE : 1986 / 8/26  
135°E MEAN TIME



F-PLOT DATA

SCALER : 5.HI100ME  
STATION : KOKUBUNJI TOKYO  
DATE : 1986 / 8/28  
135°E MEAN TIME





B. Solar Radio Emission  
 a. Daily Data at Hiraiso  
 200 MHz

Hiraiso

August 1986

Single-frequency total flux observations at 200 MHz										
FLUX DENSITY: $10^{-22} \text{ W M}^{-2} \text{ HZ}^{-1}$						VARIABILITY: 0 TO 3				
UT	00-03	03-06	06-09	21-24	DAY	00-03	03-06	06-09	21-24	DAY
DATE										
1	6	6	6	6	6	0	*	*	0	0
2	6	6	6	6	6	0	*	0	0	0
3	6	6	6	6	6	0	0	0	0	0
4	6	6	6	6	6	0	0	0	0	0
5	q	q	q	6	6	*	*	*	0	*
6	6	6	7	6	6	0	*	*	0	0
7	7	8	7	7	7	0	0	0	0	0
8	8	8	7	7	8	0	0	0	0	0
9	7	7	7	6	7	0	0	0	0	0
10	7	7	7	6	7	0	0	*	0	0
11	7	7	7	6	7	0	0	*	0	0
12	6	7	7	6	6	0	0	0	0	0
13	6	6	6	6	6	0	0	0	0	0
14	6	6	6	6	6	0	0	0	0	0
15	6	6	6	6	6	0	0	0	0	0
16	6	6	7	6	6	*	*	0	0	0
17	6	7	8	7	7	0	0	*	0	0
18	6	6	6	6	6	0	*	*	0	*
19	6	6	6	6	6	*	*	0	0	*
20	6	6	6	6	6	0	0	0	0	0
21	6	6	6	6	6	0	0	*	*	0
22	6	6	6	5	6	*	0	0	0	0
23	6	6	6	6	6	*	0	0	0	0
24	6	6	6	6	6	0	0	0	0	0
25	6	6	6	6	6	0	0	0	0	0
26	6	6	7	7	6	0	0	0	0	0
27	7	7	6	6	7	0	*	*	0	0
28	6	6	6	6	6	0	0	*	0	0
29	6	6	6	6	6	0	*	*	0	*
30	6	6	6	6	6	0	*	*	0	*
31	6	6	6	6	6	0	0	0	0	0

Note: (q) likely quiet.

(\*) interference.

B. Solar Radio Emission  
 a. Daily Data at Hiraiso  
 500 MHz

Hiraiso

August 1986

Single-frequency total flux observations at 500 MHz					
FLUX DENSITY: $10^{-22} \text{ W M}^{-2} \text{ HZ}^{-1}$					
UT	00-03	03-06	06-09	21-24	DAY
DATE					
1	24	24	24	24	24
2	24	24	24	24	24
3	24	24	24	24	24
4	23	23	23	24	23
5	24	24	24	24	24
6	24	24	24	24	24
7	24	24	24	24	24
8	25	24	24	24	24
9	25	25	24	24	24
10	24	24	24	24	24
11	24	24	24	23	24
12	23	24	23	24	23
13	24	24	24	23	24
14	23	24	23	23	23
15	23	23	23	24	23
16	24	23	23	23	23
17	23	23	23	23	23
18	23	23	23	23	23
19	24	23	23	23	23
20	23	23	23	-	23
21	23	23	23	24	23
22	23	23	23	23	23
23	23	23	23	23	23
24	23	23	23	23	23
25	23	23	23	23	23
26	23	23	23	23	23
27	24	24	23	24	23
28	24	23	23	24	23
29	24	24	24	23	24
30	24	24	23	23	23
31	23	24	23	24	23

Note: No observations during the following periods.

5th 0033 - 0052  
 20th 2000 - 2355



B. Solar Radio Emission  
 b. Outstanding Occurrences at Hiraiso

Hiraiso

August 1986

Single-frequency observations								
Normal observing period: 2000 - 0930 U.T. (sunrise to sunset)								
AUG 1986	FREQ. (MHZ)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY ( $10^{-22} \text{ W M}^{-2} \text{ Hz}^{-1}$ )		POLARIZATION REMARKS
						PEAK	MEAN	
No outstanding occurrences.								

01	02	03	04	05	06	07	08
09	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96
97	98	99	00	01	02	03	04

Note: No observations during the following periods:  
 0200 - 0230  
 0300 - 0330



C. Radio Propagation

a. HF Field Strength at Hiraiso

WWVH 15 MHz

August 1986

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

C. Radio Propagation

b. Radio Propagation Quality Figures at Hiraiso

Hiraiso

Time in U.T.

Aug. 1986	Whole Day Figure	W W V				W W V H				Conditions				Principal Geomagnetic Storms		
		00	06	12	18	00	06	12	18	00	06	12	18	Start	End	Range
		06	12	18	24	06	12	18	24	06	12	18	24			
1	4+	S	S	S	S	4	5	4U	4	N	N	N	N			
2	4o	4U	S	S	S	3	4	5	4	N	N	N	N			
3	4+	5U	S	S	S	4	5	4U	4	N	N	N	N			
4	4+	5U	S	S	S	4	3	5	4	N	N	N	N			
5	4+	5U	4U	5U	5U	4	4	4U	4	N	N	N	N			
6	4o	5U	4U	S	S	4	4	4	4	N	N	N	N			
7	4+	5U	5U	S	5U	4	4	4U	4	N	N	N	N			
8	4o	5U	S	S	S	4	4	4U	4	N	N	N	N			
9	4o	3U	5U	S	5U	4	4	4U	4	N	N	N	N			
10	4+	5U	S	S	5U	4	4	4	4	N	N	N	N			
11	4o	5U	5U	S	S	3	4	4U	3	N	N	N	N			
12	3-	S	S	S	S	4	3	3U	4	N	N	N	N			
13	4-	4U	S	S	S	4	3	3U	4	N	N	N	N			
14	4o	S	4U	S	5U	4	4	4U	4	N	N	N	N			
15	4+	5U	S	S	5U	4	4	5	4	N	N	N	N			
16	5-	5U	5U	5U	5U	4	5	5	4	N	N	N	N			
17	4+	5U	5U	S	5U	4	4	3U	4	N	N	N	N			
18	4+	4U	5U	S	5U	4	4	4U	4	N	N	N	N			
19	4o	5U	5U	S	S	4	4	3U	4	N	N	N	N			
20	4o	S	S	S	S	4	4	4	4	N	N	N	N	1351	---	91
21	4o	S	S	S	S	4	4	4	4	N	N	N	N	---	---	
22	3+	S	S	S	S	4	4	3U	3	N	U	U	U	---	---	
23	3+	S	S	S	S	4	4	2U	4	U	U	U	U	---	---	
24	3+	S	S	C	C	4	3	C	C	N	N	N	N	---	09.0	
25	4+	S	S	S	S	4	4	5	4	N	N	N	N			
26	4+	S	S	S	5U	4	4	4	4	N	N	N	N			
27	3+	S	S	S	S	4	2	4U	4	N	N	N	N			
28	4-	S	S	S	S	4	4	4	3	N	N	N	N			
29	3+	S	S	S	S	4	3	3U	4	N	N	N	N			
30	4o	S	S	S	5U	4	3	4U	4	N	N	N	N			
31	4o	S	S	S	S	4	4	4	4	N	N	N	N			

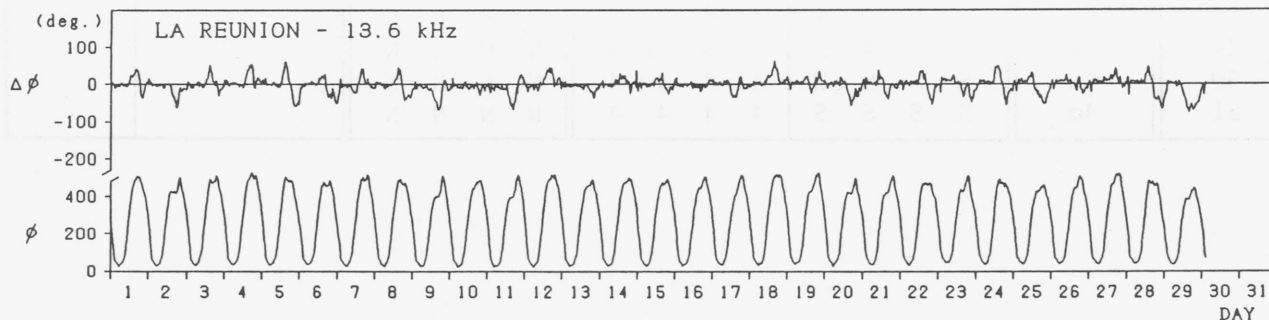
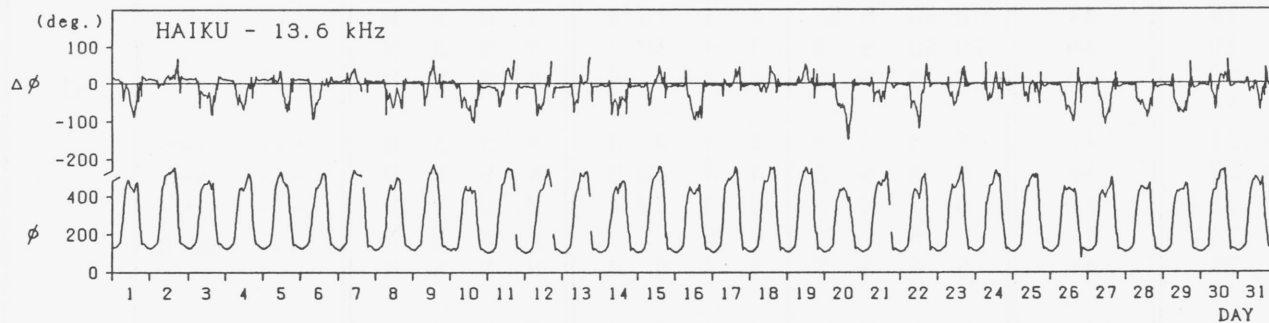
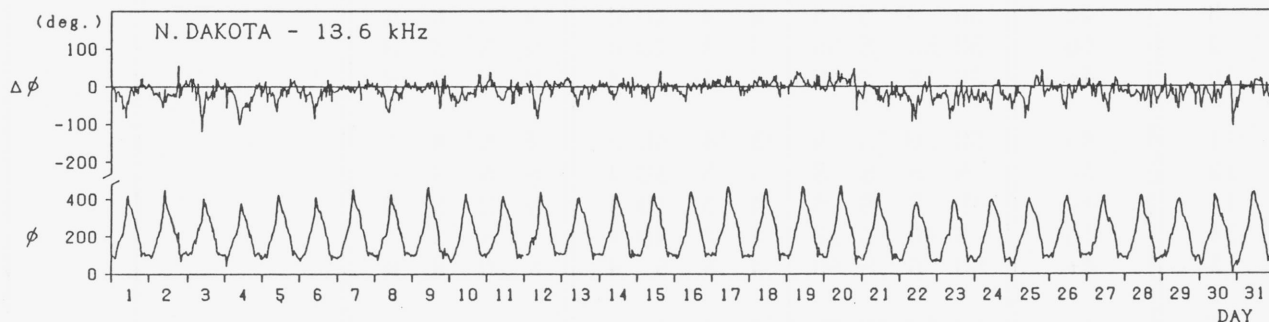
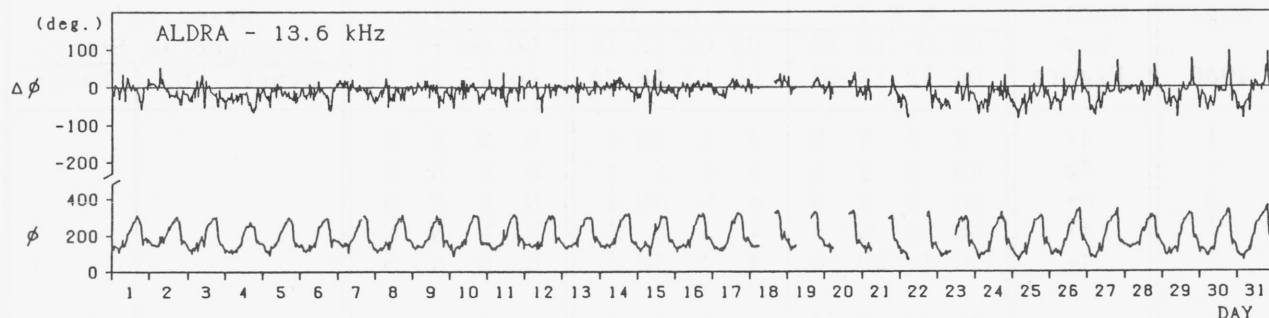


### C. Radio Propagation

#### c. Phase Variations in OMEGA Radio Waves at Inubo

Inubo

August 1986



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

NONE

## C. Radio Propagation

## d. Sudden Ionospheric Disturbances

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

Hiraiso

Time in U.T.

Aug. 1986	S W F						Correspondence				
	Drop-out Intensities (dB)				Start	Duration	Type	Imp.	Solar Flare	Solar Noise	Geomag. Crocht
	CO	HA	1)	2)							
						None					

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

## (ii) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Aug. 1986	S P A					Time (U.T.)		
	Phase Advance (degrees)					Time (U.T.)		
Date	$\Omega/N$	$\Omega/LR$	NWC	$\Omega/H$	$\Omega/ND$	Start	End	Maximum
				None				

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IONOSPHERIC DATA IN JAPAN FOR AUGUST 1986

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