ISSN 0021—0382

F—578

IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 1997

VOL. 49 NO. 2

CONTENTS

Preface
Introduction ····· 1
A. Ionosphere
A1. Automatic Scaling
Hourly Values at Wakkanai (*foF2*, *fEs* and *fmin*) ····· 5
Hourly Values at Kokubunji (*foF2*, *fEs* and *fmin*) ····· 8
Hourly Values at Yamagawa (*foF2*, *fEs* and *fmin*) ····· 11
Hourly Values at Okinawa (*foF2*, *fEs* and *fmin*) ····· 14
Summary Plots at Wakkanai ····· 17
Summary Plots at Kokubunji ····· 24
Summary Plots at Yamagawa ····· 31
Summary Plots at Okinawa ····· 38
Monthly Medians *h'F* and *h'Es* ····· 45
Monthly Medians Plot of *foF2* ····· 47
A2. Manual Scaling
Hourly Values at Kokubunji ····· 48
f-plot at kokubunji ····· 62
B. Solar Radio Emission
B1. Daily Data at Hiraiso ····· 70
B2. Outstanding Occurrences at Hiraiso ····· 71
B3. Summary Plots of $F_{10.7}$ at Hiraiso ····· 72
C. Radio Propagation
C1. H.F. Field Strength at Hiraiso ····· 73
C2. Radio Propagation Quality Figures at Hiraiso ····· 75
C3. Phase Variation in OMEGA Radio Waves at Inubo ····· 76
C4. Sudden Ionospheric Disturbances
a. Short Wave Fade-out (SWF) at Hiraiso ····· 78
b. Sudden Phase Anomaly (SPA) at Inubo ····· 79

COMMUNICATIONS RESEARCH LABORATORY
MINISTRY OF POSTS AND TELECOMMUNICATIONS
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) , solar radio emission (S) and radio propagation (P) obtained at the following stations under the Communications 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)
Kokubunji	35°42.4′N	139°29.3′E	25.5°N	205.8°	Vertical Sounding (I)
Yamagawa	31°12.1′N	130°37.1′E	20.4°N	198.3°	Vertical Sounding (I)
Okinawa	26°16.9′N	127°48.4′E	15.3°N	196.0°	Vertical Sounding (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°	Radio Receiving (P)

A. IONOSPHERE

Ionospheic observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes.The ionosonde produces ionograms,which are recorded digitally on computer storage medium as well as graphically on 35 mm photographic film. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled as well by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five factors of ionospheric characteristics are published for the present. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (*foF2, fEs, fmin*) and monthly medians of two factors (*h′Es, h′F*) , daily Summary Plots and monthly medians plot of *foF2.*

a. Characteristics of Ionosphere

foF2	Ordinary wave critical frequency for the *F2* layer
fEs	Highest frequency of the *Es* layer whether it may be ordinary or extraordinary
fmin	Lowest frequency which shows vertical ionospheric reflections
h′Es *h′F*	Minimum virtual height on the ordinary wave for the *Es* and *F* layers, respectively

b. Descriptive Letters

The following descriptive letters are used in the tables.

A Impossible measurement because of the presence of a lower thin layer,for example *Es* (for *foF2*).

B Impossible measurement because of absorption in the vicinity of *fmin.*

C Impossible measurement because of any failure in observation.

G Impossible automatic scaling because of too small ionization density of the layer (for *fEs*).

N Impossible automatic scaling because of complex echoes.

Blank No digital record because of trouble in the automatic data processing system, but existence of film record.

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

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

Median (MED) is defined as the middle value when the numerical values 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.

If CNT is less than 10, there are blank spaces left.

d. Reliability of Automatic Scaling

The results of the comparison between automatically-scaled values and manually-scaled ones showed that hourly values of *foF2 , fEs* and *fmin* were scaled within a difference of 1 MHz from about 90 , 90 and 99% , respectively of the test ionograms.

e. Summary Plot

Daily Summary Plots which are made from quarter-hourly digital ionograms are published to present general ionosphere conditions. The upper and middle parts of a Summary Plot show the diurnal variation of the frequency range of the echoes reflected from the *F* and *E* regions, respectively. The two solid arcing lines indicate the predicted values of *fxE* and *foE* calculated by the method described in the CCIR report 340. The lower part shows the diurnal variation of the virtual height where the echo traces become horizontal.

A2. Manual Scaling

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 I-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 transmisson 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 b.(iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replaced a numerical value on the monthly tabulation sheets, if necessary.

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

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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 trace 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 the 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 normnal *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 (CND) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

Median (MED) is the middle value when the numerical values 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 at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of three parabolic antennas, one with 10-meter diameter for 200 MHz measurements, one with 6-meter diameter for 500 MHz measurements and one with 2-meter diameter for 2800 MHz measurements, each being equipped with a pair of crossed doublet antennas as a primary radiator, and three appropriate receivers. Each pair of the crossed doublet antennas is used as a polarimeter. Observations are continuously carried out almost from sunrise to sunset.

B1. Daily Data at Hiraiso

The three-hourly mean and daily mean values of the solar radio emission intensities are tabulated for 500 MHz measurements. The intensities are expressed by the flux density in 10^{-22} Wm^{-2} Hz^{-1} unit.

The following symbols are used in the tables, when interference or radio bursts prevented measuring the base-level flux densities or determining the variability indices:

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

The table is a list of outstanding occurrences of solar radio emission bursts observed at 200, 500 and 2800 MHz during a month.

Listed in the table are the date, frequencies, the type of event, the start time and the time of maximum, both in U.T. expressed in hours, minutes and tenths of a minute, the duration in minutes, the peak and mean flux densities in 10^{-22} $Wm^{-2}Hz^{-1}$ unit, and the polarization.

The type of event is expressed by a combination of a numerical code and a letter symbol in accordance with the " Descriptive Text of Solar Geophysical Data, NOAA " as defined by H. Tanaka in the " Instruction Manual for Monthly Report of Solar Radio Emission, WDC-C2 " in January 1975:

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

The 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.

One of the following symbols may be attached after numerical values, if necessary.

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

B3. Summary Plots of $F_{10.7}$ at Hiraiso

The 10.7 cm solar radio flux at Hiraiso is plotted over a one month period. The 10.7 cm flux ($F_{10.7}$) is determined by adjusting the 10.7 cm radio flux measured at Hiraiso to the Pentincton 10.7 cm radio flux. The figure on the right-hand side shows the $F_{10.7}$ index estimated at Hiraiso.

The following symbols are used in the $F_{10.7}$ index:

*	Measurement made not at 3h U.T..
B	Measurement affected by bursts.

C. RADIO PROPAGATION

C1. 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 600 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.

The tabulated *field strength* expressed in dB above one microvolt per meter is the average of quasi-peak values of the incident upper sideband field intensity for 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 are ranked according to magnitude,
U	uncertain,
E	less than,
C	innuenced by, or impossible because of, any artificial accident,
S	influenced by, or impossible because of, interferences or atmospherics.

C2. 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 range over five grades as follows:

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

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

C	artificial accident,
S	propagational accident,
U	inaccurate.

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

The column of conditions presents a record of the forecast of *radio propagation conditions* which is applicable to forthcoming 12 hours and broadcast six times par hour from JJY (Japan Standard Wave) staion. The conditions are denoted as follows:

N normal,
U unstable,
W disturbed.

Data on *geomagnetic storms* which are often correlated with radio propagation disturbances are tabulated based on reports from observation at Kakioka Magnetic Observatory, Japan Meteorological Agency. *Time* (U.T.) is expressed in hours and minutes (or tenths of an 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 ---.

C3. Phase Variation in OMEGA Radio Waves at Inubo

The phase values of eight OMEGA radio signals as received at Inubo are depicted for an interval of one month, along with the phase deviation defined as a deviation from a value averaged over the six quietest day within the month. Particulars of the received signals are given in the table below.

In each of the four panels of the figure, the phase (ϕ) is shown in the lower part and the phase deviation ($\Delta\ \phi$) is shown in the upper part. The phase data are sampled every 30 min, so the curves of the phase and phase deviation are composed of 48 data points per day. The phase delay is measured as a positive value.

The polar cap phase anomaly (PCPA) caused by the solar protons are well detected on the Norway signal. The start, end and maximum times of the PCPA are listed in the table next to the figure, where the times are expressed as day / hour & minute in U.T.. The maximum phase deviation in the list is defined as a phase advance (negative values in the figure) in degrees.

C4. Sudden Ionospheric Disturbances

a. 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 those 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 could not be determined accurately, they are accompanied by one of 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 and X-ray flares, and solar radio burst to SWF is marked by X, being determined with data from interchange messages of IUWDS and observations at Hiraiso.

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

b. 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 -, an indistinguishable record is spaced out, and a multi-peak event is marked by *. The most remarkable or distinct phase advance is underlined and listed in the column of *Time*.

In table (b) SPA, *date* indicates the day to which the *start-time* of the 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 Coordinates)		Call Sign	Frequency (kHz)	Radiation Power (kW)	Arc Distance from Inubo (km)
Norway	66°25´N	013°08´E	/N	13.6	10	7820
Liberia	06°18´N	010°40´W	/L	13.6	10	14480
Hawaii	21°24´N	157°50´W	/H	13.6	10	6100
North Dakota	46°22´N	098°20´W	/ND	13.6	10	9140
La Reunion	20°58´S	055°17´E	/LR	13.6	10	10970
Argentina	43°03´S	065°11´W	/AR	13.6	10	17640
Australia	38°29´S	146°56´E	/AU	13.6	10	8270
Japan	34°37´N	129°27´E	/J	13.6	10	1040
North West Cape	21°49´S	114°10´E	NWC	22.3	1000	6990

HOURLY VALUES OF foF2 AT WAKKANAI

FEB. 1997

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	35	28	29	29	30	28	25	35	47	55	47	67	A	58	57	60	51	A	A	A	B	28	C	29
2	35	35	35	35	35		26	38	57	44	52	61	59	57	A	52	55	42	N	24	23	A	35	29
3	35	35	35	40		37		38	A	57	61	A	60	A	B	56		48		35	35	28		59
4		A	34	35	29	29	N	35		56	56	56	60	57	52	53	62		35	35	32	29	A	59
5		36	40	34	35	32	B	29	58	62	60	57	70		A	59	57	37	28	28	N	29	35	28
6	38	32	35	29	N	35	B	28	48	N	73		67	71		58	52	48		N	N	A	29	36
7	35	38	38	40	42	32	35	49			56	68	70	59	61	60	57		A	34		38	A	31
8	26	36	29	30	29	38	29	39	57	51	60	69	61	59	58	59	58	58		23	B			31
9	34	28	35			B	28	41	60	68	69	68	66	67	59	62	57	38		A	A	A	29	
10		36	35	29	32	38	38	57	57	47	A	58	56	67	67	68	55	41	B		B		A	35
11	37	36	44	38	42	36	A	44		57	A	A	60	68	61	57	56		38	32			32	38
12		30	31	32	28	31	N	69	38	A	47	A		56	A	A	48		34	B	A	A	N	28
13	35	29	29	28	28	29	N	36			A	A	57	64	A	58		40	B	N	35	35	35	29
14	A	A	31	38	A	28	38	38		43	A	56	64	A	52	55	52	43	35	23	B	31	35	35
15	29	35	29		30	N	28		56	55	A	60	62	61	A	54	49	38	35	29	31	38	35	36
16	35	A	35	29	31		26		50	56	57	62	61	60	57	49	48	42	B	35	30	40	35	28
17	N	38	35	31	28		31	41	56	60	58	55		A	52	61	57	58	58	56	58	35	35	
18	49		35	31	28		29		56	57	66	67			65	56	58	59	35	40	40			35
19	35	35	35	31	38	34	34		56	56	59			63	57	58	57	50		38	42			39
20	35			48	51		40	56	58	71		66	57	59	58	53	57			37	38		38	37
21	30	36			37	38	38		56	48	55	60	57	60	57	58	56		38	38		36	40	36
22	40			39	38	30	28			63	60	63	64	57	55	57	56	56		28	35	37	34	29
23	38	32	29	26	28		29	38	41		67	73	81		64	70	60	68		35	34	36	35	38
24	38		37	35	38	38	36		60	61	58	66	68	69	68	60	56	57		36	38	40	37	40
25	44	36	36	38	38	31	32	57	68	65			68	66	62	60	68	58		31	35	30	40	36
26	36	36	36	32	36	34	37				60	61	67	71	72	68	54	48		38		59		35
27	46	47	46	52	41	32	35		68	59	65	A	72	67	58	67	62	67	40	35	35	32	A	A
28	A	A	34	32	32	30	34	44		57		86		64	69	69	64	70			40			35
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	21	20	25	25	24	20	21	19	19	22	20	20	22	22	21	27	26	21	10	21	16	17	16	25
MED	35	36	35	32	34	32	32	39	56	57	60	62	63	62	58	58	56	48	35	35	35	35	35	35
U Q	38	36	36	38	38	36	36	49	58	61	63	67	68	67	64	61	58	58	38	37	39	38	36	37
L Q	35	32	31	29	29	30	28	36	50	55	56	59	60	59	57	56	54	41	35	28	33	29	34	29

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT WAKKANAI

FEB. 1997

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	C	23	27	N	26	26	28	25	28	G	36	30	44	B	32	27	G
2	G	G	G	G	G	G	G		N	29	26	30	29	29	27	25	G	G	G	G		38	33	28
3		G	G	G	G	G	G	29	27	34	29	29	28	31	B	G	G	G	G	G	G	G	26	25
4	G		28	30	G	G	G	G	26	25	35	34	34	26	25	28	G	30	G	32	G	G	29	G
5	G	G	G	G	G	G	B	26	24	27	34	30	33	32	26	24	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	B	26		N	29	28	34	33	29	26	22	G		G	33	26	G	G
7	G	G	G	G	G	G	G	G		30	30	34	29	37	33	38	40	35	29	G		G	38	36
8	26	26	G		G	G	G	G		32	32	31	30	28	30	34	40	24	G	30	B	27	G	G
9	G	G	G	G	G	B	27	G		31	27	34	28	28	26	23	G	30	33		36	29	G	G
10	G	G		24	24	G	G	G	G	26	29	28	30	27	24	G	G	34	B	G	B	G	26	G
11		G	G	G		G	45	29	G	39	26	26	26	26	28	22	G	29	G	G		G	G	G
12	G	G	G	G	G	G	27	G	29	30	32	28	31	28	33	35	28	28	G	B	29	50	G	29
13	G	G	G	G	G	G	G	G	G		26	36	35	28	34	24	G	G	B	G	29	30	G	G
14		27	26	G	28	G	G	G		24	32	G		34	26	28	29	29	G	G	B	G	G	G
15	G	G	G	G	G	G	G	G	24	27	32	28	28	28	27	24	G	G	G	G	G	G	28	G
16	G	30	24	28	G		G	G	32	32	32	28	32	28	27	25	27	G	B	G	G	G	G	G
17	G	G	G	G	G	G	G	G	27	27	26	29	35	36	36	33	27	G	G	G	G	G	G	G
18	G	G	G	G	G	G	G		25	27	34	42	41	34	26	32	G	G	G	G	G	29	G	25
19	G		G	G	G	G	G	G	25	30	34	35		28	27	29	39	32	35	32	34	29	30	32
20	32	G	G	26	24	G	G	11	26	28	N	36	29	32	31	26	G	G	G	G	G	G	G	G
21	G	G			G	G	G	G	23	28	30	30	29	29	31	26	G	29	G	G	G	G	G	G
22	G		24	G	G	G	G	G	24	31	41	30	30	30	29	26	G	G	G	G	G	G	G	G
23	G	G	27	G	G	G	G	G	24	29	33	31	29	30	28	25	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	29	24	34	32	30	33	25	35		23	G	G	G	G	G	G	G
25		G	G	G	G	G	G	G	24	29	34	34	32	34	30	26	G	G	G	G	G	G	G	G
26	G	G	26	G	G	G	G	26	28	28	N	31	31	28	28	27	28	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	27	28	28	34	30	28	32	25	23	G	G	G	G	33		32
28		28	G	G	G	G	G	22	26	30		25	37	34	27	33	26	G	G	G	G	G	G	G
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	23	25	26	26	27	26	26	25	22	26	24	28	26	28	27	27	28	28	24	26	21	28	27	28
MED	G	G	G	G	G	G	G	G	24	29	32	30	30	28	28	26	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	24	27	31	33	34	33	32	31	29	27	29	G	G	15	29	26	13
L Q	G	G	G	G	G	G	G	G	24	27	28	28	29	28	26	24	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

FEB. 1997

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	15	15	16	15	15	15	16	17	17	17	18	C	18	18	20	16	15	18	16	B	17	16	17
2	15	15	15	15	16	15	17	15	22	16			18	22	20	17	20	15	15	16	15	15	15	15
3	15	16	16	15	15	15	20	14	18	17	18	18	20	17	B	30	18	15	17	15	15	18	18	18
4	15	16	17	16	18	17	16	17	18	28	17	18	17	17	18	16	16	15	17	16	16	15	16	15
5	16	15	16	16	15	15	B	17	24	16	16	17	18	17	16	17	21	15	20	17	17	17	16	20
6	16	15	16	17	17	18	B	16	24	17	16	17	16	16	16	15	15	15		16	17		16	16
7	16	17	15	17	15	16	15	17	15	15	16	16	15	15	15	16	15	15	16	16		17	16	15
8	15	16	15	16	16	15	16	16	18	15	16	15	16	16	15	15	16	15	16	15	B	16	16	15
9	15	15	15	15	16	B	16	17	20	15	15	16	16	15	15	15	18	15	16	16	15	18	16	15
10	16	16	16	18	16	16	16	17	21	20	16	16	17	17	17	26	20	15	B	20	B		17	16
11	15	15	16	15	15	15	15	15	20	15	16	16	17	17	18	16	14	16	16	15		15	15	15
12	15	15	17	16	15	16	18	20	17	16	16	16	16	16	16	17	15	16		B	18	16	16	16
13	15	16	15	15	16	15	16	17	24	16	15	15	15	16	17	18	20	17	B	17	16	15	16	17
14	16	17	17	22	17	16	17	18		21	24		47		18	16	18	15	17	21	B	16	16	15
15	16	16	17	17	15	16	16	18	16	16	17		20			26	20	16	15	16	16	16	15	16
16	16	15	16	16	16		17	21	16	16	15	15	17	17	16	17	21	16	B	16	15	16	15	17
17	15	15	17	16	17		16	14		16	16	18	16	17	17	17	16	15	18	16	16	16	16	16
18	15	17	15	17	15	18	17		26	17	17	17	18	18	17	16	16	16	17	16	16	16	15	15
19	15	15	16	15	16	16	17	16	18	18	20	21		18	18	17	15	15	15	15	15	16	16	16
20	15	15	15	16	15	16	16	16	15	16	18	18	20	20	20	17	22	17	17	15	15	15	15	14
21	15	15			15	16	16	18	23	17	21	18	17	16	17	17	22	16	15	17	16	16	16	15
22	16	16	15	15	17	15	16	18	16	17	17	17	17	16	16	16	23	17	15	17	15	16	15	15
23	15	15	15	15	15	16	15	20	24	16	17	16	16	17	17	16	21	17	16	16	15	16	15	15
24	15	15	15	16	15	15	16	16	15	16	16	16	16	15	15	16	22	16	15	15	17	15	15	15
25	15	15	16	15	15	15	15	20	24	16	16	16	16	16	17	16	22	18	16	20	15	15	16	15
26	15	15	15	15	15	16	17	21	16	18	18	16	17	18	15	15	15	16	16	16	20	17	17	16
27	15	15	15	15	16	15	15	21	16	16	18	17	17	17	16	16	16	17	16	16	16	15	15	15
28	15	16	15	16	15	15	16	16	16				18	18	18	16	16	18	16	16	16	16	16	15
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	28	28	27	27	28	25	26	27	26	27	26	24	26	26	26	28	28	28	23	27	22	26	28	28
MED	15	15	15	16	15	16	16	17	18	16	16	16	17	17	17	16	18	16	16	16	16	16	16	15
U Q	16	16	16	16	16	16	17	18	23	17	18	18	18	18	18	17	21	16	17	17	16	16	16	16
L Q	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	16	16	15	15	16	15	15	15	15

HOURLY VALUES OF foF2 AT KOKUBUNJI

FEB. 1997

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	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	C	C	35	35	A	B	55	56	53	51	62	67	61	C	63	58	C	41	A	A	N	A	N
2	A		30		35	B	B	40	46	54	48	60	69			56	50	45		35	32	B		28
3	30	40		35		B	B	58	56	56	55	64	66	68	65	59	60	54		47				49
4	32	32	35	30	34		B	58	56		56	58	56	54	52	60	60	57	41	35	36			35
5	32	35	35	28	35		N		59	59	54	54	52	68	59	56	48	42	36	35		28	49	49
6	N	44	30	N	35	30		47			50	68	82		56	60			43		B		47	26
7			29		59	B	N	36	58	68	66	63		66	67	60	52	50	A	49	59			56
8	56	30	28	35	32	37		41		58	55	65	63	72	69			51	60		41	31	31	
9	58	29	36	36	41	B	B	43		80		95	81	74	67	66	72	53		59			N	A
10	A	A	A	32	39	A	49	48		68				88	86		68	57	38	35	A	89		A
11	37				30			29		68	68			62	62			47	45			28	A	A
12	59	A	32	30	B	30	B	58	58	60	56	69	66	63	A	59	58	57		N	A		32	39
13		40	A	36	36	30	B	37	56	58	56	52		64	81	67	57	58	34	32	35			59
14	59			35	36	B	59		51	50	57	62	71	72	60	58	56		36	A	69		69	59
15	N	35		38	29			46		68		70	80		62	58	56		36		47		29	30
16		58	59	31	29	B	16		64	56		82		66	60	60	61			69	64		69	59
17		35	36	30	N	59	N	47			62	74	63		55		62	58	57		59		46	A
18	69			38	30					56	77	70	83	74	64			58		36				30
19		59		N	35			40		56	66	62		68	58	58	54	58	46	35		89	A	36
20			34	35	30	32	38		56	56	64		80	69	68	67	61		37				A	69
21		30	40	38	34		34		58	51	56	62	68	65	59	60	66	56	46	47		A	37	36
22			35				N	56		62	54	61	80	81	58	60	56	57	43		56			
23	35		49	49	56	B	27	48	58	56	68		101	87		63	71	60	40		30		36	40
24	38	32	36	N	49	31	32		60	70		64	69	71	67	66	60	68	40	31		89		49
25		37		47	38	34			52	68	63	71	76	80		65	67		51		A			36
26		59		32	30	32	36		56	58	52	67		90		67	60	57			43		29	
27	35		40	38	46	B	N		63	72	75	85	81	79	74	72	66	63						38
28			28		31		28	48	56	93	51				68	71	76		56	47				58
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	13	14	17	20	24			18	18	25	23	23	20	23	22	23	24	20	19	14	12		11	20
MED	37	36	35	35	35			47	56	58	56	64	70	69	63	60	60	57	41	36	45		37	40
U Q	58	44	38	38	38			55	58	68	66	70	80	79	68	66	66	58	46	47	59		49	57
L Q	32	32	30	31	30			40	56	56	54	62	66	65	59	59	56	52	37	35	35		31	35

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

FEB. 1997

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	24	G	G	G	C	30	B	G	23	32	28	C	38	32	G	26	G	G	G	40	32	G	40	G
2		G	G	G	G	B	B	G	30	33	32	30	30	30		26		G	G	G	G	B	G	G
3	G	G		G	26	B	B	29	G	28	34	42	39	30	28	28	32	31	G	29	G	G	G	G
4	G	G	G	G	G	G	B	G		40	43	36	28	42	42	40	29	G	G	G	G	G	G	28
5	28	G	23	G	G	G	G	G		40	39	57	46	28	30	25	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	G	29	31	40	31		32	34	34	G		G	G	B	G	G	G
7	G	G	G	G	G	B	G	G	31	28	30		39	31	31	28	33	33	28	G	G	G	G	G
8	G	G	G	G	G	G	G	G	30	28		44	30	30	30	49	30	G		28	G	G	27	28
9	G	G	G	G	G	B	B	28	30	32	31	32	31	38	45		29	G	G	G	G	G	G	27
10				G	52	39	G	31		49	44	42	31	62		41	31	31	G	24	30	30	G	30
11	25	G	G	G	G	G	G	G	30	37	33	30	30	40	34	26	29	G	27	G	G	G		32
12	28		G	25	B	G	B	G	28	29	32		46	32	109	83	30	G	G	G		G	G	G
13	G	G		26	G	G	B	G	30	30	30	32	48		36	31	29	G	G	G	28	G	G	G
14	G	G	G	G	G	B	G	G		31	34	42	37	39	39	40	34	G	G	28	G	32	G	G
15	G	G	G	G	G	G	G		G	29	41	33	34	32	30	35	30	G	G		G	G	G	
16	G	G	G	G	G	B	G		29	32	31	30	39	30	32	40	28	29	G	G	G		25	G
17	G	G	G	G	G	G	G		30	33		48	47	32	40	29	30	29	G	G	G	G	G	
18	G	G	G	G	G	G	G	28	29	28	28	34	34	31	30			G	G	G	G	G	G	G
19		24	G	G	G	G	G	G	29			40	34	31	30	30	38	G	28	25	G	28		G
20	G	G	G	G	G	G	G		26	33			32	32	31	29	25	G	G	G	G	G		G
21		G	G	G	G	G	G	G	32	27	30	38	31	33	30	28	29	G	G	G	G	28	G	G
22	G	G	G	G	G	G	G	G	29	34	44	43	G	42	30	30	30	G	G	G	G	G	G	G
23	G	G	G	G	G	B	G	30	29	27	41	44	32	46	38	35	31	43	G	G	G	G	G	G
24	G	G	G	G	G	G	G		30	26	40	46	41	31	41	34	32	G	G	G	G	G		G
25	G	G	G	G	G	G	G		29	33	30	44	45	50	50	27	40	32	28	28			G	G
26		G	G		G	G	G	24	30	28	28	31	35	34	45	32	29	G		G	G	G	G	G
27	G	G	G	G	G	B	G		32	34	28	29	38	37	45	G		G	28	24	G	G	G	G
28	G	G	G	G	G	G	G	G	G	27	28	28	38	35	31	30	33	30	27	G	G	G	G	G
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	23	26	25	27	26	20	21	21	24	27	24	24	27	27	26	26	25	27	26	27	25	25	24	26
MED	G	G	G	G	G	G	G	G	29	31	32	37	35	32	33	30	30	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	26	30	33	40	43	39	39	41	35	32	29	G	24	G	G	G	G
L Q	G	G	G	G	G	G	G	G	28	28	30	31	31	31	30	28	29	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

FEB. 1997

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	15	14	14	15	B	18	15	14	15	16	15	23	18	C	C	15	15	14	15	21	14	14
2	14	15	15	14	14	B	B	18	14	14	14	18	20	21		18	14	17	15	15	15	B	22	15
3	14	14	14	14	14	B	B	14	15	18	14	14	14	14	14	15	14	15	14	15	14	15		16
4	14	14	14	14	15		B	20	15	14	16	14	14	15	15	16	15	15	14	15	14	15	15	14
5	14	14	15	14	15	15	15	14	14	15	14	15	15	14	14	18	15	18	15	14	14	15	16	15
6	15	15	14	16	15	15	14	20	15	15	14	14	15	16	14	14	16		16	15	B	18	15	15
7	15	15	15	15	14	B	14	16	15	15	14	14	14	15	14	15	15	15	15	14	16	15	15	18
8	15	15	14	15	15	14		18	15	14	14	14	16	15	16	14	15	16	14	14	14	15	14	14
9	14	17	15	15	14	B	B	14	15	15	15	14	15	15	15	15	15	17	14	15	15	14	17	15
10	14	14	14	14	15	14	18	17		14	14	14	16	16	15	15	14	15	16	15	14	14	15	14
11	14	14	14	15	14	16	16	21	14	16	18	18	14	16	15	15	14	15	15	15	15	14	14	15
12	14	14	15	15	B	15	B	17	17	16	15	14	14	14	15	15	15	16	15	14	14	14	15	15
13	15	14	14	15	14	14	B	15	14	14	15	14	16	16	14	15	15	16	15	14	14	15	15	14
14	15	14	15	15	14	B	15	16	14	14	16	15	16	16	16	16	15	15	14	14	14	15	15	15
15	15	15	15	14	14	15	14	14	15	14	14	15	17	16	14	15	16	16	15		15	15	15	14
16	14	14	15	15	14	B	15		15	15	15	15	15	14	15	15	15	14	14	16	14	15	15	15
17	15	14	14	15	14	14	15	18	15	16	14	14	17	16	16	16	15	14	14	15	14	15	15	14
18	18	15	14	15	15	16	16	16	23	14	16	16	14	15	15			16	14	14	14	15	14	15
19	15	14	15	15	15	14	16	15	15	14	17	16	17	15	16	17	15	17	15	14	15	14	14	16
20	14	15	14	14	15	14	15		14	14	18		21	18	16	18	14	14	14	15	15	16	14	16
21	15	14	15	14	14	14	14	16	14	15		18	21	20	17	15	14	16	14	15	15	14	16	15
22	14	15	15	14	15	17	16	21	14	14	15	15	20	17	16	14	14	16	15	15	15	14	15	15
23	14	15	15	14	15	B	15	16	14	14	14	16	20	16	16	14	15	14	15	15	15	15	15	15
24	15	16	14	15	15	15	15	15	15	15	16	15	16	14	14	15	14	20	15	15	16	14		14
25	16	14	15	14	14	14	15		14	15	14	14	15	16	16	15	14	15	15	15	15		18	14
26	15	14	15	15	14	15	16	16	14	15	15	14	14	14	14	15	15	16		16	15	15	14	14
27	14	15	15	15	15	B	17		15	16	15	15	16	15	17	14	14	22	15	15	15	15	14	15
28	14	15	14	14	16	15	14	20	14	15	14	15	15	15	14	15	14	14	15	15	15	14	15	14
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	28	28	28	28	27	19	20	24	27	28	27	27	28	28	27	26	26	27	27	27	27	26	26	28
MED	14	14	15	15	14	15	15	16	15	15	15	15	16	16	15	15	15	16	15	15	15	15	15	15
U Q	15	15	15	15	15	15	16	18	15	15	16	16	17	16	16	16	15	16	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	15	14	14	14	14	14	15	14	15	14	15	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

FEB. 1997

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	N	42	C	C	41	C	C	C	C	49	57	60	70	76	68	66	70	C	54	A	79	C	31	C
2			31	24			B	30			69		62	66		59				32	A		59	54
3	31			40			B	24			70	71	82	78				61		32		48	32	
4		N			69		N	31	30	52			62	58	55	66	61	66	50	53		34	37	34
5	31		A	31			B		50		66	72	62	68	71	63	66		47				59	69
6		59	49	30		N		30	31	54	55	68	75		80	72	66	54	51	53		34	31	N
7	49	31	31	34	N	31	N	49		55				67	78		68	61	51	41		32		28
8	34		N	69				59	53	48	60	58	68	72	83	71	62	54	51	42			32	37
9	A	89		22	41	35	B	31		72		86		82	74	71	70	60	53			37	A	
10	A	89			40	39		30			71	67		101	100		68		54	43	A		A	A
11		31	31		N	26		43			70		83	69	66	66	73	66	66	40	38		49	A
12		59	A	32	37		B	49	52	51	61	73	66	72	62	68	58		53	32				31
13		89			25	26		69	72	51	56					85	93		51		69		N	49
14	31	35					69	59	59		60	67	72	73	72	66	60	54	53			23		
15		69	31	32	25	A	N	30			70	72	70	74	71	68	59	54	53	A	69	32	32	A
16		A	38	38			N	69		51		67	84	83	68	66	A	A	A	B	39		A	
17	49		A	69	A		N	A	A	B	61	A	A	A	A	82	A	A	A	A	A	A		69
18	A	A	A	A	A	B	A	A	A		83	82	74	84	81	82			55	42	42	32	32	42
19		89		32		N	N	47	51	C	63		84	83		66	58	61	51		32	59	A	25
20	30		32	31	32		N	31		52	54		70	83	78	74	66	73	65		A	A		
21	26	34		A	A	A	A	A	A	54		66	60	69		B	68	62	54		79		A	
22			37		69		N	34		57	50	70		85	76	66		66		49	A	B	69	
23	32		26				A	31		60		81		97		83	79	66					A	
24	A	69		A	A	31	30				63	67	75	A		88	88		53		79		89	
25			37		69	32	A		57	53		72	A	B	84	72	73	73	74		34		B	
26		59	N	32	28		B	48	53		66		78	93	87	A		73	47				59	59
27	26	A	A		41	N	A	43		64	74	91	83			A	66	66	63	53				
28	A	34	B	49				46		66	81	81	92		B	84	82	72	83		42	32	B	
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	10	15	10	15	12			21	10	16	21	19	20	21	18	22	21	18	22	12	11	10	13	11
MED	31	59	32	32	40			43	52	54	63	71	73	76	75	70	68	64	53	42	42	33	37	42
U Q	34	89	37	40	55			49	57	58	70	81	82	83	81	82	73	66	55	51	79	37	59	59
L Q	30	34	31	31	30			30	50	51	58	67	67	69	68	66	61	60	51	36	38	32	32	31

HOURLY VALUES OF fEs AT YAMAGAWA

FEB. 1997

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	C	29	G	G	C	G	C	28	30	28	28	33	32	31	29	31	28	C	39	25	G	G	G
2	G	G	28	26	G	G	B	G	31	30	33	30	31	31		29	29	26	30	28	24	G	G	G
3	G	G	G	G	G	G	B	G	29		28	29	57	32	31	29	30	28	26	26	G	G	G	G
4	G	G	G	G	G	G	G	G		29	28	30	30	31	29	30	30	38	27	G	G	G	28	
5	G		28	27	30	G	B	G		30	35	47	37	31	34	34	26	28	26	G	G	G	G	G
6	G	G	G	G	G	G	G	G	28	37	37	31	50	49	62	32	27	30	G	22	G	G	G	G
7	G	G	G	G	G	G	G	G		31	32	30	30	30	29	31	29	28	26	G	G	G	G	G
8	G	G	G		25	29	G	G	29	30	35	31		30	31	31	30	28		26	G	G	G	G
9			30	30	26	G	B	37	27	30	N	30	31	30	40	47	30	27	27	G	G	G	28	G
10		24	28		G	G	G	24	30	28	36		30	57		31	25	28	G	G	32			31
11	G	G	G	27	G	G	G	G		31	32	30	35		33	38	30	G	G	G	G		G	24
12	28	30	32	24	26	G	B	G	26	29	29	31	36	36	36	33	30	27	G	25	G	25	25	27
13	G	G	G	G		G	G	21	G	27	28	36	36	37	31	28	29	30	37	34	25	G	G	G
14	G	G	26	G	G	G	G	G	30	30	31	37	32	37	34	43	38	37	26	26	29	29	25	
15		30	26	26	25	26	G	24	28	29	30	34			36	30	28	29	29	34	33	25	23	26
16	G		G	G	11	19	G	23		37	38		G	36	36	28	54	52	30	B	G	32	33	G
17	G	G		31	30	G	G	30	36	B	26	69	76		54	61		57	32	33		32	G	G
18	30	30	30	30	31	B	28	32			31	30	36	31	31	30	28	29	30	26	G	G	G	G
19		28	G		28	G		G	28	C	28	36	37	36	38	36	31	36		28	30	24	26	G
20	G	G	G	G	G	G	G	24	29	32	37	38	38	G	38	30		48	48	45	29	24	G	G
21	G	G	G		30	27	25	32	37	33	G	30	31	35	G	B	31	33	G	G	G	24	25	G
22	G		G		G	G	G	11	G	32	29		G	31	31	30		30	G	G		B	G	G
23	G		G	G	G	G		26		32	G	50	49	32	G	31	30	30		G	32	G	26	
24	29	G	G		30	G	G	28		G		30	48		G	31	30	28	G		G	G	G	G
25	G	G	25	G	G	G		G		26	29	31	38	B	55	35	32	31		G	G	G	B	
26	G	G	G	31	G		B		32	30	31	G	38	36	37		79	70	28	31	G		G	G
27	26			G	G	G	28	G	G	31	30	31	38		G	78	35	24	30	40	G	G	G	G
28		G	B	G		G	G	G	28	36	29	29	30	G	B	29	27	32	32	G	G		B	
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	22	21	25	22	26	25	19	26	19	24	26	25	26	22	25	26	25	28	23	26	26	23	25	23
MED	G	G	G	G	G	G	G	G	28	30	30	31	36	32	33	31	30	30	27	26	G	G	G	G
U Q	G	12	28	27	26	G	G	24	30	32	33	36	38	36	37	35	31	34	30	31	25	24	25	G
L Q	G	G	G	G	G	G	G	G	27	29	28	30	31	31	30	30	28	28	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

FEB. 1997

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	14	14	15	14	14	14	14	15	17	17	17	17	17	17	15	14	15	14	14	14
2	14	14	14	14	15		B	14	16	14	15	17	17	17		16	14	15	14	14	15	14	16	14
3	15	14	14	14	14	14	B	15	15		15	15	16	16	16	14	14	15	15	14	15	15	14	14
4	14	15	14	14	14	15	15	15	15	14	17	15	18	17	16	15	14	14	14	14	15	15	14	15
5	14	14	15	14	14	14	B	14	15	14	14	15	17	16	16	15	16	14	15	14	15	14	14	14
6	15	14	14	14	14	14	15	14	14	14	15	15	16	16	15	15	16	14	14	14	14	14	14	15
7	14	14	14	14	14	14	15	14	15	14	15	15	15	15	16	14	14	14	14	14	14	14	14	15
8	15	14	14	14	14	14	18	14	14	14	14	16	16	16	16	14	15	14	14	14	14	15	14	15
9	14	14	15	14	14	15	B	14	16	14	15	16	16	17	16	15	15	15	14	14	15	14	15	15
10	15	15	14		14	15	18	15	16	15	15	16	16	17	16	16	14	14	14	15	15	14	15	14
11	15	14	14	14	15	14	15	15	14	16	15	16	16	17	16	16	14	15	15	15	14		14	14
12	14	14	14	14	14	14	B	14	16	15	16	16	16	16	15	14	15	15	15	14	15	14	14	14
13	14	14	15	14	14	14	14	14	18	15	17	16	16	14	15	14	15	14	15	14	15	14	14	14
14	14	14	14	14	14	14	14	14	14	15	16	16	17	17	16	17	15	14	16	15	14	14	15	14
15	15	14	14	14	15	14	15	15	14	14	14	16	17	15	17	17	15	15	15	14	14	14	15	14
16	14	14	14	14	14	14	15	14	15	14	21		53	48	48	22		21	16	B	16	15	14	16
17	15	16	16	15	15	17	15	15	18	B	43	45		45	45	44	45	23	16	15	16	15	18	15
18	16	15	15	16	14	B	15	16	23		15	14	16	16	16	16	15	14	14	15	15	15	14	15
19	14	14	14	15	14	15	15	14	14	15	18	17	18	20	18	17	15	16	15	15	15	14	14	14
20	14	14	14	14	14	14	15	14	14	14	17	18	17	17	17	17	15	14	15	15	14	14	15	15
21	16	15	17	15	17	15	16	15	23	16		18	18	17		B	15	14	16	18	14	15	16	66
22	15		14		17	15	14	15		15	15	16	14	16	17	16		14	16	14	14	B	14	15
23	15	18	14	14	14	14	16	14	15	14		16	20	18		17	16	14		20	15	14	15	
24	16	14	14	14	17	14	14	15			15	17	17	14		17	14	14	15		16	14	14	15
25	15	18	14	14	14	14	14		15	15	16	15	14	B	16	15	15	14	14	16	14	15	B	
26	18	15	15	14	15		B	16	15	14	15		16	17	16	14		22	14	14	14		15	15
27	15	14	14	17	14	15	14	16		14	15	16	17			48	15	23	14	14	15	15	14	21
28	15	15	B	15	14		15	16	14	14	14	16	18	14	B	16	15	15	14		14	14	B	
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	28	27	27	26	28	24	22	27	25	24	26	26	27	26	22	27	25	28	27	25	28	25	26	25
MED	15	14	14	14	14	14	15	14	15	14	15	16	17	17	16	16	15	14	15	14	15	14	14	15
U Q	15	15	15	14	15	15	15	15	16	15	16	16	17	17	17	17	15	15	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	14	15	15	16	16	16	15	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT OKINAWA

FEB. 1997

LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

H / D	00	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	B	A	C	59	69	B	A	42	C	64	74	63		91	C	115	91	C	65	C	58	B	B
2	B	B	B	69	A	B	B	A	46	57	58	63	61	62	68		64	63	A	A	43	46		
3	31			58	B	58		38	48	57		84	96	90	122	122		68				43		B
4			58		B	B	B	79			64		64		58	59	60	56	57	59			69	69
5		56	B			B	B	49	50	69		81		96	104	104	109	105		A	57	58		
6	30		56	59		B			44		70	82		114	118	117	115	88	83		61			46
7	43	B	31		32	B	B	31			68	67	76	85	81	74	66	84	72	A	58	58		B
8	B	59	59	69			B	47	48		66	66	66	72	86	90	83	82	83	A	46	46		B
9	B			54		A	B	49	56			94	90	94	104		99	72			35		N	89
10	B	B	N	31	58	B	B	69		64	58	70	92	105	103	88	83	80	88	33	37		B	
11		B	30	37	29		B		64	59	67		86	67	64	81	72				56	46	44	
12	A	A	56		30	B	B	55	70	61	67	76	72		80	92	92	82	90	A		59	B	B
13	B	A	59	69		A	23			54	60	65		68	89	116	125	126	116	A	64	54	58	
14			58	35	35	B	26		48	56	56	70	81	78	91	87	90	89		65	56	41		B
15	58			37	31	B	B	79		68	68	69	68	73	87	84	81	60	65	A	A			89
16							B	A	56		72	78	78		90	92	85	88		A	56	44	43	49
17			56	35	B	B	B		42		59		77	82		70	B	B	63				38	38
18		35	B	B	B	49	B	34		58	65	88	95	73	B		B	64	62			38	44	B
19	58		49		36	B	B	69	58	54	B	80	105	95	92	87	85	58	57		B		58	B
20	B	B	B	26	B	B	B		52		65	80	80	86			86		87	A	47	B		N
21	B		55	59		B	B	47	42		59	66		78		91		104		A	77		B	89
22	A	46		38		B	B	49		70						98	83	86			31			B
23	B	69	B	A	A	B	B	49		63	83	92		116			114	88	83		46	37		
24	69	64		58	58		B	69	48				84	96	96	128	127	115		A	38		43	B
25	29		49	35	30	B	B	41		66	57	67		96	90			87	87	B	46		44	
26	B	46				A	N		68	58	63	68	81	89		107	117	123	112	A	B			
27	47	A	A	35	41	B	B	43		58		92	91	87	83	84	92	85	85		63			46
28	B	58	N	56		B	B	41			94	68	92	88	90			83	83		53		69	A
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			12	18	11			18	17	16	21	23	21	23	21	20	22	25	17		19	13	10	
MED			56	46	35			49	48	58	65	74	81	87	90	90	88	85	83		53	46	44	
U Q			58	59	58			69	57	65	68	82	91	96	99	105	114	90	87		58	58	58	
L Q			49	35	30			41	45	57	59	67	70	73	82	84	83	70	64		43	42	43	

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

FEB. 1997

LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	C	B	27	G	G	G	B	25	27	30	29	34	36		43	C	44	40	G	G	G	G	B	B
2	B	B	B	G		B	B	23		38	35	28		38	36	35	34	G	33	37	G	G	G	G
3	G	G	G	G	B	G	G	G		31	33	36	42	39	40	39	26	25		G	G	G	G	
4	G	G	G	G	B	B	B	G	25	25	32	36	32		32	30	32	24	G	G	G	G	G	
5	G	G	B	G	G	B	B	G			35	50	52	33	37	35	32	29		32	G	G	G	G
6	G	G	G	G	G	B	G	G	25	32	35	36		57	45	40	40	39	48	25	26	G	G	26
7	G	B	G	G	G	B	B	G	26	32	36	36	32	24	26	31	34	33	26		G	G	G	B
8	B	G	G	G	G	G	B	G		32	36	37	43	42	45	35	27	24	26		24	G	G	B
9	B	G	G	G	G	23	B	G		31		38	38	39	35	31		33	G	G	G	G	G	G
10	B	B	G	G		B	B		24	30	35	33	52	38	51	36	26	G	G	G	37	G	B	G
11	G	B	G	G	G	G	B	G	27	26	28	36	37	37	43	28	37	G	24	G	G	G	28	G
12		24	24	G	G	B	B	G	30	29	32	N	34		40	38		36	27	38	G	G	B	B
13	B	25	26	G	G	25	G	G	G		35	24	36	36	40	35	28	30	27			G	G	G
14	G	G	G	G	G	B	G		28	34	37	39	32		41	38	38	34	29	26	G	G	34	B
15	G	G	G	G	11	B	B	G		40	36	37	32		51	43	41	32	29		37	28	G	G
16	G	G	G	G	G	G	B		32	31	35	49	50		45	49	38	34	43	28	G	G	G	G
17	G	G	G	G	B	B	B	G			35	26	38	37	36	33	B	B	G	G	G	G	G	G
18	G	G	B	B	B	G	B	G		36	43	36	44	36	B	38	B	30	G	G	G	G	G	B
19	G	G	28	G	G	B	B	G	27	26	B	35		39	44	39	29	31	29	G	B	G	G	B
20	B	B	B	G	B	B	B		28	32	24	27	N	39	38	39	35	33	G	45	G	B	G	G
21	B	G	G	G	G	B	B	G		38	34	27	38	42	44	34	37	30	29		23	G	B	G
22		G	G	G		B	B	G		38	43	39		28	33	32	34	30		G	G	G	G	B
23	B	G	B	30		B	B		52	38	28		54	66	37	38	28	25	25	G	G	G	G	G
24	G	G	G	G	G	G	B	G	28	31	34	39	48	49	37	33	32		G		G	G	G	B
25	G	G	G	G	G	B	B		29	27		41	61	40	50	41	44	38	34	B	24	G	G	G
26	B	G	G	G	24		G		27	26		36	30	40	36	38	38	34	G	36	B	G	G	G
27			28	23	G	B	B		28	34	27	33	37	38	33	37	36	24	G		G	G	G	G
28	B	G	G	G	G	B	B	G	G	26	29	27	27	38	30	35	40	25	G	G	G	G	G	24
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	14	21	23	27	19			20	18	25	24	26	23	22	27	27	24	26	25	20	25	27	24	17
MED	G	G	G	G	G			G	27	31	35	36	38	38	40	36	34	30	25	G	G	G	G	G
U Q	G	G	G	G	G			G	28	35	35	38	48	40	44	39	38	34	29	30	12	G	G	G
L Q	G	G	G	G	G			G	25	28	30	33	32	37	36	33	30	25	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT OKINAWA

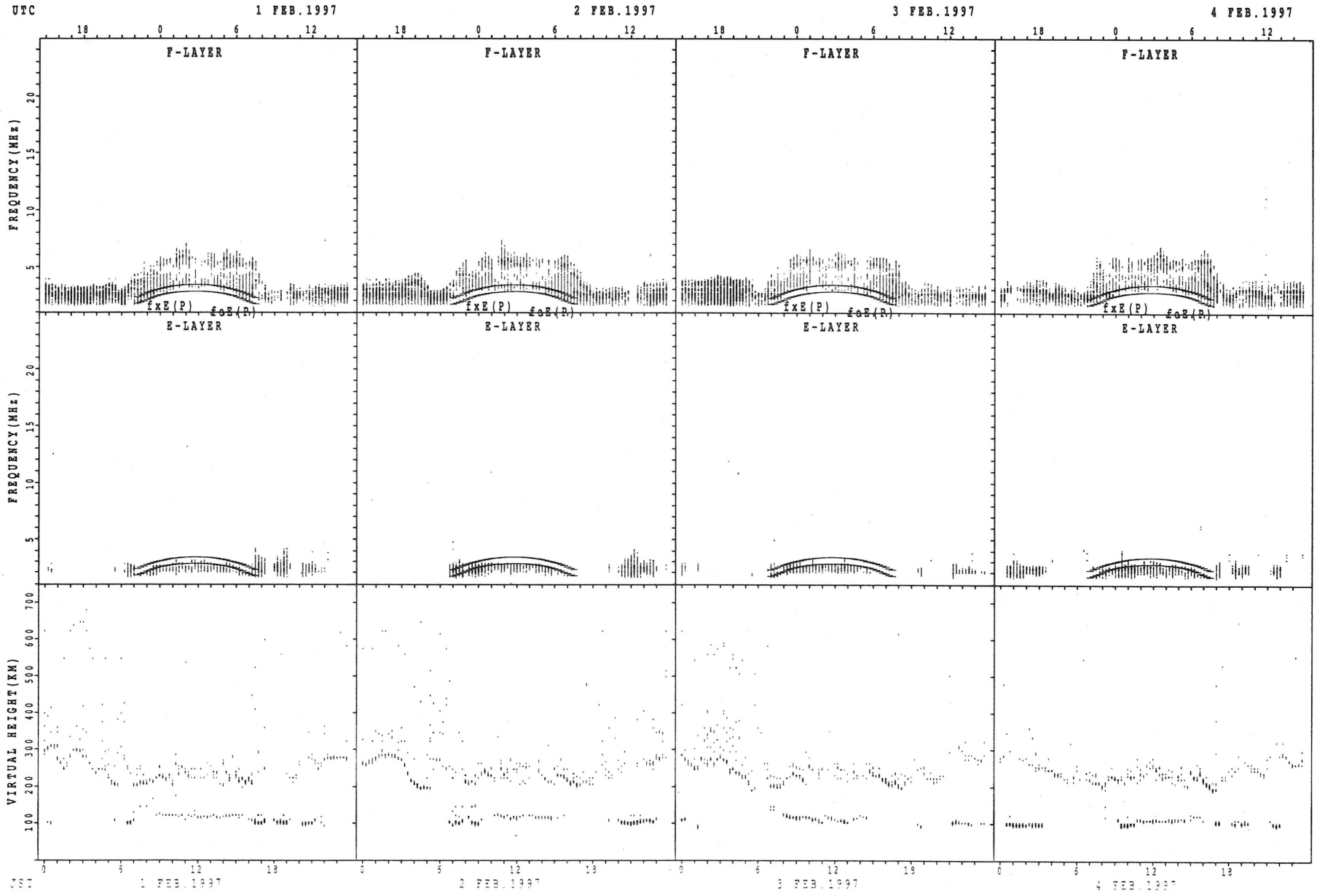
FEB. 1997

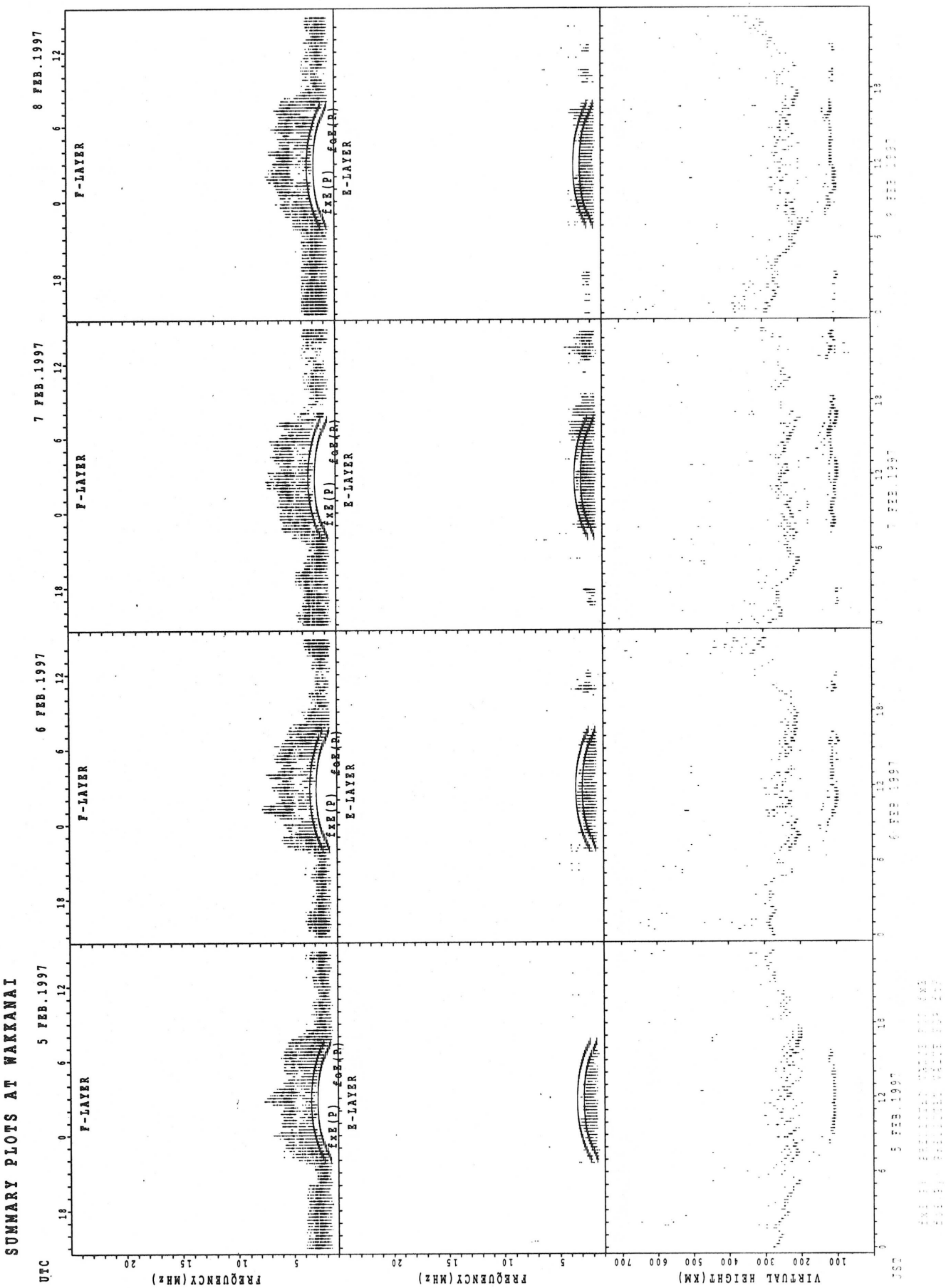
LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	18	B	15	17	15	15	B	14	14	14	15	18	20		18	21	21	16	17	15	20	16	B	B
2	B	B	B	15	14	B	B	14	24	15	16	16	17	20	23	17	15	15	14	14	16	16		
3	16	18		17	B	17	16	17	23	14	15	15	16	17	26	15	14	15		15	15	17	15	B
4			14	16	B	B	B	14	14	14	15	16	18	17	24	17	16	14	17	15	14	16	14	15
5	15	15	B		14	B	B	14	14	14	16	16	17	17	16	16	14	14	15	15	17	15	22	17
6	15	15	14	15	16	B	15	15	15	14	15	16		17	17	15	15	14	16	14	15	15	15	15
7		B	15	16	16	B	B	14	14	14	15	18	17	16	16	21	15	15	15	14	16	15	14	B
8	B	15	15	15	15	16	B	14	16	14	15	18	22	22	21	20	15	14	14	14	14	15	15	B
9	B			16	14		B	14	16	15		16	20	16	20	15	14	14	17	14	18	16	15	15
10	B	B	15	17	16	B	B	14	17	14	16	17	18	20	17	17	15	14	17	14	14	16	B	20
11		B	15	15	14	17	B	14	16	14	15	16	21	16	16	16	15	18	14	15	15	16	14	17
12	15	16	15	15	15	B	B	15	17	14	16	15	16	17	15	16	15	14	16	15	15	16	B	B
13	B	15	15	15	16	15	15	14	21	16	16			16	16	16	14	14	15	15	15	15	15	17
14	16	15	15	15	16	B	15	14	14	15	17	17	20	17	16	15	17	15	14	14	18	16	15	B
15	15	14	16	14	15	B	B	14		14	16	16	17	18	18	18	28	15	15	14	15	14	15	21
16	15	15	16		15		B	14	14	16	15	15	17			16	16	15	14	15	16	16	15	15
17	18	15	15	16	B	B	B	15	14	14	15	16	16	18	17	16	B	B	17	14	15	24	15	16
18	15	16	B	B	B	16	B	14	23	14	14	15	16	17	B	17	B	14	20	14	16	15		B
19	17		14	16	15	B	B	18	15	16	B	21	20	22	24	21	20	14	15	14	B		16	B
20	B	B	B	15	B	B	B		14	15	16		20	26	21	17	16	14	16	14	14	B	15	16
21	B	15	15	14	29	B	B	15	14	14	16	18	17	18	20	26	16	14	14	14	15	16	B	16
22	15	17		17		B	B	14		15	17	17	18	20	22	16	20	16		14	15	15	15	B
23	B	15	B	15	15	B	B	14	14	14	16	17	33	28	23	18	17	15	15	14	15	16	20	
24	15	15	16	15	14	16	B	14	14	17	17	16	33	24	17	26	18	14	16	14	14	15	14	B
25	17	15	16	17	14	B	B	15	14	14	15	16	18	22	16		16	14	14	B	15	15	16	17
26	B	16	16	15	14	14	15	14	14	14	15	15	18	18	18	16	16	14	16	14	B	14		
27	15	15	15	15	15	B	B	15	14	16	17	20	20	17	21	18	15	14	18	14	16		18	17
28	B	15	15	16	15	B	B	15	14	15	20	18		48	44	21	16	15	17	14	15	15	17	15
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	15	19	20	25	22			27	26	28	26	26	25	26	26	27	26	27	26	27	26	25	21	15
MED	15	15	15	15	15			14	14	14	16	16	18	18	18	17	16	14	16	14	15	16	15	16
U Q	17	16	15	16	16			15	16	15	16	18	20	22	22	20	17	15	17	15	16	16	16	17
L Q	15	15	15	15	14			14	14	14	15	16	17	17	16	16	15	14	14	14	15	15	15	15

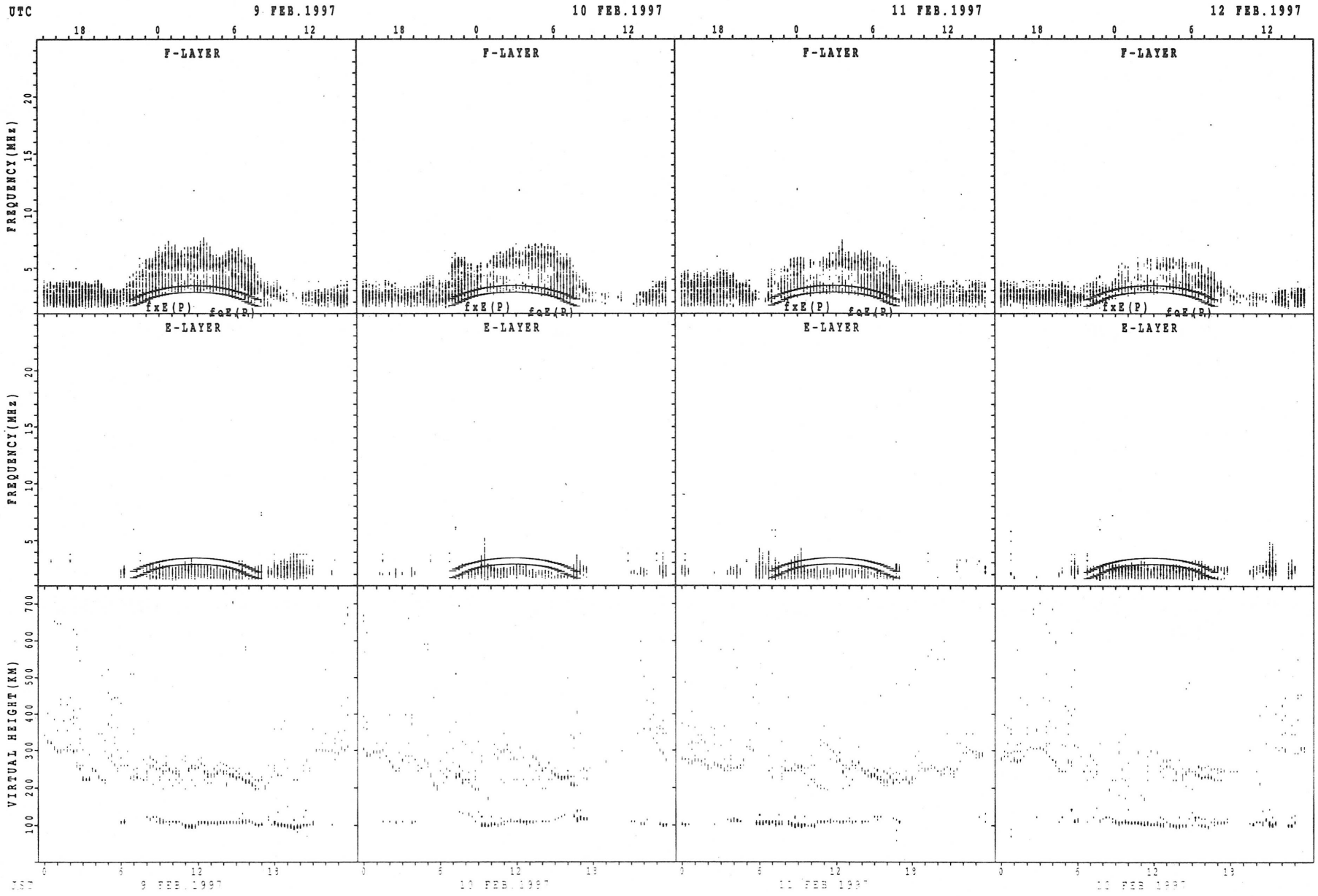
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

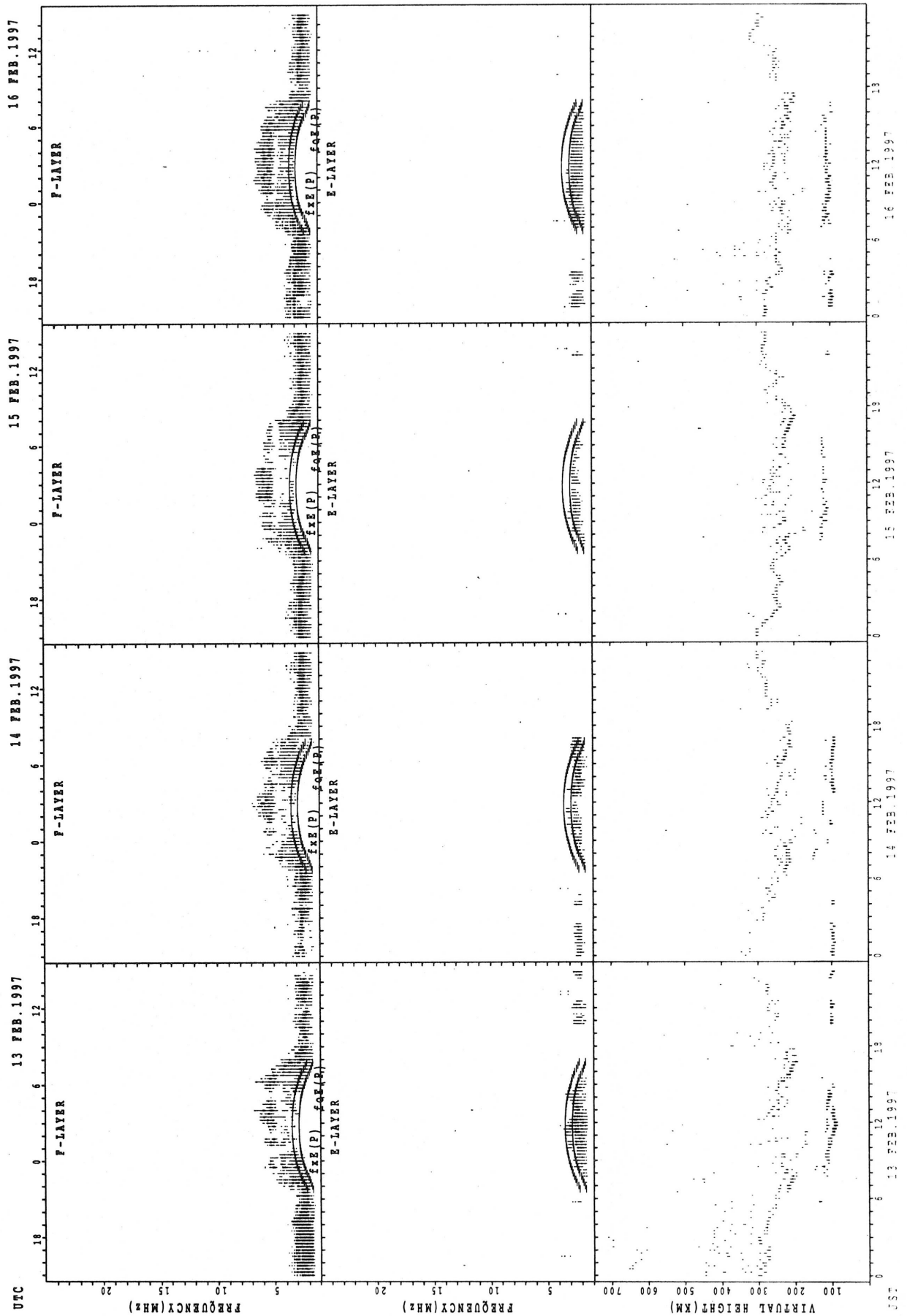
SUMMARY PLOTS AT WAKKANAI



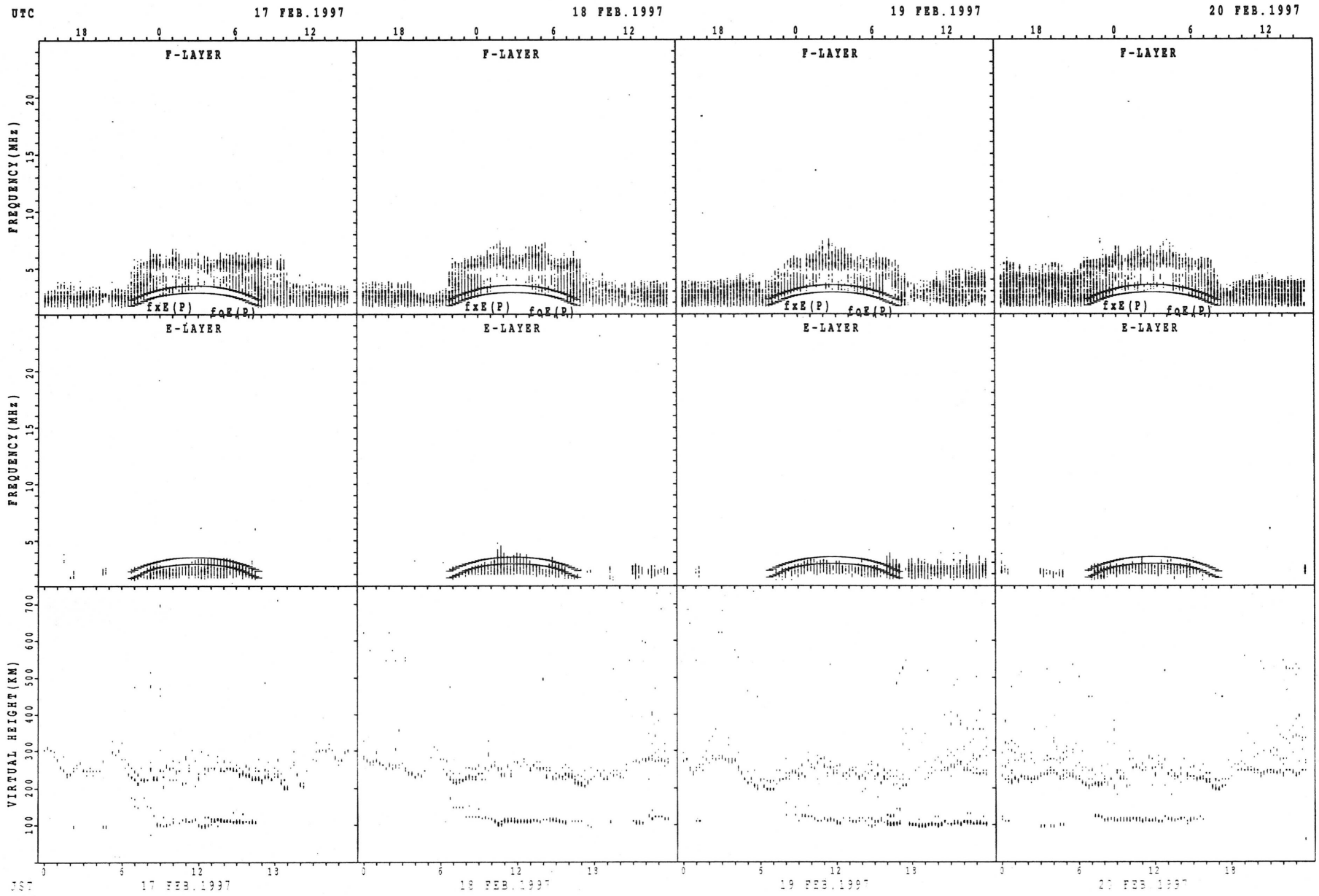

SUMMARY PLOTS AT WAKKANAI
UTC
5 FEB.1997
6 FEB.1997
7 FEB.1997
8 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)

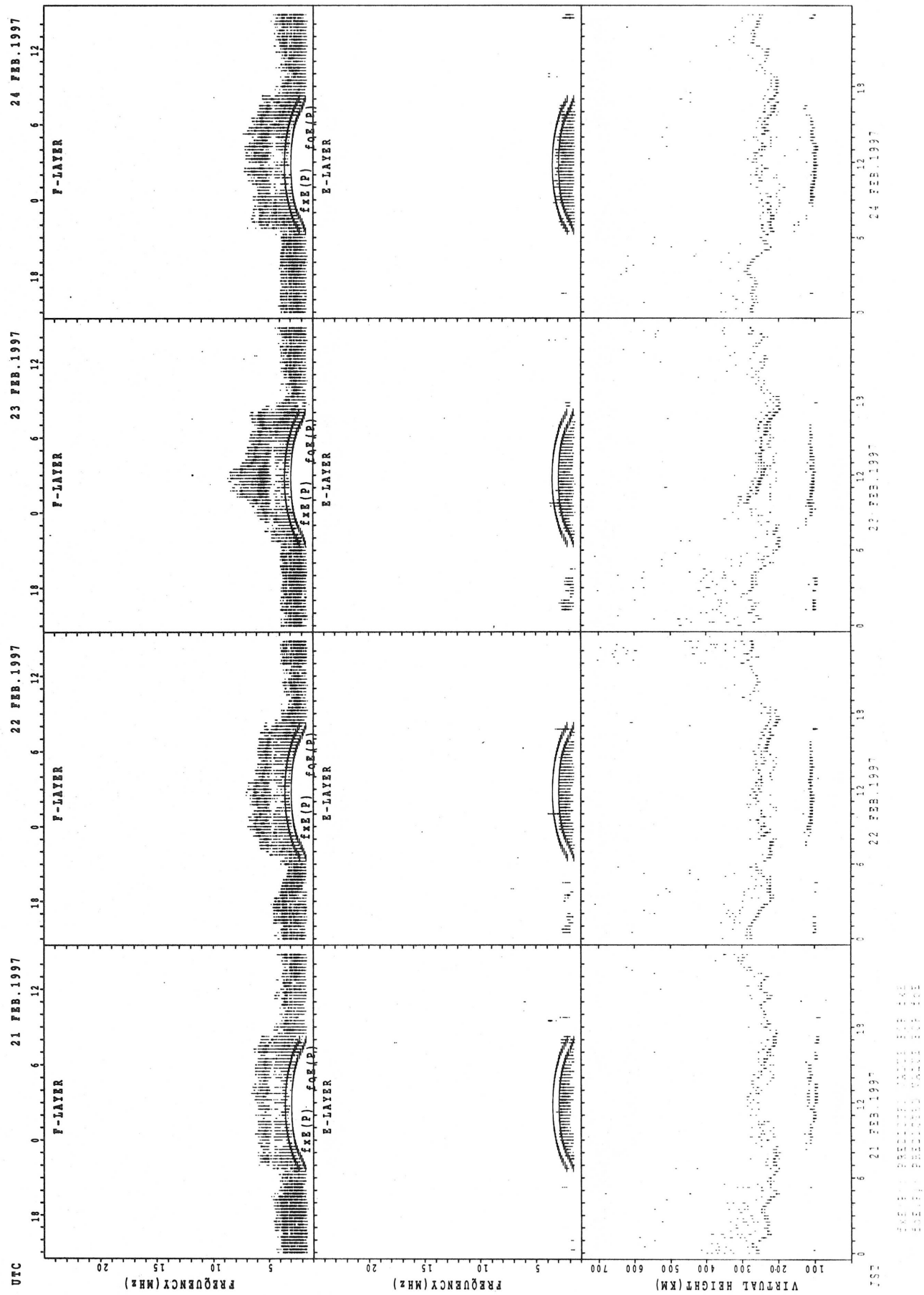
SUMMARY PLOTS AT WAKKANAI



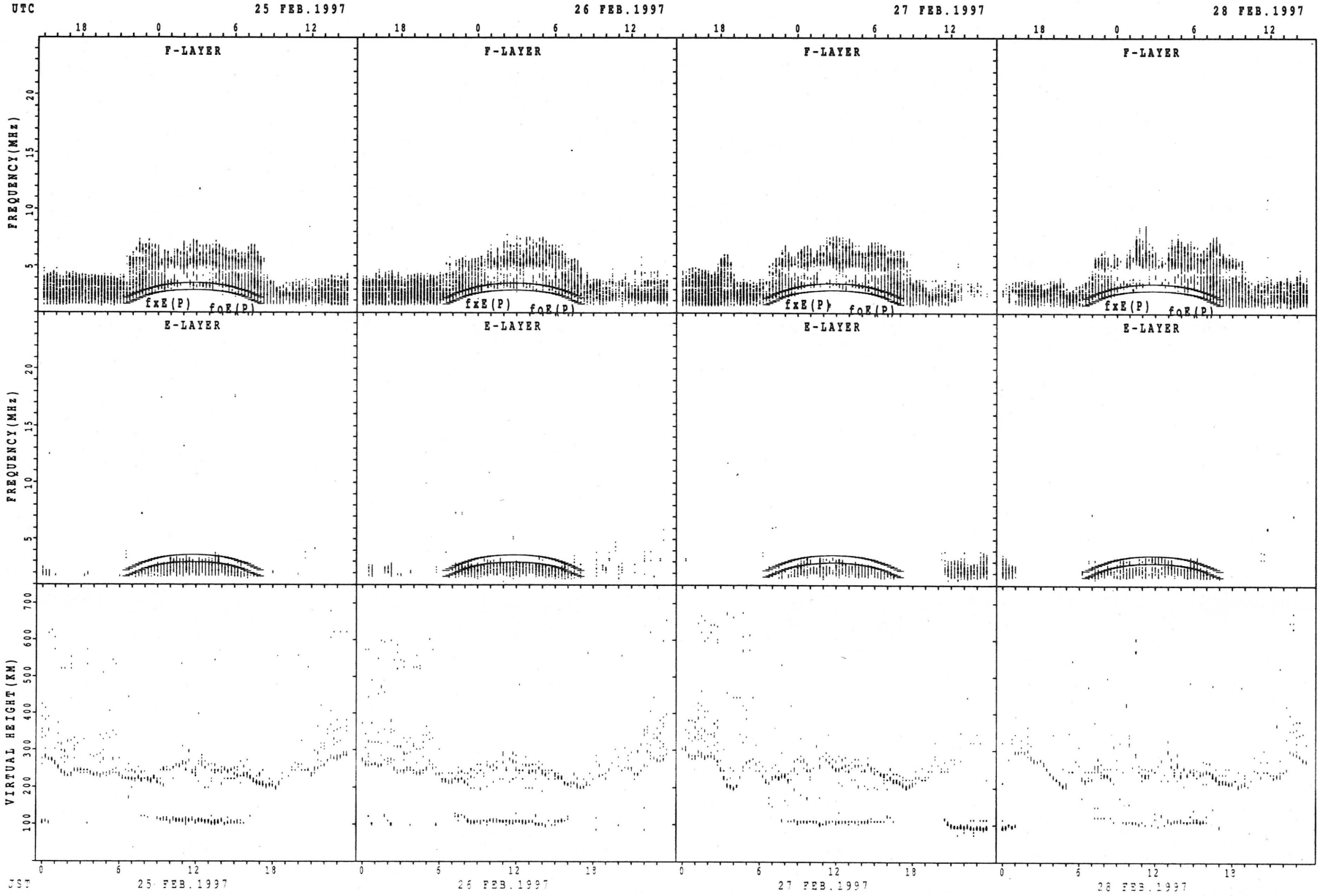

SUMMARY PLOTS AT WAKKANAI
UTC
13 FEB.1997
14 FEB.1997
15 FEB.1997
16 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST

SUMMARY PLOTS AT WAKKANAI



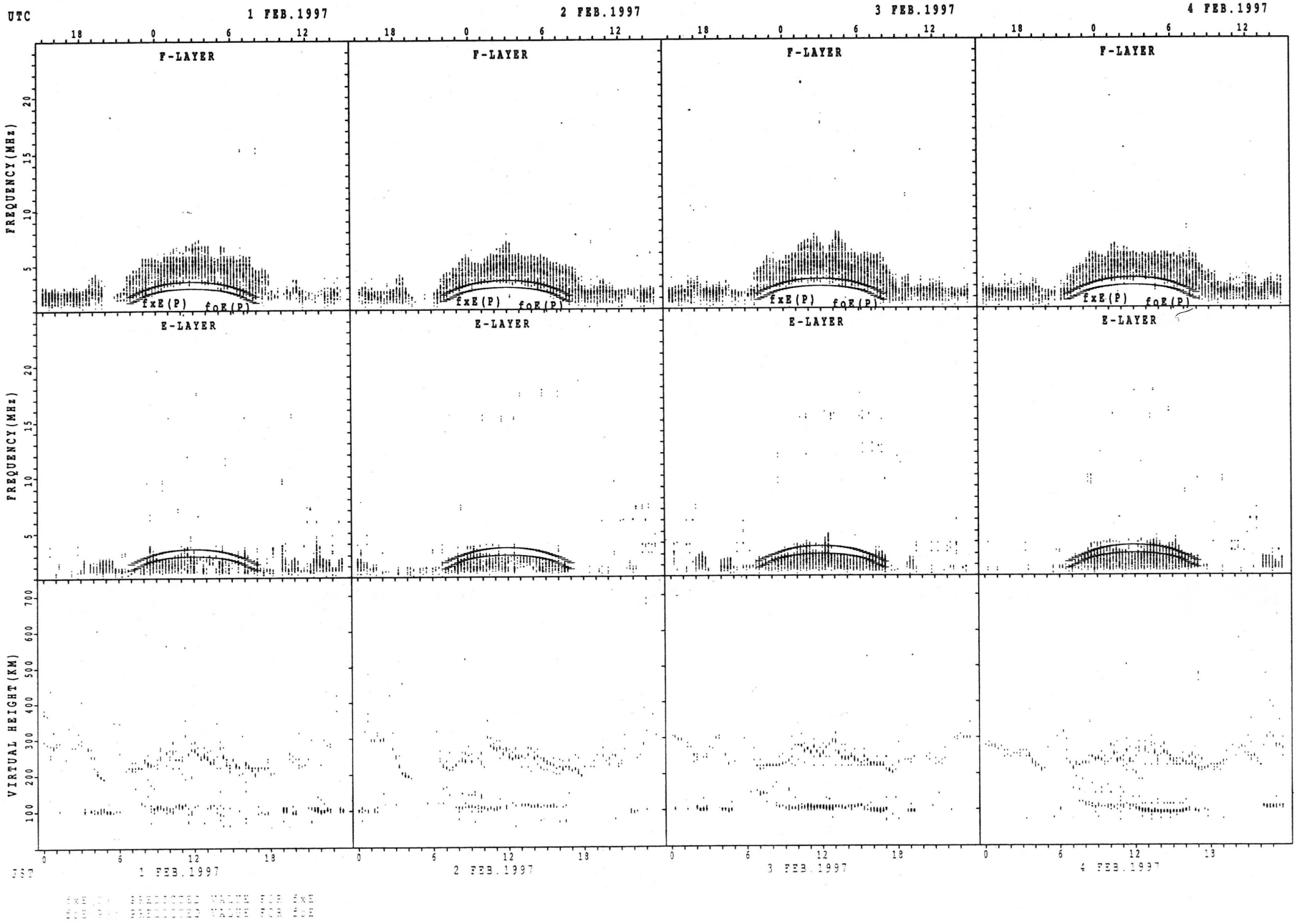

SUMMARY PLOTS AT WAKKANAI
UTC
21 FEB.1997
22 FEB.1997
23 FEB.1997
24 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST

SUMMARY PLOTS AT WAKKANAI

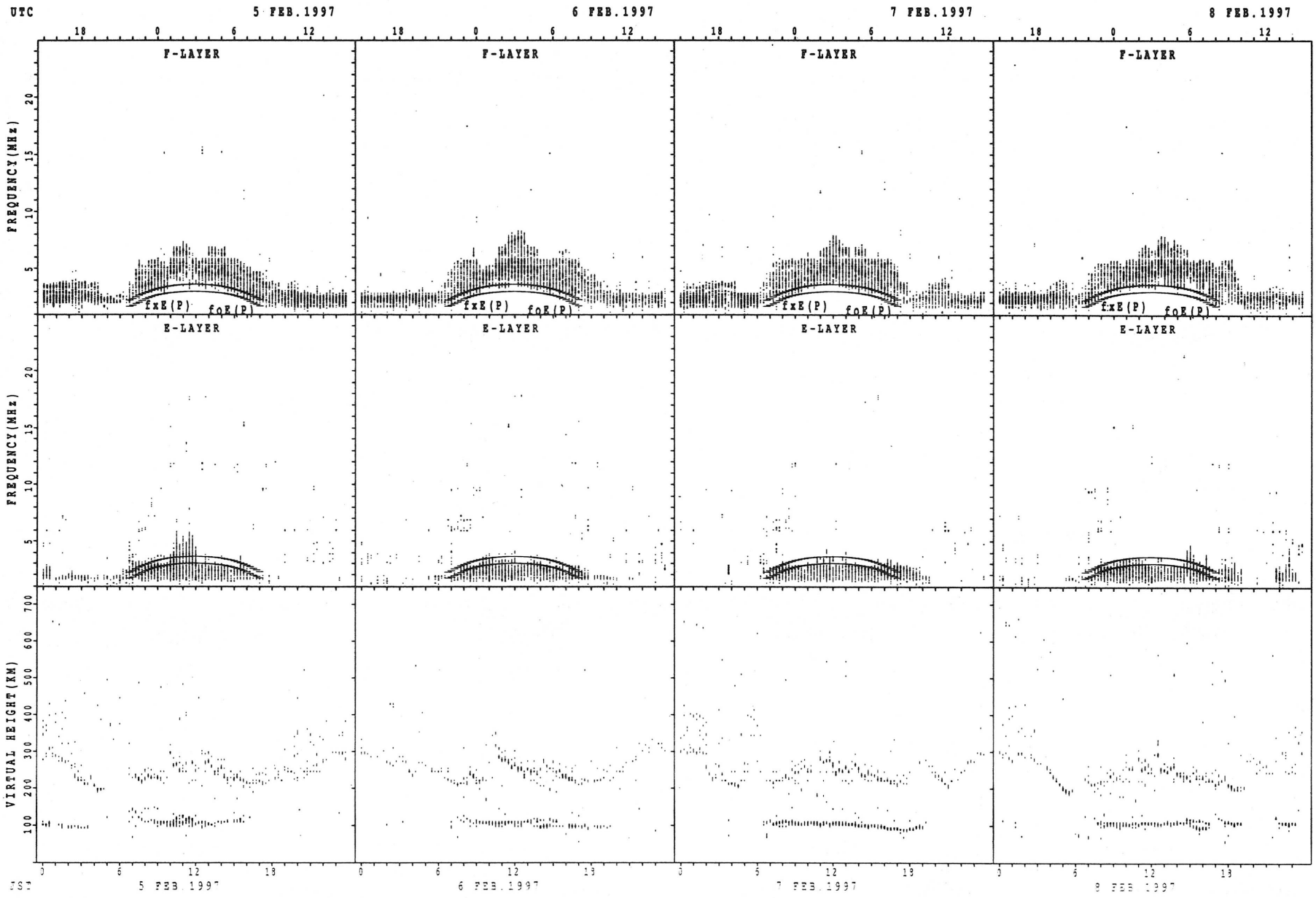


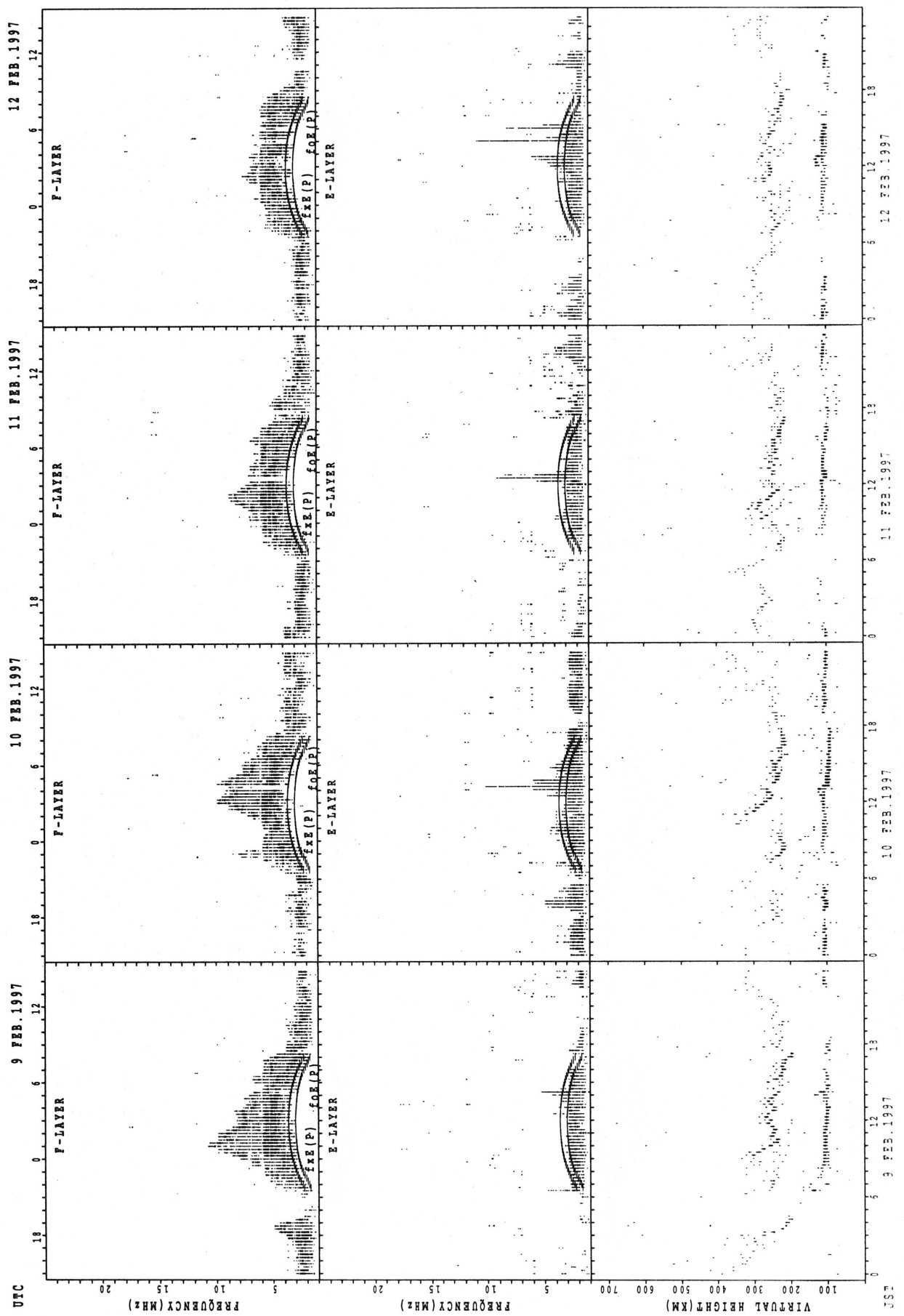
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

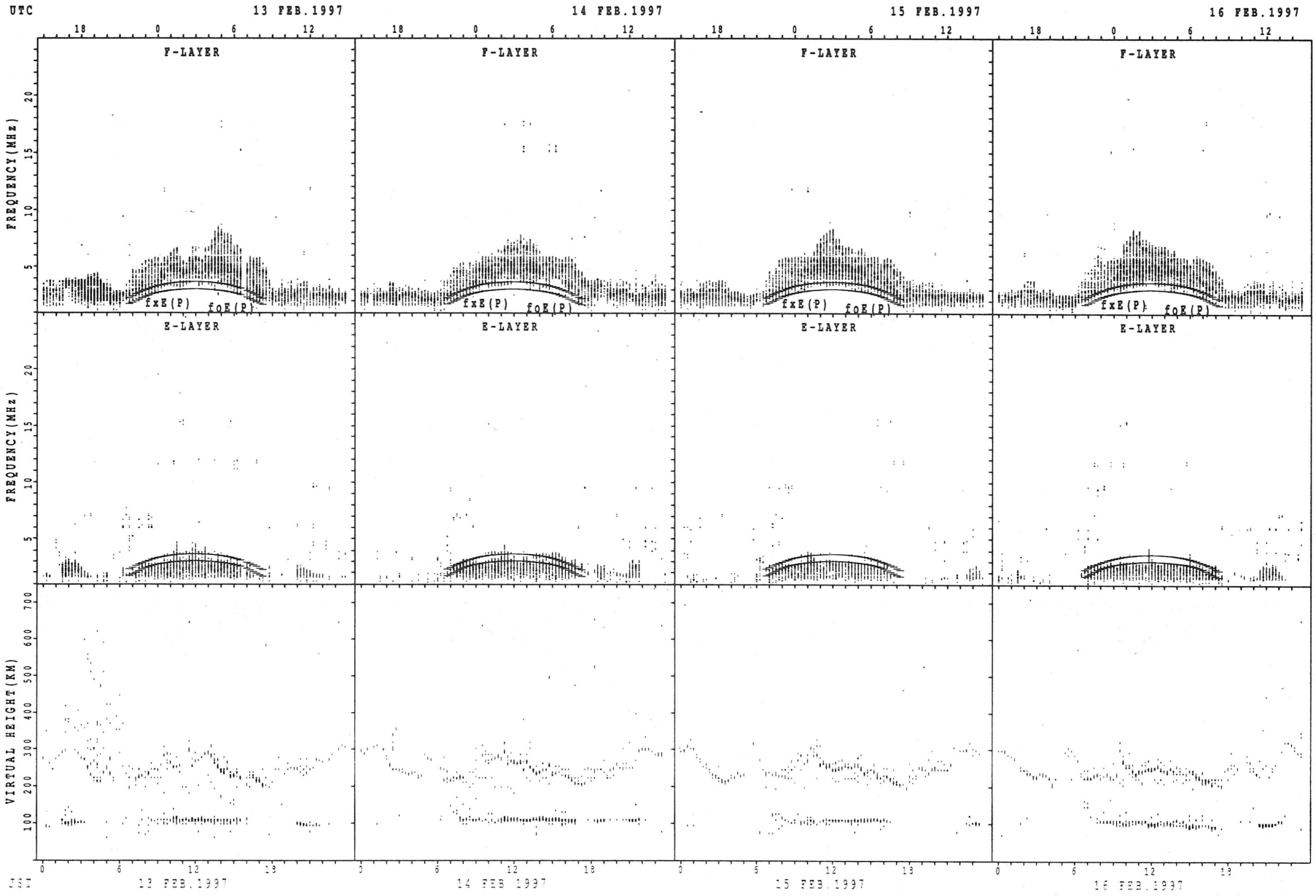


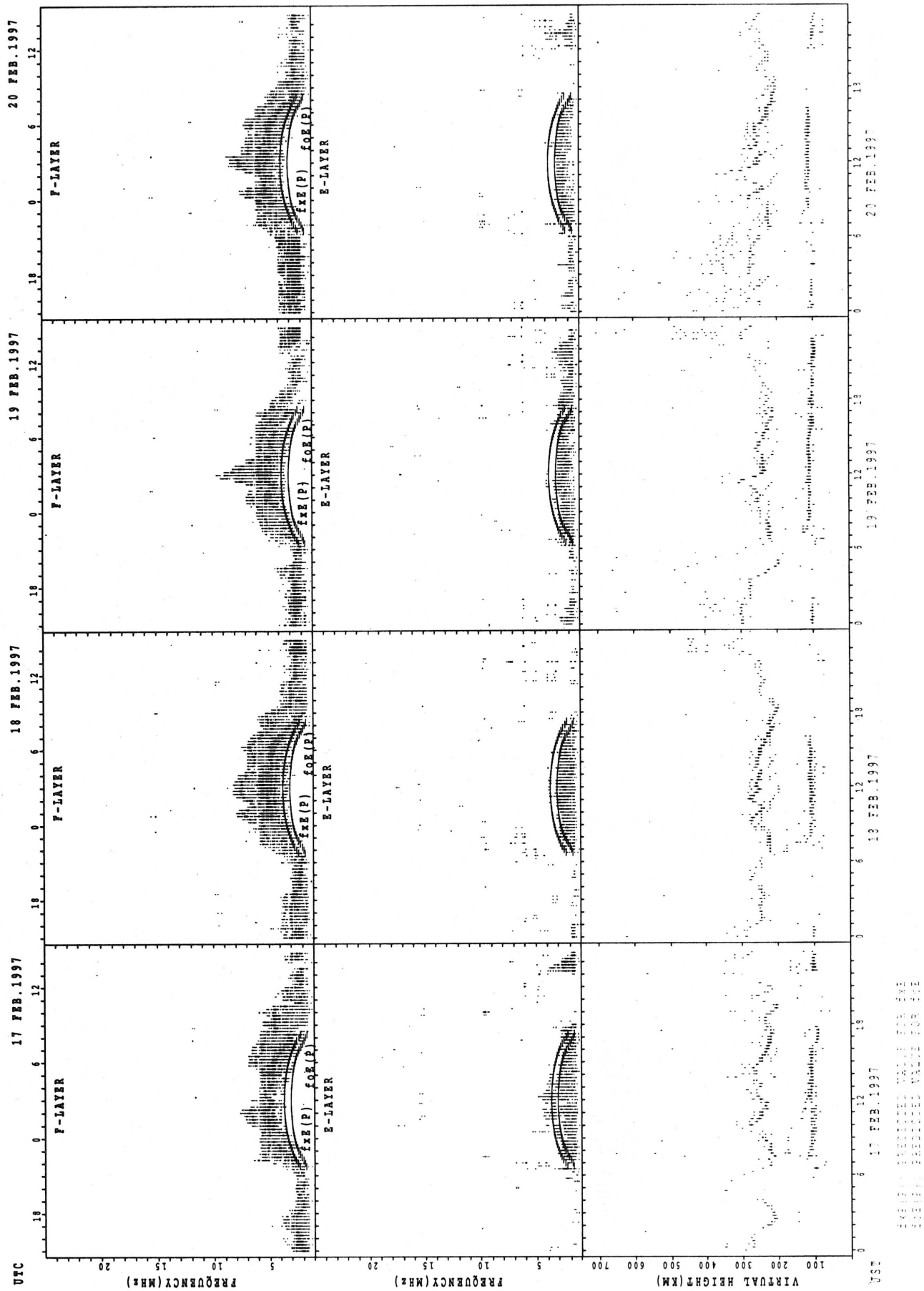
fxE (P) : PREDICTED VALUE FOR fxE
foE (P) : PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
5 FEB.1997
6 FEB.1997
7 FEB.1997
8 FEB.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
5 FEB.1997
6 FEB.1997
7 FEB.1997
8 FEB.1997

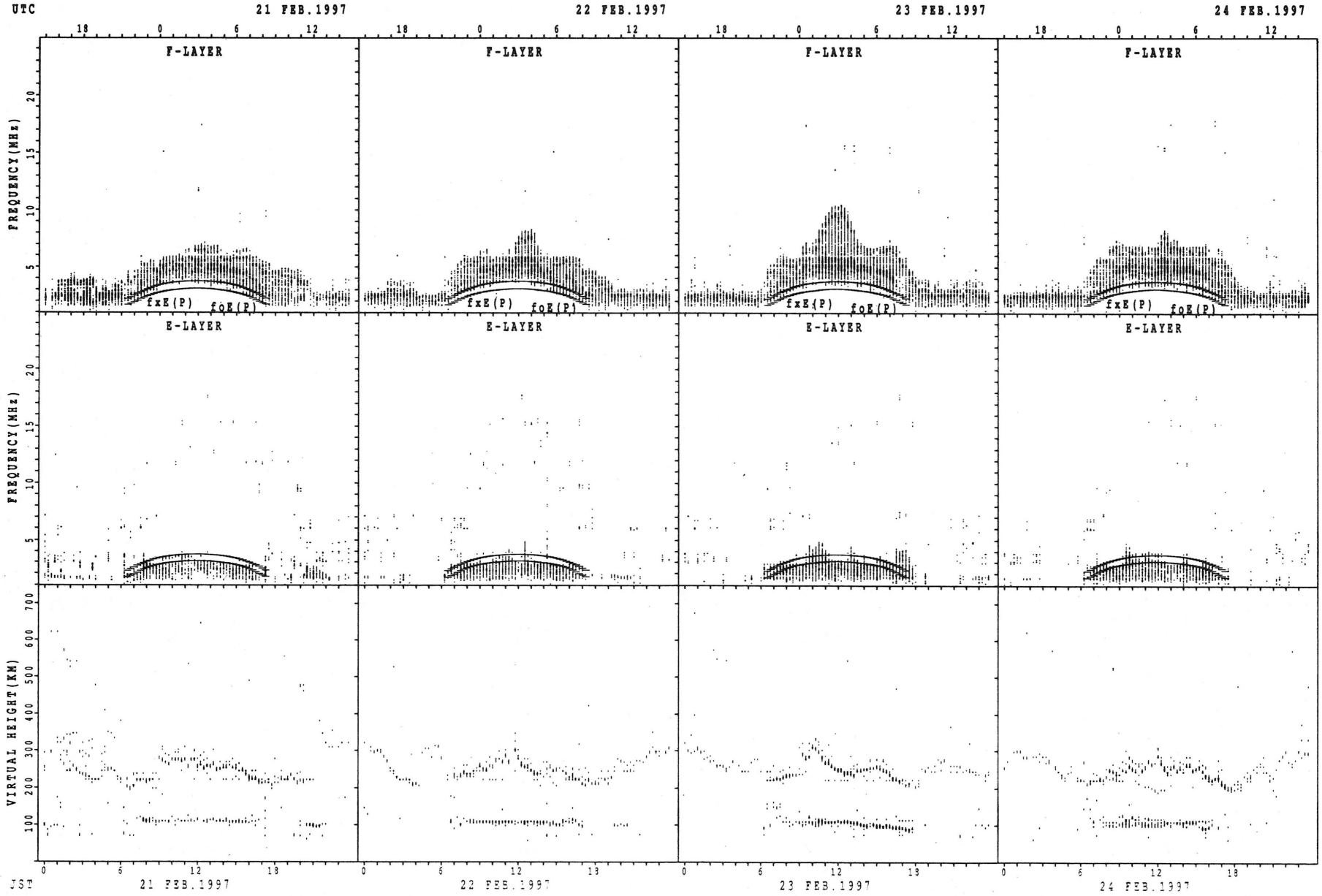

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
9 FEB.1997
10 FEB.1997
11 FEB.1997
12 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
9 FEB.1997
10 FEB.1997
11 FEB.1997
12 FEB.1997

SUMMARY PLOTS AT KOKUBUNJI TOKYO

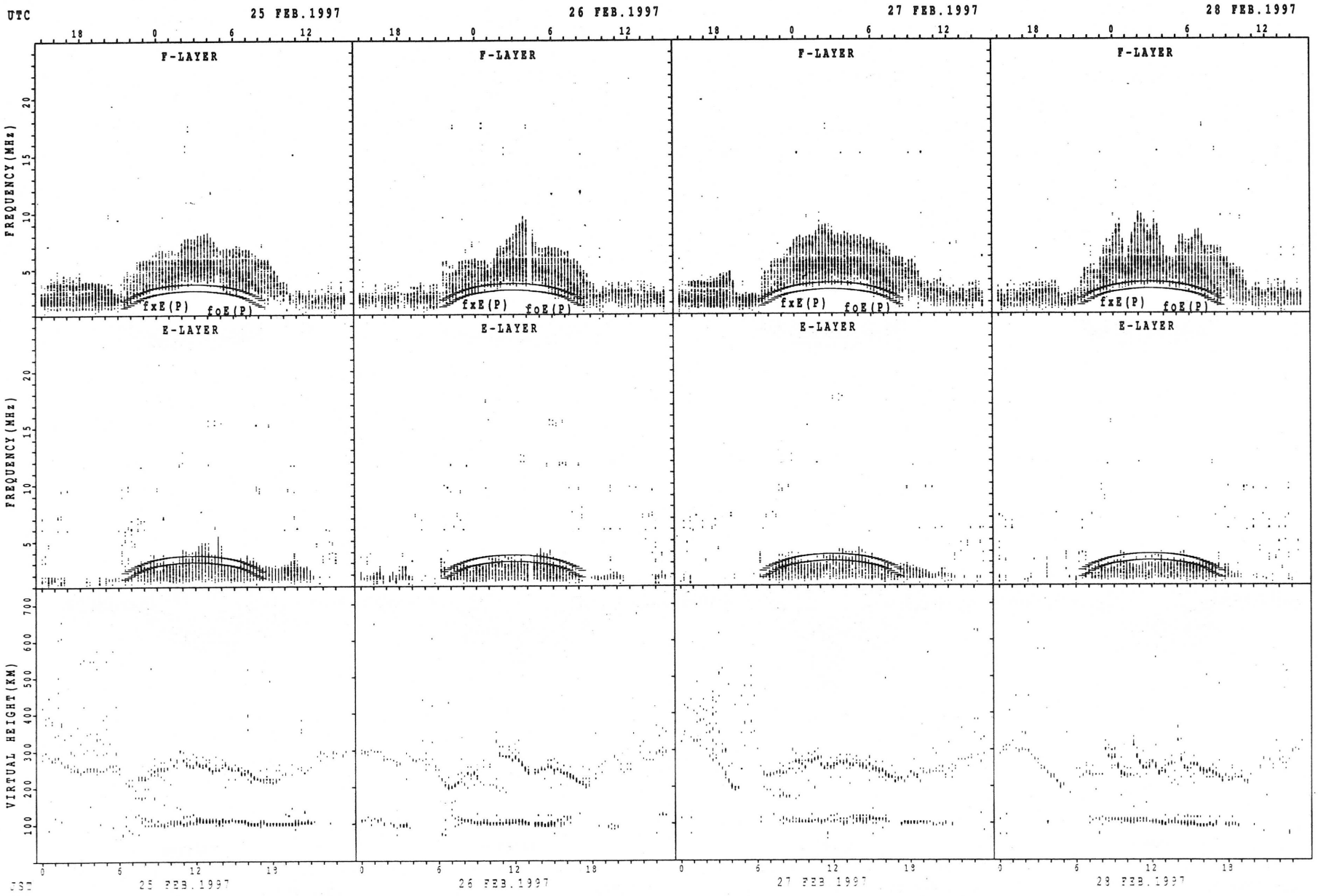



SUMMARY PLOTS AT KOKUBUNJI TOKYO
17 FEB.1997
18 FEB.1997
19 FEB.1997
20 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)

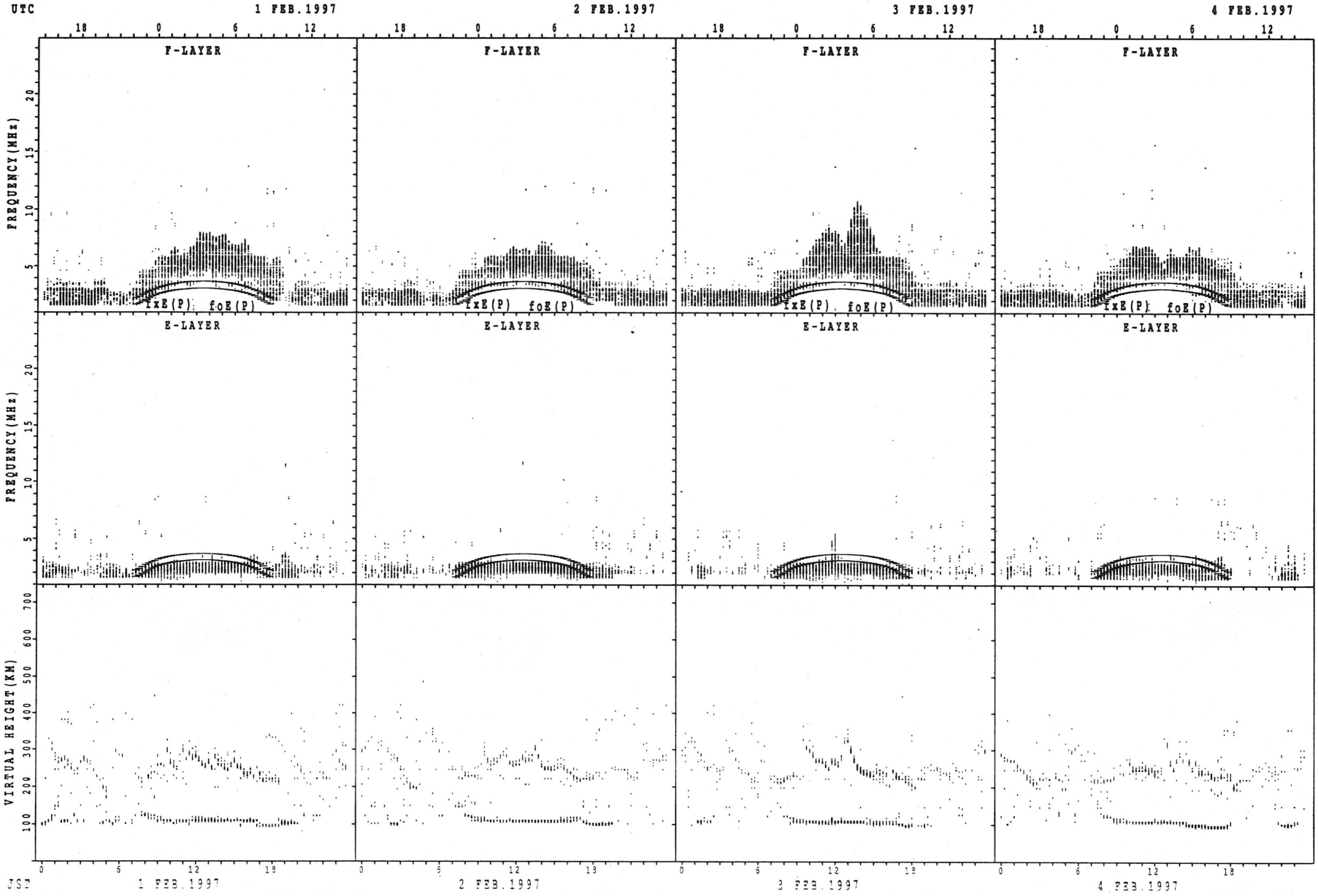
SUMMARY PLOTS AT KOKUBUNJI TOKYO



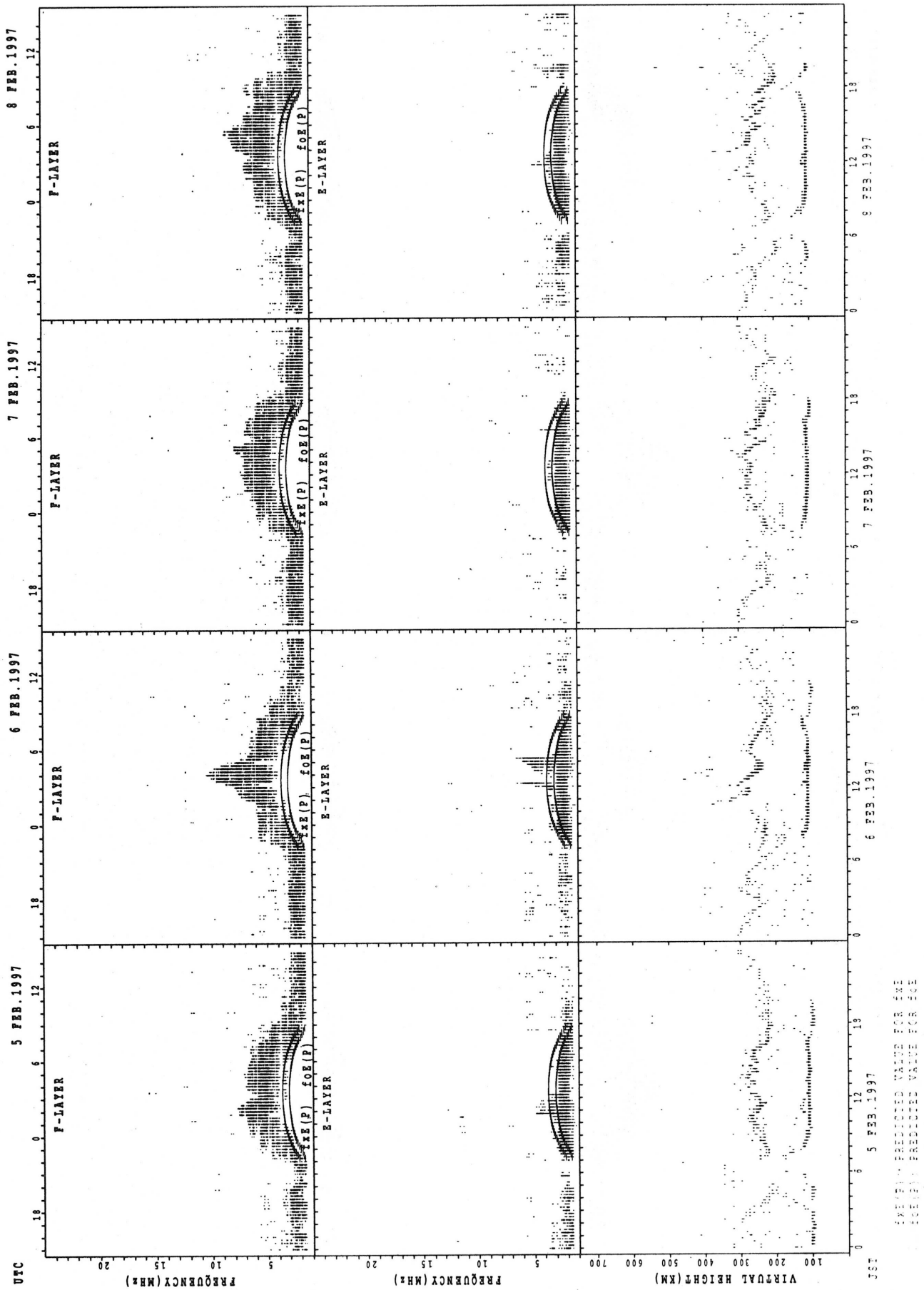
SUMMARY PLOTS AT KOKUBUNJI TOKYO



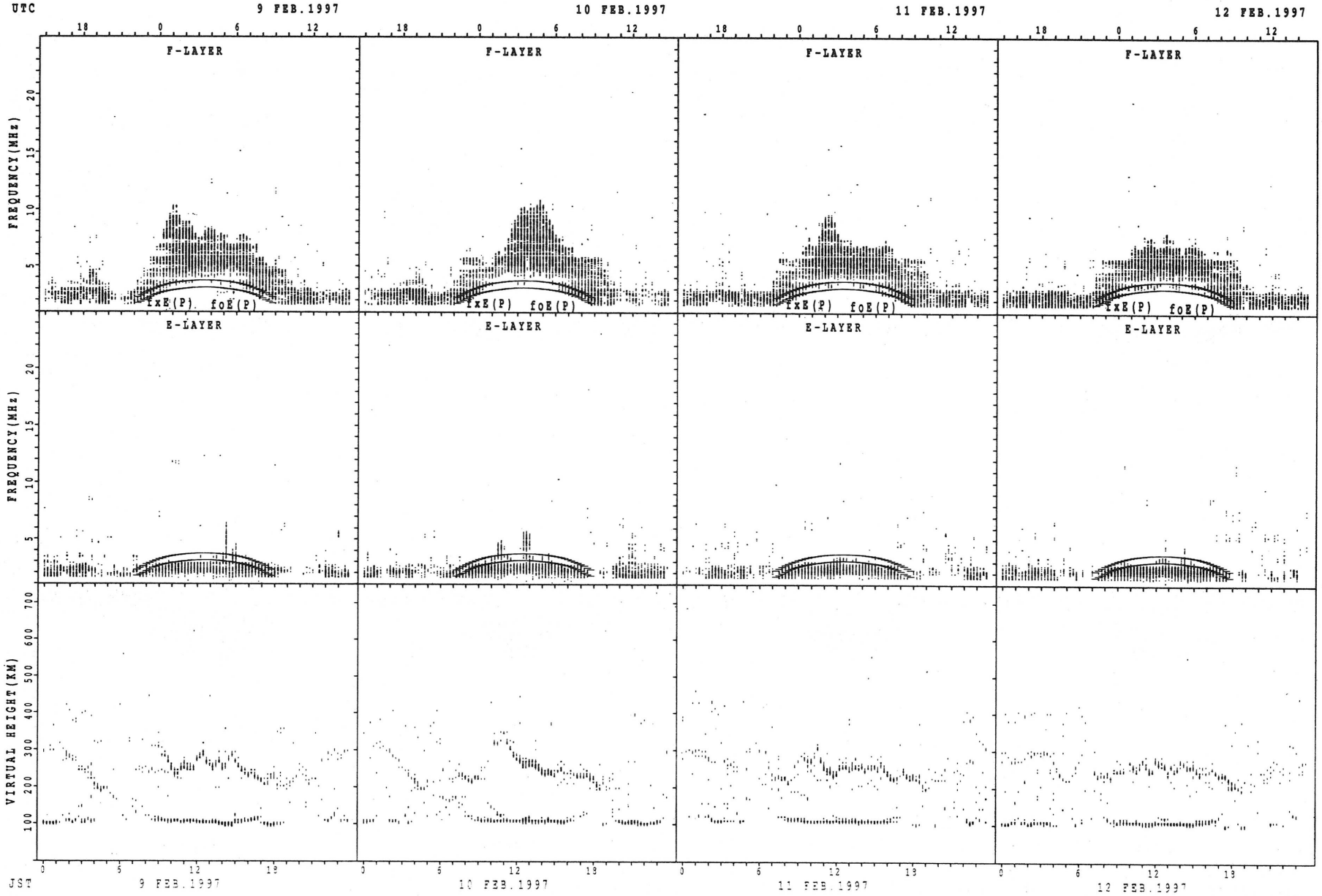
SUMMARY PLOTS AT YAMAGAWA

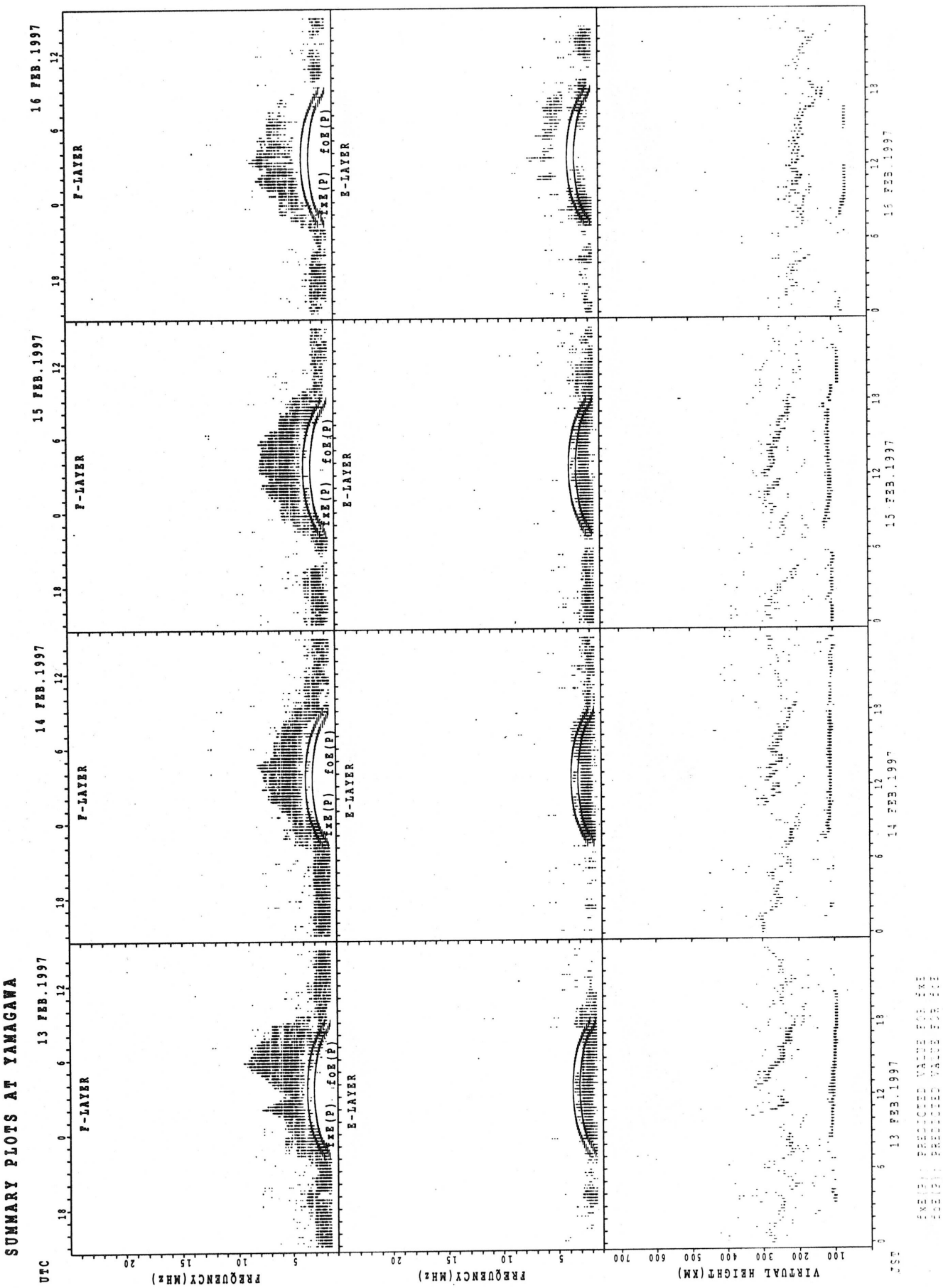


foE(P): PREDICTED VALUE FOR foE

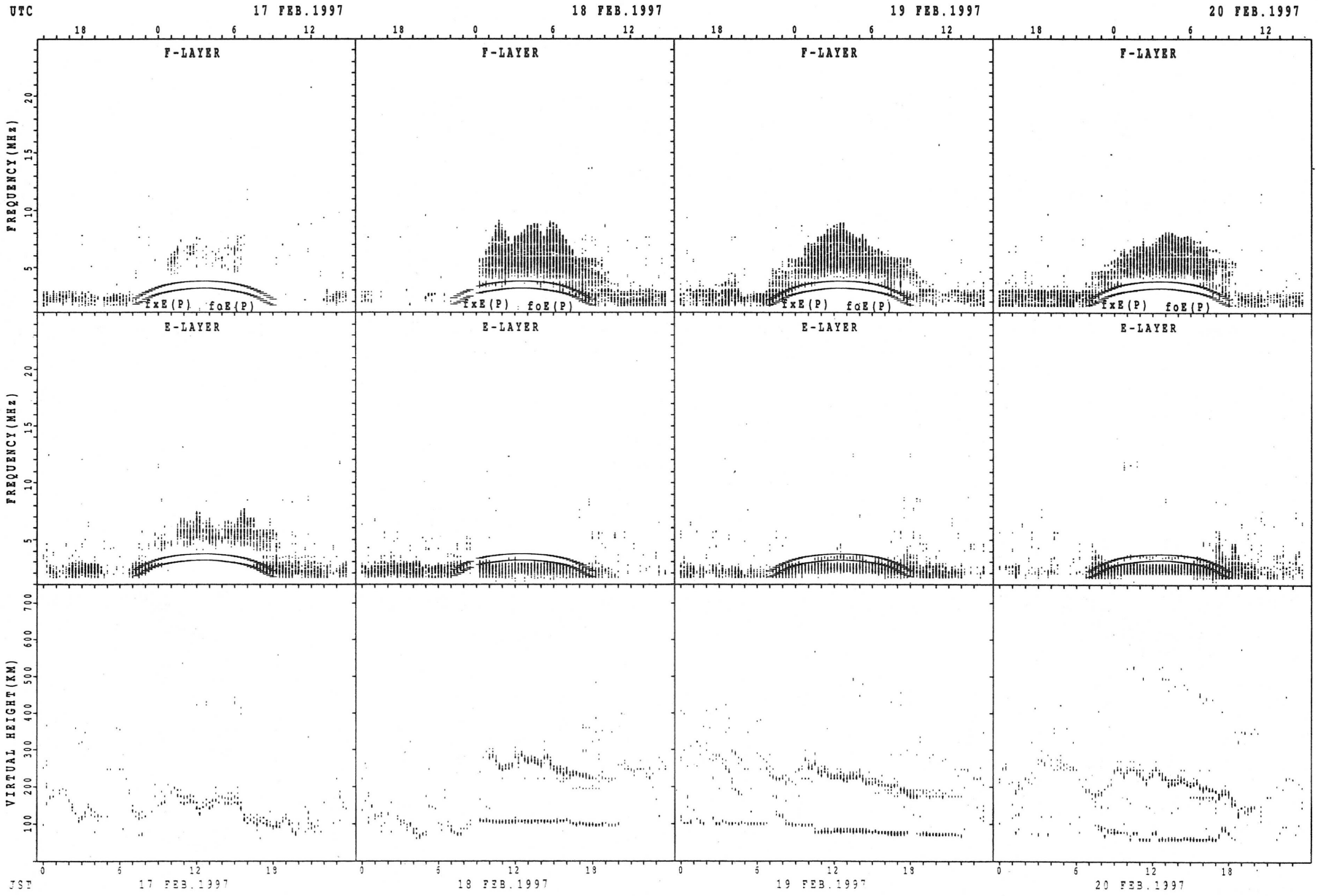

SUMMARY PLOTS AT YAMAGAWA
UTC
5 FEB.1997
6 FEB.1997
7 FEB.1997
8 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
JST
5 FEB.1997
6 FEB.1997
7 FEB.1997
8 FEB.1997

SUMMARY PLOTS AT YAMAGAWA

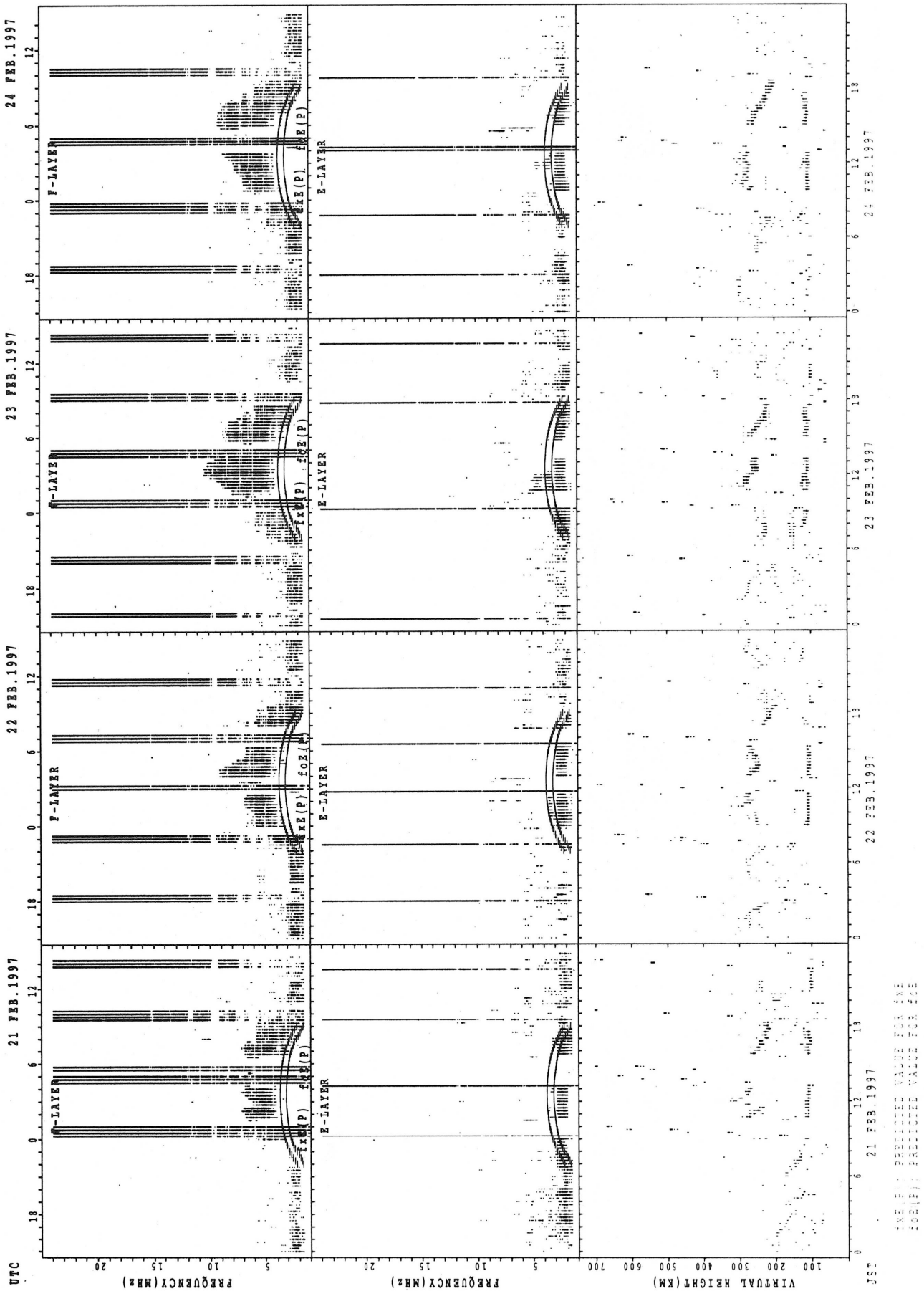



SUMMARY PLOTS AT YAMAGAWA
UTC
13 FEB.1997
14 FEB.1997
15 FEB.1997
16 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)

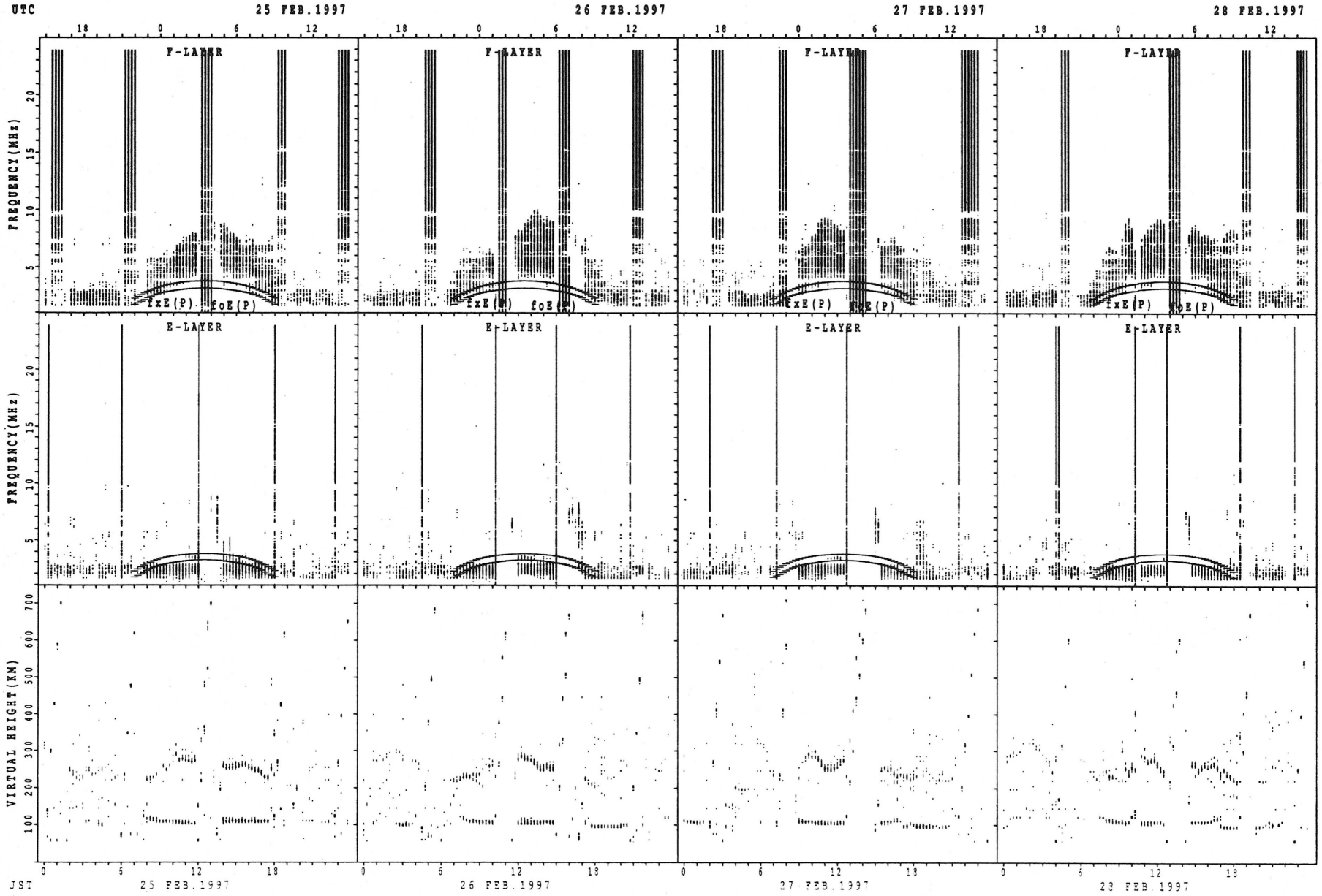
SUMMARY PLOTS AT YAMAGAWA



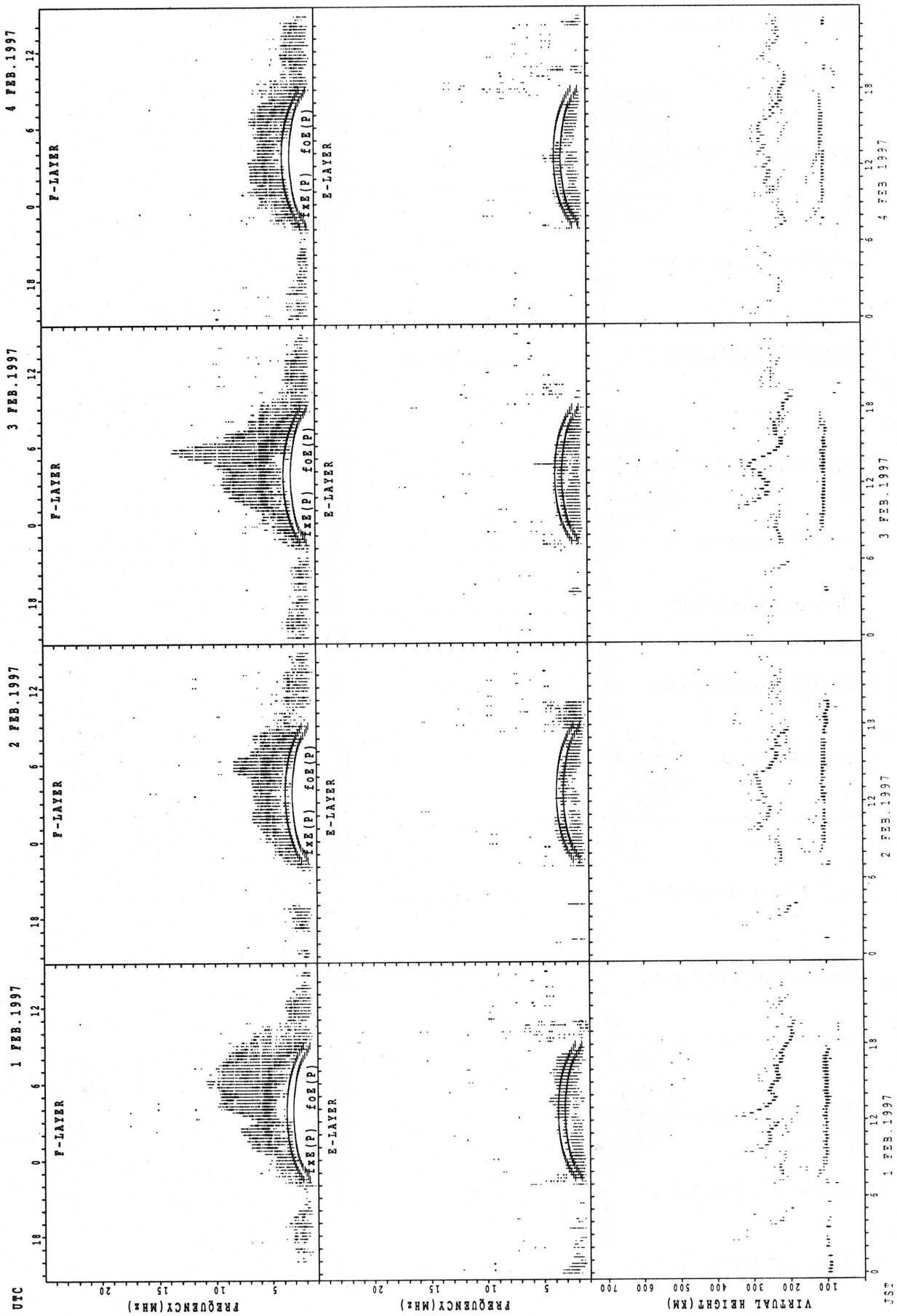
foE(P) : PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
21 FEB.1997
22 FEB.1997
23 FEB.1997
24 FEB.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE
JST

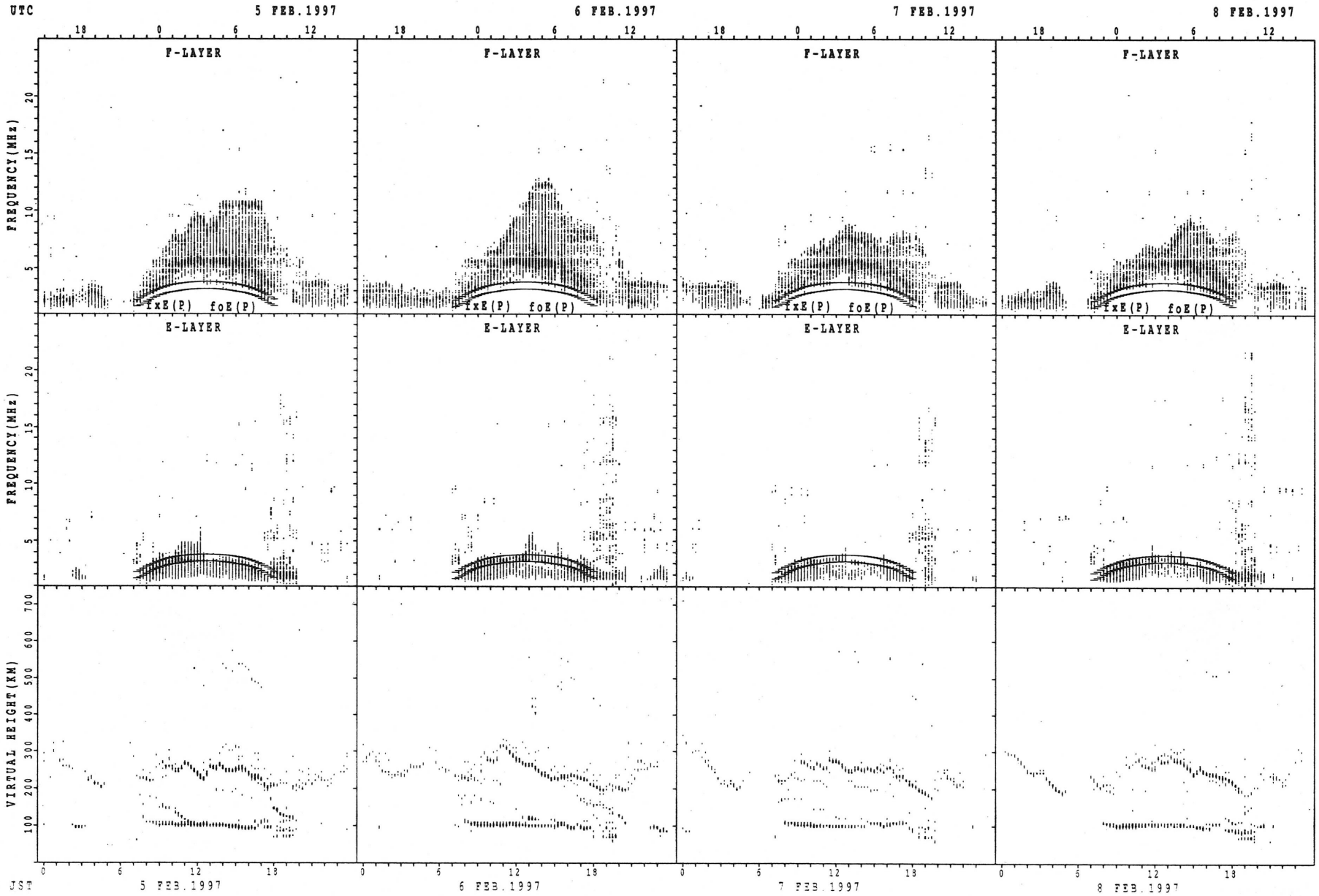
SUMMARY PLOTS AT YAMAGAWA



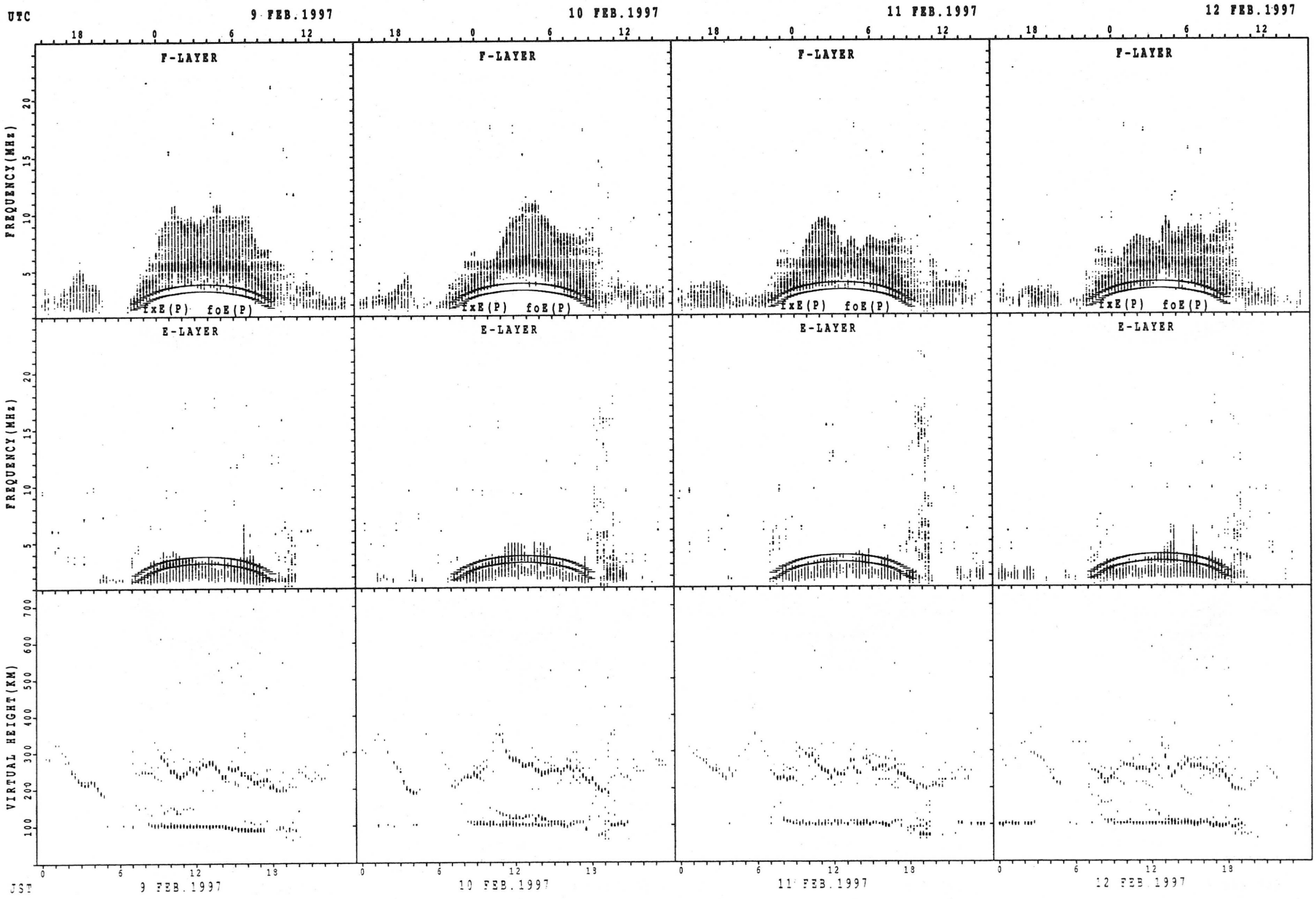
foE(P) : PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
1 FEB.1997
2 FEB.1997
3 FEB.1997
4 FEB.1997
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
1 FEB.1997
2 FEB.1997
3 FEB.1997
4 FEB.1997

SUMMARY PLOTS AT OKINAWA

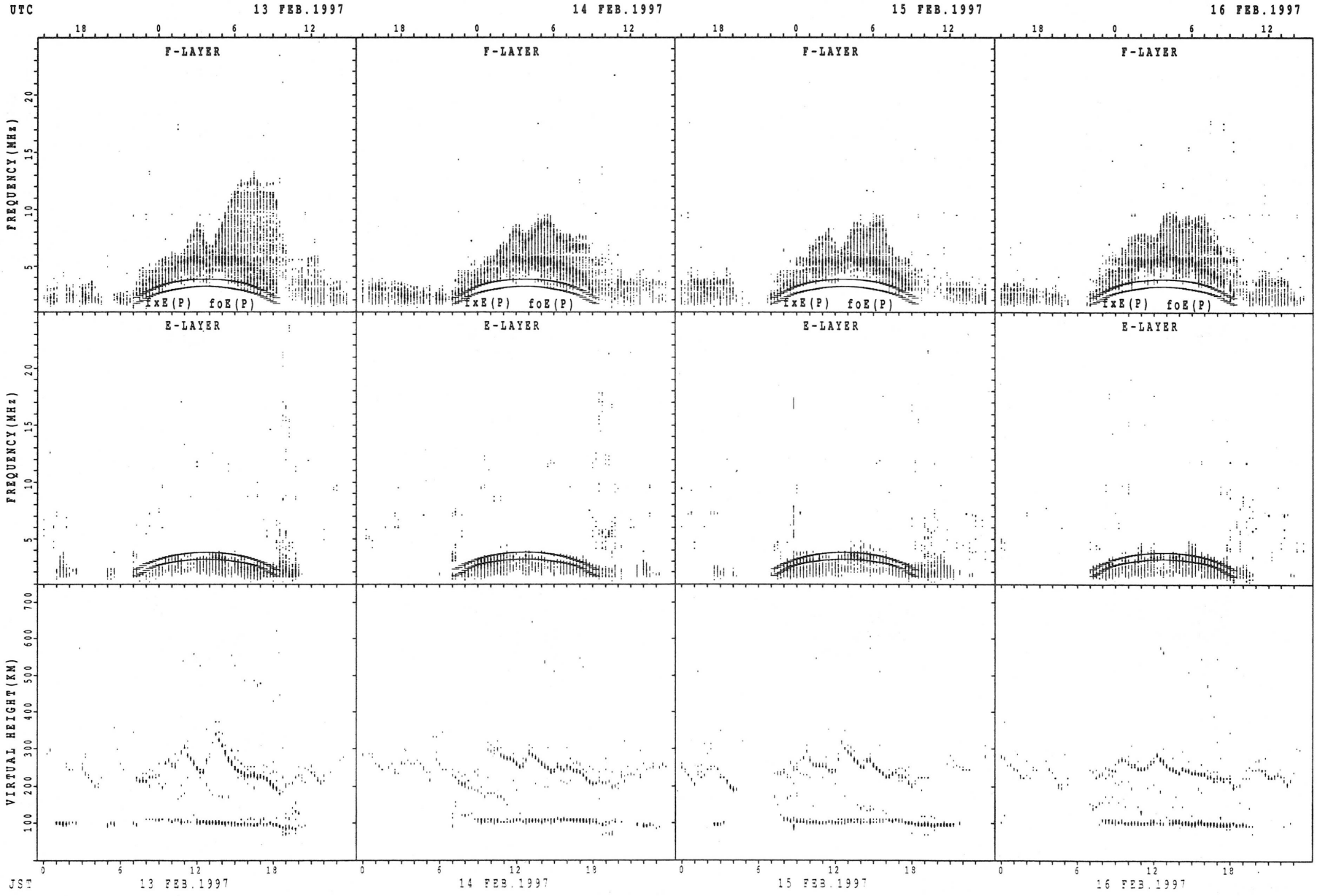


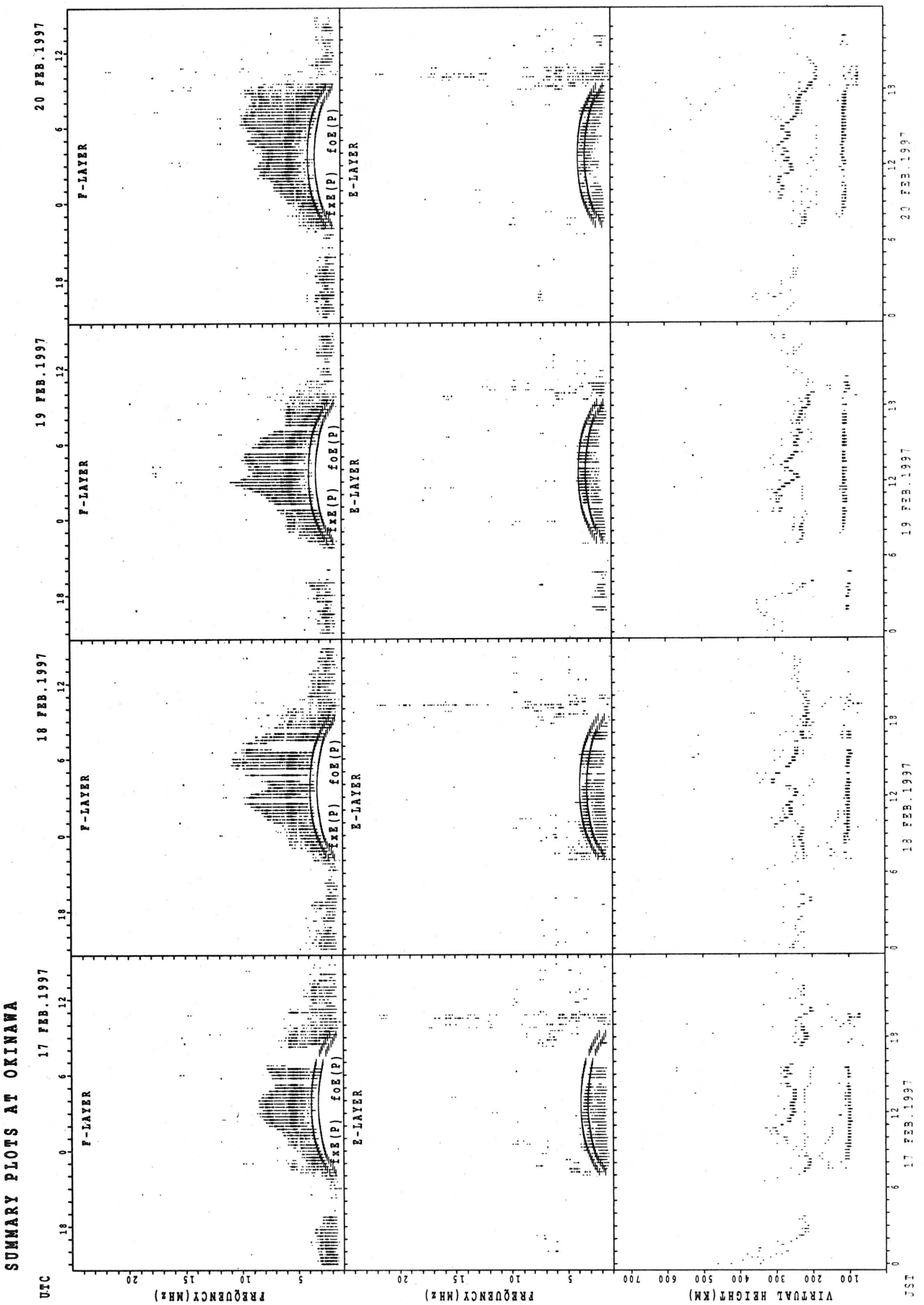
SUMMARY PLOTS AT OKINAWA



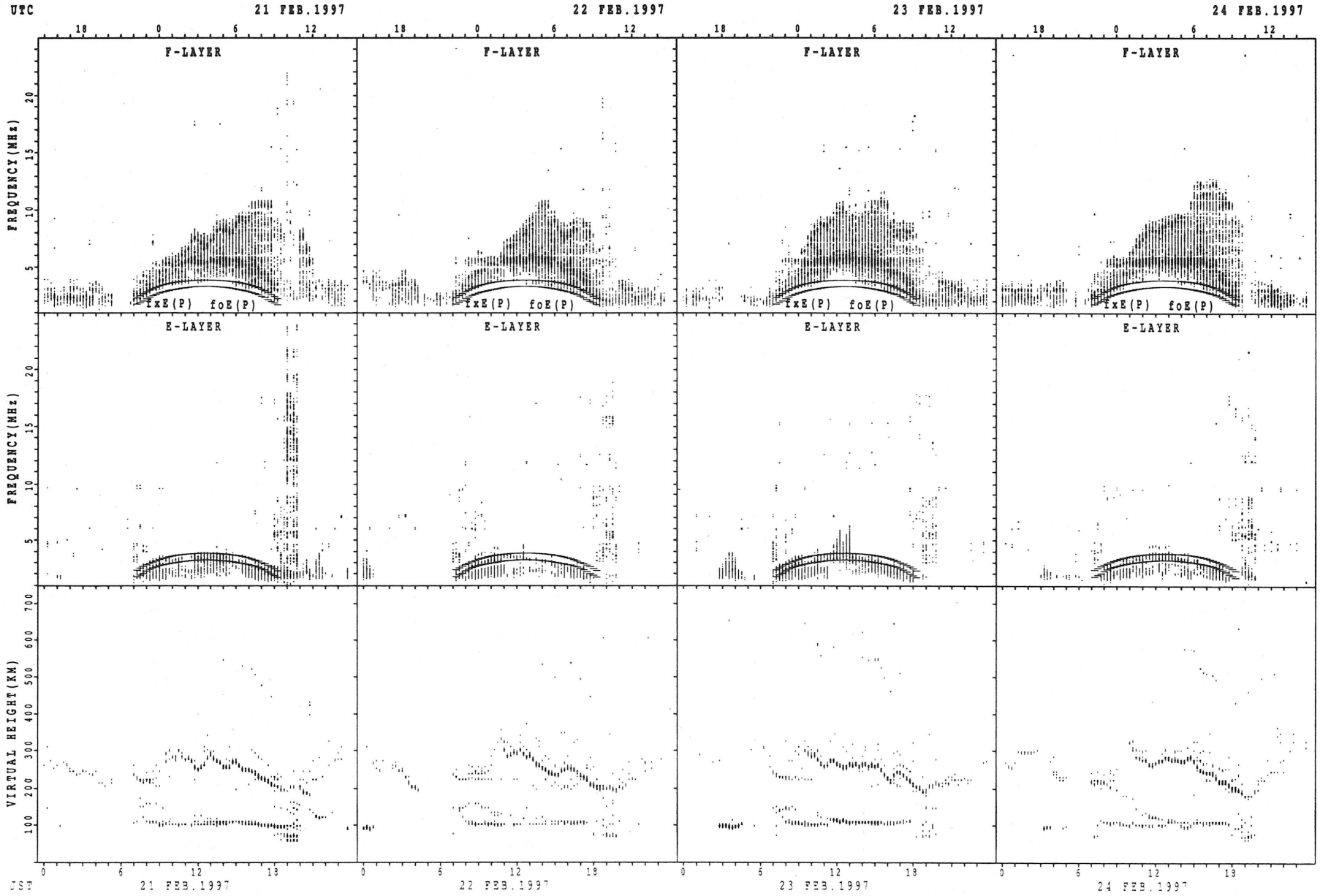
foE(P): PREDICTED VALUE FOR foE

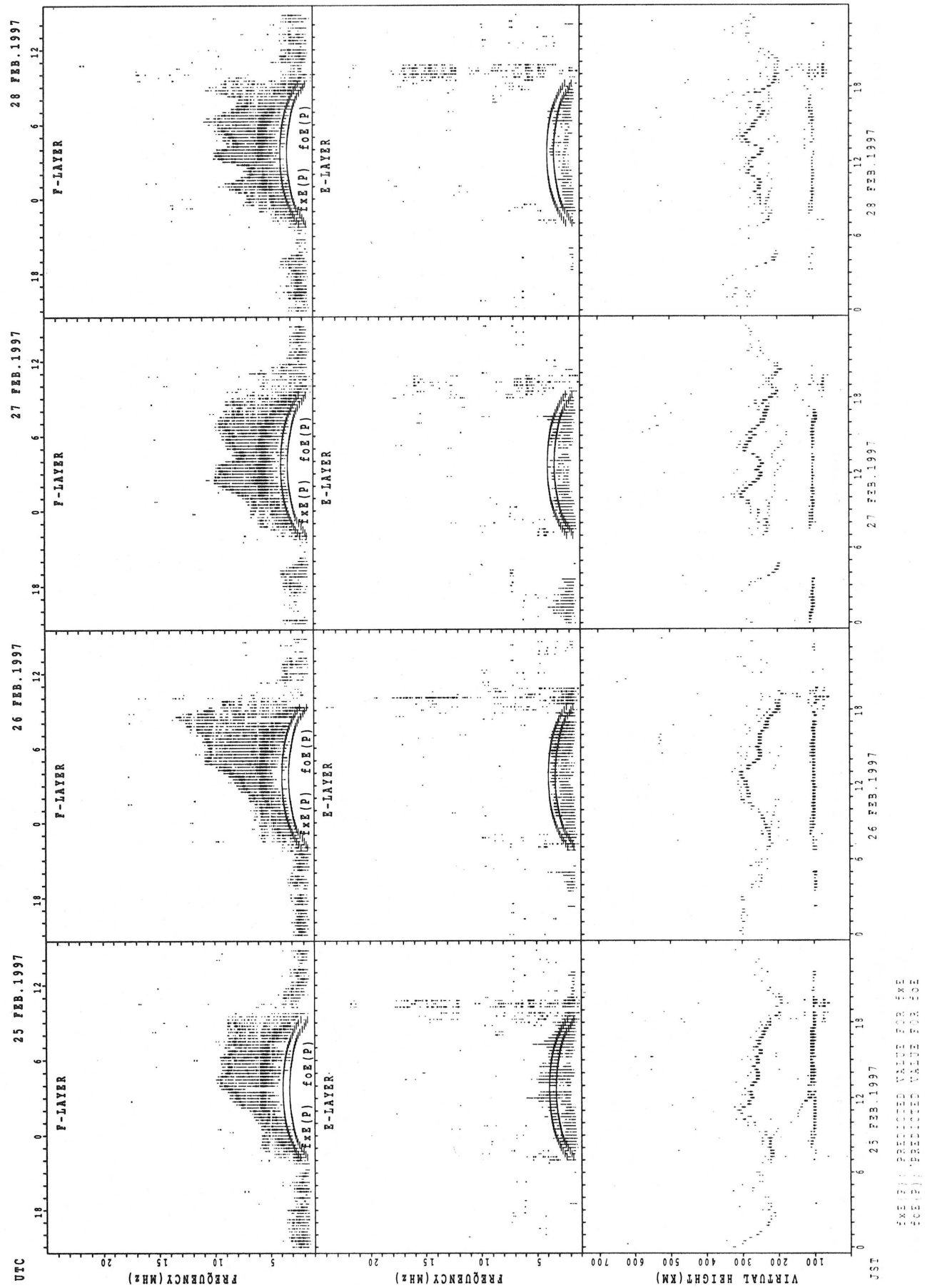
SUMMARY PLOTS AT OKINAWA




SUMMARY PLOTS AT OKINAWA
UTC
17 FEB.1997
18 FEB.1997
19 FEB.1997
20 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
17 FEB.1997
18 FEB.1997
19 FEB.1997
20 FEB.1997

SUMMARY PLOTS AT OKINAWA




SUMMARY PLOTS AT OKINAWA
UTC
25 FEB.1997
26 FEB.1997
27 FEB.1997
28 FEB.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h'F AND h'Es

FEB. 1997 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION WAKKANAI LAT. 45.4N LON. 141.7E

	00	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	14	20	20	12									
MED											272	263	261	255	258									
U Q											282	274	276	267	269									
L Q											256	244	248	245	254									

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									22	27	24	25	25	27	27	26	12	11				10		
MED									127	115	113	111	119	113	113	115	109	105				103		
U Q									155	131	119	119	125	123	121	123	118	113				107		
L Q									121	111	108	106	110	109	111	111	98	95				101		

h'F STATION KOKUBUNJI LAT. 35.7N LON. 139.5E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											11	22	25	21	13	10								
MED											276	270	264	262	256	250								
U Q											302	294	272	275	278	270								
L Q											264	252	256	247	247	246								

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									24	28	26	27	27	28	26	26	24							
MED									114	128	113	113	113	113	111	107	103							
U Q									131	163	147	135	119	119	113	113	111							
L Q									111	109	107	107	109	106	103	101	97							

h'F STATION YAMAGAWA LAT. 31.2N LON. 130.6E

	00	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	21	25	23	19	22	17							
MED											280	260	276	264	252	257	250							
U Q											286	281	283	276	258	264	264							
L Q											256	250	259	248	240	240	241							

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	11	12	13	12			13	24	24	24	27	25	22	21	27	27	27	20	15	11	10	10	
MED	111	109	112	113	112			143	126	113	137	119	113	111	111	113	113	115	105	103	105	106	107	
U Q	125	131	115	126	161			166	152	161	163	125	121	113	119	119	119	125	126	111	167	113	125	
L Q	105	103	110	104	107			108	119	111	119	109	109	109	108	111	111	107	101	97	89	95	103	

MONTHLY MEDIANS OF h'F AND h'Es

FEB. 1997 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION OKINAWA LAT. 26.3N LON. 127.8E

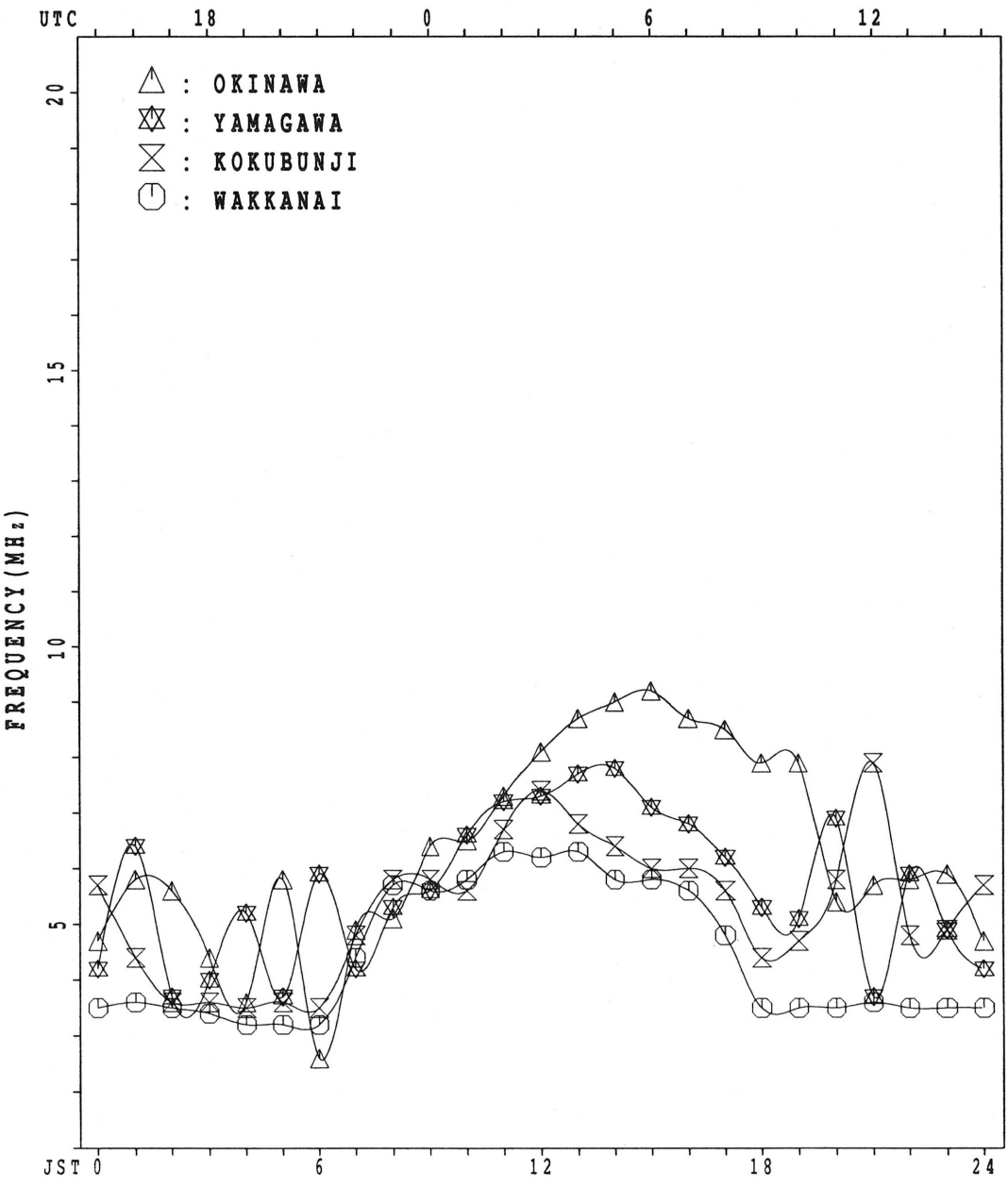
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											16	27	27	24	26	27	24	24	17					
MED											287	274	258	271	258	250	241	243	232					
U Q											291	294	272	288	274	260	253	248	324					
L Q											265	258	248	262	252	240	234	230	223					

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									24	28	26	27	26	27	27	28	26	24	15	15				
MED									123	111	108	115	111	107	107	107	107	108	101	97				
U Q									162	149	157	147	113	113	115	109	109	113	105	101				
L Q									114	105	105	107	107	103	105	103	101	104	99	83				

MONTHLY MEDIANS PLOT OF foF2

FEB.1997 AUTOMATIC SCALING



IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	34	X 34	X 33	X 32	X 42	A	X 26												X 46	A	X 40	X 31	X 31	X 33
2	X 33	X 33	X 32	X 35	X 34	X 24	X 25												X 38	X 36	X 36	X 31	X 34	X 33
3	X 32	X 34	X 38	X 36	X 34	X 28	X 27												X 38	X 40	X 37	X 38	X 32	X 32
4	X 34	X 36	X 36	X 36	X 37	X 28	X 26												X 46	X 35	X 37	X 39	X 34	38
5	38	38	41	X 40	X 40	X 24	28												X 40	X 36	X 36	X 34	X 32	X 33
6	X 34	X 34	X 34	X 34	X 35	X 34	X 34												X 48	X 37	X 32	X 31	X 32	X 35
7	X 35	37	X 37	X 38	41	31	32												X 36	X 36	X 44	X 40	X 31	X 32
8	X 34	35	35	X 34	X 36	X 41	X 25												X 63	X 37	X 35	X 36	X 35	X 34
9	X 34	X 34	X 37	42	X 46	X 24	X 25												X 39	X 39	X 34	X 33	X 31	X 33
10	X 33	X 34	X 34	X 37	O X 35	35	30												X 42	X 41	X 40	X 38	X 40	40
11	42	X 37	X 37	X 34	X 32	X 31	X 29												X 50	X 46	X 38	X 34	X 34	X 34
12	X 36	X 34	X 35	X 34	X 34	X 35	X 27												X 45	X 38	A	X 36	X 37	X 39
13	41	X 41	44	43	46	36	31												X 37	X 36	X 39	X 37	X 36	X 35
14	X 33	X 34	X 36	X 36	X 34	X 32	X 31												X 43	X 42	X 38	X 38	X 38	X 39
15	X 36	X 36	X 39	X 42	X 34	X 28	X 29												X 41	X 38	X 36	X 36	X 33	X 35
16	X 34	X 35	X 39	X 36	X 34	X 29	X 29												X 35	X 34	X 41	X 38	X 34	X 34
17	X 34	X 35	X 40	X 34	X 29	X 29	X 29												X 58	X 57	X 43	X 39	X 35	X 37
18	X 37	X 40	X 38	X 39	X 34	X 32	X 30												X 55	X 38	X 42	X 38	X 37	36
19	X 36	36	37	X 36	X 41	X 30	X 31												X 46	X 36	X 36	X 36	X 38	40
20	38	40	42	34	41	41	44												X 43	X 35	X 38	X 36	X 34	X 36
21	X 34	40	44	42	39	X 33	X 37												X 50	X 51	X 48	X 30	X 34	X 34
22	X 34	X 35	X 39	X 37	X 32	X 28	X 32												X 48	X 41	X 35	X 36	X 36	X 36
23	X 34	X 34	X 36	X 36	X 33	X 31	X 33												X 44	X 38	X 36	X 38	X 38	X 37
24	X 34	X 34	X 34	X 36	X 36	X 36	X 37												X 44	X 36	X 36	X 37	X 36	34
25	X 34	45	45	44	42	39	X 35												X 57	X 42	X 34	X 34	X 34	X 35
26	X 35	X 36	X 36	X 38	36	38	X 41												X 42	X 37	X 41	X 39	X 39	X 38
27	38	39	42	44	50	27	32												X 58	X 45	X 40	X 38	X 36	38
28	X 35	X 36	X 35	X 38	X 38	X 28	X 35												X 62	X 52	X 38	X 38	X 38	X 37
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	28	28	28	28	28	27	28												28	27	27	28	28	28
MED	X 34	X 36	X 37	X 36	X 36	X 31	X 30												X 44	X 38	X 38	X 36	X 34	X 35
U Q	36	38	40	40	41	35	X 34												X 50	X 42	X 40	X 38	X 37	38
L Q	X 34	X 34	X 35	X 34	X 34	X 28	X 28												X 40	X 36	X 36	X 34	X 34	X 34

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	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 26	28	27	26	36	A	20	40	54	54	56	60	69	67	60	59	56	42	40	A	34	25	25	27
2	27	27	26	29	28	U S 17	R 19	39	47	52	48	58	68	57	55	52	49	44	32	30	30	25	28	26
3	26	28	32	30	28	22	21	40	52	50	59	68	65	70	R 65	52	54	51	32	34	31	32	26	26
4	28	30	30	30	31	22	20	38	48	54	56	55	54	52	51	52	53	52	40	29	31	33	R 28	F 30
5	F 30	F 30	F 32	34	34	18	F 20	41	50	56	R 62	68	58	65	64	56	46	42	34	30	30	28	26	27
6	28	28	28	28	29	28	28	S 46	54	56	50	66	78	67	54	56	62	51	42	31	26	25	26	29
7	29	F 30	31	32	32	F 22	F 24	R 45	54	56	61	64	76	66	67	59	56	46	30	30	38	34	25	26
8	28	F 28	F 27	28	30	35	20	R 44	51	55	54	R 65	62	74	69	54	58	50	57	31	29	30	29	28
9	28	U R 28	31	F 33	40	18	19	45	57	75	104	94	79	74	68	65	54	51	33	33	28	27	25	27
10	27	28	28	31	29	F 28	24	42	R 74	55	54	68	94	88	85	71	60	52	36	35	34	32	34	F 32
11	F 34	31	31	28	26	25	23	S 46	52	J R 58	68	85	68	62	60	58	56	46	44	40	32	28	28	28
12	30	28	29	28	28	29	21	R 48	R 50	52	56	66	65	63	R 60	57	54	52	39	32	A	30	31	33
13	F 34	35	F 36	F 34	F 39	F 29	F 22	42	51	54	60	51	62	64	82	66	52	54	31	30	33	31	30	29
14	27	28	30	30	28	25	25	42	50	51	57	60	69	71	J R 60	58	54	44	37	36	32	32	32	33
15	31	30	33	36	28	23	23	46	55	56	57	71	78	63	61	54	54	46	34	32	30	30	27	29
16	28	29	33	30	28	23	23	R 47	54	52	69	77	68	66	57	56	52	44	29	28	35	32	28	28
17	28	29	34	28	23	23	23	J R 45	55	56	62	72	63	58	57	66	61	57	52	51	37	33	29	31
18	31	34	32	33	28	26	24	43	56	58	75	69	78	73	64	68	63	53	49	32	36	32	31	F 26
19	30	F 28	F 30	30	J R 35	24	25	45	51	57	66	60	91	68	58	57	56	54	41	30	30	31	32	F 31
20	F 30	F 33	F 35	F 27	F 30	F 32	F 36	J R 50	52	60	U R 63	58	80	69	64	66	55	45	37	29	32	30	28	30
21	28	F 27	F 36	F 36	F 32	27	30	42	50	53	56	61	68	64	59	60	59	51	44	45	42	24	28	28
22	28	29	33	31	26	22	26	J R 48	57	61	58	60	74	80	60	54	57	50	42	34	30	30	30	30
23	28	28	30	30	27	25	28	51	55	60	68	92	100	86	65	64	70	57	38	32	30	32	32	31
24	28	28	28	30	30	30	31	R 50	58	66	66	63	69	71	66	64	R 62	R 63	38	30	30	31	30	28
25	28	F 36	F 35	F 33	F 33	F 31	29	R 48	56	62	62	70	73	78	62	64	63	57	51	36	28	28	28	29
26	29	30	30	32	F 29	F 30	35	R 50	52	56	51	66	78	88	65	66	60	52	36	31	35	33	33	32
27	F 31	F 31	F 35	F 35	F 43	F 18	F 25	48	57	71	73	88	79	79	74	73	67	57	52	39	34	32	30	F 30
28	29	30	29	32	32	22	29	48	57	76	57	96	H 82	66	68	70	73	67	56	46	32	32	32	31
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	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	28	28
MED	28	29	31	30	30	25	24	45	54	56	60	66	71	68	63	59	56	51	38	32	32	31	28	29
U Q	F 30	F 30	F 33	F 33	32	F 29	28	R 48	56	60	66	72	78	74	66	66	62	54	44	36	34	32	31	31
L Q	28	28	29	28	28	22	21	42	51	54	56	60	66	64	60	56	54	46	34	30	30	28	28	28

IONOSPHERIC DATA STATION Kokubunji

FEB.1997 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	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 L 340	L	L	424	420	408	412	L	L							
2										L		L 416	420	416	L 412	L 384	U L 288							
3											L 420	L 428	420	440	L 416	U L 388	U L 332							
4										L	L 440	L 420	424	L	L	L 380	L							
5										L	420	420	L 432	424	412	L 380	L							
6									L	U L 396	L 420	420	432	L 428	U L 416	U L 380	U L 344							
7									L	U L 392	L 416	428	432	L 436	L 420	L	L							
8									U L 316	L	L 424	428	L 420	L 404	416	L	L							
9										L 432	428	440	440	436	L 416	L 408	L							
10										L	L	L 448	428	456	408	L 400	L 332	U L 212						
11									L	L	420	400	428	U L 416	U L 400	U L 388	U L 320	200						
12								208	L 312	L	412	400	416	420	L 412	A	U L 332							
13									L	L 384	420	L 416	L 428	432	408	392	U L 332	188						
14									L	L 404	L 420	420	428	420	408	U L 400	L							
15									L	U L 416	420	416	420	420	412	L 396	L	L						
16									L	L	412	428	428	420	L 416	L 376	L	L 216						
17								224	L 296	L	408	432	420	424	U L 432	396	L 352							
18										L	L 428	424	432	436	424	L 412	L 352	L 228						
19										U L 400	L 416	L 432	432	L 432	L 412	L 400	L							
20									U L 348	U L 428	424	444	432	424	416	L 400	U L 340							
21								L		L 416	428	428	432	428	416	L 404	L 348	L						
22									L	L 416	L 420	L 428	440	432	L 416	L 404	U L 348	U L 220						
23										L 436	L 444	440	440	428	L 432	L 416	L 372							
24									L	U L 440	L 436	L 440	452	440	416	L 412	L 364							
25								232	L 340	U L 428	L 440	440	444	L 436	L 428	L 412	U L 364							
26									L	L	L 420	432	436	440	432	L 420	L							
27										L 448	444	444	444	440	424	L 420	340	252						
28									L 424	L 440	L	436	L 448	L 424	452	L 432	U L 380	U L 276						
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								3	7	15	24	28	28	27	27	24	17	8						
MED								224	L 340	L 416	L 420	428	432	428	416	L 400	U L 344	L 218						
U Q								232	L 348	L 436	L 428	438	438	436	424	L 412	L 358	L 240						
L Q								208	L 312	U L 400	420	420	422	420	412	L 388	U L 332	206						

FEB.1997 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.1997 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								164	228	A	292	U A 304	A	304	R	264	U S 216	B						
2								152	232	272	296	304	312	296	292	264	204	B						
3								A	236	284	A 300	A	312	304	288	272	228	B						
4								164	240	272	292	316	312	A	A	A	228	B						
5								B	224	272	304	316	324	312	288	268	220	160						
6								156	232	276	296	316	312	304	A 284	A	208	B						
7								176	228	272	296	312	320	312	292	264	216	B						
8								160	232	280	304	320	328	324	296	276	224	A						
9								B	236	280	304	312	316	312	292	264	224	160						
10								188	232	276	292	300	R 320	300	A	A	A	B						
11								172	216	260	288	R	304	A	A	252	A	B						
12								184	220	264	292	308	316	300	A	A	A	B						
13								172	236	264	288	A	A	A	292	256	216	148						
14								180	A	284	300	U A 312	A	308	A	A	A	152						
15								156	240	276	A	A	320	304	A	A	A	B						
16								172	236	284	308	312	320	312	296	272	228	B						
17								192	232	264	292	316	316	308	296	276	A	B						
18								184	224	272	296	324	A	A	284	272	232	R						
19								208	248	280	304	316	A	R	R	A	A	180						
20								B	236	268	304	R	R	320	R	276	R	U S 164						
21								172	A	280	324	324	332	A	A	292	244	B						
22								188	252	292	312	A 328	336	332	304	280	232	B						
23								180	244	284	A	A	R 332	A	304	A	244	A						
24								212	244	284	A 296	A	A	R 308	A	280	A	B						
25								B	244	292	312	316	320	U A 316	A	280	A	A						
26								188	256	276	300	320	A	312	A	284	244	U R 172						
27								192	252	280	296	312	A 320	304	A 288	A	A	188						
28								184	240	284	R 304	R 320	324	312	304	276	A	A						
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								23	26	27	26	21	20	21	15	19	16	8						
MED								180	236	276	298	316	320	308	292	272	226	162						
U Q								188	244	284	304	320	324	312	296	280	232	176						
L Q								164	232	272	292	312	314	304	288	264	216	156						

FEB.1997 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.1997 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	21	J A 18	E B 14	18	24	29	20	G	G	30	33	34	33	32	G 26	30	G	J A 24	19	J A 40	J A 25	J A 19	J A 34	J A 19
2	J A 23	19	E B 14	18	E B 14	19	19	G	27	33	33	34	34	G	G	G	G	E B 16	E B 15	E B 15	E B 15	E B 14	20	E B 13
3	E B 13	E B 14	J A 21	E B 14	J A 21	21	22	J A 24	26	G	35	J A 37	J A 34	G	G	G	J A 28	J A 26	E B 15	J A 22	E B 14	E B 13	E B 14	E B 13
4	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	18	G	G	34	36	34	G	J A 36	J A 36	J A 37	29	25	18	E B 14	E B 13	E B 13	E B 13	J A 21
5	J A 25	19	21	20	19	E B 15	21	J A 28	27	32	36	J A 50	40	G	31	G	G	G	E B 14	E B 16	E B 15	E B 15	E B 14	E B 14
6	E B 13	E B 15	18	E B 15	18	18	E B 14	G	G	G 23	36	34	36	33	32	J A 28	23	J A 22	19	21	E B 15	E B 15	E B 16	E B 13
7	E B 15	E B 12	E B 15	E B 14	E B 13	E B 14	E B 14	26	G	G 23	G 24	G 28	38	36	31	30	J A 27	J A 27	J A 22	20	E B 14	E B 15	E B 14	E B 14
8	E B 15	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	G	27	G 27	36	36	G	35	G	J A 42	J A 25	J A 22	J A 27	J A 22	E B 14	E B 13	E B J A 21	24
9	E B 15	E B 13	E B 13	E B 14	E B 14	E B 13	18	J A 23	G	30	G	G 30	G 28	J A 34	J A 39	28	G	G	21	19	E B 14	E B 14	14	J A 22
10	J A 21	J A 33	J A 25	20	J A 45	J A 33	J A 16	J A 25	25	32	39	34	G	J A 56	J A 36	38	30	27	21	22	28	J A 25	J A 24	J A 21
11	23	22	17	20	21	E B 14	E B 14	G	26	33	32	G 29	G	40	29	G	28	E B 15	25	20	E B 15	20	J A 34	J A 28
12	27	J A 24	J A 22	23	E B 15	E B 14	E B 13	G	G	G	G	G 21	J A 40	35	J A 103	77	J A 24	E B 16	J A 19	20	J A 36	J A 21	20	E B 15
13	21	E B 12	J A 29	24	18	21	E B 14	G	25	30	31	J A 34	J A 43	34	32	G	G	G	E B 15	E B 12	J A 22	22	19	E B 13
14	E B 15	E B 12	E B 14	E B 14	E B 15	E B 14	E B 14	G	J A 27	G 26	33	J A 36	32	J A 35	J A 34	J A 34	34	J A 19	E B 15	J A 21	21	J A 26	E B 15	E B 15
15	E B 15	18	E B 15	E B 14	E B 15	E B 16	E B 15	G	G	G J 21	A 36	33	G 30	G	31	29	J A 24	E B 13	E B 15	E B 14	18	E B 14	E B 15	22
16	22	E B 14	18	E B 16	E B 14	E B 12	E B 15	23	27	30	32	G	J A 33	G 27	G	J A 34	G	J A E 23	B 14	20	E B 14	27	24	E B 14
17	E B 14	E B 14	E B 14	E B 15	E B 14	E B 15	E B 15	G	J A 23	G	36	40	39	34	33	30	J A 23	J A 22	21	19	E B 14	E B 14	19	27
18	20	19	E B 14	E B 14	E B 15	18	E B 15	G	G	31	32	G 32	J A 34	32	G	G	26	G	E B 14	E B 13	18	E B 15	E B 14	E B 13
19	25	22	20	E B 13	18	E B 14	E B 15	G 20	28	31	35	34	33	G 30	G 29	30	J A 32	G	J A 22	24	20	J A 23	J A 27	E B 13
20	S 18	E B 15	20	18	21	19	17	J A 24	26	29	34	G 30	G 30	G	G 30	30	G 24	G	16	E B 15	E B 14	18	24	20
21	20	18	18	E B 14	E B 15	E B 15	E B 15	G	J A 26	G	35	36	G	34	30	G	G	E B 17	E B 15	E B 16	20	26	19	E B 15
22	18	E B 14	18	E B 14	E B 15	E B 15	E B 15	G	29	34	35	37	37	35	G 29	G 22	G	E B 18	E B 15	E B 14	19	E B 16	E B 14	E B 14
23	E B 14	E B 15	E B 12	E B 14	E B 15	E B 14	20	24	30	32	J A 39	J A 40	G 29	J A 41	J A 33	30	30	J A 36	E B 14	E B 15	E B 16	16	E B 15	19
24	19	E B 16	19	E B 15	E B 14	E B 15	E B 15	28	27	30	J A 36	38	33	G J 30	A 36	G 27	25	E B 18	E B 14	E B 15	E B 16	18	E B 14	E B 15
25	19	21	E B 15	E B 15	E B 15	E B 15	E B 14	E B 17	G	33	G 26	38	39	J A 44	J A 43	G	J A 36	J A 26	28	27	J A 27	25	E B 15	E B 15
26	25	24	19	21	E B 15	E B 14	E B 16	23	J G 25	29	36	35	34	32	J A 40	32	G	G	20	19	24	E B 15	E B 14	E B 14
27	20	18	E B 15	E B 14	E B 13	E B 12	E B 16	G	32	34	33	G	38	37	38	30	25	G J	A 22	25	20	20	E B 15	E B 15
28	19	E B 12	E B 15	E B 14	E B 15	E B 14	18	G	G 24	32	33	G	37	36	32	31	J A 27	J A 24	26	20	18	E B 16	E B 14	E B 14
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	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	19	E B 16	16	E B 14	E B 15	E B 15	E B 15	G	26	30	34	34	34	34	32	30	24	G	18	20	17	16	E B 15	E B 15
U Q	22	19	20	18	18	18	18	J A 24	27	32	36	36	38	36	J A 36	J A 32	28	J A 24	22	22	20	22	J A 20	20
L Q	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G	32	G	G	G	G	G	G	G	E B 15	E B 15	E B 14	E B 14	E B 14	E B 14

FEB.1997 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.1997 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	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 B 13	E B 14	E B 14	E B 14	E B 13	A A 29	E B 13	G	G	28	33	33	32	31	U G 26	30	G	17	17	A A 40	22	17	17	E B 14
2	E B 14	E B 14	E B 14	E B 12	E B 14	E B 13	12	G	25	32	32	33	33	G	G	G	G E 16	B E 15	B E 15	B E 15	B E 15	B E 14	B E 13	B E 13
3	E B 13	E B 14	16	E B 14	17	17	E B 15	22	26	G	32	32	G 25	G	G	G	G 19	18	E B 15	18	E B 14	B E 13	B E 14	B E 13
4	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	15	G	G	33	35	34	G	30	32	29	G 18	18	15	E B 14	B E 13	B E 13	B E 13	17
5	E B 14	17	E B 14	E B 14	E B 14	E B 15	E B 14	24	26	30	34	35	36	G	30	G	G	G	E B 14	B E 16	B E 15	B E 15	B E 14	B E 14
6	E B 13	E B 15	E B 14	E B 15	E B 13	E B 14	E B 14	G	G	G 20	34	33	35	32	30	27	22	18	E B 15	B E 16	B E 15	B E 15	B E 16	B E 13
7	E B 15	E B 12	E B 15	E B 14	E B 13	E B 14	E B 14	G	G	G 22	G 23	G 26	35	34	30	29	G 18	16	18	E B 13	B E 14	B E 15	B E 14	B E 14
8	E B 15	E B 14	E B 14	E B 14	E B 14	E B 16	E B 15	G	G 18	G 19	35	35	G	34	G	32	G 20	16	20	19	E B 14	B E 13	16	17
9	E B 15	E B 13	E B 13	E B 14	E B 14	E B 13	15	E B 15	G	30	G	G 26	G 26	G 26	34	27	G	G	E B 15	B E 14	B E 14	B E 14	B E 14	B E 14
10	18	17	E B 15	18	22	19	14	22	24	30	34	33	G	35	33	28	24	18	E B 14	B E 14	17	E B 14	17	16
11	E B 14	E B 14	E B 14	16	E B 14	E B 14	E B 14	G	25	32	31	U G 29	G	32	28	G	23	E B 15	18	E B 14	B E 15	B E 14	17	20
12	18	17	E B 14	18	E B 15	B E 14	B E 13	G	G	G	G	G 19	34	33	30	44	22	E B 16	B E 15	B E 14	A A 36	E B 15	B E 15	B E 15
13	E B 15	B E 12	19	17	E B 15	B E 15	B E 14	G	G	28	30	30	36	33	32	G	G	G E 15	B E 12	B E	B 15	16	16	B E 13
14	E B 15	E B 12	E B 14	E B 14	E B 15	B E 14	B E 14	G	24	G 24	32	33	32	G 28	30	28	24	G E 15	B 18	E B 15	20	E B 15	B E 15	
15	E B 15	E B 14	E B 15	E B 14	E B 15	B E 16	B E 15	G	G	G 19	32	33	G 28	G	30	28	23	E B 13	B E 15	B E 14	B E 14	B E 14	B E 15	18
16	E B 14	E B 14	E B 15	E B 16	E B 14	B E 12	B E 15	21	26	30	31	G	G 23	G 20	G	G 23	G	17	E B 14	B E 15	B E 14	17	E B 14	B E 14
17	E B 14	E B 14	E B 14	E B 15	E B 14	E B 15	B E 15	G	G 20	G	35	38	38	34	32	30	22	17	E B 14	B E 14	B E 14	B E 14	B E 15	B E 16
18	17	17	E B 14	E B 14	E B 15	13	E B 15	G	G	29	32	G 28	32	32	G	G	26	G	E B 14	B E 13	15	E B 15	B E 14	B E 13
19	E B 15	E B 15	E B 14	E B 13	E B 16	B E 14	B E 15	G 16	27	30	34	33	33	U G 30	U G 28	29	27	G E 13	B 14	17	E B 16	18	E B 13	
20	16	E B 15	E B 13	E B 14	E B 16	16	E B 13	20	25	28	32	U G 30	U G 30	G	U G 30	29	U G 23	G	15	E B 15	B E 14	14	E B 14	B E 14
21	E B 14	E B 14	E B 12	E B 14	E B 15	B E 15	B E 15	G	25	G	35	36	G	33	U Y 30	G	G E 17	B E 15	B E 16	B E 15	16	E B 14	B E 15	
22	E B 14	E B 14	E B 15	E B 14	E B 15	B E 15	B E 15	G	28	33	34	36	36	34	G 26	G 20	G E 18	B E 15	B E 14	B E 15	B E 16	B E 14	B E 14	
23	E B 14	E B 15	E B 12	E B 14	E B 15	B E 14	16	22	29	32	36	35	G 28	34	G 24	29	G 22	E B 32	B E 14	B E 15	B E 16	B E 14	B E 15	B E 15
24	E B 14	E B 16	E B 14	E B 15	E B 14	B E 15	B E 15	G 18	27	29	33	35	33	G 28	30	G 24	24	E B 18	B E 14	B E 15	B E 16	B E 14	B E 14	B E 15
25	17	16	E B 15	E B 15	E B 15	B E 15	E B 14	E B 17	G	33	G 21	36	35	36	34	G	30	19	19	19	18	E B 16	B E 15	B E 15
26	E B 16	18	16	16	E B 15	B E 14	B E 16	21	G 20	29	35	33	33	G 26	33	G 24	G	G	E B 15	B E 15	18	E B 15	B E 14	B E 14
27	E B 15	16	E B 15	E B 14	E B 13	B E 12	B E 16	G	31	34	32	G	35	36	36	30	25	G E 14	B E 15	B E 16	B E 15	B E 15	B E 15	B E 15
28	E B 15	E B 12	E B 15	E B 14	E B 15	B E 14	12	G	G 20	32	32	G	36	35	32	30	27	18	E B 14	B E 15	B E 15	B E 16	B E 14	B E 14
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	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	E B 15	E B 14	E B 14	E B 14	E B 15	B E 14	B E 15	G	G	29	32	33	32	32	30	28	G E 16	G E 15	B E 15	B E 15	B E 15	B E 15	B E 14	B E 14
U Q	15	16	E B 15	15	E B 15	15	E B 15	G	26	32	34	35	35	34	32	29	24	18	15	16	16	16	16	15
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	B E 14	B E 14	G	G	G	32	G	G	G	G	G	G 22	G	E B 14	B E 14	B E 14	B E 14	B E 14	B E 14

FEB.1997 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.1997 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	14	14	14	13	14	13	13	14	16	16	16	24	18	14	15	17	15	14	14	14	14	14	14
2	14	14	14	12	14	13	12	12	15	14	14	14	14	22	16	16	15	16	15	15	15	14	13	13
3	13	14	13	14	12	13	15	12	14	14	14	16	14	16	16	15	14	16	15	14	14	13	14	13
4	14	14	14	14	13	13	13	12	13	13	15	15	13	15	14	14	14	16	14	14	13	13	13	14
5	14	16	14	14	14	15	14	17	15	14	15	15	17	16	15	14	13	13	14	16	15	15	14	14
6	13	15	14	15	13	14	14	12	15	15	14	15	16	15	14	15	15	14	15	16	15	15	16	13
7	15	12	15	14	13	14	14	17	16	16	15	14	15	15	14	14	14	15	16	13	14	15	14	14
8	15	14	14	14	14	16	15	14	16	14	14	16	17	14	16	15	15	13	13	14	14	13	14	15
9	15	13	13	14	14	13	13	15	16	15	14	15	16	16	16	14	14	13	15	14	14	14	14	14
10	15	15	15	15	14	14	11	15	15	14	14	14	15	16	14	15	15	16	14	14	15	14	14	14
11	14	14	14	14	14	14	14	13	14	13	14	14	16	15	16	14	15	15	15	14	15	14	15	15
12	15	14	14	14	15	14	13	14	14	13	13	14	15	13	13	14	14	16	15	14	13	15	15	15
13	15	12	14	13	15	15	14	13	13	14	14	15	16	14	14	16	14	13	15	12	15	14	13	13
14	15	12	14	14	15	14	14	15	15	15	14	14	16	17	15	16	15	14	15	14	15	14	15	15
15	15	14	15	14	15	16	15	12	14	15	15	14	14	14	14	13	16	13	15	14	14	14	15	15
16	14	14	15	16	14	12	15	14	15	14	15	15	15	15	14	15	16	15	14	15	14	14	14	14
17	14	14	14	15	14	15	15	15	14	14	15	13	14	14	16	16	14	14	14	14	14	14	15	16
18	14	15	14	14	15	13	15	14	14	14	16	15	14	15	15	19	14	14	14	13	12	15	14	13
19	15	15	14	13	16	14	15	14	14	14	14	16	16	17	17	17	15	14	13	14	14	16	17	13
20	15	15	13	14	16	13	13	16	14	16	17	17	21	19	18	16	14	13	13	15	14	12	14	14
21	14	14	12	14	15	15	15	15	13	15	16	16	18	16	16	16	15	17	15	16	15	15	14	15
22	14	14	15	14	15	15	15	15	16	15	15	17	15	18	14	16	13	18	15	14	15	16	14	14
23	14	15	12	14	15	14	12	13	14	13	14	16	17	16	16	15	14	15	14	15	16	14	15	15
24	14	16	14	15	14	15	15	14	14	15	16	15	14	15	17	15	15	18	14	15	16	14	14	15
25	15	14	15	15	15	15	14	17	16	14	16	15	15	16	16	15	14	15	16	15	15	16	15	15
26	16	16	15	15	15	14	16	14	15	16	14	14	14	15	15	15	16	16	15	15	15	15	14	14
27	15	14	15	14	13	12	16	14	16	16	15	15	15	16	16	16	13	14	14	15	16	15	15	15
28	15	12	15	14	15	14	12	14	15	14	16	16	14	16	15	13	14	15	14	15	15	16	14	14
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	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
MED	14	14	14	14	14	14	14	14	14	14	15	15	15	16	15	15	14	15	14	14	15	14	14	14
U Q	15	15	15	14	15	15	15	15	15	15	16	16	16	16	16	16	15	16	15	15	15	15	15	15
L Q	14	14	14	14	14	13	13	13	14	14	14	14	14	15	14	14	14	14	14	14	14	14	14	14

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	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 313	315	327	316	353	A	342	373	348	356	341	350	336	354	339	341	366	363	377	A	353	364	336	318
2	310	310	319	335	402	U S 302	R 299	376	336	374	348	347	358	356	373	378	365	368	343	345	347	326	326	324
3	317	318	336	327	316	364	368	379	366	331	334	337	342	319	R 345	370	357	376	342	343	320	329	343	315
4	313	311	322	329	368	321	338	350	359	357	344	371	366	355	355	368	361	368	351	351	324	336	R 332	F 322
5	F 322	F 305	F 310	352	378	318	F 305	332	347	361	R 325	365	349	340	340	385	381	362	347	338	340	340	336	308
6	297	313	321	324	325	337	340	S 354	357	394	337	336	330	351	368	348	355	356	339	349	338	347	322	292
7	298	F 304	324	319	354	F 375	F 334	R 363	360	363	353	334	344	348	343	359	357	379	334	315	328	370	342	317
8	309	F 306	F 316	316	331	391	377	R 366	370	354	343	R 325	331	351	364	359	378	369	372	364	330	322	326	310
9	310	U R 301	316	F 310	381	328	281	337	317	296	346	353	336	342	362	338	374	371	330	327	326	341	335	299
10	307	299	306	337	379	F 353	312	331	R 365	380	314	311	337	340	356	361	356	359	319	343	341	358	295	F 282
11	F 310	312	312	336	307	288	318	S 351	329	J R 309	332	353	352	336	367	359	365	352	337	338	323	331	334	297
12	331	316	313	314	310	335	331	R 351	R 352	326	363	344	350	356	R 362	357	354	358	389	338	A	327	310	304
13	F 302	306	F 310	F 295	F 349	F 349	F 339	366	357	352	343	338	330	324	356	367	343	371	330	338	317	334	324	301
14	320	299	315	347	366	316	325	378	375	357	346	329	349	331	J R 340	373	368	377	345	353	326	318	313	301
15	299	301	320	352	361	350	337	344	346	345	336	348	361	349	352	361	352	383	362	332	319	324	319	304
16	309	303	344	355	380	316	324	R 363	351	338	347	344	355	363	367	352	377	373	327	310	325	330	319	308
17	309	313	344	379	346	291	314	399	376	362	336	359	359	366	349	343	363	360	326	353	305	347	299	287
18	302	321	343	340	330	327	348	362	349	343	357	327	338	358	342	352	367	354	374	309	317	321	320	F 294
19	306	F 308	F 299	309	J R 384	362	329	370	369	349	351	337	357	369	350	365	380	367	369	367	327	312	297	F 312
20	F 328	F 317	F 305	F 334	F 327	F 331	F 327	J R 363	362	327	U R 359	312	335	335	352	361	367	363	356	339	331	339	309	321
21		F 317	F 338	F 322	F 342	353	372	374	370	321	339	344	348	344	352	347	369	352	345	343	352	373	305	290
22	286	301	352	353	372	322	328	J R 383	361	351	353	333	335	357	335	351	344	366	349	350	322	317	306	303
23	313	311	317	335	338	316	334	366	367	310	300	329	342	365	352	337	364	370	360	331	323	325	335	334
24	322	317	311	302	331	340	333	R 360	348	355	352	338	321	334	357	335	R 354	R 362	363	343	322	336	308	297
25	318	F 321	F 322	F 328	F 333	F 320	347	R 366	375	353	331	337	334	359	346	340	352	361	349	341	346	328	324	312
26	307	306	307	321	F 321	F 327	356	R 371	363	369	349	335	323	356	354	352	354	361	362	315	319	334	309	300
27	F 291	F 300	F 286	F 326	F 373	F 326	F 320	363	349	341	335	347	335	336	344	365	358	347	345	329	333	327	322	F 321
28	328	302	306	319	351	360	326	348	294	314	317	339	H 326	358	312	339	367	342	343	338	305	306	312	298
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	27	28	28	28	28	27	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	28	28	28
MED	310	309	316	328	350	328	332	363	358	352	343	338	340	351	352	358	364	363	346	339	326	330	321	304
U Q	318	316	326	338	372	353	341	372	366	359	350	348	351	358	360	365	368	370	362	349	338	340	333	316
L Q	302	302	F 310	318	330	318	322	351	348	329	334	334	334	338	344	345	354	358	338	331	320	324	309	298

FEB. 1997 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	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 L 392	L	L	398	404	H 378	373	L	L							
2										L		L 364	356	376	L 362	L 381	U L 407							
3											L 364	L 360	375	352	L 367	L	U L 387							
4										L	L 357	L 392	404	L	L	L 394	L							
5										L	355	369	L 377	366	365	L 382	L							
6									L	U L 367	L 376	382	360	L 369	U L 386	U L 378	L							
7									L	U L 378	H 376	H 394	361	L 374	L 352	L	L							
8									U L 417	L	L 374	382	L 398	L 405	372	L	L							
9										L 346	362	369	369	363	L 367	L 368	L							
10										L	L	354	358	H 354	370	L 359	L 405	U L 427						
11									L	L	365	391	377	U L 383	H 390	L	U L 392	401						
12								389	L 385	L	397	414	375	398	L 383	A	L							
13									L	L 382	363	L 389	372	367	356	375	L	408						
14									L	L 373	L 374	385	384	381	374	L	L							
15									L	U L 363	366	367	373	371	380	L 358	L	L						
16									L	L	371	381	381	389	L 381	L 393	L	L 414						
17								408	L 428	L	374	363	A 387	384	H 360	358	L 365							
18										L	L 357	390	368	352	364	L 363	L 393	L 387						
19										U L 377	L 366	L 378	373	L 367	L 382	L 374	L							
20									U L 407	U L 360	381	383	373	391	370	L 360	U L 402							
21								L		L 381	393	H 422	386	379	370	L 363	L 387	L						
22									L	L 365	L 370	L 385	364	371	L 382	L 371	L	S						
23										L 347	L 355	359	365	373	L 362	L 347	L 357							
24									L	U L 378	L 366	L 383	385	374	367	L 351	L 371							
25								433	L 388	L	L 367	374	362	L 376	L 384	L 376	U L 376							
26									L	L	L 401	396	H 379	364	377	L 364	L							
27										L 348	358	355	372	378	372	L 363	389	411						
28									L 360	L 343	L	369	L 372	L 383	353	L 347	U L 360	L						
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								3	7	14	24	28	28	27	27	21	13	6						
MED								408	L 392	L 366	366	382	373	374	370	L 364	L 387	410						
U Q								433	L 417	L 378	375	390	382	383	L 381	L 377	L 398	L 414						
L Q								389	L 385	L 348	362	368	366	367	364	L 358	L 368	401						

FEB. 1997 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									246	248	258	252	272	254	282	254	238							
2										244		274	254	256	250	238	230							
3											286	264	264	294	248	240	230							
4										246	282	242	256	262	264	238	238							
5										234	298	254	252	276	264	232	224							
6									234	218	282	284	268	256	242	260	236							
7									244	246	252	284	264	260	258	244	228							
8									224	248	276	286	252	256	248	234	236							
9										300	258	250	258	248	246	264	224							
10										230	320	326	272	264	234	242	236	218						
11									258	334	294	254	252	248	238	248	228	218						
12								234	248	280	254	270	260	254	258	252 A	252							
13									238	250	272	278	276	294	242	234	228	220						
14									230	274	270	280	270	274	242	240	236							
15									250	260	272	264	248	258	262	250	236	214						
16									238	266	262	246	252	250	244	258	230	212						
17								224	230	254	286	252	252	258	274	258	238							
18										260	252	278	262	252	264	254	232	226						
19										254	258	272	244	240	262	246	232							
20									232	280	242	342	250	272	254	248	232							
21								206		282	280	278	260	262	260	256	230	218						
22									248	262	264	288	288	248	278	258	240	216						
23										314	314	276	254	244	254	264	242							
24									240	240	260	262	292	260	254	258	236							
25								212	230	256	286	282	268	256	260	266	250							
26									230	232	262	288	286	246	254	248	240							
27										272	274	264	258	272	258	246	234	222						
28									326	284	266	266	268	244	326	264	244	234						
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	17	27	27	28	28	28	28	28	28	10						
MED								218	238	256	272	273	260	256	256	249	236	218						
U Q								229	248	280	286	283	269	263	263	258	238	222						
L Q								209	230	246	258	258	252	249	247	241	230	216						

FEB. 1997 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	302	266	262	290	230	A	276	224	H 194	H 194	224	216	190	H 186	224	214	236	216	214	A	240	230	302	282
2	296	298	296	264	194	E B 388	344	228	224	242	232	212	262	224	202	218	200	216	224	238	234	224	268	290
3	308	290	244	256	284	234	250	224	226	234	234	226	232	228	224	224	212	220	212	238	260	236	234	300
4	294	270	256	258	228	B 268	284	224	234	248	240	224	206	H 186	226	210	218	216	214	222	246	248	238	298
5	266	298	276	222	208	336	318	238	230	230	236	228	216	216	H 216	216	210	222	222	236	232	236	254	294
6	296	286	276	276	242	274	242	224	216	H 210	210	H 176	A 230	228	214	196	H 196	218	222	224	242	B 298	284	316
7	304	300	264	264	218	260	260	222	H 190	216	H 182	H 184	234	222	206	224	218	212	242	252	244	210	236	278
8	300	286	292	282	260	206	206	226	198	H 188	226	204	204	190	230	A 232	240	220	218	204	258	254	270	312
9	308	326	272	282	212	288	B 376	256	256	220	208	210	202	224	230	214	224	206	224	230	244	242	272	306
10	316	320	312	240	A 254	A 254	264	234	226	214	236	222	H 206	H 212	230	H 196	200	A 216	220	224	236	232	316	324
11	272	284	276	248	270	328	256	232	220	248	238	200	H 188	220	H 200	H 208	218	216	248	228	240	242	262	E A 342
12	270	288	274	300	300	254	B 242	228	218	202	206	188	232	218	202	A	226	230	206	224	A	252	260	274
13	270	262	302	284	226	234	264	226	H 198	204	H 188	200	A 234	208	206	210	208	222	202	242	254	244	262	292
14	288	310	282	248	236	254	258	224	212	H 194	208	200	190	222	218	228	222	214	220	234	242	A 272	300	296
15	296	296	256	224	228	240	288	236	234	218	200	224	230	226	218	208	216	216	216	236	238	244	298	302
16	290	288	252	226	226	282	276	232	228	226	212	226	210	214	222	H 176	H 204	196	226	272	252	248	264	316
17	296	276	232	216	246	332	290	190	180	H 178	236	244	A 244	200	H 206	218	208	228	234	222	270	222	310	314
18	288	268	246	244	250	260	244	228	228	H 216	238	218	200	228	222	212	218	220	210	214	252	240	252	312
19	286	298	296	272	238	194	258	230	230	212	216	226	H 200	228	198	214	A 222	222	214	220	252	242	288	290
20	258	288	254	276	276	268	238	222	210	186	222	204	204	204	H 186	214	216	218	212	232	226	234	268	256
21	250	306	252	240	226	248	222	202	216	210	204	H 164	H 196	228	224	226	224	224	214	222	220	220	298	306
22	320	296	260	218	208	286	260	236	240	230	222	210	240	218	212	212	228	S 228	218	216	258	252	278	288
23	304	298	276	258	276	260	248	226	236	238	236	228	228	228	224	210	226	214	208	234	252	252	254	240
24	256	296	294	286	258	232	220	226	222	226	216	212	198	212	200	218	220	218	204	226	252	226	276	300
25	286	282	264	242	254	248	246	172	180	238	H 200	204	234	214	208	H 202	A 236	222	214	238	264	254	284	294
26	304	302	288	262	280	270	236	208	214	H 204	210	194	H 178	238	210	H 198	H 196	216	208	250	272	252	284	284
27	306	334	304	264	198	B 304	280	234	240	240	220	190	216	208	218	H 208	214	206	228	H 210	246	246	256	288
28	294	310	306	264	234	216	244	236	H 184	H 234	230	216	250	236	H 208	218	232	230	218	226	266	266	278	276
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	28	28	28	28	28	27	28	28	28	28	28	28	28	28	28	27	28	28	28	27	27	28	28	28
MED	295	296	275	260	237	260	258	226	221	217	221	211	213	219	215	214	218	218	217	228	246	243	271	294
U Q	304	301	293	276	259	286	278	233	230	234	235	224	233	228	224	218	225	222	223	238	258	252	286	309
L Q	279	285	256	241	226	240	243	224	204	H 204	208	200	200	210	206	H 208	209	216	212	222	240	233	258	286

FEB. 1997 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								166	128	A	124	120	122	122	A	120	130	B						
2								144	E A 148	A 142	A 136	118	118	120	120	118	118	B						
3								A	120	118	114	A	A 132	116	120	116	A 128	B						
4								152	122	114	118	116	114	A	A	A	A 118	B						
5								B	120	120	120	110	110	114	116	120	120	E B 192						
6								164	124	126	114	A 132	114	116	A 124	A	108	B						
7								134	122	126	126	122	124	A 126	A 130	122	A 130	B						
8								B 174	136	136	A 136	132	118	116	114	112	A 118	A						
9								B	A 126	A 126	116	A 130	122	A 126	116	116	120	164						
10								154	130	114	122	120	120	124	A	A	A	B						
11								120	122	120	118	A	120	A	A	116	A	B						
12								B 184	126	116	118	116	116	118	116	A	A	B						
13								128	122	112	112	A	A	112	A	112	112	E B 206						
14								160	A	142	116	116	A	A 140	A	A	A	E B 188						
15								B 180	124	126	A	A	122	116	A	A	A	B						
16								B	118	118	116	116	A 122	116	116	A 124	120	B						
17								130	124	118	114	116	120	114	114	A	A	B						
18								164	128	A 130	118	A 132		114	122	124	116	120						
19								130	124	114	122	118	114	A	A	A	A	110						
20								B	122	118	120	A	A	118	A	A	A	134						
21								124	A	118	116	116	118	A	120	120	116	B						
22								130	118	120	116	114	A	A 134	A 124	118	116	B						
23								B 160	118	114	A	A	118	A	126	A	E A 144	A						
24								138	116	112	118	114	112	132	A	A 132	A	B						
25								B	116	116	120	112	116	112	A	120	A	A						
26								140	130	A 132	122	128	A	A 132	A	A 130	118	154						
27								140	118	112	110	114	122	120	118	A	A	154						
28								164	A 144	114	116	110	A 124	128	118	120	A	A						
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								22	26	27	26	22	22	23	16	17	16	9						
MED								148	122	118	118	116	119	118	119	120	118	U 137						
U Q								164	128	A 126	122	122	122	A 126	A 123	A 123	A 124	E B 190						
L Q								130	120	114	116	114	116	116	116	116	116	127						

FEB. 1997 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	116	114	B	114	112	108	110	G	G	116	170	122	124	124	100	158	G	100	96	108	106	116	104	122
2	108	112	B	118	B	194	160	G	182	150	148	140	146	G	G	G	G	B	B	B	B	B	102	B
3	B	B	112	B	108	116	164	146	172	G	130	114	106	G	G	G	100	104	B	96	B	B	B	B
4	B	B	B	B	B	B	106	G	G	150	148	146	G	100	94	94	98	96	104	B	B	B	B	110
5	110	98	100	100	102	B	160	142	146	148	150	122	124	G	150	G	G	G	B	B	B	B	B	B
6	B	B	118	B	112	112	B	G	G	112	168	142	128	128	122	116	130	130	106	102	B	B	B	B
7	B	B	B	B	B	B	B	114	G	110	110	108	148	140	128	178	100	98	96	100	B	B	B	B
8	B	B	B	B	B	B	B	G	112	114	184	156	G	160	G	124	98	132	114	110	B	B	114	112
9	B	B	B	B	B	B	164	108	G	130	G	112	108	100	134	160	G	G	104	102	B	B	B	112
10	110	110	110	112	106	110	184	174	168	176	134	136	G	124	100	98	98	96	100	112	110	110	126	106
11	108	112	118	122	118	B	B	G	186	188	156	112	G	108	112	G	100	B	98	110	B	116	128	112
12	114	110	114	108	B	B	B	G	G	G	G	106	122	128	112	104	108	B	100	96	108	124	112	B
13	100	B	104	110	120	114	B	G	134	120	124	122	112	118	168	G	G	G	B	B	104	100	102	B
14	B	B	B	B	B	B	B	G	114	114	132	126	112	112	116	114	112	104	B	114	116	114	B	B
15	B	100	B	B	B	B	B	G	G	110	126	122	114	G	116	120	118	B	B	B	112	B	B	110
16	104	B	108	B	B	B	B	148	186	178	140	G	104	104	G	98	G	100	B	114	B	104	112	B
17	B	B	B	B	B	B	B	G	114	G	152	138	126	134	122	180	116	98	98	100	B	B	148	108
18	110	110	B	B	B	110	B	G	G	166	162	114	120	124	G	G	132	G	B	B	104	B	B	B
19	106	110	112	B	110	B	B	102	178	176	150	130	122	114	112	112	106	G	110	108	108	108	104	B
20	110	B	108	108	108	114	100	102	128	128	166	116	116	G	116	160	114	G	122	B	B	110	106	106
21	102	104	106	B	B	B	B	G	118	G	176	152	G	126	128	G	G	B	B	B	110	106	110	B
22	148	B	128	B	B	B	B	G	174	166	164	122	166	152	110	108	G	B	B	B	108	B	B	B
23	B	B	B	B	B	B	116	160	148	158	124	120	114	114	104	104	102	96	B	B	B	110	B	106
24	128	B	110	B	B	B	B	118	170	130	122	120	122	110	114	116	122	B	B	B	B	118	B	B
25	114	122	B	B	B	B	B	B	G	170	114	122	118	116	118	G	104	110	110	108	106	110	B	B
26	112	114	116	100	B	B	B	156	114	150	184	140	114	106	104	104	G	G	104	96	96	B	B	B
27	120	124	B	B	B	B	B	G	178	168	178	G	122	120	114	116	114	G	106	108	102	104	B	B
28	140	B	B	B	B	B	114	G	112	182	182	G	146	140	136	124	98	102	98	100	102	B	B	B
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	18	13	14	9	9	8	10	11	19	24	26	25	23	23	23	20	19	13	16	17	14	14	12	10
MED	110	110	111	110	110	113	138	142	148	150	150	122	122	120	116	116	106	100	104	108	107	110	111	110
U Q	116	114	116	116	115	115	164	156	178	169	168	139	126	128	128	141	116	107	108	110	110	116	120	112
L Q	108	107	108	104	107	110	110	108	114	118	130	115	114	110	110	104	100	97	98	100	104	106	104	106

IONOSPHERIC DATA STATION Kokubunji

FEB. 1997 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

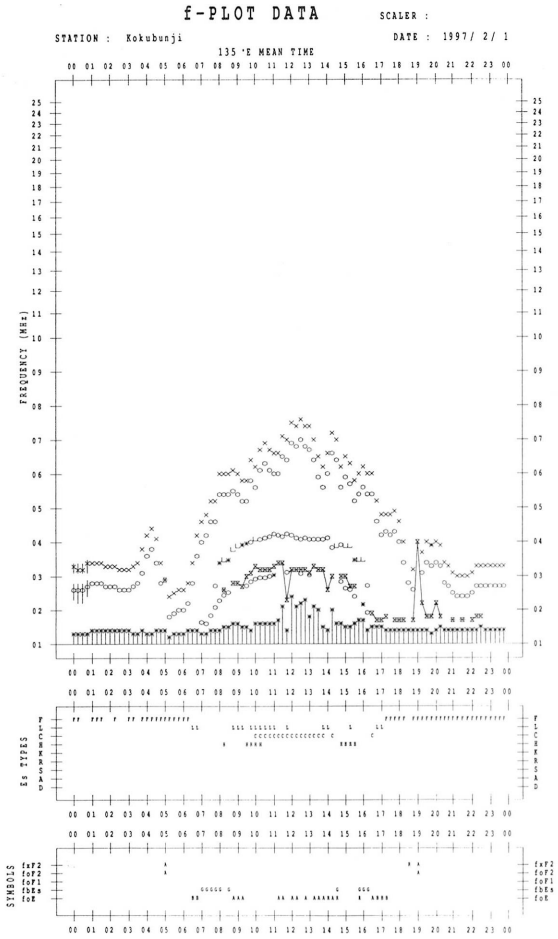
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

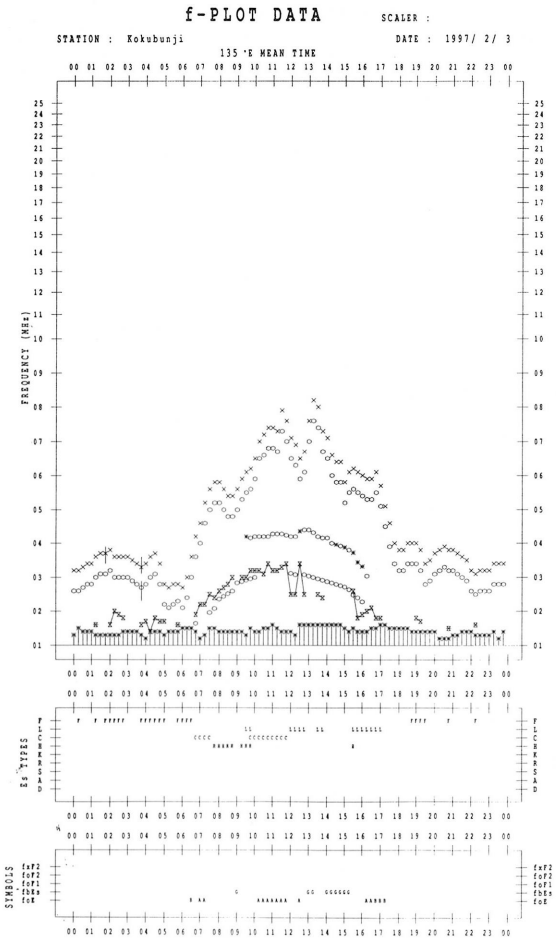
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 1	F 1		F 1	F 1	F 2	F 1			L 1	HCL 11	CL 11	C 1	C 1	L 1	H 1		L 1	F 1	F 2	F 2	F 1	F 2	FF 11
2	F 2	F 1		F 1		F 1	F 1		HL 11	HL 11	HL 11	H 1	H 1										F 1	
3			F 1		F 1	F 1	F 1	C 2	H 1		C 1	C 1	L 2				L 2	L 2		F 2				
4							F 1			H 1	H 1	H 1		L 2	L 2	L 3	LC 11	L 1	F 1					F 1
5	F 1	F 1	F 2	F 1	F 1		F 1	C 2	CL 11	H 1	HC 11	C 1	C 1		H 1									
6			F 1		F 1	F 1				L 1	H 1	HL 11	C 1	C 1	CL 12	CL 21	H 1	CL 11	F 1	F 1				
7								L 1		L 2	L 1	L 1	HL 11	HL 11	CL 12	HL 11	LH 21	L 2	F 2	F 1				
8									L 1	L 1	HL 11	HCL 11		H 1		C 2	L 2	L 1	F 2	F 1			F 2	F 2
9							F 1	LC 11		CL 11		L 1	L 1	LH 21	C 1	HL 12			F 1	F 1				F 2
10	F 2	F 2	F 2	F 2	F 3	F 4	F 1	H 1	H 1	H 1	CL 21	CL 11		CL 11	L 2	L 2	L 2	L 2	F 1	F 1	F 2	F 1	FF 12	F 2
11	F 2	F 2	F 1	F 1	F 2				H 1	H 1	H 1	L 1		L 1	L 1		L 1		F 2	F 1		F 1	FF 12	F 4
12	F 2	F 3	F 2	F 2								L 1	C 1	CL 11	C 2	L 2	L 2		F 1	F 2	FF 42	F 2	F 1	
13	F 1		F 2	F 2	F 1	F 1			C 1	C 1	C 1	C 1	C 2	C 1	HL 11						F 1	F 2	F 2	
14									C 1	L 1	C 1	C 1	L 1	L 1	L 1	L 2	L 2	L 1		F 1	F 1	F 5		
15		F 1								L 1	C 1	L 1	L 1		C 1	C 1	L 2				F 1			F 2
16	F 1		F 1					HL 21	H 1	H 1	CL 11		L 1	L 1		L 2		L 1		F 1		F 3	F 2	
17									L 1		H 2	HL 11	CL 21	CL 11	C 1	HL 11	L 1	L 1	F 1	F 1			F 1	F 1
18	F 1	F 1				F 1				HL 11	HL 11	L 1	C 1	C 1			C 1				F 1			
19	F 2	F 2	F 2		F 1			L 1	HL 11	H 1	HL 11	C 1	C 1	L 1	L 1	L 1	L 2		F 2	F 1	F 2	F 2	F 3	
20	F 2		F 1	F 1	F 1	F 1	F 1	LC 11	C 1	C 1	H 1	L 1	L 1		L 1	HL 11	L 1		F 1			F 1	F 2	F 1
21	F 3	F 2	F 1						C 1		H 1	H 1		C 1	C 1						F 1	F 2	F 1	
22	F 1		F 1						H 1	HL 11	HC 11	HC 11	HC 11	HL 11	L 1	L 1					F 1			
23							F 1	C 1	H 1	HC 11	C 1	C 1	L 1	L 1	LC 21	LC 21	L 3	L 3				F 1		F 2
24	F 1		F 1					L 1	H 1	HL 11	CL 11	C 1	C 1	L 1	L 1	L 1	CL 22					F 1		
25	FF 11	F 2								HL 11	L 1	C 1	C 1	C 2	C 2		L 3	L 2	F 3	F 3	F 2	F 2		
26	F 2	F 2	F 1	F 3				HL 11	L 2	HL 11	HCL 11	CL 11	L 1	L 1	L 2	L 1			F 1	F 2	F 1			
27	F 2	F 1							H 1	H 1	H 1		CL 11	CL 11	CL 11	CL 21	L 2		F 1	F 1	F 2	F 1		
28	F 1						F 1		L 1	H 1	HC 11		HL 11	CL 12	CL 11	CL 12	L 3	L 2	F 1	F 1	F 1			
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																								
MED																								
U Q																								
L Q																								

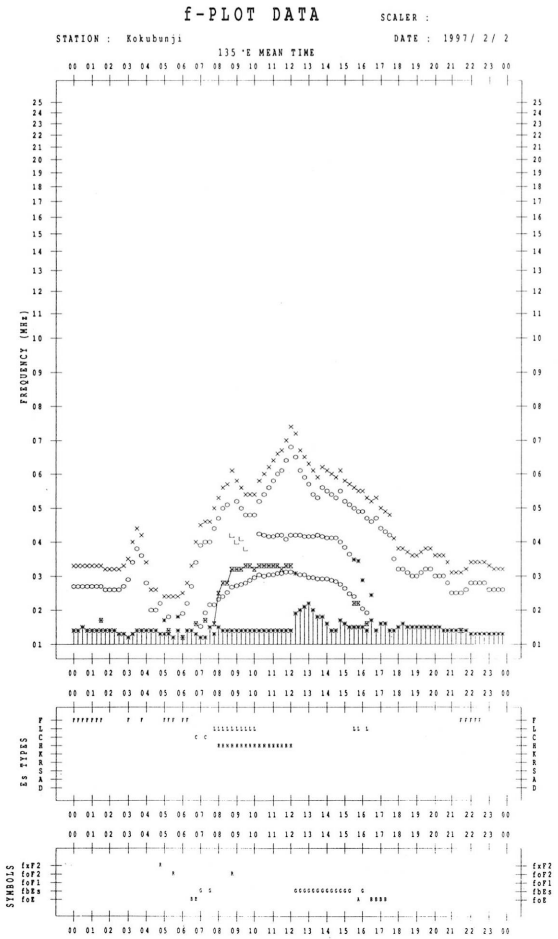
FEB. 1997 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

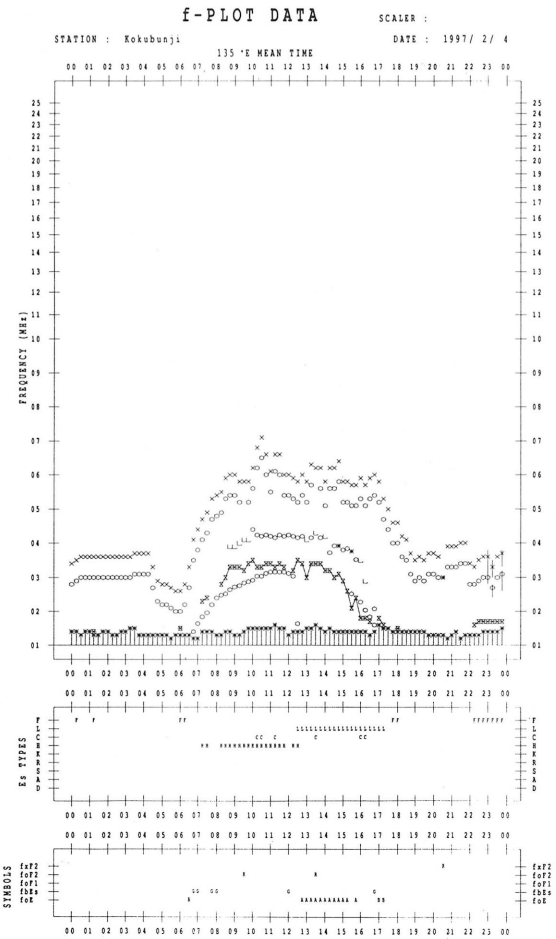
f-PLOTS OF IONOSPHERIC DATA

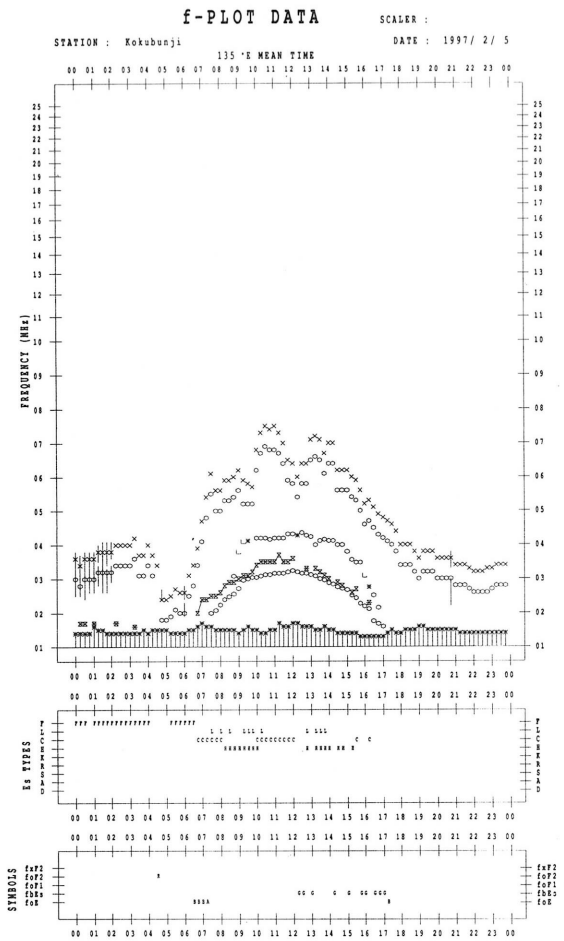
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

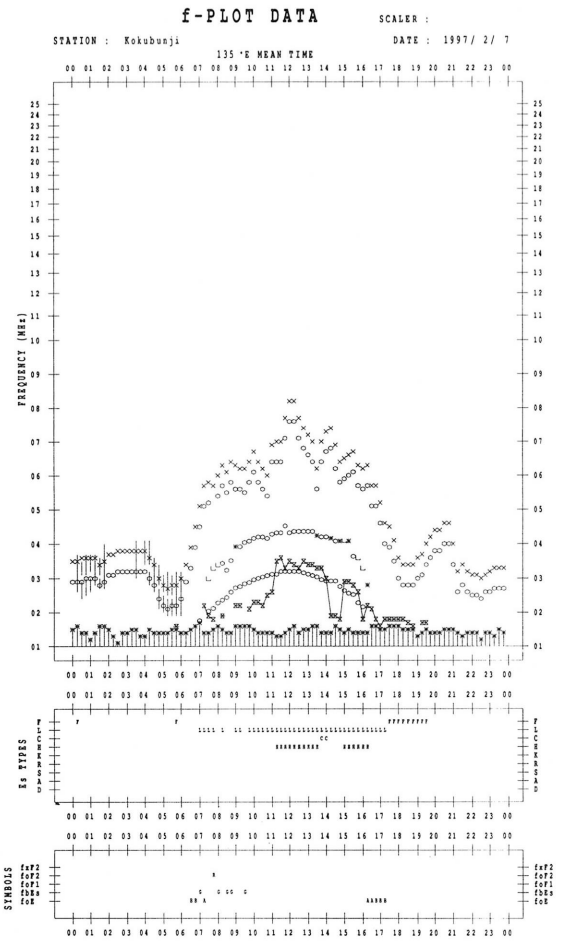

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

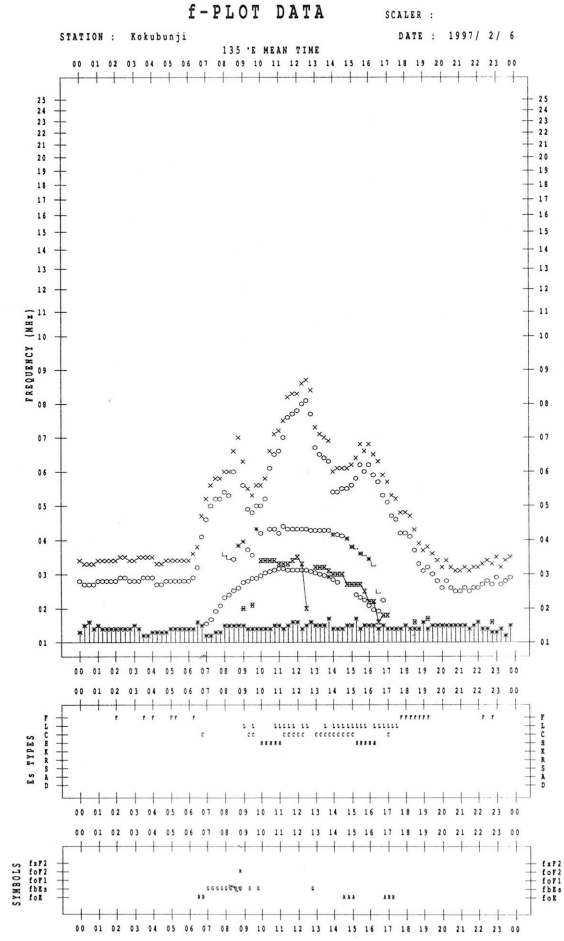

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

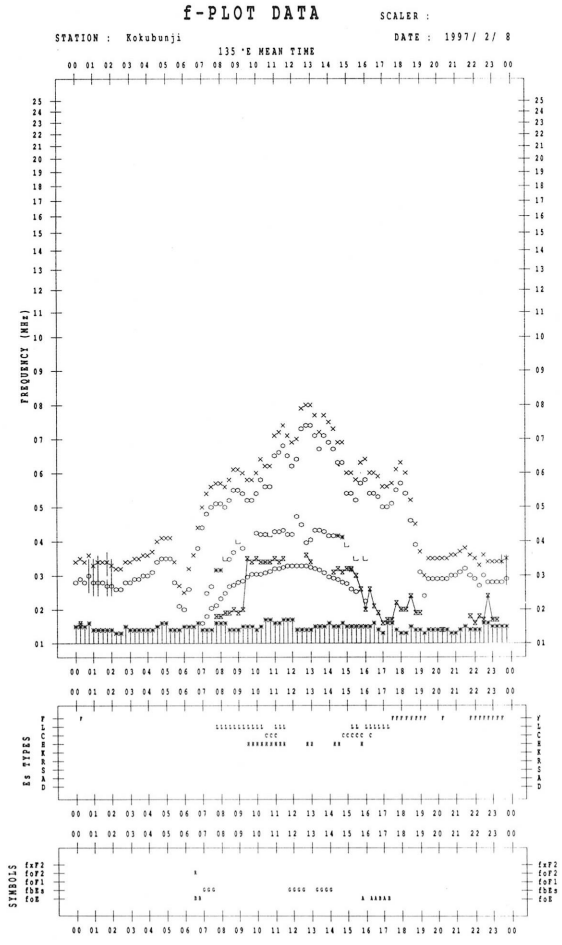

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

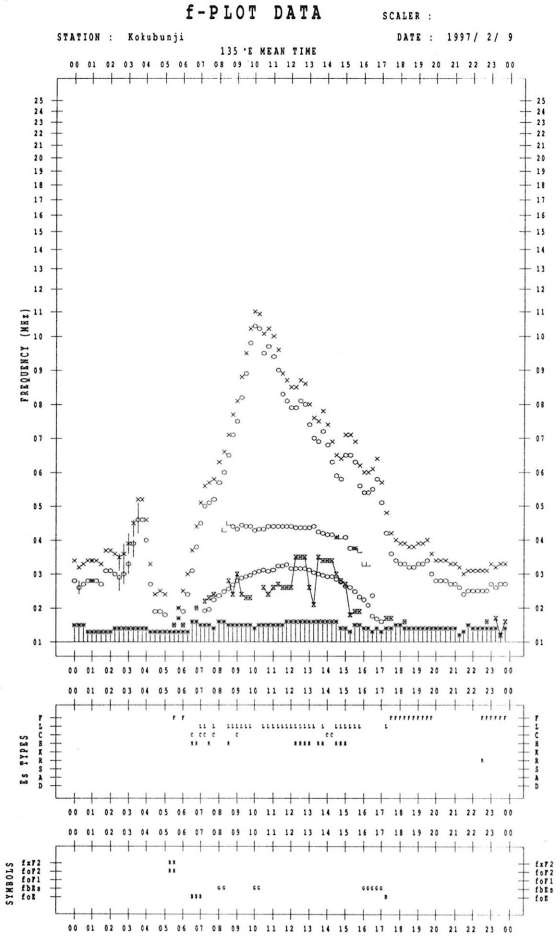

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

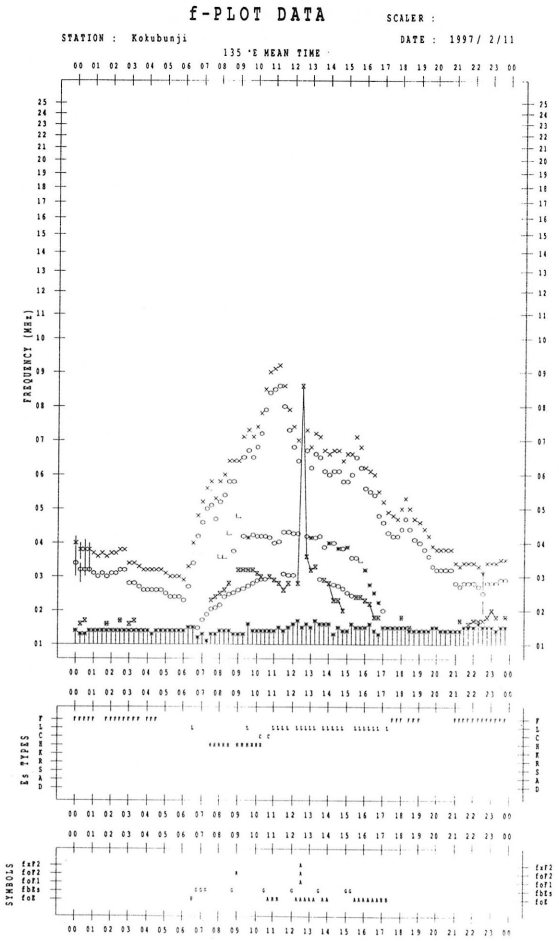

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

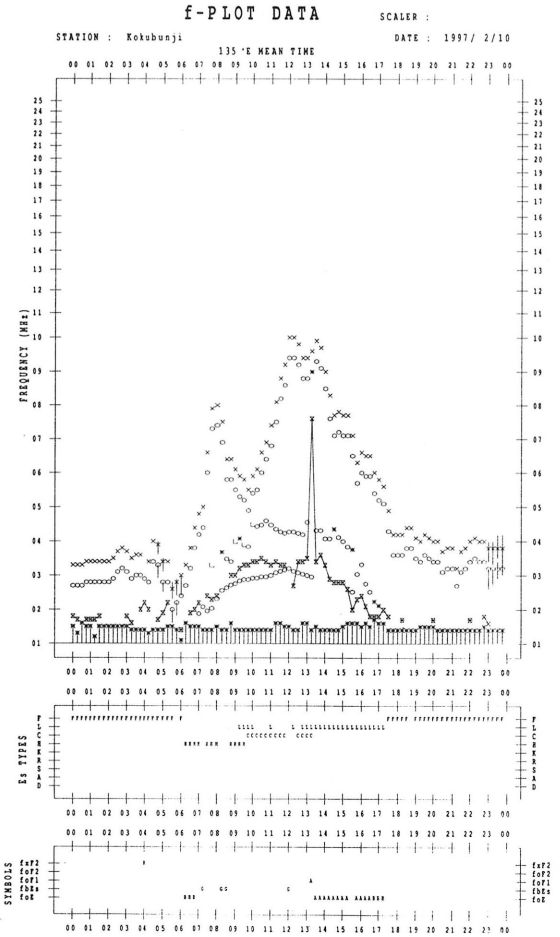

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

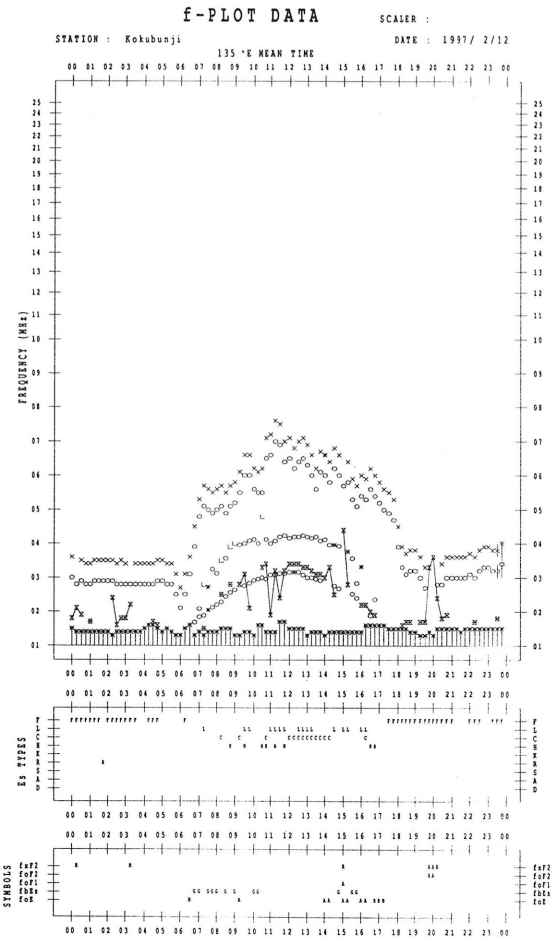

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

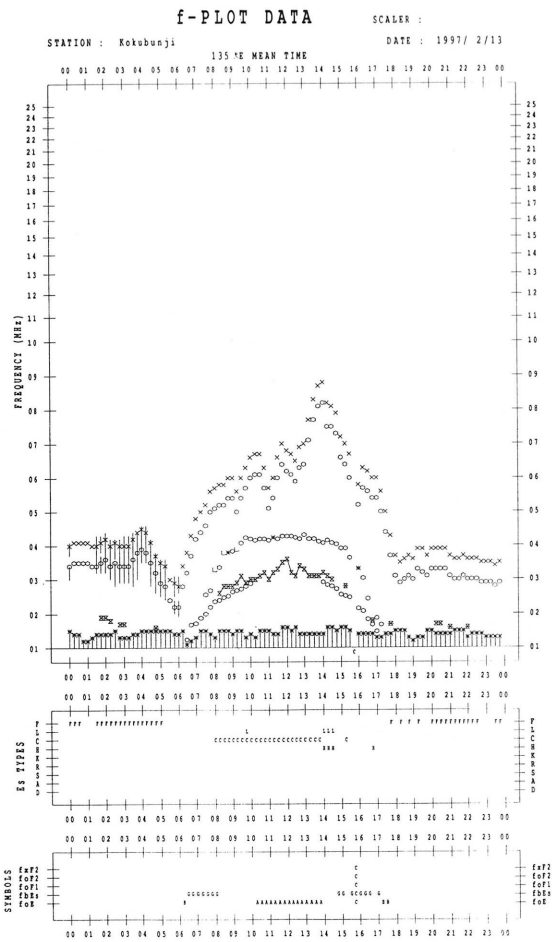

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

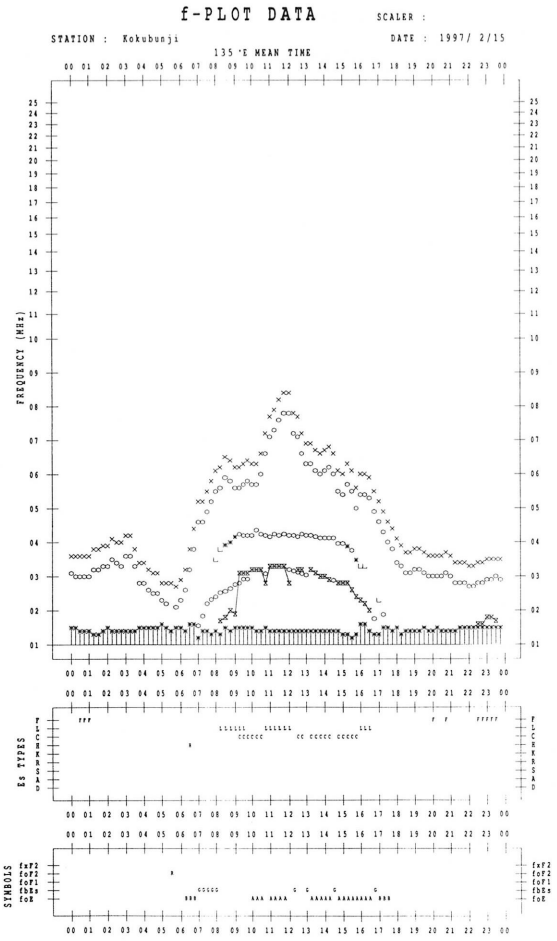

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

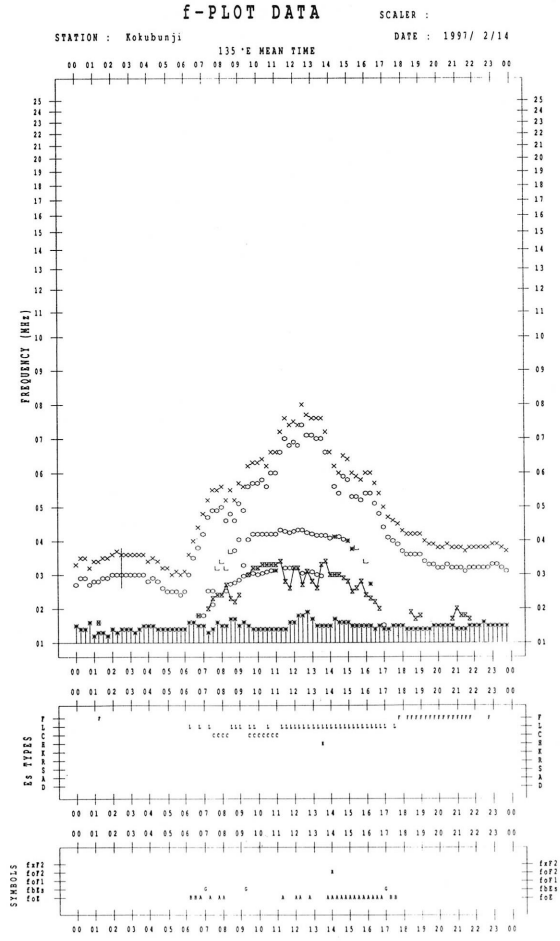

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

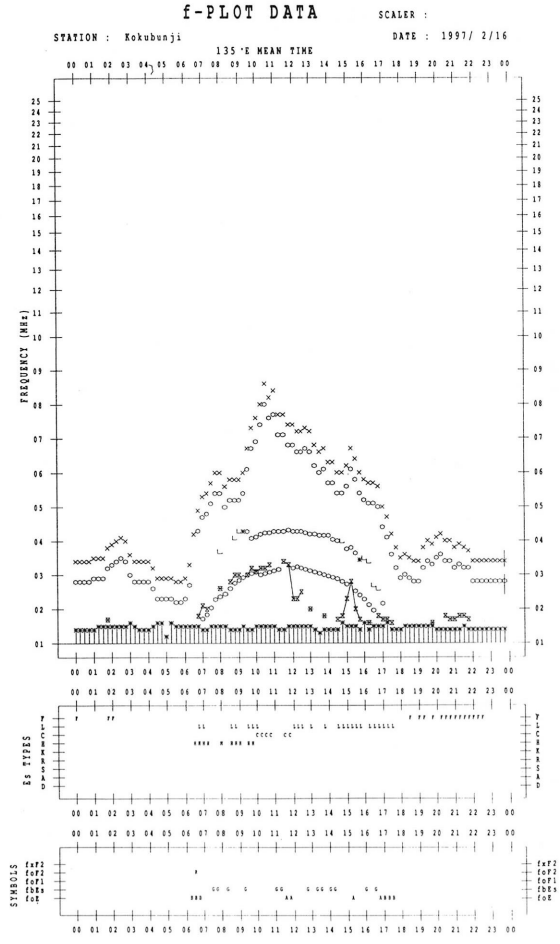

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

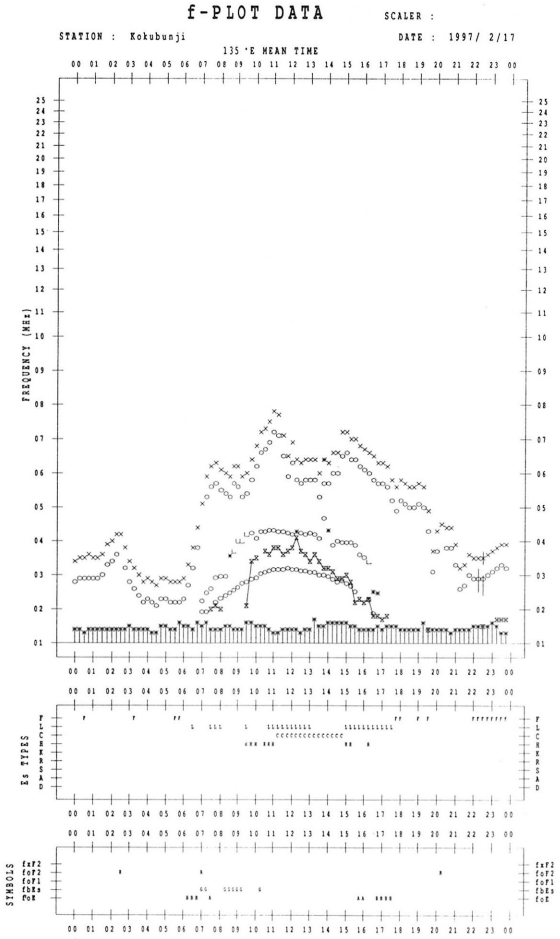

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

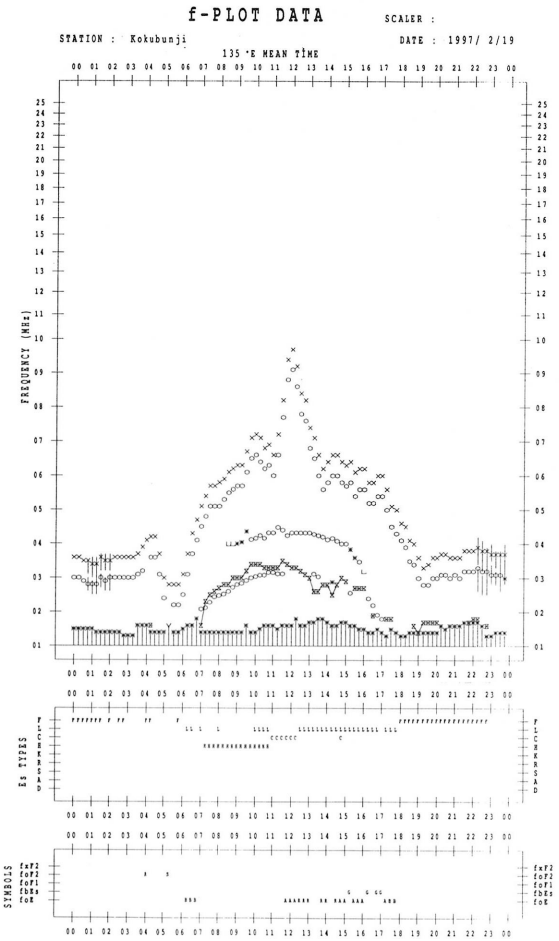

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

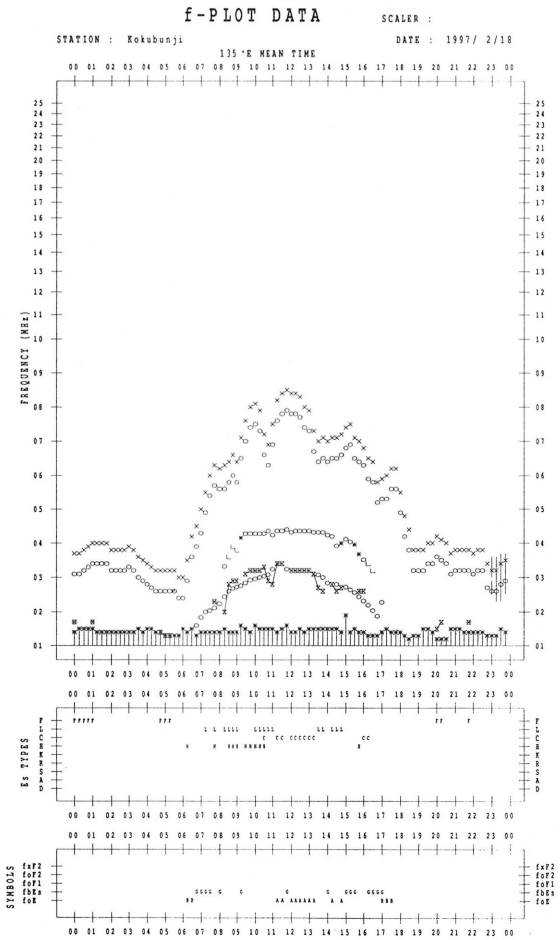

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

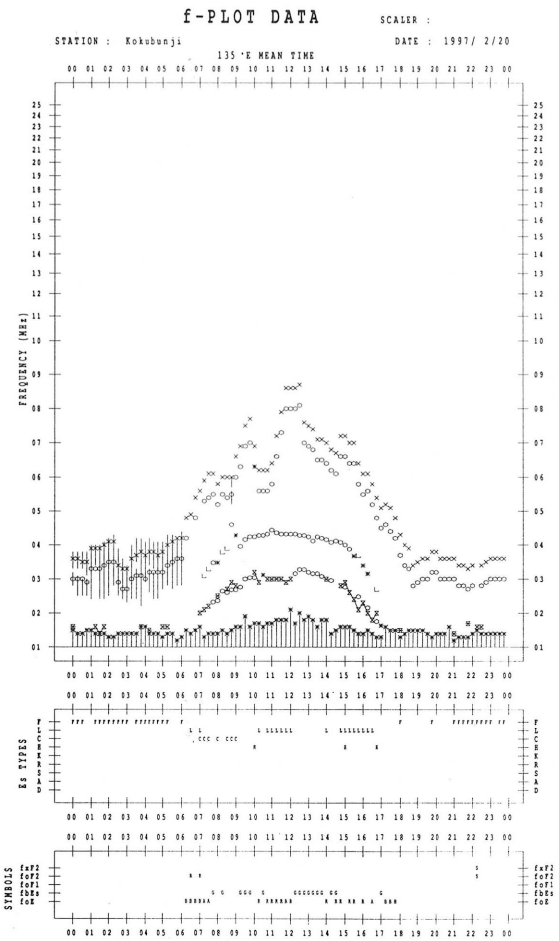

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

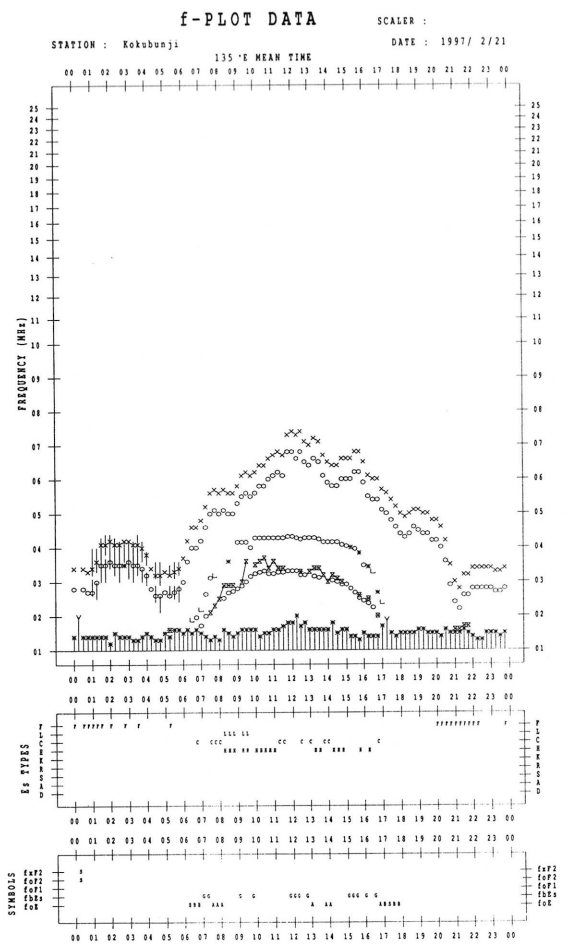

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

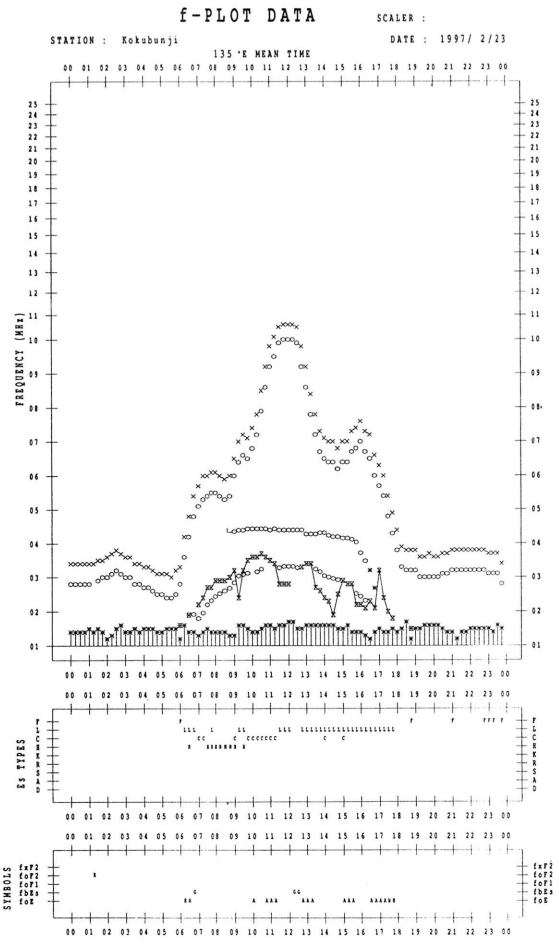

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

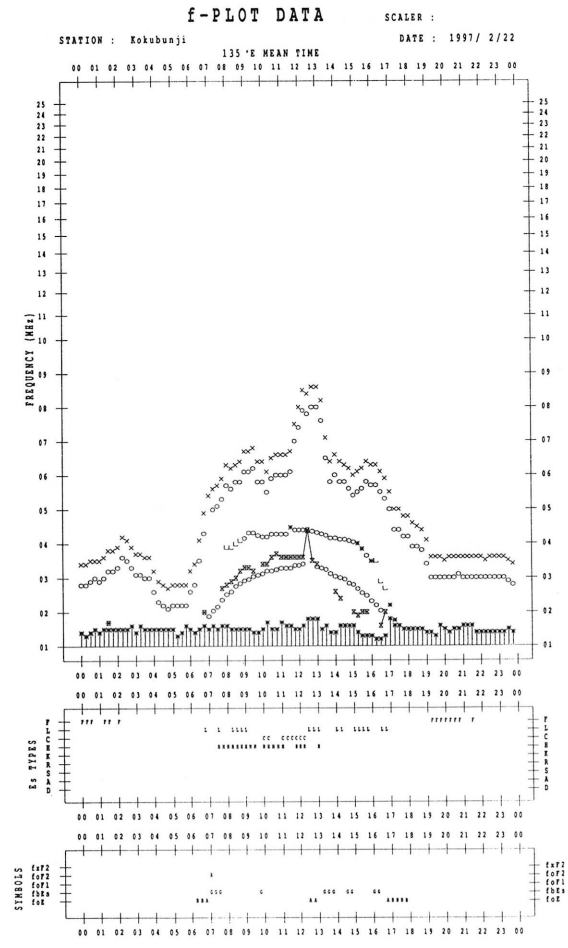

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

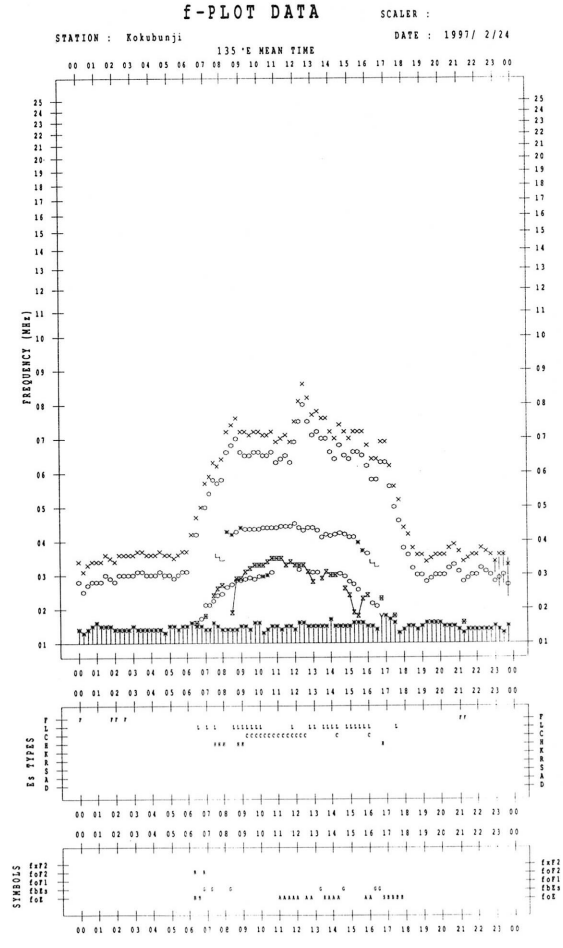

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

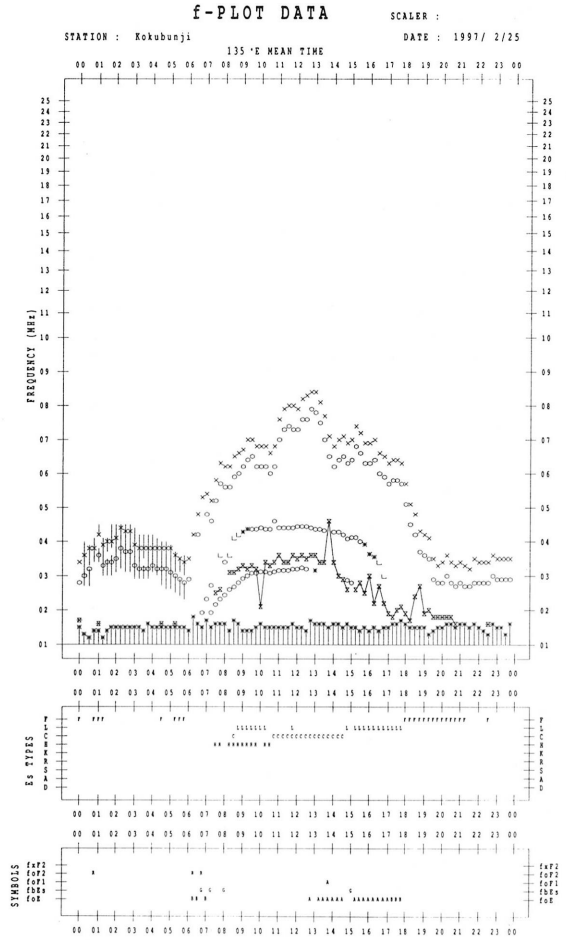

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

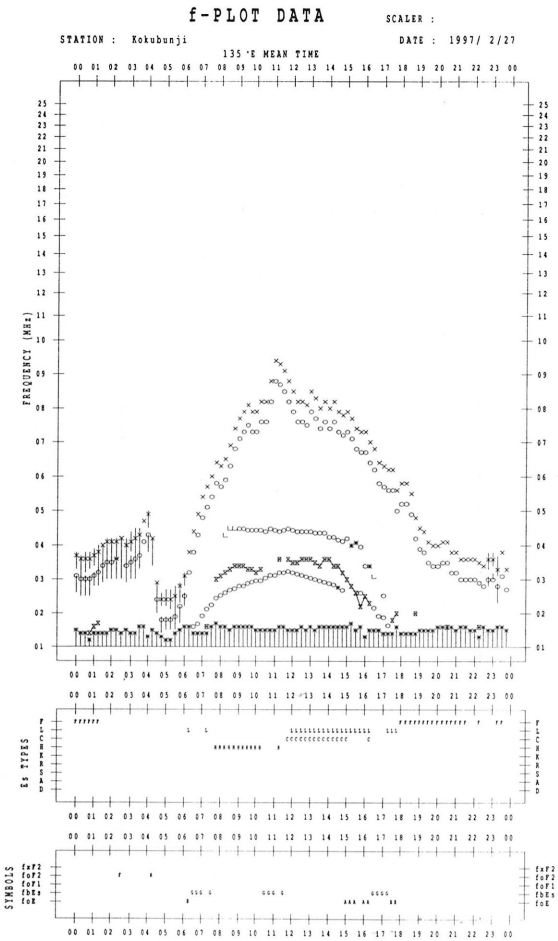

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

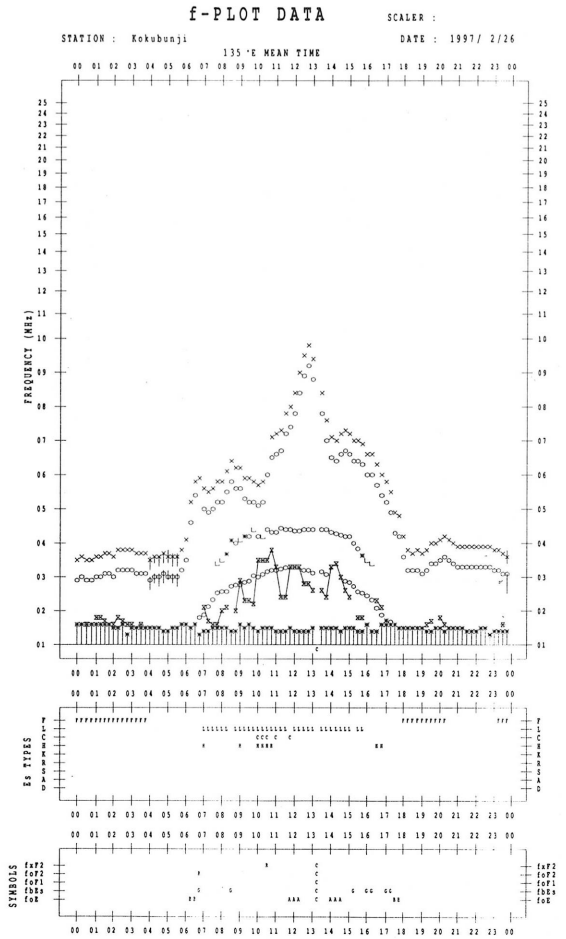

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

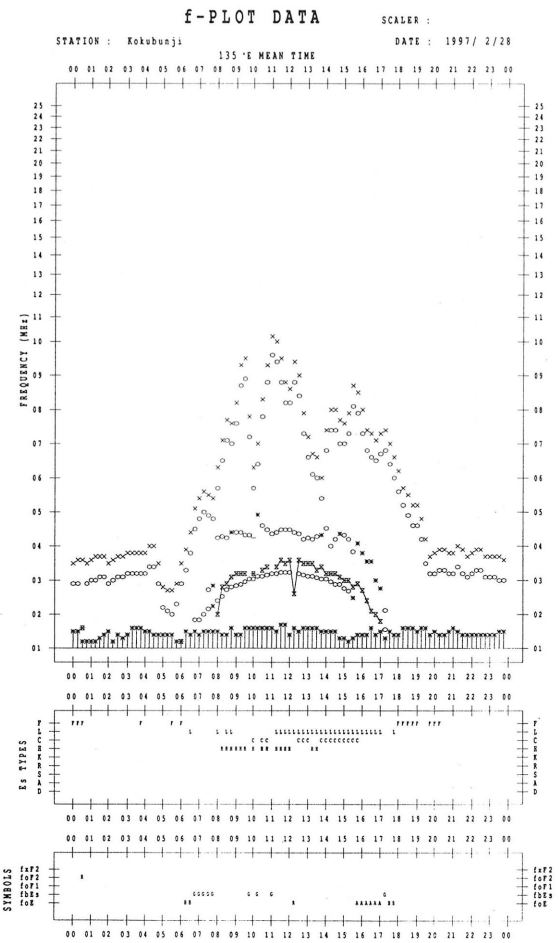

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 2/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso February 1997

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

Note: No observations during the following periods.
4th 0200 - 0730

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso February 1997

Single-frequency observations

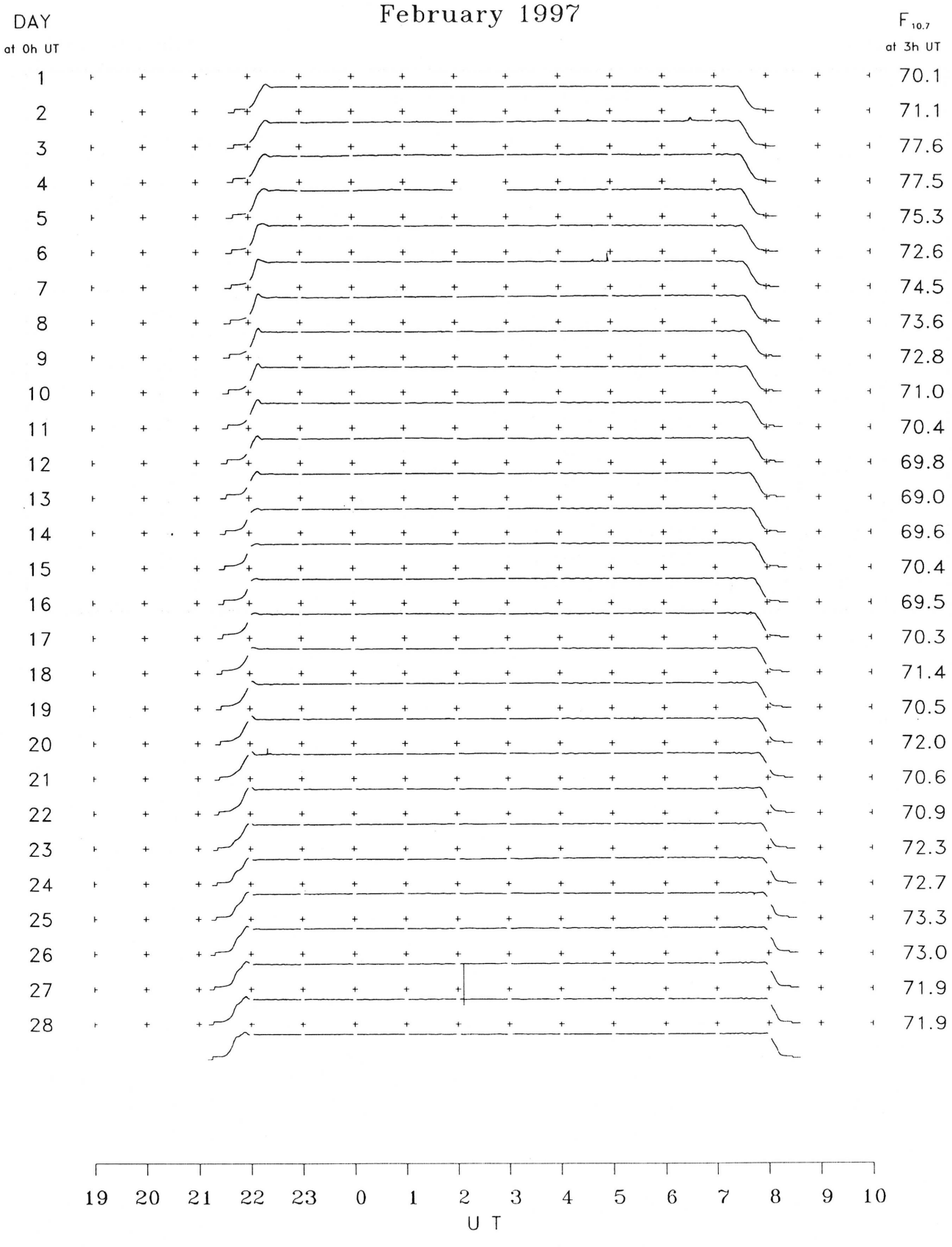
Normal observing period: 2120 - 0820 U.T. (sunrise to sunset)

FEB. 1997	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
2	500	1 S	0115.0	0115.6	1.2	3	-	WR
	2800	1 S	0115.5	0115.7	0.7	2	-	0
	500	42 SER	0221.5	0221.8	4.2	10	-	WR
	200	8 S	0224.5	0225.1	0.7	32	-	WL
	500	41 F	0433.0	0434.7	7.0	16	-	WL
	200	46 C	0433.2	0435.0	8.0	13	2	0
	2800	1 S	0437.2	0437.5	0.3	3	-	0
	500	46 C	0631.0	0631.5	5.0	32	3	WL
	2800	3 S	0631.0	0632.5	4.0	7	2	0
	200	46 C	0631.0	0632.6	4.5	11	2	WL
20	200	42 SER	2211.6	2212.0	4.0	7	-	WR

B. Solar Radio Emission

B3. Summary Plots of $F_{10.7}$ at Hiraiso

February 1997



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. RADIO PROPAGATION

C1. H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

FEB 1997 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT	00H	01H	02H	03H	04H	05H	06H	07H	08H	09H	10H	11H	12H	13H	14H	15H	16H	17H	18H	19H	20H	21H	22H	23H
DAY	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M	17M
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
1	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
2	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
3	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
4	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
5	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
6	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
7	-21	-21	-21	-21	-21	-21	-20	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
8	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
9	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
10	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
11	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
12	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
13	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	S	S	S	S	S	S	S	S	S	S	S	S
14	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21												
	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
15		-5	-5	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	S	S
16	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21				
	ES	S	S	ES	ES	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		ES
17	-21			-21	-21			-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-11	-21
	ES	ES	ES	S	S	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
18	-21	-21	-21					-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	-21																							
	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20																								
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
22	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
23	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
24	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
25	-21	-21	-21	-21			-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
26	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
27	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	S	S	ES	ES	S	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
28	-21	-21			-21	-21				-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
CNT	26	25	24	24	24	23	23	25	25	26	26	26	25	25	25	25	25	25	25	25	25	25	24	24
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
MED	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
UD	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
LD	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21

C. RADIO PROPAGATION

C1. H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

FEB 1997 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 46M	01H 46M	02H 46M	03H 46M	04H 46M	05H 46M	06H 46M	07H 46M	08H 46M	09H 46M	10H 46M	11H 46M	12H 46M	13H 46M	14H 46M	15H 46M	16H 46M	17H 46M	18H 46M	19H 46M	20H 46M	21H 46M	22H 46M	23H 46M
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
1	7	7	7	10	15	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	5	12	10
					ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
2	5	10	14	10	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	5	9	5
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
3	7	7	7	15	11	3	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	10	10	7
					ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
4	7	15	10	10	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	12	8	7
					ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
5	7	10	10	8	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	7	7	7	6
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
6	7	8	15	15	15	21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	7	7	12	10
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		
7	15	15	8	11	15	7	10	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	10	10
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
8	10	13	15	10	9	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	2	0	3	10
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		
9	7	13	13	7	8	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	22	10
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
10	10	13	15	18	25	18	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	13	13	13
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
11	15	13	15	20	16	16	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	10	13	7
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
12	7	10	20	17	10	7	-21	-21	-21	-21	-21	-21	-20	-20	-20	-20	-20	-20	-20	-20	-20	10	10	7
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
13	6	10	20	15	15	10	-21	-21	-21	-21	-21	-21	-20	-20	-20	-20	-20	-20	-20	-20	-20	0	-11	5
						ES	ES	ES	ES	ES	ES	ES	S	S	S	S	S	S	S	S	S	S	S	S
14	-5	5	8	5	15	-21	-21	-21	-21	-21	-21	-21												
						ES	ES	ES	ES	ES	ES	ES		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
15	5	10	10	13	7	-21	-21	-21	-21	-21	-21	-21	5	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	S	S	S
16	10	10	10	0	5	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21			
						S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
17	10	15	15	15	5			-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	10	17	11
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
18	9	11	10	13	15	15	10	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-5	10	13
		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	10																							
	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20																								
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
21	12	10	15	12	16	11	10	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	7	7	7
						ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
22	12	7	12	16	6	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	10	0	16	0
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
23	10	15	16	18	7	12	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	0	7	7
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
24	17	17	15	17	12	15	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	11	5	7	7
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
25	10	15	15	20	20	18	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	2	12	12	12
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
26	7	15	15	15	20	15	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-5	3	10
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
27	5	15	15	15	20	15	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-5	0	5
		US					S	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
28	7	15	16	16	13	15				-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	10	10	16	10
CNT	27	26	26	26	26	25	24	25	25	26	26	26	25	25	25	25	25	25	25	25	25	24	24	24
							ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
MED	7	12	15	15	12	7	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	5	10	7
								ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES				
UD	15	15	16	18	20	18	10	-21	-21	-21	-21	-21	-20	-21	-21	-21	-21	-21	-21	-21	10	12	17	13
					ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		
LD	5	7	8	7	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-11	0

C. Radio Propagation

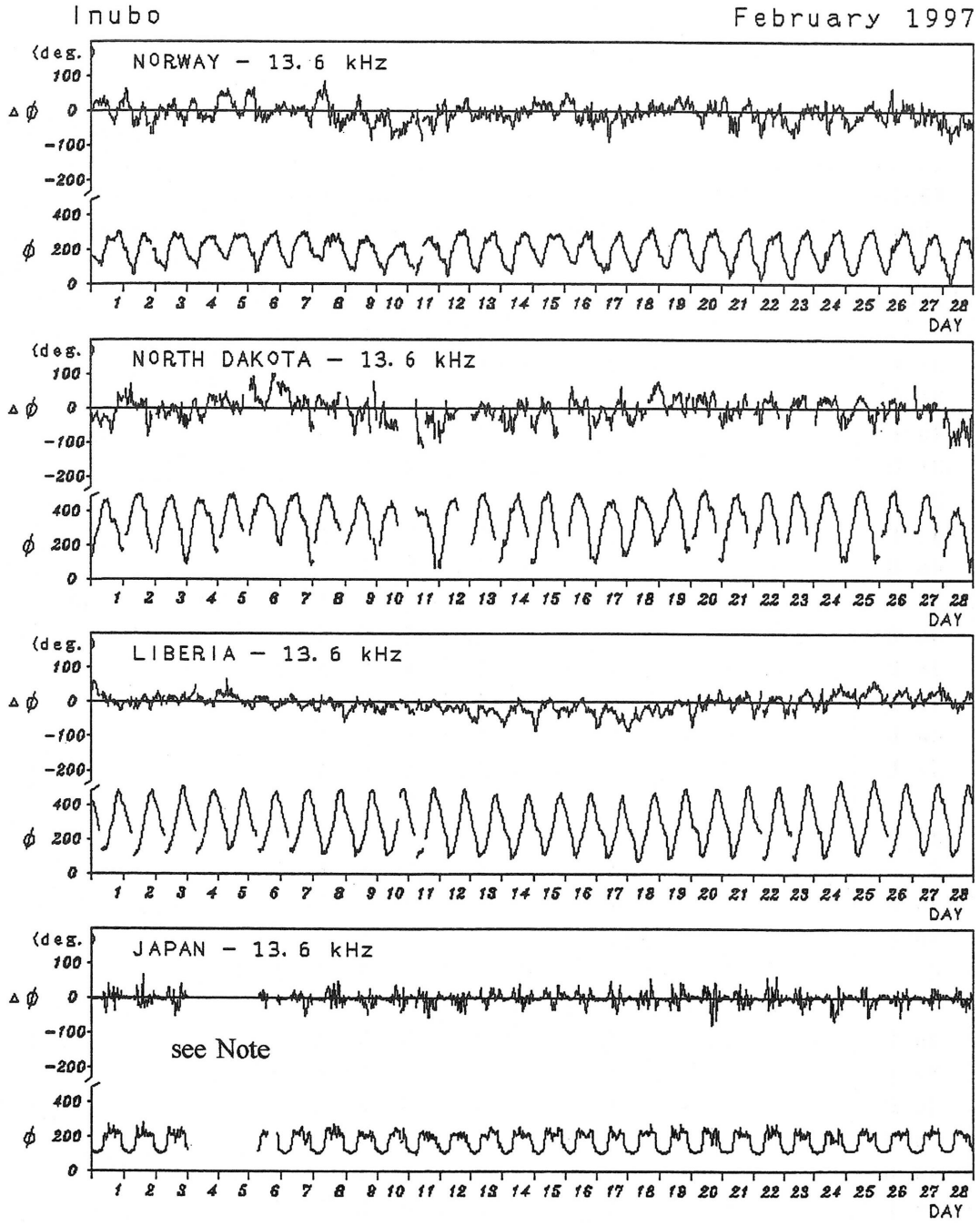
C2. Radio Propagation Quality Figures at Hiraiso

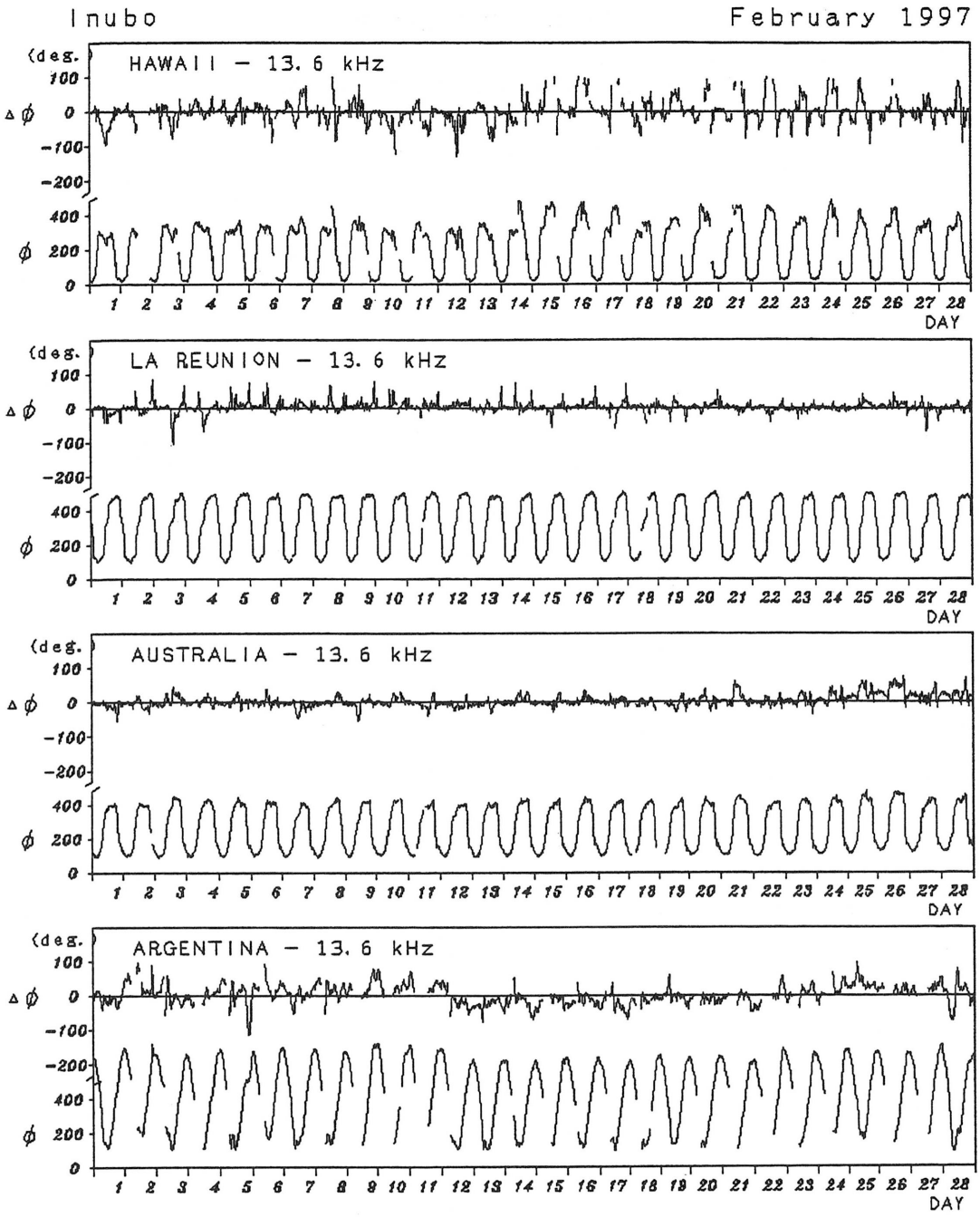
Hiraiso Time in U.T.

FEB. 1997	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	3+ U	- - - -	3 - - 4	N N N N			
2	3+ U	- - - -	3 - - 4	N N N N			
3	4o U	- - - -	4 - - 4	N N N N			
4	3+ U	- - - -	3 - - 4	N N N N			
5	3+ U	- - - -	3 - - 4	N N N N			
6	4o U	- - - -	4 - - 4	N N N N			
7	4o U	- - - -	4 - - 4U	N N N N			
8	3+ U	- - - -	3 - - 4	N N N N	09.9 ---	24	81
9	3o U	- - - -	3 - - 3U	N N N N			
10	4+ U	- - - -	4 - - 5	N N N N			
11	4o U	- - - -	4 - - 4	N N N N			
12	4o U	- - - -	4 - - 4	N N N N			
13	3+ U	- - - -	4 - - 3	N N N N			
14	S	- - - -	3 - - S	N N N N			
15	2+ U	- - - -	3 - - 2	N N N N			
16	S	- - - -	3 - - S	N N N N			
17	4o U	- - - -	4 - - 4	N N N N			
18	4o U	- - - -	4 - - 4	N N N N			
19	C	C C C C	C C C C	N N N N			
20	C	C C C C	C C C C	N N N N			
21	4o U	- - - -	4 - - 4	N N N N			
22	3+ U	- - - -	3 - - 4	N N N N			
23	4o U	- - - -	4 - - 4	N N N N			
24	4o U	- - - -	4 - - 4	N N N N			
25	4o U	- - - -	4 - - 4	N N N N			
26	3+ U	- - - -	4 - - 3	N N N N			
27	3+ U	- - - -	4 - - 3	N N N N	1810 --		109
28	4o U	- - - -	4 - - 4U	N N N N	--	24 SSC	

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for JAPAN-13.6 kHz, no record during 4 February 0000 UT to 6 February 2030 UT, due to transmitter maintenance.

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

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso

Time in U.T.

FEB. 1997	S W F						Correspondence	
	Drop-out Intensities(dB)				Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC							
None										

NOTE CO:Colorade(WWV) HA:Hawaii(WWVH) AUS:Australia MOS:Moscow BBC:London
* Optical and X-ray Flares

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Feb. 1997	S P A								
	Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
2			34	18			0634	0717	0640
19				22	29	–	2220	2304	2224
20				11	9	–	0130	0200	0144
20			7	4			0525	0600	0533
20		39	11				0757	0840	0809
20		49	14				1138	1220	1147

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 1997
F-578 Vol.49 No.2 (Not for Sale)

電離層月報（1997年２月）
第49巻 第２号（非売品）
1997年７月25日 印刷
1997年７月31日 発行
編集兼 郵政省通信総合研究所
発行所 〒184 東京都小金井市貫井北町４丁目２－１
☎ (0423) (27) ７４７８(直通)

Queries about "Ionospheric Data in Japan" should be forwarded to :
Communications Research Laboratory, Ministry of Posts and Telecommunications,
2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184 JAPAN