ISSN 0021—0382

F—614

IONOSPHERIC DATA IN JAPAN

FOR FEBRUARY 2000

VOL. 52 NO. 2

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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°	Solar Radio Emission (S)
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 descriptive letter 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. 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.

C2. 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. 2000

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	42	51	47	45	38	37	38	66	92	90	87	84		114	90	82		60	59	57	44	59	44	
2	A	41	29	36	A	32	38	60	70	102	103	89	90	88	81	84	72	61			40	A	A	
3	42	A	48	46	47	50	42	63	70	87		90	102	84	80	82	73	60	49	41	46	47	A	47
4		48		48	41	42	41	68	82	92			90	89	89	87	74	69		48		42		A
5	A	A	45	37	45	48	46	70	91	88	88		90	83	90	83	70	67	56	37	42		40	57
6	45	43		38	38	41		70	121		102	91	90	121	90	105	87	83	84	67	56	60	63	A
7	70		66	57	54	55	53	79	103	103	117	120	123	128	118	88	91	87	68	52	56	54	59	
8		59		A	69	38		69	84	116	121	128		112	103	90	91	84	66	59	58	58	60	60
9	61	58	56	56	41		43	69	112	120	117	115	120	94	113		92		72	60	54		29	60
10	54	45	55	55	47	37		68	87	88	90	123	118	90	90	89	88	81	73	66	57		57	
11	48		46	58	49	48		72	70	93	114	145	127			96	90	87	71	68	56	49	56	A
12	50	54	49	43	44		69	64	91	93	114	121	133	90	119	116	87	81	74	64	58	66	71	
13	70		48	48	52	51	60		96	124	125	119	123	89	88	90	91	95		70		57		A
14	48	50	49	42	A	41		70	82	93	114	89	120	116	110	116	89	91	68	55	61		52	30
15	43	43				34		68	82	82	103			90		90	88	90	94	94	63	59	A	57
16	58		57	60	56	50	58	72	N	102	118	132	118	121		100	108	112	81	60	60			49
17	50	A	57	49	46	47	48	71	87		126	128	125	90	108	107	91	85	73	74	60	57	52	57
18	57	53		56	51	47	47	72	87	90		122	122	118			90	77	71	63	60	50	57	58
19	57	58	51	56	51	57	55	74	82	88	115	106	115	102	90	90	88	80	59	54	58	49	46	43
20		47	49	48	57	48	57	71	81	90		90	107	89	91	97	91	84	70	63	58	48		
21	60	59	63	51	60	48	51	79	92	87	91	120	126	121	118	123	117	87	64	66	72	70		70
22	66	57	54	57	53	70	N	68	89	102	102	124	134	127	116	104	91	87	94	66	58	A		
23	58		57	A	50	48	56	68	102	104	122	114	123	117	114	122	113	101	84	79	71	58		A
24	49	A	53	56	A	39	52	84	92	108	91	128	122	123	121	90	113	90	92	92	59	50		63
25	63		69	49	59	41		74	92	124	138	129	138	140	123	117	90	115	93	71	70	70	69	
26	69		A		56	44	58	94	118		128	130	134	123	120	103	103		92	82	74	61	58	51
27	56	57	53	55	54	49	57	92	91	117	123	126	130	132	121	119	112	103	81	79	69	66	59	
28	51			57		58	64	93	89	114	131	126	132	115	93	117	118	91	115	72	60	A	67	
29	58		60	53	57	A	60	93	92	131	136	132	133	127		90	85	91	81	84	67	A	60	64
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	24	16	22	25	24	26	21	28	28	26	25	26	26	28	24	27	28	27	26	28	27	20	18	14
MED	56	52	53	51	51	48	53	70	90	98	115	122	122	114	106	96	90	87	73	66	58	58	58	57
U Q	60	57	57	56	56	50	58	76	92	114	124	128	130	122	118	116	97	91	84	73	63	60	60	60
L Q	48	46	48	45	45	41	44	68	82	90	102	106	115	90	90	89	87	80	68	58	56	49	52	49

HOURLY VALUES OF fEs AT Wakkanai

FEB. 2000

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	29	G	32	25	29	N	30		32	30	26	24	31	G	G	G	31	G	
2	38	34	33	46	33	G	G	44	30	52	58	40	36	34	30	26	24	34		32	28	48	29	G
3	30	28	41	26	33	G	G	G	24	29		29	31	32	30	26	G	G	G	27	G	G	41	G
4		G		G	G	G	26	G	32	31			33	31	32	36	29	G		G	G	26	27	43
5	32	34	33	32	30	30	G	G	28	30	31		33	33	31	31	35	G	47	34	58	58	60	33
6	39	G	G	28	24	30	G	29	26		32	35	35	32	31	34	47	35	32	55	32	42	32	32
7	28		27	G	33	G	G		23	34	31	32	32	32	30	29	25	28	30	G	28	G	G	32
8	G	27	G	32	G	28	32	G	32	31	84	41		38	32	27	30	40	32	25	G	G	G	G
9	G	28	42	25	27	G	G	G	34	32	31	41	32	29	40		30	25	33	28	26		32	30
10	27	G	G	31	G	G	G	29	32	35	31	38	37	34	32	27	37	42	44	G	32	G	33	
11	G	G	G	29	32	G	G	46	30	42			32			34	38	30	50	31	58	49	32	30
12	30	30	G	G	G	G	34	33	37	30	31	32	34	33	30	30	30	30	29	G	G	G	G	
13	26		29	28	24	30	38		60	63	48	40	47	34	29	47	54	63		40		34		30
14	28	G	G	38	35	G	G	G	26	27	32	30	40	40	47	60	33	60	34	64	30		G	30
15	G	G	G	33	G	G	G	G	33	G	G			30		33	30	52	37	33	58	63	58	46
16	34		33	30	G	G	G	26	30	37	36	32	56	32		28	26	G	33	33	33		42	42
17	29	30	G	G	G	G	G	G	26		29	31	31	32	31	30	G	32	37	33	32	28	31	G
18	G	G		28	G	G	G	34	27	30		31	31	G			G	G	G	G	G	G	G	G
19	33	29	30	G	G	G	G	G	25	30	29	32	31	31	32	30	24	G	G	G	G	G	G	G
20		G	G	29	30	G		29		29		31	32	32	32	29	G	G	G	24	G	G	G	G
21	28	G	G	G	28	G	G	G	27	29	34	34	32	32	31	30	G	G	G	G	G	G		G
22	G	G	G	G	G	G	G	21	27	30	32	32	32	32	31	29	31	G	G	G	G	27	G	G
23	28	G	G	26	G	28	G	32	28	31	34	35	35	34	33	30	32	34	G	G	G	G	G	27
24	G	28	28	G	26	28	G	28	34		36	35	36	33	33	32	32	24	G	G	G	G	G	G
25	G	G	G	G	G	G	G	34	32	30	33	34	34	34	39	32	32	G	G	30	G	G	G	G
26	G	G	28	G	G	G	G	30	34		33	36	35	34	34	32	32	G	G	G	G	G	G	G
27	29	G	G	G	30	G	G	28	34	34	34	36	34	35	35	34	36	26	G	G	G	G	G	G
28	G	G		31	28	G	G	30	33	34	46	34	34	36	33	35	32	29	31	28	G	29	G	G
29	32		G	G	G	35	G	25	33	32	34	35	35	33		30	29	G	G	G	28	28	27	25
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	25	26	29	29	29	28	27	28	25	23	25	26	28	24	27	29	29	26	29	28	26	27	26
MED	28	G	G	26	G	G	G	28	30	31	33	34	34	32	32	30	30	26	15	24	G	G	G	G
U Q	30	28	29	30	30	28	G	32	33	34	36	36	35	34	33	34	32	34	33	32	31	31	32	30
L Q	G	G	G	G	G	G	G	G	26	29	31	31	32	32	30	29	24	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Wakkanai

FEB. 2000

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	15	14	14	14	15	15	15	18	16	17	20	18		18	18	18	16	15	15	15	14	16	15	
2	15	14	15	14	14	15	15	14	20	18	20	23	21	22	20	18	15	15		15	15	15	15	15
3	15	16	15	15	15	15	15	18	27	18		17	22	22	20	18	17	16	15	15	15	14	14	15
4		15		14	15	14	15	18	15	16			20	16	17	16	16	16		15	15	15	14	14
5	15	15	15	14	15	14	15	22	28	17	18		17	20	17	16	15	15	14	14	15	15	15	15
6	15	15	14	15	15	17	15	21	15		16	18	18	16	16	15	15	15	16	15	15	15	15	14
7	14		14	15	15	15	15	17	28	17	17	18	17	18	16	16	16	16	15	15	14	15	15	15
8	15	15	15	15	14	15	15	21	15	16	15	16		16	16	15	15	15	15	15	14	15	15	15
9	14	14	15	15	15	18	15	21	16	15	20	16	17	17	16		16	17	15	15	15		14	15
10	14	15	14	15	15	15	15	15	16	17	17	22	18	20	17	16	17	15	15	15	15	16	14	
11	16	20	15	15	14	14	15	20	15	16	15	16	21			15	16	14	14	15	14	15	15	15
12	15	15	15	15	15	15	14	14	14	16	18	18	18	20	18	16	15	17	15	15	15	15	15	
13	14		14	15	15	14	14		16	16	18	17	17	20	17	20	17	15		15		15		15
14	15	15	15	14	15	14	14	22	18	18	20	21	22	21	20	18	16	15	14	15	14		15	15
15	15	15	15	15		16	15	22	23	36	42			22		22	20	15	14	14	15	15	15	15
16	14		15	14	15	15	15	15	17	20	20	21	20	20		15	16	20	15	14	14		15	14
17	14	15	15	15	15	15	15	22	17		20		20	22	21	17	26	14	15	15	15	15	15	15
18	15	15		15	14	16	15	15	20	21		22	22	38			26	17	16	15	16	16	14	15
19	15	14	14	15	15	15	15	23	16	20	20	20	21	20	18	18	17	17	15	14	15	14	14	15
20		15	15	14	15	15	15	18	15	17		20	21	20	18	17	16	18	15	15	14	16	15	17
21	15	14	15	15	15	15	15	23	16	17	20	18	17	16	18	16	15	18	15	15	15	16		15
22	15	15	15	15	15	14	15	23	15	16	17	20	18	16	18	17	15	18	14	14	15	15	16	15
23	15	15	15	15	15	15	15	18	16	16	20	18	20	20	18	16	16	15	15	15	15	14	15	15
24	14	15	15	15	16	15	15	14	16	17	16	18	17	16	16	14	15	20	15	15	15	15	15	15
25	15	14	14	15	15	15	15	18	15	15	16	16	18	18	17	15	15	18	15	15	15	14	15	14
26	15	15	15	14	15	15	15	16	16		16	18	18	16	15	15	15	21	14	14	14	15	15	15
27	14	15	15	15	15	15	15	14	14	18	22	18	20	18	18	16	15	21	15	15	14	15	15	15
28	15	15		15	15	14	16	15	15	15	16	18	18	18	17	15	15	22	14	14	15	15	15	15
29	15		15	15	17	15	15	16	15	15	18	17	20	17		15	15	21	15	15	14	14	14	15
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	25	26	29	28	29	29	28	29	26	25	25	26	28	24	27	29	29	26	29	28	26	27	26
MED	15	15	15	15	15	15	15	18	16	17	18	18	19	19	18	16	16	16	15	15	15	15	15	15
U Q	15	15	15	15	15	15	15	21	17	18	20	20	21	20	18	18	16	18	15	15	15	15	15	15
L Q	14	14	14	14	15	14	15	15	15	16	16	17	18	16	16	15	15	15	14	14	14	15	14	15

HOURLY VALUES OF foF2 AT Kokubunji

FEB. 2000

LAT. 39.7N LON. 140.1E 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	58	59	37	36		28	18	68	93	96	81	115	114	106	105	84	82	70	50	57	57	40	34	34
2	A	35	38	41	30	35	33	69	94	100	125	105	116	115	97	86	84	73	59	45	40		A	A
3	40	35	56	59	31	40		58	92	92	114	115	107	94	92	82	72	66	47	60	52	58	40	46
4			44	47	35	35		71	92	102	114	115	104	101	107	93		74	68	68	58		56	57
5		46	43	43	37	36	41		95	80	110	115	95	92	92	87	91	69		57	57	46	42	58
6	41	58	56	38	30		32	81	96	107	100	107	113	116	114	97	92	86	93	94	68	46	57	
7	57	67	69	58	57	50		94	96	106	123	134	122	131	116	104	92		95	95	56	57	57	44
8	47		40					68	104	97	107	116	116	116	116	102	112	86	94	68	58	57	56	58
9	69	60	48	43	30	20	44	93	93	107	115	118	116	120	123	115	107	87	63	67	61	57		56
10	46	46		46		38	43	70	95	120	123	122	132	127	116	107	96	79	68	67	60	60	57	57
11	57	58	68	57	48	46	58	88	96	103	114	134	136	133	119	112	104	98	82	68	58	51	57	A
12	51	57	46	42	42	43	48	77	94	97	114	111	134	120	100	104	97	84	86	81	80	82	80	93
13		67	67	68	77	82	93		102	112	131	132	123	121	110	106	123	122	93	75	82	69	57	49
14	57	50	57	57	44	58	41	74	101	116		113	127	131	134	123	104	103	84	66	66	69	60	60
15	A	A	57	48	34	31	46	94	107	116	122	126	125	118	111	112	114	101	94	82	52	68	69	56
16	57	57	56	57	56	43	45	94	116	114	116	144	142	128	116	120	126	114	94	81		57	61	57
17	68	69	56	50	46		46	88	94	113		133	132	133	112	105	96	92	70	60	60	58	57	A
18	A	66	44	40	45	48	69	94		124		117	127	133	122	116	100	81	68	61	60	57	57	48
19	48	57	57	56		59	64	67	93	112	116	103	123	125	116	105	103	86	82	61	57	47	47	62
20	58	56	44	43	43	47	45	81	95	106	114	116	124	114	113	98	92	86	73	62	57	50	48	46
21	45	43	56	55	37	35	43		95	105	116		135	128	122	122	116	124		63	63	68	69	69
22	57	57	56	58	57	58	63	82	95	117	152	131	130	140	134	131	107	86	82	69	57	58	68	57
23	57	58	57	58	57	48	69	92	96	113	116	122	133	134	131	124	122	116	94	58	73	62	60	48
24	50	51	57	42		38	48	93	96	116	124	132	131	131	131	132	115	122	116	83	81	68	57	68
25	68	69	48	60	43	44	57	84	108	152	151	151	135	135	138	131	117	116	94	73		64	56	68
26	57	60	58	44	56	47	68	95	107		131	134	135	128	126	121	114	122	93	80	81	69	57	56
27	58	57	51	57	48	50	63	94	92	116	122	127	134	142	133	116	116	115		95	80	67	70	62
28	58	57	69	58	45	46	57	92	111	132	127	124	126	126	123	114	118	116	93	70	66	70	60	64
29	68	56	60	51	45	47	50	102	116	124	130	133	138	124	125	116	116	114	93	76	60	76	46	69
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	28	28	24	26	25	26	28	28	26	28	29	29	29	29	28	28	26	29	27	27	27	25
MED	57	57	56	50	44	45	48	86	96	112	116	122	127	126	116	112	106	90	85	68	60	58	57	57
U Q	58	60	57	57	52	48	63	94	103	116	125	132	134	132	125	120	116	115	94	80	68	68	60	63
L Q	48	51	45	43	36	36	43	71	94	102	114	115	116	116	110	100	94	82	68	61	57	57	56	48

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Kokubunji

FEB. 2000

LAT. 39.7N LON. 140.1E 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		31	30	34	38	34	31	34	37	58	35	34	G	G	G	G
2	58	36	30	G	G	G	G	G		35		73	61	34	31	37	40	30	G	G	G	G	28	25
3	G	G	G	G	G	33	27	G		30	32	33	49	35	33	29	32	31	31	G	G	G	G	G
4	G		G	G	G	G	G	G		31	33	32	42	55	51	35	26	G	G	34	G		G	G
5	39	G	G	30	G	G	G	G		30	32	34	34	58	66	67	36	G	G	G	G	G	G	G
6	G	29	G	G	G	G	G	G		31	49	52	34	37	38	42	35	30	27	26		G	G	
7	G	G	30	35	35	28		28	34	40	40	36	61	46	47	49	47	45	60	G	G	G	G	G
8	G	G	G	G	G		G	30	32	32	30	48	53	49	36	52	35	28	G	G	G	G	G	50
9	32	30	G	G	G	G	G		32	36	30	32	60	56	35	46	32	29	34	34	26	G	25	25
10	G	G	32	G		G	G	29	34	30	38	42	39	47	38	32	29	G	G	G	G	G	G	29
11	G	G	25	G	28	28	G		32	32	36	37	38	35	35	49	40	30	26	G	G	G	G	56
12	44	30	26	25	G	G	G		29	66	59	36	43	G	26	31	33	27	26	G	G	G	G	G
13		32	30	25	G	G	G		27	31	32	48	47	33	34	42	37	61	47	G	37	32	G	G
14	G	G	28	26	37	24	25	G		32		41	G	54	54	58	40	34	48	G	28	G	29	26
15	32	48	G	G	29	27	25	G	28	G	32	G	G	34	G	32	35	40	52	33	40	37	24	25
16	34	26	G	G	G	29	G	G	33	34	38	39	39	G	38	32	27	G	G	24	35	32	G	26
17	G	G	G	G	G	G	G	G	30	32	32	34	54	41	33	32	27	33	G	G	G	G	G	34
18	40	G	G	G	G	G	G	G		36	34	G	35	59	46	33	51	G	G	G	G	G	G	G
19	G	29		G	G	G	G		32	32	35	36	33	36	34	32	28	28	28	G	G	G	G	G
20	G	G	G	G	G	G	G	25	32	30	G	G	34	36	32	38	G	G	G	G	G	G	G	G
21	G	G	G	G	G	G	G		25	29	33	33	37	36	34	33	34	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	26	28	36	33	G	34	32	32	31	40	33	G	24	G	G	G	G
23	G	G	G	G	G	G	G		28	30	33	G	38	37	33	33	36	24	G	33	23	25	G	24
24	G	G	23	G	G	G	G	27	31	34	33	39	37	34	36	34	34	30	25	G	G	G	G	G
25	28	G	29	G	G	G	G		34	36	34	39	40	G	34	37	37	G	25	G	G	G	G	G
26	G	G	G	G	G	G	G	29	32	32	32	41	40	34	33	34	34	37	G	G	G	G	G	G
27	G	G	G	G	G	G	G	34	26	G	G	G	G	G	40	35	32	G	G	G	G	G	G	G
28		30	26	G	G	G	G	27	34	32	36	34	38	36	59	34	35	30	50	49	41		32	G
29	G	31	29	G	G	G	G	G	30	32	34	31	30	35	36	33	34	G	G	G	G	34	G	27
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	29	27	28	28	21	21	29	27	29	29	29	29	29	29	29	29	29	28	27	29	28
MED	G	G	G	G	G	G	G	G	32	32	33	34	38	36	35	34	35	29	G	G	G	G	G	G
U Q	32	29	27	G	G	G	G	27	32	34	36	40	45	46	39	42	37	33	32	25	12	G	G	25
L Q	G	G	G	G	G	G	G	G	28	30	32	31	34	34	33	32	32	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

FEB. 2000

LAT. 39.7N LON. 140.1E 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	15	14	15		16	15	20	16	14	16	16	16	17	17	15	15	15	15	16	14	15	15	14
2	14	14	14	14	14	15	15	15	15	16	18	21	20	21	16	15	15	16	14	14	14	15	15	15
3	15	15	14	16	16	15	15	22	18	18	18	17	22	21	21	16	17	15	15	15	14	15	14	15
4	15		15	16	15	15	15	22	14	16	16	16	20	23	21	20	17	17	16	14	14		15	16
5	15	15	15	15	16	14	14	14	16	14	15	17	17	21	17	16	15	21	14	14	15	14	15	15
6	15	15	14	15	18	15	15	18	15	14	18	16	18	16	16	17	14	14	16	14	14	14	15	
7	15	14	14	14	14	15		21	15	15	15	18	16	16	14	14	14	15	14	15	15	15	15	15
8	15	14	15	15	15		14	15	15	14	14	15	17	17	26	15	14	15	14	15	15	15	15	14
9	14	14	15	14	15	15	14	15	14	14		17	20	20	15	15	18	15	15	15	15	15	14	15
10	15	14	14	14		16	15	14	15	15	17		27	18	17	16	14	20	14	14	15	15	15	14
11	15	14	16	15	14	15	14	20	15	16	15	18	29	16	17	17	16	14	15	15	15	15	15	15
12	14	14	14	15	15	16	14	16	15	15	16	17	17		16	17	14	14	15	15	15	14	15	14
13		15	14	14	15	14	14		17	15	16	17	20	20	21	16	16	14	15	14	14	15	14	16
14	15	14	14	14	14	15	14	15	16	18		34	43	35	22	18	16	16	15	15	14	15	14	15
15	14	15	15	14	15	15	16	22	15	22	21		42	40	44	21	15	15	17	14	15	14	15	15
16	14	14	15	15	14	14	15	18	18	20	28	22	22		21	17	16	22	14	15	14	15	14	15
17	15	14	14	15	14	15	14	14	15	16	16	18	21	20	14	20	18	14	14	15	14	15	14	14
18	15	14	14	15	14	14	15	14	17	27	24		18	14	15	16	14	18	14	15	14	14	14	15
19	15	14	15	14	17	17	14	15	18	16	26	16	18	21	17	15	16	15	14	14	15	15	14	15
20	15	15	15	15	15	15	14	17	15	17	42	42	22	16	20	14	14	16	14	14	15	14	15	14
21	15	14	14	14	14	16	15	18	18	15	18	17	27	22	28	18	15	21	15	14	15	14	14	15
22	14	14	15	14	14	14	15	16	16	17	17	26	22	17	24	16	15	15	15	15	14	15	15	15
23	14	14	14	14	14	15	14	24	17	20	41	42	41	18	21	20	14	17	14	14	15	15	15	15
24	14	14	15	15	14	14	15	14	15	15	18	20		23	20	14	16	14	15	15	14	15	14	14
25	15	15	14	14	15	15	14	18	15	16	17	17		44	20	17	14	16	14	14	14	15	15	14
26	15	14	14	15	16	16	14	14	15	16	15	23	29	26		20	15	16	15	15	14	15	14	15
27	14	14	15	14	15	14	15	17	14	45	16		42	40	21	16	16	24	15	15	15	14	15	16
28	15	14	14	14	17	14	15	18	15	16	17	18	21	17	17	17	15	15	15	16	15	14	14	14
29	16	15	16	14	15	15	15	26	16	16	17	18	22	16	23	18	15	17	15	14	15	15	15	15
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	29	29	27	28	28	28	29	29	27	25	27	27	28	29	29	29	29	29	29	28	29	28
MED	15	14	14	14	15	15	15	17	15	16	17	18	21	20	20	16	15	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	15	20	16	17	18	21	27	23	21	18	16	17	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	15	15	15	16	17	18	17	16	15	14	15	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES

IONOSPHERIC DATA of Yamagawa is not available due to the ionosonde trouble.

HOURLY VALUES OF foF2 AT Okinawa

FEB. 2000

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	56	46	A	43	41		59		89		116	128	121	117	121	124	134	127	136	138		94	93	69
2	50	32	34	58	A	A	A		88	106	124	120	118	118	147	158	151	121	125		80	94	93	76
3	70	54		38		69		59	81	127	123	118	120	121	118	110	92		91	A	68	77	57	47
4	48	51		69	41			46	88	102	122	120	126	140		159	162	165	169		155	139	151	155
5	116	93	96	72	38		A	A	103	121	117	122	125	124	93	120	127	127	143	140	122	130	152	93
6	95	78	60	48					128	94	118	143	143	145	140	116	116	124	121	128	132	134	90	93
7	83	60	64	48	41	36	A	49	109	118		158	170	163	148	144	141	146	167		145	116	93	88
8	95	68	95	61	69	35	38		119	133	111	114	120	146	170	145	146	167	172	169	121	156	137	90
9	91	93	61	44				59	93	93	113	122	121	133	144	144	126	121	134	142	N	111	107	94
10	91	70	58	69	42	42		N	92	120	127	122	128	148	150	144	132	128	128	141	87	94	69	94
11	92	95	68		58			53	96	120	120	124	121	155	165	167	172	175	127	141	90	96	82	92
12	92	72	70	58		47	56	49	89	118	122	122	120	139	112	116	122	120	125	159	164	172	172	124
13	115	90	96	93	96	94	92	91	121	123	127	124	130	144	148	146	127		156	147	128	95	114	93
14	95	71	62	67	40	A	38	50	99	114	116	122	127	142	147	151	172	169	181	177	161	164	151	110
15	96	83	91	92	89		54	69	100	119	121	124	128	136	134	141	136	143	144	144	122	118	94	83
16	95	95	69		69		89	59	84	93	117	117	150	142	159	171	170	172	170	175	177			
17	150	155	122	96	86	56	58	53	90	106	126	154	161	174	184	184	172	164		142	132		119	94
18	96	83	72		61	69	69	74	95	121	125	134	156	172	170	166	153	146	133	149		113	92	94
19	95	84	94	60				47	83	105	120	130	134	159	193	185	177	174	173		122	131	94	95
20	69	69	43	42	42		59	49	92	103	121	124	125	133	148	150	148	138	115		91	92	80	68
21	69	62	67	68	42				82	94	110	118	133	133	134	154	150	146	128	131		93	94	69
22	68	57	44	48	49	50	63	62	92	124	127	147	154	156	165	174	171	172	156		122	142	111	93
23	96	93	70	70	57	56			81	90	113	115	134	142	153	147	144	147	139		132		113	94
24	92	81	78	69	49	48		54	94	105	120	131	126	125	154	153	164	146	140	139	132		90	94
25	96	69	62	57	58	44	48	49	93	134	151	125	133	149	168	168	173	171	145	141	155		152	112
26	91	81	66	55		44		59	93	117	124	134	132	127	157	171	180	176	181		174	170		96
27	96	92	N	94	92	43	48	66	98	116	125	121	132	143	150	138	138	130	142	145	116	155		122
28	117	94		80	68		69	A	114	115	121	138	128	130	143	148	147	142	145		138	159	151	121
29	95	93	94	95	70		48	68	112	130	149		143	132	153	162	157	160	170		173	172	155	94
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	29	29	24	26	22	14	15	20	29	28	28	28	29	29	28	29	29	27	28	18	25	24	26	28
MED	95	81	68	64	58	48	58	56	93	116	121	124	128	142	149	150	148	146	142	142	132	124	100	94
U Q	96	93	92	72	69	56	69	64	101	121	125	132	138	148	162	166	170	169	168	149	155	155	151	95
L Q	76	65	61	48	42	43	48	49	88	104	117	120	123	131	141	142	133	128	128	140	118	94	92	89

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

FEB. 2000

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	26	26	42	G	G	G	G	G	28		31	38	50	50	48	41	37	31	40	51		G	G	G
2	G	G	G	G	40	28	24	45	25	35	38	49	68	68	67	101	35	46	34	38	G	G	G	G
3	G	G	G	G	G	G	G	G	23	37	34	42	35	79	97	68	76		28	48	G	G	G	G
4	G	G	G	G	G		G	G	25	36	38	42	37	71	53	49	32	72	70	34	G	37	G	G
5	32	25	G	25	25		40	45	27	35	38	34	35	34	48	48	39	51	42	48	30	G	44	25
6	G	G	G	G	G			G	30	35	38	36	37	37	37	37	45	32	33	43	G	G	G	G
7	G	G	G	G	G	G	34	41	30	30	34	35	G	G	34	36	40	33	G	48	G	42	25	24
8	22	44	26	44	25	29	G	36	49	36		37	39	37	43	39	41	28	G	G	G	44	G	G
9	G	G	G	G	G	G		36	28	36	36	36	38	38	59	42	40	39	61	G	28	G	G	G
10	G	G	G	G	G	G		24	28	30	42	38	39	44	54	59	42	35	36		61	G	45	G
11	G	G	G	G	G	G	G	34	37	38		36	37	43	39	38	42	37	G	38	G	G	G	G
12	G	G	G	G	G	25	29	28	24	32	34	36	37	G	G	37	37	39	34		43	43	25	G
13	48	28	29	27	G	26	26	G	G	36	36	43	58	100	118	93	84	47	56	47	G	G	G	G
14	G	G	G	G	G	38	G	25	27	35	32	35	34	52	62	108	60	61	39	33	24	G	G	24
15	G	27	25	G	G		24	G	24	31	34	G	56	56	66	G	36	34	G		G	G	G	G
16	G	G	G	G	24	25	G	G	26	31	31	48	59	G	41	38	35	35	G	G	G			
17	25	G	26	G	G	G	G	G	30	35	37	36	58	54	38	35	32	26		32	25		G	G
18	G	58	37	31	34	24	G	48	30	34	32	32	G	39	G	38	40	28	G	G	G	G	G	G
19	G	G	G	G		G		G	24	38	G	34	41	G	38	36	34	35	G		G	G	G	G
20	G	G	G	G	G		G	G	27	30	G	G	G	G	38	38	G	34	G	G	G	G	G	G
21	G	G	G	G	G	G		G	30	32	40	42	57	51	41	G	34	30	G	G	G	G	G	G
22	34	G	G	G	G	G	G	26	22	29	44	43	36	33	G	G	34	27	G	G	G	26	42	G
23	G	G	G	G	G	G	G		25	31	41	G	38	37	G	47	47	37	32	G	G	G	G	G
24	33	G		G	G	G	G	G	32	37	36	38	58	G	38	39	34	32	35	45	G	G	G	G
25	G	G	G	G	G	G	G	G	32	38	39	37	38	G	40	37	38	39	32	G	G		G	G
26	G	G	G	G	G	G	G	G	28	32	36	36	37	47	44	48	43	38	30		G	G		G
27	G	G	G	G	G	G	G	27	32	G	36	38	37	37	35	46	47	44	36		24	29	G	G
28	G	G		G	G	G	G	42	31	36	35	37	58	62	60	38	G	35	G		G	G	G	G
29	G	G	G	51	27	24	G	G	24	38	31	34	41	55	65	42	45	38	G		G	44	G	G
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	29	29	27	29	28	24	24	28	29	28	27	29	29	29	29	29	29	28	28	21	28	26	27	28
MED	G	G	G	G	G	G	G	G	28	35	36	36	38	39	41	39	39	35	31	33	G	G	G	G
U Q	11	G	G	G	G	24	12	35	30	36	38	40	56	54	59	48	44	39	36	46	12	26	G	G
L Q	G	G	G	G	G	G	G	G	24	31	32	34	36	17	37	37	34	32	G	G	G	G	G	G

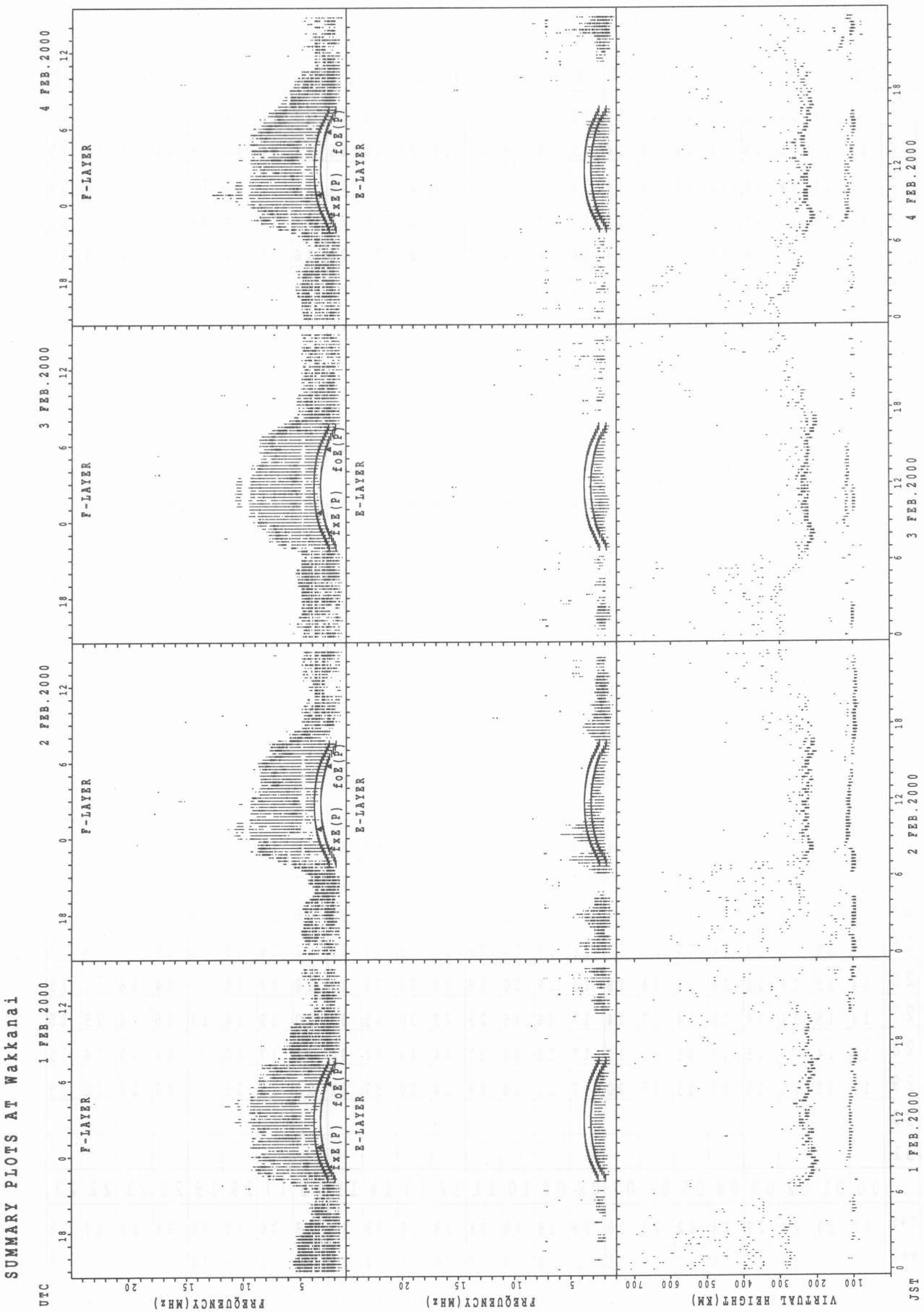
HOURLY VALUES OF fmin AT Okinawa

FEB. 2000

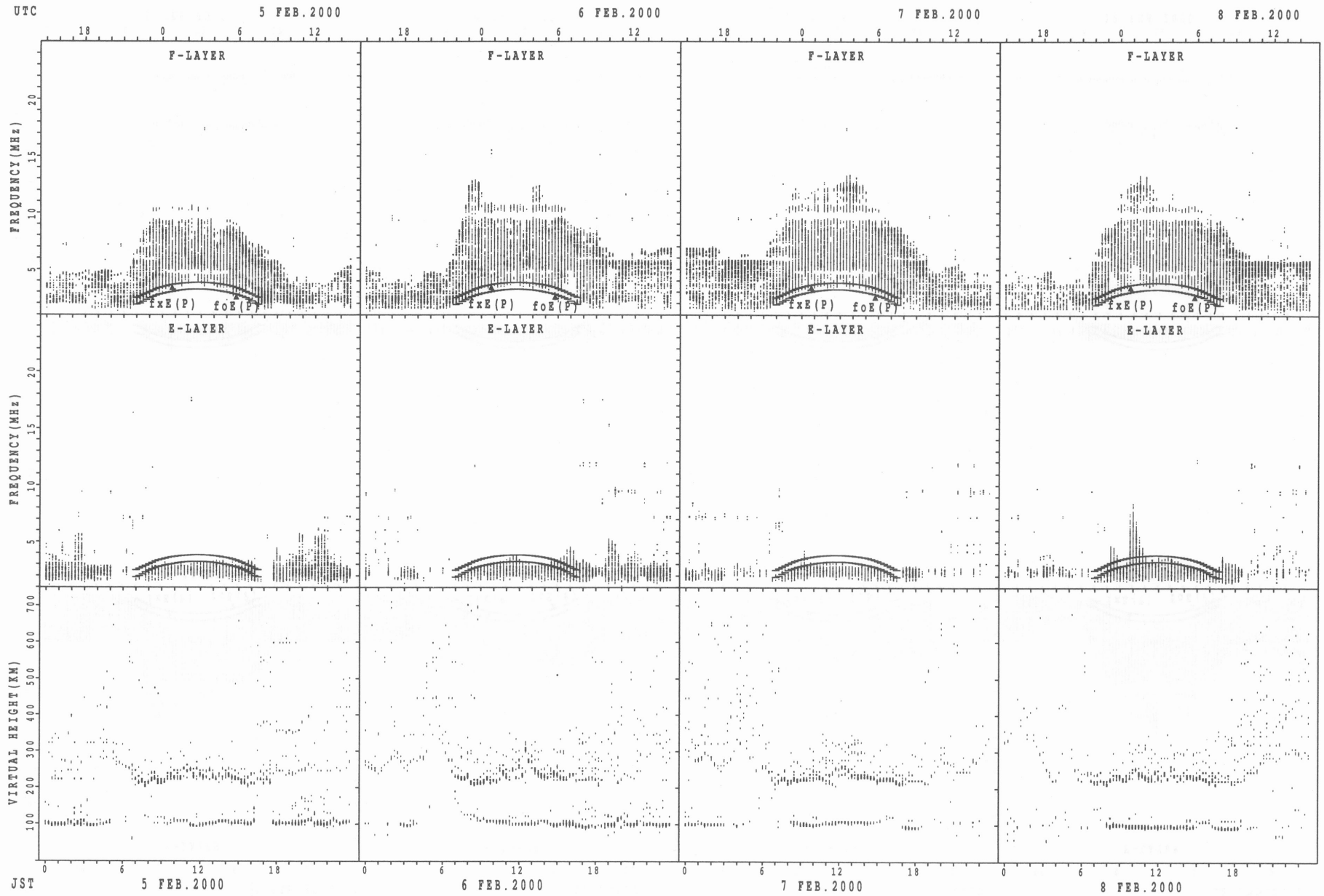
LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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	14	14	14	15	16	15	14	14	15		17	18	20	18	28	17	20	14	14	14		15	16	15
2	15	17	15	15	14	14	15	14	15	15	16	17	18	20	24	16	15	16	15	14	21	15	16	15
3	15	14	14	15	15	14	16	14	15	16	18	27	24	22	30	18	16		14	14	17	15	14	14
4	15	15	15	15	15		17	15	14	16	18	17	27	27	28	24	34	15	14	14	15	15	15	15
5	14	15	15	14	14		14	14	14	15	17	27	27	27	30	24	16	15	14	14	15	16	14	16
6	17	15	14	14	15			14	15	16	17	21	29	27	28	24	17	16	14	14	16	15	16	15
7	14	15	16	14	14	15	16	14	14	15	17	21	48	46	42	29	23	15	20	15	23	15	17	15
8	15	15	14	14	14	15	15	15	15	15	17	23	17	27	23	18	16	16	24	14	17	16	14	15
9	15	15	15	14	14			14	15	15	44	23	27	30	28	24	17	14	14	15	14	15	15	15
10	14	14	15	15	14	15		16	15	20	18	50	48	28	28	26	17	16	14	14	15	16	16	16
11	15	15	14	15	15	15	15	14	14	15	24	45	47	29	30	16	27	16	15	15	15	15	15	14
12	16	15	14	16	14	14	14	14	18	16	21	28	28	52	47	16	15	14	14	16	14	15	14	15
13	14	14	14	14	14	14	14	16	18	16	17	24	27	27	34	17	16	16	15	14	14	15	15	14
14	14	15	14	14	14	15	16	14	18	17	21	26	21	34	32	29	22	15	15	14	16	17	21	14
15	15	16	14	14	14		15	15	18	18	42	46	36	38	32	48	47	17	14	15	15	15	15	14
16	18	15	14	15	15	14	14	16	16	17	36	28	36	47	29	31	27	18	22	14	15			
17	15	16	15	15	15	16	26	17	18	17	17	30	32	42	29	27	34	16		15	15		17	15
18	16	15	14	15	15	15	15	16	14	16	18	20	52	45	46	30	18	16	23	15	17	16	15	15
19	15	15	15	15		17		16	15	16	44	46	30	49	29	27	18	16	22		14	15	16	15
20	14	14	15	15	15		16	16	18	16	43	45	48	51	47	27	35	16	23	15	15	16	17	15
21	15	16	14	15	14			16	14	15	17	22	38	32	33		18	16	16	15	14	15	15	14
22	14	15	15	15	15	14	15	14	18	17	22	28	29		48	36	18	15	23	14	14	15	15	16
23	15	14	15	15	15	14			18	15			47	29	48	29	23	17	15	15	15	14	14	15
24	14	14	14	14	14	16	15	16	15	18	28	29		45	30	32	26	15	14	14	15	15	14	14
25	14	14	15	14	14	14	15	17	16	16	18	29	30	53	33	28	22	16	14	15	15		14	15
26	14	15	14	14	14	15	14	18	15	18	20	28	29	32	36	29	18	18	14		14	16		15
27	14	15	14	14	15	14	17	14	17	46	46	29	29	30	45	33	20	15	14	14	15	14	15	15
28	14	14		15	14	15	16	15	17	18	20	27	44	45	42	30	35	17	20		14	15	14	15
29	15	15	15	15	15	15	15	20	17	17	38	48	34	30	39	32	28	23	23		16	14	15	15
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	29	29	28	29	28	22	23	28	29	28	28	28	28	28	29	28	29	28	28	25	28	26	27	28
MED	15	15	14	15	14	15	15	15	15	16	19	28	30	31	32	27	20	16	15	14	15	15	15	15
U Q	15	15	15	15	15	15	16	16	18	17	32	29	41	45	42	30	27	16	21	15	16	16	16	15
L Q	14	14	14	14	14	14	14	14	15	15	17	22	27	27	28	21	17	15	14	14	14	15	14	14

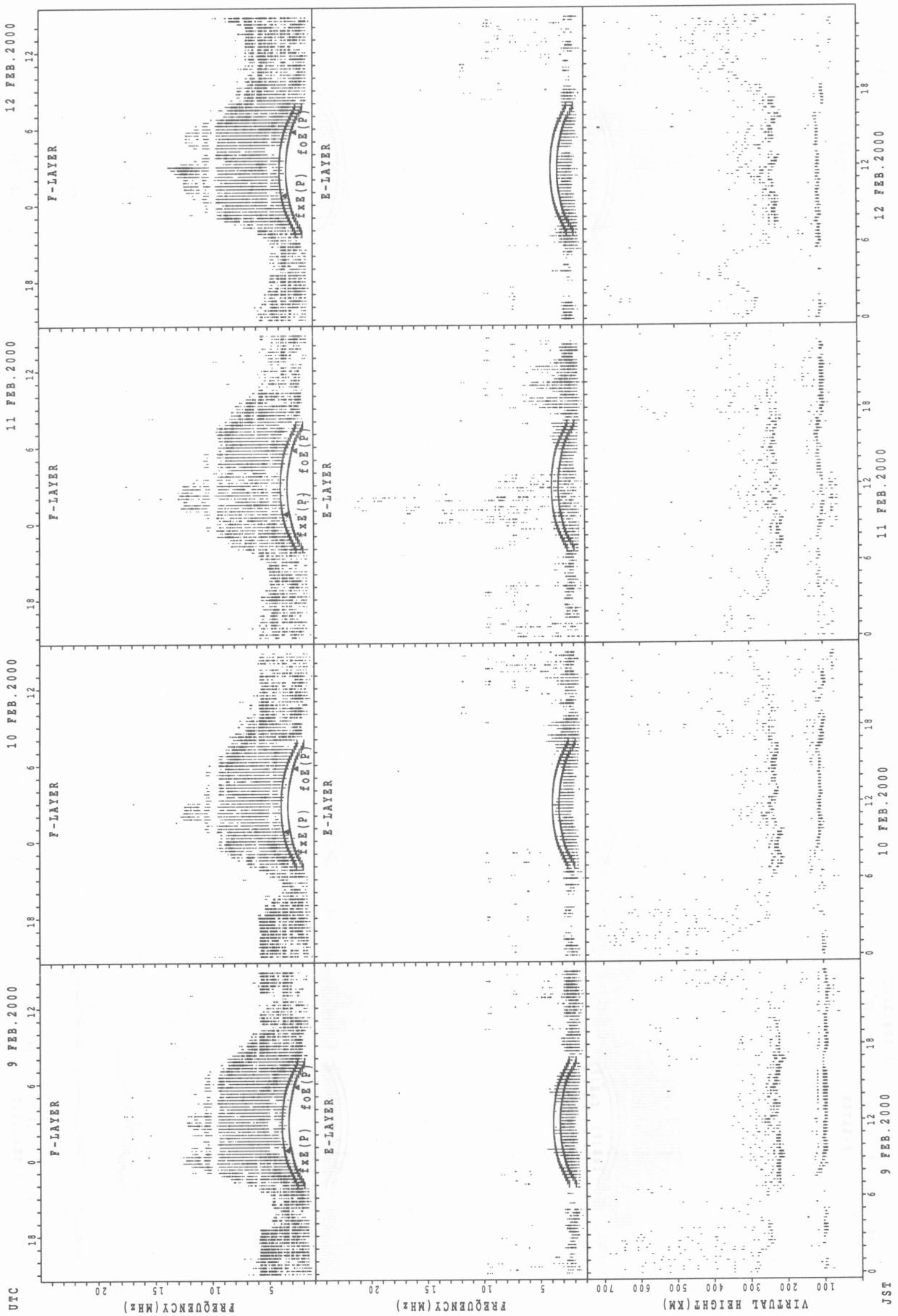
COMMUNICATIONS RESEARCH LABORATORY, JAPAN


SUMMARY PLOTS AT Wakkanai
UTC
JST
1 FEB.2000
2 FEB.2000
3 FEB.2000
4 FEB.2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

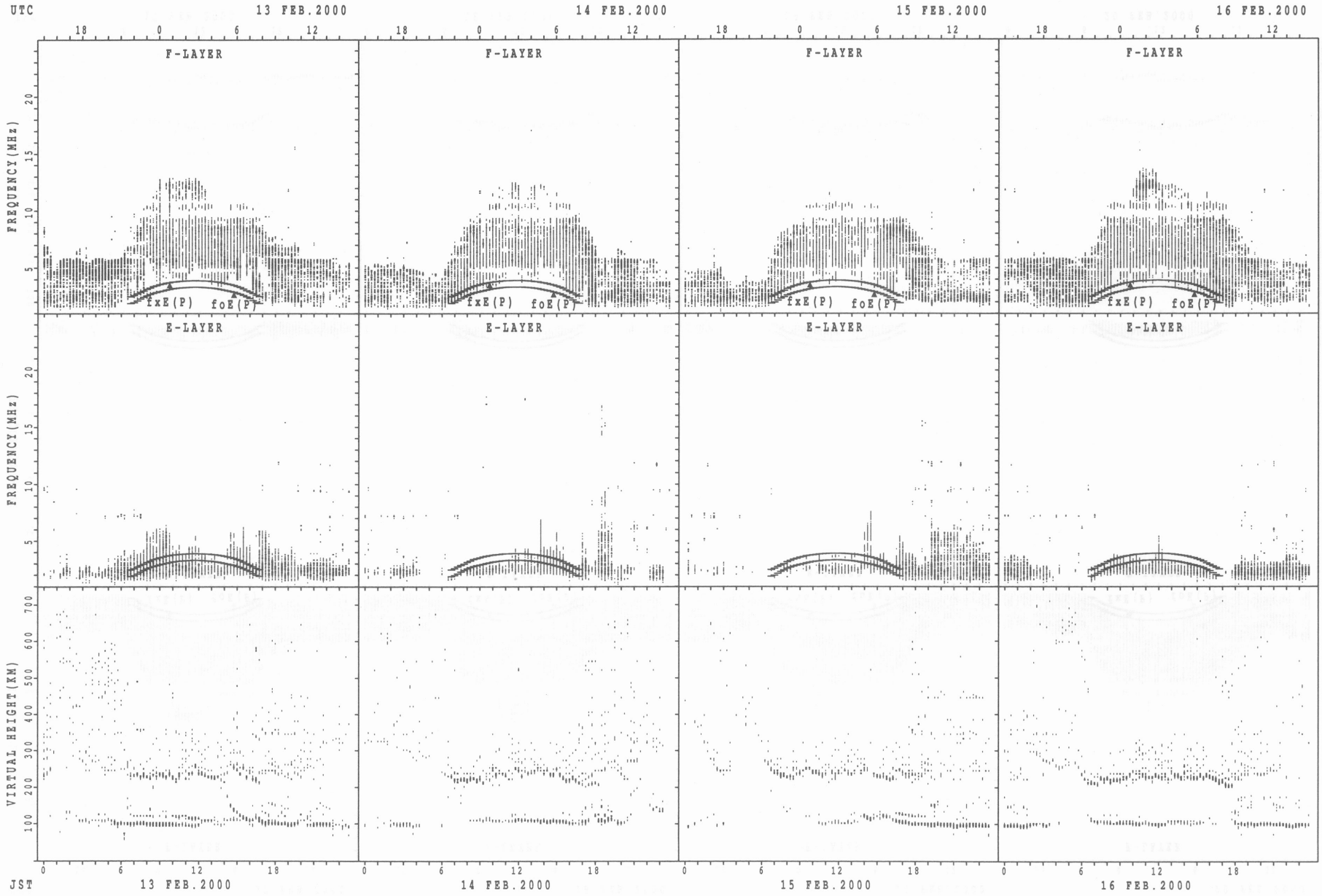
SUMMARY PLOTS AT Wakkanai



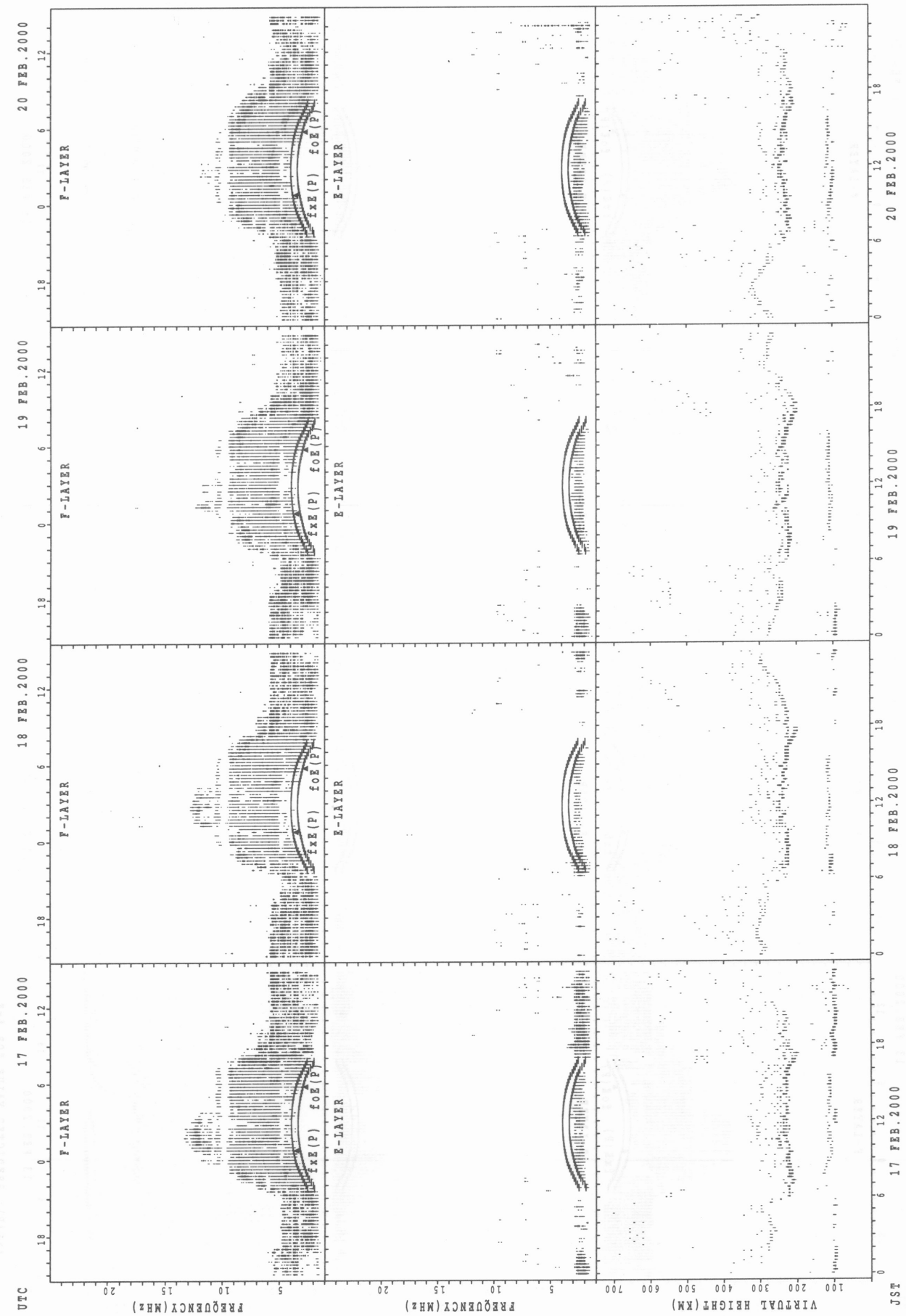
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
9 FEB.2000
10 FEB.2000
11 FEB.2000
12 FEB.2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

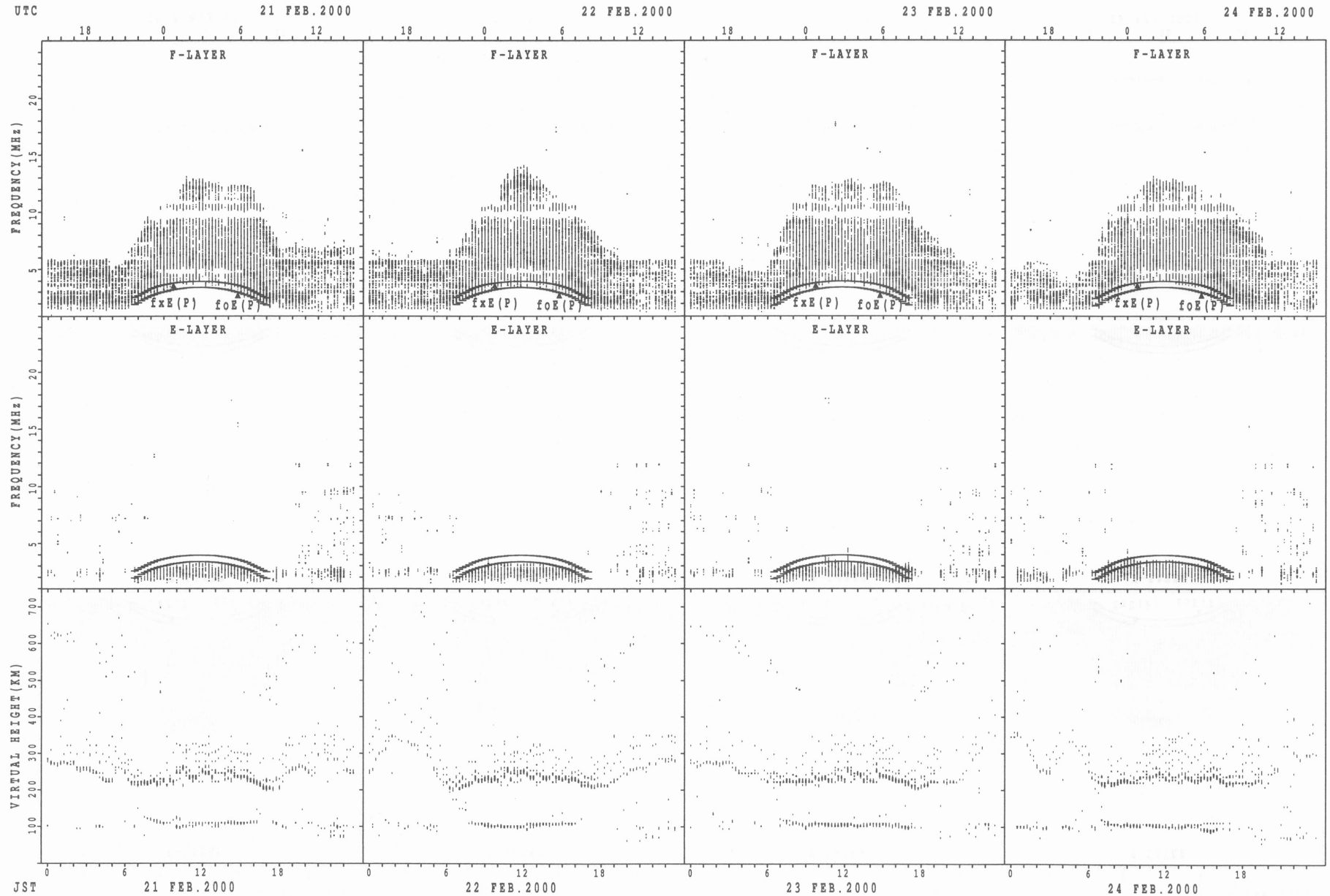
SUMMARY PLOTS AT Wakkanai



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

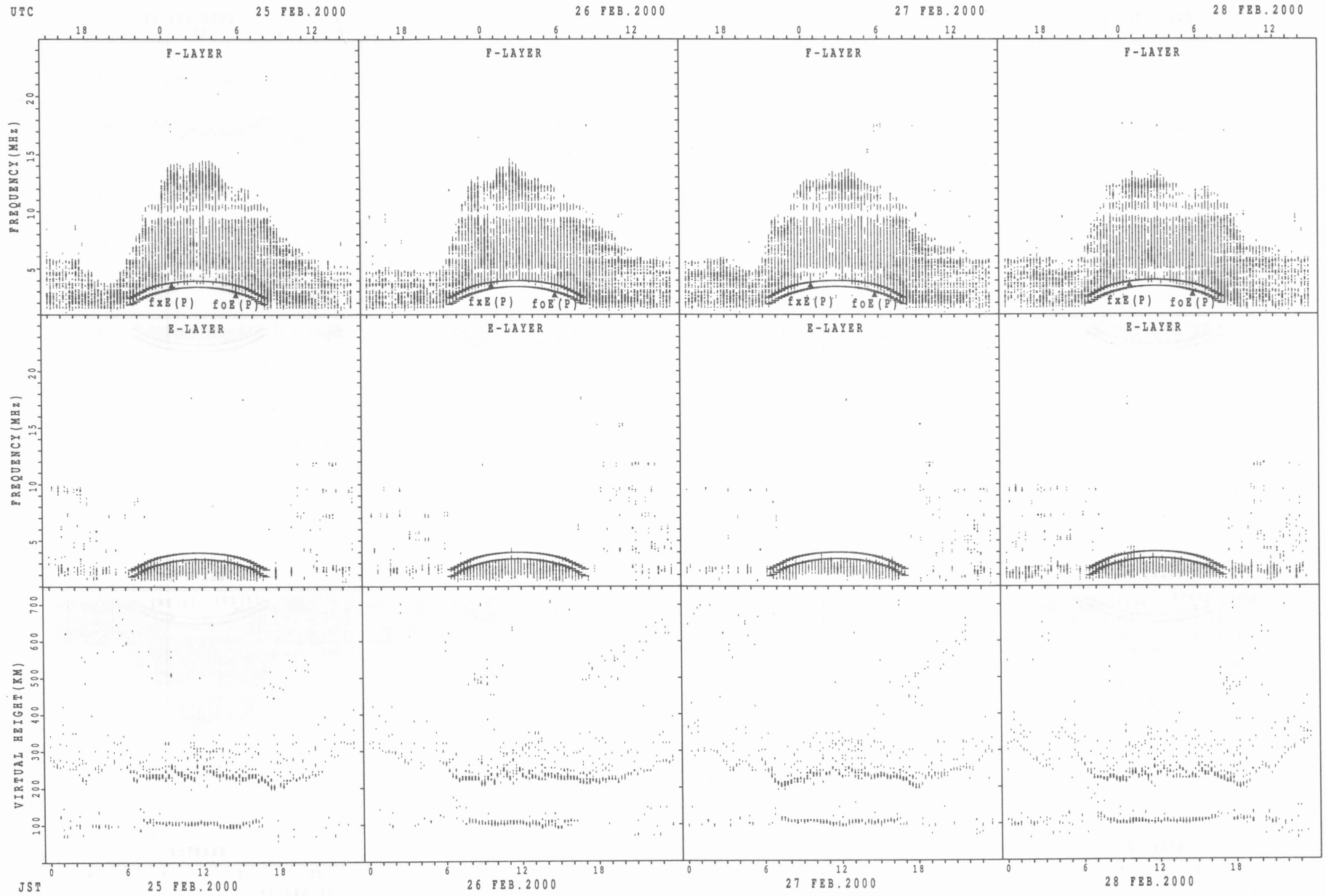

SUMMARY PLOTS AT Wakkanai
UTC
JST
17 FEB.2000
18 FEB.2000
19 FEB.2000
20 FEB.2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

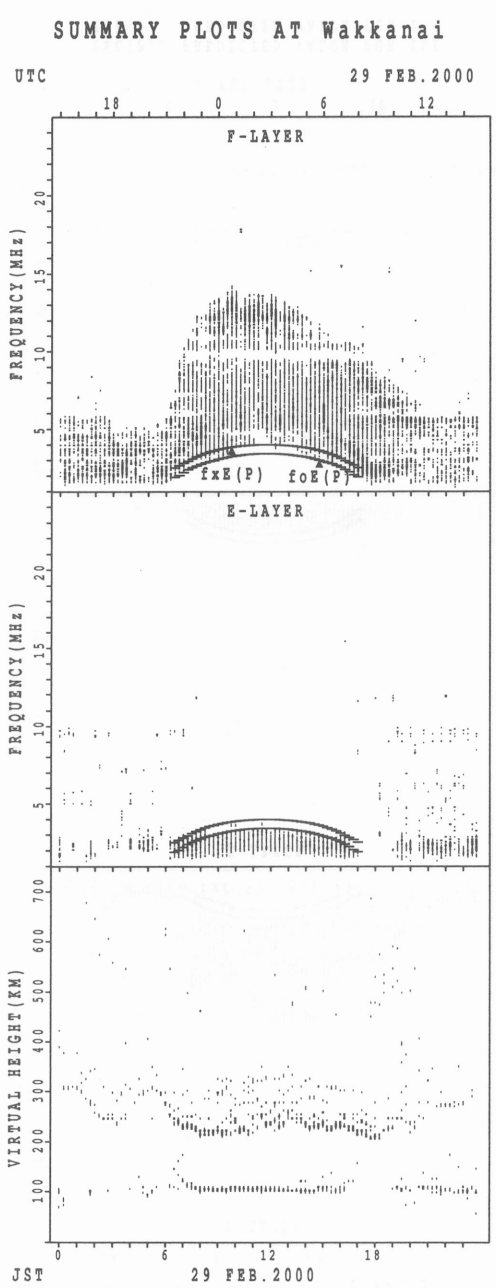


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

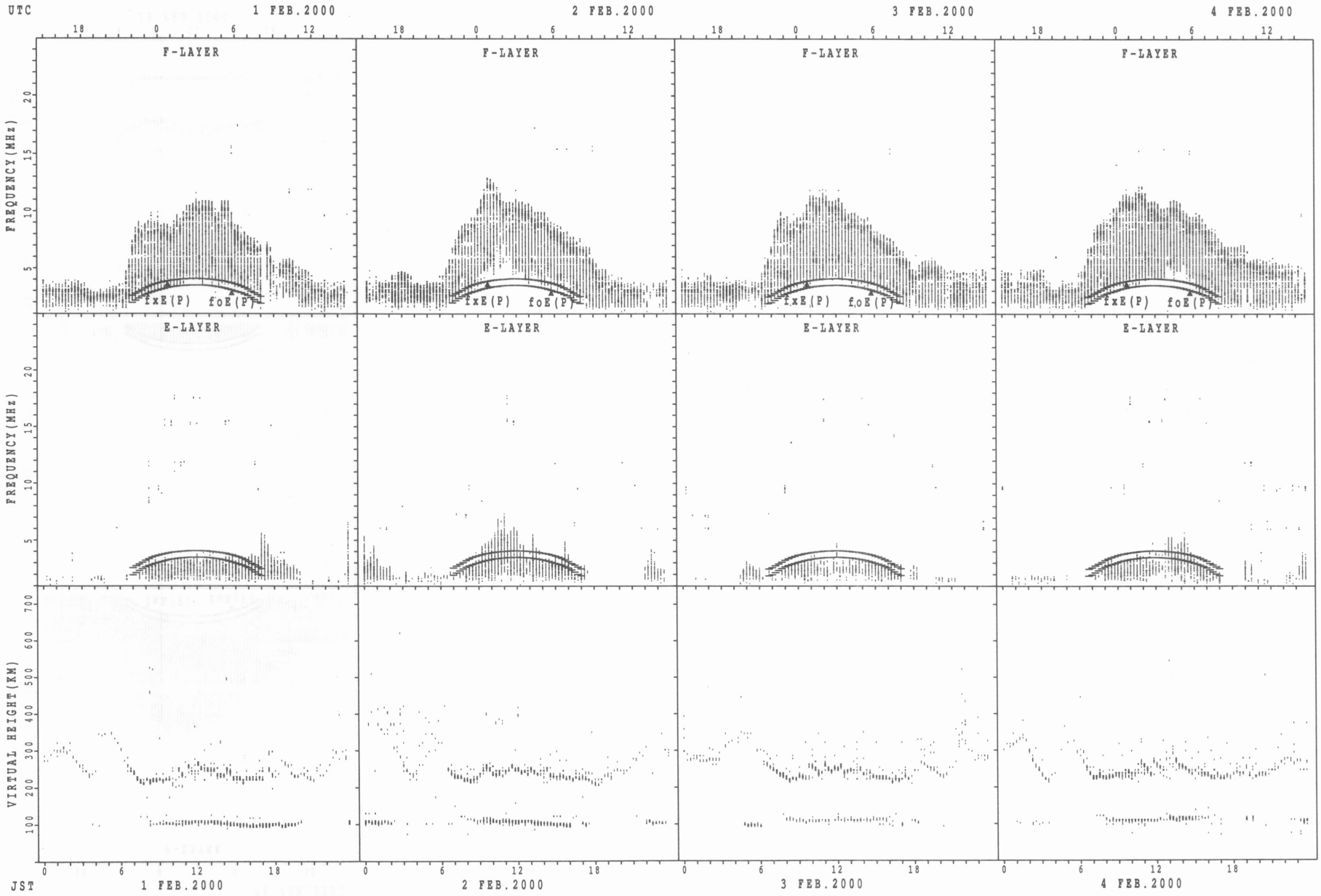


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



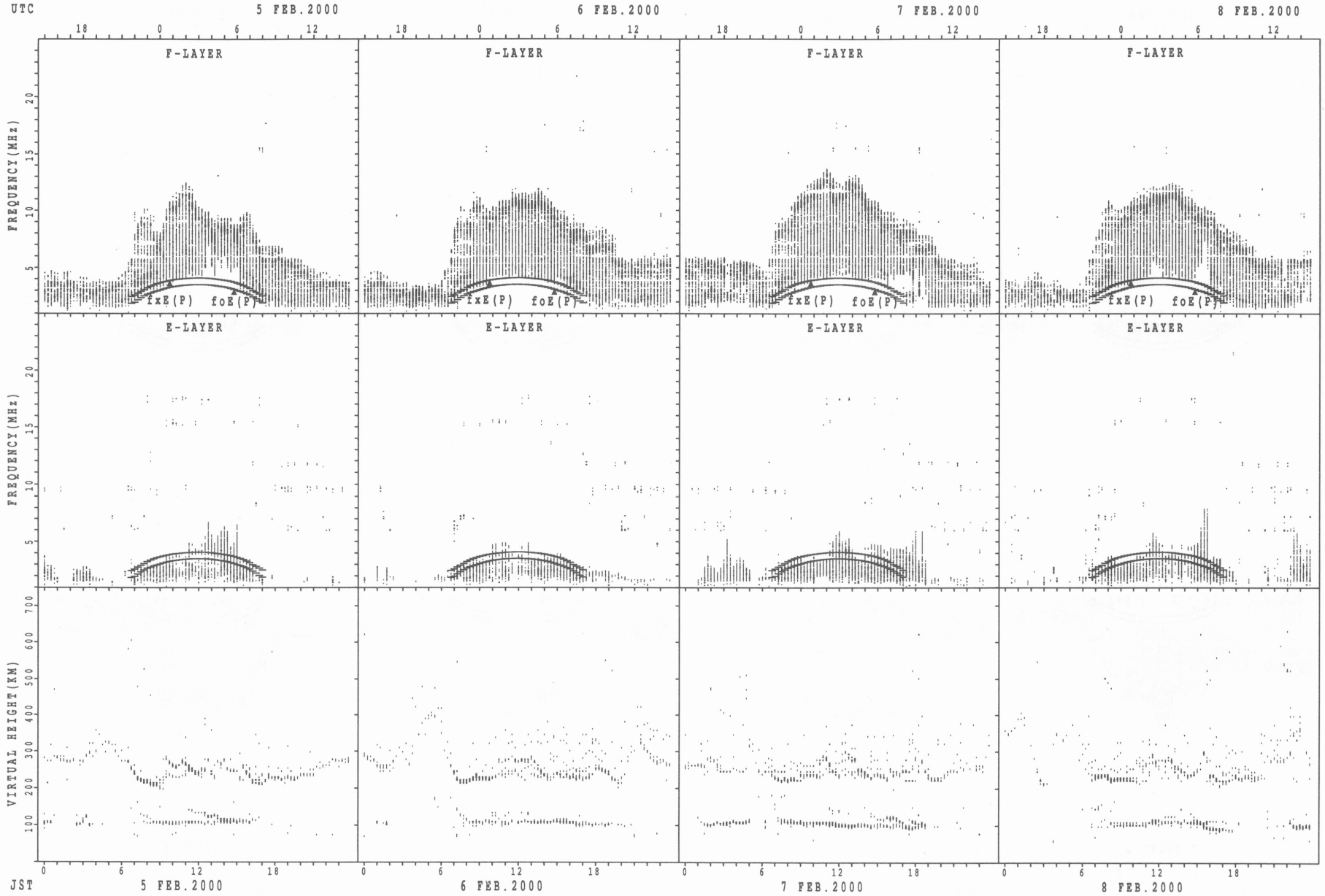
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



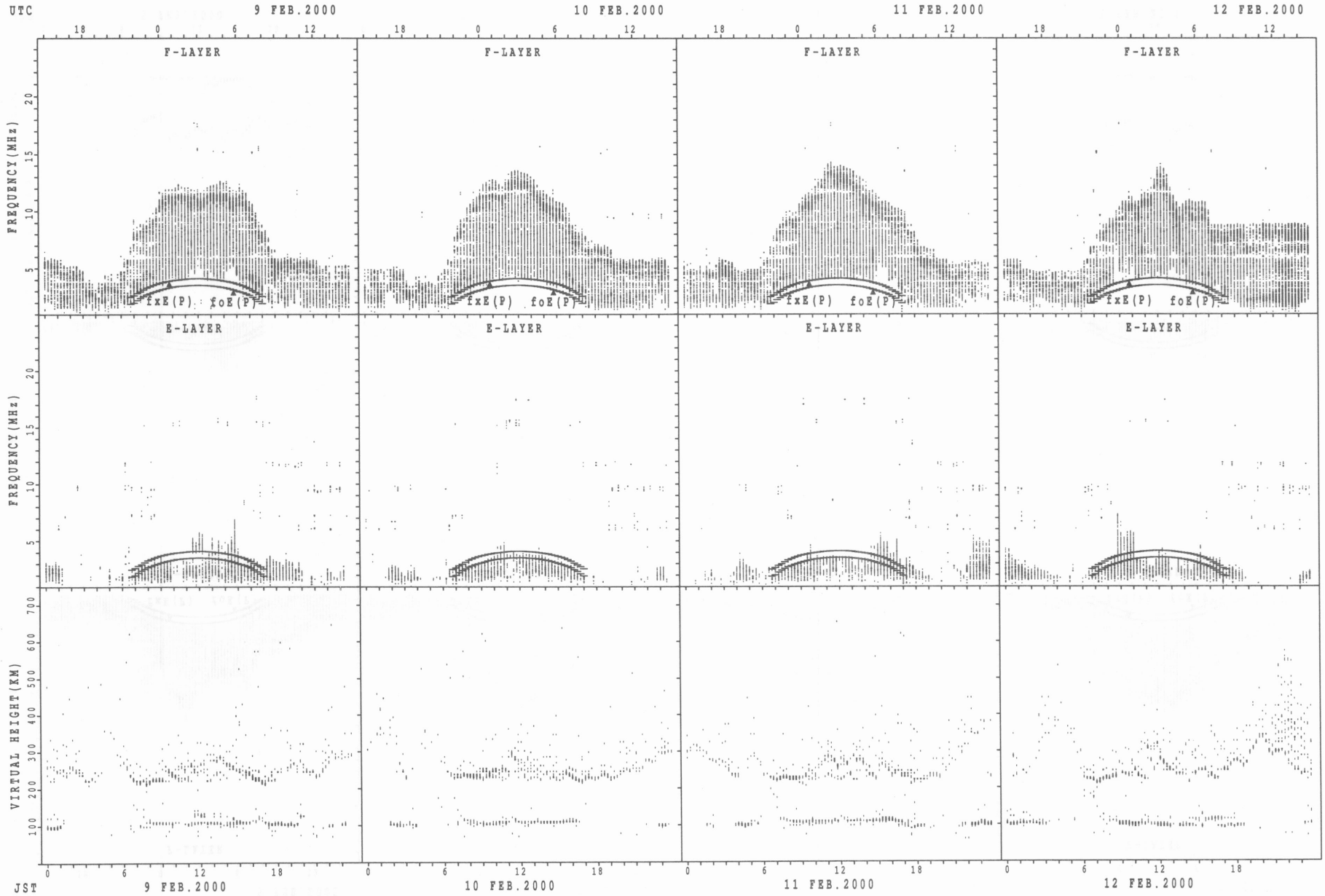
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



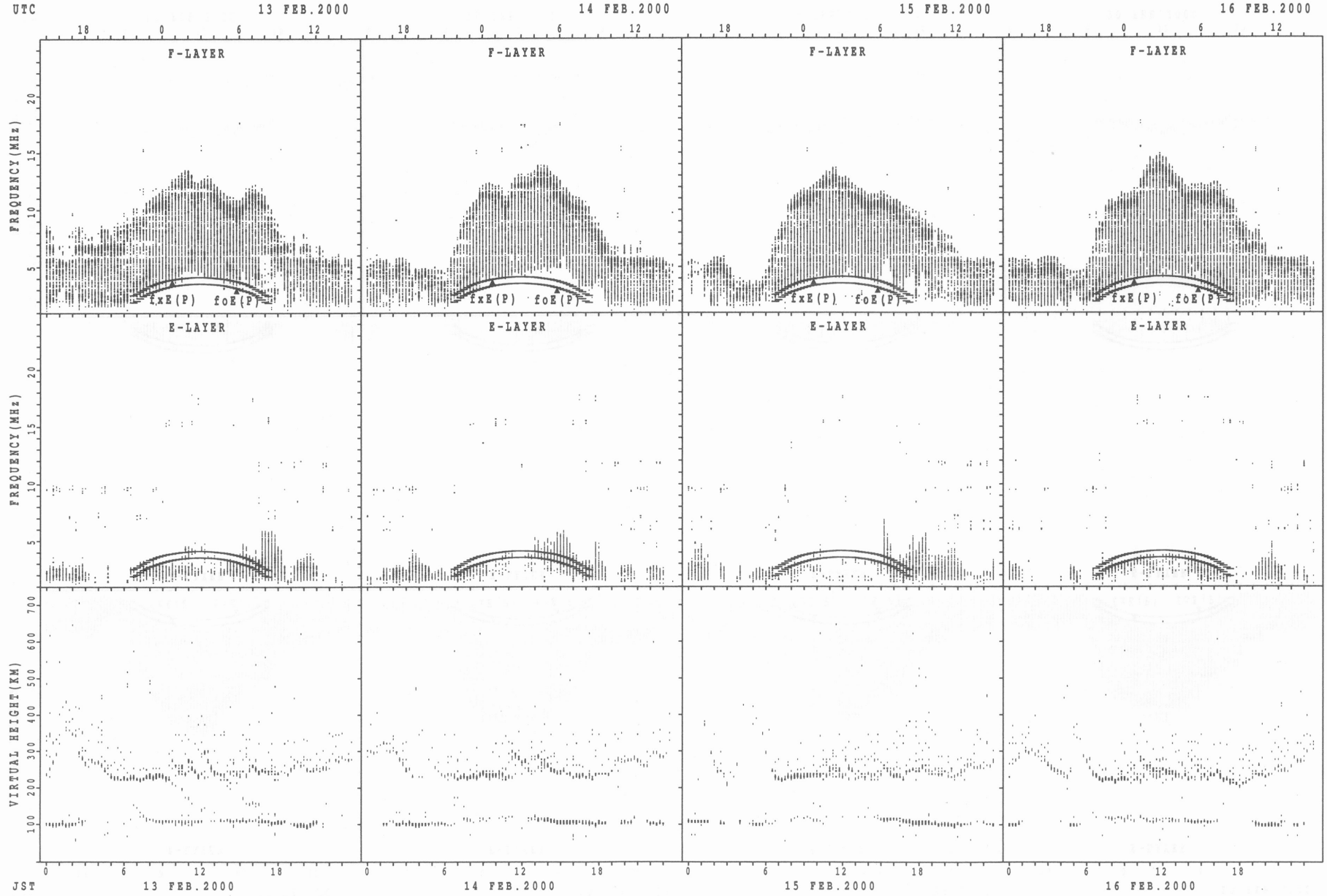
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

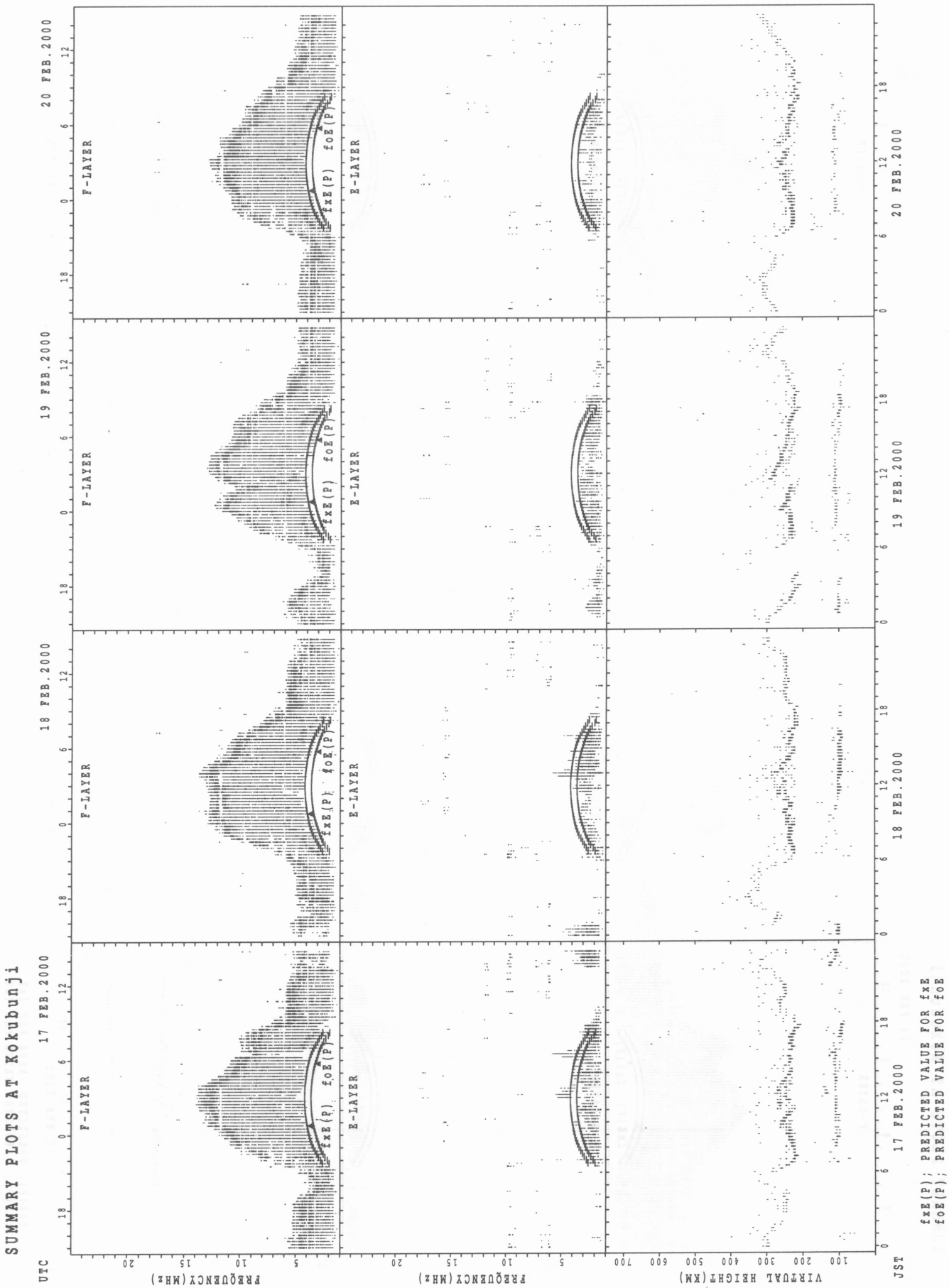


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

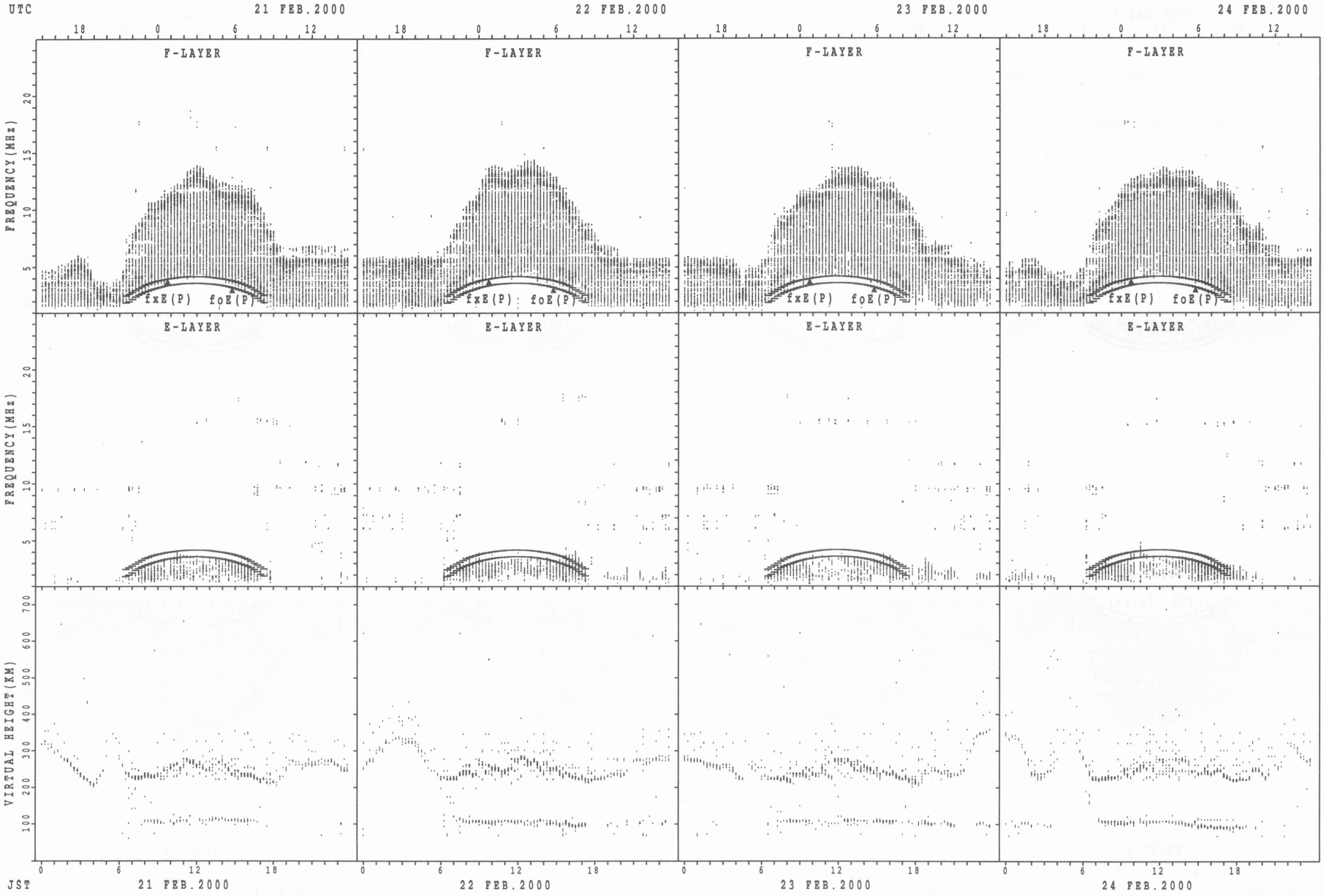
SUMMARY PLOTS AT Kokubunji



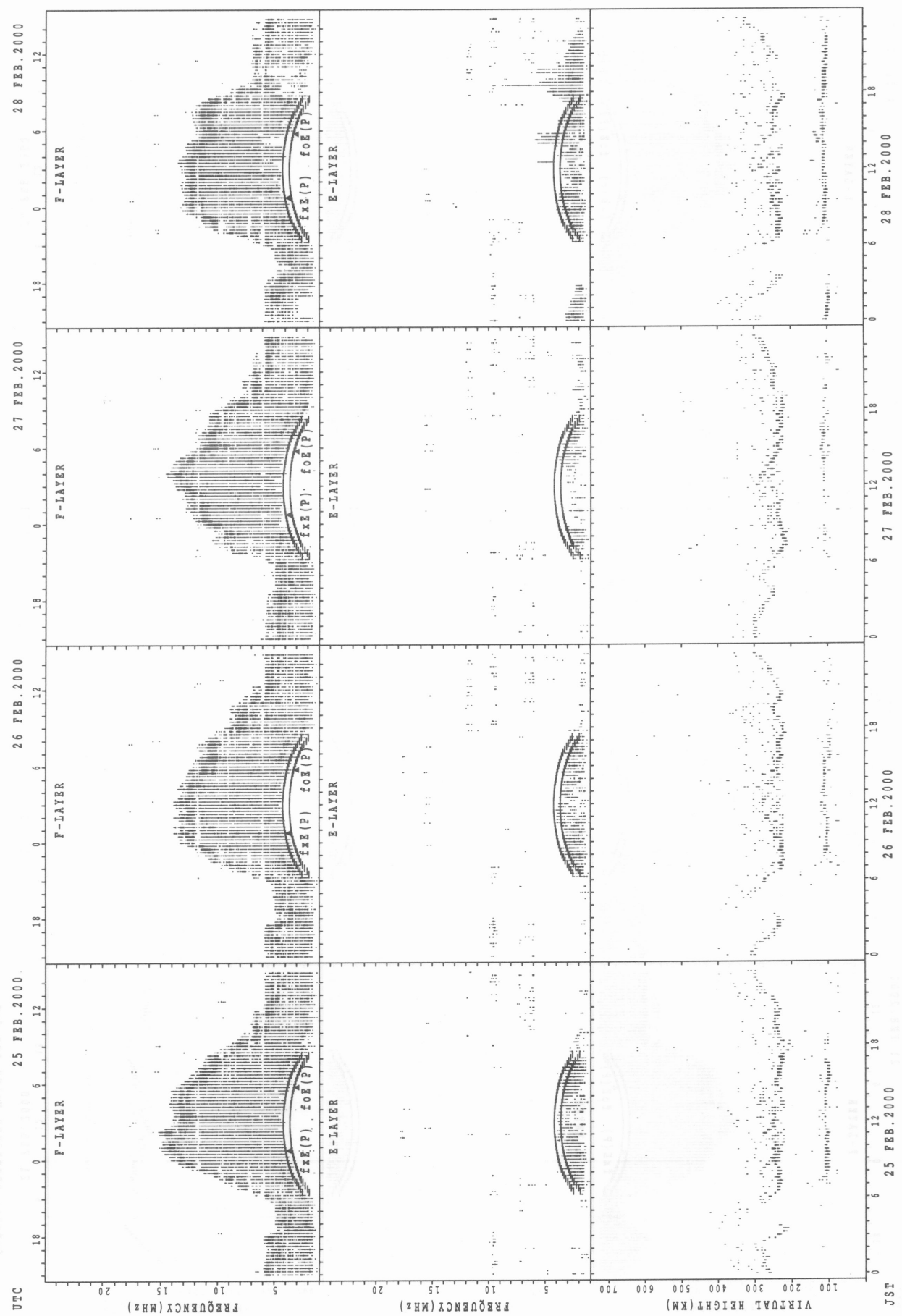
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
17 FEB.2000
18 FEB.2000
19 FEB.2000
20 FEB.2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

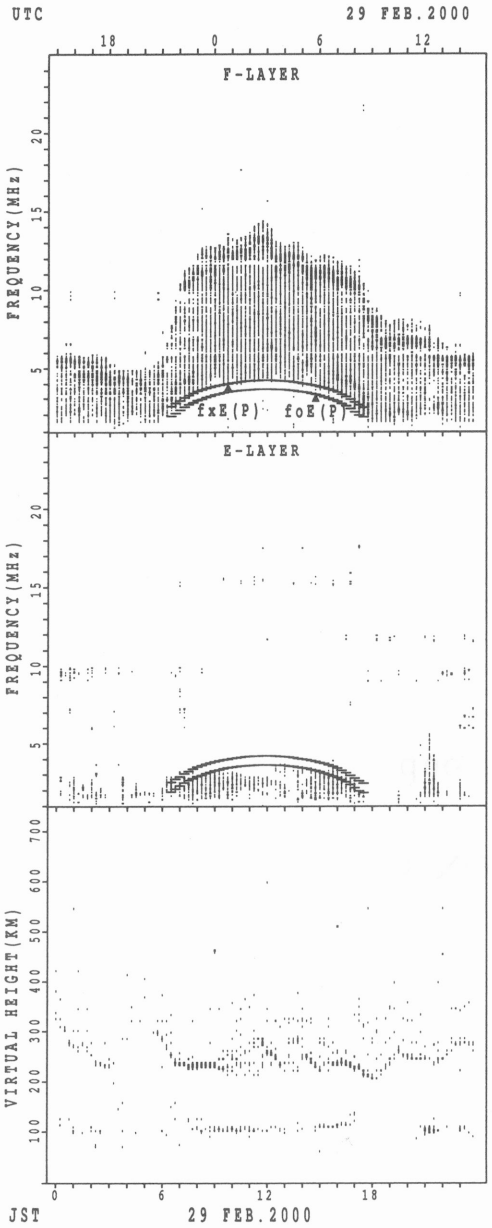
SUMMARY PLOTS AT Kokubunji



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


SUMMARY PLOTS AT Kokubunji
UTC
JST
25 FEB.2000
26 FEB.2000
27 FEB.2000
28 FEB.2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

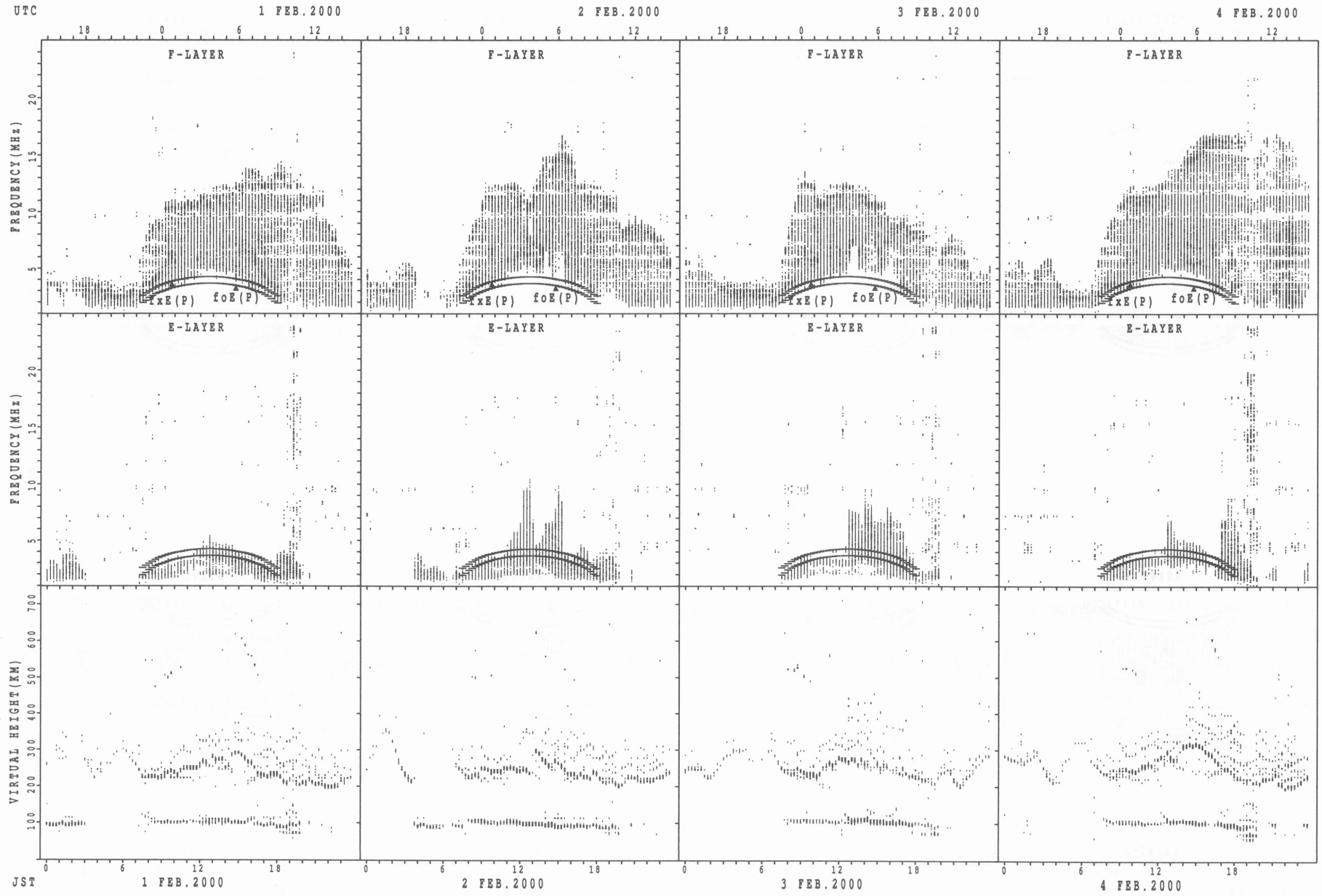


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS

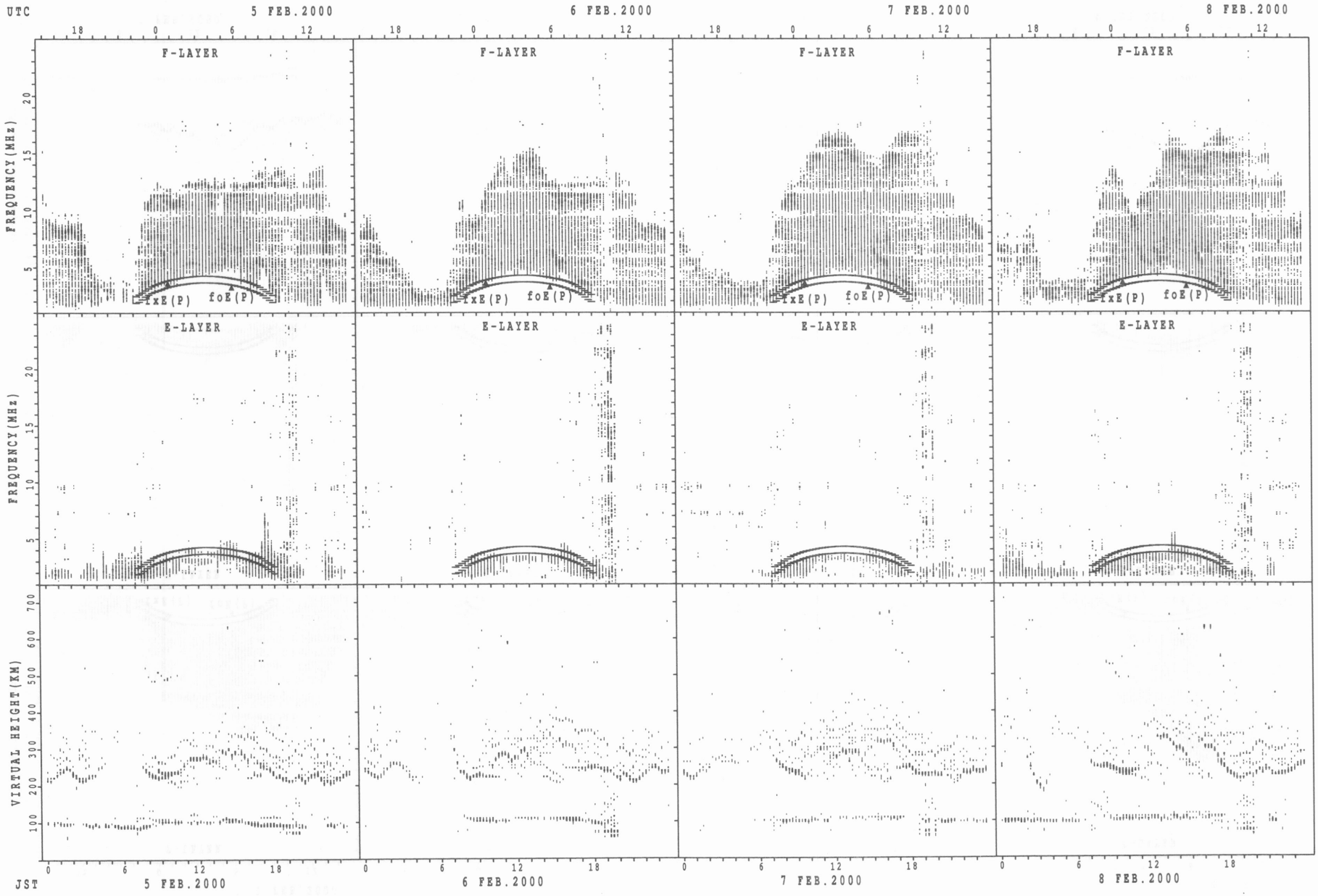
IONOSPHERIC DATA of Yamagawa is not available due to the ionosonde trouble.

SUMMARY PLOTS AT Okinawa



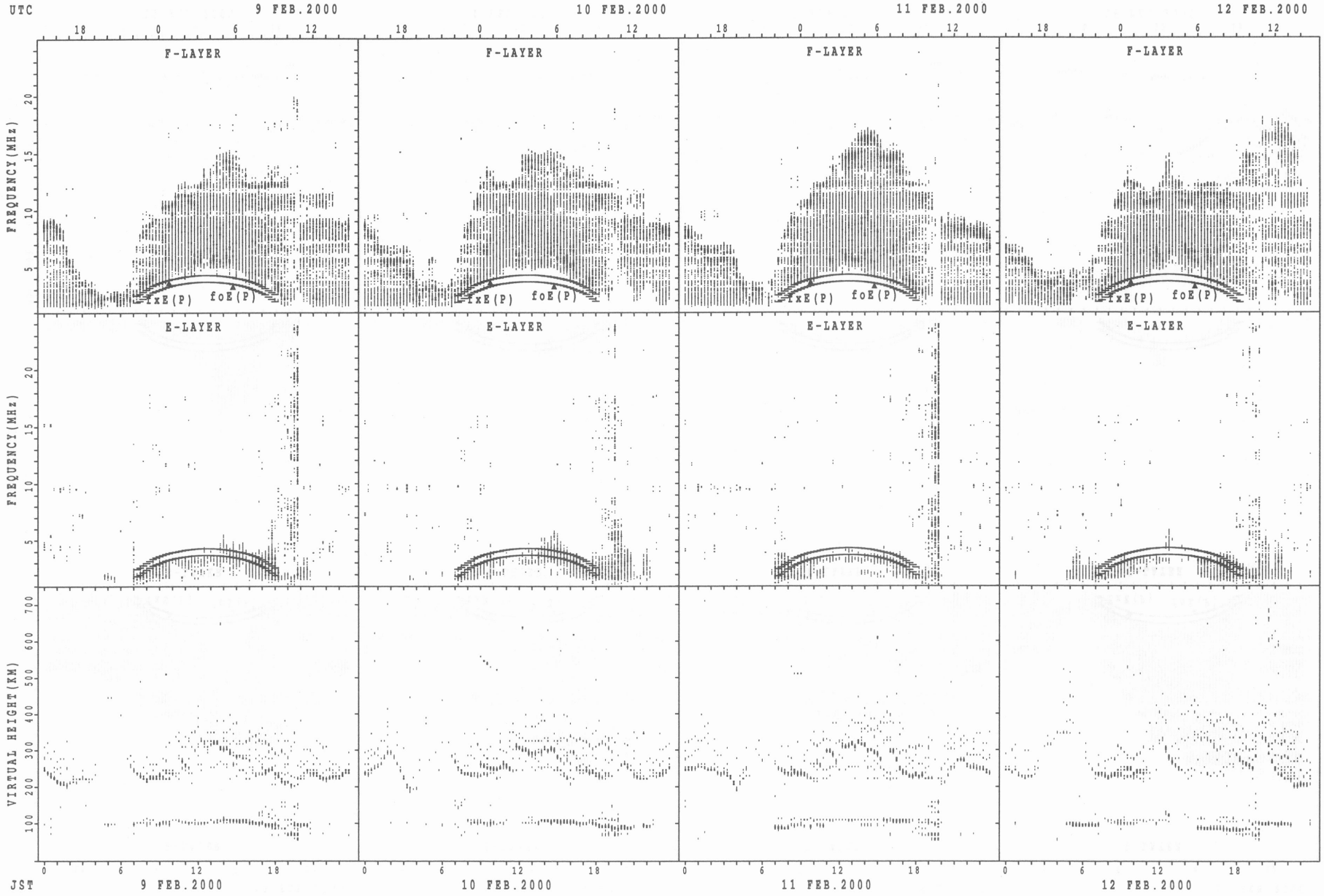
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



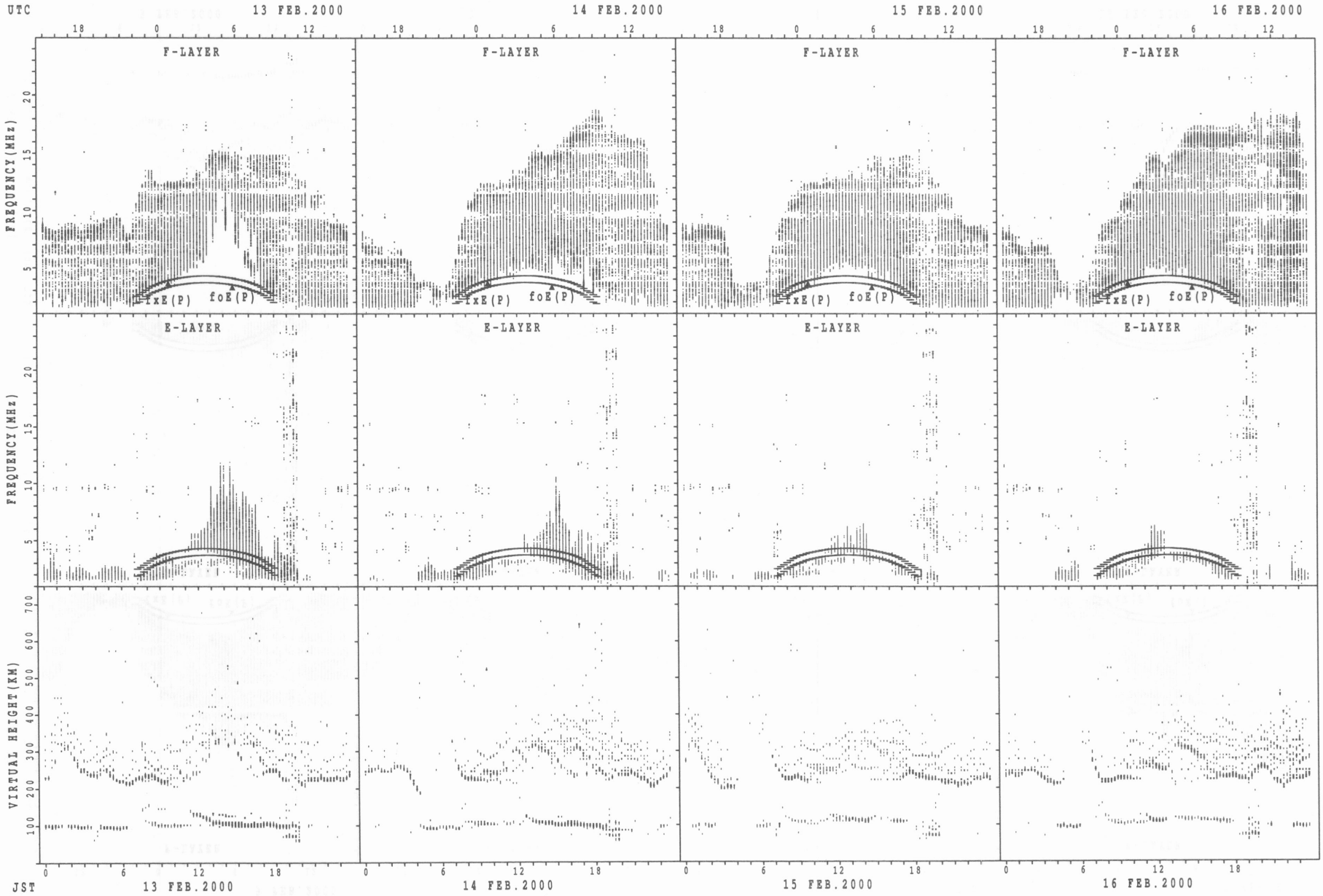
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



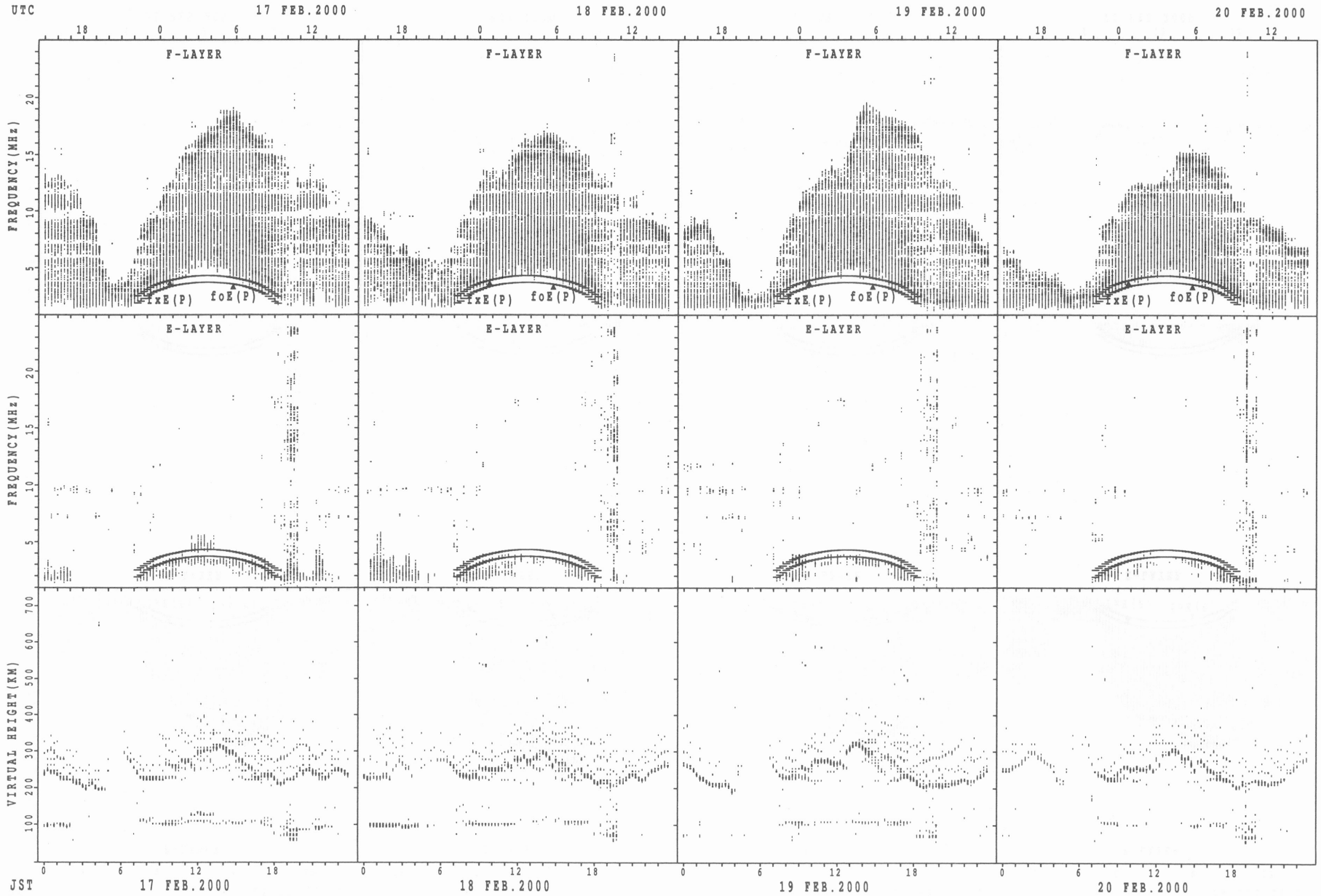
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



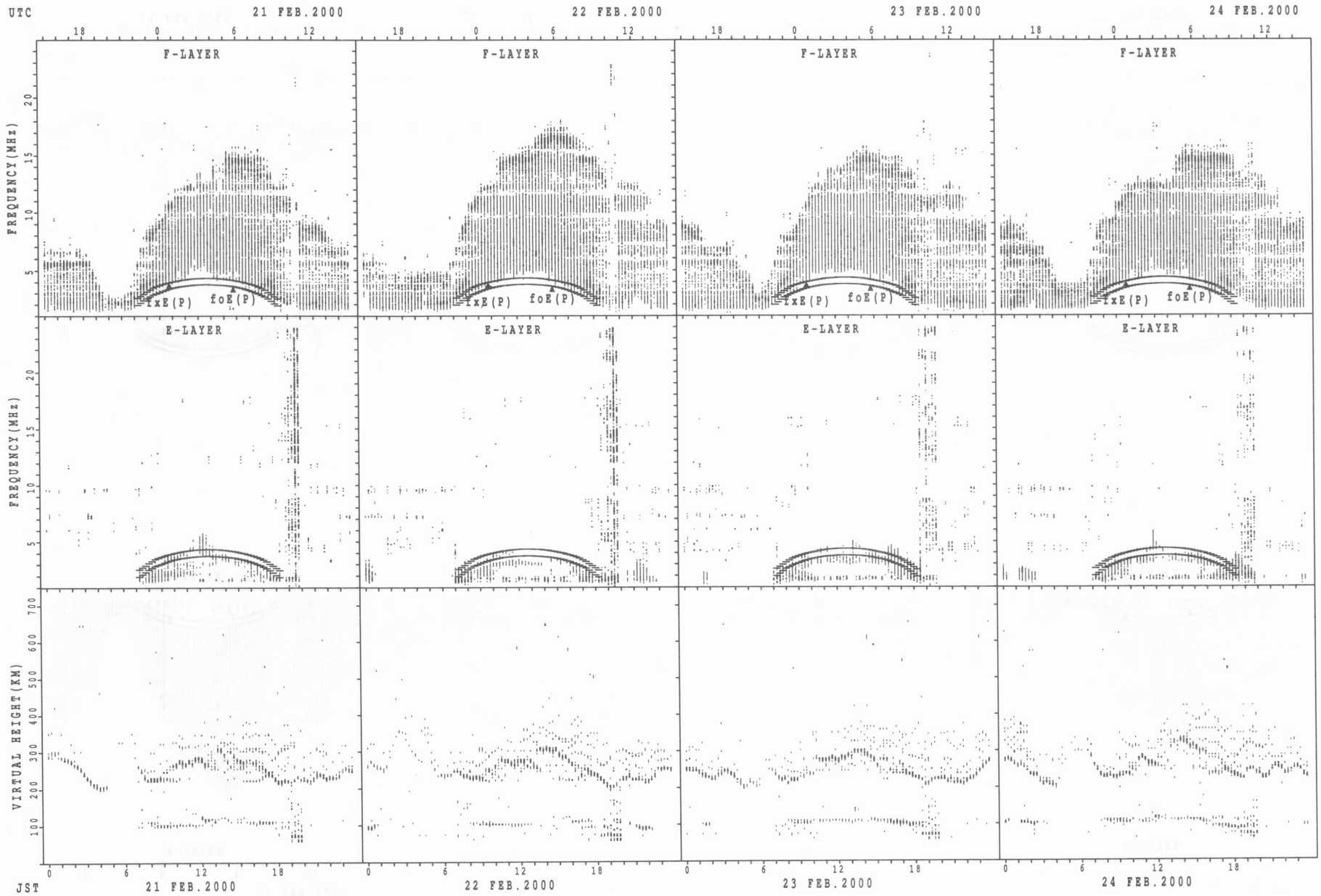
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



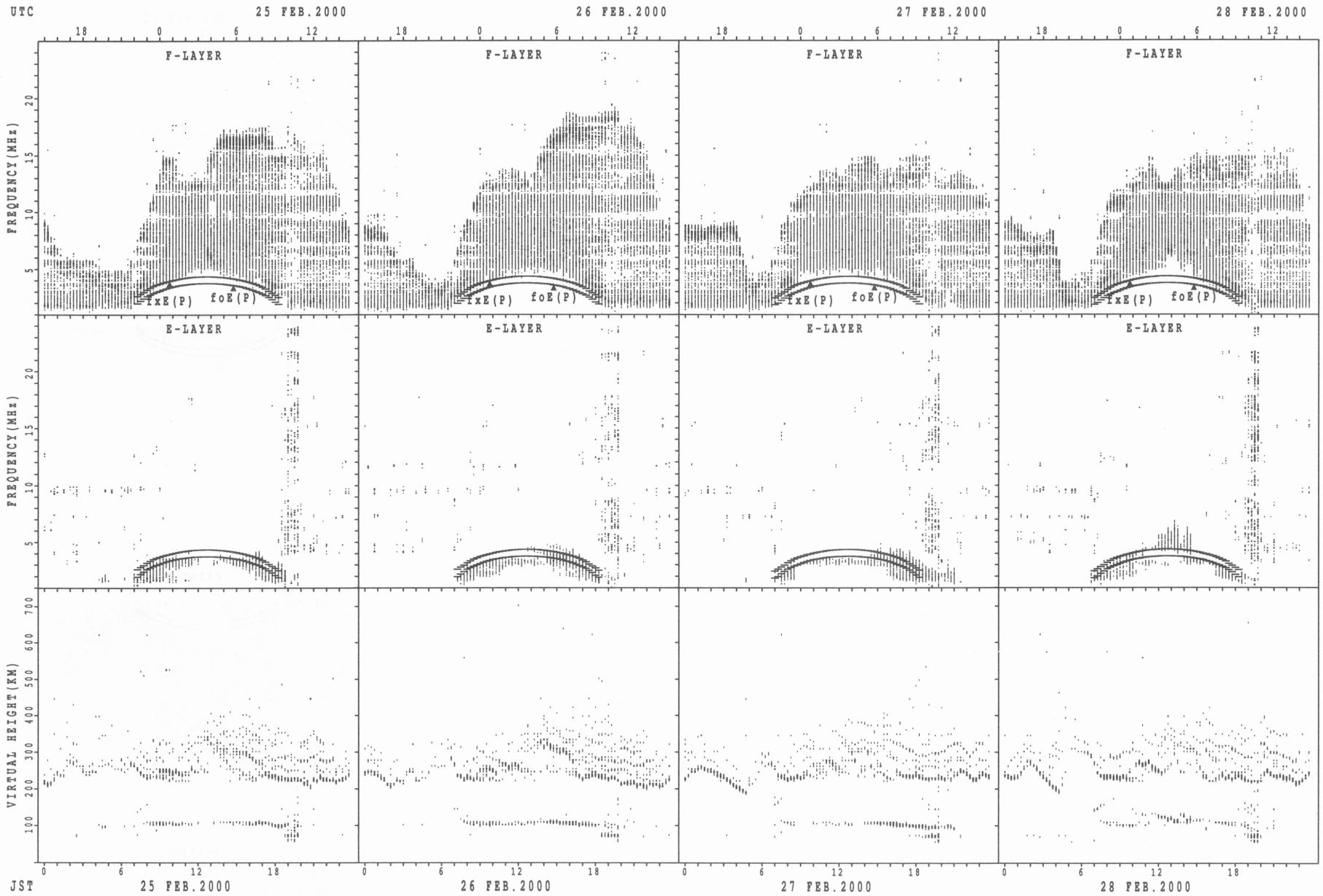
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



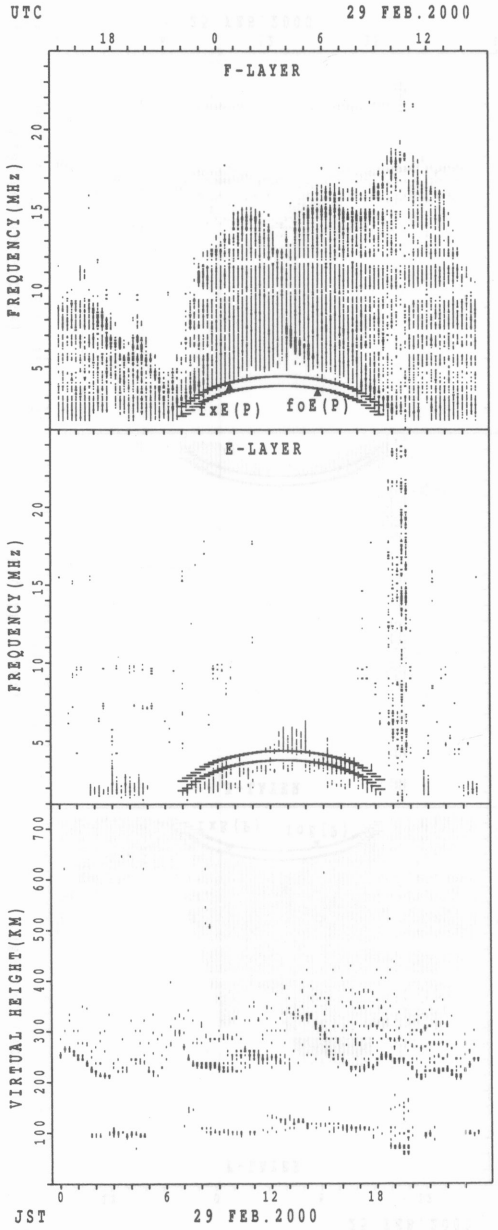
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

FEB. 2000 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	1						1	17	29	26	25	26	26	28	24	27	28	23	14	4	2			1
MED	302						444	242	228	230	242	238	244	246	248	240	242	240	262	294	325			386
U Q	151						222	259	233	238	248	250	252	257	254	248	246	248	264	305	350			193
L Q	151						222	239	224	224	233	232	238	238	239	234	238	234	256	279	300			193

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	16	9	9	16	14	8	5	18	29	24	23	26	26	27	23	27	24	17	13	15	12	12	12	12
MED	101	99	103	104	105	104	103	115	119	115	109	107	109	107	109	113	112	103	103	99	105	99	99	100
U Q	105	103	123	109	111	123	103	155	123	126	113	113	113	113	115	123	115	108	109	103	113	109	102	108
L Q	98	98	99	103	99	102	98	107	108	107	105	105	107	105	107	107	107	97	95	97	101	97	95	97

h'F STATION Kokubunji LAT. 39.7N LON. 140.1E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1			1		1	1	26	29	29	28	29	29	29	29	28	28	25	18	13	11	4	2	5
MED	242			378		300	296	250	234	242	246	262	268	256	256	257	252	248	270	308	324	332	404	336
U Q	121			189		150	148	260	240	255	254	274	279	276	268	264	264	264	288	335	342	344	472	448
L Q	121			189		150	148	242	230	235	240	255	260	249	248	250	243	242	260	289	296	312	336	225

h'Es

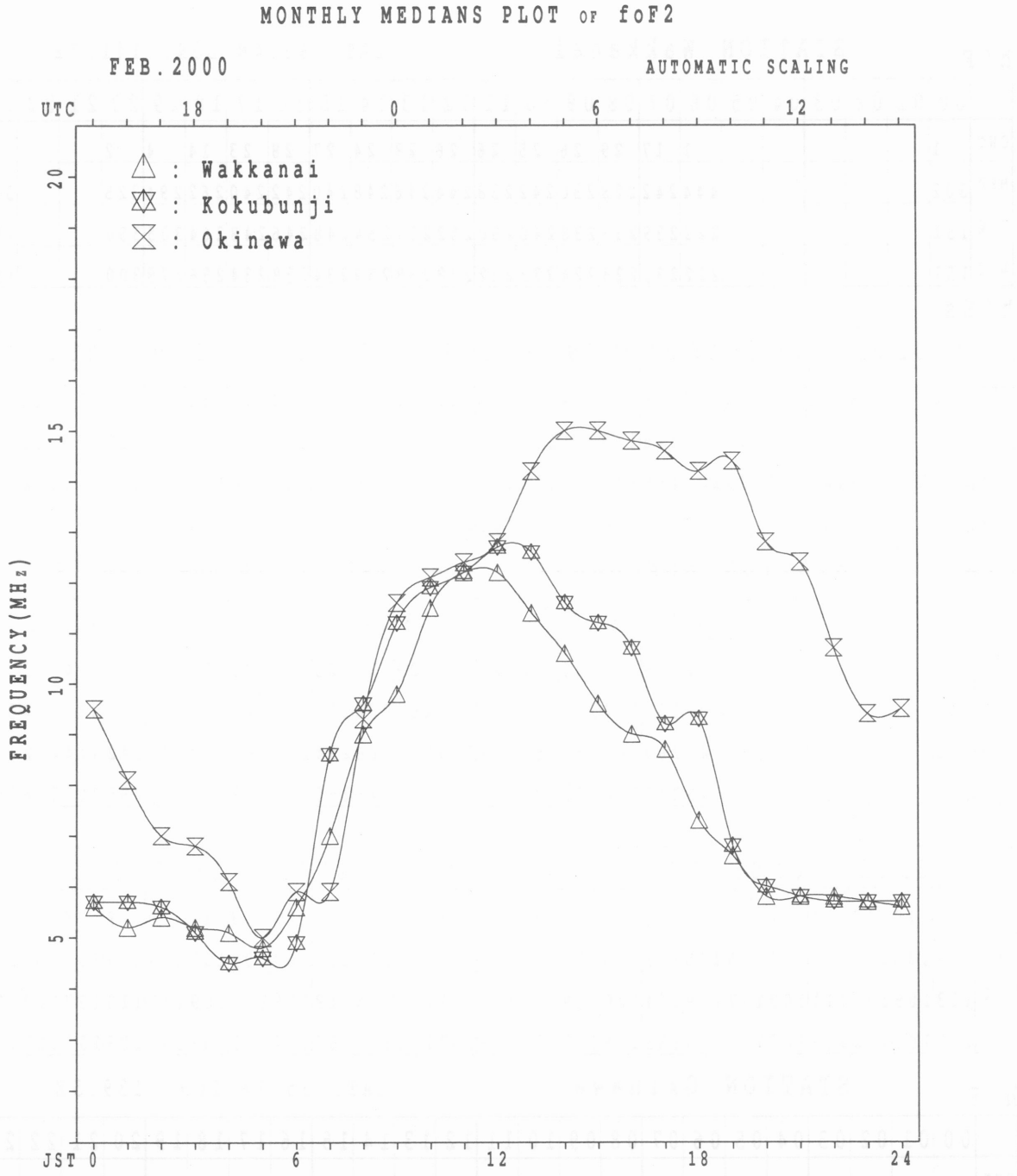
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	10	12	5	4	6	3	16	29	27	25	23	26	25	28	29	28	19	14	9	8	6	5	11
MED	107	106	105	107	106	105	105	155	113	113	111	111	113	113	113	113	107	99	107	107	107	105	107	107
U Q	113	109	107	111	109	107	109	164	120	119	117	115	121	118	115	118	115	111	109	113	110	107	110	109
L Q	103	103	102	103	103	103	95	135	109	107	107	107	107	110	110	107	104	95	97	104	103	103	103	105

h'F STATION Okinawa 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	22	16	11	11	5	1	1	1	29	28	29	29	29	29	28	29	29	28	28	24	27	26	25	25
MED	278	279	280	264	274	264	238	260	242	245	250	266	278	290	307	288	280	262	246	250	254	252	250	272
U Q	300	308	330	306	385	132	119	130	261	253	263	276	303	312	312	323	320	277	264	266	264	262	268	289
L Q	264	264	244	246	223	132	119	130	236	238	242	256	263	273	287	273	256	250	238	222	240	248	241	248

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	7	6	7	5	6	8	6	13	27	27	26	25	26	22	25	26	27	28	16	16	7	7	5	3
MED	99	101	99	97	96	96	96	97	113	107	107	109	111	111	113	110	107	107	98	94	91	99	95	97
U Q	101	101	101	100	97	99	97	148	119	107	117	118	117	115	115	115	113	110	101	100	97	105	103	99
L Q	97	101	97	95	93	95	93	90	107	101	105	106	107	109	109	105	105	103	94	89	91	95	92	95


MONTHLY MEDIANS PLOT OF foF2
FEB. 2000
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
⛛ : Kokubunji
⧖ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

FEB.2000 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	X 43	X 42	X 42	X 43	X 36	X 36	X 39												X 62	X 64	X 54	X 46	X 40	X 40
2	X 40	44	44	48	41	38	42												X 64	X 50	X 46	X 42	X 42	X 42
3	X 45	X 45	X 47	X 42	X 43	X 43	X 44												X 53	X 60	X 57	X 49	X 46	X 50
4	X 49	X 48	X 50	X 52	X 38	X 42	X 46												X 71	X 72	X 63	X 59	X 56	X 55
5	X 50	X 48	X 48	X 45	X 43	X 42	X 46												X 73	X 66	X 59	X 49	X 47	X 46
6	X 46	X 49	X 45	X 39	35	X 36	40												X 83	X 86	X 63	X 60	X 64	X 61
7	X 61	X 64	X 61	X 60	X 59	X 58	X 50												X 85	X 82	X 65	X 59	X 57	X 51
8	X 44	X 43	X 46	X 38	X 39	X 38	X 41												X 82	X 74	X 64	X 64	X 62	X 64
9	X 65	X 62	X 54	X 49	X 37	X 47													X 70	X 68	X 66	X 64	X 55	X 56
10	X 54	51	X 50	X 50	X 40	X 42	X 49												X 76	X 71	X 64	X 62	X 60	X 58
11	X 58	X 55	X 58	X 58	X 54	51	X 54												X 84	X 70	X 62	X 57	X 57	58
12	X 58	X 61	X 51	X 49	X 48	X 48	X 52												X 92	X 88	X 95	X 98	X 97	X 98
13	X 88	X 74	85	86	X 81	X 83	92					137							X 90	X 81	X 82	X 73	X 65	X 63
14	X 61	X 59	X 59	X 60	X 51	X 52	46												X 91	X 70	X 71	X 69	X 64	X 65
15	X 58	X 57	X 63	X 54	X 41	X 44	X 49												X 100	X 91	X 81	X 68	X 63	X 61
16	X 60	X 57	X 57	X 62	X 56	X 49	X 55												X 96	X 84	X 74	X 68	X 65	X 60
17	X 58	X 58	X 56	X 54	X 51	X 45	X 50												X 76	X 67	X 69	X 63	X 58	X 55
18	X 54	X 57	X 49	X 51	X 52	X 54	X 60												X 73	X 67	X 66	X 63	X 59	X 54
19	X 54	X 60	X 61	X 49	X 31	X 38	X 46												X 82	X 66	X 59	X 52	X 52	X 53
20	X 50	X 51	X 50	X 49	X 49	X 45	X 51												X 79	X 67	X 60	X 55	X 54	X 51
21	X 49	X 54	X 57	X 60	X 43	X 39													X 84	X 66	X 70	X 74	X 71	X 70
22	X 67	X 64	X 62	X 64	X 64	X 63													X 84	X 71	X 65	X 62	X 64	X 63
23	X 64	X 64	X 62	X 61	X 59	X 54													X 95	X 76	X 76	X 69	X 58	X 57
24	X 56	X 56	X 60	X 54	X 47	X 47													X 112	X 86	X 88	X 73	X 65	X 68
25	X 68	X 65	X 60	X 64	X 51	X 52													X 96	X 80	X 76	X 69	X 62	X 62
26	X 60	X 62	X 64	X 49	X 51	X 53													X 99	X 90	X 86	X 73	X 66	X 62
27	X 61	X 59	X 58	X 58	X 54	X 55													C	X 84	X 82	X 75	X 71	X 66
28	X 64	X 61	X 63	X 60	X 50	X 51													X 96	X 76	X 78	X 76	X 73	X 69
29	X 66	X 68	X 64	X 57	X 52	X 54													X 95	X 82	X 83	X 79	X 68	X 68
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	29	29	29	29	29	29	19					1							28	29	29	29	29	29
MED	X 58	X 57	X 57	X 54	X 49	X 47	X 49					137							X 84	X 72	X 66	X 64	X 62	X 60
U Q	X 62	X 62	X 62	X 60	X 53	X 54	X 52												X 95	X 83	X 80	X 73	X 65	X 64
L Q	X 50	X 50	X 50	X 49	X 40	X 42	X 44												X 74	X 67	X 62	X 58	X 56	X 54

FEB.2000 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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	37	36	36	37	30	30	34	72	89	87	82	96	106	105	106	85	74	69	56	58	48	40	34	35
2	34	F 34	F 36	F 40	F 35	F 31	34	65	87	98	124	104	106	102	96	86	79	73	58	44	40	36	36	36
3	39	39	41	36	37	37	38	69	96	90	111	114	107	94	92	81	73	64	47	54	51	43	40	44
4	43	42	44	46	32	36	40	70	88	100	112	118	104	99	102	92	86	74	65	66	57	53	50	R 49
5	44	42	42	39	36	36	40	77	96	78	108	120	100	90	91	86	92	66	67	60	53	43	42	40
6	40	43	39	33	F 27	30	F 35	80	93	107	98	106	113	112	110	97	89	86	77	80	57	54	58	55
7	55	58	55	54	53	52	44	78	94	112	121	134	120	127	113	103	95	90	79	76	59	52	50	44
8	38	37	40	32	33	32	35	72	106	97	108	111	116	121	109	101	96	83	76	68	58	58	56	57
9	59	56	48	43	32	41	42	79	92	107	116	118	116	119	122	115	106	86	64	62	60	58	49	50
10	48	F 43	44	44	34	36	43	75	98	117	124	122	132	127	114	105	95	77	70	65	58	56	54	52
11	52	J R 49	52	V 53	48	F 43	47	75	94	102	114	134	136	133	121	111	103	96	78	64	56	51	51	F 51
12	52	55	45	43	42	42	46	74	89	102	110	114	135	118	103	104	96	84	86	82	89	92	F 90	92
13	82	68	R 69	75	75	77	78	97	105	114	125	F 129	124	121	109	106	118	109	84	75	R 76	67	59	57
14	55	53	53	54	45	46	39	73	98	118	117	113	127	131	133	122	109	101	85	64	64	63	58	59
15	52	51	57	48	35	38	43	79	106	115	121	132	125	118	111	112	106	99	94	85	75	62	57	55
16	54	51	51	56	50	43	49	87	105	111	114	141	141	128	115	117	121	109	90	78	68	62	59	54
17	52	52	50	48	45	39	44	76	99	114	129	132	134	132	111	104	95	95	70	61	63	57	52	49
18	48	51	43	45	46	48	54	78	113	123	128	122	126	132	120	108	100	78	67	61	60	57	53	48
19	48	54	55	44	25	32	40	74	94	114	114	100	123	124	115	104	102	89	76	60	53	46	46	47
20	44	45	44	43	43	39	45	79	99	106	113	121	124	114	111	97	92	84	73	61	53	49	48	46
21	R 43	48	51	54	37	33	38	74	97	103	116	125	135	128	121	118	115	R 98	R 77	60	64	68	65	64
22	61	58	56	58	58	57	62	82	99	117	134	130	136	139	133	122	106	92	78	65	59	56	58	57
23	58	58	56	55	53	48	52	82	96	113	113	121	132	133	131	122	121	109	89	70	70	63	52	51
24	50	50	54	48	42	41	50	83	97	116	123	127	131	130	131	124	116	120	106	81	82	67	59	62
25	62	59	54	58	45	46	55	83	108	137	148	149	135	136	138	128	118	108	90	73	70	R 64	56	56
26	54	56	58	43	45	47	53	87	107	130	129	134	135	130	126	119	112	109	93	84	80	67	60	56
27	55	53	52	52	48	49	53	92	98	112	121	126	134	142	132	114	112	102	C	78	76	70	65	60
28	58	55	57	54	44	45	53	91	110	129	127	128	128	126	123	115	118	115	90	70	72	70	67	63
29	60	62	58	51	46	48	55	100	120	123	128	133	138	124	124	118	114	109	89	R 76	77	73	62	62
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29
MED	52	51	51	48	43	41	44	78	98	112	117	122	127	126	115	108	103	92	78	66	60	58	56	54
U Q	56	56	56	54	47	48	53	83	106	117	126	132	135	132	125	118	114	108	89	77	74	67	59	58
L Q	44	43	44	43	34	36	40	74	94	102	112	114	116	116	109	99	94	80	68	61	56	52	50	48

FEB. 2000 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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												L	L	L	L	L	L							
2										L	L	L	L	L	L	L								
3										L	L	U L 516	L	L		L								
4										L	L	L	L		L	L	L							
5										L	L	L	L	A	A									
6										L		L	L	L	L	L								
7									U L 340	L		L		L	L									
8												L	L	L	L									
9														L	L	L								
10										L	L		L		L									
11												L	L	L	L	L								
12											A	U L 608	L	L	U L 616	L								
13										L	L	L	L		L									
14											L		L	L	L									
15												L												
16												L	L		L									
17										L	L	L	L	L										
18										L	L	L	L	L	L									
19										L	L	L	L	L	L	L								
20										L	L	L	U L 504	L		L								
21											L	L	L	L	L									
22										L	L		L	L	L	L								
23										L	L		L	L	L	L								
24										L		L	L	L	L									
25										L	L	L	L			L								
26											L	L	L											
27												L	U L 644	L				L						
28										L			L	L	L	L	L							
29										L		L	L	L	L	L								
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									1			2	2		1									
MED									U L 340			U L 562	U L 574		U L 616									
U Q																								
L Q																								

FEB. 2000 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B				A	A				A	B						
									260	300	328			336	324	292								
2											A	A	A	R			A							
								168	260	308					324	296		172						
3								H					U A	R										
								192	264	308	332	352	360		336	312	268	172						
4								H							A									
								188	252	304	332	352	368	356	336	316	256	184						
5																A								
								200	272	308	348	368	372	360	340		252	156						
6																A	A	B						
								204	268	316	352	368	372	368	352									
7											R	U R	A	A				B						
								200	288	332	356	372	372		348	320	260							
8								A					U A				A	B						
									272	320	348	368	376	364	356	328								
9							K				U R					A		A						
							196	208	272	316	356	372	376	368	356		268							
10								H				A	A	A	U A									
								204	284	320	344				348	324	276	196						
11											A	R					A							
								204	284	328		372	376	372	348	324	272	184						
12										A	A	R	R	U R	R			A						
								204	284				376	364	360	324	264							
13													R			R		A						
								192	268	312	336	348	388	368	344	324	272							
14											R	A	A	A	A	A	A							
								228	280	324	356	372	376					216						
15										R	R	R	R				A	A						
								204	276	316	352	384	380	368	348	324								
16									A		A	A	A	A	A			B						
								208		316						320	268							
17											R													
								212	288	332	356	376	380	364	344	328	268	196						
18										R	R	U R			A	A		B						
								220	288	336	360	376	388			332	260							
19								H			R		R											
								232	276	320		364	372	368	340	320	268	192						
20											B	R			R			A						
								192	272	320		372	372	368	348	320	284							
21							B					A	A	A	R	A	A	R						
								216	272	320	352				348									
22							B					U R	U R		R		A	A						
								204	292	332	356	376	376	368	352	324								
23							B					R	R	R		R	A							
								224	292	332	352				352			204						
24							B					A	R					A						
								216	288	336	360			372	360	332	292							
25							B	H			R	A	A	R										
								216	284	324		376			360	344	292	200						
26							B	H				A	A	U R		R								
								232	296	328	356			372	360	336	280	208						
27							B			B	R	U R	U R	384		R	A							
								232	292			380	384		A	336		212						
28							B					R	R				A							
								220	300	340	364	376	384	380	368	344		220						
29							B					R	R											
								220	296	336	356	372		372	360	336	292	224						
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							1	27	28	27	21	20	19	19	25	23	18	15						
MED							K 196	208	282	320	352	372	376	368	348	324	268	196						
U Q								220	288	332	R 356	R 376	R 380	372	358	332	280	212						
L Q								200	272	316	346	368	372	364	342	320	264	184						

FEB. 2000 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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	E B 14	E B 14	E B 14	E B 14	18	E B 14	E B 14	E B 18	G	G 23	G 26	36	38	G 32	G 29	34	J A 30	J A 51	J A 31	J A 28	23	E B 16	E B 13	E B 15
2	J A 55	J A 30	J A 21	21	E B 14	20	E B 14	17	G	36	J A 46	J A 70	J A 54	G 32	G 30	36	38	J A 22	E B 15	E B 14	E B 15	E B 16	J A 21	24
3	E B 13	E B 15	E B 14	E B 14	E B 14	J A 26	J A 20	G	G	G	G	G	J A 43	G 33	G 32	G 28	G 25	J A 22	J A 24	E B 14	18	18	E B 14	17
4	E B 15	18	20	18	18	E B 14	E B 14	G	G	G	G	40	41	J A 48	J A 45	34	G 25	22	E B 14	J A 27	E B 14	E B 15	E B 16	E B 14
5	J A 37	E B 15	E B 14	J A 23	19	E B 14	E B 15	G	G	G	37	40	45	J A 51	J A 59	J A 60	J A 30	G	J A 14	E B 13	E B 14	E B 14	E B 14	E B 14
6	E B 14	J A 21	19	E B 16	E B 14	E B 15	20	G	G	G	J A 41	44	40	G	38	J A 36	J A 29	J A 24	J A 20	J A 21	21	E B 14	E B 15	E B 15
7	18	17	28	J A 27	J A 29	J A 21	J A 15	G	J G 28	36	40	40	J A 55	J A 40	39	J A 42	J A 39	J A 39	J A 52	19	18	19	E B 15	E B 13
8	E B 14	E B 14	E B 14	E B 16	17	E B 15	20	J A 24	32	G 25	38	J A 42	J A 48	J A 42	41	J A 45	34	J A 21	18	E B 15	E B 14	E B 16	J A 19	J A 46
9	J A 24	J A 22	E B 14	E B 15	E B 14	E B 14	K 20	G 20	G 24	36	39	40	J A 53	J A 48	G 27	J A 39	31	J A 24	J A 28	J A 28	J A 19	18	J A 20	24
10	E B 15	E B 15	J A 25	21	20	E B 13	E B 15	29	G 21	G 24	38	42	39	J A 40	38	G	G 27	G	E B 15	E B 14	E B 15	E B 15	E B 14	J A 23
11	E B 14	E B 15	28	E B 14	J A 22	J A 22	J A 19	G	G	G	38	G 36	G	G	G	J A 42	J A 34	J A 24	J A 19	20	J A 22	E B 15	19	J A 51
12	J A 38	J A 24	24	23	19	E B 14	E B 14	G	31	J A 63	58	G 25	40	G 29	G 26	35	J A 30	26	J A 22	E B 14	E B 16	E B 14	E B 16	18
13	24	26	J A 23	J A 19	E B 15	E B 14	E B 14	24	29	G	G 26	44	46	42	G	42	38	J A 55	J A 40	J A 22	J A 30	J A 26	E B 16	E B 16
14	E B 15	21	J A 22	J A 22	J A 30	J A 20	J A 19	J A 22	G	37	G 25	42	41	J A 49	J A 47	J A 51	J A 34	J A 28	J A 43	E B 14	J A 22	E B 13	J A 22	J A 20
15	J A 25	J A 42	E B 15	E B 13	J A 23	J A 21	24	G	30	G	G	G	G	G	38	36	J A 32	40	J A 45	J A J 31	J A 34	J A 28	23	24
16	J A 27	J A 21	E B 15	E B 14	E B 14	J A 22	E B 14	G 20	31	32	37	38	40	38	38	G 30	G 22	E B 20	E B 15	J A 18	J A 32	J A 26	E B 14	J A 22
17	22	E B 13	E B 14	E B 14	E B 15	E B 14	E B 15	G	31	G 23	39	G	47	42	39	38	G 19	J A 26	J A 20	E B 14	E B 14	E B 15	E B 14	J A 28
18	J A 39	J A 22	E B 14	20	E B 15	E B 14	E B 15	G	G	34	G 33	G	G 34	J A 52	44	34	J A 45	E B 18	E B 14	18	E B 15	E B 14	E B 14	E B 14
19	20	J A 22	J A 18	22	20	E B 15	19	G	31	G	G 34	G	G 30	G	G 25	G 22	G 20	J A 24	J A 22	22	20	20	E B 15	E B 16
20	E B 15	E B 14	E B 14	E B 15	E B 15	E B 14	E B 14	25	31	G	E B 40	G	G	G	G 18	36	G 22	21	16	18	E B 14	E B 14	E B 14	E B 14
21	E B 13	E B 14	18	E B 14	E B 15	E B 13	E B 14	G	G	G	G	39	38	37	G	34	J A 28	G	E B 14	E B 14	E B 13	E B 14	E B 14	E B 15
22	E B 14	E B 14	E B 16	E B 15	E B 14	E B 14	E B 15	26	G	36	40	G	G 34	G 31	G	G 27	J A 34	J A 25	E B 14	22	18	E B 15	E B 15	E B 14
23	E B 14	E B 15	E B 15	E B 15	E B 14	E B 14	E B 16	G	G	G 29	38	G	G 36	G 36	G 32	G 31	J A 32	24	E B 14	J A 26	22	23	E B 15	22
24	18	20	22	20	E B 14	E B 15	E B 15	26	G 28	G 31	40	40	G 36	G 32	G J 32	G 26	31	J A 26	22	E B 14	E B 14	E B 15	E B 14	E B 14
25	E B 14	E B 14	J A 22	16	E B 14	E B 13	E B 14	G	J G 26	J G 30	G 32	43	40	G 32	G 34	35	J G 29	22	J A 17	21	E B 15	E B 14	E B 15	E B 14
26	E B 14	E B 14	E B 16	E B 13	E B 13	E B 15	E B 14	J G 22	G 24	G 28	G 28	40	39	G	G	G	32	J A 24	20	E B 14	E B 16	E B 15	E B 14	E B 15
27	E B 15	E B 16	E B 15	E B 14	E B 14	E B 14	E B 15	26	32	E B 40	G 28	G 27	G	G	39	G 26	J G 30	A G 20	C E B 14				J A E 17	B 15
28	J A 25	J A 24	J A 19	E B 14	E B 15	E B 15	E B 15	28	33	37	G	G	G	G J 33	A 52	G 34	36	J A 24	J A 43	J A 45	J A 38	J A 28	J A 24	E B 15
29	E B 16	J A 24	J A 22	E B 15	E B 14	E B 15	E B 18	J A 26	33	G 26	39	G	G 29	G 26	G	G	34	28	E B 15	E B 16	E B 15	E B 28	E B 15	J A 20
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29
MED	E B 15	17	18	E B 15	E B 15	E B 14	E B 15	G	G	G	37	38	39	G	G	34	31	J A 24	J A 20	18	18	E B 15	E B 15	E B 16
U Q	J A 24	J A 22	J A 22	20	19	J A 18	19	24	31	36	40	41	J A 44	J A 42	39	J A 38	J A 34	J A 26	J A 26	J A 22	J A 22	J A 20	J A 18	J A 22
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G 30	G 34	G	G	G 32	G 32	G 32	G 28	G 21	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14

FEB. 2000 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 18	G	G 22	G 24	36	36	G 28	G 27	32	26	20	22	23	E B 14	E B 16	E B 13	E B 15
2	22	20	E B 13	E B 13	E B 14	E B 13	E B 14	G	G	34	39	40	43	U G 32	G 28	G 22	25	G 17	E B 15	E B 14	E B 15	E B 16	19	18
3	E B 13	E B 15	E B 14	E B 14	E B 14	19	16	G	G	G	G	G	40	U G 33	G 32	G 27	G 23	G	17	E B 14	E B 14	17	E B 14	16
4	E B 15	E B 13	E B 14	16	E B 14	E B 14	E B 14	G	G	G	G	38	40	44	41	G 28	G 23	G 18	E B 14	E B 14	E B 14	E B 15	E B 16	E B 14
5	20	E B 15	E B 14	E B 14	17	E B 14	E B 15	G	G	G	37	38	42	50	56	48	G 24	G	E B 13	E B 13	E B 14	E B 14	E B 14	E B 14
6	E B 14	E B 14	E B 13	E B 16	E B 14	E B 15	E B 15	G	G	G	40	42	39	G	37	33	26	20	17	18	E B 15	E B 14	E B 15	E B 15
7	E B 15	E B 14	20	19	22	17	E B 15	G	G 23	35	39	40	G 33	40	38	40	35	32	49	16	E B 14	E B 16	E B 15	E B 13
8	E B 14	E B 14	E B 14	E B 16	E B 13	E B 15	E B 15	22	30	G 21	36	40	42	40	39	41	29	19	E B 15	E B 15	E B 14	E B 14	E B 14	34
9	20	E B 14	E B 14	E B 15	E B 14	E B 14	K 20	G 17	G 22	35	U Y 38	U Y 40	50	46	G 24	34	30	20	26	18	18	E B 14	E B 12	E B 14
10	E B 15	E B 15	17	E B 15	14	E B 13	E B 15	G 17	G 19	G 23	37	39	39	38	38	G	G 24	G	E B 15	E B 14	E B 15	E B 15	E B 14	18
11	E B 14	E B 15	18	E B 14	17	14	E B 16	G	G	G	35	G 31	G	G	G	40	29	G	E B 14	E B 15	E B 14	E B 15	E B 14	17
12	29	18	E B 15	E B 15	E B 13	E B 14	E B 14	G	30	46	52	G 24	G 29	G 27	G 24	35	28	21	18	E B 14	E B 16	E B 14	E B 16	E B 14
13	14	20	18	E B 16	E B 15	E B 14	E B 14	22	28	G	G 24	42	45	41	G	39	36	50	31	E B 15	23	17	E B 16	E B 16
14	E B 15	E B 14	E B 14	E B 13	24	E B 14	E B 14	G	G	35	G 24	41	40	45	44	47	32	G 18	20	E B 14	16	E B 13	18	18
15	18	34	E B 15	E B 13	17	E B 14	14	G	30	G	G	G	G	G	38	35	30	37	21	20	26	20	E B 15	E B 14
16	21	E B 14	E B 15	E B 14	E B 14	16	E B 14	G 17	29	G 29	36	38	40	38	36	G 29	G E 20	B E 20	B E 15	B E 14	22	18	E B 14	E B 13
17	E B 13	E B 13	E B 14	E B 14	E B 15	E B 14	E B 15	G	30	G 22	38	G	47	40	39	36	G 18	G	18	E B 14	E B 14	E B 15	E B 14	22
18	28	E B 14	E B 14	E B 15	E B 15	E B 14	E B 15	G	G	G 28	G 32	G	G 29	41	38	G 24	G E 20	B E 18	B E 14	B E 13	B E 15	B E 14	B E 14	B E 14
19	E B 14	E B 14	E B 17	14	E B 14	E B 15	E B 15	G	30	G	G 31	G	G 27	G	G 24	G 20	G 18	G E 18	B E 15	B 16	E B 17	E B 15	E B 15	E B 16
20	E B 15	E B 14	E B 14	E B 15	E B 15	E B 14	E B 14	24	31	G E 40	B	G	G	G	G 17	36	G 19	20	16	E B 15	E B 14	E B 14	E B 14	E B 14
21	E B 13	E B 14	E B 13	E B 14	E B 15	E B 13	E B 14	G	G	G	G	38	38	U Y 37	G	34	28	G	E B 14	E B 14	E B 13	E B 14	E B 14	E B 15
22	E B 14	E B 14	E B 16	E B 15	E B 14	E B 14	E B 15	24	G	35	38	G	G 31	G 28	G	G 26	28	21	E B 14	E B 15	E B 13	E B 15	E B 15	E B 14
23	E B 14	E B 15	E B 15	E B 15	E B 14	E B 14	E B 16	G	G	G 27	38	G	U G 36	U G 34	G U 31	G 31	30	22	E B 14	20	E B 15	E B 14	E B 15	E B 14
24	E B 14	17	E B 14	E B 14	E B 14	E B 15	E B 15	24	G 26	G 28	38	40	U G 36	G 30	G 30	G 24	G 22	21	18	E B 14	E B 14	E B 15	E B 14	E B 14
25	E B 14	E B 14	E B 14	16	E B 14	13	E B 14	G	G 23	G 27	U G 32	40	40	G 32	G 32	G 28	G 26	21	15	E B 15	E B 15	E B 14	E B 15	E B 14
26	E B 14	E B 14	E B 16	E B 13	E B 13	E B 15	E B 14	G 18	G 21	G 26	G 27	40	U Y 39	G	G	G	G 24	24	15	E B 14	E B 16	E B 15	E B 14	E B 15
27	E B 15	E B 16	E B 15	E B 14	E B 14	E B 14	E B 15	25	31	E B 40	U G 28	G 25	G	G	U Y 39	G 24	28	G 18	C E 14	B	17	E B 14	E B 15	E B 15
28	E B 14	16	17	E B 14	E B 15	E B 15	E B 15	26	G 26	37	G	G	G	G 31	41	G 30	30	G 20	40	22	24	E B 14	16	E B 15
29	E B 16	18	E B 14	E B 15	E B 14	E B 15	E B 15	25	32	G 24	38	G	G 28	G 25	G	G	33	25	E B 15	E B 16	E B 15	E B 15	E B 15	E B 14
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29
MED	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	G	G	G	36	38	38	G	G	G	26	G	15	E B 15	E B 15	E B 15	E B 15	E B 15
U Q	17	16	16	E B 15	15	E B 15	E B 15	22	30	34	38	40	40	40	38	36	30	21	19	16	16	16	E B 15	16
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G	G 27	G 32	G	G 36	G 32	G 30	G 28	G 23	G 20	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14

FEB. 2000 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB.2000 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

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	14	14	14	14	14	14	14	18	13	14	16	15	16	16	18	17	14	14	14	15	14	16	13	15
2	15	15	13	13	14	13	14	14	16	15	18	20	16	18	17	16	16	13	15	14	15	16	14	14
3	13	15	14	14	14	14	14	13	16	17	18	16	20	20	20	17	16	15	14	14	14	14	14	14
4	15	13	14	14	14	14	14	13	14	15	15	15	18	20	20	20	17	16	14	14	14	15	16	14
5	14	15	14	14	14	14	15	15	15	14	16	17	16	18	15	16	15	12	13	13	14	14	14	14
6	14	14	13	16	14	15	15	15	16	14	16	16	20	17	16	16	15	15	15	14	15	14	15	15
7	15	14	15	14	14	15	15	14	14	15	16	18	15	16	15	15	15	16	15	14	14	16	15	13
8	14	14	14	16	13	15	15	14	15	15	15	15	15	18	20	16	14	16	15	15	14	14	14	15
9	14	14	14	15	14	14	14	15	15	16	22	18	20	20	16	15	16	15	15	15	14	14	12	14
10	15	15	14	15	14	13	15	13	14	15	17	19	21	18	19	16	16	13	15	14	15	15	14	13
11	14	15	14	14	14	13	16	14	15	16	16	17	18	18	18	18	15	15	14	15	14	15	14	15
12	15	14	15	15	13	14	14	14	14	16	16	16	18	22	16	16	14	15	14	14	16	14	16	14
13	14	16	16	16	15	14	14	15	16	15	15	14	20	18	20	16	18	14	15	15	14	14	16	16
14	15	14	14	13	14	14	14	14	17	17	17	22	28	25	22	19	18	17	14	14	14	13	13	14
15	13	14	15	13	14	14	14	16	14	18	18	22	26	22	23	18	18	15	16	16	14	16	15	14
16	12	14	15	14	14	14	14	14	17	20	23	20	22	22	19	18	18	20	15	14	14	14	14	13
17	13	13	14	14	15	14	15	15	15	16	16	20	20	20	20	21	17	15	14	14	14	15	14	14
18	14	14	14	15	15	14	15	14	14	19	20	24	21	18	15	15	14	18	14	13	15	14	14	14
19	14	14	14	14	14	15	15	14	15	16	21	19	21	21	18	16	15	14	15	16	15	15	15	16
20	15	14	14	15	15	14	14	14	15	18	40	22	20	19	15	19	16	16	13	15	14	14	14	14
21	13	14	13	14	15	13	14	16	15	15	20	17	20	21	19	18	15	16	14	14	13	14	14	15
22	14	14	16	15	14	14	15	15	14	16	16	24	20	20	19	17	15	14	14	15	13	15	15	14
23	14	15	15	15	14	14	16	16	15	20	18	22	19	21	21	18	17	15	14	14	15	14	15	14
24	14	14	14	14	14	15	15	15	16	16	20	21	20	21	20	14	15	14	14	14	14	15	14	14
25	14	14	14	12	14	13	14	15	16	16	18	19	28	26	21	19	15	15	14	15	15	14	15	14
26	14	14	16	13	13	15	14	14	14	15	15	20	27	22	23	19	16	15	12	14	16	15	14	15
27	15	16	15	14	14	14	15	16	14	40	22	20	28	21	20	16	15	14	C	14	14	14	15	15
28	14	13	14	14	15	15	15	17	15	16	17	17	20	19	18	17	17	16	15	16	15	14	14	15
29	16	15	14	15	14	15	15	15	17	16	18	17	22	20	18	18	16	16	15	16	15	15	15	14
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29
MED	14	14	14	14	14	14	15	15	15	16	17	19	20	20	19	17	16	15	14	14	14	14	14	14
U Q	15	15	15	15	14	15	15	15	16	17	20	20	22	21	20	18	17	16	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	16	16	18	18	16	16	15	14	14	14	14	14	14	14

FEB.2000 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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	302	295	291	309	286	279	286	350	354	360	340	322	333	328	315	333	347	325	322	315	318	322	315	287
2	293	287F	282F	320F	322F	301F	301	340	349	330	342	336	328	334	327	332	337	329	330	324	309	308	286	283
3	288	290	304	286	268	277	297	331	354	346	323	324	315	328	323	330	331	317	298	296	316	289	273	285
4	287	274	278	320	309	284	284	347	333	322	320	322	317	298	320	309	327	314	301	311	314	306	294	299R
5	302	286	291	295	292	284	296	330	366	327	322	324	319	315	310	305	337	319	315	314	308	313	304	314
6	289	299	308	298	273F	265	268F	329	342	341	323	304	298	294	297	301	306	299	293	311	294	267	270	282
7	292	301	291	300	251	260	301	334	321	313	301	304	292	295	304	314	302	310	295	307	299	298	303	322
8	266	249	268	358	274	258	296	339	352	332	309	299	295	303	300	301	312	304	313	307	290	277	282	295
9	295	311	308	340	301	264	284	350	343	307	311	310	302	292	299	297	315	316	282	282	293	300	290	285
10	273	258F	262	291	276	274	290	327	335	317	312	289	293	295	295	305	323	316	296	307	294	303	292	291
11	284	J 275R	285	282V	299	288F	299	340	339	312	302	294	291	293	291	294	299	316	312	303	294	273	271	273F
12	276	299	278	264	252	257	305	347	329	315	310	293	288	303	274	286	307	297	282	266	248	253	262F	282
13	279	249	253R	279	280	304	309	346	330	320	310	316F	291	299	291	290	303	327	310	296	294R	292	275	279
14	279	274	274	320	265	285	294	328	338	329	321	294	297	289	299	294	301	302	297	279	280	283	272	272
15	244	248	290	303	253	244	283	336	328	329	310	303	296	302	296	297	305	310	309	299	305	293	290	289
16	286	284	282	305	314	266	290	347	344	325	306	312	311	303	296	303	300	314	307	302	306	300	285	279
17	272	278	283	295	309	261	290	340	335	325	320	309	306	309	302	315	309	325	308	291	293	293	278	274
18	279	301	267	251	254	274	307	326	332	331	330	307	302	308	306	307	316	329	320	294	297	302	301	273
19	274	308	333	343	357	268	303	337	337	327	331	301	305	309	310	307	314	334	324	303	305	288	279	297
20	285	283	279	278	283	281	292	343	345	334	319	316	312	302	316	319	321	319	312	317	302	295	285	278
21	281R	278	300	334	353	285	295	342	334	319	316	295	304	300	299	299	309	316R	313R	282	286	294	290	290
22	297	271	259	260	263	273	316	342	333	312	322	311	296	298	298	312	317	320	306	300	301	285	291	287
23	285	293	302	300	306	294	306	342	345	326	317	300	300	301	302	308	303	316	320	294	307	306	277	265
24	263	265	311	307	259	262	287	330	324	313	308	302	294	291	292	297	290	305	302	286	310	289	259	280
25	285	286	269	315	269	265	303	328	299	320	310	303	294	285	289	297	302	305	307	291	305	297R	280	272
26	274	281	310	300	265	279	289	335	315	310	314	307	294	284	288	297	298	308	301	292	308	296	288	284
27	278	275	282	286	288	281	288	342	334	307	304	300	293	296	298	297	304	306	C	292	287	290	290	285
28	282	270	281	298	275	270	290	326	314	321	307	302	295	295	292	286	289	313	302	279	279	289	282	274
29	266	282	288	283	264	269	281	321	320	311	308	297	301	284	292	291	301	310	297	276R	290	300	295	285
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	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29
MED	282	282	283	300	276	274	294	339	335	322	314	304	298	299	299	301	307	316	307	296	299	294	285	284
U Q	288	294	301	318	304	284	302	342	344	330	322	314	308	306	308	310	319	320	313	307	308	301	292	290
L Q	274	272	276	284	264	264	288	330	328	313	308	300	294	294	292	297	302	307	298	288	292	288	276	276

FEB. 2000 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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												L	L	L	L	L	L							
2										L	L	L	L	L	L	L								
3										L	L	U L 3 6 3	L	L		L								
4										L	L	L	L		L	L	L							
5										L	L	L	L	A	A									
6										L		L	L	L	L	L								
7									U L 4 0 2	L		L		L	L									
8												L	L	L	L									
9														L	L	L								
10										L	L		L		L									
11												L	L	L	L	L								
12											A	U L 3 2 3	L	L	U L 3 4 3	L								
13										L	L	L	L		L									
14											L		L	L	L									
15												L												
16												L	L		L									
17										L	L	L	L	L										
18										L	L	L	L	L	L									
19										L	L	L	L	L	L	L								
20										L	L	L	U L 3 7 3	L		L								
21											L	L	L	L	L									
22										L	L		L	L	L	L								
23										L	L		L	L	L	L								
24										L		L	L	L	L									
25										L	L	L	L			L								
26											L	L	L											
27												L	U L 3 5 8	L				L						
28										L			L	L	L	L	L							
29										L		L	L	L	L	L								
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									1			2	2		1									
MED									U L 4 0 2			U L 3 4 3	U L 3 6 6		U L 3 4 3									
U Q																								
L Q																								

FEB. 2000 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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												266	274	256	270	232	232							
2										252	246	238	256	256	258	244								
3										236	264	266	258	254		236								
4										248	246	268	272		266	254	236							
5										228	268	268	250	A 246	A 270									
6										238		290	288	292	246	252								
7									228	256		288		290	258									
8												270	278	286	254									
9														292	280	264								
10										260	256		278		260									
11												300	L 278	294	254	278								
12											254	312	302	252	330	262								
13										238	276	276	L 304		254									
14											246		278	300	270									
15												266												
16												266	260		304									
17										254	260	268	272	274										
18										248	248	258	268	276	250									
19										264	246	242	286	264	254	248								
20										244	252	256	272	254		246								
21											264	276	266	262	274									
22										278	258		280	272	276	260								
23										256	244		282	272	270	264								
24										264		266	284	262	284									
25										262	252	282	258			258								
26											252	272	290											
27												286	300	284				238						
28										254			286	266	286	252	264							
29										244		258	270	256	272	294								
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									1	18	17	23	26	22	22	15	3	1						
MED									228	253	252	268	278	269	270	254	236	238						
U Q										260	262	282	286	286	276	264	264							
L Q										244	246	266	268	256	254	246	232							

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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	276	286	290	250	240	314	290	244	224	226	216	208	212	224	H 196	216	230	230	224	266	240	228	250	278
2	A 354	A 380	314	260	232	294	272	236	224	210	A 246	A 232	E A 246	H 206	216	222	228	230	218	234	252	266	306	322
3	290	276	270	284	318	A 334	280	256	230	208	224	212	232	230	236	226	226	218	228	258	238	254	324	278
4	284	316	298	242	232	288	284	226	226	H 208	222	222	240	A 244	A 248	222	242	224	234	238	230	248	268	270
5	276	276	268	274	288	304	284	246	224	206	236	236	238	A	A	A 252	238	216	232	230	234	244	268	268
6	278	266	258	284	312	360	332	246	222	228	230	234	236	232	230	238	234	228	258	244	220	300	304	264
7	258	264	284	254	366	326	242	234	210	228	240	236	238	244	236	244	246	244	A 278	244	230	246	258	254
8	332	372	322	206	320	310	270	240	234	230	228	224	242	236	232	244	242	226	232	236	234	282	286	A 310
9	266	250	260	224	228	340	274	228	224	228	230	230	A 248	240	232	234	240	218	232	270	256	238	274	286
10	294	360	328	230	288	298	262	238	240	230	230	236	232	232	228	230	236	230	230	230	248	254	270	294
11	288	304	280	264	236	272	240	224	232	220	226	236	228	226	234	A 242	238	236	222	236	240	278	308	332
12	A 338	256	260	314	370	342	238	218	226	A 238	A	216	H 236	234	232	230	238	254	278	296	342	298	272	242
13	232	304	352	278	272	236	230	226	234	232	210	242	238	240	220	232	258	A 242	240	250	270	254	262	286
14	282	306	300	248	352	266	234	234	232	240	234	230	228	248	A	A 240	232	232	224	244	276	280	284	290
15	386	E A 438	270	212	A 358	376	304	228	230	234	240	234	232	230	230	238	236	244	250	236	244	246	266	258
16	274	290	292	268	240	304	276	232	226	230	228	226	222	234	228	228	238	228	210	230	236	264	262	280
17	304	290	256	252	244	290	282	228	230	228	236	236	A 244	238	234	236	234	232	214	254	256	250	280	A 320
18	A 344	276	276	346	326	300	232	232	238	226	230	222	226	240	228	230	236	222	222	246	248	248	252	286
19	300	266	238	216	208	336	272	238	236	242	242	224	212	242	232	224	242	224	224	226	234	256	294	272
20	270	290	304	302	268	286	274	232	228	234	234	232	200	224	238	220	236	220	226	226	222	254	274	296
21	314	300	274	236	212	256	286	232	234	238	226	220	234	232	224	242	242	224	220	250	264	266	272	264
22	254	288	330	326	318	264	226	230	244	234	240	246	218	240	242	234	236	230	226	232	234	272	270	278
23	280	272	260	260	236	268	234	226	224	H 220	226	230	232	228	234	234	240	226	220	240	244	240	272	330
24	336	330	240	238	260	332	290	228	232	230	240	230	232	230	230	244	246	238	226	232	244	270	326	286
25	262	274	288	238	310	324	264	238	236	240	234	222	H 228	240	242	234	238	232	214	242	246	240	270	286
26	304	278	246	232	312	294	278	230	226	230	230	224	236	238	244	228	238	228	226	248	236	238	252	272
27	302	296	290	260	248	276	264	230	224	232	238	234	232	238	250	238	242	222	C	216	252	254	260	272
28	288	316	284	246	278	310	276	238	230	236	238	232	232	236	246	238	238	238	228	262	294	254	276	298
29	328	276	254	234	264	310	294	242	234	216	226	214	228	230	218	230	240	234	212	240	254	252	250	278
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	29	29	29	29	29	29	29	29	29	29	28	29	29	28	27	29	29	29	28	29	29	29	29	29
MED	288	289	280	252	272	304	274	232	230	230	230	230	232	235	232	234	238	230	226	240	244	254	272	280
U Q	321	311	299	276	318	329	284	238	234	234	238	235	238	240	238	239	242	235	232	250	255	268	285	295
L Q	275	275	260	235	238	281	241	228	224	223	226	222	228	230	228	228	236	224	221	232	234	246	262	271

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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								B 158	124	124	122	A	A	130	126	130	A 130	B 168						
2								142	126	114	A	A	A	A	122	128	A	168						
3								158	124	120	118	118	116	A	134	132	140	B 154						
4								154	128	118	118	116	116	114	114	A 142	136	A 156						
5								158	122	116	124	126	122	118	118	A	A 130	168						
6								158	124	116	118	116	116	116	116	A	A	B						
7								148	136	134	A	A	A	A	116	114	122	B						
8								A	124	126	118	116	118	118	118	118	A	B						
9							152	156	130	124	128	122	126	126	120	A	118	A						
10								142	122	120	122	A	A	A	118	120	A 138	154						
11								156	116	116	A	132	120	118	116	122	120	134						
12								142	116	A	A	116	A 124	120	120	116	118	A						
13								142	126	120	120	116	124	120	120	118	132	A						
14								158	122	120	122	A	A	A	A	A	A	A 130						
15								150	128	126	122	124	126	126	124	122	A	A						
16								156	A	136	128	A	A	A	A	A 132	126	B						
17								132	126	120	120	120	118	120	A 128	118	118	E B 178						
18								138	126	136	130	118	124	A	A	124	124	B						
19								136	116	116	A 144	120	128	122	126	122	120	128						
20								148	126	122	B	122	120	118	118	128	118	A						
21							B	146	118	116	124	124	122	A	124	A	A	144						
22							B	136	122	132	124	116	126	124	122	122	A	A						
23							B	128	118	126	118	118	A	A	128	A	A	B 138						
24							B	138	A 144	132	A 132	A	A	126	124	116	120	A						
25							B	132	130	126	A	126	A	126	130	124	126	142						
26							B	144	122	126	122	118	A	122	122	122	122	126						
27							B	146	126	B	A	126	122	124	A	122	A	A 142						
28							B	134	A 148	134	118	120	120	122	118	A 140	A	128						
29							B	138	124	122	122	112	124	124	120	118	A 132	134						
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							1	27	28	27	22	22	19	20	25	23	18	16						
MED							152	144	124	122	122	119	122	122	120	122	123	141						
U Q								156	127	126	124	124	124	125	125	128	132	155						
L Q								138	122	118	118	116	118	118	118	118	120	132						

FEB. 2000 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 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	B	B	B	B	112	B	B	B	G	110	110	118	114	110	110	156	102	102	106	102	110	B	B	B
2	110	110	110	114	B	112	B	108	G	124	116	110	112	112	108	106	102	110	B	B	B	B	110	114
3	B	B	B	B	B	102	104	G	G	G	G	G	124	116	116	118	116	106	114	B	98	100	B	112
4	B	112	110	106	104	B	B	G	G	G	G	176	148	124	118	118	118	118	B	118	B	B	B	B
5	110	B	B	118	110	B	B	G	G	G	180	158	138	128	118	108	120	G	108	B	B	B	B	B
6	B	114	128	B	B	B	154	G	G	G	136	126	128	G	150	124	114	112	110	108	112	B	B	B
7	122	124	108	110	116	118	168	G	116	182	162	164	104	102	150	128	132	116	118	110	100	108	B	B
8	B	B	B	B	114	B	150	150	142	112	158	142	124	124	142	122	100	98	100	B	B	112	108	106
9	104	104	B	B	B	B	K 154	100	122	164	182	190	138	134	112	114	152	122	112	110	130	102	106	108
10	B	B	110	108	110	B	B	112	110	110	126	118	118	124	126	G	114	G	B	B	B	B	B	102
11	B	B	122	B	106	108	110	G	G	G	112	112	G	G	G	130	118	106	98	98	126	B	104	110
12	110	106	108	108	112	B	B	G	150	106	104	106	100	104	102	140	128	98	102	B	B	B	B	106
13	108	108	104	116	B	B	B	152	148	G	114	164	142	150	G	188	162	110	112	114	102	110	B	B
14	B	110	110	106	104	112	108	112	G	182	112	164	158	128	116	112	112	112	110	B	112	B	110	108
15	112	112	B	B	112	110	108	G	186	G	G	G	G	G	146	144	122	116	108	112	110	106	108	112
16	104	110	B	B	B	104	B	118	124	120	130	128	124	120	122	118	114	B	B	116	104	106	B	112
17	110	B	B	B	B	B	B	G	E G 210	108	182	G	140	146	146	134	108	100	102	B	B	B	B	132
18	126	126	B	114	B	B	B	G	G	120	110	G	102	100	100	100	100	B	B	100	B	B	B	B
19	116	110	108	108	104	B	102	G	168	G	122	G	114	G	110	110	102	104	100	98	98	94	B	B
20	B	B	B	B	B	B	B	170	174	G	B	G	G	G	104	132	94	120	98	100	B	B	B	B
21	B	B	104	B	B	B	B	G	G	G	G	128	128	126	G	122	116	G	B	B	B	B	B	B
22	B	B	B	B	B	B	B	168	G	170	182	G	112	112	G	108	100	102	B	102	98	B	B	B
23	B	B	B	B	B	B	B	G	G	112	132	G	122	116	116	114	112	140	B	106	108	102	B	108
24	106	98	100	106	B	B	B	180	116	110	126	126	112	112	106	102	100	96	102	B	B	B	B	B
25	B	B	118	106	B	B	B	G	114	114	110	130	122	120	114	106	106	168	110	112	B	B	B	B
26	B	B	B	B	B	B	B	124	108	110	110	124	124	G	G	G	100	136	100	B	B	B	B	B
27	B	B	B	B	B	B	B	168	174	B	114	110	G	G	114	102	118	114	C	B	112	106	106	B
28	110	104	104	B	B	B	B	164	112	168	G	G	G	110	130	116	122	126	112	108	110	108	108	B
29	B	124	118	B	B	B	108	170	184	110	156	G	110	110	G	G	132	142	B	B	B	110	B	114
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	15	15	12	11	7	10	14	17	18	23	19	24	22	23	26	29	24	19	16	15	12	8	13
MED	110	110	110	108	110	110	109	151	133	113	126	128	123	118	116	118	114	112	108	108	110	106	108	110
U Q	114	114	118	114	112	112	154	168	174	164	158	164	133	126	130	130	121	121	112	112	112	109	109	113
L Q	107	106	104	106	104	104	108	112	115	110	112	118	112	110	110	108	102	103	100	101	100	102	106	107

IONOSPHERIC DATA STATION Kokubunji

FEB. 2000 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

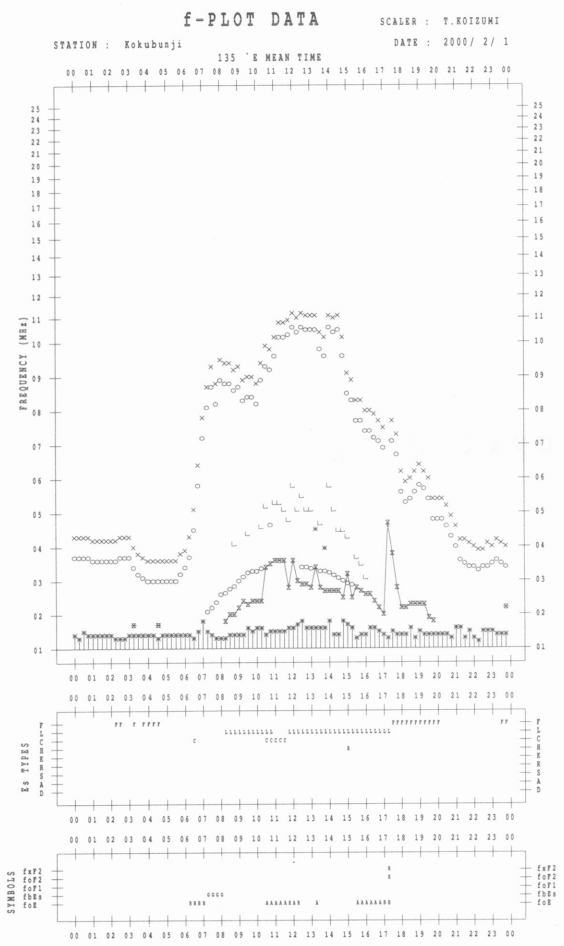
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

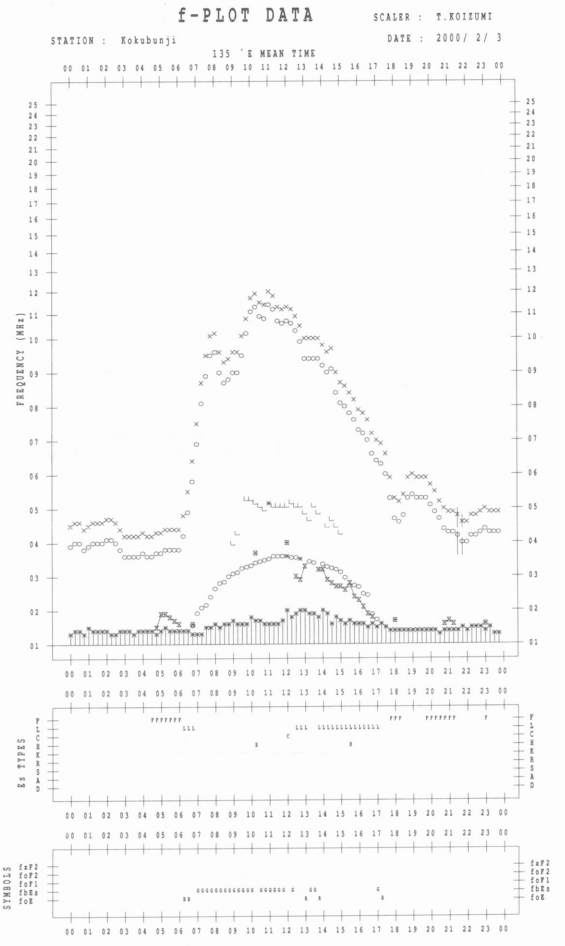
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1					F1					L1	L1	C1	L1	L1	L2	HL12	L3	L3	F2	F2	F1			
2	F2	F3	F2	F1		F1		L1		C1	C2	L2	L2	L1	L2	L2	L2	L1					F2	F2
3						F3	F2						C1	L1	L1	L1	L1	L1	F1		F1	F1		F1
4		F1	F1	F1	F1							HC11	H1	C1	C2	L1	L1	L1		F1				
5	F3			F1	F1						HL11	HL11	HL11	C3	C3	L2	L2		F1					
6		F1	F1				F1				CL11	C1	C1		H1	C1	L2	L2	F1	F2	F1			
7	F1	F1	F5	F6	F6	F2	F1		L2	HL12	HL11	HL11	LC21	L2	HL11	CL21	CL31	C4	FF32	F1	F1	F1		
8					F1		F1	C1	H1	L1	HL11	H1	C1	C1	H1	C2	L3	L2	F1			F1	F1	F3
9	F2	F2					K1	L1	L1	H1	HL11	HL11	CL21	CL11	L1	C2	HL11	C2	F3	F2	F1	F1	F1	F2
10			F2	F2	FF11			L1	L1	L1	CL11	C1	C1	C1	C1		L1							F2
11			FF11		F1	F1	F1				L1	L1				C1	C1	L1	F1	F1	F1		F1	F2
12	F3	F2	F1	F2	F1				H1	L2	L2	L1	L2	L1	L1	C1	C1	L2	F1					F1
13	FF11	FF31	F3	F1				H2	C1		L1	HC11	HL11	HL11		H1	HL11	L3	F4	F1	F3	F2		
14		F1	FF11	F1	F2	F1	F2	L1		H1	L1	HL11	HL11	CL11	L2	L2	L2	L2	F2		F2		F2	F2
15	F2	F3			F3	F1	F1		HL11						H1	H1	C1	L2	F3	F3	F5	F3	F1	F2
16	F3	F1				F1		L1	L1	L1	CL11	C1	C1	C1	C1	L1	L1			F1	F4	F2		F1
17	F1								HL11	L1	HL11		H1	C1	HL11	C1	L1	L2	FF11					FF22
18	FF23	F1		F1						L1	L1		L1	L2	L2	L1	L1			F1				
19	F1	F1	F1	F1	F1		F1		H1		L1		L1		L1	L1	L1	L1	F2	F1	F1	F1		
20								H1	HL11						L1	CL11	L1	L1	F1	F1				
21			F1									C1	C1	C1		L1	L1							
22								H2		HL11	HL11		L1	L1		L1	L2	L2		F1	F1			
23										L1	H1		LL11	L1	L1	L1	L2	C1		F2	F2	F1		F1
24	F1	F2	F1	F1				HL11	L2	L1	CL11	CL11	L1	L1	L1	L2	L2	L2	F1					
25			F1	F1					L2	L1	L1	CL11	C1	L1	L1	L2	L2	HL11	F1	F1				
26								L1	L1	L1	L1	C1	C1				L2	CL11	F1					
27								H1	HL11		L1	L1			L1	L1	L1	L2			F1	F1	F1	
28	F1	F2	F2					H1	L2	HL11				L1	C1	L1	L1	L2	F4	F3	F3	F2	F2	
29		FF11	FF11				L1	H1	HL11	L1	HL11		L1	L1			CL11	C1				F3		F2
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																								

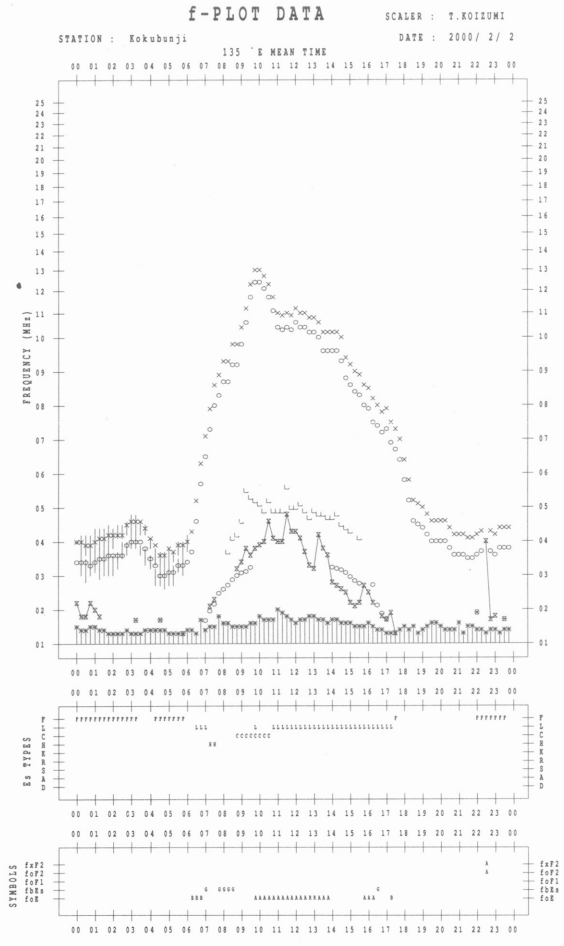
FEB. 2000 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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 : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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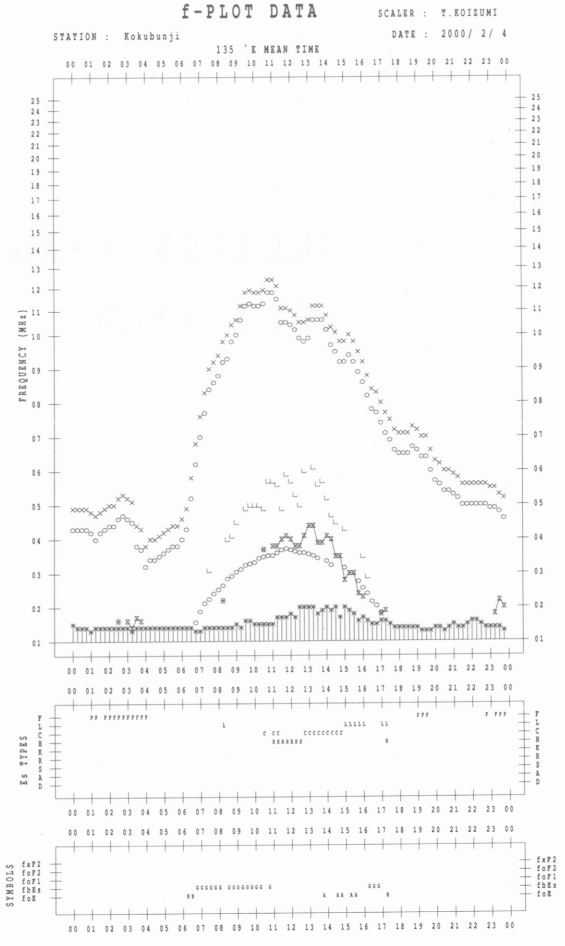
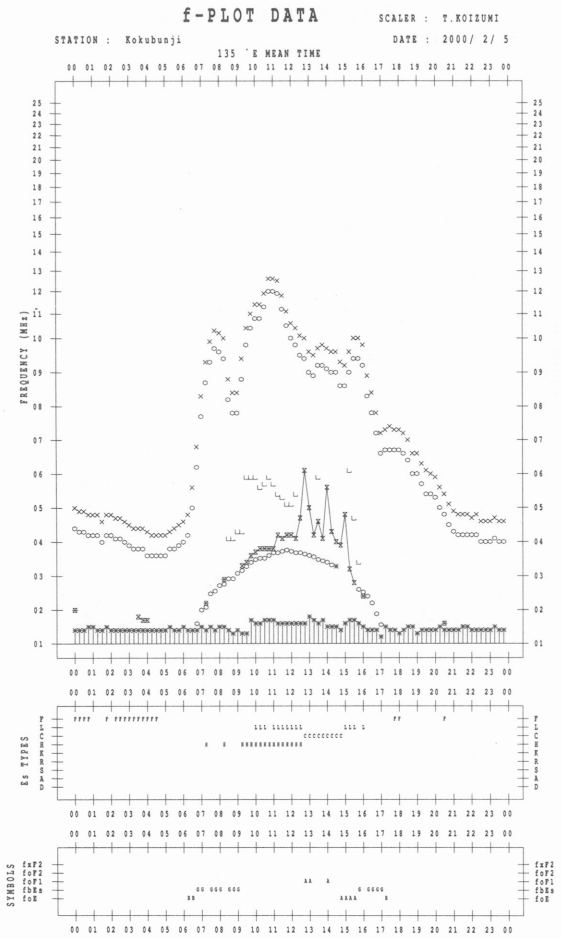
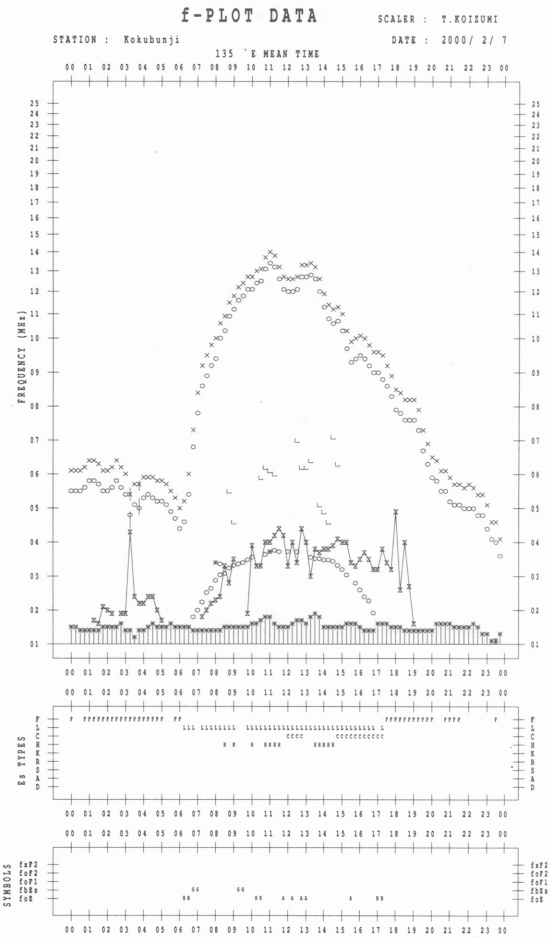
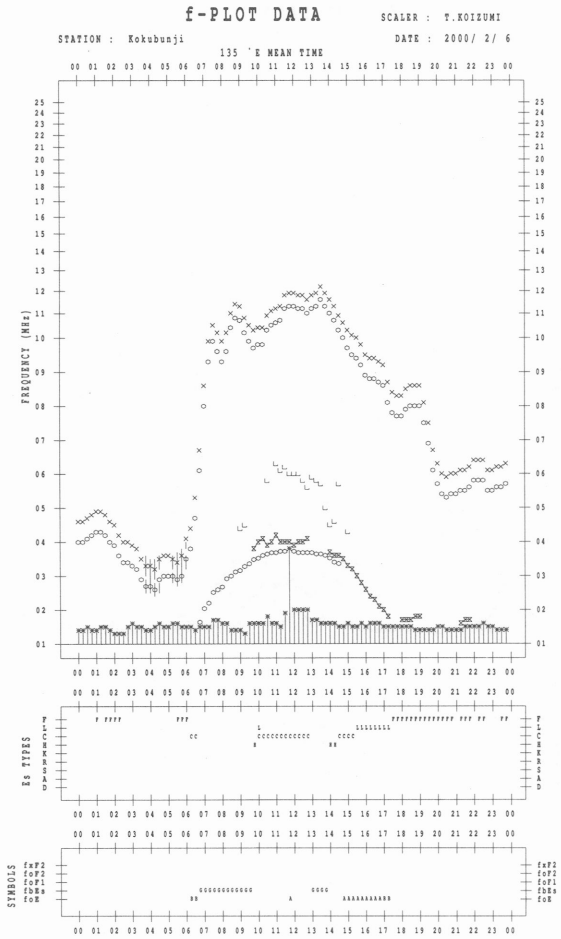
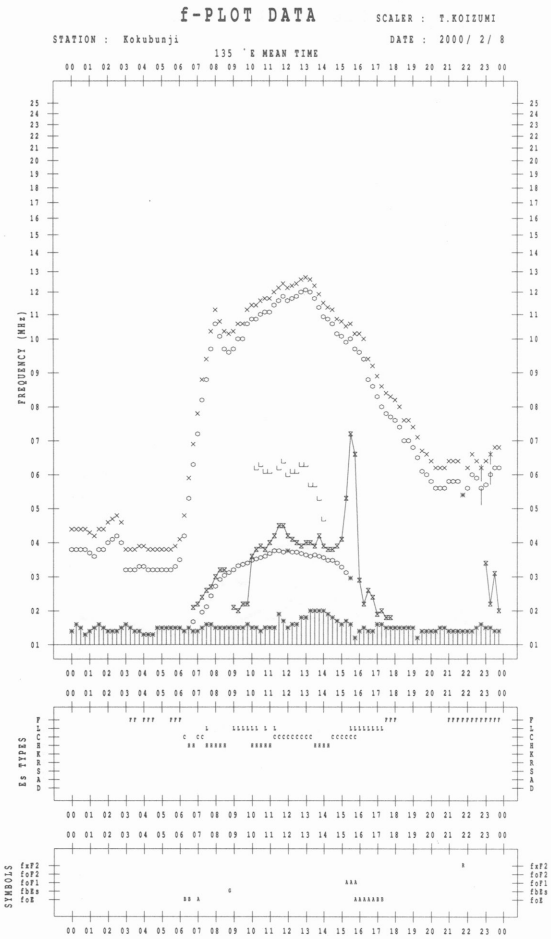
STATION : Kokubunji
DATE : 2000/ 2/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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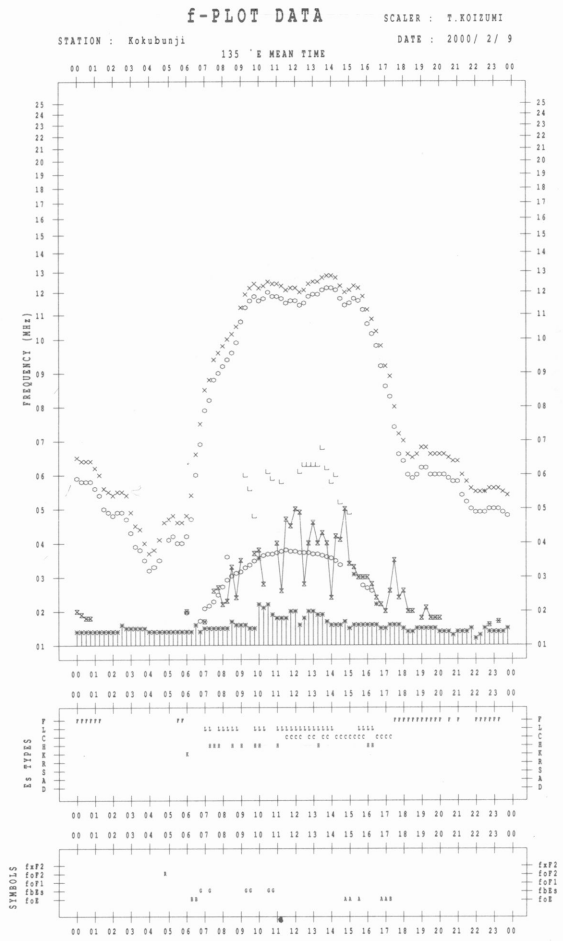
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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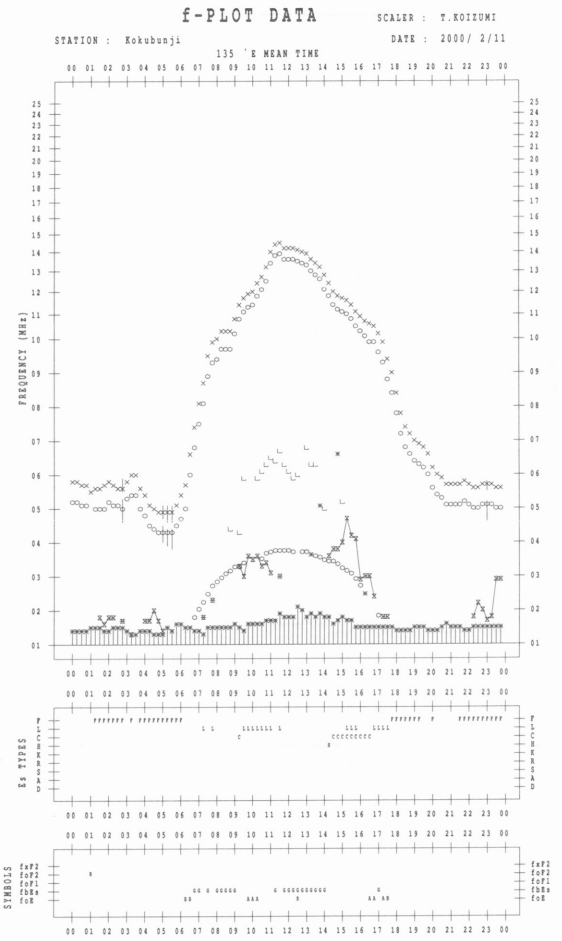
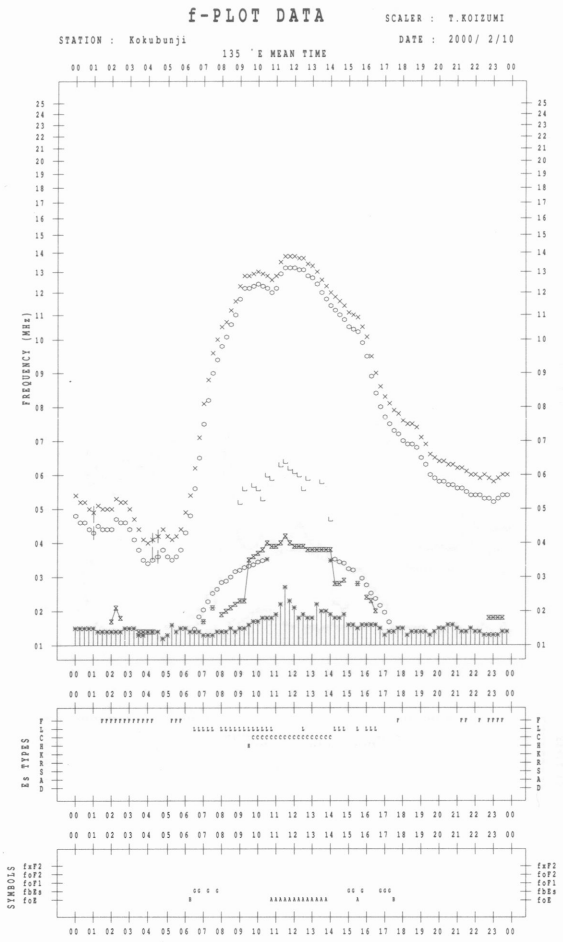
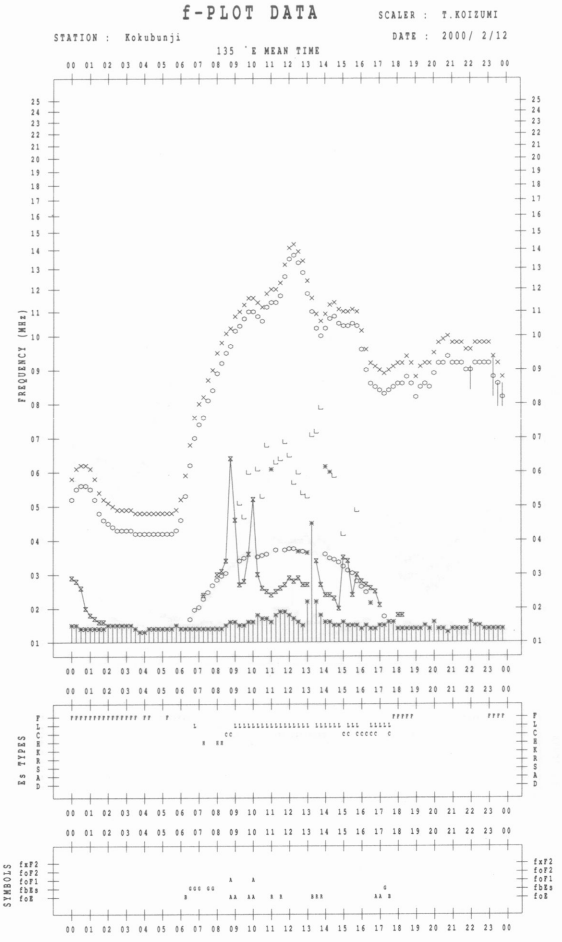
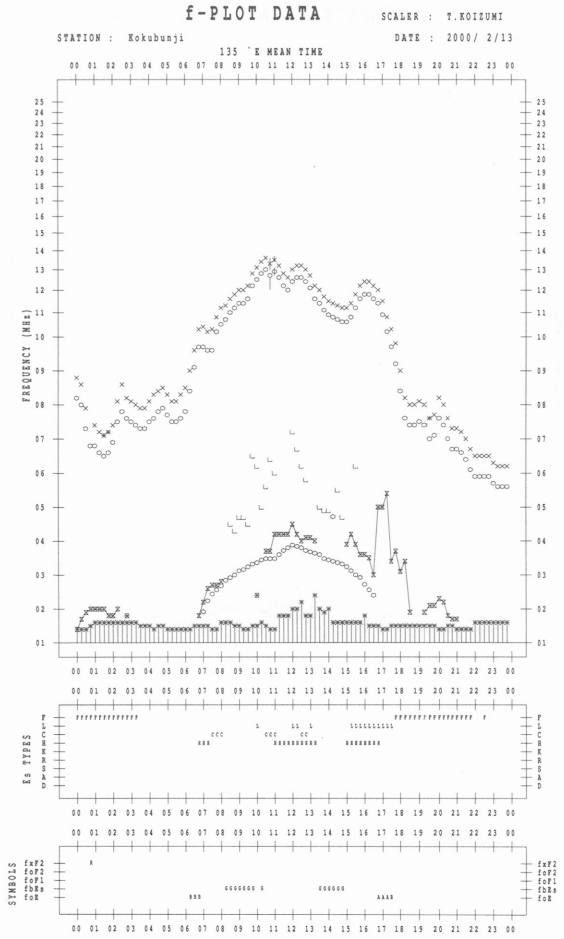
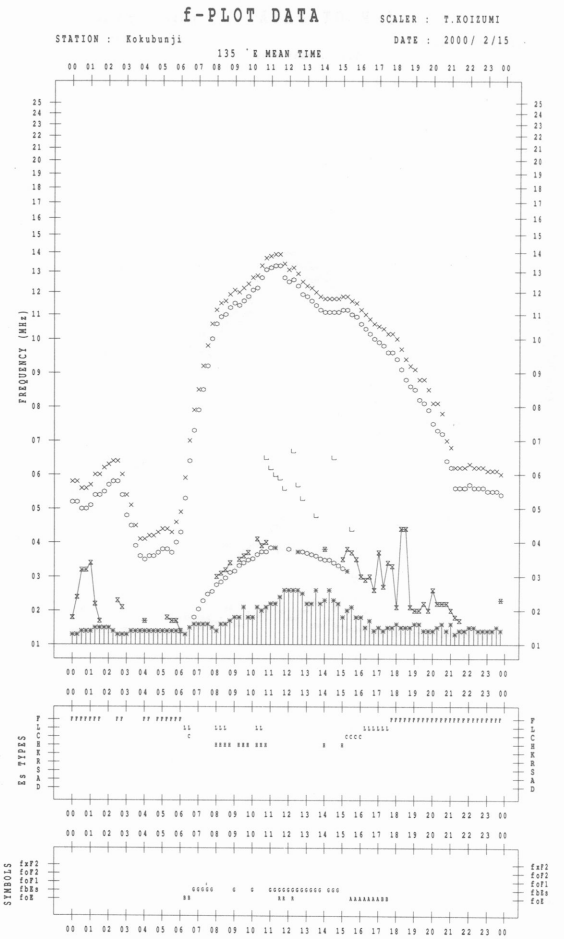
STATION : Kokubunji
DATE : 2000/ 2/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

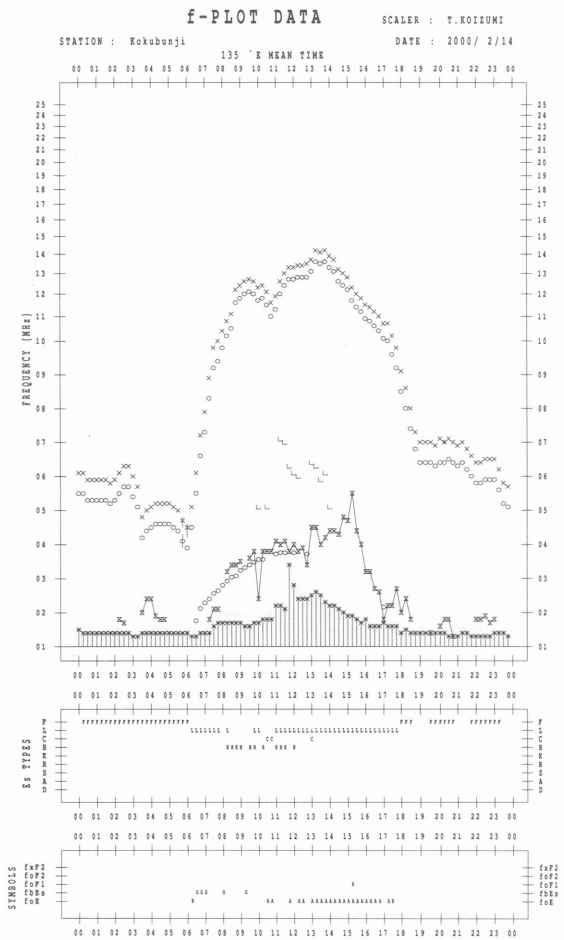

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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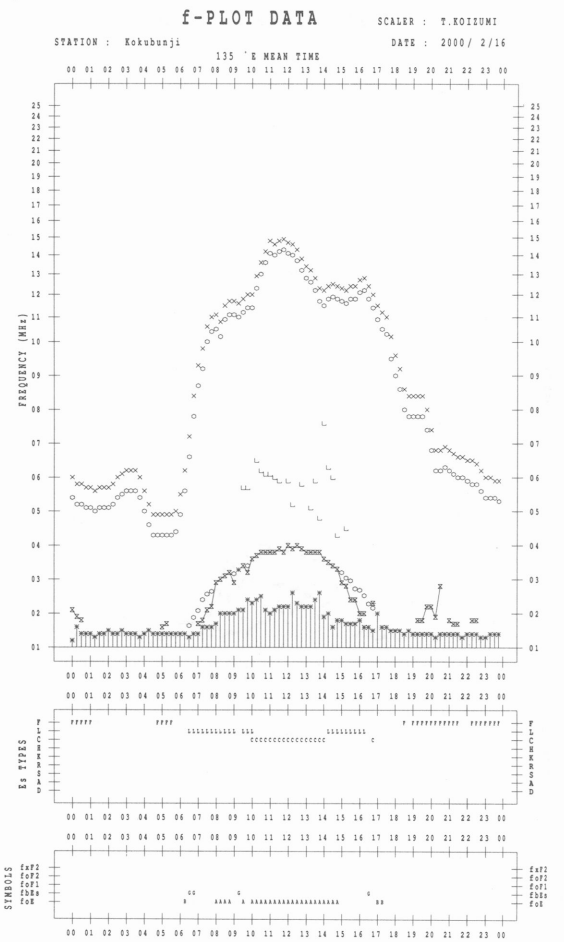
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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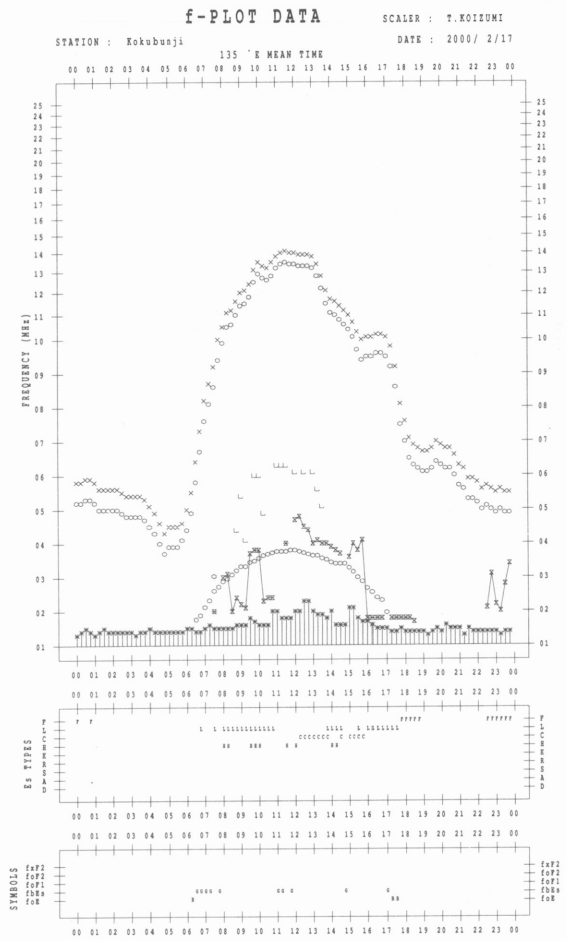
STATION : Kokubunji
DATE : 2000/ 2/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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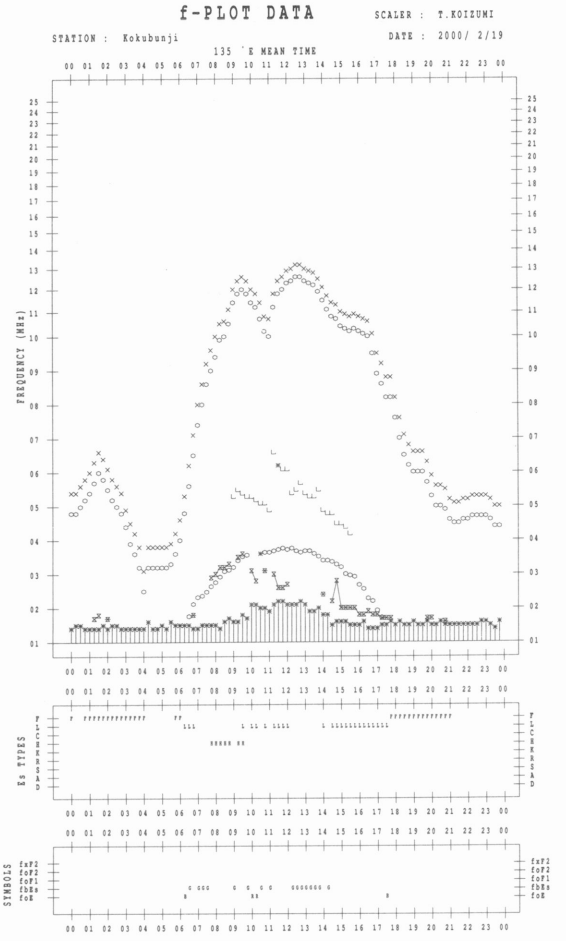
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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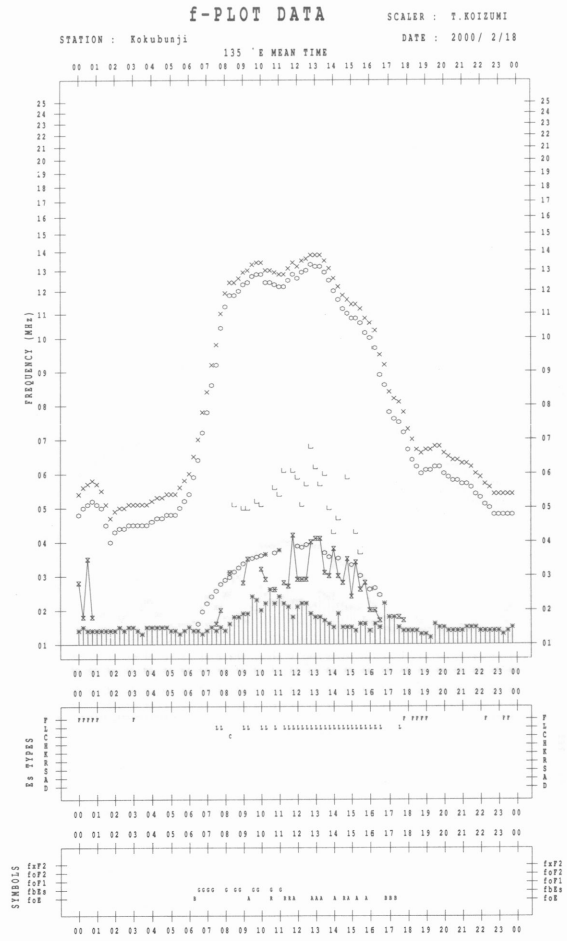
STATION : Kokubunji
DATE : 2000/ 2/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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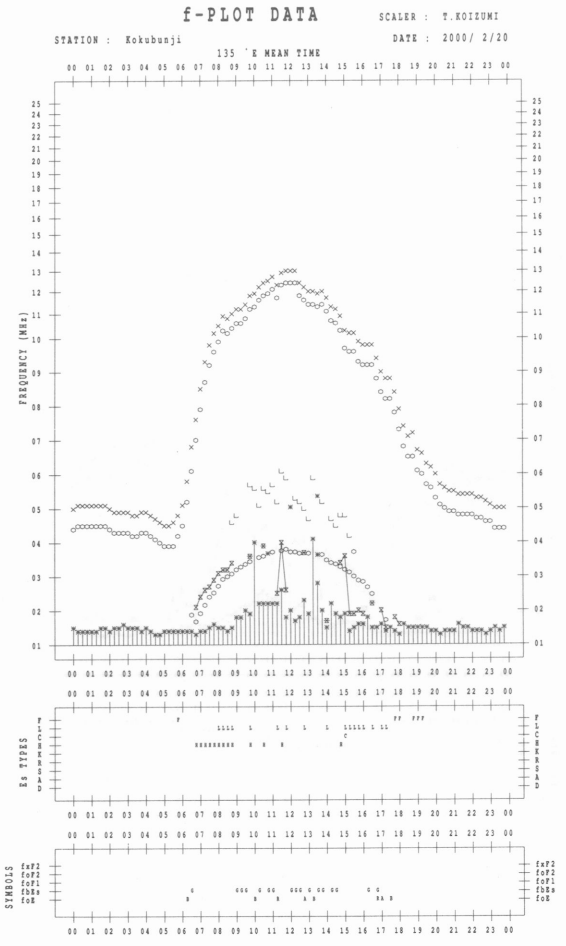
STATION : Kokubunji
DATE : 2000/ 2/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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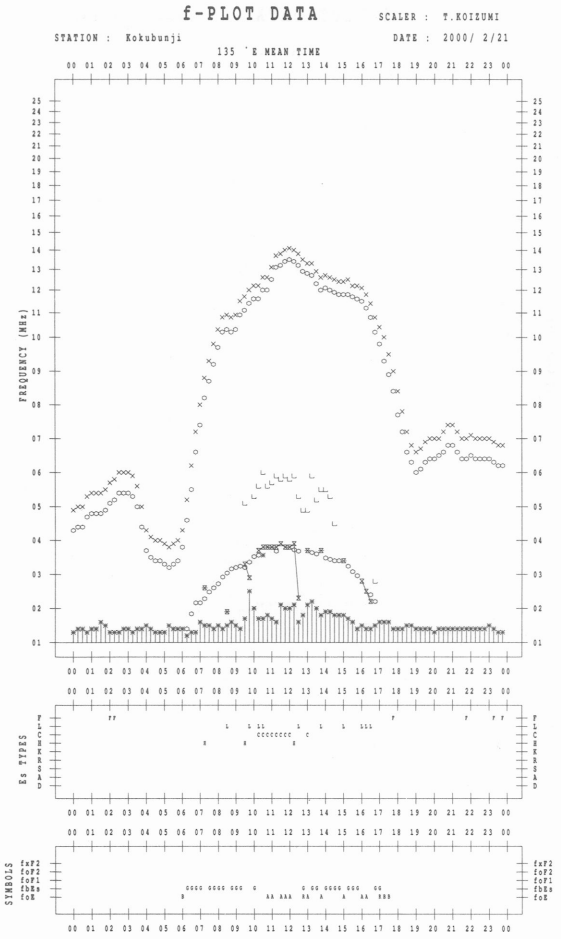
STATION : Kokubunji
DATE : 2000/ 2/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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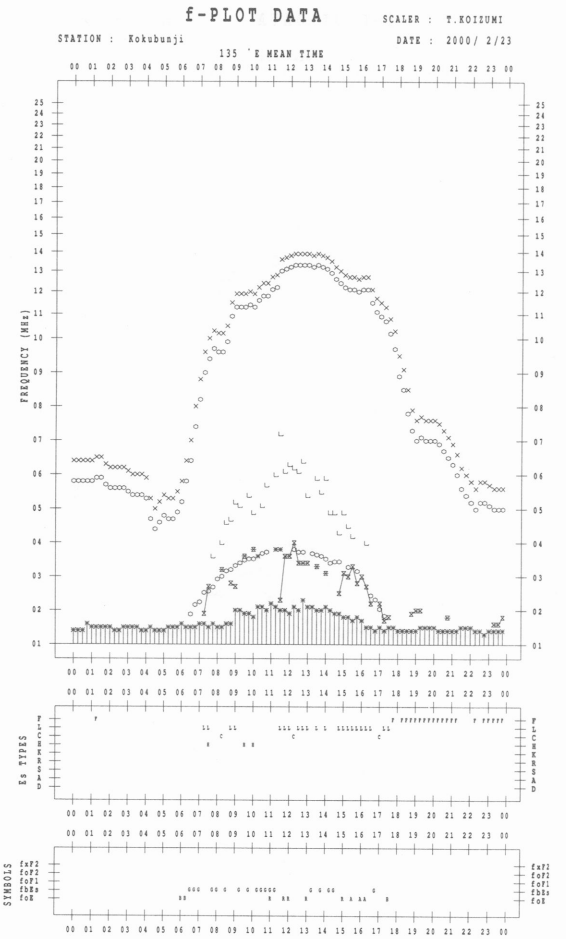
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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STATION : Kokubunji
DATE : 2000/ 2/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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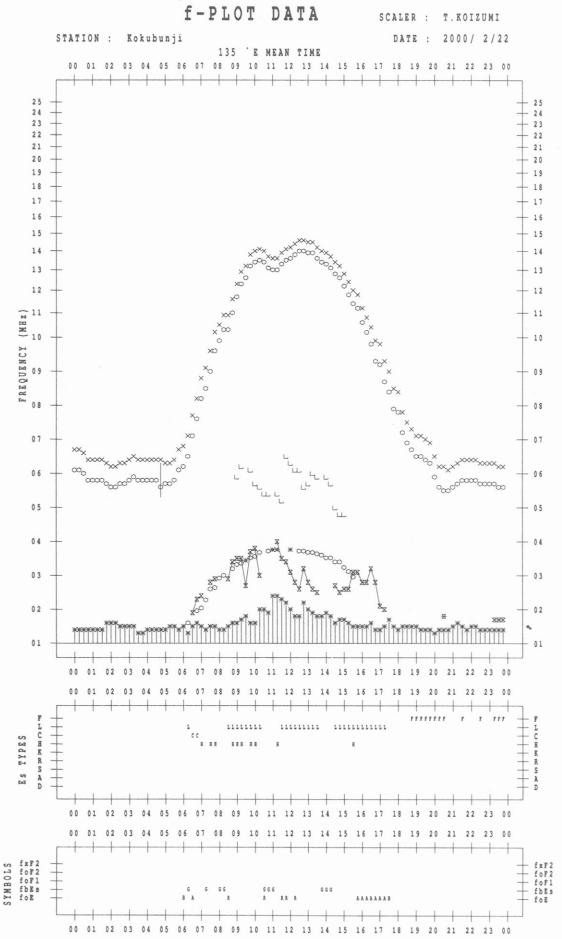
foF2
foF1
fbEs
foE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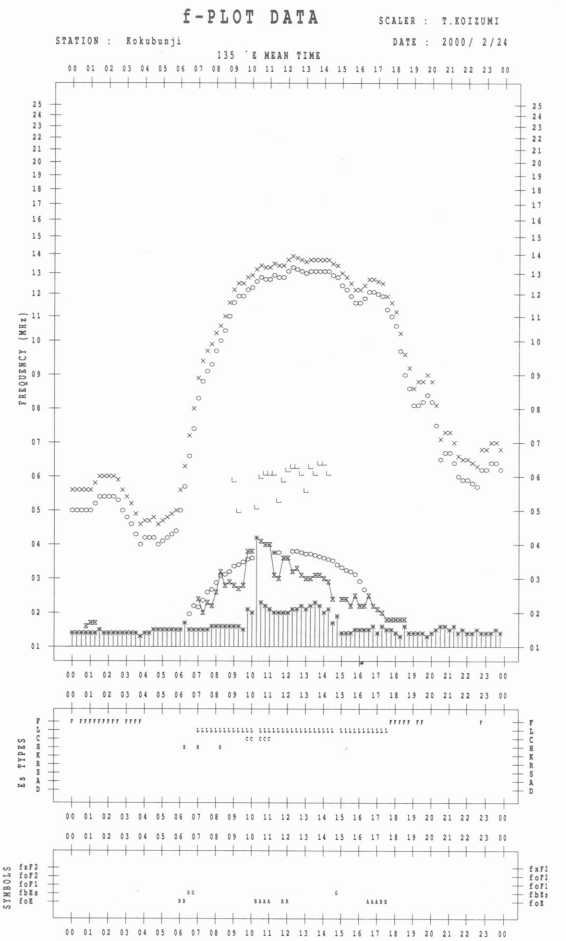
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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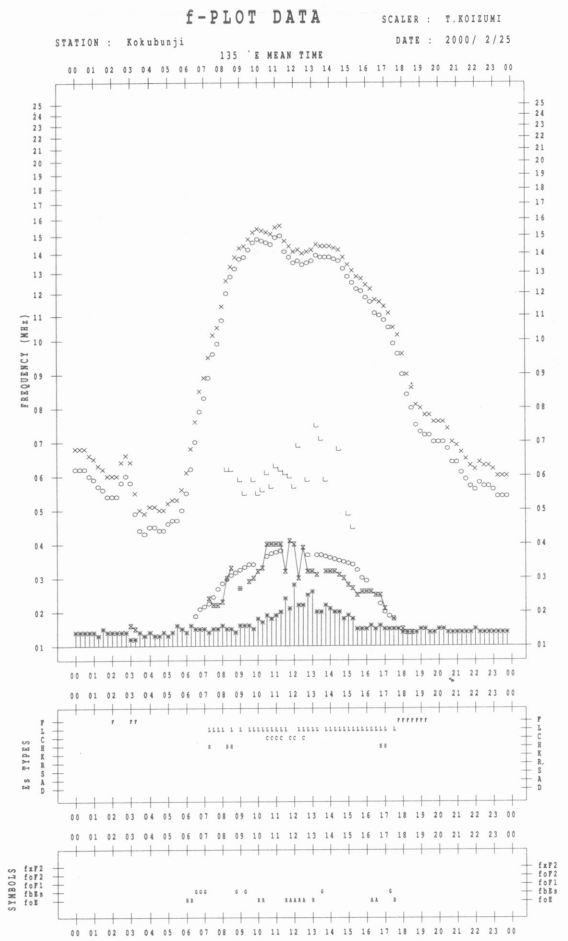
STATION : Kokubunji
DATE : 2000/ 2/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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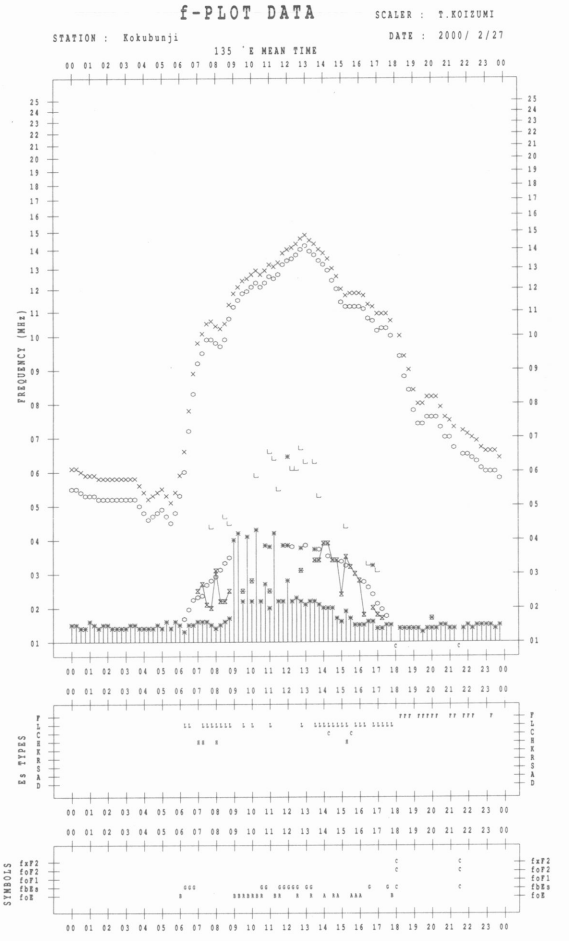
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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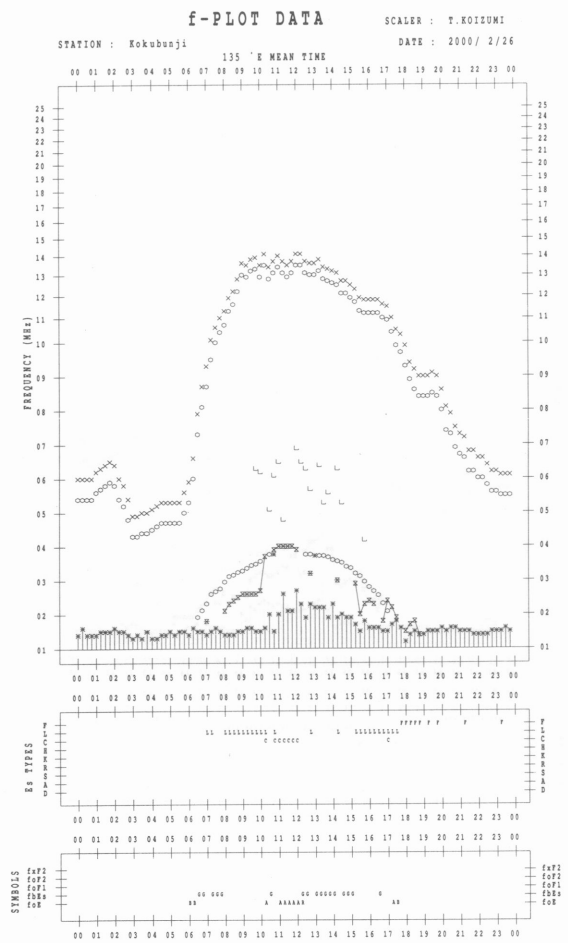
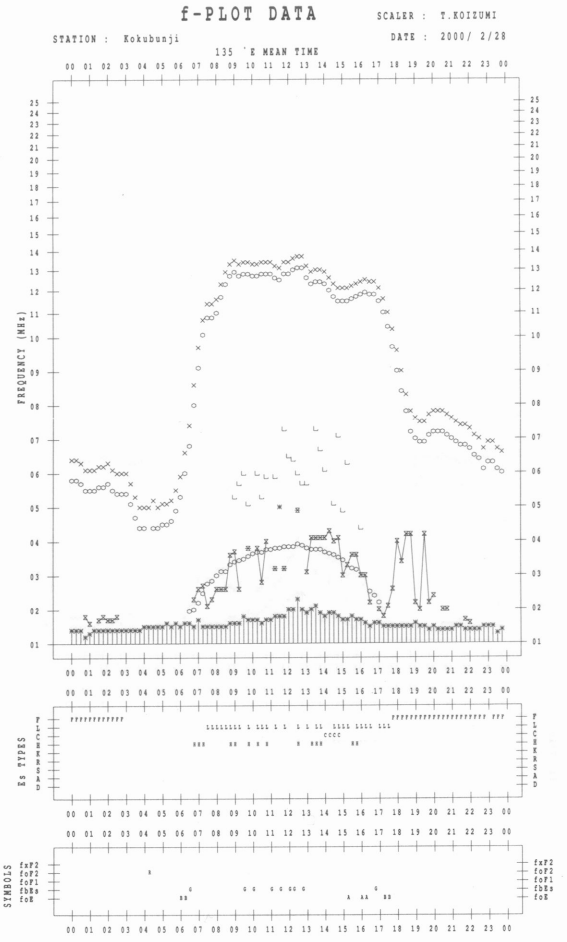
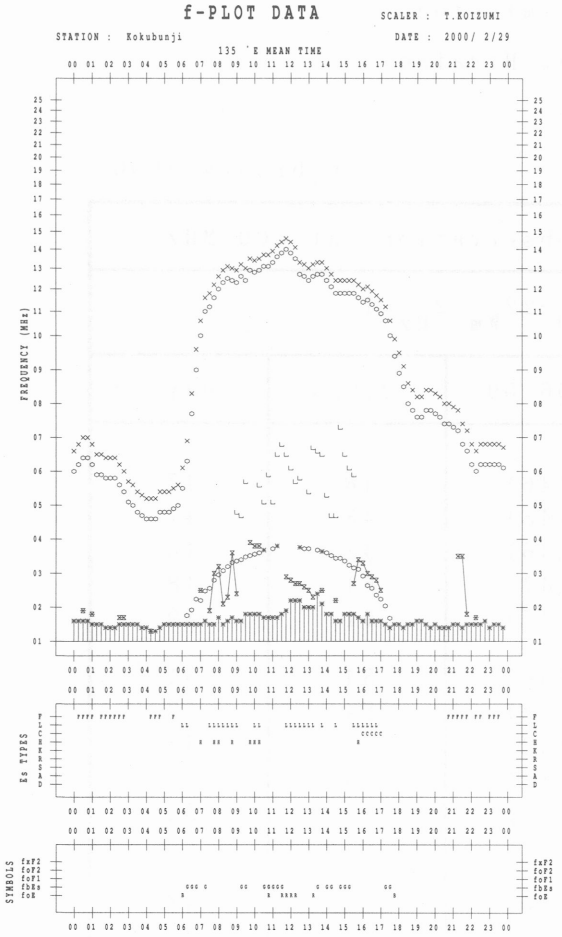
STATION : Kokubunji
DATE : 2000/ 2/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 2000/ 2/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso February 2000

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	47	47	(46)	48	47
2	47	46	(45)	48	47
3	48	47	(46)	49	48
4	49	47	(47)	51	48
5	50	48	(47)	51	49
6	51	50	(50)	54	51
7	53	52	(52)	54	52
8	54	53	(52)	-	53
9	53	53	(53),	55	53
10	55	53	(52)	54	54
11	52	50	(50)	54	51
12	52	50	(49)	52	51
13	50	49	(49)	50	50
14	49	48	(47)	50	49
15	50	49	(-)	(50)	50
16	49	48	(48)	49	49
17	48	46	(46)	50	47
18	49	47	(46)	47	47
19	46	45	(45)	43	45
20	43	44	(44)	48	44
21	47	47	(46)	(48)	47
22	47	47	(46)	-	47
23	52	49	(49)	52	51
24	51	50	(50)	52	51
25	51	50	(50)	54	51
26	53	52	(-)	-	52
27	-	-	(-)	-	-
28	54	52	(52)	57	54
29	56	57	(56)	-	56

Note: No observations during the following periods.
8th 2230 - 9th 0100 15th 0430 - 15th 2300
22th 2200 - 22th 2400 26th 0600 - 28th 0030
29th 2200 - 29th 2400

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso February 2000

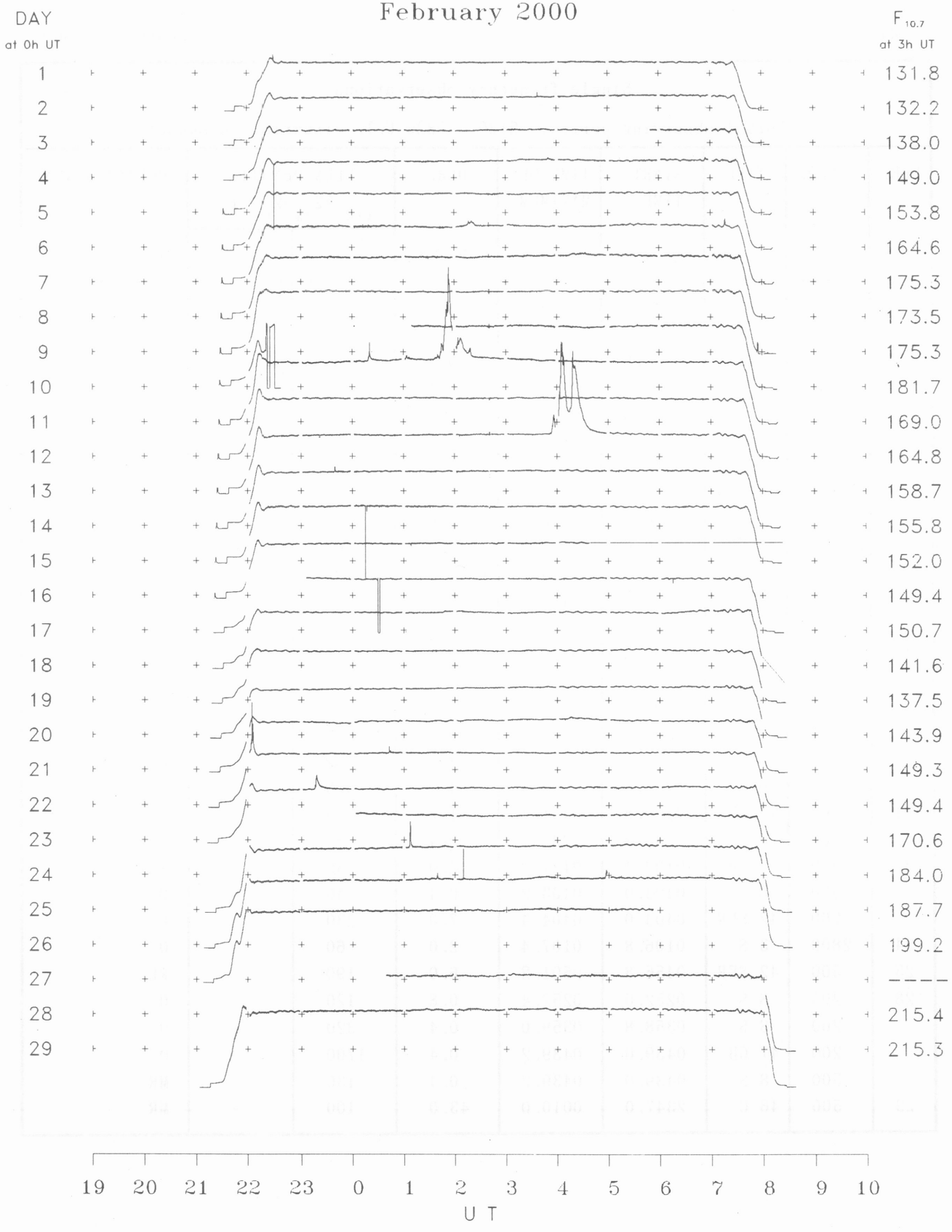
Single-frequency observations

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

FEB. 2000	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	200	8 S	0338.8	0339.2	1.0	240	-	0
3	200	8 S	0716.6	0716.8	0.4	120	-	0
6	200	8 S	0715.6	0715.8	0.8	70	-	0
7	200	8 S	0433.2	0433.4	0.4	70	-	0
10	500	47 GB	0143.0	0151.0	40.0	2900	-	MR
	2800	46 C	0143.0	0153.0	32.0	220	-	WR
	200	46 C	0143.0	0156.0	40.0	420	-	WR
12	500	42 SER	0354.8	0355.0	0.8	170	-	WR
	2800	46 C	0400.0	0406.6	40.0	200	-	-
	500	47 GB	0400.0	0408.6	40.0	660	-	MR
	200	46 C	0401.0	0415.4	65.0	100	-	MR
	500	4 S/F	0446.0	0448.0	6.4	40	-	WR
16	200	8 S	0718.8	0719.0	0.4	170	-	0
18	200	8 S	0206.6	0207.0	0.8	100	-	0
20	200	8 S	0658.2	0658.4	0.4	340	-	0
	2800	46 C	2203.8	2206.2	5.2	70	-	0
	2800	8 S	2205.0	2205.2	0.4	100	-	0
	500	4 S/F	2205.0	2207.4	3.8	180	-	0
	200	46 C	2206.8	2207.4	4.2	320	-	0
21	200	42 SER	0450.8	0451.4	1.2	50	-	0
	200	8 S	2238.2	2238.4	0.4	80	-	0
23	500	27 RF	0102.4	0124.0	42.0	30	-	WL
	500	8 S	0403.0	0403.2	0.4	40	-	0
	200	42 SER	0403.0	0404.4	7.0	230	-	0
24	2800	3 S	0106.8	0107.4	2.0	60	-	0
25	500	42 SER	0456.8	0501.2	6.0	190	-	WL
28	200	8 S	0252.0	0252.4	0.8	120	-	0
	200	8 S	0358.8	0359.0	0.4	320	-	0
	200	47 GB	0439.0	0439.2	0.4	1700	-	0
	500	8 S	0439.0	0439.2	0.4	130	-	MR
29	500	46 C	2347.0	0010.0	43.0	100	-	MR

B. Solar Radio Emission

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



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

IONOSPHERIC DATA IN JAPAN FOR FEBRUARY 2000
F-614 Vol.52 No.2 (Not for Sale)

電離層月報（2000年２月）
第52巻 第２号（非売品）
2000年７月10日 印刷
2000年７月15日 発行
編集兼 郵政省通信総合研究所
発行所 〒184-8795 東京都小金井市貫井北町４丁目２－１
☎（042）（327）７４７８(直通)

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