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IONOSPHERIC DATA IN JAPAN

FOR MAY 2000

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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

Errata of Location of the Ionospheric Stations

(November 1998 – April 2000)

It was found that the coordinates of some ionospheric stations in the pages of the automatic scaling data have mistakes for the period from November 1998 to April 2000. Readers are requested to note the correction given in the table.

Station	Wrong	Corrected
Kokubunji		
Lat.	39.7° N	35° 42.4′ N
Lon.	140.1° E	139° 29.3′ E
Yamagawa		
Lat.	35.7° N	31° 12.1′ N
Lon.	139.5° E	130° 37.1′ E
Okinawa		
Till Oct. 1999		
Lat.	31.2° N	26° 16.9′ N
Lon.	130.6° E	127° 48.4′ E
Since Nov. 1999		
Lat.	35.7° N	26° 16.9′ N
Lon.	139.5° E	127° 48.4′ E

HOURLY VALUES OF foF2 AT Wakkanai

MAY 2000

LAT. 45°23.5'N LON. 141°41.2'E 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												A										A		A
2		A								A			N					A	A	A		A	A	A
3		A					A	A	A	A	A	A	A	A				A	A		A	A	A	
4	A	A		A	A				A	A	A									A		A		A
5	A	A	A	A		A	A		A								A			A	A	A	A	A
6	A		A	A		A			A			A	A	A								A	A	A
7	A	A				A				A									A		A		A	A
8		A	A			A														A	A	A	A	A
9	A	A				A								A									A	A
10	A								A	A				A			A	A				A	A	
11								A	A								A	A	A	A	A	A	A	
12								A						A							N			
13	A			A			A									A	A		A	A	A			A
14								A								A	A	A			A			
15														A		A	A						A	A
16								A	A	A			A		A	A							A	
17					A			A	A		A			A									A	
18	N										A	A		A		A			A			A		A
19	70	92	70	67	80	83		81	A	A		A	A		71	81	82	83	92	87	86		91	
20	71	71	68	77	77	92	81	80	74	A	A	A	A	A	A	70	81	A	82	81	83		71	
21	94	68	76	72	76	83	81	83	81	66	70	A	70	A	82	A	A	A	A	A	78		A	
22	79	71	68	71	80	82	81	79	93	A	77	A	80	A	68	A	A	A	A	A	A		78	73
23	78	80	72	71	55	A	A	82	A	A	A	A	A	A	A	A	66	68	72	A	68		A	A
24	68	A	71	60	65	61	64	A	A	A	A	A		A			68	58	A	A				
25		51	53	53	A	68		82	80	72	68	A	A	A	A	A	67	89	82	81	66		93	A
26	83	93	82	70	68	81	90	73	A	A	A	A	A	A	A	61	A	A	70	71	69	70		73
27	72	68	64	62	62	70	71	A	58	A	A	A	A	A	74	69	67	73	90	92	82	83	A	
28	68	72	68	67	66	70	A	A	66	61	A	A	A	A	49	81	76	78	74	67	91	A	79	82
29	73	78		67	70	95	81	78	67	A	A	A	A	A	74	A	73	A	93	74		74	A	72
30	70	71	62	51	59	69	64	90	72	A	A	69	A	A	A	68	A	79	A	94	A	74		89
31	68	75	70	65	68		74	78	81	81	A	A	A	70	82	A	A	A	A	81		A		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	12	12	13	12	11	9	10	9	4	3	1	2	1	7	6	8	7	8	9	8	4	5	5
MED	72	72	69	67	68	81	81	80	74	69	70	69	75	70	74	70	70	78	82	81	80	74	79	73
U Q	78	79	71	71	76	83	81	82	81	76	77	34	80	35	82	81	78	83	91	89	84	78	92	85
L Q	69	69	66	61	63	69	67	78	66	63	68	34	70	35	68	68	67	68	73	72	68	72	74	72

HOURLY VALUES OF fEs AT Wakkanai

MAY 2000

LAT. 45°23.5'N LON. 141°41.2'E SWEEP 1MHz TO 25MHz AUTOMATIC 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														G	G	G	G			G	G			
2			G	G	G	G	G	G				G	G	G	G	G	G				G			
3				G	G	G									G		G			G				G
4						G	G	G										G	G					
5					G			G		G	G	G	G	G		G		G	G					
6		G			G		G	G		G	G				G	G		G	G	G	G			
7			G	G	G		G	G	G		G	G	G	G	G	G		G		G		G		
8	G			G	G		G	G			G	G	G		G	G	G		G					
9			G	G	G			G		G	G	G	G		G	G	G	G		G	G	G		
10		G	G	G	G	G		G			G		G		G	B								G
11		G	G	G	G	G	G			G		G	G			G								G
12	G	G	G	G	G	G			G	G					B	G	G	G	G	G	G	G	G	G
13		G	G		G	G			G	G												G	G	
14		G	G	G	G		G												G			G	G	G
15	G	G	G	G		G				G											G	G		
16		G			G	G					G						G	G				G		G
17	G	G	G	G								G	G		G							G		G
18					G								G											
19	30	32	29	28	31	28	30	43	63	58		42	36		38	35	31	46	52	40	G		48	G
20	26	G	G	G	G	31	42	58	55	46	34	46	43	44	38	G	42	82	119	40	47	G	G	G
21	G	28	29	25	31	32	48	51	42	42	32	34	45	73	43	71	170	97	98	85	72	G		G
22	G	G	28	G	G	40	47	47	65	46	64	63	69	46	41	80	90	174	180	86	61	G	39	46
23	29	G	G	29	32	84	84	68	86	89	76	56	32	59	88	78	47	45	61	74	60	G	64	61
24	58	44	42	32	31	56	50	53	66	91	44	34	G	38	G	G	30	31	48	33			G	G
25		32		G	29	G	32	33	37	G	47	64	64	77	85	82	64	37	42	59	72	G		97
26	72	52	33	28	32	41	74	70	66	40	60	48	75	85	34	47	59	63	52	31	44	G		G
27	24	33	32	27	G	40	63	56	58	79	59	46	44	42	45	32	35	51	43	40	59	59		G
28	G	G	G	G	25	40	56	60	57	60	63	42	46	41	38	34	31	29	47	36	54		47	G
29	G	G		31	G	38	43	40	51	66	82	44	60	40	36	33		60	57	54		G		G
30	28	G	G	G	28	37	50	52	40	62	56	53	32	74	96	34	77	46	86	51	70	64		G
31	G	G	G	72	46		62	62	66	43	43	45	52	45	73	90	94	88	97	72			G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	22	21	24	27	21	20	21	16	20	19	20	22	16	22	22	19	20	19	19	16	17	10	20
MED	G	G	G	G	G	28	42	43	56	42	43	42	32	43	35	16	31	41	48	40	46	G	G	G
U Q	28	28	28	27	29	40	53	57	65	61	60	47	46	66	43	47	64	61	86	59	60	G	47	G
L Q	G	G	G	G	G	G	G	G	38	G	G	G	G	19	G	G	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Wakkanai

MAY 2000

LAT. 45°23.5'N LON. 141°41.2'E 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																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19	14	14	15	14	15	15	15	15	18			23	20		21	20	18	16	16	15	15		16	
20	14	14	14	15	20	16	15	16	20	21	21	22	22	23	20	21	18	16	16	14	14	15	17	18
21	14	14	14	14	15	15	14	16	18	18	18	20	20	20	17	20	18	16	16	15	15	18	22	31
22	14	14	15	15	17	16	15	15	17	17	21		21	22	21	18	16	16	16	15	14	17	15	14
23	18	16	15	14	16	15	15	16	17	18	18	20	20	18	20	20	15	16	15	15	15	29	14	14
24	14	14	14	14	14	16	17	18	16	18	20	18	21	22	23		18	16	15	15			23	15
25		14	15	14	15	15	15	20	20	20	18	20	18	18	28	18	16	15	15	14	15		15	16
26	15	15	14	14	15	16	14	15	15	17	20	18	18	20	16	18	16	16	15	15	14	15		17
27	15	14	15	14	17	15	15	15	18	18	18	20	18	22	20	17	17	15	15	15	15	15	16	33
28	14	15	15	15	17	16	17	17	17	18	21	18	22	16	20	18	20	16	17	15	15	16	18	18
29	14	14		15	18	15	15	16	21	21	17	18	21	20	17	20	18	16	16	14		15	14	29
30	15	15	14	15	17	18	16	18	15	20	20	18	18	20	17	18	20	15	15	15	15	15		33
31	14	14	15	14	15		15	15	17	17	21	21	20	23	18	16	15	15	17	14		16	18	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	12	13	12	13	13	12	13	13	13	12	12	12	13	12	13	12	13	13	13	13	10	10	11	12
MED	14	14	15	14	16	16	15	16	17	18	20	20	20	20	20	18	18	16	16	15	15	16	16	18
U Q	15	15	15	15	17	16	15	17	19	20	21	20	21	22	21	20	18	16	16	15	15	17	18	30
L Q	14	14	14	14	15	15	15	15	16	17	18	18	18	19	17	18	16	15	15	14	14	15	15	15

HOURLY VALUES OF foF2 AT Kokubunji

MAY 2000

LAT. 35°42.4'N LON. 139°29.3'E 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	92		94	81	81		104	96	114	108	114	121	128	135	129	131	132	125	126	104	97	94		95
2	93	94		92	93	94	93	97	107	116	120	121	125	132	125	118	106	106	101	110	96	80	93	95
3			68	94	83	93	115	94	102	100	111	124	118	112	117	121	122	110	116			70	76	
4	95	67	68	56	66		92	87	96	103	106	106	127	126	116	118	114				84	82	83	95
5	95	95	94	92	67	61	94	78	86	98	94	97	106	112	112	106	108	114	116	106	84	94	N	95
6	82	94	94	70	57	76	94		84	90	96	107	113	113	126	125	120	117	116	97	70	76	72	
7	76	68	68		62	95	96	105	101	101	106	97	112	115	114	113	116	123	127	131	93	71	81	97
8	95	94	95	71	71	92	94	93	94	91	100	106	104	109	116	117	117	113		A		93	68	94
9	87	80	93	77	77	100	105	108	97	102	102	102	106	108	113	111	109	110	122	122	106	92	94	93
10	94	93	80	67	73	86	95	104	114	100	92	103	94	93	96	103	102	106	106	88	79	94	94	80
11		81	94	92	70	94	93	100	107	103	103	113	116	116	116	113	114	113	111	104	114	93	93	
12		94	95	78	76	93	93	96	98	106	115	116	117	113	117	123	126	127	152	121	82	85	94	
13	94	92	94	66	92	92	94	105	107	109	115	110	103	113	114	102	96	96	98	92	81	A	A	A
14	92	95	83	67	66	94	94	96	90	86	81	89	96	92	101	110	107	101	97	87	83	93	81	81
15	94	94	95	92	69	72	82		86	82	92	94	82	91		91	86	86	82	93	81	70	94	95
16	77	95	66	60	67	76	93	80	71	A	A	A		86	84	91	94	94	93	71		80	94	96
17	94	94	76	64	56	62	72	64	A		A	A	A		86	100	93	92	77	93	66	94	94	68
18	71		61	67	72	92	93	91	89	93	94	89	101	101	103	105	103	104	101	101	94	A	A	82
19	93	80	82	94	88	98	104	106	A	A	102	107	A	A	110	110	106	103	106	117	82	92	94	94
20	93	93	94	76	80	94	116	108		87	A	A	107	105	103	106	106		129		A	85	90	
21	86	94	80	82	80	94				A	A	95	96	94	99	97	A	A	98	93	95	A	A	93
22		94	95	71	72	81	114	A	95	115	98	102	103	99	96	95	90	100			95	A		93
23	94	94	93	74	67	100	95	83	A	82	A	85	88	84	86	81	86	88	80	79	68	69	76	81
24	81	73	67		70	65	70	88	80	A	A	A	90			87	91	71	A		A	A	79	
25	A	55	57	56	60	69	102	104	91	83	101	105	114	98	A	96	101	103	111	89	81		94	93
26	92	94	80		67		92	78	A	A					A	67	A	68	70	70	67	73		74
27	68	67	63	63	66		93	82	A	A	A	96	106	98	98	96	91	91	98	85	92	94	93	
28	115	115	84	72	69		92	72	74	83	81	87	91	93	100	96	91	96	91		84	82	95	87
29	81	93	77	77	76	92	98	114	A	A	82	84	88	102	103	106	96	96	114	92	74	71		82
30	79	80	61	57	53		94	88	115	99	A	A	90	98	103	93	84	A	84	93		A	68	
31	A	A	A		A	A	A	94	88	97	97	98	A	90	96	107	108	90	87	94	A	A	78	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	27	29	27	30	24	29	27	23	23	22	25	26	27	27	31	29	27	27	24	24	23	23	21
MED	92	94	82	72	70	92	94	94	95	99	100	102	105	102	103	106	106	103	101	93	84	85	93	93
U Q	94	94	94	82	77	94	100	104	107	103	106	108	114	113	116	113	114	113	116	105	94	93	94	95
L Q	81	80	68	66	66	76	93	83	86	87	94	94	94	93	98	96	92	92	91	88	80	73	78	81

HOURLY VALUES OF fEs AT Kokubunji

MAY 2000

LAT. 35°42.4'N LON. 139°29.3'E 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	24	G		38	37	53	46	G	G	78	G	G	54	90	61	37	59	129	67	34	G
2	G	G	G	G	G	G	36	51	56	62	57	54		35	33	33	51	62	48		30	G	G	G
3	G	25	G	G	G	G	31	46	47	G	45	64	103	61	107	G	31	136	65			69	68	38
4	G	G	G	G	G	32	40	45	56	60	G	55	67	62	G	60	94		132	78	61	31	G	G
5	G	G	G	G	G	G		42	50	56	G	G	G	G	G	32	27	42	72	52	40	G	28	25
6	G	G	G	G	G	G	32	46	49	34	G	G	G	G	G	28	32	49	52	34	30	30	40	25
7	G	G	28	34	28	28	46	48	52	55	48	56	53	G	56			27	44	35	47	53	31	G
8	G	28	G	G	26	27	27	30	53	52	44	58	48	58	62	66	91	90	71	124		34	30	G
9	G	32	G	23	G	30	40	46	51	43	G	46	G	G	47	G	33	44	41	46	30	27	28	G
10	G	G	G	G	G	G	26	34	51	53	54	G	G	G	54	G	38	43	34	39	29	G	63	41
11	34	32	G	G	G	27	32	53	59	59	59	56	87	58	69	60	43	28	44	41	50	40	40	30
12	28	G	G	G	G	32	40	62	65	59	G	G	47	55	G	41	58	27	37	80	79	58	G	26
13	29	30	G	28	28	G	32	G	54	88	95	71	G	57	72	70	G	59	45	29	52	77	78	33
14	32	24	G	24	G		33	48	72	68	55	60	48	G	G	G	33	28	32	26	23	G	G	40
15	42	33	28	30	28	65	44	52	46	47	G	G	G	G		G	56	50	55	48	29	35	44	33
16	G	30	G	G	G	G	41	52	56	66	82	55	G	58	68	70	68	60	68	103		48	45	34
17	G	40	30	28	G	32	48	52	72		61	58	55		G	54	53	54	72	30	32	32	G	G
18	28	30	42	G	G	30	36	63	63	56	51	72	56	57	60	50		66	77	53	26	84	96	51
19	54	37	62	38	43	34	33	72	92	64	74	87	109	108	84	61	81	88	84	88	60	59	25	G
20	G	28	37	35	G	G	47	58		77	114	88	58	52	G	90	62	101	85	93	82	93	75	43
21	40	42	36	56	37	39	54	89	93	166	162	56	58	G	38		90	96	62	61	79	87	91	97
22	42	26	34	34	G	27	36	92	60	67	71	51	92	G	37	36	G	95	140	126				98
23	73	70	63	G	G	23	36	50	79	61	91	68	47	G	54	33	56	48	40	39	30		54	50
24	39	28	29	G	G	G	34	35	34	54	54	59	G	G	G	G	G	32	41	180	150	108	116	39
25	79	40	27	23	40	41	50	63	69	58	85	97	83	51	87	61	88	66	52	58	88	51		38
26	34	32	28	G	G	34	59	94	135	71	G				48	58	61	62	56	55	43	52	67	59
27	29	30	34	33	G	30	44	66	61	83	88	84	54	70	60	44	55	91	96	132	90	38	26	
28	36	40	36	G	23	34	40	56	60	71	45	60	82	39	88	48	49	56	68		84	58	58	46
29	53	43	32	40	43	60	60	68	105	74	58	44	61	83	54	61	82	88	71	72	31	64	71	59
30	50	G	G	24	G	36	49	54	60	63	90	107	G	112	48		31	78	42	83		108	59	
31	99	105	110	130	68	80	104	63	59	81	G	58	99	58	47	60	65	95	36		86	93	61	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	29	30	31	30	30	31	30	29	29	30	28	29	30	31	27	26	29	29	28
MED	29	30	27	23	G	30	40	52	59	60	54	57	54	51	48	49	55	60	55	58	48	52	44	34
U Q	42	37	34	33	28	34	47	63	69	71	82	68	80	58	62	60	74	88	72	88	82	73	67	44
L Q	G	G	G	G	G	G	33	46	52	54	G	46	G	G	G	30	32	44	41	39	30	31	27	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

MAY 2000

LAT. 35°42.4'N LON. 139°29.3'E 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	16	15		16	20	21		49		39		56	21	18	15	15	15	14	15	14	14
2	15	15	15	14	15	17	15	18	18	20		30		28		23	17	16	15	17	14	14	16	15
3	17	15	15	15	15	18	14	15	18		45	40	40	42	36	46	16	16	14			15	14	14
4	15	14	16	14	14	15	16	17	36	37		38	36	40	75	17	16		15	15	14	14	15	15
5	15	15	14	14	14	22	15	14	17	20			60	43	48	42	17	16	16	15	15	15	15	15
6	14	15	15	15	14	18	16	16	18	14	49		62	65	55		17	16	16	15	15	15	15	15
7	14	14	14	14	14	16	15	17	22	14	40	42	39		34	21	17	16	15	14	15	15	15	16
8	15	15	14	15	16	16	15	16	21			40	40	42	28	23	20	16	16	15		14	15	15
9	16	14	15	15	14	16	16	16	20	22		50	N	58	50	45	16	16	15	15	14	15	15	15
10	15	18	14	15	14	14	15	18	18		40		62	58	60	50	21	15	14	15	14	14	14	14
11	15	14	14	14	15	16	16	18	24	30	40	40	40	44	39	18	17	18	15	15	15	14	15	14
12	15	16	18	15	15	15	15	17	23	38		63	60	40		33	20	18	15	16	14	14	15	17
13	14	15	14	15	14	21	16		39	43	44	48	N	45	43	38	42	24	16	14	20	15	15	14
14	15	15	14	15	14	22	17	20		43	44	46	40		64	54	18	15	14	16	15	14	14	15
15	15	14	14	15	14	15	15	16	28	34		63		63		52	20	16	21	14	15	15	15	14
16	15	15	14	14	15	16	16		38	42	40	42		43	39	26	22	17	14	14		15	14	14
17	15	14	14	15	16	15	15	14			43	42	42			40	18	15	15	15	14	14	15	15
18	15	14	14	16	14	14	20	23		40	44	45	40	42	40	38	20	18	15	15	15	15	14	15
19	14	14	14	15	14	14	15	17		40	43	40	39	42	38	34	20	26	18	17	15	15	15	14
20	14	14	15	14	18	16	17	17		38	42	43	42	44		42	20	17	16	16	15	15	15	14
21	15	14	14	14	15	16	15	18	23	35	39	38	44		29	23	17	18	16	15	15	15	15	15
22	15	14	15	14	16	17	16	16	15		40	44	43		63	26	26	15	17	16	15	15		16
23	15	14	15	15	15	21	16	17	15	23	42	40		62	40	17	18	14	17	17	15	15	14	15
24	15	14	14	16	14	23	16	18	22	40	44	45		71			46	22	16	16	16	14	16	15
25	15	14	14	14	15	16	16	26		39	40	42	43	44	44	40	21	16	17	16	15	15	14	14
26	15	14	15	20	14	15	16	18	18						40	17	17	15	16	17	14	15	15	14
27	14	15	14	15	14	15	17	14	23		38	40	20	20	28	35	18	20	17	16	14	15	15	
28	14	14	14	15	15	15	21	17	18	20	36	42	42		36	18	18	17	17		15	15	15	15
29	15	14	14	14	14	15	15	14	17	34	38		43	38	18	26	20	16	16	16	14	14	15	15
30	15	15	15	14	14	15	14	20	34	38	42	41		40	42	21	21	16	16	16		15	15	
31	15	14	14	14	15	16	17	15	17	26		39	36	40	23	22	17	16	17	15	15	15	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	30	31	29	25	23	22	25	22	23	25	29	31	30	31	29	27	31	30	29
MED	15	14	14	15	14	16	16	17	21	35	42	42	41	43	40	26	18	16	16	15	15	15	15	15
U Q	15	15	15	15	15	17	16	18	23	40	44	45	43	58	52	41	20	18	17	16	15	15	15	15
L Q	15	14	14	14	14	15	15	16	18	22	40	40	39	40	35	21	17	16	15	15	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

MAY 2000

LAT. 26°16.9'N LON. 127°48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC 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	125	128	130	92	95	94	80	96	96	117	117	126		167	168	171	172	170	174	168		148	168	160
2	166		109	116	115		96	98	110	118	A	123	136	147	154	146	145	144		135	117	A	112	110
3	113	122		102		96	92	94	94	100	114	151	139	151	172	168	165	159	156	142	122	84	94	92
4		94	93	82	81	70	94	93	93	95	104	122	155	164	168	183	186	181	185	186	89	A	157	160
5	150	150	156	133	96	93	85	93	96	94	94	105	118	126	145	152	161	151	141	135	113	81	82	93
6	A	93	73	77	68	69	94	88	92	91	108	120	115	154	171	177	178	182	176	165	122	117		96
7		93	86	94	94	80	94	103	95	82	94	A	120	144	144	A	168	176	164	151	123	113	115	121
8		95	92	93	81	74	94	79	93	94	95	94	117	132	150	144	148		174	141	78	90	A	A
9	117		116	93	93	76	92	93	100	A	A	111	118	137	149	145	147	147	172	171	139		132	
10	138	161	164	116	92	82	94	114	87	90	107		123	119	134	148	143	148	141	139	A	123	149	117
11		115		95	93	95	87	104	104	116	111	117	135	153	150	147	166	164	167		109	119		109
12		87	81	93	95	76	92	110	96	92	95	117	N	120	145	158	168	171	172	150		120	A	116
13		89	116	111	76	68	95	96	93	100	106	118	121	134	133	123	122	134	131	A	94	97		78
14	108	119	134	100	79	81	92	103	93	90	93	115	125	151	163	N	170	174	173	164	142	136	142	158
15	149	125	117	94	96	81	94	91	92	92	95	114	116	117	107		105	111	110	109	80	81	80	95
16		90	80	73	64	70	71	92	A	93	87	94	110	114	117	118	123	128	120	111	111	132		109
17	109	112	115	80	74	94	72	94	94	94	A	A	111	115	124	131	132	124	122	130	119	115	132	111
18				92	94	95	93	96	94	96	92	92	106	118	122	131	150	147	172	154		109	169	164
19	169	174		158	123	118	92	90	94	92	115	118	126	136	133	149	155	129	133	144	132	109	113	134
20	151	153	133	95	115	109	106	119	93	94	99	117	120	150	158	149	149	150	145	142	117	139	139	93
21		152	114	92	92	84	94	96	A	98	104	118	125	123	117	126	117	106	A	91	87	80	115	68
22	94	94	82	85	81	81	93	87	93	91	95	92	112	115	112	114	108	111	N	110	92	93	94	79
23		88	92	82	80	77	93	86	98	92	95	118	117	119	120	129	133	130	127	105	A	A	A	80
24	80	97	A	75	75	62	62	75	95	79	86	93										A	68	68
25	A	94	A	A	A	56	94	83	76	78	94	A	A	93	116	125	130	124	71	110	92	114	111	109
26	94	A	99	93	93	95	76	79	A	A	A	74	80	83	83	81	90	90	86	A	A	A	58	A
27	72	75	71	70	61	61	63	95	A		103	115	120	124	150	155	158	162	162	163	70	114	122	138
28	151	115	94	92	95	93	94	92	A	A	92	A	A	104	A	115	117	116	A	108	83	92	93	84
29		90	93	79	70	72	80	86	82	80	92	115	111	121	127	119	156	124	138	136	124	96	86	94
30	94	92	85	93	71	75	68	78		112	98	105	104	104	113	116	121	120	122	121	92	96	83	82
31		99	94	93	68	95	77	82	A	87	A	A	A	A	133	121	115	113	A	89	A	A	68	76
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	27	25	30	29	30	31	31	24	27	26	25	25	29	29	27	30	29	25	27	23	24	24	28
MED	117	97	94	93	92	81	92	93	94	93	95	115	118	124	134	144	148	144	145	139	111	111	112	102
U Q	150	125	116	95	95	94	94	96	96	98	106	118	125	148	152	152	165	163	172	154	122	119	135	119
L Q	94	92	85	82	74	72	80	86	93	90	94	99	111	116	118	121	122	122	124	110	89	92	84	83

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

MAY 2000

LAT. 26°16.9'N LON. 127°48.4'E 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	68	42	24	26	G	43	39	40	62	84	G	G		G	G	69	56	55	65	52	85	66	66	72
2	40	40	36	G	G	G	G	41		59	112	78		G	G	G	43	91	103	103	137	84	90	133
3	124	64	60	45	34	G	33	54	64	58	74	50	78	G	G	G	51	66	75	42	60	42	69	
4	66	40	30	G	G	G	23	49	51	72	68	88	74	75	G	47	G	32	50	40	87	180	75	41
5	G	G	G	G	G	G	G		46	59	64	66	G	90	64	G	81	96	65		76	68	42	38
6	33	26	G	24	G	G	G		47	51	59	72	77	83	72	52	38	36	52	58	39	24		39
7	33	44	28	33	G	G	G		56	84	108	185	110	156	104	154	113	67	68	92	95	66	42	43
8	41	38	38	37	G	G	G	40	58	99	96	84	58	66	84	70	62	52	49	79	127	134	148	125
9	G	24	27	G	36	G	G	31	58	86	178	71	89	64	G	62	42	65	95	91	39		G	
10	42	64	61	43	42	G	G			42	G		G	51	67	62	88	68	59			68	58	39
11	38	48	45	34	G	25	G	38	45	68	G	G	G	G	G	39	35	32	32		34			G
12		27	39	31	G	G	G	39	53	69	G	92	G	68	99	80	80	66	79	86	39	38	114	82
13	46	40	37	25	27	G	G	25	48	40	52	G	G	65	G	39	G	53	58	152	92	58	35	36
14	36	39	25	G	G	G	G	35	48	47	G	87	124	96	68	44	38	54	48	43	G	25	G	G
15	G	G	G	G	37	36	25	37	47	43	80	64	47	G	G		56	69	96	67	76	57	29	59
16	56	43	44	41	G	G	G	46	95	166	60	65	56	60	84	64	41	49	45	37	65	46		28
17	28	23	G	G	G	G	25	42	66	67	118	97	82	92	78	56	43	44	67	60	72	39	37	40
18				G	G	G	G	38	40	G	G	G	G	G	48	G	55	38	24	27		G	30	G
19	26	26	G	G	G	G	G	36	41	46	G	123	86	82	G	64	82	64	48	58	94	74	69	45
20	30	G	G	G	G	G	G	33	46	45	58	G	G	G	44	G	G	45	26	G	G	G	G	G
21		G	36	G	74	77	34	88	151	87	80	68	58	G	42	69	61	76	123	104	92	54	54	56
22	51	50	40	G	G	G	G	37	44	43	41	G	G	G	58	60	75	58	66	60	G	38	33	44
23		33	24	G	G	G	G	41	39	36	38	G	G	94	80	58	60	40	42	36	126	69	66	37
24	G	40	93	83	37	G	G	39	47	G	G	G										75	54	34
25	98	59	120	156	133	99	G	51	58	67	89	160	127	G	G	G	45	60	87	70	G	37	26	42
26	98	124	84	64	47	65	G	50	130	134	88	55	38	G	G	74	36	51	70	80	93	70	77	152
27	64	28	28	34	G	29	41	59	92		100	122	79	G	43	41	68	83	64	92	74	62	43	53
28	44	39	34	32	G	G	40	61	116	159	85	155	128	74	160	80	61	52	96	88	70	40	74	92
29		66	98	40	31	45	59	66	60	98	136	57	88	60	86	78	86	41	38	38	G	G	G	G
30	G		60	57	62	40	38	37		G	38	52	72	67	67	53	G	36	54	40	G	53	35	58
31	81	82	46	47	42	38	44	50	93	78	98	125	137	136	57	54	65	41	124	164	119	77	42	37
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	30	31	31	31	31	27	28	30	31	30	28	30	30	29	30	30	30	27	28	29	28	29
MED	40	40	36	26	G	G	G	40	54	63	64	67	65	62	52	56	56	54	64	60	73	57	42	41
U Q	64	49	46	41	37	36	33	50	65	84	96	92	87	82	78	69	68	66	79	91	92	69	69	58
L Q	28	26	24	G	G	G	G	37	46	43	G	G	G	G	G	39	38	41	48	40	36	38	31	35

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Okinawa

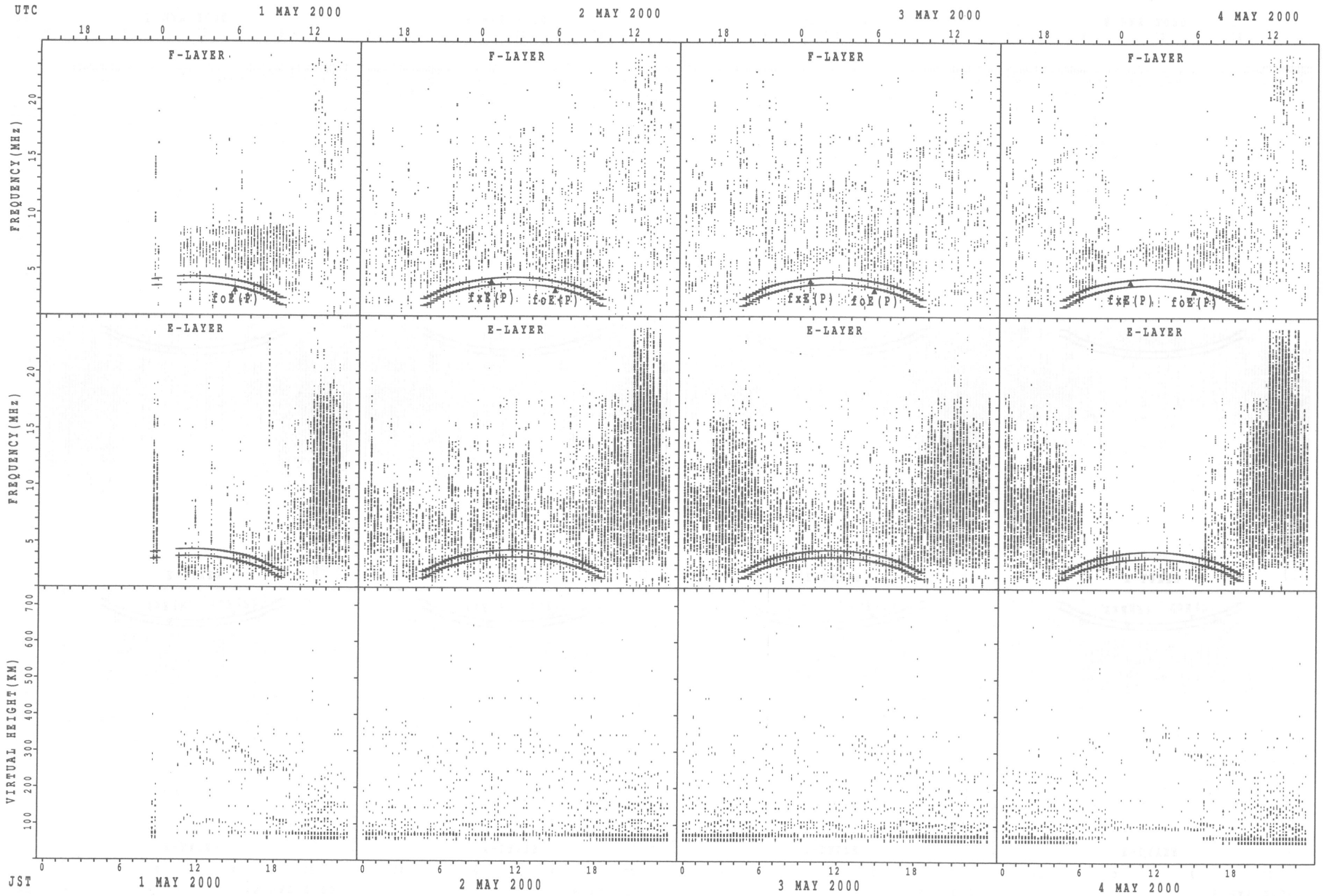
MAY 2000

LAT. 26°16.9'N LON. 127°48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

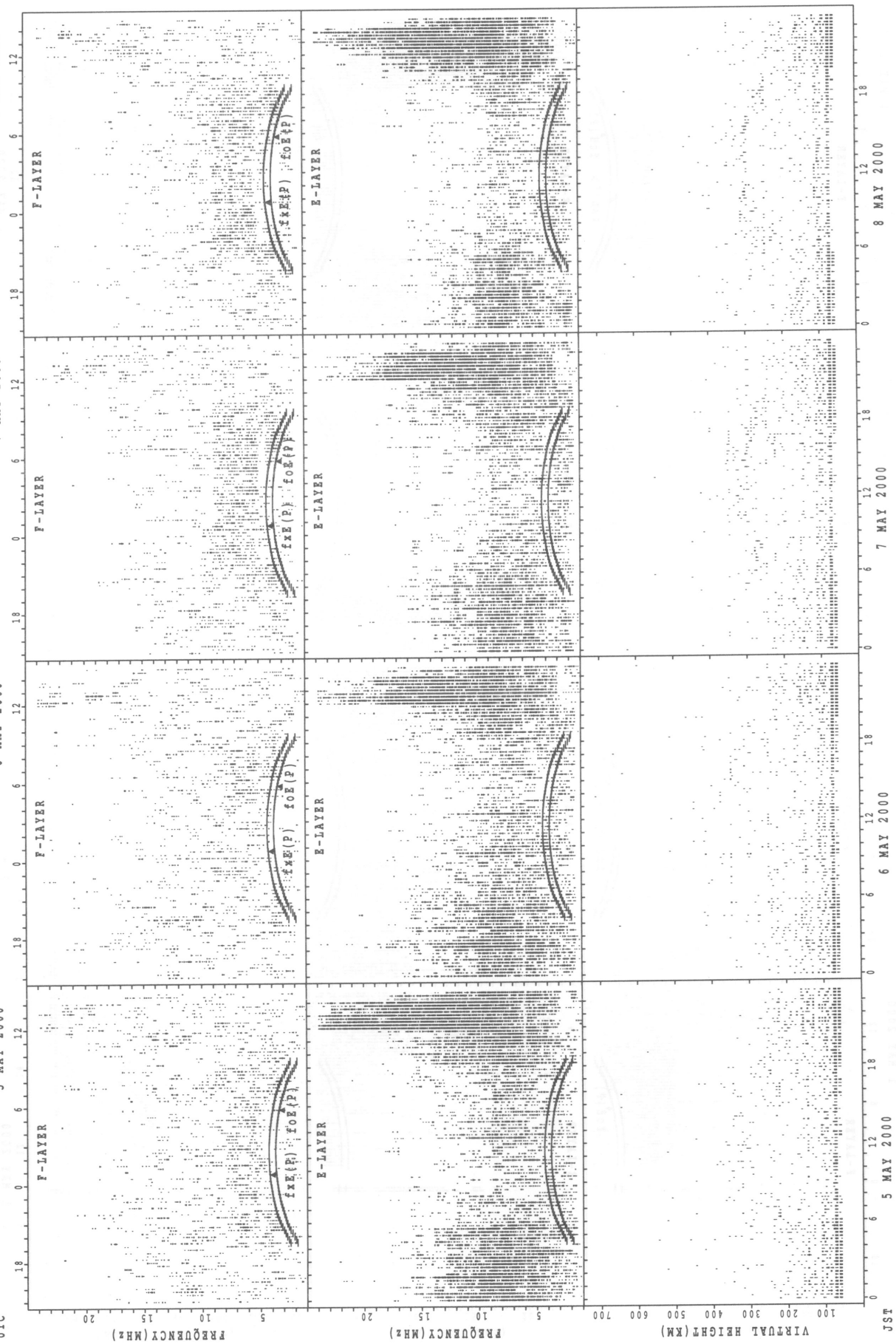
H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	14	15	15	15	14	17	20	30		49		52	56	40	36	30	16	14	15	14	14	14
2	15	14	14	20	16	16	22	16	17	29	38	39	39	50	49	46	29	18	15	14	14	14	14	14
3	14	15	15	14	15	17	16	16	17	29	34	43	43	49	56	50	36	17	16	15	14	15	14	14
4	14	14	14	14	16	16	15	17	28	33	39	42	44	43		38	40	21	15	15	14	14	15	14
5	15	16	15	15	14	14	24	16	16	24	36	38		36	45	48	37	21	17	14	16	14	14	15
6	15	14	15	15	18	16	16	16	18	23	28	33		45	35	29	26	24	17	14	14	15	14	18
7	14	14	14	14	14	16	18	15	26	26	29	36	35	32	30	26	22	17	15	15	15	14	14	14
8	15	15	15	15	24	15		17	29	27		46	44	38	38	42	41	29	15	15	14	14	14	14
9	15	14	15	15	14	18	27	16	21	29	32	42	47	47		44	49	18	15	15	14		15	
10	15	14	15	14	16	15		16	17	27			53	58	30	32	28	26	16	15	14	14	14	15
11	16	15	15	15	16	15	26	15	26	29		55	64	58	53	52	54	26	16		14	15		16
12		15	14	14	15	14	22	17	30	38		41		45	38	30	28	21	18	15	14	14	14	15
13	17	14	16	26	14	16	28	18	26	29	33	62	60	48	60	58		32	17	14	14	15	14	15
14	15	15	15	15	14	15	21	17	24	34	66	48	44	46	40	36	29	26	15	15	28	15	15	28
15	15	15	15	14	15	14	15	15	18	29	38	40	35		62		40	23	30	14	14	14	14	14
16	15	15	15	15	16	16	26	28	28	32	42	45	43	49	42	35	30	18	18	15	15	15		14
17	15	15	15	17	14	16	17	18	18	38	41	44	43	46	43	32	29	26	16	14	14	14	15	14
18	15			15	16	15	29	17	32	50	50	62	101	62	58	62	30	28	17	14		20	14	16
19	14	14	15	16	15	14	24	18	29	38	68	39	45	47	60	43	30	27	16	15	14	14	15	14
20	14	16	15	15	16	16	16	18	28	30	42	59	59	62	62	58	53	36	17	18	15	15	15	15
21		15	14	15	14	15	16	16	21	29	30	42	41	61	33	44	44	23	16	15	15	15	14	14
22	14	15	15	20	15	16	24	16	27	22	30	65	63	59	44	41	39	22	15	14	18	14	15	14
23		14	16	15	15	15	15	16	29	28	56	56	56	38	36	32	28	27	16	15	14	14	14	15
24	16	14	14	14	14	16	27	16	18	52	53	60										15	15	14
25	15	15	15	14	14	14	28	21	18	40	44	44	44	53	91	54	38	23	16	15	15	15	14	14
26	15	14	14	14	14	14	15	15	18	34	29	29	71	101	59	33	30	23	16	14	14	15	14	15
27	14	14	15	14	14	14	15	16	18		34	33	36	60	34	27	28	20	15	14	14	14	15	14
28	15	14	15	14	16	16	16	17	24	27	30	32	39	40	36	32	37	21	15	14	14	14	14	14
29		14	15	14	14	14	16	15	17	24	29	42	30	39	35	33	27	18	16	14	16	16	15	15
30	15	15	14	14	14	15	15	15		47	30	57	45	44	32	29	47	17	15	15	16	14	15	15
31	14	14	14	14	14	14	15	15	17	26	29	36	39	38	30	32	28	20	15	14	14	14	15	15
	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	30	30	31	31	31	29	31	30	30	26	30	26	29	28	29	29	30	30	29	29	30	29	30
MED	15	14	15	15	15	15	17	16	21	29	35	42	44	47	42	38	30	23	16	15	14	14	14	14
U Q	15	15	15	15	16	16	25	17	28	34	42	55	56	58	57	47	40	26	17	15	15	15	15	15
L Q	14	14	14	14	14	14	15	16	18	27	30	39	39	41	35	32	28	20	15	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

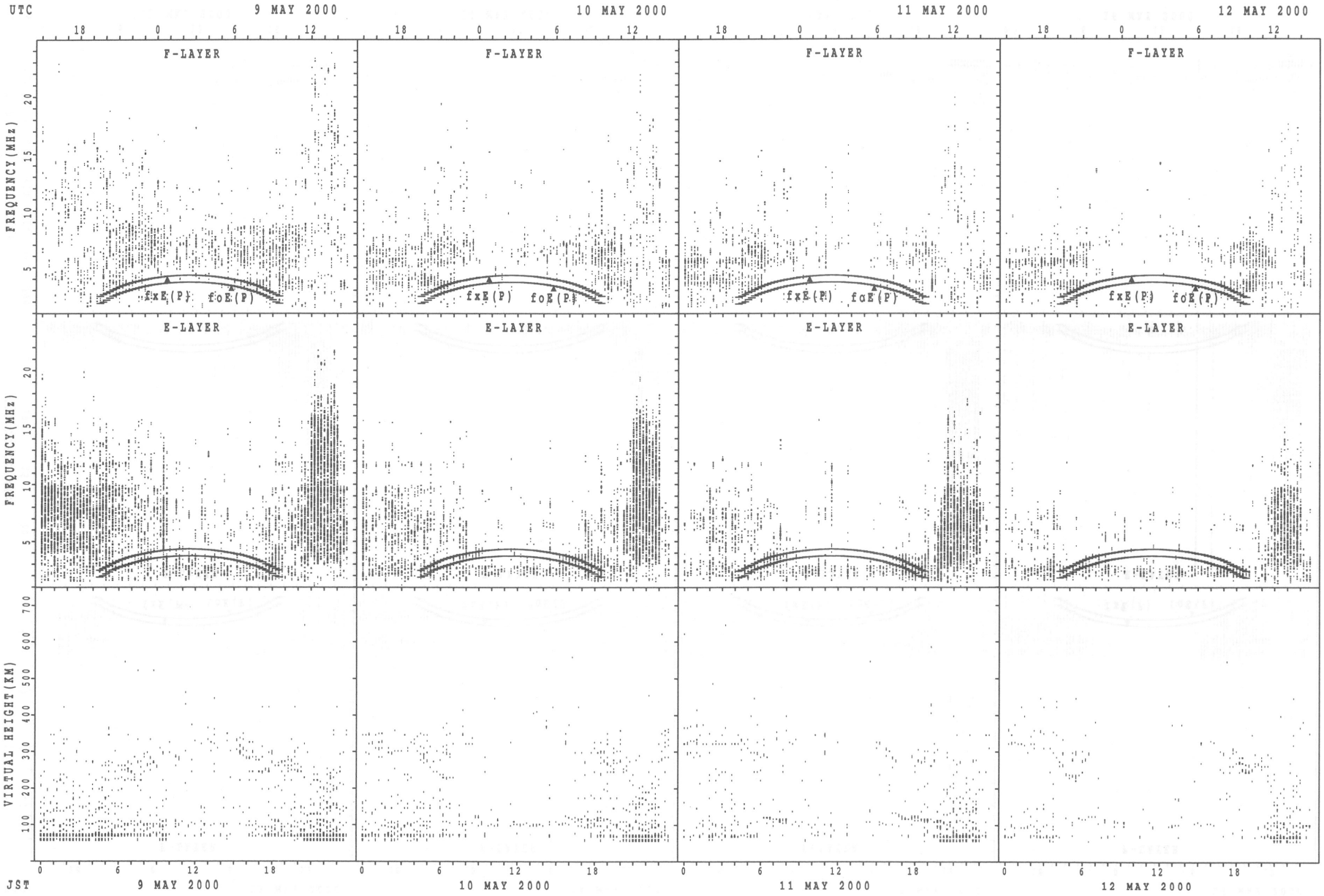
SUMMARY PLOTS AT Wakkanai



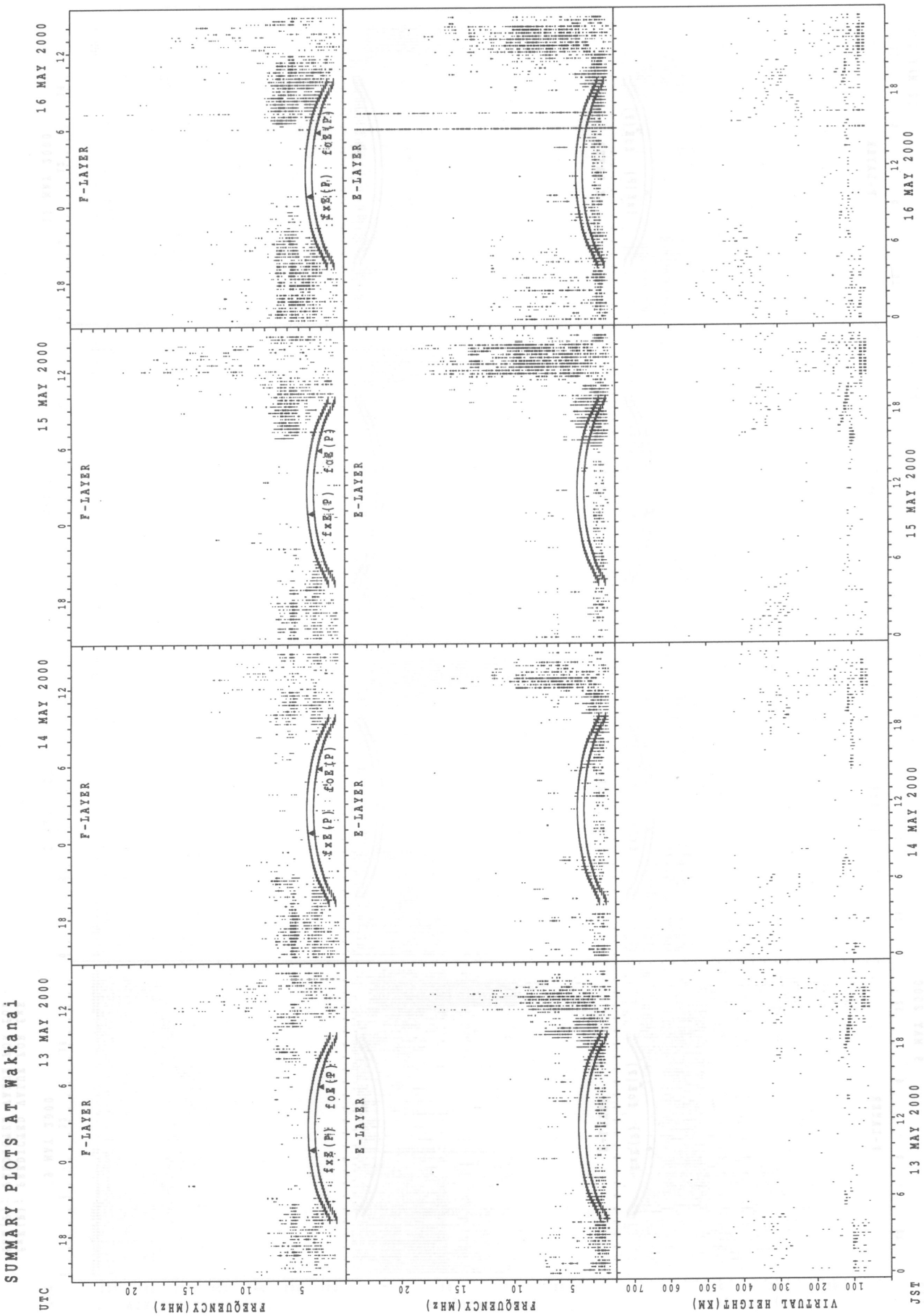
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 MAY 2000
6 MAY 2000
7 MAY 2000
8 MAY 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

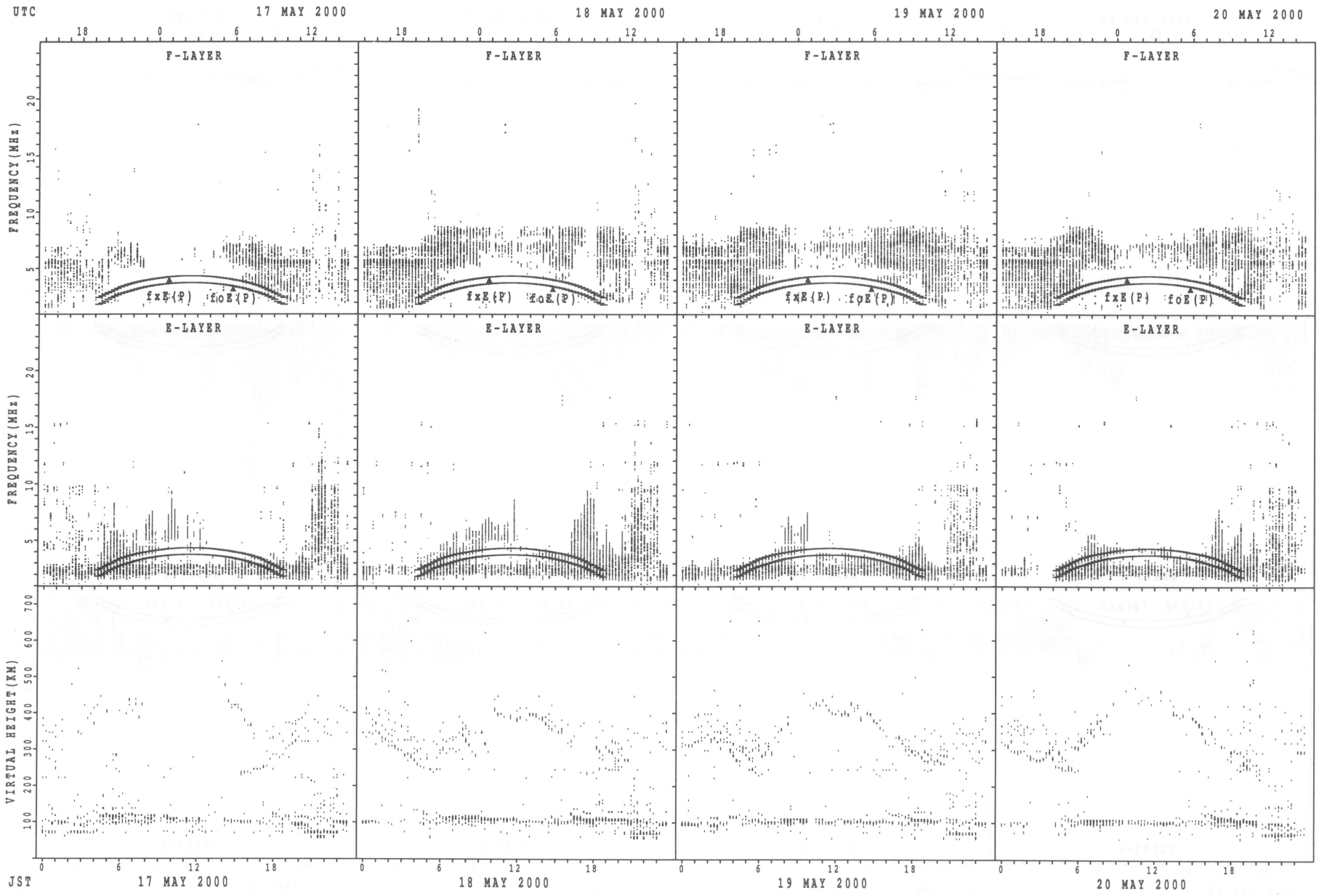
SUMMARY PLOTS AT Wakkanai



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

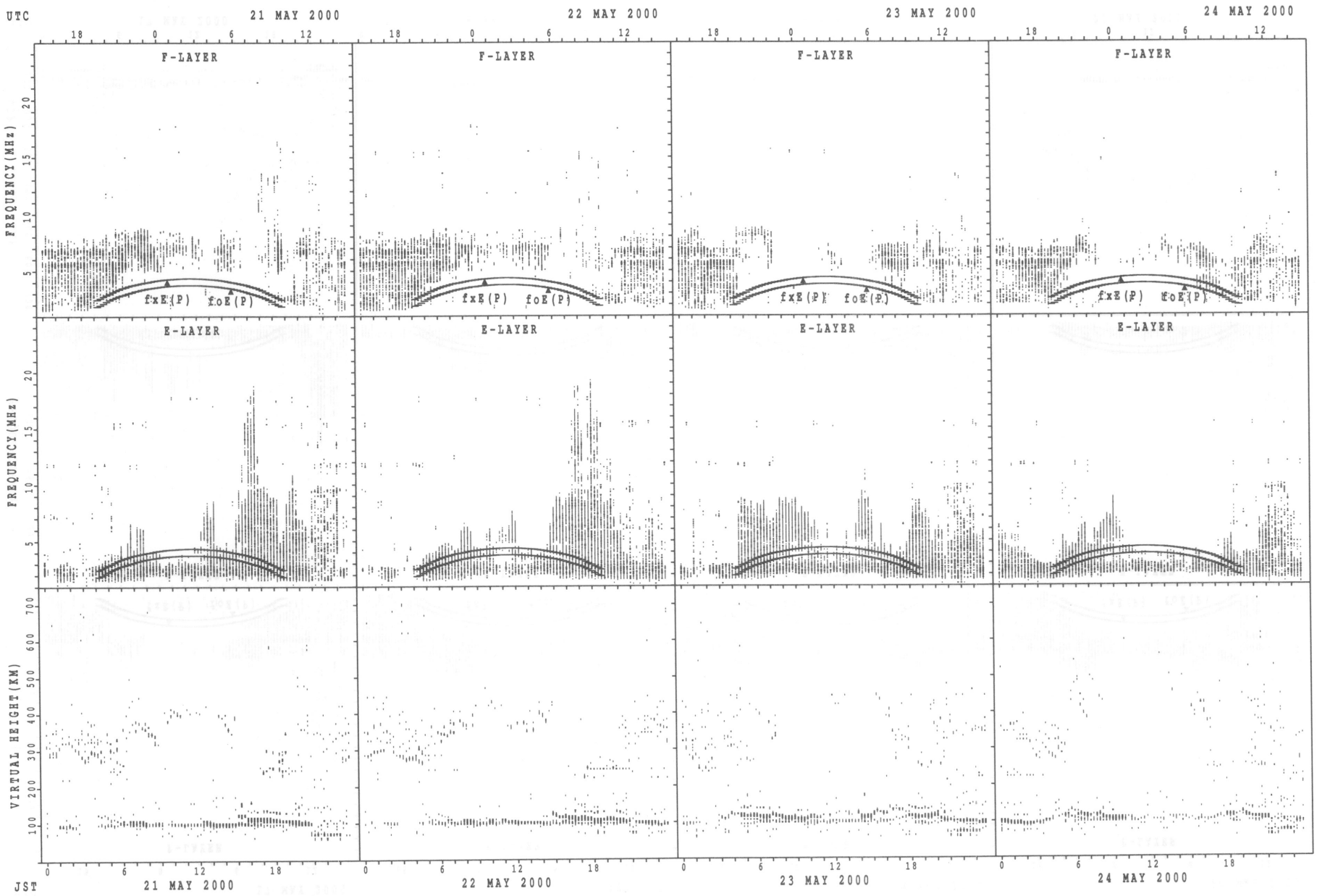

SUMMARY PLOTS AT Wakkanai
UTC
JST
13 MAY 2000
14 MAY 2000
15 MAY 2000
16 MAY 2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foF2(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



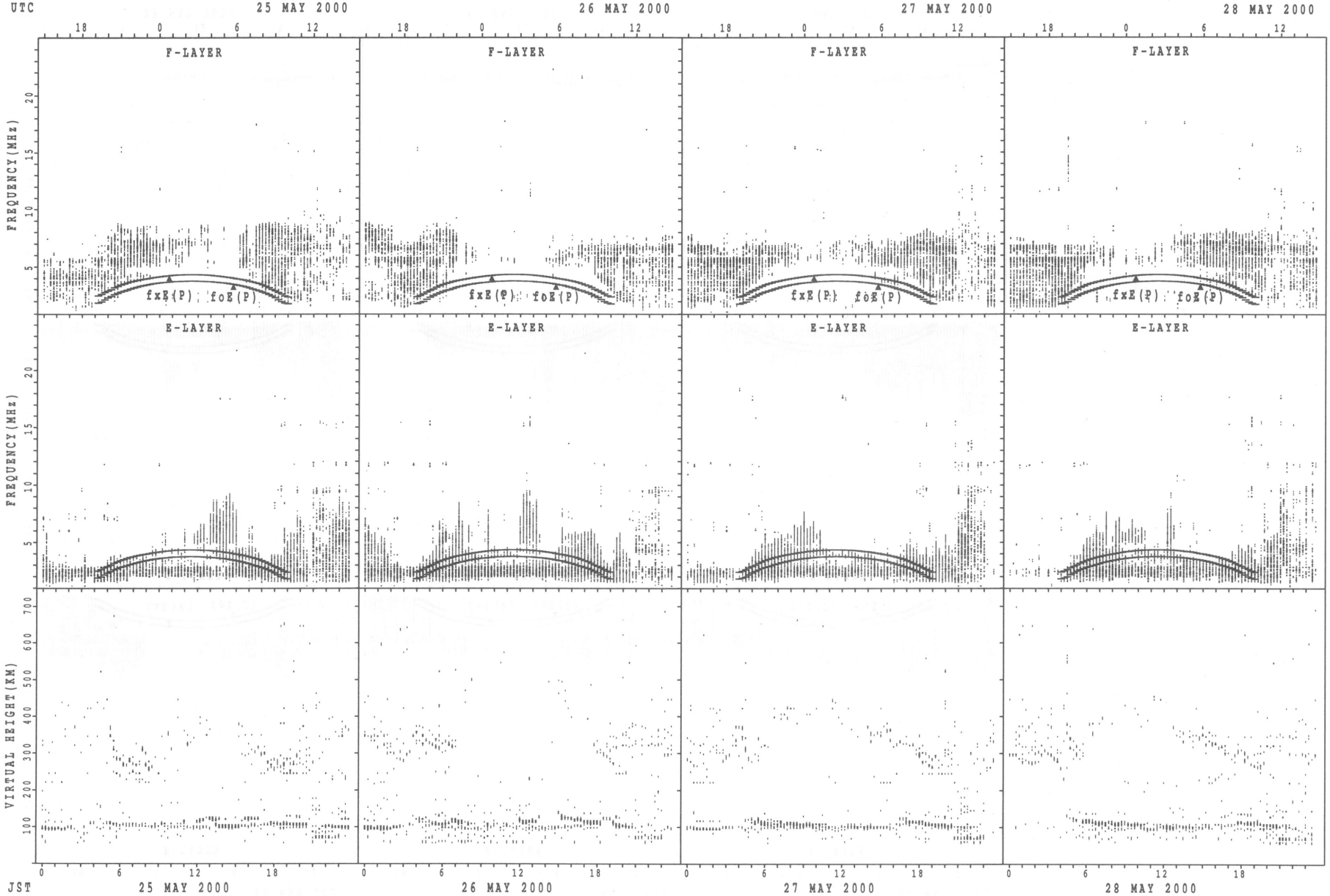
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



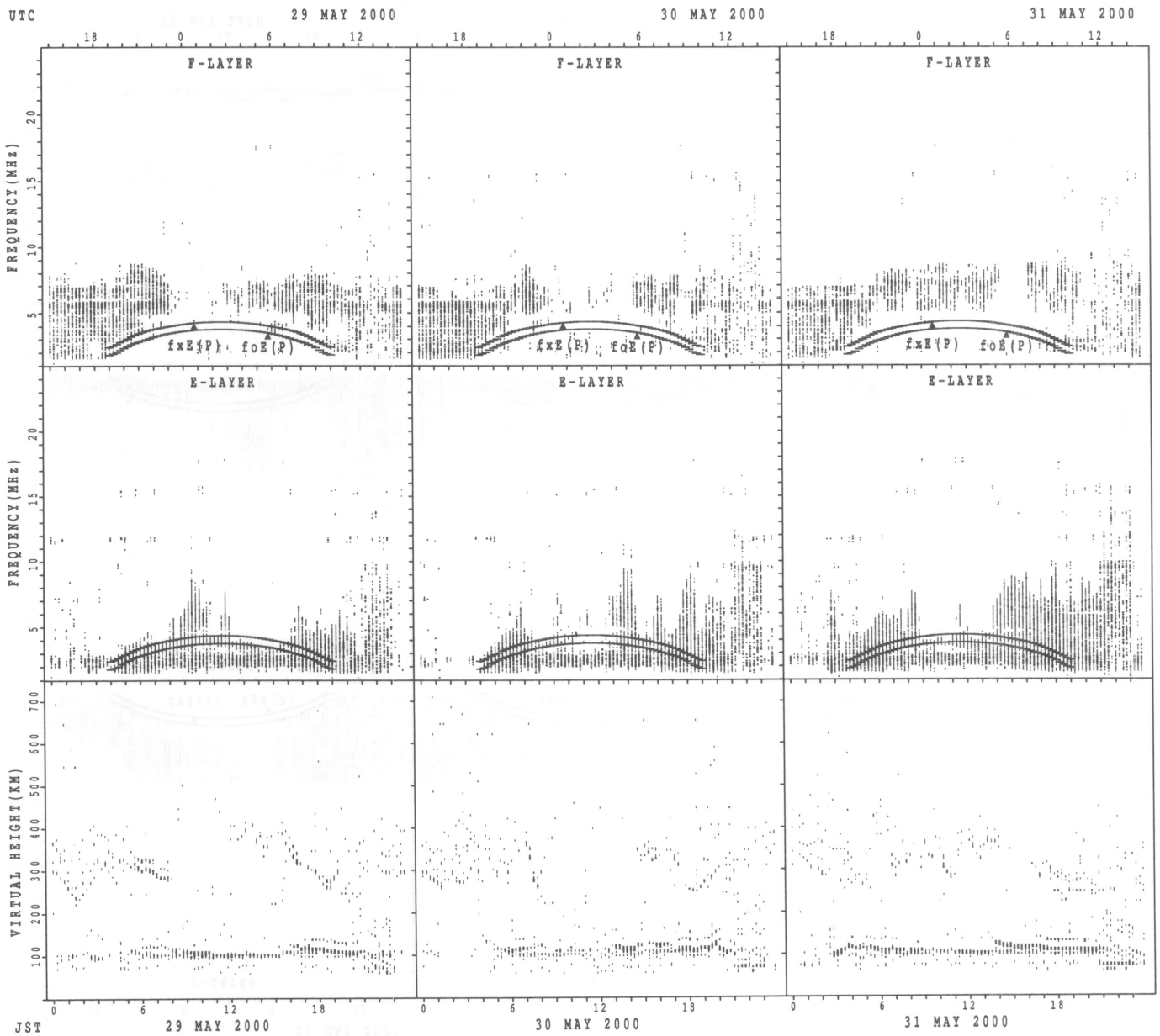
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



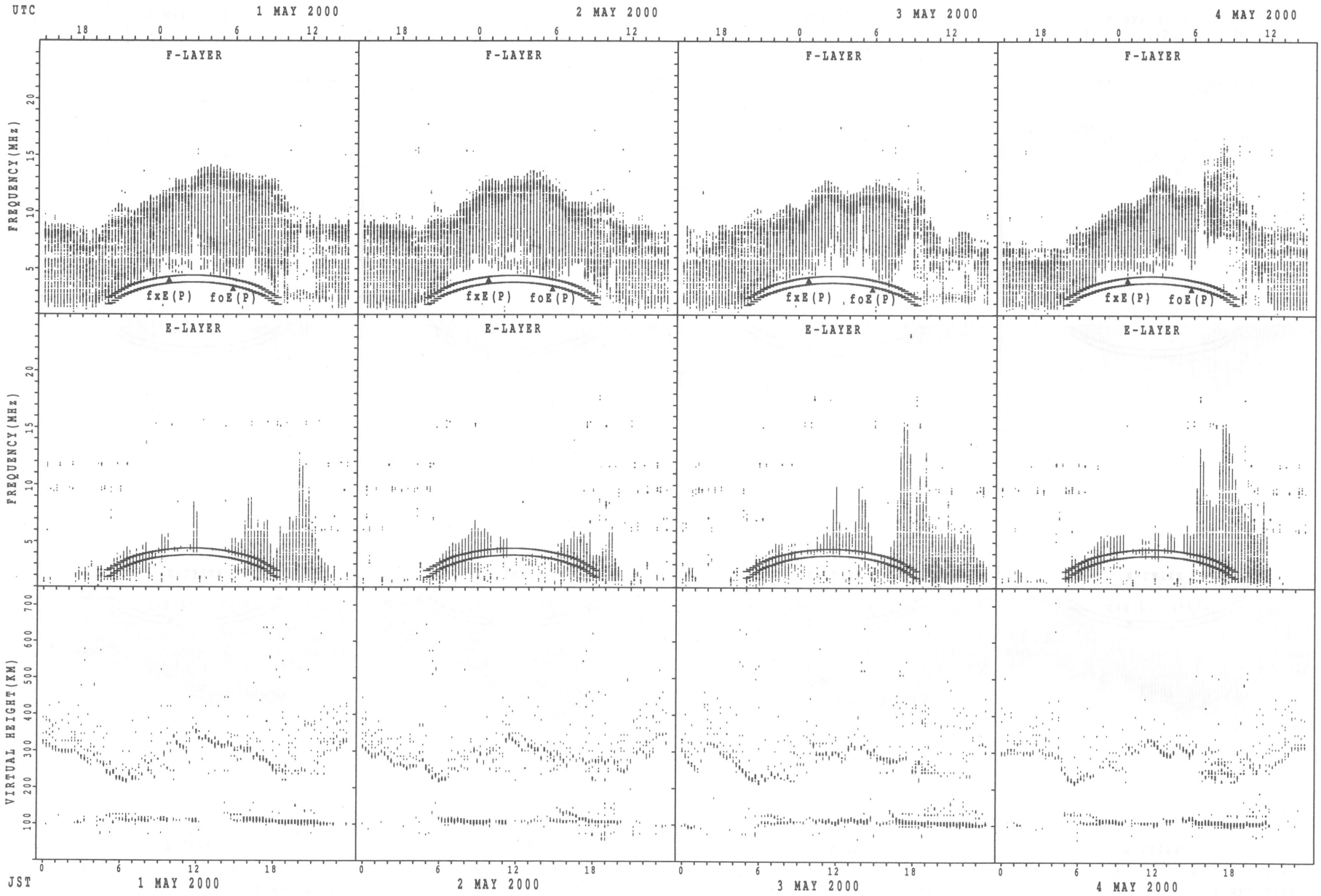
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



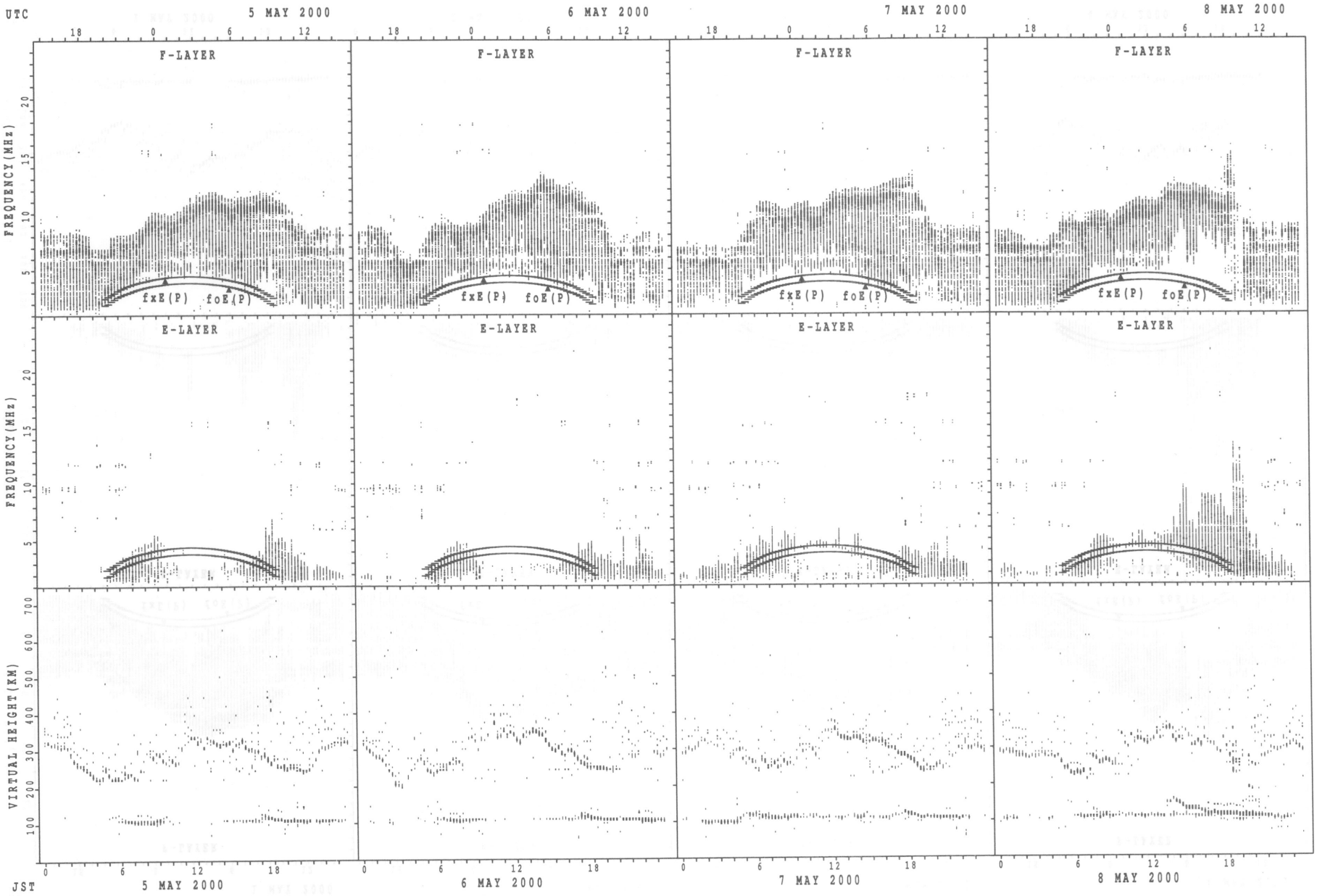
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

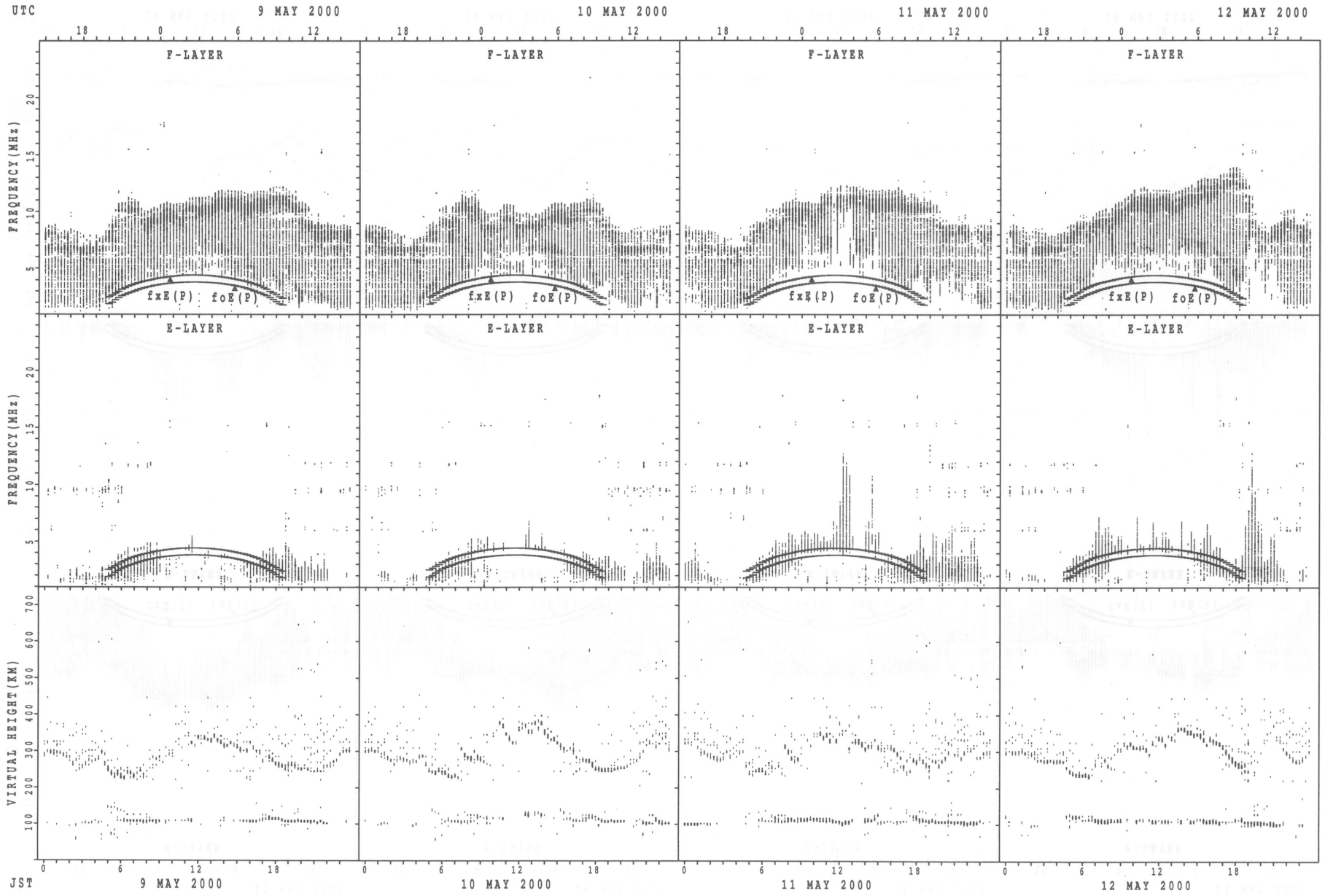


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

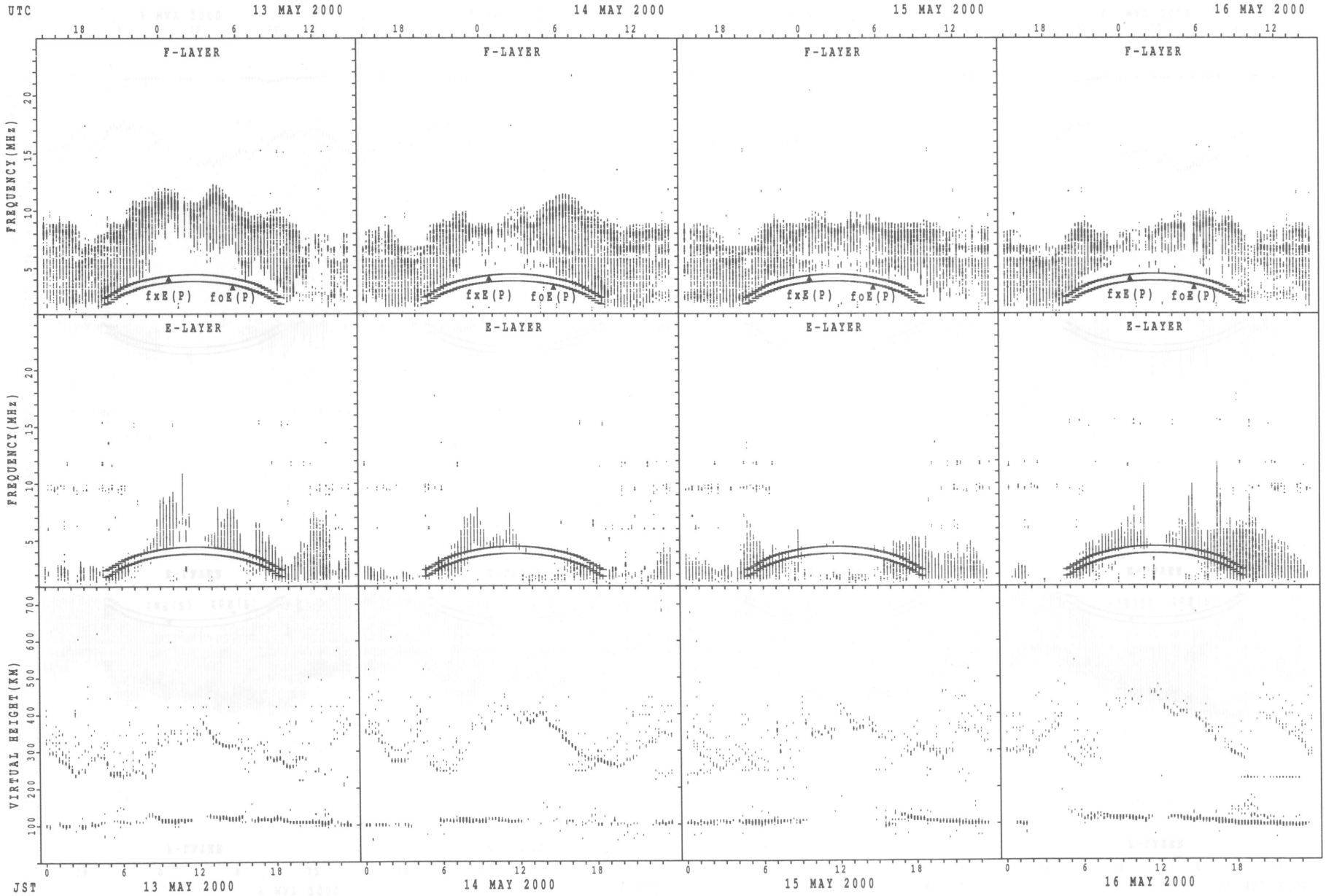


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



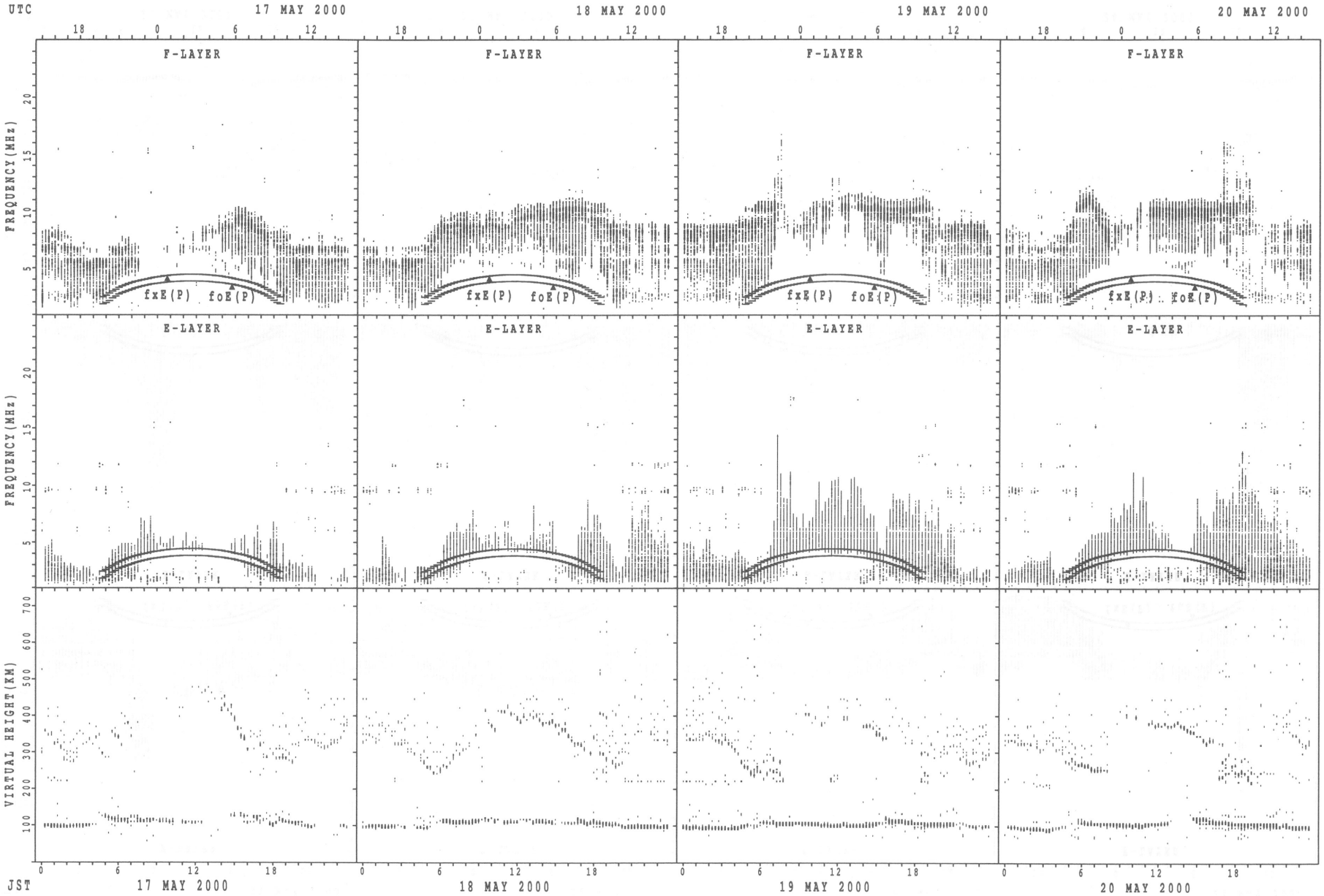
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



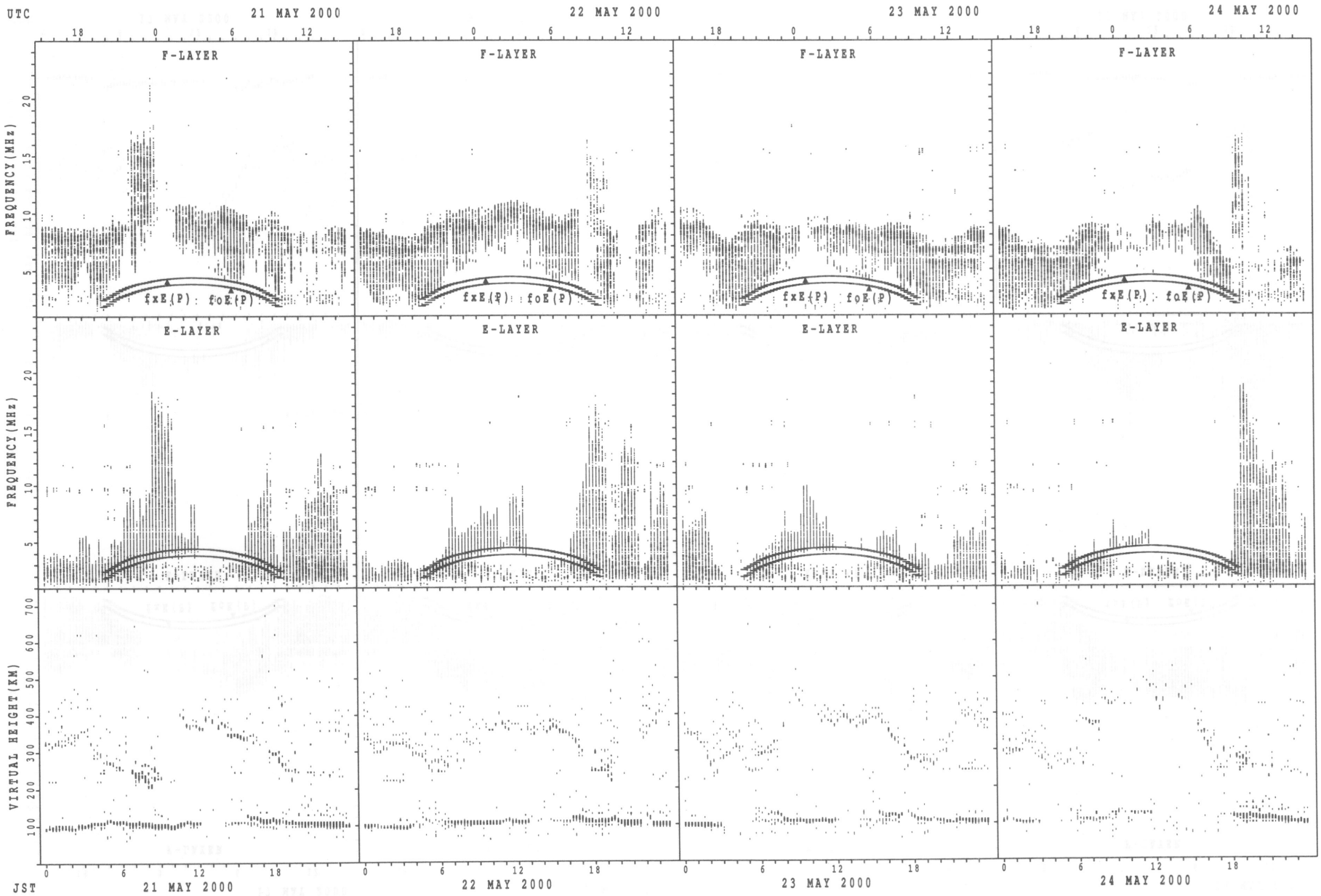
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

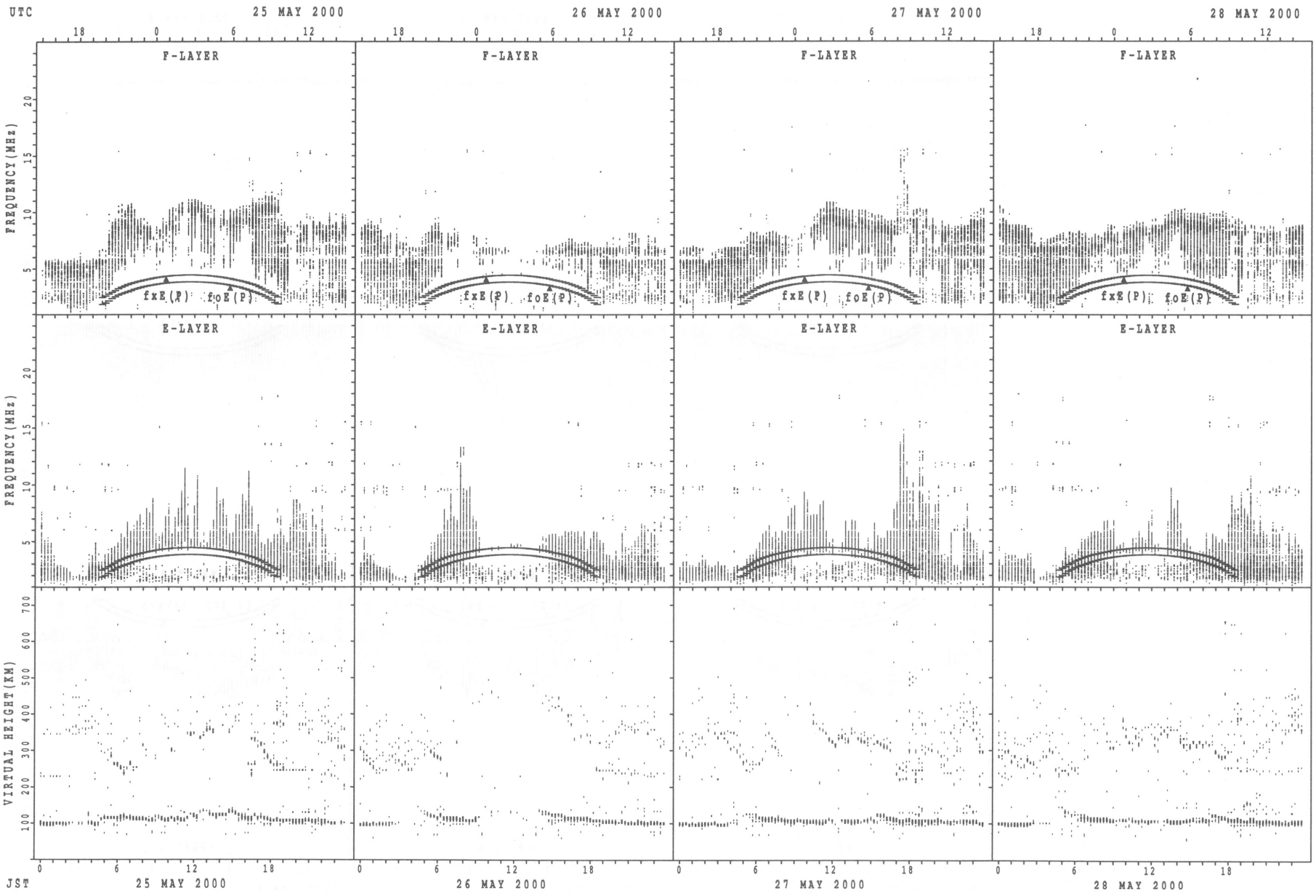


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

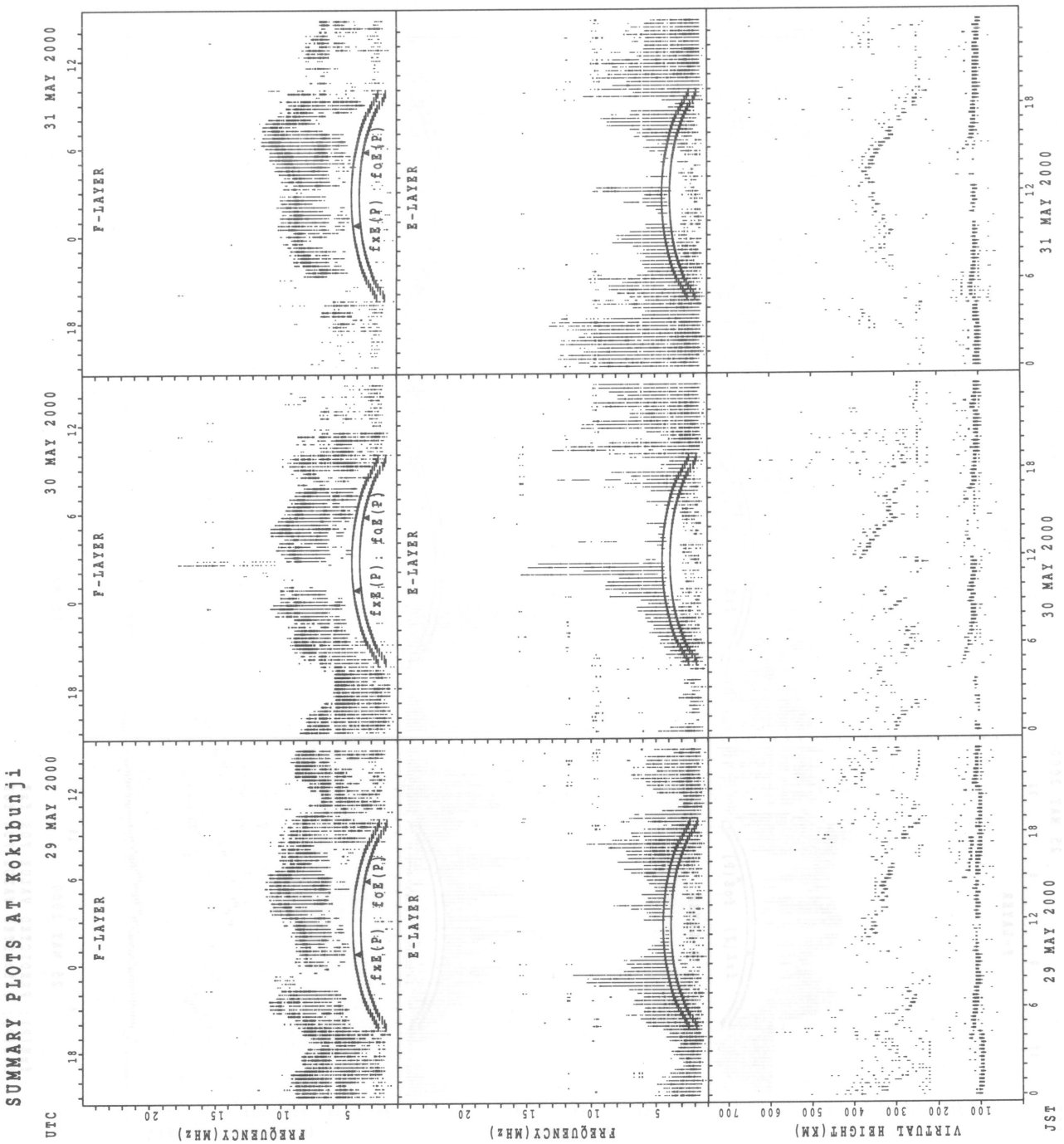
SUMMARY PLOTS AT Kokubunji



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

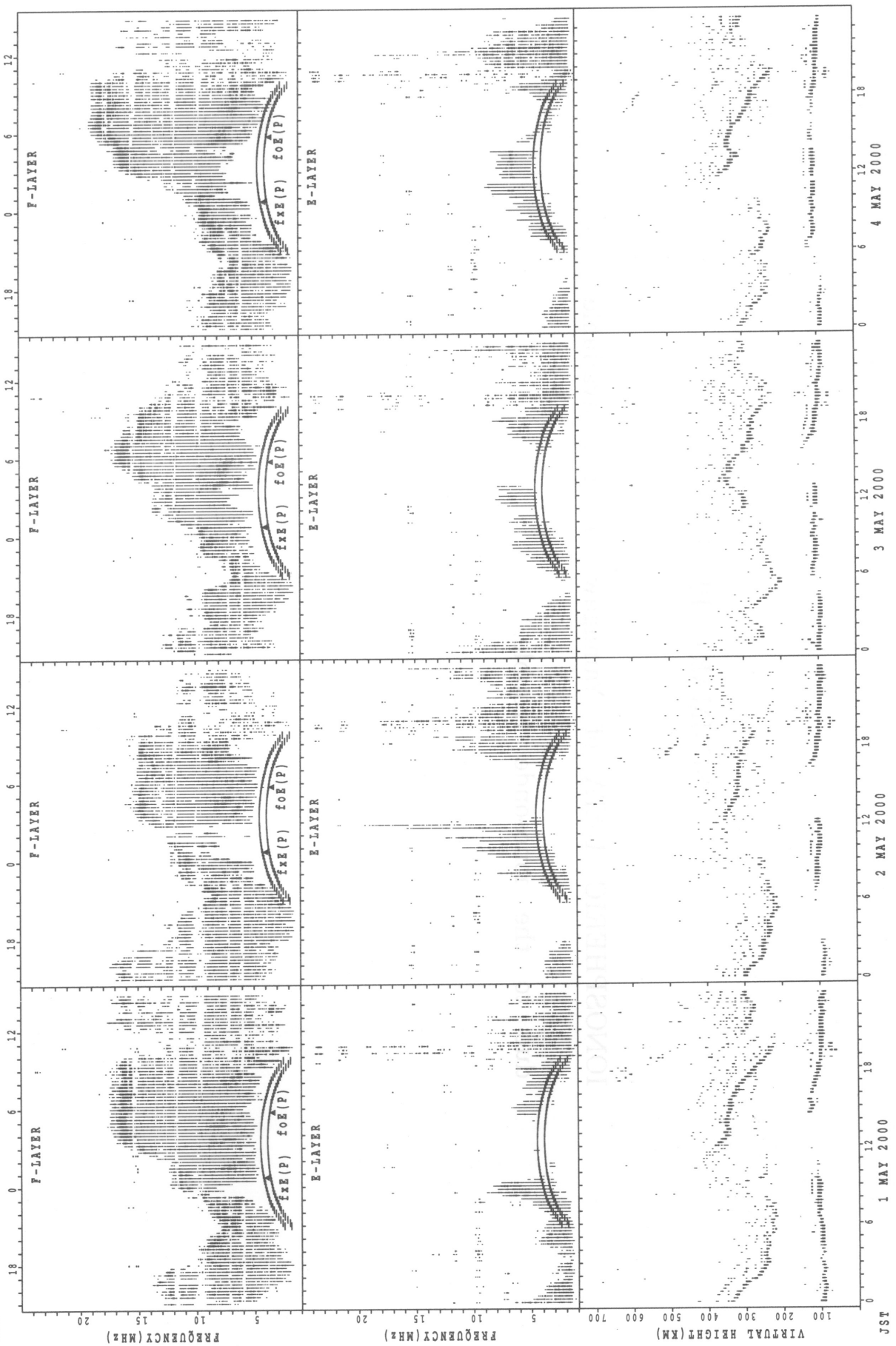


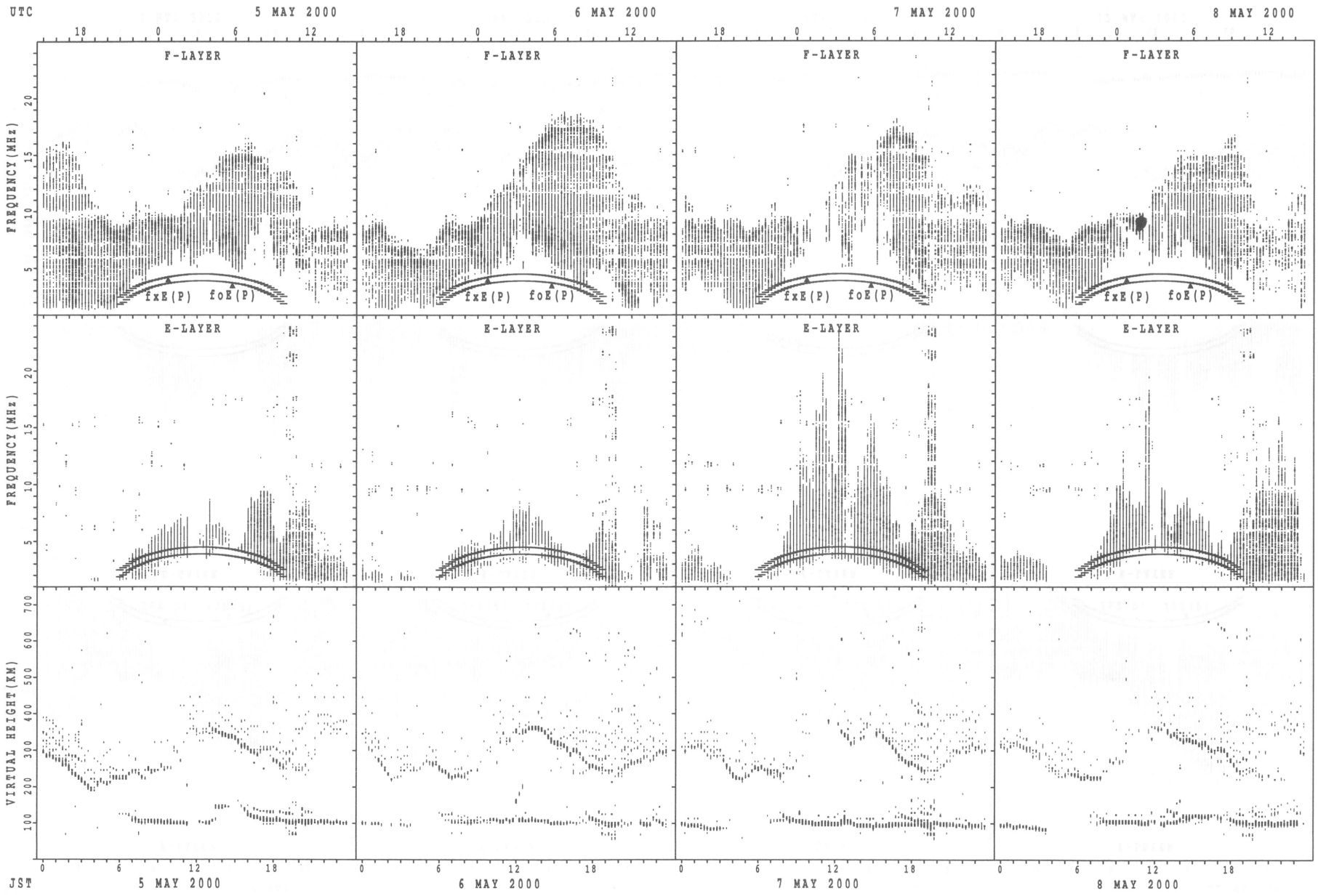
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
29 MAY 2000
30 MAY 2000
31 MAY 2000
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

SUMMARY PLOTS

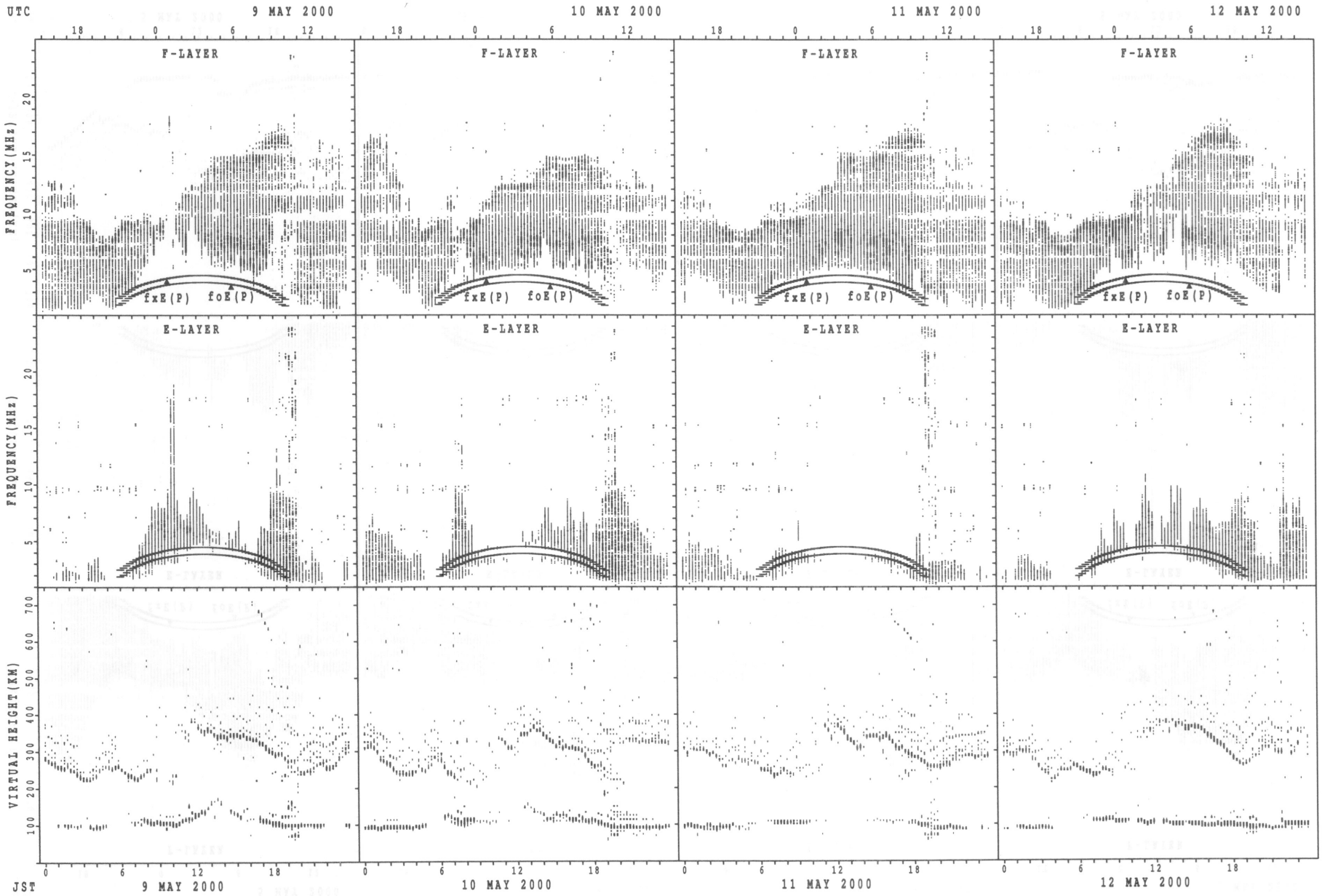
IONOSPHERIC DATA of Yamagawa is not available due to the ionosonde trouble.


SUMMARY PLOTS AT Okinawa
UTC
JST
1 MAY 2000
2 MAY 2000
3 MAY 2000
4 MAY 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



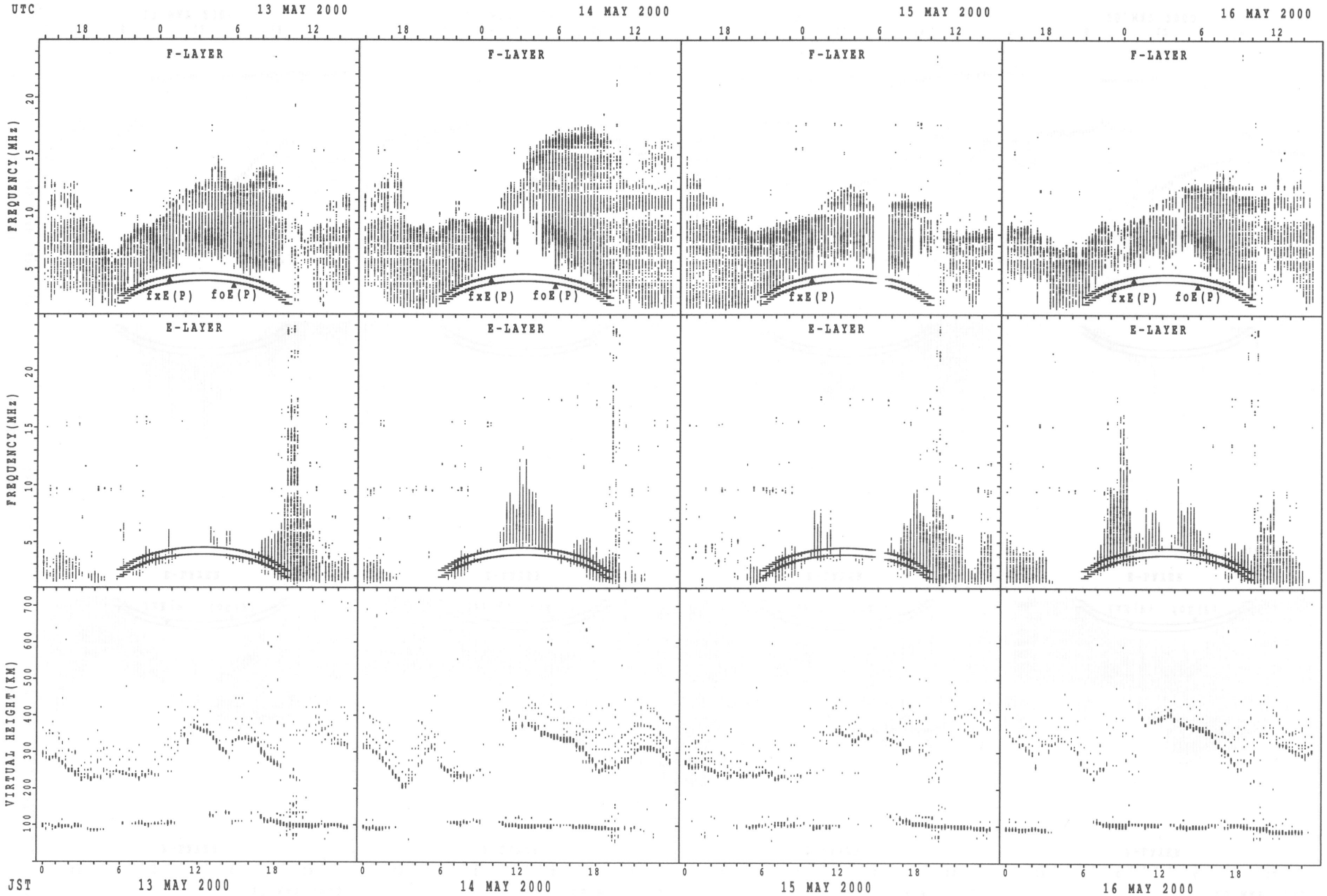
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



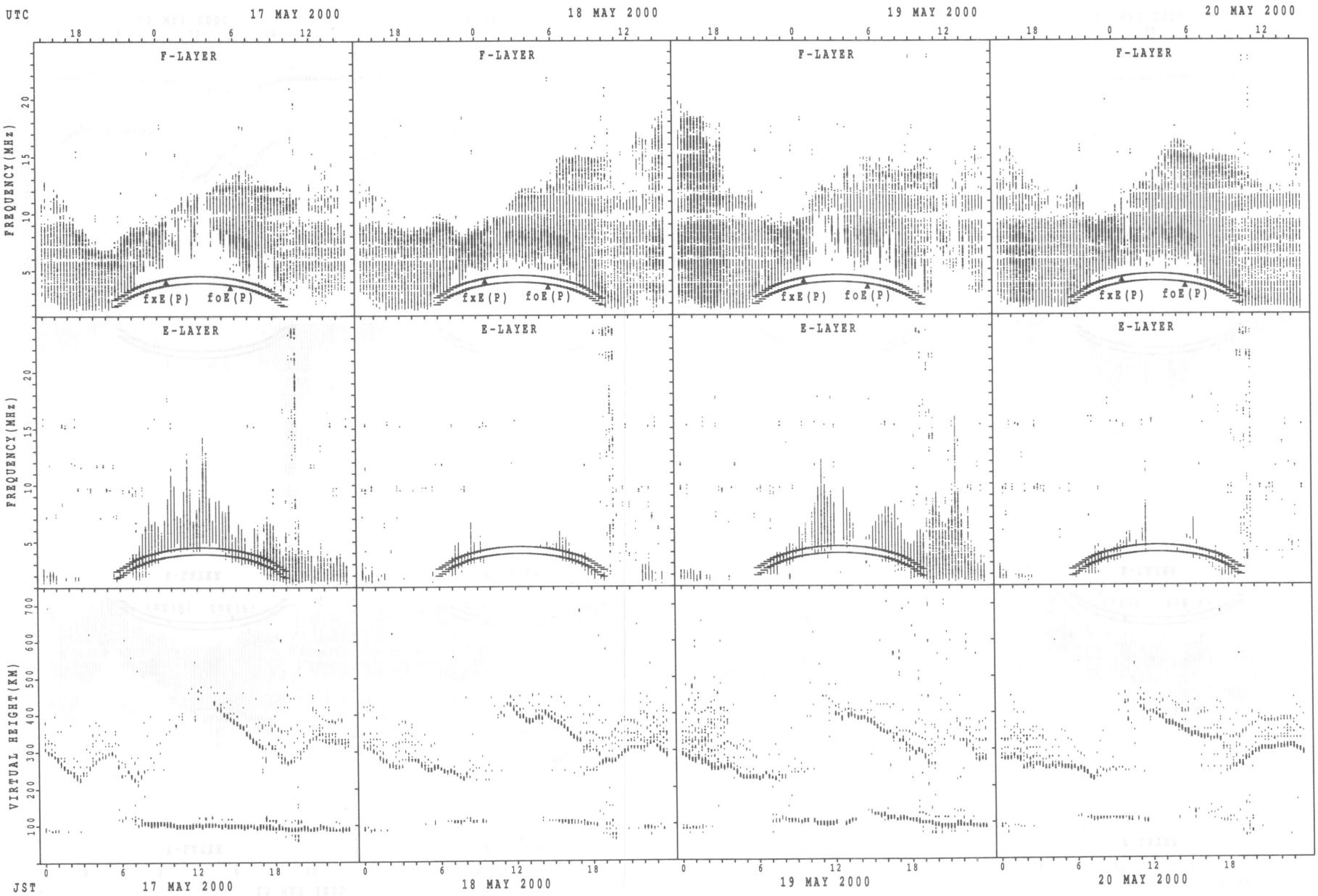
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



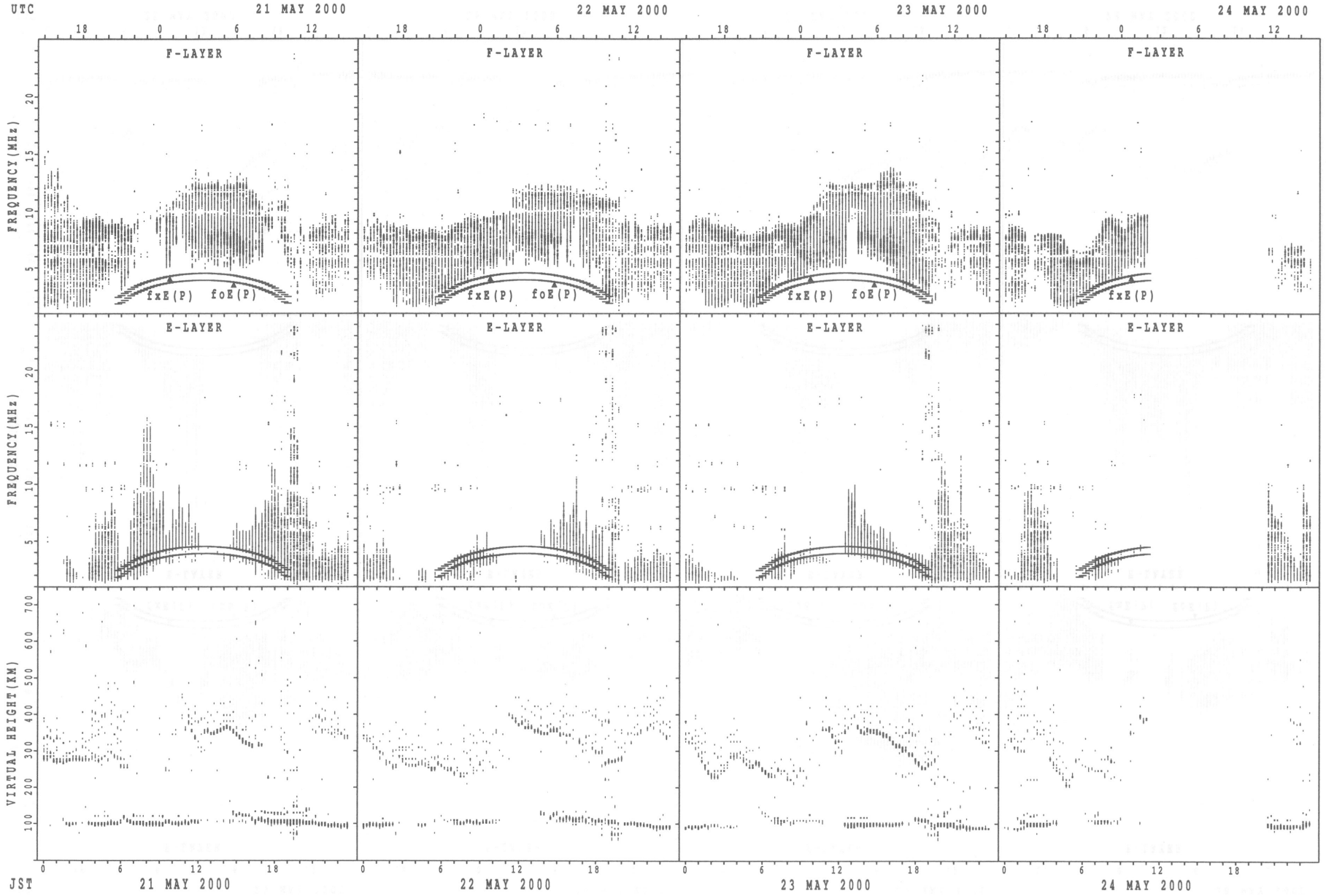
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



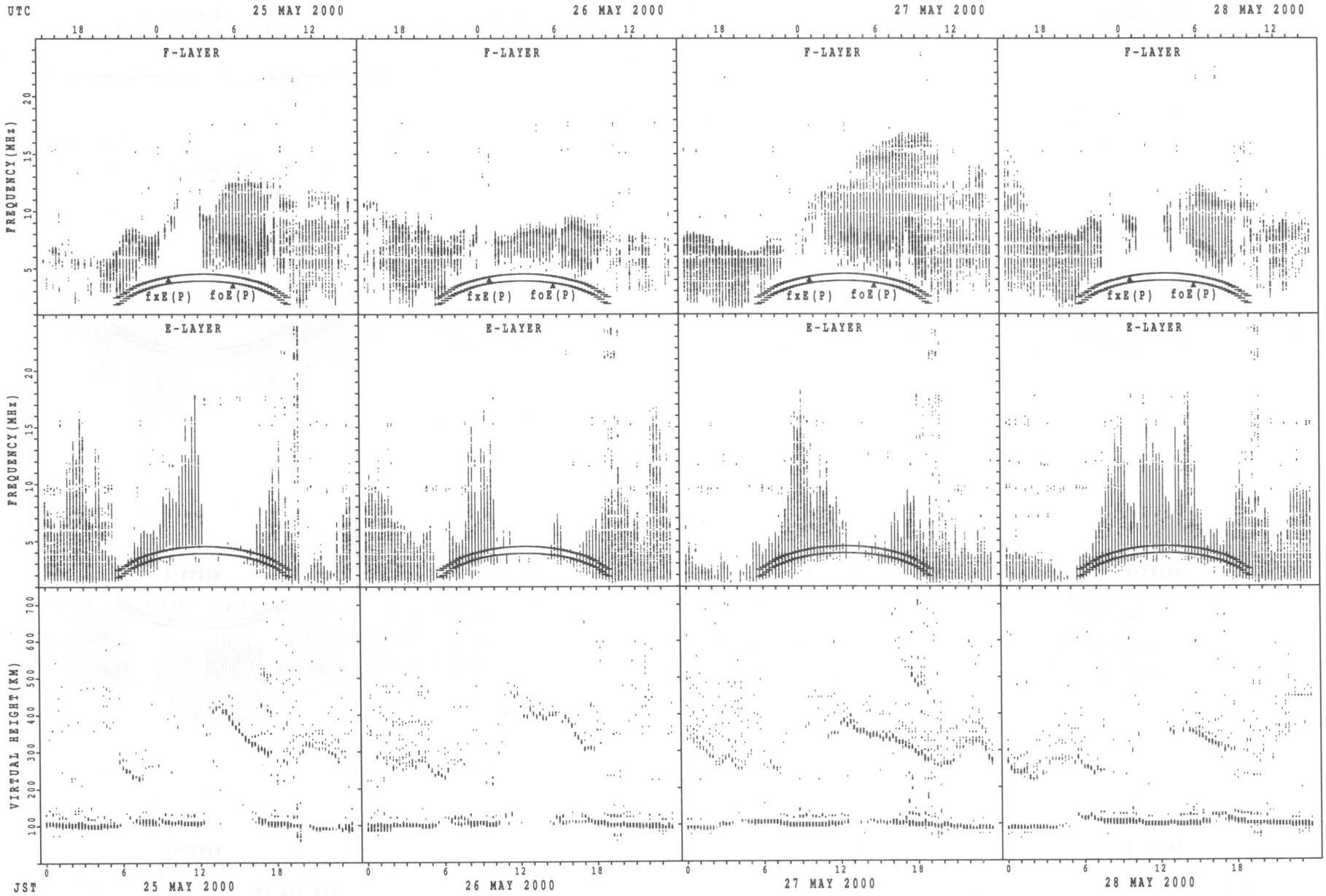
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



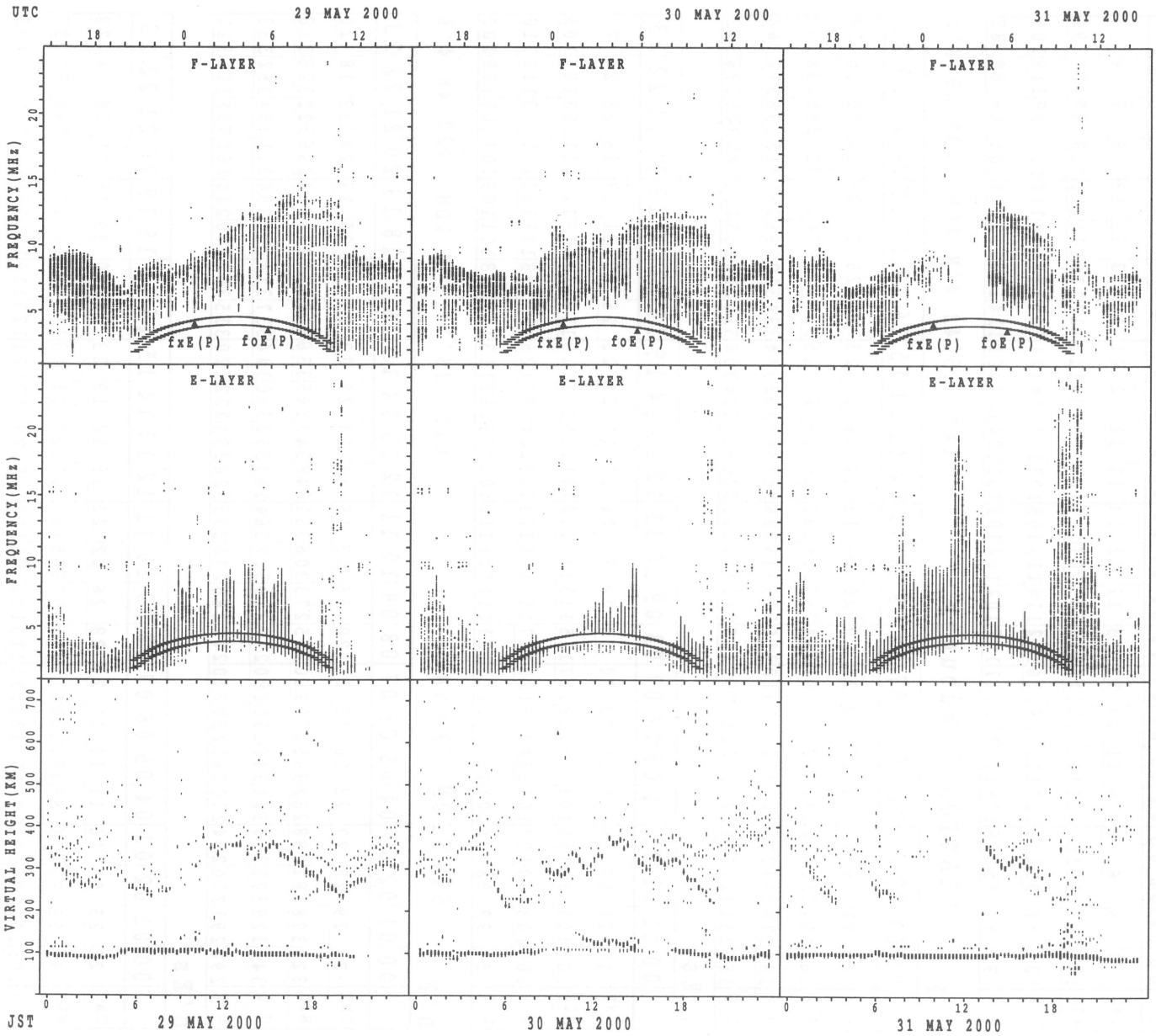
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

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

MAY 2000 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45°23.5'N LON. 141°41.2'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	10	3	1	4	14	18	14	9	2	2		3	4	4	7	12	10	14	13	11	4	5	4
MED	367	345	346	232	334	315	304	313	332	264	310		302	325	312	310	328	316	321	298	320	344	304	241
U Q	382	384	362	116	354	332	354	336	347	272	318		348	352	333	358	348	340	332	324	358	371	365	331
L Q	348	330	250	116	328	308	258	284	298	256	302		296	286	268	304	291	288	300	269	286	325	206	238

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	6	8	9	11	13	13	13	12	12	13	12	12	12	11	12	13	13	13	9	2	4	3
MED	103	97	93	101	121	113	115	115	111	109	107	105	103	105	104	115	117	119	115	111	109	89	101	91
U Q	103	99	95	105	127	119	119	116	112	114	110	109	107	120	114	121	123	121	118	118	118	89	119	105
L Q	97	97	85	96	116	107	113	111	107	104	104	101	101	104	100	101	114	114	112	111	105	89	89	83

h'F STATION Kokubunji LAT. 35°42.4'N LON. 139°29.3'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	21	19	11	9	17	29	26	19	20	17	18	14	16	17	23	27	25	28	26	16	10	10	14
MED	366	354	352	366	342	296	272	282	284	297	326	332	338	336	322	316	314	290	274	275	333	365	338	359
U Q	395	378	364	378	360	336	300	318	316	313	346	346	352	347	338	344	334	319	296	304	345	386	374	368
L Q	350	331	322	326	327	272	255	256	266	280	304	320	326	327	314	308	310	282	258	258	287	346	336	352

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	18	22	16	16	10	20	30	30	30	29	22	24	20	17	21	22	26	30	31	27	26	25	24	20
MED	103	101	99	100	107	123	119	117	115	113	113	112	111	115	117	118	119	117	115	111	111	109	107	105
U Q	105	103	100	107	109	134	125	121	117	117	119	115	113	124	131	125	121	123	119	113	111	113	111	110
L Q	99	99	98	96	101	117	113	113	111	111	111	111	109	110	112	113	113	113	111	109	107	105	105	103

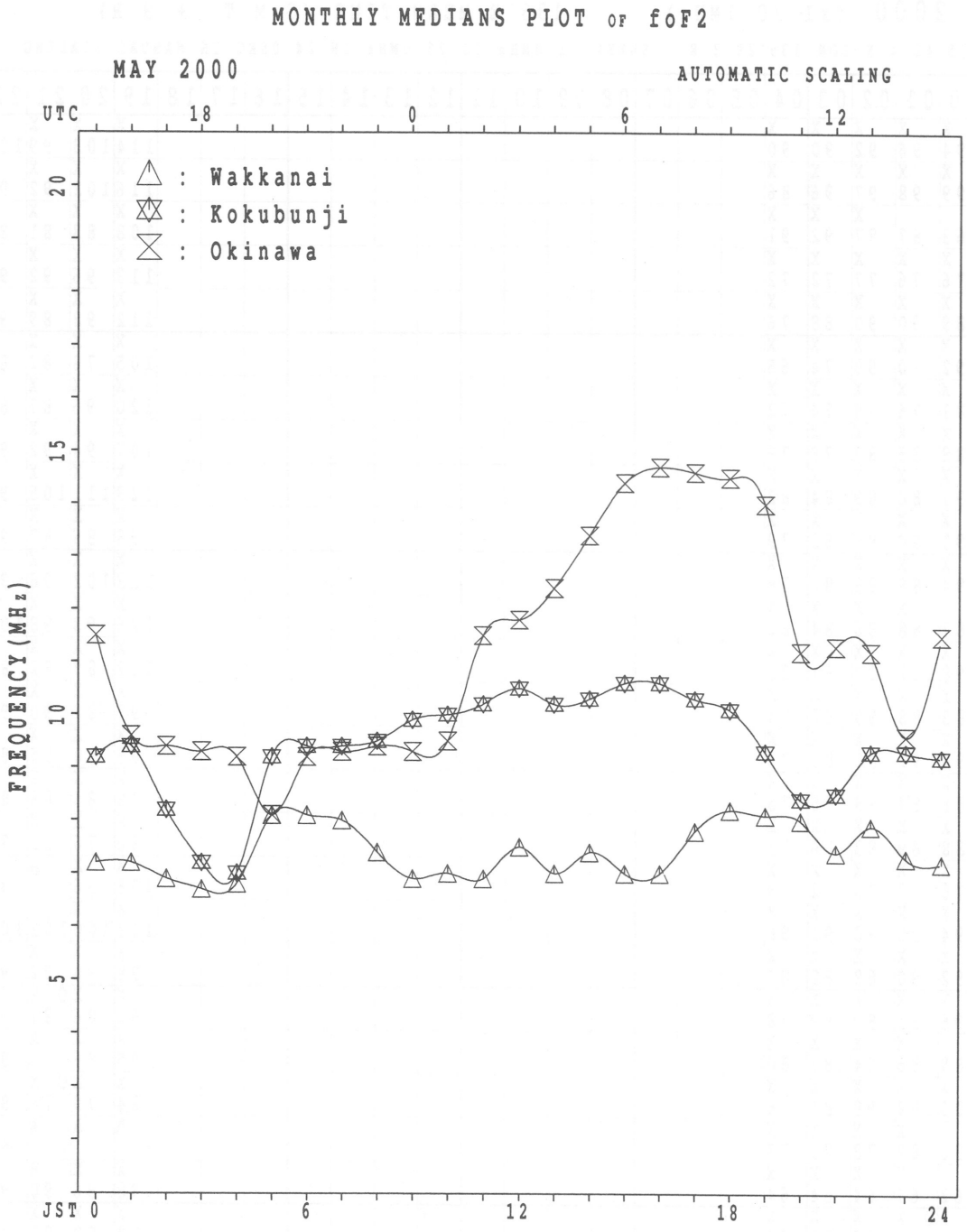
h'F STATION Okinawa LAT. 26°16.9'N LON. 127°48.4'E

	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	29	28	27	23	20	22	26	20	16	13	16	16	18	22	22	29	30	25	27	24	19	18	20
MED	322	308	282	298	282	305	270	250	255	273	306	351	348	343	345	336	328	306	278	264	296	322	326	318
U Q	342	329	300	314	324	346	280	280	277	319	317	364	363	352	350	344	337	314	294	298	341	354	352	333
L Q	298	291	270	254	270	261	250	240	247	260	275	333	328	334	332	320	315	302	270	244	264	306	316	311

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	21	25	23	18	11	10	11	26	28	26	22	22	18	18	19	23	26	30	30	25	21	26	24	23
MED	97	95	97	96	99	101	109	111	111	107	105	107	105	105	111	113	118	114	107	103	107	103	99	97
U Q	105	102	101	103	105	107	115	113	113	113	109	113	115	129	117	121	123	119	111	105	113	105	107	103
L Q	94	91	93	91	95	99	105	107	107	107	103	103	103	103	101	101	103	109	107	99	102	95	94	91

COMMUNICATIONS RESEARCH LABORATORY, JAPAN


MONTHLY MEDIANS PLOT OF foF2
MAY 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

MAY 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 94	X 96	X 92	X 90	X 90															X 114	X 103	X 99	X O X 100	102
2	X 99	X 98	X 97	X 96	X 86															X 116	X 102	X 92	X 96	X 88
3	63	87	X 87	X 92	X 91															X 108	X 83	X 81	X 84	X 78
4	X 76	X 76	X 77	X 72	X 72															X 113	X 96	X 92	X 92	X 90
5	X 89	X 90	X 90	X 88	X 76															X 112	X 98	X 89	X 90	X 90
6	X 92	X 90	X 90	X 74	X 65															X 105	X 78	X 82	X 82	X 86
7	X 81	X 75	X 75	X 74	X 72															X 120	X 96	X 87	X 88	X 88
8	X 88	X 85	X 80	X 78	X 78															X 107	X 94	X 92	X 92	X 92
9	X 91	X 88	X 89	X 84	X 82															X 123	X 111	X 105	X 96	X 94
10	X 91	X 90	X 86	X 82	X 79															X 98	X 86	X 87	X 90	X 94
11	X 94	X 88	X 85	X 80	X 78															X 113	X 102	X 98	X 98	X 96
12	87	X 88	X 86	X 84	X 82															X 126	X 93	X 98	X 105	X 100
13	X 98	X 102	X 97	X 81	X 80															X 102	X 89	X 82	X 82	X 84
14	X 83	X 88	X 90	X 80	X 74															X 97	X 88	X 90	X 94	X 94
15	X 94	X 91	X 88	X 81	X 75															X 95	X 90	X 85	X O X 88	88
16	X 88	X 84	X 78	X 75	X 75															X 78	X 85	X 88	X 88	X 93
17	X 88	X 89	X 83	X 76	X 71															X 86	X 76	X 82	X 82	X 80
18	X 78	X 77	X 73	X 72	X 73															X 106	X 96	A	87	X 94
19	X 94	X 90	X 90	X 91	X 96															X 112	X 100	X 102	X 102	X 98
20	X 92	X 90	X 88	X 82	X 82															X 98	X 90	X 92	X O X 97	97
21	X 96	X 91	X 89	X 89	X 88															X 94	X O X 86	87	X 92	X 92
22	89	X 86	X 84	X 82	X 80															X 95	X 86	A	X 96	103
23	X 105	X 104	X 98	X 81	X 78															X 84	X O X 79	78	X 82	90
24	90	X 82	X 78	X 78	X 73															A	A	A	X 68	69
25	62	X 67	X 64	X 64	X 64															X 98	X 96	R 90	X 98	X 99
26	R O 92	X 94	X 86	R 79	X 74								Y							X 77	X 82	X 85	X 83	X 82
27	X 78	X 74	X 71	X 69	73															X 106	X 99	X 94	X 92	100
28	X 109	X 96	X 90	X 78	X 78															X 101	X 92	X 89	X 90	90
29	90	X 97	X 86	X 84	83															X 94	X 81	X 79	94	95
30	X 90	X 82	X 67	X 67	X 65															X 98	X 90	A	81	X 84
31	A O	X 75	69	69	66															A	X 82	X 86	83	81
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31															29	30	27	31	31
MED	X 90	X 88	X 86	X 80	X 78															X 102	X 90	X 89	X 90	X 92
U Q	X 94	X 91	X 90	X 84	X 82															X 112	X 96	X 92	X 96	X 96
L Q	X 87	X 82	X 78	X 74	X 73															X 95	X 85	X 85	X 83	X 86

MAY 2000 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	88	90	86	84	84	92	102	R 96	107	112	118	125	133	138	133	131	128	127	124	108	R 97	R 93	93	R 96
2	94	R 93	91	90	80	92	R 98	R 97	107	R 119	124	124	128	131	127	R 118	106	106	100	109	96	86	90	82
3	R	R	80	86	85	93	R 97	96	102	100	111	123	R 118	112	118	122	118	116	112	102	77	R 75	78	72
4	70	R 70	R 71	66	66	75	82	85	97	103	105	111	127	R 126	118	118	110	110	A	107	90	86	86	R 83
5	84	84	84	82	70	70	78	76	86	98	94	100	110	115	113	109	110	114	114	106	92	82	84	83
6	86	R 84	84	68	58	69	88	90	84	90	98	106	115	114	125	125	120	116	108	R 98	R 74	R 76	R 76	80
7	R 75	69	68	68	66	77	94	104	100	101	106	100	111	116	117	115	118	122	126	114	90	R 80	82	83
8	82	R 79	74	72	72	84	R 92	H 92	94	91	100	106	R 106	112	121	118	116	R 111	108	101	88	R 86	R 86	86
9	86	82	83	R 80	76	88	104	108	96	102	104	106	108	110	114	114	112	114	R 120	117	R 105	R 99	91	88
10	85	84	80	R 76	R 73	86	101	104	110	99	95	104	96	93	98	103	103	106	104	92	80	81	84	R 88
11	88	R 82	79	74	72	82	92	R 100	106	105	104	117	120	119	116	114	115	114	111	107	R 96	R 92	U R 93	90
12	R	82	80	R 78	R 76	85	93	96	97	106	116	117	116	114	118	123	126	131	136	120	87	91	R 99	R 94
13	92	R 96	91	R 75	R 74	84	88	107	108	113	115	110	U R 104	116	114	101	95	95	R 98	R 96	83	76	77	R 78
14	R 77	82	84	R 74	68	76	92	R 97	93	R 90	89	94	96	R 96	100	110	110	100	R 98	92	82	84	88	88
15	88	85	82	75	69	71	81	R 94	86	86	95	94	88	94	92	91	85	85	85	91	84	U R 79	R 82	82
16	82	R 78	R 72	R 69	R 69	78	87	80	74	78	80	81	88	R 95	91	96	98	94	90	72	78	82	82	87
17	82	83	77	R 69	65	62	72	70	A	R	R	75	R 80	89	R 92	101	96	90	79	80	71	R 76	76	R 74
18	72	71	67	66	67	77	92	94	97	95	99	94	102	102	104	106	108	108	103	100	R 90	A	R	R 88
19	88	85	V 84	85	90	U R 94	F	105	96	93	105	109	108	111	111	110	106	107	109	105	R 94	R 96	R 96	92
20	86	84	82	R 76	R 76	91	115	109	92	93	A	107	108	106	107	108	106	106	105	93	84	86	91	91
21	90	V 85	83	83	82	89	92	92	99	A	R 109	104	102	98	102	100	94	96	98	88	80	U R 81	R 86	R 86
22	F	80	78	76	75	84	R 97	R 100	100	R 99	R 100	R 104	107	104	100	R 94	94	100	R	89	U R 80	A	R 90	F
23	R 99	R 98	92	75	72	84	92	89	81	85	91	R 92	90	89	86	81	86	86	83	78	R 73	R 72	R 76	F
24	F	76	72	72	66	70	78	89	83	84	R 81	78	95	82	90	98	89	69	54	A	A	A	62	F
25	R	61	58	58	58	70	102	103	92	R 81	100	105	R 109	102	R 98	99	102	108	111	92	90	R	92	93
26	R	88	U R 81	R	68	76	88	80	U R 80	74	73	R	Y	R	U R 69	70	72	71	71	71	R 76	R 79	R 77	R 76
27	72	68	65	63	F	72	80	81	74	A	A	U R 100	105	98	98	95	92	91	R 98	R 100	93	88	86	F
28	103	90	84	72	72	74	78	74	78	83	87	91	90	95	98	96	94	95	92	95	86	83	84	F 84
29	F	R 90	R 80	R 78	F	84	104	100	A	82	V 85	90	96	104	R 106	107	96	R 100	R 98	88	75	73	F	F
30	R 83	76	61	61	59	75	93	89	100	98	95	A	U R 93	98	103	93	89	78	88	92	84	A	F	U R 78
31	A	U R 69	R	R	F	A	A	83	91	97	R 98	99	R 93	94	101	107	108	104	92	A	R 76	80	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	30	30	29	28	30	29	31	29	28	28	29	30	30	31	31	31	31	29	29	30	26	27	25
MED	86	82	80	75	72	80	92	94	96	96	100	104	106	104	104	107	106	106	100	96	84	82	86	86
U Q	88	85	84	79	76	86	98	100	100	102	106	110	111	114	117	115	112	114	111	106	R 90	R 86	91	89
L Q	82	76	72	68	66	74	84	85	85	86	92	94	95	95	98	96	94	94	91	90	78	R 79	78	R 81

MAY 2000 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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 644	A	L	L	L	A							
2								L	L	L	L	L	L	L	L	L								
3									L	L	L	L	A	A	L	L	L							
4										L	L	L	L	L	A	L	A		A					
5									L	L	L 516	L	L 580	L	L	L	L	L						
6								L	L	L	L	L	L 556	U L 540	U L 588	L	L							
7									L	L	L	L	L 608	L 588	L	L	L	L						
8								L	A	L	L	U L 552	L	L 608	A	L	A	A	A					
9									L	L	L	L	L	L	L 548	L	L	L						
10								L	L	L	L 592	L 572	R 600	L 572	540	L	L	L						
11								L	L	L	L	U L 636	L	L	A	L	L							
12								A	A	L	L	L	L	L	L	L	L	L						
13							L		L	A	A	A	E B	L	A	A	L	L						
14							L	L	A	A	L	A	U L 644	U L 604	U R 608	L 572	L	L						
15							L	L 548	L	L 640	L	L 616	U L 632	U L 592	E B	L	L	L						
16						L	L	L	L 588	A	A	U Y 624	U Y 616	U Y 604	A	A	L	L						
17							L 452	516	A	R	U Y 616	U L 624	U Y 600	U L 592	572	576	L	L	A					
18								L	L	L	U Y 632	L	L 632	U Y 632	576	L 596	L	A	A					
19								A	A	U L 716	A	A	A	A	A	L	A	A	A					
20						L	L		A	U L 680	A	A	A	L	U L 600	A	A							
21								A	A	A	A	U L 592	A	U R 600	576	L	A	A						
22							L	A	L	A	A	A	A	U L 612	588	L 568	L	L	A					
23							L	L	L	560	A	A	L 548	U R 568	U Y 568	548	L 516	L						
24								L 508	U L 528	U R 576	U Y 584	A	U L 608	E B	U Y 592	E B	L	L						
25									A	A	A	A	A	U L 588	A	L	A	L						
26								A	A	A	A	E B	U Y 520	Y	U R 536	U L 524	A	A	A	A				
27									A	A	A	A	A	U R 576	A	L	L	A	A					
28									L	U L 576	A	L 584	560	560	L 616	A	L 512	U L 528	A	A				
29								A		A	A	L	U L 564	L 640	A	L	L	A	A	A				
30							L		A	L	A	A	A	U L 568	536	L 508	L 524	L	A	A				
31							A	A	A	L	A	L	U L 580	A	L	L 540	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	3	3	5	6	12	15	16	14	7	2							
MED							L 452	L 516	U L 576	U L 640	588	U L 586	L 600	U L 592	574	L 568	L 522							
U Q								L 548	L 588	U L 698	U Y 616	U L 624	L 632	U L 606	U 588	576								
L Q								L 508	U L 528	568	584	U 562	L 568	U 570	L 540	L 524								

MAY 2000 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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

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	244	300	340	R	B	B	B	B	B	U R 360	324	268	B					
2						B	244	296	340	R	R	A	R	R	R	R	324	268	B					
3						B	240	R 308	A	R	B	B	A	R	R	B	316	276	A					
4						B	A 308		R	R	B	R	B	R	B	R	320	264	B					
5						B	252	300	344	R	R	R	B	B	R	R	312	272	B					
6						B	256	A	A	360	B	R	B	R	R	R	320	288	A					
7						B	256	R 308	344	R	B	B	B	B	R	U R 332	316	272	188					
8						180	232	U R 316	340	A	R	B	B	U R 400	R	U R 368	332	272	200					
9						B	248	316	352	A	R	R	B	B	R	R	320	276	192					
10						B	U R 264	324	352	R	R	B	B	B	B	B	U R 332	276	B					
11						B	U R 268	320	356	U R 376	B	R	B	B	B	R	344	U R 288	188					
12						B	268	R	R	R	B	B	B	B	B	U R 356	A	U R 268	B					
13						B	272	U R 336	R	B	B	B	B	B	B	R	348	284	208					
14						B	A 336	372		B	B	B	B	B	B	B	U R 340	U R 264	A					
15						B	A	A	A	A	B	B	B	R	B	R	U R 348	292	236					
16						B	288	R	R	B	U R 400	B	R	B	B	R	A	A	A					
17						B	264	340	R	B	B	B	R	B	B	U R 408	U R 352	U R 296	B					
18						B	280	340	R	B	B	R	A	B	R	R	U R 340	A	B					
19						B	272	U R 332	U R 360	B	B	B	B	B	B	R	352	288	B					
20						B	276	A	R	R	B	B	B	B	R	R	U R 348	292	U R 196					
21						B	R 312		R	B	A	A	428	B	R	R	R	280	216					
22						B	280	304	R	R	B	B	B	B	R	U R 380	U R 344	284	A					
23						B	280	320	352	R	B	B	B	B	B	U R 372	332	U R 284	212					
24						B	280	R	R	R	B	B	B	B	B	B	B	U R 308	220					
25						B	272	U R 336	R	R	R	B	R	B	R	B	336	U R 296	A					
26						B	268	312	U R 352	R	B	B	R	B	R	R	332	280	212					
27						B	A 312	352		R	R	R	A	R	R	R	R 284		B					
28						224	U A 292	340	368	U A 392	A	A	A	A	A	A	U A 332	296	U A 220					
29						B	A 308	U R 332		R	R	B	B	B	R	A	A	A	B					
30						196	268	312	R	U R 368	B	B	B	B	R	R	U R 336	276	200					
31						B	264	308	340	R	R	B	A	B	U R 380	R	328	272	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	25	25	16	4	1		1	1	1	7	25	28	13					
MED						196	268	312	352	U 372	U R 400		428	U R 400	U R 380	U R 368	332	280	208					
U Q						224	278	334	354	U 384						U R 380	U R 344	288	218					
L Q						180	254	308	340	364						U R 356	322	272	194					

MAY 2000 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	19	20	E B 14	24	E B 15	J A 20	30	36	J A 46	45	43	44	J A 72	E B 45	E B 46	46	J A 83	J A 55	J A 30	J A 52	J A 126	J A 53	J A 28	E B 16
2	19	E B 15	E B 15	19	E B 16	E B 19	31	43	J A 49	J A 57	J A 50	J A 48	G	G	G	42	44	60	J A 33	J A 37	29	E B 16	E B 16	22
3	20	18	E B 16	E B 16	E B 16	E B 19	30	39	41	44	45	58	J A 96	65	J A 101	E B 46	36	J A 124	J A 60	J A 127	54	J A 63	J A 72	J A 34
4	J A 22	J A 20	18	20	J A 19	25	32	38	J A 50	J A 61	51	48	J A 60	J A 56	E B 66	J A 55	J A 92	J A 120	J A 126	J A 72	J A 54	J A 25	E B 16	E B 16
5	E B 16	E B 14	E B 16	E B 14	E B 15	21	G	35	43	49	45	44	E B 44	E B 43	G	G	G	35	J A 65	J A 47	J A 33	23	J A 22	J A 18
6	20	19	20	E B 16	E B 15	21	31	39	42	40	E B 42	G	E B 46	G	G	G	G	J A 42	J A 46	J A 27	23	J A 25	J A 36	J A 23
7	22	E B 14	26	J A 27	27	20	J A 39	J A 44	45	49	47	50	45	J A 48	J A 51	G	G	32	J A 38	34	J A 41	J A 47	J A 25	E B 16
8	E B 16	27	E B 14	20	25	21	29	34	48	45	44	J A 51	47	53	64	J A 60	J A 84	J A 84	J A 64	J A 118	J A 42	J A 30	27	24
9	E B 16	E B 15	E B 16	22	E B 15	23	33	39	43	42	G	46	E B 50	E B 46	41	G	G	36	J A 35	46	J A 23	J A 22	J A 21	E B 15
10	E B 15	23	20	E B 16	J A 16	E B 18	29	36	43	46	J A 49	E B 45	46	45	47	E B 38	38	36	26	J A 32	J A 22	E B 15	J A 32	J A 35
11	J A 26	J A 25	21	E B 16	E B 14	22	32	J A 46	J A 53	J A 52	J A 53	J A 50	J A 80	J A 52	J A 63	J A 54	43	35	J A 37	J A 36	J A 44	32	40	J A 27
12	J A 22	E B 15	21	19	E B 16	26	33	J A 58	J A 58	J A 54	45	46	46	48	47	41	51	G 25	30	J A 73	J A 80	J A 52	E B 16	J A 20
13	J A 22	J A 24	E B 15	21	J A 22	19	31	38	46	J A 82	88	71	E B 64	56	72	J A 63	40	J A 52	J A 39	23	46	72	71	31
14	J A 25	J A 19	19	J A 21	E B 16	20	31	41	J A 65	61	54	62	47	E B 48	E B 49	E B 44	G 28	G 22	25	J A 19	22	22	20	38
15	J A 36	J A 29	J A 22	J A 23	J A 21	J A 59	J A 38	J A 45	39	J A 48	E B 48	48	50	G	E B 77	G	40	41	J A 49	J A 43	J A 22	J A 29	J A 38	J A 26
16	E B 16	J A 24	E B 15	E B 14	E B 15	22	36	45	48	66	J A 75	J A 50	48	52	68	J A 65	J A 62	J A 54	J A 62	J A 98	J A 50	J A 42	J A 40	J A 28
17	E B 16	J A 33	J A 24	J A 31	23	J A 25	J A 42	J A 45	72	51	53	52	52	E B 47	E B 50	50	45	J A 47	J A 66	23	J A 26	J A 24	E B 15	19
18	27	J A 22	J A 37	21	J A 22	J A 24	36	J A 56	J A 57	J A 51	52	J A 65	J A 49	J A 51	J A 54	46	G	J A 59	J A 70	J A 46	J A 20	J A 84	J A 78	J A 46
19	J A 47	J A 29	J A 48	J A 33	J A 37	J A 28	33	J A 68	J A 85	64	J A 68	86	108	106	83	60	J A 74	J A 82	J A 77	J A 69	J A 54	J A 53	24	20
20	23	26	J A 33	J A 30	21	22	39	J A 52	J A 54	J A 71	J A 108	87	57	51	G J 84	A	61	J A 94	85	J A 86	82	J A 86	J A 66	J A 36
21	J A 34	J A 36	J A 29	J A 49	J A 31	J A 34	47	J A 84	J A 93	J A 159	J A 157	J A 52	58	E B 48	G 30	G	J A 84	J A 89	J A 52	60	J A 75	J A 82	J A 80	J A 88
22	J A 35	J A 20	J A 27	33	23	26	33	J A 86	J A 53	J A 60	J A 65	51	J A 86	E B 45	G	G	39	J A 94	J A 134	J A 118	J A 65	J A 127	J A 26	J A 82
23	J A 62	J A 60	J A 53	22	E B 14	24	36	42	J A 72	J A 54	J A 84	J A 63	48	E B 46	J A 47	42	J A 50	40	33	J A 33	J A 23	J A 24	J A 48	J A 44
24	J A 28	J A 21	J A 22	A E B 14	E B 15	J A 25	33	36	40	J A 49	52	58	E B 47	E B 76	E B 47	E B 67	E B 39	G	33	J A 182	J A 150	J A 101	J A 109	J A 31
25	J A 72	J A 36	25	22	J A 36	J A 36	J A 44	J A 56	J A 62	J A 54	J A 80	96	82	50	J A 82	60	87	J A 59	J A 44	52	J A 81	J A 44	J A 77	32
26	34	J A 27	J A 22	21	E B 15	27	J A 52	J A 89	J A 130	J A 66	E B 55	E B 42	47	E B 47	48	51	J A 54	J A 54	J A 50	J A 44	J A 37	J A 47	J A 61	J A 53
27	J A 22	J A 24	J A 30	J A 26	A E B 14	22	37	J A 60	J A 56	J A 77	J A 82	J A 78	48	J A 63	J A 53	J A 45	48	J A 84	J A 90	J A 126	J A 84	31	20	46
28	J A 30	J A 34	J A 29	J A 21	J A 17	J A 27	J A 36	J A 49	J A 53	J A 65	45	J A 55	J A 77	44	J A 80	48	J A 43	J A 50	J A 61	J A 88	J A 81	J A 51	J A 51	J A 42
29	J A 49	J A 38	J A 28	J A 33	J A 39	J A 53	53	J A 61	J A 102	J A 67	52	45	60	J A 76	52	J A 55	J A 75	J A 82	J A 64	J A 64	J A 25	54	J A 64	J A 53
30	J A 43	E B 15	25	24	E B 13	30	J A 44	J A 47	J A 53	J A 57	J A 82	J A 100	E B 47	J A 105	48	G	39	J A 72	42	J A 75	J A 27	J A 103	J A 53	J A 74
31	J A 87	J A 98	J A 105	J A 124	J A 62	J A 74	J A 97	J A 57	J A 54	J A 74	41	J A 51	J A 94	J A 53	46	J A 55	J A 59	J A 88	30	86	J A 80	J A 81	J A 61	J A 54
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A 23	J A 24	22	21	16	24	33	J A 45	J A 53	J A 54	52	51	50	48	48	46	44	J A 54	J A 49	J A 52	J A 44	J A 47	J A 38	J A 31
U Q	J A 35	J A 29	J A 29	J A 27	J A 23	J A 27	J A 39	J A 57	J A 62	J A 66	J A 75	J A 63	J A 72	56	66	J A 55	J A 62	J A 84	65	J A 86	J A 80	72	64	J A 46
L Q	E B 19	E B 19	E B 16	E B 19	E B 15	21	31	39	45	49	45	46	47	45	G 46	G	G 38	36	33	J A 36	J A 25	25	22	20

MAY 2000 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	16	E B 16	E B 14	E B 16	E B 15	19	30	34	44	44	42	43	68	E B 45	E B 46	46	62	46	26	44	57	44	21	E B 16
2	16	E B 15	E B 15	16	E B 16	E B 19	26	39	47	54	48	45	G	G	G	41	42	56	25	32	22	E B 16	E B 16	E B 15
3	16	16	E B 16	E B 16	E B 16	E B 19	28	38	40	G 44	44	57	75	62	53	E B 46	36	55	45	61	30	21	19	25
4	E B 15	E B 15	16	16	E B 15	24	31	37	46	52	49	47	55	54	E B 66	54	71	80	A A 126	65	22	21	E B 16	E B 16
5	E B 16	E B 14	E B 16	E B 14	E B 15	20	G	35	40	48	44	42	E B 44	E B 43	G	G	G	33	62	35	26	16	16	16
6	13	E B 16	16	E B 16	E B 15	19	28	37	40	G 40	E B 42	G	E B 46	G	G	G	G	41	37	26	16	18	17	16
7	16	E B 14	20	22	20	19	28	40	44	48	46	48	44	45	45	G	G	32	36	32	37	20	19	E B 16
8	E B 16	18	E B 14	E B 14	17	19	28	34	45	42	44	49	47	46	64	54	82	74	59	89	25	E B 16	20	17
9	E B 16	E B 15	E B 16	E B 16	E B 15	22	32	37	42	42	G	46	E B 50	E B 46	40	G	G	34	32	39	21	20	19	E B 15
10	E B 15	E B 16	E B 15	E B 16	E B 15	E B 18	29	36	41	U Y 45	43	E B 45	46	44	46	E B 38	38	35	26	32	20	E B 15	26	E B 16
11	19	22	E B 16	E B 16	E B 14	20	28	42	51	50	51	49	53	45	59	50	43	34	36	22	40	32	38	E B 15
12	E B 14	E B 15	20	E B 16	E B 16	23	32	54	58	48	44	U Y 46	46	47	46	U Y 40	U Y 51	G 25	28	67	41	36	E B 16	18
13	E B 14	E B 16	E B 15	17	20	18	30	U Y 38	45	80	87	U Y 70	E B 64	54	67	62	40	49	38	20	43	53	60	17
14	21	17	16	16	E B 16	20	29	40	64	U Y 60	53	62	U Y 47	E B 48	E B 49	E B 44	G 27	G 22	24	16	E B 15	16	17	30
15	29	20	19	19	18	21	29	34	U Y 39	43	E B 48	47	46	G	E B 77	G	38	41	47	33	20	24	21	E B 16
16	E B 16	17	E B 15	E B 14	E B 15	21	30	44	48	65	66	49	45	51	65	58	38	41	43	43	30	34	36	24
17	E B 16	29	22	18	18	22	36	41	A A 72	50	53	U Y 52	50	E B E B 47	E B 50	47	44	34	42	20	20	22	E B 15	16
18	E B 15	20	28	E B 15	E B 14	20	35	54	56	50	51	60	48	48	45	45	G	57	69	30	18	A A 84	58	31
19	33	22	28	24	34	18	32	66	80	58	66	79	101	102	76	54	73	79	76	65	29	39	E B 16	E B 13
20	16	17	29	25	19	21	38	50	53	63	A A 108	85	U Y 56	50	G	61	58	56	80	73	77	32	41	20
21	23	34	21	46	31	28	45	56	75	A A 159	96	50	U Y 57	E B 48	G 29	G	65	62	45	54	45	76	47	28
22	18	E B 13	23	27	E B 15	23	33	81	51	57	62	U Y 50	76	E B 45	G	G	37	36	77	26	24	A A 127	20	63
23	48	42	44	19	E B 14	22	34	41	44	51	77	62	48	E B 46	45	41	48	40	U Y 32	26	21	22	20	40
24	18	E B 15	16	E B 14	E B 15	24	33	U Y 36	U Y 39	48	50	U Y 58	E B 47	E B 76	E B 47	E B 67	E B 39	G	30	A A 182	A A 150	A A 101	18	22
25	43	22	E B 15	E B 11	18	31	43	51	62	49	64	92	77	48	64	57	U Y 86	40	43	41	48	36	24	28
26	U Y 33	19	16	18	E B 15	26	48	64	65	56	E B 55	E B 42	U Y 47	E B 47	47	50	52	46	43	39	36	20	40	39
27	18	E B 15	22	20	E B 14	22	30	56	51	A A 77	A A 82	75	48	61	47	39	U Y 48	65	52	43	48	28	15	38
28	22	20	24	E B 16	E B 15	26	32	44	47	57	44	53	46	U Y 44	77	47	34	43	57	40	18	18	27	30
29	24	32	18	26	23	47	48	54	A A 102	54	47	44	56	66	50	50	70	78	48	46	19	17	44	44
30	17	E B 15	14	E B 15	E B 13	28	34	43	50	53	78	A A 100	E B 47	50	46	G	U Y 39	53	39	40	24	A A 103	39	63
31	A A 87	49	52	24	47	A A 74	A A 97	53	49	63	U Y 41	48	78	53	45	54	51	67	28	A A 86	54	67	26	40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	17	16	16	E B 15	21	32	41	48	51	50	49	48	46	46	46	42	43	43	40	26	24	20	20
U Q	23	22	22	20	18	24	35	54	58	58	66	62	57	53	64	54	58	57	57	61	43	44	38	31
L Q	E B 16	E B 15	E B 15	E B 16	E B 15	19	29	37	44	48	44	46	46	45	G 45	G	G 36	34	32	30	20	18	E B 17	E B 16

MAY 2000 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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

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	16	14	16	15	13	16	21	22	21	40	38	40	45	46	21	20	14	15	16	15	15	16	16
2	16	15	15	15	16	19	17	20	18	18	21	22	26	27	22	22	16	18	16	15	16	16	16	15
3	15	16	16	16	16	19	15	15	19	17	39	40	26	24	21	46	16	16	16	14	15	14	15	15
4	15	15	15	15	15	16	20	19	24	22	41	25	36	28	66	20	16	15	16	16	14	16	16	16
5	16	14	16	14	15	17	16	18	20	22	20	29	44	43	21	20	19	14	16	16	13	16	14	15
6	12	16	16	16	15	15	18	18	19	20	42	21	46	26	22	19	16	16	16	16	16	15	16	16
7	14	14	15	16	16	16	15	18	20	26	41	42	38	37	27	19	18	18	16	16	14	16	16	16
8	16	16	14	13	13	17	15	16	14	20	22	42	39	24	28	20	20	14	16	15	15	15	17	15
9	16	15	16	16	15	16	18	15	21	20	24	26	50	46	28	22	16	16	14	16	15	15	15	15
10	15	15	16	16	15	18	19	21	20	21	21	45	43	41	42	38	21	16	16	16	15	15	14	16
11	16	12	16	16	14	16	16	19	20	24	42	28	41	41	39	18	20	14	16	16	15	14	15	15
12	14	15	16	16	16	16	16	22	23	28	39	42	41	42	36	29	19	19	16	18	13	15	16	14
13	14	15	15	14	14	16	17	23	27	42	45	48	64	46	44	23	21	21	16	14	20	16	15	14
14	14	16	14	15	16	15	15	22	23	42	44	47	40	48	49	44	19	15	16	14	15	16	16	16
15	16	14	13	13	13	14	16	15	20	28	48	43	44	28	77	22	21	19	19	16	15	15	15	14
16	16	15	15	14	15	15	15	21	23	41	33	42	32	42	41	23	21	18	14	16	16	16	16	16
17	16	14	16	15	16	14	16	22	23	42	44	42	38	47	50	29	19	19	14	14	13	15	15	15
18	15	15	14	14	14	14	18	23	26	40	42	35	37	38	32	24	18	17	17	16	14	16	15	15
19	15	16	14	15	14	16	16	18	19	41	43	40	40	42	36	27	20	23	22	15	15	15	16	13
20	12	15	16	15	14	15	19	20	22	31	41	42	42	44	30	35	22	18	15	14	16	14	16	15
21	16	16	15	14	16	17	14	16	23	35	24	33	40	48	24	23	18	16	16	17	16	15	15	15
22	16	13	14	15	15	12	18	17	17	19	39	43	42	45	26	24	18	19	16	16	16	16	16	15
23	16	15	15	13	14	15	17	19	22	23	42	40	38	46	42	16	19	16	18	18	13	16	14	16
24	16	15	14	14	15	20	18	23	22	28	41	46	47	76	47	67	39	19	18	16	16	16	16	14
25	17	14	15	11	13	17	15	24	24	24	29	42	34	42	29	41	22	19	16	16	16	15	16	16
26	16	14	14	14	15	19	18	22	19	18	55	42	28	47	29	18	19	18	15	18	16	16	16	16
27	15	15	16	15	14	22	16	18	18	21	26	27	28	28	29	23	18	18	18	12	16	16	12	15
28	16	16	16	16	15	17	21	19	21	22	27	39	40	23	24	18	17	15	16	16	16	16	16	16
29	15	16	12	13	16	19	17	19	23	22	27	37	44	36	24	24	19	19	14	17	16	16	16	17
30	16	15	14	15	13	14	16	15	23	27	42	42	47	42	25	25	22	16	17	16	16	16	16	16
31	12	15	14	14	13	16	19	18	17	24	25	39	31	42	22	21	18	18	18	16	13	15	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	16	15	15	15	15	16	16	19	21	24	40	40	40	42	29	23	19	18	16	16	15	16	16	15
U Q	16	16	16	16	16	17	18	22	23	31	42	42	44	46	42	29	21	19	17	16	16	16	16	16
L Q	15	14	14	14	14	15	16	18	19	21	26	33	36	28	24	20	18	16	16	15	14	15	15	15

MAY 2000 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 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	259	265	261	275	275	285	323	R 293	306	277	267	273	269	275	277	274	283	287	302	280	R 276	R 279	R 270	R 258
2	267	R 280	282	288	286	295	R 304	R 293	281	R 279	282	266	272	279	284	R 287	283	290	285	295	286	254	266	242
3	R	R 249	266	278	321	R 301	302	291	290	276	293	R 296	290	282	292	297	298	311	320	275	268	R 273	269	
4	270	R 271	R 278	265	266	302	323	295	283	283	282	265	284	R 293	285	293	293	301	A	306	R 296	267	268	R 264
5	259	262	275	295	312	317	321	300	298	308	298	272	277	274	283	275	280	280	291	296	310	265	261	258
6	261	R 273	299	292	273	284	306	304	281	278	255	267	278	265	272	281	281	300	300	R 315	R 271	R 270	R 265	269
7	R 271	263	272	272	278	286	290	309	308	285	289	272	271	278	279	279	280	289	301	316	296	R 271	266	268
8	275	R 283	283	275	279	310	R 330	H 290	308	306	284	281	R 275	270	284	281	287	R 294	293	297	282	R 268	R 266	267
9	270	276	279	R 274	281	295	318	311	295	293	282	270	280	274	279	280	274	279	R 291	297	R 290	R 283	277	264
10	266	271	279	R 277	R 276	288	306	288	297	295	271	278	274	279	276	283	281	289	302	293	272	263	264	R 258
11	265	R 267	276	263	264	260	296	R 289	292	284	265	271	274	281	283	284	276	285	284	291	R 287	R 277	R 277	272
12	R	267	270	R 277	R 273	303	317	298	297	275	282	282	269	268	262	265	268	276	298	311	249	258	R 265	R 280
13	258	R 282	299	R 277	R 264	286	282	272	283	276	280	280	R 264	276	288	287	290	289	R 282	R 289	283	249	258	R 249
14	R 249	254	278	R 268	244	264	290	R 278	275	R 271	256	259	260	R 263	263	269	281	288	R 286	289	261	250	253	259
15	263	269	281	271	269	276	271	R 284	286	260	274	288	263	275	274	281	282	281	279	275	266	R 243	R 245	R 260
16	262	R 267	R 261	R 245	R 243	251	275	278	267	265	255	250	255	R 259	260	261	271	284	296	263	245	245	256	266
17	251	265	263	R 265	248	262	282	289	A	R	R 265	252	R 231	251	R 259	255	271	282	280	279	247	R 246	253	R 249
18	253	256	254	257	258	285	278	293	262	280	266	258	261	257	262	257	265	271	270	281	R 267	A	R	R 264
19	265	261	V 251	257	278	R 314	F	304	279	245	253	255	250	258	259	267	263	272	278	282	R 267	R 260	R 272	269
20	251	259	R 265	R 271	R 264	272	301	303	278	251	A	254	262	260	265	275	273	277	294	291	R 250	248	257	267
21	263	V 268	259	260	277	282	286	287	248	A	R 271	263	265	265	270	279	281	277	287	286	260	260	R 268	R 261
22	F	266	262	266	268	273	R 288	R 271	264	R 260	261	R 270	272	272	271	R 272	267	285	R	275	R 253	A	R 244	F
23	R 264	R 276	295	276	254	262	293	273	270	247	260	R 264	263	273	275	267	278	282	287	282	R 258	R 254	R 250	F
24	F	272	258	278	276	271	247	256	243	246	R 255	238	243	R 225	244	256	294	283	245	A	A	A	254	F
25	R	254	247	248	247	269	312	311	304	R 301	290	277	R 274	268	R 262	256	260	263	290	289	252	R	264	261
26	R	R 302	R 254	R	265	263	301	271	R 231	254	249	R	Y	R	R 260	262	273	278	282	262	R 254	R 255	R 254	R 260
27	272	277	269	256	F	280	296	283	286	A	A	U R 273	285	286	289	282	293	282	R 287	R 294	283	267	256	F
28	281	299	294	266	267	279	301	283	268	296	290	292	285	276	282	280	283	287	294	295	280	265	261	F 260
29	F	R 286	R 281	R 273	F	282	299	302	A	263	V 259	278	271	279	R 278	286	276	R 286	R 284	305	270	244	F	F
30	R 270	280	270	259	258	283	272	300	271	288	292	A	U R 276	280	290	291	293	268	279	289	279	A	F	R 258
31	A	R 246	R	R	F	A	A	274	279	288	R 280	278	R 281	265	274	279	287	302	304	A	R 264	R 274	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	30	30	29	28	30	29	31	29	28	29	29	30	30	31	31	31	31	29	29	30	26	27	25
MED	264	268	271	271	268	282	299	290	281	278	271	271	272	274	275	279	281	284	287	291	270	R 262	264	261
U Q	270	277	281	276	278	295	309	302	296	289	282	278	277	279	283	283	287	289	297	297	283	R 268	R 268	268
L Q	259	263	261	262	261	271	284	278	269	262	260	261	263	265	262	267	273	278	282	282	258	250	R 254	R 258

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

IONOSPHERIC DATA STATION Kokubunji

MAY 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 320	A	L	L	L	A							
2								L	L	L	L	L	L	L	L	L								
3									L	L	L	L	A	A	L	L	L							
4										L	L	L	L	L	A	L	A		A					
5									L	L	L 394	L	L 346	L	L	L	L	L						
6								L	L	L	L	L	L 356	U L 353	U L 323	L	L							
7									L	L	L	L	L 333	L 331	L	L	L	L						
8								L	A	L	L	U L 358	L	L 328	A	L	A	A	A					
9									L	L	L	L	L	L	L 344	L	L	L						
10								L	L	L	L 339	L 356	R 331	L 340	352	L	L	L						
11								L	L	L	L	U L 319	L	L	A	L	L							
12								A	A	L	L	L	L	L	L	L	L	L						
13							L		L	A	A	A	E B	L	A	A	L	L						
14							L	L	A	A	L	A	R 313	U L 327	U R 318	L 322	L	L						
15							L	L 325	L	L 333	L	L 339	U L 329	U L 335	E B	L	L	L						
16						L	L	L	L 328	A	A	U Y 325	U Y 336	U Y 326	A	A	L	L						
17							L 323	342	A	R	U Y 311	U L 316	R 348	U L 329	322	322		L	L	A				
18								L	L	L	R 340	L	L 321	U Y 309	346	L 322	L	L	A	A				
19								A	A	R 329	A	A	A	A	A	L	A	A	A					
20						L	L		A	U L 315	A	A	A	L	U L 326	A	A							
21								A	A	A	A	U L 343	A	U R 339	343	L	A	A						
22							L	A	L	A	A	A	A	U L 328	338	L 338	L	L	A					
23							L	L	L	326	A	A	L 357	U R 346	U Y 338	339	328	L	L					
24								L 330	U L 341	R 316	U Y 322	A	U L 324	E B	R 303	E B	L	L						
25									A	A	A	A	A	U L 335	A	L	A	L						
26							A	A	A	A	E B	U Y 373	Y	R 350	R 337	A	A	A	A					
27								A	A	A	A	A	U R 334	A	L	L	A	A						
28								L	U L 324	A	L 337	A	349	L 315	A	A	U L 328	A	A					
29							A		A	A	L	U L 353	R 303	A	L	L	A	A	A					
30						L		A	L	A	A	A	U L 337	R 318	R 357	L 348	L	A	A					
31						A	A	A	L	A	L	U L 330	A	L	L 350	A	A	A						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	3	3	5	6	11	15	16	14	6	2							
MED							L 323	L 330	U L 328	326	338	U L 339	L 334	U L 330	338	L 330	L 328							
U Q								342	U L 341	331	340	U L 356	348	U R 340	346	339								
L Q								L 325	U L 324	316	U Y 322	U L 320	324	U 326	323	322								

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

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MAY 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									278	284	320	316	356	334	322	310	304							
2								292	292	308	308	300	330	322	292	288								
3									272	304	336	304	308	314	322	312	288							
4										286	320	302	328	298	318	310	306		A					
5									308	294	282	320	322	334	322	320	308	306						
6								284	310	312	304	358	328	352	344	302	302							
7									274	302	308	332	356	328	328	324	314	292						
8								238	258	268	308	324	326	354	326	310	324	294	280					
9									268	290	300	334	344	334	318	316	328	302						
10								310	288	286	350	350	362	356	356	328	312	290						
11								284	302	298	350	348	344	330	312	316	316							
12								268	268	310	316	308	340	344	364	352	338	320						
13							288		294	E A 322	E A 340	334	346	342	320	312	316	326						
14							300	328	318	E A 360	412	420	380	384	390	358	320	294						
15							290	358	314	402	358	348	400	360	E B 392	342	330	336						
16						346	308	322	408	E A 416	440	454	428	396	402	386	348	316						
17							344	350	A	R	460	418	486	440	418	394	312	328	302					
18								294	310	314	376	414	396	404	382	376	348	322	342					
19								284	E A 352	U R 452	384	E A 384	A	A	374	354	366	E A 346	E A 332					
20						306	278		256	416	A	E A 410	380	376	372	352	334							
21								278	E A 404	A	E A 412	378	370	386	374	350	350	344						
22							296	E A 362	330	E A 300	356	366	360	350	362	368	352	302	E A 346					
23							294	330	342	438	E A 426	394	360	380	378	392	358	336						
24								374	438	442	444	494	436	B	440	410	310	290						
25									322	254	338	E A 392	354	362	368	380	E A 430	320						
26							286	E A 384	E A 470	438	466	428	Y	R 504	444	420	390	344	328					
27								340	286	A	A	364	328	330	336	336	314	338						
28								L 292	376	314	348	324	352	358	A 346	316	322	302	A 294					
29							268		A	E A 316	298	352	380	338	326	318	E A 348	E A 334	280					
30						312		260	342	278	344	A	376	358	324	318	324	E A 350	302					
31						A	A	E A 320	336	314	328	342	E A 376	368	356	334	314	288						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	10	21	28	28	29	30	29	29	31	31	30	24	9					
MED						312	292	301	304	306	341	348	356	354	351	334	320	312	298					
U Q						346	300	345	342	381	398	394	380	378	378	368	348	336	E A 337					
L Q						306	286	284	282	292	312	324	335	334	322	316	312	298	287					

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IONOSPHERIC DATA STATION Kokubunji

MAY 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	318	306	294	284	288	244	228	224	234	230	214	194	A	242	258	E A 268	A	280	258	260	290	310	292	308
2	316	286	284	268	262	258	222	240	E A 252	E A 274	E A 248	228	220	224	244	252	264	290	260	274	260	272	302	322
3	304	254	318	298	278	242	220	242	226	238	234	E A 282	A	A	E A 294	268	244	280	256	264	234	298	290	304
4	294	300	298	304	292	248	226	240	258	254	248	238	E A 286	A	A	A	A	302	A	288	246	270	284	316
5	318	312	290	258	224	238	222	230	230	E A 262	206	192	210	244	218	256	244	262	278	256	246	256	308	322
6	318	282	240	202	250	248	250	244	238	224	202	224	232	218	222	246	244	268	252	242	248	284	324	284
7	290	298	310	304	286	266	242	252	E A 248	E A 266	E A 250	250	218	220	E A 258	238	236	E A 246	272	240	252	276	298	310
8	292	288	276	278	280	246	232	214	A	224	220	E A 260	E A 252	E A 254	A	A	A	A	A	A	E A 250	E A 280	E A 292	306
9	292	290	280	258	276	254	232	232	234	222	238	238	E B 250	244	222	230	230	E A 254	270	262	252	242	262	E B 290
10	E B 300	296	278	278	274	248	246	240	E A 242	E B 256	210	204	E A 240	230	E A 252	E B 236	246	E A 256	254	246	E A 252	E B 270	312	316
11	316	E A 306	284	280	290	244	244	242	A	E A 266	E A 254	E A 248	E A 284	E A 246	A	E A 292	E A 252	252	274	262	274	E A 294	E A 298	286
12	294	296	296	274	272	248	236	A	A	E A 258	226	E A 246	E A 234	E A 232	E A 248	E A 242	A	256	270	268	E A 302	330	296	274
13	306	280	250	248	E A 292	244	236	250	E A 246	A	A	A	B	E A 316	A	A	E A 250	A	284	260	286	E A 392	E A 418	E A 316
14	354	328	278	274	342	268	252	250	A	A	E A 288	A	E A 288	E B 250	E B 274	E B 256	E Y 266	250	270	266	264	292	322	336
15	E A 318	290	264	E A 264	276	270	250	220	222	H E 210	B 246	228	214	238	B	E B 240	E A 244	E A 280	E A 316	296	276	E A 318	E A 350	314
16	296	294	292	338	366	280	254	E A 266	E A 268	A	A	E A 256	230	E A 278	A	A	E A 242	E A 290	290	E A 328	E A 360	E A 364	E A 340	310
17	302	E A 310	280	304	326	282	E A 286	E A 252	A	E A 284	E A 314	E A 296	E A 248	E A 256	E B 304	E A 276	A	242	A	288	E A 306	E A 336	318	328
18	326	324	E A 346	316	300	262	254	E A 278	E A 282	E A 258	E A 254	A	E A 244	E A 266	238	E A 250	240	A	A	280	268	A	E A 384	E A 316
19	E A 318	320	342	328	E A 296	262	250	A	A	E A 270	A	A	A	A	A	E A 334	A	A	A	298	E A 292	E A 316	276	260
20	312	314	E A 310	E A 298	E A 310	276	E A 256	258	A	E A 346	A	A	A	E A 272	244	A	A	E A 308	E A 318	E A 326	E A 494	E A 352	E A 358	308
21	316	318	320	E A 346	E A 286	E A 268	256	A	A	A	A	E A 270	A	226	226	232	A	A	292	E A 288	E A 338	A	E A 348	E A 318
22	304	290	E A 312	E A 316	292	260	252	A	E A 274	A	A	A	A	210	E A 248	246	E A 244	264	A	258	E A 314	A	354	E A 412
23	E A 348	312	264	278	312	252	E A 254	E A 268	E A 262	E A 336	A	A	E A 248	E A 240	E B 246	H 224	E A 334	E A 278	E A 274	274	E A 286	312	E A 356	E A 366
24	294	298	310	280	254	270	E A 264	E A 258	E A 250	E A 290	E A 284	A	248	B	E B 298	B	E B 258	240	E A 274	A	A	A	E A 288	E A 330
25	E A 374	E A 334	356	352	366	E A 288	264	256	A	A	A	A	A	E A 260	A	E A 344	A	E A 284	272	252	E A 360	E A 346	E A 300	E A 328
26	E Y 298	256	248	268	248	E A 274	A	A	A	A	B	208	Y	E B 262	E A 310	A	A	A	A	E A 314	E A 348	E A 328	E A 378	356
27	302	282	E A 300	E A 338	310	270	248	A	A	A	A	A	E A 262	A	E A 270	E A 234	A	A	E A 300	264	E A 308	276	310	E A 352
28	288	274	262	264	310	250	258	A 264	A 266	A	226	A	A 240	Y 234	A	A	234	A	A	A 278	266	286	342	A 354
29	E A 330	296	240	296	E A 342	E A 290	A	274	A	E A 248	E A 208	208	E A 340	A	A	A	A	A	A	270	E A 264	356	E A 380	E A 344
30	294	278	244	E A 312	E A 340	E A 278	242	A	E A 298	A	A	A	E B 250	E A 326	E A 278	R 256	E A 256	A	A	266	E A 264	A	E A 386	E A 412
31	A	E A 432	E A 364	290	410	A	A	A	E A 318	A	232	E A 266	A	A	E A 254	A	A	A	E A 246	A	E A 382	E A 378	E A 340	E A 304
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	28	23	19	19	20	19	21	24	21	21	18	20	21	28	30	26	31	31
MED	302	293	284	281	289	255	246	245	E A 250	E A 258	U 223	U 216	E A 248	E A 244	E 252	E 250	241	260	266	265	E A U 275	288	U 304	311
U Q	318	312	310	312	312	270	254	A 258	E A 268	E A 274	E A 252	E A 260	E A 257	E A 261	E A 276	E A 268	E 256	282	287	288	E A 308	E A 336	E A 354	E A 336
L Q	294	286	264	268	276	248	234	240	234	230	223	208	231	231	241	237	242	253	259	260	252	276	296	306

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MAY 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	116	114	112	112		B	B	B	B	112	112	112	B					
2						B	116	114	110	110	114	112	112	110	114	114	112	110	B					
3						B	114	112	110	110	B	B	112	110	118	B	110	118	120					
4						B	132	112	114	112	B	108	B	114	B	110	116	116	B					
5						B	114	112	110	112	108	116	B	B	118	118	114	118	B					
6						B	118	112	108	112	B	110	B	112	114	114	114	118	A					
7						B	116	112	112	114	B	B	B	B	112	110	112	118	128					
8						166	114	116	110	114	112	B	B	112	126	118	114	116	128					
9						B	114	112	110	112	112	114	B	B	116	116	114	120	124					
10						B	120	116	114	116	112	B	B	B	B	B	120	116	B					
11						B	120	120	114	114	B	118	B	B	B	124	126	132	132					
12						B	118	118	112	114	B	B	B	B	B	120	116	122	B					
13						B	116	116	116	B	B	B	B	B	B	116	122	122	126					
14						B	A	116	118	B	B	B	B	B	B	B	122	116	A					
15						B	A	112	114	A	B	B	B	112	B	118	118	116	126					
16						B	126	118	114	B	122	B	114	B	B	118	114	A	A					
17						B	118	116	118	B	B	B	112	B	B	122	116	120	B					
18						B	120	116	118	B	B	120	A	B	116	114	116	122	B					
19						BE	A 128	114	112	B	B	B	B	B	B	114	116	118	B					
20						B	122	112	116	114	B	B	B	B	116	124	114	118	120					
21						B	114	112	112	B	A	A	118	B	116	114	112	112	112					
22						B	126	A	A	110	B	B	B	B	122	116	120	116	118					
23						B	114	124	122	116	B	B	B	B	B	112	118	120	122					
24						B	116	128	114	116	B	B	B	B	B	B	B	120	118					
25						B	114	120	114	114	114	B	120	B	116	B	120	116	118					
26						B	112	116	116	112	B	B	110	B	116	112	114	110	118					
27						B	116	114	114	110	112	114	A	112	114	114	126	118	B					
28						146	130	114	116	116	120	A	112	114	A	A	116	112	132					
29						B	116	116	110	112	120	B	B	B	112	114	114	A	B					
30						136	114	118	114	114	B	B	B	B	118	114	114	112	118					
31						B	118	112	112	112	110	B	A	B	112	114	112	110	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	29	30	30	23	11	8	8	8	17	25	30	29	16					
MED						146	116	115	114	112	112	114	112	112	116	114	115	118	121					
U Q						166	120	116	116	114	120	117	116	113	118	118	118	120	127					
L Q						136	114	112	112	112	112	111	112	111	114	114	114	114	118					

IONOSPHERIC DATA STATION Kokubunji

MAY 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	100	104	B	108	B	124	128	124	116	120	118	116	112	B	B	126	116	118	112	106	108	108	106	B
2	104	B	B	96	B	B	124	116	114	110	114	108	G	G	G	154	134	120	112	110	112	B	B	100
3	106	96	B	B	B	B	122	128	122	122	120	116	108	118	116	B	164	116	114	134	110	108	106	106
4	112	112	94	96	112	134	134	128	118	112	120	110	108	118	B	122	116	114	110	110	108	108	B	B
5	B	B	B	B	B	186	G	128	124	114	120	116	B	B	G	G	G	130	116	110	110	116	108	106
6	108	108	104	B	B	138	124	122	124	130	B	G	B	G	G	G	G	124	114	112	116	112	110	112
7	112	B	100	100	100	128	124	120	116	116	118	112	116	116	114	G	G	142	120	112	112	112	112	B
8	B	108	B	106	106	170	142	140	116	116	116	110	112	150	150	132	122	118	116	114	112	108	112	112
9	B	B	B	108	B	142	134	130	122	120	G	116	B	B	118	G	G	130	118	112	114	112	110	B
10	B	110	108	B	104	B	154	138	126	120	122	B	152	142	130	B	136	124	122	114	114	B	108	108
11	104	104	106	B	B	134	128	122	116	116	116	116	110	114	116	132	146	152	122	114	110	108	108	116
12	118	B	100	96	B	128	126	116	112	116	122	118	116	112	120	118	114	110	122	110	108	106	B	106
13	106	108	B	100	108	146	142	140	132	118	112	120	B	128	124	122	156	118	120	112	112	112	110	106
14	104	104	104	106	B	136	114	128	114	114	118	114	112	B	B	B	114	106	138	104	104	102	94	106
15	106	108	108	108	110	106	110	118	112	112	B	144	142	G	B	G	142	126	116	110	108	108	106	106
16	B	104	B	B	B	132	126	122	118	116	114	116	124	120	112	116	112	106	104	122	120	100	98	98
17	B	102	98	102	110	126	120	122	116	118	112	110	110	B	B	132	130	130	104	114	114	100	B	100
18	114	96	98	102	108	100	122	114	112	116	124	114	112	122	116	120	G	114	116	108	106	100	100	98
19	98	98	100	94	98	102	128	116	108	112	108	106	104	104	106	108	120	116	112	108	106	108	108	106
20	102	98	98	94	96	132	122	112	112	110	106	108	110	120	G	122	122	114	112	110	112	108	106	100
21	96	98	108	104	112	120	116	110	108	102	102	112	112	B	104	G	124	116	118	112	110	108	106	106
22	104	100	98	96	114	118	130	110	110	110	108	114	112	B	G	G	134	120	110	112	108	106	134	104
23	102	100	98	96	B	158	136	126	112	112	110	110	118	B	130	142	124	126	120	112	112	106	112	108
24	110	108	106	B	B	146	126	138	124	132	130	126	B	B	B	B	B	G	122	116	134	112	108	104
25	102	100	102	106	102	118	120	118	116	122	116	114	122	136	126	138	122	118	112	110	110	112	106	104
26	98	100	100	102	B	130	120	118	116	114	B	B	136	B	140	128	120	120	114	108	106	106	106	102
27	104	102	98	98	B	128	122	114	112	110	110	106	110	110	108	118	120	112	110	116	110	108	108	108
28	102	104	104	114	110	154	134	126	118	112	124	116	112	116	112	114	118	126	120	114	120	114	110	110
29	106	100	98	98	128	122	114	112	110	110	116	116	112	108	114	110	124	122	100	104	104	114	112	110
30	106	B	106	112	B	140	130	120	120	120	118	118	B	126	130	G	138	112	114	108	106	106	116	108
31	108	106	102	106	108	120	116	112	112	110	120	110	110	116	144	124	116	112	112	108	108	108	106	104
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	23	24	16	28	30	31	31	31	27	28	24	18	20	19	25	30	31	31	31	29	27	27
MED	104	104	100	102	108	131	125	122	116	116	116	114	112	118	117	122	122	118	114	112	110	108	108	106
U Q	108	108	106	106	111	141	130	128	120	120	120	116	117	126	130	132	135	126	120	114	112	112	110	108
L Q	102	100	98	96	103	121	120	116	112	112	112	110	110	114	113	118	117	114	112	108	108	106	106	104

IONOSPHERIC DATA STATION Kokubunji

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

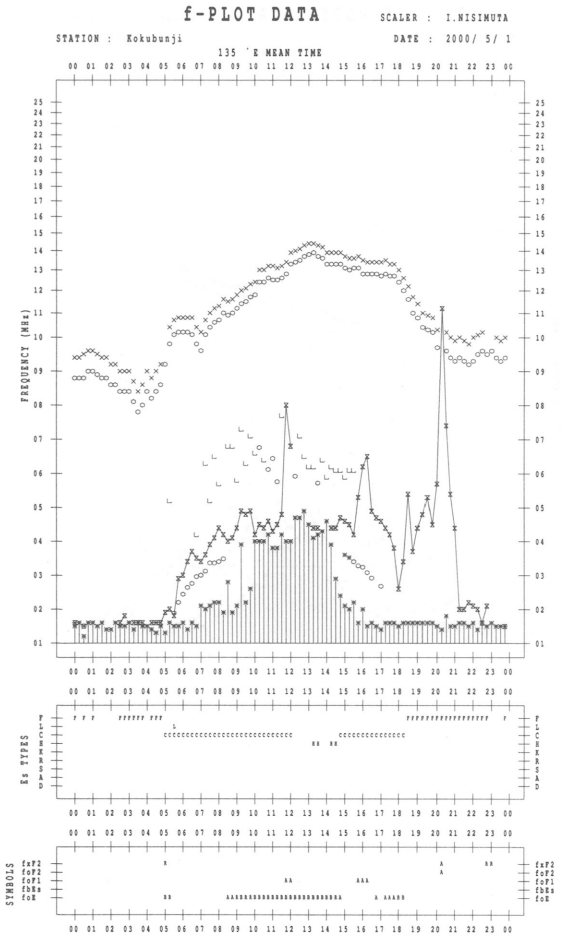
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

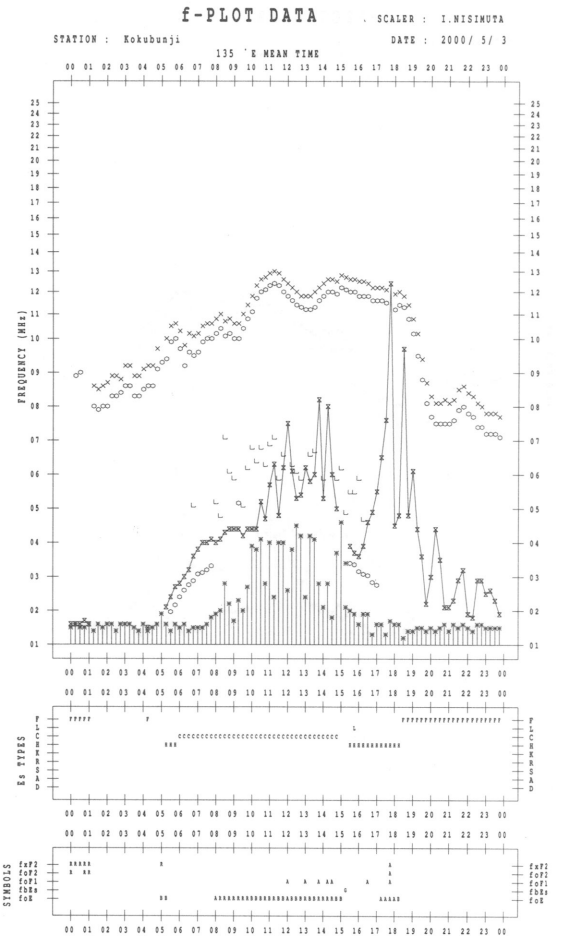
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F1	F1		F2		C2	C2	C1	C1	C1	C1	C1	C2			C1	C2	C2	C3	F5	F3	F4	F3	
2	F1			F1			C1	C1	C2	C2	C2	C1				H1	H1	C3	C2	F3	F2			F1
3	F1	F1					C1	C1	C1	C1	C1	C2	C3	C1	C2		H1	H3	H3	FF15	F3	F2	F3	F4
4	F1	F1	F1	F1	F1	C2	C2	C1	C1	C2	C1	C1	C1	C2		C2	C3	C4	C4	F4	F3	F2		
5						H1		C1	C1	C1	C1	C1						C1	C4	F4	F3	F1	F3	F2
6	F1	F1	F1			C1	C1	C1	C1	C1								C2	L3	F5	F1	F2	F2	F2
7	F2		F2	F2	F2	C2	C1	C2	C1	C2	C1	C1	C1	C1	C1			H1	C2	F6	F7	F2	F2	
8		F2		F1	F1	H1	H1	C1	C1	C1	C1	C1	C1	H1	HL11	C2	C2	C3	C4	F4	F3	F2	F2	F1
9				F1		H1	H1	C1	C1	C1		C1			C1			C2	C3	F5	F3	F3	F2	
10		F1	F1		F1		H1	H1	C1	C1	C1		H1	H1	C1		H2	C1	C4	F5	F4		F4	F2
11	F2	F4	F2			C2	C1	CL11	C1	C2	C1	C1	C2	C1	C1	CL11	HL11	HL11	H3	F5	F3	F6	F4	F3
12	F1		F1	F1		H1	C2	C2	C2	C1	C1	C1	C1	C1	C1	C1	C2	L1	C2	F4	F2	F3		F2
13	F2	F1		F2	F2	H1	H1	H1	H1	C2	C2	C1		C1	C1	C2	H1	C3	C2	F2	F3	F3	F4	F2
14	F3	F2	F1	F1		C1	L1	C1	C2	C1	C1	C2	C1				L1	L1	HL11	F1	F1	F1	F1	F3
15	F5	F3	F2	F3	F2	L2	L1	C1	C1	L1		H1	H1				HL11	C1	C3	F6	F3	F2	F3	F2
16		F2				C2	CL11	C1	C1	C1	C2	C1	C1	C1	C1	C1	C1	L2	L2	FF13	FF13	F5	F4	F2
17		F3	F3	F2	F1	C2	C2	C1	C1	C1	C1	C1	C1			C1	C1	C1	C2	F2	F3	F2		F1
18	FF11	F2	F3	F1	F1	LC11	C1	C2	C2	C1	C1	C1	L1	C1	C1	C1		CL21	C4	F4	F2	F4	F4	F3
19	F4	F3	F2	F3	F3	LC22	CL11	C2	C2	C1	C1	C2	C2	C2	C2	C2	C2	C3	C3	F5	F3	F2	F1	F2
20	F2	F3	F3	F4	F1	C2	C2	C2	C2	C2	C2	C2	C1	C1		C1	C2	C3	C3	F5	F6	F3	F3	F2
21	F4	F2	FF12	F4	F3	C3	C2	C3	C3	C2	L2	L1	C2		L1		C1	C3	C2	F5	F3	F3	F3	F3
22	F2	F1	F4	F3	F1	C1	CL11	CL21	CL21	C2	C1	C1	C1				C1	C2	C3	F3	F2	F2	F1	F2
23	F3	F2	F2	F1		H1	H1	CL11	CL21	C2	C2	C1	C1		C1	H1	CL21	CL21	C2	F5	F4	F2	F4	F6
24	F2	F2	F2			H1	C1	C2	C1	C1	C1	C1							C2	F4	FF24	F4	F3	F4
25	F4	F3	F2	F1	F2	C4	C2	C2	C2	C1	C1	C2	C2	C1	C2	C2	C2	C2	C4	F4	F4	F3	F3	F3
26	F4	F1	F1	F1		C2	C2	C2	C2	C1			C1		H1	C2	C2	C2	C3	F6	F5	F6	F3	F4
27	F2	F2	F2	F3		C2	C1	C2	C2	C2	C2	C2	L1	C2	C2	C1	CL21	C3	C3	FF24	F4	F4	F2	F4
28	F2	F3	F2	F1	F1	C1	C1	C2	C2	C2	C1	C1	C1	L1	L2	L1	C1	C2	CL31	F4	F3	F2	F3	F3
29	F3	F3	F3	F3	FF12	C3	C3	C2	C3	C2	C1	C1	C2	C2	C1	C2	CC32	CL32	L2	F3	F2	FF12	F6	F4
30	F2		F1	F1		H2	C1	C1	C2	C2	C2	C2		C1	C1		C1	C3	C3	F6	F3	F4	F5	F6
31	F4	F4	F3	F3	F4	C4	C4	C2	C2	C2	C1	C1	L1	C1	H1	H1	C2	C3	C3	F5	F3	F3	F5	F3
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

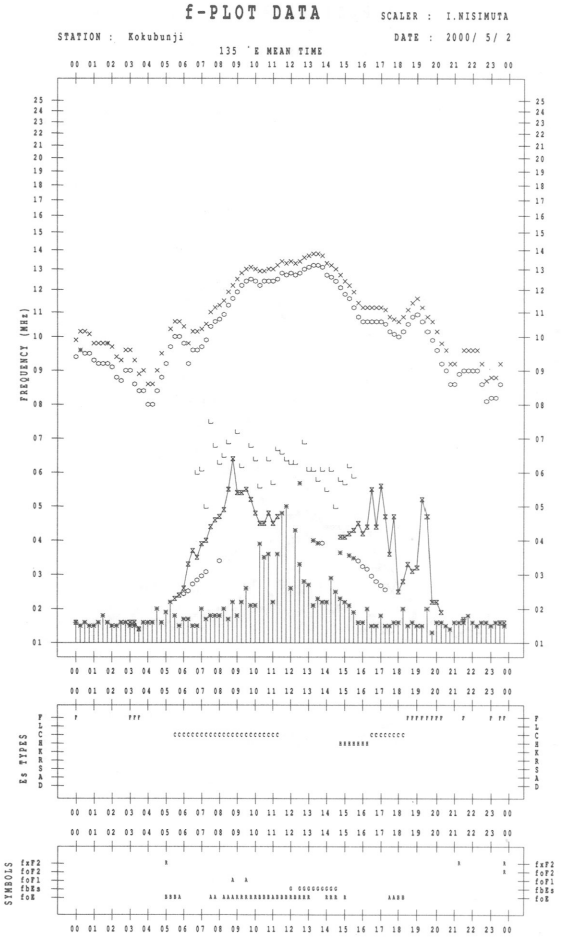
MAY 2000 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

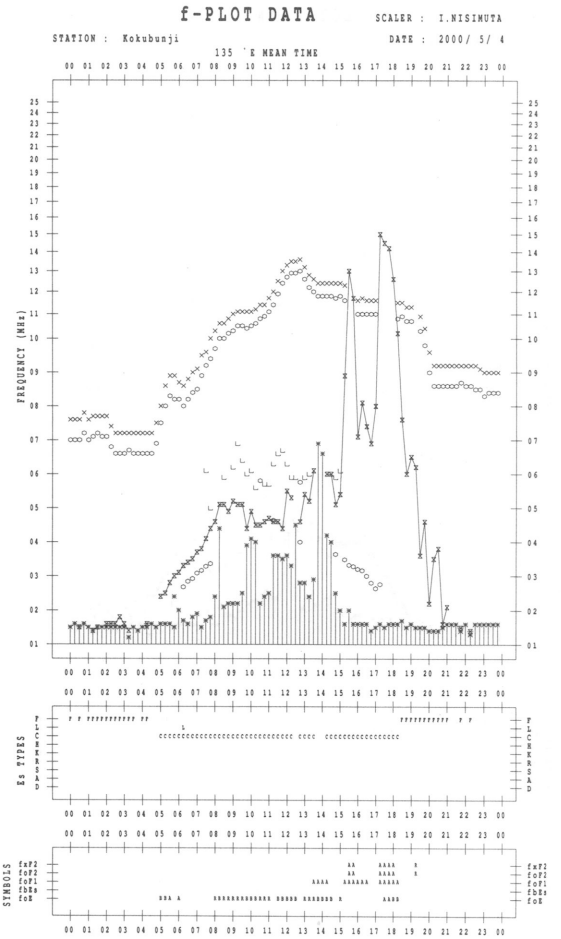
f-PLOTS OF IONOSPHERIC DATA

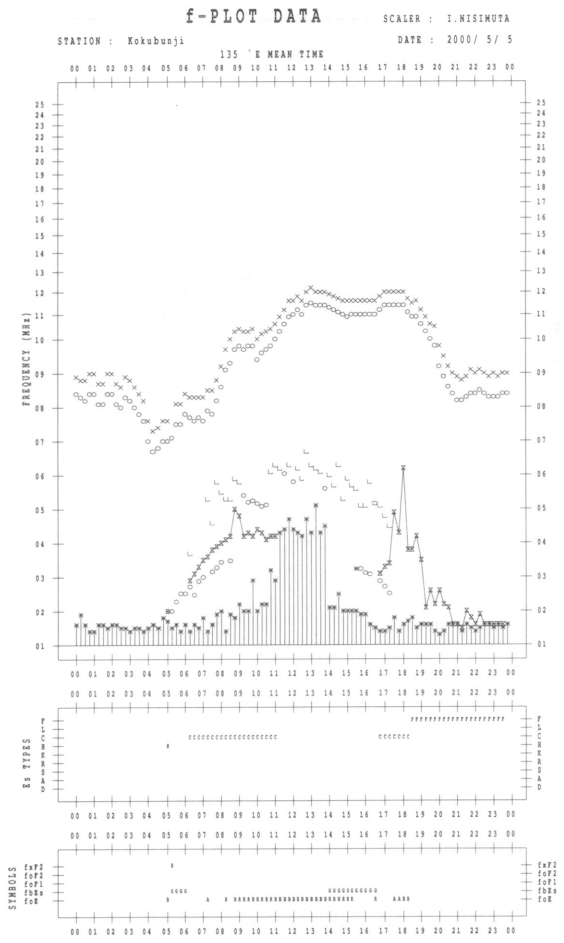
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

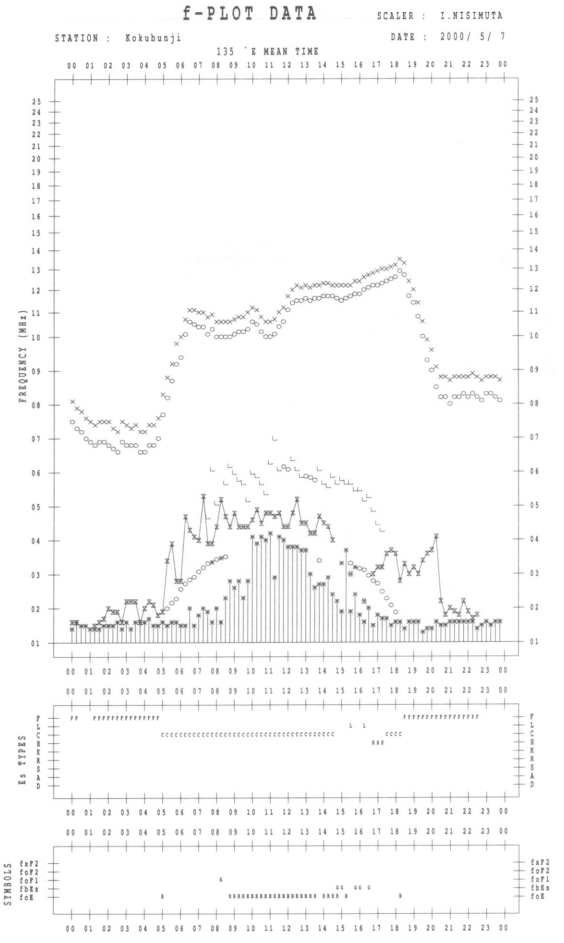

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

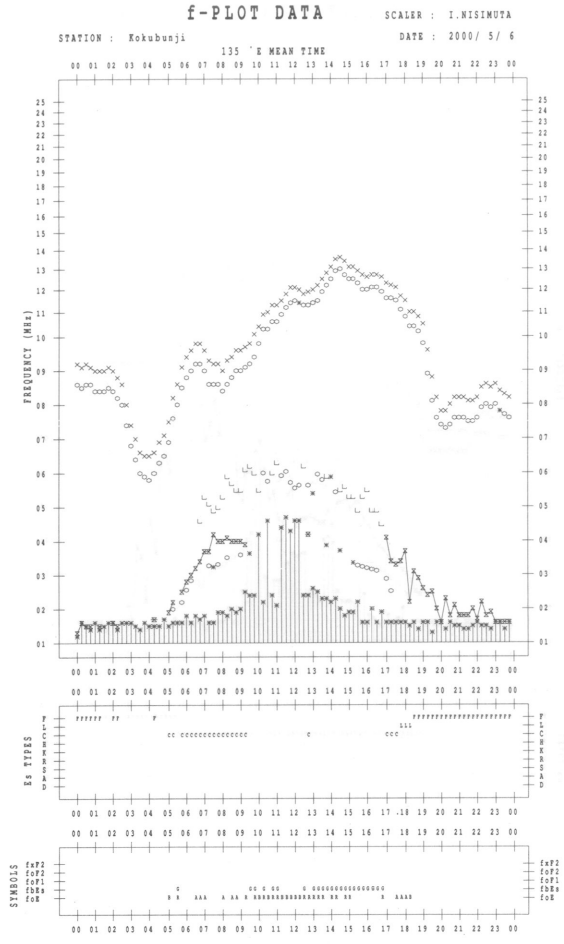

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

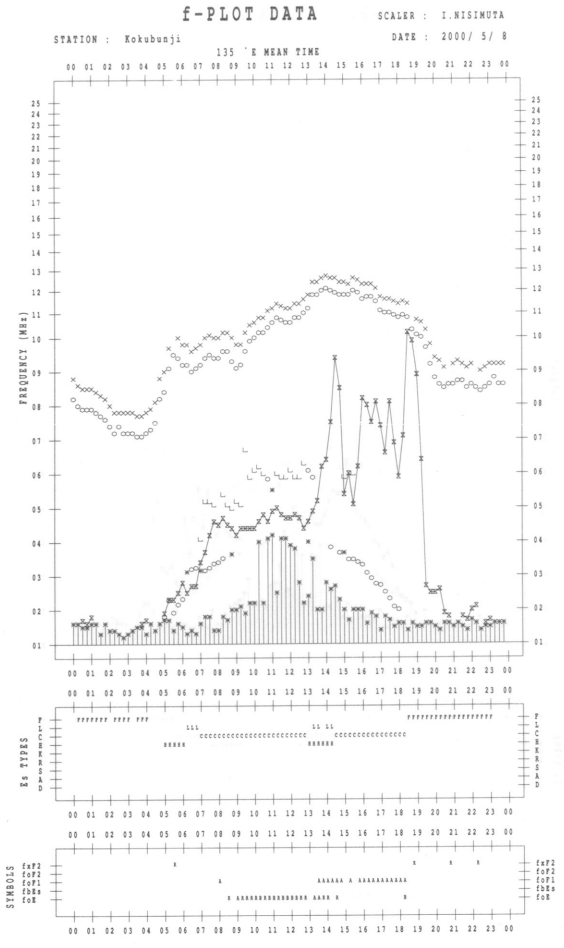

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

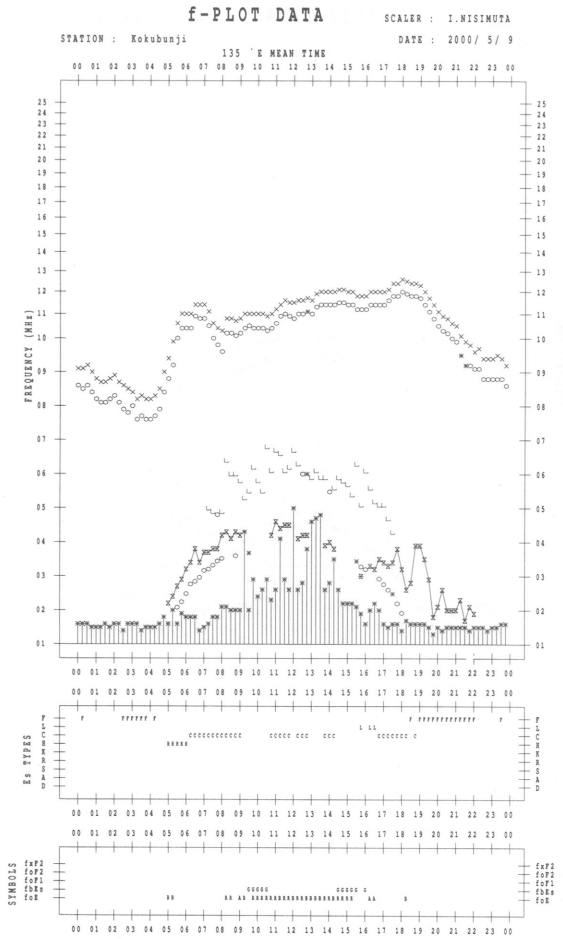

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

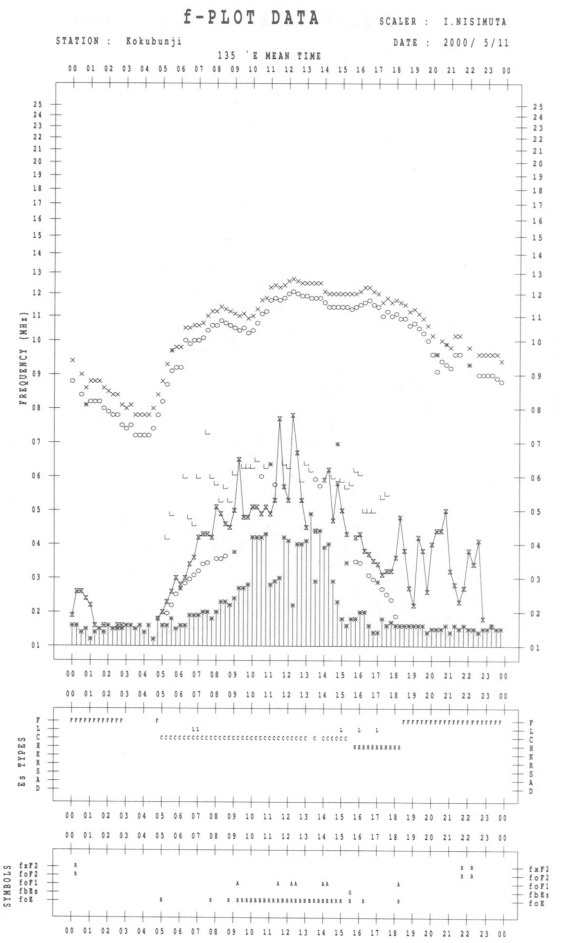

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

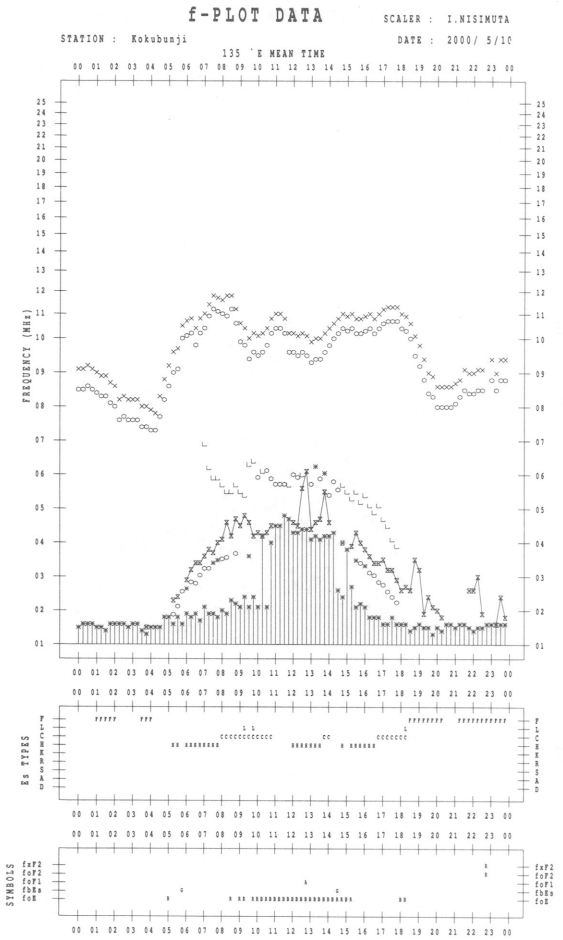

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

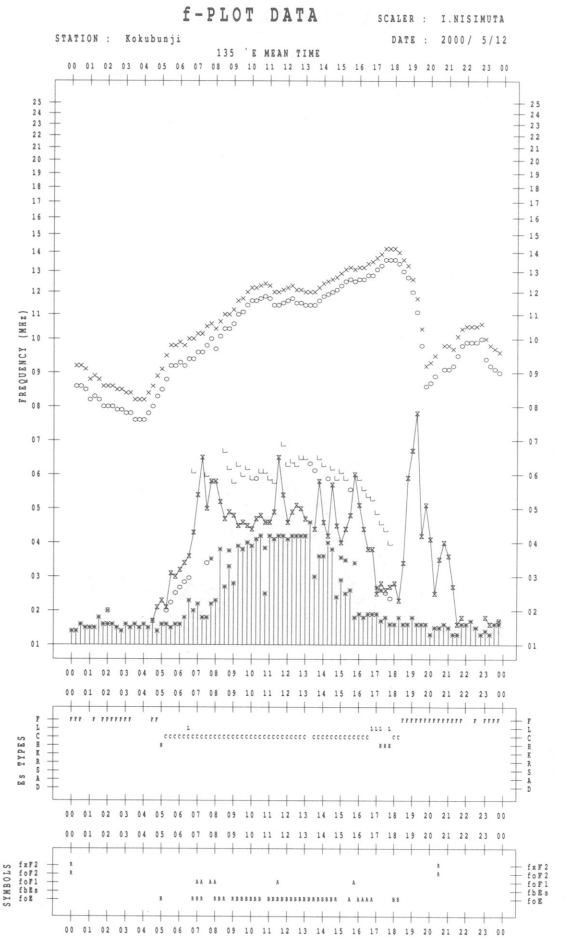

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

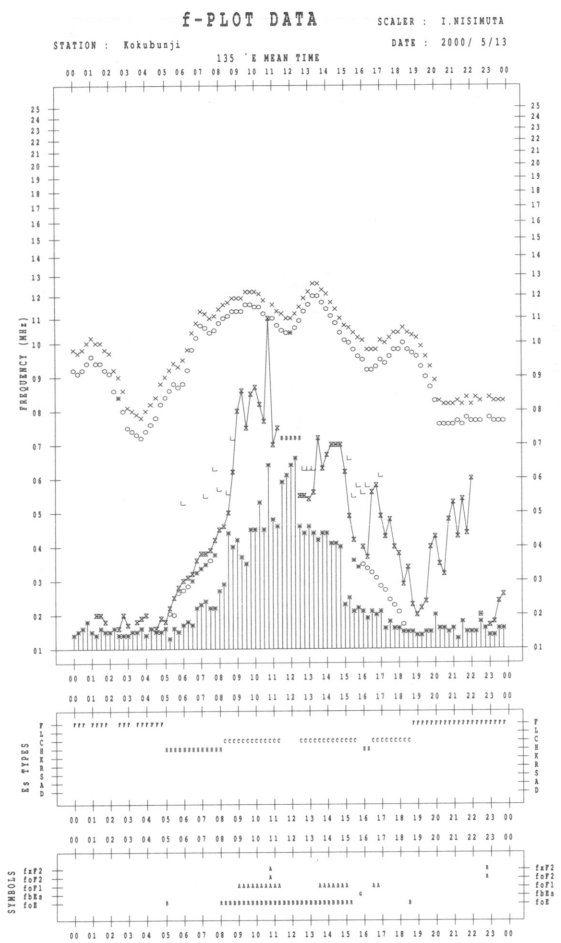

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

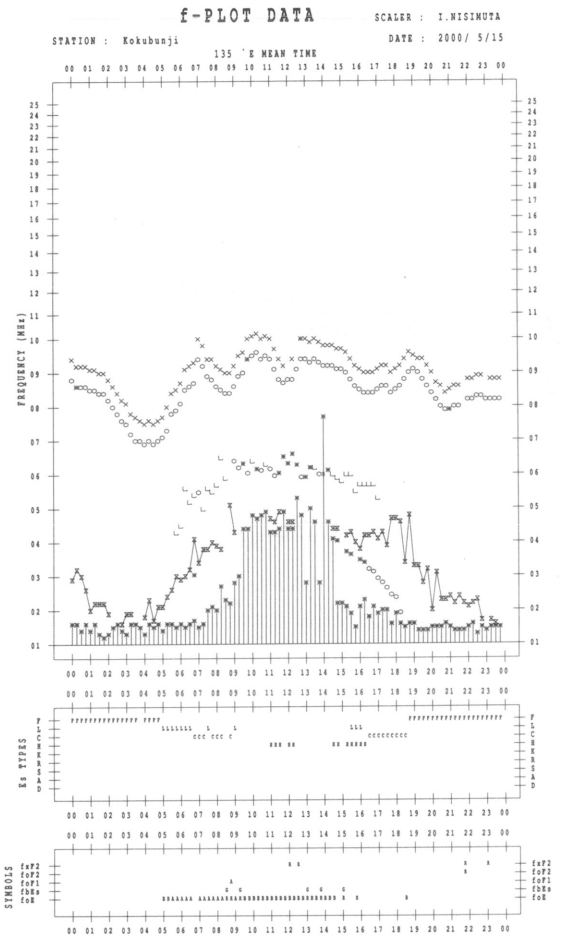

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

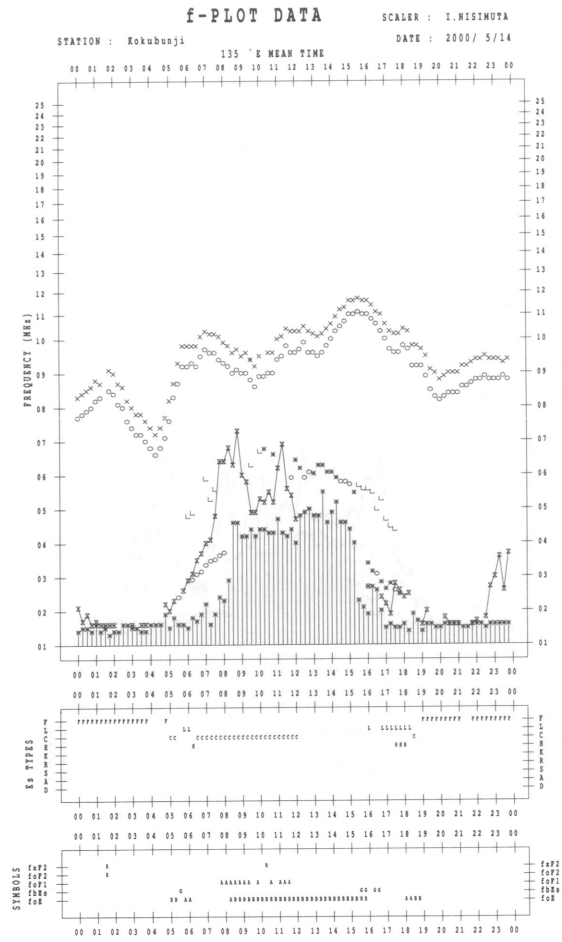

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

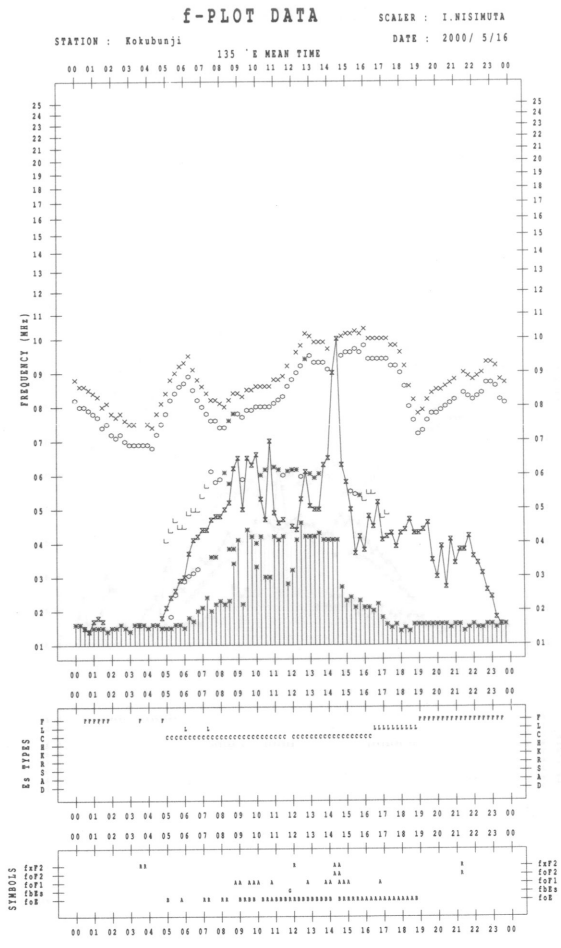

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

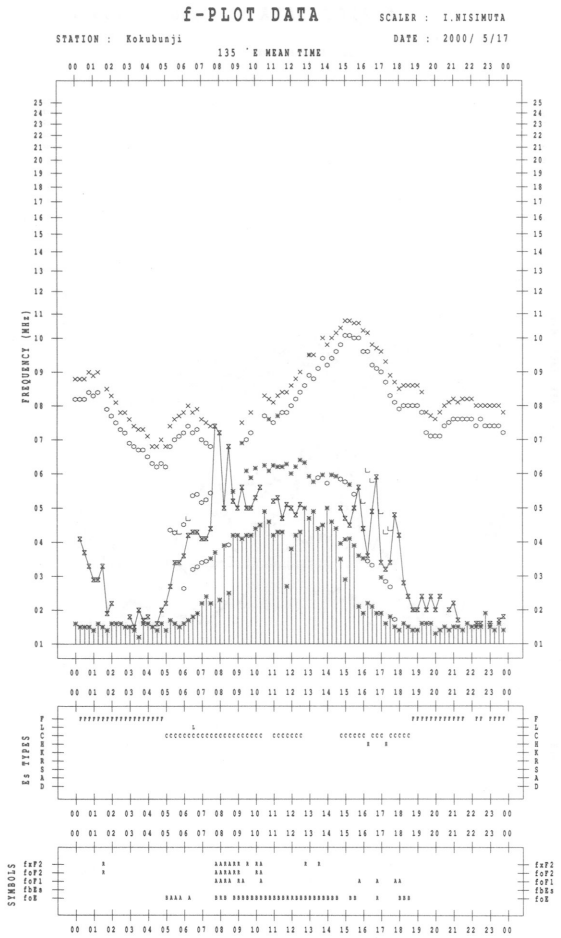

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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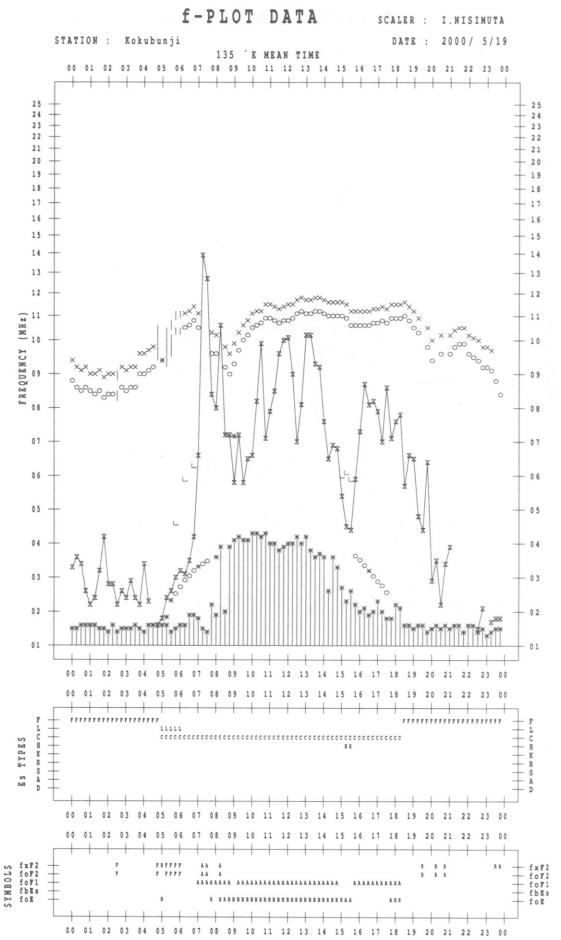
STATION : Kokubunji
DATE : 2000/ 5/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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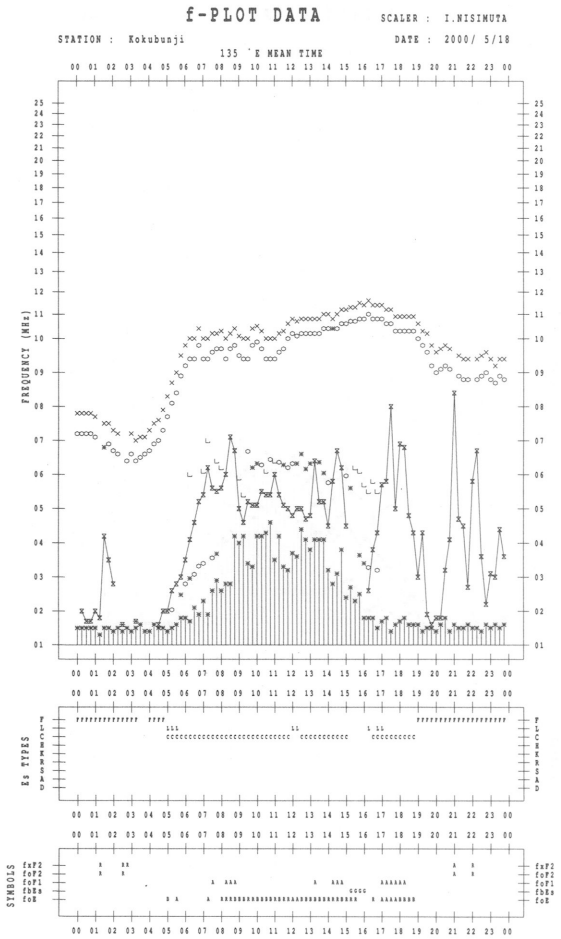
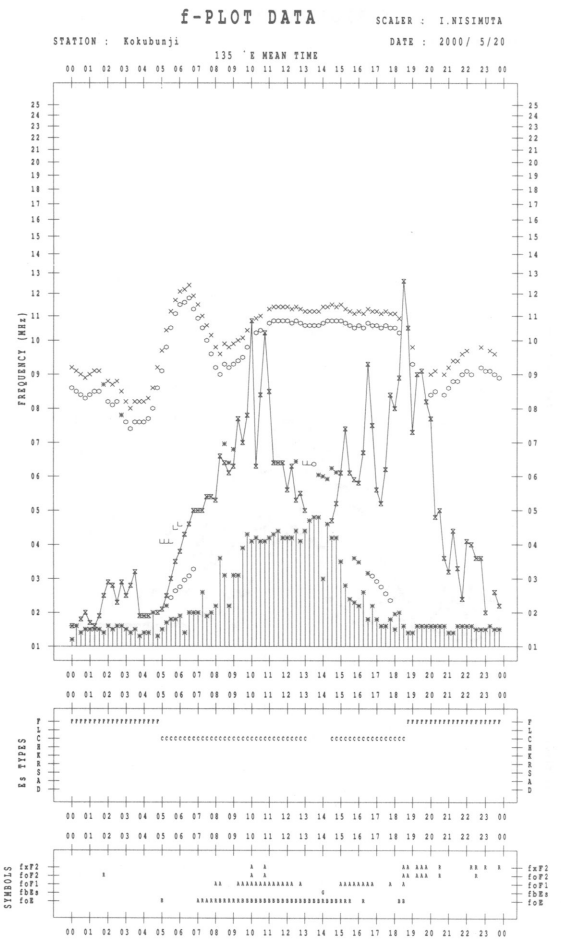
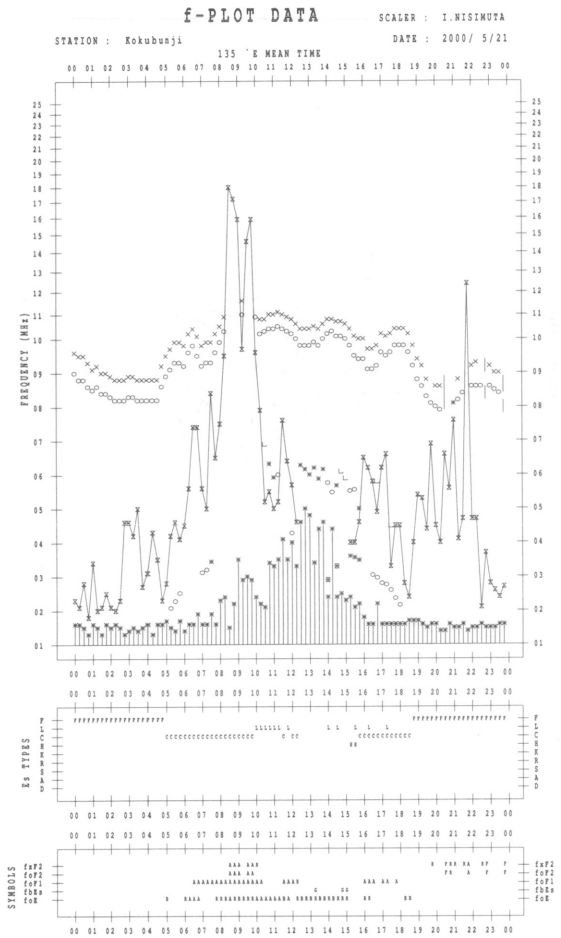
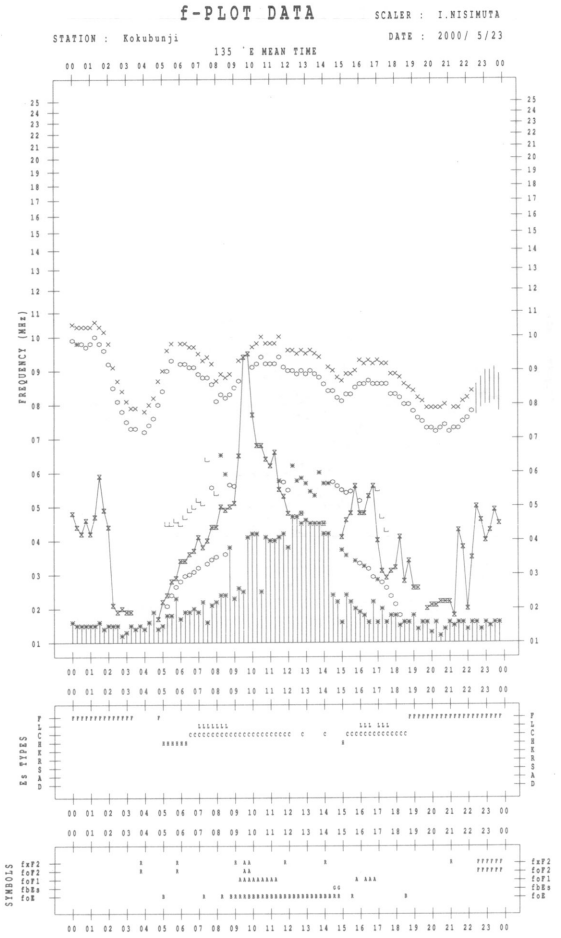
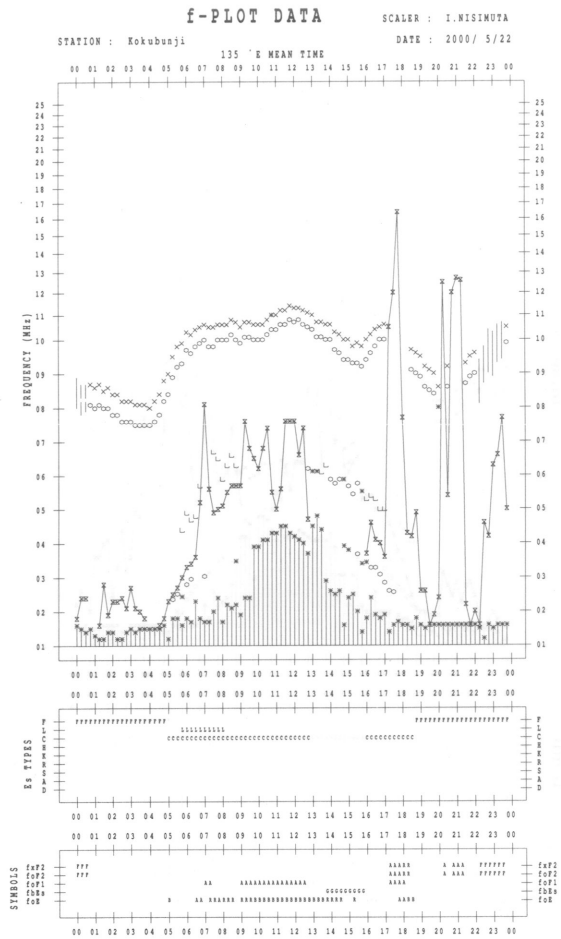
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

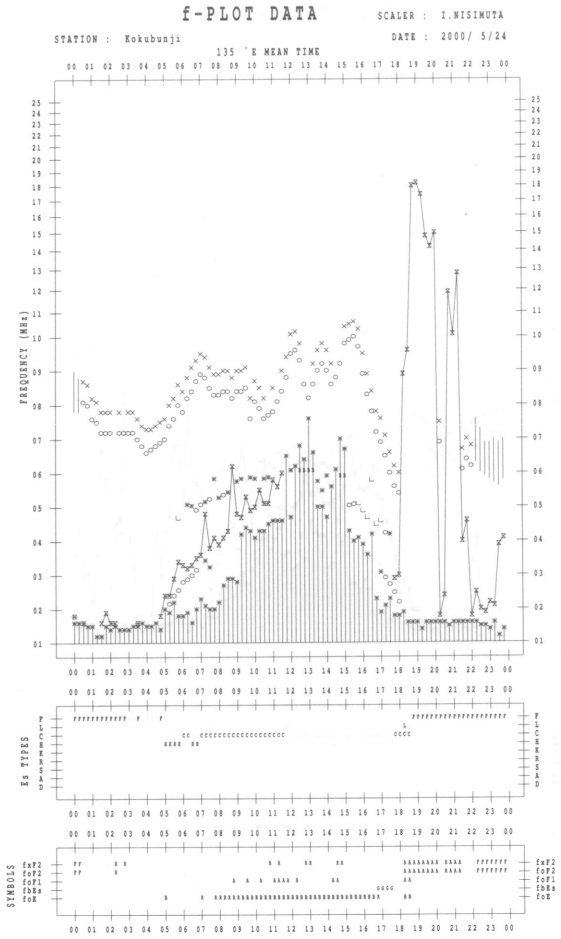

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

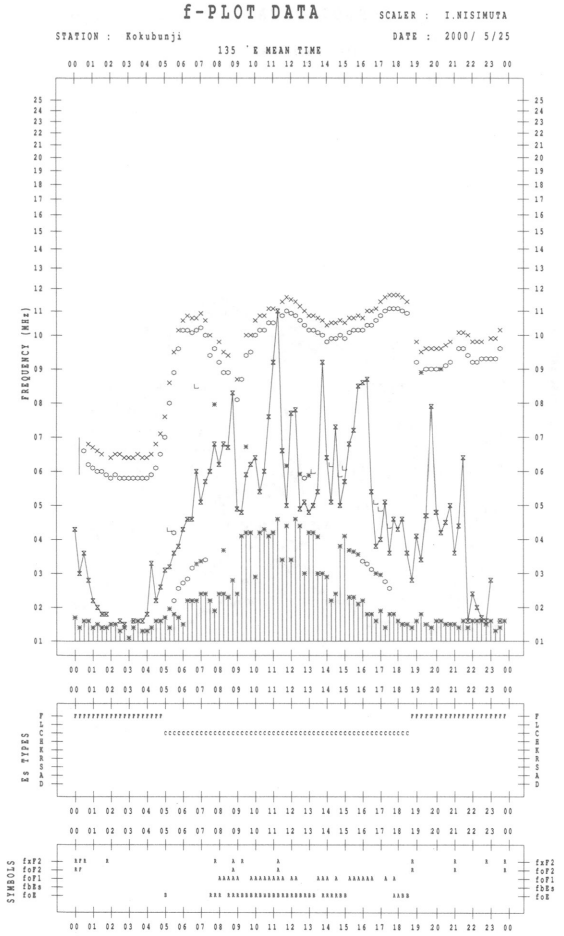

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

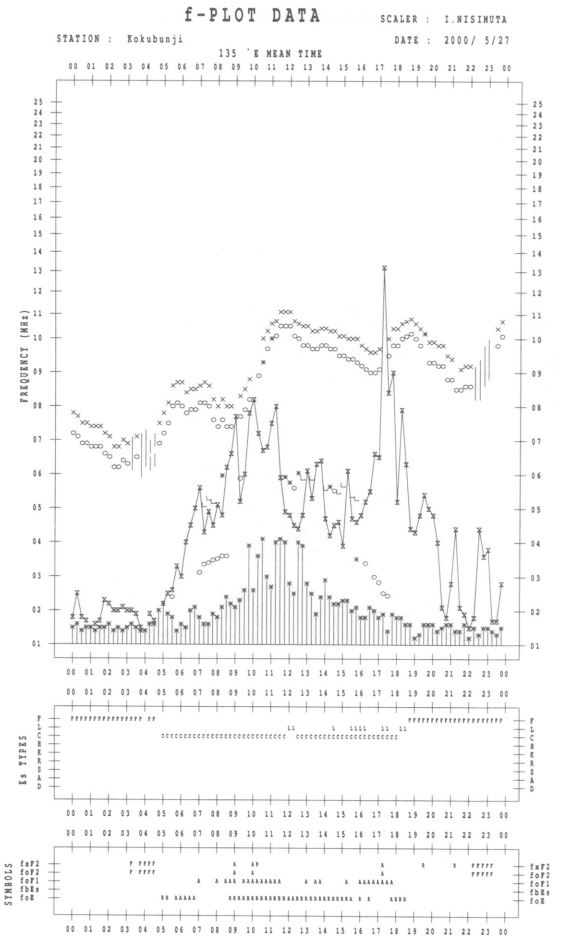

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

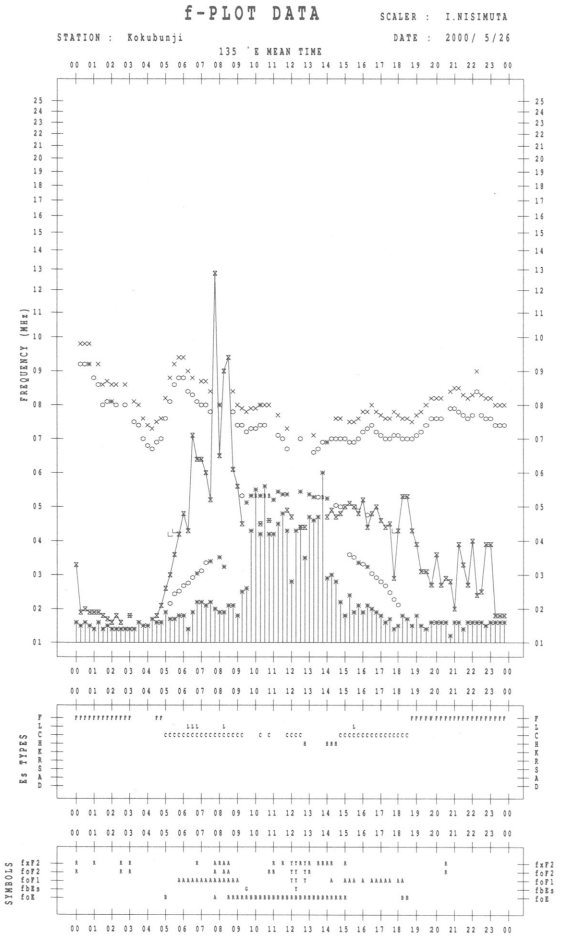

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

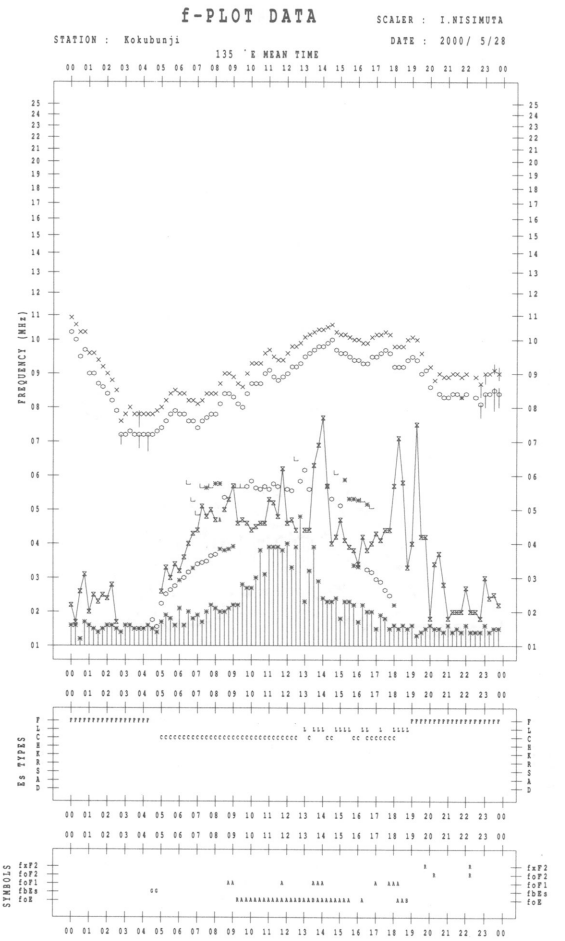

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

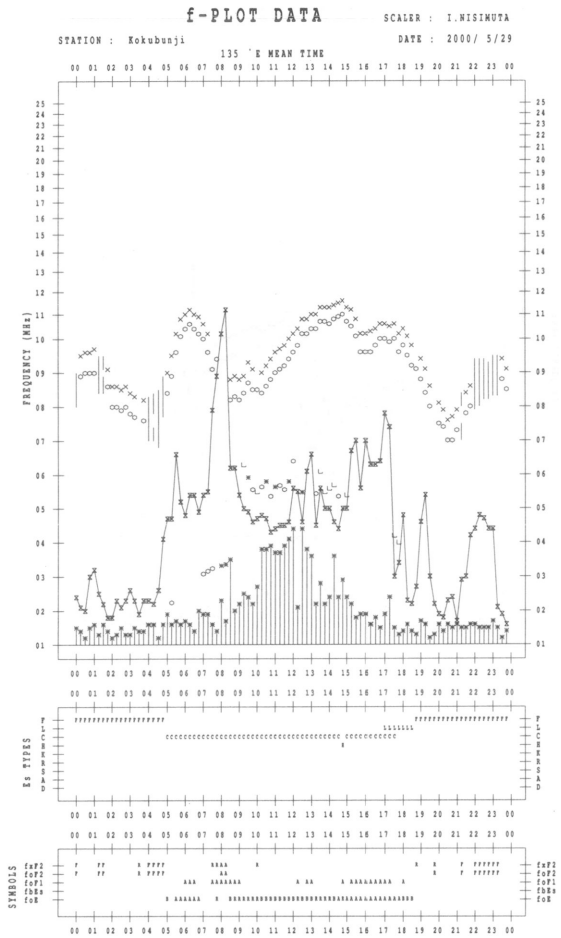

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

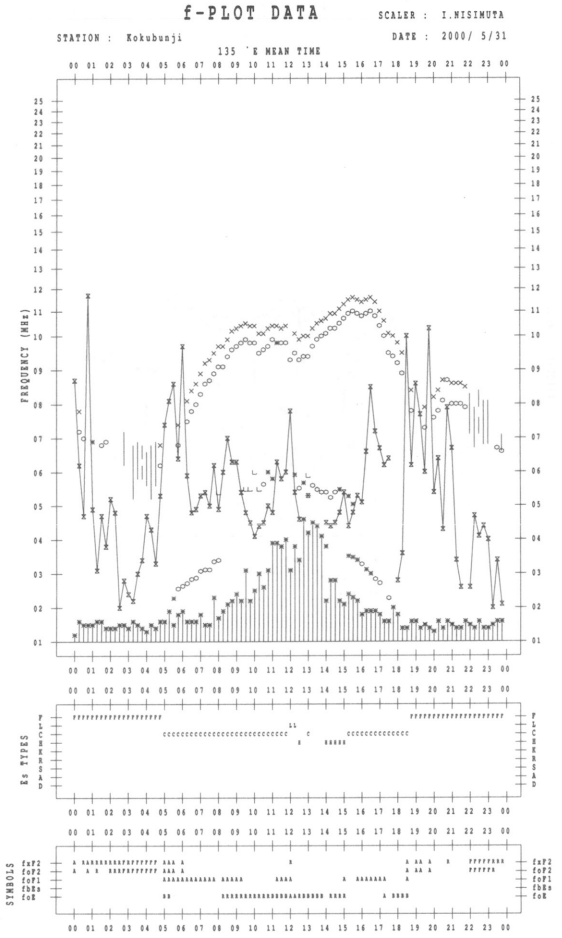

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

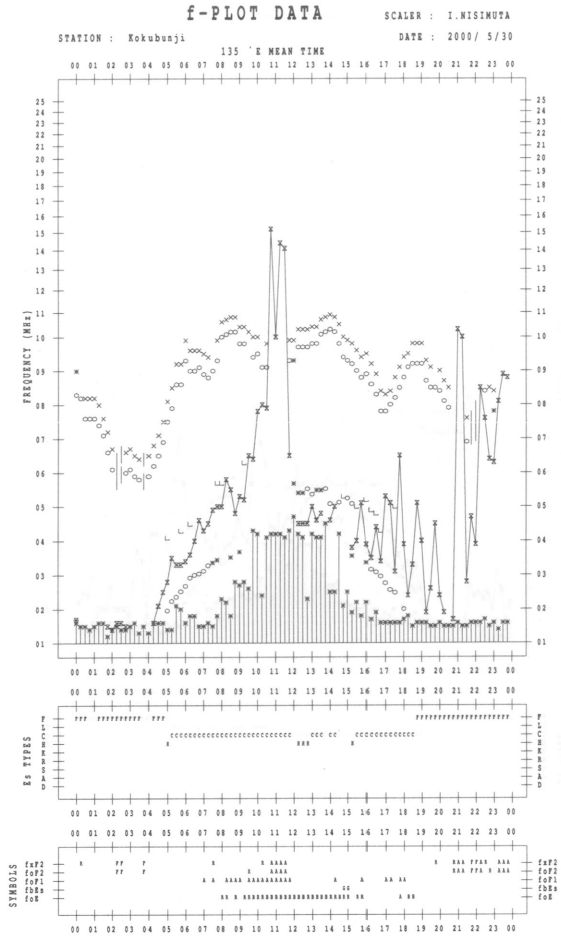

f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/31
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISIMUTA
STATION : Kokubunji
DATE : 2000/ 5/30
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 May 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	-	43	43	44	43
2	44	43	43	44	43
3	44	43	43	43	43
4	42	42	43	42	42
5	42	42	41	43	42
6	42	42	42	42	42
7	42	40	39	41	41
8	40	40	39	41	40
9	41	41	41	43	41
10	43	43	43	46	44
11	46	46	45	(48)	46
12	48	47	46	47	47
13	46	46	46	-	46
14	-	-	-	-	-
15	(46)	47	47	47	47
16	47	47	47	56	49
17	60	57	57	58	58
18	58	51	50	60	55
19	54	52	51	51	52
20	55	54	54	51	53
21	(60)	51	48	51	51
22	(51)	50	47	45	47
23	44	43	43	44	44
24	43	43	42	44	43
25	44	43	43	40	42
26	39	39	38	40	39
27	40	40	40	39	40
28	39	37	36	39	38
29	39	39	39	39	39
30	38	37	37	40	38
31	40	40	40	40	40

Note: No observations during the following periods.
1st 0000 - 1st 0300 13th 2100 - 15th 0200

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso May 2000

Single-frequency observations

Normal observing period: 1930 - 0940 U.T. (sunrise to sunset)

MAY	FREQ.	TYPE	START TIME	TIME OF MAXIMUM	DUR.	FLUX DENSITY (10^{-22} Wm^{-2} Hz^{-1})		POLARIZATION
2000	(MHz)		(U.T.)	(U.T.)	(MIN.)	PEAK	MEAN	REMARKS
1	200	8 S	2235.0	2235.0	1.0	320	-	0
2	200	42 SER	0042.0	0047.0	5.0	110	-	0
	200	8 S	0125.0	0125.0	1.0	200	-	0
	200	8 S	0347.0	0347.0	1.0	360	-	0
	200	42 SER	0458.0	0501.0	3.0	130	-	0
	500	42 SER	0500.0	0501.0	1.0	40	-	WL
3	200	46 C	2248.0	2249.0	2.0	80	-	0
4	500	46 C	0433.0	0434.0	10.0	40	-	0
	200	46 C	0435.0	0435.0	3.0	180	-	0
10	200	46 C	1939.0	1948.0	13.0	360	-	WR
	200	4 S/F	2041.0	2142.0	2.0	80	-	MR
	200	4 S/F	2056.0	2058.0	3.0	110	-	MR
12	200	42 SER	0345.0	0345.0	1.0	80	-	0
	2800	45 C	2320.0	2325.0	8.0	30	-	0
13	200	42 SER	0613.0	0613.0	1.0	80	-	0
15	500	46 C	0842.0	0903.0	32.0D	80	-	WL
	2800	46 C	0842.0	0904.0	32.0D	320	-	WL
	200	46 C	0846.0	0917.0	35.0D	70	-	WL
16	200	8 S	2042.0	2042.0	1.0	170	-	0
	200	8 S	2359.0	2359.0	1.0	380	-	0
17	200	8 S	0645.0	0646.0	1.0	130	-	0
	500	46 C	0645.0	0646.0	2.0	80	-	WR
	2800	3 S	0646.0	0646.0	1.0	30	-	0
18	500	8 S	0125.0	0125.0	1.0	40	-	WR
	500	42 SER	0222.0	0223.0	1.0	30	-	WR
	500	8 S	0727.0	0727.0	1.0	260	-	0
	2800	8 S	0727.0	0728.0	1.0	40	-	MR
	500	8 S	2359.0	0000.0	1.0	200	-	0
20	500	8 S	0106.0	0106.0	1.0	400	-	0
	2800	8 S	0106.0	0107.0	1.0	50	-	MR
	2800	8 S	0527.0	0527.0	1.0	80	-	ML
	500	46 C	2112.0	2114.0	2.0	50	-	0
	500	8 S	2114.0	2114.0	1.0	240	-	0
	500	27 RF	2300.0	0010.0	360.0	400	-	ML
21	500	43 NS	0812.0	0845.0	45.0D	260	-	ML

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso May 2000

Single-frequency observations

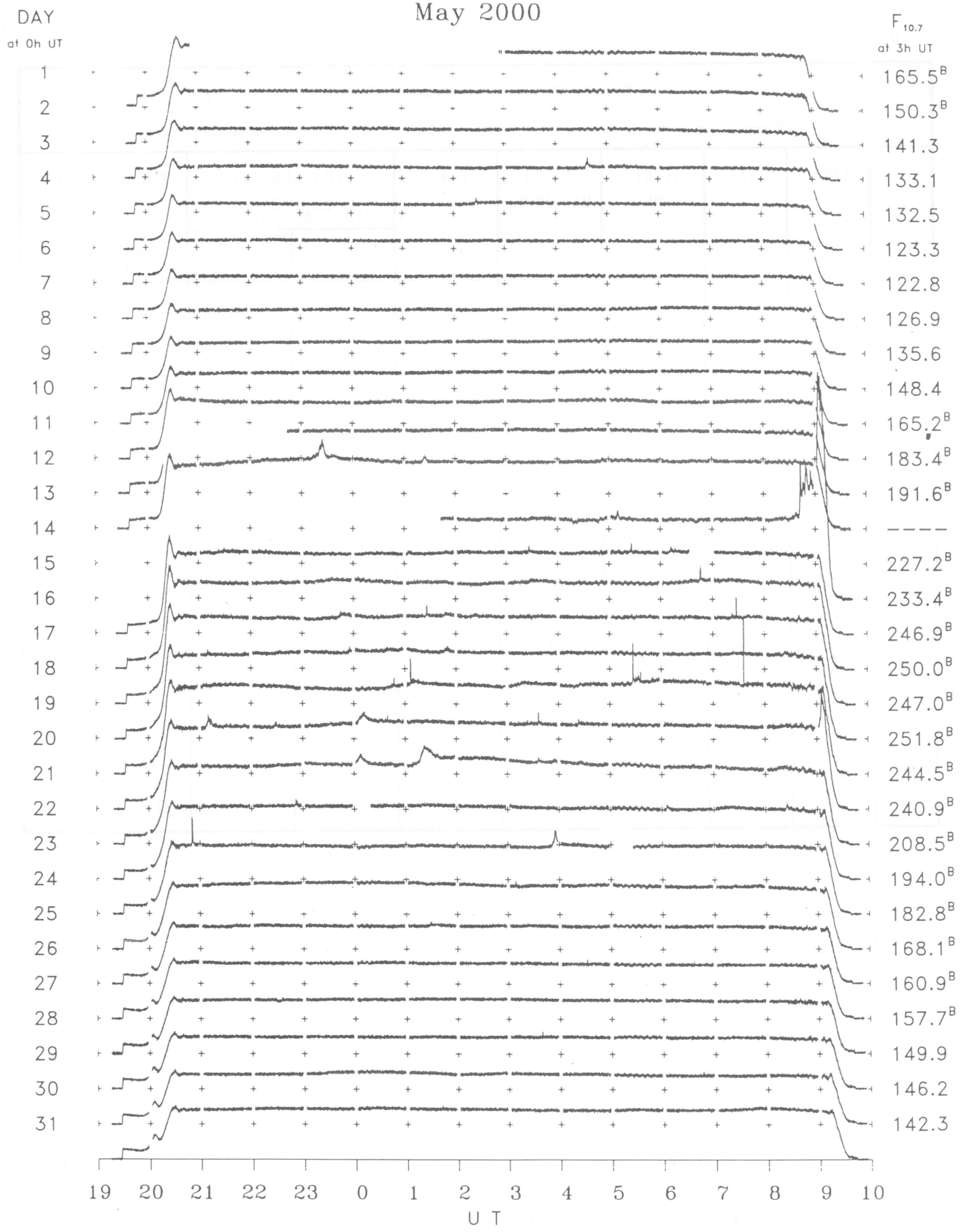
Normal observing period: 1930 - 0940 U.T. (sunrise to sunset)

MAY 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
21	2800	43 NS	0903.0	0906.0	80.0D	80	-	WL
22	2800	20 GRF	0117.0	0123.0	18.0	30	-	WR
	200	27 RF	0123.0	0130.0	35.0	240	-	WL
	200	8 S	0810.0	0811.0	1.0	160	-	WR
	200	8 S	2134.0	2135.0	1.0	380	-	0
	200	46 C	2258.0	2300.0	2.0	140	-	0
23	200	8 S	0604.0	0605.0	1.0	50	-	0
	200	4 S/F	0620.0	0621.0	2.0	90	-	WR
	500	8 S	0622.0	0623.0	1.0	30	-	WR
	200	47 GB	2050.0	2050.0	1.0	1300	-	0
	500	8 S	2050.0	2050.0	1.0	140	-	0
	2800	4 S/F	2053.0	2054.0	2.0	60	-	0
24	2800	5 S	0351.0	0355.0	8.0	30	-	0
	200	8 S	2025.0	2026.0	1.0	280	-	0
	200	8 S	2345.0	2345.0	1.0	100	-	0
25	200	8 S	0122.0	0123.0	1.0	70	-	0
26	200	47 GB	0851.0	0852.0	4.0	760	-	0
27	200	8 S	0904.0	0904.0	1.0	70	-	0
29	200	8 S	2325.0	2325.0	1.0	60	-	0
31	200	8 S	2047.0	2047.0	1.0	70	-	WL

B. Solar Radio Emission

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

May 2000



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

IONOSPHERIC DATA IN JAPAN FOR MAY 2000
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2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184-8795 JAPAN