

IONOSPHERIC DATA IN JAPAN

FOR MAY 2002

VOL. 54 NO. 5

CONTENTS

Preface	
Introduction	1
A. Ionosphere	
A1. Automatic Scaling	
Hourly Values at Wakkanai (f_oF2 , fEs and $fmin$)	4
Hourly Values at Kokubunji (f_oF2 , fEs and $fmin$)	7
Hourly Values at Yamagawa (f_oF2 , fEs and $fmin$)	10
Hourly Values at Okinawa (f_oF2 , fEs and $fmin$)	13
Summary Plots at Wakkanai	16
Summary Plots at Kokubunji	24
Summary Plots at Yamagawa	32
Summary Plots at Okinawa	40
Monthly Medians $h'F$ and $h'Es$	48
Monthly Medians Plot of f_oF2	50
A2. Manual Scaling	
Hourly Values at Kokubunji	51
$fplot$ at kokubunji	65
B. Solar Radio Emission	
B1. Daily Data at Hiraiso	74
B2. Outstanding Occurrences at Hiraiso	75
B3. Summary Plots of $F_{10.7}$ at Hiraiso	77
《 Real time Ionograms on the Web	http://wdc-c2.crl.go.jp/index_eng.html 》



COMMUNICATIONS RESEARCH LABORATORY
 INDEPENDENT ADMINISTRATIVE INSTITUTION
 TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I), solar radio emission (S) and radio propagation (P) obtained at the

following stations under the Communications Research Laboratory, Independent Administrative Institution in 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°40.5'N	128°09.2'E	16.5°N	161.7°	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

Ionospheric 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. 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 (f_oF2 , fEs , $fmin$) and monthly medians of two factors ($h'Es$, $h'F$), daily Summary Plots and monthly medians plot of f_oF2 .

a. Characteristics of Ionosphere

f_oF2	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 f_oF2).
- 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 f_oF2 , 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 f_xE and f_oE 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 Hand-book of Ionogram Interpretation and Reduction (Second Edition) 1972" and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

fxl	Top frequency of spread F trace
f_oF2 f_oF1 f_oE f_oEs	Ordinary wave critical frequency for the $F2$, $F1$, E and Es including particle E layers, respectively
$fbEs$	Blanketing frequency of the Es layer, e.g. the lowest ordinary wave frequency visible through Es
$fmin$	Lowest frequency which shows vertical ionospheric reflections
$M(3000)F2$ $M(3000)F1$	Maximum usable frequency factor for a path of 3000 km for transmission by $F2$ and $F1$ layers, respectively
$h'F2$ $h'F$ $h'E$ $h'Es$	Minimum virtual height on the ordinary wave for the $F2$, whole F , E and Es layers, respectively
Types of Es	See below b. (iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replace a numerical value on the monthly tabulation sheets, 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 by, or impossible because the ionization density of the layer is too small to enable it to be made accurately.
H Measurement influenced by, or impossible because of, the presence of a stratification.
K Presence of particle *E* layer.
L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
N Conditions are such that the measurement cannot be interpreted.
O Measurement refers to the ordinary component.
P Man-made perturbations of the observed parameter; or spur type spread *F* present.
Q Range spread present.
R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
S Measurement influenced by, or impossible because of, interference or atmospheric.
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V Forked trace which may influence the measurement.
W Measurement influenced or impossible because the echo lies outside the height range recorded.
X Measurement refers to the extraordinary component.
Y Lacuna phenomena, severe layer tilt.
Z Third magneto-electronic component present.

(ii) Qualifying Letters

The following letters are entered in the first column before a numerical value on the monthly tabulation sheets, 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.
X 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 part *E* layer minimum virtual height.
c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)
q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
d A weak diffuse trace at heights below 95 km associated with high absorption and large *fmin*.
n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.
k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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

Median count (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 Measurement, 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 $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$ 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

SGD Code	Letter Symbol	Morphological Classification
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

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 F10.7 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 Pentintion 10.7 cm radio flux. The figure on the right-hand side shows the $F_{10.7}$ index estimated at Hiraiso.

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

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

C. RADIO PROPAGATION

C1. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C2. Sudden Phase Anomaly (SPA) at Inubo

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

Phase advance is shown in unit of degree at its maximum stage. No transmission or no reception during the period is indicated by -, an indistinguishable record is spaced out, and a multi-peak event is marked by *. The most remarkable or distinct phase advance is underlined and listed in the column of *Time*.

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

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

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

Transmitting Stations						
Name	Location (Geographic Coordinates)	Call Sign	Frequency (kHz)	Radiation Power (kW)	Arc Distance from Inubo (km)	
Norway	66°25'N 013°08'E	/N	13.6	10	7820	
Liberia	06°18'N 010°40'W	/L	13.6	10	14480	
Hawaii	21°24'N 157°50'W	/H	13.6	10	6100	
North Dakota	46°22'N 098°20'W	/ND	13.6	10	9140	
La Reunion	20°58'S 055°17'E	/LR	13.6	10	10970	
Argentina	43°03'S 065°11'W	/AR	13.6	10	17640	
Australia	38°29'S 146°56'E	/AU	13.6	10	8270	
Japan	34°37'N 129°27'E	/J	13.6	10	1040	
North West Cape	21°49'S 114°10'E	NWC	22.3	1000	6990	

HOURLY VALUES OF foF2 AT Wakkanai

MAY 2002

LAT. 45°23.5'N LON. 141°41.2'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	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	67	65	68	54	59	69		82	91		92		88	80	88	82	92	83	87	83	82		70	69
2	66	69	67	68	74	68	95		82	88	84	80	81	88	83	88	87	84	93	81	81	95	94	70
3	73	75	70	69	70	68	94		115	79	92	82	94	84	92	84	91	91	90	94	82	92	94	92
4		69	70	69	74	94	95	115		81	81	82		92	92	92	78	91	93	82	82	74	94	91
5	94	95	94	69	70		94	82	98	79	90	92	84		91	91	91	82	89	92	82	95		93
6	77	95	95	71	73	94	80	93	82	114	69	89	96	92	89	91		92	79	94	93	92	75	83
7	82	68	95	68	72	95	94	95	82	85	82	82	91	82	92	96	90	82	94	81	92	92	95	95
8	71	75	70	69		99	94	83	88	83	82	83	84	87		92	87	86	80	82	83	92	92	77
9	66	74	68	71	72	72	81	78	81	80	82	82	84	82	83	81	88	82	81	84	92	74	95	81
10	70	74	74	74	78	83	112	93	91	92	93	93	91	92	94	93	92	90	84	90	92	93	94	80
11	83	71	74	68	63	68	94	79	69	67		73	82	82	81	83	83	83	81	94	92	92	70	95
12	54	70	50	52	54		37							A		69	67	62		73	72	71		63
13	54	71	69	66	60	62	79	61	66	72		81	82	82	83	80	81	80	80	77	79	95	95	95
14	76	76	78	68	72	77	95	92	82		82	83	92	96	90	91	91	92	79	81	68	93		92
15	69	69	69	68	58	76	A	67		66				59	66	67	68	68	82	79	76	82	79	73
16	65	68		66	68	68	76	90	81	84	80	84	81	77	81	78	77	83	82	92	92	95	78	
17	73	72	70	68	66	68	72	76	83	82	83	78	82	83	82	81	82	82	94	90	78	95	95	72
18	95	74	76	71	68	68		74	82	81	82	81	91	83	87	81	83	81	81	82	95	95	95	92
19	77	80	94	71	74	71	95	83	92	84	82	83		80	88	82	87	112	94	84	68	92	72	92
20	77	95	74	70	73	82	96	92	91	91	81	94	82	88	93	82	92	91	81		77	92	92	95
21	92	94	78	68	67	68	71	49								70	68	70	82		66	77	76	72
22	74	69	68	67	66	74	78	67	68	84	73	82	77	70	76	78	77	78	89	85	69	95	94	84
23	92	70	71	70	67	71	74	68						71	66	70	73	78	82		95	76		75
24	49	62	57	40																67	61		55	68
25	57	70	70	57	63	68	A	82	A	81		84	81		77	82	83	82	92	94	82	64		81
26		76	73	65	62	80	93	82	82	68	77	67	79	60	A	92	80	A			80	78		74
27	73	70	71	60	52	66												71	72	79	82	74		
28		58		60	65	75	94	56	59				A	A	A	A	60	63			59	69	69	68
29	68	56	68	63	59		62	67	66						A	78	76	A	78	77		72	95	
30	89	70	72	66	67	94	94	80	82	A	82	79	83	77			78	87					83	79
31	94	71	71	72	80	94	96	80	88	85							65	69				95		70
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	31	29	31	29	27	25	26	23	21	19	21	20	22	21	26	28	28	25	24	28	28	23	28
MED	73	71	71	68	67	72	94	81	82	82	82	82	84	82	87	82	82	82	82	82	82	92	92	80
U Q	82	75	75	70	72	83	95	90	91	85	84	84	91	88	91	91	89	88	91	91	92	95	95	92
L Q	66	69	68	65	62	68	77	68	81	79	81	80	81	77	81	78	76	78	80	80	74	75	75	72

HOURLY VALUES of fEs AT Wakkanai

MAY 2002

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	G	G	32	24	G	G		G	41		G	88	G	G	62	46	G	42	37	G	G	G	G	G				
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	37	39	37		G	G	G	G			
3	G		25	29	G		25	33	G		41	67	46	G	G	G	G	G	45	G	G		46	26	G			
4		G	G	G	G	G	G	G	G	G		44	G	G	G	G	G		44	49	35	37		G	G	G		
5	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G		43		26	G	G		G			
6	G		G	G	G	G	G		G	G	G	G	G	G	G	G			43	44	32	28		G	G			
7	G	G	G	G	G	G	G		G	G	G	G	G	G	G		45	G	44	40		39		G	G	G		
8	G	G	G	G		G	G		G		G	G		44	50		G	G	45	60	48	G		49	62	48		
9	G	G	G	G	G	G		40	47	52	59	61	G	G	G	G	G	G	G	G		28		G		39		
10		32	G	G	G	G	G	G		50	54	68	G	G	G	G	G			38	28		G	G	G	G		
11	G	G	G	G	G	G		40	G	G	G		56	59		G	G	52	54	53	G	G		G	G	G		
12	G	G	G	G		G	G	G		54	46	57	67	76	70	46	46		40		G	G	G		G	G		
13	G	G	G	G	G		41		52	46		G	G	G	G	G		G	G		32		G	G	G	G		
14		24	G	G	G	G		43	49	59	83	59		G	G	G	G	G		42	35	37	46		G	G		
15	G		29	29	26	30	38	60	52	61	48	55	75	46		G	G	52	63	47	44	30	44		G	G		
16	G	G		G	G	G	G		44		47	G	G	G	G	G	G	G		59	52	38	29		G			
17	G	G	G	G	G	G	G	G	G	G		48		71	65	63		G	G		55	47	42	39	46			
18	G	G	G	G	G	G	G		59		G	G	G	G	G		45	52	44	69		41		G	G	G		
19	G	G	G	G	G	G		41	47	43	G		G	58	46		39	G		30	52	40		G	G	G		
20	G	G	G	G	G		34	43	39		46	87	88	G	G	G	G	68	45	70	68	45		G	G	43		
21	27	25	G	G	G	G		43	49	55	49	47	46	58	57		G	G		44	61		39	48	42	30		
22	27	35	26		G	G			51		G	G	G	G	G	G	G		38	42	33	48		G	G	G		
23	G		30	G	26		G	G		49	46		G	G	G	G	G		39	42		G		36		G		
24	G	G		26	25	39	32	45	39	51	44	46	76	82		G	G	61	61	66	85	66		38	61	G	G	
25	G	G	G	G	G		42	95		133	44	45		45		G	G		45	68	60	89		G		G		
26		G	G	G	G		41	44	48	64	59	75	46	G	60		44	72	96	81	85	73	67	79				
27	28	G	G	G	G		51	60	121	63	G	66	70	64		65	76	50	G		40	50		G		75	82	58
28	60	52		39	54	42	48	48	43		44	59	80	64	65	42	66		G			G	G	G		63		
29	48	G	G	G	G		31	50		G	G	G		G	G	G	G		79	42	64	88	58	48		31	75	54
30	36	44	36		G	G		43	79	50	98	61		G	G	G	G		65	43	64	86	97	88		40	47	
31	39	G	G	37	G	G		45	47	47	56	58	47	58	49	45	44	G		40		35	59	54		31		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT	29	30	29	31	30	30	28	28	31	29	30	28	29	28	29	30	29	29	29	26	30	28	26	27				
MED	G	G	G	G	G	G	40	40	43	G	46	G	G	G	G	G	G		43	45	36	32	15	G	G			
U Q	27	G	G	G	G	33	45	48	52	54	58	58	52	49	53	44	52	45	60	50	40	47	40	39				
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		38	26	G	G	G	G			

HOURLY VALUES OF f_{min} AT Wakkanai

MAY 2002

LAT. 45°23.5'N LON. 141°41.2'E SWEEP 1MHz to 25MHz AUTOMATIC SCALING

$\begin{matrix} H \\ D \end{matrix}$	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	17	15	15	16	20	22		20	21		23	21	28	20	21	20	17	15	17	15	16	16	16	17
2	18	21	18	20	18	22	17	20	20	20	20		21	22	20	20	20	15	18	18	18	18	16	18
3	17	18	15	17	20	18	15		20	21		23	22	22	21	21	20	18	15	18	17	16	16	23
4		22	26	20	17	23	18	18	18	20	22	22		23	18	20	21	20	17	16	16	20	18	15
5	17	20	18	17	17	27	17	21	20	20	21	26	23		21	18	17	17	24	16	17	17		18
6	20	17	17	17	18	23	16	16	20	24	24	22	23	23	21	21		16	15	14	16	18	16	16
7	17	18	15	20	20	24	15	15	17		50	23	24		21	20	17	15	21	15	16	17	18	17
8	20	18	17	18		24	18	18	21	22	22	22	22	24		20	20	16	16	15	18	15	16	14
9	20	15	18	17	18	24	18	18	20	21	23	21	22	22	20	20	18	17	22	16	17	16	20	19
10	16	17	17	20	20	24	17	17	20	22		35	24	24	24	21	18	17	16	15	21	20	16	17
11	21	18	18	20	20	18	16	18	20	23	22	24		33	20	21	21	17	16	20	20	18	18	18
12	17	20	16	18	20		16	18	21	20	20		26	28	24	18	18	18	16	20	20	18		16
13	17	17	17	15	21	20	16	20	20	21		27	26	23	17	20	21	17	24	15	18	20	16	17
14	16	16	16	17	20	20	20	21	22	22			23	22	20	18	18	15	15	15	15	16		18
15	18	18	20	22	17	20	17	20	21	22		28	35	34	24	20	22	18	18	15	15	15	18	18
16	20	18		20	20	24	17	21	21					51	50	23	20	18	15	15	17	17	15	
17	18	20	16	18	20	23	18	18	20	23	24	33	32	23	20	22	20		17	15	18	18	15	18
18	15	16	20	18	20	24	17	17	20	21	24	21	22	28	17	20	18	18	21	16	16	18	15	17
19	17	20	18	17	18	23	17	18	18	22		50		23	21	20	20	18	23	15	16	22	16	18
20	20	17	17	17	20	21	15	22		21	20	22		28	22	22	20	17	16	15	15	18	17	17
21	16	20	20	17	21	22	20	20	22		35	24	24		32	20	21	17	17		16	16	16	15
22	16	15	17	21	20	24	16	22	20			52			22	21	20	16	18	15	20	16	18	17
23	18	17	20	20	20	24	17	18	20	21	35	22	22	22	29	21	20	17	18		16	18		17
24	21	20	18	15	20	22	16	21	24	21	22	22	22	20	21	20	27	20	16	22	20	16	18	17
25	18	20	16	20	20	21	16	18	20	22		33	24		52	26	21	17	15	16	20	22	22	16
26	17	18	16	20	20	17	16	18	20	23	24	23	22	21	21	20	20	17	18	15	16	15	18	15
27	18	20	20	18	26	18	18	18	18	23	21	23	24		23	23	23	18	17	16	21	16	16	17
28	17	18		15	16	20	17	20	21		36	33		40	22	20	18	18			17	20	15	15
29	16	18	18	18	20	16	16	20	20	21	20	21		23	23	26	20	17	16	15		20	15	15
30	15	15	15	18	20	22	15	18	18	22	21			24	33	28	22	16	15	15	16		15	15
31	16	21	20	15	21	21	20	21		39	24	24		32	36	22	21	20	17	16	16	15		17
	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	29	31	30	30	30	30	29	25	22	26	20	25	30	31	30	30	30	28	30	30	26	30
MED	17	18	17	18	20	22	17	18	20	22	22	23	24	23	22	20	20	17	17	15	17	18	16	17
U Q	18	20	19	20	20	24	18	20	21	22	24	28	25	28	24	22	21	18	18	16	18	18	18	18
L Q	16	17	16	17	18	20	16	18	20	21	21	22	22	22	21	20	18	17	16	15	16	16	16	16

HOURLY VALUES OF f_oF₂ AT Kokubunji
MAY 2002
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	70	69	69	57	57	72	95	94	97	104	106	107	111	113	116	115	103	96	93	94	89	82	94	93
2	88	81	94	94	94	68	94	103	116	111	110	115	113	116	113	117	105	101	117	114	92	94	95	
3	93	95	91	95	94	79	105	114	114	102	114	115		118	114	A	113		111		115	92	94	95
4	97	92	94	82	81			106	116	112	115	125	126	118	116	111	116	116	111	98	94	94	94	94
5		96	94	82	82	82	114	124	103	95		110	113		117	110	106	115	104	96	91	94	94	
6	94	94	94	94	95	94	97	98	96	117	115	111	117	121	122	120	116	105	103	93		95	94	94
7	94	93	94	93	94	92	104	97	102	108	108	110	112	105	110	109	107	101	115	93	94	94	93	
8	91	96		94	68	94	97	116	100	105	107	115	124	123	111	120	111	117	117	100	94	84	95	90
9	82	98	95	80	74		114	94	99	106	107	104	118	121	117	118	106	98	98	94	82	82	82	94
10	94	95	81	74	73	92	94	100	114	107	114	122	127	128	150	127	122	113	116	114	94	94	82	82
11	83	81	94	66	72		95	88	83		99	101	108	117	117	115	111	113	106	99	94		82	85
12	100	80	70	70	61	53			A					78	82	84	83	74	74	81		70		
13	75	67	68	69	59	68	94	81	96	102	107	103	108	113	108	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	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	10	11	12	12	11	11	12	11	12	13	11	12	11	12	11	10	11	11	8
MED	92	93	94	82	74	80	97	99	101	106	108	110	113	118	116	115	109	105	108	96	94	94	94	94
U Q	94	95	94	94	94	92	105	110	114	111	114	115	124	121	117	120	114	115	115	100	94	94	94	94
L Q	82	80	75	69	64	68	94	94	96	102	107	105	111	113	110	110	105	98	100	93	91	82	82	87

HOURLY VALUES OF fEs AT Kokubunji

MAY 2002

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	32		22	23	G	G	G	39	47	55	G	57	79	54	G	43	59	55	39	57	44	26	36	41
2	29	G	G	32	G	G	35	47		G	G	G	G	G	G	G	G		40	65	47	G	G	
3	G	G	33	G	G	25		G	52	55	G	53		56	67	123	118		60	56	34	24	26	23
4	G	G	G	G	G		G	G	50		G	G	G	G	G	G	G		39	36	32	39	29	26
5	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G		46	35	29	G	24	G
6	G	G	G	G	G	G	G	G	G	G	45	G	G	53		55	58	43	35	29	28	28	G	G
7	26	G	G	G	G	G	G	48	60	55	60	G	G	G	G	G	47	36	61	37	G	G	G	G
8	G	G	G	G	G	G	G	51	53		G	G	G	G	G	G	G		34	26	29	119	35	36
9	24	29	G	G	G		G	50	56	58	51	57	67	76	50		G	G		29	40	44	36	35
10	36	25	G	G	G	G	G	40		G	G	G	59		G	G	G			57	33	29	G	G
11	G	G	G	G	G	29		48	57		G	G	G	G	G	G		40	55	44	45	56	53	G
12	G	G	G	G	G	30	40	51	70	72	70			G	50	55	48	G	57	93	98		60	
13	29	30	32	G	G	G	49	50	56	58	G	60		58	G	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	12	13	13	13	11	12	13	13	12	12	12	11	13	13	12	12	11	12	12	12	11	12	9
MED	G	G	G	G	G	G	G	40	52	28	G	G	G	G	G	G	20	G	39	42	34	28	14	G
U Q	29	13	11	G	G	25	18	50	56	56	48	57	G	55	25	49	53	46	50	57	45	39	35	31
L Q	G	G	G	G	G	G	G	G	24	G	G	G	G	G	G	G	G	G	34	32	28	24	G	G

HOURLY VALUES of fmin AT Kokubunji

MAY 2002

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	14	13	15	13	15	17	15	20	22	20		40	42	40	24		15	17	14	14	13	13	13	13
2	15	17	15	13	14	20	15	17	31		23					23	17	15	14	13	14	14	13	
3	13	14	13	13	14	18	13	23	23							37	18		13	14	13	14	14	14
4	14	14	13	14	13		18	15	21			64	79	46			15	14	14	15	14	13	13	13
5	14	13	14	14	14	20	18	20	20				62	59	25	23	18	14	14	13	14	14	15	14
6	14	13	14	14	14	21	14	14	18	46	35					23	18	15	13	14	13	14	14	14
7	15	15	13	13	13	20	17	15	20		40		62				18	13	14	13	13	13	13	14
8	13	13	17	13	14	14	14	17	18	23						22	22	20	13	14	14	13	13	13
9	14	14	14	14	13		17	18		40	40	42	37	40	34	20	22	15	15	13	14	14	14	13
10	13	18	15	13	14	14	18	17		47	49	38		49		24	22	15	24	13	13	13	14	13
11	14	14	13	13	14	14	13	17						62			42	17	13	13	13	13	14	14
12	14	15	14	14	14	14	14	17	22	20	40					36	21	15	15	13	13	14	13	
13	13	14	13	14	13	21	15	18	22	37		34				C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	13	13	13	13	11	13	13	10	7	6	5	5	6	3	8	12	11	12	12	12	12	12	10
MED	14	14	14	13	14	18	15	17	22	37	40	40	62	48	25	23	18	15	14	13	13	14	14	14
U Q	14	15	15	14	14	20	17	19	22	46	40	53	70	59	34	30	22	17	14	14	14	14	14	14
L Q	13	13	13	13	13	14	14	16	20	20	35	36	39	40	24	22	17	14	13	13	13	13	13	13

HOURLY VALUES OF foF2 AT Yamagawa

MAY 2002

LAT. 31°12.1'N LON. 130°37.1'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							79	100		119	110				119		115							
2							99	92	115	119	123		59					120	123					
3							96	119	116	115				79	94	159				A	A			
4							88	119	95	95							95	124						
5							97	104		92		116				79			119					
6							82	119	115	116		82		115			119	115						
7							119	96	109	94		79				79		125	108					
8							95				C	C	C	C		A	A	A						
9							87		109	119		92	86			125		113			A		59	
10							82		119	94	92		79	133			105			72				
11			59				94	101			92	89						149	159	95				
12								79								92		83		94	A		A	
13			A				81	94					A					89						
14							109	92	109	94					115			115						A
15							93	96	99	93		115					132	116						A
16	A						109	93	85	A	92	80		A				116	92	93	A	A		59
17	A						119	99	95	94						86				A	A	A		
18	70						99	92	99	94		82	89	A	A	92			A	A				59
19							99	99	93		96	93			A		79		98				A	A
20							109	95	93	92	114				A			A					A	A
21	A	A					98				82		79			79	83		82	94				
22							82		99							82			A	89		A		
23					57		109	82	109	A	79				A		83	100	A	109	69	A	A	
24	A				A		52	A	A	A	A	A	A	A		A		A			A			A
25	A						72	99	95							A	A	A	A		94			A
26	A	A					85		95	92	88		A	A	95			94	119				A	A
27	A	A	A	A			89	81	95		119				83			82	98			A		
28	A		A			A	109	99	109	93					A	95		81	159					A
29							99					93									A		69	A
30											94						A	A			A	A		80
31	A						75	99	93	95						100	A	A		129	129	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	2	2		3	1	29	23	20	18	10	11	5	3	7	11	7	16	11	8		2	1	2
MED	70	62	50		75	99	95	96	99	94	94	89	79	115	95	83	105	115	119	94		64	59	70
U Q	35	62	59		95	49	99	101	109	115	114	93	87	133	115	95	119	122	129	94		69	29	80
L Q	35	62	42		57	49	83	93	95	93	92	80	69	79	92	79	95	91	98	80		59	29	59

HOURLY VALUES OF fES AT Yamagawa
MAY 2002
LAT. 31°12.1'N LON. 130°37.1'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		42			34					51	62	G			G	G	G	G		73		G				
2					G		G			G	G			G	G			G			41		G				
3				G	G				44		G	G	G		G	G	G		G	G		57	78	98	63		
4			G							G	G	G		G				G	G								
5	G	G						48	G			G	G					43			41		G				
6	G		G							G			G					62	58				34		G		
7			G					33	41	G	G		G				G			66	86		G				
8				G				35		62		C	C	C	C		80	88	129	154	94						
9								G	G	40	50		58	80			G		G	G	G		44	G			
10								G				55		61	64	74	57					G					
11			G					52		50		55	G			G											
12		G			G				44			96		G			G			45	G	36	53		75		
13			63						44			63		87					G			28					
14									36	42		G				70			G		73						
15								41	61		118	72	114		G			G	G		79		G				
16	74							G	G			78	62				G			56	65	98	67		26	G	
17	65		G						74	G	G		54	56		G	G			78	86	78	76		G	G	
18	G		G							51			G		59	G	G	G	G		62		74		G	G	
19	52		G						62	G	67	97	G		98	90		G	G					G		65	74
20	G			G						G		62	63			74		76	171	142		63				36	75
21	49	65						30	74		65		57	G		G		59	48	60	66	42	G				
22								34		G				G				80	74	62				33			
23					G				36	73	60		77		87	82	63	90	78	67	44	62	76		G		
24	50	51			26			37	64	78	90	118	62	66	88	G	58			99	39		74			63	
25	53							34	62					62					119	121	129					63	G
26	97		G		G	G			G	50	65	57		83	60		G			50						65	66
27	76	75	65	27				48	G	G		G				G			G				62				
28			46			62	61				G					84	58		60		76						
29			G					36					71							G				44	66	50	
30	51	G			G	G			G	G		79		73	89		71	100	104		96	102	74	44	76	61	
31	48	73	54	78	70	28	34		G	G		77	84	86			G		119	102		64	122	64		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	15	7	14	5	8	5	17	19	21	20	17	19	15	10	16	18	17	23	19	16	16	8	11	13			
MED	50	51	G	G	G	28	34	41	G	56	61	57	62	58	G	58	48	58	66	54	58	38	63	G			
U Q	65	73	46	52	13	48	44	62	50	72	78	71	83	87	75	76	103	78	86	78	70	53	66	64			
L Q	G	G	G	G	G	G	15	G	G	G	G	G	G	G	G	G	G	G	G	41	14	G	G	G	G		

HOURLY VALUES OF fmin AT Yamagawa
MAY 2002
LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

$\frac{H}{D}$	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	33		33			20	14	15	18	36	35				63	53	44	18	14					
2							23		44	53	53		57				55	48	14					
3					38		14	20	43					61	58	45	49	46	21	36	32	36		
4			18				20	14	48	53	62		73				54	44						
5							17		41	53		64			72	56			14		38			
6			47				14	14		34			63				21	21	17		16			
7			58				17	18		50					50		14	36	30		39			
8				52			16	18		36	C	C	C	C	48	44		33	15					
9							14	17	32				44					42	29			22		
10							27	20	33		45		44	47					16					
11			48				14	28	35		39				61			14	22	16				
12							14	20	34		42		59			58		30	14	20	33			
13			36				28	33			45		35						14	21				
14							17	20	32		52	60					52	43	15					
15							14	20	33	38	40	42	40	53				35	18					
16							14		27	46	48	48	14	52		58		34	23		36	16		
17	21		38				18	17		32	44							45	16			21		
18			26				24	14					14	60	62				18	33				
19	23						14	14			44		51	45	50		57		14	16			34	21
20							14	14					51		44	38	36	15						
21	21	18					15	29		41	14	45				42	15	24	14	26	27			
22							14		44							44	40	33	22			18		
23					44			18	35	39	36			43	44	41	34	35	24	29				26
24	24	20			17		17	18	23		43	45	46	47	45	45		28	16		50			24
25							18	30	15		14		44			42	38	35	14					47
26	23				36		14	17	23	33	44		48	41	63		52	33	15					24
27	24	32	34	16			14	16			33								14		38			
28	17		26			46	14	32							50	45		14	14					27
29			52				14	14	23			18							33		14	27	16	14
30	20	17			16	22	36	43				49	40		52	44	45		14	14	14	21	18	16
31	20	16	24	20	16	21	17			50		52				14	30	23	16	14	20	16		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	5	12	3	6	4	30	26	18	14	18	9	15	10	13	15	16	23	30	10	12	8	5	6
MED	22	18	35	20	26	22	14	18	33	40	44	48	44	49	52	44	42	34	16	20	32	21	24	22
U Q	24	26	47	52	38	34	18	20	41	50	45	56	57	53	62	53	52	42	21	29	38	24	40	26
L Q	20	16	26	16	16	20	14	15	23	36	36	43	40	45	49	42	32	24	14	16	18	17	17	16

HOURLY VALUES OF fof2 AT Okinawa

MAY 2002

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		94	96				94		114	128	119	124		169		152	125	134						
2							91	114		116		125	151	159	137	133	149	150						
3							101	117	116	119		123		132				136						
4							100				106						132	151						
5							99	102	95	116	116	116	131		151	132	153		98					
6		69			95		91	94	109			115	150			134			134	119				
7							90		109		117		121		126		114	149	159	101				
8		94	95				99	114	100		122					122	133	149	159			116		
9		95		A	109	99	94	114	93	120					154	134	155	126	126	119		119		
10			99	94	94	99	99		95	99		123		149		153		174	152					
11			89	99		93	99	94		116			122	138			175	154	152					
12		99	95		95		89		95		109	121			124		150	124		128	115	119		
13	58		95				89		109	90		103			159	159		154	159	119	109	99		
14							99	95	94	101	124	114	115		152	151	131	151	149		88	115	109	
15	89	96		93	94		95		99			118	149	142			150		159	129	120			
16			95		94	99	99	95	95	94		119			159		150	150	151	152	99	109		99
17		89		95	93	95	99	94		119		116	115	150	135	150		151	159	106	117			
18		116						99		124	111	114	94		124		150	152	155	115		92		
19	99	93	96				99	95	92	94		115		122		159	123	124		135		99	109	
20							109	94				96	98	106	124		151	132		132	82	116		
21	119	95			99	95	96		115	101	115	102		114	124		122	102	101	116	119	99		
22		99	80	95		71	89			101				126	123	135	119	116	95	123	95	93		
23		99					70			116	116			150			124	124	133	124	109	109		59
24		89					99	A	A		A	A			91		80	82	95	71	67	68		A
25			115					75		76			114			125	126		98	119				
26				93	99	82		96		A			114	123	124	115	125		129	88	83		99	
27	99		80	71	89	89	99	94	95	93		102	119		115	125	135	106	90					
28	99	94	96					93	95	114				115		113			103	116	95	94		
29		C		89				93	109	119			114	117	121	101	108		129	99		87		
30	94		94	81	95	94	95	92			119				115	122		124	159	93			82	94
31		94	77		89			109	109	94		99				115	126	110	124	119	99			99
	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	15	14	9	12	10	25	20	19	21	11	18	14	15	18	19	24	24	23	22	14	15	4	4
MED	99	94	95	93	94	94	99	95	99	114	116	116	117	132	124	133	132	135	133	119	99	99	104	96
U Q	99	99	96	95	97	99	99	105	109	119	119	121	131	150	151	151	150	151	159	128	115	116	109	99
L Q	89	93	89	85	93	89	91	94	95	94	111	103	114	117	123	122	123	124	101	106	88	93	90	76

HOURLY VALUES OF fEs AT Okinawa

MAY 2002

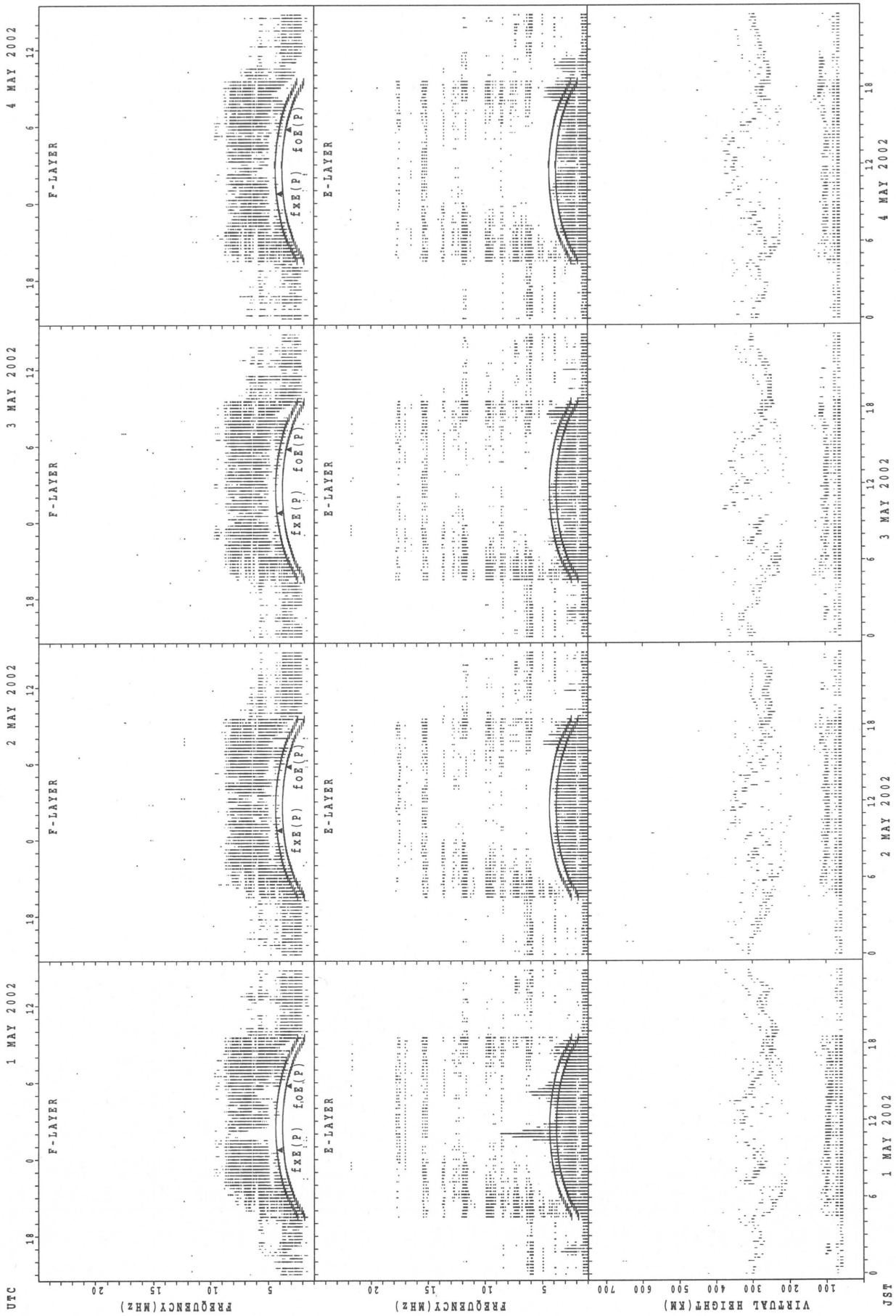
LAT. 26'16.9'N LON. 127'48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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		G	G						34	G	G	G	G				82	G	G			G			G		
2	G			G	G				G	G	G		49		50		G							G			
3		G	G							G			G		G				74				G				
4		G	G	G				G			39							46	62		98		G		G		
5	G	G	G			G			66	63	G	G	46	58			G	64	76	56		66		G	G		
6	G	G	G		G			G	G				G		60		74	94		105	62		G		G		
7		G	G	G						48		G	99	74	71	77	72	116	156	91	64	97			98		
8		G	G				G	G		51	G	71	116				G	G	G	50	90	120	97	35	G		
9		G	G		G	G	G		40		G					G	G	G			95	32	44	96		G	
10	G	G	G	G	G	G	G			G	G	G			G		G			G				38		G	
11	G	G	G	G	G			G	G				64		G	G		G	G		65	87	63	36		75	
12		G	G	G						48		G			62			G	G	G			26				
13	G		G	G			G	G		G	G			64				G									
14			G	G				G	G		53						G	G					G	G		G	
15	G	G	G	G	G			G		55	119				G	G		G			60	77	45		G		
16	G	G	G	G	G	G	G			61	65	62				82	64		G						G	G	
17		G		G	G	G	G			66	98	56	94	106	53	92		G		53	74	43	61	99	77		
18	G	G		G			G			34		G	46	54	63	85	59		G	G	G					79	
19	45	86		51			G	G	G			G	46	54	63	85	59		G	G	G						
20		50		35			G				34							G									
21	121	77	61		G	G	G			62	50	62	63	60				G	G								
22	G	G	G	G			G	G	G						G						108	96	88			G	G
23		G	G				G									68	74	80	74	86	65	42					
24	G				50	50				74	54	79	74	177					62		63	64	77		78	62	
25	G		33		30			42						82	119	78	60	70	79		63			63		79	
26	G	G	G					32	62									G		60	65	44		63		44	
27	75	64		96	48	61		73		64	86	72	89				G	G	G	G	G	G					
28	65	61	60	45		48		87		G			56	66			88		G								
29		G		G						G	G				G			G				64			65		
30		C		G						G						G	G		G								
31	50							G																			
32	75	62		G	G	G	G			G		G								G							
33	78	74	38		G	G				G	G									G	G						
34	78	74	38		G	G				G	G									G	G						
CNT		19	27	25	22	16	13	23	18	24	23	16	21	17	17	18	22	25	21	21	21	23	17	14	13		
MED		G	G	G	G	G	G	G	G	20	48	59	63	G	G	26	G	G	53	64	64	44	36	26	G		
U Q		65	50	G	G	G	24	G	62	53	65	75	96	76	61	68	74	72	69	90	82	63	67	77	68		
L Q		G	G	G	G	G	G	G	G	G	G	G	25	G	G	G	G	G	G	G	40	G	G	G	G		

HOURLY VALUES OF fmin AT Okinawa
MAY 2002
LAT. 26°16.9'N LON. 127°48.4'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

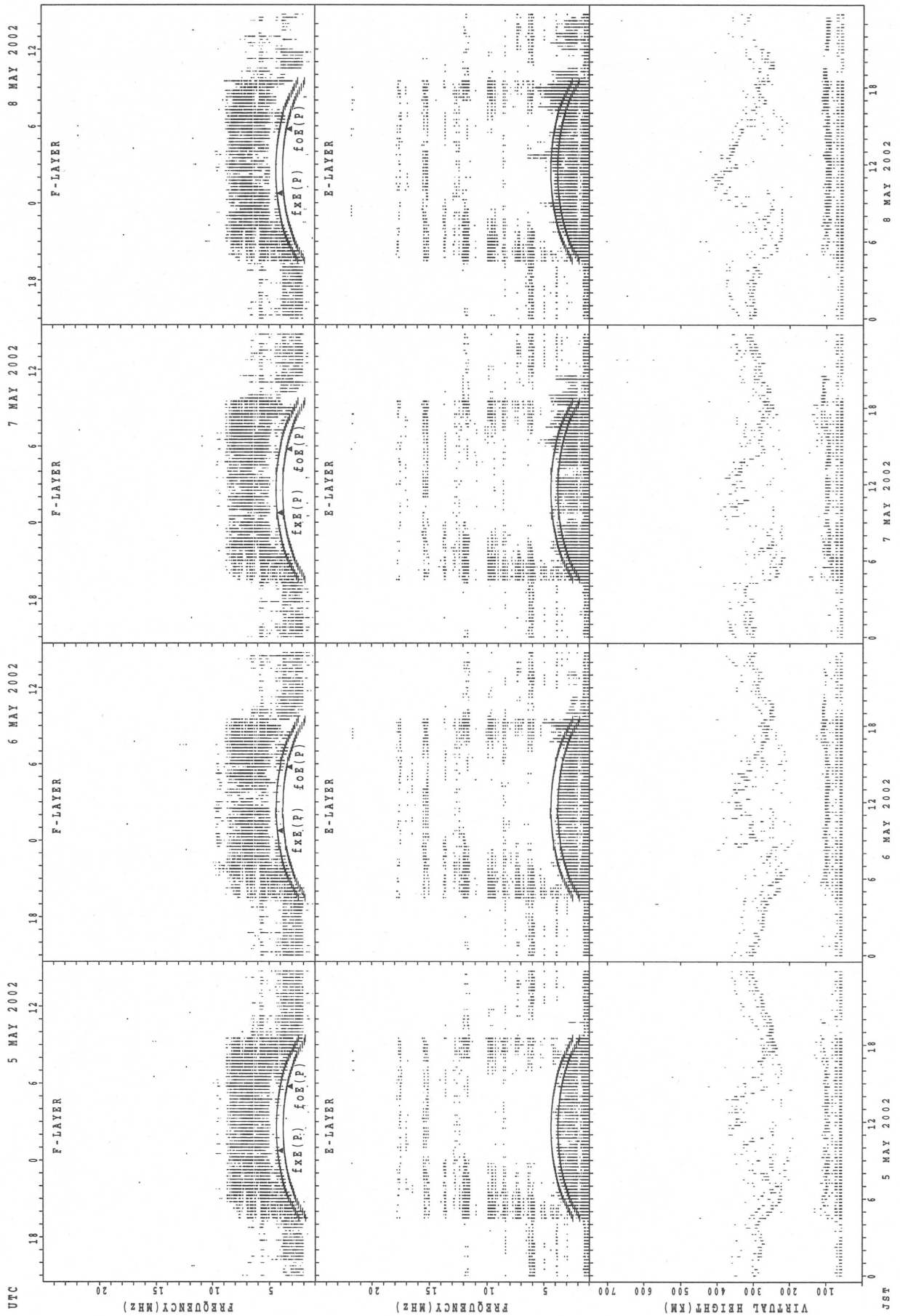
D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								21	21		47	53			42										
2								23		43			42			58		59	35	26				42	
3	60							23											36	21					
4								26				44							35	23					
5							58	22	34		52					67			34	23		46			
6						59		23	38					38			46	40		21	38				
7								24		27		67	58	42	68	56	46	40	36	28	54				
8								24		34		36	42				58	56		22	23	15	14		
9	41							46	44	49								58		36	29	17	14		
10						43		29					46		62				44	40	24		18	21	
11		58						24			43								54	28	22	14	39	17	27
12		29	36	42	15	18				38				47						24	15	14	14		
13	41		40					37	41				40	63		32	58		48	23	18	20	40		
14		42						33		40	43	45	40	46		68	60	52	56	35		29	37	39	59
15	29	27		30				38	36	35	38		42		59					24	18	20	22	30	56
16		41	44				23	30	40	40	43	45			56	55		59			30	21			
17		35			42	33	32	36	33	40	38			46		30			42	26	17	16	17	21	
18	28	33			23			45	28		44	43	45		60	63			35	23	20		23		26
19	28	17	22	30	36	32	32			39	41	44					56	60		26	24	18		16	
20		24		18			39	36	32					56		44		43	40	20	21	21			18
21	22	27	20		30	29	28	29			43	47	48			63				26	14	15		56	58
22		34	22				38	32							59	56	44	43	35	28	18	23	18		
23	43	30			41	14	29			39	40	43	44	52	46			43	38	23	26	16	27	24	18
24	30			21				21	33	38	41	44	54	45	48	45	43			40	15	14	28	26	
25	42		54					26	26		59			43					38	21	18	14		39	21
26				30	27	23	22	22			38	44	46							38	23	23		28	
27	24	20	20	24			39	22	28		29		35	42	54	54	46	44		26	20	18	20		
28	29	29	30							44										21	22	14	27		
29	26	^C		28							33			63			46			37	21	14	18	26	20
30	14			30	30			40	34							67	70		45	23	24	18	15	22	17
31	21	20	15	55				45	39				46				44	36		23	21	17		21	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		15	15	10	10	10	11	28	18	12	16	13	15	11	10	14	12	13	16	29	25	23	17	15	10
ME D		29	29	26	30	33	32	28	34	38	42	44	45	46	58	56	46	44	38	24	21	17	20	26	24
U Q		41	35	40	30	42	39	34	39	40	43	46	48	52	60	63	58	58	44	28	24	21	27	39	56
L Q		24	24	20	24	27	23	23	28	34	39	43	42	42	48	45	45	41	35	23	18	14	16	21	18

SUMMARY PLOTS AT Wakkanai



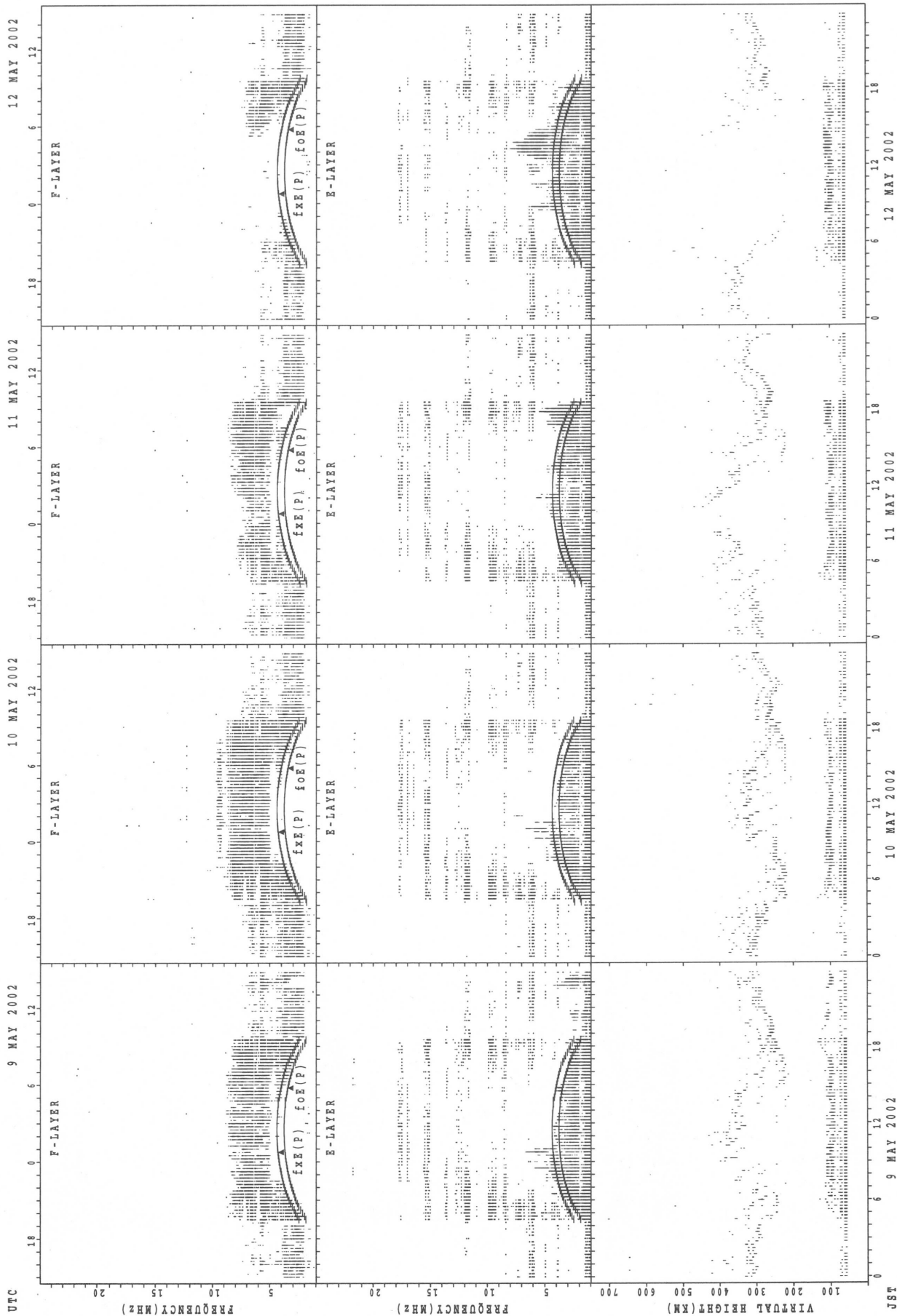
fXe(P); PREDICTED VALUE FOR fXe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



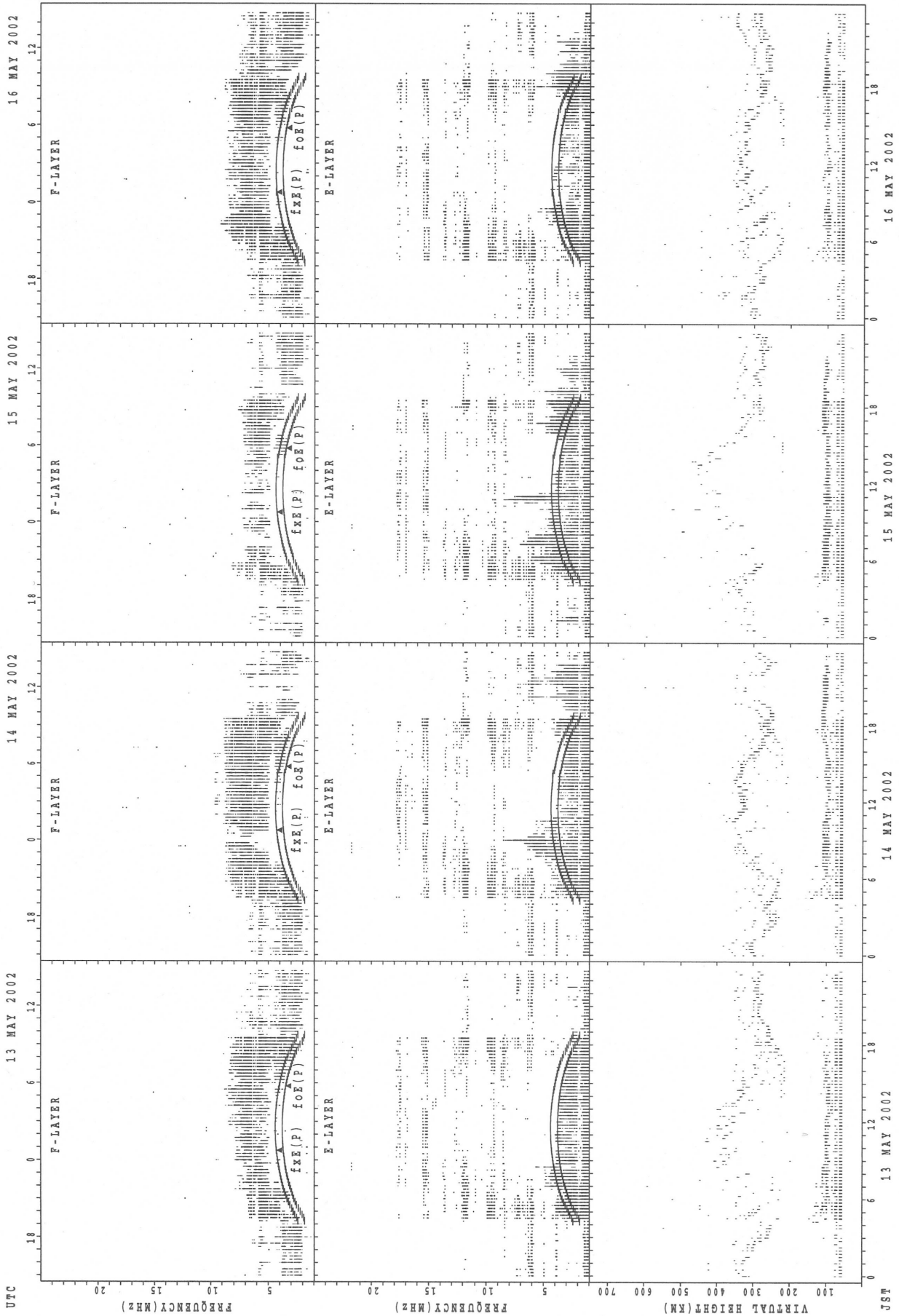
f_xE(p); PREDICTED VALUE FOR f_xE
 f_oE(p); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



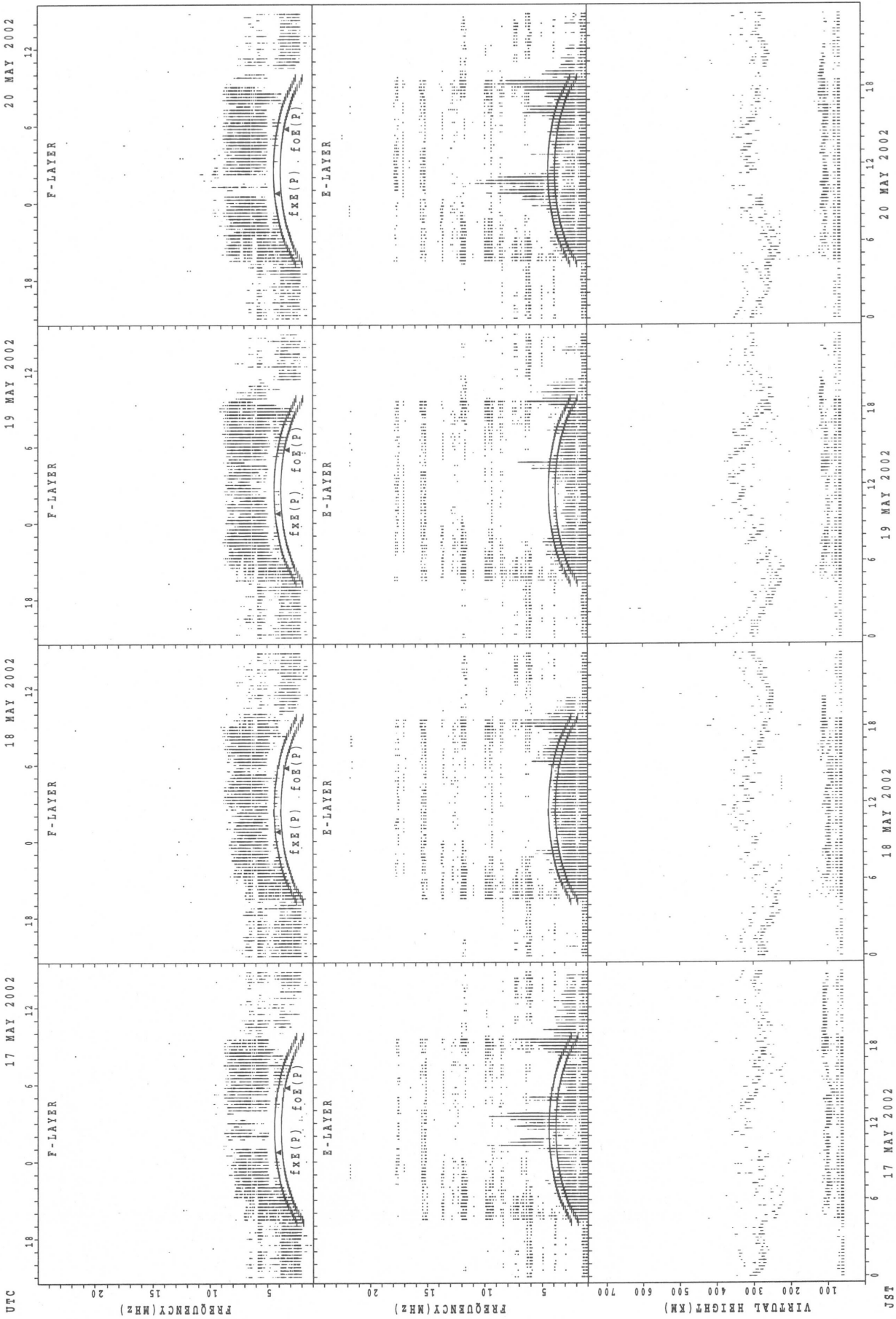
fX(P); PREDICTED VALUE FOR fX
 fE(P); PREDICTED VALUE FOR fE

SUMMARY PLOTS AT Wakkanai



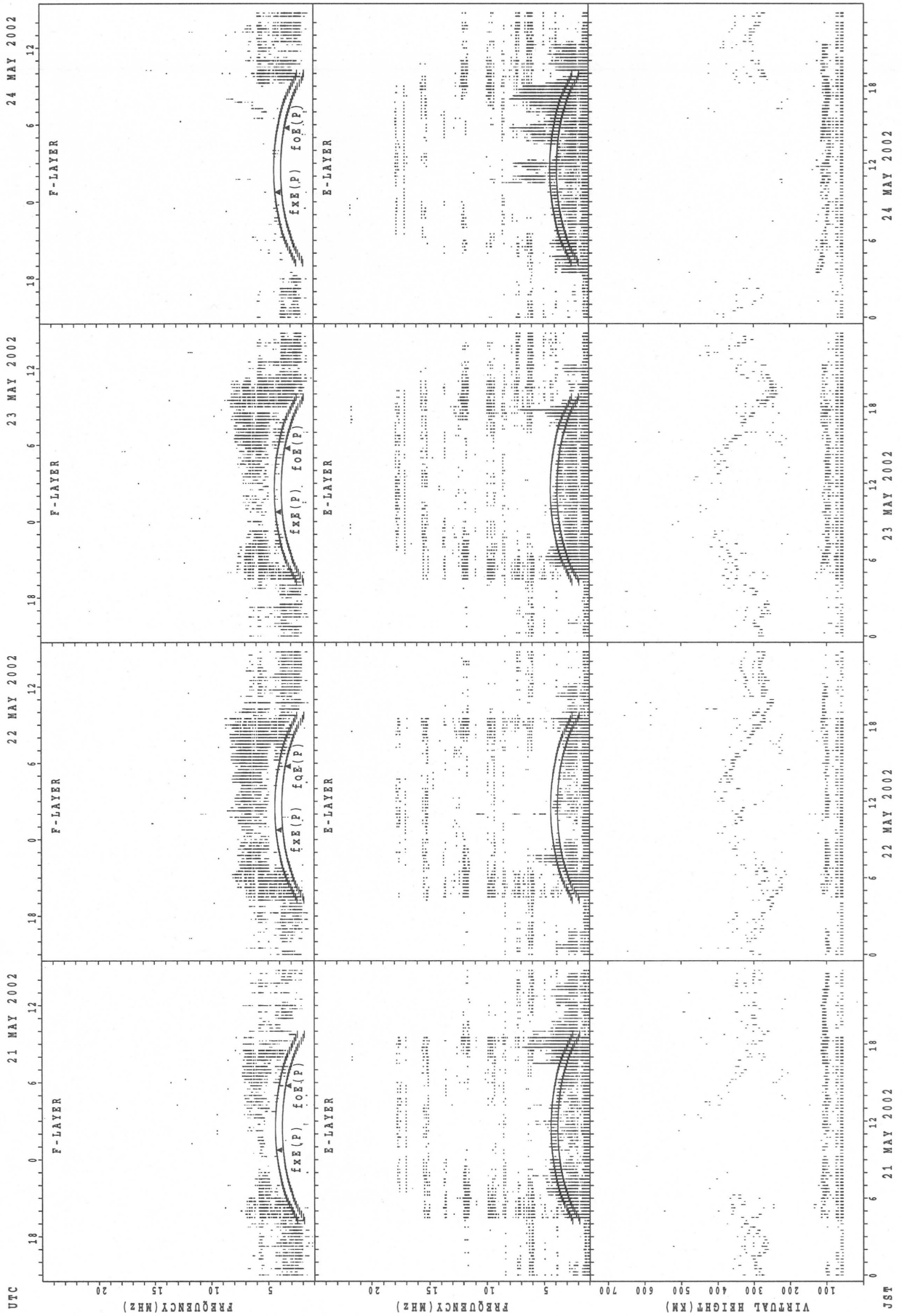
f_xE(P); PREDICTED VALUE FOR f_xE
 f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



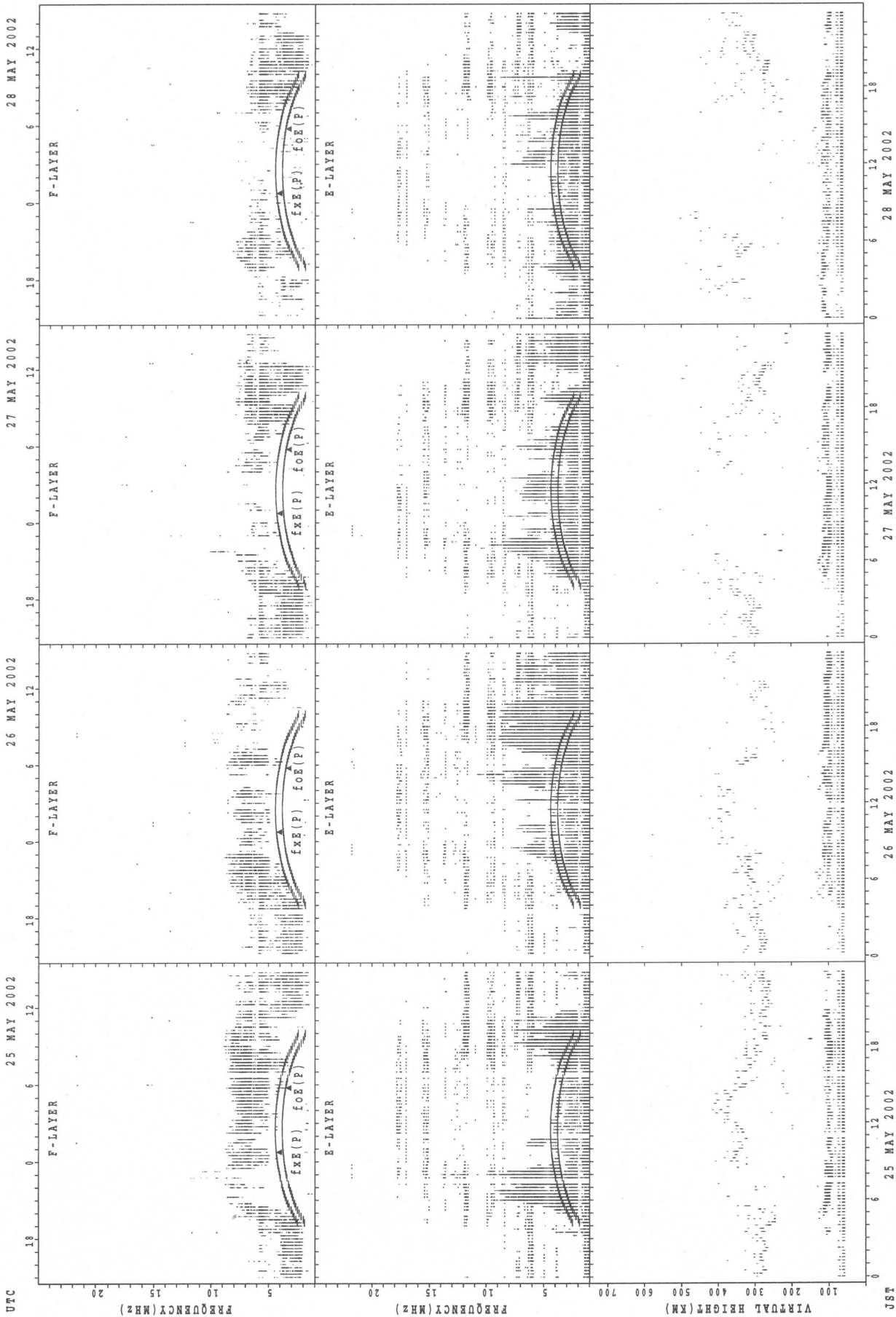
f_{x E(P)}; PREDICTED VALUE FOR f_{x E}
 f_{o E(P)}; PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Wakkanai



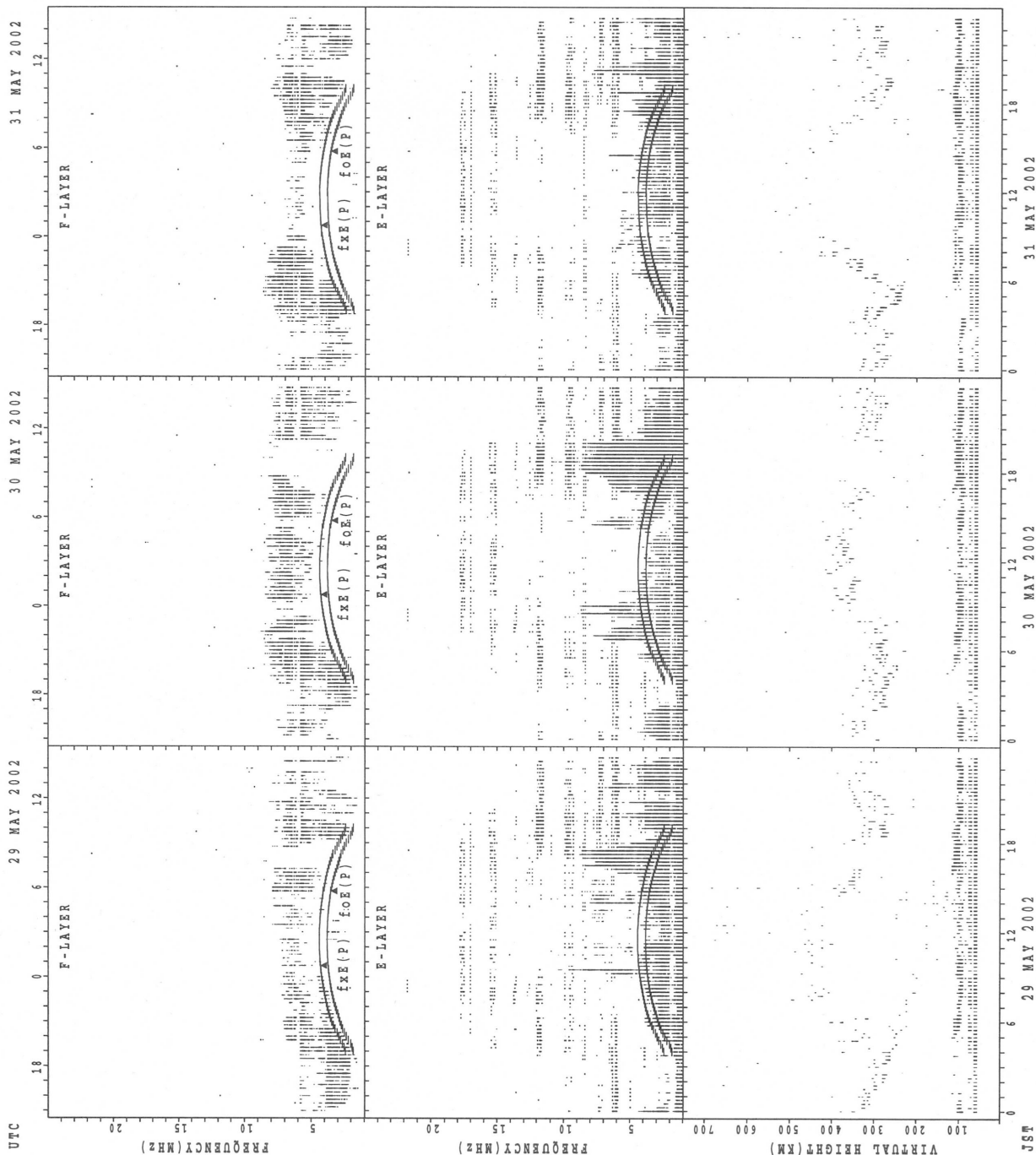
$f_xE(P)$; PREDICTED VALUE FOR f_xE
 $f_oE(P)$; PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Wakkanai



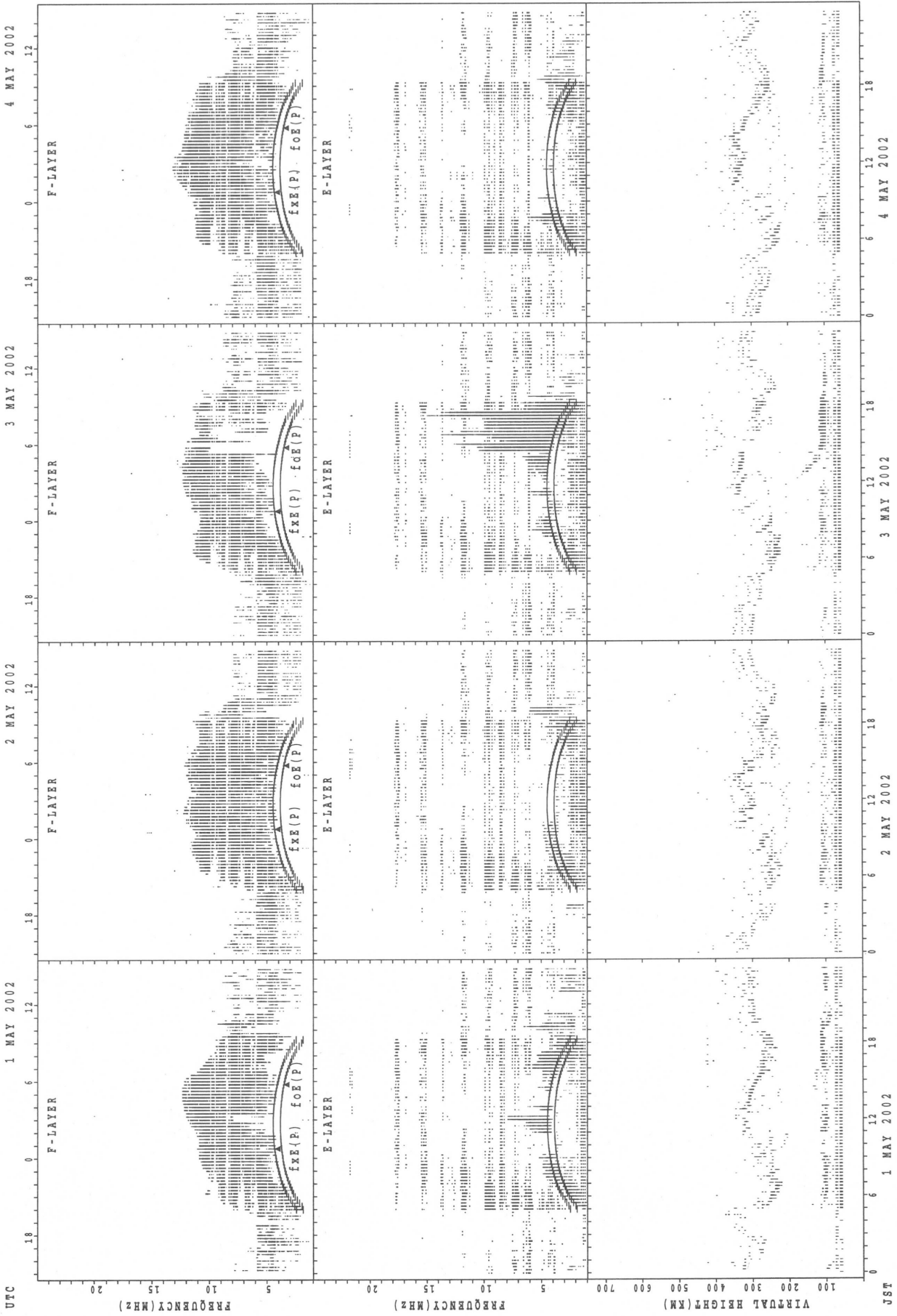
fxE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



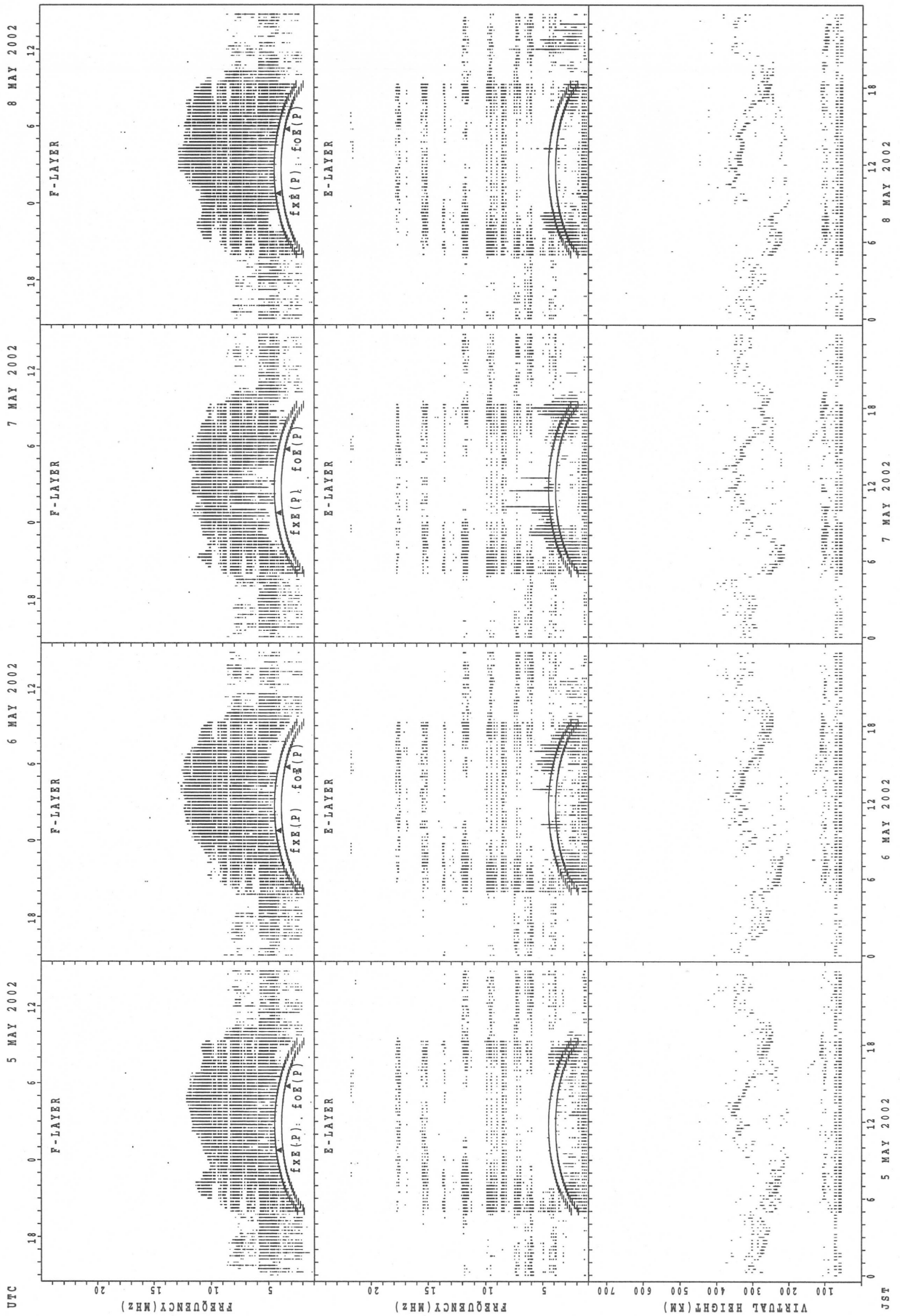
f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji



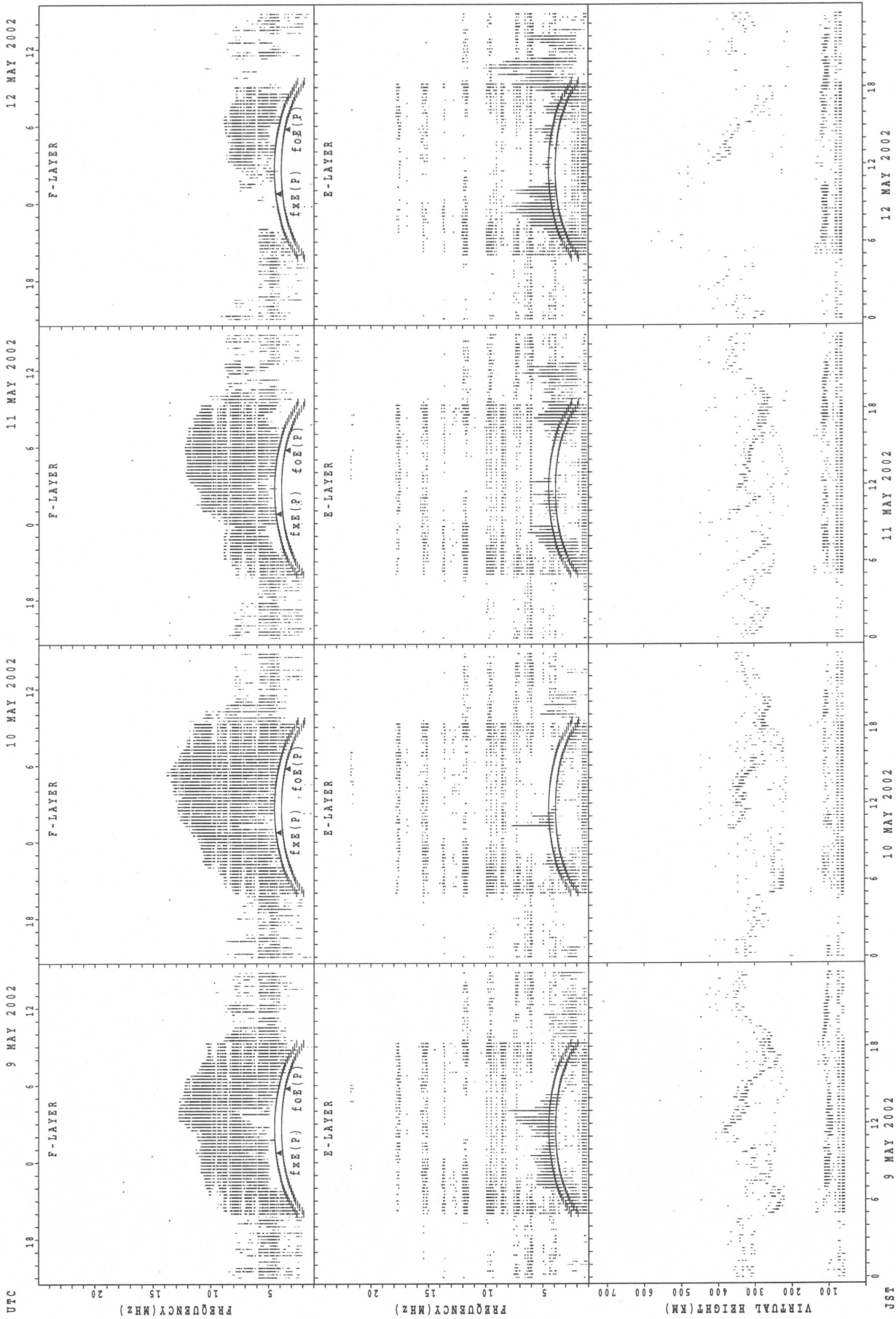
f_{x E(P)}; PREDICTED VALUE FOR f_{x E}
 f_{o E(P)}; PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Kokubunji



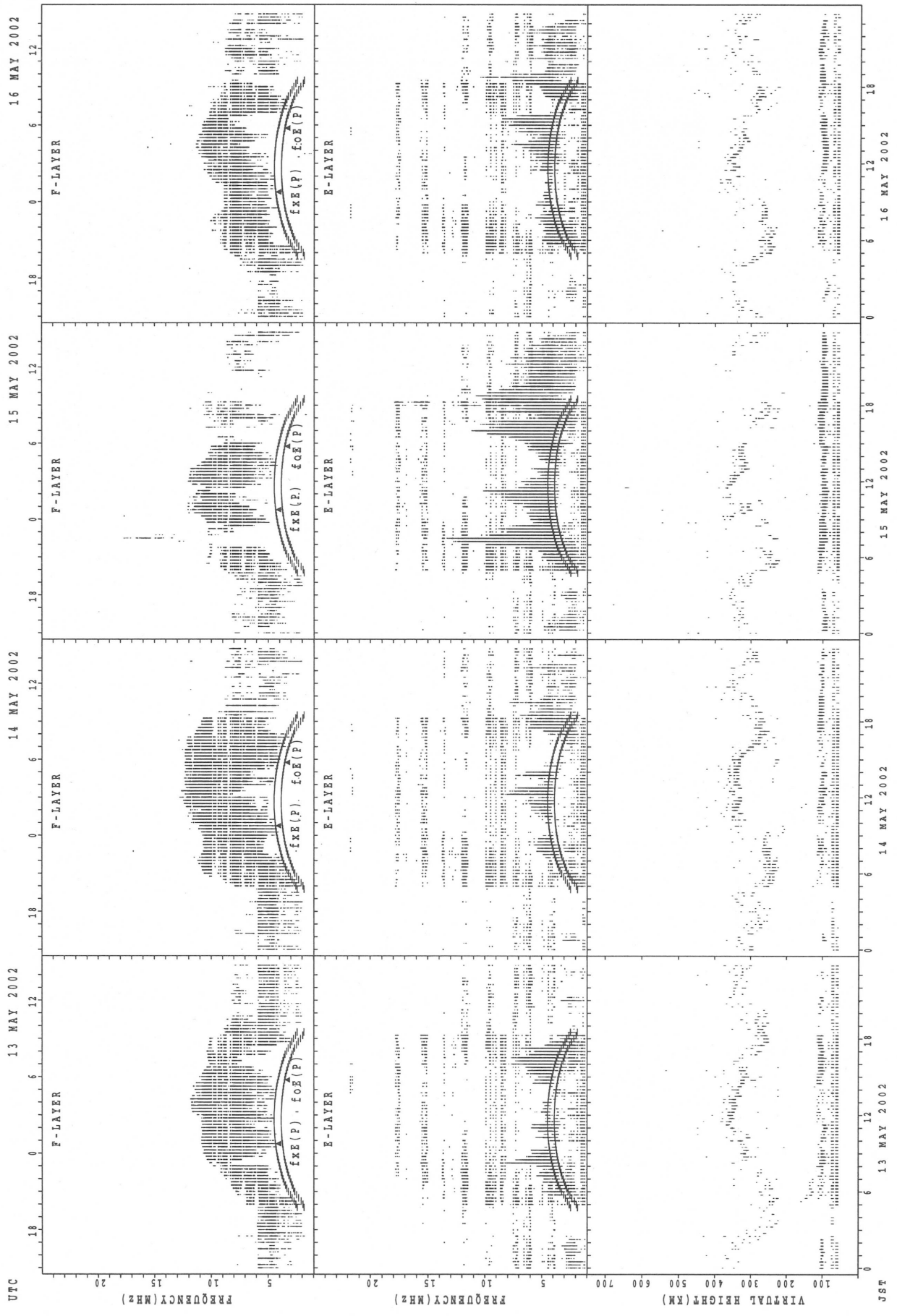
fxe(p); PREDICTED VALUE FOR fxe
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Kokubunji



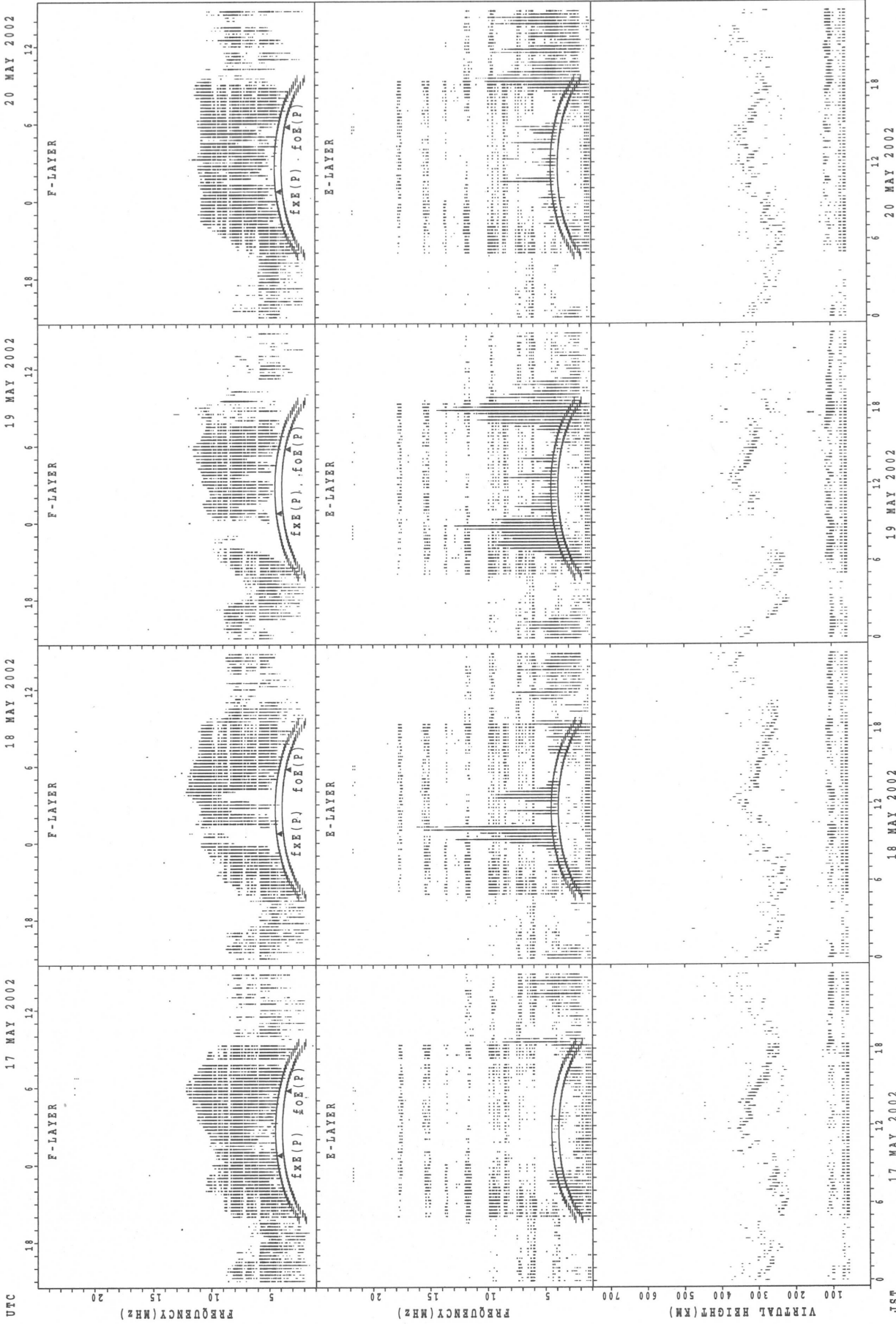
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



f_xE(P); PREDICTED VALUE FOR f_xE
f_oE(P); PREDICTED VALUE FOR f_oE

SUMMARY PLOTS AT Kokubunji

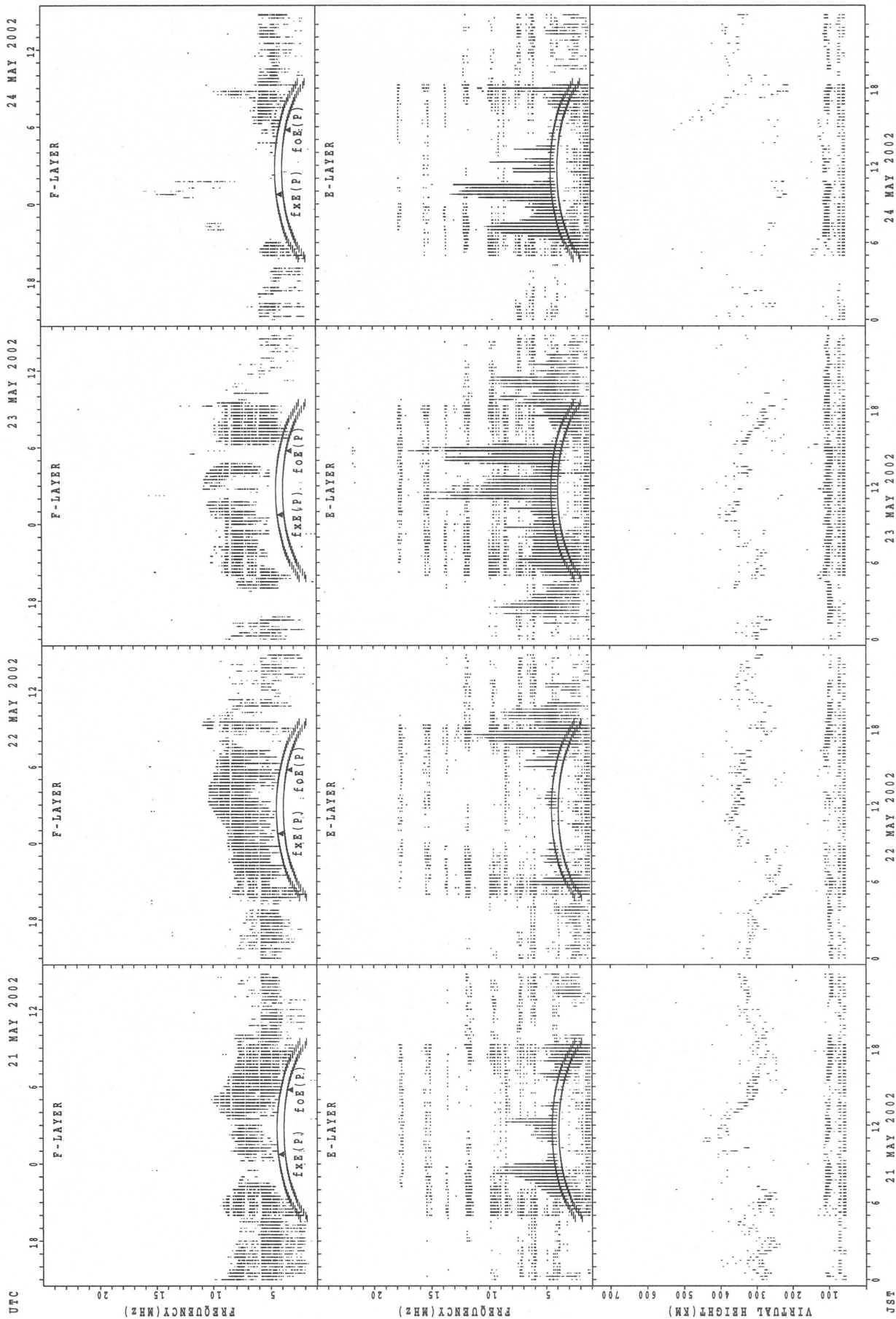


UTC

JST

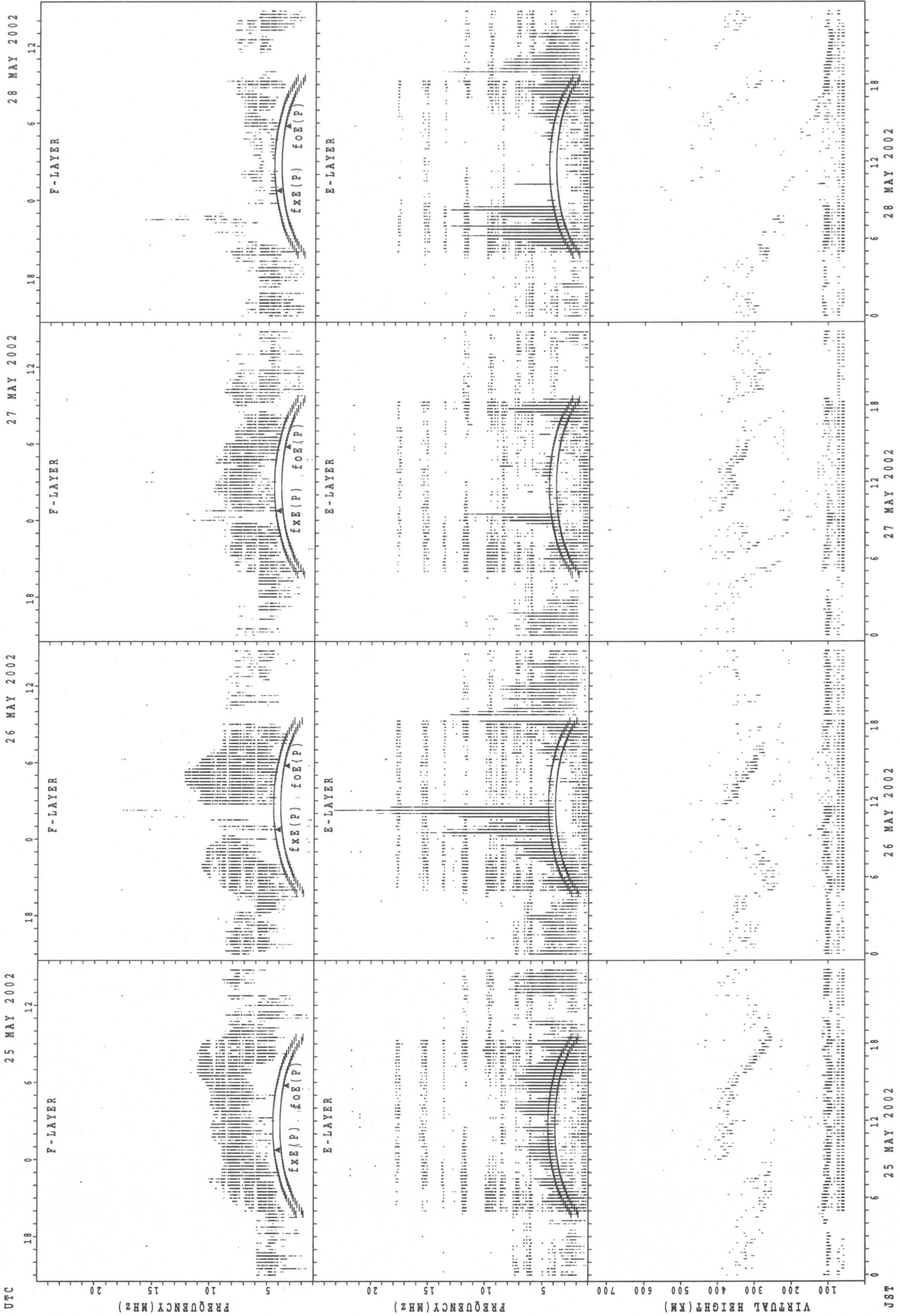
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



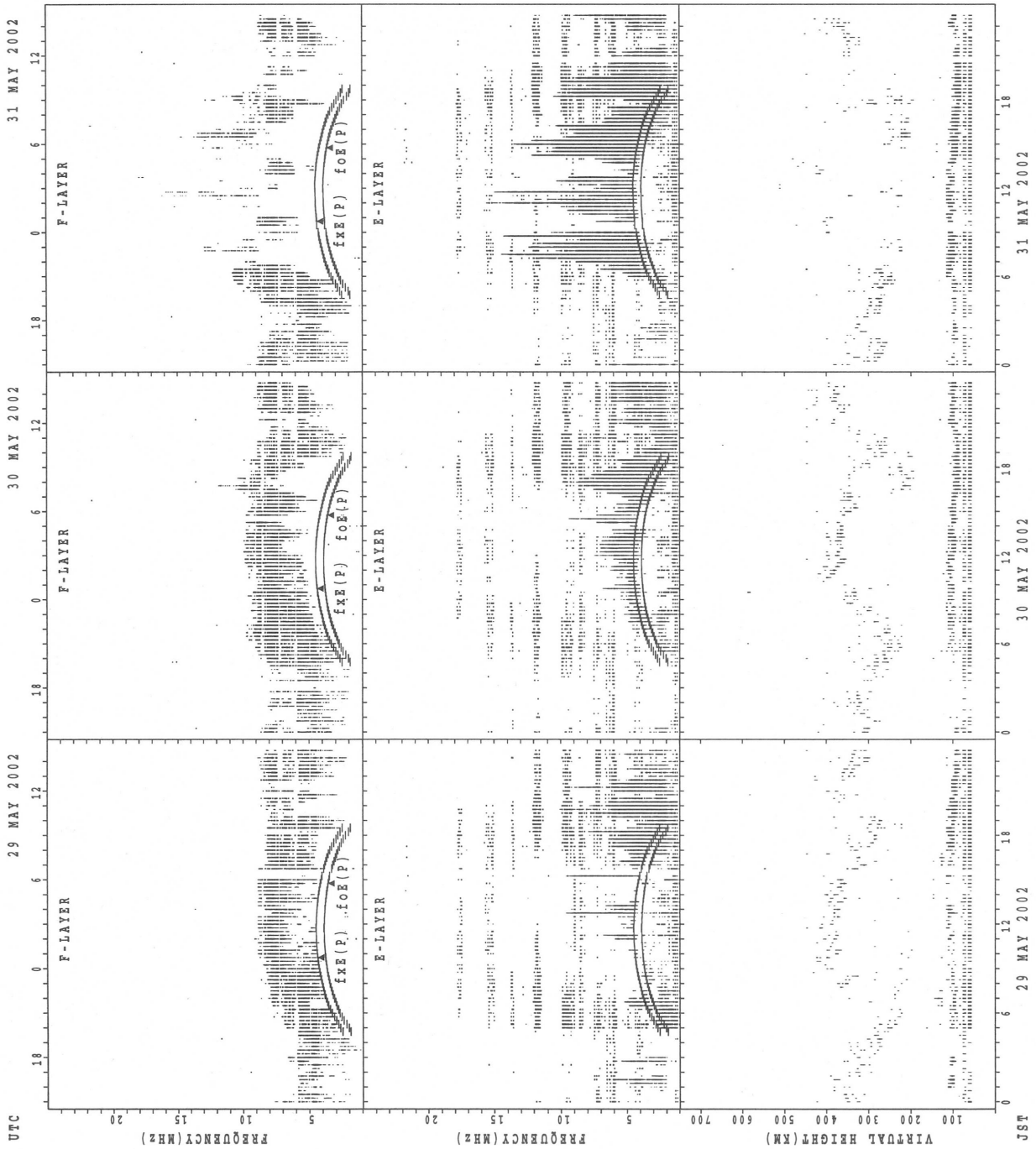
f_{x E(P)}; PREDICTED VALUE FOR f_{x E}
 f_{o E(P)}; PREDICTED VALUE FOR f_{o E}

SUMMARY PLOTS AT Kokubunji



foF2(P); PREDICTED VALUE FOR foF2
fXoF2(P); PREDICTED VALUE FOR fXoF2

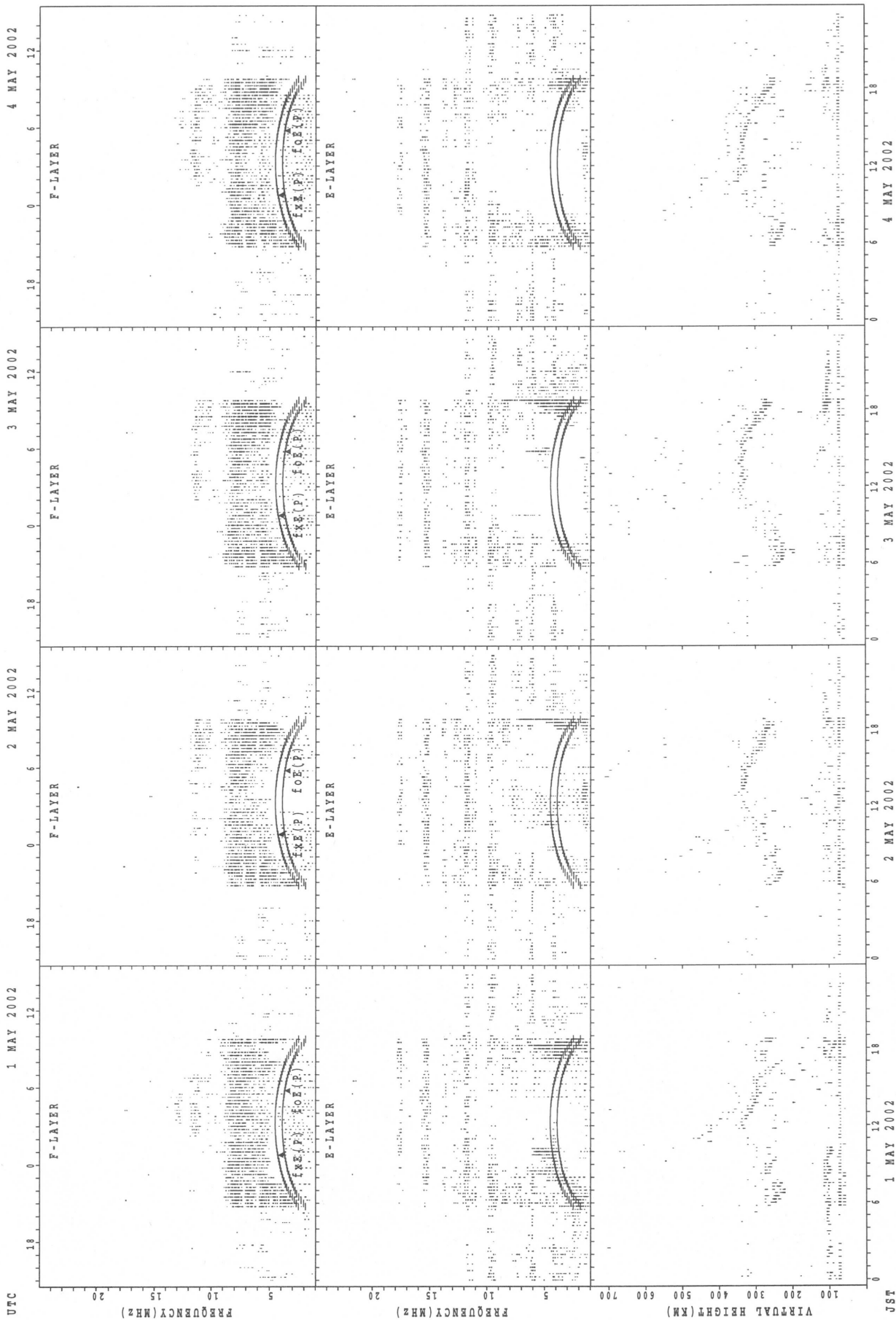
SUMMARY PLOTS AT Kokubunji



f_xE(P); PREDICTED VALUE FOR f_xE
 f_oE(P); PREDICTED VALUE FOR f_oE

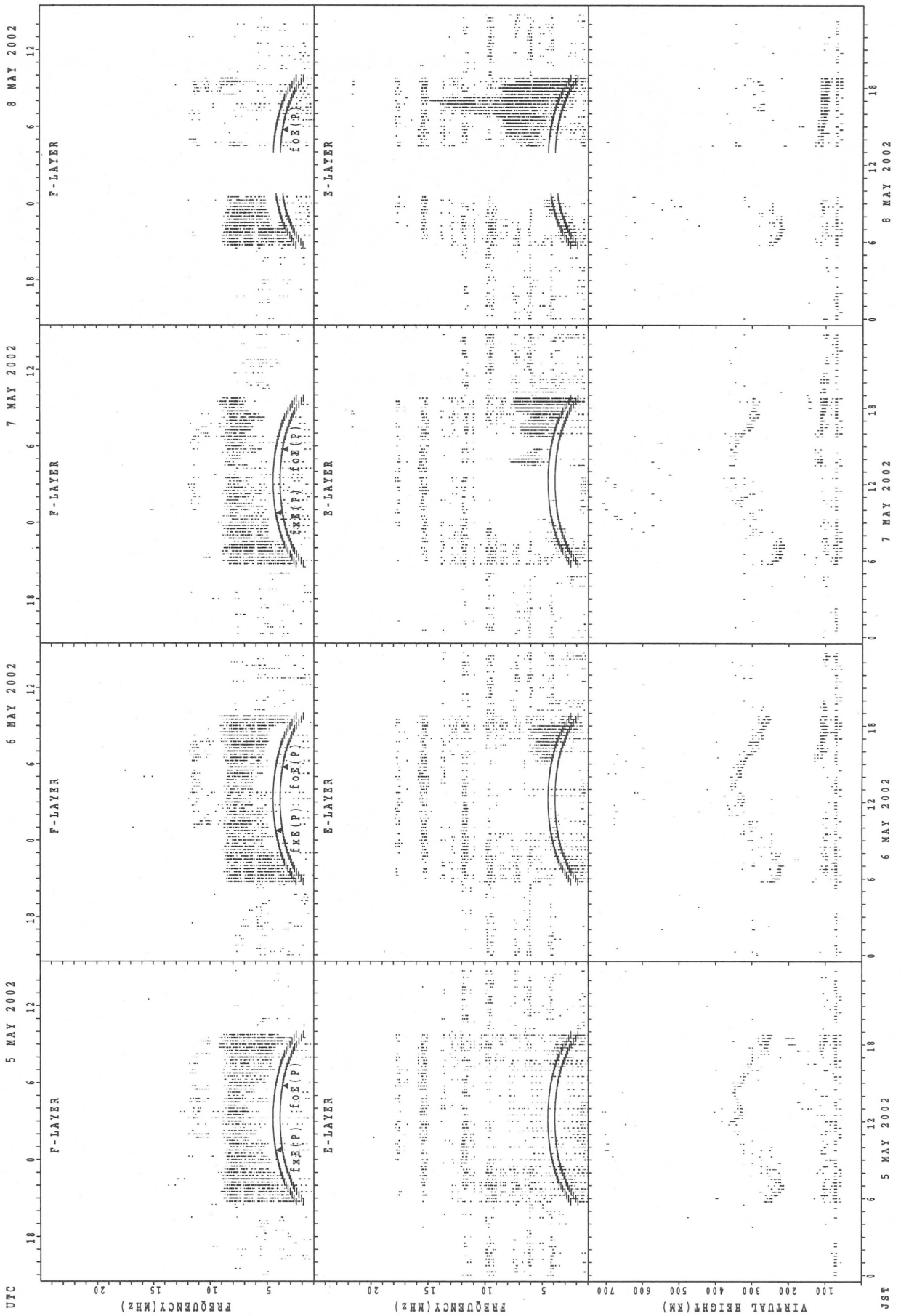
JST

SUMMARY PLOTS AT Yamagawa



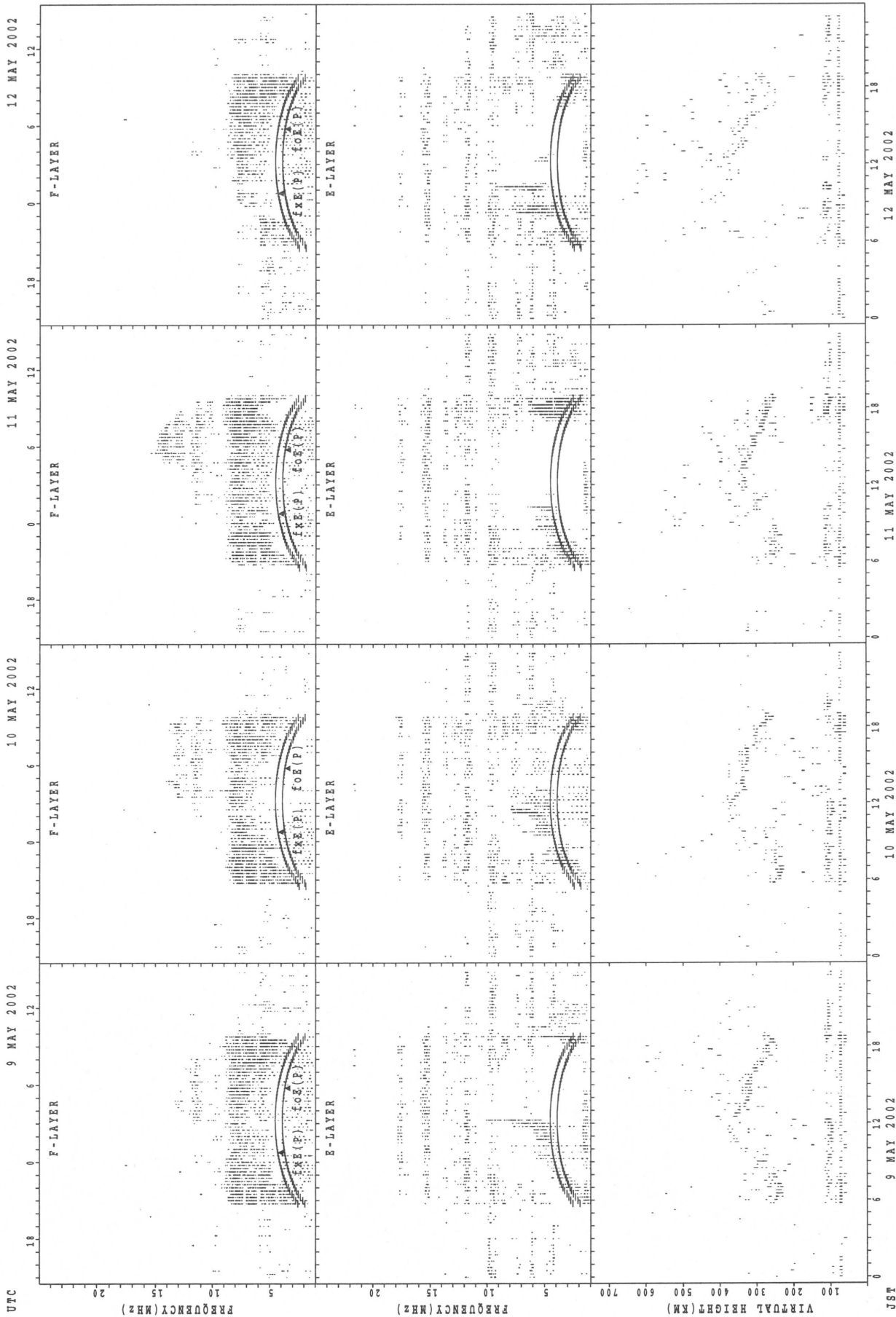
foF2(P); PREDICTED VALUE FOR foF2
 fminF2(P); PREDICTED VALUE FOR fminF2

SUMMARY PLOTS AT Yamagawa



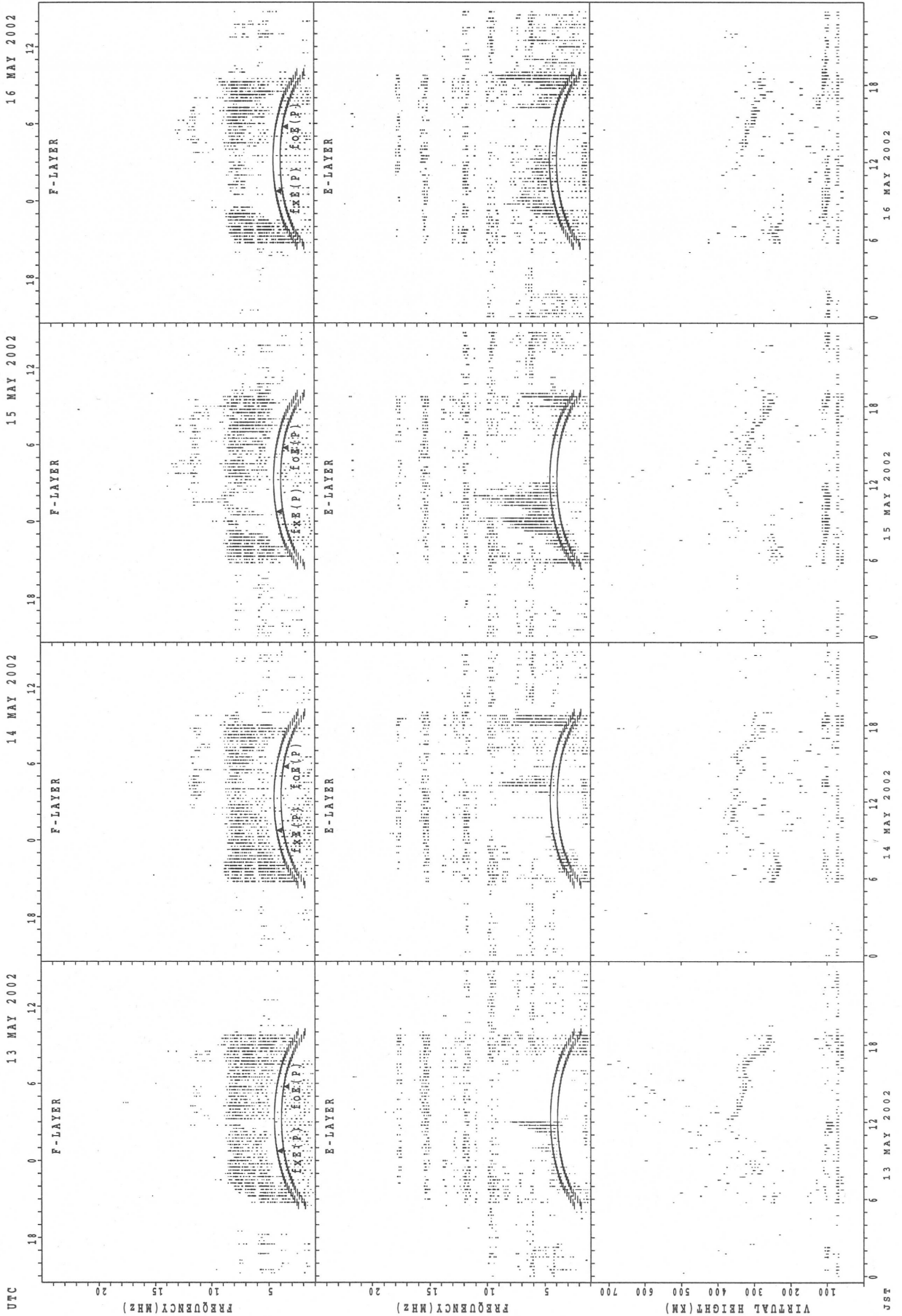
$f_x f_e(P)$; PREDICTED VALUE FOR $f_x f_e$
 $f_o E(P)$; PREDICTED VALUE FOR $f_o E$

SUMMARY PLOTS AT Yamagawa



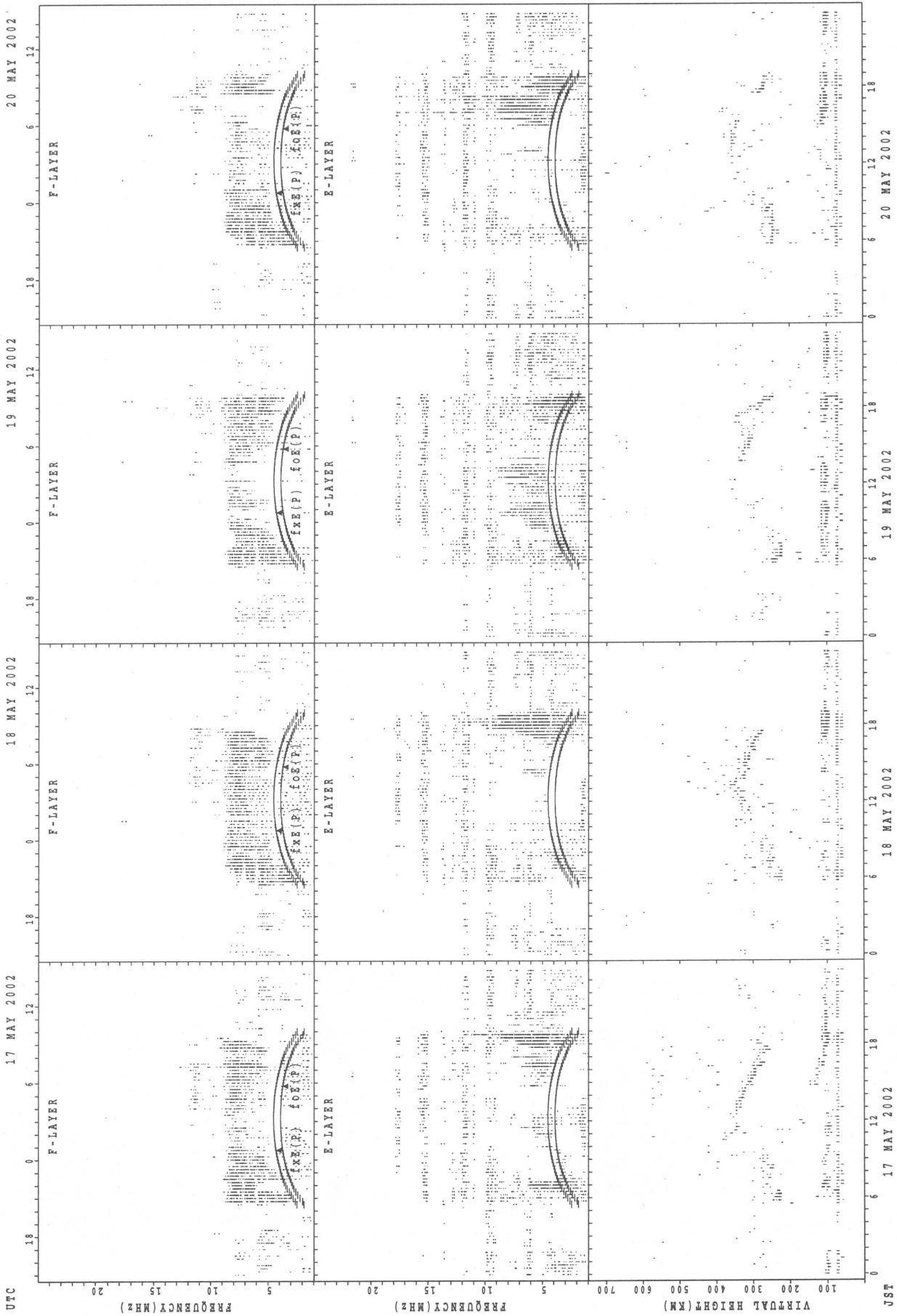
fxe(p); PREDICTED VALUE FOR fxe
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Yamagawa



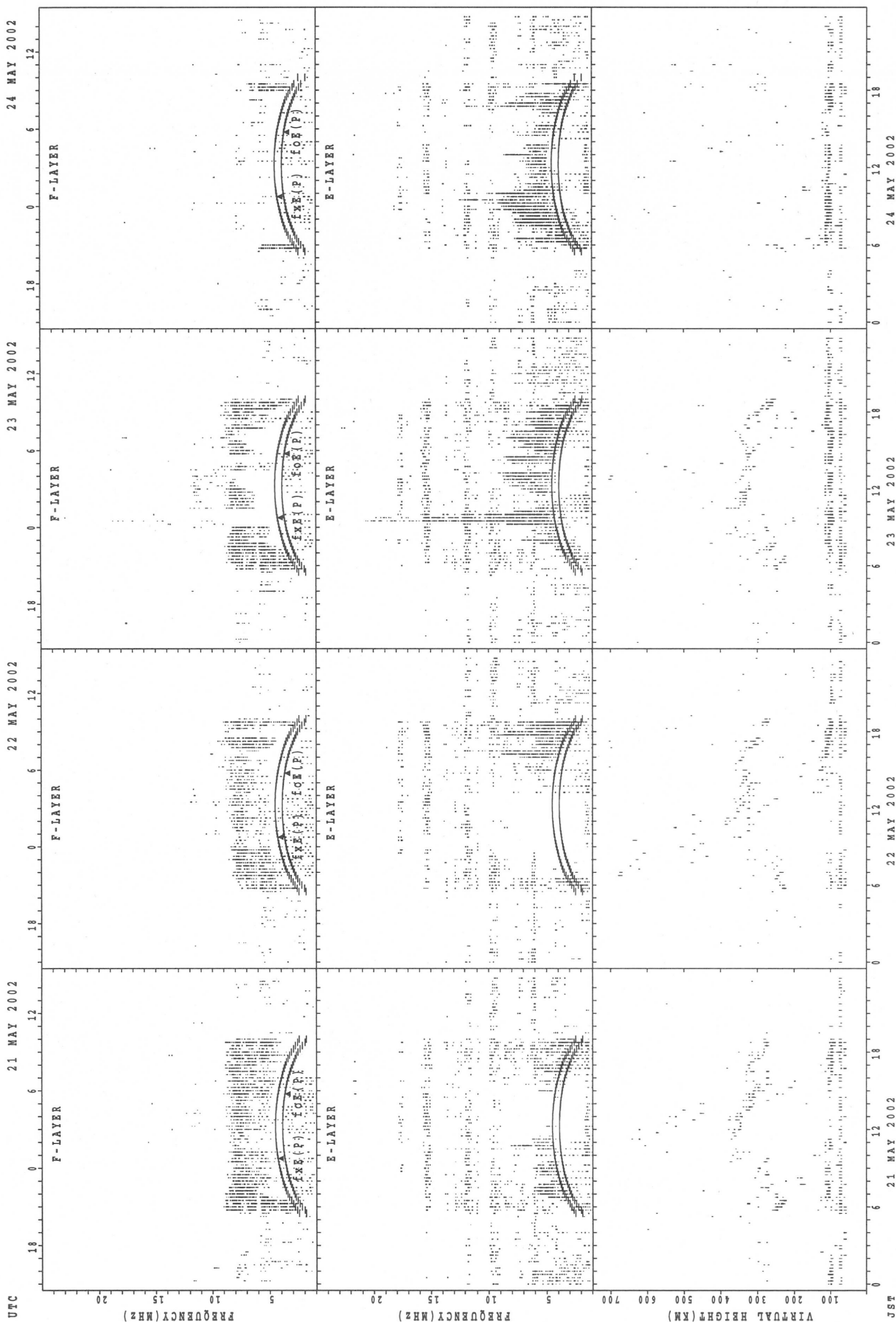
foE(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



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

SUMMARY PLOTS AT Yamagawa

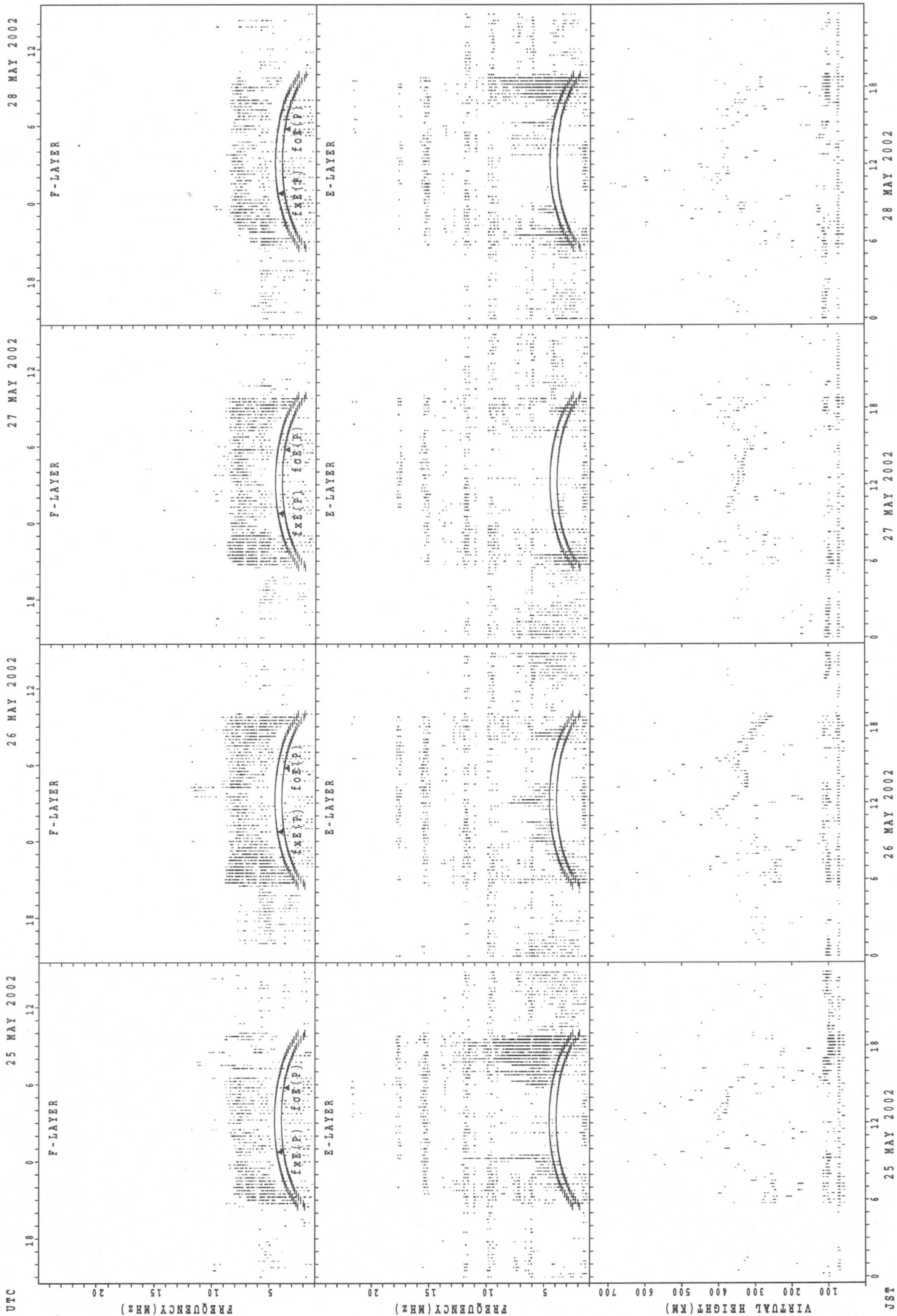


fxe(P); PREDICTED VALUE FOR fxe
foe(P); PREDICTED VALUE FOR foe

UTC

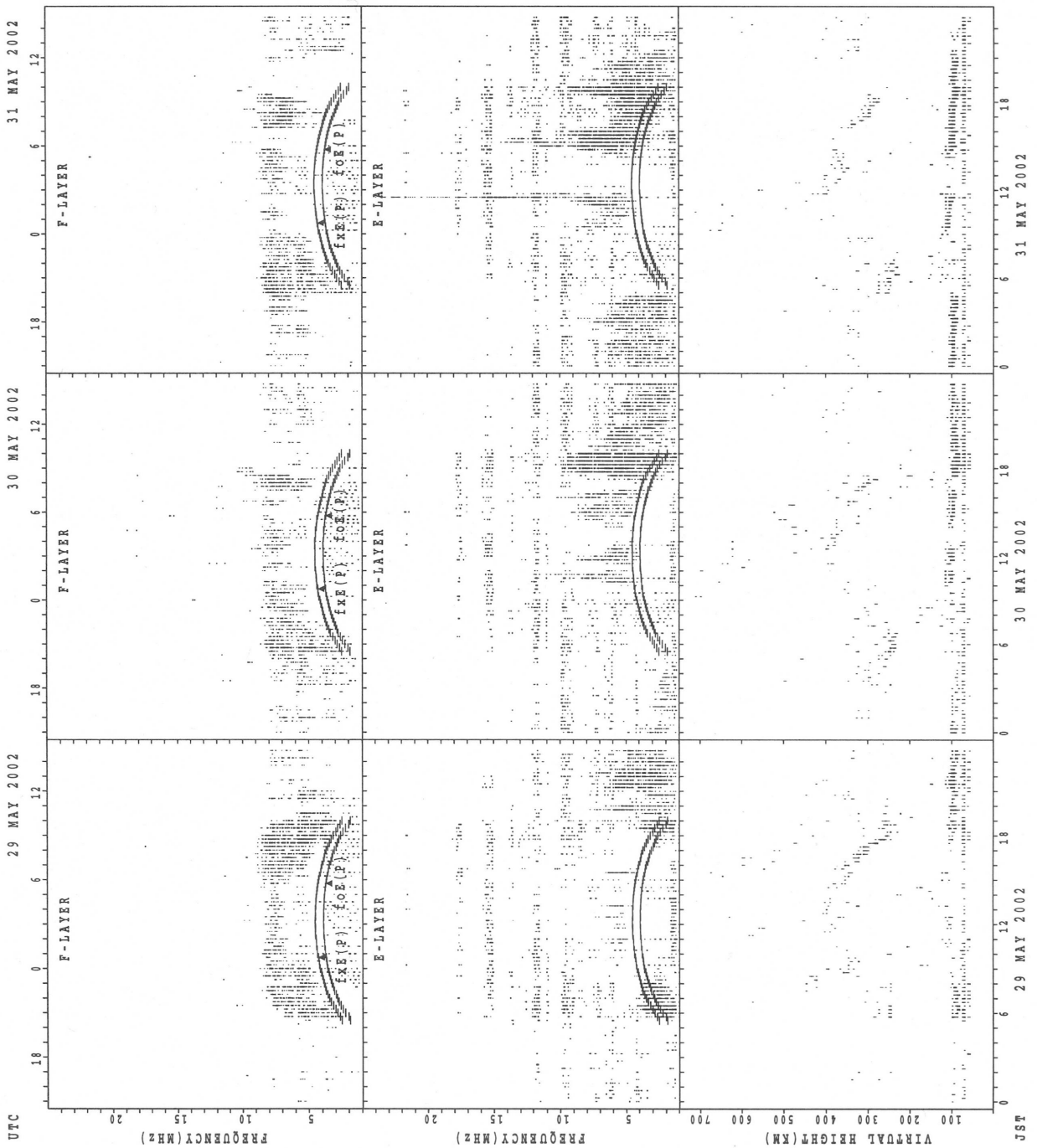
JST

SUMMARY PLOTS AT Yamagawa



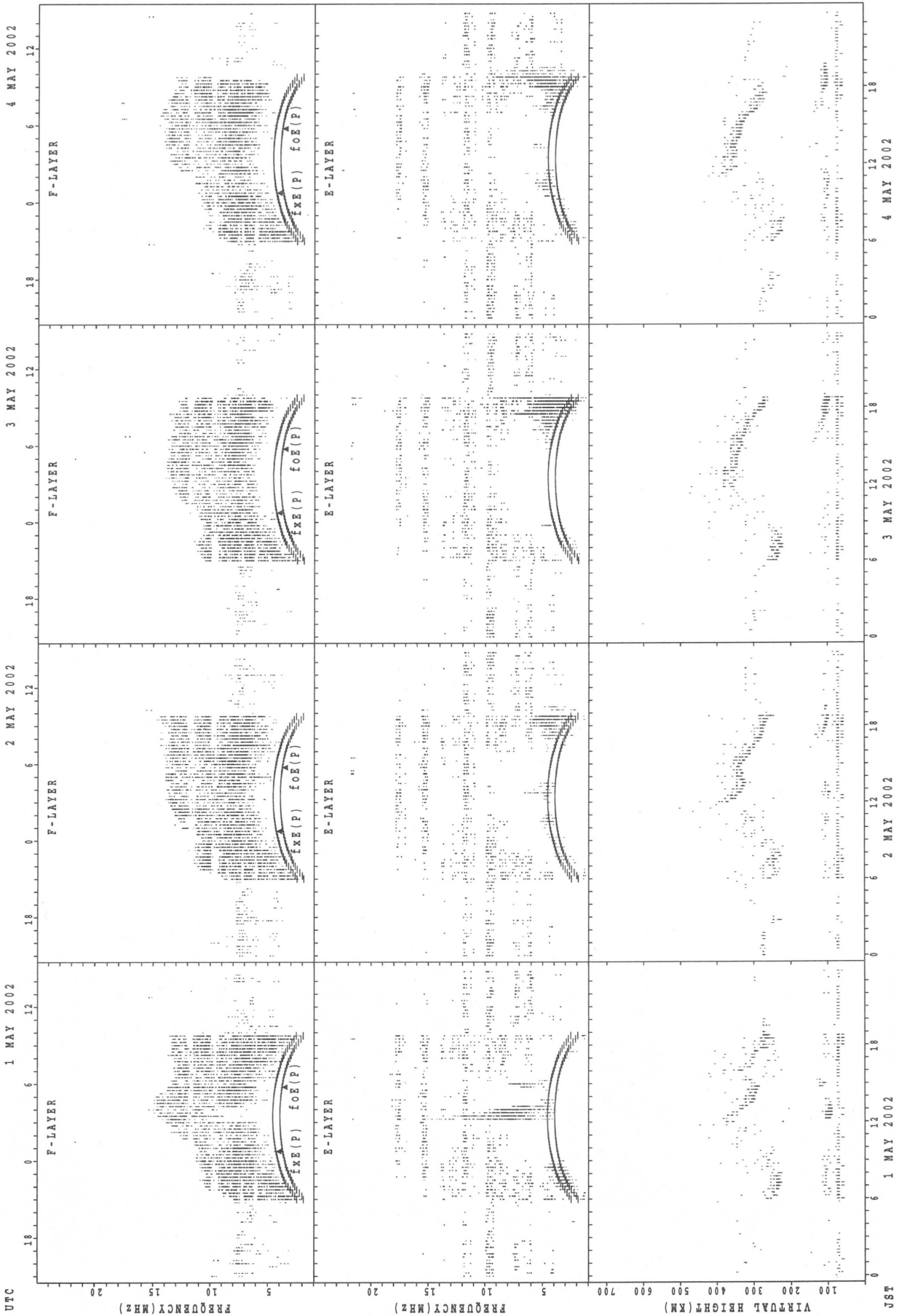
fXE(P); PREDICTED VALUE FOR fXE
 fXE(P); PREDICTED VALUE FOR fXE

SUMMARY PLOTS AT Yamagawa



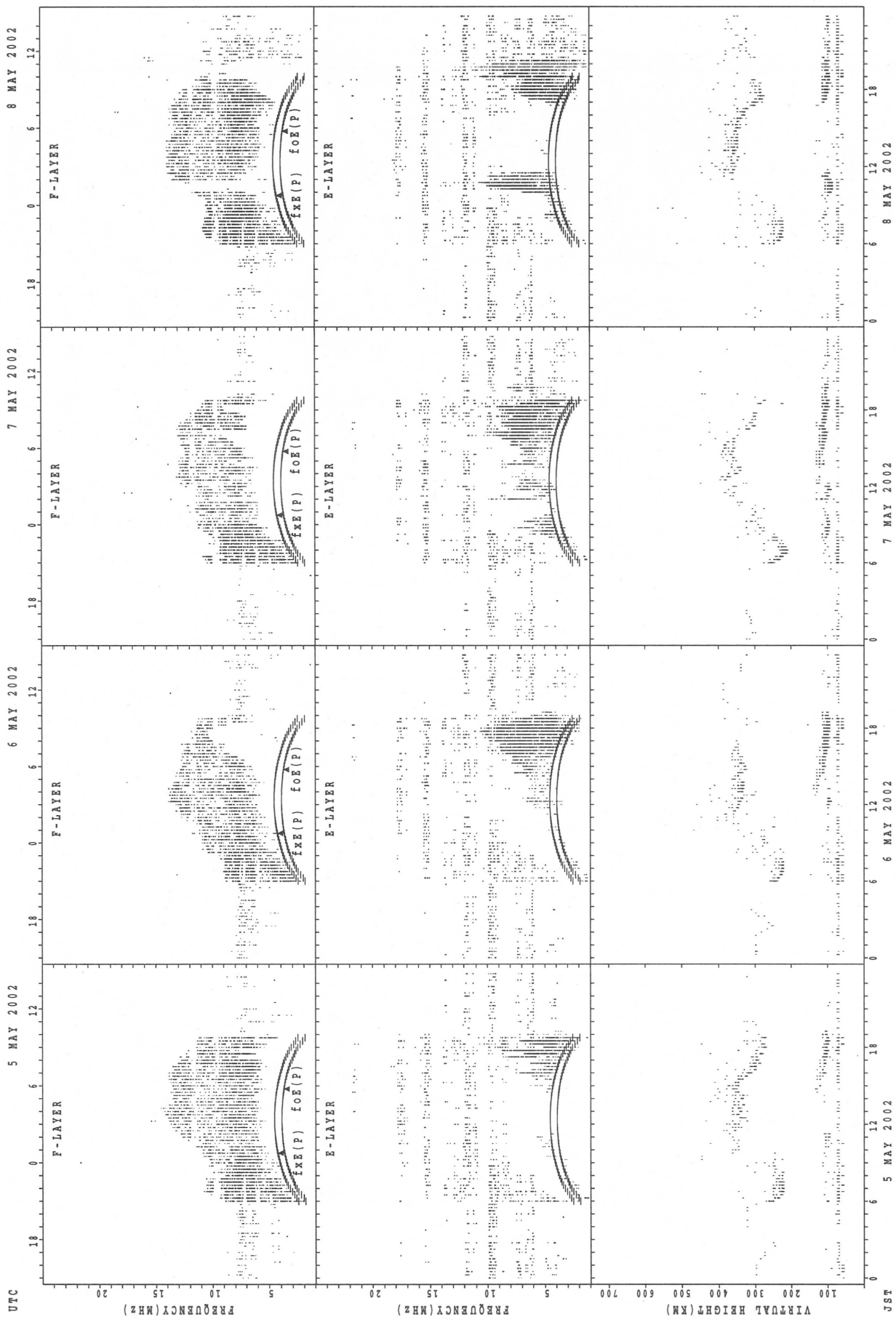
fxe(P); PREDICTED VALUE FOR fxe
fce(P); PREDICTED VALUE FOR fce

SUMMARY PLOTS AT Okinawa



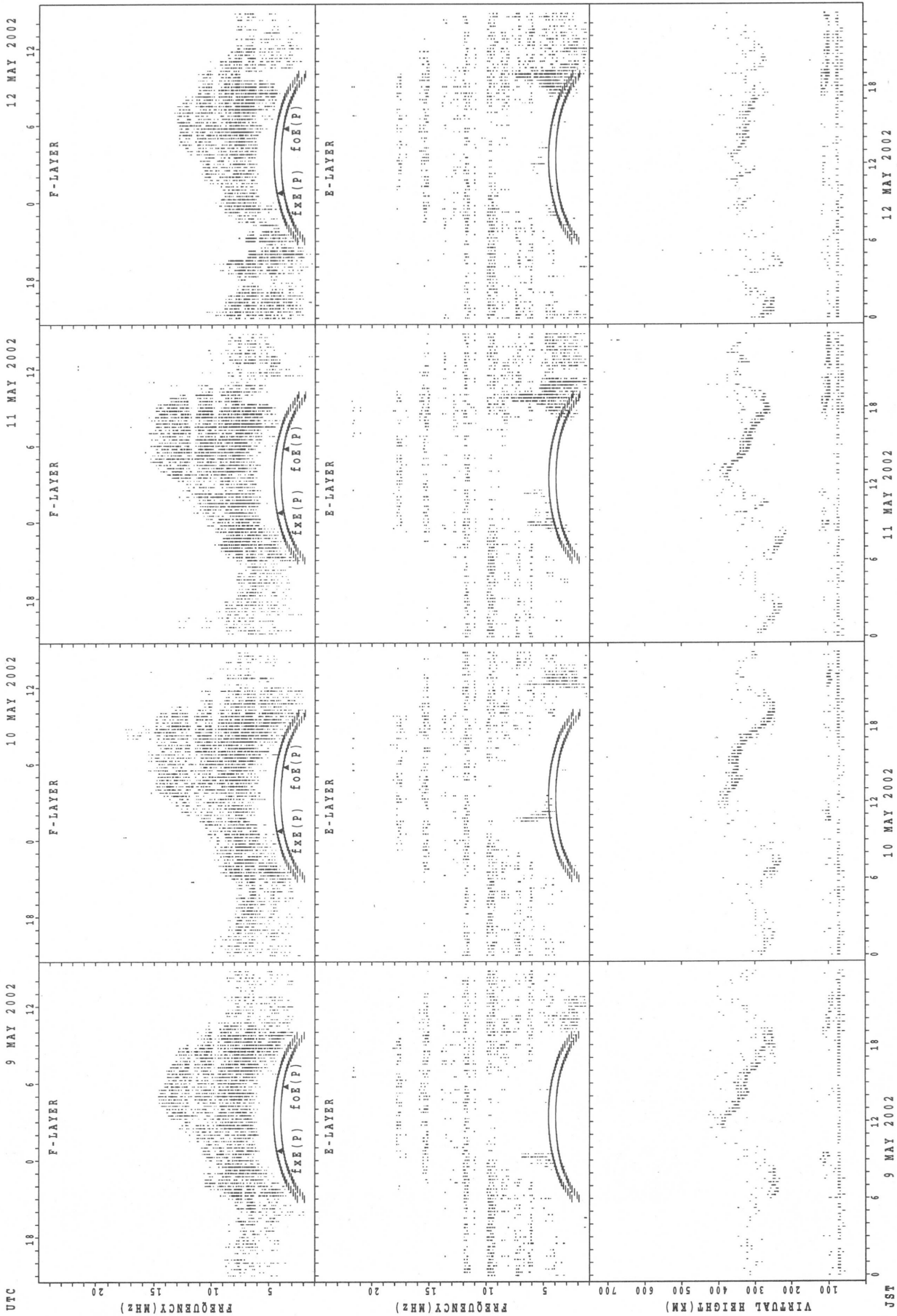
fxe(P); PREDICTED VALUE FOR fxe
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



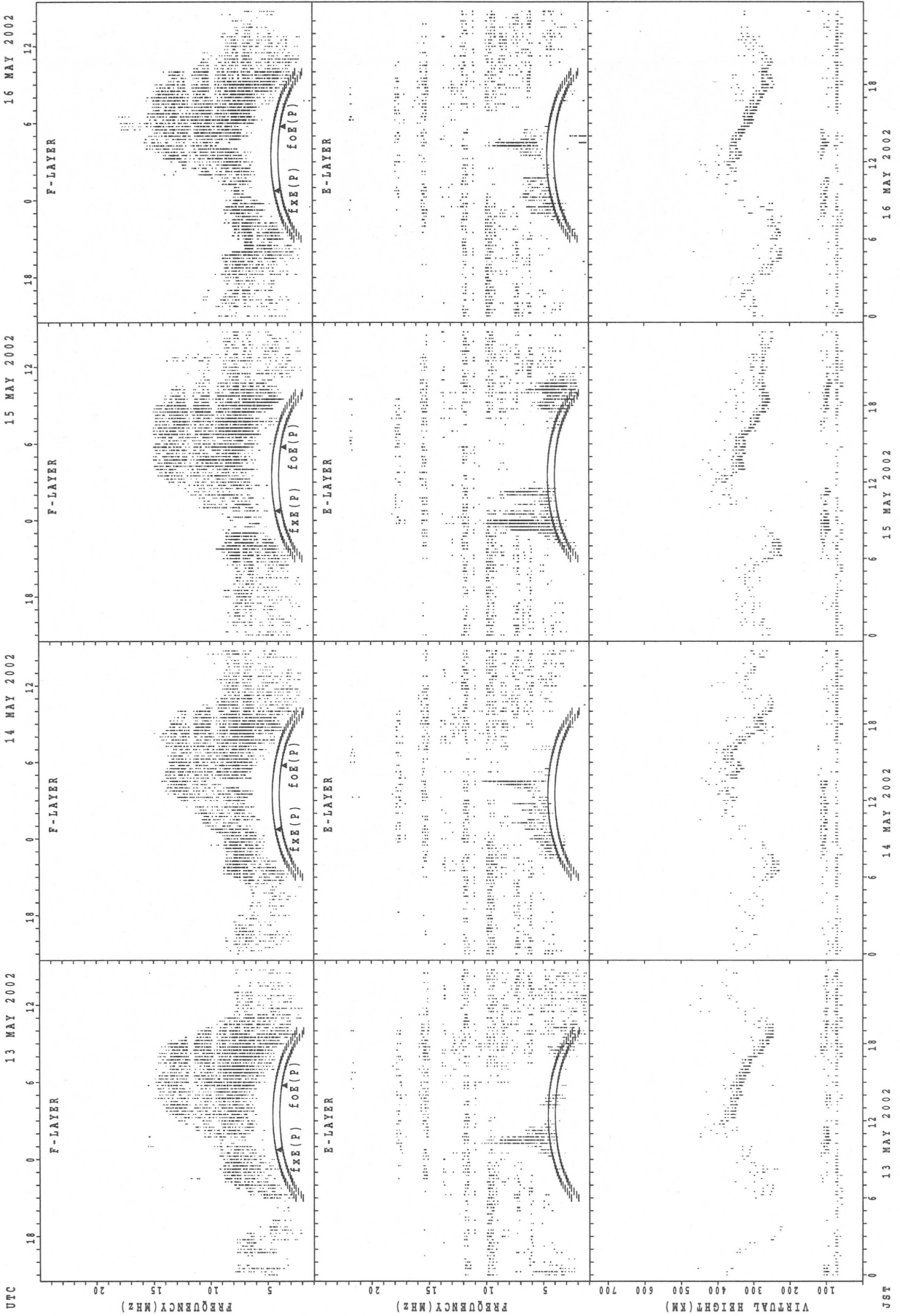
foE(P); PREDICTED VALUE FOR fxe
fxe(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



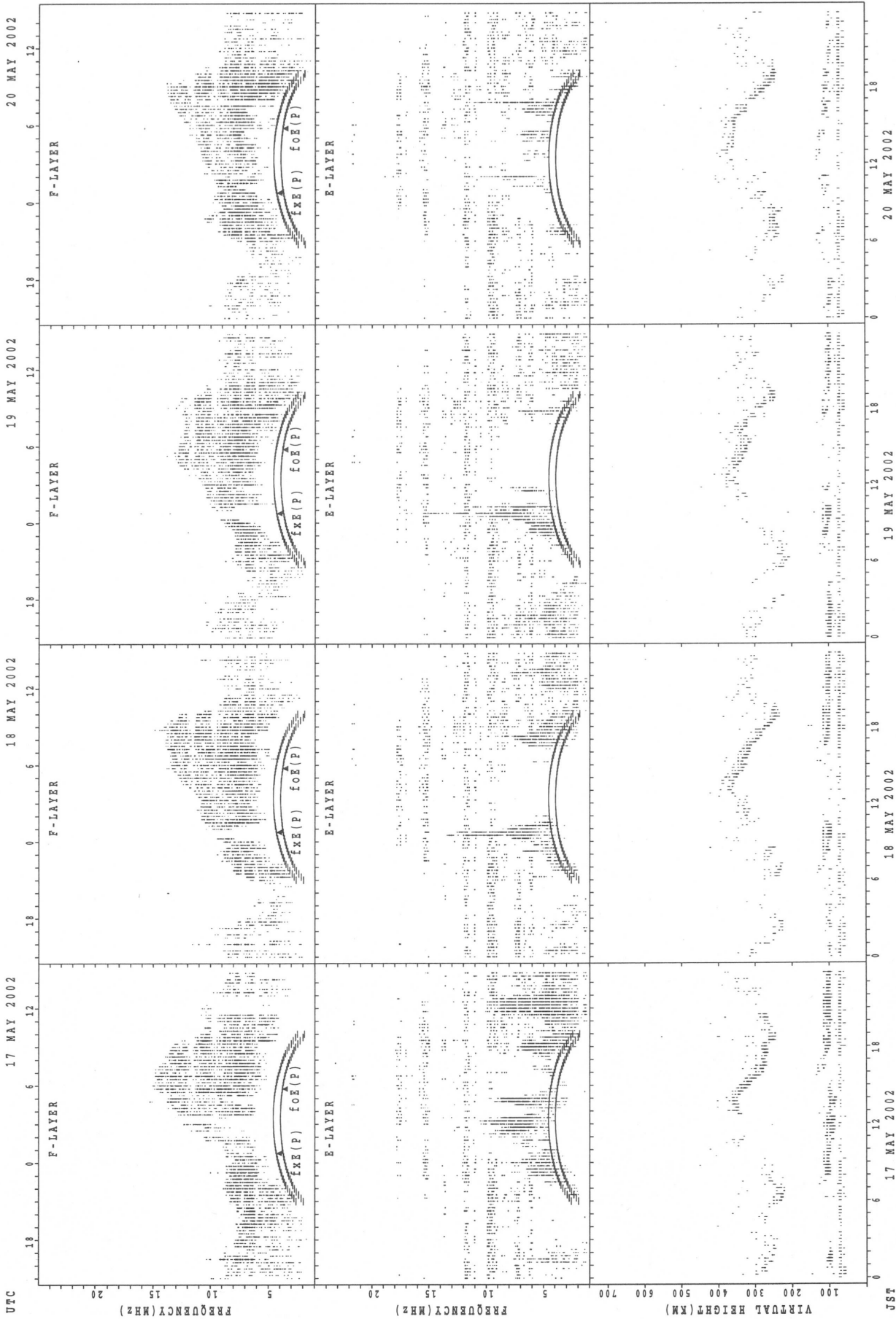
fXE(P); PREDICTED VALUE FOR fXE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



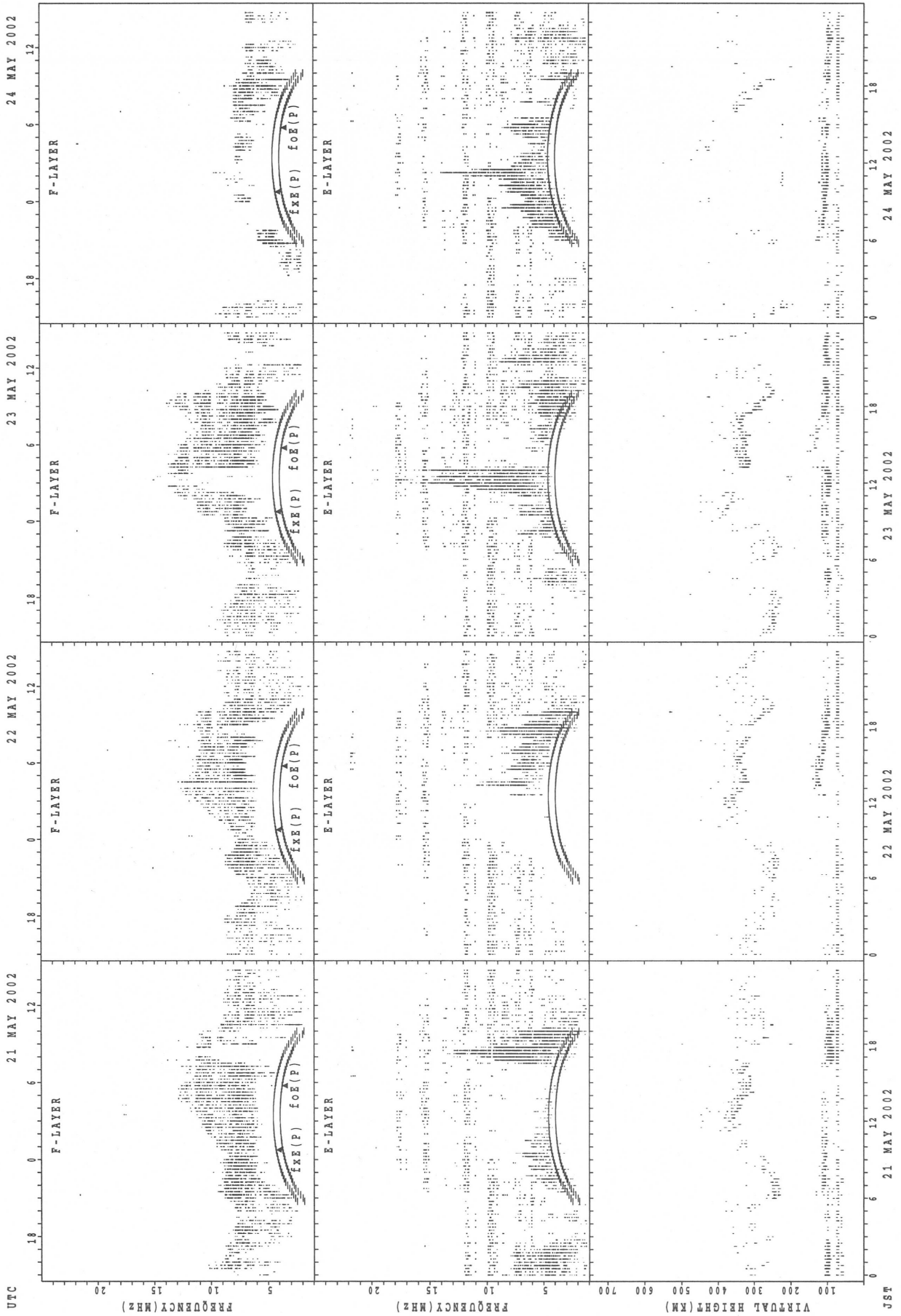
fxe(p); PREDICTED VALUE FOR fxe
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

21 MAY 2002

22 MAY 2002

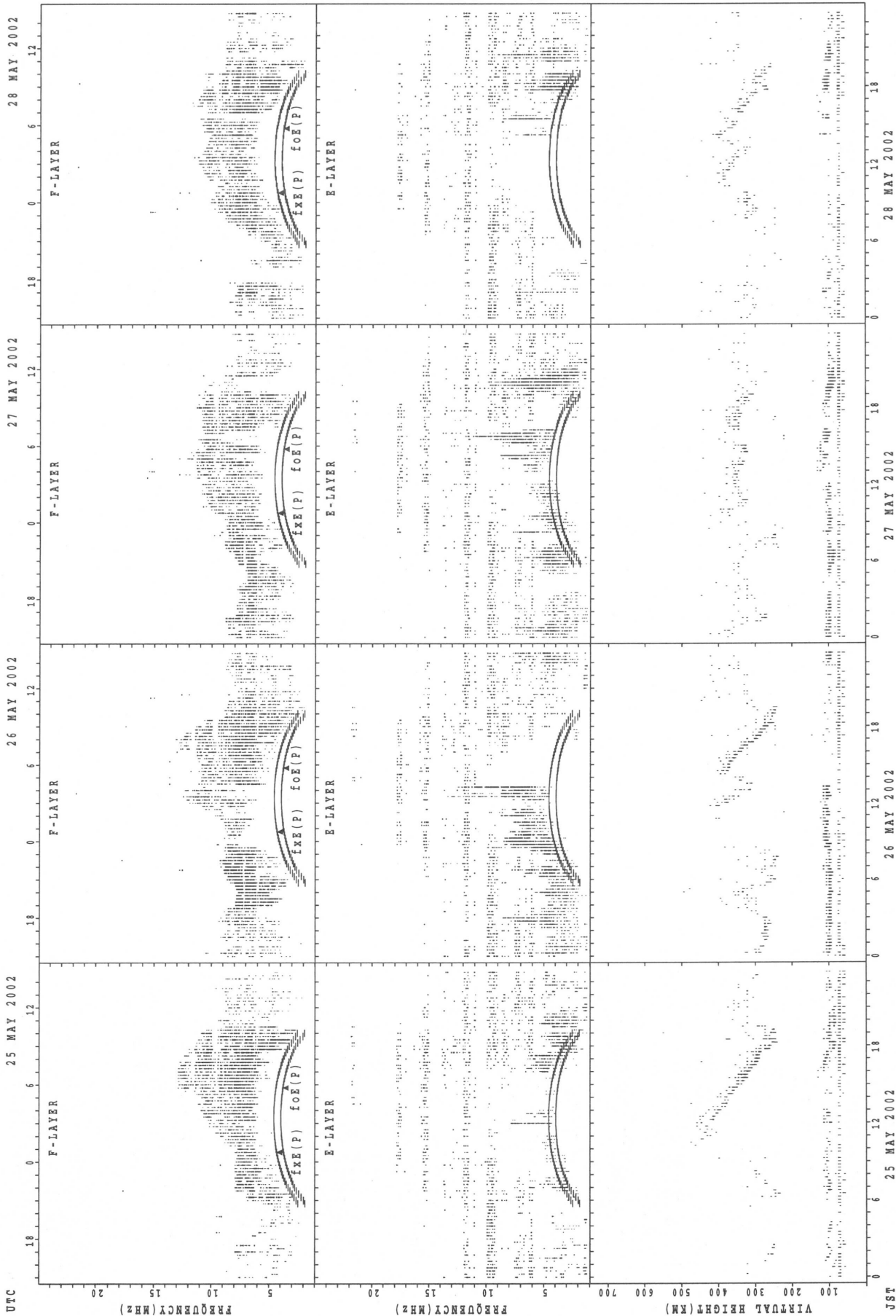
23 MAY 2002

24 MAY 2002

UTC

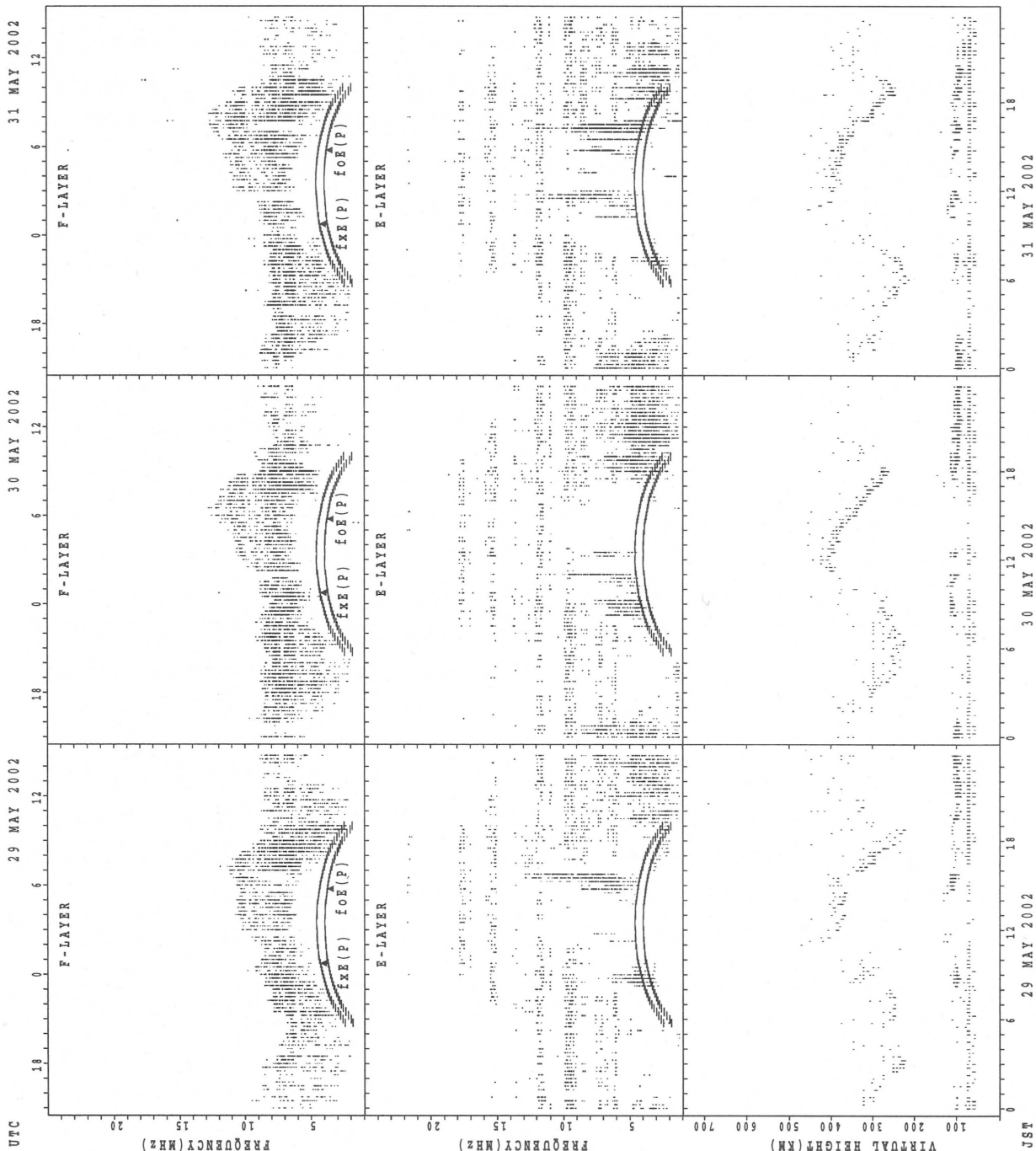
JST

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 2002 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	11	13	9	5	4	18	20	17									20	20	23	22	18	27	16	21
MED	356	356	362	396	332	336	294	290									331	298	290	288	343	342	331	344
U Q	384	385	377	413	333	346	333	327									347	317	300	298	354	372	341	376
L Q	328	334	324	303	328	298	270	275									305	282	280	280	304	322	328	327

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	7	6	6	5	10	16	17	18	14	20	11	10	9	9	12	13	19	26	20	18	14	8	9
MED	105	105	105	116	127	124	119	115	112	112	111	107	111	113	111	114	119	115	114	111	112	107	104	103
U Q	106	115	129	133	129	129	124	121	119	119	115	113	113	123	120	119	123	125	119	116	113	113	109	106
L Q	101	103	103	107	117	121	114	111	109	107	110	105	105	105	106	108	114	113	111	109	111	101	103	94

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	10	11	11	9	4	6	12	11	10								12	10	11	12	10	8	8	8
MED	363	366	350	348	384	342	273	256	283								300	288	282	283	346	373	361	363
U Q	376	376	356	360	389	384	289	282	294								307	298	288	294	394	383	377	391
L Q	330	348	336	319	383	298	261	250	270								288	286	274	278	320	349	345	354

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	6	3	3	2		3	3	8	10	6	4	5	2	5	3	4	6	5	11	12	10	9	6	4
MED	106	107	105	103		137	119	120	114	113	112	109	107	121	125	120	122	119	117	110	110	107	104	104
U Q	109	107	107	105		149	137	123	115	115	116	117	111	142	127	125	123	125	119	113	111	112	107	106
L Q	101	103	103	101		131	115	116	113	111	111	104	103	111	107	119	121	116	113	104	107	107	101	101

h'F STATION Yamagawa LAT. 31°12.1'N LON. 130°37.1'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		1	1		2	1	26	30	26								17	22	26	10				1
MED		332	284		343	442	262	259	270								310	290	266	289				330
U Q		166	142		376	221	296	276	282								324	310	284	308				165
L Q		166	142		310	221	248	240	254								296	286	220	272				165

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	4	5	2	2	3	13	12	8	12	12	11	9	6	6	10	10	15	16	12	11	5	8	6
MED	103	97	103	93	99	109	115	107	107	108	104	103	105	105	109	109	108	111	107	106	99	95	99	94
U Q	113	101	105	97	105	109	120	113	113	123	110	107	107	107	115	117	109	113	107	111	109	98	107	101
L Q	95	92	92	89	93	103	97	107	106	107	100	99	98	99	105	101	95	103	99	100	89	95	93	89

MONTHLY MEDIANS OF h'F AND h'Es
MAY 2002 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	4	13	15	11	8	8	23	24	28	24							24	27	31	22	13	9	5	4
MED	322	304	314	288	324	345	286	247	260	313							318	294	272	274	304	338	336	351
U Q	342	325	330	324	339	372	316	272	274	325							335	314	288	316	335	370	350	374
L Q	297	283	296	258	277	311	264	240	252	277							307	282	264	258	297	319	311	330

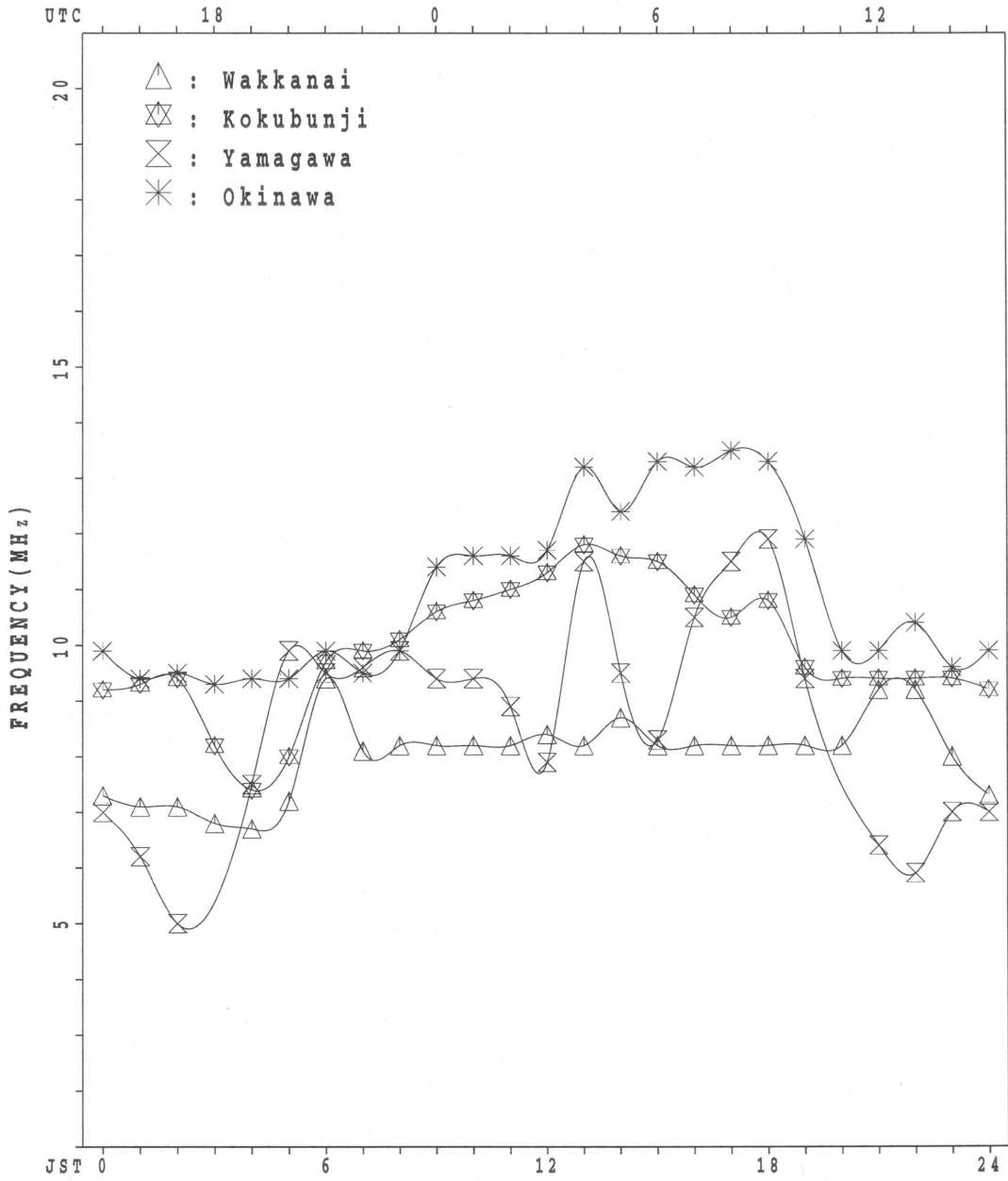
h'Es

	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	8	5	5	3	3	4	8	12	12	10	16	8	7	9	9	12	12	15	19	15	8	7	6
MED	101	96	99	103	101	95	115	112	110	105	104	103	101	113	115	115	112	111	101	97	95	100	89	101
U Q	125	99	102	103	103	105	129	120	114	109	109	108	104	125	129	121	126	114	105	105	101	101	99	101
L Q	89	91	88	96	93	95	104	89	107	102	101	101	99	109	101	113	107	95	95	95	83	90	89	89

MONTHLY MEDIANS PLOT OF foF2

MAY 2002

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Kokubunji

MAY 2002 f_{XI} (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	81	82	76	X	X															X	X	X	X	X
2	X	90	90	88	X	X															X	X	X	X	X
3	X	87	85	X	X	X															X	X	X	X	X
4	X	102	100	98	X	X															X	X	X	X	X
5	X	100	96	96	X	X															X	X	X	X	X
6	X	93	93	92	X	X															X	X	X	X	X
7	X	98	95	X	X	X															X	X	X	X	X
8	X	97	96	93	X	X															X	X	X	X	X
9	X	93	89	86	X	X															X	X	X	X	X
10	X	88	89	87	X	X															X	X	X	X	X
11	X	93	93	88	X	X															X	X	X	X	X
12	X	108	90	75	X	X															A	X	X	X	X
13	X	82	75	X	X	X															X	X	X	X	X
14	X	90	84	85	X	X															X	X	X	X	X
15	X	92	87	84	X	X															A	X	X	X	X
16	X	78	79	63	X	X															X	X	X	X	X
17	X	88	88	84	X	X															X	X	X	X	X
18	X	90	92	88	X	X															X	X	X	X	X
19	X	100	102	103	X	X															X	X	X	X	X
20	X	84	85	80	X	X															S	X	X	X	X
21	X	105	95	96	X	X															X	X	X	X	X
22	X	83	79	80	X	X															X	X	X	X	X
23	X	96	94	88	X	X															X	X	X	X	X
24	X	74	75	71	X	X															X	X	X	X	X
25	X	70	69	68	X	X															X	X	X	X	X
26	X	90	92	91	X	X															A	X	X	X	X
27	X	81	74	68	X	X															X	X	X	X	X
28	X	62	74	70	X	X															X	X	X	X	X
29	X	80	75	74	X	X															X	X	X	X	X
30	X	93	90	87	X	X															X	X	X	X	X
31	X	101	98	85	X	X															X	X	X	X	X
		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															28	31	31	31	31
MED		90	89	85	78	77															98	90	91	91	92
UQ		97	94	91	84	81															104	96	95	96	97
LQ		82	79	76	72	69															92	86	88	87	87

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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	76	76	70	66	62	72	92	94	99	104	106	108	114	117	120	118	103	96	92	90	88	85	89	90	
2	84	84	82	78	70	72	93	107	114	110	114	118	115	111	116	116	108	104	109	106	92	82	83	82	
3	81	79	75	74	72	79	105	111	113	104	112	116	120	119	117	A	111	110	112	108	91	90	94	93	
4	95	94	92	85	77	86	106	110	109	112	118	126	126	121	117	116	112	110	107	97	88	90	95	94	
5	94	90	90	84	77	81	100	111	103	100	103	110	113	115	117	114	106	102	103	92	83	87	90	89	
6	87	87	86	81	74	79	95	96	102	112	116	119	119	121	121	120	113	108	103	94	90	92	93	91	
7	92	89	87	80	78	88	104	98	103	108	111	110	113	110	112	112	107	101	99	90	84	90	91	92	
8	91	90	87	80	77	82	96	108	104	106	110	118	124	123	119	120	116	116	110	100	84	86	87	86	
9	87	83	80	76	75	83	92	98	102	106	108	108	120	124	121	118	109	101	99	88	82	84	85	86	
10	82	83	81	76	73	80	88	98	102	109	116	124	128	130	133	130	122	117	116	115	94	86	88	85	
11	87	87	82	73	71	74	81	88	86	87	102	105	111	116	116	118	114	111	104	98	94	94	90	90	
12	102	84	69	71	63	55	54	58	A	R	69	68	77	81	80	84	82	75	75	A	R	82	80	84	81
13	76	70	74	72	60	64	75	83	96	102	106	105	110	113	110	107	97	100	98	92	80	81	84	83	
14	84	78	79	70	64	78	102	110	103	103	110	118	122	120	119	118	118	113	105	91	88	85		92	
15	86	80	78	76	74	91	99	97	96	106	117	109	114	114	101	92	A	88	91	A	S	77	86	84	85
16	72	73	S	S	70	80	94	92	94	86	88	98	102	108	107	103	97	95	85	86	86	89	86	86	
17	82	82	78	70	67	78	87	100	99	94	93	96	104	109	112	117	110	C	96	86	75	82	82	81	
18	84	86	82	69	64	71	85	92	96	105	108	106	107	117	116	112	108	106	106	98	88	89	87	92	
19	94	96	97	72	66	74	89	88	84	90	100	97	102	106	108	110	101	102	108	97	75	76	79	S	
20	77	79	74	70	61	68	82	98	107	104	105	105	109	106	104	107	106	109	108	S	95	95	95	99	
21	99	89	90	77	75	83	94	78	72	71	79	80	81	89	96	88	81	77	74	81	76	77	79	77	
22	77	73	74	70	68	81	76	79	80	84	87	92	98	98	95	92	91	95	100	101	89	88	92	91	
23	90	88	82	80	79	85	95	94	90	91	98	102	103	100	A	90	92	92	90	100	84	76	S	72	
24	68	69	65	44	41	47	48	A	A	A	A	S	A	S	S	S	61	62	A	60	61	65	62	64	
25	64	63	62	56	55	64	78	92	87	84	90	94	93	93	94	99	106	106	101	90	83	82	83	88	
26	84	85	85	80	75	81	95	102	99	93	94	A	106	113	119	106	92	85	88	A	90	82	81	79	
27	75	68	62	62	61	67	76	84	80	79	80	90	91	90	90	82	74	67	76	92	92	86	77	74	
28	S	68	64	63	71	80	A	A	A	65	64	71	66	67	S	67	67	72	74	68	69	74	79	77	
29	74	69	68	63	60	66	71	75	78	80	87	88	88	86	86	86	81	80	80	77	80	84	83	88	
30	87	84	81	S	79	84	91	93	91	91	88	92	93	94	92	92	90	90	90	87	84	84	88	89	
31	95	92	79	75	80	89	102	96	S	92	90	84	A	77	80	76	A	76	80	85	86	80	82	87	86
	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	30	29	31	31	30	29	28	29	30	28	30	30	29	29	30	30	30	27	31	31	29	30	
MED	84	83	80	73	71	79	92	96	98	100	102	105	108	110	112	107	104	100	99	92	84	85	86	86	
U Q	91	88	85	79	75	83	96	101	103	106	110	113	115	117	118	118	110	108	106	98	90	89	90	91	
L Q	77	73	74	70	63	71	81	88	88	86	88	93	93	94	94	91	90	85	88	86	80	82	82	81	

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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	A	L	L	L	A							
2									L	L	L	L	L	L	L	L	L								
3										L		L	L	L	L	A	A	L	A						
4										L	L	L	L	B	L	L	L	L							
5								L			L	L	L	L	L	L	L	L							
6										L	L		L	L	A	L	L	A							
7										L	L	L	L	L	L	L	L	L							
8										L	L	L	L	L	L	L	L	L	L						
9								L		L		L	L	A	L	L	L	L							
10											L	L	L	L	L	L	L	L	L						
11								L	L	L	L	L	L	L	L	L	L	L							
12						L	A	A	U	L	A	U	L	L	L	L	L	L	L						
13								L	L	L	L	L	L	L	L	L	L	L	A						
14											L	L	L	L	L	L	L	L	L						
15										A	L	L	A	A	L	L	A	A							
16										L	A	L	L	L	A	L	A	L	L						
17									L	L	L	L	L	L	L	L	L	L	L	C					
18								L		L	A	A	L	L	A	L	L	L	L						
19										A	A	L	L	L	L	A	L	L	L						
20											L	L	L	A	L	L	L	L	L						
21						L	L	A			A	A	A	A	L	L	L	L	A	L	L				
22										L	L	L	L	L	A	L	L	L	A	L	L				
23										L	L	A	A	L	L	A	A	L	L						
24								L	A	A	A	A	A	A	U	L	U	L	L	L	A				
25									L	L	L	L	L	A	A	L	A	L	L						
26									L		L	L	A	L	L	L	L	L	L						
27										L	A	A	A	A	L	L	L	L	L	A					
28						L	A	A		A	U	L	U	L	L	U	L	L	A	L	A				
29								L	L	L	L	L	L	A	A	A	L	L	L	L					
30								L		L	L	L	L	A	A	A	A	L	L						
31								L	A	A	A	A	A	A	U	L	A	A	A	A					
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								3	2	3	8	13	13	16	14	14	11	6	4						
MED								412	514	532	574	592	580	592	576	582	564	518	494						
U Q								476		548	598	610	616	608	600	596	572	540	526						
L Q								412		516	552	564	564	570	564	564	532	516	488						

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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						B	260	A	A	A	R	A	A	A	R	356	324	272	180					
2						B	244	U A	A	A	A	R	R	R	R	R	R	R	288	196				
3						B	292	U R	U A	A	A	A	R	U A	U A	A	A	332	264	B				
4						B	264	U R	A	R	R	B	B	R	R	R	364	328	276	U A				
5						B	268	U R	R	R	R	R	B	B	U R	388	R	324	284	180				
6						B	256	U R	U R	R	A	R	R	U R	R	R	A	U A	A	A				
7						U R	188	U R	A	A	B	B	B	B	U R	R	R	336	284	200				
8						U R	168	268	320	A	A	R	R	B	R	R	R	U R	336	288	200			
9						184	264	328	A	A	R	A	A	A	A	U R	324	320	284	200				
10						U R	208	272	U A	A	R	B	A	R	B	U R	368	332	284	200				
11						180	264	316	A	A	R	U R	B	B	R	R	R	A	288	A				
12						180	264	312	A	A	B	R	U A	B	B	392	364	A	U A	B				
13						156	272	U A	A	A	B	A	A	R	R	R	A	A	272	192				
14						B	276	328	U A	A	B	A	A	A	A	U R	360	340	296	192				
15						180	272	A	A	A	B	A	A	A	A	U A	376	A	284	A				
16						U A	196	276	U A	R	A	A	B	A	A	A	A	360	296	200				
17						U R	192	276	U R	A	A	R	B	R	R	B	U R	368	332	C	212			
18						196	A	A	A	A	A	B	A	A	A	U A	364	A	R	216				
19						B	264	A	A	A	A	B	B	B	B	B	A	U R	328	284	176			
20						204	264	R	R	A	B	B	B	B	R	R	364	R	300	A				
21						200	276	324	A	B	B	B	B	B	A	A	R	A	A	A				
22						A	A	U A	A	B	B	B	B	B	B	U A	388	A	U A	A				
23						184	276	A	A	B	A	A	A	A	A	A	A	U R	332	280	200			
24						208	276	312	A	A	A	B	B	R	A	U A	356	A	U A	A				
25						U A	208	288	A	U A	A	B	A	A	A	A	A	A	296	U A	224			
26						B	A	332	U A	A	B	U R	U R	B	R	U R	U A	368	344	292	B			
27						U R	184	280	A	R	A	R	U R	B	B	B	B	U R	336	292	B			
28						U A	180	280	U A	A	B	B	B	U R	B	U R	384	A	U R	U A				
29						U R	212	276	U R	U A	A	A	B	B	B	R	U A	356	304	228				
30						B	U R	R	A	B	B	A	A	A	B	A	A	A	A	B				
31						A	288	B	364	B	B	B	B	A	B	A	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						19	28	18	6	3	1	2	2	3	4	14	17	26	18					
MED						188	272	324	U A	U A	U A	U R	U R	U R	U R	U R	364	332	284	200				
U Q						U	204	276	U	U	U	U	U	U	U	U	390	368	338	292	212			
L Q						180	264	320	U	U	A			U	U	U	380	380	360	328	280	192		

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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	J	A	J	A	E	B			J	A	G	J	A	J	A	J	A	J	A	J	A	J	A	J	A	
2	J	A	E	B	E	B	J	A	J	A	E	B														
3	E	B	E	B	J	A	J	A	E	B	J	A	G													
4	E	B	E	B	E	B	E	B	E	B	E	B	G	J	A											
5																										
6																										
7	J	A	E	B	E	B	E	B	E	B	E	B	G	J	A											
8	E	B																								
9	J	A	J	A	E	B			J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
10	J	A	J	A	E	B	J	A	G																	
11	E	B	E	B	E	B	E	B	E	B	E	B	G	J	A											
12																										
13	J	A	J	A	E	B	J	A	G																	
14	E	B	J	A	E	B	E	B	E	B	E	B	G	J	A											
15	E	B	J	A	E	B	E	B	E	B	E	B	G	J	A											
16	J	A	J	A	E	B	J	A	G																	
17	J	A	J	A	E	B	E	B	E	B	E	B	G	J	A											
18	J	A	J	A	E	B	J	A	G																	
19	J	A	J	A	E	B	J	A	G																	
20	J	A	J	A	E	B	J	A	G																	
21	J	A	J	A	E	B	J	A	G																	
22	J	A	J	A	E	B	J	A	G																	
23	J	A	J	A	E	B	J	A	G																	
24	J	A	J	A	E	B	J	A	G																	
25	J	A	J	A	E	B	J	A	G																	
26	J	A	J	A	E	B	J	A	G																	
27	J	A	J	A	E	B	J	A	G																	
28	J	A	J	A	E	B	J	A	G																	
29	J	A	J	A	E	B	J	A	G																	
30	J	A	J	A	E	B	J	A	G																	
31	J	A	J	A	E	B	J	A	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	
MED	25	22	20	19	16	23	31	42	48	49	46	49	50	52	44	42	40	40	50	40	38	33	29	29		
UQ	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A	J	A
LQ	E	B	E	B	E	B	E	B	E	B	E	B	G													

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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	24	E 14	B 17	15	E 14	B 18	27	35	40	47	G	49	73	49	33	42	51	46	29	46	32	18	26	25	
2	17	E 16	B 16	B 22	16	E 18	B 27	35	38	42	44	U Y	G	G	G E	B 31	G 30	G 28	G 20	30	49	19	E 16	B 16	B 14
3	E 14	B 16	B 18	E 14	B 16	B 20	G	36	43	45	44	48	U Y	32	50	59	119	41	55	26	28	23	E 15	B 18	16
4	E 14	B 16	B 14	B 15	B 15	B 16	G	35	41	40	32	59	77	44	29	28	36	31	29	27	22	19	19	16	
5	16	E 15	B 14	B 15	B 16	19	G 22	28	30	32	33	48	46	47	29	32	27	37	26	20	E 16	B 16	16	16	
6	E 13	B 16	B 14	B 16	B 16	20	G 24	35	32	32	44	37	36	52	G 48	50	34	25	17	16	20	15	16	16	
7	17	E 15	B 15	B 12	B 15	G	G 23	40	50	48	52	48	44	52	G 39	35	51	27	E 13	B 15	B 15	14	14	14	
8	E 16	B 16	E 15	B 15	B 15	20	29	43	43	42	32	U Y	G E	B 44	46	32	32	28	G 25	16	20	36	26	28	
9	E 15	B 19	E 15	B 16	B 19	21	30	41	48	50	45	48	61	47	43	G 29	G 28	32	26	30	35	24	21	24	
10	31	18	17	E 16	B 14	G	29	38	40	G	46	51	G E	B 48	G 34	G 29	G 22	G 22	G 47	23	19	E 15	B 15	15	
11	E 15	B 14	B 14	B 15	B 14	20	29	39	49	41	34	40	49	48	32	G 40	46	34	34	41	41	15	15	15	
12	16	E 16	B 16	B 16	B 16	21	30	41	A 64	A 42	56	G	E 49	B 48	48	47	38	33	37	A 86	58	29	47	16	
13	20	20	22	16	E 14	B 21	39	39	48	50	43	49	46	50	34	U Y 45	60	48	28	24	19	24	E 16	B 18	
14	E 16	B 21	E 16	B 19	B 18	21	30	36	47	44	46	48	47	48	56	G 28	G 35	53	50	36	33	29	24	24	
15	E 26	B 35	23	24	E 16	32	39	79	74	51	52	66	60	45	48	57	A 107	45	56	A 90	63	48	43	34	
16	20	18	42	32	E 16	G	44	41	44	48	46	44	50	57	46	69	G 31	G 36	46	41	E 20	B 31	25	21	
17	19	19	19	E 16	B 16	22	G 31	39	40	43	U Y 50	44	38	44	39	36	C 28	33	E 15	B 21	22	35	35		
18	30	21	E 18	B 14	B 19	22	30	38	40	74	91	43	42	66	43	32	G 39	G 27	38	20	16	37	24	42	
19	36	63	21	20	17	22	34	70	72	50	52	51	47	45	63	42	40	40	53	80	43	23	35	23	
20	30	18	E 14	B 15	B 16	22	29	36	29	42	E 45	B 48	46	53	42	41	36	33	39	39	22	38	43	57	
21	E 16	B 17	B 15	B 15	B 15	22	33	47	45	57	E 45	B 47	57	42	42	U Y 26	41	32	25	32	E 17	B 20	22	36	
22	29	34	22	24	32	22	41	37	47	46	46	45	49	52	44	48	U Y 51	41	25	56	34	36	17	20	
23	23	E 14	B 45	59	41	32	57	55	54	53	54	74	45	44	132	71	G 29	38	45	70	54	41	40	28	
24	E 20	B 15	B 32	B 20	B 18	G	34	A 100	A 63	A 60	A 119	A 47	A 66	46	46	40	38	34	A 91	A 15	E 20	B 22	21	29	
25	29	32	34	26	42	29	32	44	40	50	44	45	49	62	42	56	44	36	58	42	20	20	43	57	
26	43	35	29	46	28	24	38	38	56	44	42	190	46	42	43	U Y 28	41	34	46	A 129	46	42	36	38	
27	60	58	31	20	E 20	21	41	41	38	77	44	45	E 44	50	46	42	E 32	G 34	54	E 16	B 15	B 16	20	38	
28	22	24	24	15	24	24	A 78	A 128	A 86	47	E 43	B 46	B 47	37	49	44	47	43	36	43	57	40	42	20	
29	E 14	B 22	E 19	B 19	B 13	24	G 23	40	40	35	44	64	56	56	E 46	G 42	45	43	24	56	42	22	18	18	
30	23	21	E 16	B 19	B 20	24	23	39	46	44	45	49	54	58	U Y 49	53	46	71	40	32	22	39	21	35	
31	32	21	21	21	17	24	41	79	69	57	58	146	56	48	65	A 130	68	55	50	45	44	33	21	22	
	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	30	31	31	31	31	31	31	
MED	20	18	E 18	B 16	B 16	21	30	39	45	46	44	48	46	48	42	40	39	36	37	34	22	24	22	23	
U Q	29	22	23	22	19	24	39	44	54	50	52	51	56	52	48	48	46	45	50	49	43	38	35	35	
L Q	E 16	B 16	B 15	B 15	B 15	19	G	36	40	42	43	45	44	45	G	G 32	G 32	G 33	26	24	E 19	B 19	B 17	16	

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 fmin (0.1MHz)

135°E MEAN TIME (G.M.T. + 9 H)

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

H D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	13	14	12	12	14	13	14	20	20	17	28	30	40	30	23	22	16	16	14	16	15	13	12	16
2	16	16	16	15	14	18	15	16	23	25	26	26	31	28	31	22	18	14	15	15	14	16	16	14
3	14	16	12	14	16	16	15	18	20	24	21	29	21	22	23	23	18	18	13	15	14	15	12	12
4	14	16	14	15	15	16	14	15	22	28	23	59	77	34	21	17	17	14	12	16	13	14	16	15
5	13	15	14	15	16	13	16	20	15	22	25	48	46	47	21	20	17	16	14	13	16	16	16	14
6	13	16	14	16	16	12	16	15	18	22	23	28	24	28	25	26	18	16	14	14	14	14	12	12
7	13	15	15	12	15	16	16	16	16	21	41	48	42	52	28	23	18	15	15	16	13	15	15	14
8	16	13	15	15	15	13	14	16	21	22	26	28	44	24	27	19	20	20	15	11	13	15	16	14
9	15	14	15	16	17	14	16	20	24	25	31	39	38	38	24	18	17	16	14	14	14	14	14	14
10	12	11	14	16	14	13	19	17	28	31	40	35	26	48	29	21	22	15	15	14	15	16	15	15
11	15	14	14	15	14	14	15	18	19	29	28	31	49	48	23	24	21	15	15	16	15	16	15	15
12	12	16	16	16	16	15	16	17	21	20	40	35	38	48	32	23	21	16	16	15	16	14	15	16
13	14	13	14	12	14	14	15	18	20	22	40	34	34	24	26	26	19	16	16	17	15	15	16	15
14	16	13	16	19	18	15	20	21	20	25	42	35	39	39	36	23	23	19	17	16	19	16	16	20
15	26	16	15	16	16	14	16	21	24	24	37	35	38	35	32	23	22	17	16	21	16	15	14	14
16	13	14	16	16	16	16	16	21	28	36	35	40	36	38	33	35	24	20	15	20	20	16	16	17
17	14	14	15	16	16	13	18	20	24	27	31	50	34	24	44	21	20	C	17	16	15	15	15	16
18	15	14	18	14	14	16	16	20	22	24	39	43	24	39	38	21	23	19	16	16	13	14	13	16
19	16	16	16	13	14	16	14	19	23	21	34	40	40	39	40	22	20	20	14	16	13	13	13	16
20	14	15	14	15	16	17	16	19	24	24	45	41	41	41	32	29	21	16	14	17	16	15	15	16
21	16	17	15	15	15	15	16	21	23	40	45	42	41	35	24	21	21	16	14	16	17	20	14	15
22	15	14	15	15	14	14	16	24	27	42	46	45	41	43	44	26	22	17	16	17	15	16	14	13
23	15	14	16	16	18	15	18	22	23	37	32	38	35	34	32	24	17	16	14	14	14	15	14	14
24	20	15	32	20	18	15	16	18	20	22	25	42	43	22	28	31	21	14	16	15	20	14	16	14
25	14	14	14	14	16	13	19	22	22	22	20	41	33	34	34	21	20	16	13	14	15	14	16	15
26	14	13	15	18	16	15	17	15	25	29	41	35	30	42	30	22	19	20	21	19	17	14	15	14
27	15	17	15	14	20	14	15	20	28	28	23	29	44	42	41	42	25	16	15	16	15	16	20	13
28	15	16	15	12	20	15	15	22	19	41	43	46	47	30	41	28	23	21	12	14	16	18	19	14
29	14	16	19	16	13	16	15	16	16	24	30	42	44	43	46	29	25	19	17	14	15	15	16	14
30	15	15	16	19	20	24	14	20	20	40	40	36	32	36	42	35	22	21	20	16	15	16	16	16
31	14	19	15	12	14	15	19	35	21	41	41	42	42	35	40	31	20	18	15	15	16	14	17	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	30	31	31	31	31	31	31
MED	14	15	15	15	16	15	16	20	22	25	34	39	39	36	32	23	20	16	15	16	15	15	15	14
U Q	15	16	16	16	16	16	16	21	24	31	41	42	43	42	40	28	22	19	16	16	16	16	16	16
L Q	14	14	14	14	14	14	15	17	20	22	26	34	33	30	25	21	18	16	14	14	14	14	14	14

MAY 2002 fmin (0.1MHz)

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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	265	280	284	270	270	267	306	313	283	293	287	274	277	278	284	291	299	294	295	286	279	269	267	271		
2	263	269	279	283	273	266	282	295	293	284	272	282	278	269	279	289	286	288	291	299	300	262	267	265		
3	266	272	270	276	269	271	311	307	294	276	272	268	272	269	271	A	275	283	292	298	273	264	266	274		
4	278	275	288	283	269	274	301	284	281	273	257	267	273	268	268	274	282	286	298	294	261	258	271	277		
5	278	272	280	283	271	262	287	298	301	275	273	269	268	267	274	278	282	284	295	294	255	252	259	269		
6	263	263	284	287	273	282	307	291	264	277	263	264	263	270	272	275	282	288	291	277	259	252	264	271		
7	268	266	265	261	245	272	294	285	286	280	280	264	269	263	273	277	280	286	291	283	256	249	261	264		
8	265	265	266	273	263	265	284	290	283	263	256	259	267	268	265	272	269	283	291	290	253	254	253	257		
9	257	262	260	260	263	265	289	273	280	274	276	254	261	274	273	278	286	287	291	286	261	254	254	257		
10	266	266	272	276	272	296	300	289	275	267	260	264	268	265	270	274	271	270	276	297	294	260	259	265		
11	267	275	285	257	259	271	270	297	285	253	280	282	278	279	281	284	286	293	284	292	264	255	253	251		
12	278	247	258	245	263	249	232	248	A	R		266	255	266	277	278	287	293	287	268	A	R	260	262		
13	255	261	268	282	291	302	305	282	273	283	280	262	265	270	276	279	276	289	288	298	277	261	261	263		
14	278	275	284	287	278	276	308	305	278	263	264	267	274	268	266	269	284	290	281	291	270	254		283		
15	279	261	264	262	266	293	298	301	263	255	279	265	264	273	272	280	A	294	300	A	S	263	279	294		
16	277	265			272	304	315	300	313	292	277	269	271	281	287	288	285	298	290	289	272	262	271	272		
17	284	289	294	269	273	295	300	313	311	306	286	272	276	281	282	289	299	C	306	298	291	269	270	269		
18	274	297	317	301	298	306	303	300	290	295	288	283	282	285	290	290	287	298	302	303	282	266	281	259		
19	268	290	307	338	284	287	323	321	302	267	282	284	270	276	288	288	282	275	283	309	257	261	257			
20	283	288	305	299	293	284	295	296	304	281	276	274	282	276	279	286	285	282	286		285	267	268	270		
21	292	273	284	293	260	262	306	281	303	266	288	270	270	279	292	306	302	297	290	286	268	271	277	272		
22	276	280	280	277	291	326	306	316	311	286	276	269	277	281	284	282	282	280	279	302	277	262	262	263		
23	279	286	297	270	261	270	278	256	270	255	268	273	284	287		291	288	294	280	304	284	260		256		
24	260	272	292	242	227	267	242		A	A	A	A	S	A	S	S	S	275	269	A	280	257	259	261	278	
25	270	268	294	294	283	288	278	277	292	263	267	265	266	265	270	276	285	295	304	291	278	269	275	273		
26	269	277	283	275	274	270	267	285	273	277	271		263	272	288	293	288	276	272		288	261	266	261		
27	267	273	265	268	255	280	260	299	291	251	268	273	275	272	294	294	292	257	260	267	276	274	271	275		
28		270	281	265	275	314		A	A	A		234	240	269	253	259		274	271	280	291	291	257	247	251	256
29	259	264	274	269	279	311	293	288	280	266	271	267	270	278	276	281	294	288	291	276	259	255	256	269		
30	270	277	273		279	288	294	290	286	270	268	266	270	272	276	284	283	290	284	274	267	246	249	251		
31	277	286	257	278	281	278	296	295	248	261	260		252	261	261		270	276	292	292	257	264	256	256		
	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	30	29	31	31	30	29	28	29	30	28	30	30	29	29	30	30	30	27	31	31	29	30		
MED	270	272	280	276	272	278	296	295	286	273	272	268	270	272	276	282	284	287	291	291	270	261	262	267		
U Q	278	280	288	285	279	295	306	300	298	282	280	273	276	278	284	289	288	293	292	298	279	264	270	272		
L Q	265	265	268	266	263	267	282	284	276	263	266	264	266	268	270	276	280	280	283	286	259	254	256	259		

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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	A	L	L	L	A							
2								L	L	L	L	L	L	L	L	L								
3									L		L	L	L	L	A	A	L	A						
4									L	L	L	L	B	L	L	L	L							
5							L			L	L	L	L	L	A	L	L	L						
6									L	L		L	L	A	L	L	A							
7									L	L	L	L	L	L	L	L	L	L						
8									L	L	L	L	L	L	L	L	L	L	L					
9							L		L		L	L	A	L	L	L	L	L						
10									L	L	L	L	L	L	L	L	L	L	L					
11							L	L	L	L	L	L	L	L	L	L	L							
12						L	319	A	A	U	L	A	U	L	L	L	L	L	L					
13								L	L	L	L	L	L	U	L	L	L	A						
14									L	L	L	L	L	L	L	L	L	L	L					
15									A	L	L	A	A	L	L	A	A	A						
16									L	A	L	L	L	A	L	A	L	L						
17								L	L	L	L	L	L	L	L	L	L	L	C					
18							L		L	A	A	L	L	A	L	L	L	L	L					
19								A	A	L	L	L	L	L	A	L	L	L	L					
20									L	L	L	A	L	L	L	L	L	L	L					
21						L	L	A		A	L	L	A	L	L	L	A	L	L					
22									L	L	L	L	L	A	L	L	A	L	L					
23									L	L	A	A	L	L	A	A	L	L	L					
24							L	A	A	A	A	A	A	U	L	U	L	L	L	A				
25								L	L	L	L	L	A	A	L	A	L	L	L					
26								L		L	L	A	L	L	L	L	L	L	L					
27									L	A	L	L	L	L	L	L	L	L	L	A				
28						L	A	A	A	U	L	U	L	L	U	L	L	L	A	L	A			
29								L	L	L	L	L	A	A	A	L	L	L	L	L				
30								L	L	L	L	L	A	A	A	A	L	L	A					
31								L	A	A	A	A	A	U	L	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	2	3	8	13	13	16	14	14	11	6	4						
MED							319	340	367	350	352	352	339	348	331	338	334	317						
U Q							367		379	357	365	367	353	365	346	357	345	332						
L Q							319		359	344	338	332	334	335	320	333	331	314						

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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									306	302	298	334	336	328	318	304	274							
2								286	294	278	342	336	320	318	336	310								
3									298		326	356	342	342	340	A	308	304						
4									334	330	358	348	344	346	358	330	318							
5							286			350	354	346	346	354	340	330	310							
6									332	322		350	356	350	346	324	282							
7									336	330	340	366	360	362	348	336	314							
8									264	366	356	364	352	346	354	340	322	300						
9							308		298		318	384	372	342	340	328	300							
10										320	372	350	352	360	342	316	310	318						
11							342	310	312	422	354	308	348	328	328	320								
12							378	536	490	A	532	452	484	436	384	374	352	308						
13								326	326	326	338	366	366	358	346	320	322							
14										344	340	344	328	342	342	338	308	276						
15									E A	344	362	314	350	352	320	336	318	A						
16									268	266	350	344	346	338	316	318	314	300						
17								278	276	292	352	352	340	330	322	306	286	C						
18							288		334	302	E A	366	298	338	316	306	302	298	288					
19								284	E A	334	354	316	314	356	348	324	312	314	328					
20									282	276	326	304	326	328	348	318	314							
21						318	286	278	E A	332	384	362	404	390	356	316	318	270	316	308				
22									286	324	344	370	338	340	322	344	340	338	304					
23									342	386	360	E A	344	332	330	A	344	320	292					
24							490	A	A	A	A	E A	A	A	S	536	512	420	398	A				
25								310	272	396	368	364	330	394	362	350	318	300						
26								292		334	346	A	368	346	326	304	300	322						
27							372	300	326	E A	476	392	368	356	370	330	328	336	440	E A	374			
28						268	A	A	A		534	552	436	498	462	454	416	396	362	300				
29								352	360	390	378	382	394	372	378	368	310	330						
30						282		330	330	354	384	368	372	366	348	348	E A	338						
31							E A	E A	E A		A		E A	E A	A	E A	E A	E A	294					
	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	12	24	28	29	29	30	30	30	29	28	18	5					
MED						318	298	300	U	314	334	353	351	352	346	340	328	313	315	302				
U Q						378	372	324	334	385	367	371	368	362	358	344	322	338	341					
L Q						268	286	285	290	321	339	344	338	330	326	317	304	300	297					

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	E A 322	282	268	274	E B 304	282	248	232	232	E A 254	230	226		A E A 272	242	230		A E A 258	A E A 252	A E A 300	A E A 286	A E A 284	A E A 308	A E A 298		
2	E A 308	300	276	256	248	264	240	236	224	214	228	216	220	222	220	272	U R 236	244	276	266	240	238	284	E B E B 298		
3	298	292	306	268	268	252	250	244	228	234	224	244	200	E A 274	A	A E A 254		A	262	250	244	278	E A E A 304	294		
4	288	274	264	250	262	264	234	234	228	224	258		B	B			E A 254	258	262	250	260	E A E A 302	E A E A 304	286		
5	284	274	270	258	254	254	236	242	222	220	228	226	222	226	240	240	244	260	264	250	256	E B E B 312	E B E B 318	298		
6	E B 308	300	264	254	258	268	238	230	218	208	214	226	222		228	E A 276		250	258	252	276	E A E A 318	E A E A 300	296		
7	E A E B 314	292	298	288	E B 340	260	236	234	E A E A 252	E A E A 254	262	226	228	E B 260	226	U R E A 252	E A 252	246	280	258	E B E B 272	E B E B 320	E B E B 312	300		
8	300	296	E B 302	262	266	262	236	238	214	218	212	226	226	242	224	228	224	252	264	252	250	E A E A 334	E A E A 334	338		
9	E A 306	308	298	E B E A 308	310	260	234	234	E A E A 266	E A E A 266	208	234		A	232	234	240	236	246	262	258	E A E A 310	E A E A 324	324		
10	E A E A 324	304	282	264	276	260	236	230	218	224	234	220	232	260	224	236	234	230	274	274	252	272	286	304		
11	E B 300	282	264	266	E B 302	266	246	258	E A E A 268	216	224	220	232	E B 242	226	210	248	E A 276	262	260	318	E A E A 328	E A E A 338	324		
12	E B E B 280	318	290	334	302	306	254		A	A		A	232		244	254	248	274	256	234	E A E A 356	E A E A 344	E A E A 342	304		
13	E A E A 322	334	296	242	230	246	256	234	238	E A 262	220	256	230	E A 270		222	250		A	264	256	258	E A E B 312	306	310	
14	E A 286	298	256	238	E B 282	250	236	228	240	214	216	234	230	236		228	232	E A E A 238	270	286	296	E A E A 338	E A E A 306	276		
15	278	E A E A 314	298	330	294	256	236	314	E A 314	E A E A 258	282			236	260		E A 268		A	E A E A 274	E A E A 278	406	E A E A 350	312	274	
16	E A E A 270	306	344	328	314	246	250	232	E A 242	A	220	204	260		A E A 268		A	E A E A 236	E A E A 252	E A E A 264	276	276	E A E A 318	E A E A 298	306	
17	274	268	262	240	E B 292	240	236	226	228	208	204	234	212	250	234	230	228		C	246	246	260	286	E A E A 292	326	
18	E A 314	266	236	220	254	240	216	228	214		A	204	200		A	216	240	230	236	258	240	242	E A E A 310	E A E A 300	342	
19	E A 328	306	248	218	254	244	236		A	E A E A 248	E A E A 278	270	228	222		A	232	E A E A 252	E A E A 276	262	300	320	E A E A 324	E A E A 342	300	
20	E A 306	266	242	232	240	230	230	228	214	212	206		200	E A 282	206	226	218	236	256	262	252	328	E A E A 336	E A E A 356		
21	256	276	268	240	E B 298	256	246		A	224	A	206	220		226	210	214		A	234	E A 254	270	266	E B E A 288	292	324
22	E A E A 298	306	282	288	290	242	234	234		A	228	216	224	E A 260		226	256		A E A 264	E A E A 256	282	274	E A E A 322	E A E A 292	308	
23	E A 282	258	292	318	352	268	294	274	308	E A 272		A	A	214	208		224	E A E A 266	E A E A 276	306	300	330	E A E A 448	E A E A 370		
24	E B 308	236	E B E B 262	E B E B 362	E B E B 440	282	276		A	A	A	A	A		A	236	364	242	224	230		272	E B E A 314	E B E A 336	322	
25	E A E A 330	334	312	286	342	264	238	248	208	E A 256	198	206		A	A		A E A 210	284	240	276	264	258	E A E A 284	E A E A 334	342	
26	E A E A 322	312	284	328	314	248	246	220	E A 270	212	204		218	186	228	212	240	E A 224	E A 314		A E A 302	E A E A 314	E A E A 326	340		
27	E A E A 396	380	338	E A E B 320	304	264	244	256	212	A	212	224	220	E A 272	228	236	220	240		A	300	266	E A E A 248	E A E A 256	326	
28	E A E A 302	296	312	316	258	266			A	A		A	252	222	212	254	212	278	256		322	288	E A E A 424	E A E A 382	322	
29	E B E A 308	310	290	300	266	248	220	242	218	226	216		A	A	A	240	240	E A E A 250	E A E A 294	276	268	378	E A E A 362	E A E A 324	298	
30	E A E A 292	276	294	292	256	250	226	234	E A 252	198	218	238		A	A	A	E A 282		E A 294	256	254	358	E A 330	E A 360		
31	E A 312	264	252	E A 280	274	250	242		A	A	A	A	A		A	A	A	A	A	A	E A E A 280	E A E A 316	E A E A 324	E A E A 314	330	
	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	30	25	24	25	26	23	21	24	25	24	23	27	27	28	31	31	31	31		
MED	E 306	E 296	U 267	U 253	E 282	254	236	233	222	219	218	225	224	234	226	236	230	244	264	258	E 274	E 320	E 312	E 310		
U Q	E A E A 314	308	298	E A E A 316	304	264	246	243	247	254	228	234	232	260	241	251	252	264	276	281	314	334	E A E A 334	E A E A 330		
L Q	286	274	264	250	258	248	236	230	218	214	212	220	216	226	223	229	228	238	258	254	254	288	300	298		

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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						B	120	120	A	A	120	118	A	A	122	124	122	120	122					
2						B	120	122	120	120	122	120	120	120	124	124	126	130	126					
3						B	120	126	122	122	122	120	120	122	120	122	122	120	B					
4						B	122	122	118	124	122		B	B	118	122	122	124	128	120				
5						B	124	120	120	122	124		B	B	B	122	122	120	122	122				
6						B	122	122	120	126		A	124	122	122	122	126	122	118	120				
7							138	126	122	122		A	B	B	B	122	120	122	122	122				
8						E B	136	120	122		A	120	120	120		B	122	120	124	126	120	120		
9							126	118	122	122	120	120		A	A	A	122	124	126	122				
10						E B	150	120	124	122	122		B	A		B								
11							124	122	124	122	120	120		B	B		120	126	126	124	118			
12							128	120	120	120	122		B	124	E B	130	B	120	124	122	120			B
13						E B	146	124	124	122	120		B	A	122	120	120	116	116	118	120			
14						B	118	120	116	114		B	116		A	A	A	116	116	114	116			A
15							122	118	114	116	112		B	A	A	A	A	128	118					
16							112	A	116	A	114	112		B	A	A	A	A	120	122	114			
17							122	114	122	116	114		R	B		A	B	116	120		C	118		
18							126	118	116	116	114		A	B	116		120	118	122	112				
19						B	114	118	116	114	112		B	B	B	B	112	118	116	112				
20						E B	140	124	116	116	114		B	B	B	B	112	118	108	124				A
21							128	122	114	116		B	B	B	B	A	A	116	A	A	A			
22						A	A	A		116		B	B	B	B	B	114	118	118					A
23							122	116	112		A	B	A	A	A	A	A	116	118	114				
24							130	120	116	116	110		A	B	B	112	120	114	116	112				A
25							116	116		112		A	B	A	A	A	A	112	112					
26						B	A	114	116	116		B	A		B	106	116	118	112					B
27							116	114	110	110		A	112	112		B	B	B	124	118				B
28							124	116	114	116		B	B	B		110	110	112	116	120				
29							126	116	116	114	116	116		B	B	B	B	114	120	120	118			
30						B	116	116	114		B	B	A	A	A	B	A	A	A	B				
31						A	112	B	112		B	B	B	B		B	A	A	A	A				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						19	28	28	26	22	12	9	9	9	15	25	26	27	20					
MED						124	120	120	116	118	120	120	118	120	120	120	120	120	120					
U Q						E B	136	122	122	120	122	122	122	122	122	124	124	122	122					
L Q						122	116	116	116	114	114	117	115	115	120	116	118	118	115					

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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	102	96	104	104	B	150	138	122	110	110	G	118	110	112	108	130	122	122	120	116	96	100	110	108
2	110	B	B	106	110	B	120	128	116	116	120	G	G	G	B	110	110	108	116	110	112	B	B	B
3	B	B	104	112	B	142	G	140	124	116	126	118	106	152	128	118	122	120	114	110	104	108	104	100
4	B	B	B	B	B	B	G	134	116	120	106	B	B	116	108	108	146	134	118	110	110	108	108	106
5	100	B	B	B	B	146	112	110	108	110	110	B	B	B	110	112	110	132	118	112	B	112	B	96
6	96	B	B	B	B	154	110	156	108	112	110	110	110	134	G	130	124	122	114	112	108	108	110	106
7	100	B	B	B	B	G	110	122	116	112	110	B	120	B	G	G	138	134	116	106	B	B	B	B
8	B	104	B	B	B	142	130	122	112	120	112	G	B	134	108	110	112	G	120	112	112	110	106	104
9	106	104	B	106	112	146	130	124	118	114	120	106	104	108	108	108	112	136	132	114	110	112	108	108
10	106	104	108	B	122	G	144	128	120	G	112	108	G	B	G	110	112	112	150	110	110	108	114	B
11	B	B	B	B	B	140	142	120	114	126	106	110	B	B	108	G	136	122	112	110	112	108	112	B
12	96	B	B	B	B	132	124	120	112	118	110	G	128	B	128	122	124	120	110	106	108	110	106	112
13	110	108	108	110	B	158	138	132	118	114	112	104	126	122	110	114	110	110	114	112	106	104	B	100
14	B	96	B	B	B	128	134	122	108	116	114	112	106	104	102	102	G	124	112	110	110	104	102	104
15	B	96	98	98	B	116	116	106	106	106	104	100	100	102	104	116	104	112	102	104	98	102	102	100
16	96	100	94	94	B	G	118	120	112	108	110	112	100	98	102	102	106	132	106	108	108	112	102	102
17	102	102	98	B	B	144	G	102	118	114	114	B	110	100	B	144	138	C	112	110	110	106	106	108
18	104	102	B	B	100	150	122	126	122	106	100	B	116	104	124	106	116	108	112	108	102	106	106	104
19	102	96	98	96	100	164	114	106	106	108	106	110	108	110	104	126	130	118	106	106	106	104	100	100
20	94	98	B	B	B	154	130	130	104	120	B	114	114	112	120	118	120	120	102	104	108	112	102	106
21	120	98	B	B	B	144	116	112	108	106	B	110	102	104	102	102	104	102	100	98	B	B	94	94
22	94	94	B	92	102	98	98	100	106	112	112	B	104	104	B	114	116	108	102	100	98	98	94	96
23	92	B	98	98	102	116	108	106	96	106	102	104	104	106	98	102	98	116	106	106	106	108	100	106
24	B	B	B	B	B	G	130	108	112	114	102	114	120	118	120	120	120	110	100	B	B	100	104	108
25	106	102	98	98	108	118	112	102	104	108	100	98	102	100	100	100	96	116	108	114	114	92	104	102
26	104	102	104	100	100	100	104	130	112	112	116	102	116	B	160	98	118	122	104	102	100	102	100	104
27	102	102	104	102	B	116	114	110	114	96	134	114	B	118	114	B	104	118	104	B	B	B	B	108
28	108	114	116	110	110	118	108	108	108	118	B	B	B	106	152	154	124	122	110	108	102	96	92	102
29	98	104	B	102	B	162	98	126	116	100	118	110	110	112	B	G	126	120	106	104	102	100	96	92
30	92	90	B	B	B	B	104	116	112	108	106	108	106	100	104	100	100	94	94	92	94	100	102	104
31	102	102	98	96	98	98	120	108	108	106	112	110	112	112	102	96	96	92	92	94	92	96	92	102
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	21	15	16	11	24	28	31	31	30	26	21	23	24	24	27	30	29	31	29	26	27	26	27
MED	102	102	98	102	102	142	117	120	112	112	110	110	110	109	108	110	116	120	110	108	107	106	103	104
U Q	106	104	104	106	110	150	130	128	116	116	114	113	116	117	120	120	124	122	116	111	110	108	106	106
L Q	96	96	98	98	100	117	110	108	108	108	106	105	104	104	103	102	106	110	104	104	102	100	100	100

MAY 2002 h'Es (KM)

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

MAY 2002 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

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	F2	F2	F1	F1		H1	HL11	CL11	L1	L2		C1	L1	L1	L1	CL11	CL21	CL31	C3	F5	F3	F2	FF42	F3	
2	F2			F2	F2		C2	CL11	CL11	CL11	CL11					L1	L1	L2	C2	F5	F2				
3			F2	F2		HL11		HL11	CL11	CL11	CL11	CL11	L1	HL11	CL11	CL21	C2	CL21	C3	F5	F3	F2	F2	F2	
4								HL11	CL11	CL11	L1			C1	L1	L1	HL11	HL11	C2	F5	F4	F3	F3	F2	
5	F1					H1	L1	L1	L1	L1	L1				L1	L1	L21	HL31	CL6	F6		F1		F2	
6	F1					H1	L1	HL11	L1	L1	L1	L1	L1	HL11		CL11	CL11	C3	C3	F3	F2	F3	F2	F2	
7	F2						L1	CL21	CL21	L1	L1		L1				HL11	CL11	C3	F3					
8		F1				H2	HL11	CL11	L1	CL11	L1			CL11	L1	L1	L1		C3	F1	F2	F3	F3	F4	
9	F2	F2		F1	F1	H2	H2	CL11	C1	C1	L1	L1	L2	L1	L1	L1	L1	CL11	H4	F4	F3	F3	F2	F2	
10	F5	F2	F2		F1		H1	CL11	CL11		C1	L2				L1	L1	L1	H6	F6	F2	F3	F2		
11						H2	HL11	CL21	CL11	C1	L1	L1			L1		CL11	CL21	C3	F5	F6	F4	F1		
12	F2					C2	CL21	CL11	CL21	CL21	L1		C1		C1	CL11	CL11	CL21	L4	F4	F4	F4	F4	F2	
13	F3	F3	F3	F1		H1	HL21	CL11	CL11	CL11	L1	L1	C1	CL11	L1	CL11	CL31	CL31	C2	F2	F1	F4		F1	
14		F2				C1	H1	CL11	CL11	CL11	C1	L1	L1	L2	L1		C1	C3	F2	F2	F3	F2	F2	F1	
15		F2	F2	F2		C2	C2	CL31	CL31	CL21	CL21	L2	L2	L1	L1	CL21	C3	C3	C3	F3	F3	F2	F2	F2	
16	F1	F1	F1	F1			CL31	CL21	CL11	C1	C1	L1	L1	L1	L1	L1	HL11	C3	F2	F2	F1	F2	F2	F2	
17	F1	F1	F1			H1		L1	CL11	CL11	CL11		C1	L1		HL11	HL11		C2	F2	F1	F2	F2	F2	
18	F2	F2			F1	H1	CL11	CL11	CL11	CL11	L2		CL11	L2	C1	L1	CL11	L2	C1	F1	F2	F2	F2	F3	
19	F2	F3	F2	F2	F1	H1	CL21	CL31	CL31	CL2	C2	C1	C1	C1	C1	CL11	CL11	CL21	CL31	F4	F2	F2	F3	F2	
20	F2	F2				H2	HL11	CL11	L1	CL11		C1	C1	C1	C1	C1	CL11	L3	F2	F1	F3	F2	F2	F3	
21	F1	F1				H1	HL11	CL21	CL21	L2		C1	L2	L1	L1	L1	L2	L2	F2				F2	F3	
22	F2	F2	F1	F2	F3	L2	L2	L2	CL1	C1			C1	L1		C1	CL11	CL21	L2	F2	F2	F3	F2	F1	
23	F1		F2	F3	F3	C2	CL41	C3	L2	L2	L2	L2	L1	L1	L2	L2	L1	CL21	C3	F3	F3	F2	F2	F3	
24							HL21	C3	C2	C2	L2	C1	C1	CL11	CL11	C1	CL11	CL11	L4			F2	F1	F2	
25	F3	F2	F3	F2	F2	C2	CL11	L2	CL1	L1	CL1	L1	L2	L2	L1	L2	CL21	CL11	CL31	FF31	FF11	F2	F2	F3	
26	F3	F2	F2	F3	F2	L2	L2	CL11	CL21	CL21	C1	L2	C1		H1	L1	CL11	C1	L3	F2	F2	F2	F3	F4	
27	F4	F4	F3	F2		C1	CL21	CL11	C1	L2	CL11	CL11		C1	C1		L1	CL11	L2					F2	
28	F2	F2	F1	F1	F1	C2	C3	CL21	CL21	C1				L1	H1	H1	CL21	CL21	CL31	F3	F2	F3	F3	F2	
29	F1	F2		F2		HL11	L1	CL21	CL11	L1	CL11	C1	C1	C1			CL11	CL21	C3	F4	F3	F3	F3	F2	
30	F2	F1					L1	CL11	CL21	CL21	L1	L1	L1	L1	L1	L1	L3	L3	L3	F2	F2	F2	F2	F2	
31	F2	F1	F2	F1	F2	L1	C1	C2	C3	L2	C1	C1	C1	C1	L2	L3	L3	L3	L3	F3	F4	F2	F1	F2	
	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																									

f-PLOTS OF IONOSPHERIC DATA

KEY OF f-PLOT	
	SPREAD
◊	foF2, foF1, foE
×	fxF2
*	DOUBTFUL foF2, foF1, foE
⊗	fbEs
└	ESTIMATED foF1
†, ‡	fmin
^	GREATER THAN
v	LESS THAN

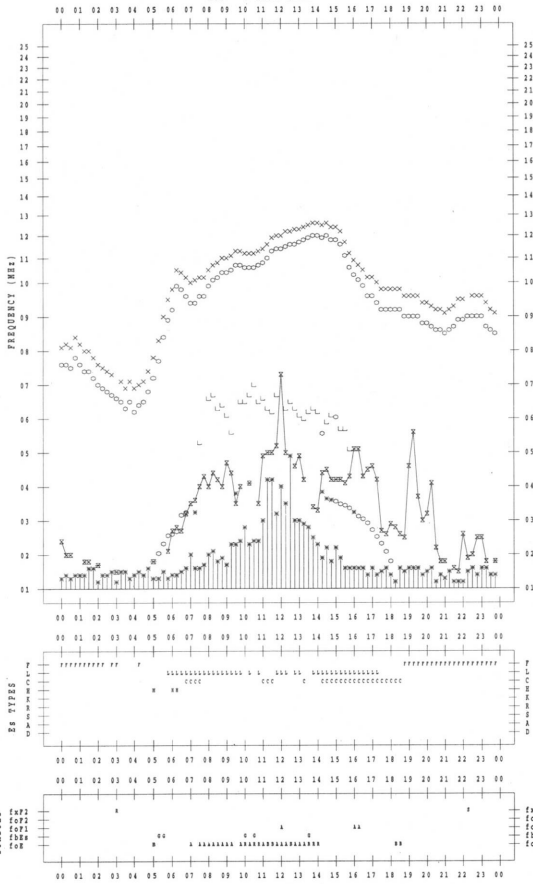
f-PLOT DATA

SCALER : I.WISHIMUTA

STATION : Kokubunji

DATE : 2002 / 5 / 1

135 °E MEAN TIME



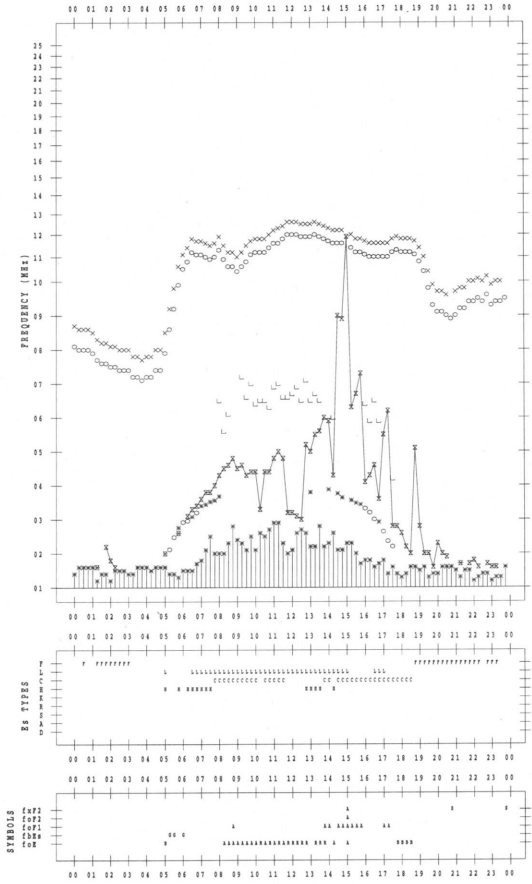
f-PLOT DATA

SCALER : I.WISHIMUTA

STATION : Kokubunji

DATE : 2002 / 5 / 3

135 °E MEAN TIME



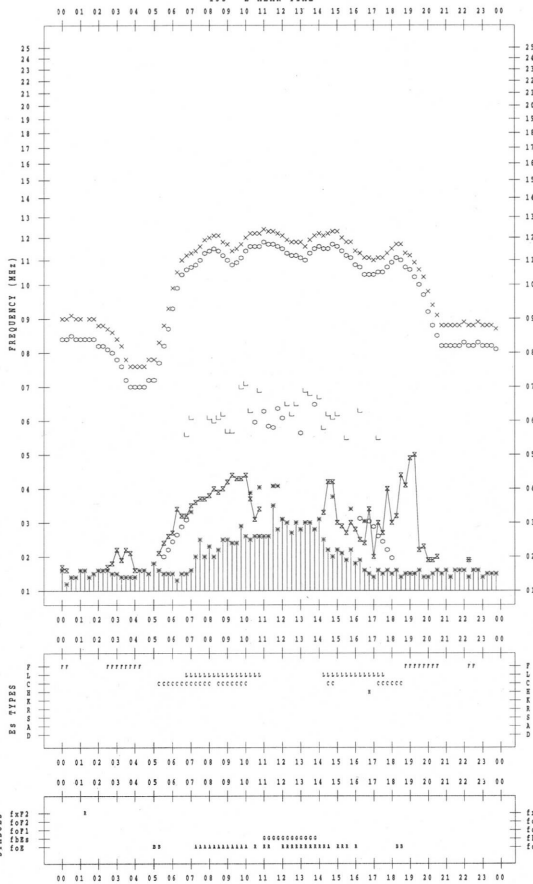
f-PLOT DATA

SCALER : I.WISHIMUTA

STATION : Kokubunji

DATE : 2002 / 5 / 2

135 °E MEAN TIME



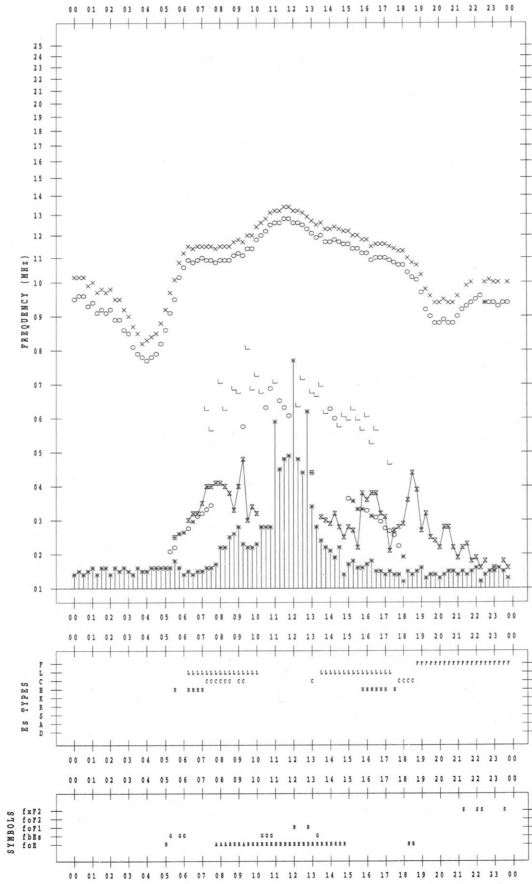
f-PLOT DATA

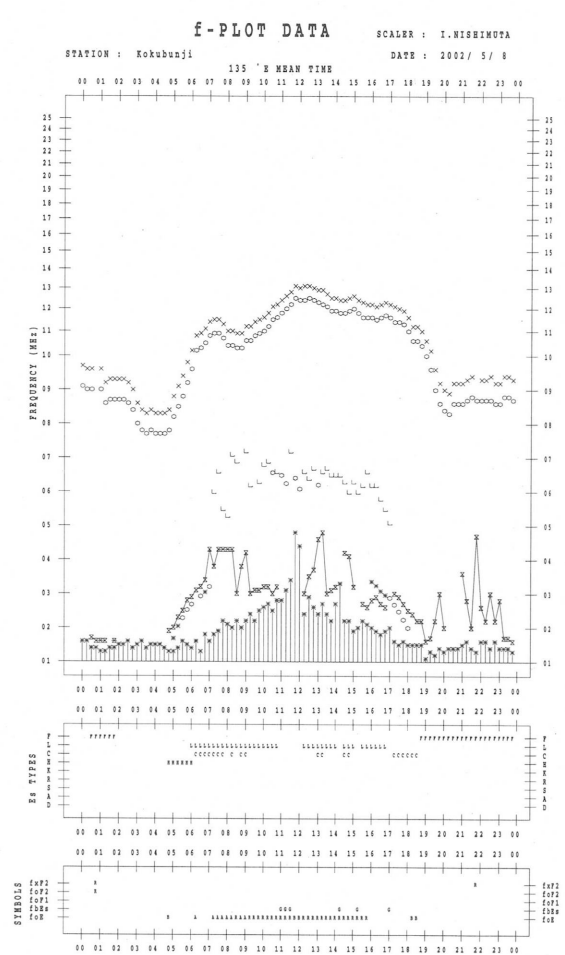
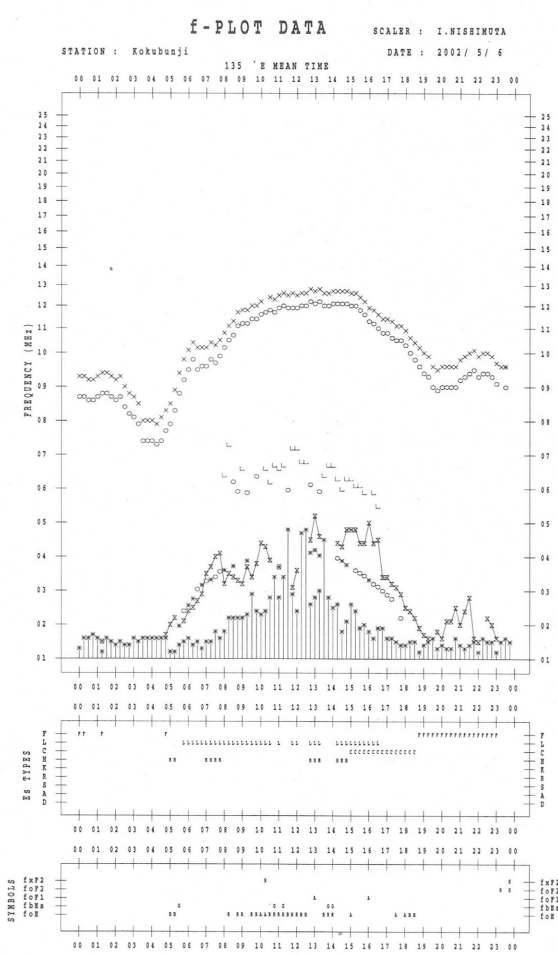
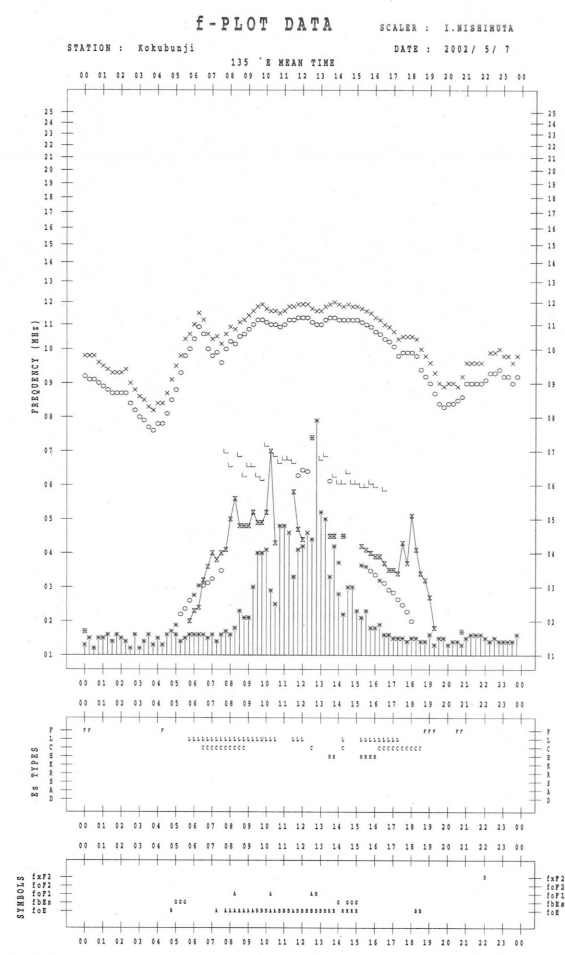
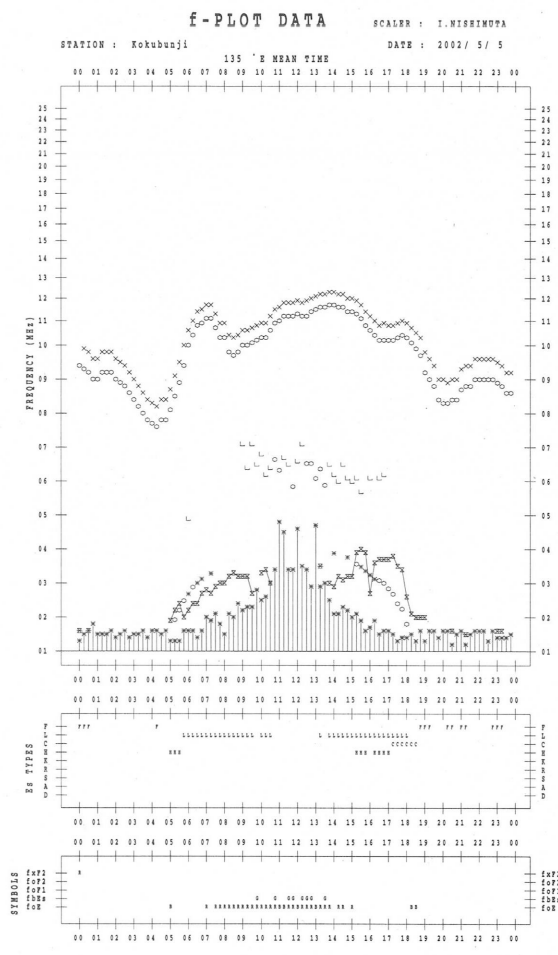
SCALER : I.WISHIMUTA

STATION : Kokubunji

DATE : 2002 / 5 / 4

135 °E MEAN TIME





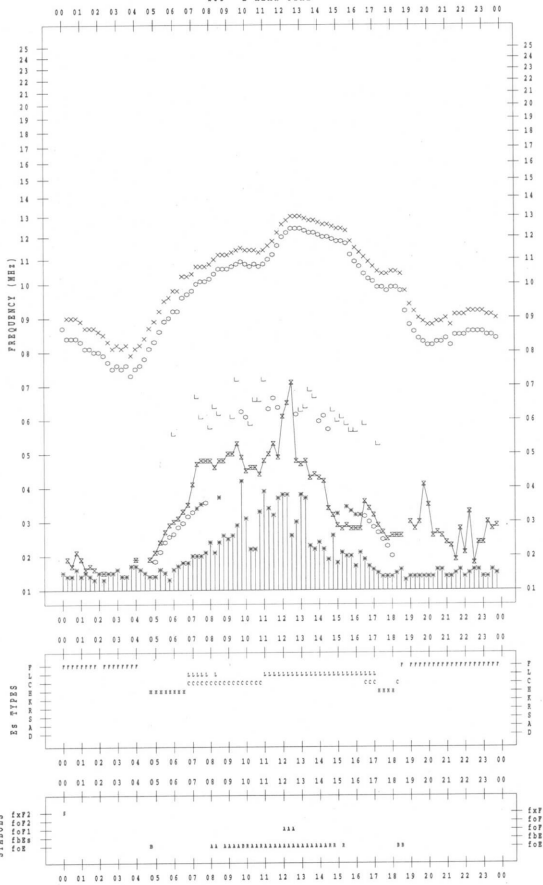
f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2002/ 5/ 9

135 °E MEAN TIME



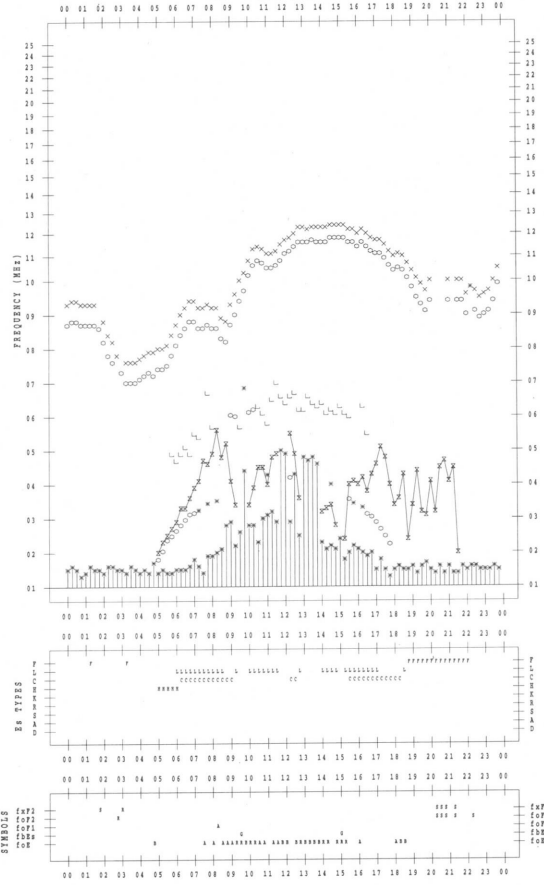
f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2002/ 5/11

135 °E MEAN TIME



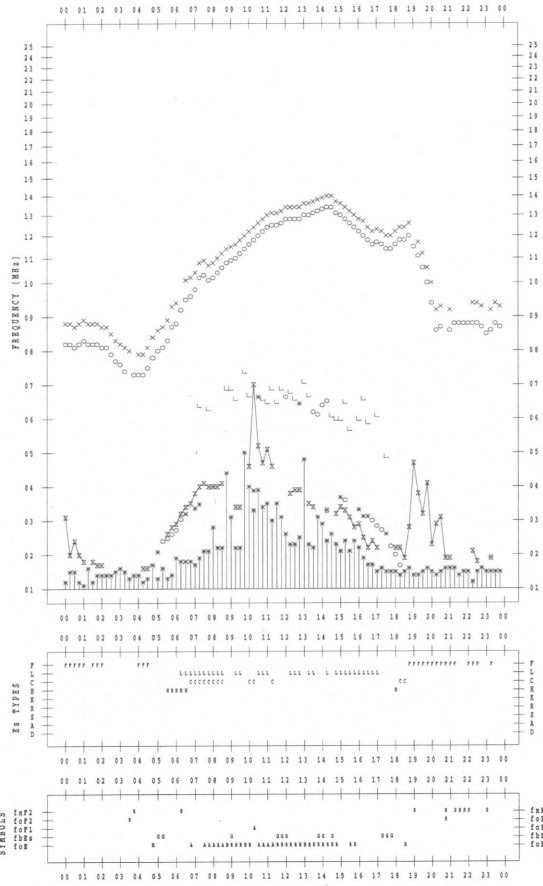
f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2002/ 5/10

135 °E MEAN TIME



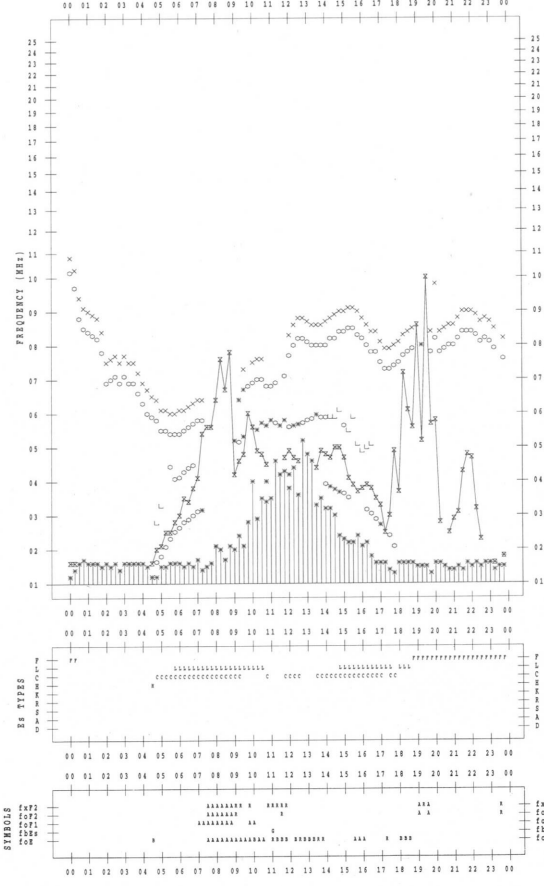
f-PLOT DATA

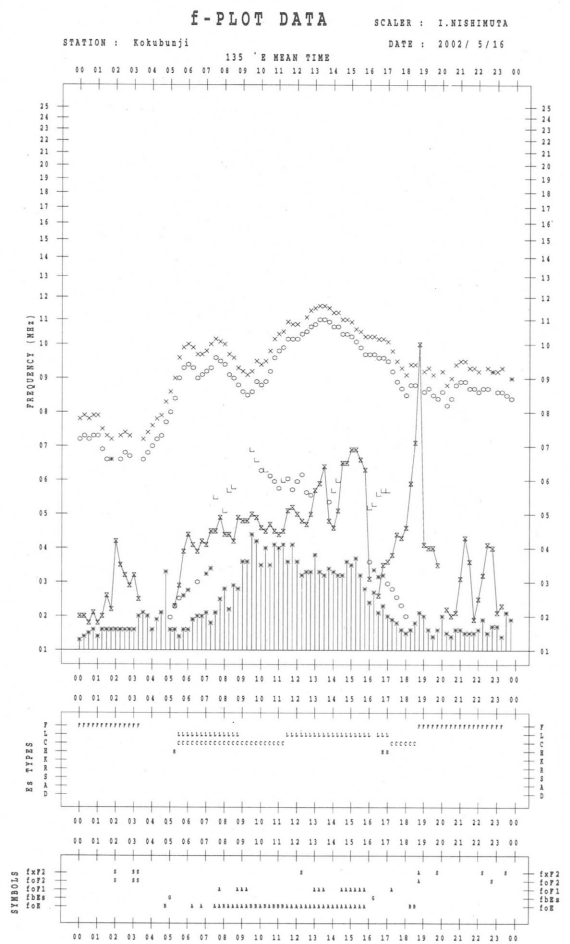
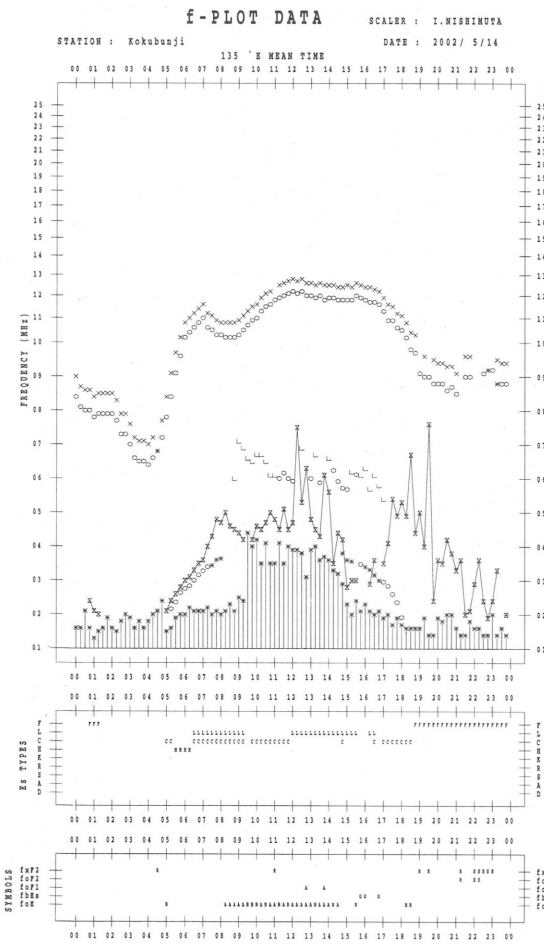
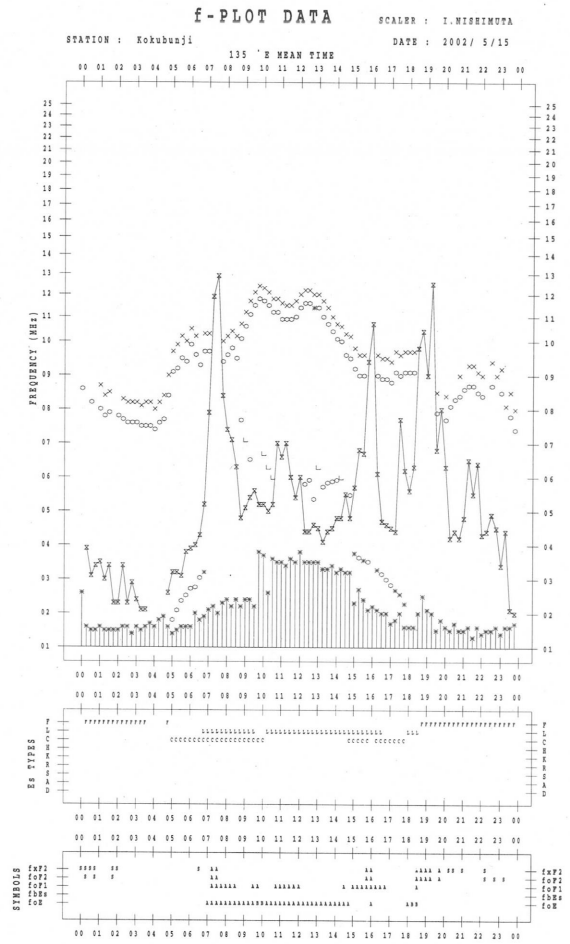
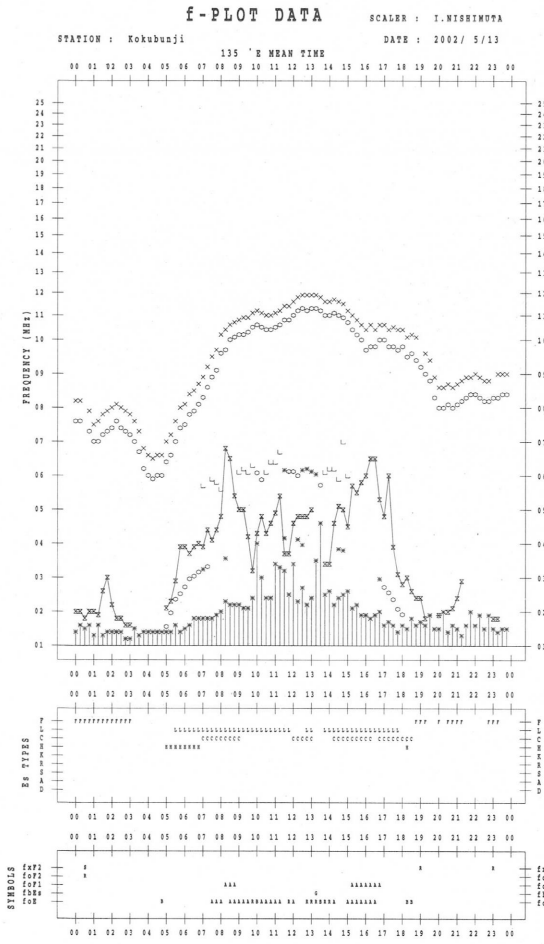
SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2002/ 5/12

135 °E MEAN TIME

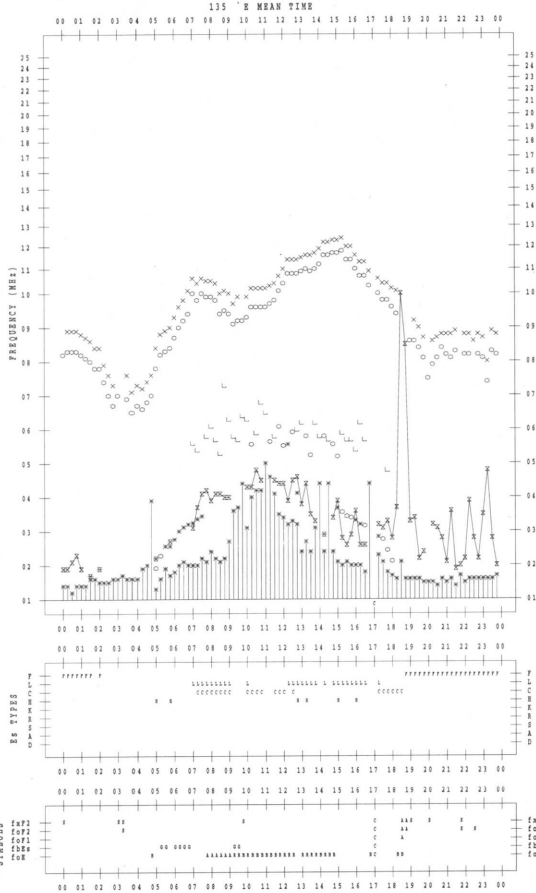




f-PLOT DATA

SCALER : I.NISHIMUTA

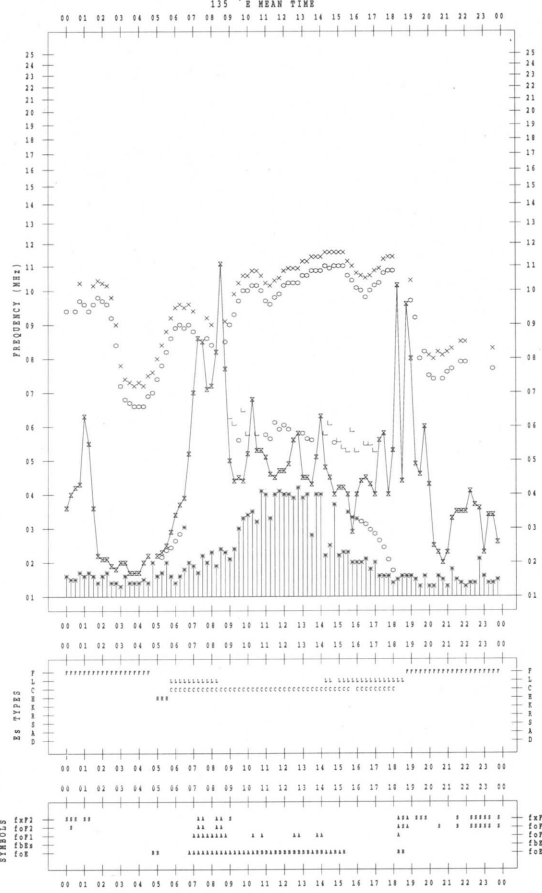
STATION : Kokubunji DATE : 2002 / 5 / 17



f-PLOT DATA

SCALER : I.NISHIMUTA

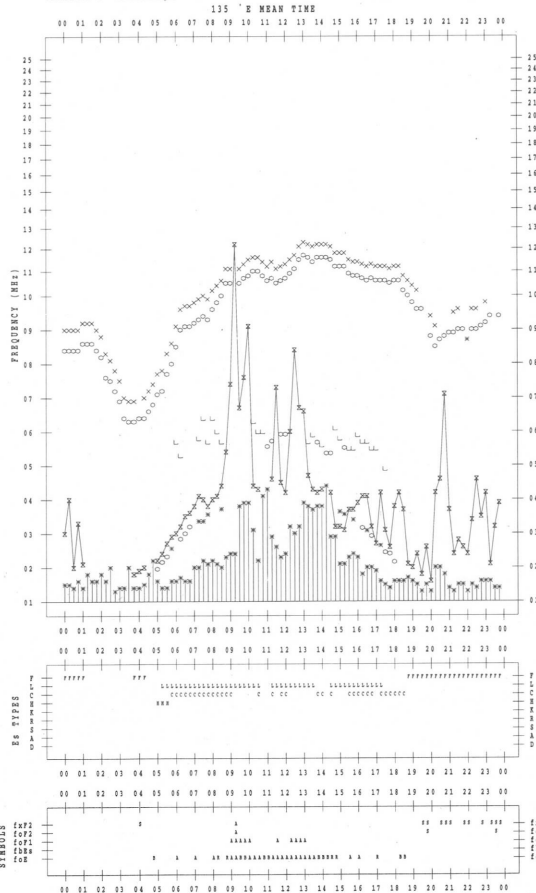
STATION : Kokubunji DATE : 2002 / 5 / 19



f-PLOT DATA

SCALER : I.NISHIMUTA

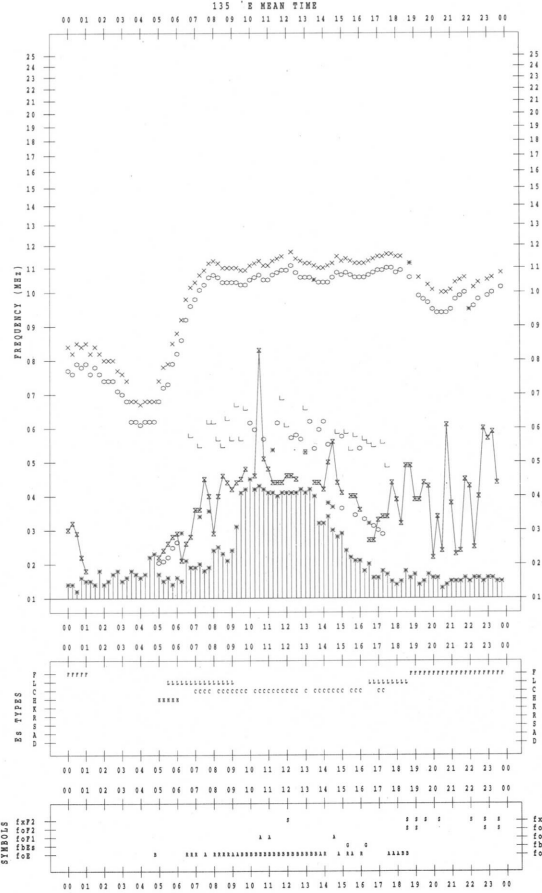
STATION : Kokubunji DATE : 2002 / 5 / 18

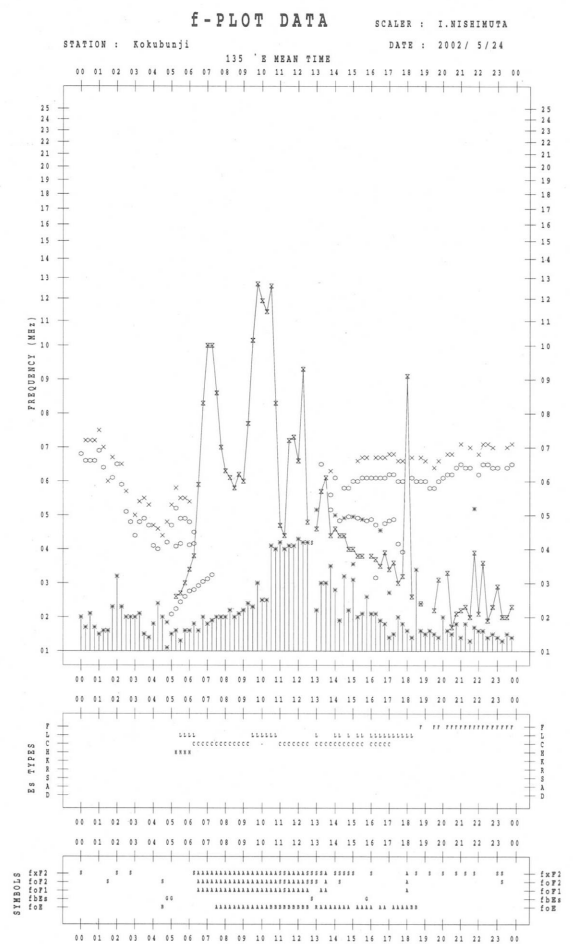
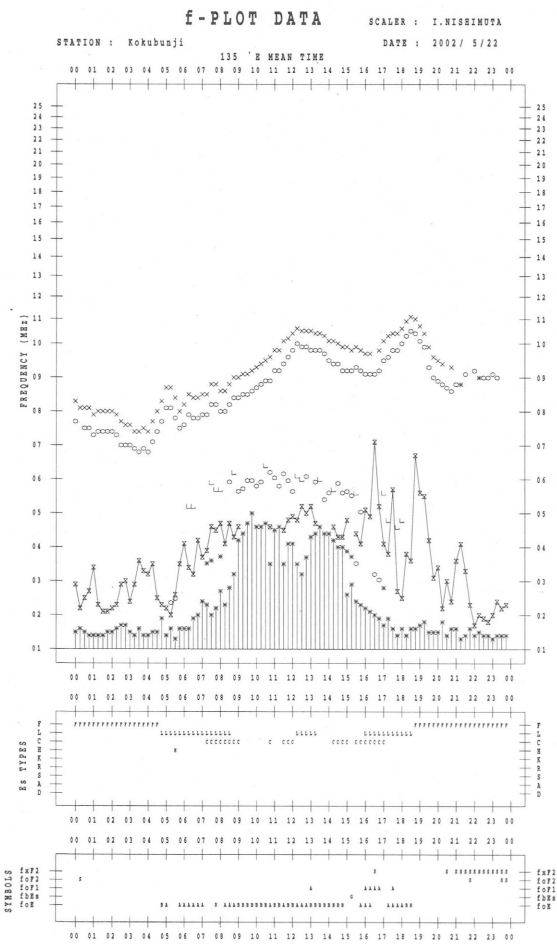
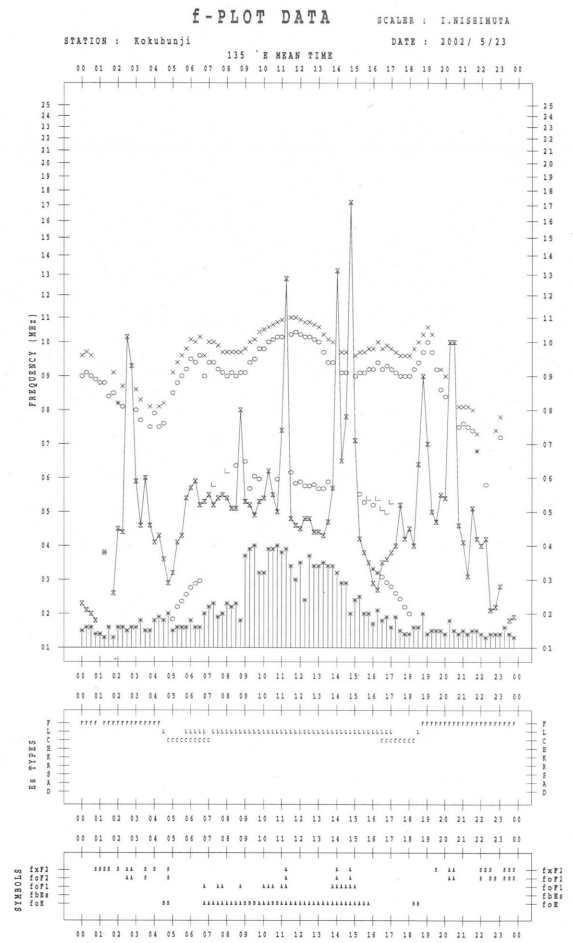
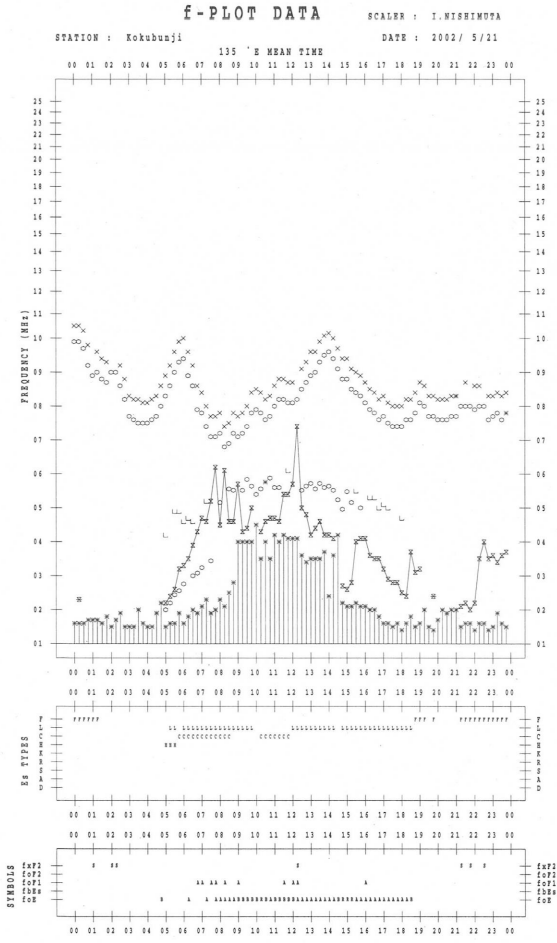


f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji DATE : 2002 / 5 / 20

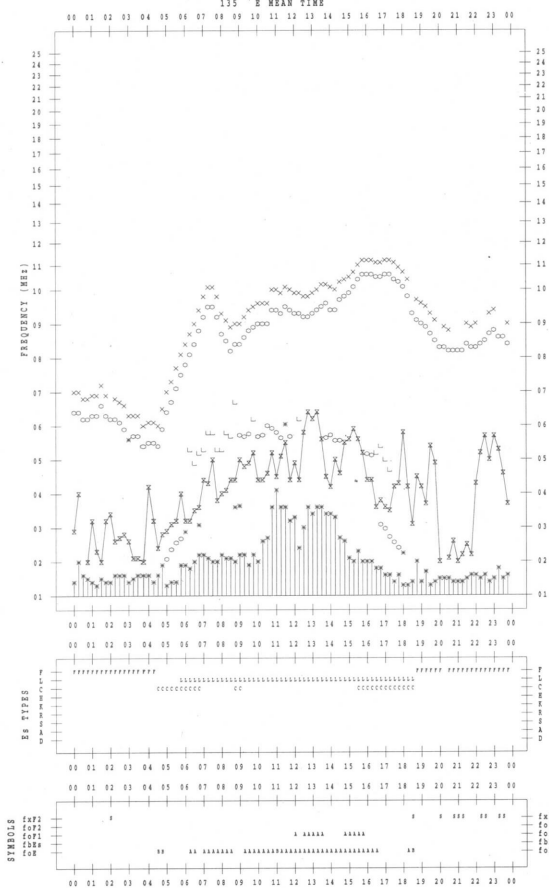




f-PLOT DATA

SCALER : I.NISHIMOTA

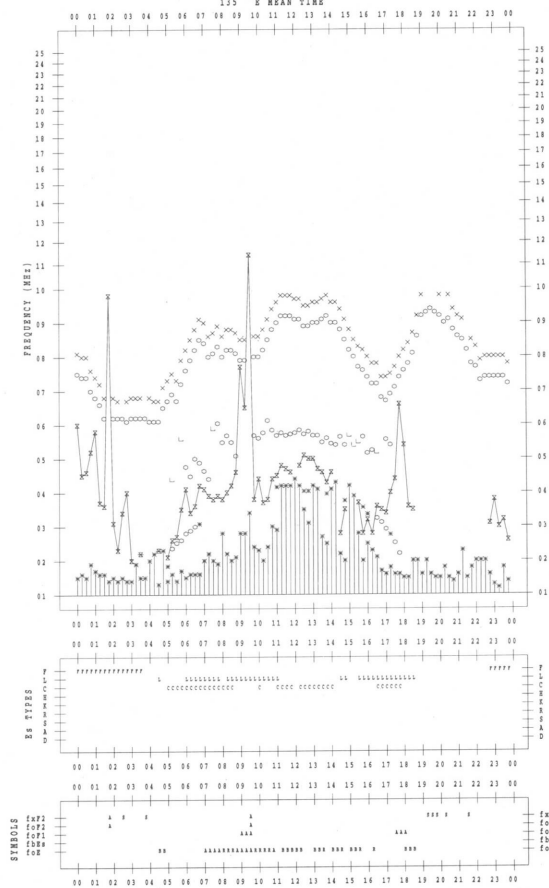
STATION : Kokubunji DATE : 2002 / 5/25



f-PLOT DATA

SCALER : I.NISHIMOTA

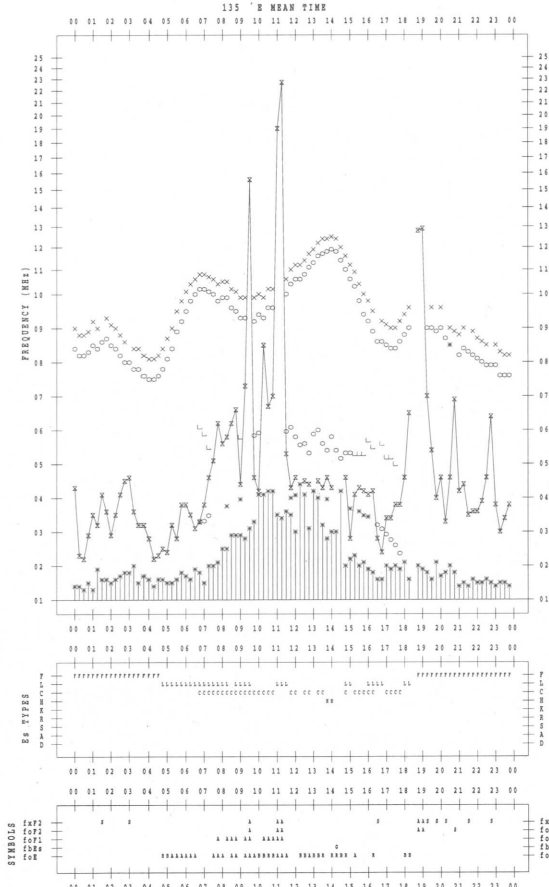
STATION : Kokubunji DATE : 2002 / 5/27



f-PLOT DATA

SCALER : I.NISHIMOTA

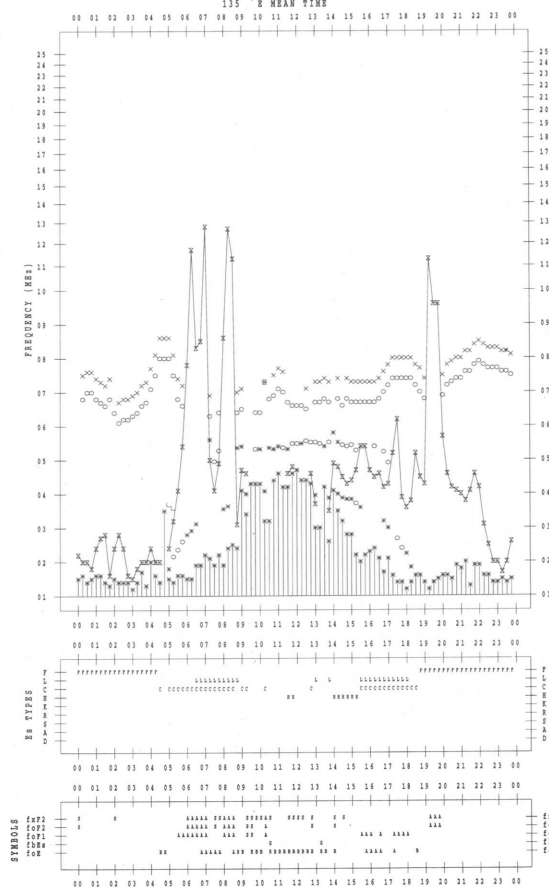
STATION : Kokubunji DATE : 2002 / 5/26

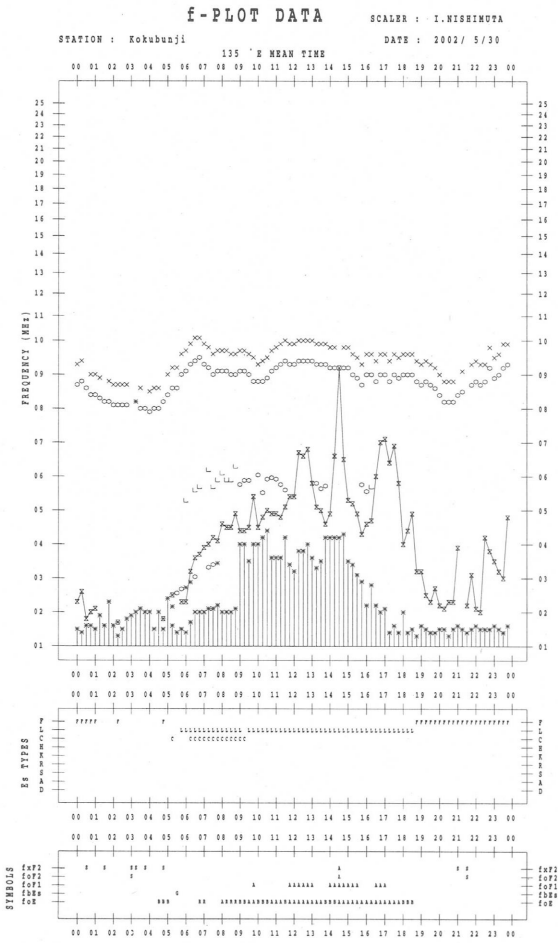
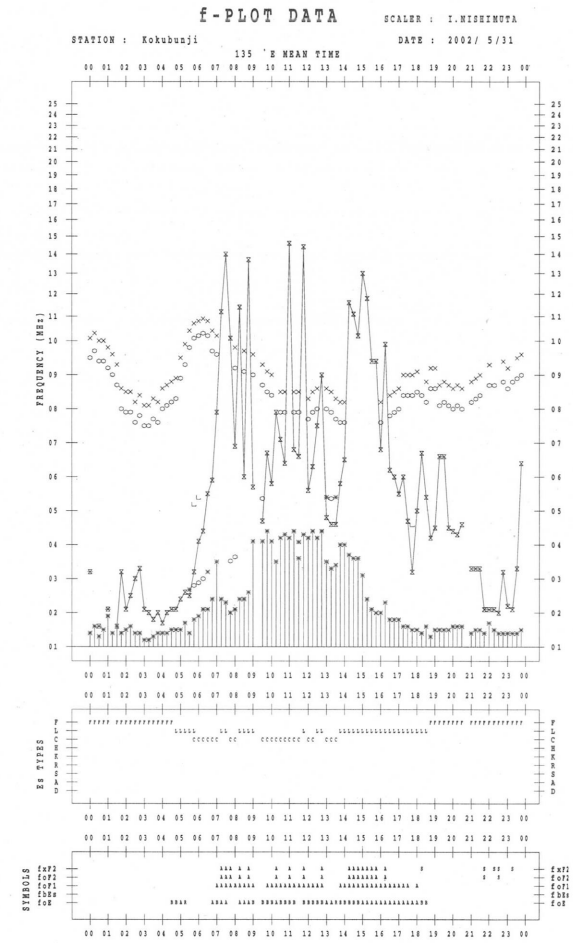
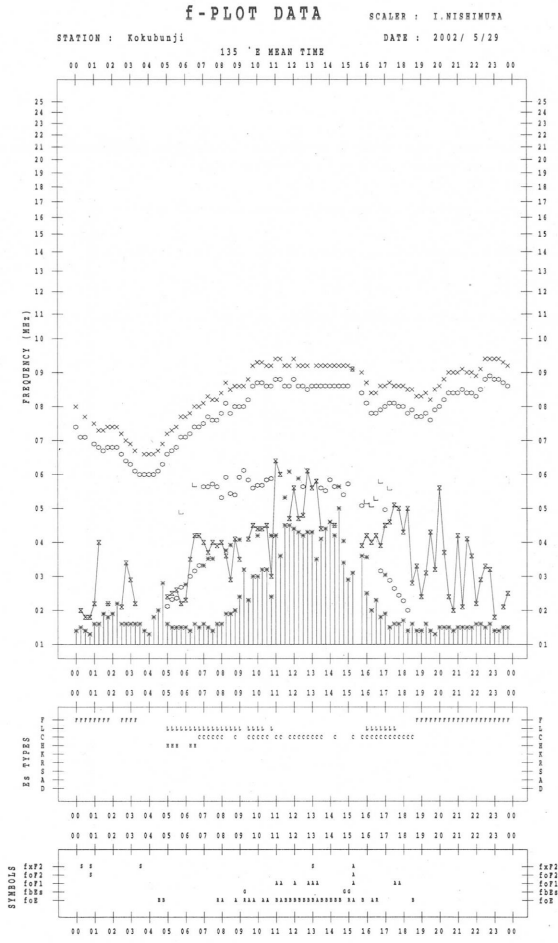


f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji DATE : 2002 / 5/28





B. Solar Radio Emission
 B1. Daily Data at Hiraiso
 500 MHz

Hiraiso

May 2002

Single-frequency total flux observations at 500 MHz					
Flux density: $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$					
Date \ UT	00-03	03-06	06-09	21-24	Day
1	43	43	43	46	44
2	44	43	42	48	44
3	44	43	42	46	43
4	44	43	42	45	44
5	46	44	44	47	46
6	46	45	46	49	46
7	48	46	42	47	46
8	47	48	48	50	48
9	50	49	48	48	49
10	—	46	46	45	45
11	48	45	45	48	46
12	47	47	49	48	48
13	47	44	43	47	45
14	46	44	45	44	45
15	43	43	43	16	36
16	26	43	18	42	32
17	43	42	42	38	41
18	41	40	39	47	41
19	40	38	39	40	39
20	39	40	40	44	41
21	41	40	39	42	40
22	40	41	41	41	41
23	39	39	39	40	39
24	39	39	39	42	40
25	41	40	41	42	41
26	42	41	41	42	41
27	41	40	39	43	41
28	43	43	42	41	43
29	41	41	40	42	41
30	41	40	41	42	41
31	42	43	41	45	43

Note: No data is available during the following periods.
 9th 2210 – 10th 0500

B. Solar Radio Emission
B2.Outstanding Occurrences at Hiraiso

Hiraiso

May 2002

Single-frequency observations								
Normal observing period: 1925 - 0940 U.T. (sunrise to sunset)								
MAY 2002	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m $^{-2}$ Hz $^{-1}$)		POLARIZATION REMARKS
						PEAK	MEAN	
1	200	8 S	0045.0	0045.0	1.0	35	—	WR
1	500	8 S	0046.0	0046.0	1.0	85	—	0
2	200	8 S	0328.0	0328.0	1.0	20	—	0
2	200	8 S	0639.0	0639.0	1.0	10	—	0
3	200	8 S	0401.0	0402.0	1.0	155	—	0
3	200	8 S	2314.0	2315.0	1.0	100	—	0
5	200	8 S	0209.0	0211.0	2.0	25	—	0
5	200	8 S	0442.0	0443.0	3.0	30	—	WR
5	200	8 S	0452.0	0453.0	2.0	55	—	0
5	200	8 S	2200.0	2200.0	1.0	20	—	0
5	200	8 S	2215.0	2215.0	1.0	15	—	0
7	500	42 SER	0002.0	0029.0	52.0	60	—	0
7	2800	42 SER	0339.0	0402.0	31.0	160	—	0
7	500	48 C	0340.0	0413.0	69.0	280	—	WR
7	200	47 GB	0341.0	0417.0	49.0	830	—	0
8	200	8 S	2230.0	2231.0	1.0	190	—	0
9	200	8 S	0215.0	0217.0	3.0	30	—	0
9	200	8 S	0423.0	0423.0	1.0	10	—	0
9	500	7 C	0656.0	0659.0	3.0	30	—	0
9	200	7 C	0656.0	0657.0	3.0	50	—	WR
9	200	7 C	0712.0	0715.0	4.0	10	—	0
10	200	8 S	2147.0	2147.0	1.0	25	—	0
10	500	8 S	2356.0	2358.0	2.0	105	—	0
11	500	8 S	0040.0	0040.0	1.0	15	—	0
11	500	42 SER	0246.0	0249.0	3.0	10	—	0
11	500	8 S	0258.0	0258.0	1.0	10	—	0
11	200	8 S	0258.0	0258.0	1.0	15	—	0
11	200	8 S	0512.0	0512.0	1.0	55	—	0
11	200	8 S	2150.0	2151.0	2.0	10	—	0
11	200	8 S	2214.0	2214.0	1.0	10	—	0
12	200	8 S	0002.0	0003.0	1.0	135	—	0
12	200	8 S	0134.0	0134.0	1.0	375	—	0
12	200	8 S	0157.0	0157.0	2.0	45	—	0
12	200	8 S	0414.0	0415.0	1.0	10	—	0
13	200	8 S	0053.0	0053.0	2.0	35	—	0
13	200	7 C	0251.0	0253.0	3.0	30	—	0
13	200	8 S	0333.0	0331.0	2.0	30	—	0
13	200	7 C	2050.0	2051.0	3.0	30	—	0
16	2800	1 S	0011.0	0016.0	7.0	35	—	0
16	2800	8 S	0031.0	0031.0	1.0	40	—	0
16	2800	8 S	0311.0	0311.0	1.0	95	—	0
16	500	7 C	0010.0	0027.0	32.0	50	—	0
16	500	21 GRF	0112.0	0320.0	356.0	20	—	0
16	500	7 C	0304.0	0320.0	79.0	360	—	0
16	200	8 S	0033.0	0034.0	3.0	40	—	0
16	200	8 S	0623.0	0624.0	4.0	140	—	0
16	200	8 S	2105.0	2105.0	1.0	95	—	0

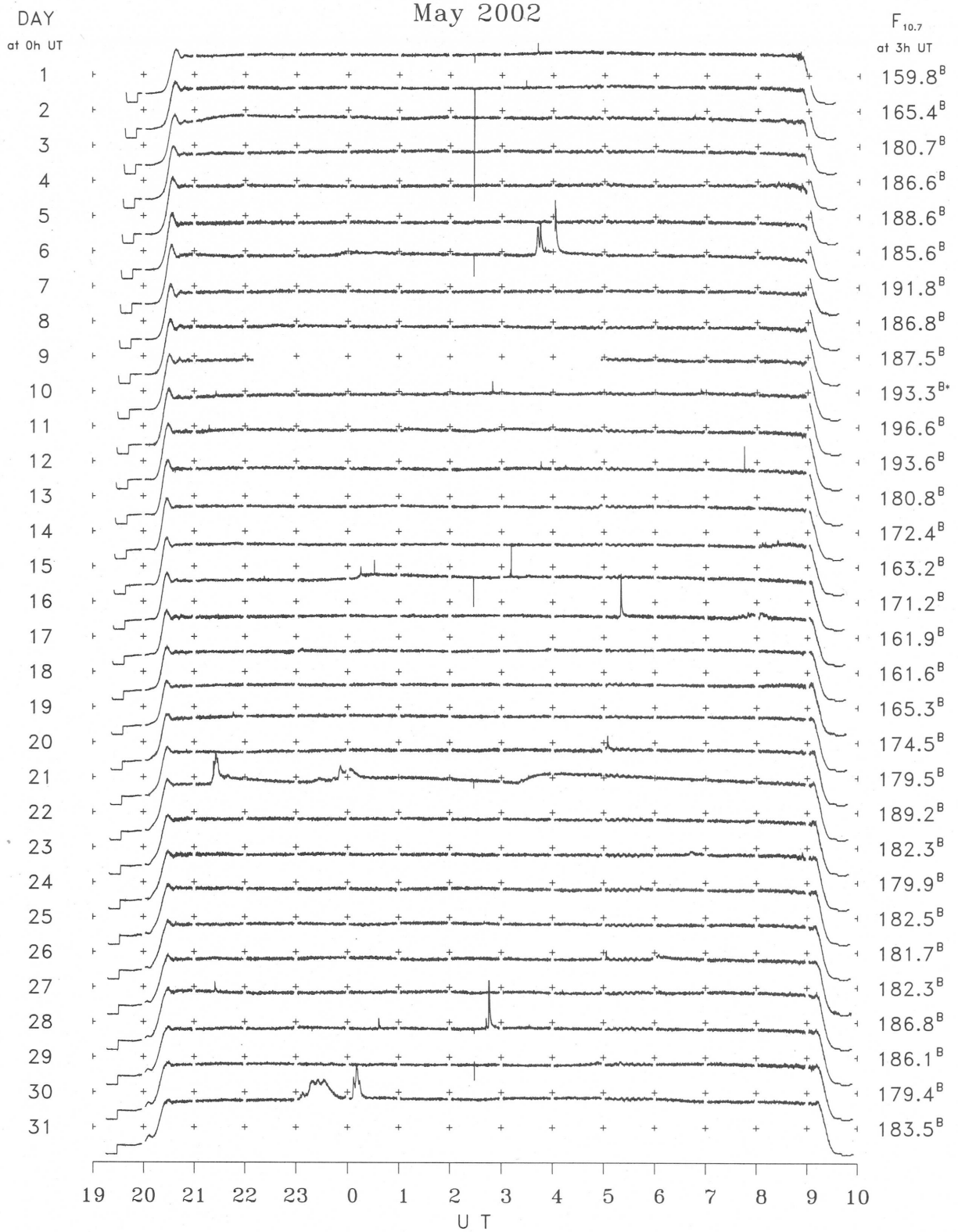
B. Solar Radio Emission
B2.Outstanding Occurrences at Hiraiso

Hiraiso

May 2002

Single-frequency observations								
Normal observing period: 1925 - 0940 U.T. (sunrise to sunset)								
MAY 2002	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY ($10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$)		POLARIZATION REMARKS
						PEAK	MEAN	
17	2800	3 S	0519.0	0520.0	4.0	125	-	0
17	500	7 C	0749.0	0757.0	23.0	80	-	0
19	200	8 S	0007.0	0008.0	2.0	95	-	0
19	500	8 S	2145.0	2146.0	2.0	30	-	0
20	500	42 SER	0334.0	0338.0	4.0	145	-	0
21	2800	1 S	0504.0	0504.0	2.0	35	-	0
21	200	8 S	0508.0	0508.0	1.0	25	-	0
21	2800	4 S/F	2119.0	2125.0	13.0	95	-	0
21	500	4 S/F	2121.0	2127.0	10.0	30	-	0
21	200	7 C	2124.0	2145.0	26.0	130	-	0
21	500	7 C	2319.0	2329.0	51.0	195	-	0
21	2800	7 C	2342.0	0000.0	38.0	40	-	0
22	200	8 S	0329.0	0329.0	1.0	35	-	0
27	500	8 S	2125.0	2125.0	1.0	25	-	0
28	500	8 S	0348.0	0348.0	1.0	20	-	0
28	500	7 C	0607.0	0607.0	13.0	10	-	0
29	2800	1 S	0037.0	0037.0	3.0	30	-	0
29	2800	7 C	0243.0	0246.0	11.0	140	-	0
29	500	47 GB	0331.0	0331.0	1.0	655	-	0
29	200	8 S	0750.0	0752.0	3.0	150	-	0
29	200	7 C	2326.0	2328.0	4.0	15	-	0
29	500	8 S	2326.0	2326.0	1.0	100	-	0
30	500	8 S	0011.0	0011.0	1.0	25	-	0
30	2800	7 C	2305.0	2325.0	46.0	55	-	0
30	500	7 C	2309.0	2334.0	40.0	25	-	0
30	200	7 C	2310.0	2321.0	17.0	20	-	0
30	500	8 S	2356.0	2356.0	1.0	20	-	0
30	200	7 C	2354.0	2356.0	5.0	80	-	0
31	2800	7 C	0006.0	0011.0	14.0	100	-	0
31	500	4 S/F	0005.0	0007.0	11.0	20	-	0
31	200	8 S	0009.0	0009.0	1.0	30	-	0

B. Solar Radio Emission B3. Summary Plots of $F_{10.7}$ at Hiraiso



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range $\geq 6^\circ$.

IONOSPHERIC DATA IN JAPAN FOR MAY 2002
F-641 Vol.54 No.5 (Not for Sale)

電離層月報 (2002年 5月)
第54卷 第5号 (非売品)
2002年 9月20日 印刷
2002年 9月25日 発行

編集兼 独立行政法人通信総合研究所
発行所 〒184-8795 東京都小金井市貫井北町4丁目2-1
☎ (042) (327) 7 4 7 8 (直通)

Queries about "Ionospheric Data in Japan" should be forwarded to :
Communications Research Laboratory, Independent Administrative Institution, 2-1
Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184-8795 JAPAN