

# IONOSPHERIC DATA IN JAPAN

FOR AUGUST 2003

VOL. 55 NO. 8

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# INTRODUCTION

This Series contains data on ionosphere (I) and solar radio emission (S) obtained at the following stations under the

Communications Research Laboratory, Independent Administrative Institution in Japan.

Station	Geographic		Geomagnetic (IGRF2000)		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.6'N	141°41.1'E	36.4°N	208.6°	Vertical Sounding (I)
Kokubunji	35°42.4'N	139°29.3'E	26.6°N	207.9°	Vertical Sounding (I)
Yamagawa	31°12.1'N	130°37.1'E	21.4°N	199.8°	Vertical Sounding (I)
Okinawa	26°40.5'N	128°09.2'E	16.8°N	198.4°	Vertical Sounding (I)
Hiraiso	36°22.0'N	140°37.5'E	27.4°N	209.2°	Solar Radio Emission (S)

## 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

$f_xI$	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

replaced a numerical value on the monthly tabulation sheets, if necessary.

- A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.
- B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.
- C Measurement influenced by, or impossible because of, any non-ionospheric reason.
- D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.
- E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.
- F Measurement influenced by, or impossible because of, the presence of spread echoes.
- G Measurement influenced 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  $10^{-22} \text{ Wm}^{-2} \text{ Hz}^{-1}$  unit, and the polarization.

The type of event is expressed by a combination of a

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

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

SGD Code	Letter Symbol	Morphological Classification
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 Pentincton 10.7 cm radio flux. The figure on the right-hand side shows the  $F_{10.7}$  index estimated at Hiraiso.

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

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

HOURLY VALUES OF foF2 AT Wakkanai

AUG. 2003

LAT. 45° 23.5' N LON. 141° 41.2' E SWEEP 1.0 MHz TO 30.0 MHz 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	37		A	34	32	38	47	A	A	A	A	A	A	A			A	A	A	A	A		61	52	46			
2	A	52	43	41	38	40						A		A		76	A	39	A	62	69	62		A	54			
3	52	40	42	44	42	52				A	A					58	60	60	60	59			53	A				
4	A	55	39	48	44	46	49			59	49		A	A			A	A	62		A	A		64	54			
5	52		52	53	49	48	39	61		A	58	59	A		58		A	A	A		A		62	62	54	45		
6	55	55	54	52	47	47	61	71	72		A	A	66	70	70	78	76	70	64	67	65	76	76	51	A			
7	52	52	52	A		55	60	60	A		60	59	A		A	A	A	A	A		63	72	76	77	72			
8	54	55	61			47	72		A		74	73		62	68	82	70	71	75	A	A	A	A		66	65		
9	66	62	54	A		53	46	59	66		A	A	A		66		68	A	70	75	73	77	62		A	65	72	63
10	51	54	47	48	47	45	55	55		A	A	61		A	A		67	67	65	59								
11																	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	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	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	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	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	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	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	A						
21	53	48	40	42	A		A		A	A	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	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	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	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	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	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	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	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	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	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	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	9	9	10	8	8	11	8	6	2	3	4	3	2	3	4	6	5	6	5	6	4	7	9	8				
MED	52	54	50	46	46	46	57	64	73	60	58	66	66	68	72	70	70	62	67	62	70	62	54	56				
U Q	54	55	54	50	48	48	60	67	74	73	60	66	70	70	80	76	73	73	73	63	74	76	69	64				
L Q	51	50	42	41	40	40	48	60	72	59	53	59	62	68	62	67	62	59	61	62	59	61	52	50				

HOURLY VALUES OF fEs AT Wakkanai  
 AUG. 2003  
 LAT. 45°23.5'N LON. 141°41.2'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D <sup>H</sup>	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	37	46	G	G	33	41	48	67	56	58	48	65	62	G	G	65	53	60	59	72	N	33	48
2	47	37	G	G	G	G	38	46	49	44	G	56	G	65		66	174	53	58	31	45	48	60	G
3	G	G	G	30	32	G	34	45	51	61	54	52	44	46	G			42	55	45	40	36	56	70
4	60	36	34		G	32	G	G		G	G		65	84	G	G	53	51			72	60	39	32
5		32		G	G	G	36				88	46	62	47	48	G	97	80	54	60	72	36	38	54
6	44	50	39	45	40	35	38	61	72	66	68	57	54	61	72	57	49	39	34	G	27	40	46	57
7	40	33	37	51	43	36	39	51	70	68	52	88	66	99	90	110	96	83	70	65	70	48	68	40
8	49	27	42	47	38	39	45	63	68	68	97	47	51	G	G	61	51	47	70	70	72	49	51	49
9	58	57	38	51	49	31	42	51	76	81	112	79	51	46	78	56	46	52	53	64	52	38	G	28
10	32	28	34	48	43	27	42	48	83	68	52		61	76	61	G	40							
11														C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	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							
21	G																							
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	10	11	10	10	11	11	11	10	9	10	10	8	10	10	9	9	9	9	9	9	10	9	10	10
MED	42	33	36	44	38	32	39	50	68	67	56	54	58	62	48	56	53	52	58	60	61	46	42	44
U Q	49	37	39	48	43	36	42	61	74	68	88	68	65	76	75	63	96	66	65	67	72	48	56	54
L Q	24	28	32	G	G	G	36	46	58	56	52	47	51	46	G	G	47	44	53	38	40	37	38	28

## HOURLY VALUES OF fmin AT Wakkanai

AUG. 2003

LAT. 45° 23.5' N LON. 141° 41.2' E SWEEP 1.0 MHz TO 30.0 MHz 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	14	14	14	14	20	14	16	16	20	17	21	21	24	29	24	21	18	17	17	14	14	14	14	15	
2	14	15	14	20	15	15	14	18	17		24	32	34	33		22	18	15	14	15	14	14	15	15	
3	15	16	20	15	14	14	15	15	20	35	20	20	21	21	21	15	20	15	14	14	14	15	15	15	
4	14	15	15	15	15	14	20	20		24	24		30	23	23	22	18	17	14		15	14	14	15	
5	14	14	17	14	14	20	14	17	16	17	23	35	34	29	21	20	16	16	14	14	14	14	14	14	
6	15	14	14	14	14	14	14	18	18	18	20	22	26	21	20	15	14	14	14	16	14	15	14	14	
7	14	14	14	14	14	14	14	14	20	22	21	23	24	22	21	17	14	18	15	14	14	14	14	14	
8	15	14	14	14	14	14	14	15	21	23	21	29	23	21	18	20	18	15	14	15	15	14	14	15	
9	14	15	14	14	14	14	15	14	18	20	21	22	22	23	20	20	20	14	17	14	14	14	16	15	
10	14	14	14	14	14	14	14	15	18	21	20	22	23	23	21	20	22	15							
11														C	C	C	C	C	C	C	C	C	C	C	
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C	
14	C	C	C	C	C	C	C	C	C	C	C	C	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					16	14	14	14	15
21	14	15	17	14	14	14	21	23	21	24		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	11	11	11	11	11	11	11	11	10	10	10	9	10	10	9	10	10	10	10	9	10	10	10	10	
MED	14	14	14	14	14	14	14	16	19	22	21	22	24	23	21	20	18	15	14	14	14	14	14	15	
U Q	15	15	17	15	15	14	16	18	20	24	23	30	30	29	22	21	20	17	16	15	14	14	15	15	
L Q	14	14	14	14	14	14	14	15	18	18	20	21	23	21	20	17	16	15	14	14	14	14	14	14	

HOURLY VALUES OF f<sub>o</sub>F<sub>2</sub> AT Kokubunji  
AUG. 2003  
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 30.0MHz 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		46	A	47	A	46	A	A	A	A	A	A	A	A			54	53	55	61	58	57	54	53	A			
2		A	50	54	A	41		54	59	A	A	A			68	71		67	71		73	63	54	A	A			
3		A	47	A	46	45	45	57	A	A		56	62	63	A		78	82	75	69	68	63	A	65	66	66		
4		55	54	54	55	47	55	63	A	61		63	66			67	69	69	68	69	78	77	63	62	62			
5		62	62	54	52	47	54	56	67	60	A	58	A	A	A		67	68	71		A	A	77	64	52	A	54	
6		63	61	54	A	54	55	74	77	65	A	A	A		83		97	96	102	91	84	76	85	A	66	54		
7		A	54	61	A	54	62	71	72	A	A		73	76		51	A		82	78	80	78	85	84	66	66		
8		66	66	65	66	66	47	57	66	65	68	A	A		69	82	101	106	83	86	81	77	77	66	A	A		
9		66	55	55	52	44	55	75	83	72	A	A	A		75	82	78	85	91	90	88	84	79	75	88	76		
10		77	66	66	54	53	55	62	64	61	A	A		71	68		88	86	80	71	69	77	77	54	51	52		
11		54	A	54	53	52	51	64	80	76	A	A	A			76	75	81	84		A	93	78	A	74			
12		54	52	52	49	A	44	64	84	A		69		A	A		86	80	94	92	82	88	87	77	54	52	52	
13		54	63	55	52	52	59	71	82	90	A	A		81	85	86	87	96	98	91	93	91	80	A	66	66		
14		A	55	54	52	48	55	54	80	A	A	A		76	76	76	83	91	83	69	84	81	A	88	54	A		
15		54	52	48	53	45		56	72	A	A	A		71			68	73	76	75		76	A	66	A	72		
16		A	A	52	55	51	55	61	A	A		A	A	A			73	71	75	86	88	85	90	78	75	72	70	
17		66	64	54	57	54	64	76	97	72	75	65	A		66	A		68	62	72	74	80	87	73	78		74	
18		66	66	64	54	52	54	75	88	67	71		77	101	95	102	100	110	87	94	82	77	87	81				
19		80	74	61	62	52	53	55	55	55	A	A		A		A		48	54	56	55	66	A	63	62			
20		43		40	42	42	44	60	A	A		A		69	78	78	76	81	77	81	81	76	66	54	54	59		
21		54	45	A		44		69	77	59	59	67	72	77	76	81	81	82	91	97	99	53				52		
22		A	43	43	45	42		45	A	A	A	A						A		58	64	54		48	A	54		
23		42	41	45	A	A		A		A	A		A		A			66	62	58	56	55	55	53			44	
24		51		44		45		55	54	63	57							57	59	58	61	62	62	53	52	47		
25			47	44	42	34	38	55	67		67	66	66				69	75	74	64	66	73	54	54	A	52		
26		51	53	51		42	51	55	61	74	61	69	58	69	72	72	64	63		A	A		73	77	75	73	66	
27		55	61	55	54	47	48	59	74	69	64	74			71	69	69	72	72	73	73	72	63	54	53			
28		53	52	47	46		37	A	A		A	A	A		A			58	58	52	58	A	52	52	54	A		
29		A	54	54	46	44		A	59	59			73	81	76	72	67	71	66	66	73	72	54	51				
30		51	47	53	49	44	42	45	51	41		53			74	75	77	69	64	54	55	54	54	54	54	54		
31		52	52	52	45	42	42	66	59	56			72	80	82	76	74	71	69	77	66	54	54	54	54	54		
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT		23	26	29	23	28	23	27	23	18	10	10	14	14	16	24	29	30	29	26	30	26	27	22	21			
MED		54	54	54	52	46	53	60	72	64	68	66	72	76	76	76	75	74	71	75	76	72	54	58	54			
U Q		66	62	55	54	52	55	69	80	72	70	69	76	81	82	82	85	83	85	84	84	77	66	66	66			
L Q		51	50	47	46	44	44	55	59	59	61	58	66	69	72	70	66	69	64	64	66	57	54	54	52			



HOURLY VALUES OF fEs AT Kokubunji

AUG. 2003

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 30.0MHz 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	37	36	47	35	61	57	60	55	60		51	48	59	53	G	G	42	G	38	71	30	36	43			
2	60	49	48	47	28	30	37	43	63	110	80	50	50	45	61	61	G	50	66	31	G	53	65	57			
3	60	49	66	49	26	G	49	80	72	53	55	59	55	75	G	G	G	41	40	38	69	49	91	39			
4	49	39	39	25	G	G	42	70	51	72	G	G			G	G	G	G	G	27	26	G	47	34			
5	48	48	43	39	G	G	G	G	49	84	60	63	96	90	62	48	54	116	96	106	G	33	82	59			
6	56	51	43	70	48	43	G	G	49	70	100	91	104	97	86	65	39	40	40	49	52	80	54	48			
7	70	G	49	76	32	G	43	41	104	83	52	53	87	59	100	67	G	G		34	36	33	27	49	49		
8	68	59	G	G	G	G	G		63	52	52	101	83	48	60	52	G	G		54	42	72	58	39	68	116	
9	39	59	39	48	37	G	44	47	60	114	117	91	G	G			48	86	83	70	86	52	78	78			
10	36	48	39	29	47	39	48		55	84	175	G	G				G	G		50	50	33	G	G	33	50	
11	36	58	49	28	G	G	45	61	79	120	89	104	82	66	61	45	40	54	96	53	84	85	60	49			
12	29	30	24	27	54	G	G	56	104	G	45	72	138	G	G		49	48	46	G	80	48	29	30	G	24	
13	25	66	30	32	G	G	49	57	52	71	148	136	50	G	G		50	61	62	76	68	52	26	72	59	45	
14	82	43	26	G	G	G	28	59	92	65	71	73	60	49	G	G	G	G		40	39	58	104	84	94	67	
15	56	G	27	34	G		G	47	82	86	134	47			58		G	G		50	92	60	92	43	57	57	
16	70	83	G	G	G		33	47	85	87	84	87	74		65	53	G			40	39	40	43	48	G	43	27
17	40	40	36	28	G	G	40	40	46	48	54	94	64	78	49	G	49	49	G	26	45	49	27	G	G		
18	31	G	G	G	G	G	G	42	G	73		50	G	50	49	55	39	G		36	31	29	G	G			
19	G	G	G	G	G		26	35	49	50	80	51	50	50	56	60	51	52	49	39	34	90	40	49	33		
20	31	43	28	G	G	G	G		71	80	42	90	G	46	61	57	G			47	39	43	G	G	G	39	40
21	48	G	88	40	G		32	62	51	G	G	53	49	G	G		56	61	39	G	31	27	46	45	43		
22	60	26	26	25	G		34	82	76	135	74		46				48	55	42	89	G	36	35	57	26		
23	G	G	50	47	48	39	68	43	52	49		49		60	43	40	G	G	G	G		25	33		G	G	
24	G	G	G		G		G	G	G	G	G					G	52	47	34	40	G	26	G	G			
25		G	G	G	G		25	52	G		45	47	50	G		42	G	G	G				45	83	35		
26	G	G	G		G	G	G	G	48	60	50	46	G	G	G	40	G			60	68	40	49	85	29	G	
27	50	39	29	25	G	G	G	39	G	G	50	50		G	G	G	G			40	40	26	G	26	34	26	
28	G	G	G	G			32	52	68		71	92	83		100	50	41	62	47	32	71	30	G	95	51		
29	60	G	28	39	G	G	60	61	G			45	G	G	G	G	G	G	G	G		26		33	G		
30	G	32	26	G	G		25	40	42	G	G			G	49	61	G	G		30	G	G	24	40	43		
31	48	G	G	G	G	G	G		45		48	62	G	G	G		47	38	35	29	33			53	26		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	30	31	31	29	30	27	31	31	30	29	27	28	23	26	29	31	31	31	31	31	31	31	31	30	30		
MED	44	37	28	28	g	g	37	47	52	70	62	50	48	53	49	40	38	41	40	36	29	33	49	42			
U Q	60	49	43	43	28	32	48	62	76	84	92	73	64	65	57	55	49	50	68	52	58	49	65	50			
L Q	25	g	g	g	g	g	g	40	46	48	50	48	g	g	g	g	g	g	29	26	g	g	34	26			

HOURLY VALUES OF fmin                      AT Kokubunji

AUG. 2003

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 30.0MHz 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	22	13	28	21	13	15	17	20	20	33		37	33	34	29			15	17	22	14	22	14	28
2	26	14	15	29	14	18	22	28	20	34	36	38	40	38	36	37		29	21	13	15	14	14	14
3	17	15	14	13			13	21	33	39	34	34	34	31			18	28	28	13	23	20	24	29
4	15	15	17	18	28	28	13	15	29	30								15	17	18	14	18	34	14
5	14	14	14	18	22		28	37		34	36	34	35	35	38		34	33	17	34	18	15	14	13
6	13	17	14	33	13	15	33	18	34	34	34	36	36	35	35	30	18	15	13	13	14	17	14	17
7	17	20	18	17	13	33	14	20	31	34	37	38	42	36	35	34		30	15	20	20	18	28	28
8	18	18	13	17	15	17	17	17	31	34	33	34	36	34	34	43		28	17	13	14	14	15	15
9	20	14	14	13	17	20	17	34	34	34	34	38		42		35	20	18	17	17	14	28	15	28
10	15	17	15	14	28	15	28	34	35	34	33				34			30	20	18	29	14	15	14
11	17	14	15	18	20	15	20	20	33	34	34	34	39	36	31	21	30	26	18	18	14	14	14	13
12	14	15	17	15	17	18	30	20	33		33	40	37	53	39		34	21	15	17	17	17	15	15
13	14	14	17	14	18	17	17	18	33	33	37	53			39	35	31	20	14	15	13	13	17	17
14	15	13	18	28	17	15	25	18	30	31	31	31	33	33			38		17	20	14	15	17	14
15	13	34	14	13	34		36	34	33	35	42	37			38	34		20	23	18	34	34	13	35
16	24	14	36	34	34	15	31	34	34	34	35	35	40	34	34	31	21	17	28	14	26	33	28	20
17	18	14	14	15	20	18	17	20	31	34	34	34	34	31	33		28	31	17	18	17	18	15	21
18		13	34	20	34	15	33	30		34		39		34	33	30	26	17	15	20	13	15	15	
19	15	18	29	18	20	18	14	17	28	33	35	36	38	37	22	34	31	28	20	14	13	14	13	14
20	13	14	13	14	15	17	14	23	26	35	33		30	33	28	34	20	17	14	14	14	15	15	15
21	17	17	28	13	17		31	24	31	44		34	33			28	21	17		14	17	14	15	14
22	20	17	18	20	18		18	22	21	34	35		39			34	31	20	18	30	23	15	14	18
23	14	20	18	13	18	29	17	31	31	34		36		31	25	20		30	21	22	17	33		34
24	34	34			28		33	35		50	34					37	20	17	15	17	17	15	17	21
25		20	14	20	18	15	14	17	44		37	31	53		22			34	30	25	34	18	14	15
26	28	18	18		14	20	24		26	29	18	34	47		52	46		25	14	17	14	18	17	18
27	14	15	17	13			17	20	36		34	33					18	17	21	13	17	14	13	17
28	20		20	20		14	15	28		34	34	35		34	31	21	17	13	14	21	15	31	18	14
29	13	28	13	13	20	15	18	17				26					37	34	20	14	14	14	13	
30	34	14	15	20	18	15	21	17			48			30	30	29	38	15	14	14	20	14	14	18
31	17	15	13	26	15	18	26	25		35	34		35		48	34	30	15	14	26	21	20	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	29	30	30	29	28	24	31	30	24	26	25	24	19	19	22	20	21	30	30	31	31	31	30	29
MED	17	15	16	18	18	17	18	20	31	34	34	35	36	34	34	34	28	20	17	17	17	15	15	17
U Q	20	18	18	20	21	18	28	30	33	34	36	37	40	36	38	35	32	29	20	20	20	20	17	21
L Q	14	14	14	13	15	15	17	18	28	34	33	34	34	33	30	29	20	17	15	14	14	14	14	14

HOURLY VALUES OF f<sub>o</sub>F<sub>2</sub> AT Yamakawa

AUG. 2003

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1.0MHz TO 30.0MHz 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	52	43		47	36	53	51	A	A	A	A	A			78	63	A	61	66	62	A	A	A	53	
2			54	51	A	51	53	67	A	A	A	66	66		76		74	78	79	78	70	63		52	
3	42	A	47	37	47	47	51	62	A	73	A	A	A		77	85	86	84	80	77	66	54	54	62	
4		54	52	54	50	45	60		57	67	66	62	68	68	73	78	78	77	77	78	78	66	52		
5	54	49	52	51	49	47	54	72	67	67	68	A	A	A			76	78	85	80	A	A		52	54
6	A	A			47	36	65	52	58	66	74		A		80	81	100	A	113	86	85	83	A	72	55
7	76	53	64	58	58	55	61	65	A	A	67	78	76	78	81	81	80	86	86	86	85	77	54	A	
8	63	61	61	66	52	A	A		66	58	56	76	61		A		110	85	88	85	87	77	77	73	66
9	54	61	55	A	A	51	70	77	67	76	74		78	84	85	86	91	88	109	85	80	78	78	75	
10	87	78	78	51	58	50	54	69	66	C	77	76	72	78	81	C	C		78	81	86	66		52	54
11	55		58	C	52	C	56	C	C	C	75	79		C		77	78	84	82	85	84	76	74	78	76
12	76	77	66	A	A	A	61	78	75	A	A				77	78	82		A		110	73	54	66	66
13		66	52	55	58	60	66	78	73	77	80	84	76	84	84	85	87	110	113			78	52	52	
14	63	55	54	55	52	50	A	78	88	A	A	A		85	78	85	88	86	81	87	86		80	A	A
15		55	55	66	A	A	A	74	80	A	A	74		A		76	86	86	86	82	A		66	53	66
16	60	55	60	58	58	56	55	79	82	76	A	A	A		A	A		87	92	87	86	78	77	78	78
17	72	72	67	52	54	49	66	80	70	80	73		68	72	72	72	74	80	86	84	86	80	77		
18	76	66	64	62	61	62	78	76	74	71		82	88	86	87	62	112		90		84		86	78	
19	80	76	54	76	70	76	80	67	54							67	75	66	67	65	76		52	62	
20	66	66	54	55	46	46	52	63	67		A	A		87	90		114	111		116	109	77	70	66	66
21	50	51	47	37	42	36	51	66	61	A	64	78	80	84	88	88		110	111		78	A			
22	A	A	42	A		34	41	46	35	A	64		66		66	66	62	67	80	64	51	54	52		
23	A		47	53	A	A	40	55	A	A	A	A			71	76	75	75	74	68	66	72	54	47	52
24	52	43	37	44	A	38	49	54	75	62	68	66	68	77	63	63	73	78	78		A	72	63	A	55
25	36	54	42	48	42	32	42	64	72	67	64				74	78	76	71	72	80	66	54	37	54	
26	55	52	50	55	53	47	47	61	74	56	72	71	78	80	81	75	68	67		A	A	80	64	60	61
27	53	53	62	55	47	51	55	68	62	66	58			80	80	78	80	81	84	80	70	A	54	53	
28	51	51	52	39	49	36	37	53	A	A	A	A		A	A	A	67	A		66	66	52			
29	49	48	46	44	A	A	48	65	54		A	70	84	77	81	90	81	76	80	78	77	54	52	66	
30	52	54	52	52	48	44	42	50	60	57		66	80	82	77	81	82	75	72	66	60	51	53	42	
31	51	54	A	A			52	68	70	76	75	82	88			85	84	85	86	78	62	53	52	52	
	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	25	28	25	22	24	28	28	24	16	17	15	17	19	23	26	26	27	29	26	27	22	25	23	
MED	54	54	54	53	51	48	54	66	67	67	72	74	78	78	78	80	80	80	85	80	76	64	54	61	
U Q	69	66	60	56	58	52	61	75	74	76	75	79	84	84	81	86	86	86	86	86	78	77	72	66	
L Q	51	51	48	47	47	41	48	61	59	64	65	66	68	77	76	75	75	75	77	77	66	54	52	53	

HOURLY VALUES OF fEs                      AT Yamakawa  
 AUG. 2003  
 LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D <sup>H</sup>	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	36	31	32	28	31	24	35	61	44	72	70	54	56	G	G	50	58	50	39	72	89	59	60	32		
2	54	60	37	46	72	32	47	60	61	79	60	G	50	70	70	72	64	44	36	28	25	58	53	56		
3	28	61	40	29	37	G	G	39	70	62	72	54	75	83	53	62	G	46	43	39	34	43	24	59		
4	40		G	G	32	38	29		40	48	44	G	G	G	G	44	G	41	37	28	G	G		G		
5	38	28	G	26	24	27	26	40	52	60	62	92	159	89	89	56	75	43	40	34	69	59	69	84		
6	82	69	43	40	36	38		40	43	G	52	73	87	71	48	75	112	36	33	33	32	83	60	57		
7	83	34	41	40	34	G	G	38	80	90	53	G	57	G	G	60	48	G	58	40	G	G	G	39		
8	36	41	70	41	58	59	59		48	G	G	G	52	68		55	46	44	G	26	19	34	G	25		
9	59	43	40	104	79	64	40	44	56	G	G		G	57	52	44	57	50	G	41	26	28	58	49		
10	43	40	40	37	24	29	G	36	49	C		53	50	G	G	C	C		38	39	32	59	40	34	70	
11	33	40	39	C	35	C	G	C	C	C		49	50	54	C	G	G	G		43	43	55	41	55	58	70
12		69	83	86	62	91	57	86	79	74	129	G	54	58	56	60	74	84	82	39	40	37	39	32		
13	28	27	G	G	G	40	38	36	57	70	61	G	G	G	G	G	49	51	50	73	38	57	40	58		
14	54	40	40	38	26	82	74	48	80	93	94	94	58	61	57	G	G	G		37	49	72	59	83	92	
15		32	92	58	53	70	46	60	58	77	72	68		88	G	43	67	72	55	51	88	40	55	59		
16	50	91	53	36	28	36	G	39	44	52	93	101	149	60	78	92	58	38	59	41	32	G	G	G		
17	G	G	G	G	G	G	G		34	40	42	58	60	G	60	59	70	48	55	92	44	40	30	33	28	
18	29	40	32	27	G	G	G	G	G	G		51	44	53	G	G	G	G	G	G		31	28	G		
19	G	G		24	G	G	G		G	G				58	56	58	56	40	G	40	36	48	43	39		
20	40	27	50	G	G	28	G	36	42	66	84	104	50	52	G	42	G		G	G	G	G		43	23	
21	37	30	G	G	G	23	G	G	G	96	48	G	G	G	G	G	G	G		37	45	40	32		38	
22	58	44	G	42	28	G	G	37		58			G	52	G	G	54	48	50	36	26	G	G		59	
23	59	36	30	26	36	68	36	43	73	79	69	114		G	G	G	G		36	33	33	34	29	24	33	
24	27	29	G	G	44	G	27		42	51	50	G	G	G	G	G	42	G	G		60	44	40	85	44	
25	26	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G	G		34	G	G	G	G	25	
26	30	40	38	34	26	G	G	G		39	45	G	G	G	G	G	51	46	93	95			43	41		
27	32	27	27	G	G	G	26	G		55	59	52	G	G		45	43		55	42	82		27	G		
28	27	28	29	27	29	G	G	41	114	79	174	104	58	90	96	74	48	97	40	41	30	38	28	28		
29	35	39	32	38	91	57	29	37	40	G	65	56	G	G	G	41	43	G	G	G	G	G	26	G	G	
30	G	G	G	G	G	25	28	36	43	41	43	71	52	G	G	G	46	G	G	G	G	G		25	25	
31	G		72	94	71	39	39	G	G	43	49	49	G	G	G		G	39	G	G	G	G	G		33	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	29	30	31	30	31	30	30	29	30	29	30	28	28	29	30	30	30	29	31	31	31	30	30	31		
MED	36	38	32	28	29	28	14	37	44	58	53	50	51	52	G	44	46	41	39	39	32	33	32	38		
U Q	52	43	41	40	39	40	36	42	58	75	70	72	57	64	56	60	57	49	50	45	44	43	55	58		
L Q	27	28	G	G	G	G	G	G	40	G	48	G	G	G	G	G	G	G	33	28	G	G	G	25		

## HOURLY VALUES OF fmin AT Yamakawa

AUG. 2003

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1.0MHz TO 30.0MHz 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	14	15	14	14	15		14	15	17	20	24	29	28	33		21	20	16	15	15	17	15	14	15		
2	14	15	15	15	14	14	16	16	17	24	35			45	42	35	22	18	17	15	15	14	15	15		
3	15	14	14	15	15	16	21	14	20	34	32	30	32	30	30	22	18	16	14	14	15	14	15	15		
4	14	14	15	15	15	16	15		17	18	22	33	28	29		22	18	18	14	15	15	15	14	17		
5	14	15	17	17	15	15	15	15	14	21	29		38	38	38		21	20	15	15	14	15	15	14		
6	15	14	14	14	14	15	20	29	17	23	21	26	35		36	30	29	15	15	14	14	15	15	16		
7	15	14	15	14	14	15	23	17	18	23	28	28				36	22	21	20	15	15	15	17	15		
8	15	14	15	14	14	14	15	16	18	21		28	32	32		26	20	17	15	18	17	14	16	16		
9	15	14	15	14	14	15	14	15	17	21						24	20	16	14	14	15	15	14	14		
10	15	14	15	15	15	14	20	15	17	C		26	33	28	33	30	C	C		16	14	14	16	15	14	14
11	15	14	14	C	15	C	21	C	C	C		26	28	36	C	35		21	18	15	15	14	15	15	14	
12	14	15	14	15	14	15	14	16	17	23	22		40	42	39	34	27	18	17	14	14	14	14	15		
13	14	16	17	14	16	14	15	15	18	22	33						22	18	17	15	15	15	14	14		
14	14	14	15	15	15	15	15	17	17	22	30	29	33	33	30	46	52	21	14	15	15	15	15	14		
15		15	14	14	14	14	15	20	21	34	34	38		42	29	29	24	17	16	15	15	14	14	15		
16	14	16	15	14	15	15	20	15	18	24	27	35	36	34	47	29	24	16	14	14	15	15	15	16		
17	15	15	15	21	16	15	18	15	18	26	30	34		38	30	30	23	18	15	15	14	15	15	14		
18	14	15	15	14	16	14	18	15	18	22	28	36	38				21	18	15	17	16	15	15	15		
19	15	16	16	18	14	15	15	14	18	22			44	33	29	27	22		16	15	14	14	17	14		
20	15	15	15	15	16	18	18	15	18	21	27	29	30	30		23	20		22	15	15	15	15	14		
21	15	15	14	14	15	15	18	20	18	26	26		23	28		23	21	16	14	14	15	15		15		
22	15	14	16	14	17	15	18	22	20	33			54	44			33	17	15	14	16	18	15	14		
23	14	15	15	17	15	15	14	15	20	21	30	35		28	27	21	17	15	14	14	14	14	16	16		
24	17	14	17	16	14	16	16	15	18	22	21				36	27	22	16	26	14	14	15	14	15		
25	17	15	15	16	16	15	18	16	18	21	26	22	55			26	21	17	15	18	15	16	15	15		
26	15	15	15	15	15	15	17	17	17	17	28	20	29	24			22	17	15	15	15	15	14	14		
27	16	14	16	15	17	15	15	15	14	28	34	33				28	20	17	20	14	15		15	18		
28	16	16	15	17	17	22	18	16	18	30	34	34	29	29	28	22	21	15	14	15	15	15	15	15		
29	14	17	15	14	15	15	15	16	17	18	22	23	26		22	21	17	14	16	15	15	15	16	16		
30	15	15	17	16	16	15	15	17	18	21	35	34	34			28	20	18	22	23	15	15	17	18		
31	16	15	15	14	14	14	18	15	18	32	34					36	20	18	15	18	15	15	17	15		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	30	31	31	30	31	29	31	29	30	29	27	21	21	19	16	24	30	29	31	31	31	30	30	31		
MED	15	15	15	15	15	15	16	15	18	22	28	30	33	33	30	27	21	17	15	15	15	15	15	15		
U Q	15	15	15	16	16	15	18	17	18	26	33	34	38	38	37	30	22	18	17	15	15	15	15	16		
L Q	14	14	15	14	14	14	15	15	17	21	26	28	28	29	29	22	20	16	14	14	14	15	14	14		

HOURLY VALUES OF fOF2 AT Okinawa  
 AUG. 2003  
 LAT. 26°40.5'N LON. 128°09.2'E SWEEP 1.0MHz to 30.0MHz 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	54	51	46	52	58	64	42	50	56	A	A	A	A	72	86	74	73	67	77	80	65	61	54	50	
2	A	48	50	44	A	47	65	70	58	58	58	59	86	80	94	91	90	105	105	90	77	66	44	A	
3	A	54	54	50	72	65	50	52	60	77	67	A	A	72	83	A	106	108	102	90	78	73	66	52	
4	55	52	61	55	50	44	65	65	62	67	62	66	80	80	84	88	86	87	91	97	86	74	64	66	
5	62	62	60	61	53	47	58	65	61	68		64	71	71		77	86	90	102	72	54	54	58	51	
6	54	51	A	54	60	45	41	57	A		78	70	80	90	96	115	131	146	141	131	110	107	84	66	
7	A	84	73	74	72	66	66	75	74	59	68	76	77	84	85	91	97	106	117	110	101	80	73	66	
8	72	71	74	80	64	41	A	75	59	61	78	68	75	87	103	120	107	115	131	111	100	78	74	76	
9	66	54	54	55	56	55	66	90	70	76	73	77	78	95	106	111	117	118	123	121	106	101	101	88	
10	83	87	81	75	61	50	52	68	62	78	76	85	94	85	92	108	104	88	107	110	A	66	65	65	
11	66	64	66	66	68	60	55	70	80	66	77	81	72	72	88	93	92	102	102	95	80	78	66	65	
12	71	68	72	60	55	55	65	100	68	71	76	78	76	86	84	90	A	113	121	110	A	66	66	66	
13	54	66	61	58		60	63	72	A	A	79	87	96	91	94	95	107	122	131	137	126	84	65	66	72
14	72	72	71	71	61	52	66	86	A	A	77	92	101	97	108	116	118	108	111	127	110	86	44	A	
15	A	75	78	72	54	54	51	75	85	A	A	A	98	102	105	118	142	150	145	142	131	104	72	82	
16	86	97	87	87	86	76	73	87	110	84	72	74	85	A	88	A	110	120	127	125	106	87	106	88	
17	102	105	101	78	71	64	72	72	80	86	74	75	76		75		85	86	100	105	105	87	84	87	
18	85	82	76	70	63	63	78	78	71	74	74	86	91	100	111	125	127	131	126	140	110	131	123	107	
19	105	106	86	77	76	84	87	90	66	66	62	63	70		72	82	87	80	80	90	85	54	71	74	
20	66	72	65	51	52	47	50	59	71	75	88	108	124	142	156	172	157	152	151	145	124	106	87	81	
21	66	61	67	48	51	48	43	66	68	81	70	82	91	116	118	131	152	153	145	147	88	50	42	49	
22	51	47	42	A	32	34	45	56	54	68	97	71	93	87	85	76	75	86	102	80	A	A	54	51	
23	55	48		36	30	A	59	63	A	65	71	82	82	88	97	90	101	101	101	86	81	80	51	53	
24	54	52	51	36	42	40	40	60	65	67	70	71	86	98	88	70	87	108	100	87	66	61	A	A	
25	52	52	50	47	41	30	35	70	80	74	62	64	75	83	87	88	84	85	87	102	74	47	46	48	
26	48	50	51	55	45	32	38	56	61	64	74	86		102	100	85	75	78	A	100	86	66	54	61	
27	62	65	70	55	50	43	51	64	72	70	A	71	76	102	116	108	111	110	110	107	80	52	A	A	
28	52	52	53	51	43	34	38	62	62	60	A		81	82	81	86	84	81	A	85	63	51	A	53	
29	50	50	50	47	40	41	52	84	54	56		75	91	101	107	110	110	110	105	102	83	66	54	54	
30	66	55	52	52	54	54	46	55	64	58	64	84	102	107	106	97	101	92	96	82	66	61	53	61	
31	54	54	52	51	44	A	45	69	68	77	72	87	118	136	143	141	128	133	131	110	83	66	66	76	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	27	31	29	30	29	29	30	31	27	27	25	27	28	28	30	28	30	31	29	31	28	30	28	27	
MED	62	61	61	55	54	50	52	69	66	68	73	76	84	89	94	95	102	108	107	105	84	66	66	66	
U Q	72	72	73	71	63	61	65	75	72	77	77	85	92	101	106	115	118	120	129	125	105	86	73	76	
L Q	54	52	51	51	44	42	45	60	61	64	67	70	76	82	85	87	86	87	100	90	77	61	54	53	

HOURLY VALUES OF fEs AT Okinawa

AUG. 2003

LAT. 26°40.5'N LON. 128°09.2'E SWEEP 1.0MHz TO 30.0MHz 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		29	G	G	26	G	11	G	G	G	84	102	173	80	G	45	71	61	47	60	35	51	47	40	49	
2		71	32	36	29	72	42	61	50	53	48	46	56	54	G	60	55	58	56	45	38	40	27	58	56	
3		80	53	36	29	30	30	G	38	45	G	47	82	76	66	46	92	G	67	33	35	G	G	33	28	
4		49	50	60	34	30	80	35	34	G	40	G	G	46	47	54	53	46	46	40	36	71	25	27	G	
5		G	G	G	G	G	G	27	39	60	114	81	45	58	54	G	52	52	64	35	43	G	24	39	54	
6		104	27	81	26	25	25	58	48	63	68	69	60	68	52	88	95	134	55	35	38	37	68	48	59	
7		85	72	58	26	32	24	G	31	G	51	G	G	G	56	55	44	G	G	50	33	48	58	81	60	
8		72	46	40	49	G	36	60	43	54	45	56	58	56	56	67	58	44	40	68	35	25	30	G	G	
9		G	40	37	39	30	29	G	G	38	43	48	G	54	G	48	G	G	G	G	30	33	G	G	G	
10		40	29	76	51	58	44	G	46	51	47	51	61	66	54	G	G	G	G	47	46	G	72	69	32	32
11		32	43	56	40	29	30	29	G	40	G	G	44	G	G	G	G	G	G	44	40	28	70	40	46	43
12		51	33	40	45	30	30	32	64	77	77	G	48	56	55	59	72	180	144	110	60	94	49	38	40	
13		26	G	G	G	G	G	G	45	88	78	71	57	57	G	G	G	G	40	46	58	29	32	50	28	24
14		26	G	25	34	25	G	36	43	110	72	49	68	G	G	58	G	G	51	42	27	58	48	26	131	
15		94	72	72	77	63	44	34	63	66	92	117	102	65	68	G	57	54	58	58	33	28	32	72	55	
16		57	37	36	34	44	G	G	53	40	49	78	52	71	82	73	126	44	G	43	32	46	28	G	G	
17		25	G	G	G	G	G	G	35	43	45	58	67	84	83	64	90	81	49	55	56	69	48	44	24	
18		56	36	39	50	79	G	G	35	43	52	G	54	51	44	G	G	G	39	G	G	34	G	32	33	
19		26	G	29	36	G	24	26	G	37	G	48	56	63	71	56	56	47	G	40	29	25	40	35	26	
20		34	57	32	26	36	G	28	60	57	48	44	86	G	54	61	60	49	41	G	G	G	G	G	49	
21		25	40	40	G	36	23	28	G	G	40	48	58	55	G	G	G	G	38	G	G	G	G	G	G	
22		G	G	24	35	34	32	G	40	49	64	52	G	G	G	G	52	47	48	50	56	56	33	G	28	
23		48	40	35	30	25	35	58	106	62	58	51	43	52	82	60	56	58	G	G	60	33	45	26	25	
24		78	26	G	G	G	G	G	45	39	48	61	55	51	45	66	63	51	G	G	40	G	G	84	70	
25		34	26	25	G	G	G	G	36	G	42	G	44	G	G	G	42	47	42	37	36	G	G	24	G	
26		G	G	G	G	G	G	G	G	39	G	G	G	G	58	70	63	51	54	89	60	60	79	G	G	
27		27	27	G	G	G	G	G	31	47	51	71	52	G	G	48	81	63	65	58	86	49	56	85	106	
28		30	G	G	G	G	24	26	37	58	40	67	G	G	G	44	G	69	96	49	36	26	43	39		
29		33	27	G	24	26	28	28	76	45	44	49	63	48	53	56	55	59	39	32	G	30	G	G	40	
30		38	G	G	G	G	G	28	35	40	45	43	50	58	54	50	55	44	58	34	28	33	G	G	G	
31		24	G	50	G	G	51	28	30	41	49	48	57	G	53	60	48	45	44	34	26	33	G	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		31	31	31	31	31	30	31	31	31	31	31	30	30	31	30	31	31	31	28	29	29	31	31	31	
MED		34	27	35	26	25	24	26	38	45	48	49	56	54	53	54	55	47	46	42	35	36	30	32	32	
U Q		57	40	40	36	34	32	32	48	58	64	67	61	63	56	60	63	58	56	58	46	57	48	44	54	
L Q		26	G	G	G	G	G	G	31	39	42	43	44	G	G	G	42	G	39	34	28	29	G	G	G	

HOURLY VALUES OF fmin                      AT Okinawa

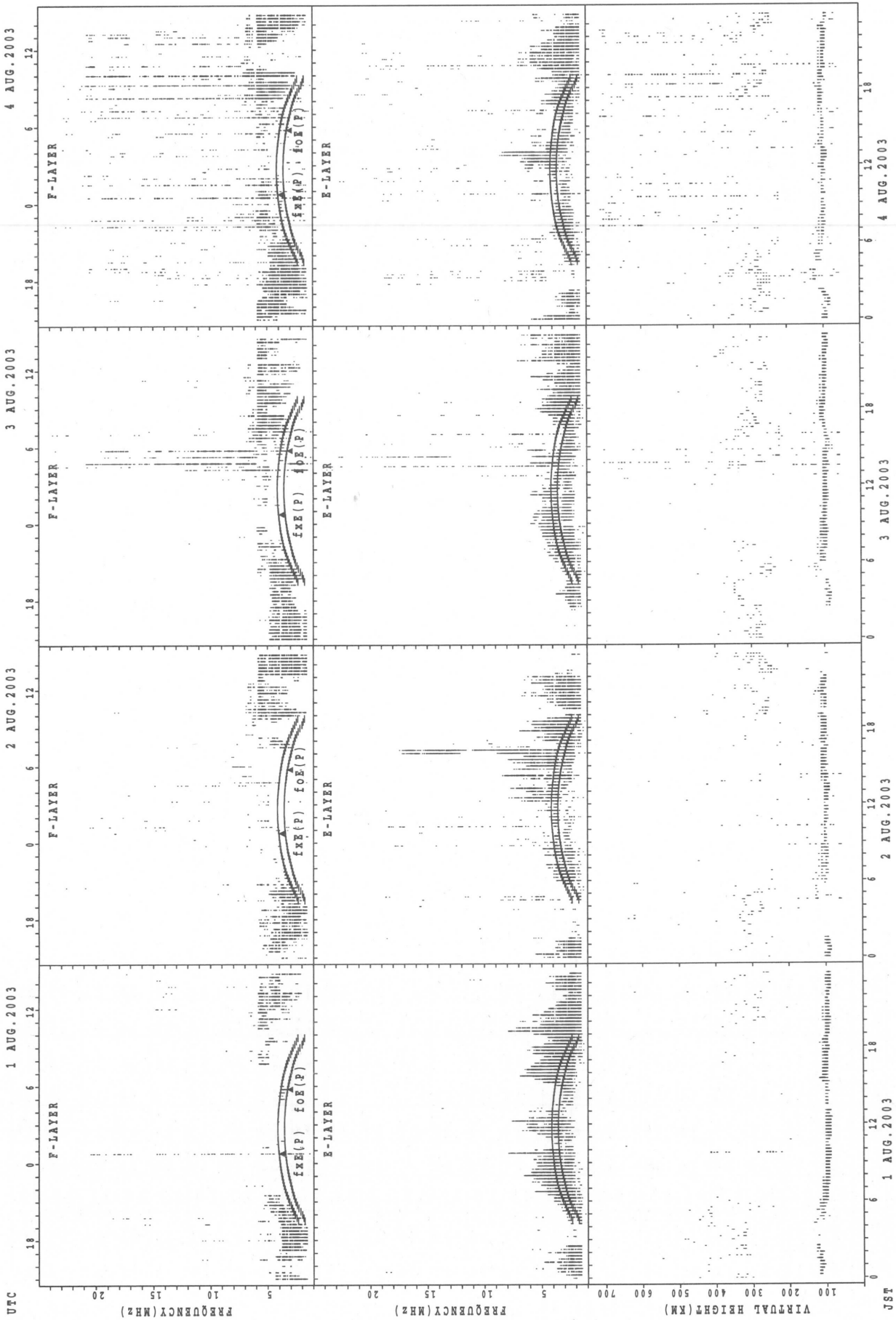
AUG. 2003

LAT. 26°40.5'N LON. 128°09.2'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

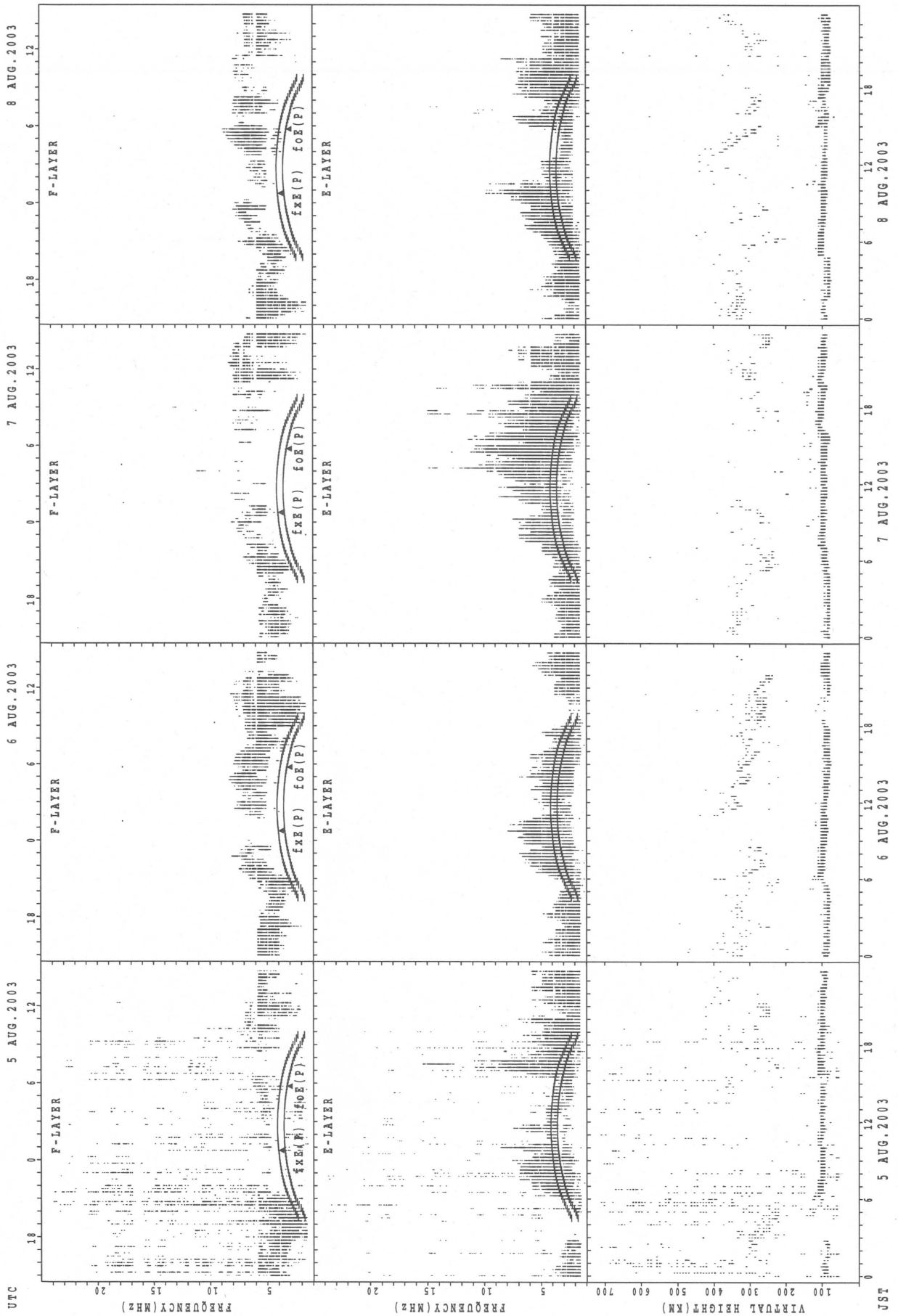
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	17	15	14	16	14	15	14	14	18	23	28	26	53	38	28	20	15	14	14	14	14	14	15
2	14	14	14	14	14	14	14	14	15	20	29	39			42	36	21	20	15	14	14	14	14	15
3	14	14	14	14	14	14	16	14	15	46	28	30	32	29	29	24	21	15	14	14	14	15	14	14
4	14	14	14	14	14	14	14	14	14	17	24	29	28	28	33	21	18	14	14	14	14	14	15	14
5	15	15	14	14	14	15	14	14	15	23	22	26				37	23	15	14	14	14	17	14	14
6	14	14	14	14	14	14	14	14	15	22	22	26	35	28	35	21	20	15	14	14	14	14	14	15
7	14	14	14	15	14	16	18	14	15	22	27	29			42	28	27	21	14	14	14	14	14	15
8	14	14	14	14	14	14	14	14	16	22	26				33	29	23	22	16	14	14	14	15	15
9	14	14	14	15	14	14	14	14	17	20	23	24	27			29	27	18	15	14	14	14	15	14
10	14	14	14	14	14	14	18	14	17	17	26	30	33	28	26	23	22	17	14	14	14	14	14	14
11	14	14	14	14	14	14	14	14	17	22	24	28	49	29		24	21	16	14	14	14	14	14	14
12	14	14	14	14	14	14	14	15	20	20	23	40	40	42	39	38	23	16	15	14	14	14	14	14
13	14	15	14	14		14	16	15	17	20	26	30	30	29	32	27	22	18	14	14	14	14	14	14
14	15	14	14	14	14	14	14	14	18	22	32	33			32		45	21	15	14	14	14	14	14
15	14	14	14	14	14	14	14	14	21	30	33	35	34	32	30	28	21	15	14	14	14	14	14	14
16	14	14	14	14	15	14	15	14	20	21	24	29	35	33	33	29	18	16	14	14	14	14	15	15
17	14	14	14	15	14	14	16	14	15	20	26	30	34	32	32	24	22	16	14	14	14	14	14	15
18	14	14	14	14	14	14	15	15	17	22	29	33	34			27	21	15	14	15	14	15	14	14
19	14	14	14	14	16	15	14	14	14	20	26	38	40	39	27	24	21	39	14	14	14	14	14	15
20	14	14	14	14	14	15	14	14	18	21	28	34			30	28	24	18	15	14	15	14	14	15
21	16	14	14	14	14	15	14	14	16	21	22	26	29	28	26	23	15	14	14	15	14	15	15	15
22	15	16	14	14	14	14	15	14	18	22	36	53			53		36	22	15	14	14	14	15	14
23	14	14	14	14	14	14	14	14	18	21	23	28	29	28	24	21	16	14	14	14	14	14	15	15
24	14	14	14	15	15	14	15	14	16	21	24				35	52	35	24	22	16	14	14	17	15
25	14	14	14	14	14	15	16	14	14	20	21						22	21	15	14	14	14	16	15
26	14	15	15	14	14	14	15	14	15	21					38	38	28	23	16	14	14	15	14	15
27	14	14	15	14	15	14	15	14	16	20	32	36	34	30	29	28	23	18	14	14	14	14	14	14
28	14	16	15	14	15	15	14	15	14	22	24				54	52	54	23	22	14	14	14	14	15
29	14	15	15	15	14	14	14	14	14	18	22	23					23	17	14	14	15	14	14	15
30	14	15	15	15	14	14	14	14	18	20	23	36	37	37	38	34	22	15	15	14	14	14	14	14
31	16	14	14	14	14	14	14	14	15	20	22	37			38		24	21	15	14	14	14	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	30	31	31	31	31	31	30	26	20	24	24	30	31	31	31	31	31	31	31	31
MED	14	14	14	14	14	14	14	14	16	21	24	30	34	32	32	24	21	15	14	14	14	14	14	14
U Q	14	15	14	14	14	14	15	14	18	22	28	36	36	40	36	28	22	16	14	14	14	15	15	15
L Q	14	14	14	14	14	14	14	14	15	20	23	28	29	29	28	23	20	15	14	14	14	14	14	14



SUMMARY PLOTS AT Wakkanai

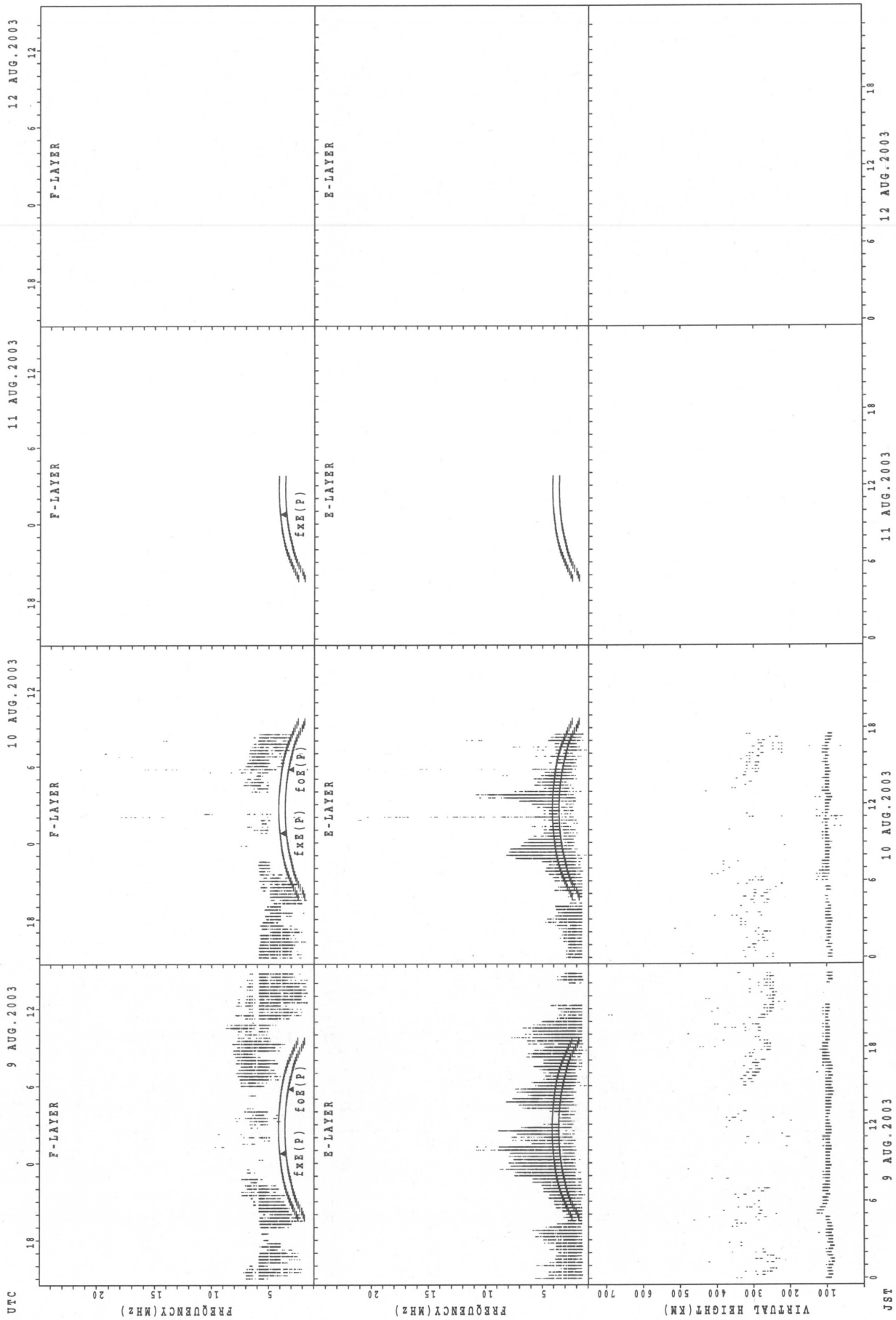


SUMMARY PLOTS AT Wakkanai



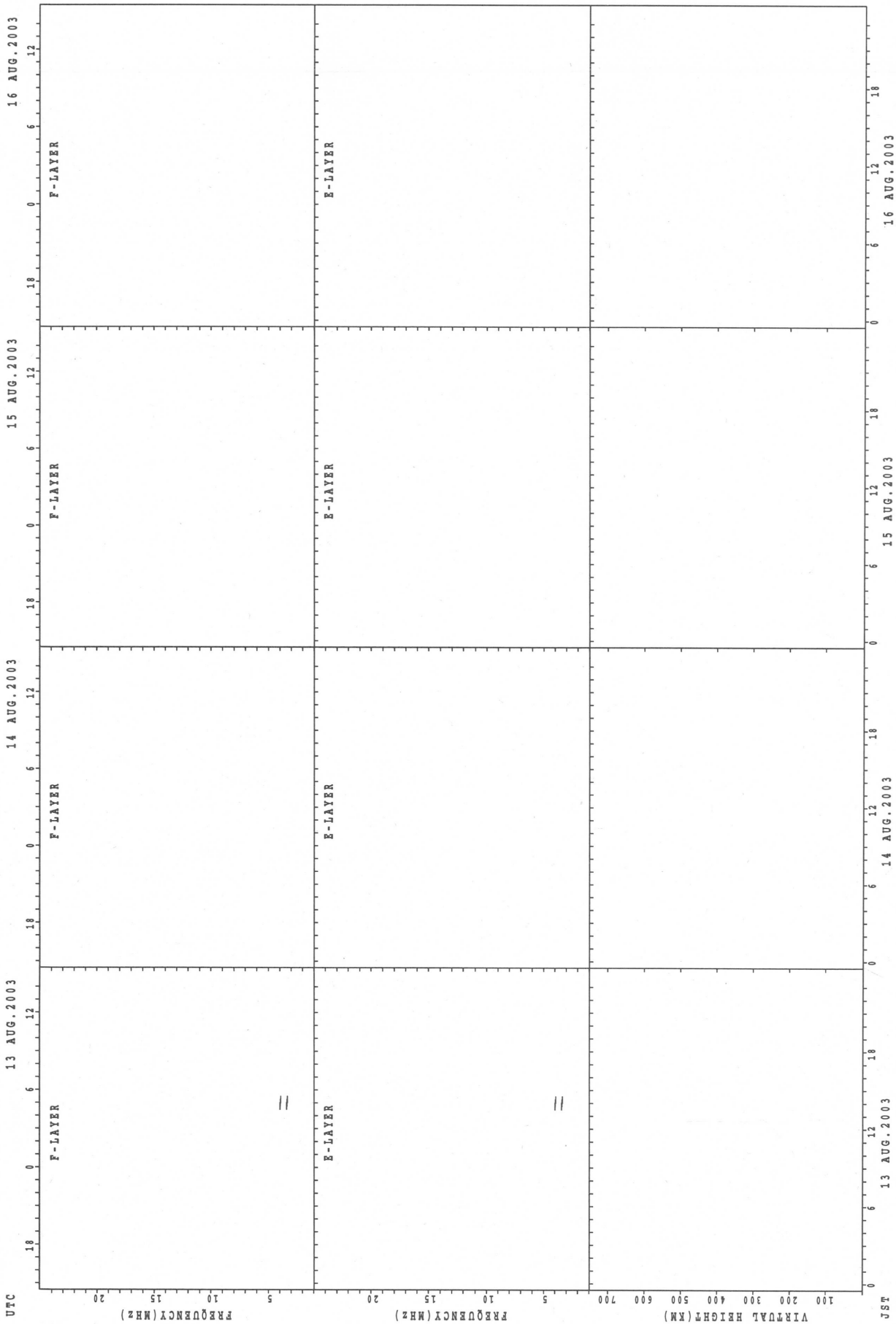
$f_xE(P)$ ; PREDICTED VALUE FOR  $f_xE$   
 $f_oE(P)$ ; PREDICTED VALUE FOR  $f_oE$

SUMMARY PLOTS AT Wakkanai



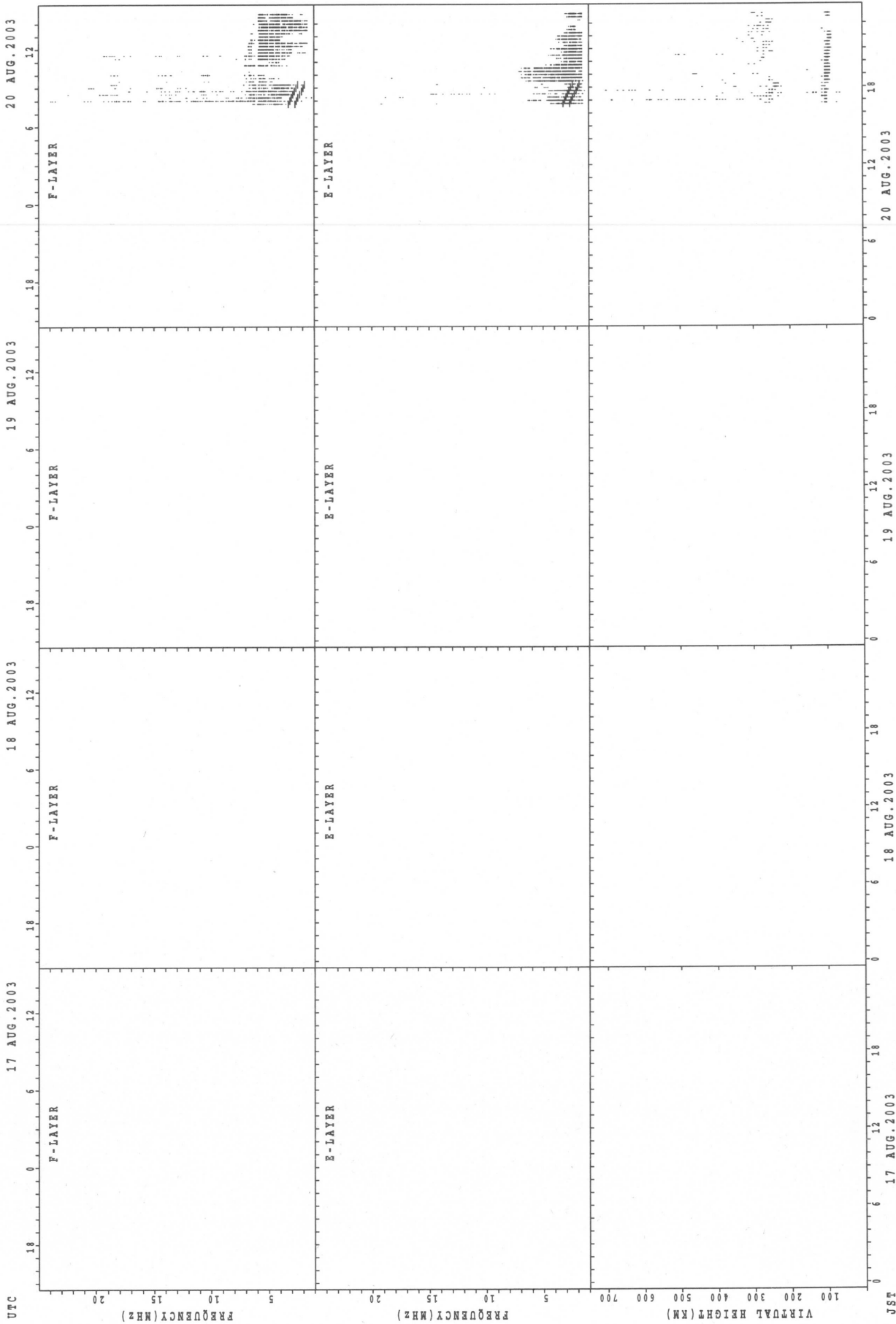
fXE(P); PREDICTED VALUE FOR fXE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



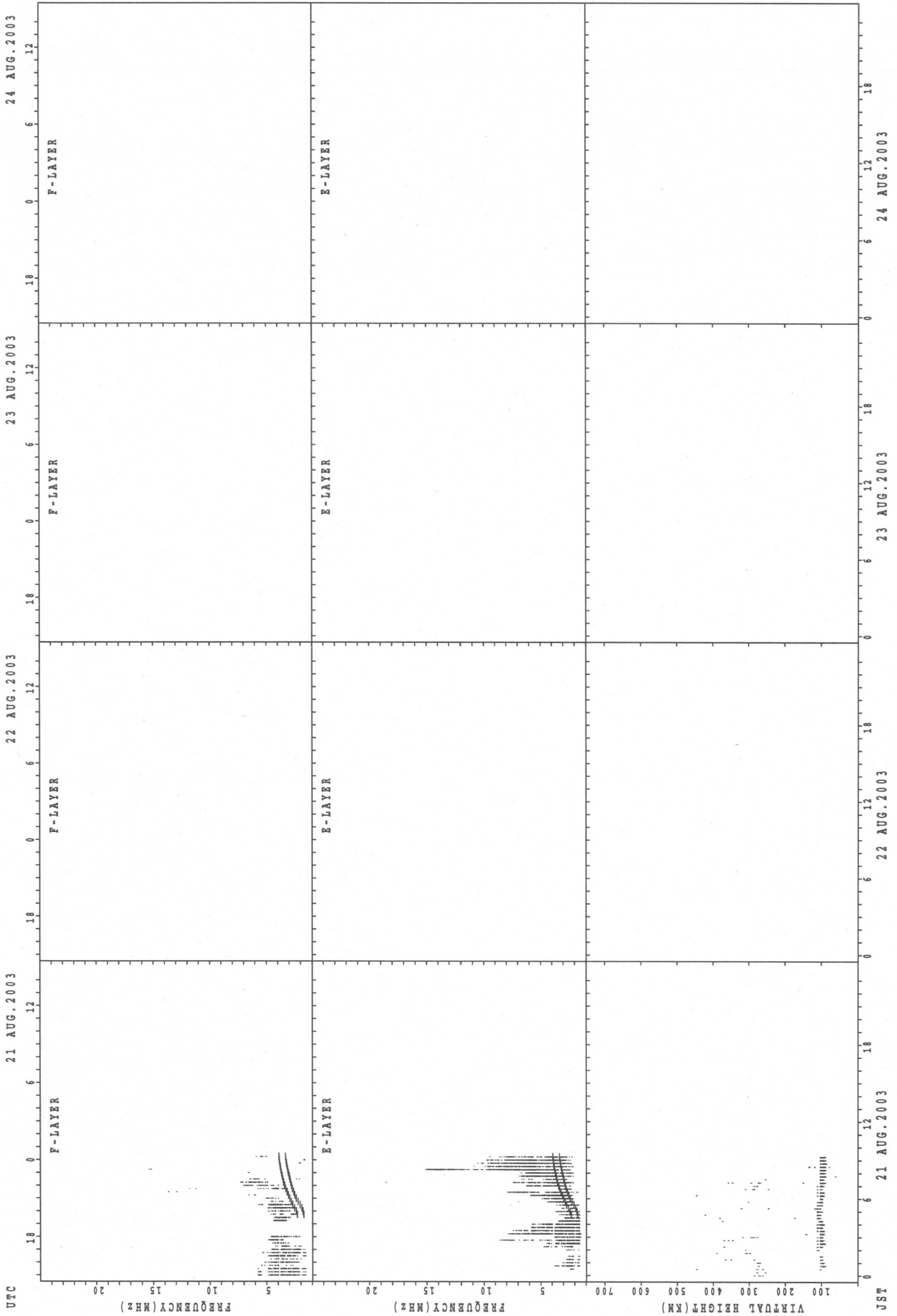
fxe(p); PREDICTED VALUE FOR fxe  
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Wakkanai



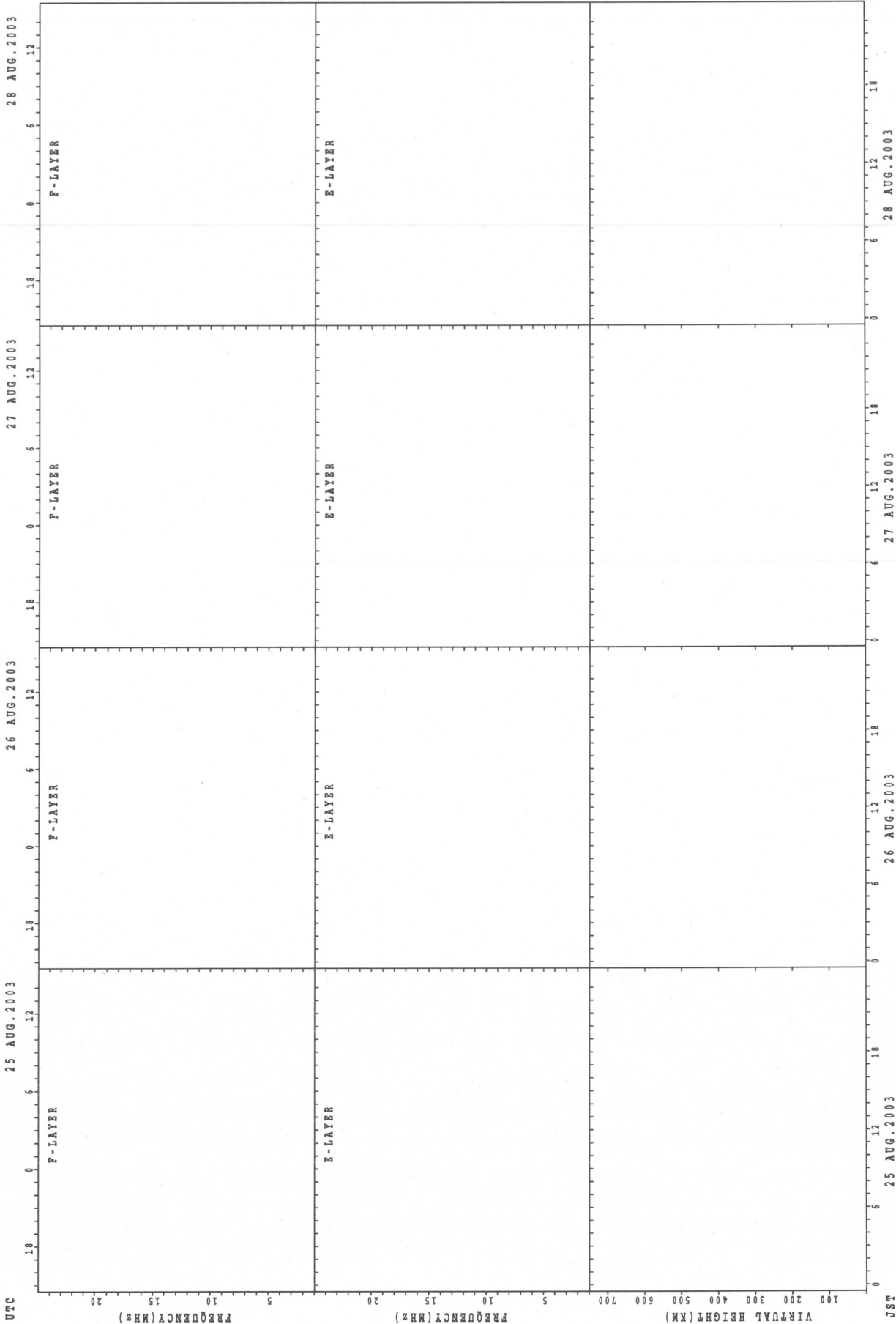
f<sub>max</sub>(P); PREDICTED VALUE FOR F<sub>2E</sub>  
 f<sub>min</sub>(P); PREDICTED VALUE FOR F<sub>2E</sub>

SUMMARY PLOTS AT Wakkanai



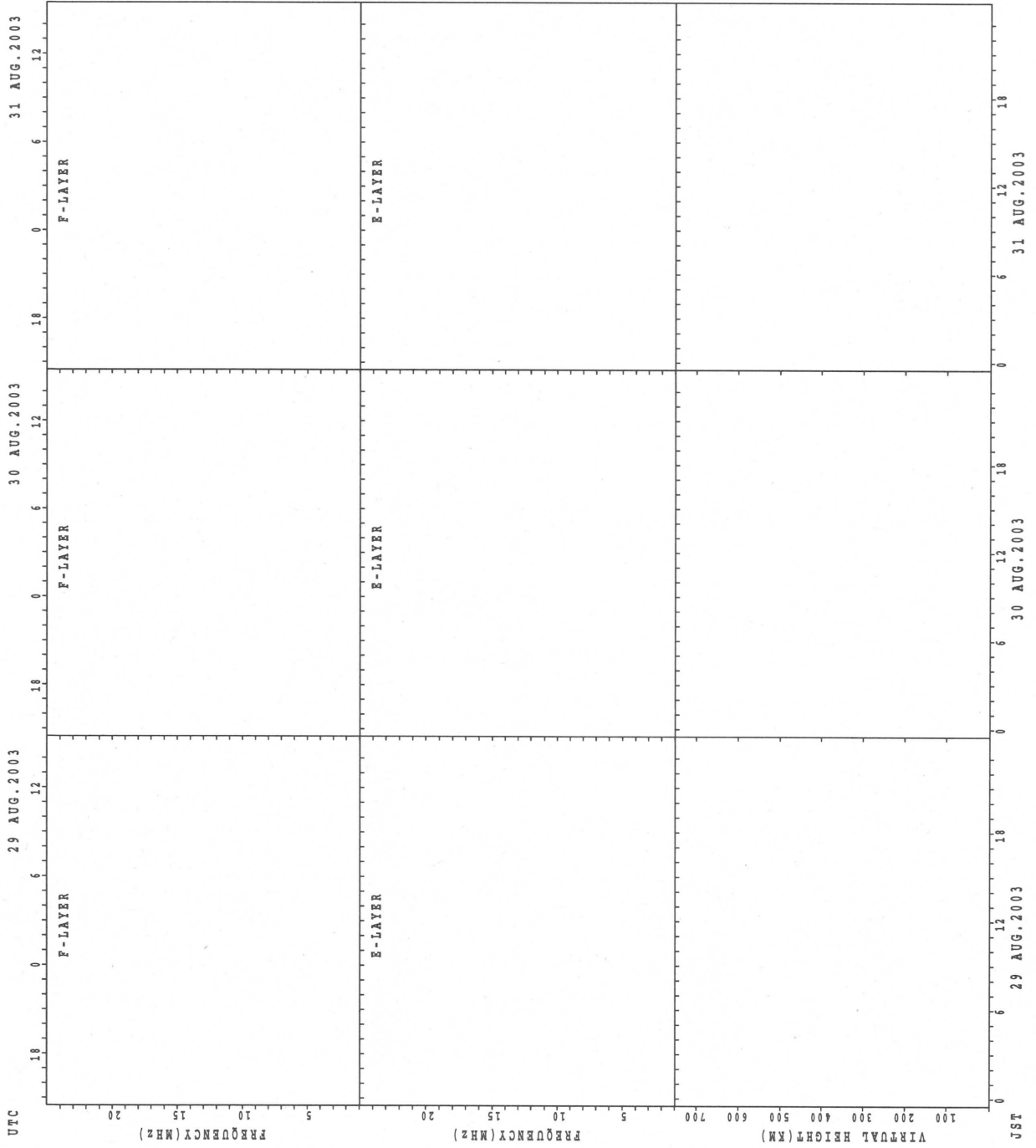
fxf(p); PREDICTED VALUE FOR fxf  
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Wakkanai



f<sub>o</sub>F(P); PREDICTED VALUE FOR f<sub>o</sub>F  
f<sub>o</sub>E(P); PREDICTED VALUE FOR f<sub>o</sub>E

SUMMARY PLOTS AT Wakkanai

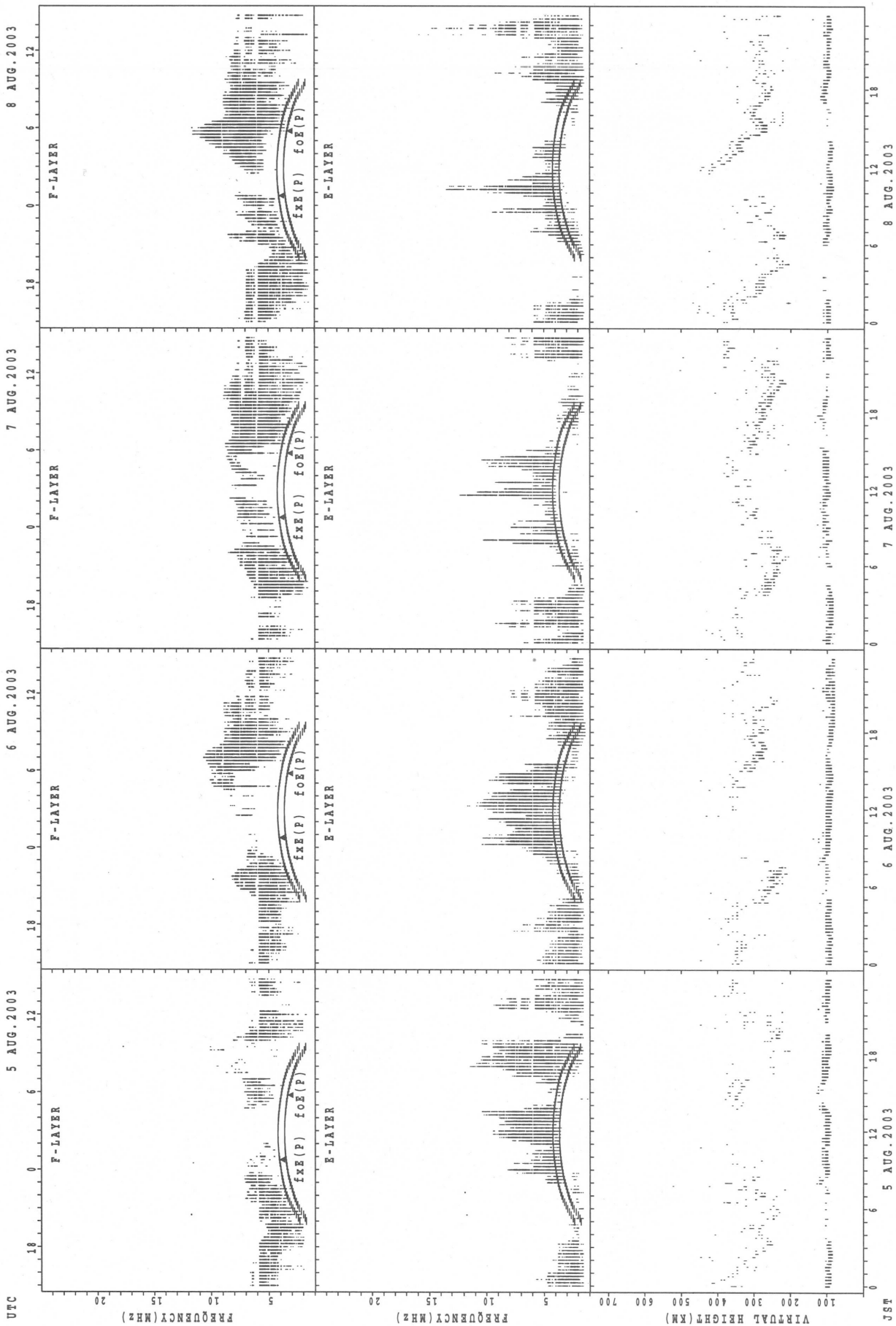


f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
foE(P); PREDICTED VALUE FOR foE



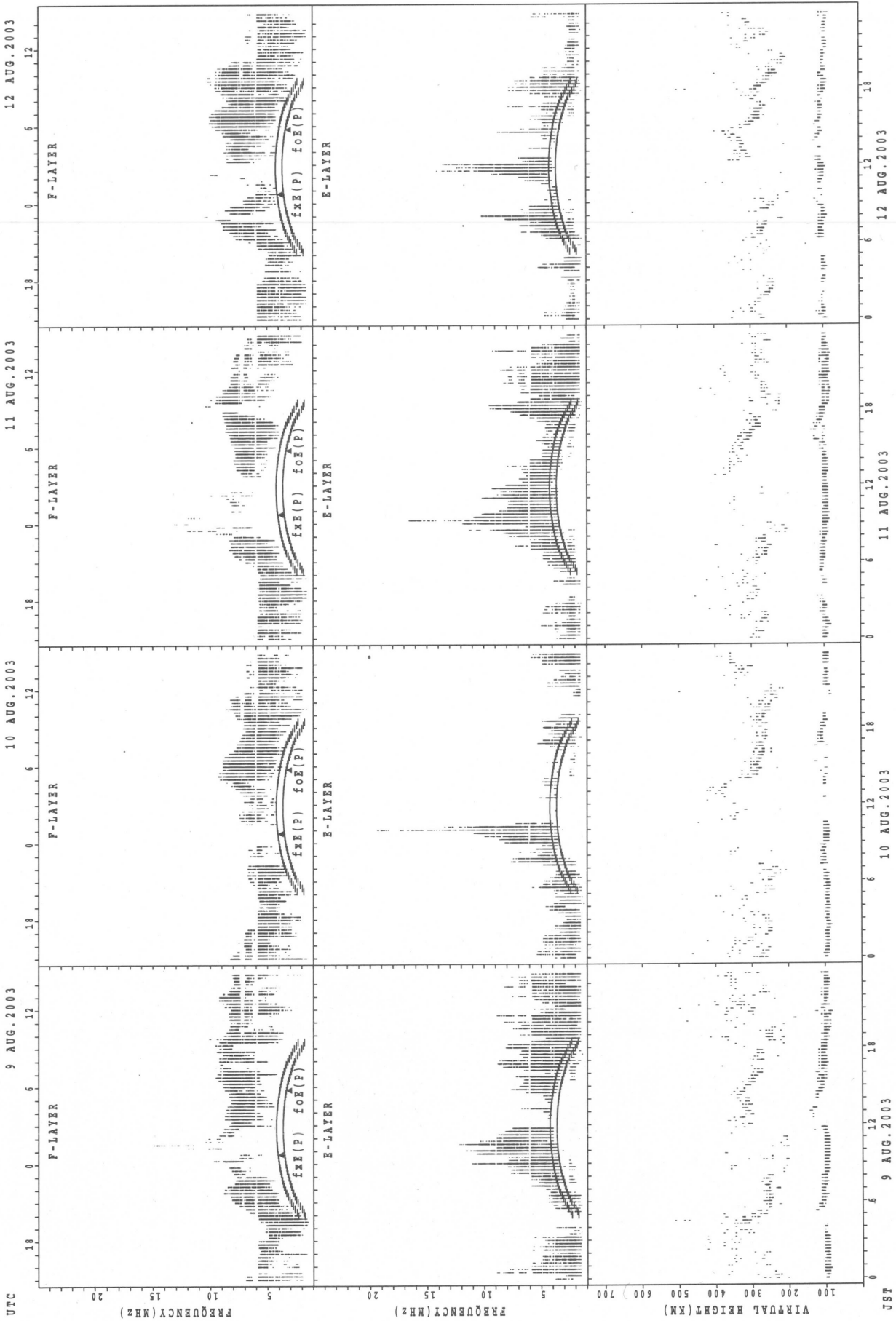


SUMMARY PLOTS AT Kokubunji



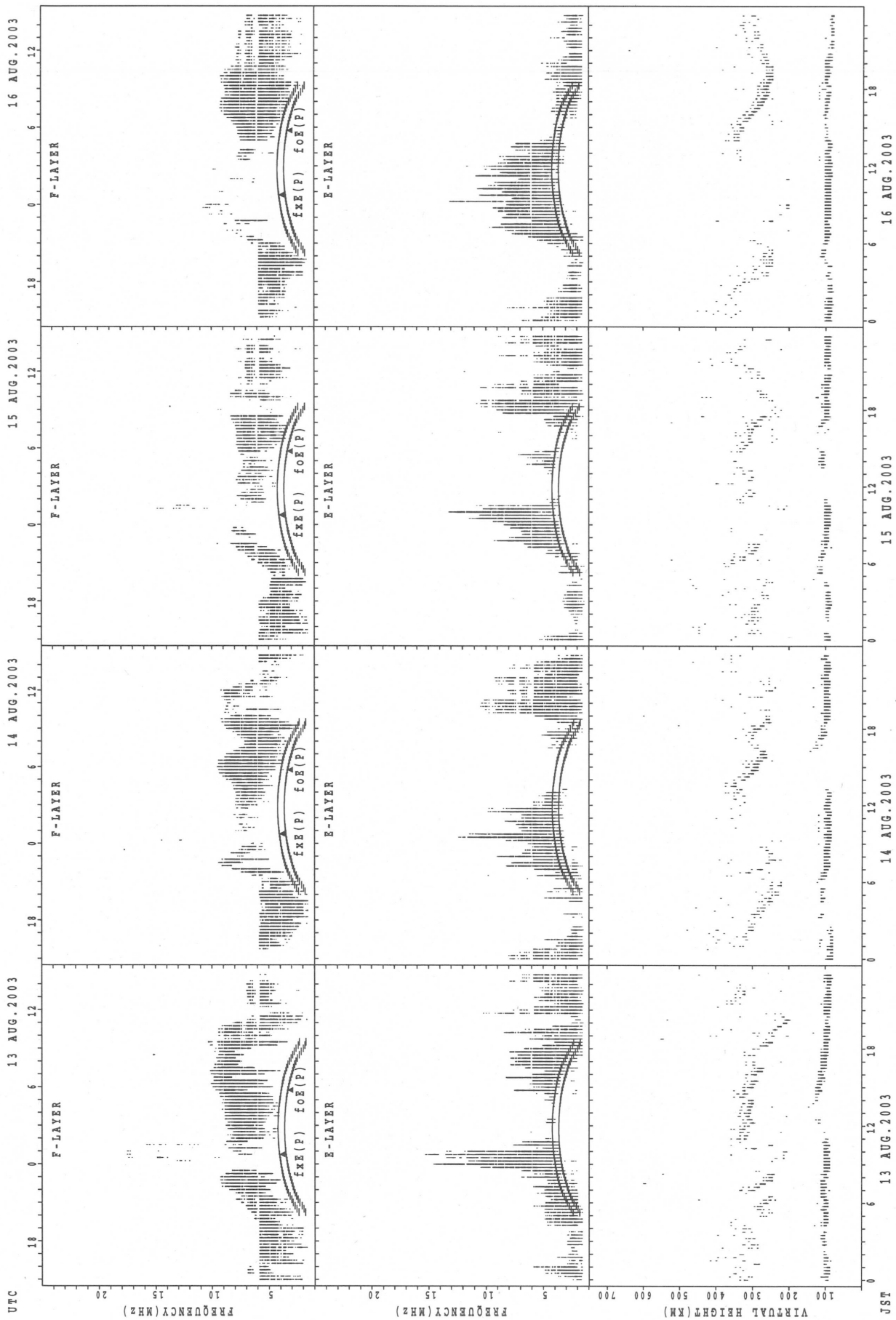
f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
f<sub>o</sub>E(P); PREDICTED VALUE FOR f<sub>o</sub>E

SUMMARY PLOTS AT Kokubunji



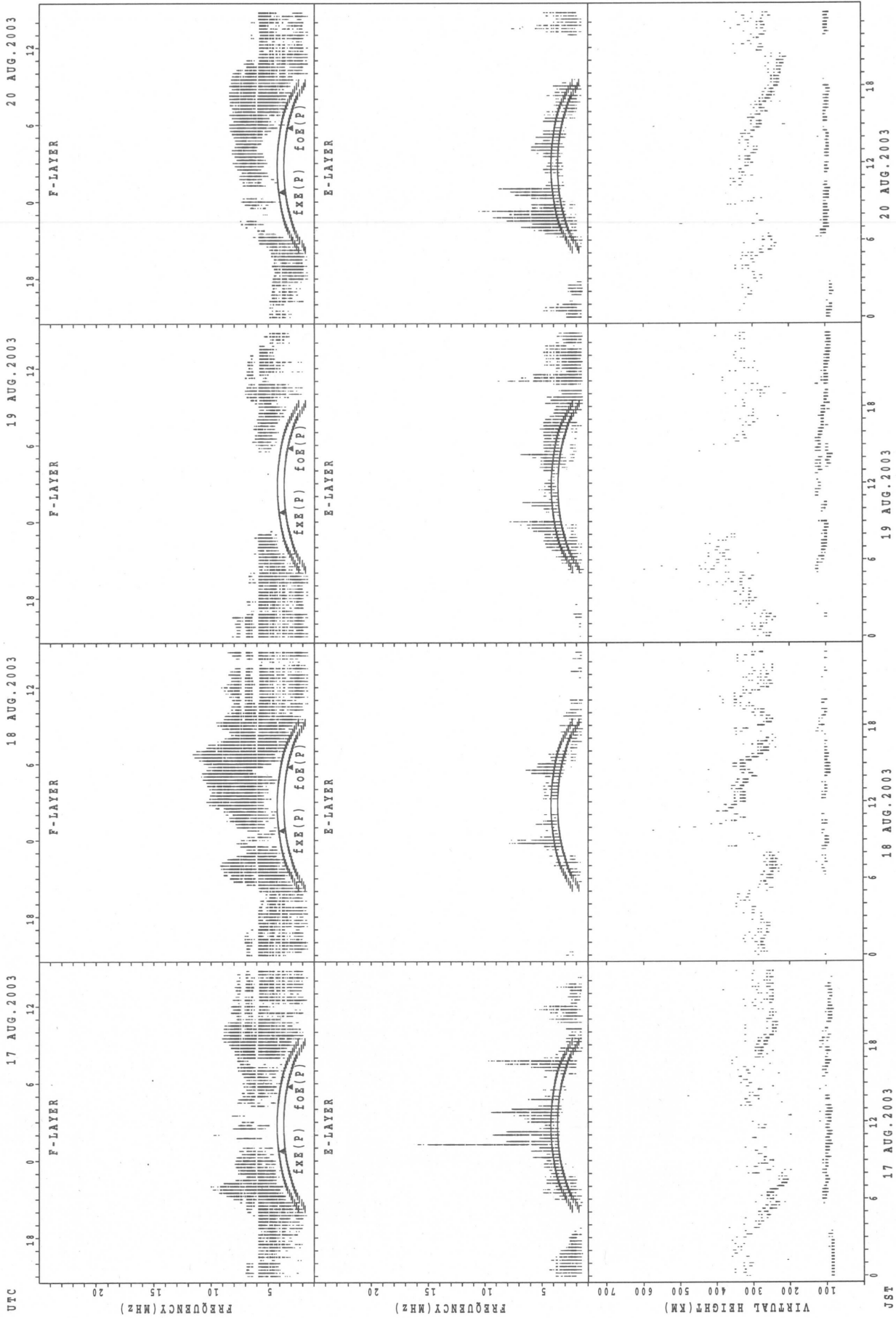
fxE(P); PREDICED VALUE FOR fxe  
foE(P); PREDICED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



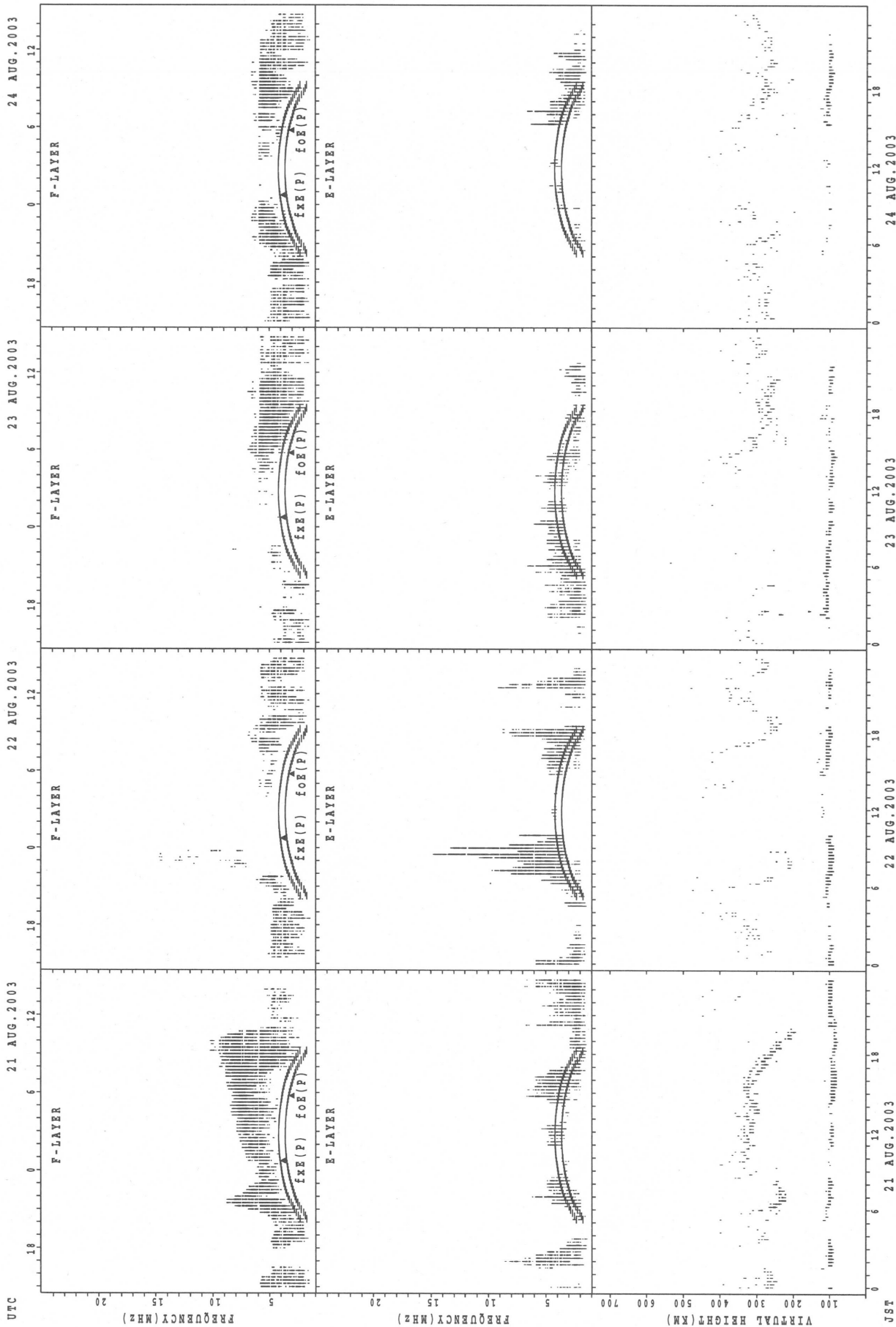
fxe(P) ; PREDICTED VALUE FOR fxe  
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



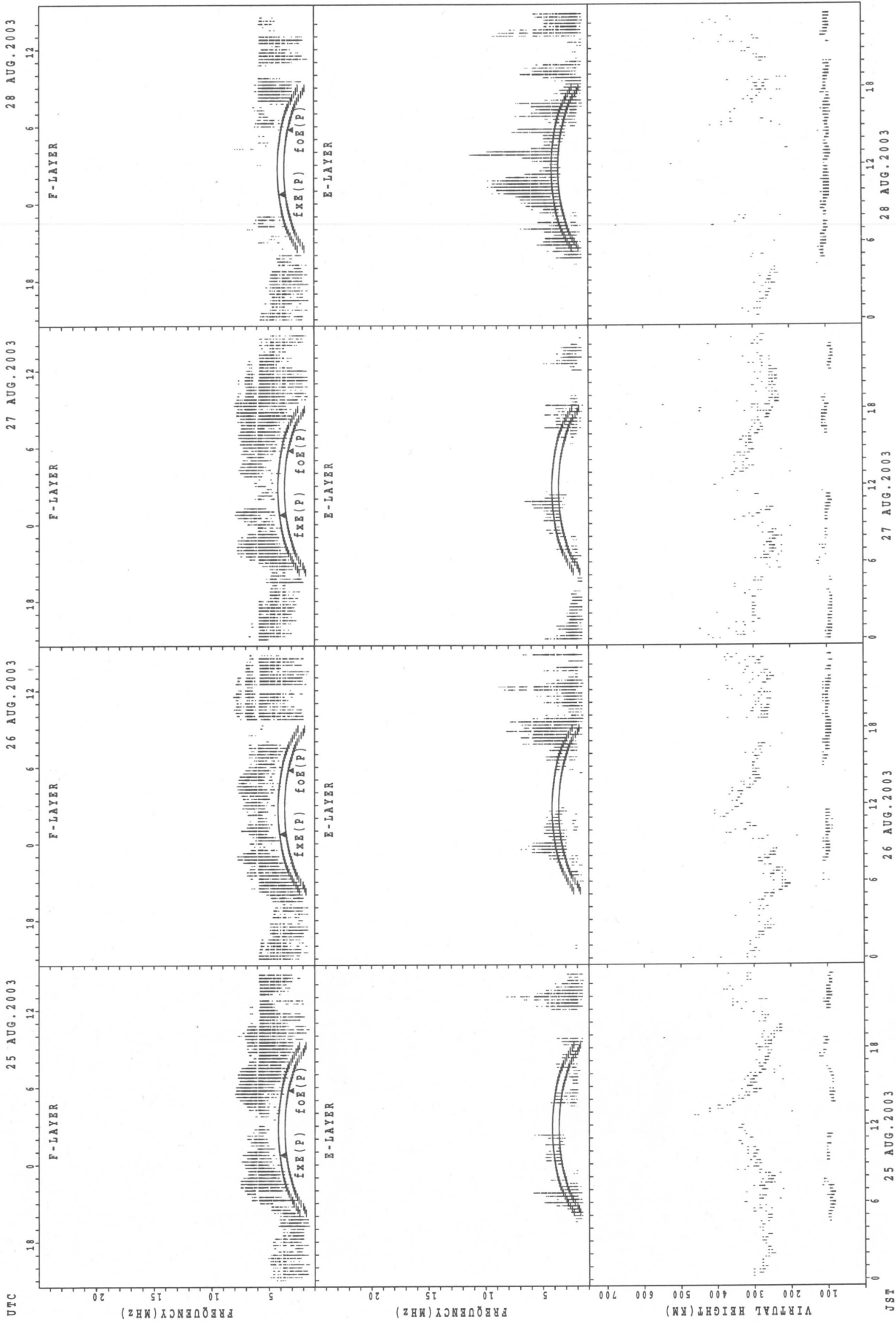
fxe(p); PREDICED VALUE FOR fxe  
foE(p); PREDICED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



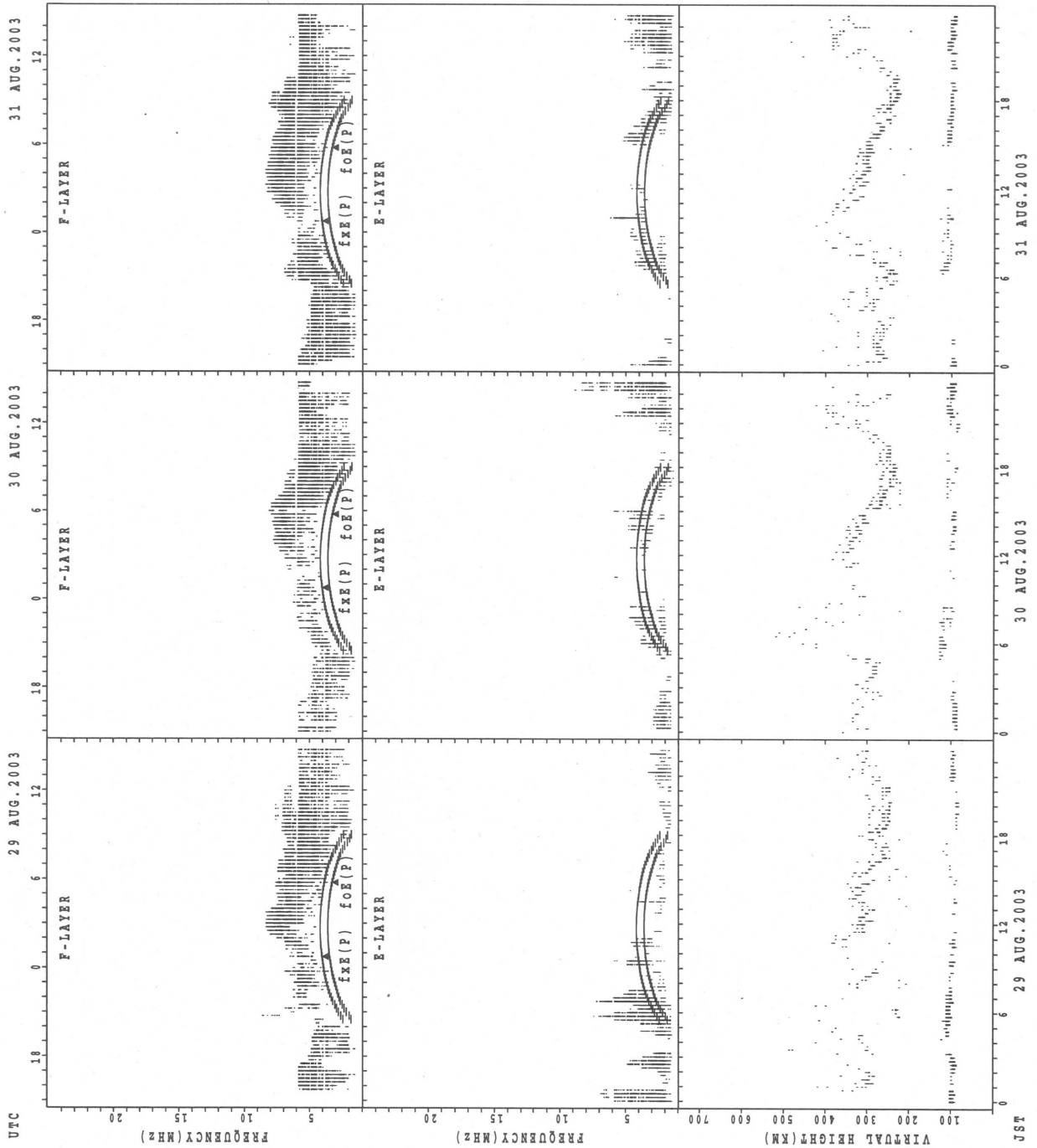
f<sub>x</sub>E(P); PREDICTED VALUE FOR f<sub>x</sub>E  
 f<sub>o</sub>E(P); PREDICTED VALUE FOR f<sub>o</sub>E

SUMMARY PLOTS AT Kokubunji



f2e(p); PREDICTED VALUE FOR f2e  
foe(p); PREDICTED VALUE FOR foe

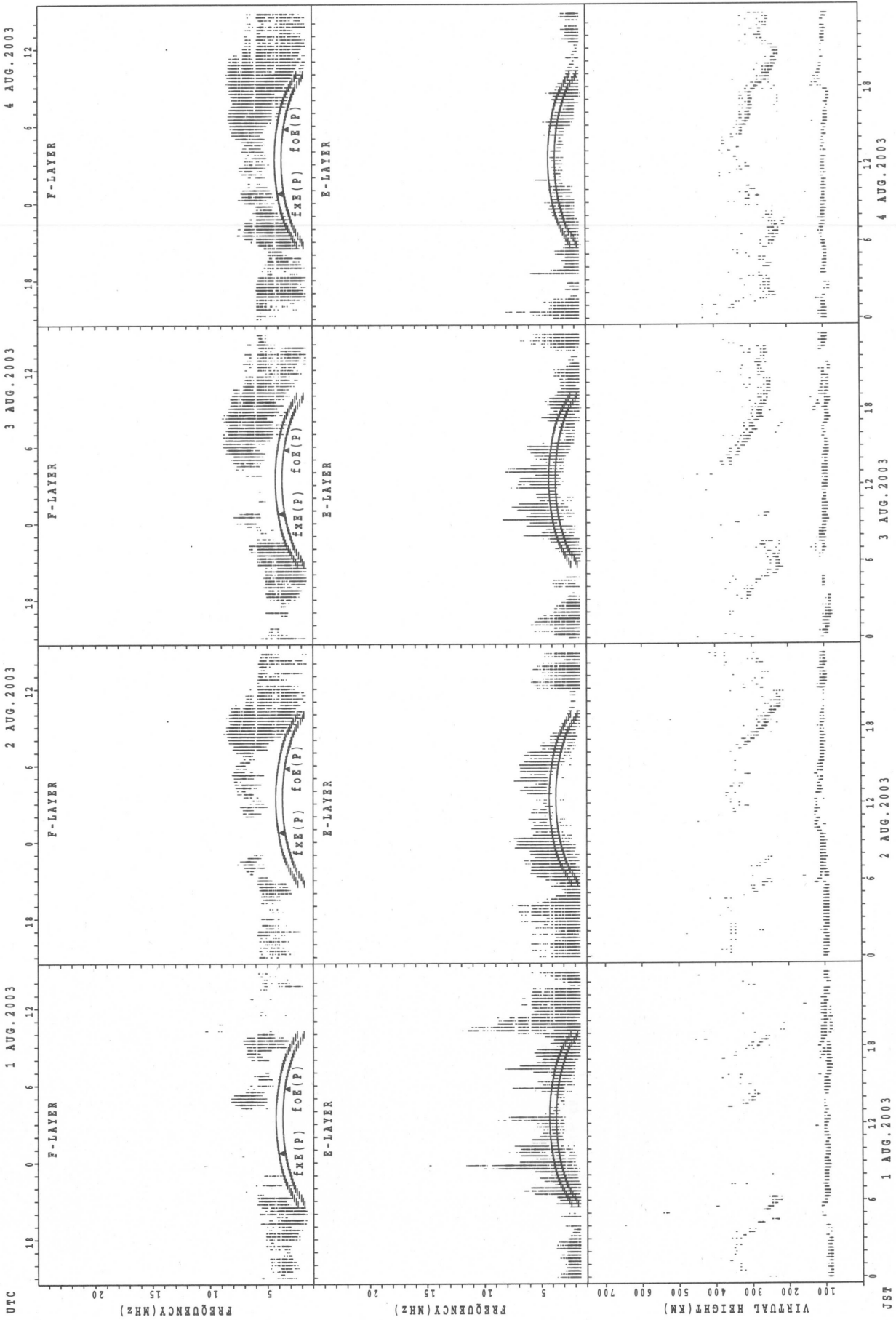
SUMMARY PLOTS AT Kokubunji



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

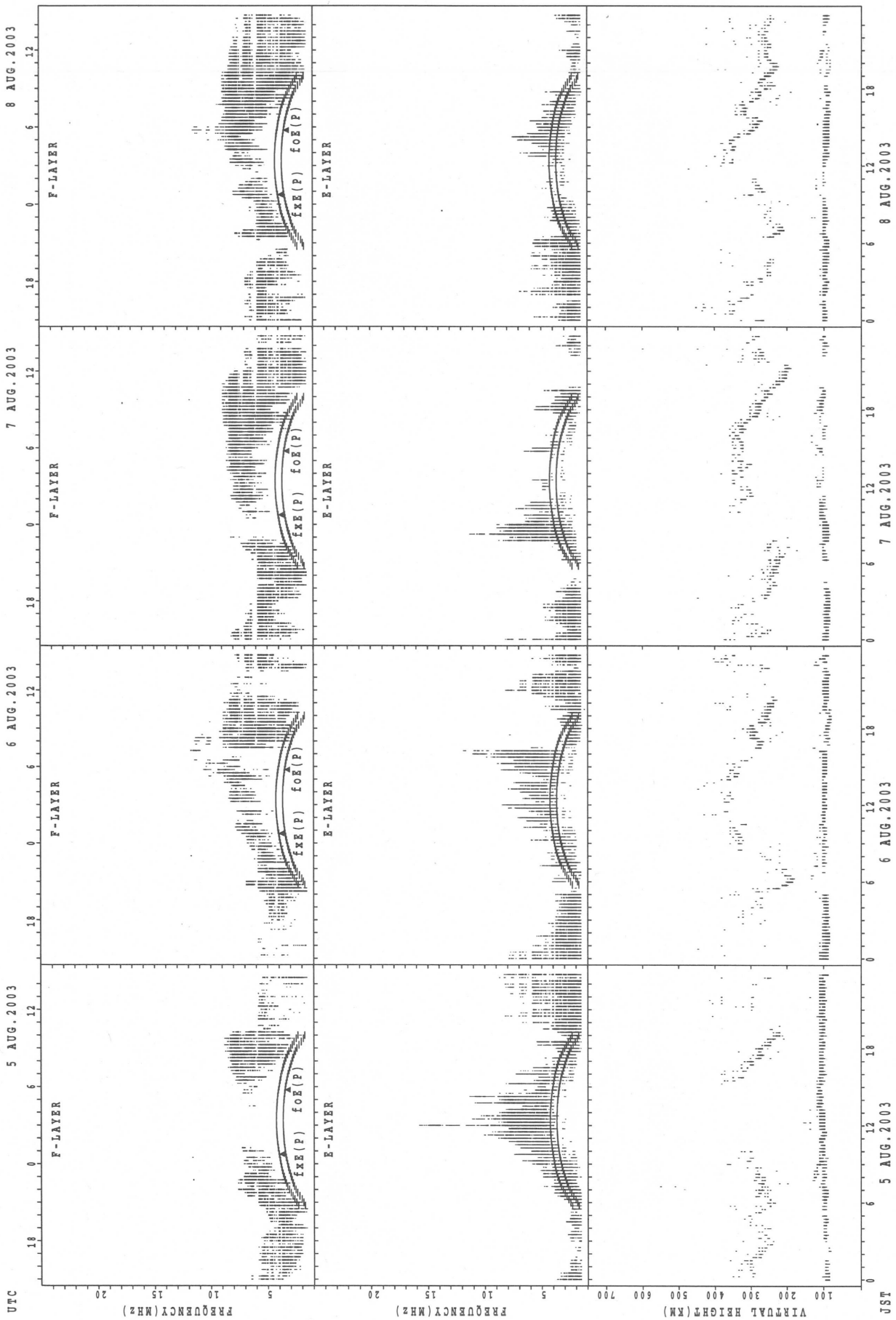


SUMMARY PLOTS AT Yamagawa



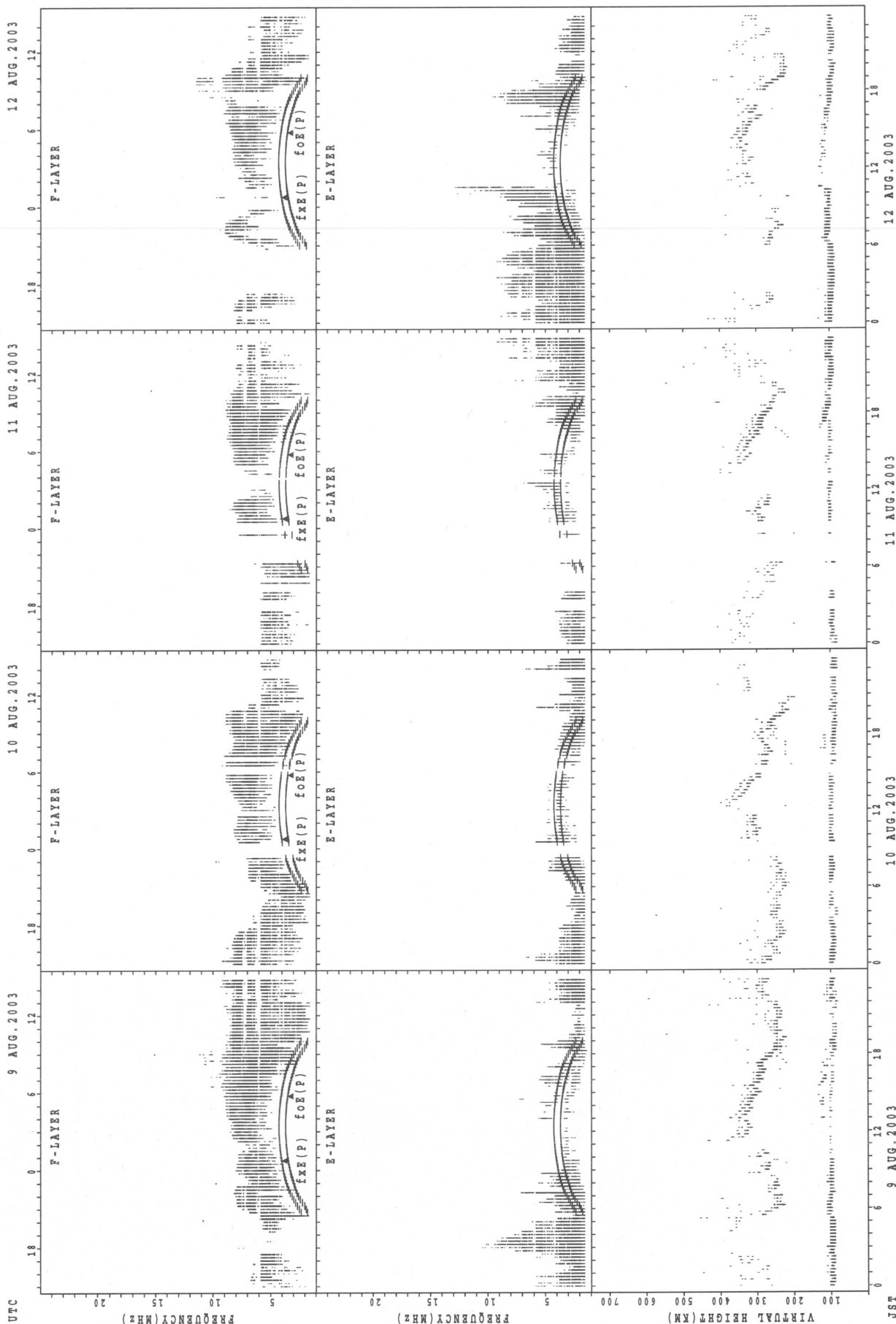
$f_xE(P)$ ; PREDICTED VALUE FOR  $f_xE$   
 $f_oE(P)$ ; PREDICTED VALUE FOR  $f_oE$

SUMMARY PLOTS AT Yamagawa



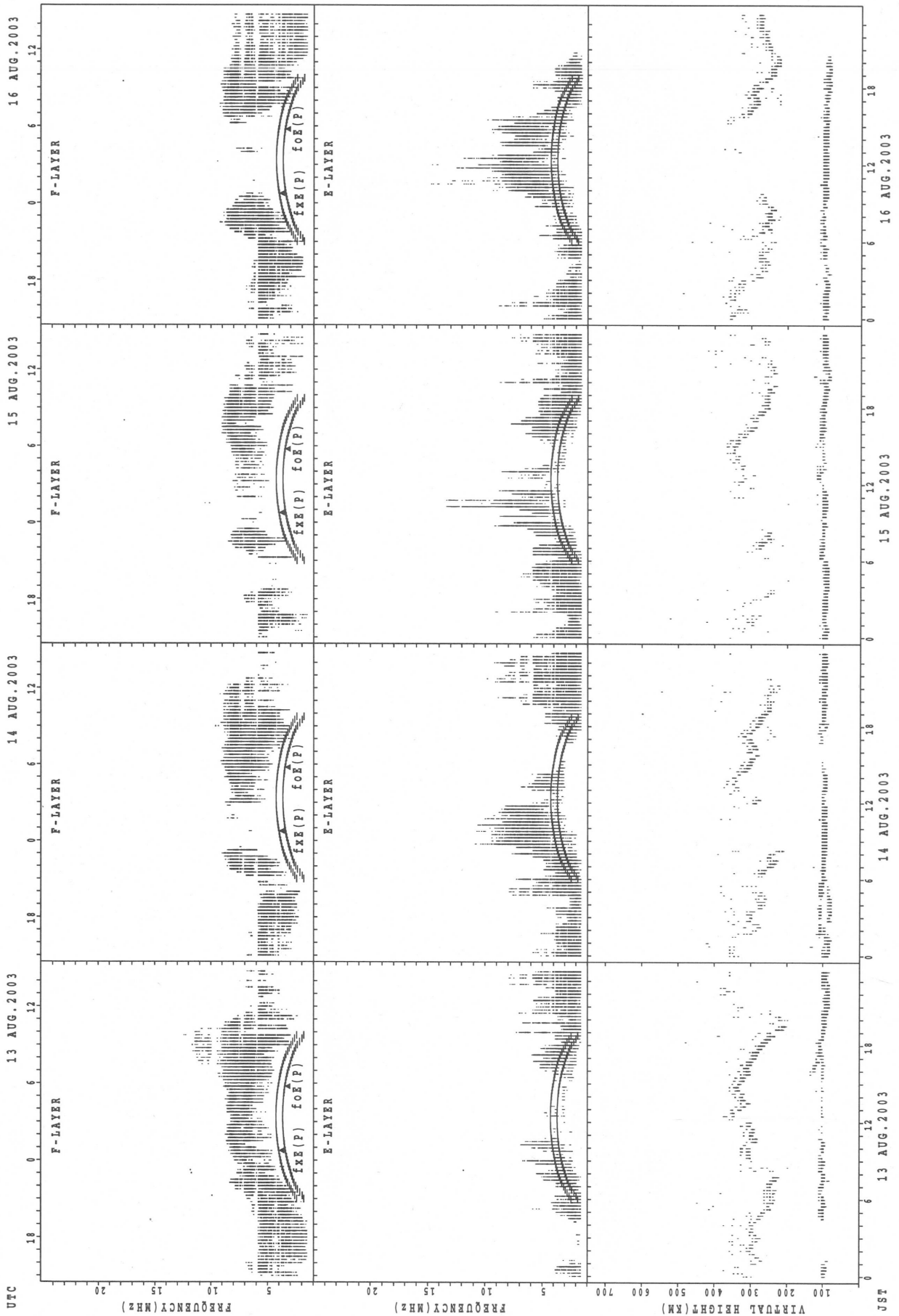
fxe(p); PREDICTED VALUE FOR fxe  
foe(p); PREDICTED VALUE FOR foe

SUMMARY PLOTS AT Yamagawa



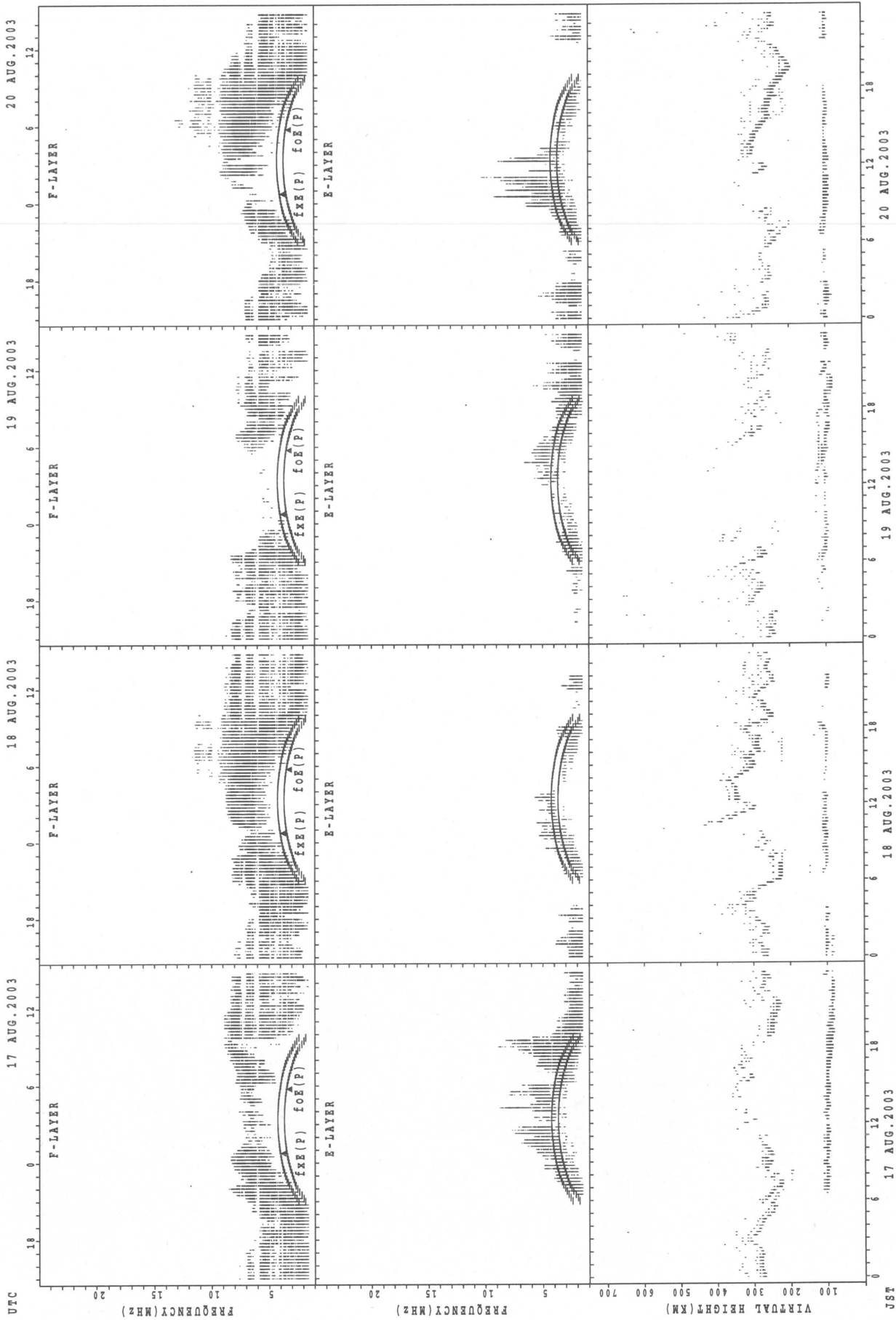
$f_xE(P)$ ; PREDICTED VALUE FOR  $f_xE$   
 $f_oE(P)$ ; PREDICTED VALUE FOR  $f_oE$

SUMMARY PLOTS AT Yamagawa



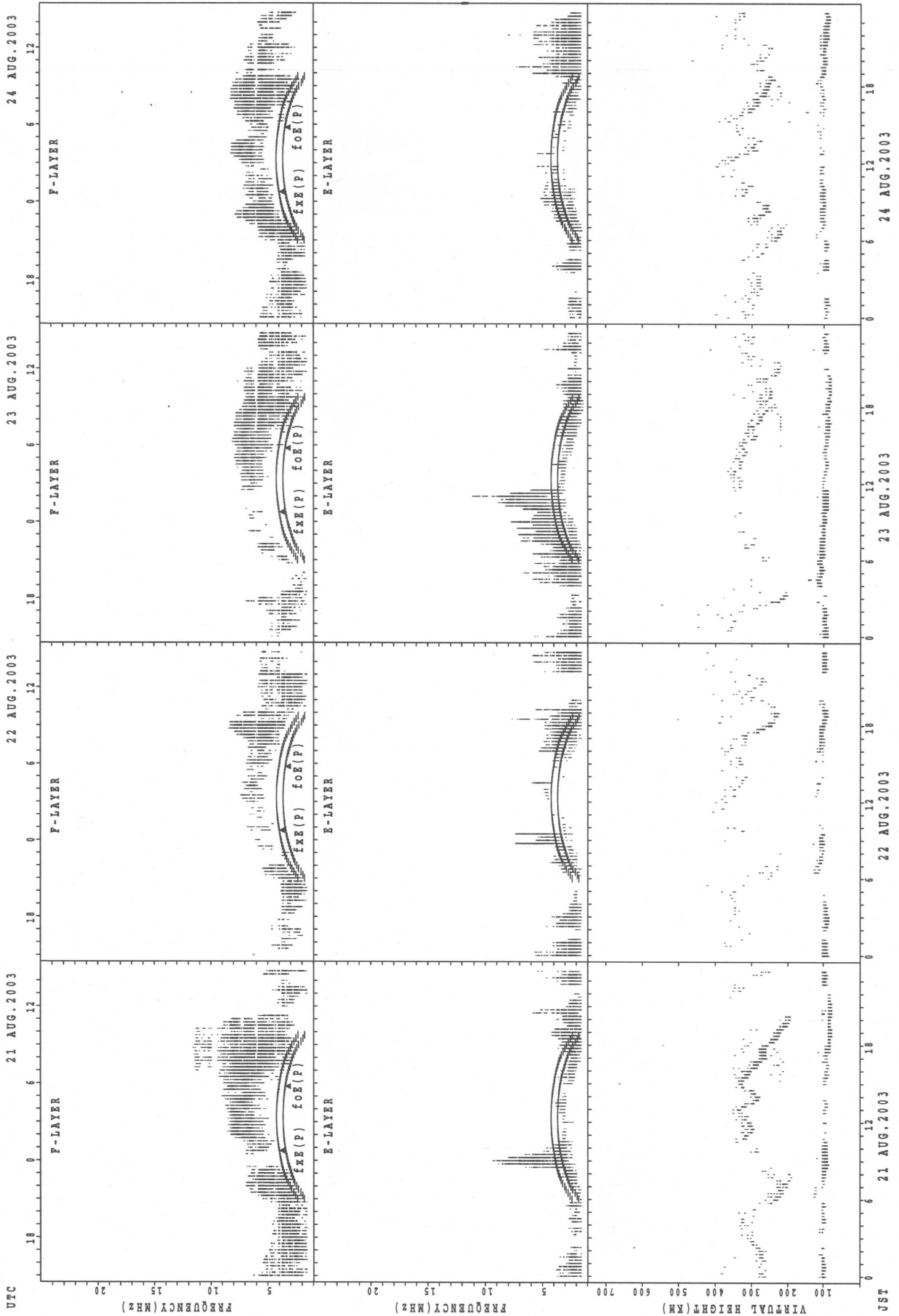
fxe(P); PREDICTED VALUE FOR fxe  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



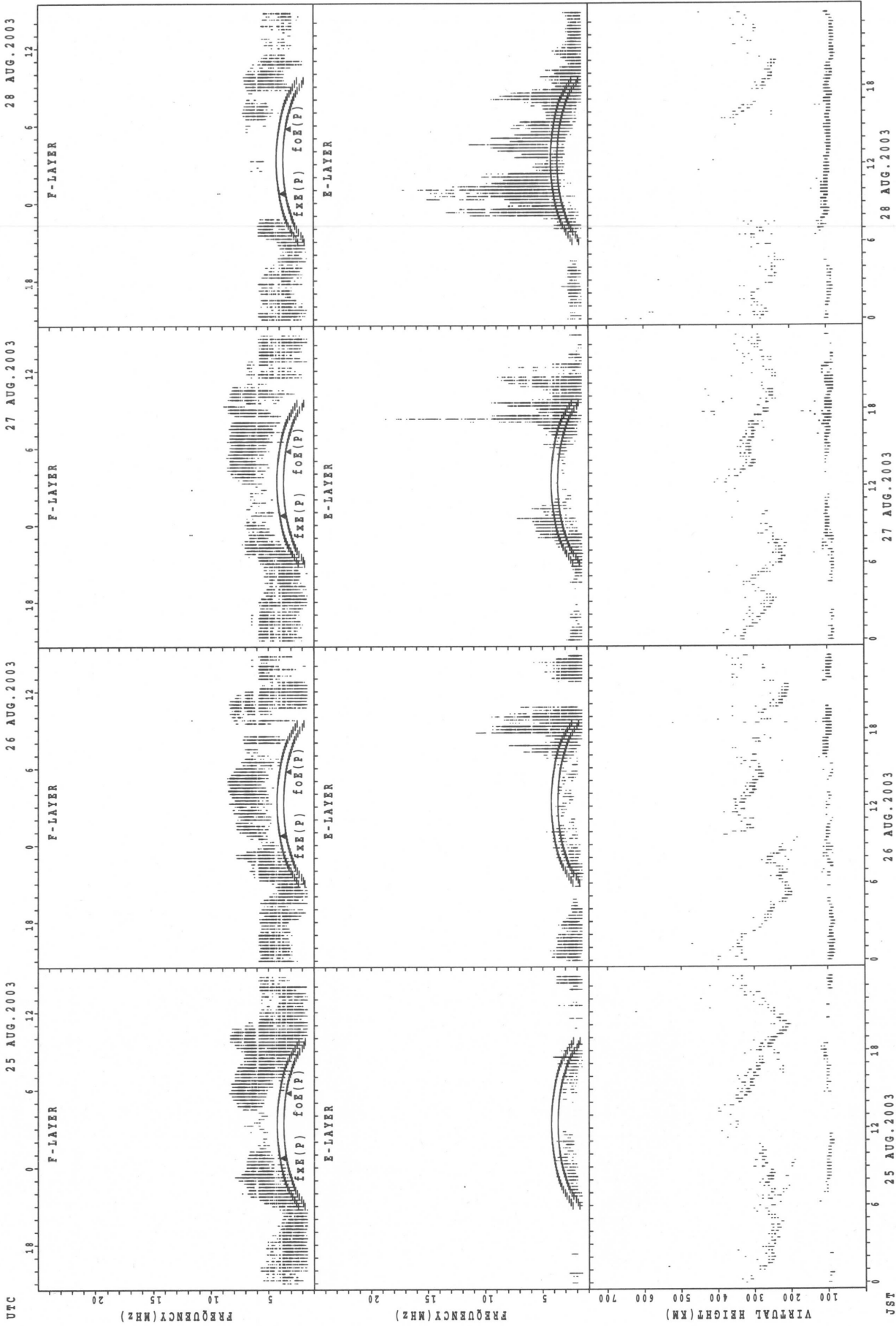
f<sub>xe</sub>(P); PREDICTED VALUE FOR f<sub>xe</sub>  
f<sub>oe</sub>(P); PREDICTED VALUE FOR f<sub>oe</sub>

SUMMARY PLOTS AT Yamagawa



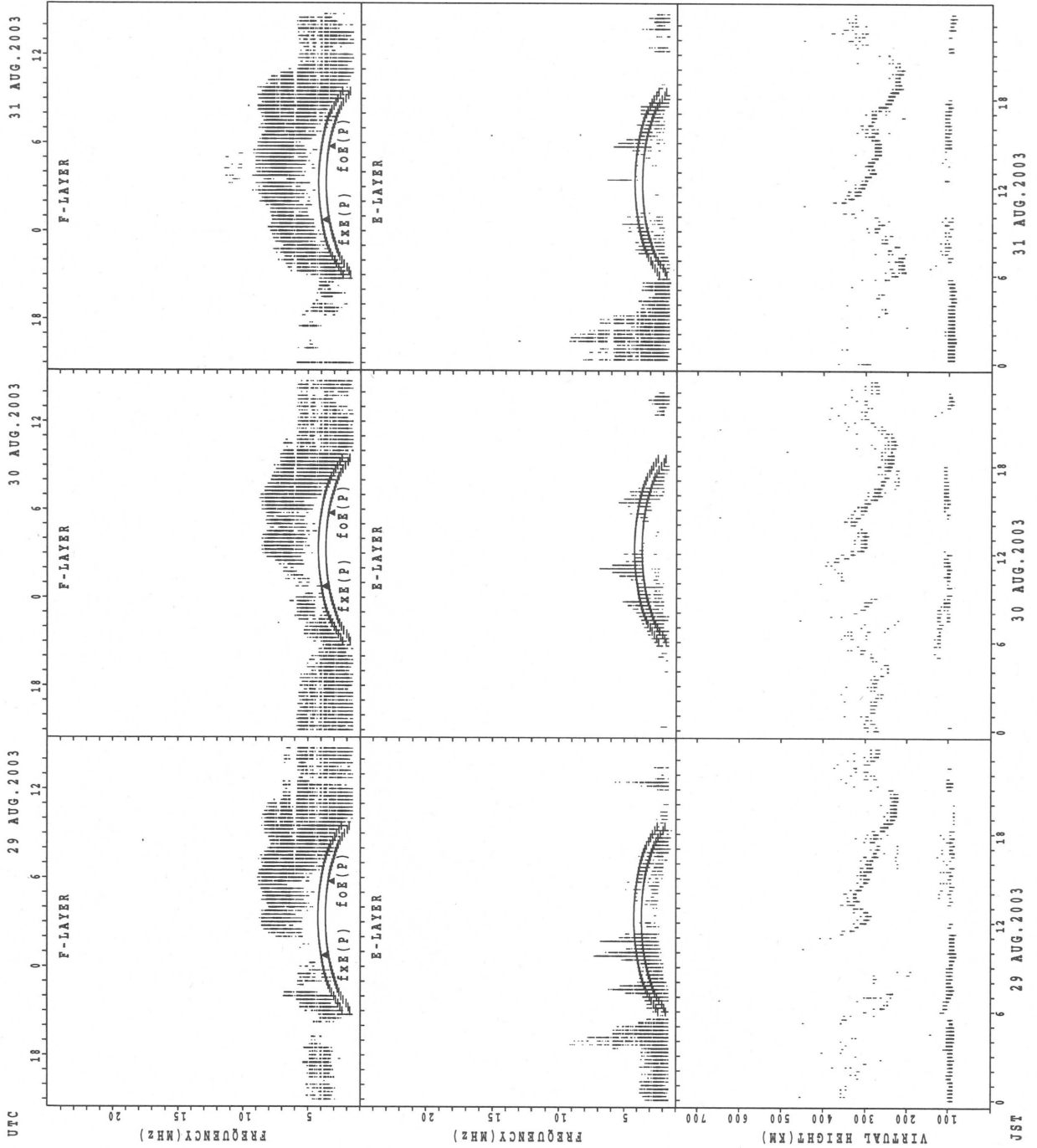
fxe(P); PREDICTED VALUE FOR fxe  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



f<sub>2</sub>(P); PREDICTED VALUE FOR f<sub>2</sub>  
foE(P); PREDICTED VALUE FOR foE

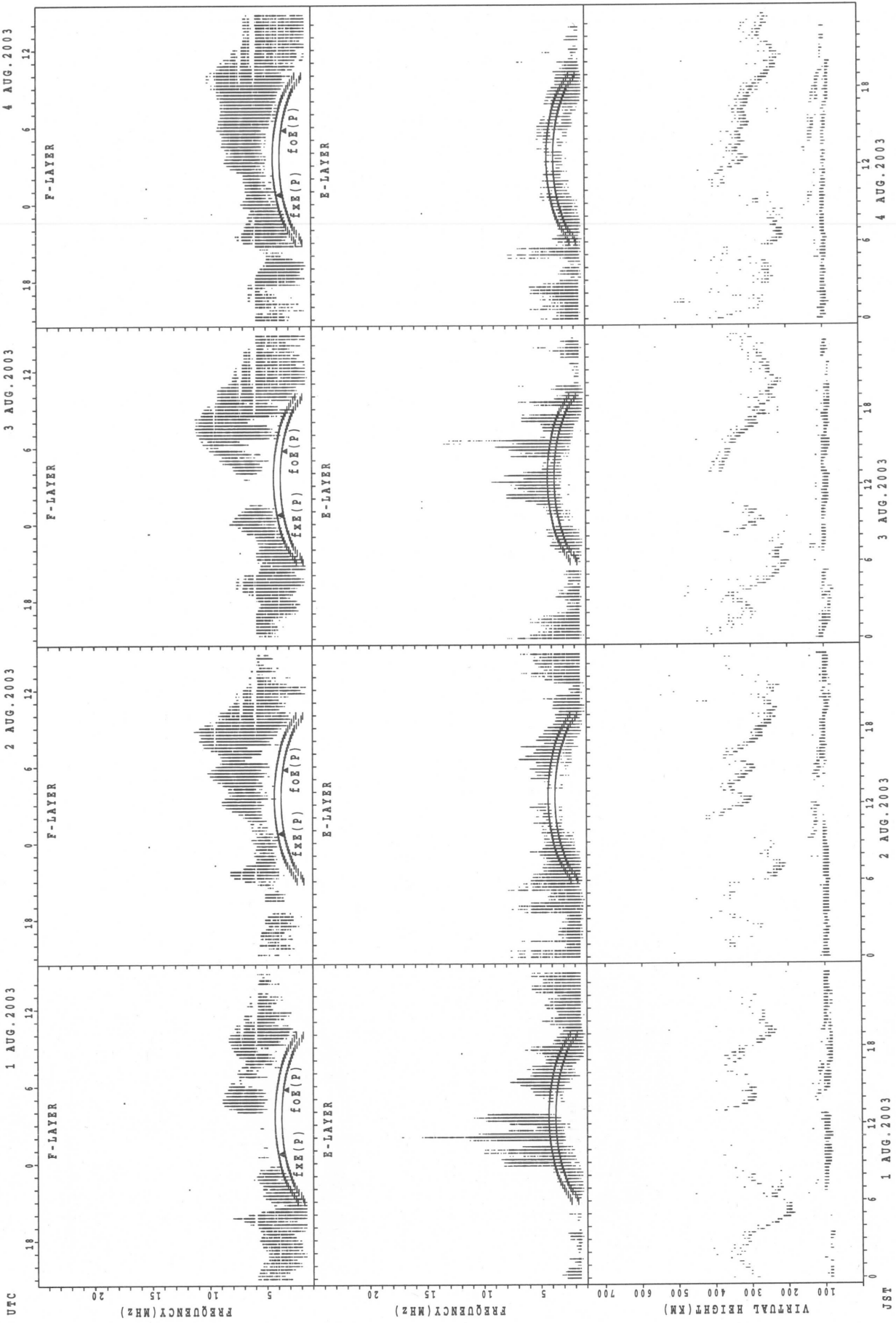
SUMMARY PLOTS AT Yamagawa



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

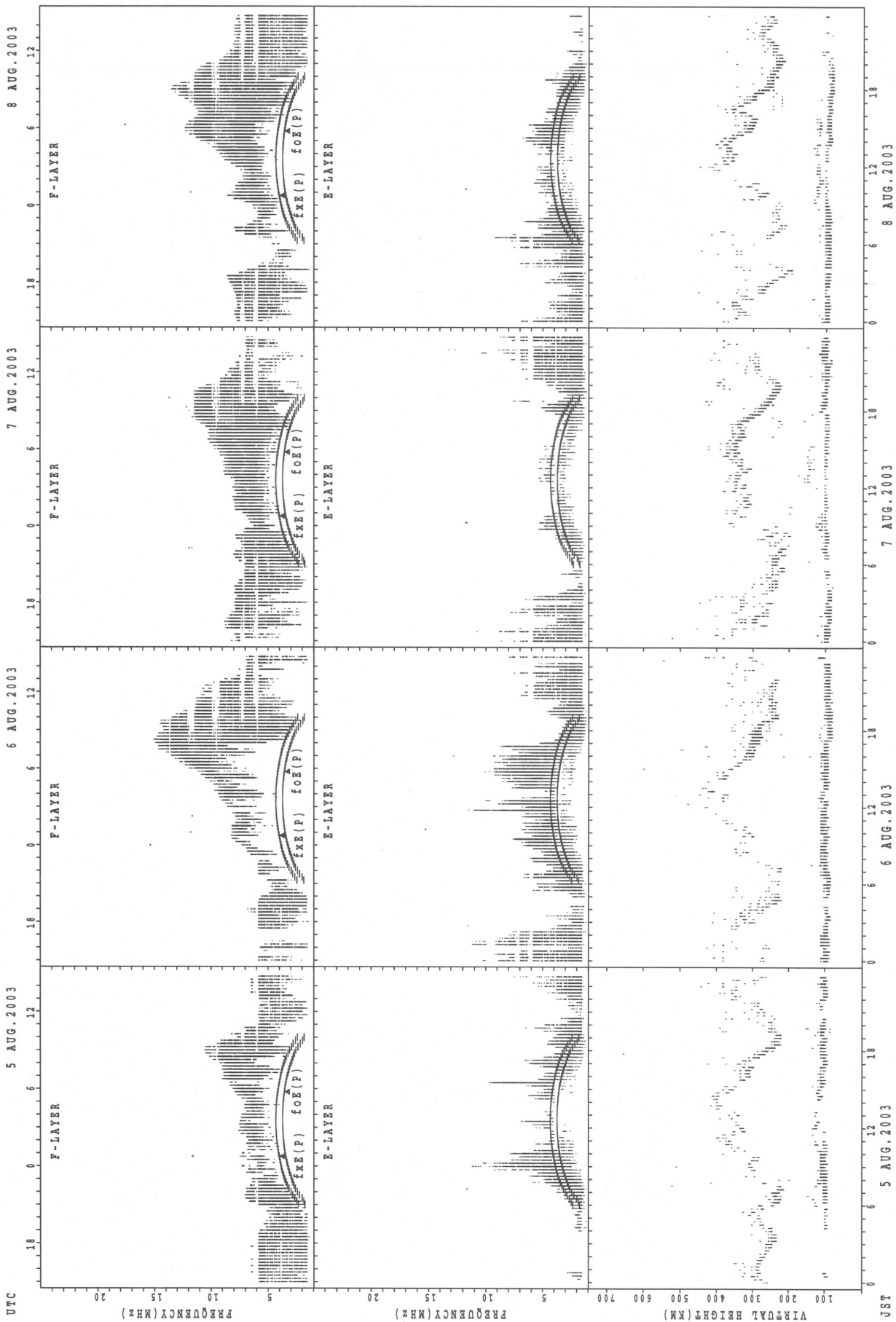


SUMMARY PLOTS AT Okinawa



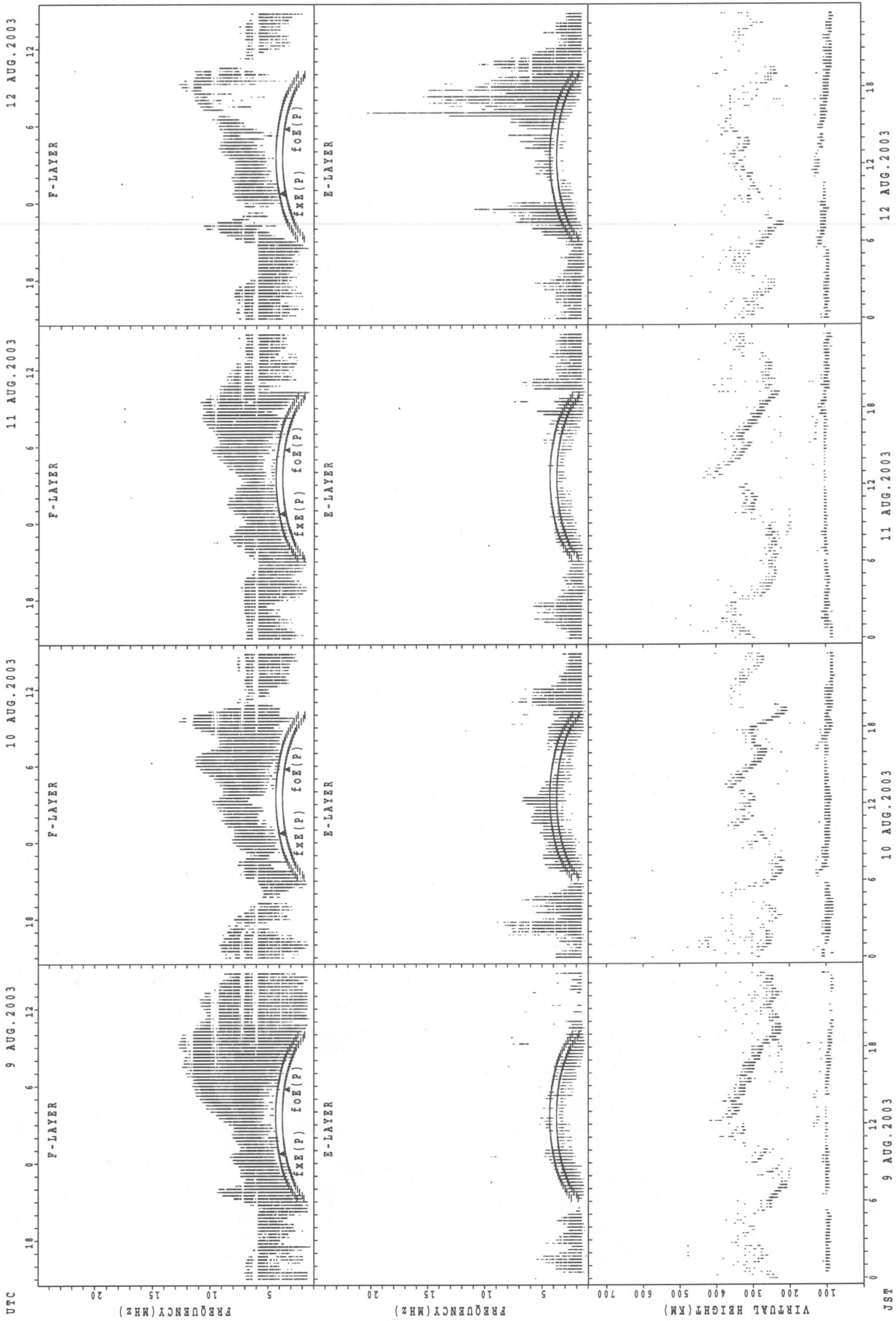
f<sub>2</sub>E(P); PREDICTED VALUE FOR f<sub>2</sub>E  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



f<sub>xe</sub>(P); PREDICTED VALUE FOR f<sub>xe</sub>  
 f<sub>oe</sub>(P); PREDICTED VALUE FOR f<sub>oe</sub>

SUMMARY PLOTS AT Okinawa



f<sub>o</sub>F<sub>2</sub>(P); PREDICTED VALUE FOR f<sub>o</sub>F<sub>2</sub>  
 F<sub>2</sub>X(f<sub>o</sub>F<sub>2</sub>(P)); PREDICTED VALUE FOR F<sub>2</sub>X

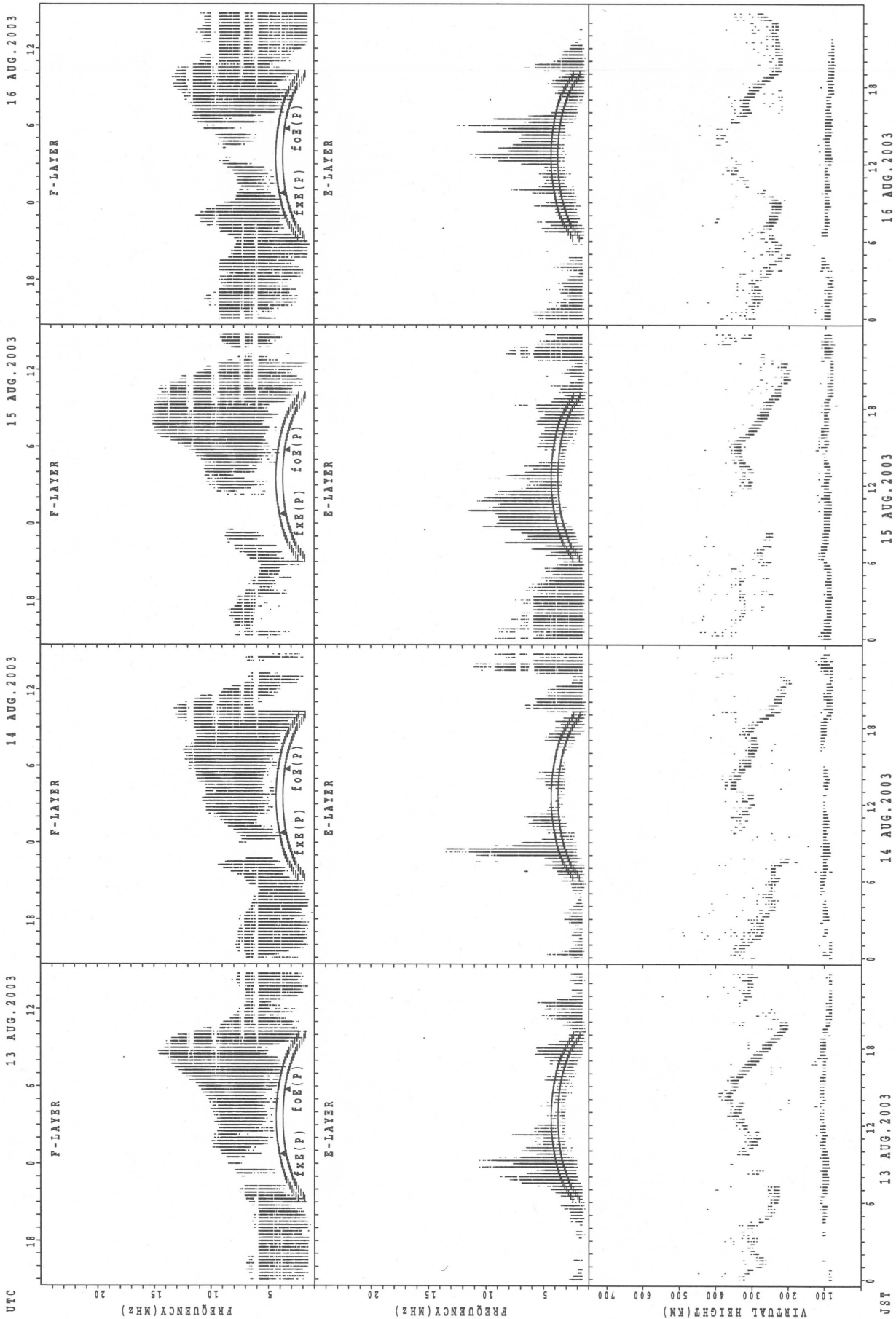
12 AUG.2003

11 AUG.2003

10 AUG.2003

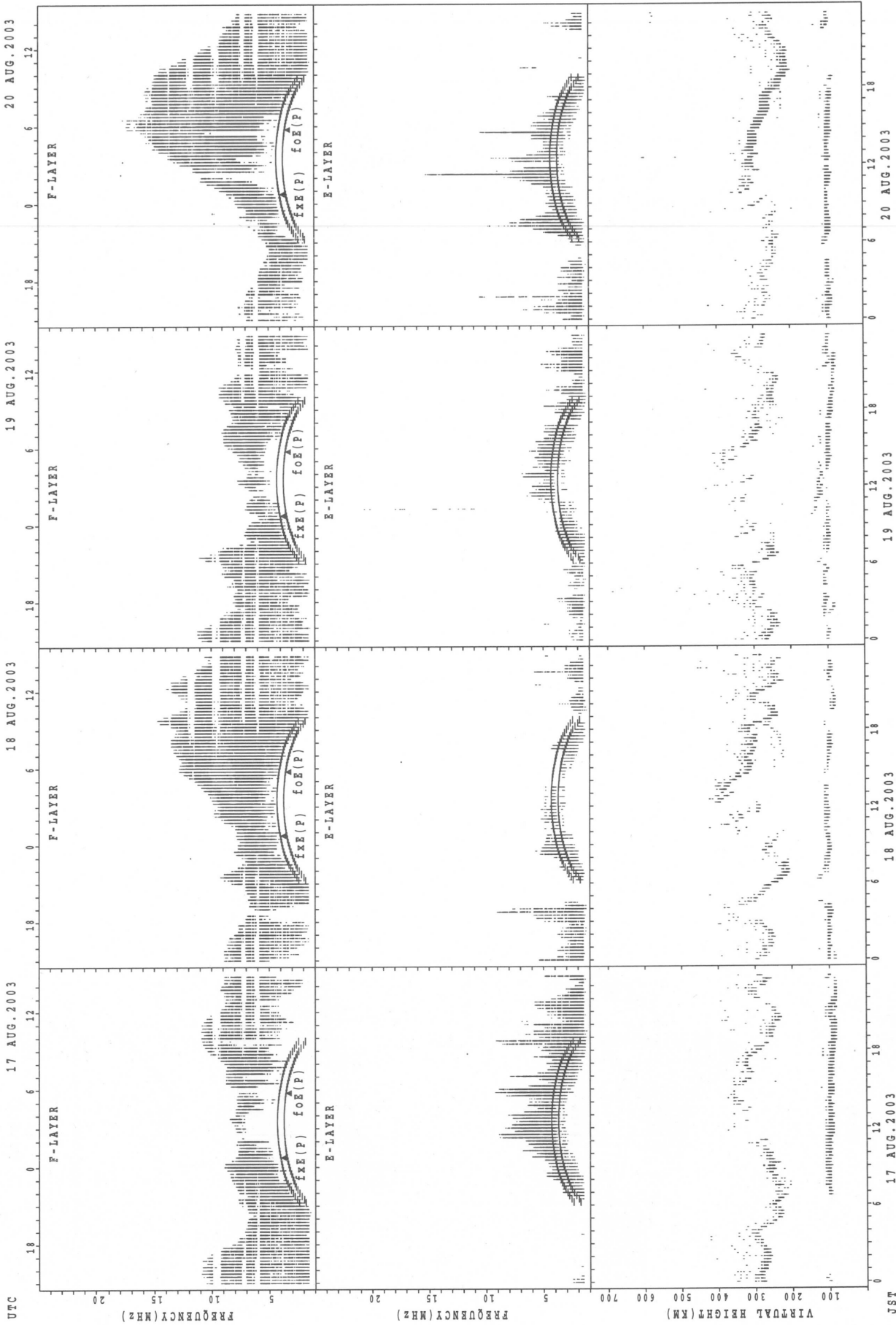
9 AUG.2003

SUMMARY PLOTS AT Okinawa



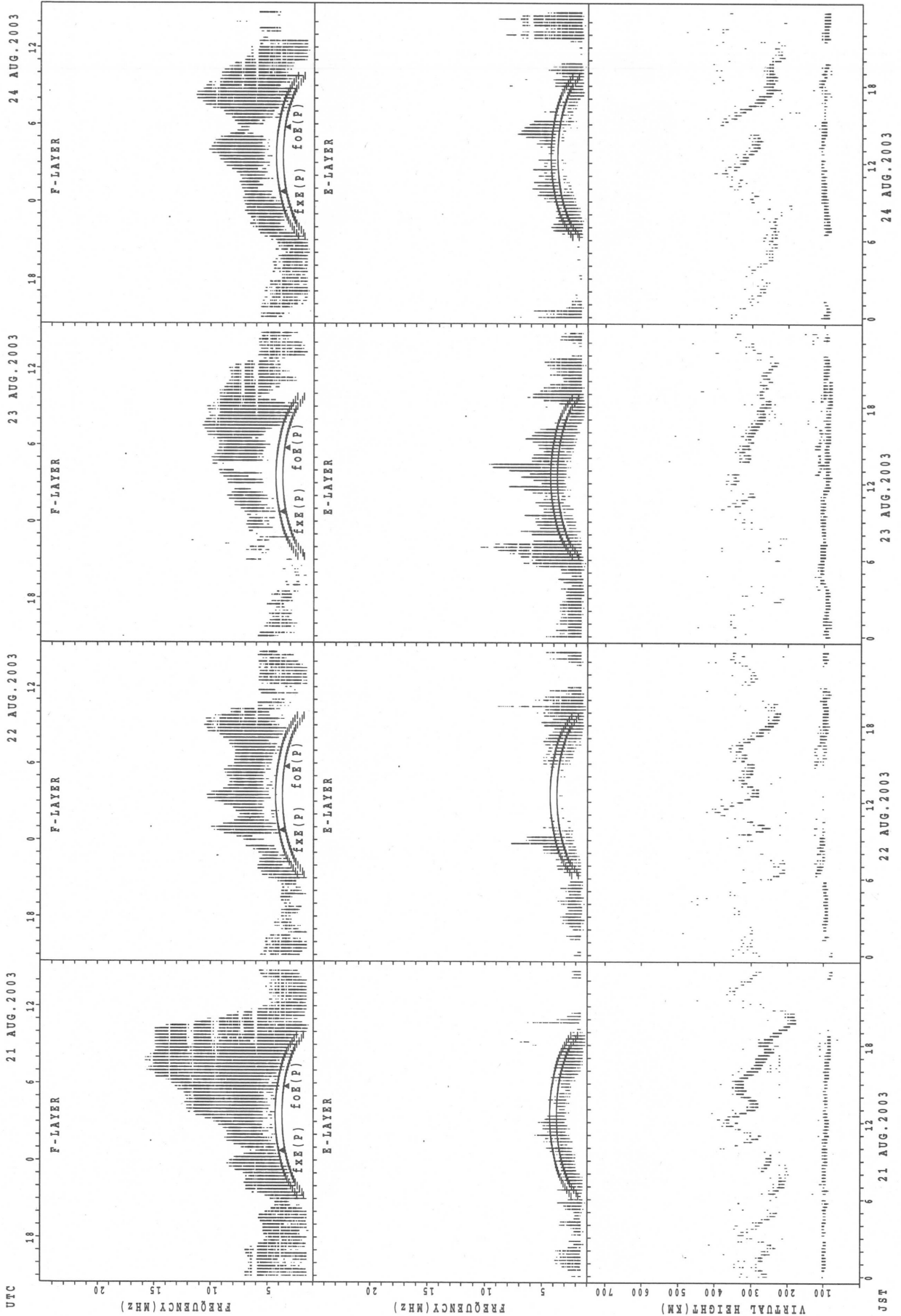
f<sub>x</sub>E(P) ; PREDICTED VALUE FOR f<sub>x</sub>E  
f<sub>o</sub>E(P) ; PREDICTED VALUE FOR f<sub>o</sub>E

SUMMARY PLOTS AT Okinawa



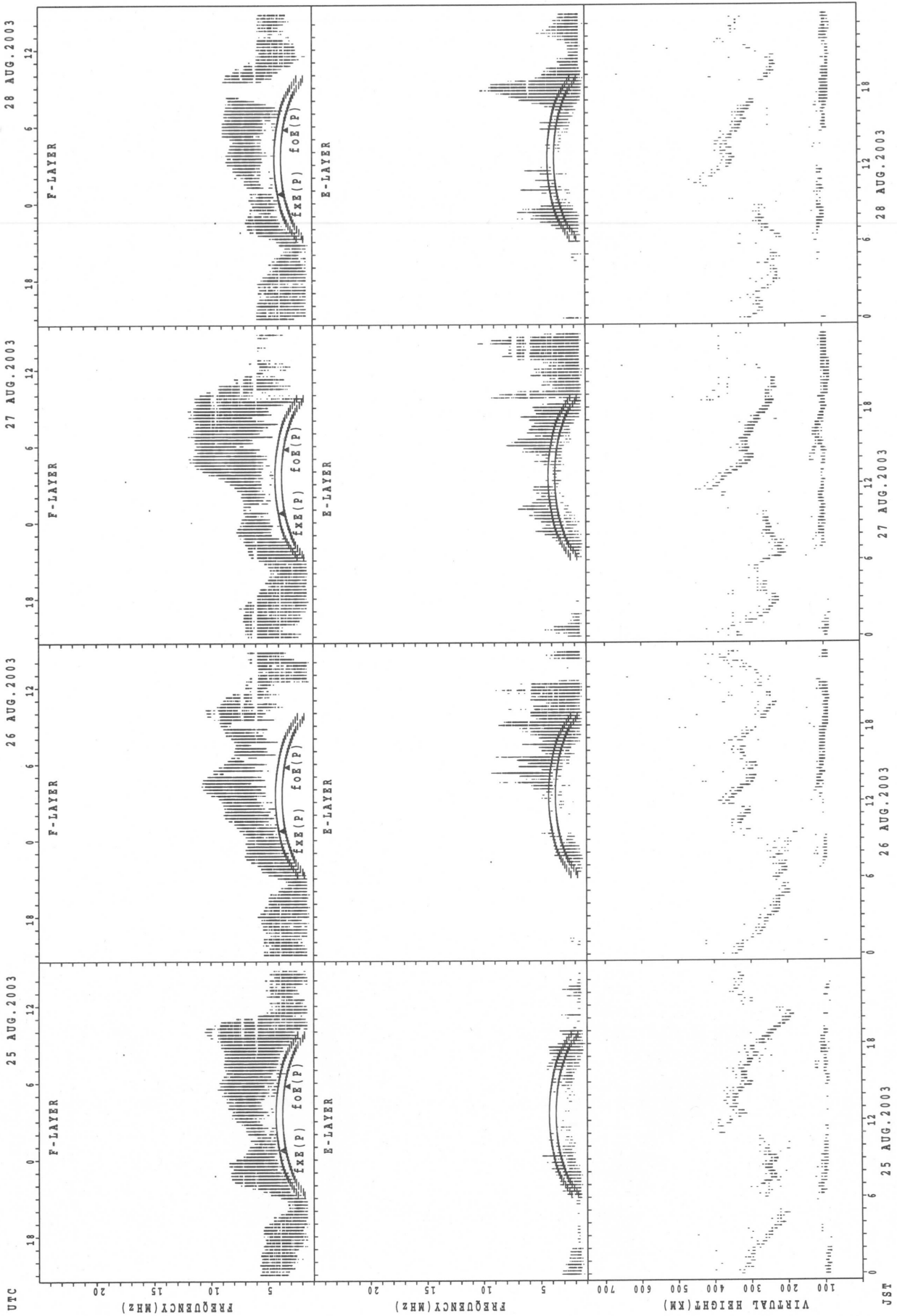
fXfE(P); PREDICTED VALUE FOR fXfE  
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa

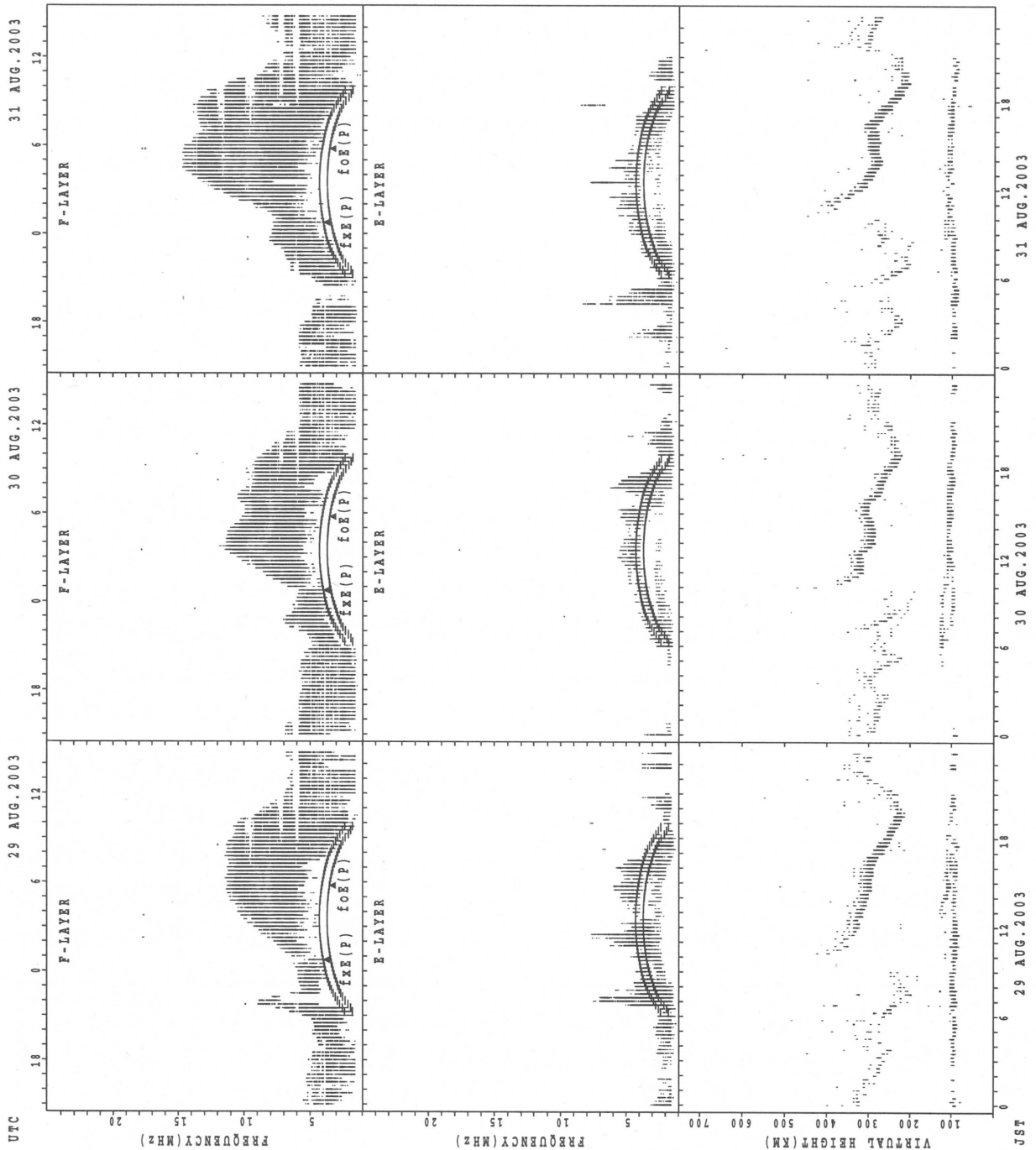


UTC  
 25 AUG.2003  
 26 AUG.2003  
 27 AUG.2003  
 28 AUG.2003

JST

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

SUMMARY PLOTS AT Okinawa



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



MONTHLY MEDIANS OF h'F AND h'Es  
 AUG. 2003 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	1						2	2									4	2	1		1	2	2	2
MED	252						248	360									304	314	276		312	309	323	305
U Q	126						264	458									320	324	138		156	322	354	336
L Q	126						232	262									298	304	138		156	296	292	274

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	8	10	8	7	7	8	10	9	9	9	8	8	9	9	5	5	9	8	9	8	10	9	9	8
MED	95	92	95	87	89	108	107	103	99	103	101	96	99	97	99	101	105	108	103	103	103	99	99	97
U Q	97	97	105	101	95	114	117	106	104	104	103	102	107	101	121	107	109	110	106	112	103	103	104	98
L Q	91	91	88	87	87	96	103	103	99	97	97	95	96	97	94	91	96	105	96	102	101	92	94	96

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	3	1	2				7	16	7								25	16	16	20	9	4	4	2
MED	290	312	304				274	262	260								294	287	286	271	272	308	328	340
U Q	312	156	320				280	285	292								310	294	317	294	288	329	358	346
L Q	274	156	288				268	238	246								278	275	273	261	250	268	313	334

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	23	19	22	19	9	12	19	25	23	25	23	24	16	17	21	17	16	23	24	25	22	23	27	25
MED	97	97	95	97	97	111	105	105	103	101	99	97	100	97	99	111	107	107	103	103	104	103	103	99
U Q	99	99	99	101	102	121	113	109	103	103	103	102	107	103	112	119	113	111	107	106	105	105	105	103
L Q	95	91	93	95	94	99	105	98	97	97	97	95	97	95	95	95	104	101	99	99	97	99	97	95

h'F STATION Yamakawa 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	3	2	1			1	2	14	13								12	23	27	23	13	4	1	3
MED	330	341	268			340	280	261	258								299	290	278	270	274	298	288	310
U Q	356	346	134			170	320	280	271								312	302	300	274	302	388	144	330
L Q	288	336	134			170	240	250	254								287	282	262	246	240	283	144	306

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	25	26	22	20	22	20	15	21	25	21	26	16	16	15	12	19	20	20	25	26	22	21	22	26
MED	97	97	96	95	96	98	99	105	103	99	103	100	105	103	103	101	105	103	103	95	96	97	97	97
U Q	101	101	99	96	97	108	111	118	108	105	107	103	112	111	112	111	112	111	111	101	103	103	105	103
L Q	95	95	93	91	95	95	97	101	100	95	95	97	101	97	97	95	98	93	96	89	89	89	93	97

MONTHLY MEDIANS OF h'F AND h'Es  
 AUG. 2003 135E MEAN TIME (UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 26'40.5'N LON. 128'09.2'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	4	9	7	3	3	4	5	21	16	17							11	30	29	31	16	10	5	6
MED	310	310	298	274	306	285	272	238	259	270							296	286	270	246	250	255	272	300
U Q	313	389	312	304	310	348	353	268	283	303							326	304	286	256	280	302	330	306
L Q	304	294	268	248	282	246	247	225	248	250							288	270	247	234	227	246	260	288

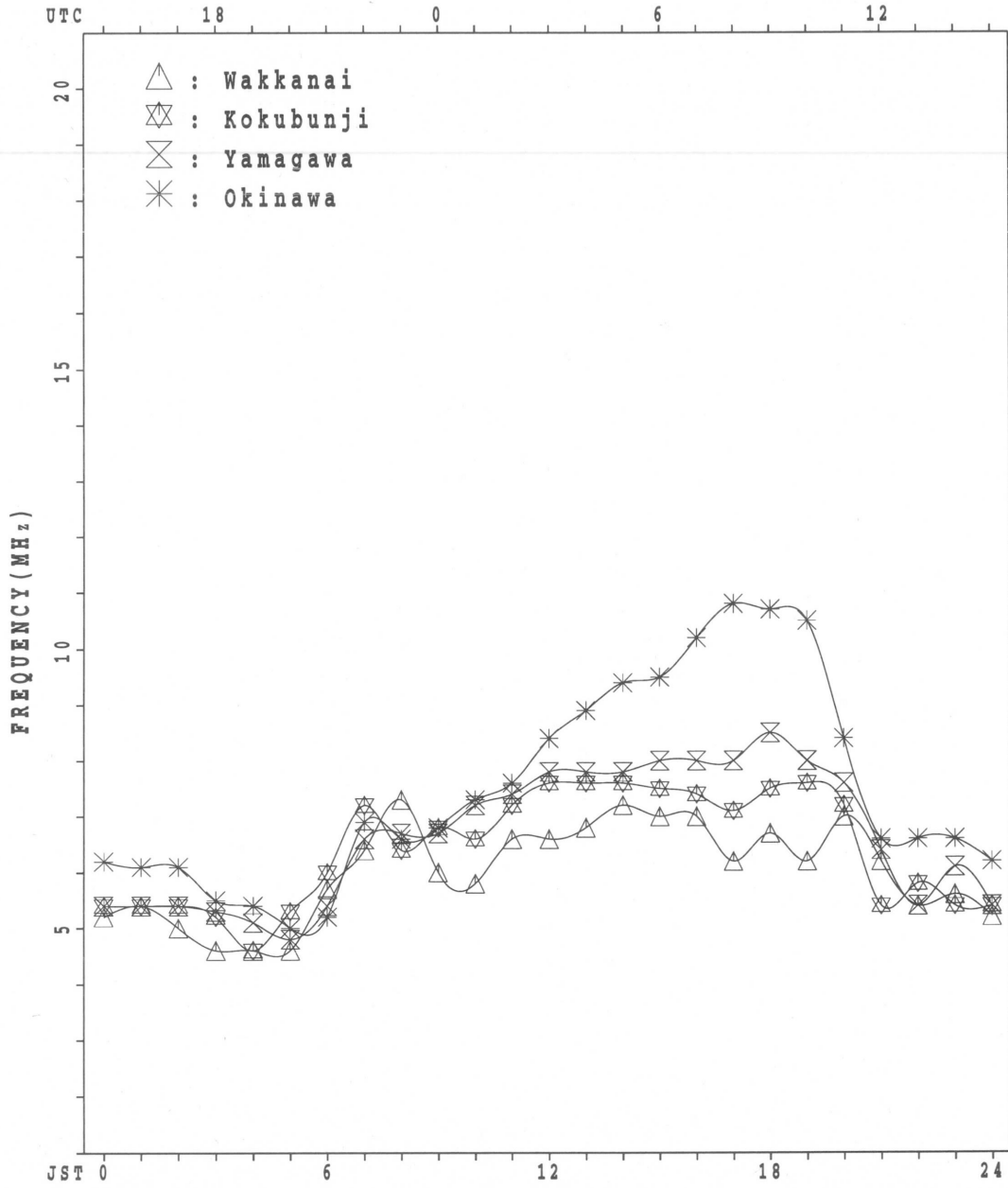
h'Es

	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	27	20	21	20	18	18	17	25	26	27	24	25	21	20	21	24	22	25	24	26	24	21	21	22
MED	101	99	99	97	97	97	103	103	103	103	102	105	105	113	107	107	109	103	98	95	91	97	99	98
U Q	105	100	101	98	99	99	114	111	109	109	108	113	121	120	124	113	111	107	106	99	95	102	103	105
L Q	95	96	95	95	95	95	96	97	99	97	100	98	95	98	97	101	103	96	92	89	89	90	89	95

MONTHLY MEDIANS PLOT OF foF2

AUG. 2003

AUTOMATIC SCALING



IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 fxI (0.1MHz)

135°E MEAN TIME (G.M.T. + 9 H)

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC 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	X	X	X	X	X															X	X	X	X	X
	55	49	54	50	51															66	66	69	63	65
2	X		X	X																X	X	X	X	
	55	62	60	56	49															79	75	65	53	62
3	X		X	X	X															X	X	X	X	X
	57	57	49	53	50															71	70	70	72	71
4	X	X	X	X	X															X	X	X	X	X
	66	66	62	60	60															85	83	69	69	67
5	X	X	X	X	X															X	X	X	X	X
	67	67	65	64	54															82	70	67	70	69
6	X	X	X	X	X															X	X	X	X	X
	70	72	68	65	64	62														88	96	70	72	68
7	X	X	X	X	X															X	X	X	X	
	69	67	67	66	67															92	91	80	70	79
8	X	X	X	X	X															X	X	X	X	X
	79	71	70	71	70															91	86	86	81	76
9	X	X	X	X	X															X	X	X	X	X
	72	62	60	58	59															91	85	84	98	84
10	X	X	X	X	X															X	X	X	X	X
	84	78	71	67	58															84	86	67	70	71
11	X	X	X	X	X															X	X	X	X	X
	68	68	60	65	58															100	86	84	78	73
12	X	X	X	X	X															X	X	X	X	X
	66	64	63	58	54															101	85	68	73	69
13	X	X	X	X	X															X	X	X	X	X
	67	69	63	64	63															106	88	64	77	72
14 <sup>0</sup>	X	X	X	X	X															X	X	X	X	X
	65	68	67	65	62															91	89	92	61	63
15	X	X	X	X	X															X	X	X	X	X
	61	64	64	57	49															87	79	74	81	80
16	X	X	X	X	X															X	X	X	X	X
	59	66	66	67	62															96	85	82	80	78
17	X	X	X	X	X															X	X	X	X	X
	74	74	67	66	69															94	87	85	83	82
18	X	X	X	X	X															X	X	X	X	X
	75	73	70	62	58															90	86	95	89	78
19	X	X	X	X	X															X	X	X	X	X
	86	86	73	69	69															73	71	73	68	57
20	X	X	X	X	X															X	X	X	X	X
	55	53	49	48	47															83	73	68	67	66
21	X	X	X	X	X															X	X	X	X	X
	60	58		50	48															106	66	54	55	57
22	X	X	X	X	X															X	X	X	X	X
	56	54	52	52	48															61	58	60	59	60
23	X	X	X	X	X															X	X	X	X	X
	50	48	50		40															70	69	60	62	62
24	X	X	X	X	X															X	X	X	X	X
	61	54	52	47	51															68	68	64	58	57
25	X	X	X	X	X															X	X	X	X	X
	56	56	54	48	44															78	70	67	64	64
26	X	X	X	X	X															X	X	X	X	X
	62	60	57	49	47															79	83	81	79	74
27	X	X	X	X	X															X	X	X	X	X
	67	67	63	60	56															79	78	77	70	61
28	X	X	X	X	X															X	X	X	X	X
	60	59	55	52	45															A	X	X	X	X
29	X	X	X	X	X															X	X	X	X	X
	64	63	62	53	50															78	78	74	66	65
30	X	X	X	X	X															X	X	X	X	X
	64	62	61	56	52															66	65	66	66	66
31	X	X	X	X	X															X	X	X	X	X
	63	57	57	57	53															75	68	66	70	68
	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	30	30	31	1			1											30	31	31	31	31
MED	X	X	X	X	X															X	X	X	X	X
	64	64	62	58	54	62			63											84	78	69	70	68
U Q	X	X	X	X	X															X	X	X	X	X
	69	68	67	65	62															91	86	81	78	74
L Q	X	X	X	X	X															X	X	X	X	X
	59	57	55	52	49															75	69	66	63	63

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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	49	43	47	44	45	A	54	54	50	R	53	A	A	60	59	60	54	58	64	60	60	63	56	59			
2	49	F	54	50	F	44	52	58	A	A	A	58	62	68	70	65	66	69	70	73	69	59	47	F			
3	51	F	S	47	44	47	58	65	A	66	63	63	63	69	79	82	75	69	65	65	64	64	F	65			
4	F	59	56	54	53	54	62	62	62	63	64	66	R	58	61	66	68	70	68	70	79	77	63	63	61		
5	60	60	58	57	48	54	55	67	65	A	56	59	61	R	60	68	67	69	74	79	76	64	60	64	F		
6	F	F	F	F	F	F	72	76	66	62	67	A	88	83	97	97	102	90	85	82	90	64	Z	F	F		
7	F	F	61	60	F	61	68	R	A	A	75	76	77	71	80	83	79	79	80	86	85	74	64	F	F		
8	F	65	64	65	64	46	61	66	69	66	72	A	72	86	102	107	84	87	80	85	80	80	75	70	R		
9	66	56	54	52	F	54	73	80	66	A	A	88	82	82	80	87	91	89	89	85	79	78	F	78	Z		
10	F	F	65	F	52	54	62	63	60	S	66	67	71	66	70	89	87	80	69	68	78	80	60	64	65		
11	F	F	53	F	52	51	63	78	77	A	78	83	A	70	75	74	81	82	A	94	80	78	72	66	S		
12	60	58	56	52	48	47	63	84	A	69	62	69	76	84	82	94	95	82	95	94	79	62	67	63	S		
13	61	63	57	57	57	59	70	81	89	A	82	82	86	86	88	95	98	93	94	100	82	58	F	66	F		
14	59	F	F	F	F	53	52	78	86	63	68	76	76	76	86	91	84	69	83	85	83	86	54	F	F		
15	55	F	F	50	43	40	54	70	78	A	A	A	71	70	72	68	73	75	77	A	S	81	73	68	F		
16	53	F	F	F	S	56	55	58	73	A	A	A	67	A	73	71	74	85	89	84	90	79	76	74	72	S	
17	68	68	61	60	63	63	77	96	72	75	71	A	69	73	68	68	72	74	79	88	81	79	77	76	S		
18	69	67	64	56	52	55	80	88	69	72	76	85	102	100	107	105	110	86	95	84	80	89	83	71	S		
19	80	80	67	63	63	63	58	56	F	50	49	A	R	A	R	A	60	60	58	57	67	65	67	62	51	S	
20	49	47	43	42	41	43	59	64	64	70	A	72	78	79	76	80	78	80	80	77	66	62	61	60	S		
21	54	52	A	44	42	43	68	78	61	60	66	71	77	76	82	81	83	92	96	100	60	48	49	51	S		
22	50	48	46	46	42	38	50	A	A	A	A	R	R	53	52	56	57	54	53	59	65	54	52	54	53	54	S
23	44	42	44	A	33	35	44	52	48	50	52	U	R	52	56	59	58	66	62	58	57	64	63	54	56	56	R
24	55	48	46	41	44	39	55	56	63	59	R	55	58	60	56	58	59	58	60	62	62	58	52	51	S		
25	50	50	48	42	37	38	56	67	68	68	66	66	62	61	71	75	74	65	67	72	64	61	57	58	S		
26	56	54	51	43	41	51	55	63	74	61	69	64	69	73	73	65	64	64	62	73	77	75	73	68	S		
27	61	61	57	54	50	49	57	75	70	66	74	64	64	71	68	69	73	72	74	73	71	71	64	55	F		
28	54	53	49	46	39	37	46	A	56	A	A	A	62	A	58	58	59	58	57	A	58	57	55	F	F		
29	F	56	55	46	44	39	47	58	59	61	65	73	81	76	71	68	70	67	66	72	72	68	59	59	F		
30	58	56	55	50	46	42	44	53	55	60	59	64	66	74	74	77	70	65	59	60	59	60	F	F	F		
31	57	51	51	50	47	43	64	59	59	58	64	74	80	81	79	75	72	70	77	68	62	60	F	F	F		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
CNT	25	24	27	26	27	30	31	29	25	20	22	26	27	30	30	31	31	31	29	30	31	31	25	23			
MED	56	56	55	50	47	48	58	67	65	63	66	68	69	72	74	74	74	70	74	78	72	63	63	61			
U Q	60	60	58	56	52	54	64	78	71	67	72	74	78	79	82	87	84	82	84	85	80	75	70	68			
L Q	50	49	48	46	42	42	54	58	59	60	63	63	62	61	68	66	66	65	64	68	63	60	56	56			

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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							A	A	A	A	U	L		A	A	A	A	L	L	L						
2								3	5	6	4	1	2	A	A	A	A	L	L	A						
3								A	A	A	A	A	A	A	A	A	L	L	L	A						
4								L	A	A	A	L	L	4	7	6	4	8	0	4	7	2	4	5	2	
5								L	L	L	A	U	L	A	A	A	L	L	A	A						
6								L	U	L	L	A	A	A	A	A	A	L	L							
7								A	L	A	A	A	L	A	L	U	L	A	L	L						
8								L	L	L	L	A	A	5	1	2	A	L	L	L	L					
9								A	L	A	A	A	A	5	2	4	A	L	A	L	A	A				
10								L	A	L	A	A	A	L	L	L	L	L	A							
11							L	A	A	A	A	A	A	A	A	L	L	L	A	A						
12								L	A	A	L	L	A	A	5	0	4	4	9	2	4	7	2			
13								A	A	A	A	A	U	L	A	L	A	A	A	A	A					
14								L	A	A	A	A	A	L	L	L	L	L	L	L						
15							E	C	U	L	U	L	A	A	A	A	L	L	L	L	A	A				
16								A	A	A	A	A	A	A	L	A	L	L	L							
17								L	L	L	L	L	A	A	A	L	L	L	L							
18								L	L	L	A	L	L	5	2	0	5	2	4	5	0	4	5	0		
19								3	4	8	A	4	1	6	4	3	6	A	U	L	A	A				
20								L	A	A	A	A	A	5	0	0	5	0	4	A	A	L	L	L		
21								L	L	A	L	L	L	L	A	L	L	A	A	L						
22								L	L	A	A	A	A	U	L	A	L	L	L	A	L	A				
23							E	C	A	A	A	A	A	4	6	0	4	6	8	A	L	L				
24								L	L	L	L	L	L	4	8	8	4	8	8	4	8	8	4	6	4	6
25								3	8	0	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
26								L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
27								L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
28								A	A	A	A	A	A	U	L	A	A	4	8	0	4	6	0			
29								A	A	U	L	L	U	L	L	L	L	L	L	L	L	L	L	L	L	
30								3	3	6	4	1	2	4	4	8	4	7	6	5	0	8	5	0	0	
31								L	A	L	A	A	A	5	0	8	5	2	4	5	0	0	5	1	6	
								0	0	0	1	0	2	0	3	0	4	0	5	0	6	0	7	0	8	
CNT								8	5	12	15	14	16	20	20	23	24	14	2							
MED								L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
U Q								3	6	8	4	1	2	4	5	8	4	7	6	4	9	6	5	0	2	
L Q								3	9	6	4	2	6	4	7	4	4	8	8	5	0	8	5	2	0	

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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						A	A	A	A	A	A	A	A	A	A	A	U	U	A	B				
2						BU	A	A	A	A	A	B	BU	A	B	A	U	R	A	A				
3						BU	A	A	A	B	A	A	A	A	A	U	U	A	BU	A				
4						B	A	A	A	A	A	A	U	U	R	U	A	A	U	U	A			
5						BU	RE	C	U	A	A	A	A	A	A	A	A	A	A	A				
6						A	A	R	A	A	A	A	A	A	A	A	A	A	A	A				
7						B	A	A	A	A	A	A	A	A	A	A	U	R	U	R	U	A		
8						BU	R	A	A	A	A	A	A	A	A	B	R	BU	A					
9						BU	A	E	C	A	A	A	U	A	E	C	U	A	U	A	U	A		
10						BE	C	A	A	A	A	A	A	A	A	A	U	R	U	U	A			
11						B	A	A	A	A	A	A	A	A	A	A	U	A	A	A				
12						B	A	A	A	A	A	A	A	A	B	A	U	A	A	A	A			
13						B	A	A	A	A	A	A	U	U	A	A	U	U	A	A				
14						BU	A	A	A	A	A	A	A	A	A	R	U	R	B	U	A			
15						E	C	E	C	E	C	A	A	A	B	B	B	BU	A	A	A			
16						B	A	E	C	B	A	A	A	A	A	A	A	A	A	A				
17						B	212	A	A	A	A	A	A	A	A	A	A	A	A	A				
18						BU	A	A	A	A	A	U	A	A	A	A	A	A	248	A	B			
19						BU	A	A	A	A	A	U	A	A	A	A	U	A	A	A	B			
20						B	224	A	A	A	A	A	A	A	A	A	A	A	A	A				
21						BU	A	A	A	A	A	A	U	R	A	A	A	A	A	B				
22						BU	A	A	A	A	A	B	B	B	B	A	A	A	A	B				
23						E	C	A	A	A	A	A	A	A	U	R	U	R	BU	A				
24						B	212	R	RE	C	A	A	A	U	R	U	U	U	A	A	B			
25						B	A	A	E	C	A	A	A	B	R	U	U	U	U	U	A			
26						BU	R	A	A	A	A	A	A	A	A	BU	A	A	A	A				
27						BU	A	A	A	A	A	A	R	U	R	U	R	R	U	A	A			
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
29						B	A	A	R	A	A	A	A	R	A	A	A	U	R	B				
30						B	220	A	A	A	R	A	A	A	A	A	U	R	U	R	B			
31						BU	R	A	A	A	A	A	U	A	B	A	A	A	A	B				
CNT							18	1	2				1	3	6	5	6	15	12	9				
MED							U	A	R	U	A		U	A	U	U	U	U	U	U	U	A		
U Q							230	292	316				352	376	364	352	336	312	256	192				
L Q							U	A						U	A	U	U	U	U	U	U	A		
							236							388	364	356	344	316	264	208				
							220							U	A	U	U	U	U	U	U	A		
														368	360	350	332	304	246	186				

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
2	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
3	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
4	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
5	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
6	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
7	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
8	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
9	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
10	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
11	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
12	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
13	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
14	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
15	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
16	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
17	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
18	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
19	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
20	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
21	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
22	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
23	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
24	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
25	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
26	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
27	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
28	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
29	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
30	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
31	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
U Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A
L Q	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A	J A



IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC IN MANUAL SCALING

D	H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
1	E B	14	30	E C	34	20	A A	48	46	42	39	36	A A A	53	48	46	35	35	35	22	31	24	22	30	36				
2		39	38	34	37	19	22	29	37	A A A A	66	105	74	48	43	42	53	54	G	29	30	56	30	E B	15	23	39	33	
3	E B	35	15	33	24	21	18	40	53	A A	66	49	46	50	48	66	37	37	36	35	35	29	30	24	21	E C	30		
4		30	21	28	E B E C E B	15	30	19		31	50	42	40	39	42	42	41	39	36	34	30	23	19	E B E C	18	15	35	21	
5		32	25	30	20	17	21	19	G E C	33	40	78	41	49	56	54	41	39	41	58	59	44	E B	14	20	38	32		
6		33	20	21	30	26	20	24	30	39	56	50	A A	85	55	55	73	44	32	28	28	30	40	45	32	22			
7		40	17	35	40	20	E B	34	35	A A A A	98	78	47	45	66	47	42	56	G	23	30	27	22	E B	14	20	E B	17	37
8		37	17	E B E B E B E B	15	14	15	16	G	20	36	35	41	56	A A	80	39	51	43	E B	G	27	40	31	45	29	31	52	42
9		20	19	E B	15	20	18	18	E B	36	E C	36	42	108	111	84	44	48	46	61	38	49	74	36	62	30	45	42	
10	E B	15	29	24	20	34	24	32	34	44	58	56	42	41	44	41	37	22	G	39	38	22	E C	29	17	25	17		
11		24	36	18	E B E B E B	14	15	16	37	45	57	115	60	58	77	56	42	38	38	44	A A	88	47	36	54	29	23		
12		19	19	17	17	31	E B	19	30	42	98	40	42	67	53	44	39	37	36	31	25	18	E B	16	20	E B	15	17	
13		17	32	19	20	E B	15	23	36	46	53	141	67	42	40	41	46	47	53	67	58	45	19	34	42	35			
14		43	29	21	30	E C E B	15	16	25	48	65	56	59	52	46	44	27	25	E B	35	34	24	46	47	19	24	35		
15	E C	28	35	18	24	E C E C E C	35	35	39	39	66	80	128	48	E B	44	42	42	41	34	40	A A	87	26	43	36	35	40	
16		45	38	E C	35	31	20	22	38	68	81	87	85	56	A A	144	40	47	36	34	31	30	35	35	E C E C	30	30	31	
17		29	35	30	18	E B E B	16	17	26	34	34	40	46	A A	88	54	69	42	36	35	32	22	18	34	30	18	17		
18		23	E B E B E B E B	15	20	16	30	16	25	34	35	48	41	41	41	41	45	47	34	30	22	22	17	E B E B E B	16	15	15		
19	E B E B E B E B	14	16	29	E C E B	16	16	18	30	39	38	37	A A	50	41	53	46	56	42	41	39	33	21	36	30	23	30		
20		25	20	16	E B E B E B	16	15	15	25	58	44	35	85	40	41	52	50	36	32	31	26	15	E B E B E B	15	15	14	17	17	
21	E B	15	16	A A	84	31	E B	15	24	45	36	38	40	42	50	34	38	48	42	30	22	22	21	32	30	20			
22		37	17	16	17	E B	15	16	28	76	71	128	69	41	44	42	38	40	E B	45	35	36	E B	16	34	20	32	15	
23	E B	14	15	23	A A	45	20	30	31	38	44	40	37	47	42	40	37	30	G	20	29	21	16	17	30	30	16		
24	E B E C E B E B E B	17	30	15	14	30	14	24	35		G E C	36	38	39	U Y	41	41	28	G	38	38	22	32	E B	14	16	E B E B		
25	E C E B E B E B	30	15	15	14	14	16	31	31	E C	37	37	39	42	E B	44		39	29	G	32	30	24	23	22	23	23	23	
26	E B E B E B E B	23	15	16	16	14	16		29	35	40	40	40	41	39	40	36	33	47	51	18	24	27	17	18				
27		36	25	20	18	E B	19	23	24	32	35	38	41	41	U Y	26	26	29	G	G	G	33	30	32	15	16	16	26	18
28	E B E B E B E B	15	15	14	14	14	20	39	66	33	70	86	82	44	A A	96	40	35	49	28	24	69	A A	20	21	E B	15	34	
29	E B	29	20	19	25	E B	14	20	42	44	U Y	30	34	41	40	42	U Y	29	37	36	30		20	15	18	15	20	20	
30		29	19	21	16	E B	17	30	35	36	37	37	39	39	40	37	44	G	G	28	17	23	16	E B	16	20	20	20	
31	E B E B E B E B	20	14	15	19	14	16		G	36	35	40	47	38	42	40	37	38	E B	34	30	21	33	E B E B	15	15	33	19	
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
CNT		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31				
MED		26	20	20	18	E	17	17	30	38	42	41	47	45	44	42	41	37	34	31	27	23	20	21	24	22			
U Q		35	30	30	30	21	22	36	46	A A A A	65	78	67	56	53	51	46	44	38	39	38	35	34	30	33	34			
L Q	E B E B E B E B	17	16	16	16	15	16	24	34	35	38	40	41	41	40	37	36	G	32	30	22	18	E B E B E B	16	17	18	17		

## IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC IN MANUAL SCALING

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

AUG. 2003 fmin (0.1MHz)

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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	302	264	266	300	271	A	307	343	268	R	274	A	A	292	297	309	295	295	310	305	286	294	275	293
2	274	F	275	310	244	F	286	296	307	A	A	A	279	292	309	317	305	310	290	306	308	307	290	280
3	288	F	277	291	283	285	S	325	326	312	A	314	314	273	309	282	297	314	316	333	307	311	279	279
4		F	295	290	296	301	299	330	320	301	317	302	316	302	273	311	312	312	313	310	314	310	296	277
5	281	284	287	303	289	313	332	335	299	A	314	307	285	265	302	297	305	311	325	321	295	293	278	F
6	F	F	F	F	F	F	F	F	F	A	A	A	276	275	286	286	306	298	295	291	321	330	285	288
7	F	F	288	284	F	329	316	321	A	A	309	294	323	284	308	299	301	303	293	298	318	300	303	F
8	F	271	273	284	319	329	287	378	294	322	332	A	269	278	278	308	287	293	298	305	284	295	294	R
9	306	F	276	288	283	F	299	323	331	369	A	A	316	303	306	298	293	314	314	308	310	285	264	Z
10	F	F	312	F	298	322	334	316	299	S	300	323	302	291	275	305	312	325	319	302	294	306	300	273
11	F	F	294	F	285	285	311	327	345	A	A	328	327	A	293	306	288	309	305	A	326	304	286	302
12	298	292	311	314	280	286	304	330	A	363	316	300	290	303	285	295	310	298	305	327	335	268	288	S
13	276	F	F	F	F	F	F	F	F	A	300	306	303	305	286	296	296	305	304	322	354	281	F	286
14	251	F	F	F	F	336	310	322	348	359	301	297	305	294	292	313	314	293	294	308	313	346	300	F
15	276	F	F	305	293	261	292	315	331	A	A	A	307	288	306	292	301	303	311	A	319	307	289	F
16	263	F	F	F	S	308	323	316	337	A	A	A	310	A	297	300	291	301	311	302	315	303	286	S
17	278	282	269	277	282	306	325	368	329	345	307	A	336	300	327	305	303	301	303	307	306	288	307	294
18	293	285	295	277	273	277	310	338	324	306	244	254	285	272	284	278	309	290	299	277	247	292	278	251
19	298	281	249	268	251	Z	246	278	272	325	248	A	256	276	A	297	318	308	290	292	274	286	285	278
20	275	299	286	292	290	320	338	314	334	327	A	311	316	325	315	330	328	330	331	321	330	288	286	299
21	296	301	A	281	281	272	321	373	367	320	312	319	312	296	307	307	298	291	296	331	341	266	265	281
22	274	298	283	279	265	254	292	A	A	A	A	A	R	261	254	277	290	292	277	300	329	308	266	256
23	279	279	298	A	306	312	318	301	266	252	270	290	R	284	291	292	314	318	327	313	284	293	270	275
24	291	286	303	277	292	280	319	304	324	312	R	237	299	280	285	298	312	319	315	291	298	286	288	278
25	277	294	307	304	291	324	305	322	358	337	329	330	321	281	303	309	315	309	310	313	292	285	264	279
26	279	283	299	301	320	342	326	356	355	311	322	285	306	301	327	325	316	314	299	292	302	286	290	278
27	271	289	276	282	281	294	306	341	345	H	295	353	309	285	312	311	306	318	308	312	300	303	310	298
28	284	291	311	313	313	308	284	A	337	A	A	A	A	254	A	294	294	308	315	320	A	295	289	269
29	F	281	289	287	276	266	293	310	308	328	295	294	316	332	317	313	319	314	301	305	309	303	285	277
30	282	265	282	275	300	281	279	278	318	318	317	300	286	312	311	320	334	321	329	295	278	278	F	F
31	291	284	283	286	292	287	340	349	289	313	297	274	299	308	301	313	330	314	341	325	297	280	F	F
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	24	27	26	28	30	31	29	25	20	22	26	27	30	30	31	31	31	29	30	31	31	25	23
MED	281	284	288	284	290	299	316	322	325	316	310	300	299	294	300	305	310	309	306	308	303	288	285	281
U Q	294	294	298	301	299	322	326	342	345	328	322	310	309	306	311	313	318	314	314	319	310	295	294	288
L Q	276	280	276	281	278	281	296	311	300	304	300	279	285	278	292	295	303	298	299	295	286	280	275	277

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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						A	A	A	A	U	L		A	A	A	A	L	L	L					
2							L			A	A	A				A	A	L	L	A				
3							354	354		A	A	A	A	A			L	L	L	A				
4							L	A	A			L	L			L	L	L	L					
5							L	L		A	U	L	A	A	A		L	L	A	A				
6							L	L	L	A	A	A	A	A	A	A		L	L					
7							A	L	A	A	A	L	A	L	U	L	A	L	L					
8							L	L	L	L	A	A			A	L	L	L	L					
9							A	L	A	A	A	A	A	L	A	L	A	L	A	A				
10							L	A	L	A	A	A	L	L	L	L	L	L	A					
11						L	A	A	A	A	A	A	A	A	A	L	L	L	A	A				
12							L	A	A	L	L	A	A		L	L	L	L	L					
13							A	A	A	A	A	U	L	L	A	A	A	A	A	A				
14							L	A	A	A	A	A	L	L	L	L	L	L	L					
15						E	C	U	L	A	A	A	A	L	L	L	L	L	A	A				
16							A	A	A	A	A	A	A	L	A	L	L	L	L					
17							L	L	L	L	L	A	A	A	L	L	L	L	L					
18							L	L	L	A		L		L	A	A	L	L						
19								A		U	L	A	A	A	A		L	A	A					
20							L	A	A		A				A	A	L	L	L					
21						L	L	A	L	L	L	L	A	L	L	A	A	L						
22						L	L	A	A	A	A	U	L	L	L	L	L	L	A	L	A			
23						E	C	A	A		A		A		L	L	L	L	L					
24							L	L																
25							343																	
26							L	L	L	L	L	L	L	L	L	L	L	L	A	A				
27							L	L	L	L	L	L	L	L	L	L	L	L	L					
28						A	A	A				A	U	L	A		A	L						
29							A	A	U	L	L	L	L	L	L	L	L	L	L					
30							350	353	375	380	374	379	360	373	369	378		L	L					
31							L	A	L		A				L	L	L	L	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							8	5	12	15	14	16	20	20	23	23	14	2						
MED							L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
U Q							344	354	373	384	392	378	362	368	366	362	352	334						
L Q							L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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						E A	348	268	E A	R	454	A	A	384	348	338	362	330	296					
2							346	330	A	A	A	418	380	332	322	326	310	312	E A					
3						E A	274	326	A	316	324	388	344	E A	450	328	290	294	270	280				
4							250	280	298	318	340	332	422	R	426	334	316	308	288	278				
5							280	274	364	A	352	364	E A	E A	416	482	334	346	324	E A	304	282		
6						E A	260	234	262	E A	374	356	A	A	366	344	338	324	288	282	290			
7						A	248	294	A	A	300	342	E A	E A	306	372	312	306	292	298				
8							310	216	296	302	284	A	A	410	354	336	270	308	278					
9							254	232	242	A	A	E A	E A	376	310	308	316	314	280	272	E A	304		
10						E A	266	240	334	E A	378	298	338	346	386	304	288	274	268					
11					334	292	264	260	A	E A	296	290	A	E A	356	314	328	310	292	A				
12							312	268	A	242	284	E A	E A	366	368	314	330	302	282	294	278			
13							262	298	254	A	E A	E A	E A	330	316	314	312	304	308	296	E A	E A	286	
14							314	284	248	E A	E A	E A	E A	260	360	334	312	340	324	294	274	314	288	
15					E C	302	356	296	E A	A	A	A	A	334	334	322	352	322	312	290	A			
16							272	314	A	A	A	E A	E A	A	322	340	330	304	276					
17							270	226	294	250	272	A	A	272	E A	402	290	314	316	292				
18							276	242	260	298	462	344	324	336	298	328	272	276						
19							366	394	342	542	A	500	A	466	A	374	328	282	E A	294				
20							E A	280	338	288	306	A	304	302	290	306	282	264	258					
21						348	292	228	250	294	328	312	314	314	306	302	302	294						
22						394	366	A	A	A	A	484	532	440	390	382	E A	410	332	254				
23						E C	300	268	E A	E A	476	552	478	416	422	396	380	318	308	288				
24							310	272	310	348	R	536	390	400	396	346	320	286						
25							300	278	252	284	296	312	334	418	334	314	286	278						
26							248	248	330	318	372	334	332	288	304	296	E A	E A	E A	284	326			
27							306	252	244	298	258	330	398	326	320	318	290	294						
28						E A	270	398	A	314	A	A	A	512	A	394	384	342	302					
29						E A	394	334	322	280	352	362	312	282	320	296	288							
30							414	406	322	332	334	368	364	314	322	296	260							
31							264	258	378	358	374	370	328	308	296	298	270							
CNT						6	30	29	25	20	22	26	27	30	30	31	31	28	13					
MED						318	285	271	291	306	325	346	339	336	323	314	296	288	283					
U Q						348	346	320	328	353	356	376	398	400	338	328	312	296	E A	300				
L Q						300	268	245	253	289	296	330	314	314	306	298	282	278	279					

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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	222	EAECE	356342	328324	EAE	A	A	A	A	208	198	A	A	A	A	212	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
2	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE
3	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	H	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
4	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
5	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
6	A	A	FE	EAE	EAE	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
7	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE
8	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE
9	226	244	250	280	302	258		AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE
10	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	H	EAE	EAE	EAE	EAE	EAE	EAE	EAE
11	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
12	264	282	244	230	316	262	232		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
14	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
15	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
16	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
17	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	H	EAE	A	A	EAE	EAE	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
18	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
19	256	260	264	290	312	324	332		AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE	AE
20	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
21	252	248		AE	AE	AE	AE	AE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
22	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
23	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
24	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
25	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
26	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
27	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
28	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
29	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
30	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
31	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
	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	30	30	30	27	21	12	16	16	14	16	20	20	23	24	27	22	19	30	31	31	31	31
MED	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	A	A	A	A	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE	EAE
UQ	304	292	282	280	281	262	226	218	210	200	198	212	210	212	212	212	216	234	254	240	252	276	292	290
LQ	334	306	308	302	304	294	256	237	222	208	202	216	239	221	230	222	234	238	260	256	268	298	316	310
	270	270	262	260	264	252	229	214	208	196	194	205	207	207	212	206	212	228	242	240	228	250	258	274

AUG. 2003 h'F (KM)

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHZ IN 15.0SEC 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						A	A	A	A	A	A	A	A	A	A	A	114	112		B				
2						B	112	110		A	A	A	B	BE	B	B	A		A	A				
3						B	108		A	A	B	A	A	A	A		114	114		B				
4						B	A	A	A	A	A	A												
5						B	118		E	C	A	A	A	A	A	A	112		A	A	A			
6						A	A			A	A	A	A	A	A	A			A	A				
7						B	A			A	A	A	A	A	A	A			114	110	114			
8						B	116		A	A	A	A	A	A	A	B			B		120			
9						B	116		E	C	A	A	A	A	E	C	114	112	112	114	118			
10						BE	C		A	A	A	A	A	A	A		114	110	112	120				
11						B	A	A	A	A	A	A	A	A	A	A			116	120	112			
12						B	128	116		A		A	A	A	B		A		A	A				
13						B	A	A	A	A	A	A	A				114	116	114	116	114			
14						B	116		A	A	A	A	A	A			110	112		112	112			
15						E	C	E	C	E	C	A	A	A	B	B	B	B		A	A			
16						B	A	E	C	B	A	A	A	A	A	A	A	A	A	A	A			
17						B	110		A	A	A	A	A	A	A	A	A	A	A	A	B			
18						B	112	112	112		A	A	A						110		B			
19						B	116		A	A	A	A	118	112			114	108	112		B			
20						B	114		A	A	A	A	A	A	A	A	A	A	A	A				
21						B	112		A	A	A	A	A	A			A	A	A	A	B			
22						B	120		A	A	A	A	B	B	B	B		116	118		A	B		
23						E	C		A	A	A	A	A	A	A		108	108		B		116		
24						B	116	118	114		E	C	A	A			114	114	114	114	122	118		
25						B	A	A	E	C	A	A	A	B			114	110	110	112	114			
26						B	114	112		A	A	A	A	A	A	B			A	A	A			
27						B	128	108		A	A	A	A								A			
28						B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
29						B	A	A		A	A	A					108	110	108	118		B		
30						B	122	118	112	112	112		A	A	A	A			124	116		B		
31						B	122	116		A	A	A					B		A	A	B			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							18	10	4	2	1	1	7	8	8	16	20	15	10					
MED							116	116	113	115	112	118	114	114	114	114	114	114	112	115				
U Q							120	118	114				116	117	115	114	116	118	118					
L Q							112	112	112				112	111	111	111	110	112	112					

## IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC 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	100	94	92	90	114	108	108	104	100	100	102	98	100	98	98	98	122	112	110	106	104	110	102	98
2	96	96	98	94	96	128	124	118	106	102	106	120	120	128	114	106	104	108	104	106	B	104	100	104
3	100	100	94	94	92	118	112	106	102	102	102	100	102	92	100	144	126	118	110	102	102	104	106	100
4	98	96	92	96	C	B	106	100	98	100	100	160	138	130	128	120	118	126	124	110	104	94	98	96
5	100	98	94	96	98	100	100	130	122	102	102	102	100	100	108	124	108	100	100	100	B	102	104	100
6	102	100	96	102	102	102	156	126	122	108	112	104	98	100	100	100	104	106	104	100	108	106	102	102
7	98	96	92	94	96	B	98	118	100	104	104	106	102	102	104	106	104	126	118	108	104	104	108	102
8	100	102	104	B	B	B	106	98	100	98	98	98	100	96	96	B	100	114	112	104	106	102	100	100
9	100	98	98	98	104	B	114	106	106	98	100	100	120	138	124	110	120	108	108	104	102	110	104	100
10	100	98	94	96	96	98	96	100	104	98	96	104	106	106	102	116	96	116	110	100	C	90	96	100
11	98	90	102	102	110	B	108	104	102	96	98	98	98	96	98	102	118	116	108	104	100	100	94	100
12	100	100	102	102	100	B	134	114	100	112	106	106	106	120	118	108	112	108	102	104	102	98	98	98
13	98	96	104	106	108	102	100	108	104	98	98	98	106	148	128	122	114	110	102	100	96	94	94	94
14	90	88	90	C	120	110	116	102	96	96	94	94	98	94	94	100	B	124	110	98	98	98	98	96
15	94	C	96	92	C	C	110	104	100	94	100	B	118	106	112	124	106	98	122	100	100	100	98	
16	96	94	96	92	96	112	106	102	96	98	96	96	96	98	96	102	104	98	100	100	98	94	100	90
17	88	84	86	90	B	B	112	104	102	106	100	98	100	96	96	106	108	102	112	104	92	92	92	94
18	104	B	B	B	C	B	126	116	120	102	112	108	114	104	102	98	98	112	112	106	106	B	110	104
19	102	104	C	126	B	130	116	104	106	100	102	116	120	122	114	118	116	114	104	100	104	102	96	94
20	92	86	84	B	B	B	124	100	100	102	96	98	98	96	96	106	102	98	98	100	96	92	104	98
21	100	92	98	98	104	B	110	98	102	100	102	100	94	94	98	96	90	96	92	88	90	92	102	102
22	98	102	100	102	108	122	116	102	100	94	102	B	120	120	B	116	108	106	100	B	110	104	104	100
23	B	108	108	112	114	114	106	108	100	104	102	100	104	98	92	94	96	130	114	92	100	96	C	B
24	B	C	B	B	C	B	112	116	G	C	104	110	112	116	102	114	118	114	108	100	104	100	102	B
25	C	B	B	B	100	94	88	110	C	102	102	100	B	G	90	92	120	122	110	C	B	98	96	96
26	98	92	B	B	B	B	G	124	104	102	102	104	102	110	120	116	104	102	98	110	100	104	96	94
27	94	92	94	90	B	92	128	108	106	106	100	96	92	94	98	100	124	114	104	102	B	92	90	90
28	B	B	B	B	120	110	104	100	102	104	100	100	108	94	100	98	100	100	100	96	94	94	100	96
29	96	B	98	96	118	112	106	102	106	102	100	94	120	92	122	114	112	G	90	86	86	88	98	92
30	94	92	92	92	96	122	120	118	118	126	118	100	102	102	96	96	106	96	90	110	B	92	104	102
31	98	98	B	B	B	B	G	116	110	108	104	104	106	126	B	112	108	104	100	96	B	98	106	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	24	22	20	17	28	31	29	30	31	30	29	30	29	30	30	30	31	29	24	30	30	29
MED	98	96	96	96	103	110	111	106	102	102	102	100	102	101	100	106	108	109	104	102	101	98	100	98
U Q	100	100	99	102	112	120	118	116	106	104	104	104	113	120	114	116	118	116	110	106	104	104	104	100
L Q	96	92	92	92	96	101	106	102	100	98	98	98	99	96	96	100	104	102	100	100	97	94	96	95

AUG. 2003 h'Es (KM)

COMMUNICATIONS RESEARCH LABORATORY, JAPAN



IONOSPHERIC DATA STATION Kokubunji

AUG. 2003 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 30.0MHz IN 15.0SEC IN MANUAL SCALING

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

## f - PLOTS OF IONOSPHERIC DATA

KEY OF f - PLOT	
	SPREAD
○	f <sub>o</sub> F <sub>2</sub> , f <sub>o</sub> F <sub>1</sub> , f <sub>o</sub> E
×	f <sub>x</sub> F <sub>2</sub>
✱	DOUBTFUL f <sub>o</sub> F <sub>2</sub> , f <sub>o</sub> F <sub>1</sub> , f <sub>o</sub> E
⊗	f <sub>b</sub> E <sub>s</sub>
└	ESTIMATED f <sub>o</sub> F <sub>1</sub>
†, ‡	f <sub>min</sub>
^	GREATER THAN
v	LESS THAN

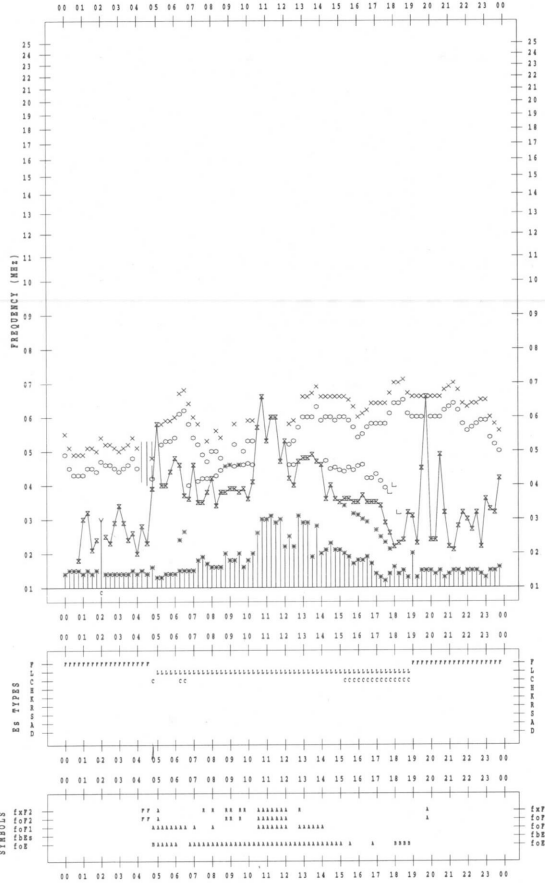
f-PLOT DATA

SCALER : I.NISHIMOTO

STATION : Kokubunji

DATE : 2003/ 8/ 1

135 °E MEAN TIME



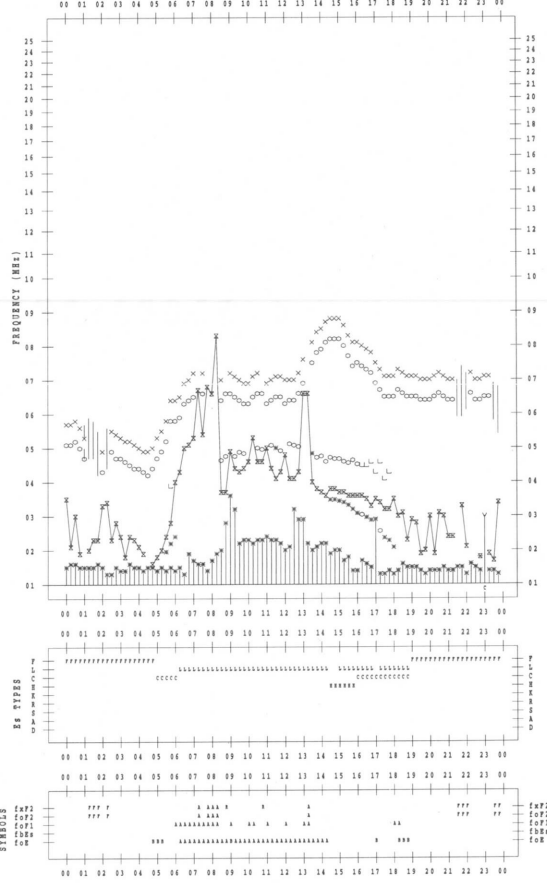
f-PLOT DATA

SCALER : I.NISHIMOTO

STATION : Kokubunji

DATE : 2003/ 8/ 3

135 °E MEAN TIME



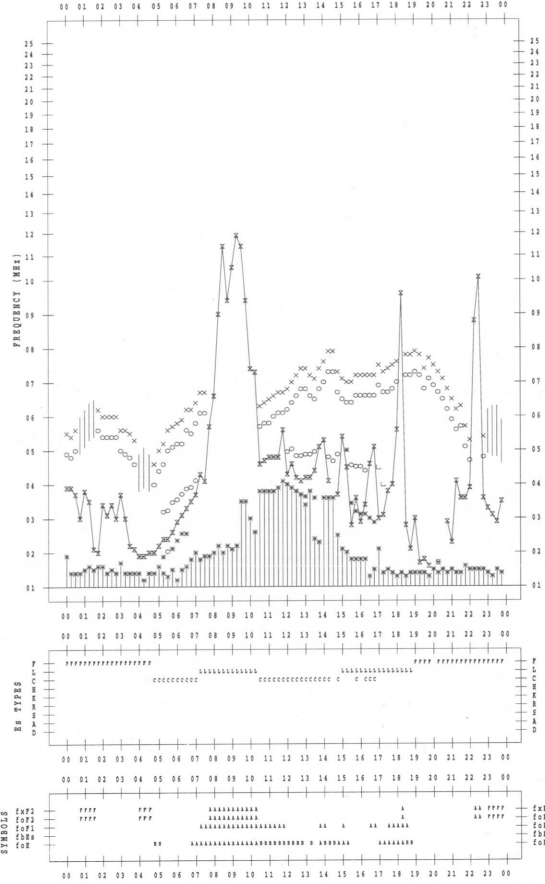
f-PLOT DATA

SCALER : I.NISHIMOTO

STATION : Kokubunji

DATE : 2003/ 8/ 2

135 °E MEAN TIME



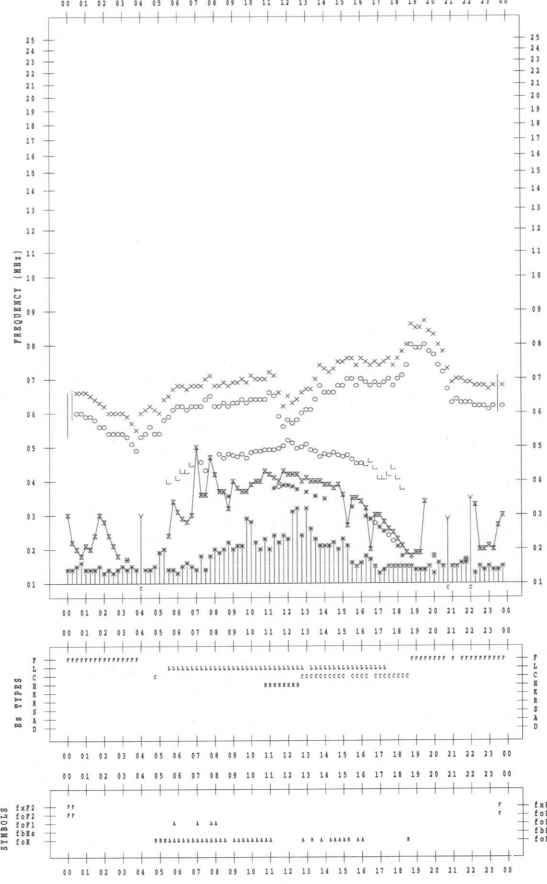
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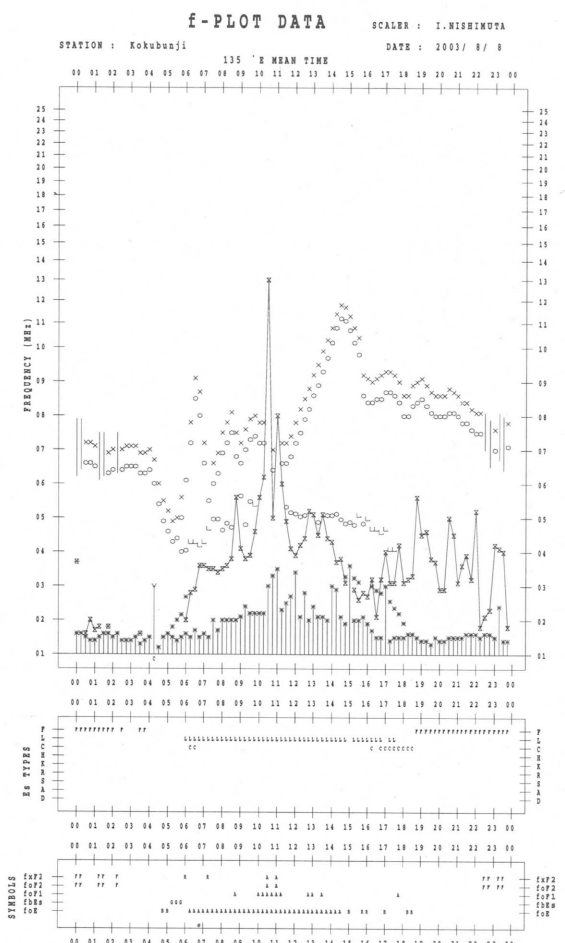
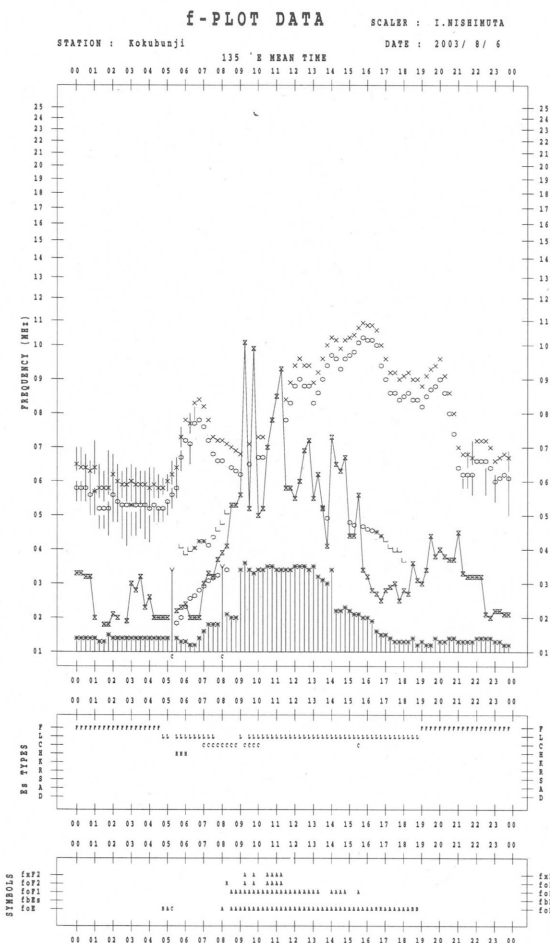
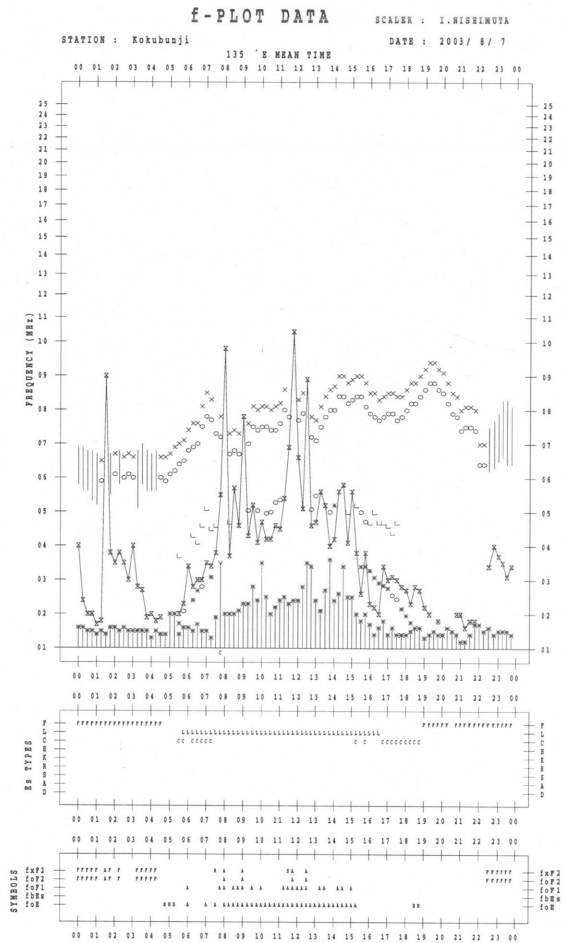
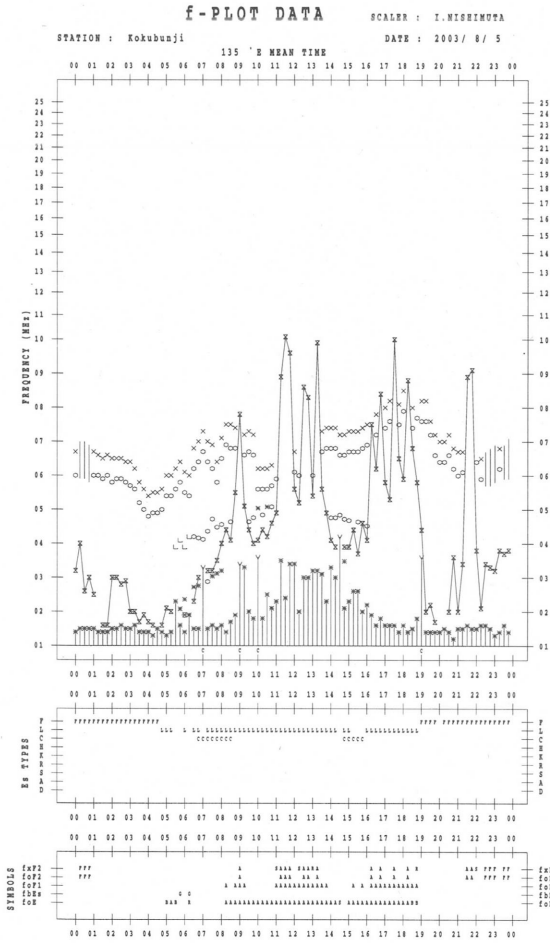
SCALER : I.NISHIMOTO

STATION : Kokubunji

DATE : 2003/ 8/ 4

135 °E MEAN TIME





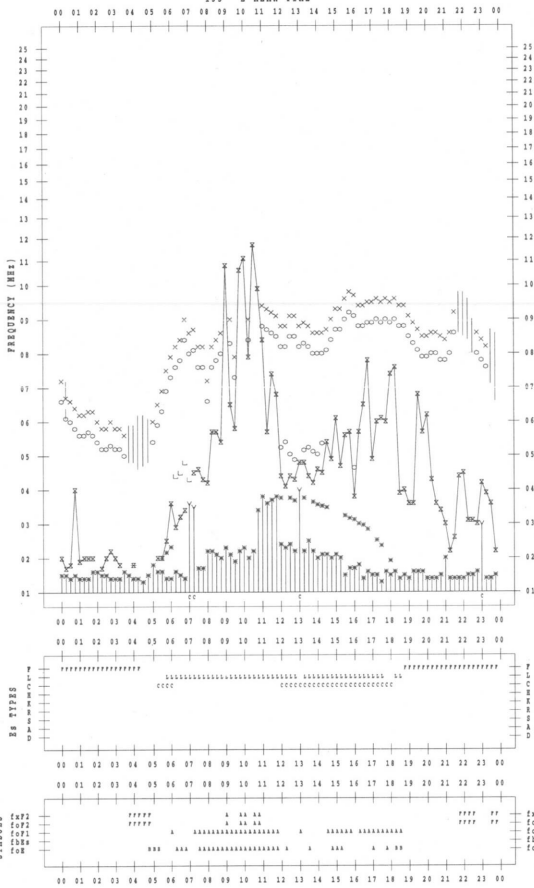
f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2003/ 8/ 9

135 °E MEAN TIME



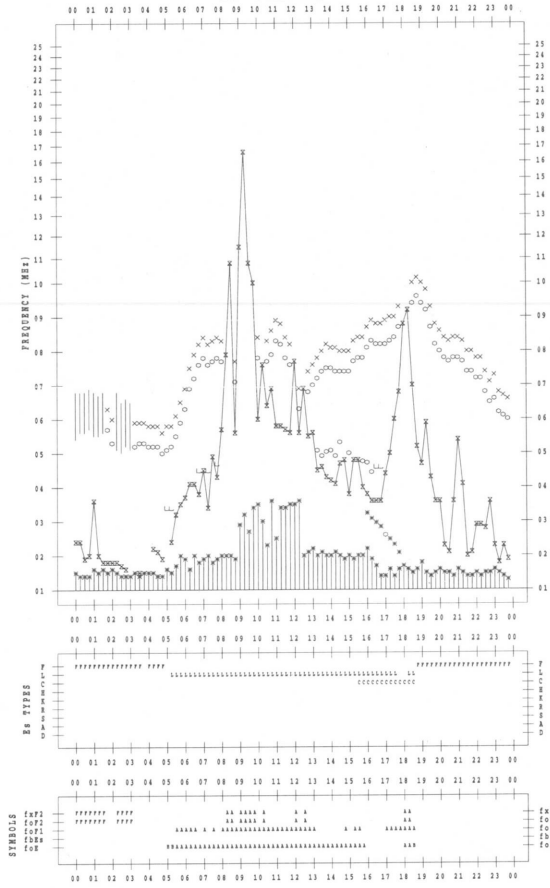
f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2003/ 8/11

135 °E MEAN TIME



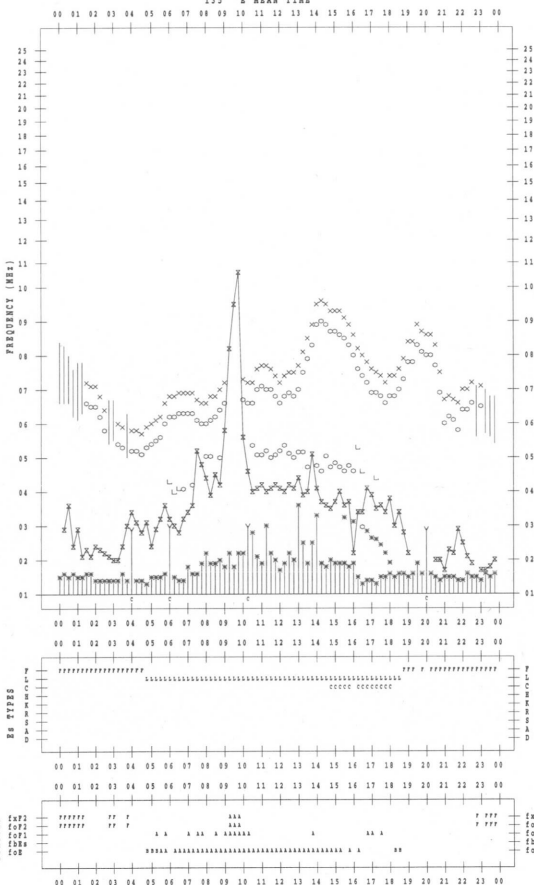
f-PLOT DATA

SCALER : I.NISHIMOTA

STATION : Kokubunji

DATE : 2003/ 8/10

135 °E MEAN TIME



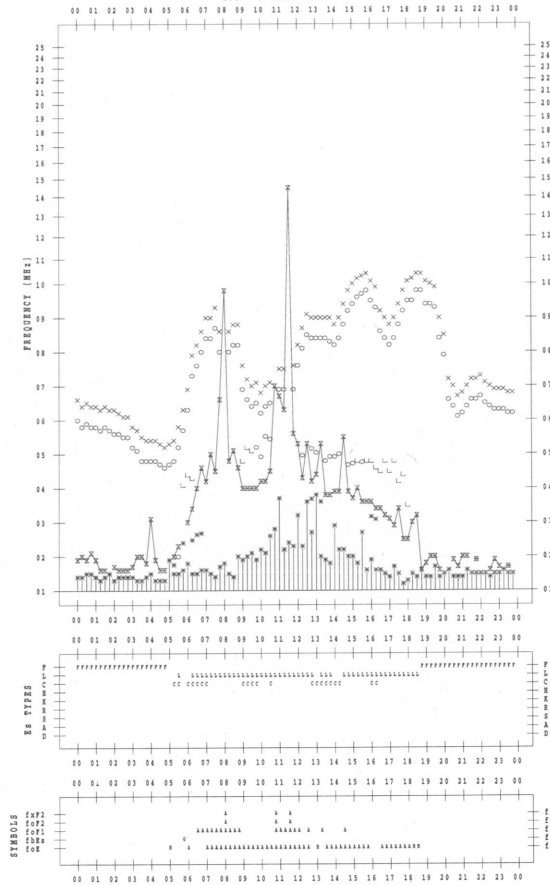
f-PLOT DATA

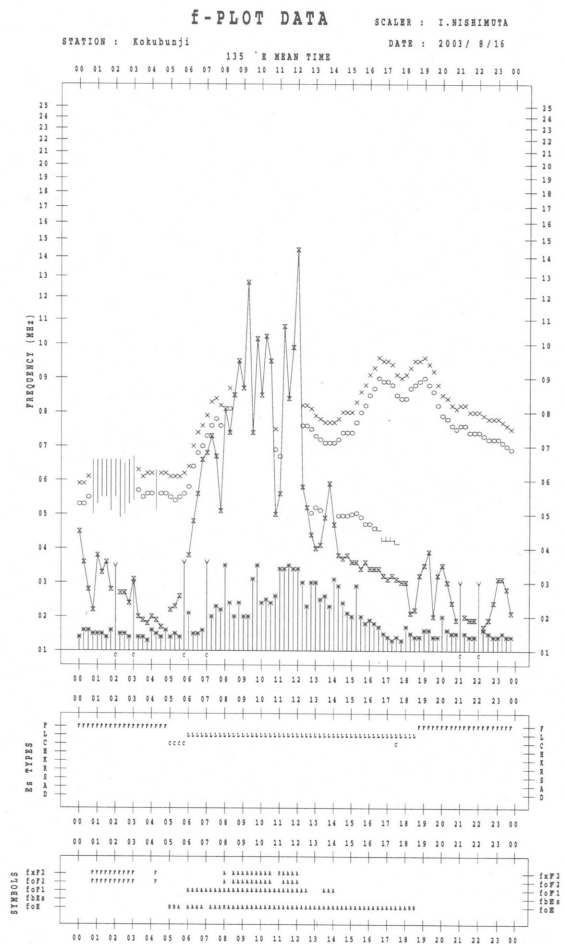
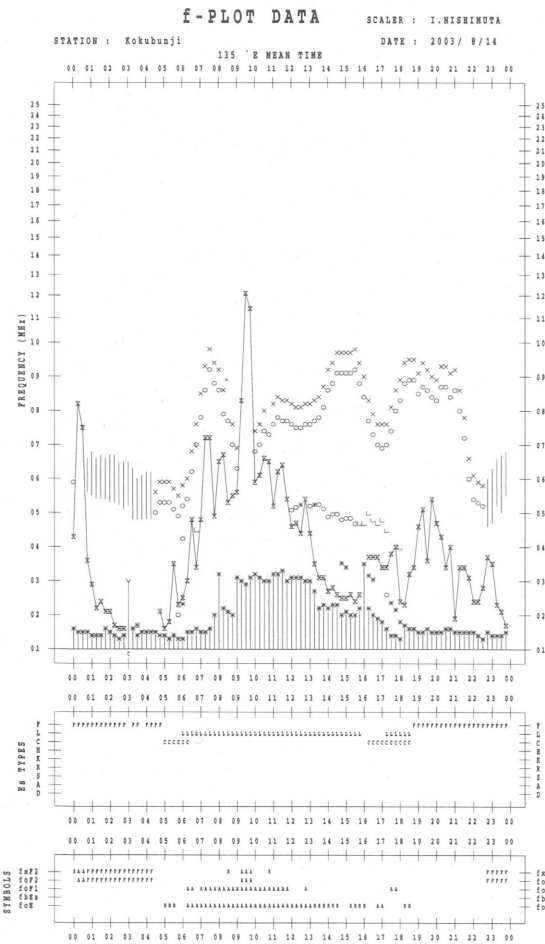
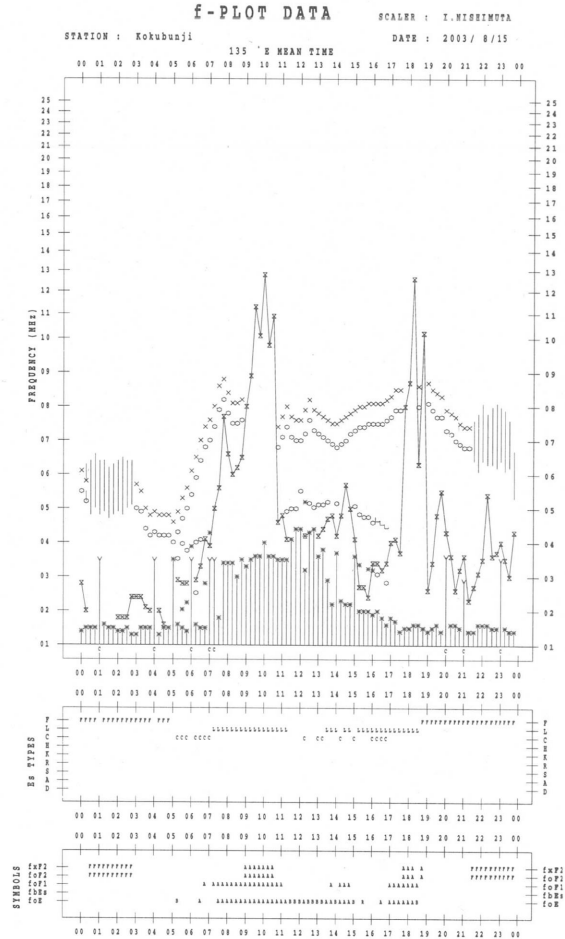
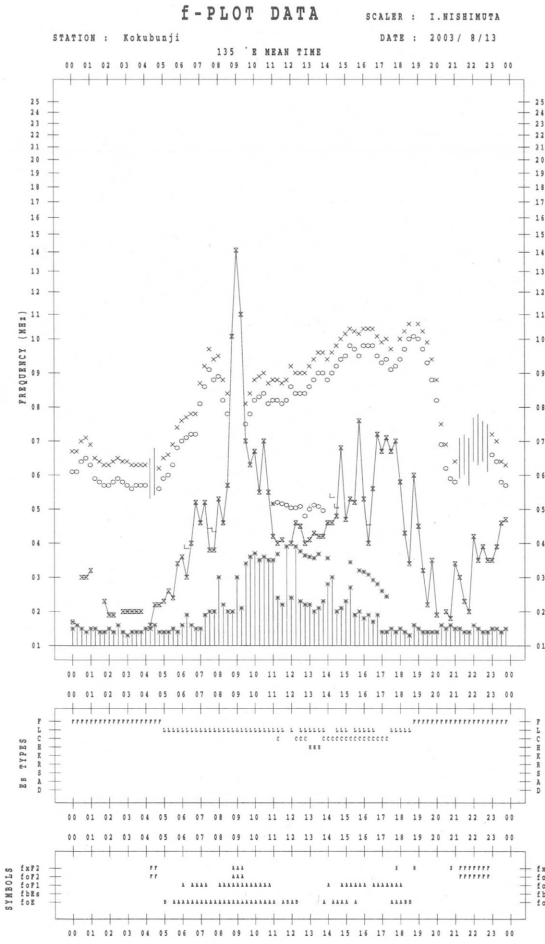
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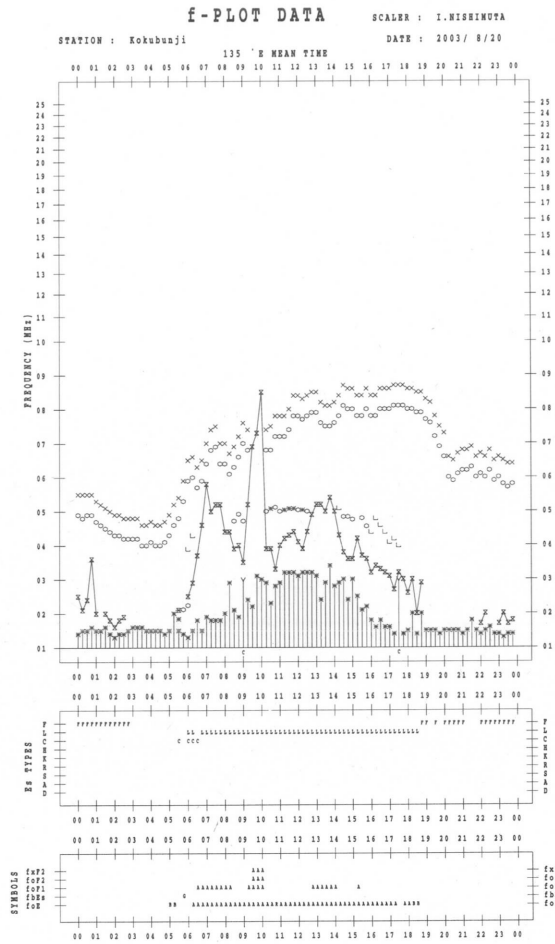
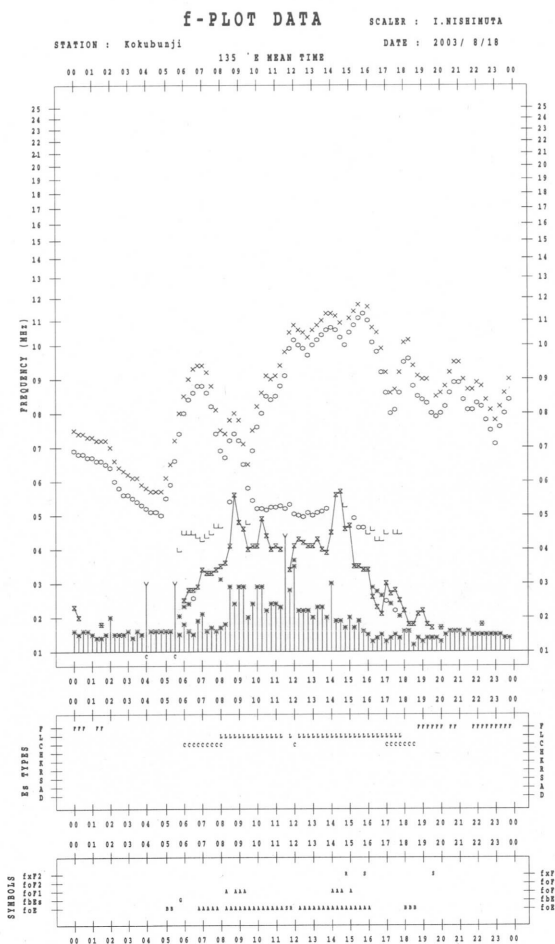
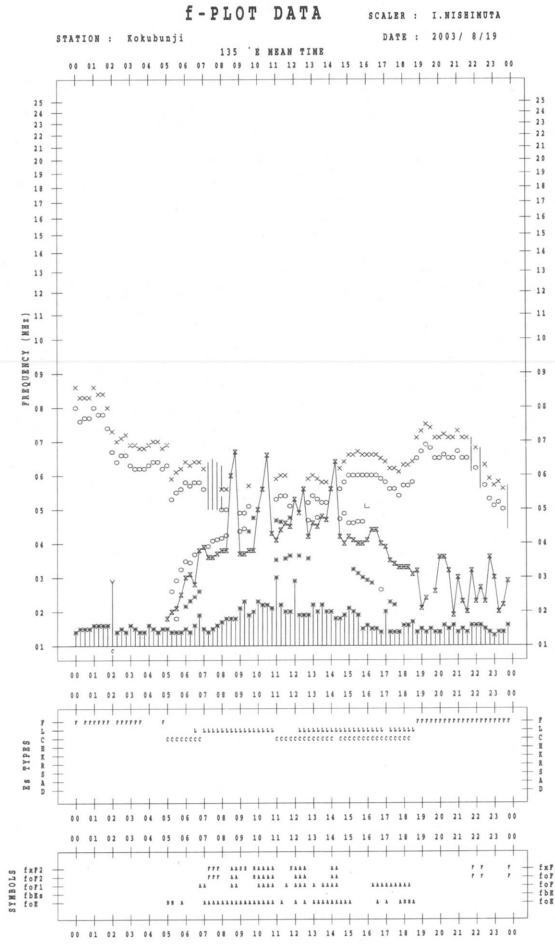
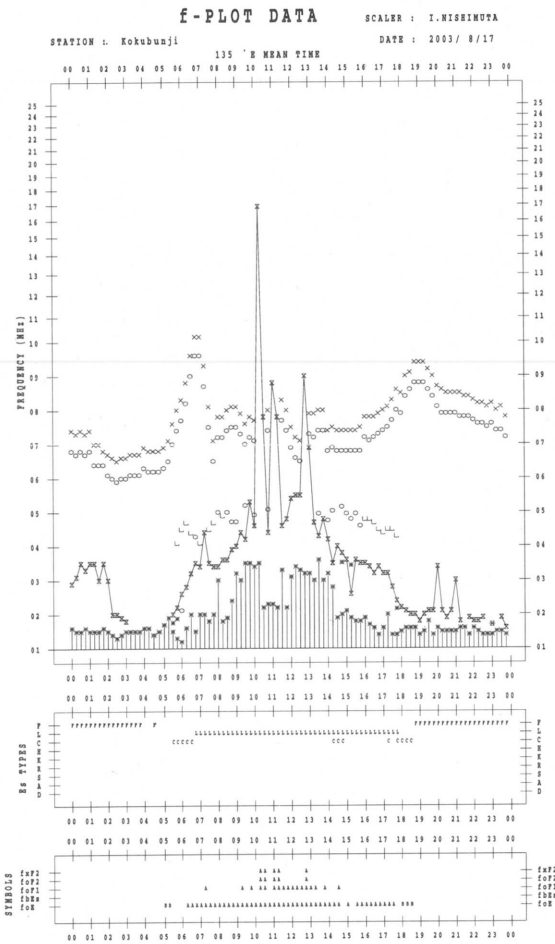
STATION : Kokubunji

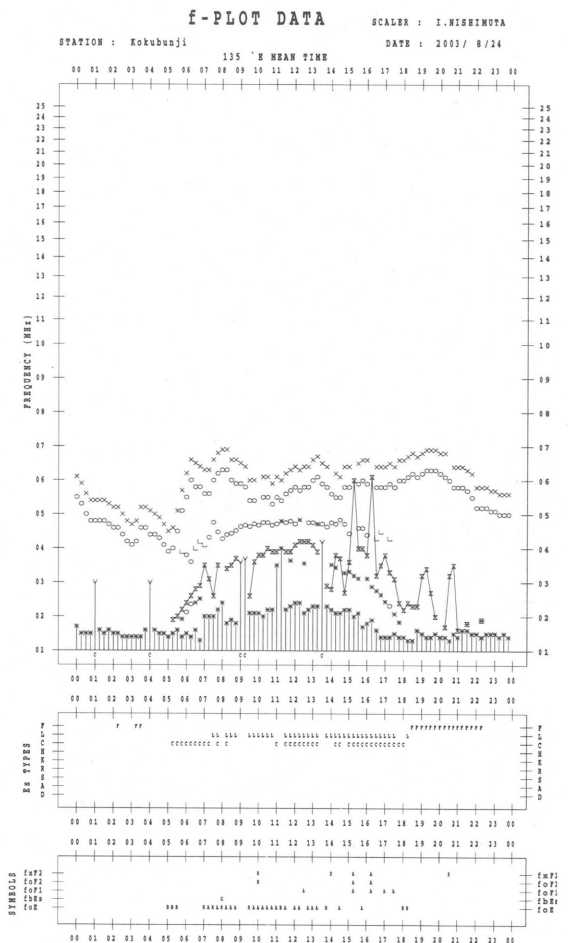
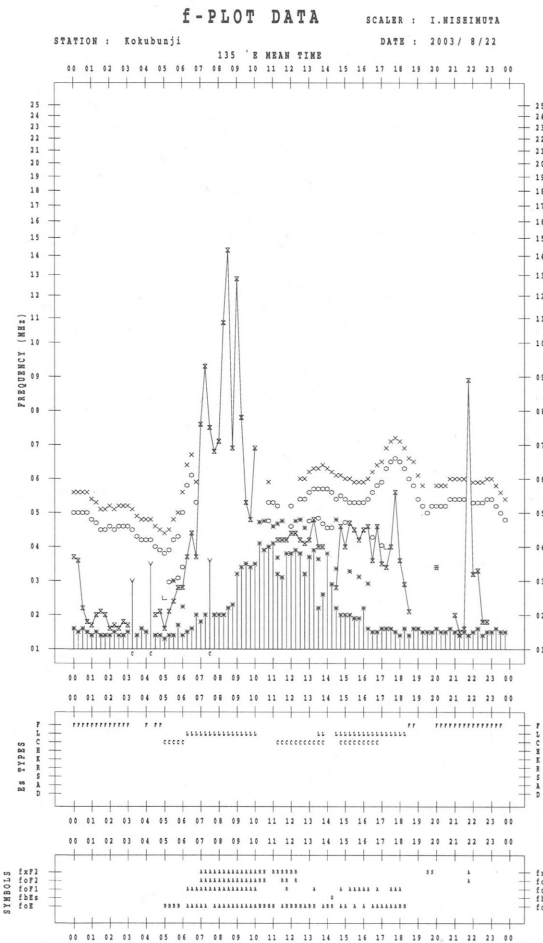
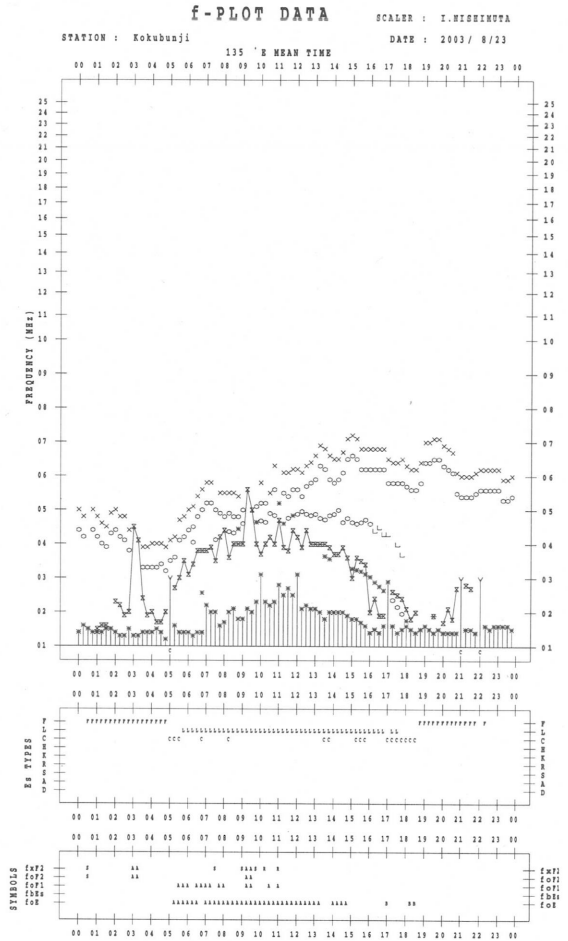
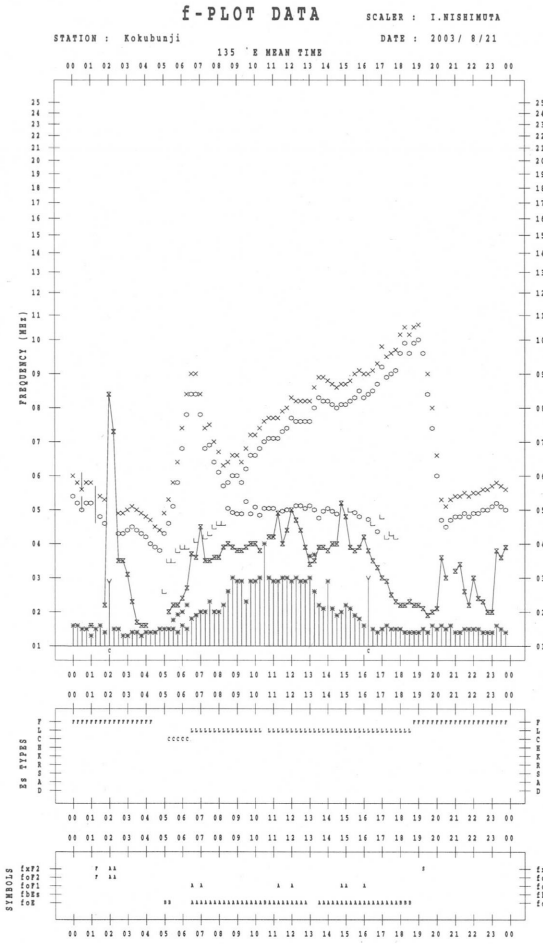
DATE : 2003/ 8/12

135 °E MEAN TIME











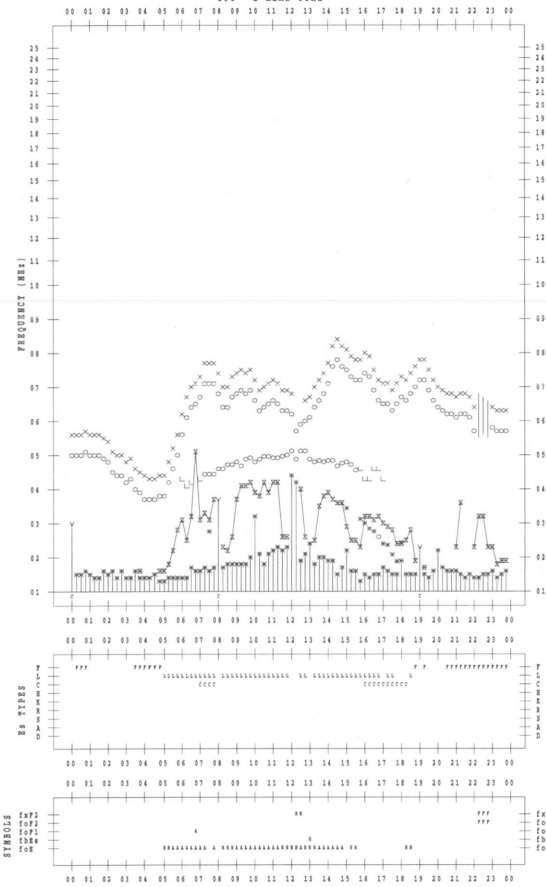
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2003 / 8 / 25

135 °E MEAN TIME



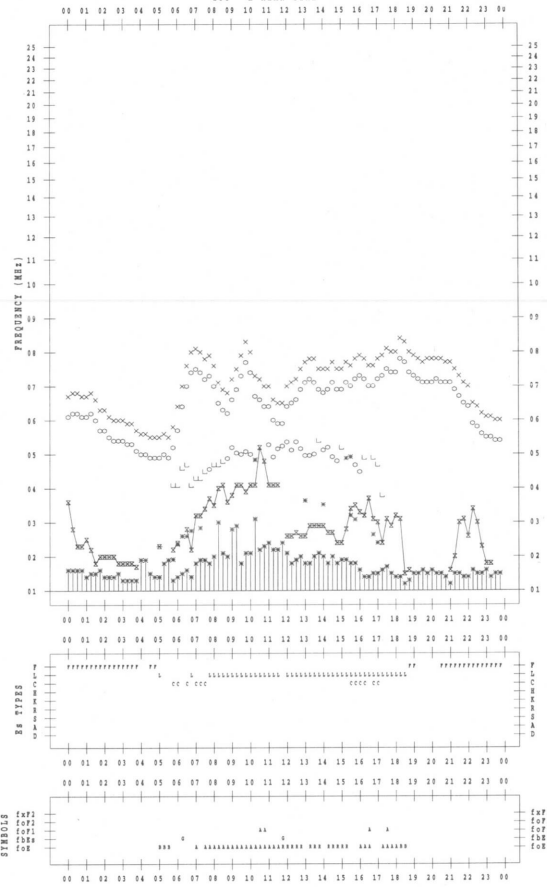
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2003 / 8 / 27

135 °E MEAN TIME



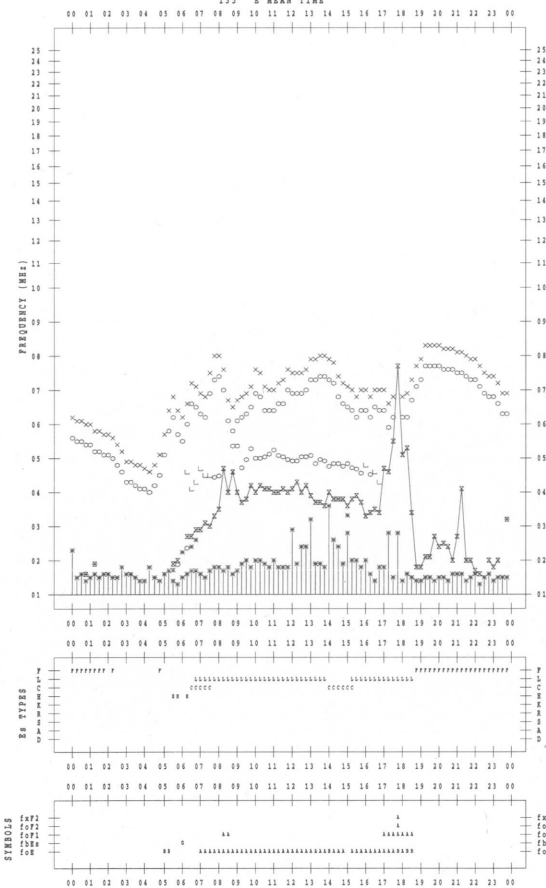
f-PLOT DATA

SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2003 / 8 / 26

135 °E MEAN TIME



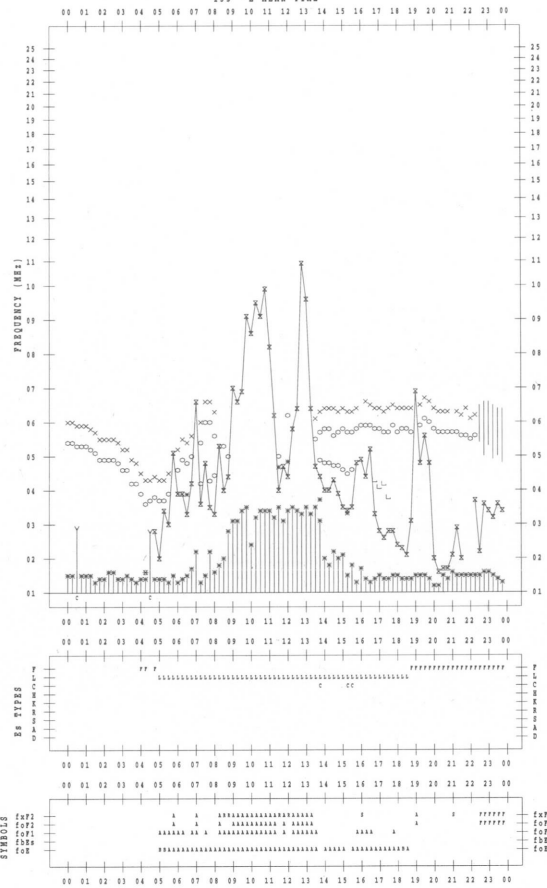
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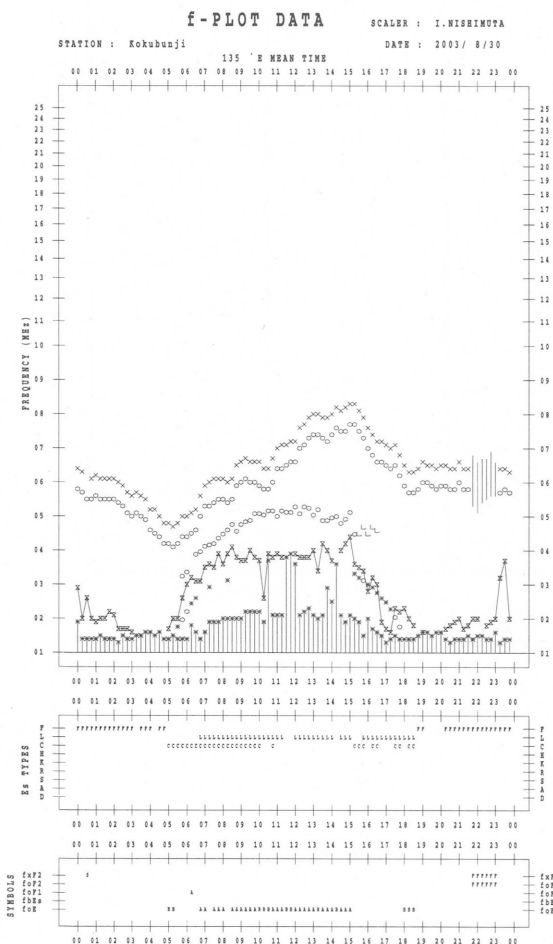
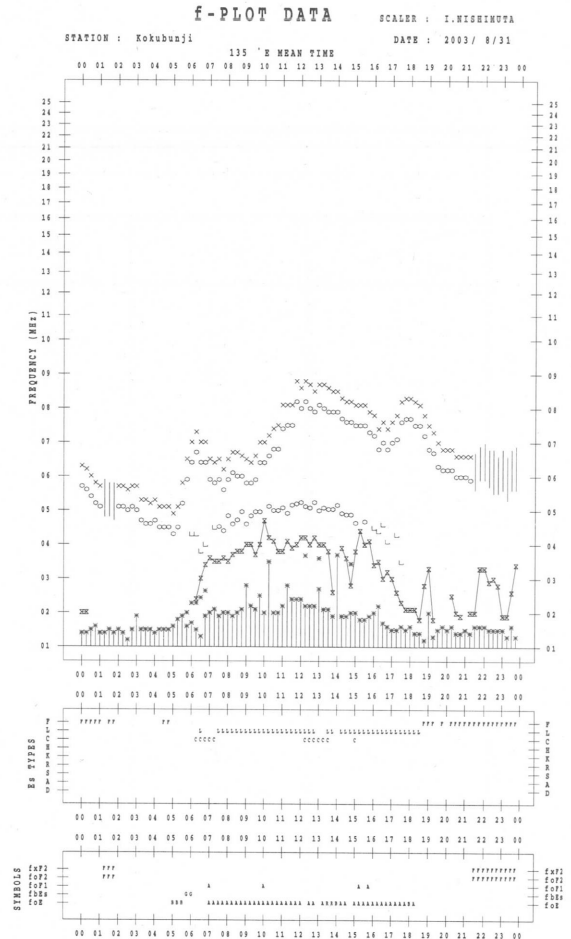
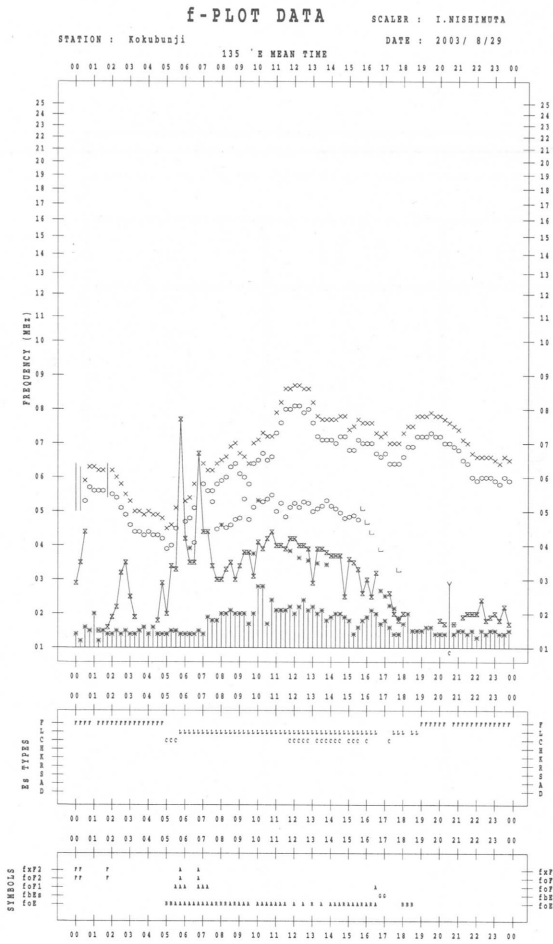
SCALER : I.NISHIMUTA

STATION : Kokubunji

DATE : 2003 / 8 / 28

135 °E MEAN TIME





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

Hiraiso

August 2003

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	27	26	27	31	28
2	28	25	24	29	26
3	24	23	21	24	23
4	23	22	21	26	23
5	25	25	28	27	26
6	26	26	27	25	26
7	26	25	26	28	26
8	25	25	26	25	25
9	25	25	24	24	25
10	24	23	24	25	24
11	24	22	22	24	23
12	25	24	24	27	25
13	25	24	23	24	24
14	25	24	24	-	24
15	-	-	-	-	-
16	27	26	25	26	26
17	26	26	25	26	25
18	25	23	25	26	25
19	26	24	25	27	25
20	25	23	24	26	25
21	24	22	24	26	24
22	25	24	24	25	24
23	24	23	22	24	23
24	23	23	23	26	24
25	24	24	23	26	24
26	25	24	25	24	24
27	26	25	26	29	27
28	27	27	27	27	27
29	25	25	25	27	26
30	27	27	27	25	27
31	26	26	27	25	26

Note: No data is available during the following periods.

14th 2030 - 16th 0200

19th 0110 - 19th 0500

A superscript \* stands for being superposed on a burst.

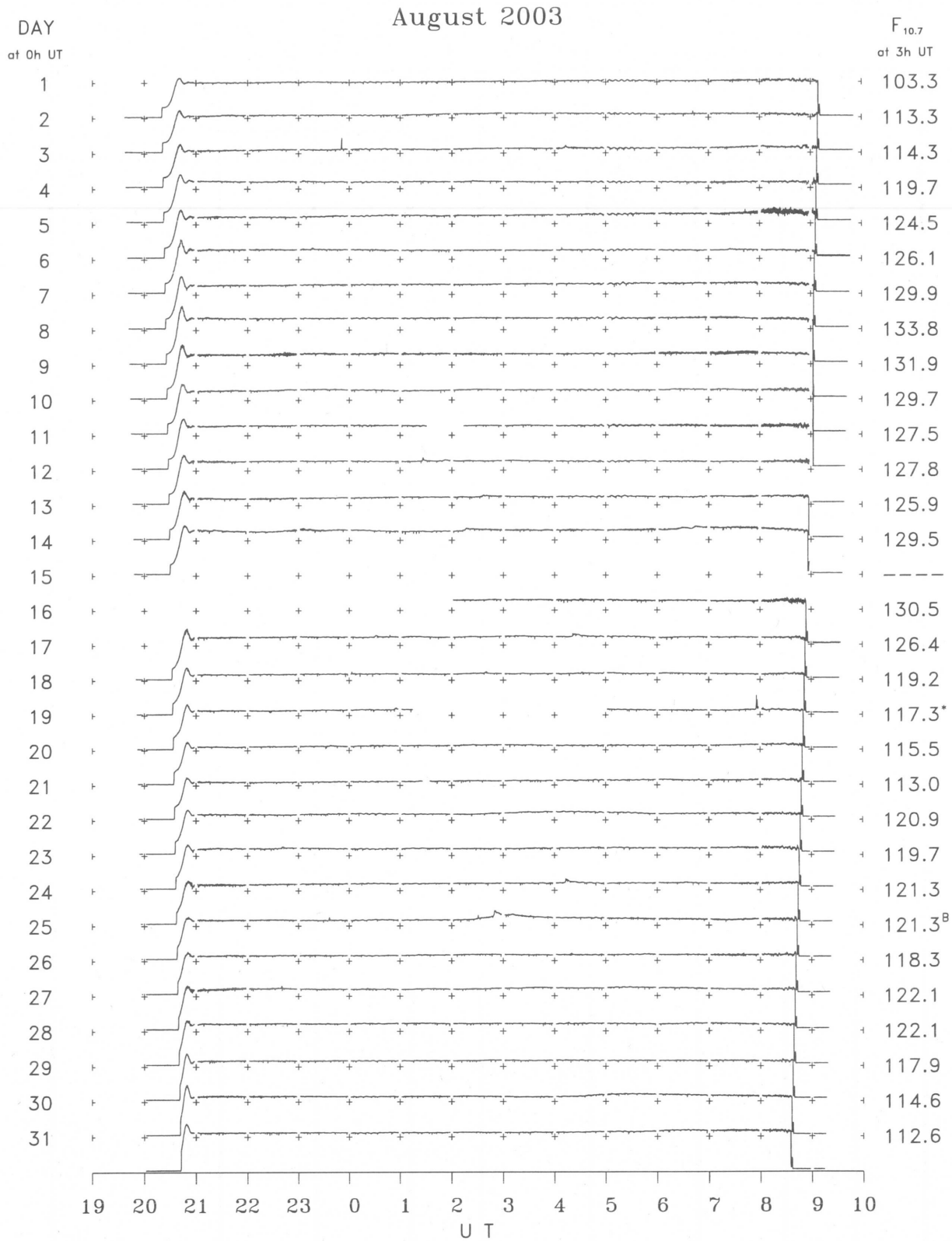
B. Solar Radio Emission  
B2.Outstanding Occurrences at Hiraiso

Hiraiso

August 2003

Single-frequency observations								
Normal observing period: 1950 - 0935 U.T. (sunrise to sunset)								
AUG. 2003	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	
2	2800	8 S	2351.0	2351.0	1.0	35	-	MR
8	500	8 S	2155.0	2155.0	1.0	10	-	0
12	2800	1 S	0125.0	0127.0	3.0	10	-	0
14	500	8 S	0609.0	0609.0	1.0	15	-	0
18	500	7 C	0234.0	0234.0	9.0	10	-	0
19	2800	6 C	0755.0	0756.0	6.0	40	-	0
19	500	7 C	0755.0	0801.0	8.0	30	-	WR
24	2800	1 S	0412.0	0413.0	7.0	15	-	
25	2800	1 S	0249.0	0250.0	13.0	15	-	
25	500	7 C	0225.0	0312.0	50.0	70	-	
27	500	8 S	0059.0	0059.0	1.0	35	-	0
27	500	7 C	2242.0	2244.0	4.0	110	-	0
28	500	8 S	0656.0	0657.0	2.0	35	-	0
28	500	8 S	0802.0	0803.0	2.0	65	-	0
28	500	8 S	0840.0	0841.0	2.0	40	-	0
30	500	7 C	0438.0	0452.0	31.0	10	-	WL

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



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

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IONOSPHERIC DATA IN JAPAN FOR AUGUST 2003  
F-656 Vol.55 No.8 (Not for Sale)

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電離層月報 (2003年8月)  
第55卷 第8号 (非売品)  
2003年11月20日 印刷  
2003年11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  
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