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IONOSPHERIC DATA IN JAPAN

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CONTENTS

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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 (*foF2, fEs*, *fmin*) and monthly medians of two factors (*h'Es* ,*h'F*), daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

Median (**MED**) is defined as the middle value when the numerical values are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

Upper quartile (**UQ**) is the median value of the upper half of the values when they are ranked according to magnitude; the ***lower quartile*** (**LQ**) is the median value of the lower half.

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

The published data consist of tabulations of hourly values of the ionospheric characteristics and figures of daily *f*-plot.

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI 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

fxI	Top frequency of spred ***F*** trace
foF2 ***foF1*** ***foE*** ***foEs***	Ordinary wave critical frequency for the ***F2***, ***F1***, ***E*** and ***Es*** including particle ***E*** layers, respectively
fbEs	Blanketing frequency of the ***Es*** layer, e.g. the lowest ordinary wave frequency visible through ***Es***
fmin	Lowest frequency which shows vertical ionospheric reflections
M(3000)F2 ***M(3000)F1***	Maximum usable frequency factor for a path of 3000 km for 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 atmospherics.
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V Forked trace which may influence the measurement.
W Measurement influenced or impossible because the echo lies outside the height range recorded.
X Measurement refers to the extraordinary component.
Y Lacuna phenomena, severe layer tilt.
Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.
D Greater than.
E Less than.
I Missing value has been replaced by an interpolated value.
J Ordinary component characteristic deduced from the extraordinary component.
M Mode interpretation uncertain.
O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U Uncertain or doubtful numerical value.
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} Wm^{-2} Hz^{-1} unit.

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

* Measurement impossible because of interference.
B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

The type of event is expressed by a combination of a

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

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

The polarization is expressed by the polarization degree and sense as follows:

R or L	right or left-handed polarization,
W, M or S	weak, moderate or strong polarization,
0	almost zero or unable to detect polarization due to small increase of flux,
00	polarization degree of less than 1

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

NOV. 2003

LAT. 45°23.5'N LON. 141°41.2'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	44	54	45				44									90	84	78	60	52	42	38	38	36
2	37	34	38	37	37	32	42						93		94	94	76	80	63	52	40	38	40	59
3	47	37	40	46	48	40	44			94			98	91	93	91	83	70	57	54	44	51	53	45
4	45	43	42	45	34	44	46		82	90	82		119		94	84	87	70	61	52	53	52	53	54
5		34	39	35	35	31	53			80		90	74	91	93			52	62	49	46	47	42	40
6	38	37	34	37	38	36	42	66	80	90	91		86	82	79	81	72	66	54	43	34	37	34	34
7	38	38	41	41	42	37	38	70	77			85	84	99		82	70	63	58	45	45	40	43	40
8	34	40	41	42	43	40	37	66	71	84	78	83				81	71	54	45	36			37	32
9	41	40	37	46	38	36	41	54	76	81	82	87	94	99	82	81	83	63	45	34	34	39	36	38
10	34	34	40	42	41		34	66	76	84	90		79	83	89	83	75	44	44	42	28	37	34	
11	40	40	40	42			41	54		82	81		83	79	75			66	55	61	54	34	32	32
12		32		31		A	42	64		88				83	87	83	74	44	52	39	32	42	40	32
13	35	35	40	34	34		37	52	70	76	83		94		79	71	77	149	169	34	34	59	38	38
14	36	38	47	32	39		35	66	83	84	84		89	82	81	82	72	58	46	44	A	38	40	38
15	38	44	44	40	42	40	38	62	83	79	A	92	69	71	81	77	82	38	40	44	47	A	A	A
16	34		34	37	A		32	47		70	70		73	67		67	61	41	26	32	A		34	
17	34	28	32	32	32	A	A	54	77	76	78	84	82	81	71	70	56	45		A	A	A	A	37
18	40	34	40		36		35	60	82		83	82	83	73	68	82	54	32		37	34	28	37	
19	40		38	36	33	33	36	66	81	84	72	72	76	76	83	70	66	45	42	36	31		34	34
20			36	34	32	35		63	82		78	86	83	84	82	70	62	54	54	36			34	38
21			A		A									61	62	61	71	69	54	53	52	47	47	40
22	36	40	34	26		A		57	78	77	72	82	78	80	73	67	58	40						
23	26	28		29	29	30	31	54	74		73	82	82	91	78	75	70	61	34	36		26	32	32
24	34	34	34	34	34			67	77		89		71	82	82	83	67	43	36	34				
25	32	29	34	38	40	36	32	52	76	82	71	88		81	78	83	71	62	45	43	40	40	43	43
26	45	43	43	44	47	40	32	60	77	90	92	89		89	66	66	61	50	34	35	41	43	41	34
27	42	40	43		44	44	40	64	84	89	91	94	81		77	77	68	57	35	36	47	36	40	42
28	40	41	42	45	42	45	41	52		83				76	75	92	62	54	38	36	49	36	38	40
29		40		25	38	37	36	58	72	82	84			82	83	82	67	52	42	43	A		40	36
30	36	37	42	45	43	42	47	60	80	94			82	88	92	83	66	58		36		36	37	37
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	26	26	24	18	25	24	21	22	20	14	22	24	26	28	28	30	26	28	20	21	26	24
MED	38	38	40	37	38	37	38	60	77	84	82	86	82	82	81	82	70	56	46	40	42	38	38	38
U Q	40	40	42	42	42	40	42	66	82	89	86	89	89	88	87	83	75	66	57	47	47	45	41	40
L Q	34	34	36	34	34	35	35	54	76	80	75	82	78	77	75	70	64	45	40	36	34	36	34	34

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HOURLY VALUES OF fEs AT Wakkanai

NOV. 2003

LAT. 45°23.5'N LON. 141°41.2'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	G	G	G				G		G	G	G	G		G		G	G	G	G	G	G	G	G	G
2	G	G	G	G	G		G				G		G		G	41	G	G	G	G	G	G	G	G
3	G	G	G	G	G		G	G				54	G	G	G	G	G	G	G	G	G	G	G	G
4	G	31	G	G	G	G			G	G	G	G	G	G	G	G	25	G	32	G	G	G		28
5	27	G	27	26	28	G	G			40	G	48	G	G	38	30	30	39	27	G	G	G	G	G
6		G	G	G	G	G	G	G	G	G	G		G	G	G	G	G		38	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	22	28	25
8	26	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G	26	G	G	35	28	G	G
9	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G	G	G	25	G	G	26	G
10	G	G	G	G	G	G	27	32	36	42	G	G	G	G	G	G	G	G	G	30	34	G	G	G
11	G	G	G	G	G	G	29	G	G	G	G		G	G	G	G		G	G	G	G	G	G	G
12	G	G	27	34	29		26		G		G	G		G	G	G		G		G	G	G	G	G
13	G	G	G	G	G		G	G	G	40	77	G	G			G	28	11	G	G	G	G	G	G
14	G	G	G	G	27	39	37	41	G	G	G	G	G	G	G	G	G	11	G	40	39	33	32	25
15	G	G	24	G	G	G	G	G	G	39	83	52	76	G	66	G	110	G	G	33	35	43	30	70
16	11	32	27	48	59	37	27	39	48	34	60	G	G	45		34	39	G	G	33	51	40	28	32
17	32	25	26	23	30	46	52	46	44	G	G	G	G	G	G	G	G	34		49	39	70	68	G
18	26	G	30	33	33	28	28	G	33	40	50	37	G	G	G	G	G	G	42	40	G		32	
19	33	34	29	G	26	G	G	G	G	39	46	80	52	G	G	G	G	G	G	27	G		G	G
20	46	31	27	28	26	27	G	G	G	G	G	G	G	G	G	G	32	28	G	G	G		G	G
21		26	29	30	29				G		G		G	G	G	G	G	G	G	G	35	29	29	39
22	G	29	26	28	G	39	27	27	G	39	G	G	G	G	G	G	G	G					G	
23	26	25		G	G	G	G		G		G	G	G	G	G	G	G	G	G	G		G	G	G
24	G	G	G	G	G			G	G	68	78	G	40	38	60	61	33	32	32	G	27			
25	G	G	G	G	G	G	G	G	G	G	G	G		63	38	30	25	G	G	34	G	G	27	33
26	27	G	30	30	G	G	G	33	38	41	G	G	G	G	35	31	33	G	G	G	30	G	G	G
27	G	G	G		G	G	G	G	G	G	48	44	G	G	G	G	G	40	G	33	40	29	G	33
28	34	G	G	G	G	G	G	G	G	G	G	G		G	G	G	28	G	G	G	G	G	G	G
29	29	G		G	G	28	G	G	G	G	G	G	G	G	34	G	24	G	G	G	47	36	30	26
30	G	G	G	G	G	G	G	G	G	G		G	G	G		G	27	31			25	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	28	28	29	23	27	23	27	25	27	26	26	27	25	30	28	29	26	28	28	25	28	27
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	26	25	27	27	26	28	27	27	G	39	46	G	G	G	17	G	28	18	G	31	35	29	28	26
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

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HOURLY VALUES OF fmin AT Wakkanai

NOV. 2003

LAT. 45°23.5'N LON. 141°41.2'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	15	14	15				17		50					53		40	27	15	17	18	15	15	14	15
2	15	20	16	14	17	14	14	17			35		51		34	18	21	16	16	22	14	15	15	14
3	15	20	14	14	14	16	15	24		21	23		36		34	24	23	15	15	16	15	16	15	15
4	16	16	15	21	15	15	18		33	33	36	16		35	33	33	22	17	14	20	15	17	15	15
5	16	14	15	16	15	18	18			26	26	24		33	20	18	16	14	18	17	15	16	16	14
6	16	16	16	14	14	14	15	21	27	21	30		23	21	20	23	21	15	14	17	20	16	20	16
7	16	15	14	14	15	15	15	21	18	20		34	32	33	26	26	21	15	17	15	14	15	17	16
8	15	15	15	14	15	15	14	21	18	21	21	30	32		27	27	18	17	15	15	15	16	20	15
9	17	20	15	16	21	15	15	21	18	20	18	18	20	20	14	14	20	18	15	17	15	17	16	15
10	20	16	15	15	15	18	17	14	15	17	15	16	18	21	27	15	18	15	16	15	15	16	16	17
11	18	15	16	15	15	15	15	18	15	15	14		18	18	26	16		15	16	15	15	15	17	15
12	15	18	15	15	14	15	15	16	14	18	20	17		27	24	23	18	16	17	15	15	15	14	14
13	14	14	14	14	15		16	23	17	20	18	22	29	28	27	22	14	15	15	16	15	15	14	15
14	15	15	18	14	14	16	15	14	18	18	21	21	20	30	27	23	20	16	16	14	15	14	15	17
15	15	14	16	14	15	15	15	20	24	21	20	20	20	21	20	24	20	20	16	14	14	15	15	15
16	14	15	14	14	14	16	14	17	20	20	21		26	20		18	15	15	20	14	15	15	15	14
17	14	18	15	15	14	15	15	14	20	16	17	21	22	18	15	15	17	15		14	15	14	14	15
18	17	17	14	14	15	16	14	21	16	18	20	18	21	18	16	21	18	18	15	15	14	15	15	16
19	14	15	15	16	18	15	16	20	15	20	17	18	20	16	28	23	20	15	18	18	16		14	17
20	17	14	15	15	20	16	15	20	20	21	20	22	21	21	18	22	15	17	15	20	20		16	17
21		18	14	14	15				23		16		17	21	27	24	21	16	21	16	14	15	14	15
22	15	14	14	15	18	15	18	17	22	20	21	21	21	20	26	29	20	14					21	
23	18	20		20	18	15	17	20	20			21	32	30	28	22	18	15	18	20		22	20	20
24	18	18	15	15	18			20	24	28	24	33	22	24	20	15	15	15	16	21	20			
25	16	14	16	14	14	15	15	20	27		41	38		24	21	17	14	18	20	16	20	15	15	17
26	16	16	14	18	16	22	20	15	21	21	34	36		23	22	18	15	16	15	15	15	16	15	18
27	16	15	18		18	15	16	20	21	21	24	26		50	35	33	20	15	21	15	15	18	17	16
28	14	15	14	14	14	18	16	21	27	48	39	53		33	33	20	14	17	16	21	18	16	18	21
29	15	16		20	14	14	27	20	27	35	40	53	53	49	27	32	15	20	16	20	15	14	17	18
30	20	20	15	14	15	15	15	18	15	17	20	18	21	21	18	23	18	14		14	18	15	17	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	28	28	29	26	28	26	27	25	27	23	22	27	28	30	29	30	27	29	28	26	29	28
MED	16	16	15	14	15	15	15	20	20	20	21	21	22	23	26	22	18	15	16	16	15	15	15	15
U Q	17	18	15	15	17	16	17	21	24	21	30	33	32	33	27	24	20	17	18	19	15	16	17	17
L Q	15	15	14	14	14	15	15	17	17	18	18	18	20	20	20	18	15	15	15	15	15	15	15	15

HOURLY VALUES OF foF2 AT Kokubunji

NOV. 2003

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	78	76	47	31			48	93	130	131	131	129	111	116	112	113	112	87	66	52	42	43	36	35
2	36	42	37	36	36	37	54	86	114	124	112	118	114	128	114	112	113	86	67	64	46	43	37	44
3	43		39		36	36	54	74	90	107	127	126	123	120	108	107	105	85	55	53	54	53	53	47
4	42	37	37		30	34	52	74	97	110	117	117	121	120	110	102	101	69	47	47				
5		35	37			41	53	86	107	104	101	115	120	98	100	105	97	81		54	52	52	38	
6			37	42	37		43	80	100	98	112	111	109	107	102	97	88	55	44	54	41	34	34	34
7		33	43	42		34	45	74	93	102	125	101	95	111	107	89	74	62	53	54	49	44		
8		38	39	40	34	28	41	80	100	93	86	95	100	102	104	77	75	62	36	42		30	32	
9	34		36	39	42	32	45	64	75	78	102	98	104	106	104	98	92	64	43	32		32		32
10	34	34	34	37	34		36	83	98	78	100	122	127	111	97	84	74	66	52	45			27	A
11			28	32	34		34	80	87	78	101	145	122	101	81	76	92	104	75	41		39		
12							42	73	102	100	128	127	87	102	100	91	81	64	42	46	46			
13		34	34	34	36	32	38	62	82	98	86	112	106	115	104	92	81	71	43	32	28			
14		31	34				35	84	94	101	120	124	118	100	90	92	100	96	48			37	34	34
15		A		41	34	31	38	77	98	84	77	87	98	105	82	82	83	55	38	43	54			
16		A	A	32	A		A	62	79	98	116	104	98	A	76	72	78	52	A				A	A
17		34	A					63	101	108	122	117	94	80	88	84	72	51				A	A	A
18		35		34			34	73	92	105	116	108	90	88	75	74	74	55		42	39	34	34	A
19			34				34	86	107	96	90	109	82	82	76	89	81	58	A	43	34	36	34	35
20	34	36			34	34	42	77	84	98	86	96	94	86	89	85	83	55	47	54	54	64	53	
21			A	A	A			54	66	73	90	82	59	72	68	58	77	81	64		42	36	42	A
22	A	A			A		28	66	77	93	120	100	91	104	96	77	67	45	46	37	36	34		
23		31					42	58	86	100	111	101	107	96	102	97	77	67	46			30		32
24	39	41	42	42			38	71	101	98	110	98	92	97	96	100	88	64		36	38			
25		32		37	32		34	64	81	84	116	107	92	102	108	91	80	69	52	42			34	
26				32	32	34	36	71	90	102	100	107	87	91	91	80	73	51	43	38	34		34	
27	34	37	34	33	34	35	36	77	91	95	116	115	96	97	87	85	80	66	46	46	40	30	28	
28		37	36	35	36	32		80	91	108	95	103	98	107	96	96	89	51	43	47	43		34	34
29	34	32	38	37	39		34	62	80	92	96	97	91	94	98	91	71	66	54			34		
30				34			36	78	85	96	95	102	97	92	95	94	88	67	52	43	32	32	28	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	18	18	19	16	13	26	30	30	30	30	30	30	29	30	30	30	30	24	24	19	19	17	10
MED	35	35	37	36	34	34	38	74	92	98	110	108	98	102	96	91	81	65	47	44	42	36	34	34
U Q	42	37	39	40	36	35	45	80	100	104	117	117	111	109	104	97	92	71	53	52	49	43	37	35
L Q	34	33	34	33	34	32	35	64	84	93	95	100	92	93	88	82	75	55	43	41	36	32	33	32

HOURLY VALUES OF fEs AT Kokubunji

NOV. 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	G	G	G			G	G	G	G	G	G	G	G	G	69	G	G	30	G	30	25	G	G
2	G	G	G	30	G	G	G	G	G	G	G	G	G	G	G	G	G	50	60	40	G	G	G	G
3	G		G		G	G	G	G	G	G	G	G	G	G	G	34	G	G	29	31	G	24	G	G
4	G	G	G		G	G	G	G	G	G	G	G	G	G	37	G	G	11	G	G	G	G	G	G
5	25	G	24	31	G	G	G	G	G	G	G	G	G	G	G	G	29	26		G	G	G	G	
6			G	G	G		G	G	G	G	G	G	G	G	G	G	G	49	G	G	G	G	G	G
7		G	G	G		G	G	29	35	G	G	G	G	G	G	G	29	G	G	G	G	G	G	31
8		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	G	
9	G		G	G	G	G	G	G	G	38	G	G	G	G	G	G	G	11	G	G		G		G
10	G	G	G	G	G		G	G	38	42	49	53	48	41	G	G	53	29	27	G			G	59
11		G	G	G	G		G	G	40	40	43	G	G	G	G	G	G	G	G	G		32	29	27
12	30	28	27	G	G	G	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	G		
13		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	G	G	G	G			
14		G	G	G			28	G	G	G	G	G	46	G	G	G	47	G	G	35	40	G	G	26
15	26	50	37	G	G	G	G	G	G	G	50	50	G	G	49	G	G	G	G	G	31	G		
16	39	54	34	G	32		51	49	G	G	G	83	93	106		60	50	48	40	39		33	40	46
17		G	48	26			G	31	G	51	G	G	40	G	49	48	42	30	43			60	50	56
18	29	G	28	G			G	G	36	42	G	G	G	G	39	G	G	G		G	G	G		31
19	25	26	G		G		G	G	G	G	60	50	50	41	50	60	61	60	38	26	27	24	G	G
20	G	G			G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	29
21	31		37	48	29	28		28	48	G	40	51	50	39	G	G	G	G	G		G	G	G	59
22	82	51	39	29	34	27	G	G	G	54	50	G	G	72	48	48	G	G	G	G	G	G		
23		G					G	G	G	40	78	62	G	G	G	G	G	34	28		34	G	27	G
24	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	27		G	G	26		
25		G		24	G		G	G	G	52	G	G	G	G	G	G	G	G	31	46	G	32	G	27
26				G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		G	
27	G	G	24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
28	41	G	G	G	G	G		G	G	39	G	G	50	51	55	G	G	G	G	G	G		G	G
29	G	G	G	G	G		G		G	G	40	G	G	G	G	G	G	G	G	33	32	27	29	
30	33	27	29	G			G	G	G	G	G	G	G	41		G	G	G	G	G	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	25	26	25	22	17	28	29	30	30	30	30	30	30	28	30	30	30	27	27	24	26	23	20
MED	13	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	14
U Q	30	13	28	12	G	G	G	G	G	39	40	G	G	39	19	G	29	27	29	26	14	25	G	31
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

NOV. 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	14	23	26	15			20	29	33	42	43	43	43	43		20	29	18	15	18	14	15	15	14
2	15	15	14	13	18	18	20	26	42	42	46	52	43	44	42	35	29	18	22	15	14	14	22	20
3	15		20		18	15	18	28	36			80	44	42	42	26	28	22	14	14	28	18	28	14
4	15	17	14		20	18	15	28	31	37	38		42	42	28	39	30	18	18	31	34	15	29	17
5	13	15	15	14	15	17	25	28	36		40		43		33	34	26	14		20	17	15	17	
6			17	14	13		14	26	33	39		39	40	26	31	30	26	29	26	18	17	17	17	20
7		14	17	17		23	26	14	18	20	33	38	42			14	15	17	18	26	25	14	23	14
8		30	26	15	14	20	14	25	15	34	20				31	28	26	18	24	14		18	17	
9	14		21	14	18	20	14	23	28	24		39	38	17		30	23	17	15	13		17		20
10	17	17	14	14	14		14	14	17	20	26	26	21	26	34	17	26	13	13	13			15	14
11		17	17	15	17		18	15	15	15	22				33	30	21	26	17	15		14	15	14
12	14	17	18	17	20	17	14	24	33	14	33	17	34	25	29	18	21	15	18	17	18	21		
13		20	18	15	13	20	15	13	18	15	34	36		22	34	26	14	14	18	18	17			
14		17	13	14			13	13		40	35	23	25		34	29	15	18	17	17	18	26	24	20
15	13	14	13	14	17	17	13	21	17	30	33	33	40	36	29	20	30	14	26	22	15	15		
16	15	13	14	20	15		14	14	26	31	39	28	29	30	26	15	18	14	15	15		17	13	13
17		18	17	17			14	17	29	28		39	30	35	20	17	15	14	29			21	14	13
18	15	15	13	18			14	22	21	26	36		40	39	24	18	29	20		15	15	14	14	14
19	14	14	18		15		14	25	15	34	26	22	29	21	17	13	15	15	20	14	14	17	22	15
20	18	17			15	18	26	24	17	15	18	45				20	28	23	17	17	20	17	15	14
21	14		14	13	13	20		29	23	51	26	28	29	25		31	28	23	18		13	15	15	14
22	13	13	13	14	14	13	14	23	29	30	30		40	26	25	21	29	28	21	23	14	17		
23		15					15	26		34	28	29			20	36	33	15	15		14	13	14	17
24	18	18	26	26		21	14	31	41	42	49	39	40	39	33		28	15		26	28	14		
25		20		14	15		17	26	33	36	39	43	40	30	26	20	18	23	13	17	23	15	18	17
26				20	18	15	14	25	28	34		40		40	34	29	28	15	18	22	14		13	
27	17	17	17	17	18	15	15	25			34			35	34	35	31	18	30	14	13	14	20	
28	13	17	18	21	17	18		25	17	18		42	28	26	17	17	26	20	15	28	15		21	14
29	21	18	17	15	23		17	23	33	34	21			40	28	33	30	18	17	14	14	17	14	
30	13	13	14	22			14	24	14	18	21		22	18	31	17	28	15	14	14	21	21	15	18
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	25	26	25	22	17	28	30	27	27	24	21	22	23	25	29	30	30	27	27	24	26	24	20
MED	14	17	17	15	16	18	14	24	28	31	33	39	40	30	31	26	27	18	18	17	16	16	16	14
U Q	16	18	18	17	18	20	17	26	33	37	38	42	42	40	34	30	29	20	21	22	20	17	21	17
L Q	13	14	14	14	14	16	14	21	17	20	26	28	29	25	25	17	21	15	15	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Yamakawa

NOV. 2003

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1			56	52	36		A	84	110	127	128	129	111	127	109	111	111	110	86	66	67	54	36	37
2	51	43	36		30		36	77	116				114	129			112	111	87	76	62	51	42	54
3	53	47	34		36		36	66	84	87				129	113		111	89	85	66	52	63	52	43
4		37	34	36	34	32	36	66	88	90	112	111	119	131	117			88	73	66		86	53	73
5	50	A	34	36	36		35	68	91	108	113	111	127	116	90	114	112	88	76	53	64	54	52	42
6	43	28	47	46	43		28	64	82	102	111		109	116	111	111	90	76	51	46	52	36	34	31
7	36	36	36	37	31	29	30	64	82	107	109	86	86	125	137	111	88	80	66	58	53	53	43	37
8	36	34	37	38	29		29	60		92	80	90			114	96	81	64	57		36	37	31	29
9	32	32		34	48	A		59	70	68	86	92	91	112	129	111	87	76	61	34	32	34	34	
10	34	34	37	41	30			62	73	71	87	130		113	122		78	78	63	54		30	34	30
11	34	34	37	36	36		31	53	71	76	112	146	114	90	79	84	88	124	83	32		42	34	A
12	A				32		36	73	76	104	116	130	86	97	104	108	81	69	55	48	53	A		28
13		30	34	29	37	22	29	66	68	78	106	111	114	108	126		83	82	68	37	32	32	34	28
14	30	41		29				66	71	81	111	128		84	84	87	107	88	63	53	42			34
15	37	34		31	37	34	34	58	77	82	88	84	88	99	98	82	85	77	70	66	77	36		A
16	A	A	36					54	81		113	117	A	114	84	80	98	82	57	41	34	A	A	A
17	A	A	A		37		31	52	79	108	112	111	88	80	108	99	81	67	58	52	50	35	35	37
18	A	A		29	A			54	78	90	111	120	90	86	85	84	84	75	65	61	54	50	43	A
19		34		30			28	66	94	85	86	111	89	81	81	82	90	77	66	53	54	54	48	42
20	42	34	34	34	36	29	32	60	81	81	86	84		98	92	104	88	77	54	72	80	75	86	77
21	39	34		A	A			58	58	70	59	58			61		70	80	54	51	43	40		28
22	32	34		34	31			53	79	103	125	111	86		126	110	80	80	76	66	61	47	34	26
23		30	30	32	36		34	62	72	88	111	113		90	114	114	86	85	65	44	46	34	32	32
24	32	29	37	35	28		31	51	87		86	85	86	107	103	102	110	86	66		36	43	34	29
25	30	32	36	42	34			52	82	85	102	114	88	88	114	110	81	86	67	54	36	47	50	37
26		36	37	34	34	32	29	62	84	104		91	86	106		99	88	82	74	66	51	45	41	36
27		34	36	36	36		30	51	88	90	104	113		90	88	104	89	84	77	60	52	52	47	34
28	28	34	37	34	34	31	32	51	89	104	104	98	89	113	126	113	114	98	78	71	74	52	47	38
29	36	34	36	34	32		30	54	75	84	83	97	90		110	108	104	109	85	54	52	49	47	37
30	30	29	34	32	30	29	29	49	87	91		98	98	88	86	110	102	85	81	71	A	49	42	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	24	21	24	25	8	21	30	29	27	26	27	21	26	28	24	29	30	30	28	26	27	25	25
MED	36	34	36	34	34	30	31	60	81	90	108	111	90	106	108	106	88	82	66	54	52	47	42	36
U Q	42	35	37	36	36	32	34	66	87	104	112	117	112	116	115	111	105	88	77	66	61	53	47	40
L Q	32	32	34	32	31	29	29	53	74	81	86	91	87	90	87	91	82	77	61	49	42	36	34	29

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Yamakawa

NOV. 2003

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	36	29	43	G	G	34	60	48	G	G	40	G	G	G	G	G	39	40	36	28	G	G	G	G
2	G	G	G		G	G	G	G	G				G	G	G	G	G	G	G	G	G	24	G	28
3	G	G	G		G		G	G	G	G	G	G	G	G	G		G	50	45	39	29	41	34	G
4	39	G	G	G	G	G	G	G	38	G	G	G	42	58	G	G		44	34	26	25	G	G	G
5	34	39	25	26	G		G	27	34	G	G	G	G	G	G	G	G	G	G	27	29	32	34	G
6	G	G	G	G	G		G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	26	G	37	38	G	G	G	G	G	G	G	28	G	G	G	G	G	G
8	G	G	G	G	G		G	33		G	G	G		G	G	G		G	28	29	G	G	G	G
9	G	G		G	G	29	G	G	G	G	42	G	G	G	G	G	G	G	G	G	G	G	G	
10	G	G	G	G	G		G	G	34	42	45	G		G	G		55	27	G	G	G	25	G	G
11	G	G	G	G	G		G	G	G	59	42	62	44	57	G	G	35	39	34	27	28	G	G	39
12	44		29	25	G		G	G	G	39	40	G	G	48	49	39	35	G	G	25	28	30	27	G
13		G	G	G	G	G	G	28	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G	G
14	G	G		24			G	G	38	40	G	G		G	42	G	G	28	33	G	G			G
15	G	G		G	G	28	G	G	G	G	G	G	G	G	42	54	G	32	40	48	29	22		47
16	60	41	38	25	28	45	24	38	49		G	60	114	83	72	73	61	54	44	33	33	44	41	64
17	44	41	44	34	28		G	G	N	G	G	G	G	G	G	G	G	G	G	27	G	G	39	38
18	42	41	33	27	31	25	G	G	G	41	G	G	G	42	G	51	40	G	26	25	26	29	G	43
19		31	28	26			G	28	N	G	G	42	G	G	39	G	G	28	30	38	30	G	G	G
20	G	G	G	G	G	G	G	G	G	G	G	G		G	41	43		46	40	27	39	G	24	40
21	30	27	26	88	33		26	32	37	40	47	50	G	G	G	G	37	G	32	27	26	26	26	G
22	G	G	44	24	27	32	26	32	G	55	52	84	63	62	G	58	G	26	40	39	G	G	G	G
23		G	G	G	G	G	G	G	G	G	G	G	G	G	45	58	33	60	45	G	G	G	G	G
24	G	G	G	G	G	G	G	28	G		G	G	G	G	G	G	G	G	25	32	29	26	G	G
25	G	G	G	27	28		28	G	G	G	G	G	G	G	G	G	G	G	44	39	39	33	G	G
26	29	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	25	G	G
27		G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	36	G	36	39	30	G	G	G	G
29	G	G	G	26	G	G	G	G		G	G	G	G		G	G	G	39	30	33	24	G	G	G
30	G	G	G	G	G	G	G	G	G	G	G	G	42	40	43	G	34	G	G	G	91	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	27	28	28	17	30	30	26	27	28	28	26	29	30	28	27	30	30	30	30	29	28	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	14	29	27	12	G	G	G
UQ	34	14	28	25	G	28	G	28	34	39	20	G	G	20	39	37	35	39	39	32	29	26	12	14
LQ	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT Yamakawa

NOV. 2003

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	16	15	14	16	14	14	17	20	36	42	44	44	39	45	16	17	15	15	16	15	16	15	15
2	15	14	15		15	17	15	22	32				49	43	44	36	20	23	15	15	16	15	15	15
3	15	14	15		15		15	22	17	21		75	58	50			21	17	16	14	14	15	15	16
4	14	16	18	15	15	18	15	22	20	34	24	28	29	32	27	50		17	15	16	15	14	20	15
5	14	14	17	17	18		15	17	21	27	45	30	46	28	21	18	15	22	16	17	17	14	15	21
6	17	15	16	15	15		16	22	17	22	23		36	34	23	15	16	21	21	17	15	16	15	16
7	16	15	15	14	15	15	15	20	15	17	20	23	24	20	22	20	16	15	15	15	15	15	15	15
8	16	16	15	15	15		18	15		17	21	18		17	15	18	15	21	15	14	17	15	16	15
9	15	16		15	15	14	18	20	16	16	17	18	18	21	18	17	16	22	16	15	17	16	15	
10	15	18	15	15	15		17	17	16	17	18	21		22	20		15	15	15	15		15	15	15
11	15	22	17	16	18		16	20	15	17	20	23	22	21	18	17	14	14	14	18	15	15	16	14
12	15		15	16	16		16	18	16	17	20	21	21	16	16	14	16	20	17	15	16	15	15	15
13		16	16	16	16	18	15	15	27	17	20	21		17	48	20	27	21	15	17	22	17	15	18
14	20	15		16			18	16	15	17	17	18		16	17	20	18	15	18	17	21			17
15	17	16		15	15	15	15	18	23	15	16	35	20	20	18	18	16	14	14	15	14	17		15
16	16	14	15	16	14	14	15	14	14		15	21	22	22	22	17	17	14	15	15	14	17	14	15
17	14	14	15	14	14		15	17	15	16	18	42	35	26	18	17	16	20	16	16	17	18	15	15
18	14	15	16	15	14	17	16	17	17	18	24	27	28	29	27	20	18	22	17	16	15	14	16	15
19		15	15	15			17	16	18	17	20	24	24	44	22	32	28	15	14	15	17	16	15	15
20	16	15	18	18	16	21	16	20	16	16	22	45		22	24	21	18	17	15	14	16	15	14	15
21	14	16	18	15	15		17	14	17	29	21	18	29	23	22	22	22	21	16	16	14	14	16	15
22	15	17	15	15	14	14	18	14	16	20	20	29	29	29	26	21	20	17	15	15	16	15	17	17
23		16	16	14	16	16	18	21	28	22	38	40	44	17	16	16	15	16	14	20	15	21	14	16
24	18	18	14	15	15	18	15	15	26		35	22			29	22	21	15	17	15	15	18	15	17
25	16	15	16	15	15		16	18	28	20	27	24		28	21	22	18	22	15	14	16	15	15	15
26	15	17	17	15	17	16	15	21	27	17		36	24	26	21	22	18	21	17	15	22	18	14	17
27		15	17	15	16		15	17	16	16	35	20	40		20	20	26	21	17	15	16	15	15	16
28	20	18	20	18	15	16	15	17	15	16	20		18	24	18	16	17	14	14	15	17	15	15	15
29	15	15	15	14	15	17	14	17	22	18	20	18	27		21	18	17	18	14	15	16	16	15	15
30	17	16	15	16	15	18	17	18	27	16	20	22	22	20	17	15	15	21	15	20	15	15	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	27	28	28	17	30	30	29	27	27	27	23	27	29	28	29	30	30	30	29	29	28	29
MED	15	16	15	15	15	16	16	17	17	17	20	23	28	23	21	19	17	18	15	15	16	15	15	15
U Q	16	16	17	16	16	18	17	20	24	21	24	35	40	29	25	21	20	21	16	16	17	16	15	16
L Q	15	15	15	15	15	14	15	16	16	16	20	21	22	20	18	17	16	15	15	15	15	15	15	15

HOURLY VALUES OF foF2 AT Okinawa

NOV. 2003

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		148	102	87	66	58	65	106	123	140	148	140	135	146	146	140	135	141	130	89	106	88	78	76
2	72	52	45				30	75	114	109	111	120	131	145	146	146	134	137	128	110	104			105
3	87	81	44	43	34		31	73	84	96	132	142	141	142	137	130	112	125	125	90	76	76	76	55
4	50	44	37	41	31		30	66	98	110	117	125	133	148	143	146	146	146	126	108		131	88	107
5	66	41	38	45	52	41	42	66	87	124	117	128	142	144	130	136	136	120	108	88	86	86	87	87
6	84	88	81	72	51			63	80	94	120	142	150	171	157	146	131	102	81	61	66	74	52	42
7	42	34	45	43	30			52	86	116	105	107	118	146	171	146	137	124	107	90	88	101	87	77
8	52	53	54	44	29			60	82	100	107	114	131	144	141	127	98	71	59	61	54	61	42	32
9	37	38	32	45	59			66	67	91	90	107	118	131	150		117	105	85	64	62	53	42	41
10	42	38	43	34				59	74	70	97	134	146	148	143	132	C	88	90	76	63	51	52	48
11	47	44	37	45	30		29	66	63	71	111	148	131	92	91	98	116	137	76	40	44		61	31
12	42	A	A	31	30	31	36	74	84	107	126	150	120	104	118	121	115	96	88	74	66	52	34	31
13	30	29	37	29	29	C		72	68	77	108	122	130	131	140	128	106	124	85	70	53	50	54	39
14	37	43		28	C	C	C	62	84	90	106	136	130	94	115	100	126	112	80	66	58		36	40
15	37	29	29	C			C	54	76	85	100	107	104	112	115	111	124	124	131		105	66		
16		A	A	A	29	29	34	54	80	97	132	110	105	110	107	107	117	107	114	90	85	64	51	
17	29	34	34	36	32	A	A	59	78	97	132	135	108	107	123	141	110	101	90	81	84	66	C	43
18	42	C	C	A	A	A		54	84	98	117	124	123	107	126	136	131	131	104	128	123	102	78	74
19	42	37	31				28	66	99	97	122	115	115		110	107	118	127	106	88	88	88	74	66
20	63	44	38	30	34		28	60	76	92	101	98		105	108	120	122	116	88	101	130	138	145	86
21	78	A	A	A	A		A	53	61	82	A	80	70	68	74	80	90	96	73	58	53	41	A	A
22	30		38			A		51	87	107	138	135		124	147	166	152	150	143	121	104	88	66	43
23	42	36	29	30	35	C		63	71		111	118	123	118	126	134	121	102	81	66	60	51	38	38
24	36	36	51	37	C	C		61	86		88	95	111	126	137	134	142	138	109	87	76	64	54	48
25	41	32	32	52	46	C	C	51	88	104	105	104	110	128	131	132	123	107	106	84	86	81	85	50
26	42	40	43	34	37	32	30	59	100	106	108	111	105	118	145	146	131	122	104	90		84	54	50
27	43	42	51	46	42			51	90	114	106	118	124	111	125	127	131	124	107	87	84	80	73	50
28	34	42	45	46	46	32	36	60	92	121	108	104	127	146	154	170	170	172	145	136	131	100	78	66
29	63	51	54	45			36	51	81	91	100	95	101	108	122	131	131	118	131	130	107	89	66	54
30	44	40	43	34	29	C		60	90	104	111	100	97	102	108	125	126	110	110	88	86	53	66	31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	25	25	23	20	6	13	30	30	28	29	30	28	29	30	29	29	30	30	29	28	27	26	27
MED	42	41	43	43	34	32	31	60	84	98	111	118	123	124	130	132	126	121	106	88	84	76	66	50
U Q	57	47	48	45	46	41	36	66	90	108	121	135	131	144	145	143	134	131	125	95	104	88	78	74
L Q	37	36	35	34	30	31	29	54	76	91	105	107	109	107	115	120	116	105	85	68	62	53	52	40

HOURLY VALUES OF fEs AT Okinawa

NOV. 2003

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Okinawa

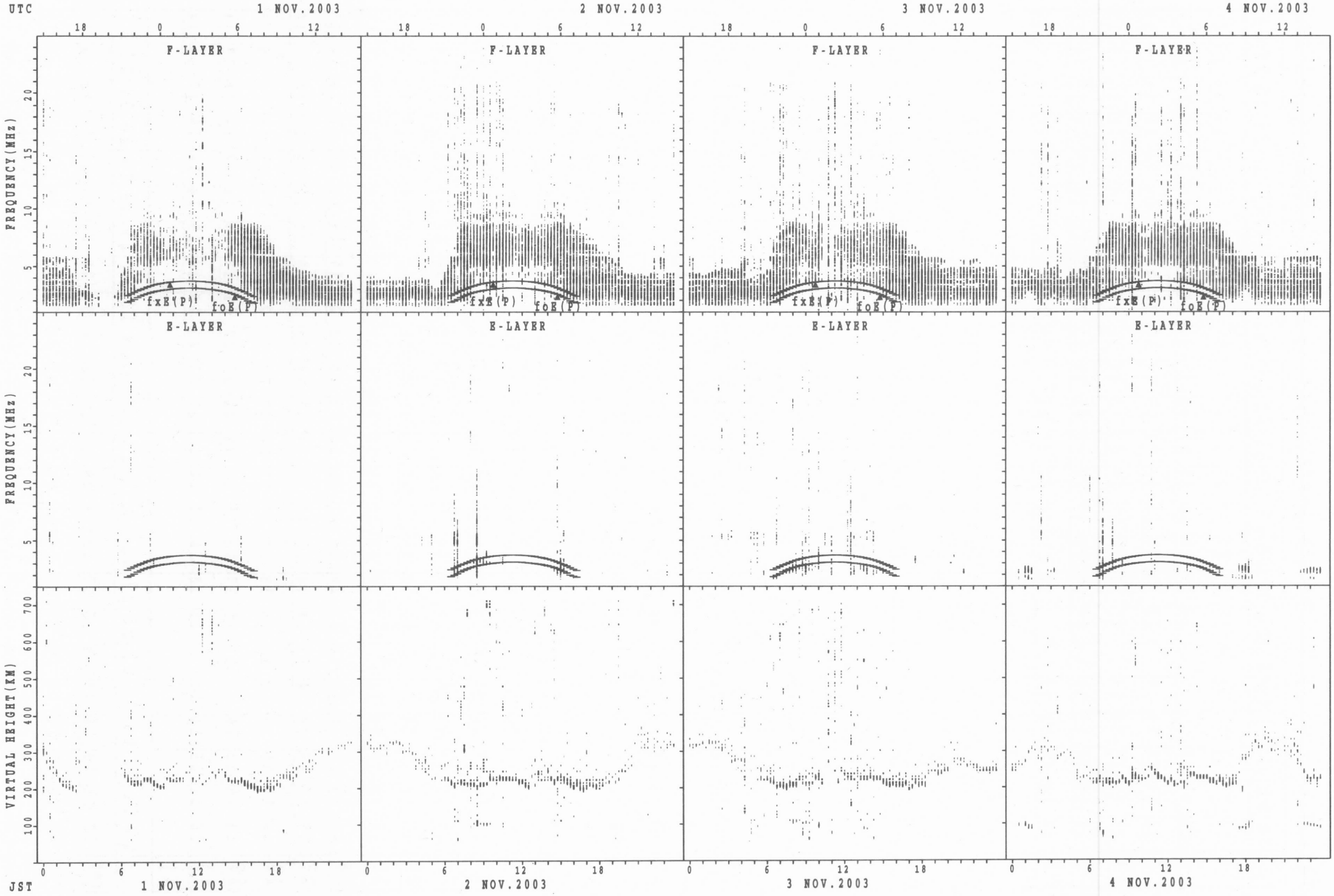
NOV. 2003

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	14	14	14	14	15	20	23		37		46	30	14	14	14	14	16	14	15	15
2	14	15	15				16	15	30	21	35	36	45	35	43	28	21	18	14	14	14	14	15	14
3	16	15	14	16	15		15	22	18	23	45	72	53	40	38	38	20	17	14	14	14	14	14	14
4	15	15	15	16	15		15	15	17	22	27	33	30	32	32	44	21	15	14	14	14	15	15	15
5	15	15	15	15	14	14	14	16	22	27	28	42	42	28	23	22	15	14	14	15	14	15	16	15
6	14	14	14	14	14			20	15	20	22	22	22		35	15	14	14	15	15	14	14	14	15
7	15	15	14	14	15	18	18	20	15	20	20	22		27	21	16	15	22	14	14	15	15	15	15
8	14	15	15	14	14	17	17	14	14	16	17	20	18	16	17	14	14	21	14	14	14	14	15	15
9	15	15	15	17	14		17	18	14	15	18	20	18	21	20	15	15	18	15	14	15	14	14	15
10	15	15	15	14				18	16	18	22	18	23	18	20	17	C	14	14	14	15	15	15	15
11	15	15	15	14	14	15	15	14	14	18	24	23	21	21	20	18	15	14	14	14	14		14	15
12	14	14	14	14	14	15	15	18	14	15	18	21	23	22	18	20	15	14	14	14	14	15	15	15
13	15	15	14	14	14	C	16	14	15	16	18	18	21	15	45	15	14	14	14	14	14	15	14	15
14	16	15	15	14	C	C	C	14	14	15	20	20	22	20	16	14	14	14	14	14	15		15	15
15	15	15	15	C	17	15	C	14	14	14	15	17	21	24	16	17	15	14	14	14	14	16	15	14
16	14	14	14	14	14	14	15	15	14	14	14	15	17	24	22	22	20	14	14	14	14	15	14	14
17	15	15	15	14	14	14	14	18	14	15	20	33	35	22	21	23	17	14	14	14	14	16	C	15
18	15	C	C	14	14	14	14	14	14	17	22	34	29	38	28	22	18	20	14	14	14	15	15	14
19	14	14	15	14	14	14	15	18	15	17		23	18	53	21	20	16	16	15	14	14	15	17	14
20	14	15	15	15	14	15	15	18	15	17	17	44		18	20	20	16	18	14	14	14	14	14	14
21	14	14	14	14	14	16	14	14	15	34	21	20	21	22	23	21	18	15	14	17	14	15	14	15
22	14	14	15	14	14	14	14	14	14	17	18	20		22	21	21	16	16	14	14	14	15	14	15
23	16	15	15	14	14	C	15	17	14		20			30	15	23	20	14	15	15	15	14	15	14
24	15	15	15	14	C	C	15	20	15		38		38	40	36	23	22	14	14	14	14	14	14	15
25	15	15	15	14	14	C	C	14	14	20	18	38	26	26	26	22	18	22	14	15	14	15	14	15
26	14	14	14	15	15	14	15	20	16	17	36	21	38	28	23	18	17	14	14	15		14	14	15
27	15	15	15	14	14	15	18	14	14	20	17	29	17	22	23	18	20	24	14	14	14	14	14	18
28	16	15	15	15	15	14	15	18	14	17	17	28	22	22	22	20	14	14	14	14	18	14	14	14
29	14	15	15	14		15	15	17	14	14	20	22	22	22	22	21	17	15	14	14	14	14	15	14
30	15	15	15	14	14	C	15	18	16	16	21	17	27	23	21	18	14	15	14	14	14	17	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	28	25	18	25	30	30	28	29	27	26	28	30	30	29	30	30	30	29	28	29	30
MED	15	15	15	14	14	14	15	16	14	17	20	22	22	22	22	20	16	14	14	14	14	15	14	15
U Q	15	15	15	14	14	15	15	18	15	20	23	33	35	29	28	22	19	18	14	14	14	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	18	20	21	21	20	17	14	14	14	14	14	14	14	14

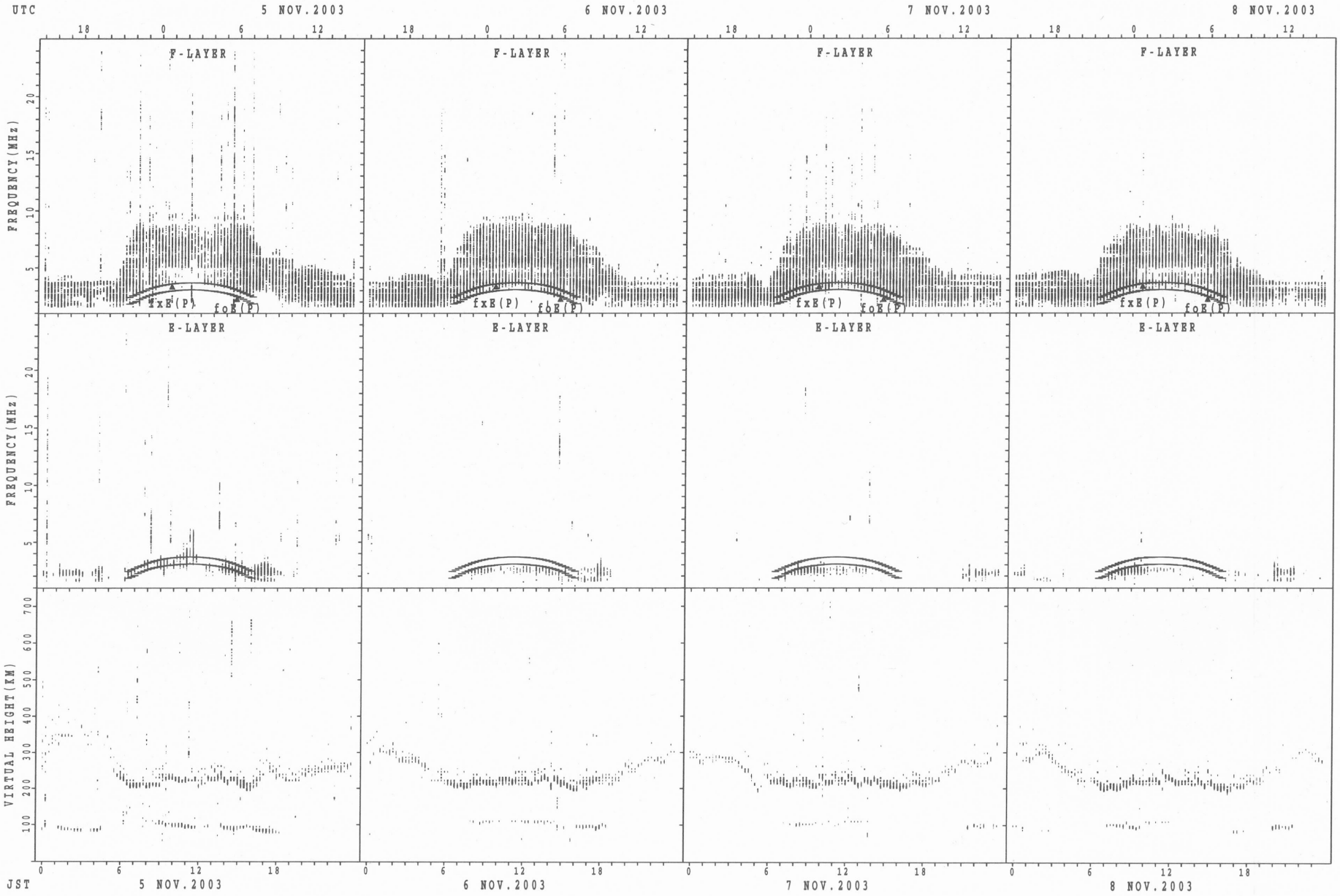
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

SUMMARY PLOTS AT Wakkanai



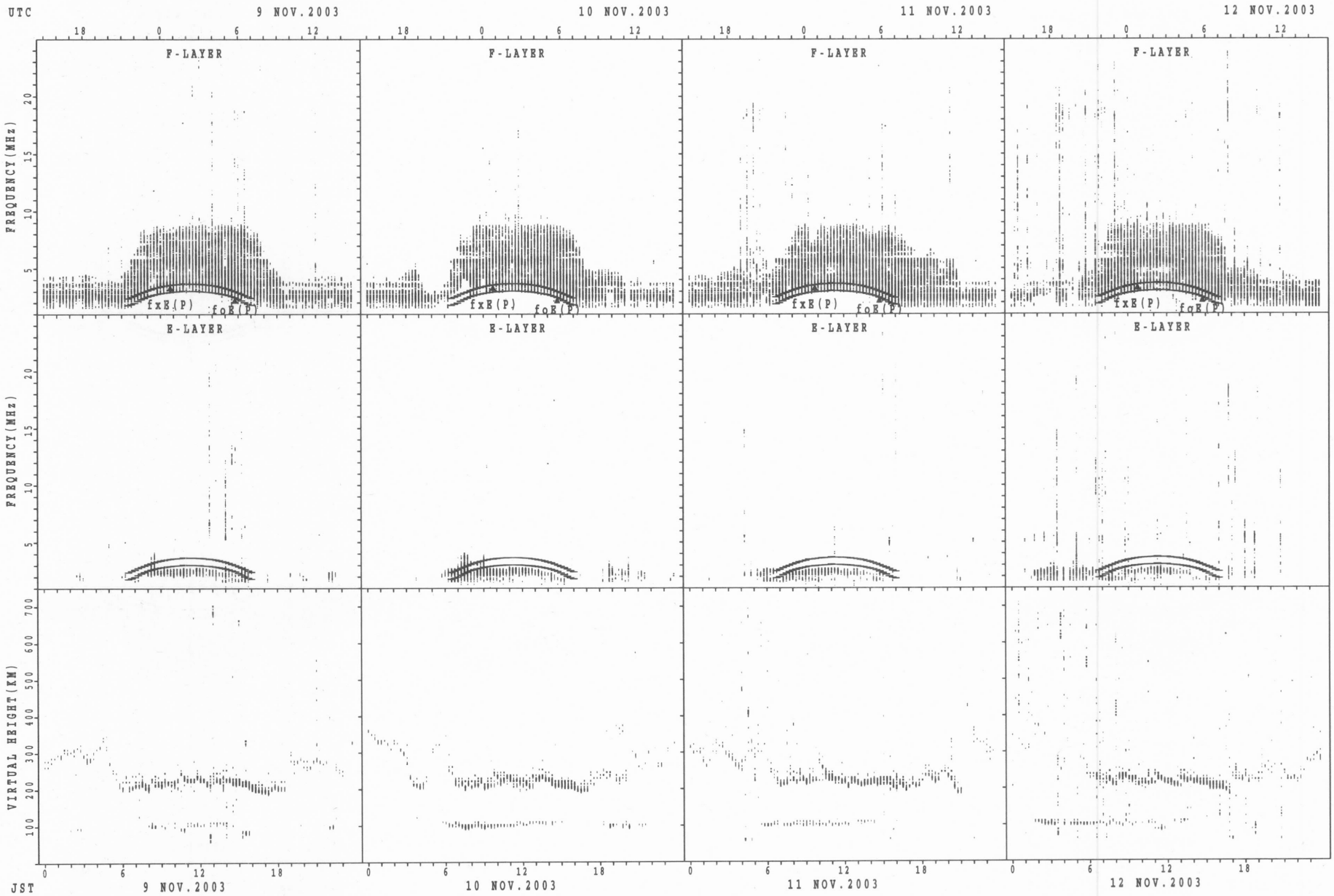
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



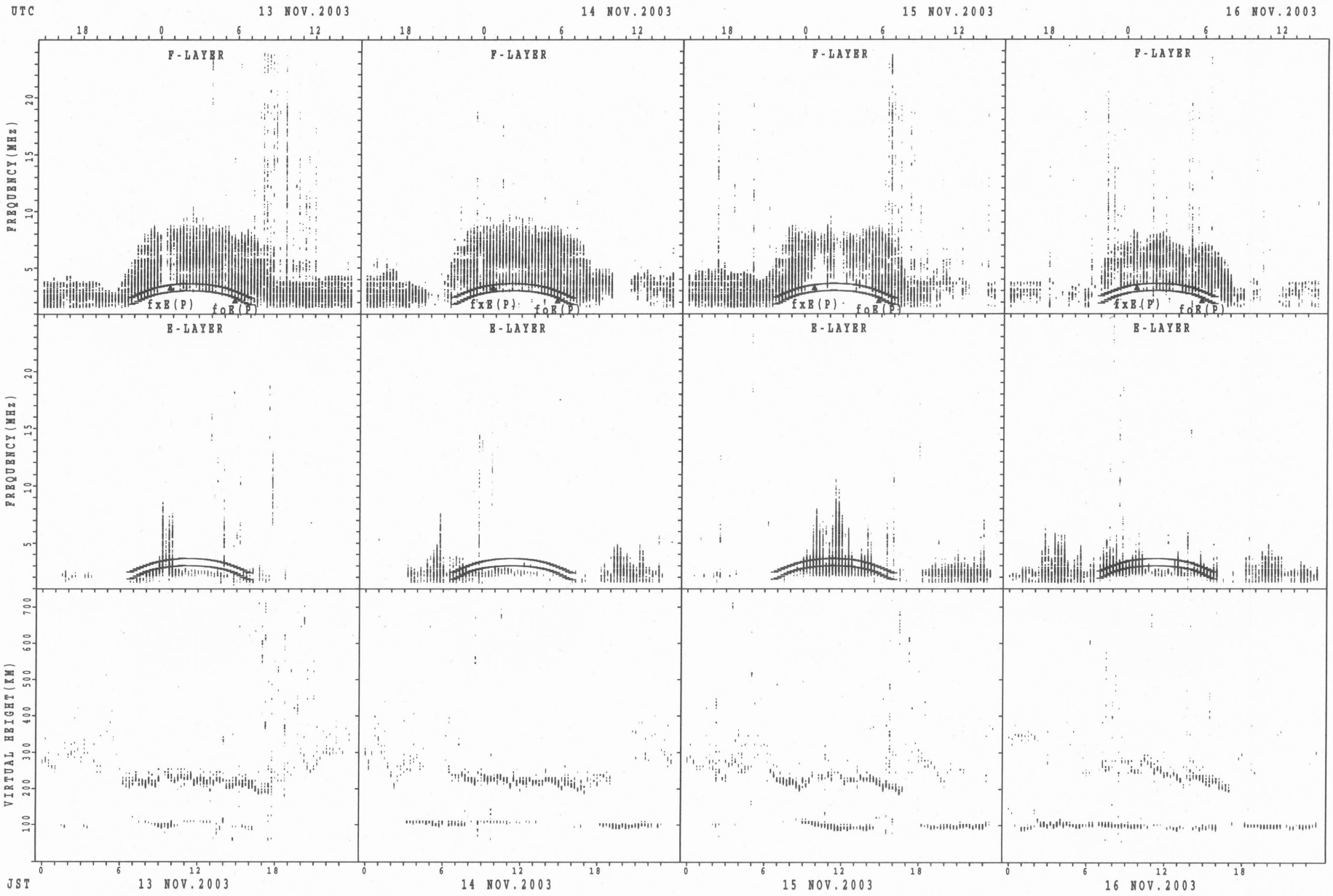
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



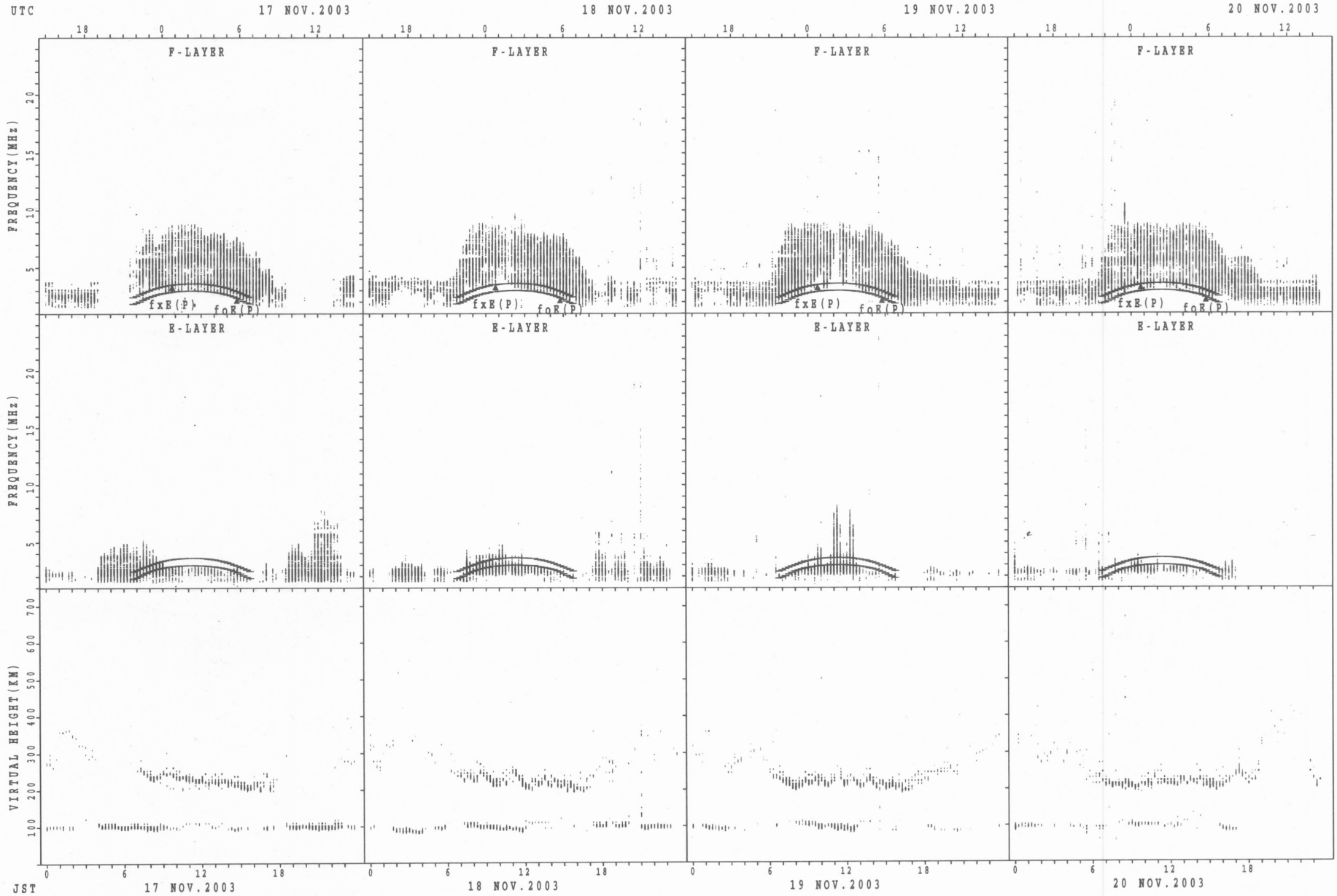
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



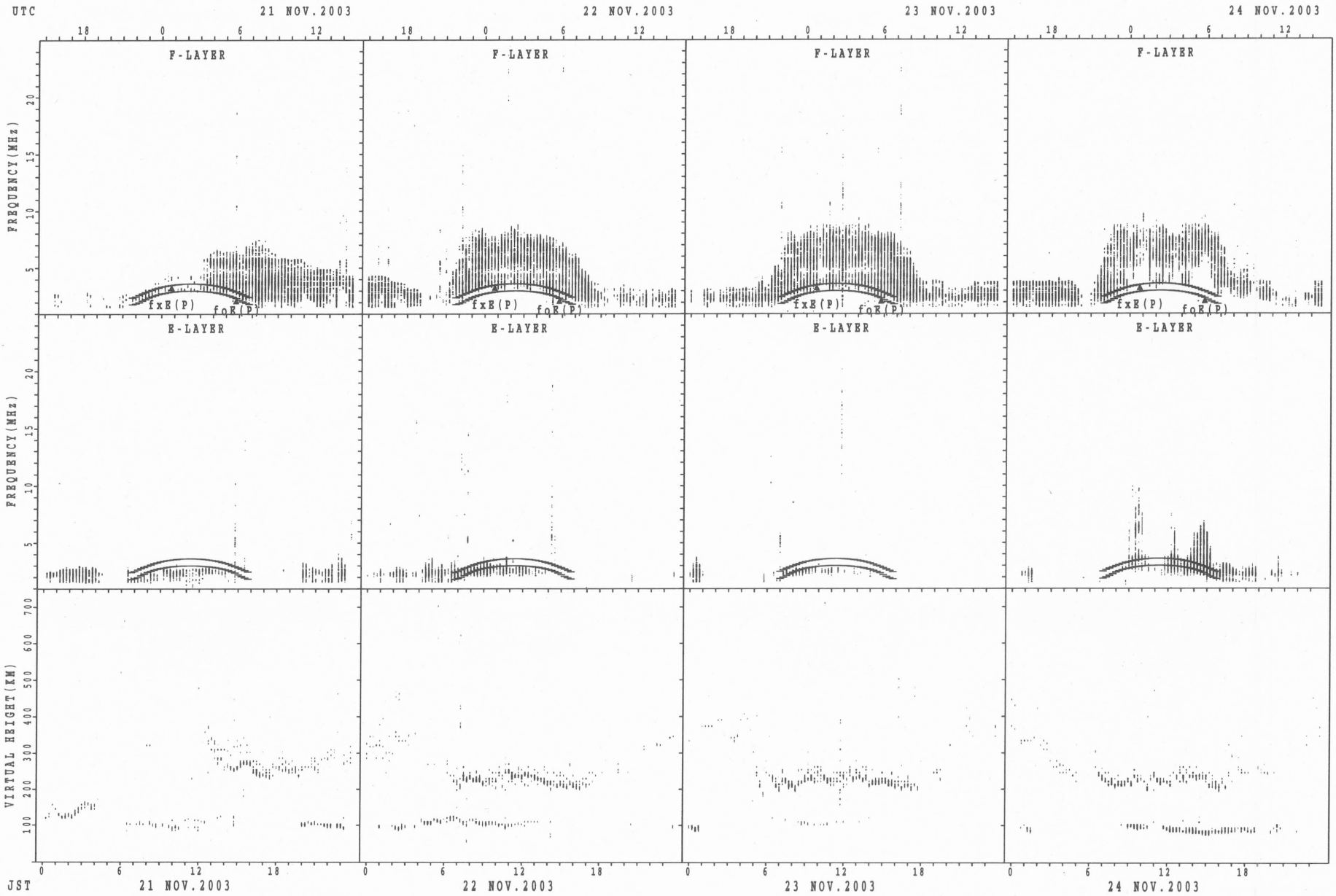
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



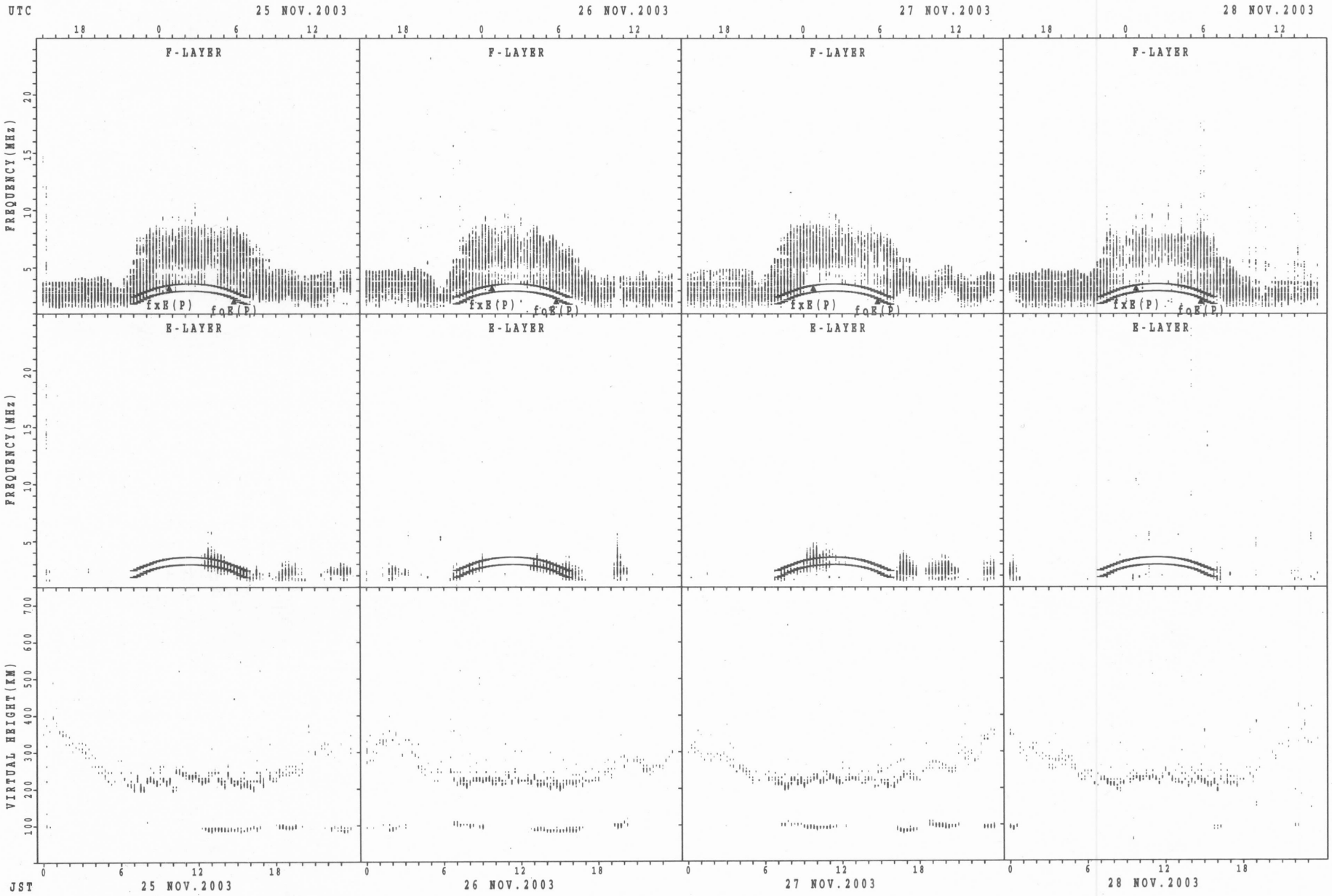
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



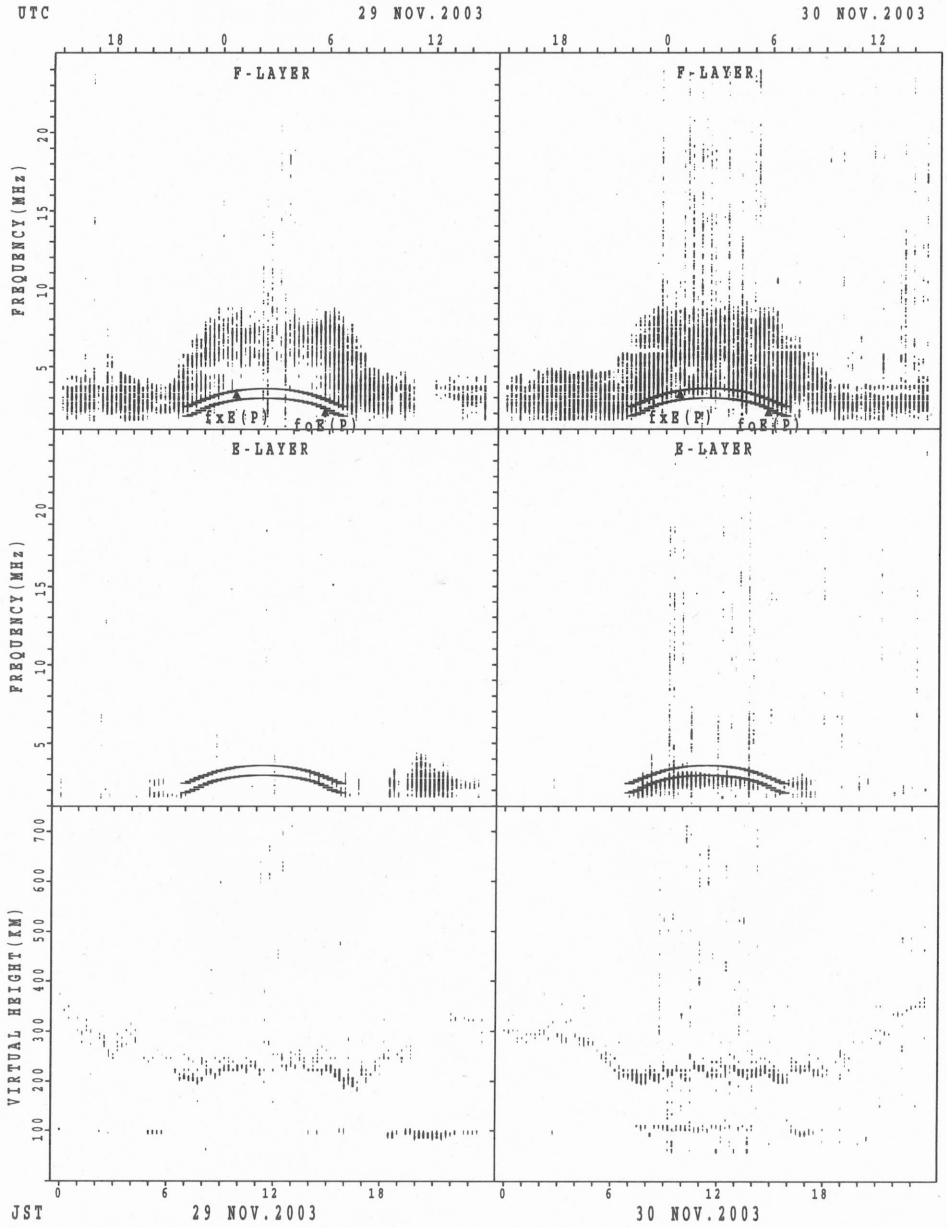
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

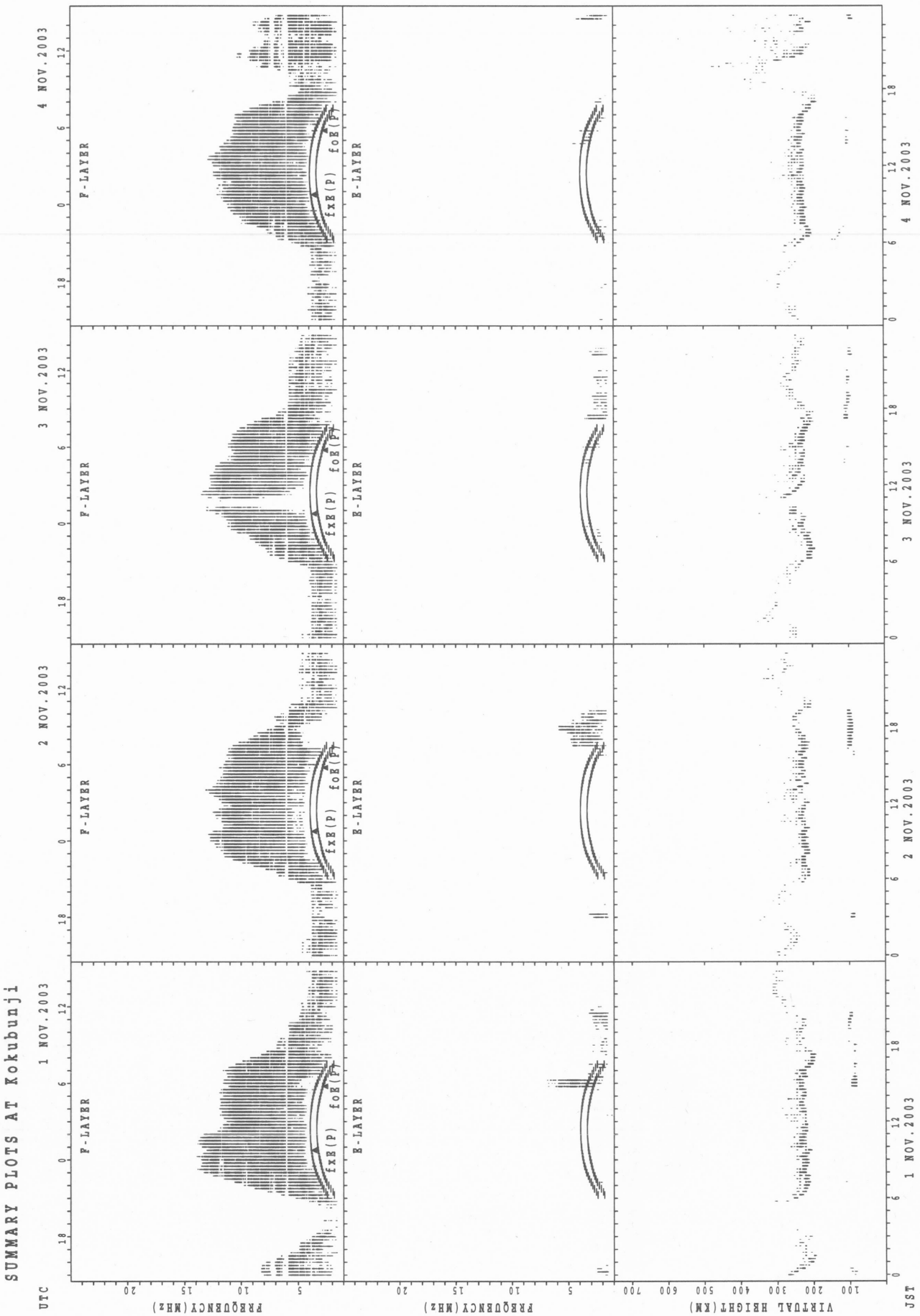


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

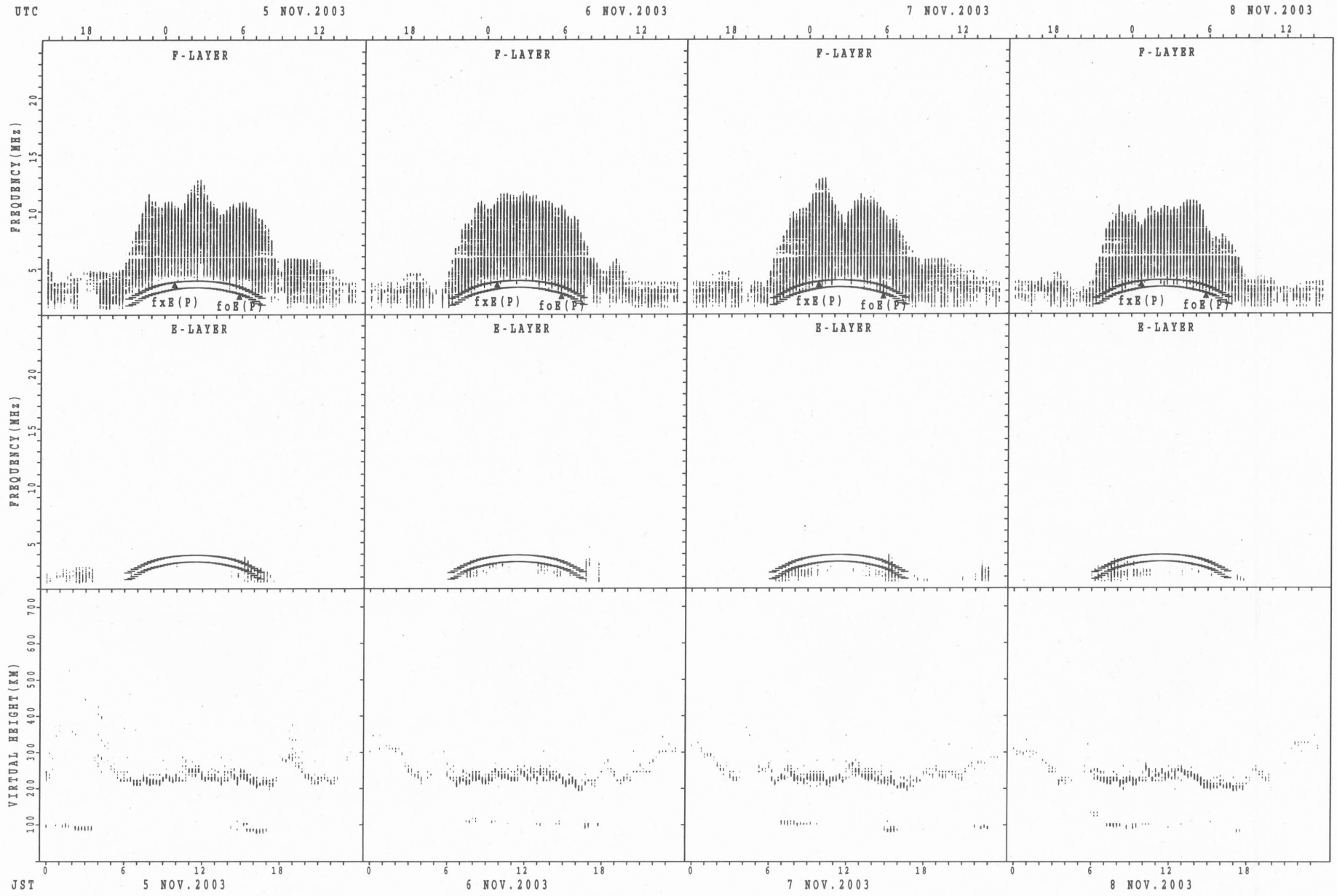
SUMMARY PLOTS AT Wakkanai



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

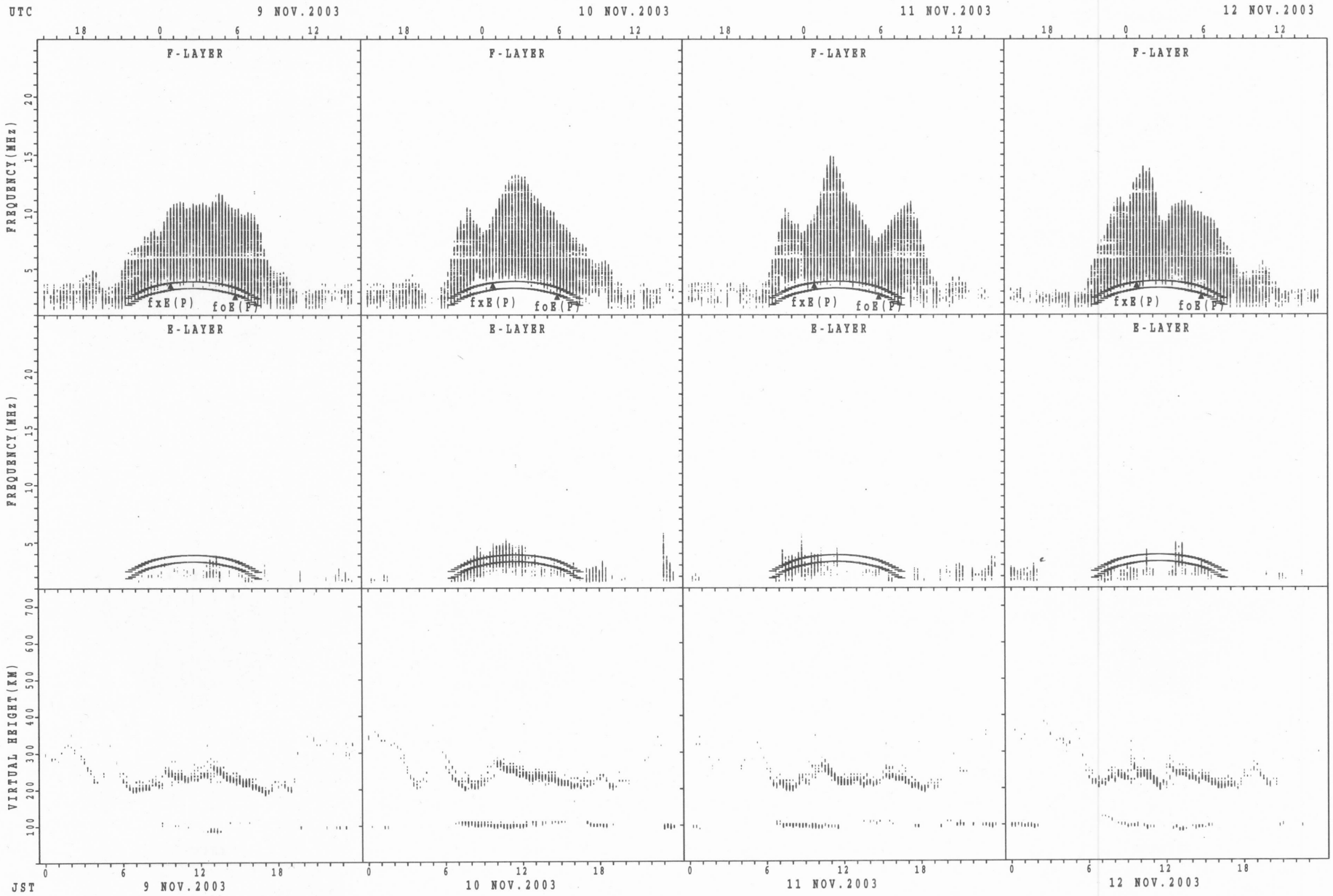

SUMMARY PLOTS AT Kokubunji
UTC
JST
1 NOV.2003
2 NOV.2003
3 NOV.2003
4 NOV.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



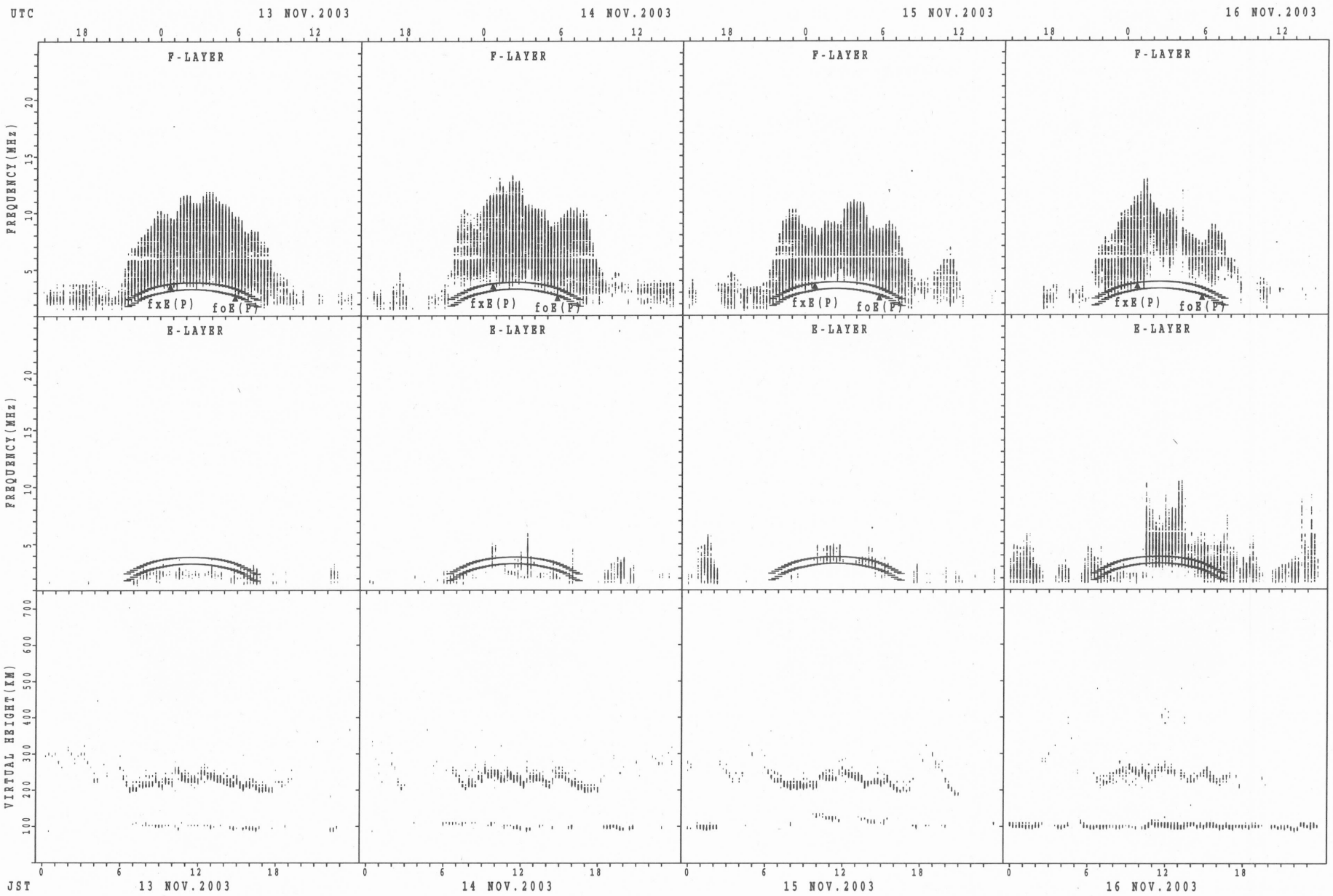
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



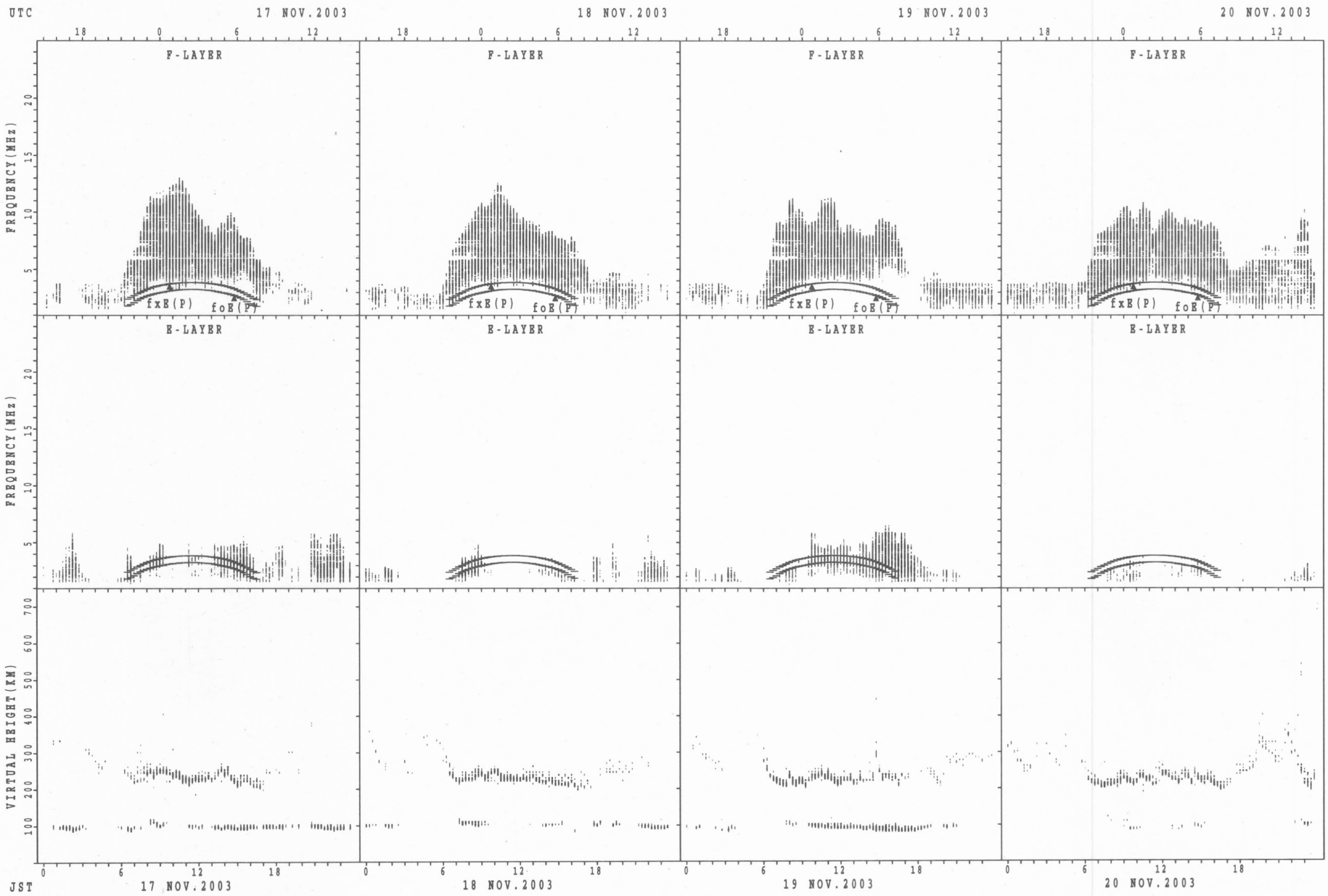
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



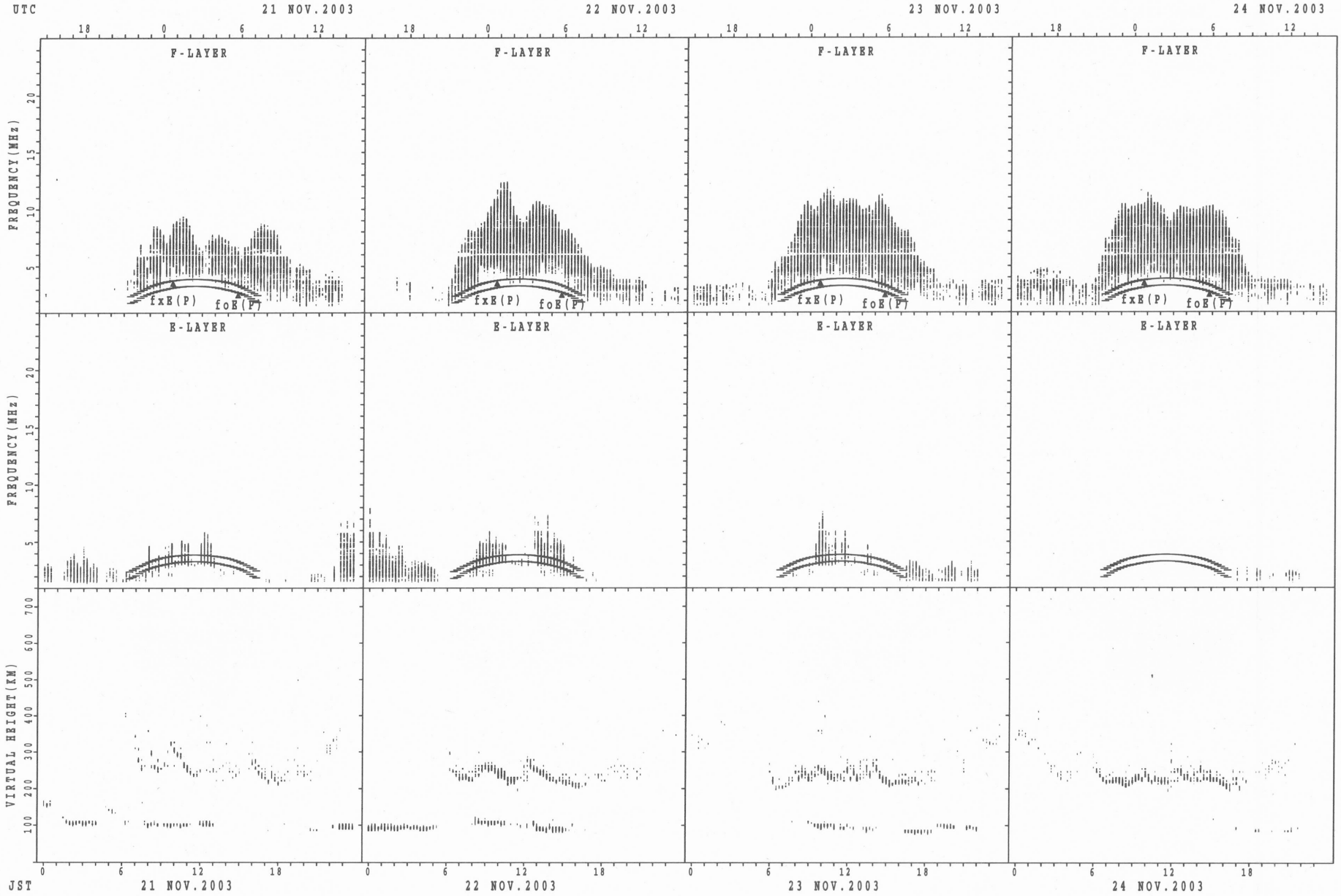
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



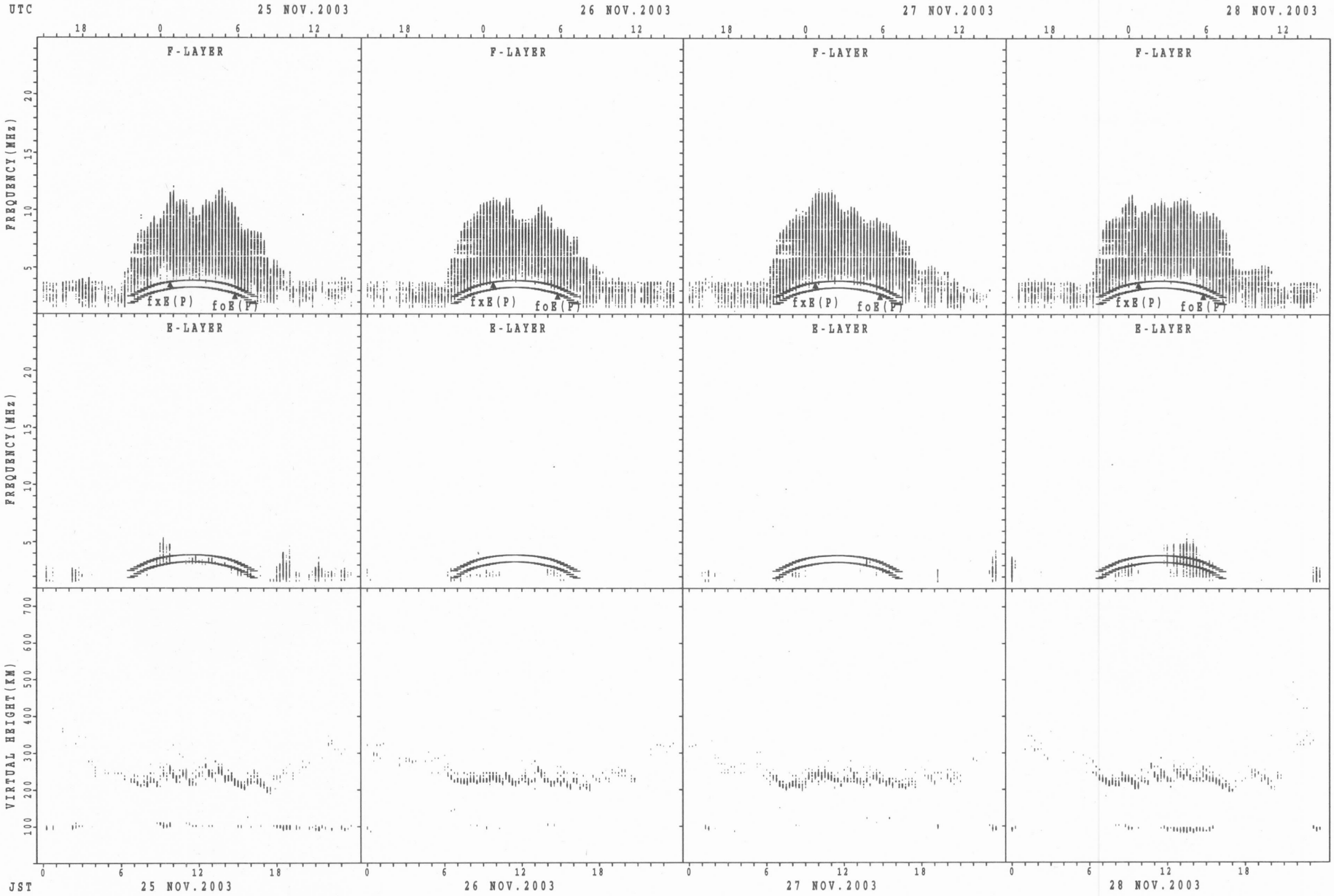
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



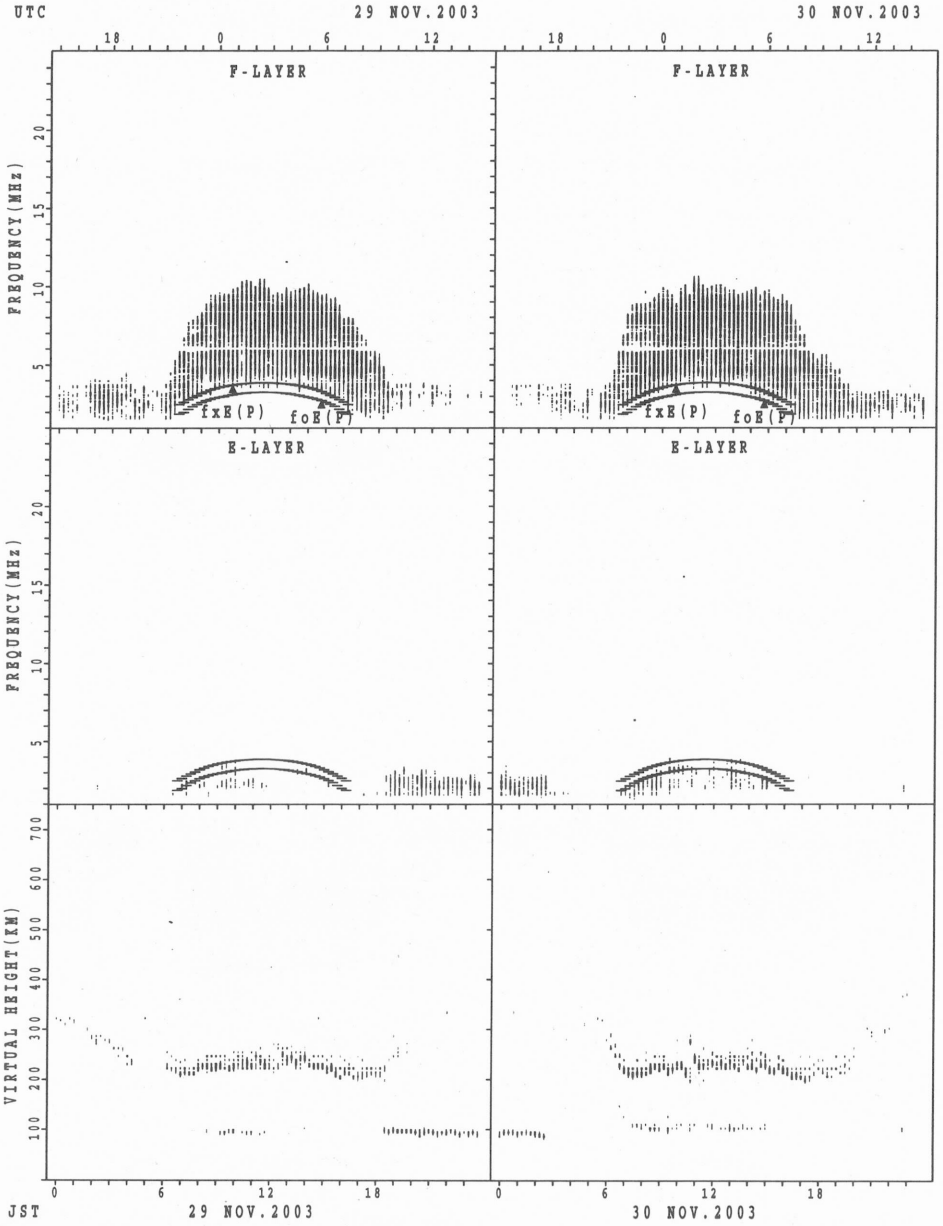
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



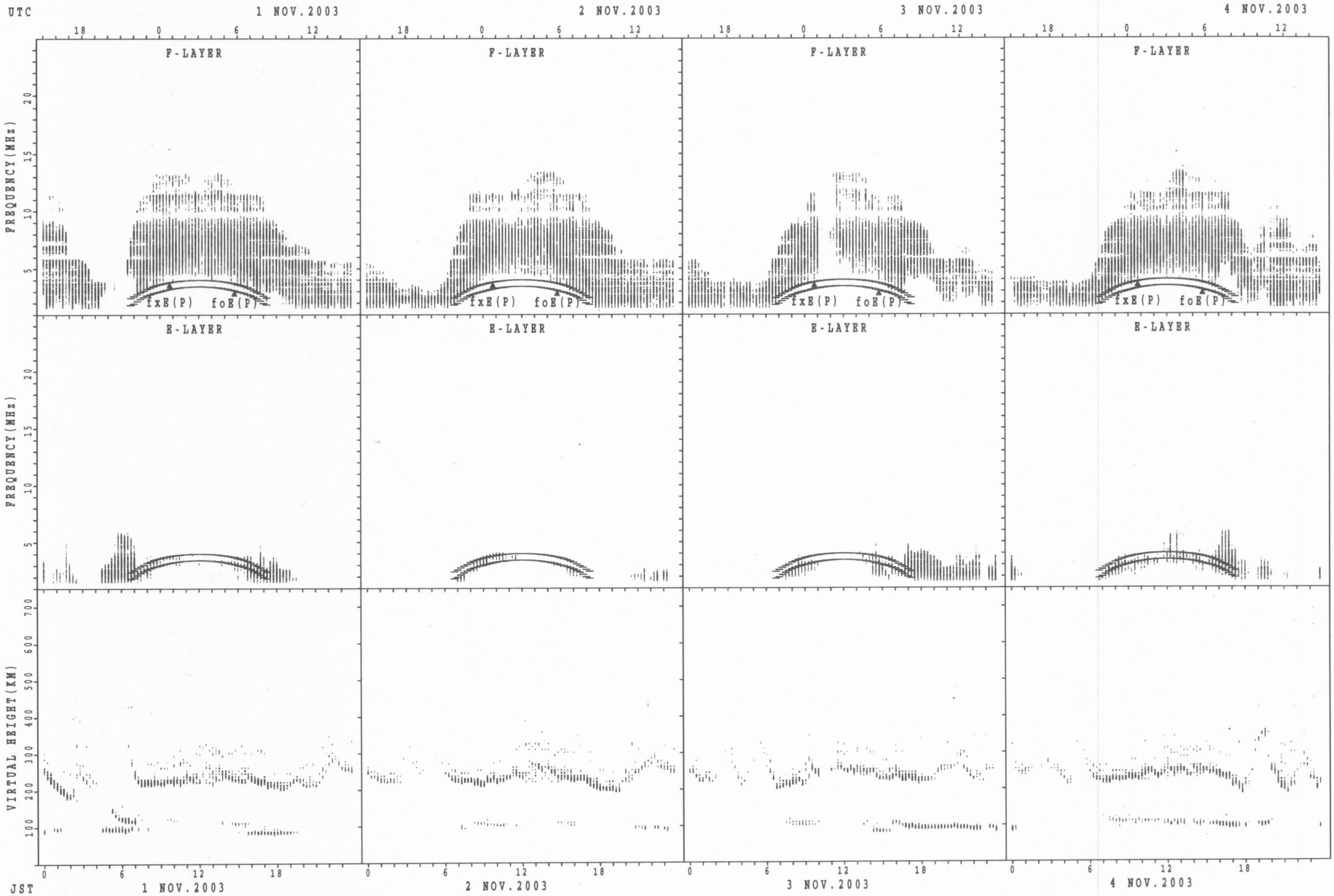
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



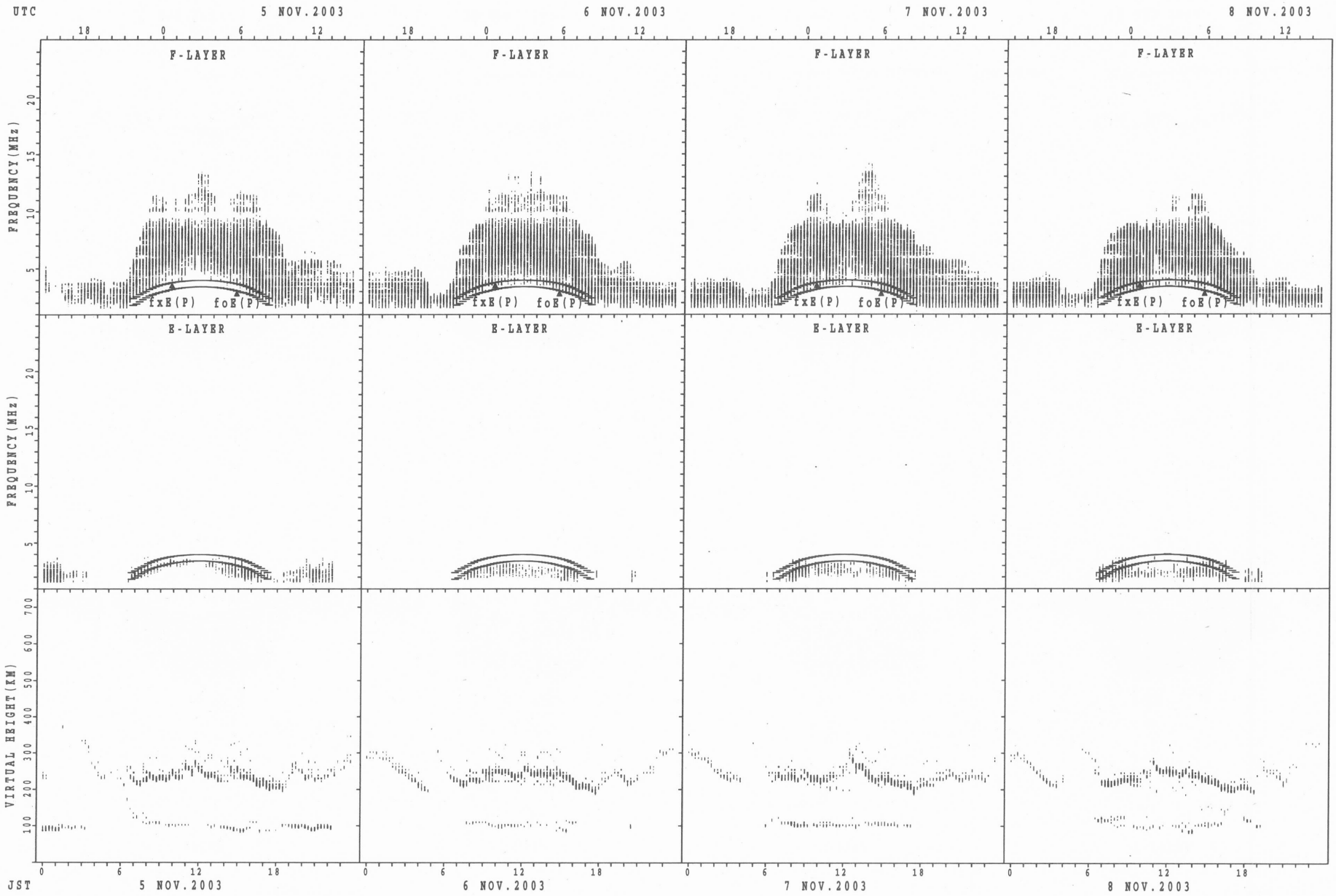
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



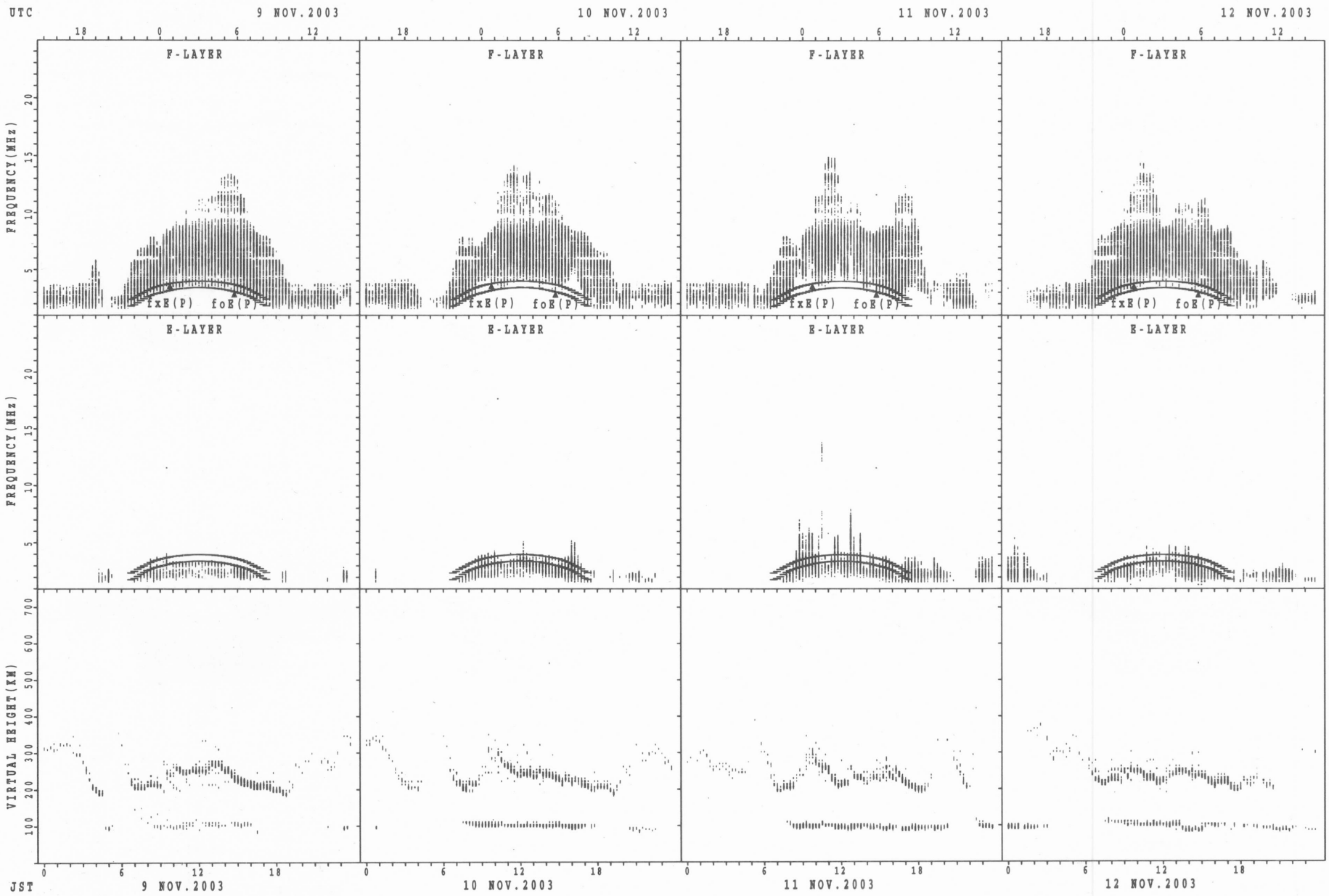
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



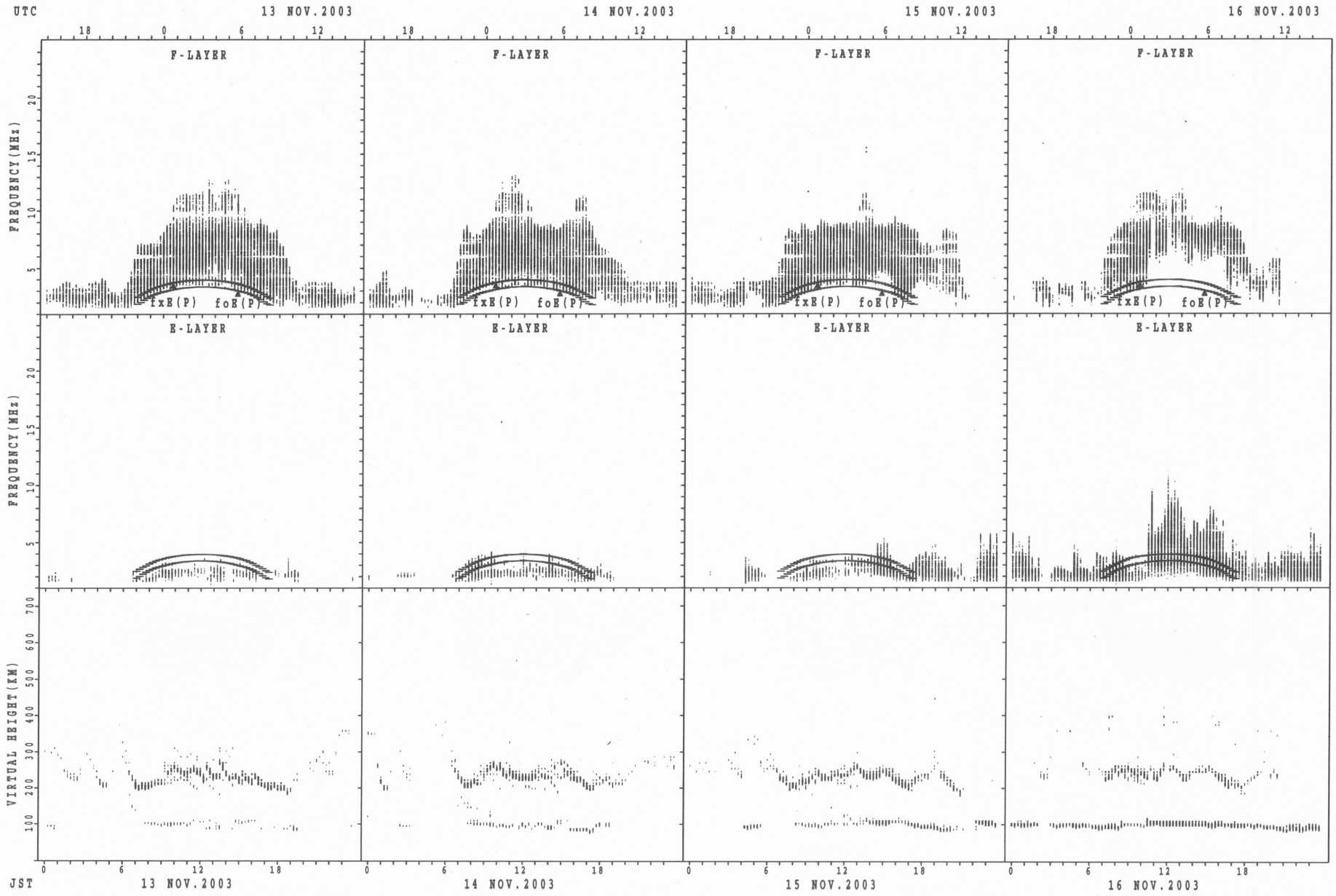
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



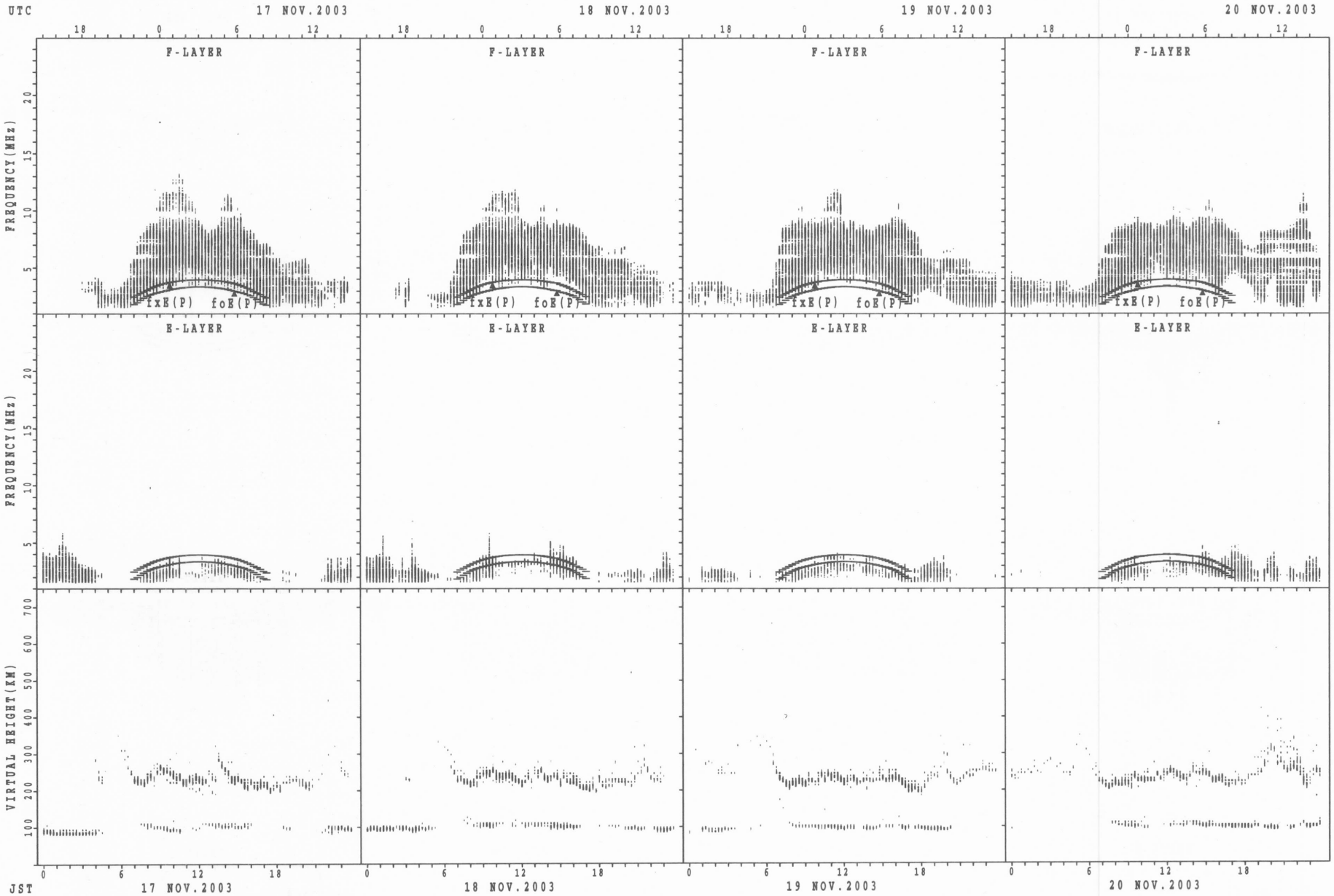
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



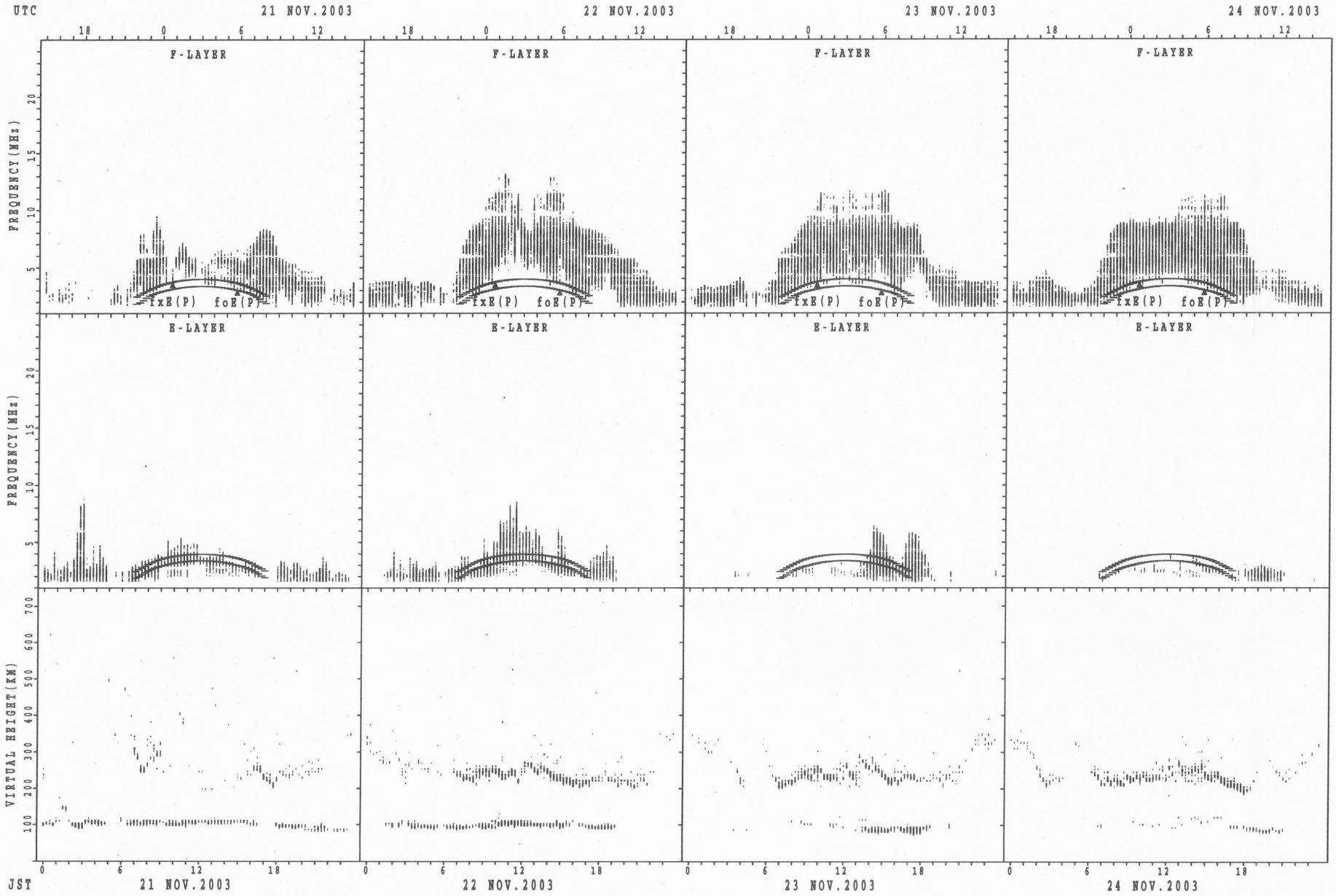
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



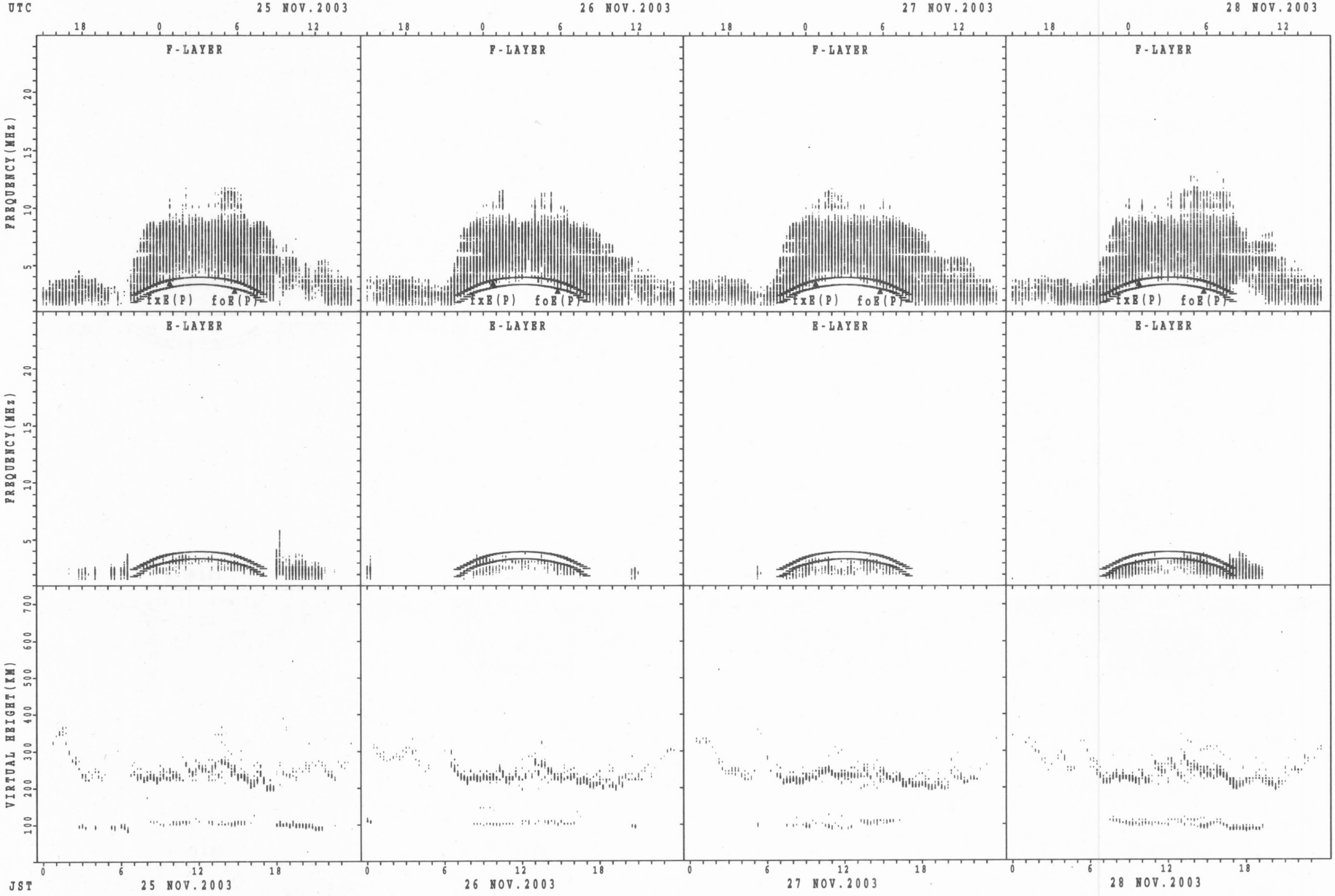
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



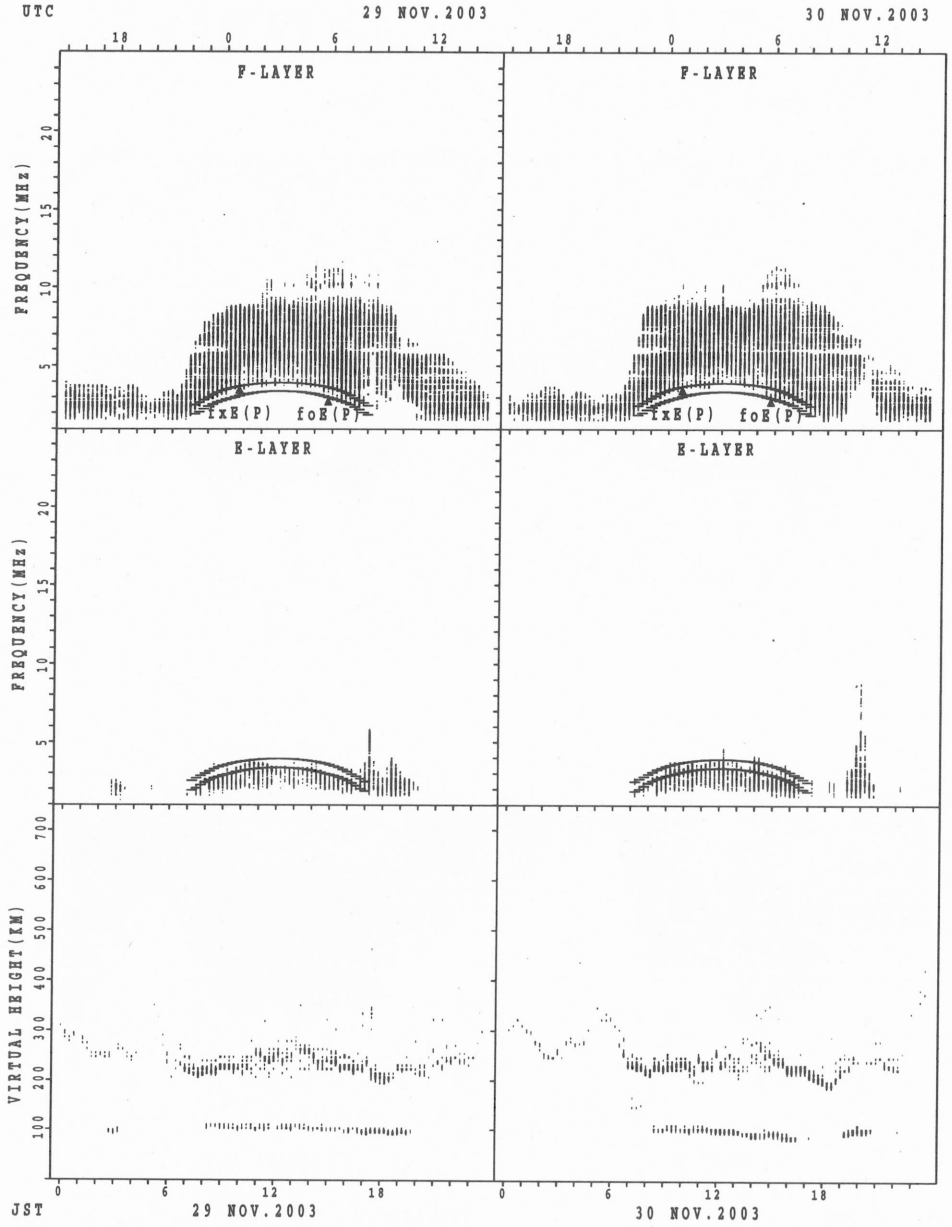
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



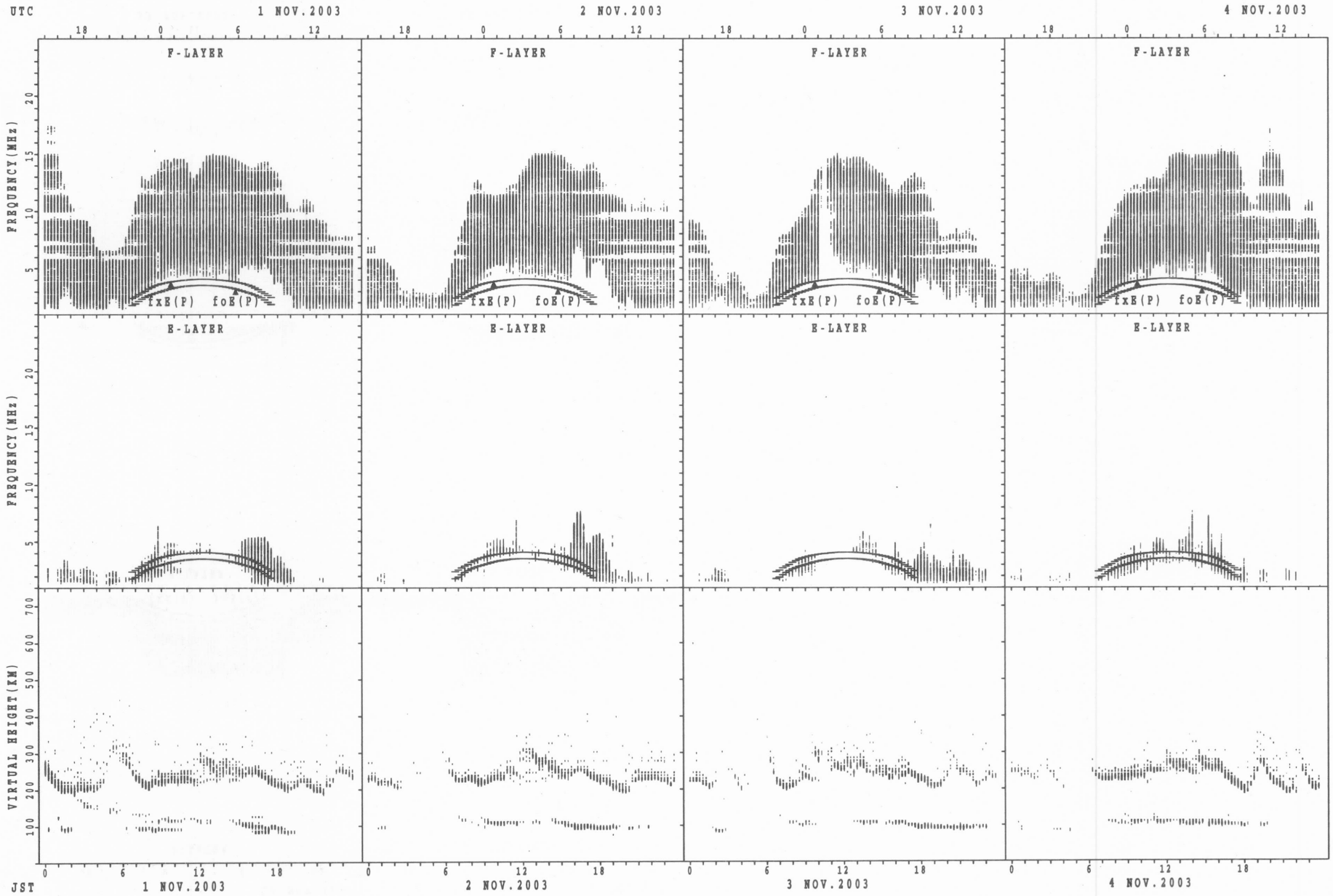
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



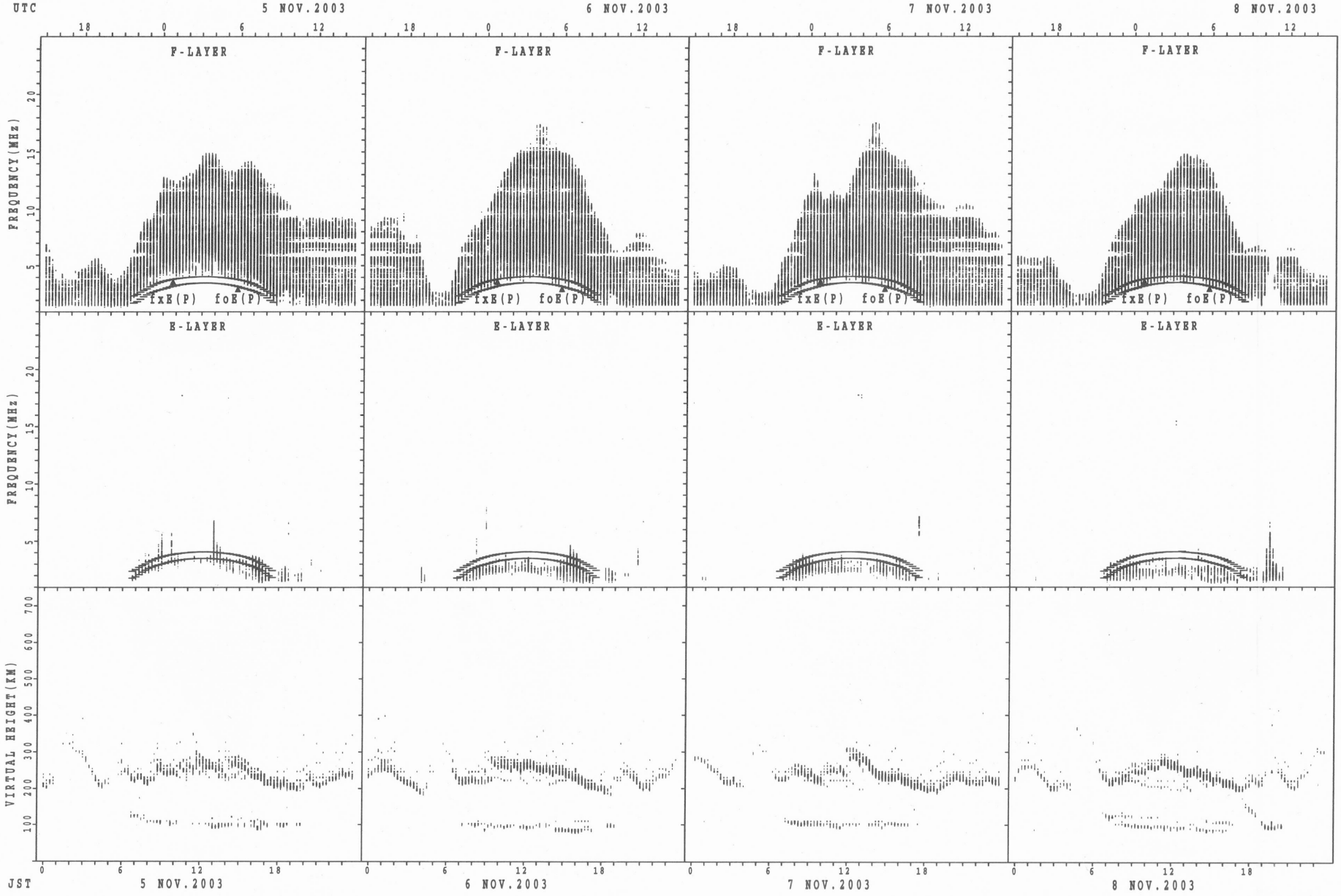
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



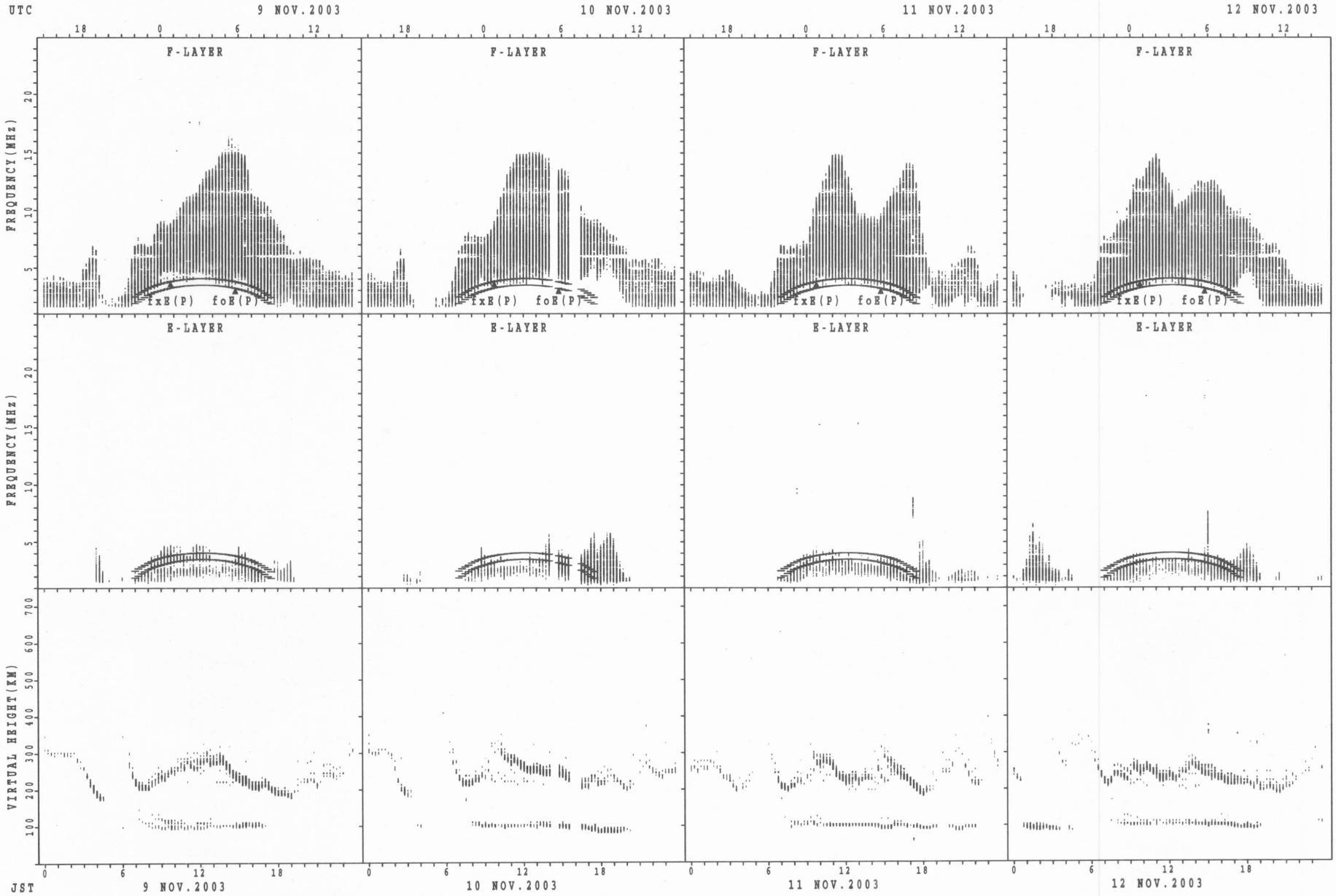
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



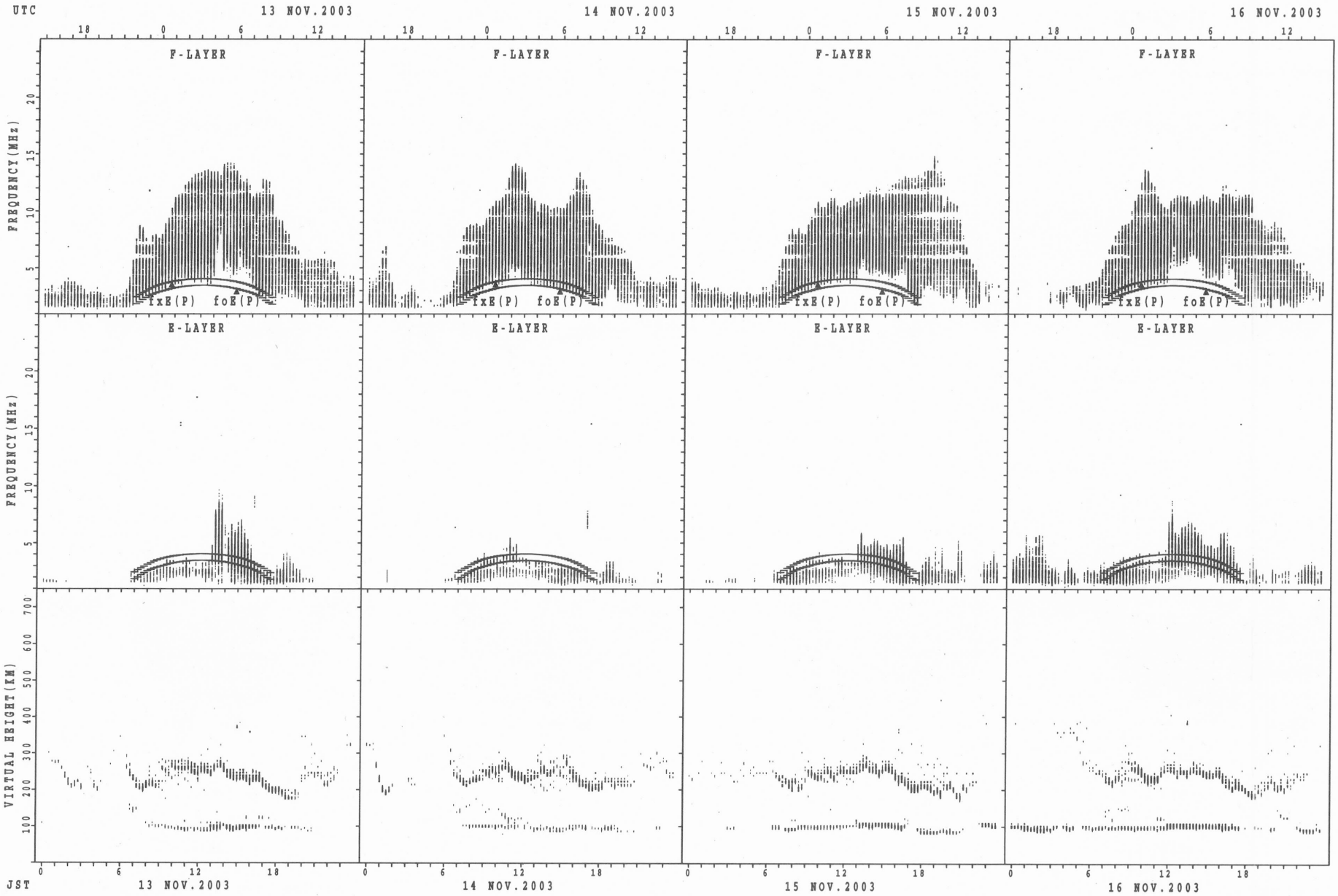
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

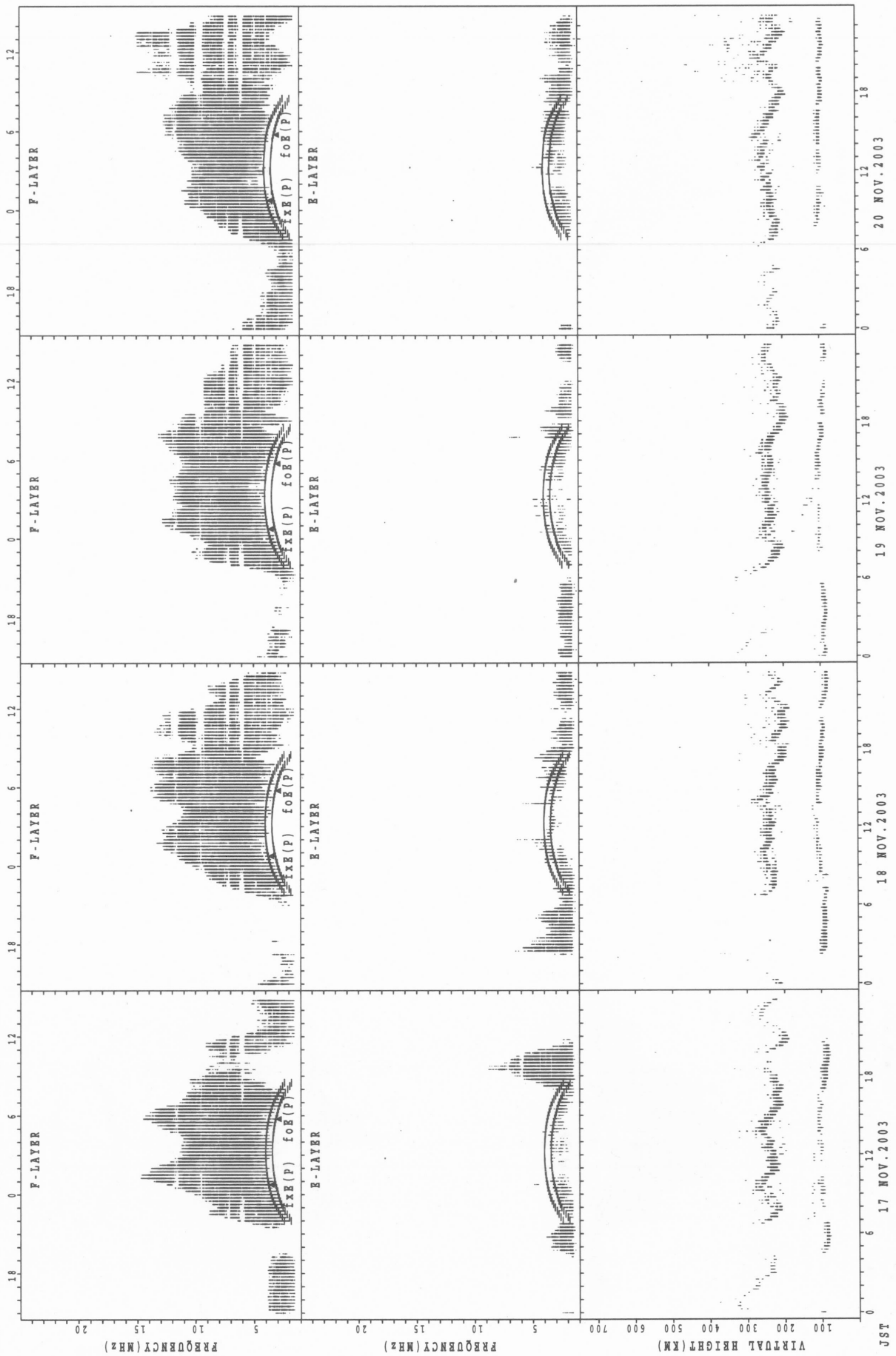


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

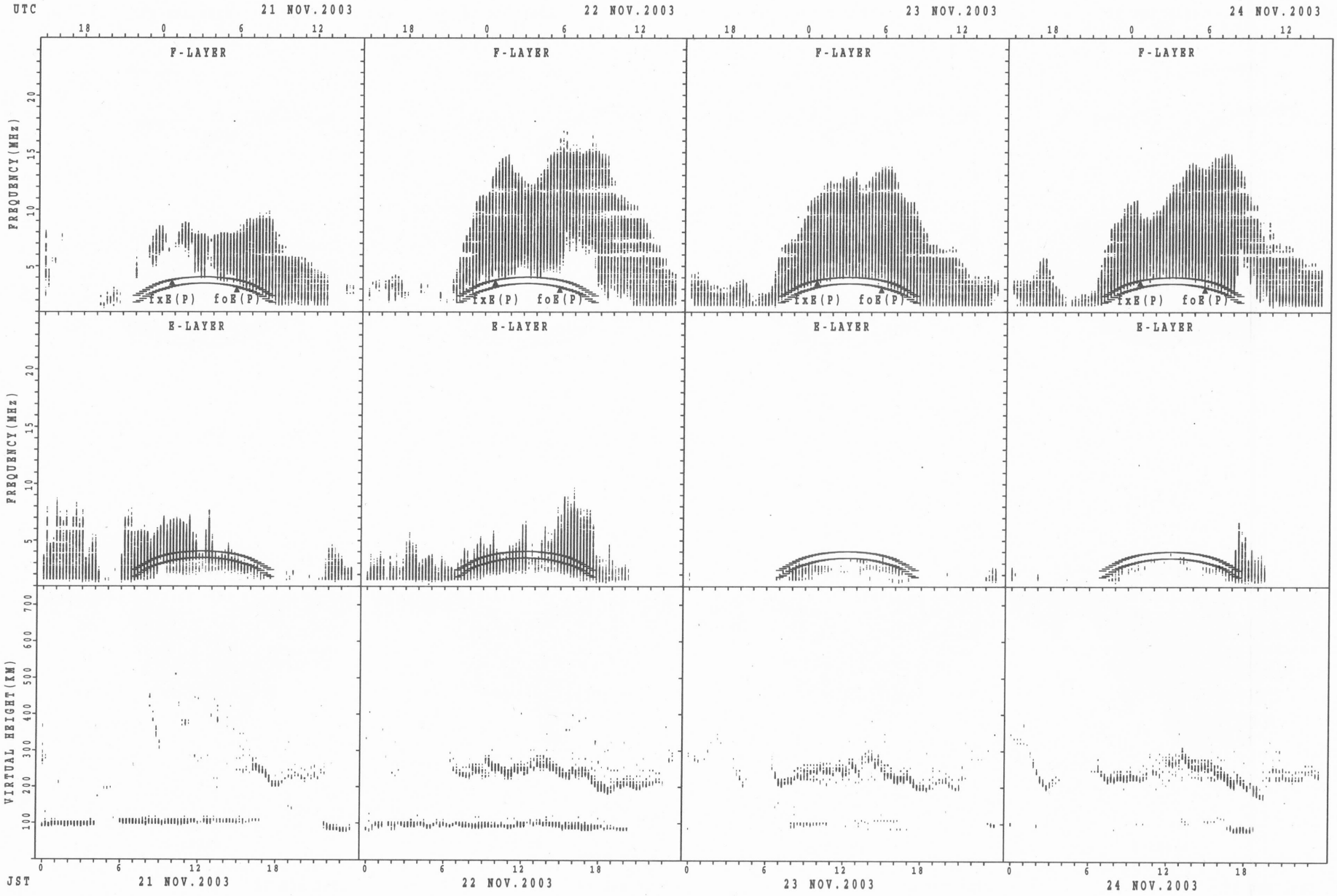
SUMMARY PLOTS AT Okinawa



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

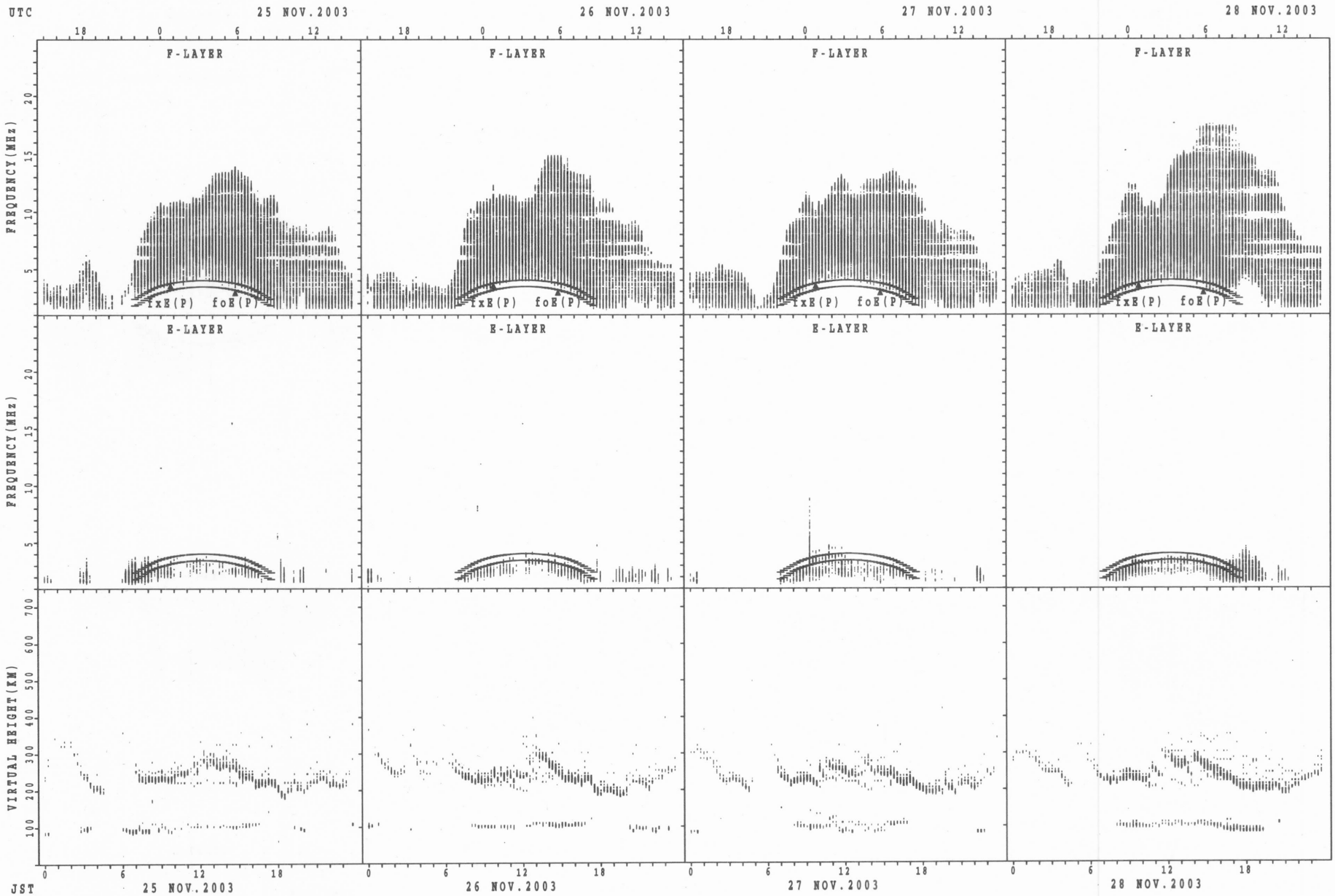

SUMMARY PLOTS AT Okinawa
UTC
JST
17 NOV.2003
18 NOV.2003
19 NOV.2003
20 NOV.2003
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



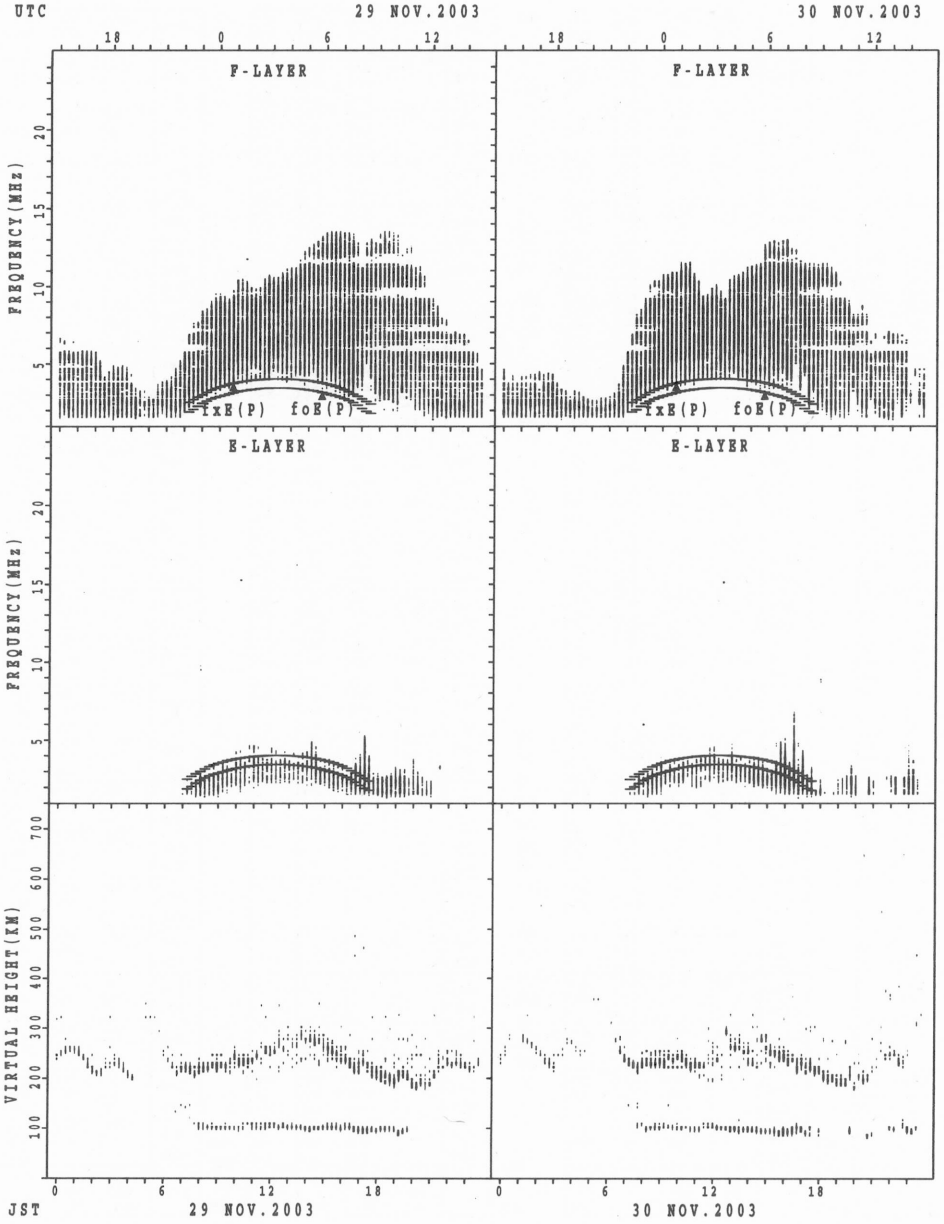
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

NOV. 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					1		7	26	26	27	25	25	27	27	29	19	6	1	1				
MED	210					240		246	229	223	228	230	224	230	232	230	230	256	288	270				
U Q	105					120		252	244	230	238	239	230	240	244	235	238	292	144	135				
L Q	105					120		240	222	222	222	223	221	226	224	222	222	252	144	135				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	8	11	9	9	7	8	6	5	10	7	6	3	3	6	6	12	7	5	10	12	9	10	9
MED	97	97	99	97	105	103	106	105	99	103	97	97	97	91	92	92	94	89	93	102	97	101	99	97
U Q	99	103	111	117	114	107	112	105	103	105	105	97	97	97	95	95	100	97	99	105	103	105	101	103
L Q	95	97	91	93	90	97	104	105	99	97	95	95	95	91	89	87	91	85	85	95	92	96	99	95

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		1						25	29	30	26	14	14	28	30	29	30	14	2			1		2
MED		230						234	222	230	238	228	238	238	230	232	229	231	236			272		288
U Q		115						245	233	240	244	236	252	246	242	240	238	248	260			136		352
L Q		115						224	214	224	230	222	234	231	226	222	222	224	212			136		224

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	6	10	6	3	2	2	4	5	9	8	6	7	8	7	6	8	9	9	7	6	9	5	10
MED	97	98	99	98	99	121	107	104	107	107	104	100	97	98	97	94	96	97	99	101	97	101	95	97
U Q	103	99	101	105	107	147	109	113	110	111	108	115	105	104	105	99	103	99	105	103	103	104	100	103
L Q	97	95	97	93	91	95	105	100	101	101	97	97	97	92	91	89	89	87	90	99	97	97	94	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	1	1						8	26	25	27	11	2	8	29	27	28	28	9	1	3	2	1	1
MED	280	216						246	233	238	240	234	248	253	248	240	232	228	234	300	262	262	350	234
U Q	140	108						251	244	250	250	256	254	270	255	246	238	234	246	150	352	298	175	117
L Q	140	108						242	224	225	232	226	242	235	239	230	222	219	224	150	232	226	175	117

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	7	9	11	6	6	6	9	7	8	7	5	5	7	8	8	9	15	18	20	15	12	7	7
MED	95	95	97	97	98	95	103	117	109	104	105	105	103	103	93	101	97	97	97	97	95	93	93	99
U Q	103	101	133	101	101	97	119	134	113	108	111	116	108	107	104	103	102	103	99	102	101	95	97	101
L Q	91	89	92	95	95	95	99	97	103	103	103	101	99	97	90	95	89	91	95	95	95	90	91	95

MONTHLY MEDIANS OF h'F AND h'Es

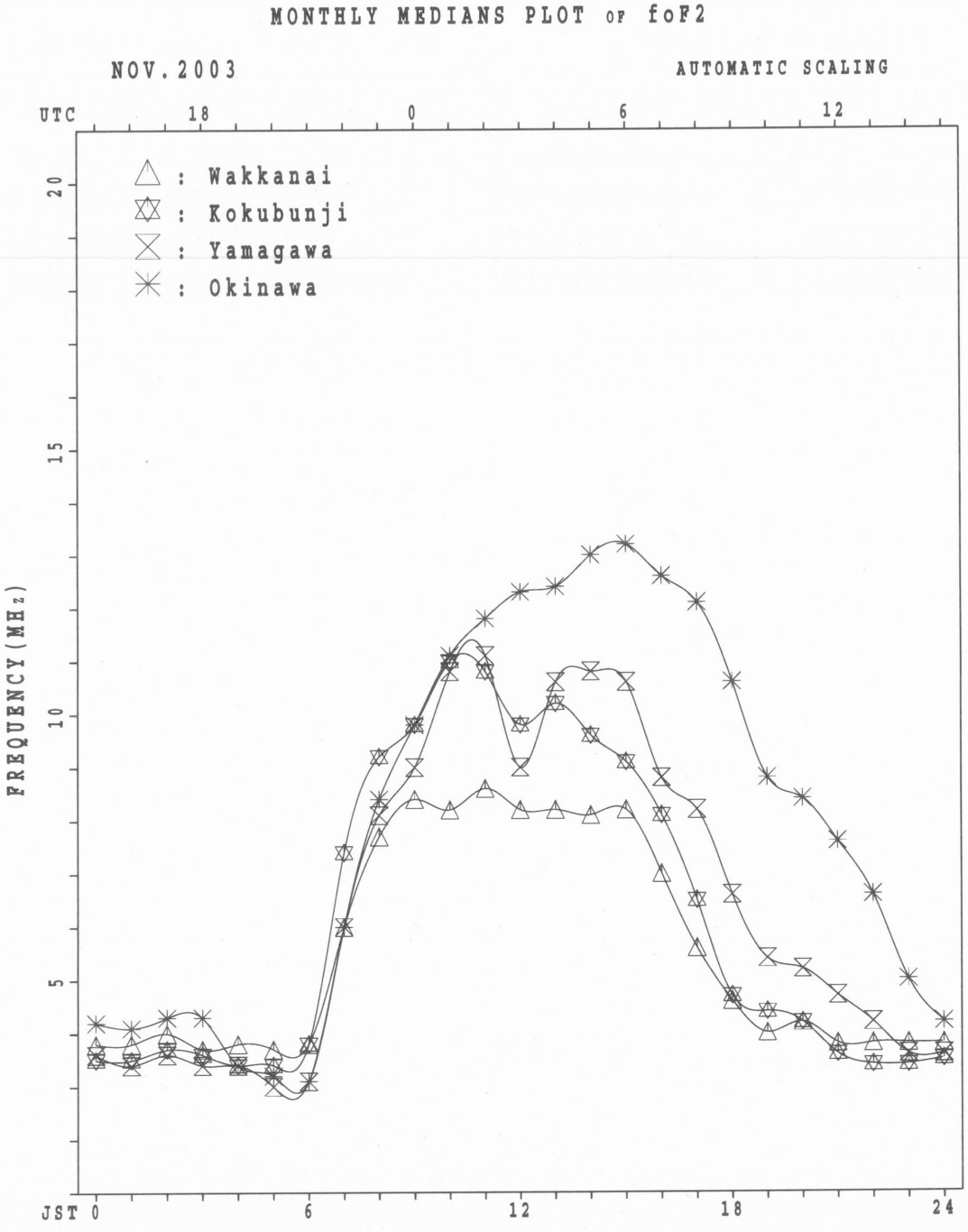
NOV.2003 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	3	2	1	2			8	27	27	29	7			20	29	29	30	28	21	13	12	7	7
MED	251	258	242	272	301			239	228	246	242	242			255	246	230	221	220	232	240	243	252	252
U Q	281	322	270	136	402			245	238	254	254	248			264	260	241	230	224	240	260	252	272	288
L Q	250	214	214	136	200			233	224	234	231	236			254	234	220	214	207	214	230	221	236	232

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	7	7	9	5	5	5	8	7	10	13	11	7	9	12	14	18	16	19	16	13	5	8	8
MED	95	97	93	95	103	91	97	100	107	109	109	113	113	103	106	103	102	97	93	95	95	95	95	93
U Q	102	101	95	128	105	118	105	118	119	113	113	119	115	114	107	105	105	103	95	97	102	116	99	96
L Q	89	95	89	92	91	90	91	92	95	103	105	105	107	100	103	99	99	95	91	89	90	94	92	88


MONTHLY MEDIANS PLOT OF foF2
NOV. 2003
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
✡ : Kokubunji
⨯ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

NOV. 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 84	X 83	X 56	X 43	X 33	X 31													X 73	O X 65	X 55	X 50	X 47	X 49
2	X 48	X 48	X 44	X 43	X 43	X 44													X 74	X 71	X 54	X 49	X 52	X 51
3	X 51	X 43	X 46	X 45	X 44	X 43													X 67	X 61	X 65	X 63	X 61	X 55
4	X 48	X 45	X 46	X 43	X 45	X 42												X 76	X 58	X 61	104	107	91	95
5	70	X 40	X 43	54	53	X 44												X 87	X 57	X 63	X 65	X 60	X 52	X 42
6	X 41	X 42	X 44	X 48	X 44	X 42													X 51	X 61	X 47	X 42	X 41	X 43
7	X 43	X 46	X 49	X 49	X 40	X 42												X 68	X 59	X 62	X 57	X 52	X 50	X 46
8	X 44	X 45	X 47	X 48	X 43	X 35												X 69	X 43	X 47	X 42	X 38	X 40	X 41
9	X 42	X 42	X 44	X 46	X 46	X 39												X 70	X 49	X 42	X 34	X 39	X 41	X 42
10	X 42	X 42	X 42	X 46	X 42	X 31												X 71	X 58	X 52	X 40	X 37	X 36	A
11	X 40	X 41	X 40	X 40	X 42	X 37												X 110	X 86	X 46	X 40	X 46	X 34	X 36
12	X 36	X 36	X 35	X 36	X 38	X 33												X 69	X 49	X 52	X 52	X 32	X 36	X 33
13	X 36	X 40	X 40	X 40	X 42	X 38												X 76	X 50	X 39	X 35	O X 38	O X 40	O X 38
14	X 41	X 44	X 42	X 40	X 38	X 31												X 102	X 56	X 46	X 44	X 44	X 42	X 42
15	X 43	X 39	X 42	X 46	X 42	X 38	X 45											X 61	X 46	X 52	X 70	X 41	O X 28	X 32
16	X 33	O X 35	X 37	X 38	X 38	X 39	X 40											X 64	X 45	X 40	X 38	X 34	X 39	X 36
17	X 39	X 40	X 40	X 39	X 40	X 37	X 42										X 78	X 57	X 53	X 40	X 40	A	X 42	A
18	X 35	X 40	X 36	X 40	X 34	X 33	X 39											X 62	X 46	X 48	X 47	X 44	X 47	X 42
19	X 39	X 41	X 41	X 40	X 34	X 34	X 42											X 64	X 47	X 49	X 43	X 44	X 42	X 41
20	X 40	X 42	X 41	X 42	X 40	X 40	X 48											X 62	X 55	X 60	X 73	X 70	X 68	104
21			A	A	X 30													X 89	X 72	X 54	X 54	X 45	X 46	A
22	A	X 47	X 41	X 38	X 35	X 33	X 36											X 57	X 53	X 46	X 43	X 39	X 31	X 34
23	X 36	X 36	X 36	X 36	X 38	X 36	X 47											X 73	X 55	X 39	X 41	X 38	X 39	X 44
24	X 44	X 46	X 48	X 46	X 44	X 37	X 43											X 72	X 46	X 46	X 45	X 40	X 36	X 35
25	X 40	X 39	X 42	X 42	X 44	X 37	X 40											X 76	X 58	X 47	X 44	X 42	X 42	X 45
26	X 44	X 45	X 44	X 43	X 41	X 41	X 43											X 64	X 50	X 45	X 46	X 40	X 40	X 40
27	X 41	X 44	X 46	X 43	X 42	X 43	X 46											X 73	X 51	X 53	X 46	X 38	X 37	X 36
28	X 40	X 42	X 42	X 42	X 43	X 39	X 42											X 60	X 50	X 55	X 48	X 37	X 39	X 40
29	X 41	X 41	X 43	X 44	X 46	X 38	X 40											X 71	X 61	X 46	X 43	X 41	X 40	X 38
30	X 40	X 40	X 41	X 40	X 40	X 39	X 44											X 73	X 58	X 49	X 39	X 39	X 37	X 39
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	29	30	29	15										1	26	30	30	30	29	30	27
MED	X 41	X 42	X 42	X 43	X 42	X 38	X 42										X 78	X 70	X 54	X 49	X 46	X 41	X 40	X 41
U Q	X 44	X 45	X 45	X 46	X 44	X 42	X 45											X 76	X 58	X 60	X 54	X 48	X 47	X 45
L Q	X 40	X 40	X 40	X 40	X 38	X 34	X 40											X 64	X 49	X 46	X 41	X 38	X 37	X 36

IONOSPHERIC DATA STATION Kokubunji

NOV. 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	78	77	50	37	27	25	51	93	131	133	132	130	110	116	113	113	111	89	67	59	49	44	41	43
2	42	42	38	37	37	38	56	86	113	124	113	120	113	128	114	114	112	92	68	65	48	43	45	45
3	45	37	40	39	38	36	57	74	91	108	128	128	124	122	110	108	105	86	61	55	59	57	55	49
4	42	39	40	37	39	36	53	74	97	110	116	117	121	120	110	103	102	69	52	55	F	F	F	F
5	F	34	37	F	F	38	51	86	107	104	102	116	120	98	100	105	98	81	50	56	59	54	46	35
6	34	36	38	42	38	36	44	80	100	98	115	110	113	108	103	97	89	58	45	55	41	36	35	37
7	37	40	43	43	34	36	45	74	94	104	125	102	95	112	107	92	80	62	53	56	51	46	44	40
8	38	39	41	42	36	29	41	81	100	94	92	94	98	102	104	78	76	62	37	41	35	32	34	35
9	36	36	38	40	40	33	46	64	75	81	103	101	104	107	106	99	95	64	43	36	28	33	35	36
10	36	36	36	40	36	26	37	82	97	77	98	123	126	112	98	88	74	64	52	46	34	30	30	A
11	34	35	34	34	36	31	39	78	88	79	102	146	122	103	82	76	93	104	80	40	34	40	28	30
12	30	30	29	30	32	27	42	73	101	R 100	129	127	88	104	101	93	82	63	43	46	46	26	30	27
13	30	34	34	34	36	32	36	69	82	98	92	115	107	115	104	93	82	70	44	33	29	S 32	S 34	S 32
14	35	S 37	36	34	S 27	25	33	84	95	104	121	123	118	101	91	91	99	96	50	40	38	38	36	35
15	37	33	36	40	36	32	38	77	98	83	75	88	99	106	82	82	84	55	40	46	64	35	22	25
16	27	29	31	32	32	33	34	68	80	98	114	104	98	R 85	75	70	81	57	39	34	31	28	27	30
17	33	34	34	33	34	31	36	63	102	108	121	118	94	79	87	82	72	51	47	34	34	A	36	A
18	29	34	30	33	28	27	33	71	88	105	118	109	92	88	80	74	75	55	40	42	41	38	41	36
19	33	35	35	34	28	28	36	86	108	96	90	108	82	82	76	91	83	58	41	43	37	38	36	35
20	34	36	35	36	34	34	42	77	85	100	93	97	94	92	89	89	84	56	49	54	67	64	62	F
21	23	23	A	A	24	28	34	56	68	75	91	82	60	74	68	59	78	83	66	48	Z 49	39	40	A
22	A	41	35	32	29	27	29	65	77	92	120	101	90	103	95	78	67	51	47	40	37	33	25	E C
23	30	30	30	30	32	30	41	60	88	100	110	100	106	98	104	98	78	66	49	33	35	32	33	37
24	38	40	42	40	38	31	37	70	102	99	110	100	93	98	95	99	89	66	40	40	39	34	30	29
25	34	33	36	36	38	31	34	70	81	89	116	107	92	105	110	92	79	70	52	41	38	36	36	39
26	38	39	38	37	35	35	37	71	89	104	106	107	88	92	92	80	74	58	44	39	40	34	34	34
27	35	38	40	37	36	37	40	76	92	95	116	115	94	97	86	86	81	67	45	46	40	32	31	30
28	34	36	36	36	37	33	36	80	92	109	96	104	99	106	98	95	89	54	44	49	42	32	33	34
29	35	35	37	38	40	32	34	65	80	90	96	97	91	94	98	91	77	65	55	40	37	35	34	32
30	34	34	35	34	34	33	38	78	85	94	95	102	97	94	94	94	89	67	52	43	33	33	30	33
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	29	28	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	28	29	24
MED	34	36	36	36	36	32	38	74	92	98	110	108	98	102	98	92	82	64	48	43	39	35	34	35
U Q	38	39	39	40	38	35	44	80	100	104	118	118	113	108	104	98	93	70	52	54	48	40	40	37
L Q	33	34	34	34	32	28	36	69	85	92	96	101	92	94	87	82	78	58	43	40	34	32	30	31

NOV. 2003 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

NOV. 2003 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B U R 264	A	B	A	B	B	B	R	A	A	B						
2								B A	B	B	B	B	B	B	B	A	A	B						
3								B U R 228	R	A	R	B	B	R	A	A	U R 232	B						
4								B U A 232	R	R	U R 360	R	B	U R 348	A	B	R							
5								B R	R	A	R	R	U R 356	A	A	U R 284	A							
6								B U R 232	R	A	U R 336	R	R	U R 340	U R 312	R	B	B						
7								B A	A	R	U R 324	R	R	U R 312	R	U R 264	A							
8								B 208	R	R	R	U R 328	328	A	C	U R 260	188							
9								B 196	268	A	R	U R 336	A	R	R	U R 256	U R 188							
10								B U A 180	A	A	A	A	A	A	A	U R 260	200							
11								B A	A	A	A	U R 340	U R 356	R	R	B	B							
12								B U R 200	R	A	A	A	U R 332	A	U R 288	A	U R 192							
13								B U R 200	272	R	R	R	U R 320	A	R	U R 252	A							
14								B A	A	E C	A	A	A	A	R	248	A							
15								U R 196	U R 252	U R 296	316	A	A	A	A	U A 252	B							
16								A	U R 244	R	A	A	A	A	A	A	A							
17								220	R	A	A	U R 332	U R 340	U R 316	A	A								
18								U R 200	A	A	U A 324	R	U R 348	R	A	U R 256	U A 188							
19								U R 216	A	A	A	A	A	A	A	A	A							
20								B	U R 272	U R 316	A	B	U R 340	R	U R 312	A	A							
21	J K 160	J K 104					B	J K 132 220	A	B	A	A	A	A	U R 280	R	A							
22								U A 208	276	A	A	A	A	A	A	A	U R 228							
23								U R 200	R	A	A	A	A	U A 328	A	B	A							
24								U R 220	B	B	B	R	R	R	A	R	A							
25								B	U A 256	A	U R 340	A	A	A	A	R	R							
26								U R 216	R	292	U R 336	340	R	R	U R 304	R	U R 204							
27								176	U R 264	U R 312	R	R	U R 352	U R 324	U A 296	A	B							
28								192	U R 260	A	U R 320	U R 324	A	A	A	A	B							
29								B	R	U A 296	328	A	A	A	A	R	B							
30								184	264	A	A	U R 356	U R 356	A	U R 316	U A 252	U R 196							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		1	1					1 21	10	5	9	7	10	6	7	10	9							
MED	J K 160	J K 104					J K 132	U R 208	U R 264	U R 296	U R 328	U R 336	U R 344	U R 326	U R 304	U R 256	U R 196							
U Q								U R 220	272	U R 314	U R 338	U R 340	U R 356	U R 340	U R 312	U R 260	U R 216							
L Q								196	U R 256	294	U 322	U R 328	U R 332	U R 316	U R 288	U A 252	U 188							

NOV. 2003 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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

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	J A 20	20	E B 16	J A 17	E B E 15	B E B 16	J A 17	G	32	37	38	E B 39	E B E 38	B E B 38	G 33	J A 68	J A 32	J A 24	J A 29	E B 16	J A 25	J A 19	E B 15	E B 15
2	E B E 14	B E B 15	E B 15	J A 24	J A 15	19	J A 18	26	E B 40	E B 40	E B 42	E B 42	E B E 44	B E B 42	B E B 37	33	30	J A 50	J A 54	J A 36	J A 18	E B 14	E B 20	E B 14
3	E B E 15	B E B 15	E B E 16	B E B 15	E B E 16	B E B 15	E B 15	G	G	36	G	E B 59	E B 44	G	J A 38	J A 36	J A 29	J A 19	J A 23	J A 25	J A 20	J A 18	E B 15	J A 23
4	J A 22	E B E 14	B E 16	E C 28	E B 16	E B 16	E B 15	27	G 22	G 27	G	G 26	E B 39	G 34	J A 44	E B 36	G 20	E B 14	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15
5	J A 20	J A J 23	A 26	J A J 26	A J A 20	E B 14	E B 20	G	G 24	36	G 34	G 33	G	36	34	G 23	J A J 24	A J 23	A E 29	C E 16	B E 15	B E 14	B E 16	B E 14
6	E B E 14	B E B 15	E B 16	E B 15	E B 14	E C 28	E B 15	G	G	37	G 26	G 28	G	G 27	G 28	G	E B 23	J A 43	E B 15	E B 14	J A 17	E B 15	E B 15	E B 15
7	E B E 16	B E B 15	E B 15	E B 16	B E B 17	E B 14	E B 22	25	34	G 28	G 30	G 30	G	G 24	G 19	J A 30	J A 28	23	20	E C 28	E B 15	J A 16	J A 24	A 29
8	J A 19	19	E C 28	E B 15	E B 15	B E B 15	J A 18	25	J A 29	G	G 23	G 26	35	33	E C 32	G	24	22	18	E B 15	E B 16	B E 15	B E 16	B E 15
9	E B E 15	B E B 15	E B 15	E B 16	B E B 14	E B 15	E B 14	22	30	38	G 28	G 29	37	G 28	G 22	G	G	E B 16	E B 16	E B 14	B J 16	A E 14	B E 16	C J 15	A 28	19
10	18	18	E B 15	E B 15	E B 15	B E B 15	21	22	J A 34	J A 36	J A 44	J A 55	J A 43	J A 37	33	G 24	27	J A 22	J A 22	21	21	E B 18	E B 15	B J 63	A
11	18	J A 17	20	E B 15	E B 14	B E B 15	E B E 14	B J 24	A J 34	A J 40	A J 41	A G 28	G 23	G 21	G E 28	B E 28	B E 21	B E 28	B J 19	A E 16	B J 27	A J 30	A J 28	A J 25	A
12	J A 27	J A J 24	A J 24	A E B 15	20	E B E 15	B E B 15	G	G 20	31	35	36	G J 25	A 49	G 25	33	G E 15	B E 14	B E 14	B J 20	A J 20	A E 15	B J 19	A
13	E B E 20	B E B 16	E B 16	E B E 15	B E B 12	E B 15	E B 16	G 18	G 26	G 29	G	G	G 27	38	G	G J 22	J A 27	J A 21	J A 22	A E 15	B J 19	A J 19	A J 23	A J 17	A
14	19	E B E 15	B E 14	B E B 16	E B E 15	B E B 14	J A 24	24	29	E C 42	J A 46	J A 41	J A 42	J A 42	G 24	G 21	J A 42	E B 15	J A 22	J A 32	J A 33	A J 22	A E 14	B J 23	A
15	J A 21	J A J 46	A J 34	A E B 16	E B E 16	B 19	E B 14	G	G	33	J A J 45	A 44	38	37	J A 43	29	E B 22	E B 15	E B 28	C J 23	A J 30	A E 16	B J 22	A J 21	A
16	J A 42	J A J 46	A J 40	A E B 15	J 31	A E C 28	J A 50	J A 42	G 22	G 25	34	J A 86	J A J 96	A J 100	A J 44	A J 62	A J 45	A J 42	A J 35	A J 44	A E 28	C J 27	A J 34	A J 44	A
17	J A 25	J A J 25	A J 52	A J A 23	18	E B 15	20	J A 29	G	J A 52	32	G 32	J A 38	G 28	J A 45	J A 45	J A 40	J A 24	J A 45	A J 25	E C 28	J A 58	J A 56	A 60	
18	J A 28	J A J 37	A J 24	A J A 18	J A 17	A E 15	B E B 14	G	J A 36	J A 44	34	G 29	G	G J 28	J A 34	G 24	22	J A 25	J A 32	A J 20	A E 15	B E 16	B J 27	A J 28	A
19	J A 20	J A 23	20	E C 28	J A 21	18	E B 15	G	29	J A 41	J A 71	A J 44	J A 48	A J 48	A J 47	A J 56	A J 58	A J 55	A J 37	A J 20	A J 22	A J 19	19	E B 15	
20	E B E 15	B E B 16	E B 15	B E 28	C E 14	B J 16	A E C 28	20	G	34	35	E B 39	G J 22	G 28	G J 26	A 32	26	E B 17	E B 15	E B 15	B E 15	B 15	19	20	J A 24
21	J K 32	J K J 21	A J 34	A J 43	A J 24	A J 29	K J 26	K 28	J A 42	E B 44	35	J A 45	A J 44	A J 42	A G 24	G	23	J A 20	22	19	18	J A 19	19	J A 54	
22	J A 86	J A J 49	A J 34	A J 22	A J 31	A J 23	A E B 15	24	30	J A 49	J A 44	36	J A 44	J A 75	J A 55	J A 52	G 20	22	18	E B 15	E B 15	J A 22	E B 15	B E C 28	
23	E B E 16	B E B 15	E B 15	B E 16	B E B 14	E B E 14	B E B 14	G	G	J A 37	J A 77	A J 63	A J 43	A J 40	A J 42	A E B 28	23	J A 31	A J 25	A J 21	A E 29	B J 14	A E 23	B 16	
24	19	J A E 17	B E 14	C E 28	B J 14	A E 29	B 14	G	E B 28	E B 33	E B 37	G	G	G	32	G 21	23	J A 27	A J 23	A J 24	A J 19	A J 22	A J 20	A E B 16	
25	J A 23	J A E 19	B 14	J A J 21	A E B 19	14	20	E B 22	28	J A 46	G	36	J A 44	37	34	G J 27	A 28	J A 29	J A 26	A J 44	A E 14	B J 28	A J 23	A J 24	A
26	J A 24	19	19	E B E 14	B E B 16	E B 15	E B 14	G 18	G 22	33	G 26	36	G	G	G	G	G	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 14
27	E B 15	J A J 20	A 19	19	19	19	E B 16	22	G 25	G 24	G 25	G 25	G 27	G	36	37	23	E B 14	E B 16	E B 15	E B 15	E B 16	E B 15	E B 15	
28	J A 43	J A J 20	A J 18	A E B 15	J 20	A E B 16	E B 15	24	G 24	34	G 30	G 28	J A 46	J A 44	J A 56	A J 34	A E 28	B E 16	B E 15	B E 28	C E 16	B E 15	B E 16	B E 15	
29	J A 24	E B J 16	A 20	A E 13	B E B 14	E B E 14	B E B 15	E B 16	G	35	38	38	37	35	J A 36	G 25	E B 21	20	J A J 20	A J 28	A J 28	A J 28	A J 24	A J 24	A
30	J A J 31	A J 24	A J 24	A J 18	A J 21	A E B 14	E B 15	23	28	34	J A 37	G 29	G J 31	A 39	G	29	G E 16	B E 16	B E 14	B	19	18	E B 16	E B 15	
31																									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
MED	J A 20	19	18	E B E 16	B E B 16	E B 15	E B 15	22	G	35	E G 34	34	E G E 38	G E 36	G E 34	G 28	24	22	21	E 20	18	18	E 19	J A 18	
U Q	J A J 25	A J 23	A J A 24	23	J A 20	19	20	24	30	J A 40	J A 41	A J 42	J A 44	A J 42	A J 42	A J 36	A J 28	A J 27	A J 28	A J 25	A J 25	A J 22	A J 23	A J 25	A
L Q	E B E 16	B E B 15	E B 15	B E 15	B E B 14	E B 15	E B 15	G	G 26	G 33	G 32	G 29	G	G 33	G 32	G 27	G 21	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	

NOV. 2003 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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	17	19	E B 16	E B 16	E B 15	E B 16	E B 16	G	31	35	37	E B 39	E B 38	E B 38	G 32	38	28	17	22	E B 16	21	17	E B 15	E B 15
2	E B 14	E B 15	E B 15	19	E B 13	E B 15	16	25	E B 40	E B 40	E B 42	E B 42	E B 44	E B 42	E B 37	32	29	40	46	28	E B 14	E B 14	E B 20	E B 14
3	E B 15	E B 15	E B 15	E B 16	E B 15	E B 16	E B 15	G	G	35	G	E B 59	E B 44	G	36	31	G 20	17	20	22	16	16	E B 15	E B 16
4	E B 16	E B 14	E B 16	E C 28	E B 16	E B 16	E B 15	26	G 22	G 27	G	G 26	E B 39	G 30	36	E B 36	G 20	E B 14	E B 15	E B 15	E B 16	E B 15	E B 15	E B 15
5	16	E B 15	E B 16	20	15	E B 14	E B 20	G	G 24	33	U Y 34	U Y 33	G	34	33	G 18	23	20	E C 29	E B 16	E B 15	E B 14	E B 16	E B 14
6	E B 14	E B 15	E B 16	E B 15	E B 14	E B 28	E B 15	G	G	34	U Y 26	G 28	G	G 27	G 28	G	E B 23	29	E B 15	E B 14	E B 16	E B 15	E B 15	E B 15
7	E B 16	E B 15	E B 15	E B 16	E B 17	E B 14	E B 22	24	29	G 28	G 30	G 30	G	G 24	G 18	G 20	22	E B 16	E B 15	E C 28	E B 15	E B 15	E B 15	E B 15
8	E B 16	E B 15	E C 28	E B 15	E B 15	E B 15	E B 15	22	24	G	G 23	U Y 26	34	32	E C 32	G	23	17	16	E B 15	E B 16	E B 15	E B 16	E B 15
9	E B 15	E B 15	E B 15	E B 16	E B 14	E B 15	E B 14	22	29	35	G 26	G 27	34	G 26	G 21	G	G	E B 16	E B 16	E B 14	14	E B 15	E C 28	E B 15
10	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	21	28	29	35	36	34	32	30	G 24	25	22	16	E B 15	E B 15	E B 18	E B 15	A A 63
11	E B 14	E B 15	E B 14	E B 15	E B 14	E B 15	E B 14	21	31	30	34	G 26	G 23	G 20	G	E B 28	E B 21	E B 28	E B 17	E B 16	19	18	17	19
12	18	16	18	E B 15	E B 16	E B 15	E B 15	G	G 18	30	33	34	G 22	33	G 21	32	G	E B 15	E B 14	E B 14	E B 16	E B 15	E B 15	E B 15
13	E B 20	E B 16	E B 16	E B 15	E B 12	E B 15	E B 14	U Y 18	G 25	U Y 29	G	G	G 27	32	G	G 20	23	E B 16	17	E B 15	16	E B 16	18	14
14	16	E B 15	E B 14	E B 16	E B 15	E B 14	E B 15	23	28	E C 42	31	32	33	30	G 23	G 20	22	E B 15	17	24	28	19	E B 14	17
15	16	32	21	E B 16	E B 16	E B 15	E B 14	G	G	32	41	42	36	35	36	28	E B 22	E B 15	E B 28	E C 16	E B 20	E B 16	17	15
16	19	21	18	E B 15	23	E C 28	23	29	G 21	G 23	31	33	54	76	32	31	28	28	33	19	E C 28	20	23	17
17	18	16	29	17	E B 14	E B E B 15	15	23	G	38	32	G 31	G 29	G 26	G 34	31	28	16	29	16	E C 28	A A 58	29	A A 60
18	17	17	E B 15	E B 16	E B 16	E B 15	E B 14	G	28	32	34	G 29	G	G 27	30	G 23	20	19	26	16	E B 15	E B 16	21	22
19	E B 16	E B 14	E B 15	E C 28	E B 15	E B 15	E B 15	G	28	32	34	37	42	33	32	40	46	36	31	17	17	E B 14	E B 15	E B 15
20	E B 15	E B 16	E B 15	E C 28	E B 14	E B 15	E C 28	18	G	33	33	E B 39	G 22	G 26	G 20	28	22	E B 17	E B 15	E B 15	E B 15	E B 16	E B 15	21
21	E B 15	E B 15	E B A 34	A A 43	19	20	19	28	38	E B 44	35	35	39	36	G 21	G	21	19	19	E B 15	16	E B 15	E B E B 15	A A 54
22	A A 86	33	20	17	25	20	E B 15	23	30	39	37	34	35	40	32	35	G 20	20	E B E B 16	E B 15	E B 15	17	E B 15	E B C 28
23	E B 16	E B 15	E B 15	E B 16	E B 14	E B 14	E B 14	G	G	31	56	42	34	G 30	32	E B 28	22	25	20	18	25	E B 14	17	E B 16
24	E B 15	E B 15	E B 14	E B C 28	E B 14	E B 15	E B 14	G	E B 28	E B 33	E B 37	G	G	G	31	G 19	21	19	19	16	18	18	E B 16	E B 16
25	E B 14	E B 16	E B 14	16	E B 14	E B 14	E B 15	E B 22	U Y 28	34	G	35	37	37	33	G 26	20	E B 16	20	20	E B 14	17	E B 15	16
26	15	16	E B 16	E B 14	E B 16	E B 15	E B 14	U Y 18	G 20	32	G 23	35	G	G	G	G	G	E B 14	E B 15	E B 15	E B 15	15	E B 15	E B 14
27	E B 15	E B 15	E B 16	E B 15	E B 14	E B 15	16	22	G 21	G 22	G 25	G 25	G 26	G	34	33	22	E B 14	E B 16	E B 15	E B 15	E B 16	E B 15	E B 15
28	22	E B 15	16	E B 15	E B 15	E B 16	E B 15	24	G 20	32	G 29	G 28	40	36	39	30	E B 28	E B 16	E B 15	E C 28	E B 16	E B 15	E B 16	E B 15
29	E B 15	E B 16	16	E B 13	E B 14	E B 14	E B 15	E B 16	G	34	35	36	35	33	31	G E B 23	21	18	18	24	27	E B 15	20	18
30	19	18	18	E B 15	E B 15	E B 14	E B 15	22	28	32	35	G 29	G 30	33	G	26	G	E B 16	E B 16	E B 14	E B 15	E B 15	E B 16	E B 15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 16	E B 15	E B 16	E B 16	E B 15	E B 15	E B 15	20	G	32	32	E G 33	E G 34	E G 32	G	E G 27	22	17	16	E B 16	E B 16	E B 16	E B 16	E B 15
U Q	17	16	18	17	E B 16	E 16	E 16	23	28	35	35	36	38	35	33	31	23	20	22	19	19	17	17	18
L Q	E B 15	E B 15	E B 15	E B 15	E B 14	E B 15	E B 14	G	G 24	G 30	G	G 29	G	G 30	G 30	G 24	G 20	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15

NOV. 2003 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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 \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	13	16	16	15	16	16	16	17	33	28	39	38	38	21	16	17	14	14	16	14	14	15	15
2	14	15	15	13	13	15	13	17	40	40	42	42	44	42	37	20	15	16	15	15	14	14	20	14
3	15	15	15	16	15	16	15	14	20	20	31	59	44	31	22	18	16	15	14	14	14	13	15	16
4	16	14	16	E C 28	16	16	15	15	18	19	24	20	39	24	22	36	17	14	15	15	16	15	15	15
5	14	14	15	14	12	14	20	22	20	22	28	22	29	19	15	15	14	16	E C 29	16	15	14	16	14
6	14	15	16	15	14	E C 28	15	14	18	20	19	18	27	17	18	19	23	16	15	14	16	15	15	15
7	16	15	15	16	17	14	22	14	13	16	21	19	22	17	14	14	16	16	15	E C 28	15	15	15	15
8	16	15	E C 28	15	15	15	15	13	13	19	16	17	17	15	E C 32	16	14	14	13	15	16	15	16	15
9	15	15	15	16	14	15	14	14	15	15	16	18	18	15	14	17	16	16	16	14	13	15	E C 28	15
10	15	15	15	15	15	15	15	14	16	15	18	22	17	17	14	15	17	14	13	15	15	18	15	15
11	14	15	14	15	14	15	14	13	13	14	16	19	15	15	20	28	21	28	14	16	14	14	16	14
12	16	15	13	15	16	15	15	15	14	13	26	14	14	14	14	14	14	15	14	14	16	15	15	15
13	20	16	16	15	12	15	14	14	15	15	20	20	19	16	20	14	14	16	15	15	14	16	15	14
14	13	15	14	16	15	14	14	14	14	E C 42	18	15	18	16	15	14	15	15	15	14	16	15	14	14
15	13	14	12	16	16	15	14	15	15	18	21	20	20	20	20	18	22	15	E C 28	16	14	16	14	14
16	14	16	14	15	13	E C 28	15	16	15	16	28	13	18	24	28	16	16	16	15	14	E C 28	14	16	14
17	13	14	16	14	14	15	15	16	16	16	17	21	18	21	17	16	15	14	15	15	E C 28	14	15	15
18	14	15	15	16	15	15	14	14	16	27	20	19	27	20	19	17	16	15	15	14	15	16	15	15
19	16	14	15	E C 28	15	15	15	15	16	27	18	18	16	18	17	14	16	13	14	14	14	14	15	15
20	15	16	15	E C 28	14	15	E C 28	16	17	16	16	39	16	16	14	15	15	17	15	15	15	16	15	14
21	15	15	13	13	15	15	14	14	15	44	16	22	22	20	16	20	16	14	14	15	14	15	15	14
22	14	14	14	12	14	14	15	14	15	19	21	17	19	25	19	16	18	14	16	15	15	14	15	E C 28
23	16	15	15	16	14	14	14	15	16	20	18	21	20	18	18	28	15	15	15	15	14	14	14	16
24	15	15	14	E C 28	14	14	14	16	28	33	37	24	28	21	20	15	16	15	15	12	14	14	16	16
25	14	16	14	15	14	14	15	22	17	19	22	23	28	23	19	17	15	16	16	16	14	14	15	14
26	13	12	16	14	16	15	14	14	16	16	15	26	21	21	19	16	15	14	15	15	15	15	15	14
27	15	15	16	15	14	15	16	15	12	15	17	18	20	22	21	19	18	14	16	15	15	16	15	15
28	14	15	14	15	15	16	15	15	14	20	21	23	16	20	14	16	28	16	15	E C 28	16	15	16	15
29	15	16	14	13	14	14	15	16	17	16	13	16	14	23	20	19	21	15	14	14	14	15	15	14
30	15	15	14	15	15	14	15	15	14	14	15	18	16	15	15	17	16	16	16	14	15	15	16	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	15	15	14	15	15	15	16	18	20	20	20	20	18	16	16	15	15	15	14	15	15	15
U Q	16	15	16	16	15	15	15	16	17	22	24	23	27	23	20	19	17	16	15	15	16	15	16	15
L Q	14	14	14	15	14	14	14	14	14	16	16	18	17	16	15	15	15	14	14	14	14	14	15	14

IONOSPHERIC DATA STATION Kokubunji

NOV. 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

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	298	328	316	333	276	267	315	342	339	335	334	337	319	320	312	321	338	333	315	313	324	300	286	280
2	292	315	314	291	294	309	357	339	352	342	337	319	308	320	312	318	325	332	334	328	313	279	285	299
3	301	271	285	280	293	298	344	371	343	336	326	308	308	310	318	316	328	331	323	304	291	313	322	323
4	312	302	290	296	318	296	332	354	345	340	340	310	313	323	330	339	345	355	273	261	F	F	F	F
5	F	271	269	F	F	313	332	358	358	336	336	324	337	342	327	339	349	361	296	279	327	344	356	307
6	298	298	298	322	354	290	317	347	343	340	334	337	333	317	339	354	367	352	315	332	335	321	296	295
7	288	290	313	326	288	306	323	345	344	323	343	347	313	334	344	349	349	334	311	315	320	325	321	293
8	295	289	301	317	349	303	320	358	370	367	317	342	332	336	355	359	355	365	347	335	334	295	289	280
9	297	298	289	303	356	263	334	369	353	316	340	340	326	321	338	353	355	371	348	370	274	285	315	303
10	272	282	288	321	342	280	308	359	392	345	319	327	341	334	335	349	357	349	348	370	342	295	308	A
11	289	292	317	297	318	283	317	349	367	334	303	338	345	349	361	327	330	348	378	367	263	313	275	297
12	276	278	267	288	296	276	334	346	330	R 323	336	360	329	345	348	357	367	355	315	322	371	307	316	287
13	307	302	284	296	341	336	316	362	358	351	340	345	325	345	344	362	366	357	338	337	336	S 284	S 293	S 282
14	250	S 323	312	359	S 364	328	306	349	360	318	336	337	361	342	359	328	338	357	353	297	326	324	295	303
15	315	312	299	325	349	298	307	342	366	356	355	348	335	348	346	351	355	347	307	304	358	410	265	271
16	284	284	317	307	283	300	324	349	346	319	325	337	336	R 357	364	345	362	355	325	295	339	310	301	255
17	307	298	276	299	306	293	294	338	336	331	334	349	354	338	337	366	360	343	343	295	328	A	A 324	A
18	290	319	291	314	287	292	312	349	345	340	331	353	351	355	347	349	365	352	325	322	321	297	314	307
19	287	305	305	335	304	294	299	366	356	372	347	359	366	367	337	347	351	359	321	328	315	314	302	309
20	285	312	312	307	308	298	328	369	366	357	340	370	346	339	357	344	358	347	312	303	263	281	262	F
21	382	242	A	A	212	253	246	301	260	334	301	346	358	298	316	315	298	316	327	313	Z 300	290	276	A
22	A	255	299	314	304	340	314	353	341	332	346	344	319	329	342	349	350	317	333	318	322	335	292	E C
23	280	278	264	275	313	278	332	361	333	348	331	320	334	317	310	347	327	340	339	340	318	322	284	284
24	277	280	282	325	313	294	301	355	350	345	354	345	325	321	322	332	357	360	326	316	321	317	300	301
25	276	265	289	282	331	302	311	339	358	328	354	366	304	310	331	345	341	355	339	330	309	293	284	289
26	283	300	299	300	281	305	312	353	353	346	352	363	323	310	337	334	337	339	322	315	335	316	294	289
27	287	287	309	330	311	287	320	369	358	338	348	345	332	338	333	337	345	350	326	353	325	339	304	310
28	278	283	293	298	307	292	308	354	346	357	344	350	328	322	306	336	341	360	308	339	339	268	274	273
29	284	290	298	318	340	293	316	348	349	359	341	330	329	328	339	341	324	335	339	315	320	282	288	296
30	281	287	307	297	297	278	298	361	360	360	339	353	336	335	325	341	343	343	333	338	318	302	285	260
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	29	28	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	28	29	24
MED	288	290	298	307	308	294	316	353	351	340	338	344	332	334	337	344	349	350	326	320	322	308	294	294
U Q	298	302	310	324	340	303	328	361	358	351	344	350	341	342	346	349	357	357	339	337	335	322	311	303
L Q	280	280	286	296	294	283	308	346	343	332	331	337	323	320	325	334	338	339	315	304	314	292	284	281

NOV. 2003 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

NOV. 2003 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV.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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1											246													
2													272											
3																								
4												262												
5												256												
6											248													
7												232	280	254										
8												240	244	248										
9												230	244	266										
10											272	258	248	248										
11											264	248												
12											246			244										
13														238										
14											246	246	222	242	222									
15											220	234	268											
16										264	244	230	260	E A 272	230									
17									254	254	246	228	230											
18										250	252	238		242										
19											234	236												
20										234	222		240											
21									374		310	260	244											
22										266	242	224	264	250										
23											248	224	254		274									
24											238		266											
25											246	240	246											
26																								
27											246													
28														258										
29																								
30												240	248											
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									2	5	18	18	16	11	3									
MED									314	254	246	239	248	248	230									
U Q										265	248	248	265	258	274									
L Q										242	242	230	244	242	222									

NOV.2003 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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

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	262	206	204	208	E B 296	E B 328	250	218	218	216	212	224	214	218	224	226	226	202	222	224	220	E A 246	E B 276	E B 282
2	E B 278	246	246	E A 290	264	250	220	218	216	216	212	218	216	226	220	228	228	216	232	230	204	E B 260	E B 304	252
3	240	234	E B 294	E B 274	244	248	228	202	212	220	220	228	232	232	230	224	226	202	216	E A 252	E A 258	244	230	226
4	230	236	254	E C 300	246	252	236	208	220	222	226	208	206	216	228	230	220	194	E B 262	E B 330	Q 316	Q 224	Q 238	Q 220
5	222	E B 326	E B 334	E A 326	252	244	220	214	216	218	218	214	228	220	218	224	218	212	E C 252	E B 274	228	214	212	218
6	E B 274	E B 288	E B 288	246	218	E C 322	238	218	218	218	208	214	210	214	220	220	208	208	208	232	214	228	252	E B 280
7	E B 292	E B 278	252	228	230	E B 262	E B 242	226	224	214	208	204	H 190	206	228	218	206	210	224	E C 246	222	218	244	252
8	E B 272	E B 278	E C 286	240	208	E B 258	244	220	222	224	212	204	196	204	H 206	210	216	196	202	224	216	236	E B 288	E B 304
9	E B 280	262	E B 298	266	222	E B 298	226	198	202	210	228	202	196	216	218	216	210	190	202	196	E A 246	E B 290	E C 290	E B 280
10	E B 308	E B 316	E B 294	238	204	E B 308	E B 260	216	206	210	200	218	214	212	214	212	202	210	216	198	206	E B 328	250	A
11	E B 276	E B 296	238	E B 284	246	E B 320	246	216	202	214	210	216	208	208	214	214	226	212	198	204	E A 332	236	E A 324	E A 330
12	E A 336	E A 314	E A 374	E B 322	E B 298	E B 332	230	208	220	218	202	208	204	198	226	222	206	204	212	242	206	226	E B 256	248
13	E B 280	E B 276	E B 288	270	220	226	258	204	212	218	212	220	204	212	222	214	210	198	200	206	E A 248	E B 310	248	E B 332
14	E A 340	248	270	204	E B 300	E B 284	E B 258	234	214	224	204	198	H 182	H 190	200	H 214	218	200	198	E A 260	E A 254	250	E B 270	E A 258
15	250	E A 304	E A 292	242	224	E B 274	258	220	210	212	A	A	216	224	214	216	212	198	E C 296	E B 284	226	192	E A 396	E A 364
16	E A 364	E A 368	E A 288	E B 276	E A 338	E C 312	E A 266	210	218	220	210	200	A	A	208	E A 230	220	214	E A 322	E A 282	E C 252	E A 292	E A 390	E A 378
17	E A 266	E A 304	E A 396	E A 300	E B 266	E B 270	E B 274	220	224	E A 232	210	200	198	204	220	214	214	200	234	E A 252	E C 258	A	E A 302	A
18	E A 294	262	E B 302	246	E B 272	E B 306	272	224	222	214	214	206	212	214	212	212	214	206	E A 270	E A 242	220	E B 252	E A 260	E A 268
19	E B 292	E B 280	250	E C 266	E B 290	E B 308	E B 272	220	214	218	206	208	210	204	210	242	218	212	E A 266	238	218	250	E B 264	262
20	E B 282	E B 266	250	E C 308	248	E B 280	256	H 206	210	204	H 190	212	202	216	218	222	214	200	226	244	E B 298	264	E B 294	214
21	214	E B 520	A	A	E A 552	K 454	E A 412	E A 310	E A 300	248	E A 240	228	A	220	224	230	264	230	212	214	234	234	E B 278	A
22	A	E A 422	E A 308	E A 270	E A 348	E A 254	E B 270	230	222	234	218	200	210	214	214	216	206	208	218	226	224	224	E B 278	E C 378
23	E B 316	E B 310	E B 324	E B 334	266	E B 318	244	202	238	224	A	A	H 188	212	226	218	214	212	214	214	E A 274	242	E A 316	E B 306
24	E B 312	E B 310	E B 280	E C 256	220	E A 246	248	218	218	208	H 180	208	196	224	216	222	212	208	214	236	238	236	E B 260	E B 282
25	E B 302	E B 344	E B 306	E A 276	240	232	228	H 206	212	214	222	202	214	226	224	218	216	204	218	E A 242	238	E A 268	E B 284	E A 290
26	E A 292	264	270	256	256	242	254	224	226	218	214	214	H 196	208	H 184	212	214	208	214	222	230	218	E B 282	E B 278
27	E B 292	E B 282	E B 272	240	242	258	226	214	212	196	208	224	210	218	214	218	216	208	220	216	222	208	E B 258	E B 262
28	E A 344	E B 304	E A 288	262	266	E B 268	240	228	216	216	206	H 196	218	206	218	228	216	198	206	232	204	E B 240	E B 286	E B 316
29	E B 296	E B 294	E A 276	258	232	E B 276	228	208	214	220	216	212	218	218	224	220	204	204	210	E A 244	E A 268	E B 258	E A 296	E A 282
30	E A 290	E A 306	274	E B 276	264	E B 310	E B 270	218	210	220	214	194	200	220	218	224	214	204	208	214	216	262	E B 280	E B 342
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	29	30	30	30	30	30	30	28	28	28	29	30	30	30	30	30	30	30	29	30	27
MED	E B 290	E B 291	E 288	E 266	U 236	E B 275	238	218	216	218	212	208	209	214	218	218	214	205	214	U 222	222	233	E 278	E 280
U Q	E 305	E B 310	E B 300	E B 287	E B 272	E B 310	E B 260	220	222	220	217	217	214	220	224	224	218	210	E 232	E 246	E A 254	E 261	E A 294	E A 316
L Q	269	264	262	244	230	252	230	208	212	214	207	202	197	207	214	214	210	200	208	216	218	225	256	252

NOV. 2003 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	112	114	B	A	B	B	B	114	A	A	B						
2							B	112	B	B	B	B	B	B	B	114	104	B						
3							B	120	110	110	116	B	B	120	A	A	112	B						
4							B	122	122	120	120	114	B	118	A	B	116							
5							B	116	116	112	A	108	118	112	112	112	A							
6							B	114	112	A	114	112	114	114	116	112	B	B						
7							B	A	A	118	118	114	112	114	110	112	A							
8							B	114	116	108	110	116	118	110	C	118	114							
9							B	118	114	112	120	118	110	110	110	110	114							
10							B	114	A	A	A	A	A	A	A	122	112							
11							B	A	A	A	A	114	112	114	112	B	B							
12							B	118	116	A	A	A	114	A	112	A	118							
13							B	124	116	A	110	110	114	A	112	114	A							
14							B	A	112	E	C	A	A	A	A	110	A							
15								112	114	114	116	114	120	120	116	116	B							
16								A	118	118	118	A	A	A	A	A	A							
17								112	116	A	A	120	120	120	A	A								
18								116	A	A	118	116	114	118	A	118	110							
19								120	112	A	A	A	A	A	A	A	A							
20								B	112	112	110	B	112	114	116	A	A							
21	K 160	190				B	K 134	112	A	B	A	A	A	A	112	110	A							
22								116	120	116	A	A	A	A	A	A	110							
23								126	114	A	A	A	A	112	A	B	A							
24								126	B	B	B	114	112	110	116	114	A							
25								B	114	A	116	A	A	A	A	118	120							
26								120	116	114	116	114	114	112	110	110	124							
27								114	114	116	118	116	118	114	112	A	B							
28								124	118	A	118	114	A	A	A	A	B							
29								B	110	112	120	116	114	116	A	122	B							
30								120	120	114	112	116	120	A	110	114	124							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	1	1					1	23	23	14	17	17	17	17	16	17	12							
MED	K 160	190					K 134	116	114	114	116	114	114	114	112	114	114							
U Q								120	116	116	118	116	118	118	116	118	119							
L Q								114	112	112	113	114	112	112	111	111	111							

NOV. 2003 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

NOV. 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	88	90	B	96	B	B	96	G	118	120	110	B	B	B	94	94	94	98	90	B	100	98	B	B
2	B	B	B	94	94	96	98	116	B	B	B	B	B	B	B	118	110	96	96	98	100	B	B	B
3	B	B	B	B	B	B	B	G	G	114	G	B	B	G	108	106	108	116	106	102	104	104	B	102
4	100	B	B	C	B	B	B	130	104	108	G	100	B	104	104	B	102	B	B	B	B	B	B	B
5	94	98	94	90	92	B	B	G	104	116	98	100	G	108	116	90	88	86	C	B	B	B	B	B
6	B	B	B	B	B	C	B	G	G	108	106	102	G	102	106	G	B	98	B	B	102	B	B	B
7	B	B	B	B	B	B	B	150	104	104	104	104	G	98	96	94	88	90	86	C	B	94	96	96
8	96	90	C	B	B	B	132	130	102	G	102	102	124	110	C	G	174	88	88	B	B	B	B	B
9	B	B	B	B	B	B	B	162	132	112	104	100	124	88	92	G	G	B	B	B	100	B	C	100
10	100	98	B	B	B	B	112	112	104	102	100	98	100	106	108	108	154	106	106	102	98	B	B	96
11	98	92	92	B	B	B	B	100	102	102	100	98	96	94	G	B	B	B	98	B	104	104	102	102
12	102	100	96	B	96	B	B	G	100	100	98	92	94	94	94	94	G	B	B	B	100	96	B	96
13	B	B	B	B	B	B	152	106	98	102	G	G	98	100	G	94	94	94	98	B	94	94	94	98
14	96	B	B	B	B	B	108	106	112	C	106	100	98	96	102	102	98	B	102	98	96	98	B	100
15	96	96	96	B	B	100	B	G	G	156	134	120	124	132	116	124	B	B	C	100	98	B	98	98
16	106	100	100	B	102	C	104	100	102	98	96	104	104	100	102	102	102	102	100	100	C	98	92	102
17	102	100	98	96	96	B	98	94	G	104	106	102	98	102	98	98	96	98	100	100	C	102	98	94
18	100	104	98	102	102	B	B	G	108	108	114	104	G	104	98	100	150	86	102	106	B	B	100	96
19	96	96	96	C	94	102	B	G	112	102	100	98	98	98	92	92	90	88	90	96	98	96	96	B
20	B	B	B	C	B	96	C	118	G	118	108	B	90	90	96	96	104	B	B	B	B	102	106	104
21	K 158	K 182	106	108	104	146	K 142	132	98	B	100	102	106	104	92	G	90	90	92	90	90	88	90	98
22	92	94	94	96	92	92	B	132	122	116	104	106	104	98	94	90	94	90	94	B	B	94	B	C
23	B	B	B	B	B	B	B	G	G	104	100	98	96	96	94	B	90	86	86	98	98	B	94	B
24	96	94	B	C	B	96	B	G	B	B	B	G	G	G	124	90	90	92	94	92	90	92	92	B
25	106	102	B	102	108	B	102	B	126	108	G	104	106	106	106	102	104	102	102	102	B	96	98	96
26	96	88	88	B	B	B	B	106	104	162	94	146	G	G	G	G	G	B	B	B	B	B	B	B
27	B	98	96	94	92	100	B	150	104	102	102	102	100	G	124	94	110	B	B	B	B	B	B	B
28	94	92	92	B	92	B	B	160	102	96	96	96	94	92	90	92	B	B	B	C	B	B	B	B
29	98	B	94	B	B	B	B	B	G	162	142	130	120	114	104	102	B	102	100	100	96	96	96	92
30	92	92	92	90	92	B	B	152	154	122	116	108	104	106	G	114	G	B	B	B	96	96	B	B
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	19	15	10	13	8	10	18	21	25	24	24	20	24	24	22	21	19	19	14	17	17	14	16
MED	96	96	96	96	94	98	106	124	104	108	103	102	100	101	100	97	98	94	98	100	98	96	96	98
U Q	101	100	98	102	102	101	132	150	115	117	107	104	106	106	107	102	109	102	102	102	100	100	98	101
L Q	95	92	92	94	92	96	98	106	102	102	100	99	97	96	94	94	90	88	90	98	96	94	94	96

IONOSPHERIC DATA STATION Kokubunji

NOV. 2003 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

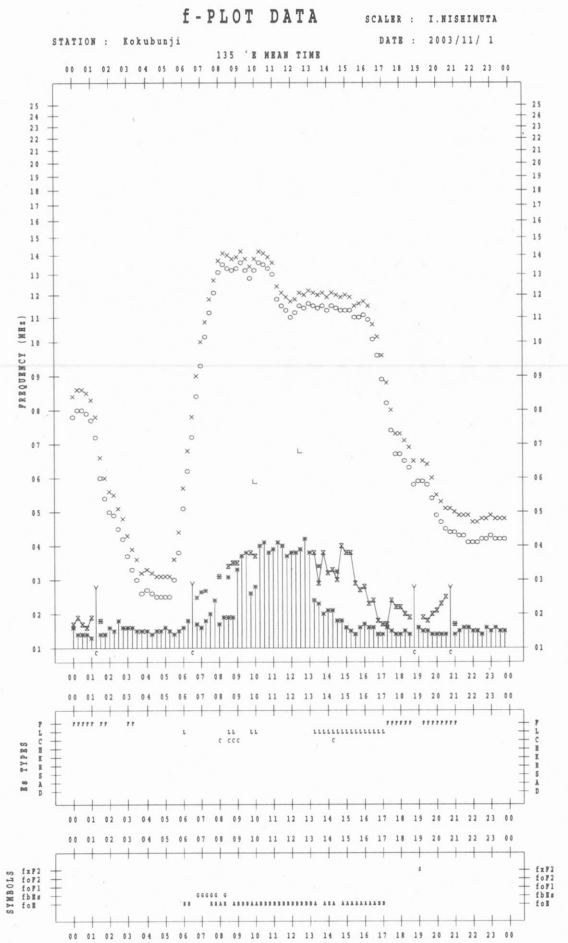
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

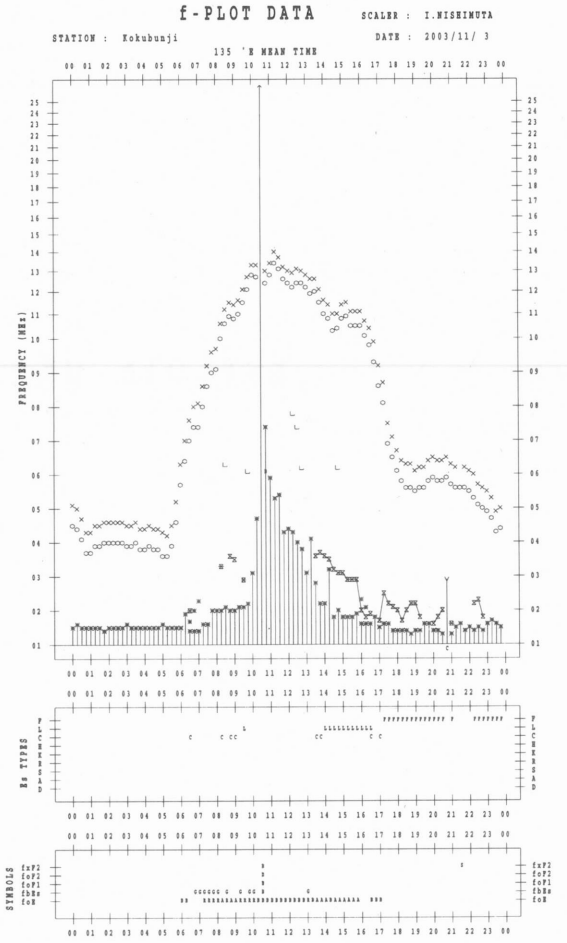
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2		F1			L1		C1	C1	L1				L1	L2	L1	L1	F2		F3	F2		
2				F3	F1	F1	L2	C1								C1	CL11	L4	F4	F3	F1			
3										C1					L1	L1	L1	C1	F2	F3	F1	F1		F1
4	F1							C1	L1	L1		L1		L1	L1		L1							
5	F3	F1	F1	F3	F1				L1	C1	L1	L1		CL11	CL11	L1	L2	F2						
6										L1	L1	L1		L1	L1			L2			F1			
7								HL11	L1	L1	L1	L1		L1	L1	L2	L2	F1	F1			F2	F2	F2
8	F1	F1					C1	C1	L2		L1	L1	CL11	CL11			H1	F2	F1					
9								H1	H1	C1	L1	L1	CL11	L2	L1						F1			F2
10	F1	F1					C1	C1	L2	L1	L2	L2	L1	L1	L1	L1	H1	F2	F1	F1	F1			F4
11	F1	F1	F2					L2	L2	L2	L2	L1	L1	L2					F1		F2	F2	F1	F3
12	F2	F2	F3		F2				L1	L2	L1	L2	L2	L2	L2	L1					F1	F1		F1
13							H1	L1	L1	L1			L1	L2		L2	L2	F1	F1		F2	F1	F2	F1
14	F1						L2	L2	C2		L1	L1	L2	L2	L1	L2	L2		F1	F2	F2	F1		F2
15	F2	F3	F2			F1				H1	H1	CL11	CL11	CL11	C2	C1				F1	F2		F2	F2
16	F2	F6	F3		F3		F3	L3	L2	L1	L1	L2	L2	L3	L2	L2	L2	F3	F4	F2		F3	F4	F3
17	F2	F2	F4	F2	F1		F2	L2		L2	L2	L1	L2	L1	L3	L3	L2	F1	F2	F2		F3	F3	F3
18	F2	F2	F2	F1	F1				L2	L1	CL11	L1		L1	L2	L2	HL11	F2	F3	F1			F3	F3
19	F2	F2	F1		F1	F1			CL11	L1	L2	L2	L2	L2	L2	L4	L3	F3	F2	F2	F3	F2	F1	
20						F1		C1		CL11	CL12		L1	L1	L1	L2	L1					F1	F1	F3
21	K1	K1	F7	F5	F4	K3	K2	H2	L3		L2	L2	L2	L2	L1		L1	F2	F1	F1	F1	F2	F1	F4
22	F4	F3	F3	F3	F3	F2		C1	CL21	CL21	L2	L1	L1	L2	L2	L2	L1	F1	F1			F1		
23										L1	L2	L2	L1	L1	L1		L2	F4	F2	F2	F4		F2	
24	F1	F1				F1									CL11	L1	L1	F2	F2	F1	F1	F2	F2	
25	F1	F1		F2	F1		F1		C1	L1		L1	L1	L1	L1	L1	L1	F1	F2	F2		F2	F2	F2
26	F2	F1	F1					L1	L1	HL11	L1	H1												
27		F1	F1	F1	F1	F1		H1	L1	L1	L1	L1	L1		C1	L1	C1							
28	F2	F1	F2		F1			H1	L1	L1	L1	L1	L2	L2	L2	L1								
29	F2		F1							HL11	HL11	CL11	CL11	C1	L1	L1		F1	F1	F2	F3	F2	F3	F2
30	F2	F2	F3	F2	F1			H2	H1	CL11	CL11	L1	L1	L1		C1					F1	F1		
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

NOV. 2003 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/ 1
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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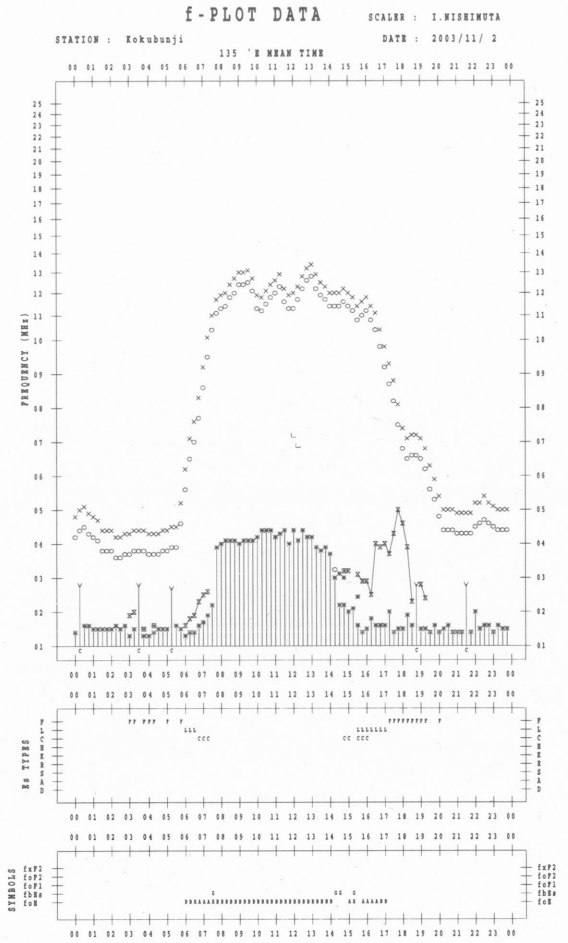
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/ 3
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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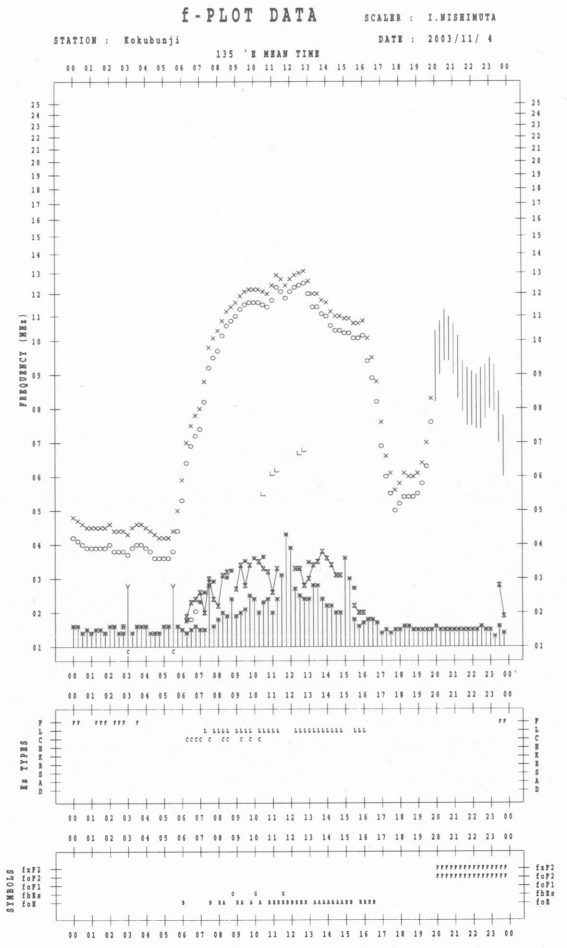
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/ 2
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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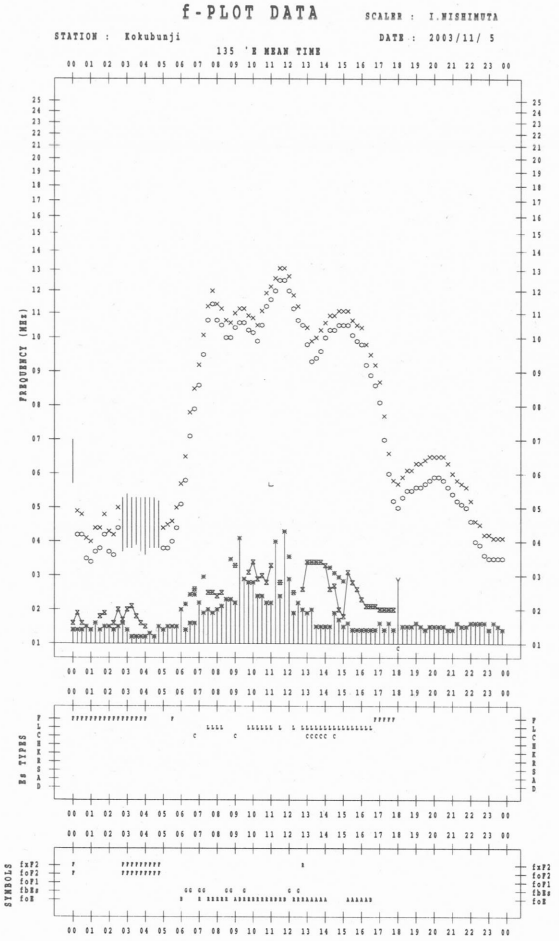
STATION : Kokubunji
DATE : 2003/11/ 4
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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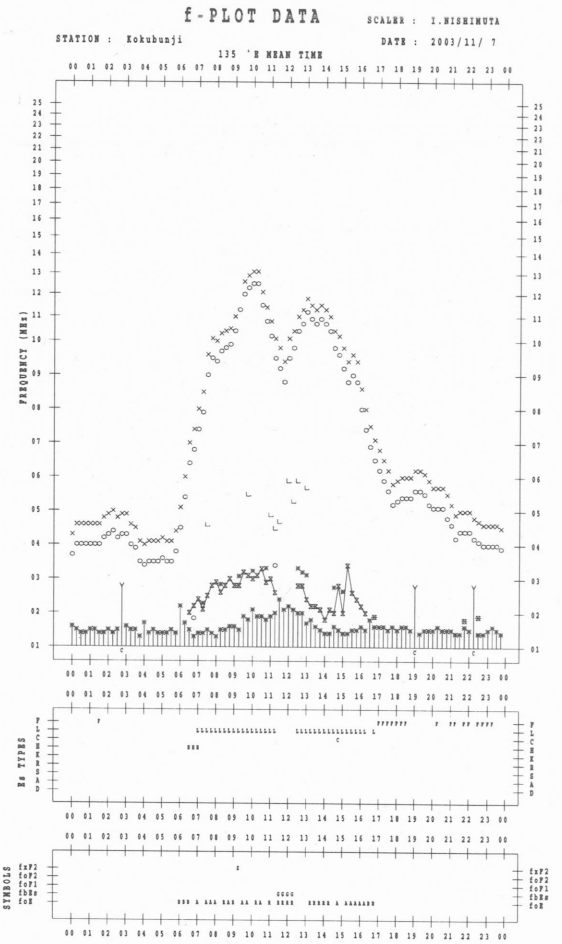
STATION : Kokubunji
DATE : 2003/11/ 5
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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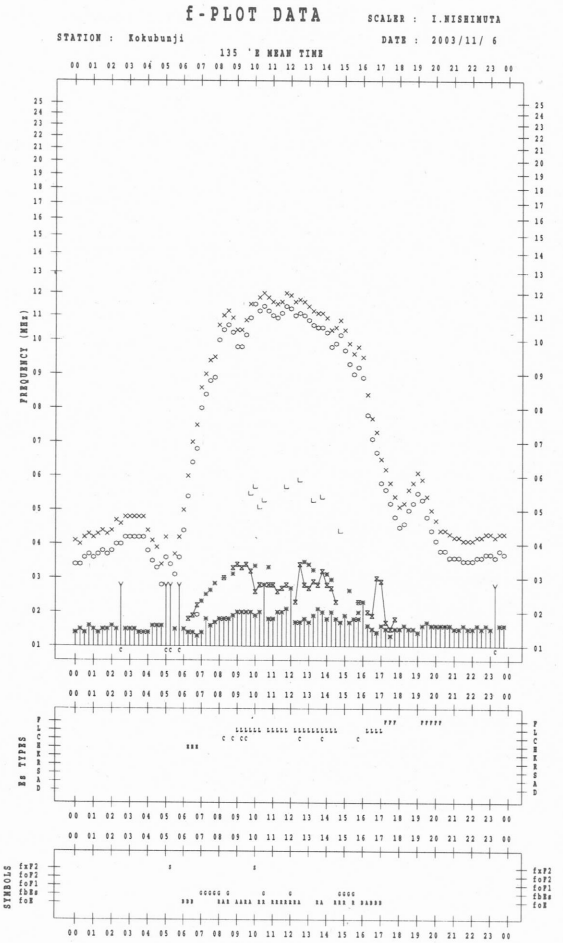
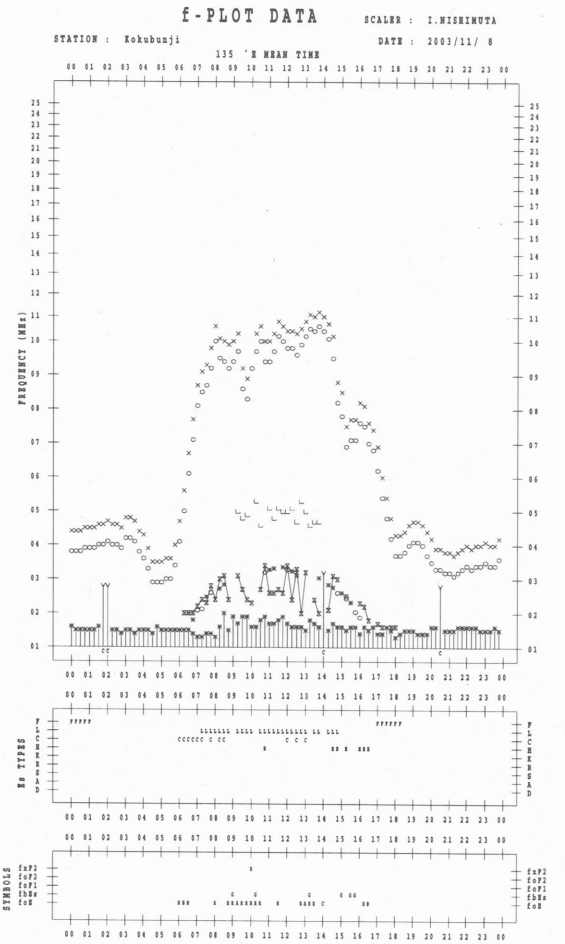
STATION : Kokubunji
DATE : 2003/11/ 7
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/ 6
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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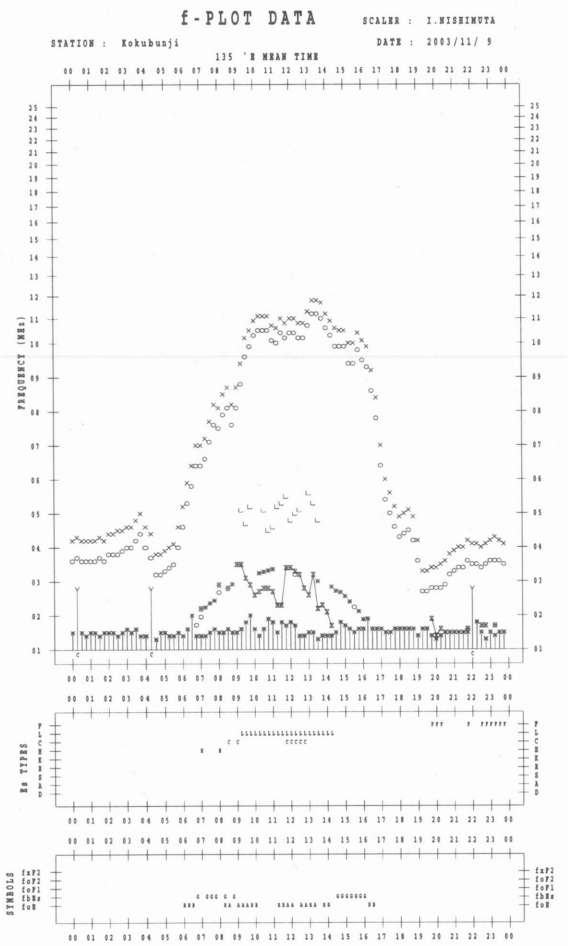
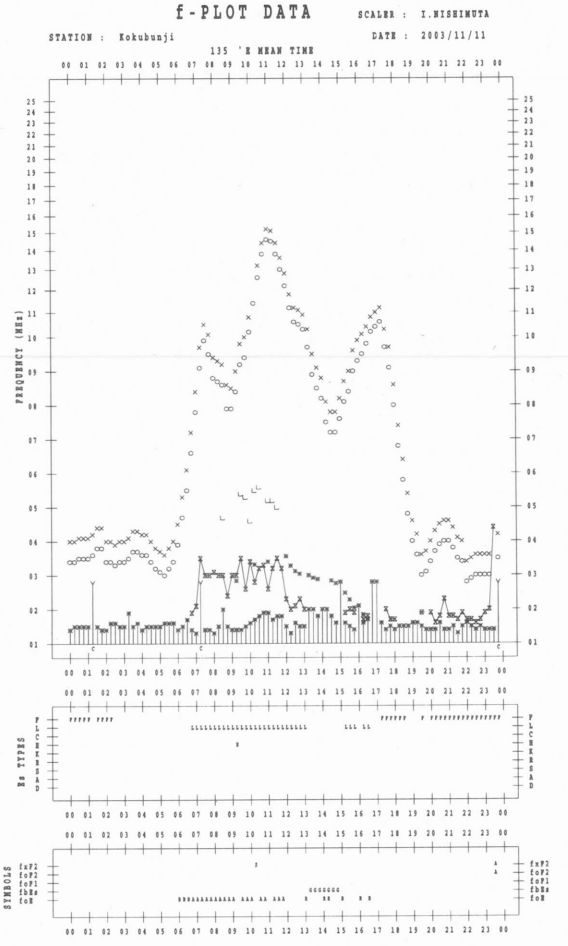
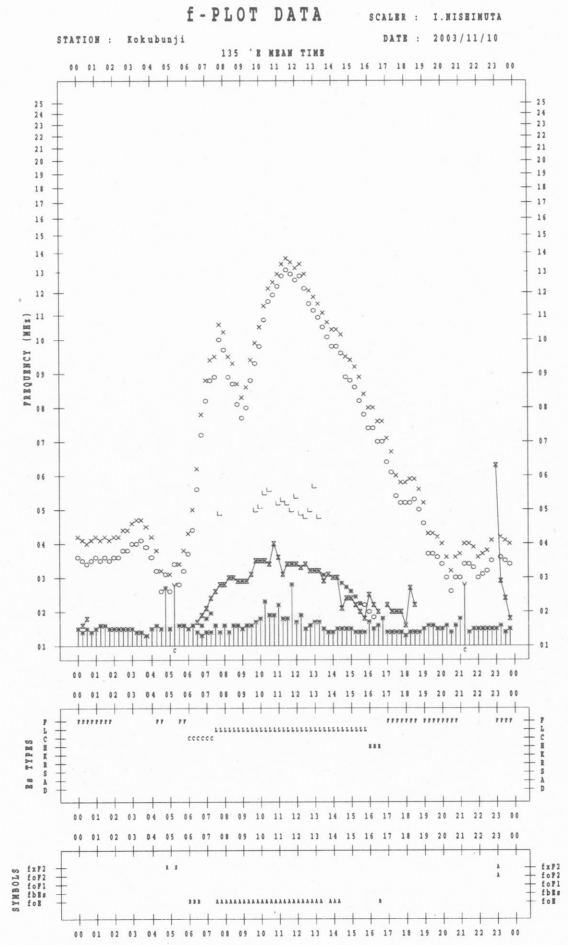
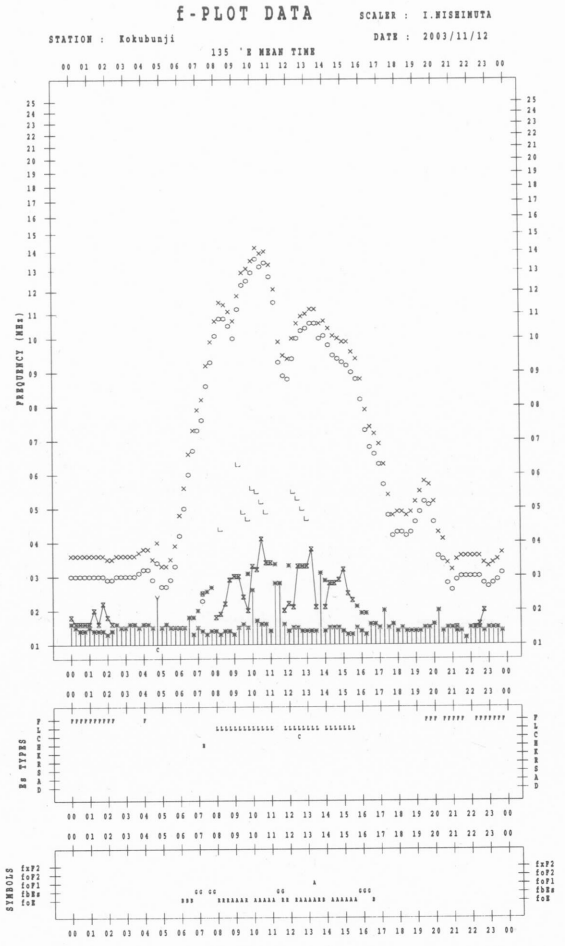
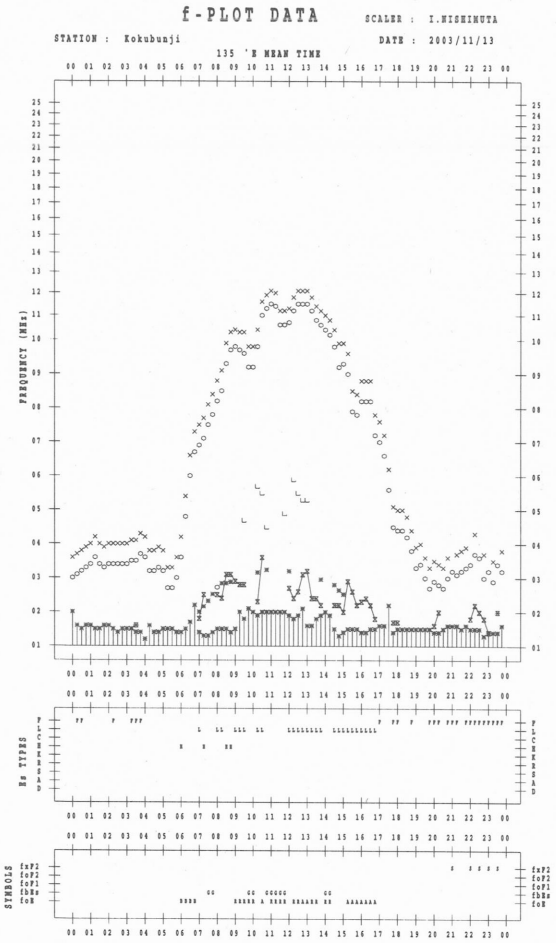
STATION : Kokubunji
DATE : 2003/11/ 8
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

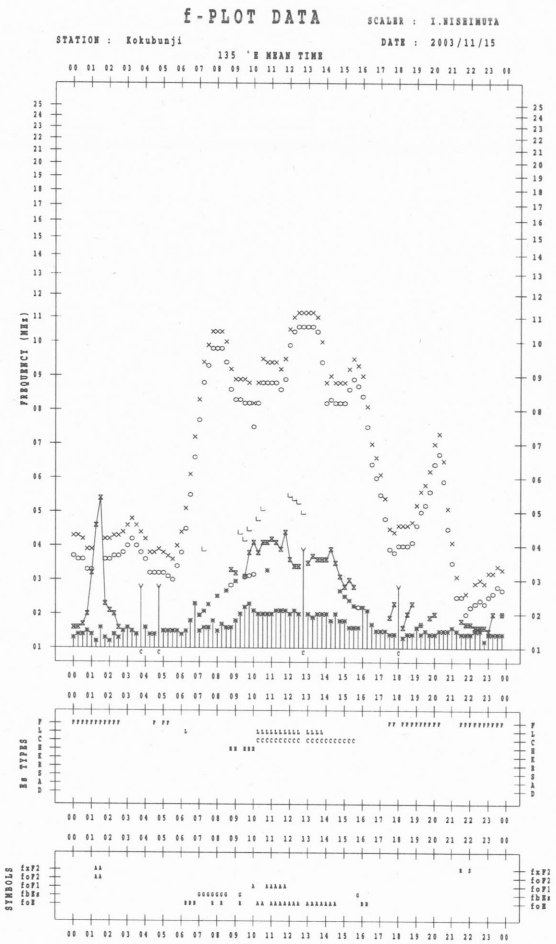

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/ 9
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

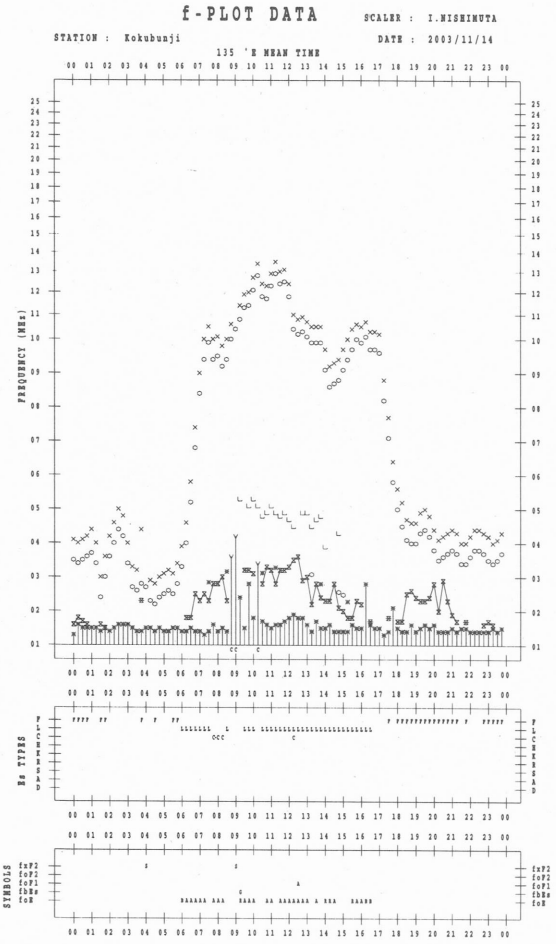

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/11
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

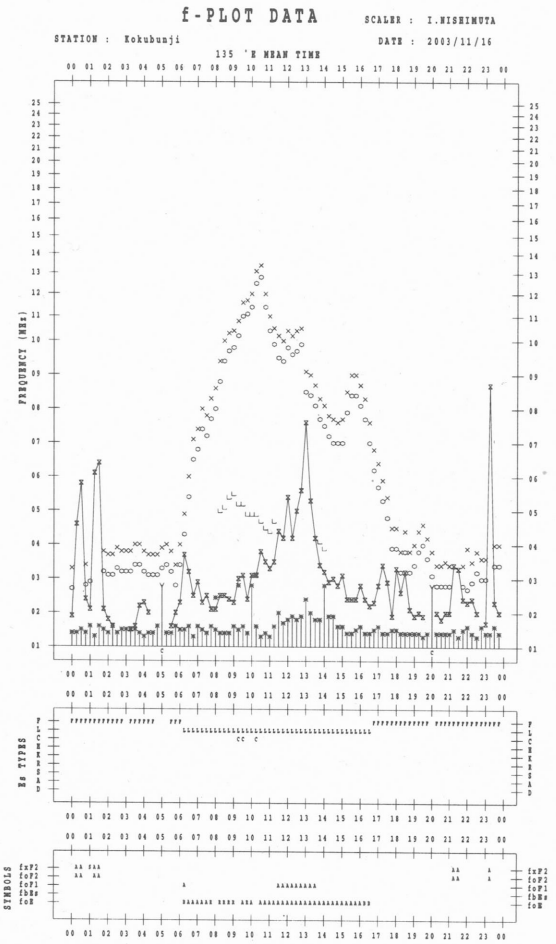

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/10
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

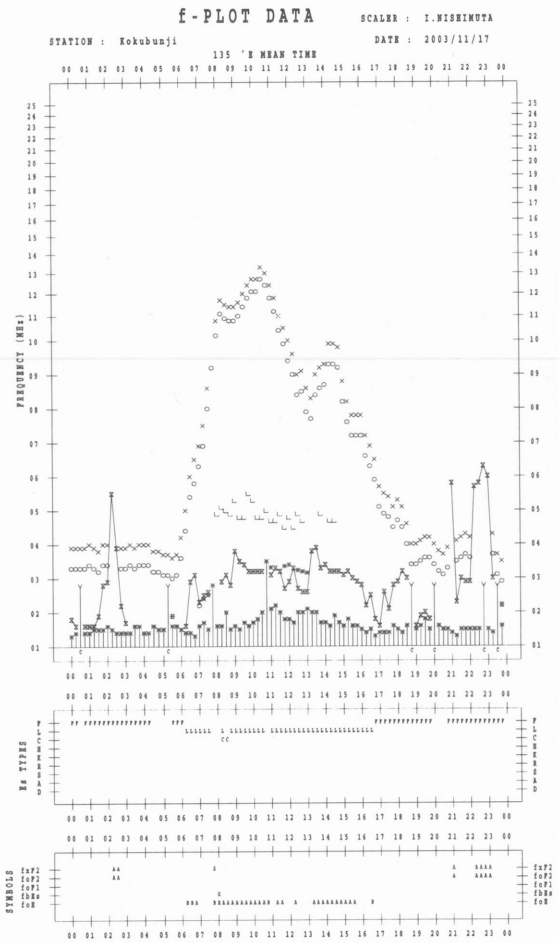

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/12
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

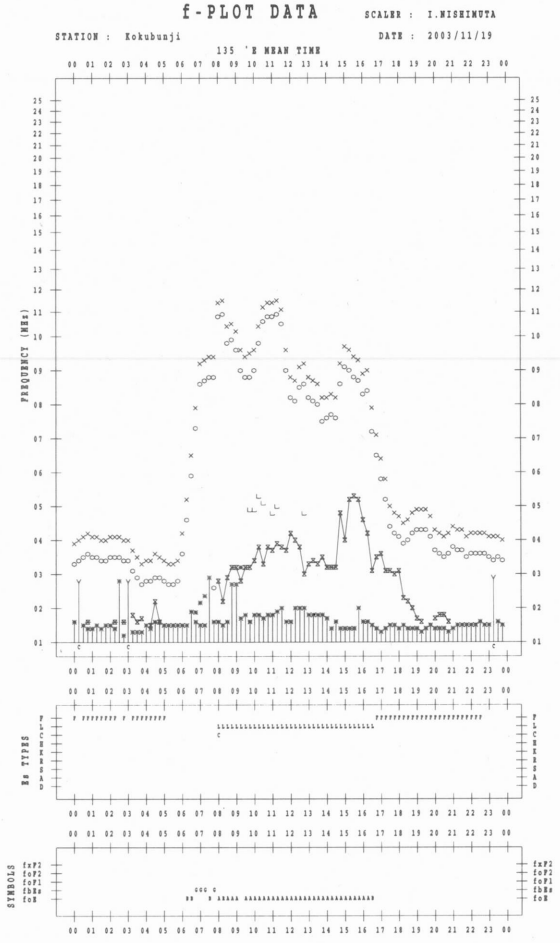

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

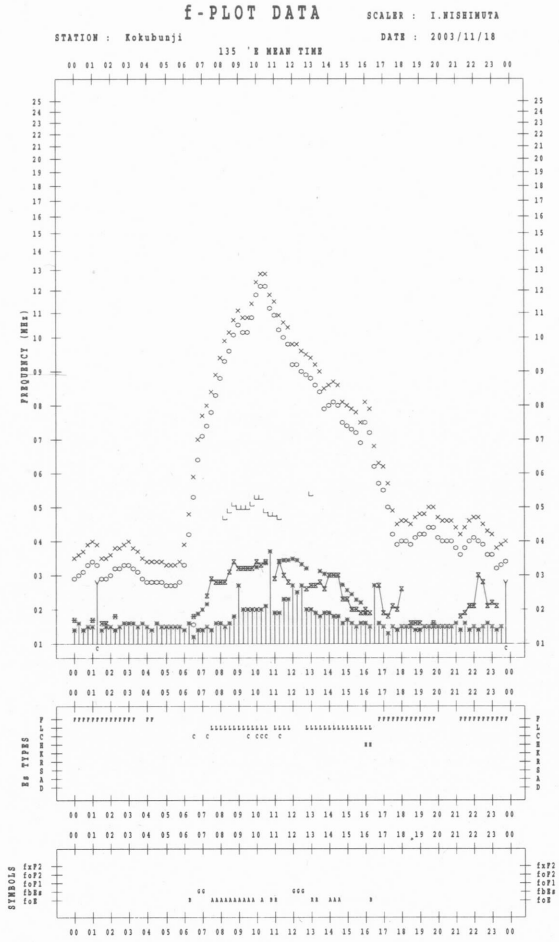

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

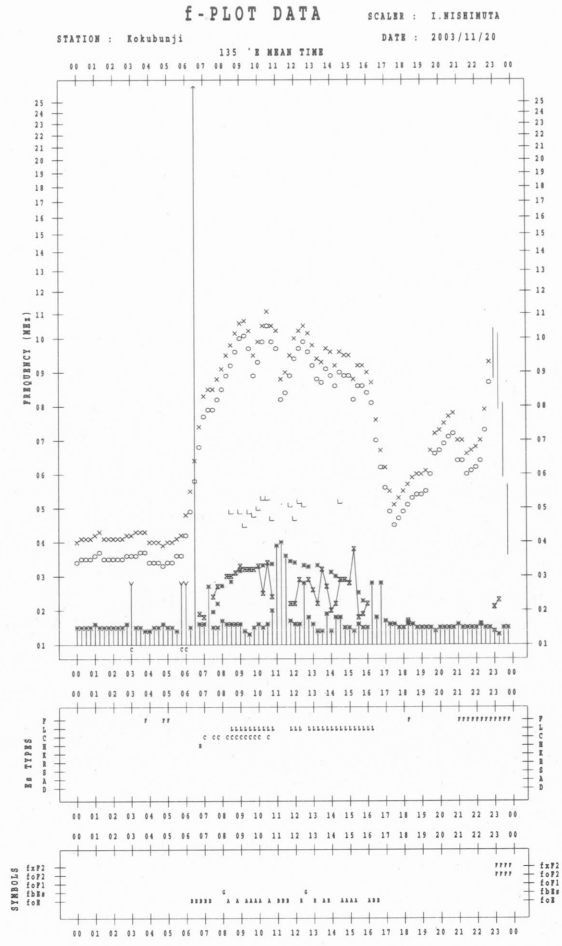

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

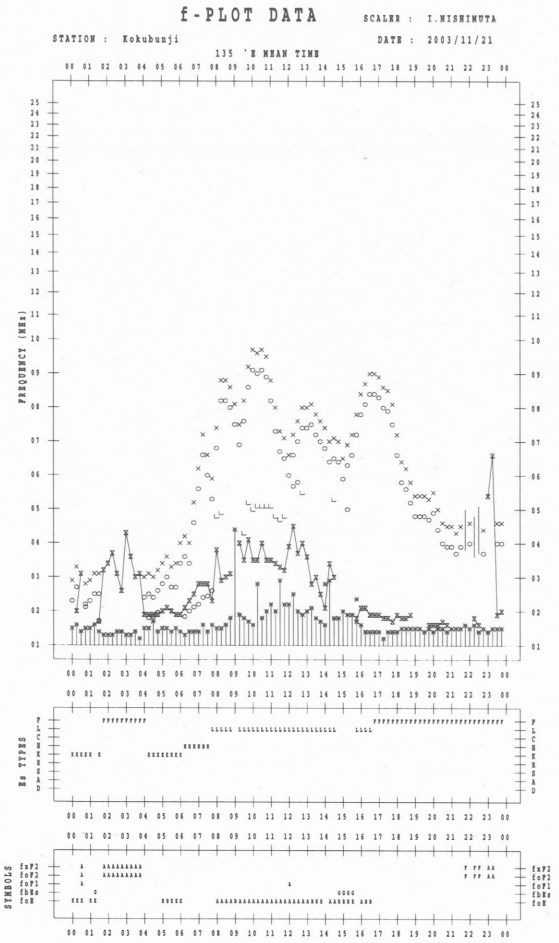

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

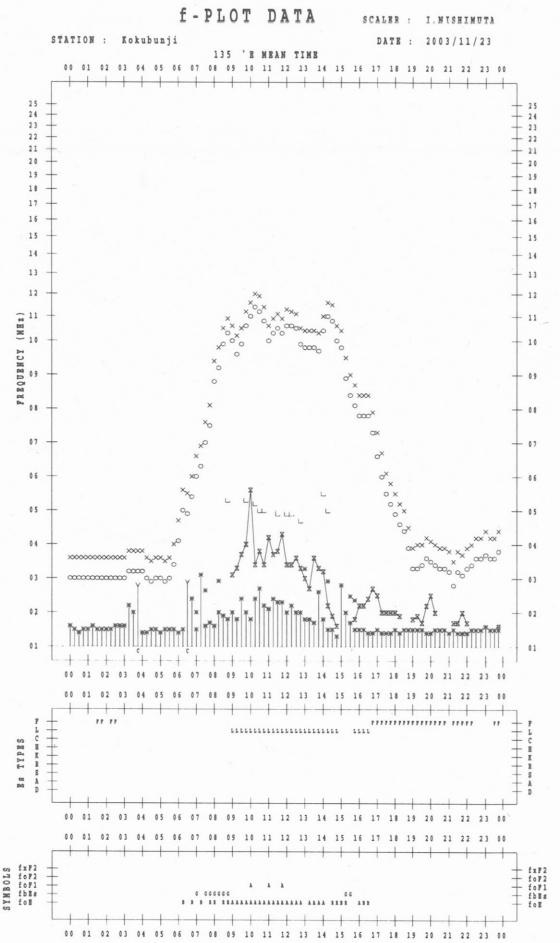

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/17
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

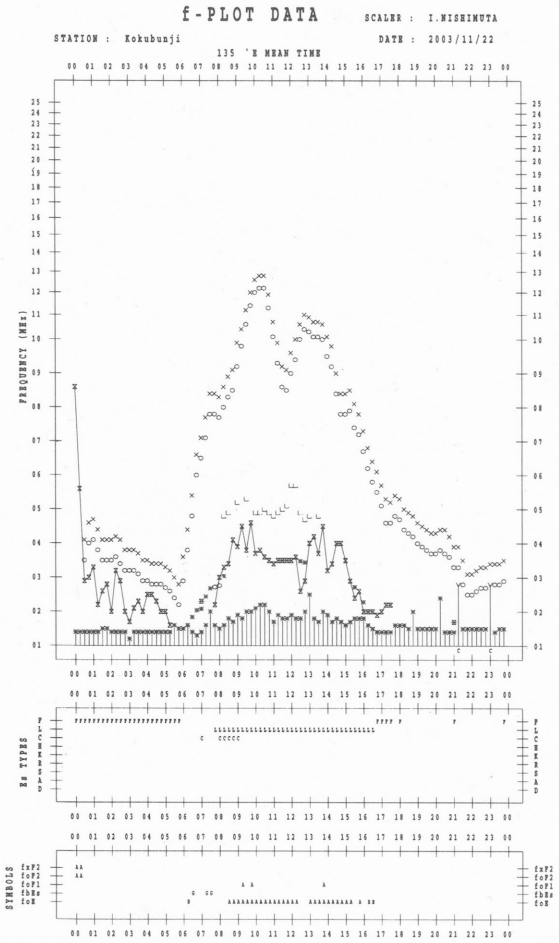

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/19
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

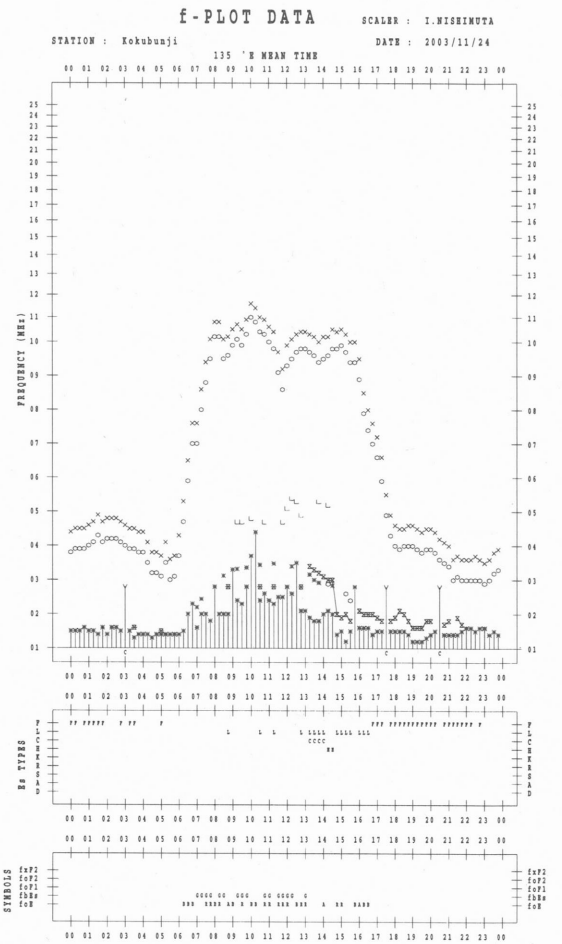

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/18
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/20
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/21
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/23
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/22
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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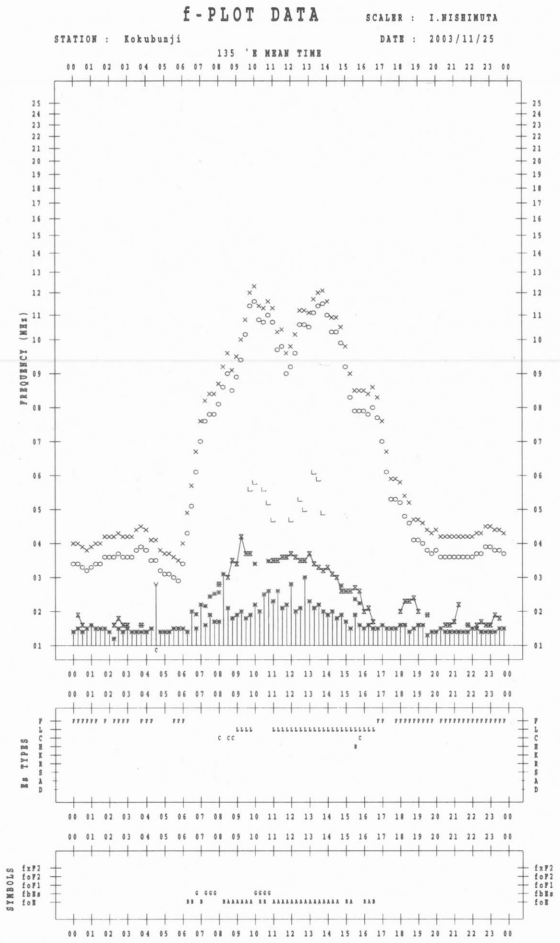
STATION : Kokubunji
DATE : 2003/11/24
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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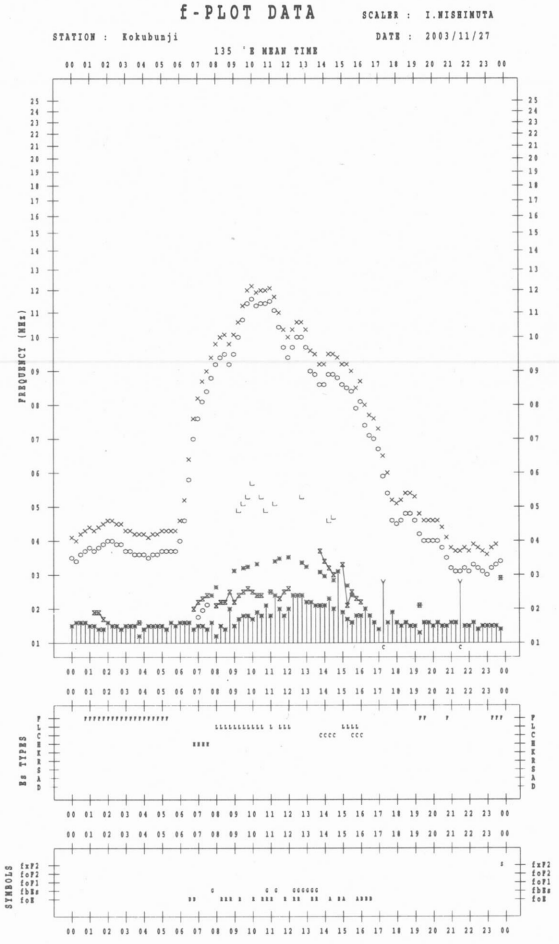
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/11/25
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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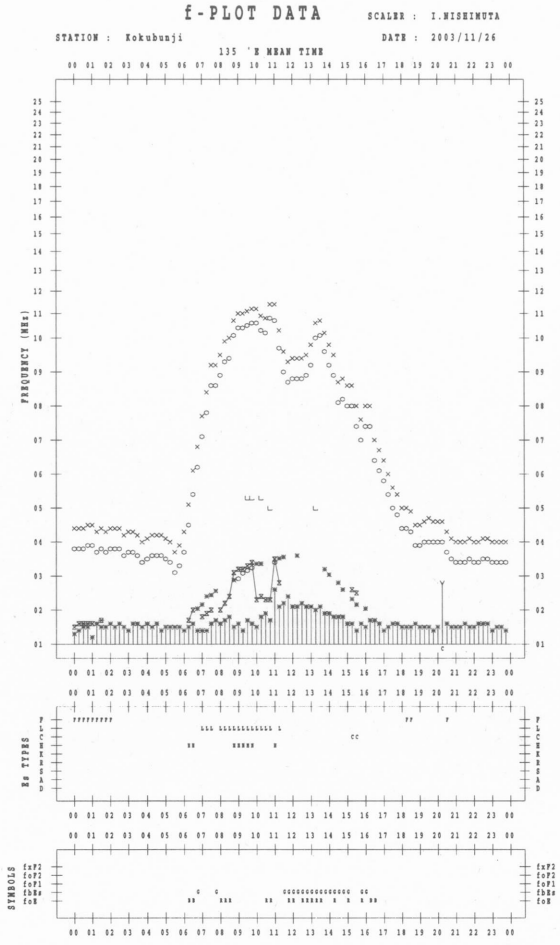
STATION : Kokubunji
DATE : 2003/11/27
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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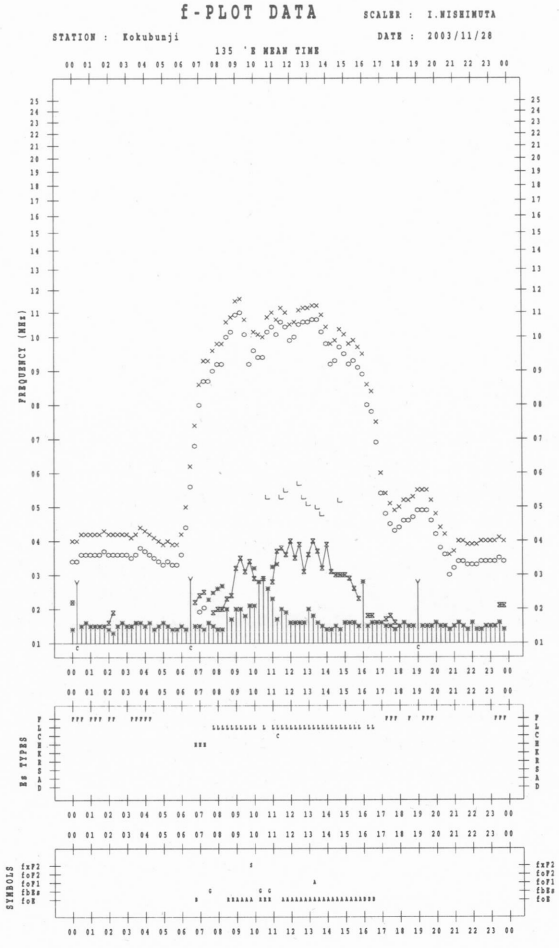
STATION : Kokubunji
DATE : 2003/11/26
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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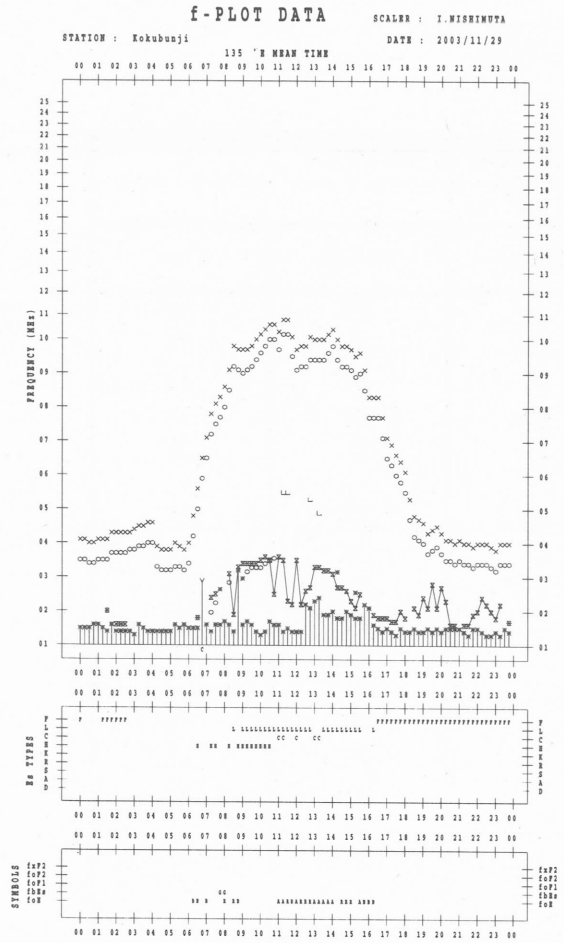
STATION : Kokubunji
DATE : 2003/11/28
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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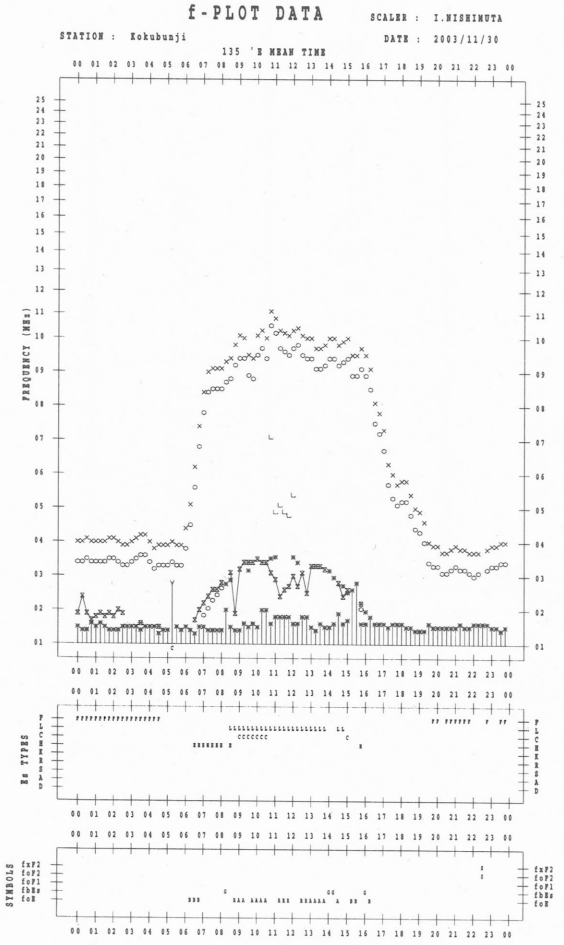
STATION : Kokubunji
DATE : 2003/11/29
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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STATION : Kokubunji
DATE : 2003/11/30
135 'E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

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

Hiraiso November 2003

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} W m^{-2} Hz^{-1}					
Date \ UT	00-03	03-06	06-09	21-24	Day
1	40	36	36	39	38
2	38	36	35	44	38
3	43	42	40	40	42
4	39	40	45	34	39
5	29	30	29	27	29
6	28	27	26	28	28
7	27	25	26	29	27
8	26	25	27	27	26
9	27	27	27	26	27
10	27	27	27	27	27
11	27	27	27	30	28
12	28	26	27	29	27
13	29	27	27	31	29
14	28	26	26	30	27
15	28	26	26	27	27
16	26	24	24	33	27
17	31	31	31	44	34
18	38	36	37	38	37
19	35	31	31	38	34
20	35	33	31	37	34
21	33	31	31	35	32
22	32	32	34	37	34
23	34	34	34	35	35
24	35	34	34	32	34
25	32	31	31	39	33
26	37	36	37	44	38
27	40	39	40	37	39
28	37	36	35	35	36
29	32	32	32	30	32
30	32	34	33	31	32
31					

Note: No data is available during the following periods.

A superscript * stands for being superposed on a burst.

B. Solar Radio Emission
B2. Outstanding Occurrences at Hiraiso

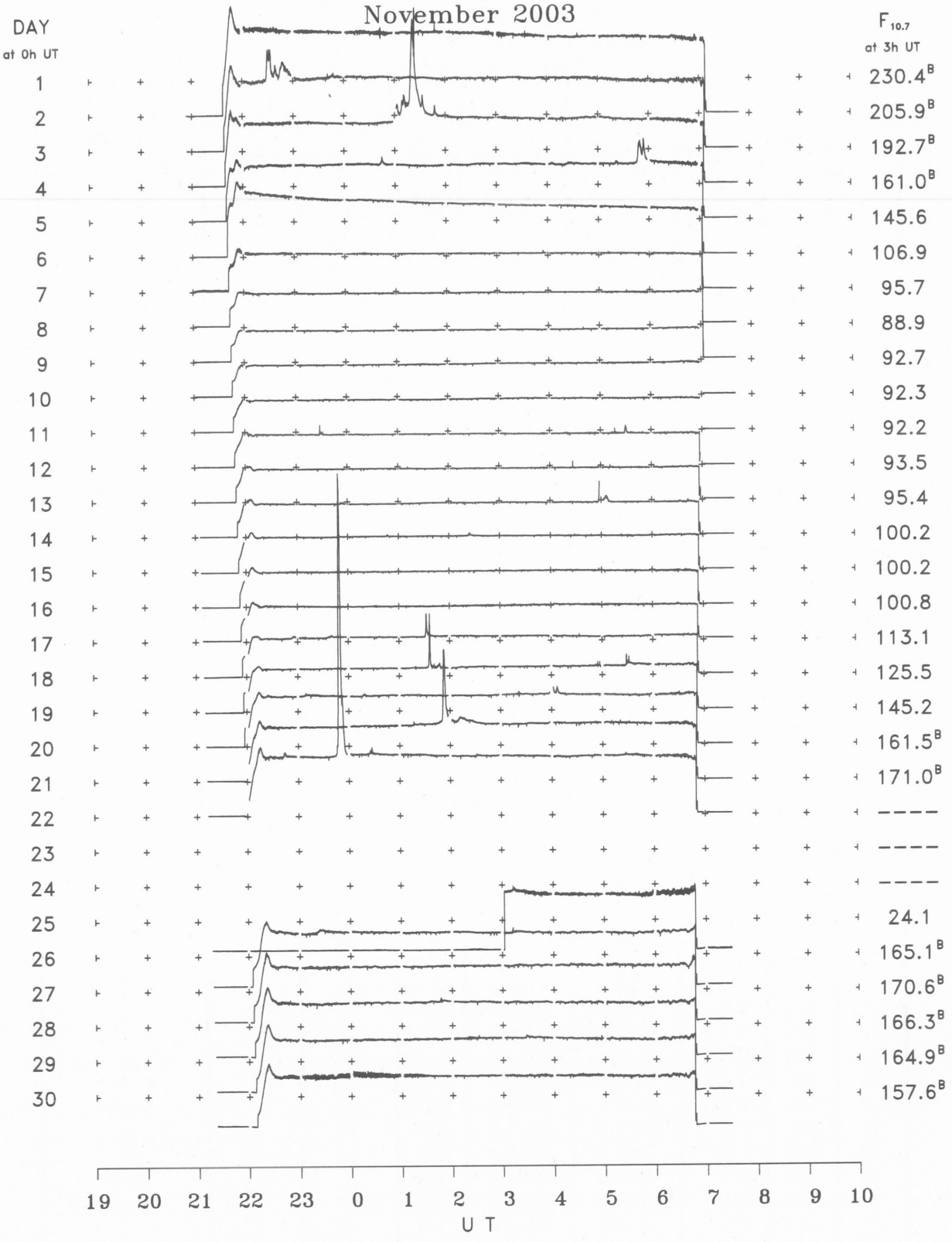
Hiraiso — Novembar 2003

Single-frequency observations
Normal observing period: 2110 - 0735 U.T. (sunrise to sunset)

NOV. 2003	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
1	500	8 S	0110.0	0111.0	1.0	20	-	
1	500	8 S	0127.0	0129.0	2.0	35	-	
1	500	8 S	0208.0	0209.0	2.0	25	-	
1	500	8 S	0234.0	0234.0	1.0	75	-	
1	2800	7 C	2228.0	2232.0	32.0	85	-	
1	500	7 C	2229.0	2248.0	53.0	45	-	
1	500	7 C	2337.0	0002.0	45.0	85	-	
2	500	8 S	0251.0	0251.0	1.0	20	-	
3	500	7 C	0058.0	0148.0	56.0	175	-	
3	2800	7 C	0059.0	0124.0	51.0	315	-	
4	2800	1 S	0042.0	0045.0	6.0	25	-	
4	500	42 SER	0513.0	0554.0	44.0	30	-	
4	2800	7 C	0545.0	0554.0	14.0	70	-	
6	500	8 S	0354.0	0355.0	2.0	20	-	0
10	500	8 S	2244.0	2244.0	1.0	20	-	0
10	500	8 S	2317.0	2317.0	1.0	20	-	0
10	2800	7 C	2328.0	2328.0	5.0	30	-	0
11	500	7 C	0519.0	0523.0	13.0	20	-	0
11	2800	1 S	0529.0	0530.0	3.0	20	-	0
12	500	7 C	0111.0	0111.0	9.0	15	-	0
13	2800	7 C	0457.0	0459.0	12.0	10	-	0
16	500	4 S/F	2253.0	2257.0	5.0	20	-	WR
16	500	7 C	2331.0	2340.0	11.0	80	-	MR
16	500	7 C	2354.0	2358.0	18.0	10	-	0
17	2800	3 S	0131.0	0133.0	5.0	65	-	0
17	500	8 S	2332.0	2332.0	1.0	15	-	WR
18	2800	7 C	0134.0	0136.0	16.0	155	-	0
18	500	47 GB	0134.0	0136.0	19.0	1625	-	SR
18	500	42 SER	0527.0	0528.0	6.0	170	-	0
18	2800	4 S/F	0528.0	0528.0	9.0	30	-	0
19	500	8 S	0017.0	0017.0	3.0	15	-	0
19	2800	7 C	0358.0	0401.0	11.0	140	-	0
19	500	7 C	0400.0	0401.0	8.0	55	-	0
20	500	7 C	0147.0	0153.0	10.0	35	-	
20	2800	3 S	0150.0	0153.0	10.0	210	-	
20	500	8 S	0259.0	0259.0	1.0	30	-	
20	500	8 S	0400.0	0400.0	1.0	10	-	
20	500	8 S	2244.0	2244.0	1.0	30	-	0
20	2800	47 GB	2345.0	2349.0	12.0	800	-	0
20	500	7 C	2346.0	2349.0	107.0	185	-	MR
21	500	8 S	0611.0	0611.0	1.0	35	-	0
22	500	7 C	2232.0	2234.0	3.0	10	-	0
23	500	8 S	0008.0	0008.0	1.0	10	-	WL
23	500	8 S	0209.0	0209.0	1.0	20	-	0
27	2800	8 S	0200.0	0200.0	1.0	40	-	0
27	500	7 C	0212.0	0214.0	4.0	10	-	0
27	500	7 C	0644.0	0645.0	2.0	15	-	0

B. Solar Radio Emission

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



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

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