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IONOSPHERIC DATA IN JAPAN

FOR OCTOBER 2003

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CONTENTS

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INDEPENDENT ADMINISTRATIVE INSTITUTION
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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

OCT. 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	45	45	53	53	52	35	62	77	73	75		109	88	83	80	82	85	73	A	52	54	64	58	42
2	37	50	52	51	43	44	66	66	82	84		83	80	81	82	84	82	81	77	71	66	53	52	54
3	54	51	53	53	54	54		80	83	91	82			92	90	84	88	78	66	57	59		53	53
4	55		54	54	53	53	66	84	86	90	92	92	93	91	91	84	84	76	A	62	63	54	54	48
5	52	52	55	53	48	50	61	81	84	84	84	83	84	84	84	81	84	76	66	64	51	52	53	53
6	53	53	54	53	52	47	66	72	84	82		84	92		83	84	83	82	62	64	A	68	61	55
7	61	62	66	64	62	58	62	79	83	81	85	84		91	91	92	82	76	70	67	72	65	66	72
8	54	54	61	61	58	61	77	82	78	84	85		84	84	84	81	83	76	71	64	54	64	54	52
9	58	58	54	54	53	58	74	81	82	85	88	91	89	79	84	78	74	76	66	66	52		54	50
10	53	47	54	53	60	44	62	73	80	78	85	84	84	84	91	77	78	77	70	66	46	54	47	53
11	52	44	52	53	44	41	66	77	80	83	97	95	87	80	84	82	82	65	65	66	64	51	53	50
12	46	53	50	50	52	62	72	74	82	84	84	83	76	84	79	84	84	77	71	66	A	65	54	46
13	54	42	50	54	56	58	66	82	79	82	91	82	80		85	83	84	76	57	57	53	45	48	53
14	52	51	45	51	45	45	52	77	81	106	82			78	85	82	80	78	70	66	64	45	A	40
15		42	37	30	28	49		A				45		52	62	65	66	57	45	32	38	34	34	32
16	34	32	A	A	A	N	46	58	66	72	69	81	78	76	78	77	76	52	47	45	32	40	36	38
17		34	34	34	36	35	44	63			81	99	81		74	77	80	66	61	65	45	36	34	32
18			40		35		52	68		83	73	87	84		71	76	72	62	62	44	A	36	37	40
19	40	37	37	38	32	35	44	61	82	86	80	74	84	76	75	83	82	67	57	52	42		45	45
20	47	45	45	41	34	34	36	57	71	73	75	90		78	84	85	73	67	62	51	44			
21	34	37		41	41	40	48	61		64				80	82	83	80		139	50		37	38	34
22	40	32	36				39	40	60	73	66	77	82	72	69	83	83	63	54	A	A	A	A	43
23	42	43	41	40	38	32	47	73	83	78	93			82	78	74	77	60	48	40	42	50	40	34
24		38	49	38	36		45	70	83		84			82	82	84	83	62	51	43	40	32	37	38
25	38	A		34	34	35	44	54	76	84	84	90	83	85	77	84	77	66	64	A	60	52	A	54
26	52	45	47	51	45	35	43	79	82	92				84	82	80	76	70	66	54	42	58	49	53
27	51	40	34	45	45	40	51	76	84		94		82	92	91	92	83	83	79	62	44	40	41	53
28	45	45	40	42	43	46	53	61	78	82				92		83	82	77	72	61	50	42	53	42
29	47	44	41	45	44	51	55	76	88	92						88	76	50		46	62	59	A	49
30	49	A			A		55	60	52	74		75	83		84	72	62	64	72	68	62	61	53	53
31	50	47	41	43	40						57	84	64		90	91	78	72	66	54	41	53	42	51
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	27	27	28	25	28	29	26	26	22	21	20	24	29	31	31	30	28	29	26	26	26	30
MED	50	45	49	51	44	45	54	73	82	83	84	84	84	82	83	83	82	72	66	61	52	52	50	50
U Q	53	51	54	53	52	53	66	79	83	85	88	90	85	84	85	84	83	77	70	66	62	59	54	53
L Q	42	40	40	41	37	35	45	61	78	78	80	81	80	78	78	78	76	64	59	50	42	40	40	40

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Wakkanai

OCT. 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	28	G	G	G	39	50	61	72	76	50	42	G	40	40	36	68	68	67	59	30	60
2	G	39	27	30	27	27	G	39	G	G	G	G	46	51	46	47	59	42		38	G	27	G	34
3	G	G	G	31	G	G	136	G	G	48	48	52	60	48	42	80	51	41	39	33		43	29	28
4	28	30	N	29	33	30	G	35	G	46	50	48	45	40	G	N	G	50	72	34	39	34	G	G
5	G	G	G	30	42	29	G	G	G	G	G	G	41	39	43	G		40	G	G	G	G	G	30
6	G	G	G	G	G	33	G	G	G	G		G	G		G		G	40	35	33	43	39	G	G
7	G	G	G	28	25	G	28	G	G	G	G	G	G	G	G	35		47	38	31	G	G	26	G
8	G	G	G	G	G	G		37	G	G	G	G	G	G	41	37	G	28	G	27	G	G	G	G
9	G	G	G	45	31	G	G	48	39	40	49	47	G	G	G	G	N		G	29	33	43	45	30
10	26	G	G	24	26	G	33		G	75	65	57	48	51	42	48		39	43	46	29	32	33	33
11	G	G	G	G	G	27	27		G	G		45	58	44	46	42	G	32	G	30	G	G	G	G
12	G	G	G	G	G	G	G	36	40	48	49	G	G	G	G	G	G	G	G	G	60	49	G	G
13	G	G	G	G	G	G	G	G	60	50	G	G	G	G	46	42	29	29	G	G	G	G	G	G
14	G	G	G	G	30	27	32	60	44	G	46		G	G	G		34	26	34		52	36	39	24
15	26	G	G	G	27	G		39	36	39	G	G	G	G	G	G	68	40	41	38	33	24	G	G
16	G	G	40	33	29	G	G	42	37	G	G	G	G	G	G	G	G	G	G	26	25	26	G	G
17	G	G	G	30	G	G	G	G	40		46				40	G		G	30	32	G	G	33	26
18	29	29	32	34	26	G	G	34		44		G	40		G	G	38	32	29	34	43	26	G	G
19	G	G	40	37	G	24	G	G	53	48	46	53	58	39	38	G	G	G	26	39	32	32	26	G
20		27	26	24	27	28	G	36	39	49	46	44		39	36	46	28	27	29	33	30	39		G
21	26	G	50	39		36	30			42	G	G		G		G	N		27	30		29	G	G
22	G	G	26	26	G		34	47	G	39	39	G	G	G	G	G	G	G	30	48	37	59	54	33
23	26	G	G	27	G	G	28	30	G	G	40			G	G	32	G	G	G	G	G	G	G	G
24	G	G	G	31	G		G	G	G	G	G			G	G	G	G	11	G	G	G	G	G	G
25	G	55	28	28	32	G		33	43	66	43	G	G	G	G	G	34	29	40	64	48	36	60	44
26	33	G	G	G	25	25	G	48	66	40		G		G	G	G	G	G	G	G	G	G	36	36
27	39	G	G	G	26	32	29	G	G	G	72	G	G	G	G	G	G	27		24	G	G	29	158
28		39	25	26	G	G	G	G	44	G	45			G		46	41	29	G	G	G	G	G	G
29	27	27	32	G	G	29		G	G	G	G			46	64	G	G	G		172	G	28	43	39
30	39	50			30		29	G	G		G	G		G		G	G	G	G	G	G	G	29	33
31	G	G		G	G		30	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	31	28	30	30	27	27	28	28	29	27	25	22	28	28	28	25	29	28	30	29	31	30	31
MED	G	G	G	26	13	G	G	32	G	39	40	G	G	G	G	G	G	28	26	30	G	26	G	G
U Q	26	27	26	30	27	28	29	39	41	48	48	46	46	39	41	41	36	39	36	38	38	36	33	33
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

HOURLY VALUES OF fmin AT Wakkanai

OCT. 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	15	14	16	17	20	15	14	16	20	20	20	21	18	26	17	14	14	15	14	14	15	14	17
2	14	14	15	14	14	15	15	14	20	16	22	16	15	22	21	18	14	15	15	15	14	14	16	14
3	15	14	14	15	15	15	20	15	15	20	22	21	18	21	18	15	14	14	14	14	15	14	16	15
4	14	14	15	17	15	14	20	15	14	14	23	21	20	20	18	14	14	14	14	14	15	15	15	15
5	14	14	14	14	15	15	20	17	16	18	16	21	21	23	18	20	14	14	15	15	15	15	15	15
6	14	14	15	16	14	15	21	15	15	20		23	21		22	15	14	14	14	14	15	15	15	20
7	14	15	17	15	14	15	16	16	18	18	23	21	20	20	18	14	14	14	14	15	15	15	20	15
8	15	15	15	15	14	14	20	14	15	22	20	15	22	21	18	15	14	18	14	16	15	15	15	16
9	20	16	18	14	14	15	14	14	15	18	20	18	21	20	16	14	14	18	15	14	15	14	14	15
10	15	14	14	16	14	15	18	14	15	18	21	21	20	18	21	16	14	17	14	14	20	14	14	14
11	15	14	14	15	14	14	20	14	16	20	21	20	16	22	20	15	15	14	15	14	15	15	14	21
12	15	15	14	14	15	15	20	14	14	16	20	20	14	18	15	14	18	15	15	15	15	14	15	15
13	15	15	15	15	14	16	18	16	16	17	18	18	17	17	17	14	14	15	14	15	15	14	16	18
14	14	14	20	14	16	15	14	14	14	15	18		18	20	17	14	17	16	14	14	14	15	14	16
15	15	14	14	14	14	20		15	16	18	18	20	18	18	18	15	15	15	15	14	14	14	20	18
16	15	16	14	14	15	18	18	14	17	21	20	22	18	16	15	14	15	15	15	15	15	16	20	15
17	17	14	16	15	15	18	20	21	17	14	18	20	17		20	18	20	16	14	15	14	18	14	18
18	15	15	15	14	16	20	18	14		15	20	20	18		15	14	14	14	16	14	14	17	14	14
19	14	15	14	15	15	15	18	22	22	22	23	22	21	20	18	16	22	14	18	14	15	18	15	14
20	14	15	15	15	17	17	20	20	16	17	21	20		20	15	14	14	15	16	14	14	14	16	20
21	15	15	14	14	15	15	14	15	15	20	21	15	15	22	29	16	14		15	15		15	18	16
22	14	17	17	18	18		15	16	29	28	20	20	21	53	35	20	23	16	14	14	14	14	15	15
23	16	15	14	14	16	16	16	17	20	21	20			18	18	14	21	14	15	15	15	20	16	20
24	18	17	20	14	16		20	26	21	23	23			27	22	29	22	15	14	17	15	17	15	16
25	15	15	15	18	18	15	20	15	20	20	20	21	21	21	21	18	14	14	14	14	14	14	14	15
26	15	14	15	14	16	15	15	14	14	17	21	21		16	21	20	28	20	18	14	18	17	15	14
27	14	17	14	14	17	15	14	27	30	21	22	23	22	21	22	20	22	18	20	18	20	17	18	14
28	14	14	15	14	14	15	18	24	24	22	22		17	21		17	18	15	16	18	18	15	15	16
29	16	18	14	16	14	15	15	15	20	21	24			20	33	18	23	15		15	15	15	14	14
30	15	14			14	17	14	28	22	21		39	20	35	18	27	22	16	15	17	20	14	17	14
31	14	15	15	14	14		16	23		20	22	22	21	35	22	20	23	14	16	15	17	15	18	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	31	28	30	31	29	31	29	26	26	28	30	31	31	30	30	31	30	31	31	31
MED	15	15	15	14	15	15	18	15	16	20	21	20	20	20	18	16	15	15	15	15	15	15	15	15
U Q	15	15	15	15	16	16	20	20	20	21	22	21	21	22	22	18	22	16	15	15	15	16	16	18
L Q	14	14	14	14	14	15	15	14	15	17	20	20	17	18	18	14	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Kokubunji

OCT. 2003

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

DAY \ HOUR	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	49	47	44	45	48	45	66	76	86	82	96	100	104	100	87	82	93	97	71		54	52	51	51
2		53	52	43	34	39	64	82	81	87	94	91	82	88	96	101	100	87	76	67	61	51	53	52
3	53	54	53	48	47	51	71	77	88	94	106	98	104	105	112	105	102	106	80	47	48	51	46	46
4	48	47	53	52	42	40	62	82	96	87	112	118	112	111	112	102	86	82	81	66	63	63	62	63
5	62	54	54	51	46	47	69	86	87	78	96	98	101	98	98	106	96	86	69	64	54	54	61	51
6	44	47	49	48	44	41	61	78	84	80	90	104	106	105	101	97	102	90	74	65	66	52	53	53
7	53	53	49	52	44	42	65	72	88	85	97	102	116	117	109	97	84	86	74	61	67	66	63	65
8	52	54	52	53	48	45	66	85	94	90	97	101	97	102	106	100	98	88	74	54	52	52	52	53
9	47	53	53	45	45	45	66	80		88	91	105	108	108	117	102	76	73	68	66	51	53	52	44
10	49	49	53	46	54	55	74	82	85	81	87	106	104	104	98	101	90	85	75	54			53	47
11	51	54	51			42	61	84	94	88	92	107	98	91	97	100	88	89	76	46	53	A	42	47
12	37		44	47	44	37	69	75	76	82	86	88	95	96	98	94	94	95	71	54	52	51	A	44
13	44	43	47	46	44	46	67	78	86	81	90	108	101	102	102	105	80	73	54	51	53	44	49	49
14	46	44	47	46	43	46	62	74	88	97	112	111	104	114	108	97	91	90	90	54	A	51		39
15	38		47		27		46	66	A	A	74	83	71	74	85	93	82	91	54	37		A	34	38
16	37		37		30	31	48	76	97	91	88	95	102	110	110	94	78	A	A	A	A	42	44	44
17		42	38	34	34	35	52	71	72	77	85	101	100	108	97	82	77	96	67	42	A	A	A	A
18	36		42	39	34	36	53	85	85	80	104	97	81	85	92	86	82	77	48	42	34	27	30	
19	34	34	36	34	31	32	54	84	90	92	95	105	90	92	96	82	81	82	51	44	46	50		43
20	44	42	43	43	45	36	48	88	100	90	104	110	123	121	98	92	90	82		54	43	47		
21		34	36	32	34	31	52	76	86	88	110	110	92	96	102	102	82	71	63	77	49	34	34	38
22		34	34				49	71	96	118	124	111	92	98	108	111	84	71	57	66	38	36	28	
23					36	39	52	80	94	124	117	108	105	104	103	86	67	74	51	54	54	45	44	46
24	44	44	44	43		30	51	77	91	91	92	101	96	104	97	95	81	71	46	52	52	44	43	36
25	32	41				32	46	77	100	124	107	114	112	120	107	96	88	82	62	64	53	46	52	
26	A	A			37	34	47	82	104	125	118	129	118	125	118	91	84	73	58	65	62		48	42
27		44		43	44	42	53	85	100	125	112	94	106	125	118	112	100	104	82	61	54	51	53	43
28	47	47	44	45	43	42	60	90	101	116	121	116	117	115	102	103	104	88	59	53	54	45	47	
29			41	44				93	101	126	134	131	123	140	132	118	113	75	69	82	88	54		
30	38		48	A	47	A	52	102	86	68	98	118	104	104	117	88	76	80	77	78	62	54	53	A
31	A	44	47	44				54	71	108	97	102	100	117	112	124	95	87	66	53	66	54	64	77
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	27	23	25	26	29	31	29	30	31	31	31	31	31	31	31	30	29	29	26	26	25	23
MED	45	47	47	45	44	40	60	80	88	89	97	105	104	104	102	97	88	86	69	54	54	51	51	46
U Q	49	53	52	48	45	45	66	85	96	108	112	111	108	115	112	103	96	90	75	65	62	53	53	52
L Q	38	42	42	43	34	35	51	76	85	82	91	98	96	98	97	92	81	75	57	51	51	45	43	43

HOURLY VALUES OF fEs AT Kokubunji

OCT. 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	34	G	G	G	G	G	G	G	G	G	G	G		33	G	90	42
2	57	G	G	G	G	29	G	G	G	G	49	G	50	61	52	51	59	111	49	43	G	G	G	G
3	G	G	G	G	G	G	G	G	G	52	48	69	G	G	G	G	G	G	G	32	29	26	G	G
4	G	G	G	G	G	G	G	G	G	47	61	52	60	73	49	G	G	G	37	36	59	50	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	49	G	45	39	G	G	36	26	G	G
6	G	G	G	G	G	G	29	G	G	39	G	G	G	G	G	G	G	G	G	G	G	25	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
8	G	G	G	G	G	G	G	G	43	52	58	50	50	G	G	G	G	G	30	G	G	G	G	G
9	G	G	G	G	G	G	G	34		G	G	G	43	G	G	G	G	G	G	G	G	37	28	28
10	28	28	G	G	G	G	G	G	G	G	G	G	G	G	40	40	43	41	32	40	40	32	38	30
11	26	G	G	G	G	G	32	35	G	G	G	G	G	G	G	G	G	G	G	G	34	39	40	32
12	27	G	G	G	G	G	G	G	G	G	G	50	83	53	G	G	34	G	35	35	22	G	33	33
13	27	G	31	25	G	G	G	34	39	41	45	G	G	G	G	G	G	31	27	32	42	G	G	G
14	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G	48	59	46	G	40	40	43	34	24
15	G		G	G	G		G	G	94	80	41	G	G	G	G	G	34	30	G	G		50	G	G
16	29	26	27		G	G	G	56	59	62	74	64	55	52	61	36	40	74	92	55	46	39	39	G
17		G	G	G	G	G	G	34	G	43	G	G	G	G	G	G	G	G	37	30	49	43	47	41
18	24	24	G	G	G	G	G	G	43	50	49	55	50	G	G	40	40	32	39	29	G	23	G	24
19	G	G	G	G	26	G	G	G	G	G	G	G	G	G	G	36	G	G	G	G	G	33	33	29
20	G	G	88	26	G	G	G	35	43	46	53	80	64	59	60	G	34	32	G	27	24	27		26
21	28	26	G	G	G	G	G	G	38	G	G	G	60	G	74	41	38	G	41	34	G	24	G	23
22		26	G	G	G		G	G	49	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
23		36	26	G	G	G	G	G	G	G	G	G	56	G	G	G	G	G	43	G	G	G	G	G
24	G	G	G	G		G	G	G	G	G	G	G	G	50	G	G	G	G	28	G	G	G	26	26
25	G	27				G	28	43	43	53	50	51	G	48	G	G	80	52	60	43	34	35	41	
26	60	54	40	37	26	G	G	G	36	91	72	53	G	G	G	G	G	G	G	G	G	G	G	28
27		33	37	G	G	G	G	G	G	49	G	G	G	G	G	G	G	G	G	G	34	31	G	G
28	G	G	G	26	G	G	G	G	43	83	G	G	G	G	G	49	G	G	G	G	G	G	G	
29			G	G			G	G	G	50	G	G	G	47	G	G	G	G	G	40	58	48		32
30	G		37	34	29	30	26	G	G	G	48	53	G	G	46	66	48	60	33	42	34	30	29	46
31	36	24	34	25				G	G	G	G	G	G	G	G	G	G	33	G	32	G	41	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	30	29	27	27	30	31	30	31	31	31	31	31	31	31	31	31	31	30	30	31	29	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	23	26	G	24
U Q	27	26	26	G	G	G	G	34	43	50	49	51	50	47	40	36	40	33	37	36	36	39	33	29
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

OCT. 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	30	17	22	26	18	17	23	17	21		29		43		44		18	29	15		17	18	17	14
2	17	18	28	17	22	14	22	29	37	37	35	43			34	28	28	20	14	17	17	29	29	14
3	20	18	14	21	15	26	26	20	26	25	35	35	42	30		18	20	18	20	13	14	20	14	13
4	17	22	26	14	18	15	22	17	26	30	33	33	33	29	20	30	18	22	14	14	13	13	14	13
5	24	17	17	14	26	15	21	29	17	35					35	20	18	15	17	14	13	14	18	15
6	15	15	14	14	13	15	14	15	35	39	40				34	35	14	15	13	15	17	14	14	15
7	24	26	14	13	18	13	15	13	34			43		39	22	33	18	13	14	15	17	28	26	17
8	18	17	17	14	13	13	20	17	29	38	34	36	34	33	25	20	13	28	14	13	18	15	30	15
9	15	15	17	15	15	14	20	14					28			17	26	14	14	17	15	17	15	14
10	14	14	14	14	13	15	20	14	18					40	21	24	20	15	14	14	15	14	14	14
11	14	15	15	14	15	17	13	18	33	34	21		20			18	26	20	14	14	15	17	28	14
12	18	26	17	13	14	14	25	18	15	20	23	23	21	21	17	14	17	14	14	13	18	15	14	14
13	15	14	14	13	14	14	20	15	23	26	25		35			17	15	15	13	14	14	15	25	26
14	18	15	18	17	18	17	18	23	17	34				17	18	29	22	15	13	14	15	14	15	15
15	14		20	13	17		20	18	24	28	28						18	14	20	22		14	15	20
16	14	14	14		17	17	26	18	20	26	29	28	28	22	26	28	20	15	14	14	14	14	14	26
17		21	17	13	15	14	18	14	18	28					39	29	29	13	13	14	17	14	15	20
18	14	15	18	20	18	17	15	14	25	21	28	26	28	24	34	20	17	13	26	14	20	13	20	15
19	15	14	14	21	15	15	17	15	17	23	29				21	18	28	18	13	17	15	14	13	14
20	13	15	13	13	13	15	18	14	21	37	34	30	28	18	26	31	20	15	22	13	15	13		15
21	14	14	15	18	18	14	20	18	18				26	47	28	20	14	18	13	13	26	15	18	17
22		15	17	15	20		21	29	31	52	42	44	42		44	40	33	20	17	18	13	15	15	
23		21	14	21	20	15	20	28	33		33	40	29		24		13	17	14	18	21	17	18	18
24	14	21	17	15		18	20	29	37	39	44	43		39		35	15	18	17	29	15	17	18	14
25	20	13				18	14	15	29	34	34	34		28	44		20	13	14	20	15	14	17	
26	15	13	17	14	17	14	18	30	25	28	29	30	42			29	43	29	28	20	20	21	14	13
27		13	13	18	15	14	20	33		31		43			44		29	28	23	28	14	13	17	25
28	18	15	20	13	17	15	20	29	29	35	42	42	29	40	34	18	34	29	33	18	18	18	17	
29			25	18			18	20		33	43		44	30	54	39	28	26	17	14	14	14		14
30	13		17	14	13	14	15	33	34		39	36	43	44	26	28	17	18	14	18	13	14	18	15
31	14	14	14	28				28		35	40	38	43	37			20	15	25	15	17	13	23	18
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	30	29	27	27	30	31	27	24	23	18	19	17	23	25	31	31	31	30	30	31	29	28
MED	15	15	17	14	17	15	20	18	25	34	34	36	33	30	28	28	20	17	14	14	15	14	17	15
U Q	18	18	18	18	18	17	21	29	33	36	40	43	42	39	39	30	28	20	20	18	17	17	19	17
L Q	14	14	14	13	14	14	18	15	18	27	29	30	28	23	22	18	17	15	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Yamakawa

OCT. 2003

LAT. 31°12.1'N LON. 130°37.1'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	50	48	49	45		42	51	67	82	84	85	87	86			98		90	86	54	66	63	52	47
2	53	36	43	47	42	A	50	75	70	82	88	85	82	88	111	110	88	87	86	76	52	52	49	51
3	53	53	52	50	47	48	54	68	81	87	88	86	89	112		115	110	110	86	74	50	44	53	51
4	52	54	51	55	36	36	43	70	85		108		119	130	128	109	100	87	86	80	62	51	53	52
5	44	54	36	50	37	32	36	77	86	84	77	88	110	90	108	113	117		86	77	67	71	66	52
6	54	50	54	52	36	37	43	70	84	80	78	88	113	109	112	111	111	109	85	78	76	66	52	51
7	51	52	61	52	37	34	36	71	85	84	80	88	111	128	125	109	87	86	86	77	66	66	66	66
8	66	54	50	50	47	36	46	70	84	86	87	86	90	110	111	90		99	84	66		54	60	53
9	50	36	51	52	47	36	41	74	84	81	88	89	114		130	111	86	78	78	80	53	51	50	43
10	47	36	34	46	37	36	43	66	76	81	87		113	129		108	89		78	63	51	51	53	52
11	43	49	41	46	42	29	34	66	79	83	85		114			110	111	84	80	35	A	44	38	A
12	A	44	34	50	36		35	65	77	76	76	78	88	89	88	110	108	90	70	52	52	50		34
13	42	47	36	42	46	32	42	70	81	78	80	90	112		109	111	90	78	67	54	52	54	52	52
14	52	52	42	44	37	41	43	68	80	85	108	114		113	127	111	90	90		64	43	52	A	37
15			41	32			36	66	72	79	89	87	80	82	106	90	105	88	81	37	36	48	A	34
16		A	A	37	32		36	71	89	81	88	88		103	129	109	103	84	73	47	36	44	46	47
17	51		36	36	34	36	38	66	80	77	80	95	119	91	108	98	85	90	79	27	A	38	A	
18	42	43	37	34		32	36	80	81	84	84	111	90	85		113	88	87	71	43	37	44	A	A
19	36	34	34	34	34	34	38	76	74	82	85	89	110	98	113		78	82	78	62		52	36	37
20	44	43	37	36	36	37	41	66	91	88	89	104	130	113	114	110		86	78	46	46	54	36	
21	32	36	36		36	31	34	66	81	88		116	100	90		128		76	75	80	74	36	34	36
22	36	37	34	34			29	66	91	111	130					112	82	78	76	62	67	A	A	A
23	36	42	44	40	36	41	36	66	88		119	131		114	128	108	81	75	77	67	54	66	53	49
24	49	44	41	43	38		31	68	86	84				88		113	86	76	66	61	65	54	52	48
25	43	43	A	A	A		34	80	102	113	110	110	113	130	129		112	114	81	64	66	A	A	37
26	A	44	A	44		30	29	72		99	108	130	115	137	157	129		86		65	76	66	52	37
27	34	36	36	37	36			72	87		118	88	100	138	131		130	130		80	66	52	53	
28	50	48	44	42	37	34	38	80	87	112	114	128		131	144	140		109	78	66	72	64	51	
29	38		43	37	37	37	45	76	87	129	129		115	138		114	136	110			86	66	A	A
30	A	54	A	47	71	A	A	82	81	66	108	136	85		118	103	88	87	87	74	77	78	53	52
31	50	A	48	46		34	30	51	86	114	84	84		142	109	142	128	101	86	52	77	66		82
	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	26	27	29	24	22	29	31	30	28	29	25	24	25	22	28	25	29	27	30	27	29	22	23
MED	48	44	41	44	37	36	38	70	84	84	88	89	110	112	116	110	90	87	79	64	65	52	52	49
U Q	51	52	49	50	42	37	43	75	87	88	108	112	114	130	129	113	111	100	86	76	72	66	53	52
L Q	42	37	36	37	36	32	34	66	80	81	84	87	89	90	109	108	86	83	76	52	51	49	49	37

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Yamakawa

OCT. 2003

LAT. 31°12.1'N LON. 130°37.1'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	30	G	39	G	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	33	40	40	44	40	G	G	52	G	G	G	G	39	62	G	41	G	G	26	G
3	G	G	G	G	G	G	G	36	G	43	61	G	G	G	G	G	G	G	G	G	29	G	24	33
4	G	26	G	G	G	G	G	33	41		54		51	G	49	G	55	40	G	83	24	41	26	G
5	G	G	G	G	25	G	G	N	G	G	G	G	G	G	G	G	G	G	G	G	29	29	40	32
6	G	G	G	G	G	G	G	G	40	42	G	G	G	G	G	G	G	G	G	G	29	34	25	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	48	42	35	39	42	44	30	G	G
8	G	G	G	G	G	G	G	34	42	50	54	57	65	55	56	44		G	42	G	G	G	G	G
9	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G	G	G	34	G	G	25	26	28	G
10	G	27	G	G	G	G	G	30	39	G	G	G	G	G	G	G	G	G	27	28	G	G	G	G
11	G	G	28	G	11	G	G	37	37	39	G		43	G	G	G	G	34	29	32	50	34	G	40
12	40	30	27	G		G	G	34	39	G	G	G	G	G	G	38	38	46	36	G	24	G		G
13	G	28	29	G	G	G	G	G	36	42	44	42	50	G	G	G	G	G	G	30	28	44	29	34
14	26	G	G	G	G	G	G	G	34	G	G	G		G	G	G	40	60	29	22	G	43	58	36
15	33	38	36	29	G		G	G	40	G	51	52	G	G	G	G	G	34	30	24	38	33	49	31
16	36	42	36	26	G		G	G		42	58	49	46	62	70	44	39	84	48	33	28	G	26	43
17	40	36	25	32	24	G	G	33	42	51	65	47	G	G	G	G	39	35	33	38	44	30	41	34
18	29	G	G	G		G	G	G	35	39	44	44	42	G		47	43	37	39	26	27	27	29	39
19	24	G	G	G	G	G	G	48	36	38	G	G	49	G	G	G	G	G	G	G	23	G	G	G
20	G	G	24	G	G	G	G	G	38	G	G	G	G	G	42	38		38	29	34	40	35	G	29
21	26	26	30	34	30	26	G		41	52		G	G	G		G		G	G	26	G	G	G	G
22	G	G	G	G			G	G	35	G	63	G	G	G	G	G	G	37	39	29		53	43	50
23	28	36	G	G	G	G	G	G	G	G	G	43		G	G	G	G	33	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G		G		G		44	48	35	29	G	G	G	G	G
25	G	34	46	53	43		G	41	42	62	54	42	54	71	G	G	G	40	33	53	53	69	46	31
26	50	37	59	30	40	G	G	35	51	44	50	G	96	62	64	82		51	27	33		G	G	G
27	G	28	G	27	27			G	G		42	55	42	G	G		G	G	28	G	G	G	G	
28	25	G	G	G	G	G	G	G	42	71	74	51	G	G	G	38		34	G	G	25	50	33	
29	G		G	G	G	G	G	G	G	42	G	G	G	G	G	G	G	G	29		G	G	42	43
30	41	41	48	41	33	34	45	36	40	42	43	G	49	41	63	59	50	34	G	49	52	39	30	39
31	43	43	40	32		G	29	G	G	38	54	67	G	G	G	G	40	G	28	34	26	G		G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	27	26	30	29	30	29	29	29	28	31	28	30	26	31	31	30	29	31	29	29
MED	G	G	G	G	G	G	G	G	36	39	42	G	G	G	G	G	G	34	28	26	25	26	26	G
U Q	29	34	29	27	25	G	G	34	40	42	54	48	47	G	21	38	40	38	33	34	33	35	36	35
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 Yamakawa

OCT. 2003

LAT. 31°12.1'N LON. 130°37.1'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	20	16	15	18	17	15	15	15	17	23	26				53	27	18	21	17	16	15	15	18	17
2	17	23	15	15	15	14	14	14	18		36	36			32	23	32	15	14	15	16	15	15	18
3	16	16	16	16	15	15	15	20	18	28	21		28	32			17	15	17	15	15	15	15	14
4	23	16	15	14	15	15	15	16	17		33		22	44	32	20	18	15	17	15	17	14	16	18
5	15	15	16	15	15	15	14	23	16	20	18			17		22	15	15	17	16	15	15	14	15
6	16	16	15	15	14	15	15	15	16	18		46	24	27	26	21	16	15	16	15	16	15	21	20
7	15	15	15	15	15	15	15	15	15	20	23			33	30	20	18	15	14	14	15	15	16	15
8	14	15	15	15	15	15	15	15	21	29	22	32	33	28	29	22		14	15	16	17	15	15	16
9	16	17	16	15	15	15	15	14	16	18	20	28				34	18	20	15	15	15	15	15	15
10	15	14	27	15	15	15	15	15	17	18	21					20	21	16	15	15	15	15	15	15
11	15	16	15	15	14	15	15	17	16	18	27		20	24	23	16	17	14	15	14	17	14	20	15
12	15	14	15	15	14	16	15	15	17	18	22		26		23	23	18	14	14	15	15	16		16
13	15	15	14	16	15	16	15	22	15	18	21	26	28	27	23	22	15	15	16	15	14	14	15	15
14	15	15	14	15	15	15	15	14	15	18	21	23		23	22	21	16	15	15	15	20	14	15	15
15	15	14	14	14	20		15	16	15	17	21	34		31	22	18	15	17	14	15	14	15	20	15
16	15	14	14	14	15		15	21	16	18	18	24	26	27	23	20	17	21	15	14	15	15	17	15
17	15	15	16	15	14	15	15	15	16	18	20	20	21	18	20	17	17	14	14	14	15	14	16	15
18	15	20	18	17		18	16	20	16	16	20	22	23	23		17	17	14	16	16	15	15	14	14
19	17	15	15	15	16	16	15	23	14	17	22	18	18			18	30	22	16	17	17	15	15	15
20	15	16	15	18	14	15	15	22	16	20			27	28	18	16		17	15	14	14	15	15	14
21	16	15	15	14	15	15	16	15	15	18		22		44				23	15	17	14	15	17	15
22	15	17	16	15			15	15	26	45	36		44		61	44	33	14	16	15	15	15	15	15
23	14	14	20	17	16	15	15	16	32		27	33		27			16	15	16	17	15	15	15	15
24	15	15	15	15	15	16	15	18	20	21						22	18	15	15	17	20	18	16	17
25	15	15	14	14	15		15	17	16	21	21	24	30	24	52	56	20	17	17	16	15	15	14	15
26	15	14	15	15	15	21	16	18	18	22	30	29	27	22	21	22		21	14	15	16	17	15	16
27	15	15	15	15	15			26	21		30	27	32		43		20	24	14	15	15	18	15	
28	17	16	16	15	15	18	15	24	18	24	33	27		26	22	20		15	17	16	15	15	14	
29	20		16	16	15	17	14	23	18	21	46	50	50	45	66	44	21	24	15		15	15	15	15
30	14	14	15	15	15	15	15	18	27	35	35	53	51	45	29	23	17	17	16	15	14	14	15	15
31	16	15	14	15		15	15	16	17	30	32				43	34	22	24	15	15	16	15		15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	31	28	26	30	31	31	27	27	19	18	21	22	27	26	31	31	30	31	31	29	29
MED	15	15	15	15	15	15	15	16	17	20	22	27	27	27	28	22	18	15	15	15	15	15	15	15
U Q	16	16	16	15	15	16	15	21	18	23	32	34	32	32	43	23	20	21	16	16	16	15	16	16
L Q	15	15	15	15	15	15	15	15	16	18	21	23	23	23	22	20	17	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Okinawa

OCT. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	61	52	52	54	53	40	50	71	82	95	92	96	115	124	136	142	128	122	104	87	87	84	83	76
2	66	63	62	64	51	34	37	72	74	84	108	98	96	113	135	136	127	121	110	104	87	87	86	81
3	72	66	72	63	50	47	51	72	87	91	107	101	108	140	147	146	148	146	144	126	87	76	78	78
4	66	54	54	50	36	29	34	71	80	102	122	128	147	149	170	171	158	147	130	131	104	84	77	76
5	72	86	87	66	37		30	74	90	96	90	107	118	121	127	131	132	131	110	104	108	106	88	87
6		86	86	54	34	28	36	71	78	87	85	102	121	122	135	141	142	137	132	108	108	108		87
7	79	83	76	66	36		34	80	82	88	88	104	118	141	135	127	126	126	127	110		101	105	86
8	99	87	87	81	48	32	36	67	90	104	104	110	114	135	136	127	118	111	109	107		88	80	66
9	54	54	54	68	61	29	32	66	83	85	110	121	136	171	161	148	135	110	98	101	76	54	53	51
10	51	51	57	52	40	26	29	64	80	94	108	118	146	170	171	169	146	134	106	86	87	106	105	88
11	87	86	73	56			29	59	75	87	102	111	131	147	157	153	146	124	96	73	52	49	52	52
12	52	48	47	60	28		31	60	78	80	78	88	106	118	131	135	131	120	101	82	82	78	71	61
13	66	53	51	63	50	29	36	70	75	80	80	98	122	142		143	128	117	90	83	88	76	83	76
14	85	86	53	51	63	48	45	71	77	84	107	94	107	132	142	131	131	123	122	81	73	87	77	64
15	61	49	58	44			31	65	63	100	146	96	102	115	116	125	110	106	110	48	52	66	A	51
16	48	48	40	40	37		32	74	104	85	104	108	122	142	146	150	147	130	122	87	84	84	70	84
17	85	34	40	40	30	30	35	71	84	77	85	110	131	131	132	142	131	117	123	77		76	61	38
18	46	51	36	34		30	34	76	95	85	87	107	117	114	118	144	137	120	93	73	66	66	53	50
19	47	44	42	40	42	37	41	84	91	86	106	107	112	116	131	116	102	105	96	83	82	80	66	54
20	47	50	33	45	37	36	40	67	88	110	124	118	141	148	148	140	144	132	110	88	72	67	66	A
21	31	A	A	34	40			66	86	101	102	122	137	130	157	150	147	130	107	108	87	66		42
22	44	42	47	40				66	87	118	147	127	136		146	137	117	120	108	87	87	52	42	43
23	40	A		51		34	41	45	66	100	110	130	144	131	144	144	125	107	82	81	84	87	100	86	73
24	72	54	42	46	36		28	71	96	86	98	122	107	128	134	136	108	102	101	87	87	87	72	66
25	52	54	41	40	37	30	35	90	108	100	111	122	137	146	145	148	145	145	130	88	87	84	54	53
26	49	48	48	51	53			65	101	110	130	137	143	168	179	176	171	148	142	116	123	131	87	72
27	51	41	36	41	30			74	105	101	117	116	124	148	146	157	170	162	148	140	106	87	73	52
28	51	51	50	38			30	73	102	120	130	144	151	167		175	175	150	135	110	105	86	66	44
29	43	47	48	44	37	36	38	74	98	136	141	128	132	145	146	148	157	160		147	131	84	53	52
30	72	73	52	55	78	A	A	A	87	64	130	136	102	102	121	110	114	128	126	74	78	100	71	52
31	51	52	47	41		34		44	138	105	108	126	142	150	149	152	168	146	148	110	126	128	127	145
	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	30	30	25	18	25	30	31	31	31	31	31	30	29	31	31	31	30	31	28	31	28	30
MED	53	52	51	50	37	33	35	71	87	94	107	111	122	140	144	142	135	126	110	88	87	84	72	65
U Q	72	69	58	60	50	37	39	74	98	104	124	126	137	148	148	150	147	145	130	110	104	100	84	78
L Q	48	48	42	40	36	29	31	66	80	85	92	102	112	122	133	131	126	117	101	83	80	76	63	52

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

OCT. 2003

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

DH	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	34	41	G	G	G	G	G	G	G	43	42	35	G	G	G	G	G
2	G	G	G	G	G	G	G	35	G	G	66	G	G	G	G	50	50	56	48	28	G	G	G	27
3	G	G	G	G	G	G	G	G	44	G	G	49	50	G	G	46	G	G	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	40	47	53	54	G	51	60	56	58	107	33	24	69	27	G	G
5	G	G	G	G	G	G	G	32	G	G	G	G	G	G	G	G	G	G	G	G	27	38	29	30
6		G	G	G	G	G	G	G	36	G	44	G	G	G	G	G	G	G	G	25	28	44	30	28
7	G	G	G	20	G		G	G	40	G	G	G	G	69	58	50	51	46	37	35	40	53	38	G
8	G	G	G	G	G	G	G	G	36	48	106	65	63	66	66	54	77	49	29	28	28	43	G	G
9	G	G	G	G	G	G	G	G	36	G	G	G	G	G	G	G	G	36	29	25	29	26	32	28
10	G	G	G	G	G	G	G	33	40	46	44	G	G	G	G	G	37	G	G	G	G	40	39	G
11	G	G	G	G	G	G	G	33	G	G	G	G	G	G	G	G	39	33	30	34	30	24	G	G
12	28	28	33	G	23	G	G	G	G	G	50	G	56	64	48	54	45	39	30	30	33	29	G	G
13	G	G	24	G	24	G	G	38	43	79	73	44	50	48	60	48	G	G	G	G	53	26	35	39
14	G	G	G	G	G	G	G	G	35	G	G	G	G	G	45	42	44	34		35	29	32	G	35
15	27	29	G	G			G	35	42	G	G	G	46	42	G	G	48	40	47	23	24	26	54	43
16	32	30	G	G	G		G	G	34	G	45	46	G	G	G	G	G	38	33	26	G	24	58	29
17	24	32	G	G	G	G	G	G	40	48	49	61	56	47	G	G	48	44	36	37	41	35	27	G
18	28	24	28	G		G	G	G	36	G	44	46	53	46	46	46	48	57	58	27	38	31	27	G
19	G	G	G	G	G	G	G	G	G	47	44	G	G	G	G	G	G	37	33	30	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	49	66	76	80	64	52	48	39	39	28	37	45	43	114
21	28	36	33	G	G	G		27	40	44	44	74	G	48	42	G	G	G	G	G	51	43	37	G
22	G	G	G	G				G	G	G	54	50	G	G	G	G	58	73	44	36	29	30	G	26
23	G	40	35	34	25	G	G	G	40	G	50	G	48	44	G	G	37	39	37	29	G	G	11	G
24	G	G	G	G	G		G	G	G	G	G	G	G	48	52	45	52	45	28	67	42	G	G	G
25	G	G	G	G	G	G	24	G	40	72	54	G	G	G	G	G	G	G	34	G	G	G	G	G
26	G	32	32	26	28			G	G	G	G	47	G	G	G	G	G	30	36	46	G	G	G	G
27	G	27	27	32	27			G	G	G	42	51	54	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G			G	G	41	51	42	42	G	66	68	47	G	37	G	46	29	G	30	G
29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	G
30	G	G	44	40	34	38	60	83	52	50	58	G	90	87	78	61	41	G	G	G	G	42	36	40
31	34	G	G	G		24	26	G	G	39	50	G	45	45	48	53	40	33	33	50	34	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	26	23	27	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31
MED	G	G	G	G	G	G	G	G	36	G	44	G	G	G	G	G	39	37	32	27	28	26	G	G
U Q	G	27	24	G	G	G	G	32	40	47	50	49	50	48	52	50	48	44	36	35	37	38	35	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

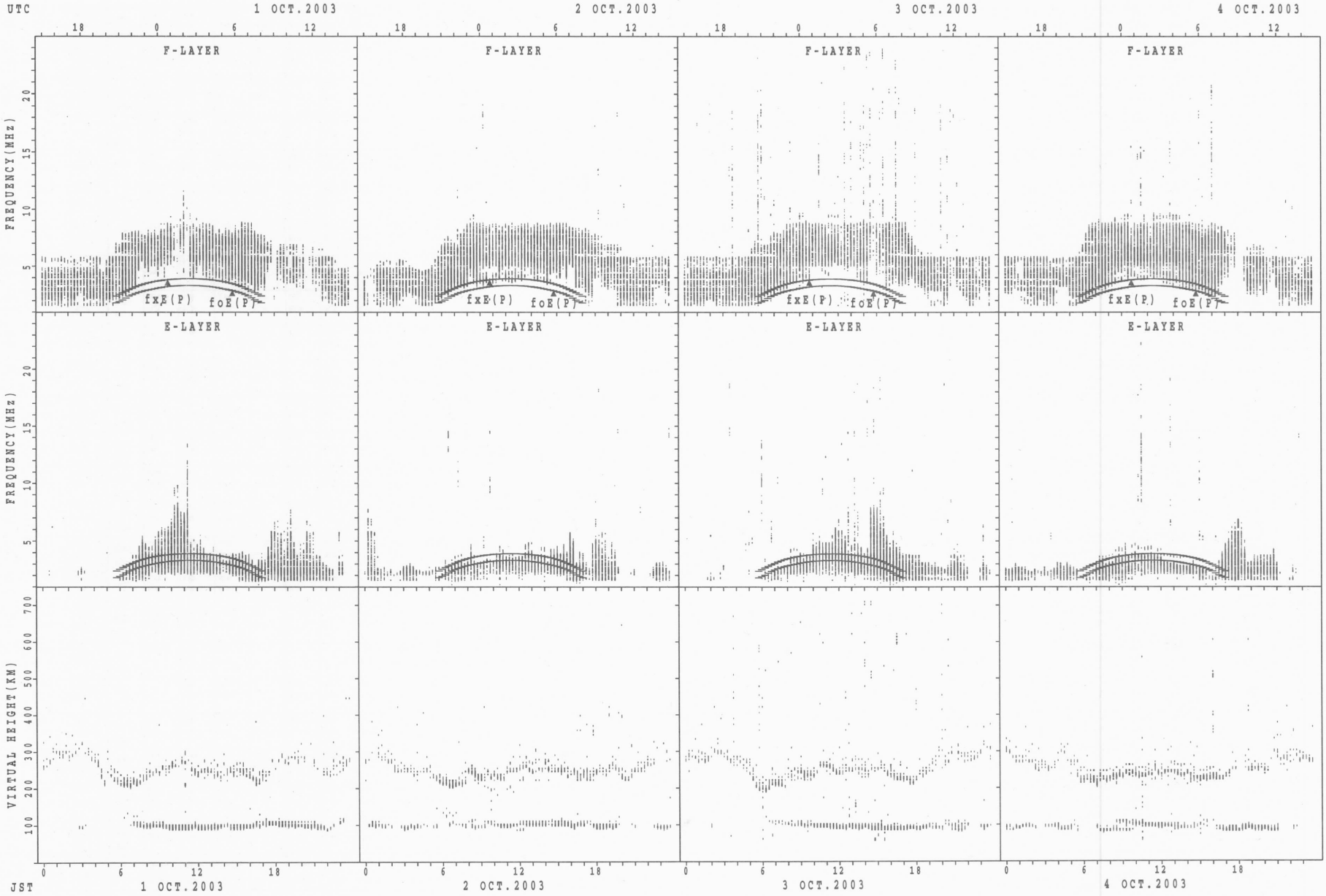
OCT. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	15	15	14	15	14	15	15	21					54	26	15	15	14	14	14	14	16	17
2	14	15	14	14	14	14	14	15	20	21	23	26		47		24	32	14	14	14	14	15	15	14
3	15	15	14	14	15	15	14	15	15	20	29	34	35	33	27	23	23	14	20	14	16	15	14	14
4	14	14	14	15	14	16	14	14	16	30	33	38		34	39	23	23	14	14	14	14	14	15	15
5	14	14	14	14	14	16	15	15	14	15	21	22		18		21	14	14	18	14	14	14	14	14
6		14	14	14	14	14	14	14	14	17	22			27	26	22	16	14	16	15	14	14	14	15
7	15	14	15	14	15		15	15	15	22	38	28		36	23	22	16	14	14	14	14	14	14	14
8	15	14	15	14	14	15	14	14	15	33	22	26	35	32	27	28	20	14	14	15	15	14	17	16
9	15	14	15	15	14	15	14	14	15	18	27			47	38	34	20	14	14	14	15	14	14	14
10	15	14	14	15	14	15	14	14	16	17	23	23			23	21	18	14	16	14	15	14	14	14
11	14	14	15	14	15	15	15	14	14	18	21	27	23	21		22	16	14	14	14	14	15	15	15
12	14	14	15	14	14	15	14	14	14	29	20		36	38		22	17	14	14	14	14	14	14	14
13	14	14	14	15	15	17	15	14	14	15	18	23	28	28	28	22	16	14	16	14	14	14	14	14
14	15	14	14	14	14	15	14	14	14	21	21	23	24	27	26	21	15	14	14	14	14	14	15	14
15	14	14	15	18			14	14	14	15	23	32	33	26	26	21	15	16	14	14	15	14	14	14
16	14	14	14	15	14		15	21	14	17	21	29	44			18	16	14	14	15	14	16	14	14
17	14	14	15	14	14	15	14	14	16	18	21	23	29	23	39	20	17	16	14	14	14	14	14	16
18	15	16	14	15		15	15	14	14	16	22	22	22	23	23	21	16	14	14	14	14	14	15	16
19	15	15	14	14	17	15	15	14	16	18	22	28	21	21	18	14	14	15	14	14	15	15	15	15
20	14	15	15	14	14	16	14	23	21	21	33	34	33	29	21	22	15	14	14	14	14	14	14	14
21	15	14	14	15	16	14		15	14	18	21	22		39	35	17	14	14	15	17	15	14	14	15
22	14	15	15	14				16	29	42	35	39	44	58	56	45	32	18	14	14	14	14	14	14
23	15	14	14	14	14	14	14	18	18	23	26	34	33	29	23	20	17	14	14	14	14	14	15	14
24	14	14	14	15	14		16	22	18	23	28	33	88	52	33	28	22	15	15	14	14	15	15	15
25	15	15	14	15	14	15	16	22	18	18	22	22			43	51	15	14	14	15	15	15	15	14
26	15	14	14	14	14			18	22	22	24	30	44	30	30	29	62	24	15	14	15	15	14	14
27	15	14	15	14	14			16	30	26	33	38	38		45	28	22	28	17	18	14	17	15	15
28	14	15	15	15			21	17	17	24	39	32		27	21	18	16	14	15	14	15	14	14	16
29	15	14	14	14	14	14	15	24	17	22	43	46	45			45	22	27	14	14	15	15	15	14
30	15	16	15	14	14	14	14	18	28	32	39	53	40	42	36	29	21	17	17	15	15	14	14	14
31	14	15	14	14		15	15	15	17	24	34	44	38	36	36	26	21	15	14	14	14	16	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	26	23	27	31	31	31	30	27	20	25	25	31	31	31	31	31	31	31	31	31
MED	15	14	14	14	14	15	14	15	16	21	23	29	35	30	28	22	17	14	14	14	14	14	14	14
U Q	15	15	15	15	14	15	15	18	18	24	33	34	42	38	38	28	22	15	15	14	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	18	21	23	28	26	23	21	15	14	14	14	14	14	14	14

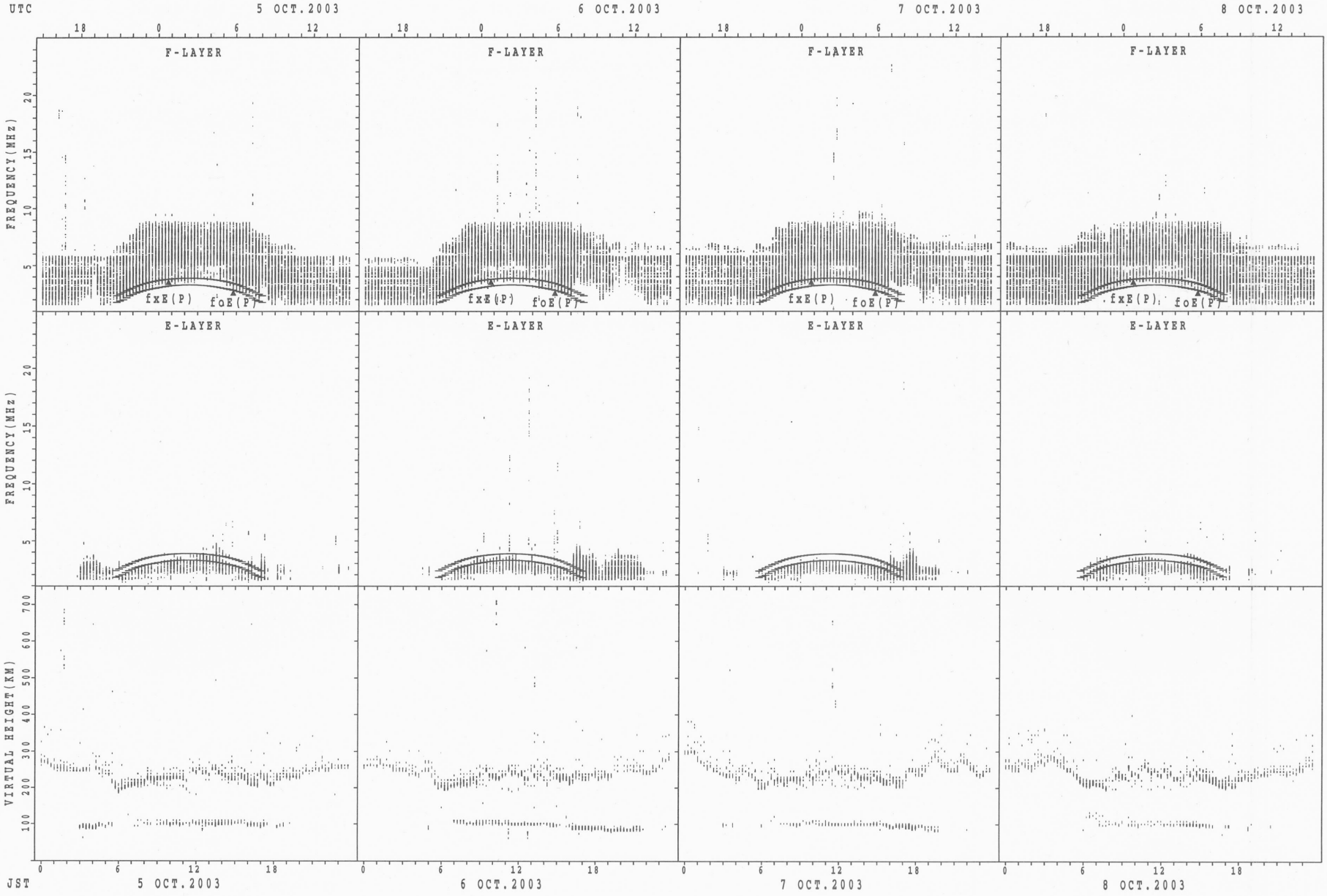
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

SUMMARY PLOTS AT Wakkanai

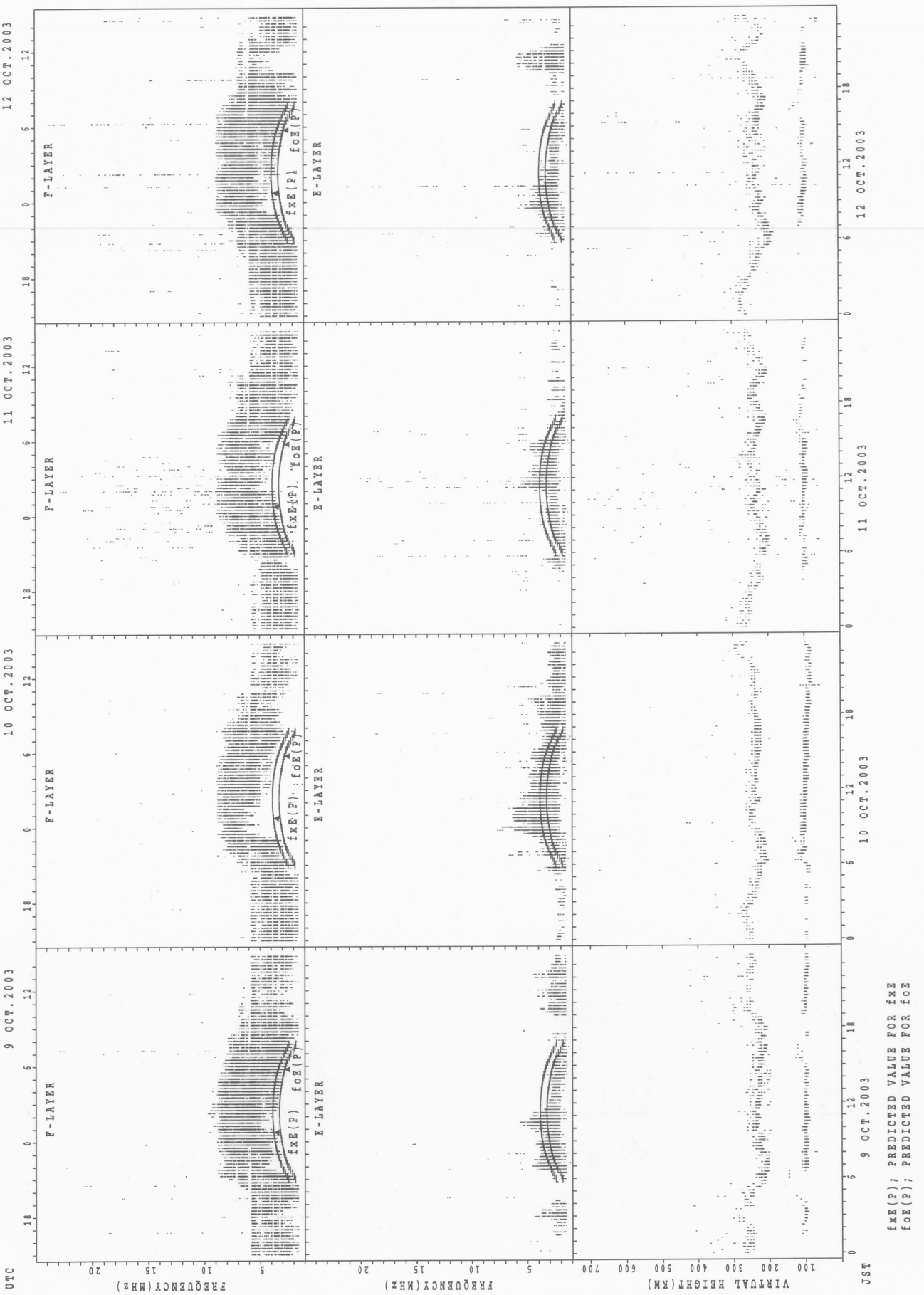


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

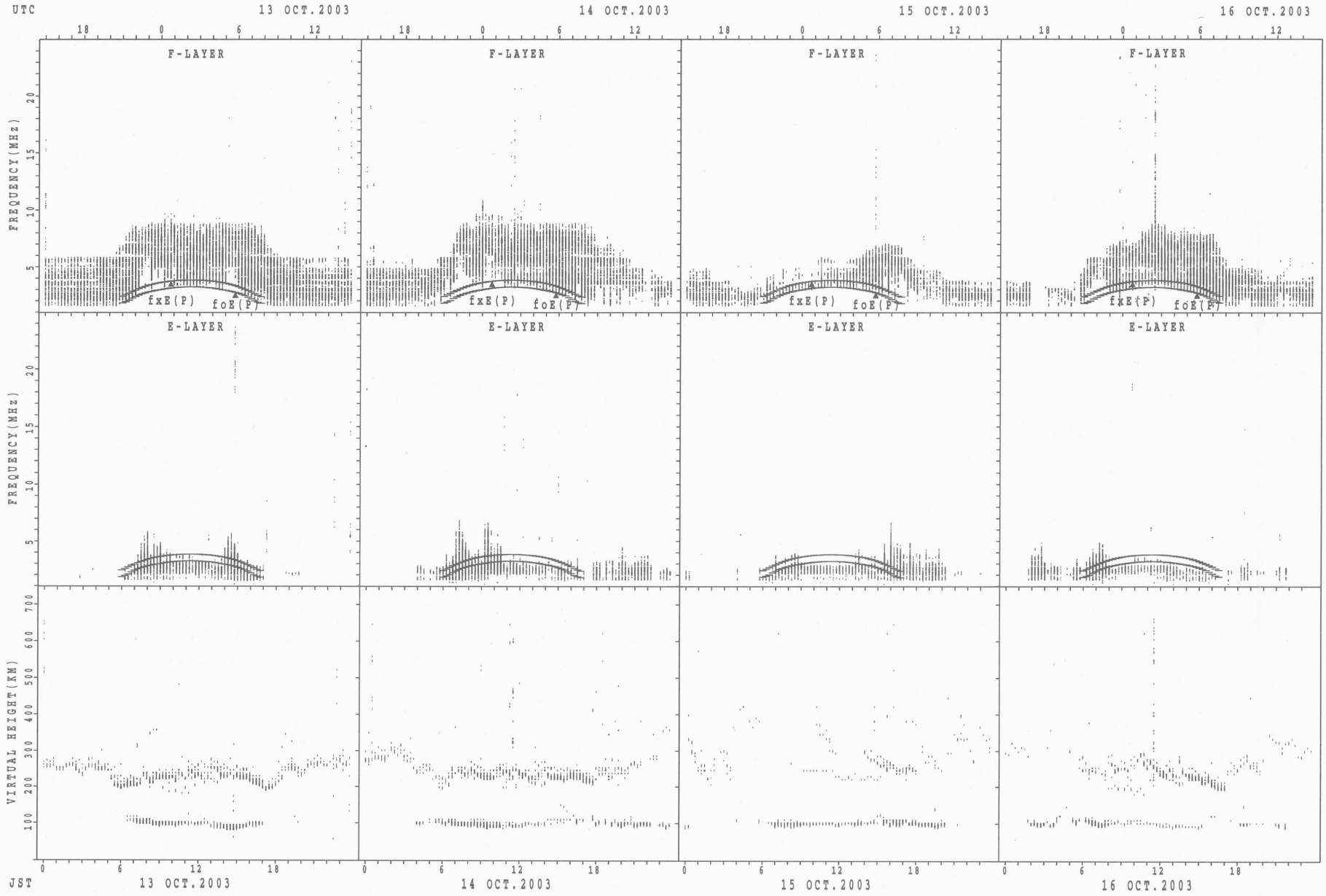
SUMMARY PLOTS AT Wakkanai



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

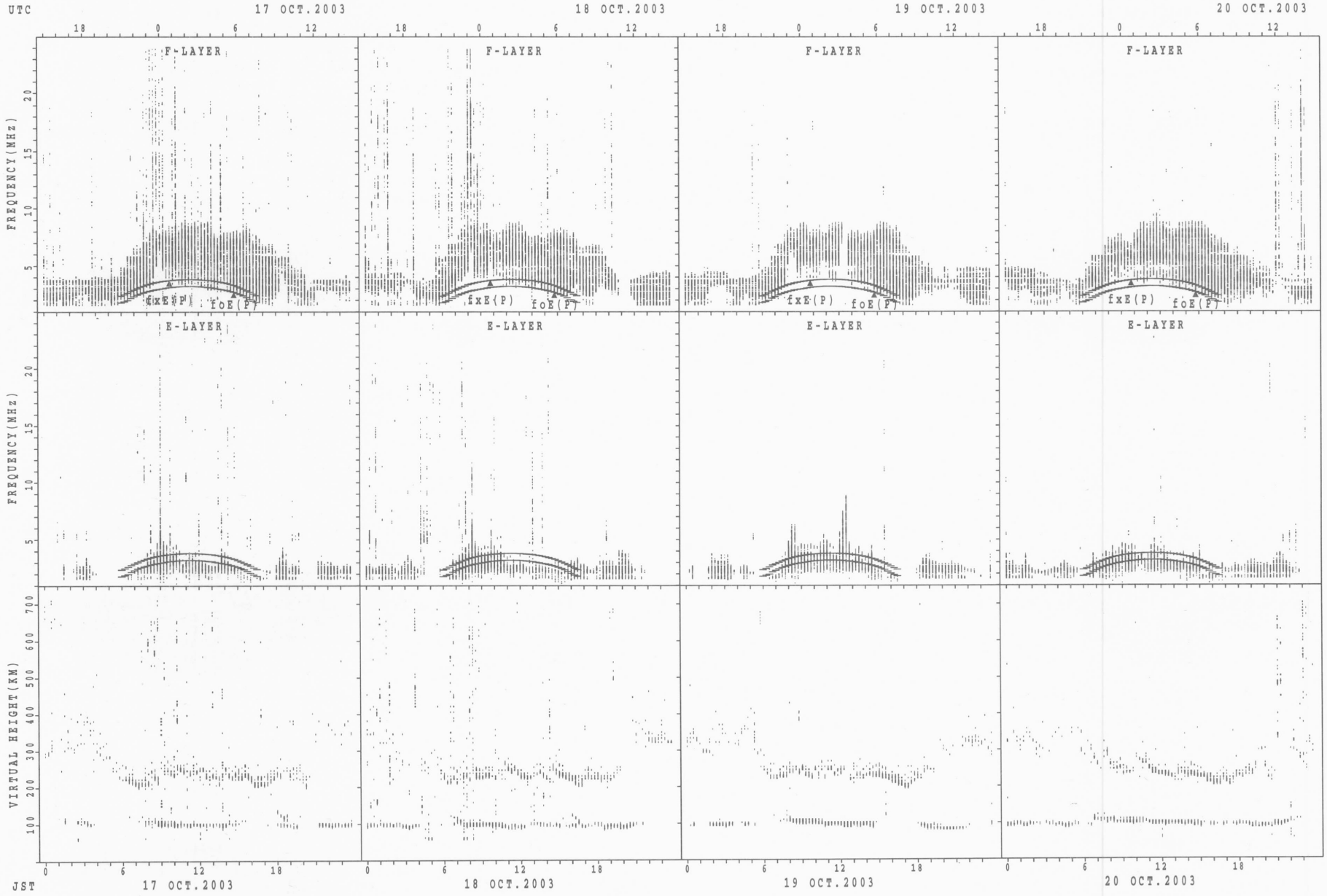

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 OCT.2003
10 OCT.2003
11 OCT.2003
12 OCT.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



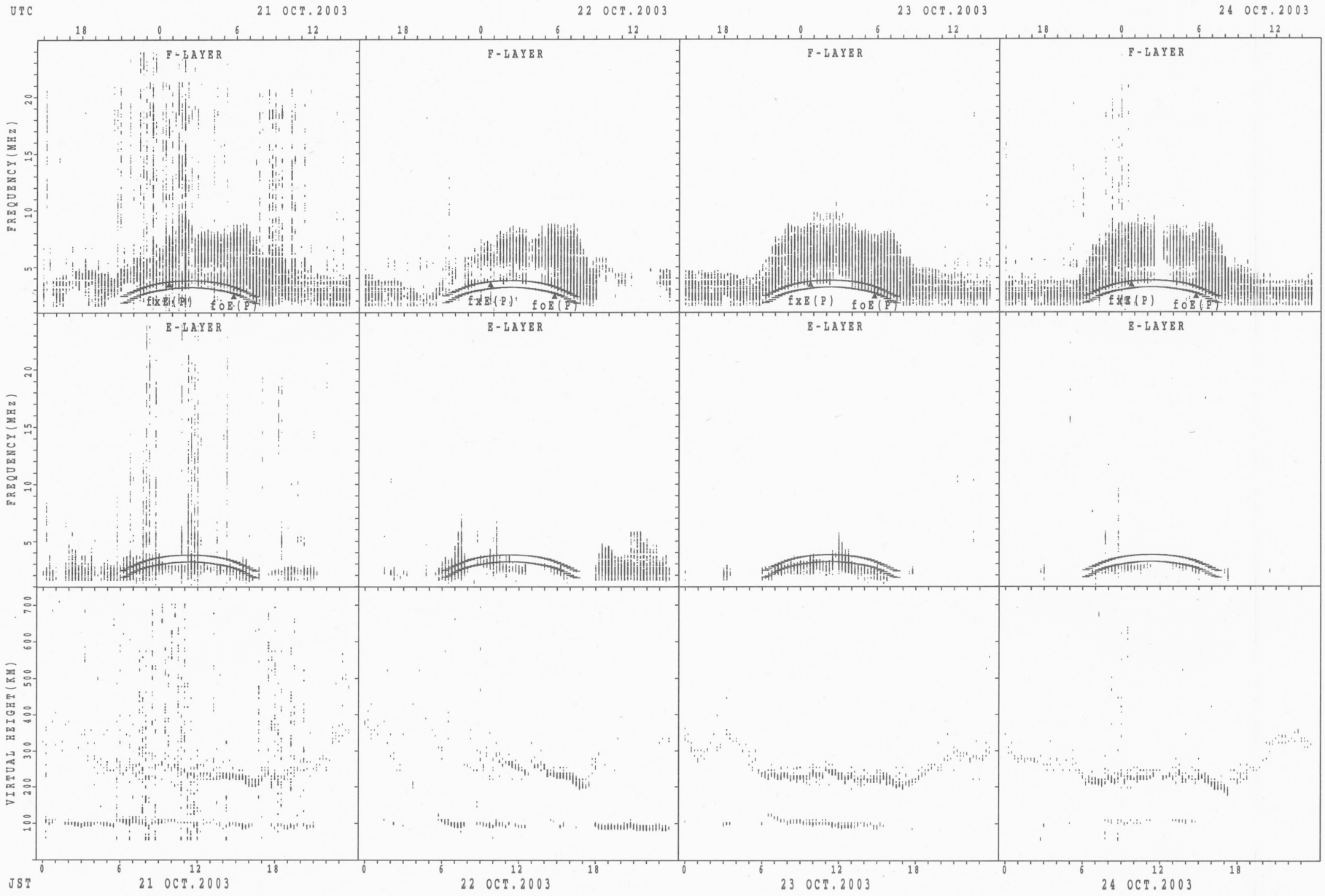
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

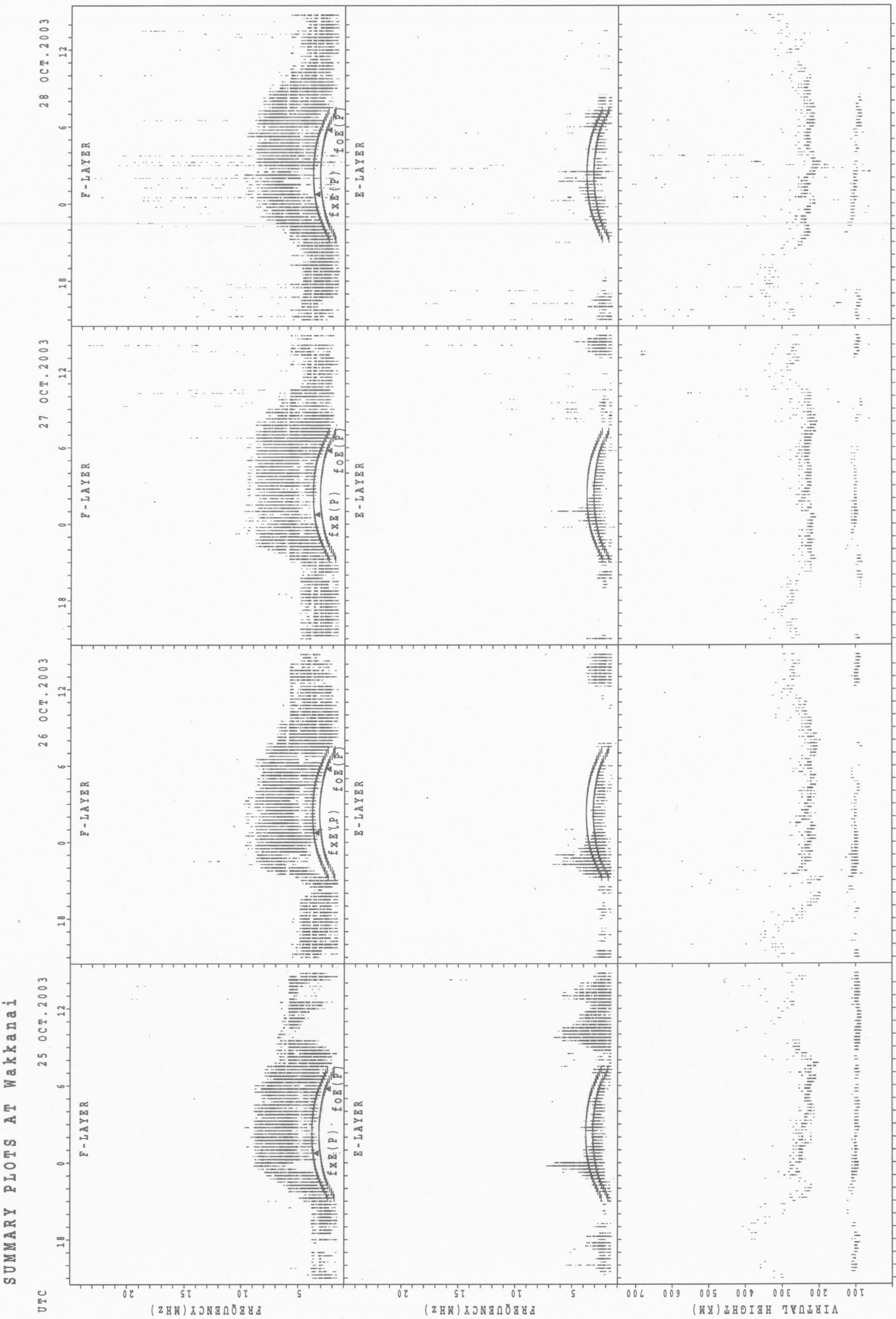


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

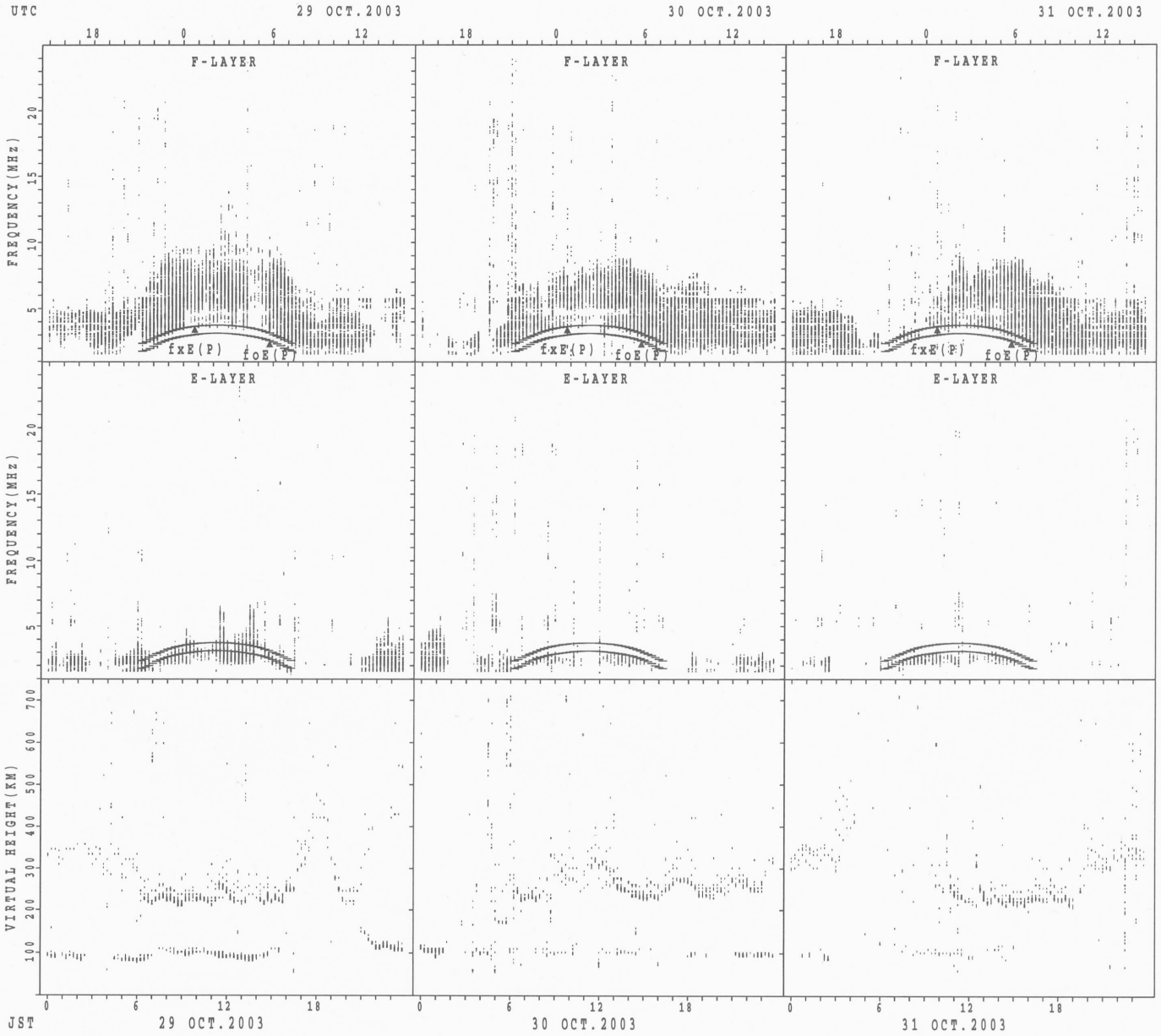
SUMMARY PLOTS AT Wakkanai



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

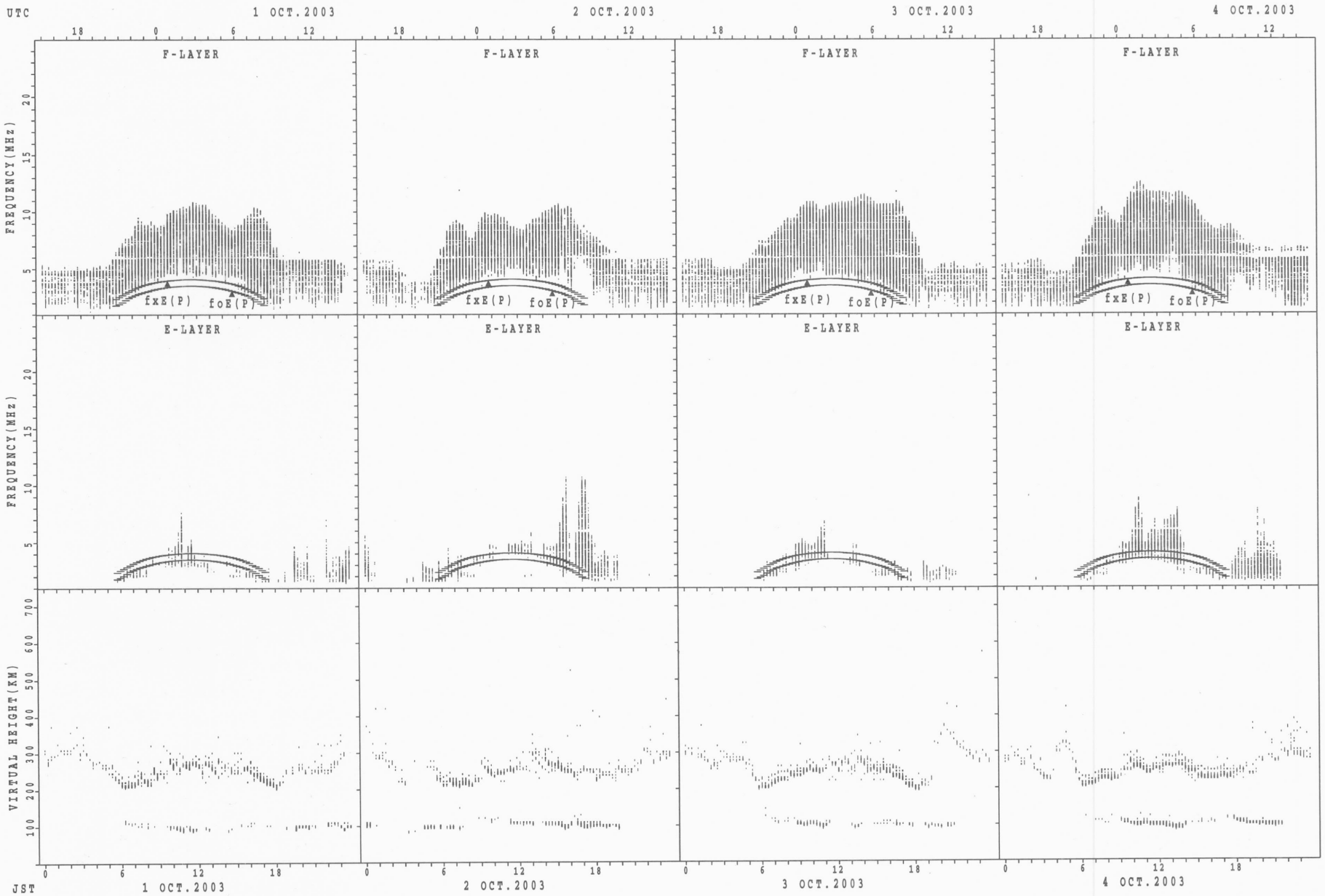

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 OCT.2003
26 OCT.2003
27 OCT.2003
28 OCT.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



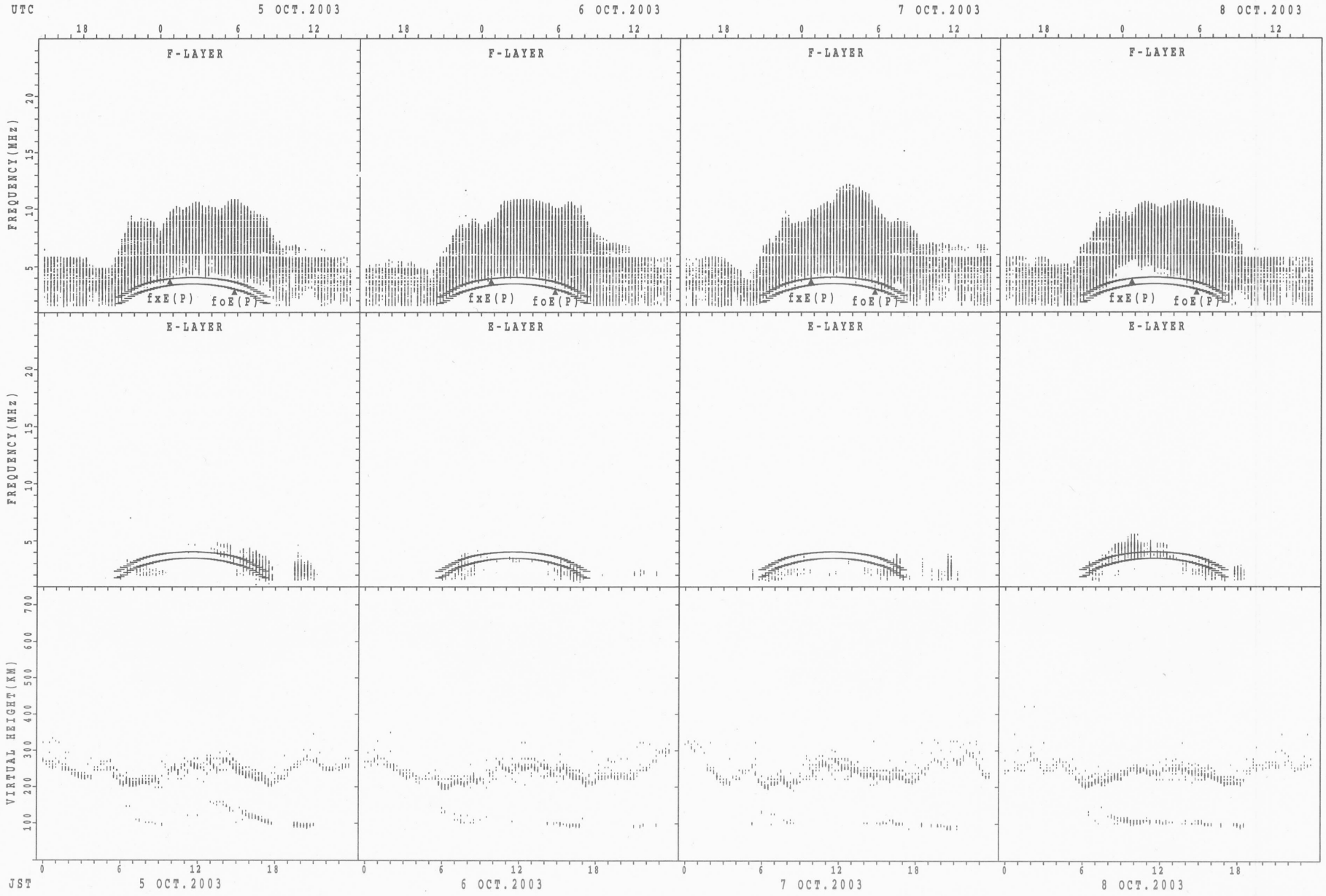
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

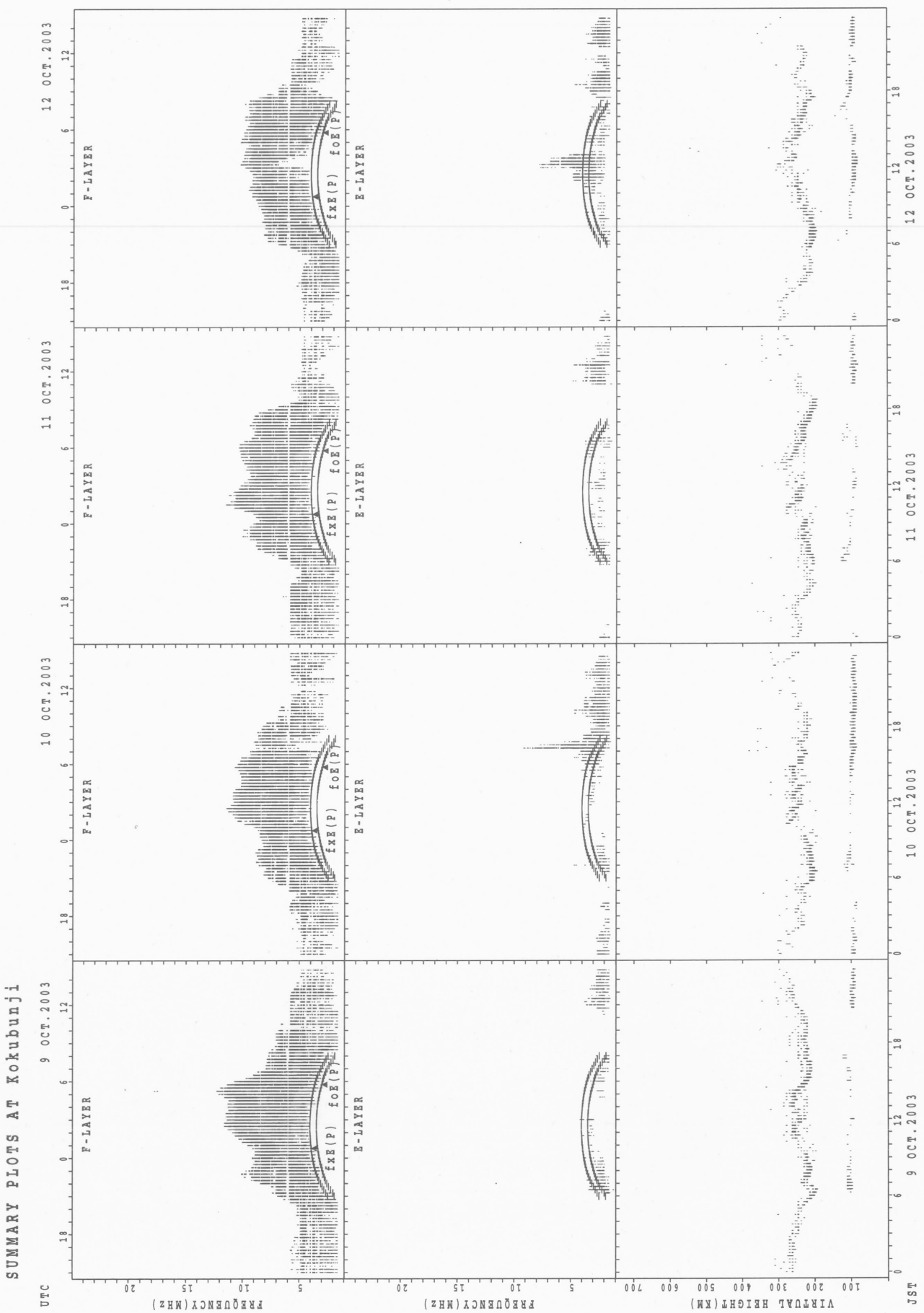


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

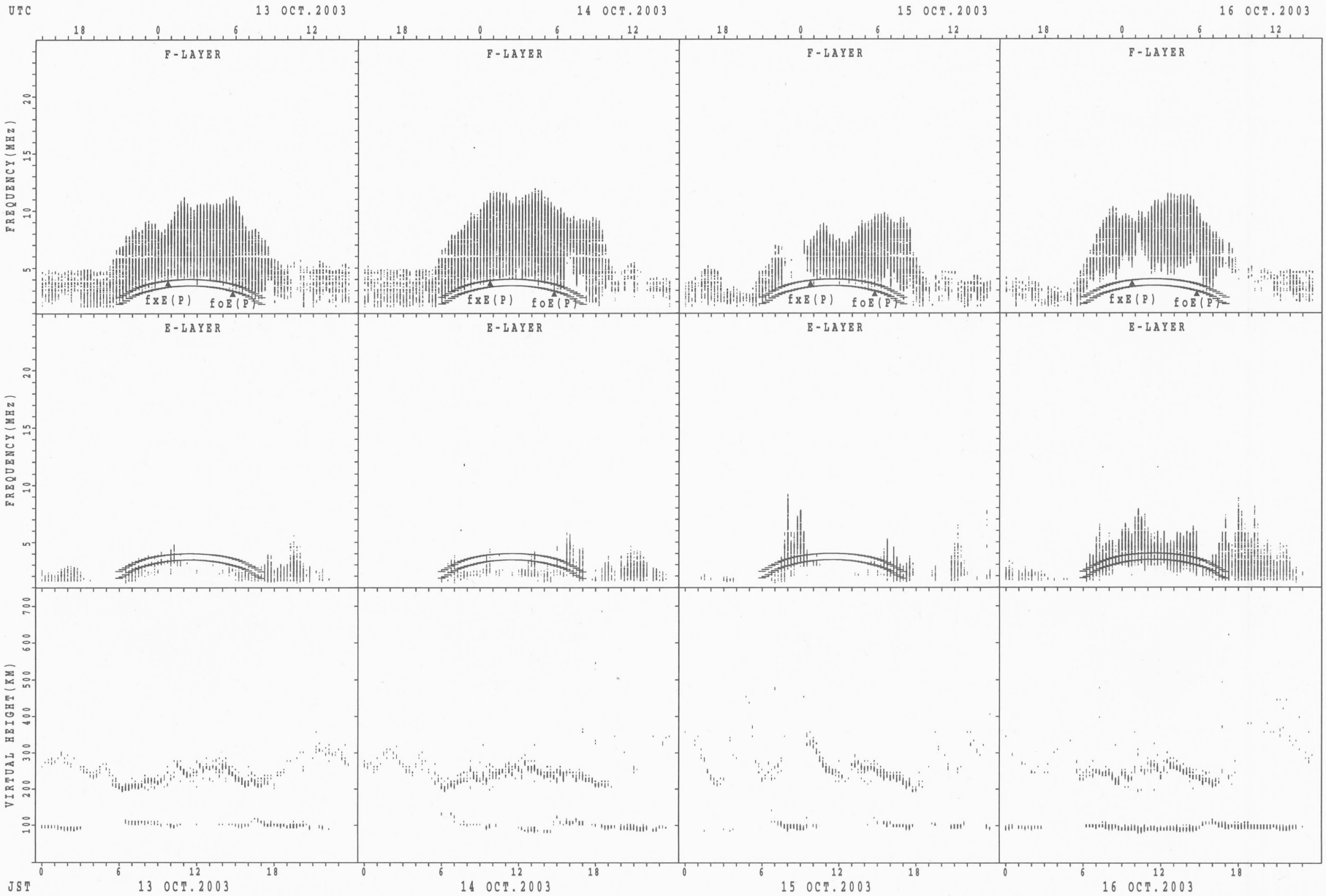
SUMMARY PLOTS AT Kokubunji



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

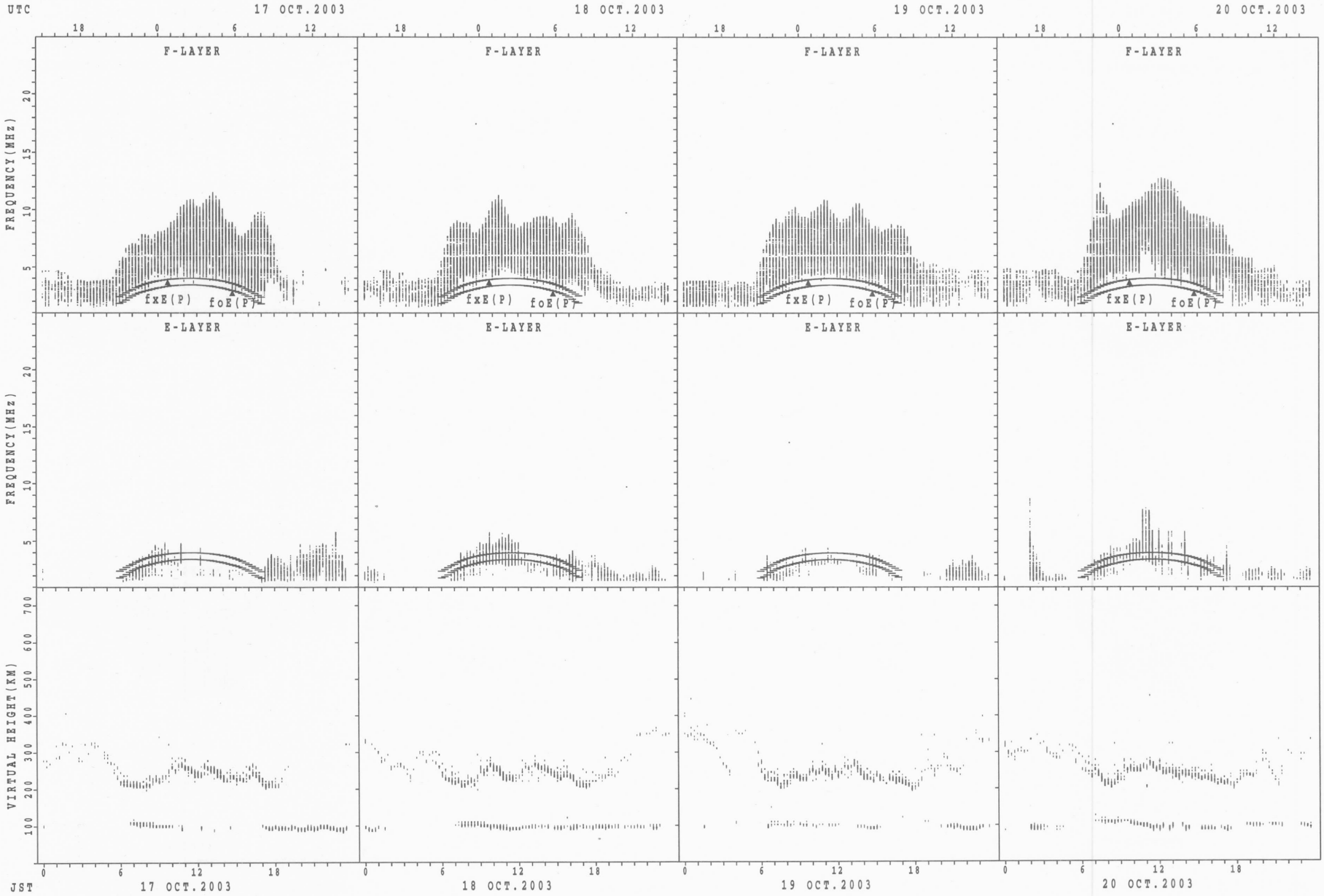

SUMMARY PLOTS AT Kokubunji
UTC
JST
9 OCT.2003
10 OCT.2003
11 OCT.2003
12 OCT.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



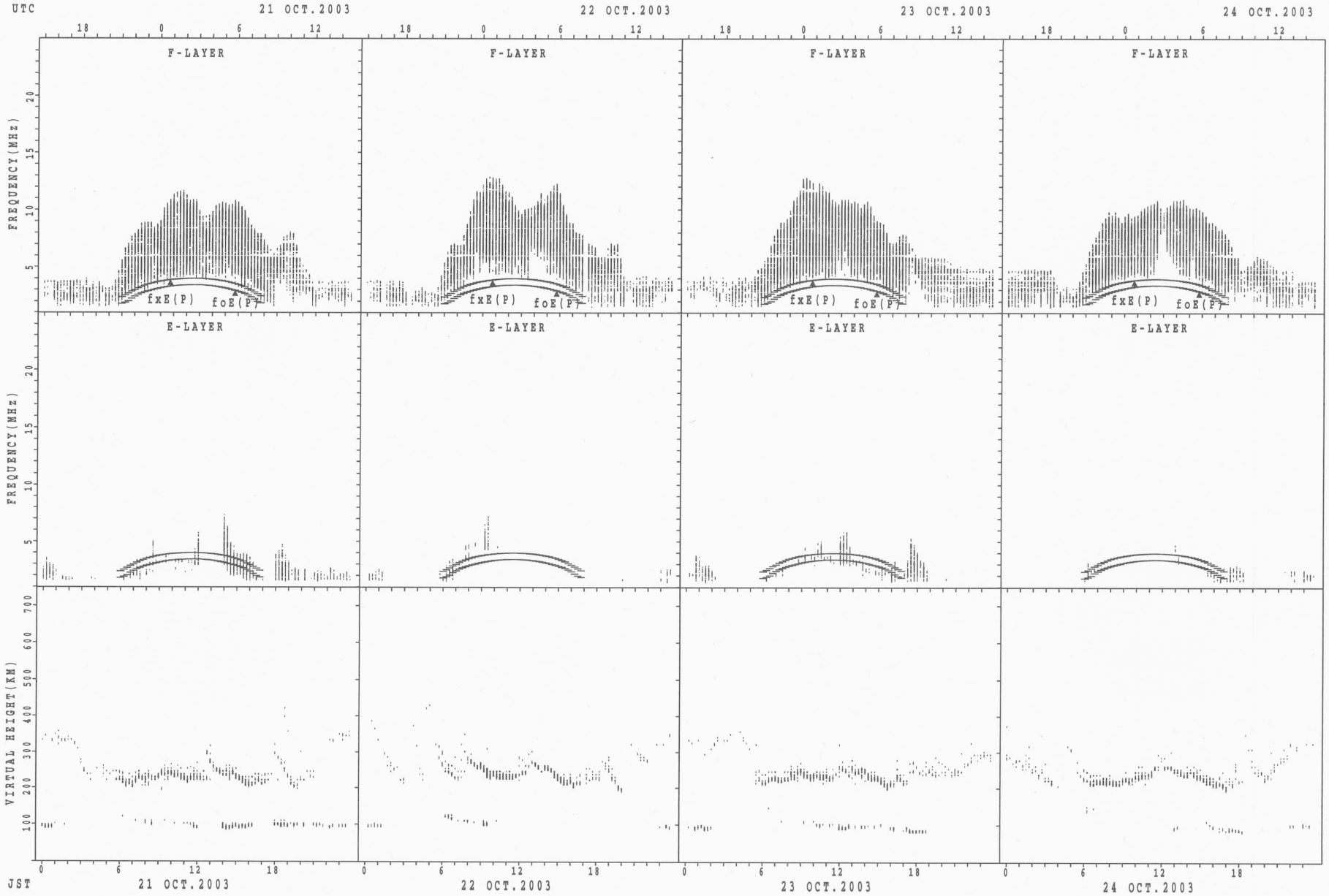
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

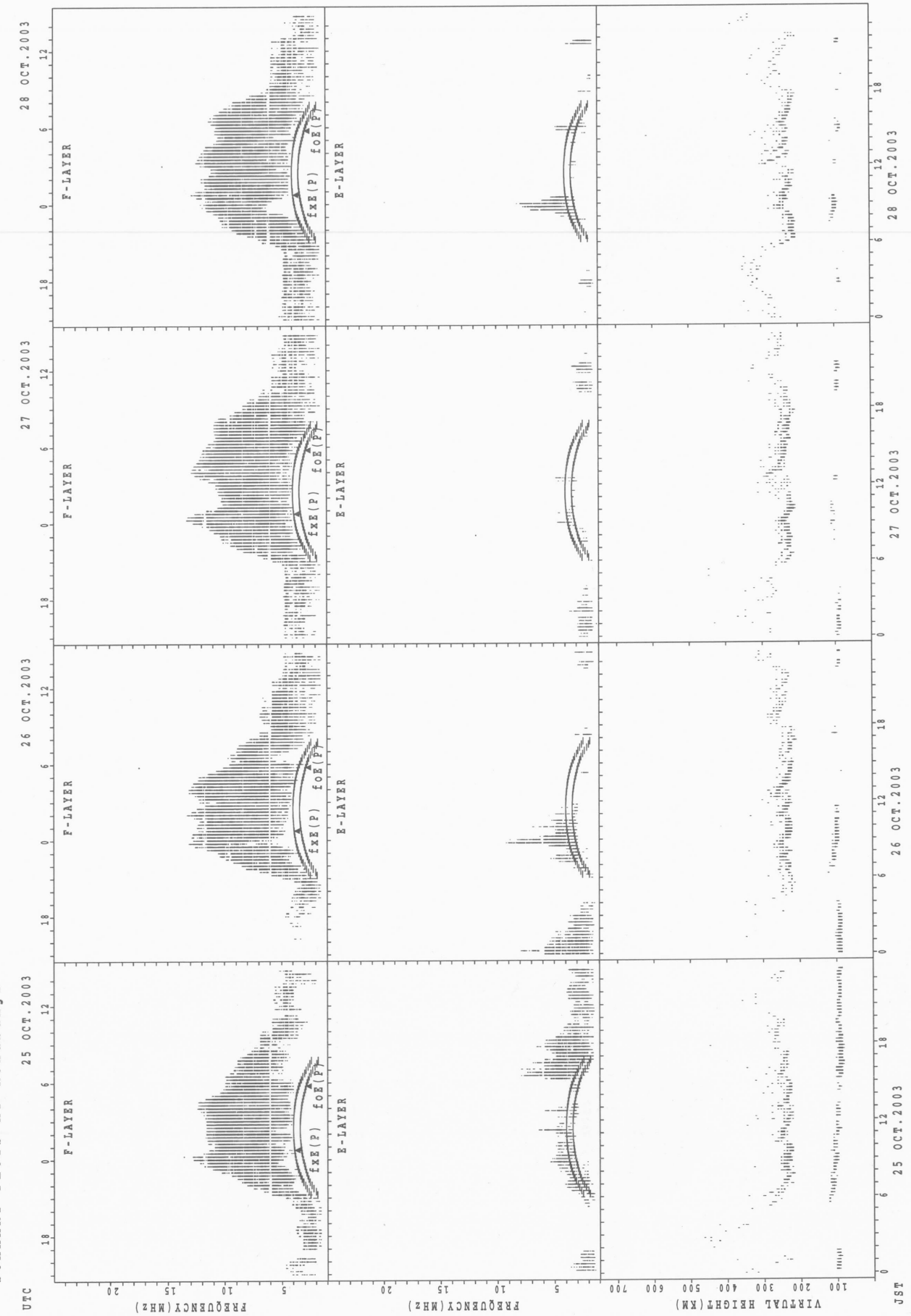


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

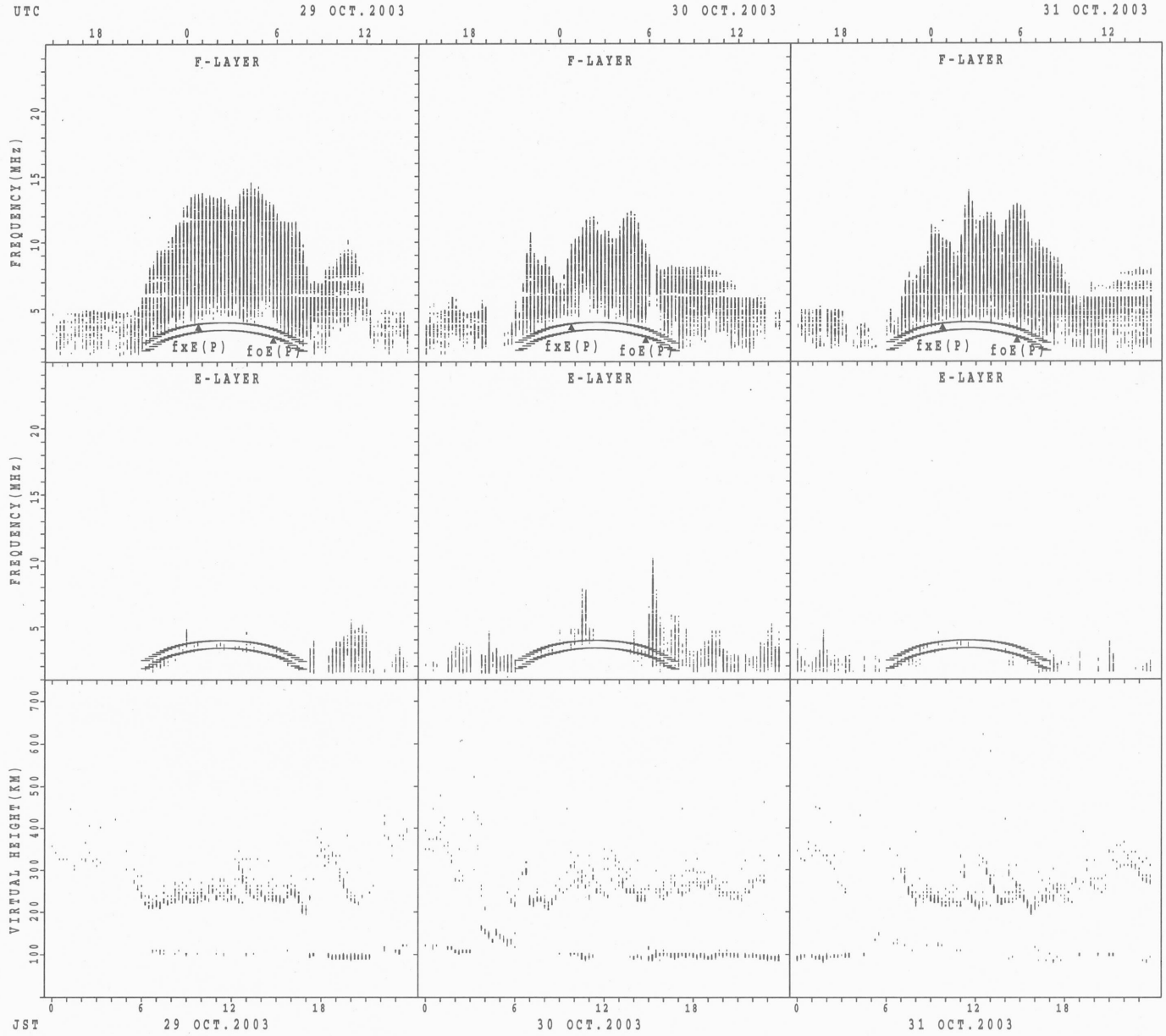
SUMMARY PLOTS AT Kokubunji



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

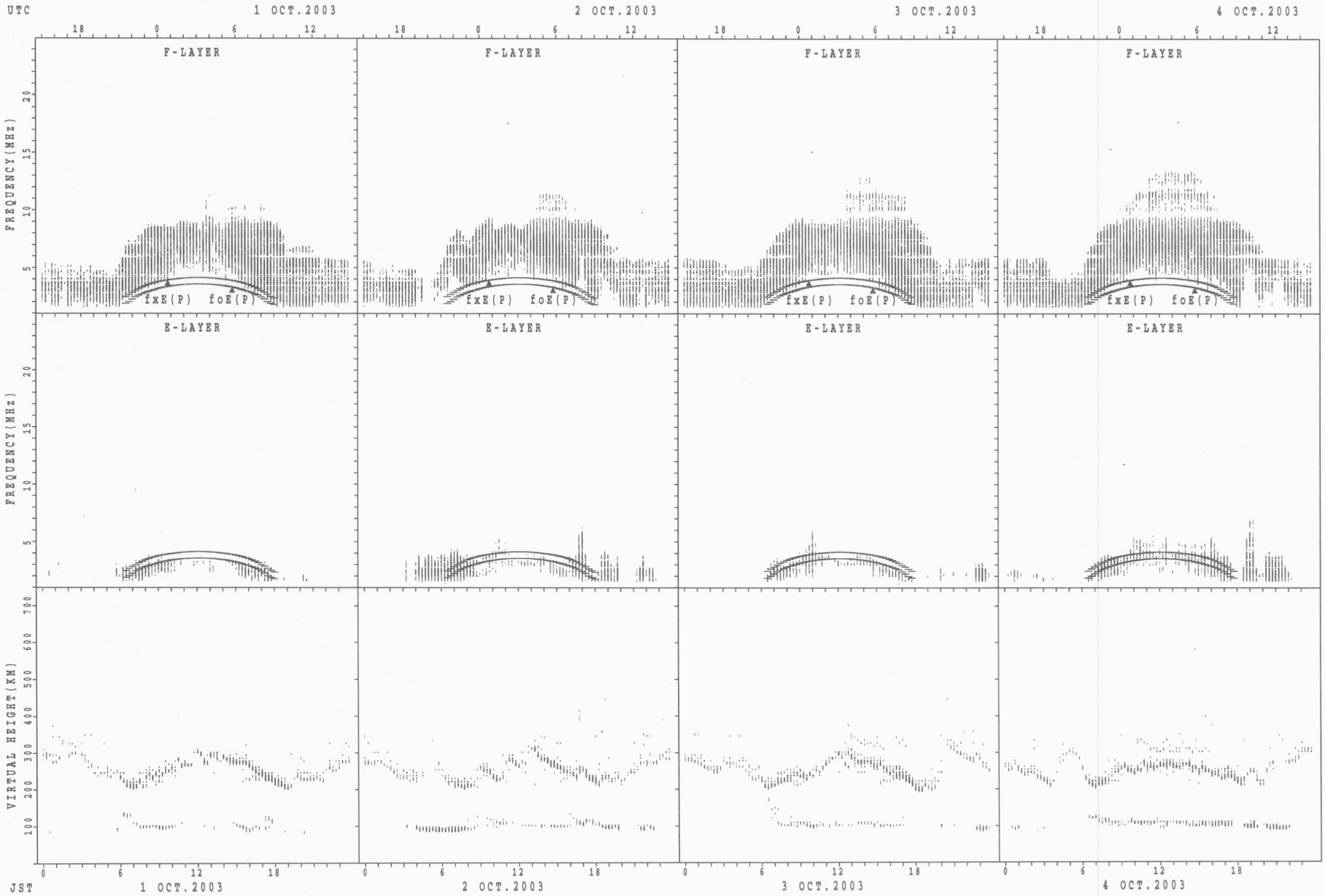

SUMMARY PLOTS AT Kokubunji
UTC
JST
25 OCT.2003
26 OCT.2003
27 OCT.2003
28 OCT.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



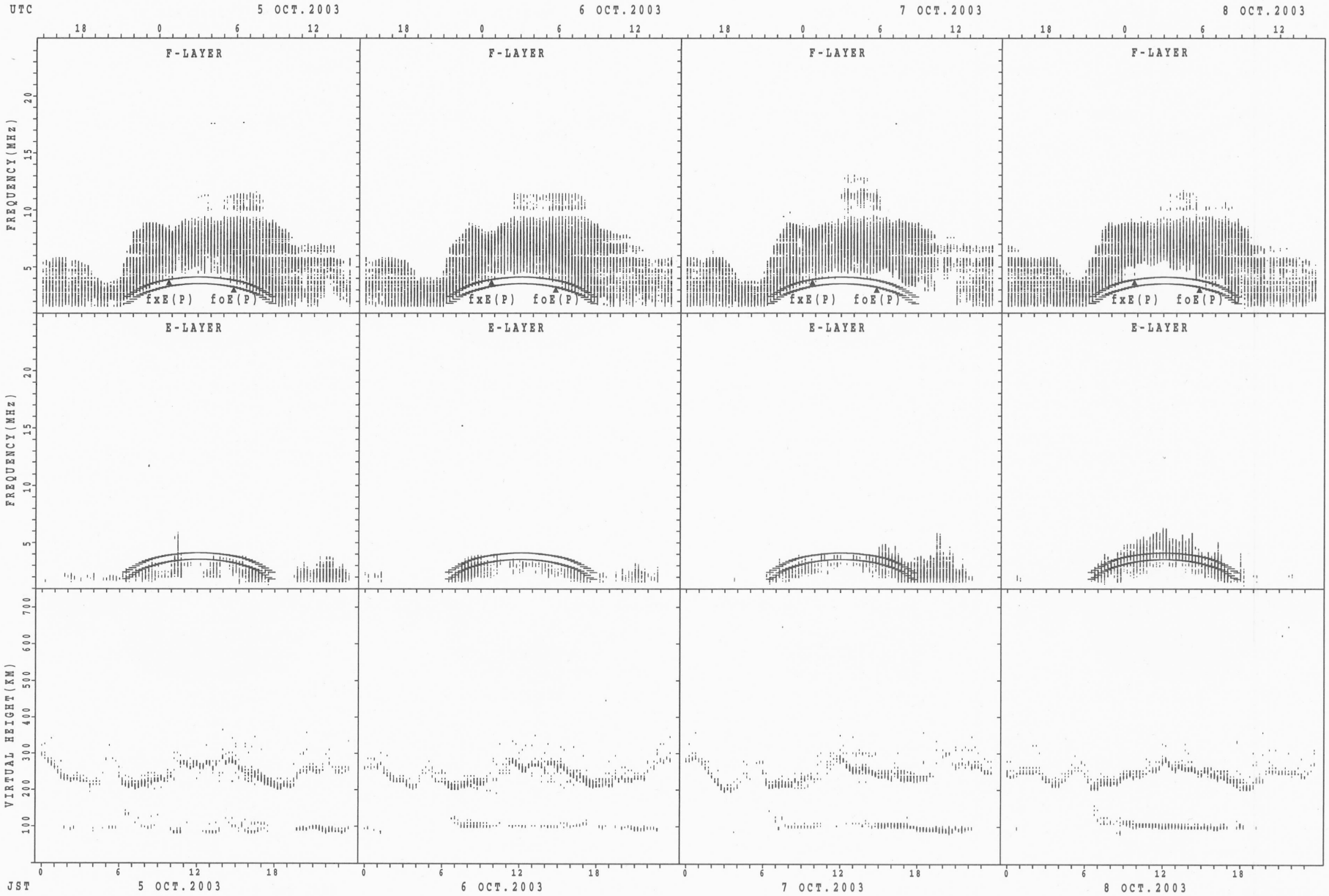
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



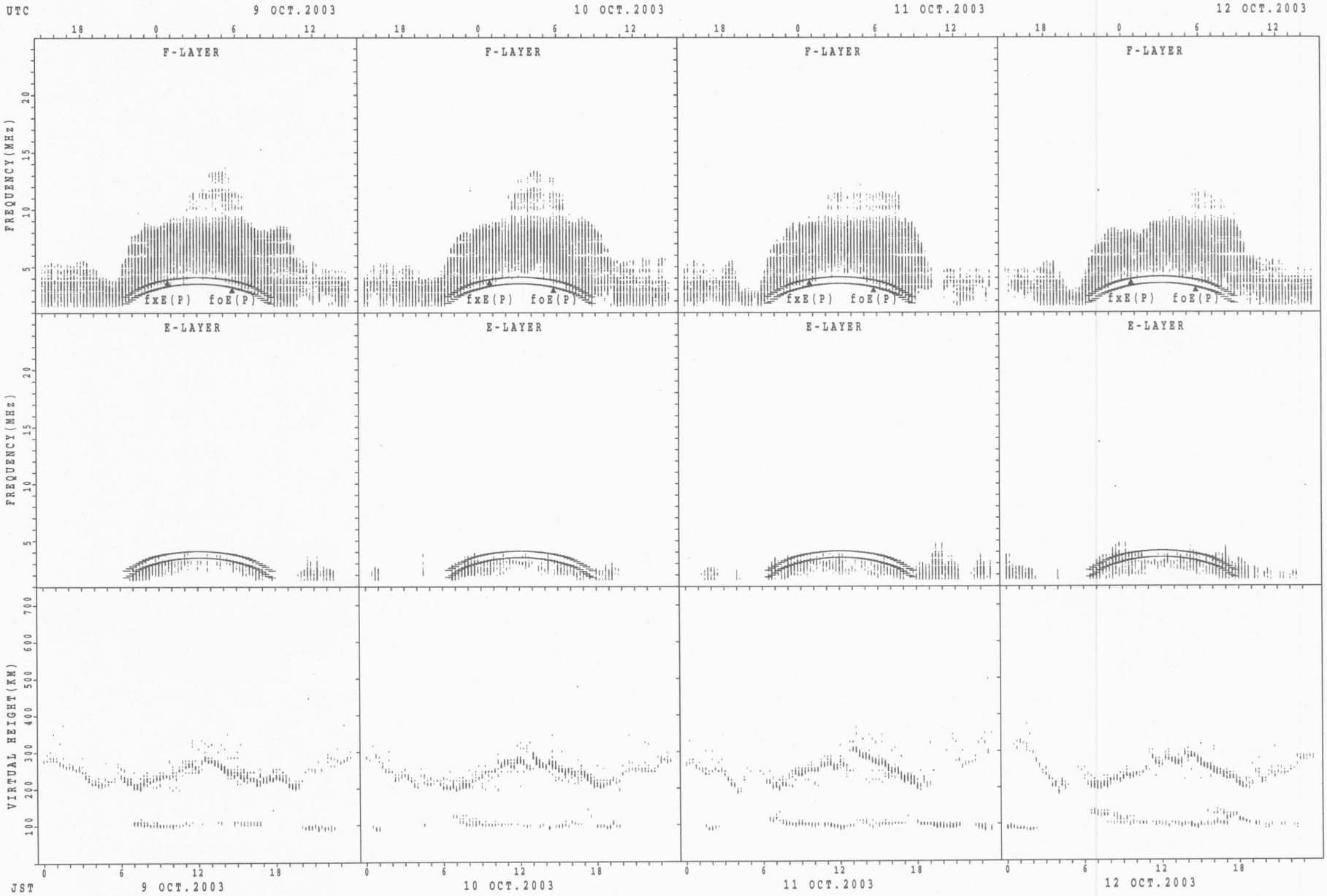
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



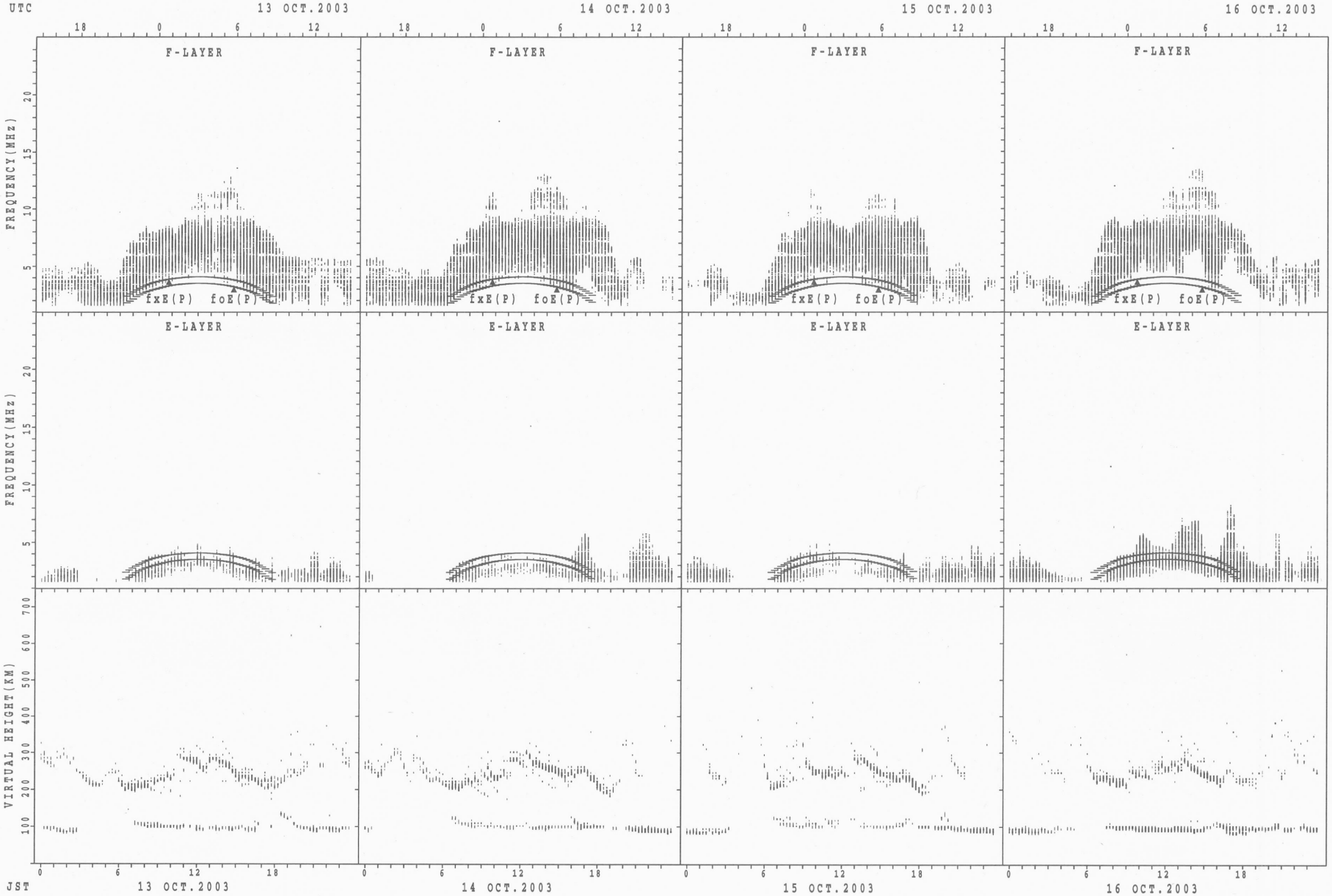
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



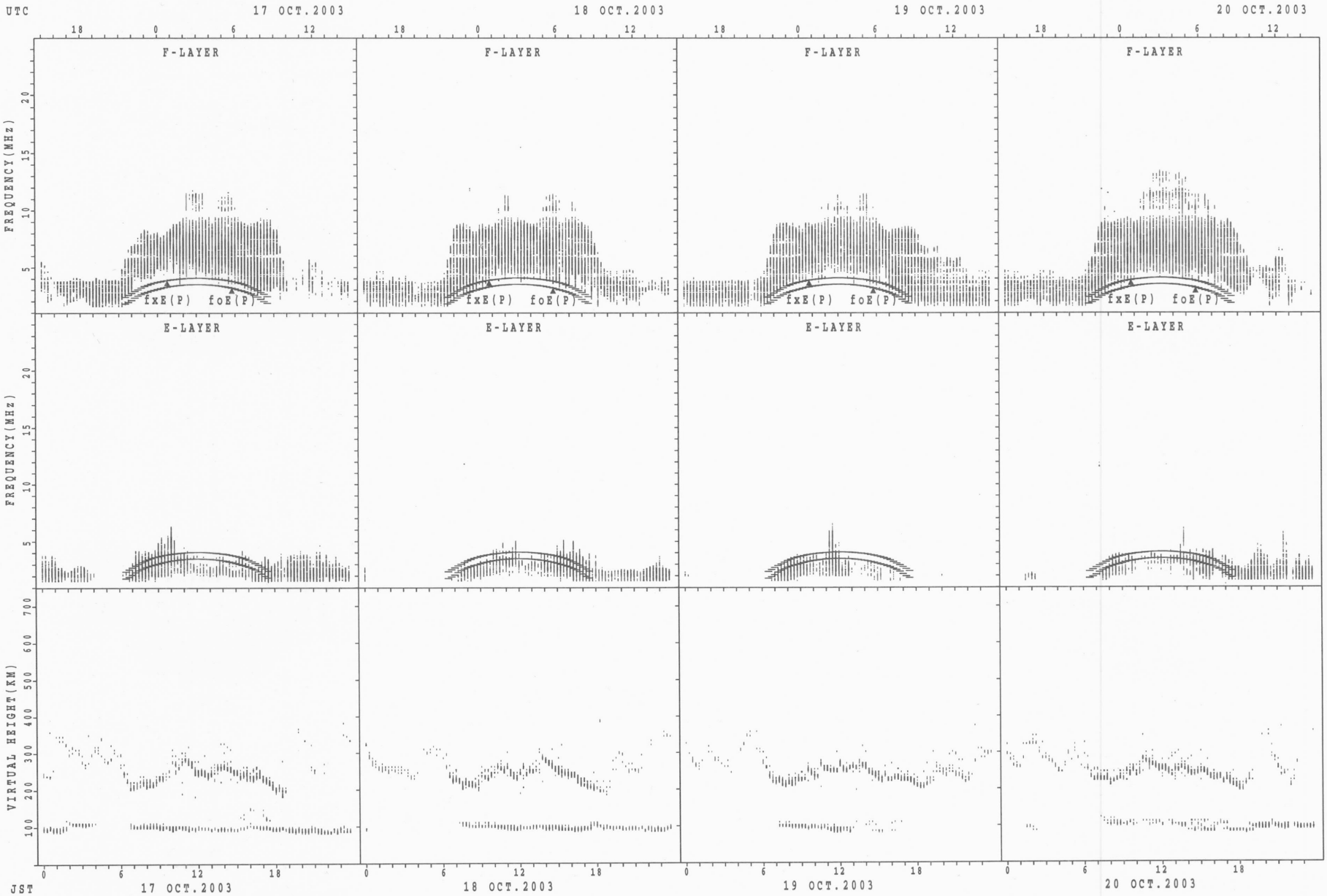
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



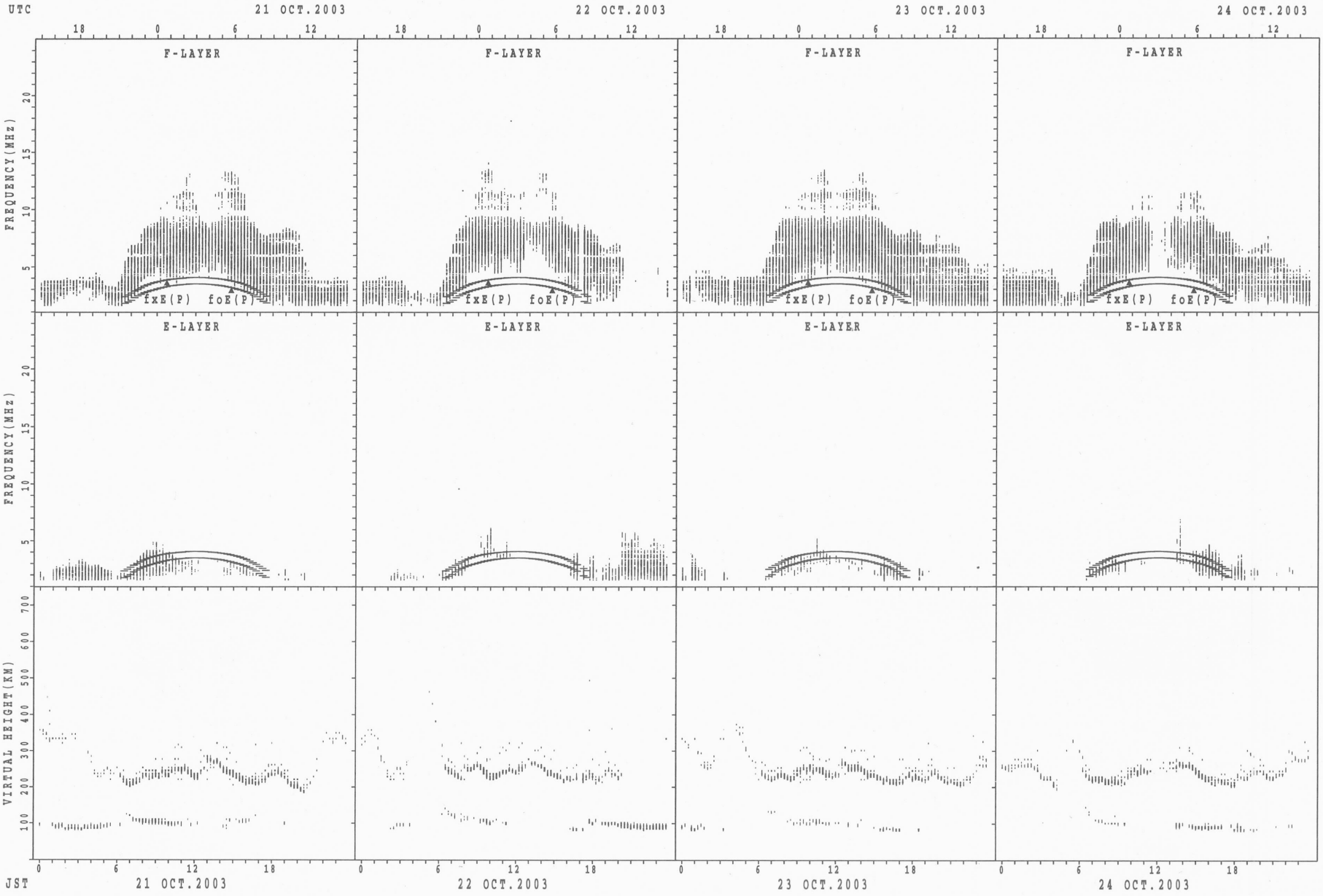
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



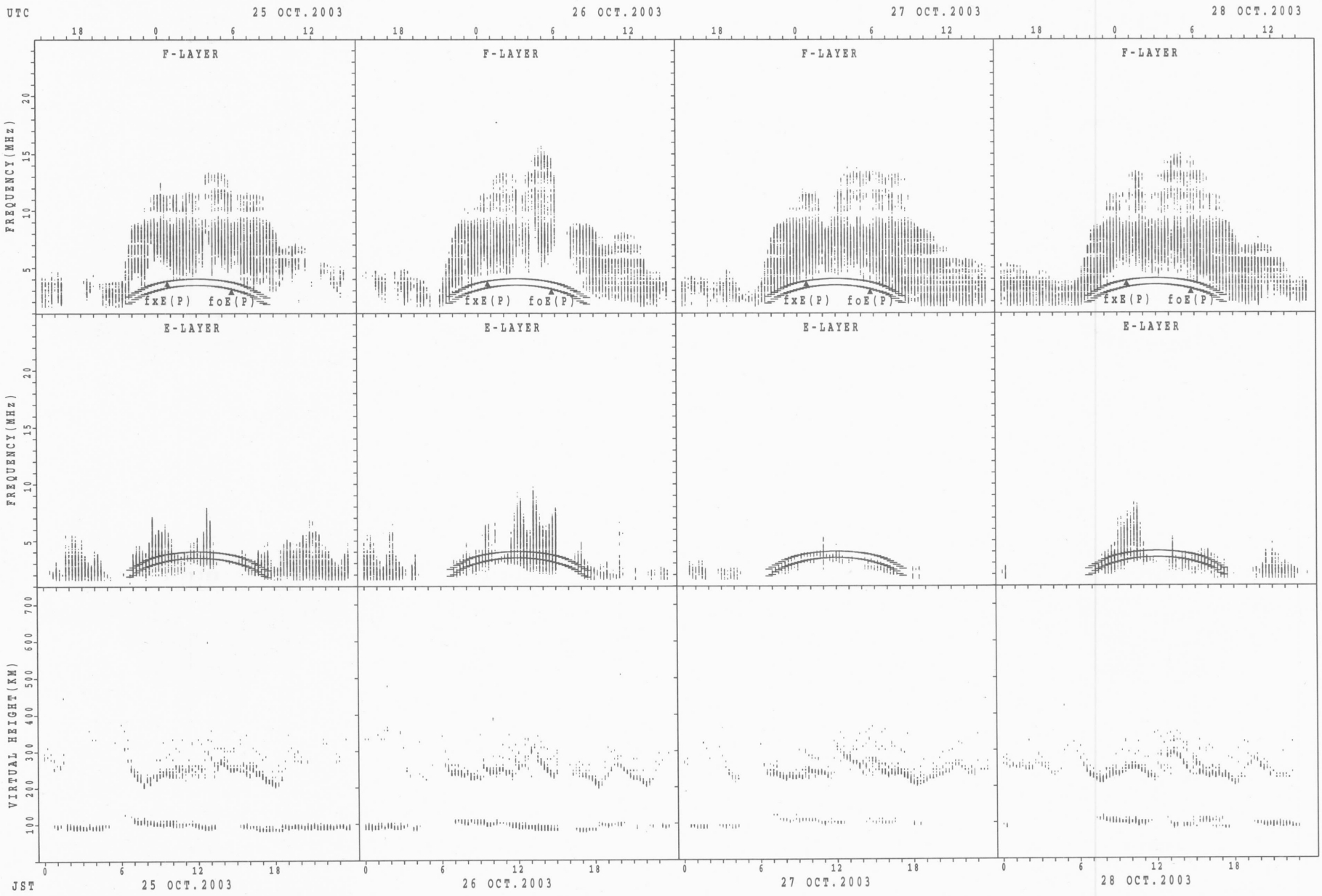
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



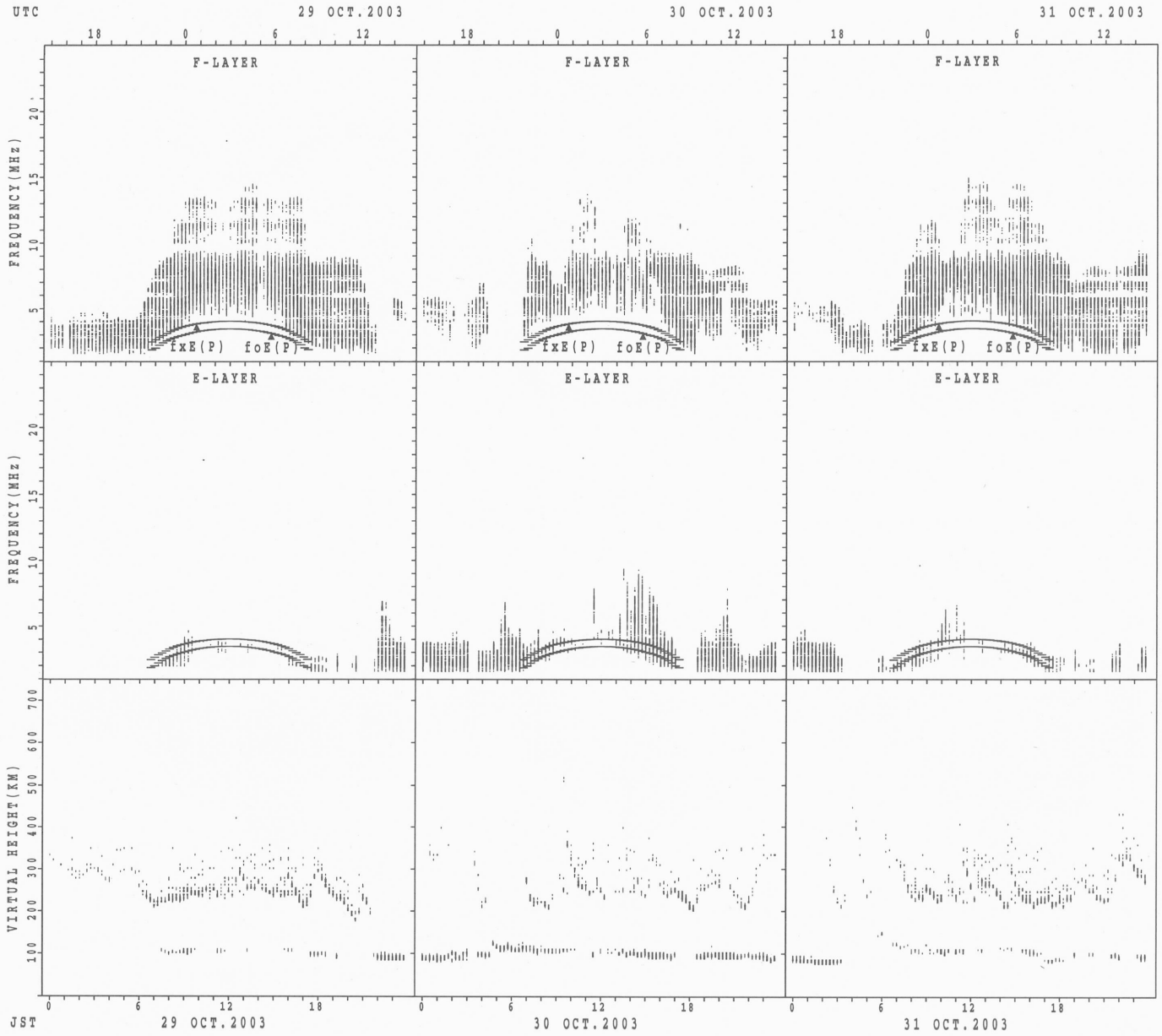
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



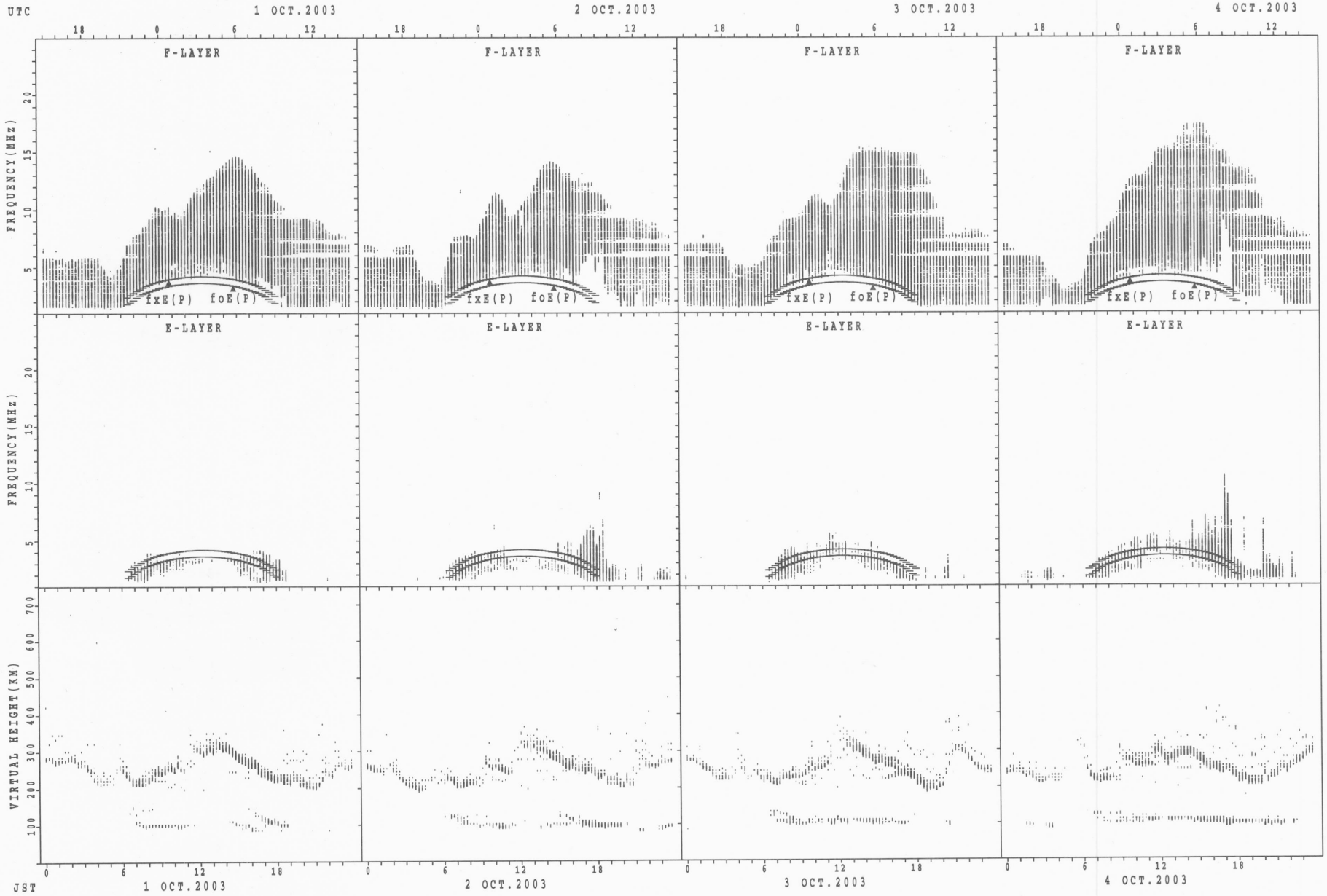
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



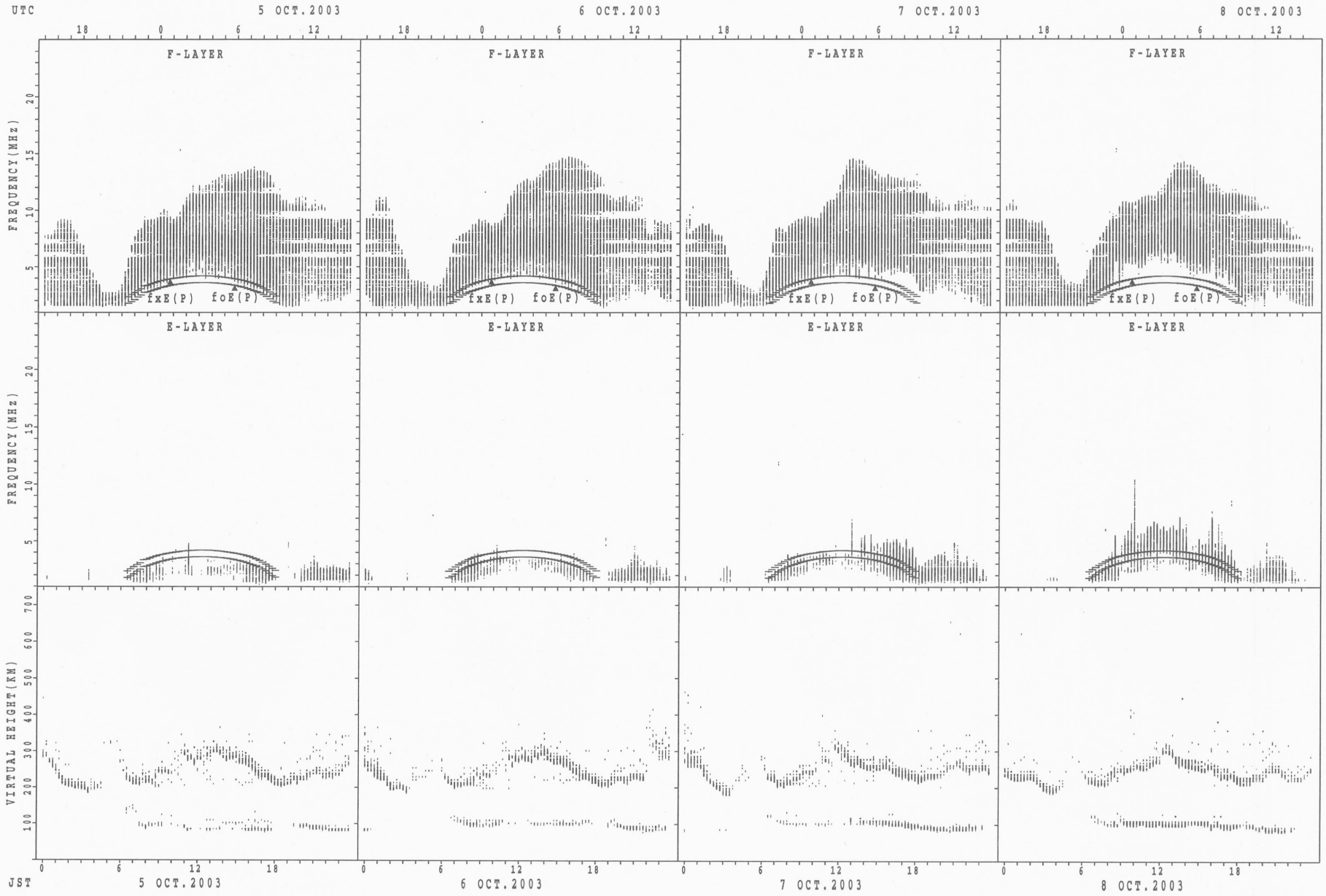
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



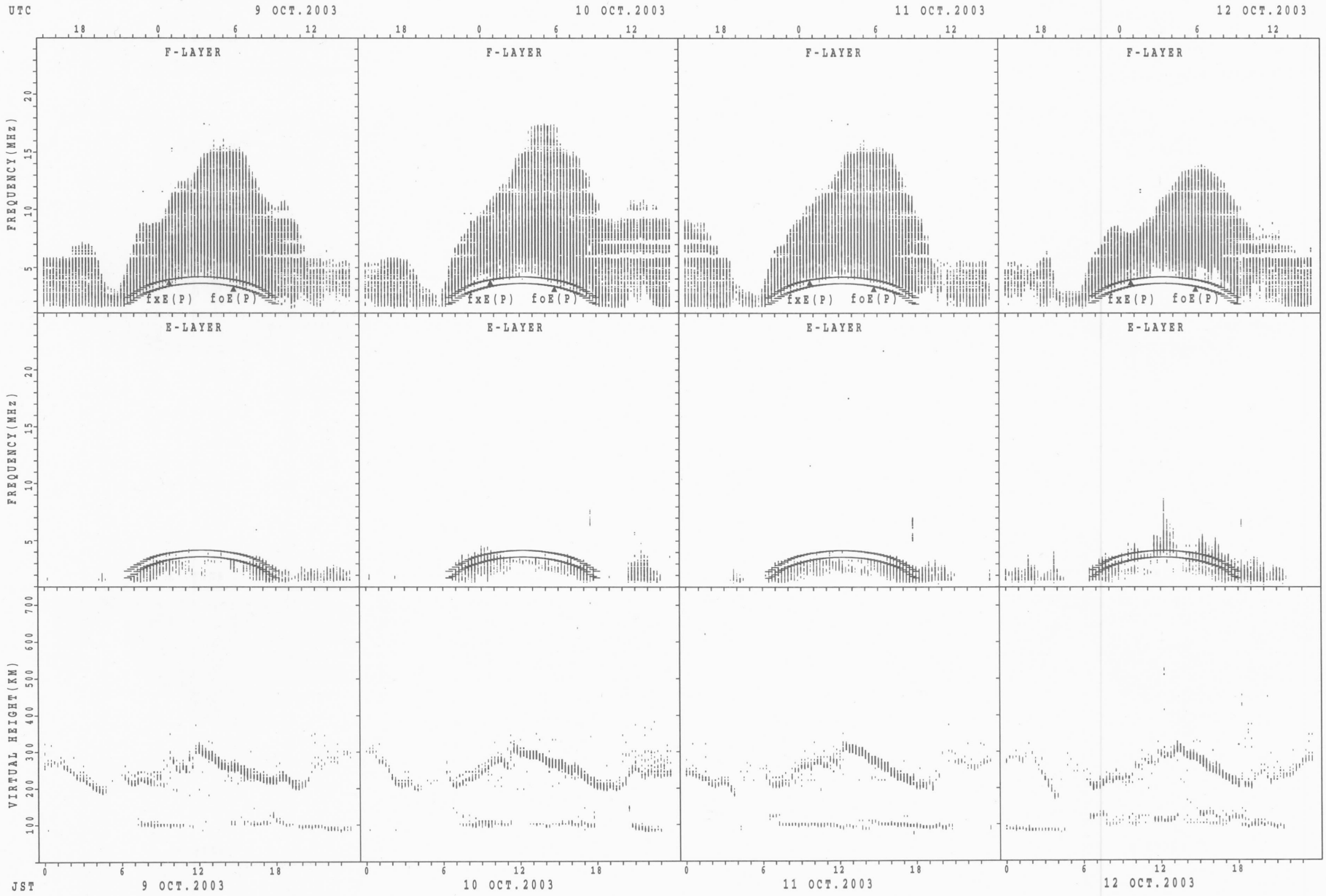
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



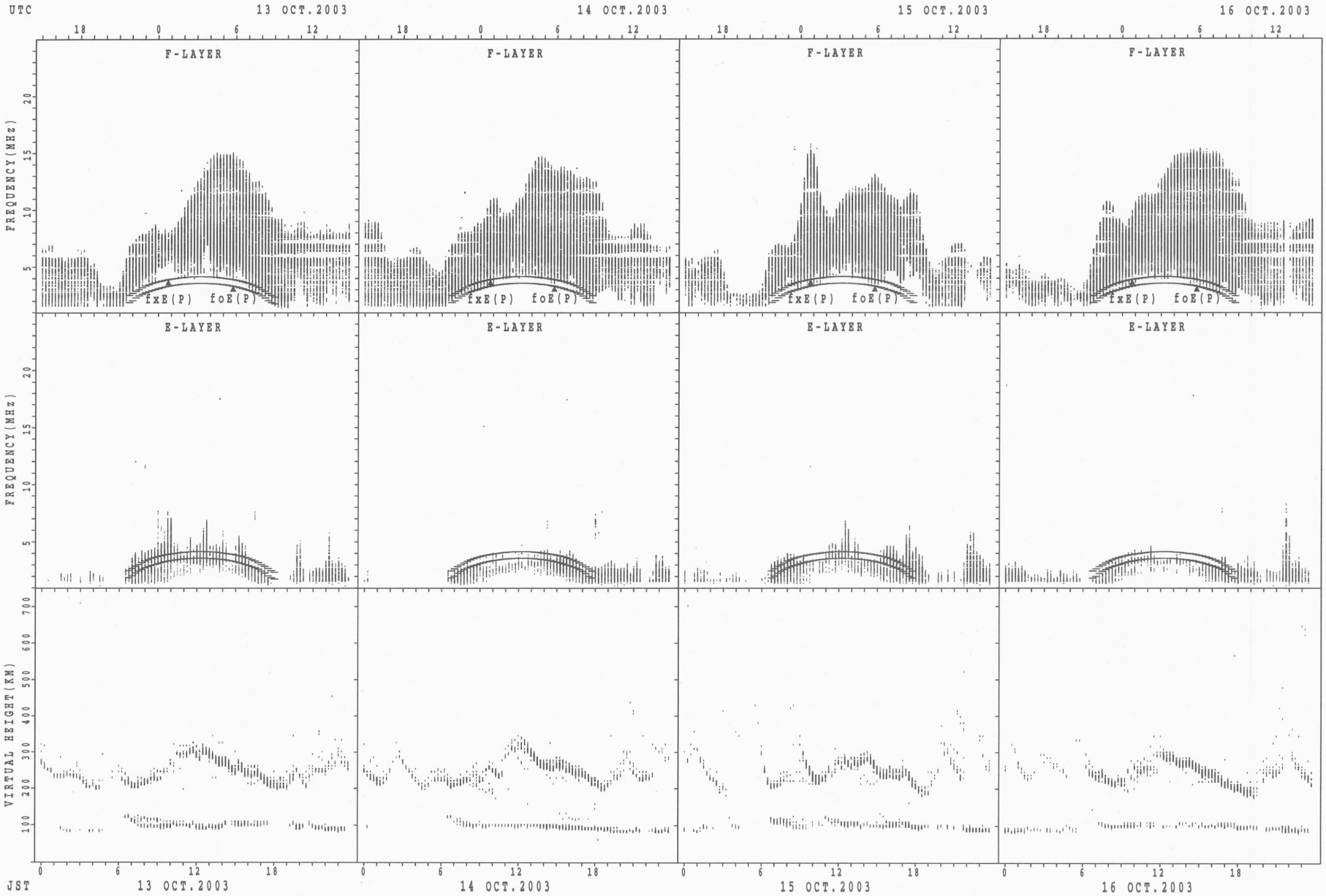
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

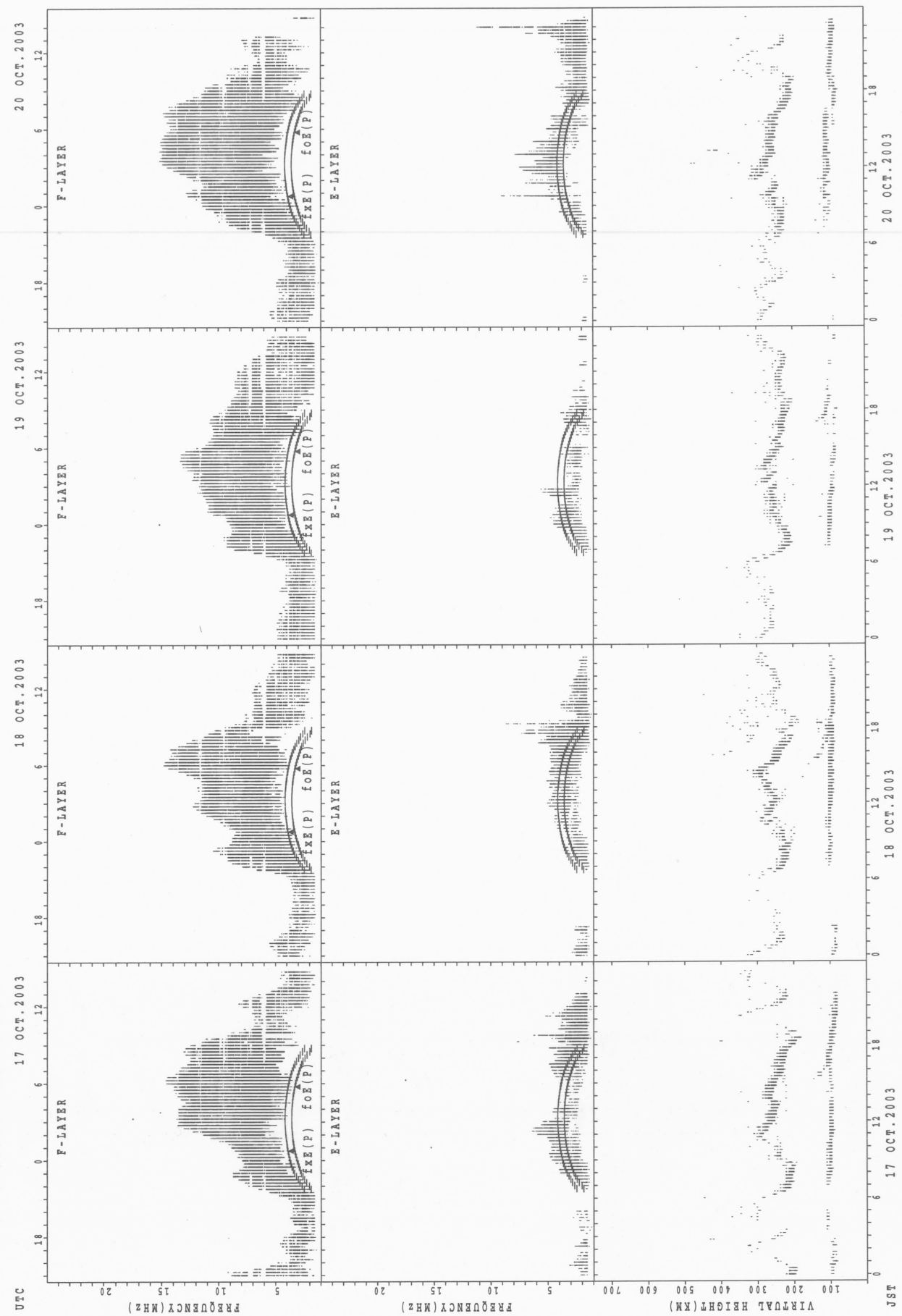


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

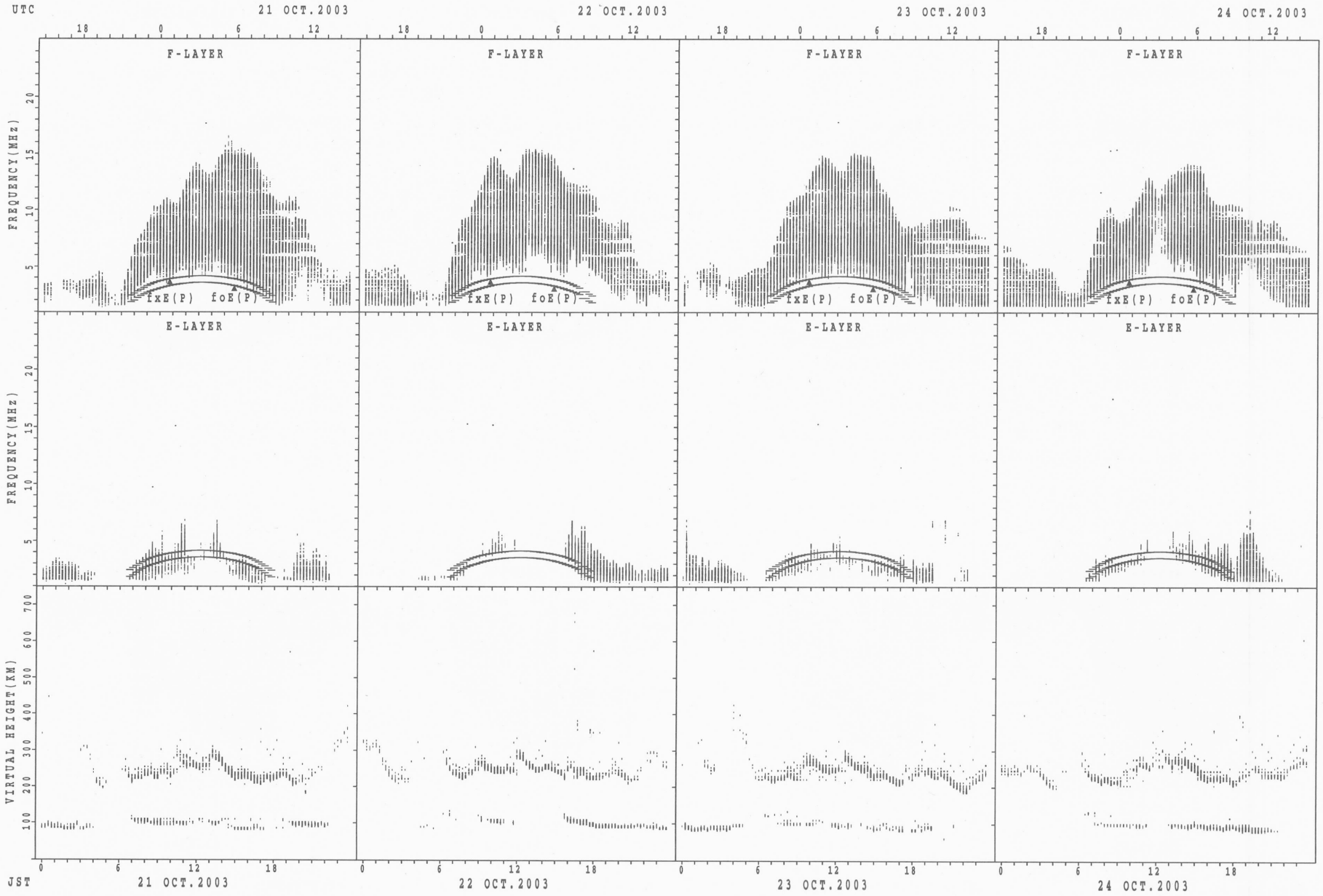
SUMMARY PLOTS AT Okinawa



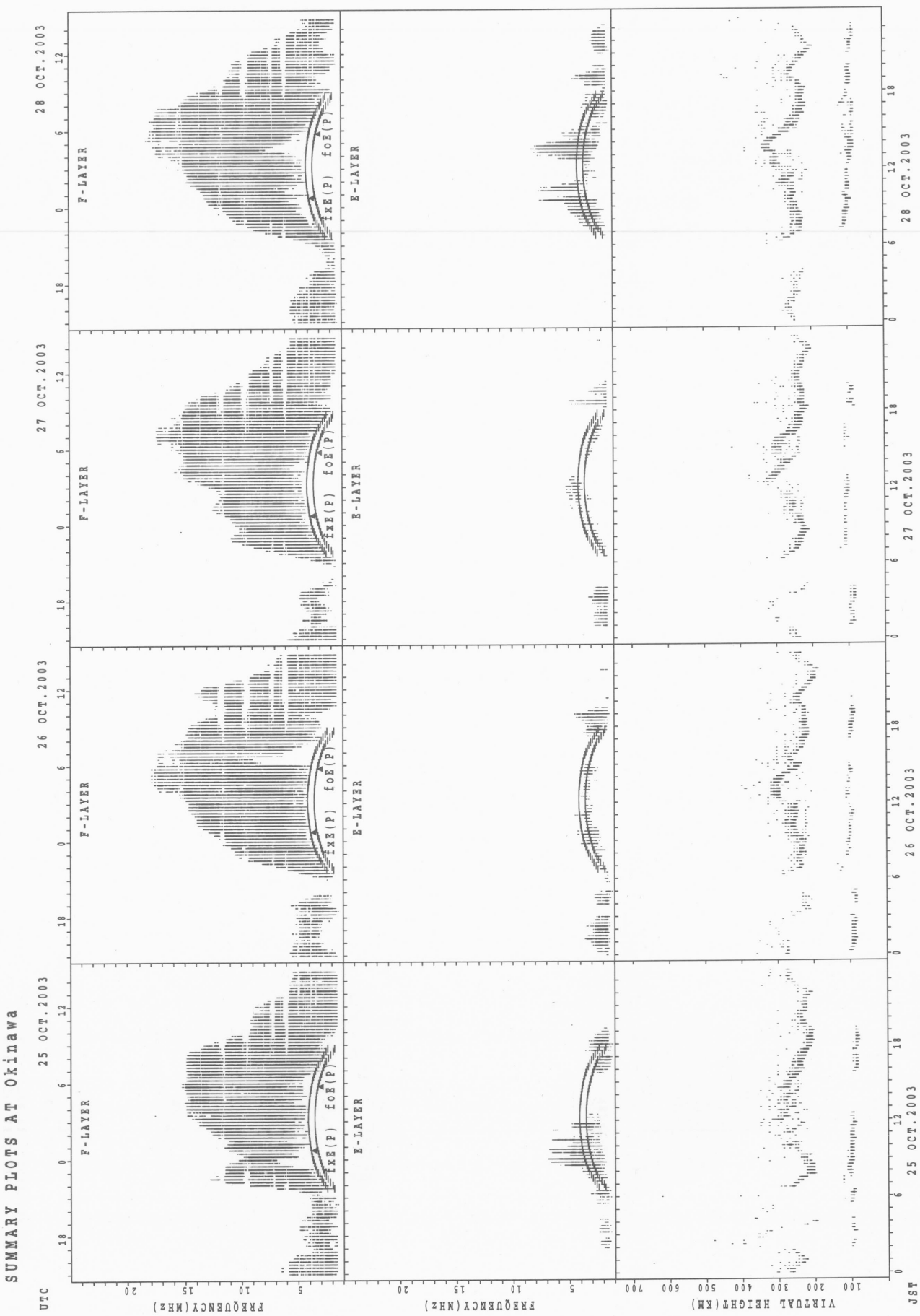
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Okinawa
UTC
JST
17 OCT.2003
18 OCT.2003
19 OCT.2003
20 OCT.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

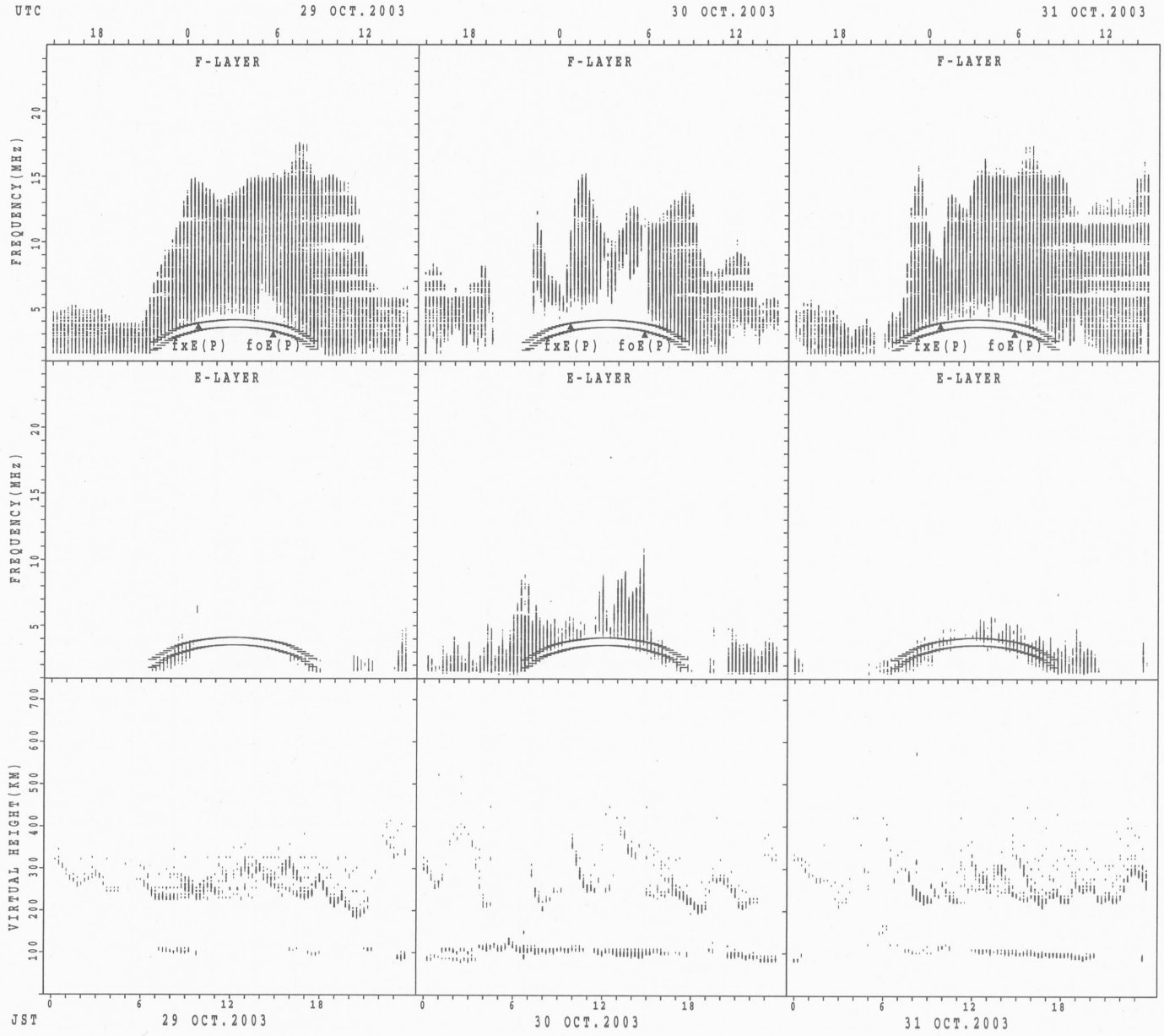
SUMMARY PLOTS AT Okinawa



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


SUMMARY PLOTS AT Okinawa
UTC
JST
25 OCT.2003
26 OCT.2003
27 OCT.2003
28 OCT.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 Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

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

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT			1			2	7	22	26	23	7	2	3	12	30	31	29	19	11	3	2	2		1
MED			322			264	238	231	236	230	234	279	230	235	246	242	236	246	268	264	261	316		288
U Q			161			326	252	248	248	246	238	302	310	240	254	248	247	254	274	270	280	344		144
L Q			161			202	230	224	228	222	230	256	208	230	238	236	230	236	260	256	242	288		144

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	10	19	15	12	11	15	13	15	15	8	9	10	11	11	10	18	15	21	14	18	14	14
MED	97	101	97	97	99	95	105	109	107	103	99	98	97	97	97	97	99	97	97	95	96	97	99	98
U Q	111	105	103	103	105	102	111	113	111	105	103	103	175	103	103	101	107	103	99	107	101	105	99	101
L Q	95	95	97	95	93	92	99	99	102	99	97	97	95	95	95	93	95	95	91	91	91	95	91	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							10	30	29	20					22	31	29	27	16	6	1			1
MED							232	230	226	232					243	238	238	238	251	271	230			332
U Q							238	238	240	242					254	246	248	246	264	288	115			166
L Q							226	222	222	230					238	232	232	230	236	260	115			166

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	10	8	6	3	2	4	9	11	15	12	10	10	8	8	9	12	12	14	16	16	20	12	15
MED	95	96	93	94	109	122	128	111	111	105	103	97	96	97	99	97	108	101	100	97	97	96	97	97
U Q	97	97	97	101	153	143	144	116	113	111	107	105	107	104	104	104	112	105	105	103	103	100	100	105
L Q	93	95	93	93	99	101	120	107	105	103	100	95	95	95	94	95	98	94	95	95	95	95	95	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			21	30	28	5				4	30	26	30	24	5	4	2		1
MED					252			234	230	238	242				266	246	243	241	232	258	258	288		336
U Q					126			252	248	243	289				315	262	254	248	253	262	283	322		168
L Q					126			224	220	231	235				248	242	234	232	222	242	240	254		168

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	13	14	12	9	8	3	3	13	21	17	15	12	11	5	7	10	11	19	18	18	19	16	17	14
MED	93	92	90	93	92	95	113	119	107	105	105	102	97	101	103	95	109	103	98	97	97	95	95	92
U Q	96	95	97	95	97	119	145	131	114	108	111	106	103	106	107	101	129	115	103	103	101	97	99	93
L Q	90	89	88	90	91	91	91	110	105	101	103	98	95	94	95	93	97	95	91	95	95	93	91	91

MONTHLY MEDIANS OF h'F AND h'Es

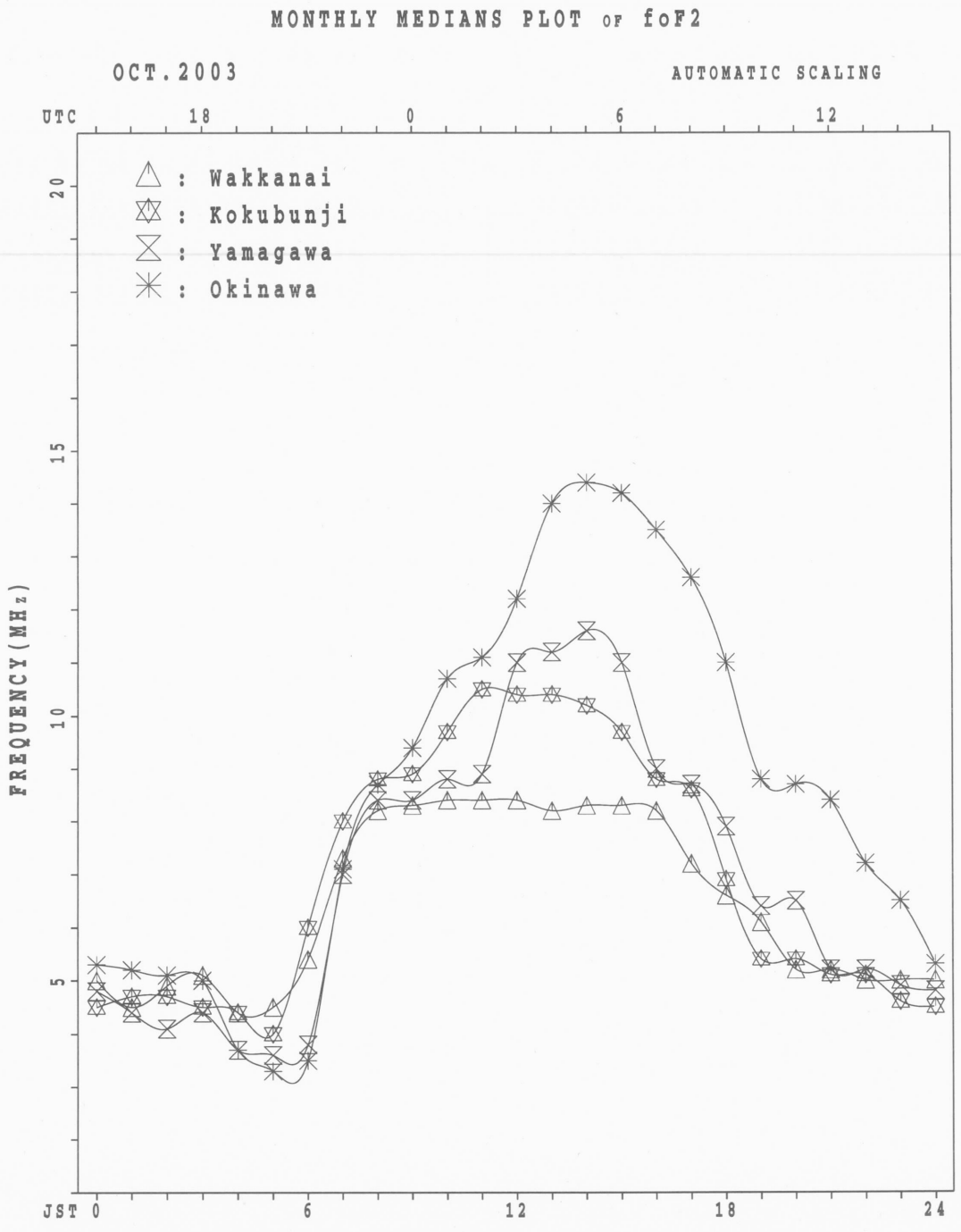
OCT.2003 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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	5	6	4	3	1			20	30	30	6					26	31	31	30	23	21	20	14	8
MED	276	261	246	224	258			235	230	238	256					254	246	230	229	238	266	268	267	304
U Q	327	298	269	236	129			243	238	250	270					262	254	238	232	246	272	280	300	317
L Q	242	248	227	224	129			230	222	226	246					246	234	222	216	230	244	248	242	280

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	9	8	5	6	2	3	9	19	11	20	13	12	15	13	14	18	21	20	21	19	20	14	11
MED	91	89	88	91	89	118	119	115	107	107	107	105	103	103	105	105	105	105	97	97	95	95	91	89
U Q	95	91	91	95	95	125	161	132	113	113	112	109	111	111	112	113	113	113	100	101	97	97	95	93
L Q	89	89	87	89	87	111	99	114	105	103	103	103	99	97	99	103	103	97	95	93	93	91	89	87


MONTHLY MEDIANS PLOT OF foF2
OCT. 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

OCT. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 58	X 58	X 58	X 57	X 57	X 56													X 77	X 65	X 69	X 65	X 63	X 59
2	X 59	X 59	X 60	X 51	X 46	X 45													X 83	X 72	X 67	X 63	X 62	X 61
3	X 60	X 61	X 62	X 58	X 58	X 60													X 86	X 55	X 53	X 58	X 59	X 60
4	X 57	X 58	X 60	X 59	X 50	X 50													X 88	X 76	X 68	X 68	X 69	X 69
5	X 68	X 67	X 68	X 64	X 55	X 52													X 76	X 70	X 67	X 66	X 68	X 63
6	X 60	X 58	X 59	X 57	X 57	X 48													X 81	X 76	X 72	X 65	X 62	X 61
7	X 60	X 60	X 62	X 59	X 50	X 46													X 81	X 73	X 72	X 72	X 69	X 75
8	X 65	X 63	X 60	X 60	X 55	X 56													X 80	X 66	X 65	X 64	X 65	X 61
9	X 60	X 59	X 59	X 58	X 58	X 56													X 76	X 74	X 64	X 61	X 59	X 55
10	X 55	X 56	X 58	X 56	X 59	X 61												X 91	X 85	X 71	X 62	O X 60	X 59	X 61
11	X 62	X 61	X 62	67	65	X 53													X 82	X 58	X 61	X 53	X 51	X 53
12	X 52	X 52	X 53	X 55	X 51	X 46													X 77	X 64	X 64	X 57	X 49	X 51
13	X 51	X 52	X 52	X 50	X 52	X 51													X 60	X 57	X 61	X 56	X 57	X 57
14	X 59	X 54	X 54	X 54	X 51	X 51													X 98	X 64	X 51	X 56	X 45	X 46
15	X 44	X 49	X 54	X 32	X 36	X 34													X 61	X 45	X 49	X 48	X 42	X 45
16	X 44	X 45	X 43	X 39	X 36	X 37													X 52	X 54	X 50	X 46	X 50	X 50
17	X 50	X 47	X 45	X 43	X 40	X 40													X 73	X 48	X 46	A	A	A
18	X 45	X 48	X 50	X 48	X 41	X 42													X 58	X 49	X 40	X 35	X 37	X 39
19	X 40	X 40	X 41	X 43	X 38	X 38													X 63	X 58	X 52	X 58	X 48	X 50
20	X 50	X 50	X 49	X 49	X 49	X 45													X 65	X 61	X 51	X 55	X 41	X 42
21	X 42	X 42	X 42	X 45	X 40	X 38													X 69	X 84	X 56	X 44	X 41	X 42
22	X 40	X 41	X 40	X 33	X 35	X 31												C	X 67	X 74	X 45	X 45	X 44	X 44
23	X 46	X 47	X 45	X 46	X 45	X 46													X 64	X 62	X 60	X 58	X 51	X 53
24	X 52	X 51	X 52	X 50	X 37	X 37													X 58	X 58	X 58	X 50	X 50	X 46
25	X 47	X 47	X 37	X 38	X 38	X 37													X 74	X 71	X 62	X 59	X 58	X 58
26	A	X 50	X 47	X 48	X 46	X 42													X 67	X 73	X 68	X 65	X 56	X 51
27	X 51	X 50	X 50	X 51	X 50	X 48													X 88	X 74	X 63	X 58	X 61	X 57
28	X 55	X 54	X 51	X 50	X 50	X 48										X 112			X 66	X 65	X 62	X 59	X 54	X 47
29	X 48	X 50	X 51	X 53	52	X 48													X 80	X 91	X 102	X 66	X 53	X 58
30	X 53	X 54	X 55	51															X 84	X 84	X 74	X 69	X 66	X 61
31	X 54	X 52	X 54	X 50	X 42	X 32													X 81	X 67	X 72	X 73	X 80	X 84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	30	30										1		1	31	31	31	30	30	30
MED	X 52	X 52	X 53	X 51	X 50	X 46										X 112		X 91	X 76	X 66	X 62	X 58	X 56	X 56
U Q	X 59	X 58	X 59	X 57	X 55	X 51													X 82	X 74	X 68	X 65	X 62	X 61
L Q	X 47	X 48	X 47	X 46	X 40	X 38													X 65	X 58	X 52	X 55	X 49	X 47

OCT. 2003 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	52	52	52	51	51	50	68	77	84	83	97	101	106	99	87	82	94	98	71	59	63	59	56	53
2	53	53	54	45	40	39	64	88	81	88	94	92	82	89	96	102	102	88	76	66	61	57	56	55
3	54	55	56	52	52	53	71	76	89	94	107	98	104	106	112	106	103	106	80	49	47	52	53	54
4	51	52	54	53	44	44	62	83	98	89	113	118	112	112	113	103	87	82	82	70	62	62	63	63
5	62	61	62	57	49	46	69	86	87	79	98	98	102	99	99	106	97	92	70	64	61	60	62	57
6	54	52	53	51	50	42	60	78	84	81	89	104	106	105	102	98	103	92	75	70	66	58	56	55
7	54	54	56	53	44	40	65	71	87	85	96	102	116	118	112	97	85	87	75	67	66	66	63	69
8	59	57	54	54	49	50	68	84	93	90	98	103	98	103	106	101	99	91	74	60	59	58	58	55
9	54	53	53	52	52	50	69	81	93	88	92	106	111	109	118	104	76	73	70	68	58	55	53	49
10	49	50	52	50	53	54	71	81	85	82	87	107	105	104	98	101	90	85	79	65	56	54	53	55
11	56	55	56	F	F	47	60	83	97	90	95	110	99	91	98	100	87	90	76	52	55	47	45	47
12	46	46	47	48	45	40	69	75	78	82	91	88	94	96	98	94	95	95	71	58	58	51	43	45
13	45	46	45	43	46	45	69	79	87	80	92	108	102	102	104	106	80	73	54	51	55	50	51	51
14	53	48	48	48	45	44	63	73	87	98	114	112	108	115	109	98	91	90	92	58	45	50	39	40
15	38	42	48	26	30	28	46	61	A	A	74	83	72	74	85	93	89	92	54	38	42	42	36	39
16	38	39	37	33	30	31	50	75	97	91	88	95	103	109	110	94	78	A	46	48	44	40	44	44
17	44	41	39	V 37	34	34	51	70	75	L 78	85	101	101	109	98	81	78	96	67	42	40	A	A	A
18	39	42	44	42	35	36	53	84	86	80	103	99	80	85	91	86	89	78	52	44	34	29	31	33
19	34	34	35	36	32	32	52	83	92	93	95	104	89	93	97	82	81	82	58	52	46	52	42	44
20	44	44	43	43	43	38	48	94	100	90	104	112	123	122	100	93	90	83	59	55	45	49	35	36
21	36	36	36	39	34	32	53	76	88	89	110	110	99	97	102	103	82	73	63	78	50	38	35	36
22	34	35	34	27	29	25	50	68	95	118	124	112	93	100	109	111	86	C	61	68	39	39	38	38
23	40	41	39	40	39	40	52	81	97	123	116	111	106	104	104	88	68	74	58	56	54	52	45	47
24	46	45	46	44	31	31	52	78	93	92	92	102	102	104	98	96	84	70	52	52	52	44	44	40
25	41	41	31	32	32	31	46	76	100	124	108	113	112	120	108	95	89	81	68	65	56	53	52	52
26	A	44	41	42	40	36	47	82	106	124	121	130	119	127	119	91	89	74	61	66	62	59	50	45
27	45	44	44	45	44	42	54	86	100	125	111	98	106	124	120	112	106	105	82	68	57	52	55	51
28	49	48	44	44	44	42	62	92	101	117	122	115	118	115	103	106	105	89	60	59	56	53	48	41
29	42	44	44	47	F	42	60	89	101	125	134	131	124	140	136	119	112	79	74	85	96	60	47	52
30	47	48	49	F	47	A	52	103	88	69	104	120	106	110	119	88	77	79	78	78	68	61	60	55
31	48	46	48	44	36	26	39	56	72	112	98	105	116	117	114	124	96	89	75	61	66	67	74	78
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	29	29	30	31	31	30	30	31	31	31	31	31	31	31	29	31	31	31	30	30	30
MED	46	46	47	44	44	40	60	81	90	90	98	105	105	105	104	98	89	87	70	60	56	52	50	50
U Q	53	52	53	51	48	45	68	84	97	112	111	112	112	115	112	106	97	92	76	68	62	59	56	55
L Q	41	42	41	40	34	32	51	75	86	82	92	99	99	99	98	93	82	78	59	52	46	49	43	41

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	L	L 504	L 496	L 532	L 484	L	L	L							
2										L	L	L	L	L	L	L	A							
3									L	L	L	L	L	L	L	L								
4											L	L	L	L	L									
5										L	L	L	L	L 552	L									
6										L	L	L	L	L	L	L								
7										L	L	L	L	L		L								
8											A	L	L	L	L	L								
9										L	L	L	L	L	L									
10										L	L	L	L	L	L	L	A							
11									L	L	L	L 476	L	L	L	L								
12										L	L	L	L	A	L	L								
13									L	L	L	L 512	L	L	L									
14											L	L 512	L 448	L										
15									A	A	L 452	L 468	L	L	L	L	L							
16									A	A	A	A		L	A	L		A						
17									L		L	L 488	L 468	L		L								
18									L	L	L 476	A	A	L	L	L								
19											L 500	L	L			L								
20								L			A	A	L	L	A									
21									L	L	L	L	L	L										
22									L	L	L		L					C						
23										L	L	L	L	L	L									
24											L	L	E	B A	L									
25									L	A	L	L	L	L										
26										L	L	L		L										
27										L				L										
28													L	L										
29														L										
30						A					L		L											
31												L		L 508	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											4	6	3	3										
MED											L 488	L 492	L 468	L 508										
U Q											L 502	L 512	L 532	L 552										
L Q											L 464	L 476	L 448	L 484										

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 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							192	A	A	R	A	A	U R 380	R	R	R	U R 264	188						
2							A	U R 280	320	A	U A 356	A	A	A	A	A	A	B						
3							E C	R	A	A	A	A	A	A	A	R	A	B						
4							180	U R 268	A	A	A	A	A	A	A	U R 308	U R 256	172						
5							U A 188	U A 256	U R 296	U A 328	R	A	A	U R 352	U R 340	300	260	B						
6							B	U A 256	A	U A 332	A	R	R	A	R	U R 288	U A 240	B						
7							B	U R 260	R	U R 340	A	R	A	B	U R 328	U A 288	U A 244	B						
8							B	U R 264	U A 300	A	A	A	A	A	A	A	U R 236	B						
9							B	A	A	A	U R 356	R	A	R	U R 312	R	U A 240	B						
10							B	268	U R 308	A	A	A	U R 360	U R 336	A	A	A							
11							B	U A 248	U R 304	R	R	U R 348	R	R	U R 312	U A 292	240	B						
12							172	R	R	R	R	A	A	A	A	R	252	B						
13							B	A	A	A	A	R	R	R	U R 320	U R 280	A	B						
14							B	U A 248	A	R	U R 348	R	R	A	R	A	A	B						
15							B	U A 244	A	A	A	R	R	R	U A 308	A	A	B						
16							B	A	A	A	A	A	A	A	A	A	U A 220	B						
17							B	A	A	A	A	R	U R 352	R	R	U R 280	R	B						
18							B	A	A	A	A	A	A	A	U R 324	A	A	B						
19							B	R	A	R	R	A	U R 360	U R 336	R	A	R	B						
20							B	A	A	A	A	A	A	A	A	R	A	B						
21							U R 176	A	A	A	A	A	A	R	A	A	A	B						
22							172	240	A	A	B	B	B	B	B	B	R	C						
23							160	U A 248	A	U A 316	A	A	A	A	A	A	236	B						
24							B	268	R	U R 332	R	B	B	A	R	R	A	B						
25							B	A	A	A	A	A	A	A	B	A	A	B						
26							B	U A 236	A	A	A	A	U R 372	R	R	R	B	B						
27							184	U R 288	A	A	A	A	R	A	R	U R 304	U R 240	B						
28							B	U A 256	A	A	A	A	A	U R 368	U R 344		U R 244	B						
29							B	R	R	A	A	A	R	A	B	A	U R 248	E C						
30					K 228	K 228	212	R	U R 332	A	A	A	B	R	A	A	U A 256	B						
31							U R 188	252	U A 304	U R 344	A	A	A	R	R	U A 288	U A 216	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	1	10	17	7	6	3	1	5	4	8	9	16	2						
MED					K 228	K 228	182	U 256	U R 304	U 332	U R 356	U R 348	U R 360	U R 344	U R 322	U R 288	U 242	180						
U Q							188	U R 268	320	U R 340	U R 356		U R 376	U R 360	U R 334	U R 302	U 254							
L Q							172	U A 248	U 300	U A 328	U R 348		U R 356	U R 336	U R 312	U R 284	U 238							

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	E B 16	J A 18	E B 14	E B 16	E B 15	E B 14	23	J A 32	J A 32	G 28	J A 45	J A 48	G 34	G 26	G 33	G 28	G 22	24	J A 26	J A 25	J A 33	J A 24	J A 100	J A 37
2	J A 54	18	23	20	J A 16	J A 24	J A 24	G 22	35	40	44	44	J A 46	J A 55	J A 46	J A 60	J A 69	J A 109	J A 47	J A 40	J A 26	E B 14	J A 21	E B 15
3	E B 16	E B 16	J A 16	E B 15	E B 16	E B 28	C E 28	G	34	J A 46	J A 42	J A 74	J A 42	J A 40	36	G 27	27	22	J A 17	J A 26	J A 26	J A 22	E B 15	E B 14
4	E B 16	18	E B 16	19	18	E B 15	G	G 19	J A 38	41	J A 55	J A 52	J A 57	J A 72	J A 45	G 21	G 20	23	J A 32	J A 30	J A 77	J A 52	J A 22	E B 15
5	E B 15	E B 16	E B 14	E B 14	E C 28	E B 15	22	31	34	38	G 26	41	43	46	43	34	38	J A 34	J A 17	J A 18	J A 34	J A 24	19	E B 16
6	18	E B 16	E B 16	E B 15	E B 14	E B 16	21	29	34	39	37	G 26	G 34	35	G 27	G 25	28	21	19	E B 15	E B 15	B J 19	A J 17	A J 16
7	E B 16	E B 14	E B 15	E B 15	E B 15	18	22	G 21	G 21	G 25	J A 40	G	38	E B 38	G 29	34	28	J A 22	E B 15	E B 15	J A 21	31	J A 20	20
8	J A 17	E B 15	E B 15	E B 16	E B 15	E B 14	20	G	37	J A 48	J A 53	J A 45	J A 44	40	35	J A 34	G 22	J A 27	J A 26	A J 20	E B 16	E B 16	C E 28	E B 14
9	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	20	28	35	38	G 33	G 28	J A 39	G 28	G 23	G 28	28	22	E B 16	E B 15	22	J A 32	A J 30	A J 31
10	J A 23	J A 22	J A 16	19	J A 17	18	19	G	G	37	38	38	G 33	J A 31	J A 36	J A 35	J A 40	42	J A 27	J A 43	J A 36	A J 31	A J 45	A J 28
11	J A 20	J A 16	A E 14	B E 16	B E 15	B E 15	B J A 26	33	G 28	G 30	G 27	G J 30	J G 32	G 25	38	35	29	19	E B 15	E B 16	J A 27	A J 34	A J 36	A J 26
12	J A 22	J A 16	A E 15	B E 14	B E 14	B E 15	20	G	G 24	G 28	G 34	J A 46	J A 97	A J 55	A J 44	A J 22	G 30	24	J A 29	A J 44	A 21	21	J A 28	A J 35
13	J A 22	J A 18	A J 27	A J 20	A 18	18	E B 17	28	32	35	J A 41	G 33	G 30	G 27	G 30	G 24	J A 25	A J 24	A J 27	A J 27	A J 46	A J 22	31	J A 21
14	19	E B 15	E B 15	E B 16	E B 15	E B 15	20	34	32	G J 27	A 38	G 28	G 28	J A 41	G 24	J A 42	A J 53	A J 41	A J 22	A J 35	A J 37	A J 42	A J 32	A J 23
15	J A 20	24	J A 17	A J 17	A 20	E B 16	E B 18	27	J A 88	A 75	36	G 30	G 31	G 24	34	32	J A 37	A J 24	A J 28	A J 24	E B 20	B J 47	A J 22	A J 20
16	J A 26	A J 21	A J 22	A J 17	A J 16	A E 15	B E 19	B J 50	A J 52	A J 61	A J 74	A J 61	A J 50	A J 46	A J 54	A J 40	34	J A 71	A J 88	A J 67	A J 44	A J 35	A J 35	A J 18
17	J A 22	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	B J 28	A J 34	A J 40	A J 39	G 31	G 28	G 25	G	G 20	G	J A 22	A J 32	A J 26	A J 44	A J 41	A J 46	A J 44
18	J A 19	A J 24	A J 18	A E 16	B E 14	B E 15	B E 15	B 26	J A 38	A J 44	A J 44	A J 49	A J 46	A J 38	A J 28	G J 39	A J 41	A J 30	A J 36	A J 27	A J 22	A J 20	A J 20	A J 23
19	19	E B 14	E B 15	B 18	J A 23	E B 16	E B 17	G 22	34	G 32	G J 33	A 40	G J 34	G 31	G J 29	A 32	G	20	E B 14	J A 18	21	J A 31	A J 29	A J 24
20	21	E B 16	J A 88	A J 24	A J 19	E B 15	B E 16	B 28	37	J A 42	A J 48	A J 86	A J 59	A J 70	A J 54	G 25	J A 31	A J 27	E B 15	J A 20	A J 18	A J 22	20	J A 20
21	J A 27	A J 22	22	E B 16	20	E B 16	24	26	J A 32	35	37	J A 38	J A 54	G	J A 77	A J 36	A J 32	E B 17	J A 36	A J 29	E C 29	J A 18	22	J A 17
22	19	J A 23	E B 15	E B 15	E B 15	18	22	30	J A 42	45	E B 40	E B 41	E B 40	B E 46	B E 43	B E 36	G	C	E B 15	E B 15	B E 16	B E 16	B E 15	B J A 22
23	J A 26	A J 34	A J 20	A E 14	B E 15	B E 16	19	27	33	37	40	J A 40	A J 53	36	34	34	G J 22	A 24	A J 42	A J 18	18	E B 16	B E 16	B E 15
24	E B 13	E B 15	B E 16	B E 14	B E 14	B E 15	22	32	G	G	G 33	E B 40	E B 63	B J 52	A G 30	G	30	J A 30	A J 27	18	19	E B 15	J A 20	A J 22
25	J A 19	A J 24	A J 18	A E 15	B E 15	B E 15	B J A 22	A J 37	A J 41	A J 50	A J 46	A J 47	A J 46	A J 46	A E 42	B 39	J A 76	A J 46	A J 53	A J 39	A J 28	A J 32	A J 35	A J 24
26	J A 61	A J 52	A J 43	A J 32	A J 21	A E 14	B 19	31	J A 40	A J 88	A J 72	A J 48	G 34	G J 26	A 34	G 24	E B 38	22	21	E B 15	B E 15	B E 15	B E 15	B J A 25
27	J A 22	A J 29	A J 31	A J 19	A J 20	A E 14	B	G	G 34	J A 44	A J 44	A J 45	G J 34	A 44	G	G	G	20	E B 16	J A 20	J A 33	A J 25	A J 18	A J 18
28	20	J A 17	A J 17	A J 20	A 20	E B 15	B E 17	B 28	38	J A 78	40	38	J A 43	G	G J 44	A	G J 24	A J 24	A J 23	A 22	19	J A 17	A J 19	E B 16
29	E B 14	E B 15	E B 15	E B 16	E B 16	E B 16	B 19	G	G	G J 46	A J 46	44	G 35	J 45	A E 42	B J 36	G	E C 28	E B 15	J A 35	J A 53	A J 44	A J 24	A J 27
30	J A 17	A J 16	A J 31	A J 31	A J 33	K J 35	K 27	G	G	J A 44	A J 48	A E 48	B 39	G	J A 44	A J 65	A J 47	A J 65	A J 31	A J 40	A J 35	A J 26	A J 24	A J 45
31	J A 32	A J 19	A J 32	24	E B 14	B E 16	G	28	34	G	41	J A 42	J A 42	G 32	G 25	34	28	J A 28	A J 20	A E 26	B J 14	A J 39	A 19	20
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31
MED	J A 19	A J 17	16	E B 16	E B 16	E B 15	20	28	34	40	J A 40	A J 41	40	37	E G 34	34	28	24	J A 26	A J 25	A J 24	A J 24	22	J A 21
U Q	J A 22	A J 22	A J 22	A J 19	A 20	16	22	31	J A 38	A J 46	A J 46	A J 48	A J 46	A J 46	A J 43	A J 36	A J 38	A J 30	A J 32	A J 35	A J 35	A J 34	A J 31	A J 26
L Q	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	E B 19	G	G 32	G	G 37	G	G 34	G 31	G 30	G 27	G	22	E B 16	B E 18	E B 19	B E 18	B 19	E B 16

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 2003 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E B 16	E B 14	E B 14	E B 16	E B 15	E B 14	22	28	30	G 28	38	42	G 32	U Y 26	G 32	G 24	G 22	21	E B 14	20	22	E B 16	E B 15	E B 15
2	29	E B 15	19	16	E B 14	19	20	G 21	34	36	41	41	41	42	44	40	36	46	17	27	E B 16	E B 14	20	E B 15
3	E B 16	E B 16	E B 16	E B 15	E B 16	E B 28	E C 28	G	34	40	39	42	39	36	35	G 27	26	20	E B 16	23	17	E B 14	E B 15	E B 14
4	E B 16	E B 16	E B 16	E B 15	E B 15	E B 15	G	G 19	32	38	47	41	40	43	36	G 20	G 19	21	20	28	20	24	E B 15	E B 15
5	E B 15	E B 16	E B 14	E B 14	E B 28	E C 15	20	29	32	34	U Y 26	39	40	44	41	32	37	30	E B 16	E B 15	21	18	E B 14	E B 16
6	E B 15	E B 16	E B 16	E B 15	E B 14	E B 16	20	28	34	38	U Y 37	U Y 26	U Y 34	35	U Y 27	G 25	27	21	E B 16	E B 15	E B 15	16	E B 14	E B 16
7	E B 16	E B 14	E B 15	E B 15	E B 15	E B 15	21	G 20	G 21	G 25	40	G	38	E B 38	G 29	33	27	19	E B 15	E B 15	18	27	16	E B 16
8	E B 16	E B 15	E B 15	E B 16	E B 15	E B 14	18	G	36	41	48	42	40	38	34	30	G 21	18	19	E B 16	E B 16	E B 16	E C 28	E B 14
9	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	18	28	32	35	G 32	G 28	36	G 28	G 23	G 27	26	19	E B 16	E B 15	E B 16	19	17	19
10	20	19	E B 16	E B 15	E B 16	16	18	G	G	34	35	37	G 32	G 30	34	30	34	38	17	22	28	28	21	20
11	17	E B 14	E B 14	E B 16	E B 15	E B 15	23	30	G 27	G 29	G 26	G 30	G U Y 31	U Y 25	35	33	28	18	E B 15	E B 16	22	31	E C 28	16
12	18	16	E B 15	E B 14	E B 14	E B 15	20	G	G 24	G 28	G 34	38	41	43	34	G 18	28	21	23	E B 15	E B 16	E B 16	20	20
13	16	E B 15	18	16	E B 15	E B 14	E B 17	26	31	33	37	U Y 33	G 30	G 27	G 28	G 24	24	20	20	20	20	E B 14	28	E B 15
14	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	19	30	32	G 27	G 29	G 28	G 28	36	G 23	31	51	31	18	28	31	21	22	18
15	E B 15	21	E B 14	E B 15	16	E B 16	E B 18	26	A A 88	A A 75	34	G 30	G 29	G 24	32	31	28	E B 22	E B 15	19	E B 20	31	16	E B 14
16	18	E B 16	18	E B 15	E B 15	E B 15	E B 19	36	46	56	59	54	46	43	51	37	30	A A 71	36	31	21	20	20	E B 16
17	18	E B 15	E B 15	E B 14	E B 15	E B 15	E B 15	24	29	34	35	G 30	G U Y 25	U Y 25	G	G 20	G	18	20	17	34	A A 41	A A 46	A A 44
18	16	17	E B 15	E B 16	E B 14	E B 15	E B 15	24	34	39	38	46	42	34	G 27	30	32	22	28	E B 15	E B 15	E B 15	16	E B 16
19	E B 16	E B 14	E B 15	E B 15	E B 15	E B 16	E B 17	G 20	31	G U Y 32	33	34	G 32	G 29	G 26	29	G	18	E B 14	E B 15	E B 15	17	21	19
20	E B 15	E B 16	16	18	16	E B 15	E B 16	28	34	35	45	60	42	35	40	U Y 25	29	22	E B 15	18	E B 16	19	E B 16	E B 14
21	16	E B 15	E B 15	E B 16	E B 15	E B 16	20	25	30	33	36	35	38	G	34	31	30	E B 17	34	20	E C 29	16	E B 14	E B 16
22	17	17	E B 15	E B 15	E B 15	E B 15	19	28	38	44	E B 40	E B 41	E B 40	E B 46	E B 43	E B 36	G	C	E B 15	E B 15	E B 16	E B 16	E B 15	18
23	23	26	16	E B 14	E B 15	E B 16	18	27	32	35	37	38	43	35	32	32	G 20	18	35	E B 15	E B 16	E B 16	E B 16	E B 15
24	E B 13	E B 15	E B 16	E B 14	E B 14	E B 15	20	30	G	G	G 33	E B 40	E B 63	44	G 29	G	28	18	20	E B 15	E B 14	E B 15	E B 15	18
25	E B 16	19	16	E B 15	E B 15	E B 15	19	35	35	46	38	40	38	37	E B 42	36	40	36	39	32	24	26	32	18
26	A A 61	36	28	22	18	E B 14	18	30	33	42	39	40	G U Y 32	U Y 26	G 24	G 21	E B 38	19	20	E B 15	E B E B 15	E B 15	E B 15	18
27	20	20	27	E B 16	16	E B 14	G	G	32	38	38	41	G 32	40	G	G	G	17	E B 16	16	21	21	E B 15	E B 16
28	E B 16	E B 15	E B 15	16	E B 16	E B 15	E B 17	27	38	54	38	38	38	G	G	35	G	19	19	16	17	E B 16	17	E B 16
29	E B 14	E B 15	E B 15	E B 16	E B 16	E B 16	18	G	G	38	42	40	U Y 35	38	E B 42	34	G	E C 28	E B 15	29	34	33	20	22
30	16	16	23	20	K A 20	A 35	26	G	G	38	42	43	E B 39	G	38	43	G 22	19	20	28	22	19	17	38
31	29	16	16	21	E B 14	E B 16	G	26	32	G	38	38	39	G 32	G 25	31	27	20	18	20	E B 14	34	E B 14	E B 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31
MED	E B 16	E B 16	E B 15	E B 15	E B 15	E B 15	18	26	32	35	38	38	37	34	E G 32	30	27	20	18	17	18	18	16	E B 16
U Q	18	17	16	16	16	E 16	20	28	34	40	40	41	40	40	38	33	30	22	20	23	22	26	21	18
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G 29	G	G 34	G 33	G 32	29	G 28	G 25	G	18	E B 15	E B 15	E B 16	E B 16	E B 15	E B 15

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	14	14	16	15	14	15	15	17	18	20	20	26	19	28	20	15	16	14	17	16	16	15	15
2	16	15	14	16	14	14	14	18	21	20	17	29	18	17	21	20	22	15	14	15	16	14	14	15
3	16	16	16	15	16	E C 28	E C 28	16	23	22	23	23	26	21	20	16	15	15	16	15	14	14	15	14
4	16	16	16	15	15	15	15	15	18	19	22	20	17	20	17	15	14	13	15	16	13	14	15	15
5	15	16	14	14	E C 28	15	16	20	15	19	20	20	21	20	20	15	16	15	16	15	15	14	14	16
6	15	16	16	15	14	16	16	16	19	21	28	20	21	20	19	18	15	16	16	15	15	14	14	16
7	16	14	15	15	15	15	15	14	16	18	20	28	17	38	18	18	17	16	15	15	14	14	15	16
8	16	15	15	16	15	14	15	15	20	24	20	21	18	24	20	16	16	15	15	14	16	16	E C 28	14
9	15	15	15	15	15	15	14	15	12	19	20	18	24	20	16	17	14	16	16	15	16	14	14	15
10	15	14	16	15	16	16	15	14	19	19	20	23	20	22	17	18	16	15	14	16	16	14	15	15
11	15	14	14	16	15	15	16	15	16	16	19	18	17	16	13	14	15	15	15	16	14	14	E C 28	15
12	14	15	15	14	14	15	13	15	17	18	17	19	20	18	14	14	16	16	14	15	16	16	14	14
13	14	15	14	14	15	14	17	14	16	21	21	23	19	18	18	15	15	15	13	15	14	14	15	15
14	15	15	15	16	15	15	14	15	15	18	20	19	18	14	14	18	16	15	13	14	15	14	15	14
15	15	16	14	15	15	16	18	15	18	16	27	20	17	18	17	14	13	14	15	14	20	15	14	14
16	16	16	16	15	14	15	19	16	19	28	20	25	20	16	19	18	13	14	15	13	15	16	15	16
17	14	15	15	14	15	15	15	15	15	16	17	20	19	16	21	16	16	15	14	13	14	15	15	14
18	13	15	15	16	14	15	15	16	16	17	18	16	28	20	16	15	14	15	17	15	15	15	16	16
19	16	14	15	15	15	16	17	16	15	18	20	19	19	20	18	15	15	14	14	14	16	15	16	14
20	15	16	14	15	14	15	16	16	16	20	19	20	18	16	17	15	15	14	15	15	16	15	16	14
21	14	15	15	16	15	16	13	17	16	18	18	18	20	30	24	19	15	17	14	15	E C 29	15	14	16
22	15	15	15	15	15	15	15	16	21	35	40	41	40	46	43	36	18	C	15	15	16	16	15	14
23	16	14	15	14	15	16	14	18	20	19	21	24	18	20	17	18	15	15	14	15	16	16	16	15
24	13	15	16	14	14	15	14	21	20	30	28	40	63	30	20	18	14	15	13	15	14	15	15	14
25	16	14	15	15	15	15	14	16	19	20	28	21	20	28	42	20	19	15	16	14	14	14	14	14
26	15	16	14	15	13	14	14	16	17	18	26	22	27	16	17	16	38	18	16	15	15	15	15	14
27	16	14	13	16	13	14	16	22	18	18	19	28	18	21	28	19	18	15	16	14	14	14	15	16
28	16	15	15	13	16	15	17	19	17	27	24	29	22	20	22	16	17	16	14	14	16	16	14	16
29	14	15	15	16	16	16	14	18	16	28	32	25	29	21	42	29	19	E C 28	15	15	12	15	14	14
30	13	14	17	15	13	14	16	22	21	23	29	32	39	28	20	16	16	14	15	14	14	11	15	14
31	15	14	15	15	14	16	15	16	16	20	27	29	25	22	18	15	15	14	14	14	14	14	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31
MED	15	15	15	15	15	15	15	16	17	19	20	21	20	20	19	16	15	15	15	15	15	15	15	15
U Q	16	16	15	16	15	16	16	18	19	22	27	28	26	22	21	18	17	16	16	15	16	15	15	16
L Q	14	14	14	15	14	15	14	15	16	18	19	20	18	18	17	15	15	15	14	14	14	14	14	14

OCT. 2003 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

OCT. 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	288	281	282	280	283	294	355	334	358	335	319	318	319	316	326	310	321	344	337	303	297	303	312	291
2	283	289	306	323	304	308	354	359	373	323	325	327	324	306	310	321	328	333	324	313	295	301	281	279
3	280	286	304	281	280	298	354	349	335	319	328	309	295	296	308	312	322	341	335	321	269	271	281	285
4	287	297	295	327	275	281	354	337	350	319	320	331	315	312	325	331	333	336	330	330	299	290	280	274
5	295	297	320	327	301	313	365	372	357	334	325	328	327	319	311	331	337	346	323	311	293	296	309	305
6	292	302	299	329	336	320	371	367	343	339	320	323	323	318	321	316	335	356	320	321	316	318	303	282
7	284	282	310	331	329	311	365	358	377	332	330	316	315	318	326	340	321	331	323	295	304	294	282	314
8	303	301	280	308	299	299	352	356	354	338	323	336	313	320	328	332	335	334	344	307	298	301	304	297
9	293	303	300	306	315	323	364	349	368	351	321	318	317	312	321	336	341	335	319	328	314	306	289	299
10	294	298	321	298	327	324	359	371	365	345	303	321	316	324	321	332	348	349	347	325	312	312	291	296
11	308	316	304	F	F	323	351	356	361	352	311	318	312	303	313	335	339	350	367	303	320	317	287	304
12	299	296	304	328	338	327	370	380	370	351	327	323	311	320	325	328	337	344	349	315	323	316	295	295
13	298	297	314	333	329	311	375	370	367	361	311	340	314	317	316	347	339	345	314	299	297	281	298	290
14	304	308	286	306	285	319	359	352	329	321	328	327	315	322	330	329	329	336	348	364	283	326	275	286
15	264	290	347	360	299	254	339	309	A	A	307	349	332	332	335	332	346	352	342	312	292	313	263	281
16	283	295	325	313	288	290	326	337	353	341	325	309	319	327	335	360	349	A	344	299	304	272	274	288
17	294	301	285	V 302	286	305	338	372	367	L 326	334	328	325	328	354	355	319	350	362	308	293	A	A	A
18	277	299	311	312	293	302	328	363	353	341	344	351	336	324	336	341	345	355	346	313	299	306	273	279
19	262	266	286	315	272	279	331	354	347	362	338	337	339	322	350	346	343	353	327	303	299	322	289	278
20	281	278	280	278	297	282	291	333	357	324	330	312	324	332	341	341	348	348	321	329	290	353	281	305
21	277	278	275	309	321	325	353	357	348	323	336	340	348	325	330	342	352	336	296	343	331	307	292	272
22	266	284	314	364	306	267	322	324	305	330	339	336	320	319	325	354	349	C	310	322	372	284	291	281
23	275	294	290	274	263	289	350	345	325	345	336	340	319	330	345	348	338	344	326	313	318	316	296	286
24	291	302	317	336	293	301	335	356	353	340	347	330	329	325	327	344	340	336	329	307	337	299	276	272
25	287	352	261	245	273	287	292	321	324	334	313	325	309	312	323	322	327	335	320	316	301	282	292	305
26	A	279	267	289	284	338	324	343	317	342	319	324	308	322	329	338	336	330	287	313	321	310	304	291
27	302	293	286	291	298	284	322	335	329	330	347	310	299	312	304	310	308	315	309	307	295	274	298	304
28	296	297	283	278	267	269	337	350	348	337	340	331	307	314	303	311	330	331	294	307	291	292	337	258
29	260	265	265	267	F	265	318	345	313	321	322	301	294	298	308	308	309	317	244	267	331	311	238	251
30	246	239	305	F	333	A	351	362	341	311	293	285	283	276	307	319	292	297	289	304	309	318	306	300
31	277	257	279	315	239	333	271	276	285	328	305	283	302	326	281	319	296	305	313	271	275	258	260	281
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	29	29	30	31	31	30	30	31	31	31	31	31	31	31	29	31	31	31	30	30	30
MED	287	295	299	309	297	302	351	352	352	334	325	325	316	319	325	332	336	336	324	312	299	304	290	287
U Q	295	301	311	328	318	320	359	362	361	342	336	336	324	325	330	342	343	348	344	321	318	316	298	299
L Q	277	281	282	285	282	284	326	337	329	324	319	316	309	312	311	319	322	332	313	303	293	290	280	279

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L 377	L 393	L 367	L 396	L	L	L							
2										L	L	L	L	L	L	L	A							
3									L	L	L	L	L	L	L	L								
4											L	L	L	L	L									
5										L	L	L	L	L 361	L									
6										L	L	L	L	L	L	L								
7										L	L	L	L	L		L								
8											A	L	L	L	L	L								
9										L	L	L	L	L	L									
10										L	L	L	L	L	L	L	A							
11									L	L	L	L 394	L	L	L	L								
12										L	L	L	L	A	L	L								
13									L	L	L	L 363	L	L	L									
14											L	L 358	L 397	L										
15									A	A	L 376	L 348	L	L	L	L	L							
16									A	A	A	A		L	A	L		A						
17									L		L	L 364	L 386	L		L								
18									L	L	L 374	A	A	L	L	L								
19											L 368	L	L			L								
20								L			A	A	L	L	A									
21									L	L	L	L	L	L										
22									L	L	L		L					C						
23										L	L	L	L	L	L									
24											L	L	E	B A	L									
25									L	A	L	L	L	L										
26										L	L	L		L										
27										L				L										
28													L	L										
29														L										
30						A					L		L											
31												L		L 379	L									
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											4	6	3	3										
MED											L 375	L 364	L 386	L 379										
U Q											L 376	L 393	L 397	L 396										
L Q											L 371	L 358	L 367	L 361										

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

IONOSPHERIC DATA STATION Kokubunji

OCT. 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									228	258	266	268	266	260	266	282	258							
2										290	250	258	272	298	288	270	250							
3									260	246	254	258	264	276	272	262								
4											270	246	256	268	256									
5										224	254	264	258	268	278									
6										230	248	254	262	262	260	260								
7										236	248	270	272	258		238								
8											256	244	256	262	258	252								
9										244	254	264	248	264	262									
10										236	250	258	246	242	268	242	232							
11									234	232	262	244	250	286	272	262								
12										234	246	256	280	258	276	254								
13									228	230	250	248	256	266	260									
14											258	256	254	264										
15										A	A	320	252	248	270	260	250	234						
16									246	234	250	252		268	250	232		A						
17									222		268	264	246	258		236								
18									230	266	258	228	232	256	262	244								
19											262	256	238			248								
20								260			256	258	260	248	240									
21									236	240	248	230	242	272										
22									290	262	242		250					C						
23										252	238	234	264	266	248									
24											240	246	252	252	248									
25									244	236	242	252	246	262										
26										240	234	252		260										
27										254				276										
28													284	266										
29														274										
30						A					314		316											
31												324		274	316									
	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	10	19	27	26	26	28	19	14	4							
MED								260	235	240	254	255	256	265	262	251	242							
U Q									246	254	262	258	264	271	272	262	254							
L Q									228	234	248	246	248	259	256	242	233							

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OCT. 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	E B 286	E B 282	E B 288	E B 280	256	242	214	214	204	208	H 190	206	H 190	204	210	220	222	226	208	238	E A 250	248	238	262
2	E A 308	E B 276	256	214	244	E A 258	212	218	218	216	210	204	212	214	E A 254	E A 238	A	E A 234	218	232	242	232	E A 288	E B 278
3	E B 284	E B 286	248	266	264	E C 266	206	216	218	A	214	210	208	E A 230	214	218	228	224	200	202	E A 322	E B 320	E B 286	E B 270
4	264	270	268	230	E B 272	E B 294	208	214	224	206	A	220	212	E A 234	218	214	H 204	230	228	222	E A 250	E A 268	E B 282	E B 286
5	264	252	242	226	E C 242	238	212	210	214	198	198	202	206	200	E A 244	236	230	220	208	222	E A 248	E A 266	238	236
6	244	256	252	230	220	214	200	210	H 202	200	200	204	H 192	184	224	210	222	218	208	220	218	218	240	E B 274
7	E B 282	E B 288	236	210	210	236	210	212	208	H 188	196	216	216	208	216	208	220	226	214	244	262	E A 272	E A 286	252
8	228	242	E B 270	242	244	240	208	214	210	224	A	214	208	204	218	214	232	212	210	234	240	250	E C 270	244
9	254	254	254	246	232	234	210	210	212	202	198	198	H 182	H 188	H 188	226	220	222	222	220	224	248	E A 262	258
10	E A 278	270	240	228	224	230	208	208	212	196	190	188	H 178	H 178	210	206	A	222	214	208	230	E A 256	E A 280	E A 284
11	244	234	242	230	206	208	202	216	210	206	204	H 192	H 194	210	220	222	232	218	204	200	238	E A 254	E C 316	E A 260
12	E A 276	266	E B 264	232	212	212	208	202	208	H 186	198	210	212	A	218	216	220	226	210	224	228	212	E A 268	E A 292
13	E A E 262	B 262	E A 268	252	230	246	204	206	202	198	192	H 188	206	198	204	220	214	212	206	E A 242	E A 264	E B 282	E A 288	E B 278
14	258	242	E B 288	258	236	234	206	210	214	214	198	H 180	H 182	194	214	214	E A 240	226	214	204	E A 332	E A 244	E A 298	E A 302
15	E B 324	E A 300	232	208	E A 260	E B 398	226	226	A	A	196	198	210	214	220	220	A	218	196	E A 246	E B 290	E A 288	E A 334	E B 268
16	E A 328	260	240	240	E B 270	E B 292	228	234	A	A	A	A	240	A	A	A	212	A	E A 252	E A 298	E A 260	E A 330	E A 308	E B 284
17	E A 272	264	270	258	E B 298	E B 272	220	212	200	204	198	190	192	204	224	210	234	214	208	E A 248	E A 350	A	A	A
18	E A E 306	A 284	252	244	238	E B 270	242	220	202	212	204	A	A	190	228	216	232	210	208	214	232	244	E A 316	E B 326
19	E B E 334	B 318	E B 314	252	E B 296	E B 328	244	222	H 194	220	208	194	H 190	218	228	204	224	220	200	236	246	246	E A 282	E A 312
20	E B 306	E B 284	E B E 286	A 298	272	E B 286	252	234	216	218	A	A	A	222	A	226	226	214	206	226	262	220	E B 258	258
21	E A E 306	B 310	E B 312	250	218	222	222	210	202	206	H 192	H 188	204	216	234	224	210	212	E A 286	228	210	220	E B 284	E B 332
22	E A E 342	A 318	244	212	E B 282	E B 362	260	228	240	A	E B 224	228	210	240	242	222	216	C	220	240	194	E B 294	256	E A 292
23	E A E 328	A E 316	A E 280	A E B 320	E B 332	E B 274	216	222	222	218	216	206	222	206	218	222	208	216	E A 252	238	234	232	242	E B 272
24	E B 276	262	248	220	206	E B 280	228	214	218	204	202	204	B	A	220	220	214	202	206	246	220	E B 256	E B 292	E A 306
25	E B 296	224	E A 390	E B 404	E B 286	E B 298	262	222	220	A	216	210	208	216	222	234	226	222	254	252	246	E A 290	E A 300	252
26	A	E A 370	E A E 364	A E 276	A E 280	A 216	218	228	224	A	206	204	214	230	228	220	224	212	228	250	236	242	228	E A 266
27	E A E 260	A 276	E A 298	256	248	254	228	222	224	222	220	212	220	222	238	238	232	228	216	220	244	E A 298	248	232
28	238	256	258	E A 288	E B 280	E B 294	224	214	218	232	228	206	202	226	230	230	228	218	214	240	262	240	212	E B 330
29	E B E 314	B 304	E B 292	E B 300	E B 288	294	236	216	220	224	220	230	224	226	228	228	240	198	E B 338	E A 310	222	E A 250	E A 388	E A 348
30	E A E 350	A 350	A E 272	A E 306	A 204	A	216	224	220	E A 246	E A 256	234	230	254	244	228	230	244	250	258	228	226	E A 258	302
31	E A E 322	A 314	A E 300	A 240	E B 410	230	E A 338	286	218	232	212	214	218	216	224	234	208	216	224	248	248	E A 322	E B 302	E B 282
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	31	31	29	25	27	28	28	28	29	30	28	29	31	31	31	30	30	30
MED	E 283	E 276	U 254	238	U 229	U 233	216	216	214	207	202	205	208	212	221	220	224	218	211	230	236	E 250	E 282	E 278
U Q	E A E 314	A E 304	A E 288	E 276	E B 280	E B 292	228	222	220	221	216	213	215	224	229	228	231	226	228	246	E 262	E A 282	E A 298	E A 302
L Q	262	256	248	230	224	234	208	210	206	201	198	196	H 193	202	217	214	215	213	208	220	228	240	256	260

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OCT. 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							118	A	A	118	A	A	118	110	112	112	114	118						
2							A	128	116	112	114	114	112	A	114	A	A	B						
3							E C	116	114	A	A	A	A	A	116	116	116	B						
4							116	122	120	116	A	A	A	A	A	118	112	118						
5							E B 134	118	114	116	118	114	112	116	118	114	114	B						
6							B	116	114	116	116	112	A	A	114	118	116	B						
7							B	124	112	114	112	112	112	B	116	116	116	B						
8							B	116	118	118	120	114	A	A	A	A	120	B						
9							B	A	116	116	118	112	A	110	112	118	122	B						
10							B	116	110	108	116	A	114	118	A	A	A							
11							B	118	118	116	114	112	108	110	112	110	108	B						
12							E B 126	110	116	118	114	A	A	A	A	114	116	B						
13							B	A	A	A	A	A	116	114	114	118	A	B						
14							B	112	112	116	118	116	114	A	108	112	A	B						
15							B	116	A	A	A	114	116	112	116	116	A	B						
16							B	A	A	A	A	A	A	A	A	A	122	B						
17							B	A	A	A	A	116	116	116	114	112	116	B						
18							B	118	A	A	A	A	A	A	114	A	A	B						
19							B	120	118	118	A	A	122	116	114	A	114	B						
20							B	114	114	A	A	A	A	A	A	110	A	B						
21							110	116	A	116	A	A	A	118	A	A	A	B						
22							120	116	114	A	B	B	B	B	B	B	112	C						
23							E B 136	114	112	112	A	A	A	A	A	A	116	B						
24							B	112	114	114	114	B	B	A	112	112	A	B						
25							B	118	A	A	A	A	A	A	B	A	A	B						
26							B	114	A	A	A	A	114	114	112	110	B	B						
27							E B 136	114	114	A	A	A	116	A	116	112	116	B						
28							B	122	A	A	A	A	A	114	114		110	B						
29							B	116	110	A	A	A	122	A	B	A	116	E C						
30					K 156	K 142	118	122	116	A	A	A	B	114	A	A	114	B						
31							126	114	112	110	114	A	A	114	114	112	108	B						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT					1	1	10	26	21	17	12	10	14	14	19	18	20	2						
MED					K 156	K 142	118	116	114	116	115	114	115	114	114	113	116	118						
U Q							E B 134	118	116	117	118	114	116	116	116	116	116							
L Q							118	114	112	113	114	112	112	112	112	112	113							

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OCT. 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	B	94	B	B	B	B	154	106	104	106	102	100	100	98	98	96	104	140	102	98	98	100	104	106
2	104	114	90	90	90	98	100	102	138	118	118	120	114	104	112	106	104	104	104	100	102	B	98	B
3	B	B	96	B	B	C	C	G	118	106	106	104	108	104	116	104	112	104	102	100	98	98	B	B
4	B	96	B	94	88	B	G	108	122	114	104	104	100	96	96	96	100	128	114	106	102	100	102	B
5	B	B	B	B	C	B	140	140	140	122	102	120	118	150	144	142	126	114	104	104	94	94	96	B
6	96	B	B	B	B	B	130	128	120	118	114	100	102	104	102	104	128	108	94	B	B	92	92	92
7	B	B	B	B	B	96	128	100	104	104	120	G	112	B	104	122	114	102	B	B	98	96	98	96
8	94	B	B	B	B	B	128	G	124	116	112	114	108	106	108	106	100	100	100	98	B	B	C	B
9	B	B	B	B	B	B	110	104	112	114	106	104	98	102	98	100	142	120	B	B	104	98	104	100
10	94	92	96	94	90	92	136	G	G	126	118	106	100	104	104	102	98	96	96	94	94	92	94	94
11	90	94	B	B	B	B	120	122	106	106	100	100	94	92	146	124	120	110	B	B	96	92	94	96
12	92	94	B	B	B	B	136	G	100	102	100	96	96	92	92	98	138	120	106	102	100	104	96	94
13	96	94	94	92	96	98	B	108	104	106	104	104	102	102	100	104	100	114	104	98	102	98	96	92
14	98	B	B	B	B	B	128	118	118	100	100	100	98	92	88	124	106	106	98	96	96	96	94	92
15	92	90	92	92	94	B	B	138	96	98	102	102	100	96	130	118	104	104	106	106	B	100	104	98
16	94	98	94	96	96	B	B	100	100	98	96	96	96	96	96	98	114	102	102	100	100	98	96	98
17	98	B	B	B	B	B	B	106	104	102	102	98	96	98	G	96	G	102	98	96	94	92	98	92
18	94	94	92	B	B	B	B	116	102	106	100	98	96	100	100	96	96	98	96	100	98	98	96	102
19	96	B	B	100	106	B	B	106	116	104	102	102	102	102	98	94	G	122	B	110	94	96	92	92
20	94	B	92	94	92	B	B	118	114	108	104	98	92	96	94	94	92	90	B	100	98	102	102	100
21	98	102	98	B	94	B	124	118	106	114	104	102	94	G	94	96	96	B	100	100	C	100	98	96
22	96	96	B	B	B	160	136	116	112	108	B	B	B	B	B	B	G	C	B	B	B	B	B	96
23	96	94	92	B	B	B	156	140	120	114	106	102	96	98	98	100	94	94	86	90	92	B	B	B
24	B	B	B	B	B	B	140	136	G	G	104	B	B	92	94	G	96	94	90	90	90	B	100	104
25	106	100	102	B	B	B	122	116	110	104	106	104	100	98	B	96	94	92	94	94	96	94	94	96
26	92	94	92	92	96	B	122	116	106	100	100	100	100	88	92	96	B	106	106	B	B	B	B	94
27	94	92	94	90	90	B	G	G	120	106	104	106	104	96	G	G	G	102	B	98	96	94	94	94
28	98	92	92	90	90	B	B	128	106	102	104	104	100	G	G	90	G	94	88	86	92	90	92	B
29	B	B	B	B	B	B	154	G	G	108	102	106	104	104	B	102	G	C	B	96	96	94	108	114
30	118	128	112	108	K 156	K 142	142	G	G	106	104	96	B	G	96	96	100	100	100	98	100	98	100	92
31	92	96	94	98	B	B	G	126	124	G	118	108	102	98	96	126	112	106	90	98	B	98	92	92
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	19	16	13	13	6	19	24	27	29	30	28	28	26	25	28	24	28	23	25	24	25	26	24
MED	96	94	94	94	94	98	130	116	112	106	104	102	100	98	98	100	104	104	100	98	97	98	96	96
U Q	98	98	96	97	96	142	140	127	120	114	106	105	103	104	106	106	114	112	104	100	100	99	100	99
L Q	94	94	92	91	90	96	122	106	104	103	102	100	96	96	95	96	97	99	94	96	94	94	94	92

OCT. 2003 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

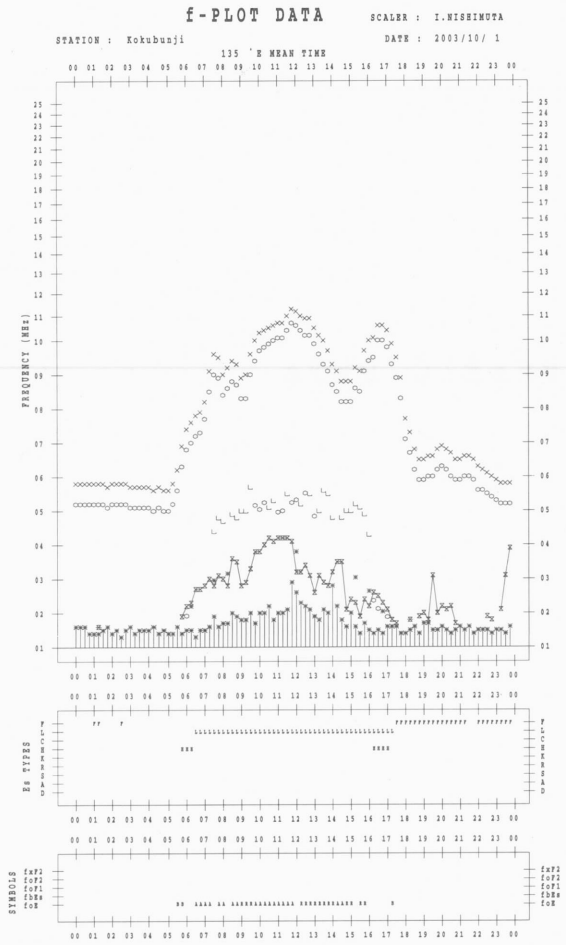
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC IN MANUAL SCALING

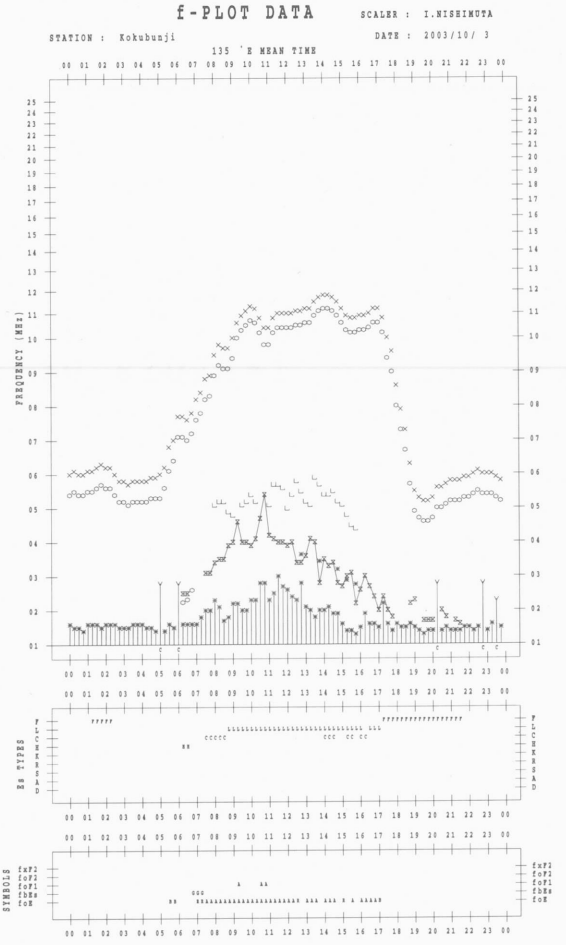
H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		F1					H1	L1	L2	L1	L1	L2	L1	L1	L1	L1	L1	HL11	F1	F1	F2	F1	F2	F2
2	F2	F1	F1	F1	F1	F2	L1	L1	CL11	CL11	CL11	C1	CL11	L1	C1	L2	L3	L2	F1	F2	F1		F1	
3			F1						C1	L2	L1	L2	L1	L1	CL11	L1	CL11	L2	F1	F3	F2	F2		
4		F1		F2	F1			L1	CL11	CL11	L2	L1	L2	L2	L1	L1	L1	C1	F2	F3	F3	F3	F1	
5							H1	H1	HL11	CL11	L1	CL11	CL11	HL11	HL11	HL11	C2	C4	F1	F1	F3	F2	F1	
6	F1						C2	C1	CL21	CL11	CL11	L1	L1	L1	L1	L1	CL12	L3	F1			F2	F1	F1
7						F1	C2	L1	L1	L1	CL11		CL11		L1	CL11	C1	L2			F2	F1	F1	F1
8	F1						C1		CL11	CL11	CL21	CL11	L1	L1	L1	L2	L2	L2	F2	F1				
9							C1	L2	CL11	CL11	L1	L1	L2	L1	L1	L1	HL11	C2			F1	F2	F2	F3
10	F3	F2	F2	F1	F2	F1	H1			C1	CL11	L1	L1	L1	L1	L2	L3	L3	F2	F3	F4	F3	F2	F3
11	F2	F2					C2	C1	L1	L1	L1	L1	L1	L1	HL11	CL11	CL11	C1			F2	F3	F2	F2
12	F2	F2					C1		L1	L1	L2	L3	L2	L2	L1	L1	H1	C2	F5	F2	F1	F2	F3	F2
13	F2	F2	F2	F3	F1	F1		L1	L1	L1	L2	L1	L1	L1	L1	L1	L3	C2	F3	F5	F2	F2	F1	F1
14	F1						C1	C2	C1	L1	L1	L1	L1	L1	L2	C1	L2	L3	F2	F3	F3	F2	F2	F1
15	F1	F1	F2	F2	F2			C2	L3	L4	L2	L1	L1	L1	CL11	CL11	L2	L4	F1	F2		F4	F2	F2
16	F2	F2	F3	F1	F1			L3	L2	L3	L3	L3	L2	L3	L3	L2	CL11	L4	F3	F4	F2	F2	F3	F1
17	F3							L1	L1	L1	L1	L1	L1	L1		L1		L2	F3	F2	F4	F4	F4	F4
18	F3	F2	F1					CL11	L2	L2	L2	L2	L2	L1	L1	L2	L3	L2	F1	F2	F1	F2	F2	F1
19	F1			F1	F2			L1	CL11	L1	L1	L1	L1	L1	L1	L2		C3		F1	F2	F2	F3	F2
20	F2		F3	F3	F2			C1	C1	L1	L2	L3	L2	L3	L4	L1	L2	L3		F3	F2	F3	F1	F1
21	F3	F1	F1		F1		C1	CL11	L1	CL11	L1	L1	L2		L2	L2	L2		F4	F3		F1	F2	F2
22	F2	F2				F1	H1	C1	C2	L1														F1
23	F2	F2	F2				H1	H1	C1	CL11	L1	L1	L2	L2	L1	L1	L2	L2	F3	F1	F1			
24							H1	H2			L1			L1	L1		L2	L2	F3	F1	F1		F2	F5
25	F2	F4	F1				C1	C2	L1	L2	L1	L2	L1	L1		L1	L3	L2	F3	F2	F2	F2	F4	F2
26	F4	F4	F3	F4	F2		C1	C1	L1	L2	L1	L1	L1	L1	L1	L1		L1	F1					F3
27	F3	F3	F3	F2	F1				CL11	L1	L1	L1	L1	L1				L1		F1	F2	F4	F2	F1
28	F1	F2	F1	F3	F1			C1	L1	L2	L1	L1	L1			L2		L1	F1	F2	F1	F1	F1	
29							H1			L1	L1	L1	L1	L1		L1				F3	F4	F2	F1	F3
30	F2	F2	F3	F3	K2	K4	H2			L1	L1	L1			L1	L2	L1	L2	F2	F2	F1	F3	F2	F4
31	F3	F3	F3	F1				C1	C1		CL11	L1	L1	L1	L1	CL11	CL11	LL12	F1	F2		F4	F1	F1
	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																								

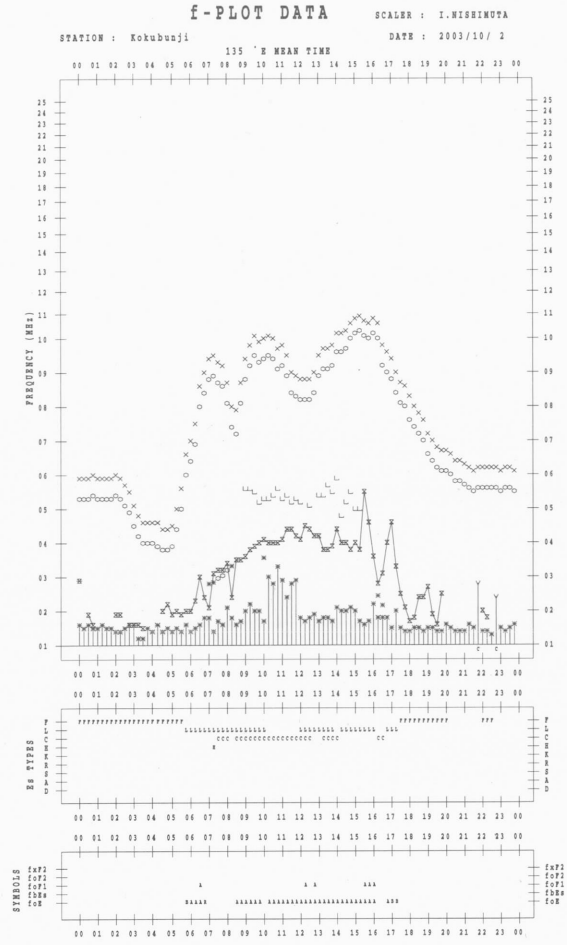
OCT. 2003 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

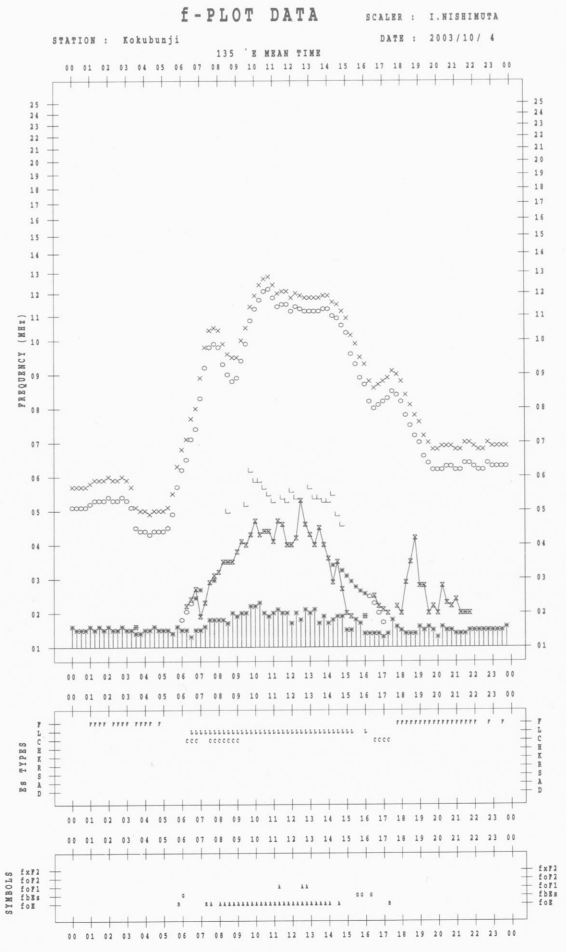
f-PLOTS OF IONOSPHERIC DATA

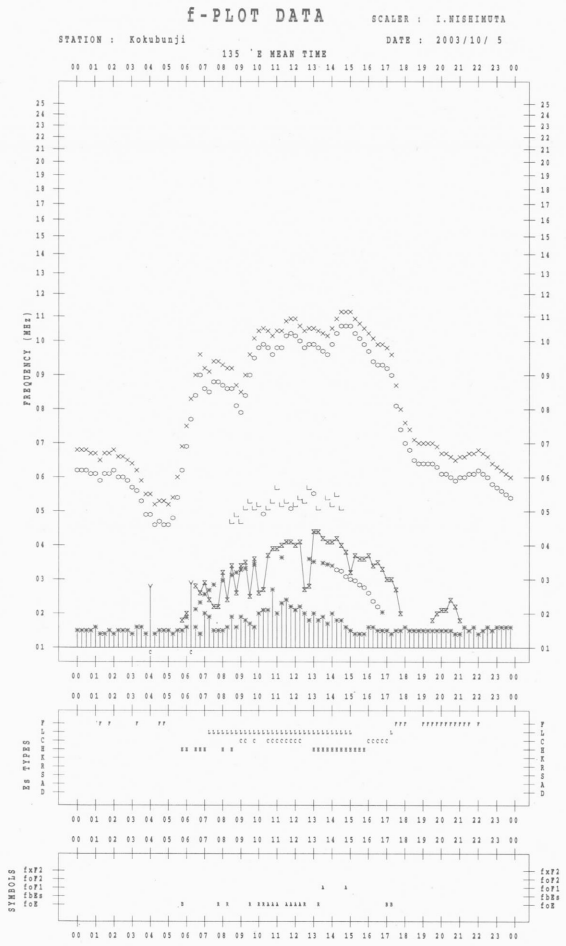
KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

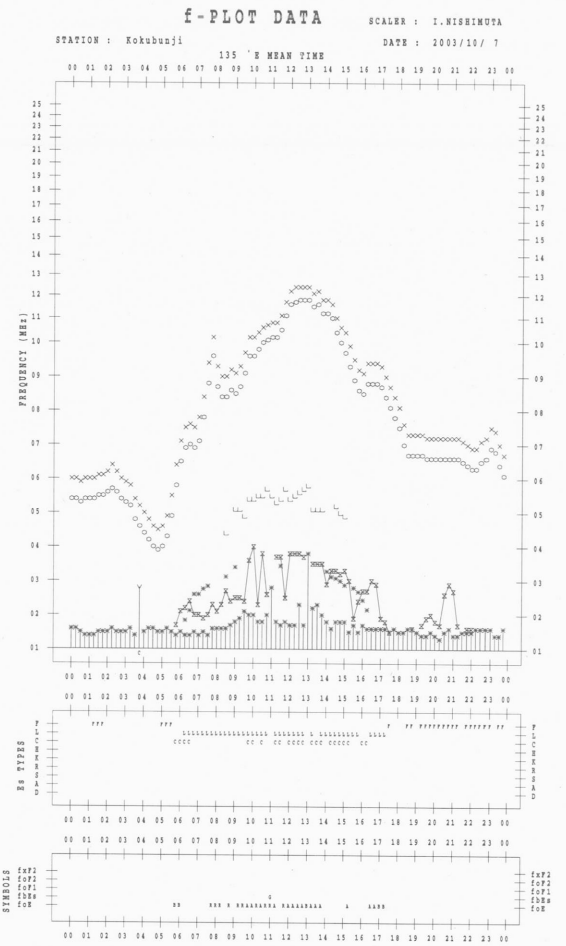

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

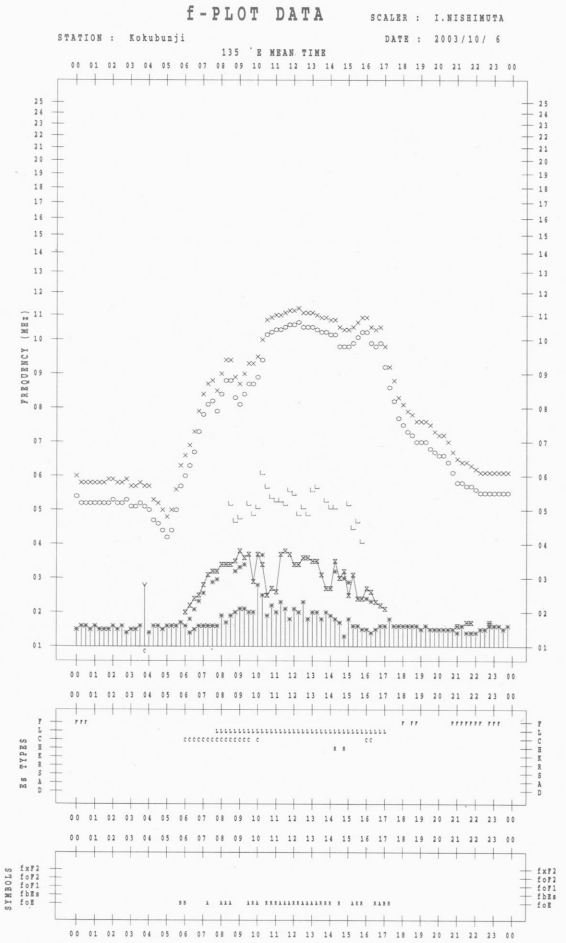

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

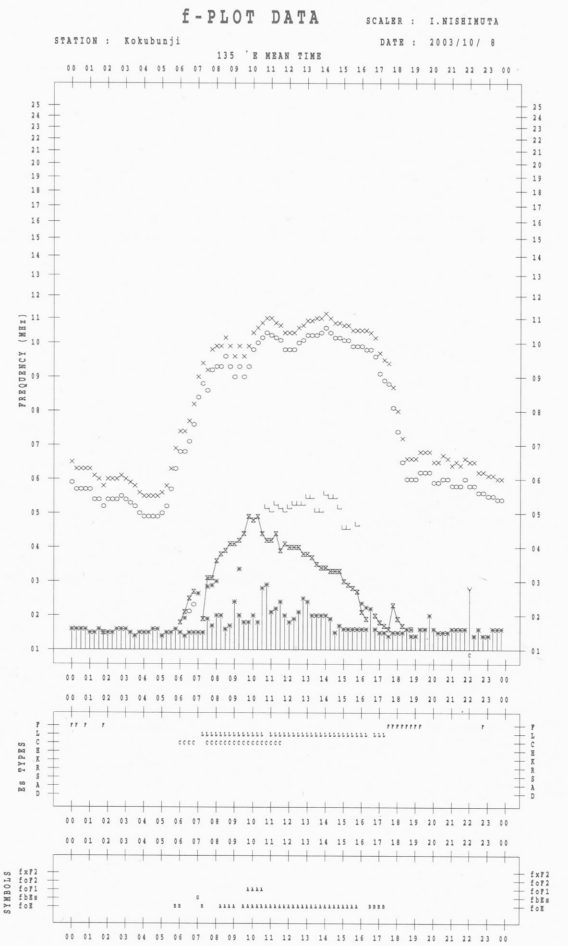

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

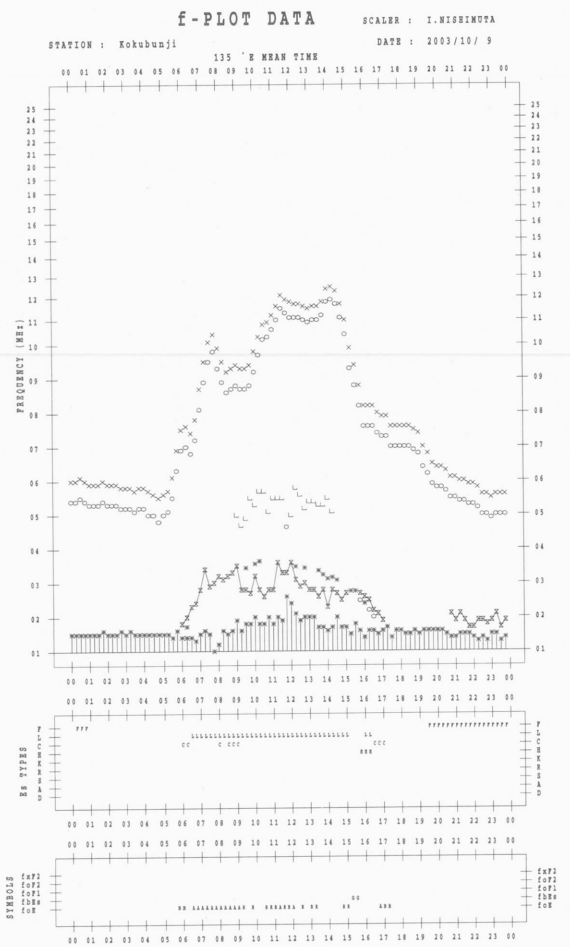

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

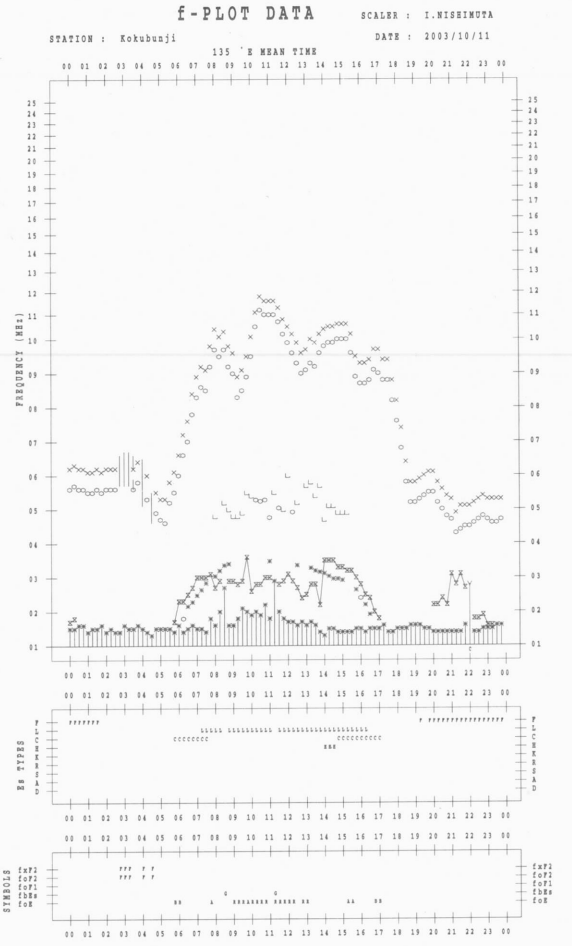

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

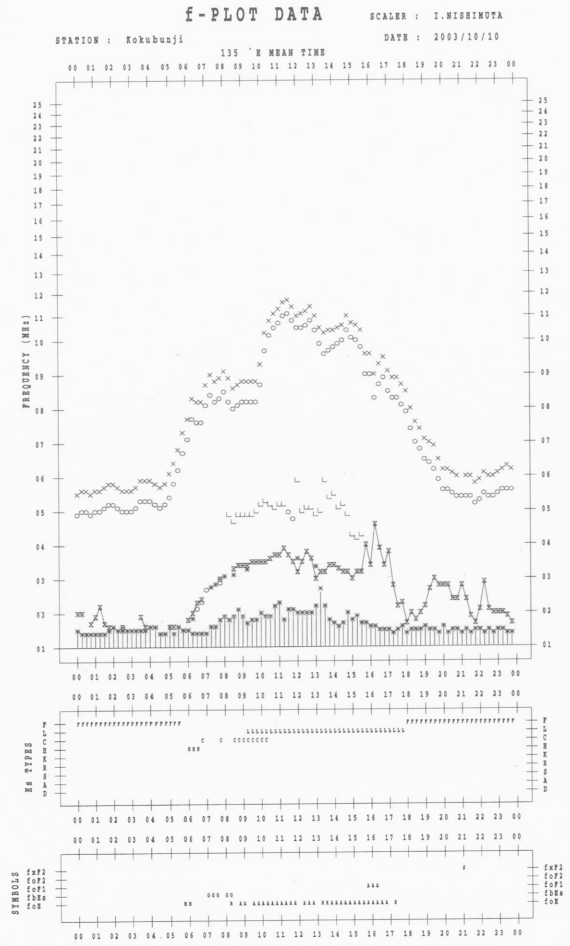

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

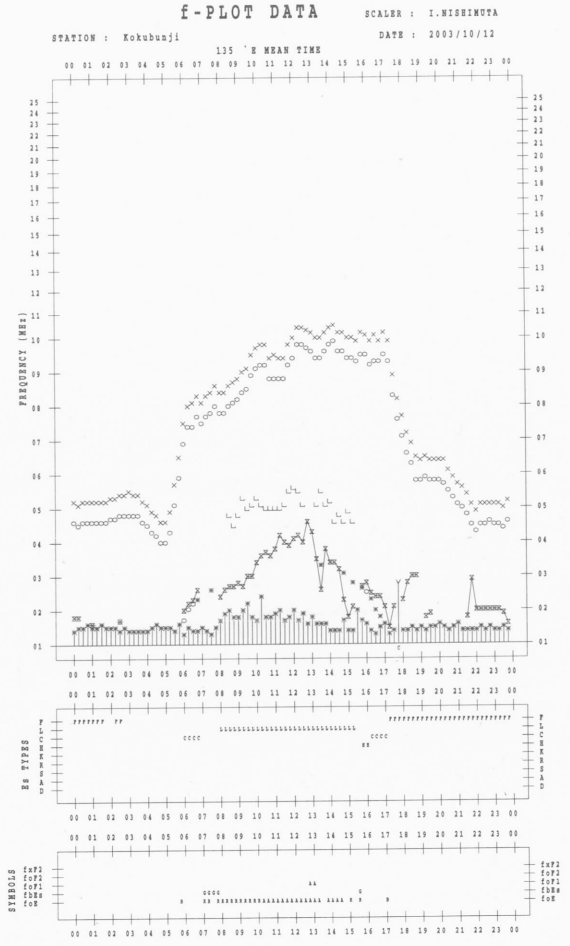

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

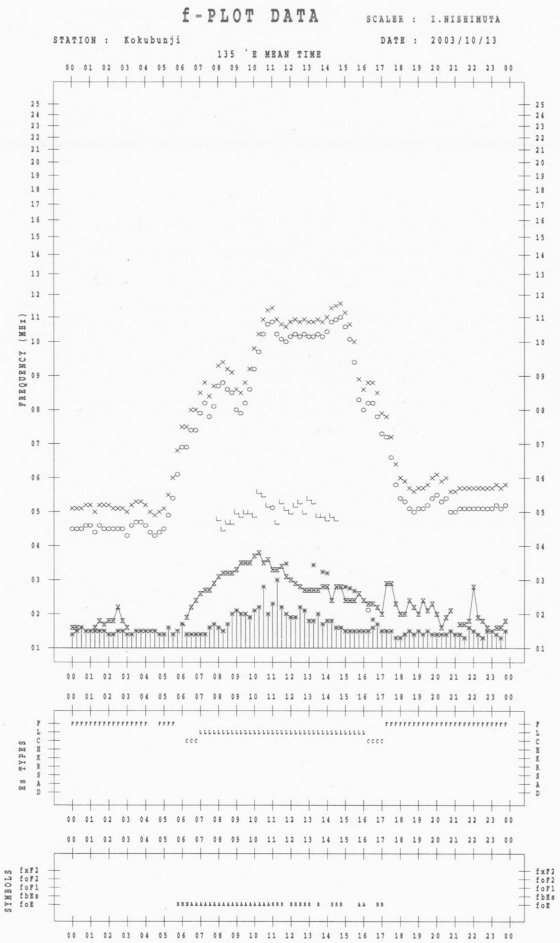

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

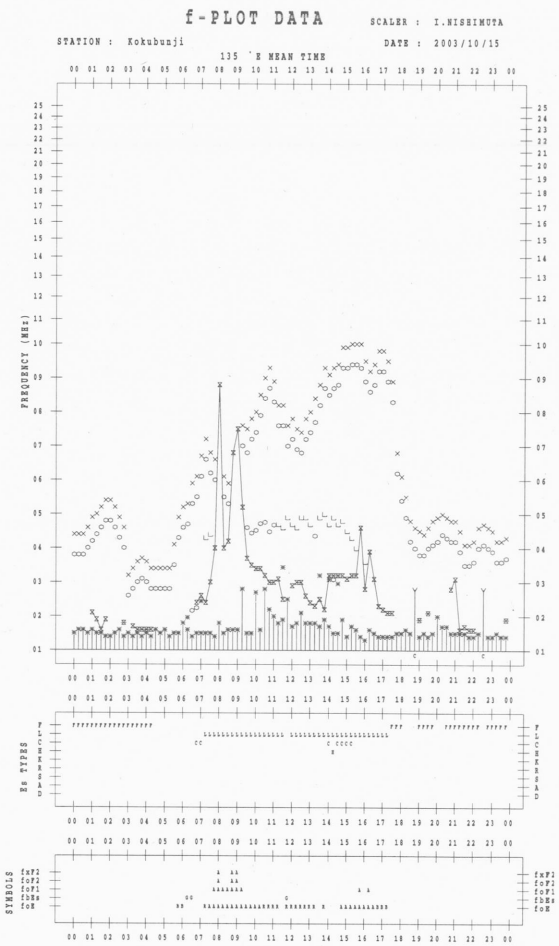

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

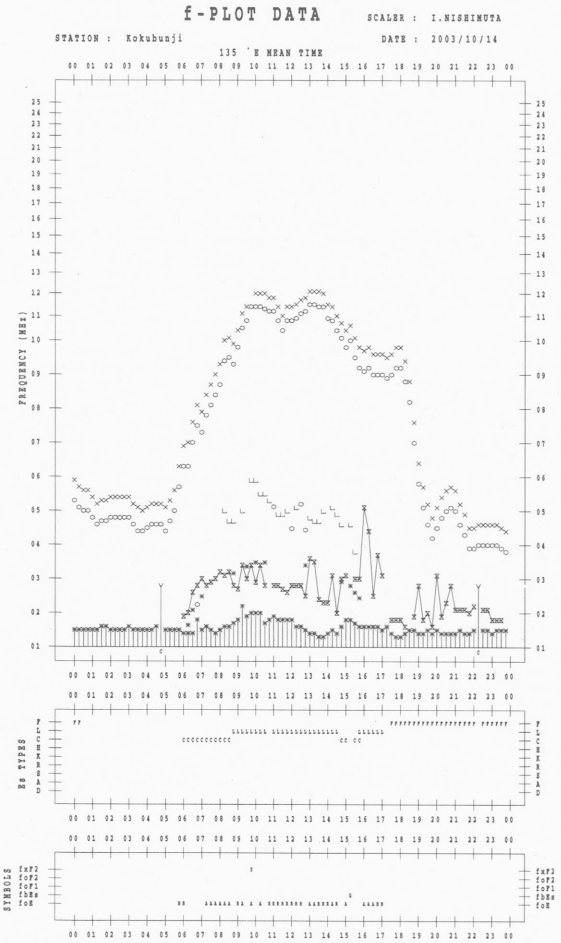

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

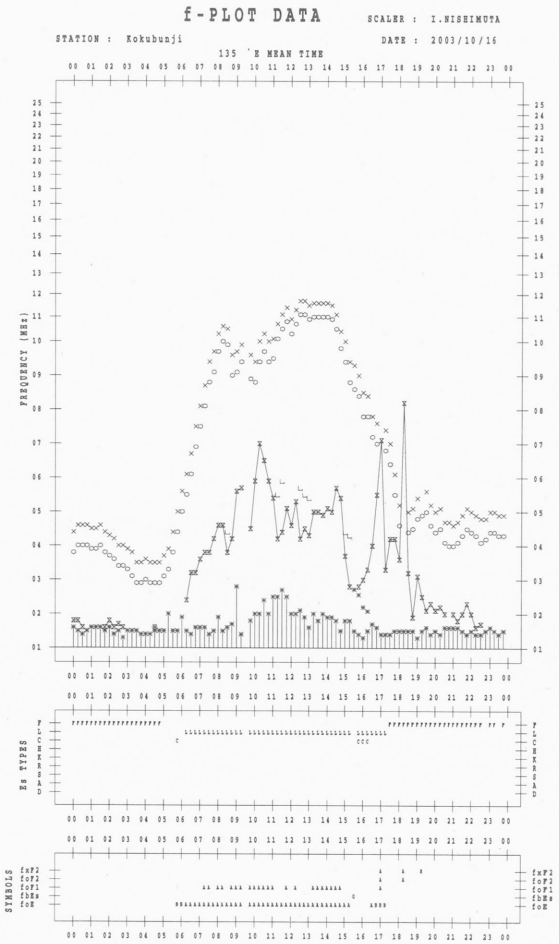

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

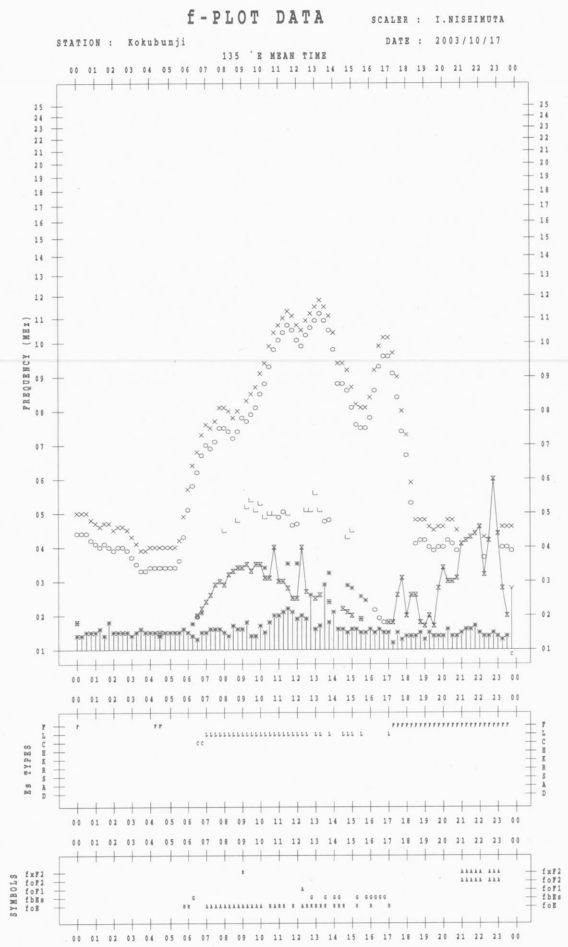

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

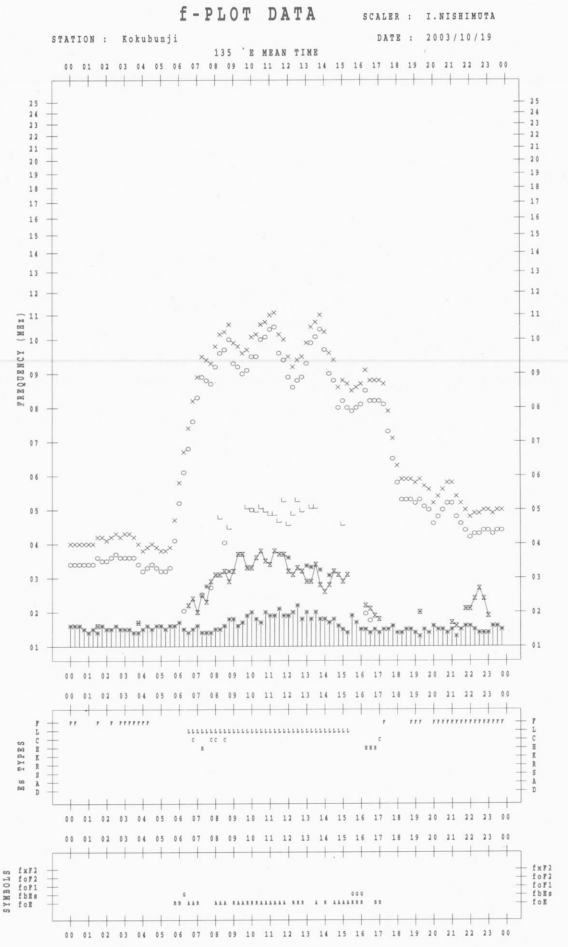

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

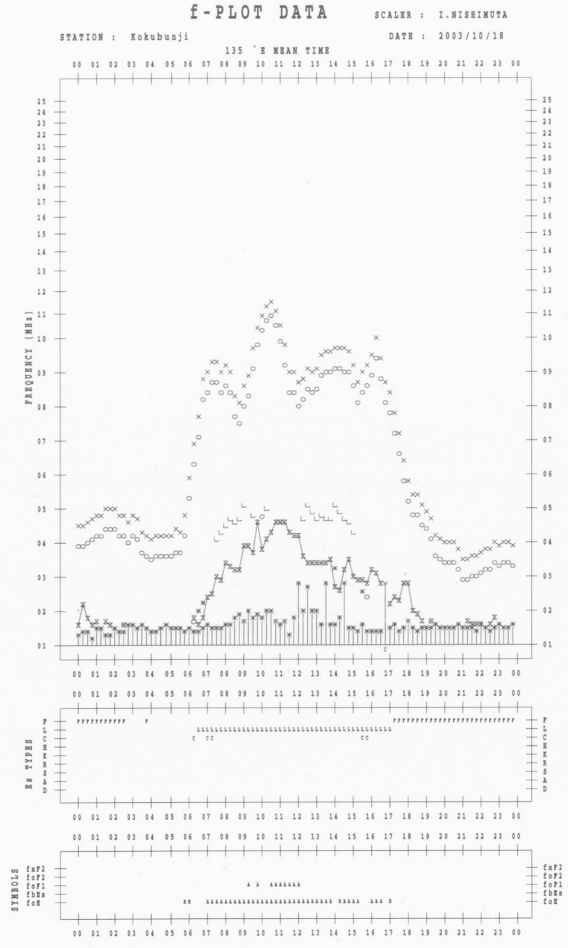

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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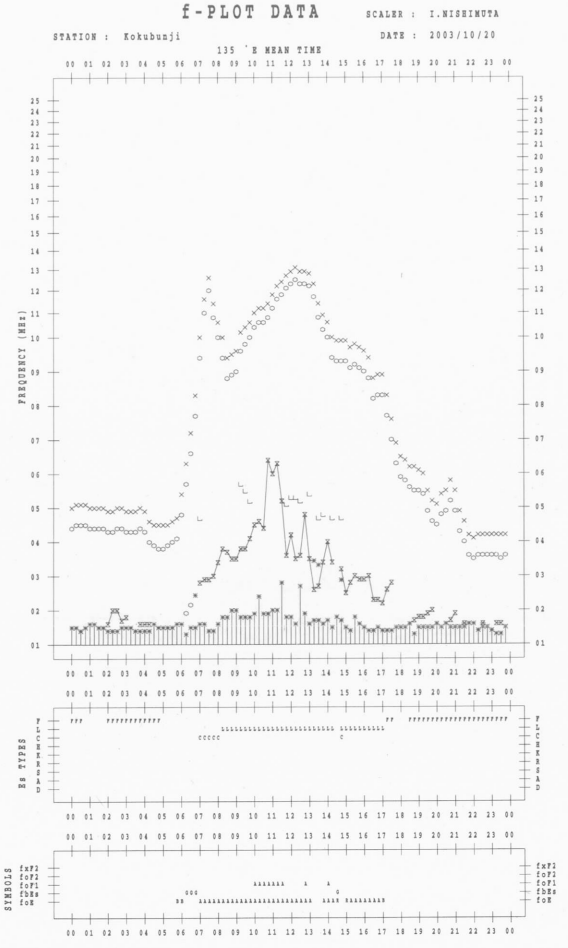
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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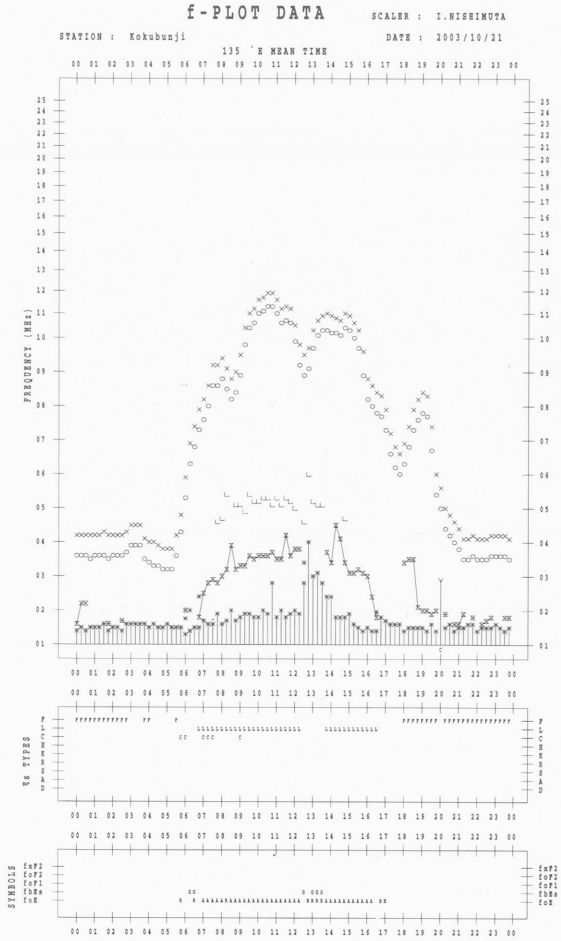
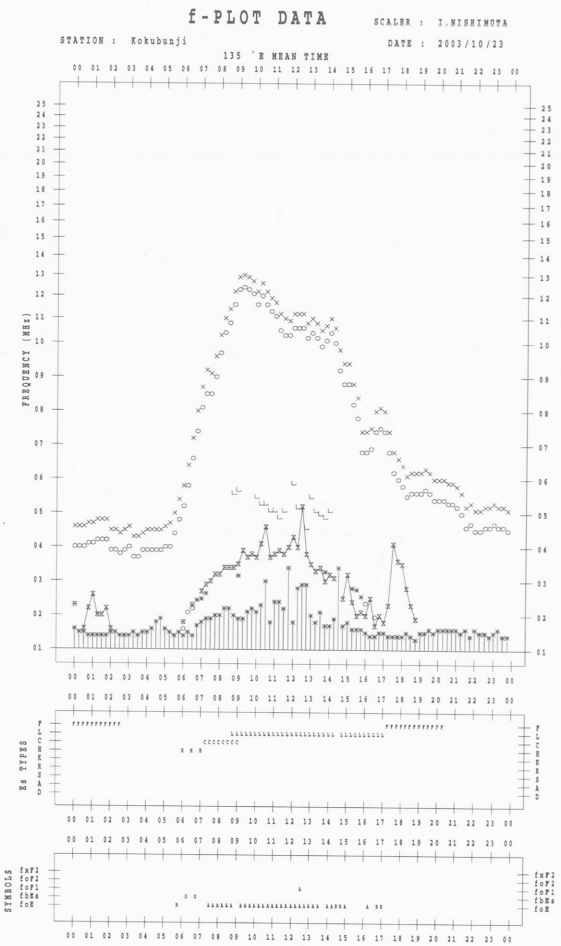
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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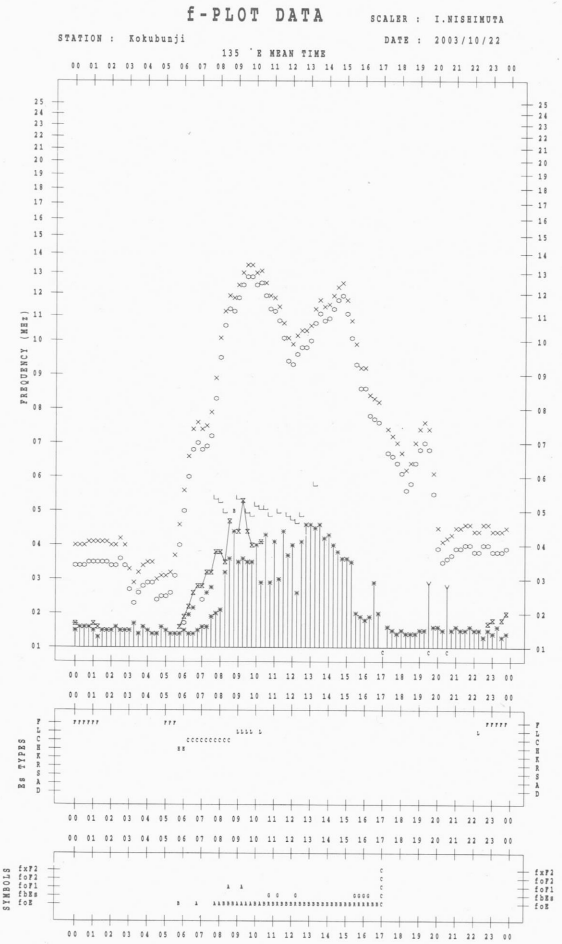
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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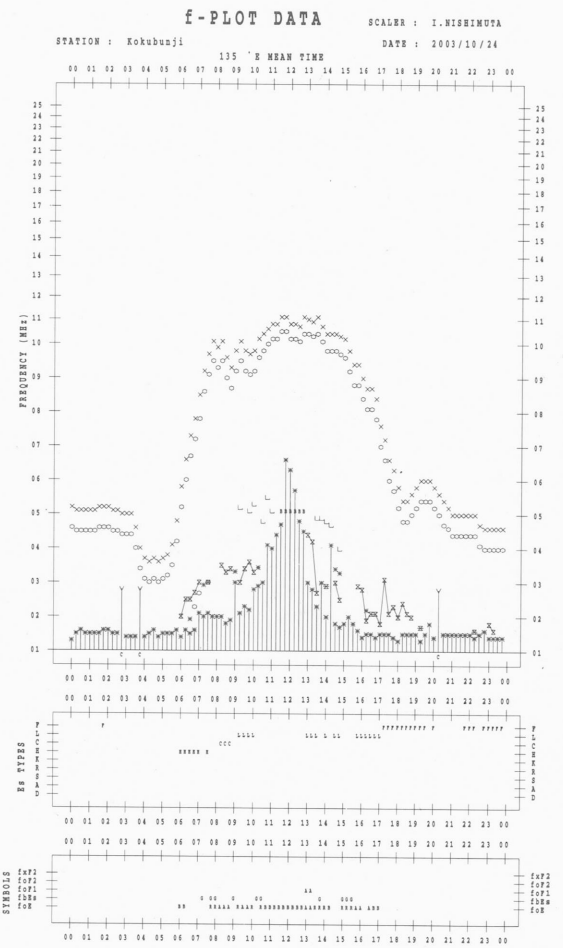
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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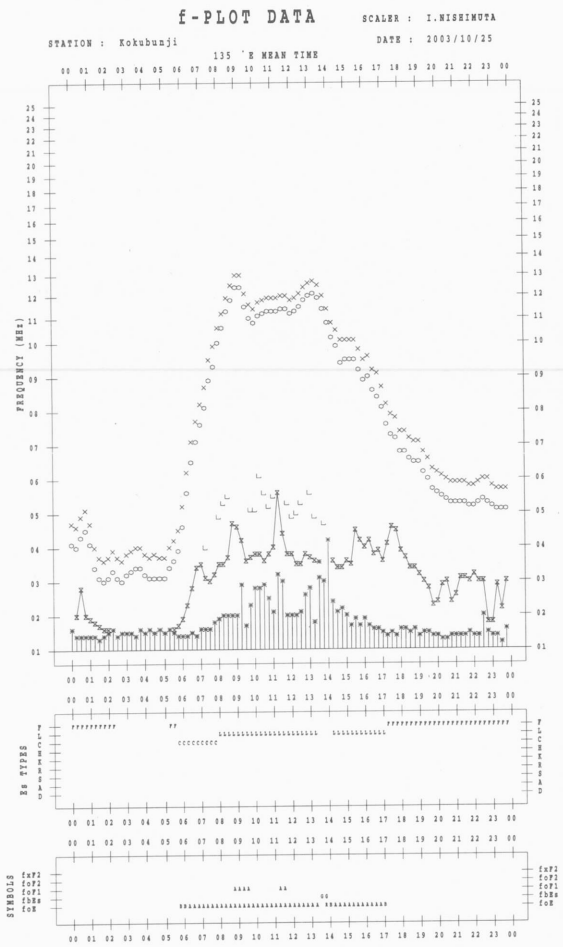
STATION : Kokubunji
DATE : 2003/10/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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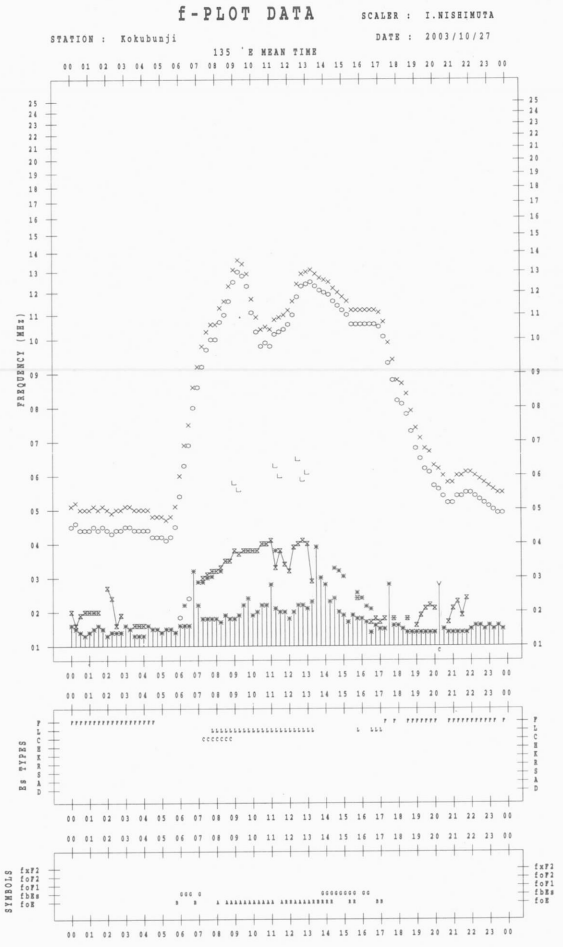
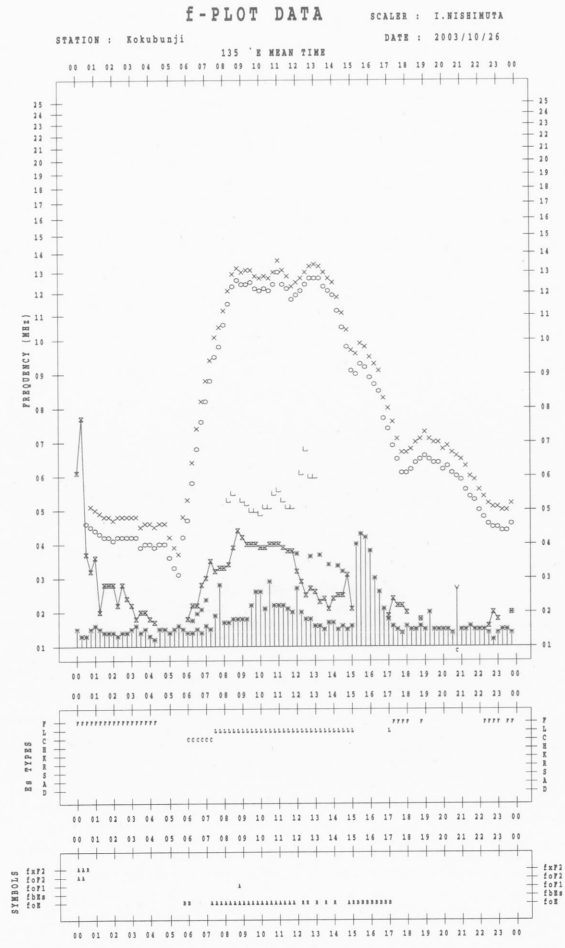
STATION : Kokubunji
DATE : 2003/10/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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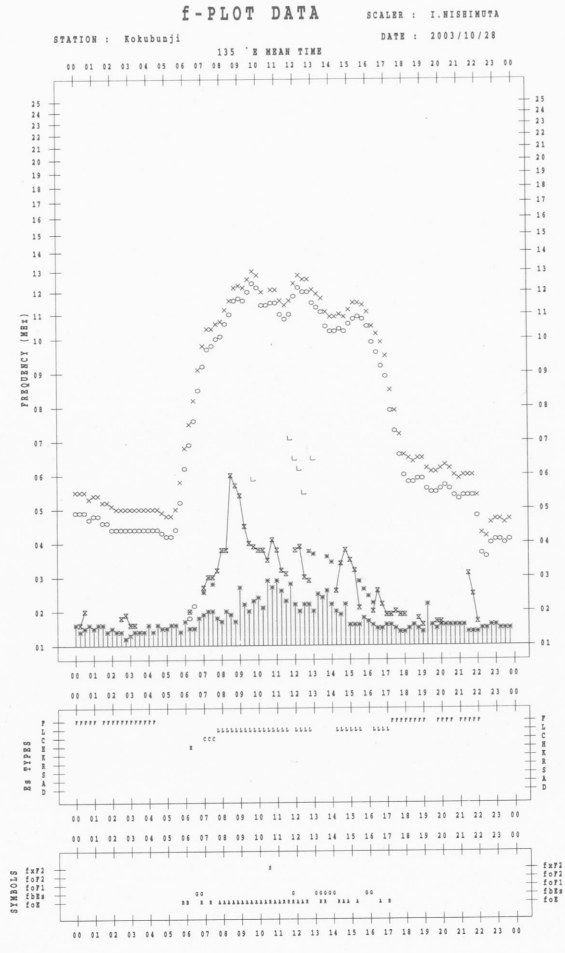
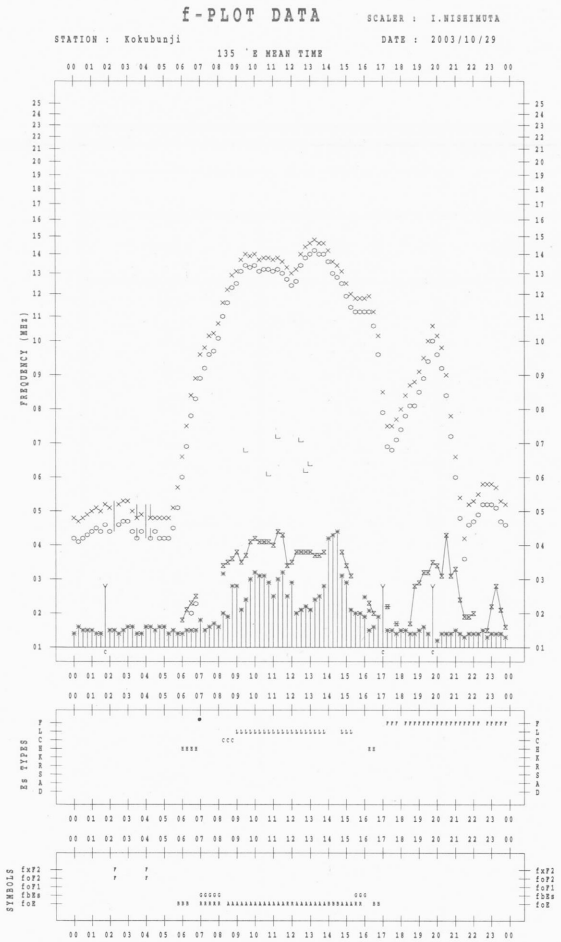
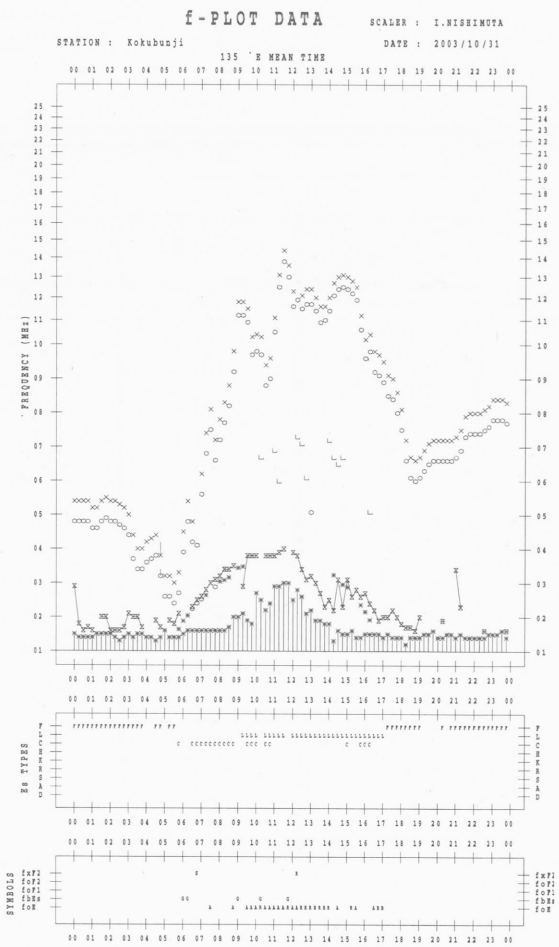
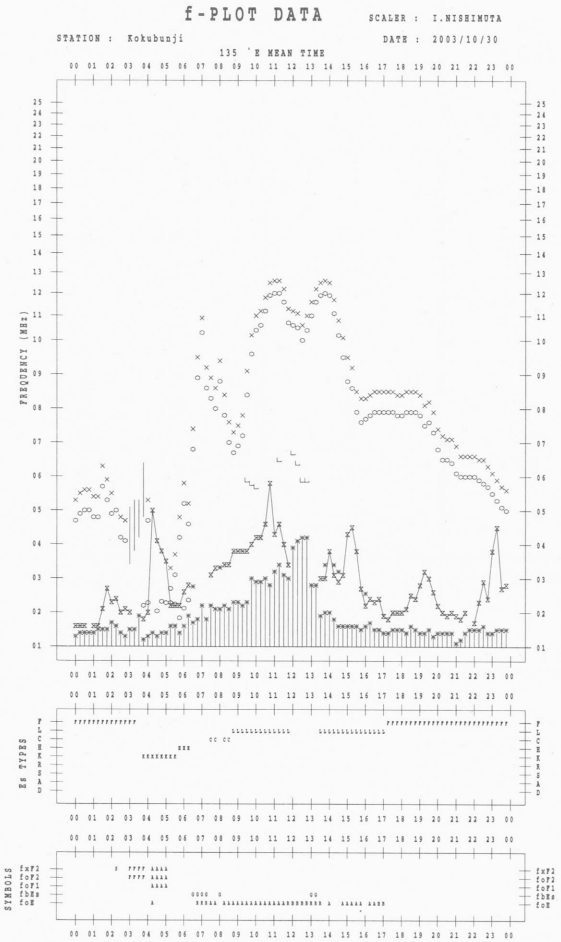
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/31
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/10/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

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

Hiraiso October 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	29	27	28	31	29
2	29	26	25	31	28
3	29	26	26	31	28
4	29	26	27	30	28
5	28	26	27	28	28
6	28	28	28	29	28
7	29	28	29	28	28
8	28	28	28	30	29
9	29	28	28	28	28
10	28	27	27	27	27
11	27	26	26	26	26
12	27	28	27	27	27
13	26	27	26	26	26
14	26	27	25	27	27
15	27	25	24	28	26
16	27	25	24	29	26
17	27	26	26	30	28
18	28	28	28	35	30
19	30	29	29	32	30
20	31	30	29	42	34
21	44	51	40	35	43
22	37	46	60	33	41
23	33	31	30	43	35
24	37	36	37	40	39
25	40	47	49	67	51
26	72	60	58	40	59
27	38	48	47	56	46
28	44	68	63	88	64
29	167	221	124	749*	310*
30	110	51	48	99	81
31	55	49	41	45	49

Note: No data is available during the following periods.
13rd 2015 - 16th 0100

A superscript * stands for being superposed on a burst.

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso October 2003

Single-frequency observations

Normal observing period: 2040 - 0805 U.T. (sunrise to sunset)

OCT. 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	2800	1 S	0422.0	0422.0	2.0	10	-	0
1	500	8 S	0431.0	0431.0	2.0	10	-	0
1	2800	1 S	0447.0	0449.0	3.0	10	-	0
2	2800	1 S	0357.0	0358.0	6.0	15	-	0
2	500	7 C	0357.0	0358.0	5.0	15	-	WR
2	2800	3 S	0651.0	0653.0	7.0	50	-	0
2	500	7 C	0652.0	0655.0	5.0	45	-	WR
3	500	8 S	0226.0	0226.0	1.0	40	-	
5	500	42 SER	0110.0	0110.0	9.0	25	-	0
5	500	8 S	0535.0	0535.0	1.0	10	-	0
6	500	7 C	0100.0	0103.0	7.0	35	-	0
6	500	6 S	2235.0	2235.0	1.0	15	-	0
7	500	8 S	0352.0	0353.0	1.0	40	-	0
7	2800	1 S	2351.0	2353.0	5.0	20	-	0
9	2800	1 S	2338.0	2340.0	5.0	10	-	0
12	500	8 S	0034.0	0034.0	1.0	10	-	0
18	500	8 S	0620.0	0621.0	1.0	15	-	0
19	2800	4 S/F	0615.0	0621.0	8.0	35	-	0
19	500	7 C	0616.0	0621.0	12.0	10	-	0
20	500	22 GRF	0026.0	0113.0	79.0	25	-	WR
20	500	8 S	0537.0	0537.0	1.0	10	-	0
21	2800	3 S	0344.0	0346.0	12.0	160	-	0
21	500	7 C	0344.0	0346.0	5.0	310	-	WL
21	500	8 S	0040.0	0040.0	1.0	45	-	0
21	500	8 S	0433.0	0433.0	1.0	45	-	WL
21	500	8 S	2126.0	2128.0	2.0	45	-	0
21	2800	8 S	2247.0	2247.0	1.0	85	-	SR
22	500	8 S	0101.0	0101.0	1.0	85	-	WR
22	500	8 S	0111.0	0111.0	1.0	35	-	0
22	500	7 C	0330.0	0334.0	5.0	95	-	0
22	500	7 C	0414.0	0414.0	3.0	300	-	0
22	2800	4 S/F	0327.0	0330.0	10.0	350	-	0
22	2800	3 S	0426.0	0430.0	21.0	160	-	0
22	500	7 C	2242.0	2244.0	4.0	35	-	0
23	500	7 C	0238.0	0241.0	4.0	255	-	0
23	500	47 GB	0705.0	0707.0	3.0	530	-	MR
23	2800	8 S	0116.0	0116.0	1.0	45	-	0
23	2800	8 S	0239.0	0240.0	2.0	40	-	MR
23	2800	8 S	0523.0	0523.0	1.0	35	-	0
23	2800	8 S	0706.0	0706.0	1.0	120	-	SR
23	2800	42 SER	2200.0	2200.0	50.0	65	-	0
23	500	42 SER	2200.0	2218.0	26.0	35	-	0
24	2800	3 S	0507.0	0510.0	9.0	95	-	0
24	2800	8 S	0620.0	0620.0	1.0	65	-	0
24	500	47 GB	0506.0	0509.0	10.0	1995	-	0
24	500	47 GB	2135.0	2140.0	11.0	950	-	MR
25	500	8 S	0016.0	0016.0	2.0	20	-	0

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso October 2003

Single-frequency observations

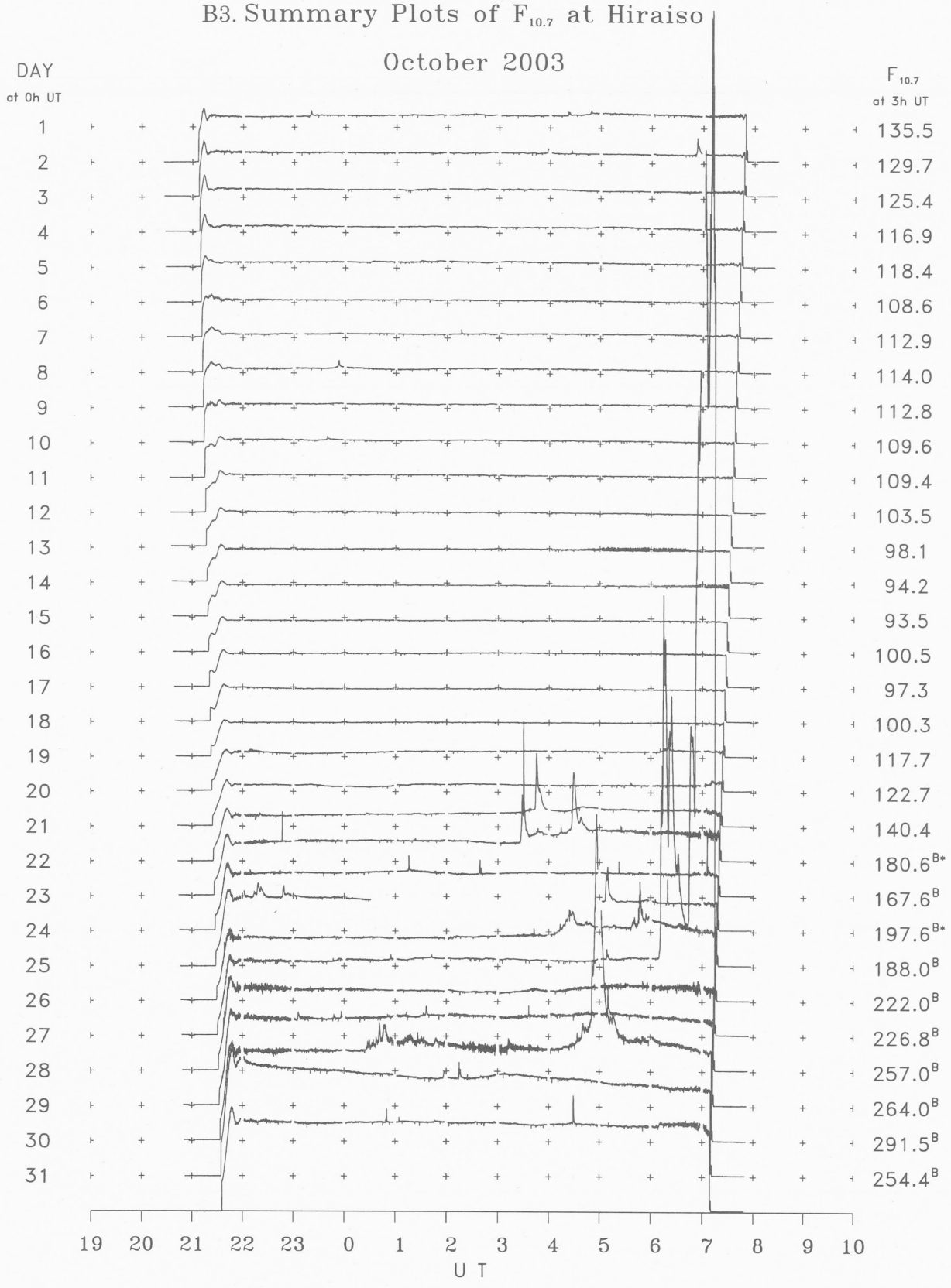
Normal observing period: 2040 - 0805 U.T. (sunrise to sunset)

OCT. 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
25	500	47 GB	0153.0	0156.0	7.0	600	-	0
25	500	7 C	0258.0	0300.0	3.0	445	-	WR
25	500	7 C	0337.0	0341.0	7.0	290	-	0
25	500	4 S/F	0436.0	0444.0	20.0	85	-	0
25	500	8 S	0516.0	0517.0	2.0	50	-	0
25	500	4 S/F	0525.0	0528.0	16.0	50	-	0
25	500	7 C	0547.0	0558.0	14.0	100	-	WR
25	2800	1 S	0258.0	0259.0	2.0	25	-	0
25	2800	1 S	0414.0	0428.0	20.0	35	-	0
25	2800	7 C	0537.0	0548.0	20.0	130	-	0
26	500	47 GB	0613.0	/////	////	4420	-	MR
26	2800	47 GB	0610.0	/////	////	2670	-	0
27	500	8 S	0621.0	0621.0	1.0	50	-	0
27	500	8 S	2356.0	2356.0	1.0	40	-	WR
27	2800	1 S	2306.0	2307.0	3.0	25	-	0
27	2800	1 S	2356.0	2357.0	1.0	25	-	0
28	2800	3 S	0058.0	0059.0	2.0	55	-	0
28	2800	1 S	0136.0	0137.0	2.0	30	-	0
28	2800	8 S	0337.0	0337.0	1.0	35	-	WL
28	2800	1 S	0510.0	0510.0	3.0	70	-	0
28	500	8 S	0051.0	0051.0	1.0	105	-	MR
28	500	8 S	0058.0	0059.0	2.0	115	-	MR
28	500	8 S	0227.0	0227.0	1.0	25	-	WL
28	500	8 S	2305.0	2305.0	1.0	380	-	WL
28	500	8 S	2355.0	2356.0	1.0	100	-	WL
29	2800	23 GRF	0026.0	0042.0	32.0	80	-	0
29	2800	47 GB	0438.0	0456.0	45.0	645	-	0
29	500	7 C	0026.0	0041.0	58.0	445	-	ML
29	500	47 GB	0433.0	0502.0	50.0	925	-	0
30	2800	1 S	0157.0	0159.0	4.0	25	-	0
30	2800	4 S/F	0215.0	0215.0	2.0	50	-	WL
31	2800	8 S	0050.0	0050.0	1.0	40	-	0
31	2800	8 S	0429.0	0430.0	2.0	80	-	0
31	500	8 S	0427.0	0428.0	1.0	215	-	0
31	500	8 S	0511.0	0511.0	1.0	170	-	0
31	500	8 S	0554.0	0554.0	1.0	185	-	0
31	500	8 S	0612.0	0612.0	1.0	15	-	0
31	500	8 S	2237.0	2238.0	2.0	225	-	

B. Solar Radio Emission

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

October 2003



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

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