ISSN 0021−0382

F−645

IONOSPHERIC DATA IN JAPAN

FOR SEPTEMBER 2002

VOL. 54 NO. 9

CONTENTS

COMMUNICATIONS RESEARCH LABORATORY
INDEPENDENT ADMINISTRATIVE INSTITUTION
TOKYO, JAPAN

INTRODUCTION

This Series contains data on ionosphere (I) , solar radio emission (S) and radio propagation (P) obtained at the following stations under the Communications Research Laboratory, Independent Administrative Institution in Japan.

Station	Geographic		Geomagnetic		Technical Method	
	Latitude	Longitude	Latitude	Longitude		
Wakkanai	45°23.5'N	141°41.2'E	35.3°N	206.5°	Vertical Sounding	(I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	Vertical Sounding	(I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	Vertical Sounding	(I)
Okinawa	26°40.5'N	128°09.2'E	16.5°N	161.7°	Vertical Sounding	(I)
Hiraiso	36°22.0'N	140°37.5'E	26.3°N	206.8°	Solar Radio Emission	(S)
Inubo	35°42.2'N	140°51.5'E	25.6°N	207.0°	Radio Receiving	(P)

A. IONOSPHERE

Ionospheric observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes. The ionosonde produces ionograms, which are recorded digitally on computer storage medium. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled as well by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

Digital ionograms are automatically scaled by the pattern recognition method. The following five factors of ionospheric characteristics are published for the present. The reliability of these factors has been ascertained by comparison of the automatically-scaled parameters with the manually-scaled values of large amounts of test ionograms.

The published data consist of tabulations of hourly values of three factors (*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.

C. RADIO PROPAGATION

C1. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C2. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

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

HOURLY VALUES OF foF2 AT Wakkanai

SEP. 2002

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

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	54		59			55	66	74	72	71	76	84	81	82	79	79	81	77	71	76	74	66	60	55
2	55	55	54			59	72	75	81	78	78	81	81	93	82	84	84	84	82	78			72	
3			47		36	66	77	92	81	83	89	84	93	93	82	84	83	84	77	69	73			62
4	62	69		34	34	28		77	81	81	83	81	85	84	82	90	94	94	81	65	66		53	
5	35	35	40					56			69			41		63	62	72	58			53	38	34
6	34	32	35	59	35	42	57	62		55				A	62	61	65	65	64	62	53	52	53	38
7	42	35	40	34	34	36	66	66	74	80	77	75	82	76	78	82	74	77	75	67	62	62		41
8	54		37	34		34			62		58		59	66	64	59	70	71			52	62	59	
9		36	34	34	34	54	73	79	80	87	81	84	82	82	82	82	82	84	82	77	77	77	72	74
10	72	66	62	66	62	62	81	93	92	94	91	90	91	82	82	85	84	91	85			74	66	66
11	62	69	55	51	52	51	66	62		63	59				76	80	77	77	74	71	64	67	66	47
12	38	43	34		30	47	58	55	56			59	62		62	65	68	67	63		60	53	44	52
13	41	45	51	43	43	37	52	63	54				62	66	70	68	70	72	72	67	64	66	59	53
14	53	54	51	52	51	57	70	81	81	82	82	82	82	85	91	82	83	83	82	72	70	66	66	63
15	66	62	56	53	56	55	71	75	75	77	77	81		81	92	83	84	82	80	70	65	66	64	58
16	54	59	58	58	58	60	75	84	81	78	80	81	82	82	84	93	84	84	82	78	74	71	64	67
17	66	66	64	66	61	68	82	86	92	102	95	92	92	92	91	92	90	93	84	81	78	73	71	66
18	75	73	66	63	62	63	72	77	82	84	92	91	93	92	91	90	84	84	80	77	72	55	66	63
19	62	54		54	55	53	80	75	75	82	84	92	91	93	93	91	85	81	A	78	80	72	66	58
20	59	60	55	54	60	66	70	77	84		92	92	92	92	91	90	82	93	79	77	78	54	63	64
21	64	63	55	61	54	51	72	84	90	84	78	88	85	83	81	82	91	91	84	78	66	66	62	66
22	72	62	61	62	60	65	84	83	93	87	93	92	93	91	92	93	93	90	82	74	66	66	66	66
23	62	61	61	55	58	61	80	85	92	92	104	94	92	94	91	92	92	93	78	76	66	66	54	62
24	61	54	58	50	52	54	73	83	90	92	95	97	94	94	92	92	93		81	81	72	73	54	54
25	62	64	64	61	61	64	74	84	116	91	94	94		94	92	85	92	90	84	82	71	66	63	61
26	62	62	62	61	57	62	80	91	92	104	90	93	91	94	92	91	92	93		82	70	54	58	60
27	54	54	63	58	50	51	68	85	90	90	92	90	91	94	94	92	90	84	84	78	76	73	70	65
28	66	66	73	67	64	66	81	90	92	88		92	92	95	92	92	90	91	83	75	66	72	71	66
29	63	66	66	66	62	64	77	84	92	93	104		93	94	92	92		89	82	72	72	71	70	72
30	66	66	61	66	61	64	70	77	84	84	89	102	94	91	93	92	90	84	85	84	71	66	67	67
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	25	26	29	27	29	27	25	26	24	25	27	29	30	29	29	27	26	27	27	28	27
MED	62	61	57	58	56	57	72	79	82	84	86	90	91	91	91	85	84	84	81	76	70	66	64	62
U Q	65	66	62	62	61	64	80	84	92	91	92	92	92	94	92	92	90	91	83	78	74	72	66	66
L Q	54	54	49	50	43	51	68	74	75	79	78	81	82	82	80	82	79	77	75	71	65	62	58	54

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Wakkanai

SEP. 2002

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	26	G	G	G	G	G	G	43	46	G	G	G	G	G	47	G	48	47	49	G	G	G	G	G
2	G	G	G	G	28	G	G	40	44	44	G	48	G	G	G	G		G	G	41	32	60	61	60
3	37	30	30	27	30	42	31	50	43	G	G		44	G	G	65	63	47	38	27	33	32	G	G
4	G	G	G	G	G	G	G	G	G	G	G	63	G	G	G	G	G	G	G	G	26	39	G	G
5	G	G	G	30	38	40	39	45	50	52	45	G	G	G	G		41	42	32	72	58	29	G	27
6	G	G	28	G	G	29	G	G	G	48	G	44	G	84	66	51	42	39	38	30	46	35	G	G
7	G	G	G	G	G	G	40	G	48	G	G	G	G	50	G	G	G	42	G	25	G	30	30	G
8	G	64	G	G		G	G	72	58	52	G	G	G	G	G	G	52	60	67	55	51	G	G	G
9	G	G	G	G	29	40	64	43	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G
10	G	G	26	25	G	G	G	37	G	G	G	G	G	G	G	40	43	37	35	39	79	49	59	25
11	G	42	24	38	30	32	38	44	47	67	59	68	76	80	G	G	49	46	46		26	G	G	G
12	25	28	32	29	26	34	39	G	G	60	100	62	G	G	G	39	47	50	52	67	58	30	34	26
13	30	31	G	G	G	G	G	G	G	48	58	G	G	G	G	G	G	35	33	33	45	31	G	G
14	G	G	G	G	G	G	G	49	44	G	G	45	G	G	G	G	G	38	29	G	41	36	43	44
15	39	33	28	24	G	G	G	G	42	43	G	G	G	42	G	G	G	G	36	G	G	24	30	29
16	34	28	27	G	G	G	32	G	40	G	G	G	G	G	41	G	36	36	30	28	G	G	G	G
17	G	G	G	G	G	29	29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	41	28
18	G	G	G	29	G	G	40	G	G	G	43	G	G	G	G	G	G	G	28	25	45	G	G	G
19	G	34	41	31	42	29	G	G	G	60	G	G	G	G	G	G	G	40	146	40	28	G	G	G
20	G	G	G	G	31	50	40		G	G	50	G	55	45	G	G	68	46	58	30	26	32	32	G
21	G	G	G	G	G	28	33	41	52	56	G	G	G	G	G	G	45	33	G	25	30	30	27	G
22	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	G	G	G	G	40	27	G
23	G	G	G	G	30	G	G	36	G	47	G	G	G	G	G	G	G	32	28	26	G	G	G	G
24	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	31	28	G	G	G	24	G
25	G	G	G	G	25	32	30	G	G		G	G	G	G	G	G	43	34	44	64	29	20	G	G
26	G	G	G	G	G	32	G	G	G	G	G	G	G	G	G	G	41	37	G	28	28	35	32	G
27	G	G	33	26	25	G	G	G	G	G		G	G	G	49	65		37	29	28	G	44	G	30
28	30	28	G	G	G	G	28	36	38	44	G	G	G	G	G	44	41	38	52	32	45	41	G	24
29	26	25	G	G	G	G	G	G	G	G	G	G	G	G	G	G		29	G	27	G	G	G	G
30	G	G	G	G	G	G	G	G	G	47	42	G	G	G		G	32	G	G	30	52	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	29	29	30	29	29	28	30	30	29	29	27	30	30	29	30	30	30	30
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	36	36	30	28	28	30	G	G
U Q	25	28	26	25	28	32	35	42	44	48	21	G	G	G	G	G	45	42	44	36	45	36	30	25
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

SEP. 2002

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

HD \ 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	21	18	22	23	20	16	17	20	20	22	21	22	18	14	21	18	14	14	14	15	15	18	18
2	17	26	21	18	21	18	17	15	20	21	20	22	22	22	20	17	15	14	14	14	14	15	15	17
3	14	15	14	17	18	15	16	18	20	20	49	23	26	20	20	15	16	14	14	14	15	15	15	18
4	15	14	20	23	21	20	26	18	20	20	18	20	18	21	20	18	17	14	20	14	17	15	14	14
5	20	23	18	14	14	14	14	17	20	18	21	21	21	22	20	22	15	14	17	16	15	14	17	20
6	20	20	16	26	24	18	15	14	20	18	18	23	22	21	21	16	14	14	14	14	15	14	21	15
7	18		18	20	22	16	15	18	20	21	21	27	21	20	18	16	14	14	18	14	17	17	15	21
8	15	14	21	20		24	14	15	18	18	20	34	26	23	20	18	18	14	16	14	14	14	14	20
9	14	18	20	20	17	14	18	20	20	21	22	21	23	18	20	18	14	15	18	14	14	14	14	14
10	14	15	15	14	14	18	15	15	21	20	20	20	20	20	17	15	15	14	14	14	14	14	14	14
11	14	14	15	14	14	14	14	14	17	18	18	20	26	20	21	18	16	14	14	14	15	15	14	14
12	14	14	16	15	18	14	15	15	17	20	18	20	22	21	23	21	18	18	14	14	14	14	14	14
13	14	14	15	21	14	17	20	15	21	18	21	24	23	20	18	21	18	15	14	14	14	14	14	14
14	14	17	14	14	14	15	16	17	20	20	21	20	16	16	20	20	18	17	14	14	14	14	14	14
15	14	14	15	14	15	15	14	15	18	22	21	18	17	15	15	18	17	14	14	14	14	14	14	14
16	14	14	15	15	14	14	14	14	15	20	20	22	20	18	20	18	14	14	14	15	18	16	17	16
17	14	14	14	14	14	14	14	14	14	18	20	22	20	21	18	15	15	15	16	14	14	14	14	15
18	15	15	15	14	15	15	14	14	18	16	18	20	21	14	20	20	17	14	14	14	14	15	14	15
19	14	14	14	16	14	14	15	17	16	18	22	17	18	15	17	20	14	14	14	14	15	14	14	14
20	15	15	14	15	14	14	14	14	18	20	21	21	22	20	18	15	14	14	14	14	14	14	14	15
21	14	14	14	14	14	14	14	15	18	22	15	21	21	23	17	18	14	14	15	14	14	14	16	15
22	14	14	14	15	15	14	14	14	16	21	21	20	18	17	16	14	15	15	14	14	14	14	14	14
23	14	14	14	14	14	14	22	14	16	16	16	15	16	14	20	20	14	15	14	17	14	15	14	14
24	15	14	15	14	15	18	14	14	16	16	16	21	21	20	20	14	14	14	14	14	15	14	14	15
25	14	14	14	14	15	14	14	14	17	15	20	18	18	20	18	14	14	14	14	14	16	14	14	14
26	14	16	14	14	14	14	15	14	15	17	18	17	15	21	20	15	14	14	14	15	14	14	14	15
27	14	15	14	16	14	14	18	15	14	15	18	21	21	22	18	17	14	14	14	14	14	14	14	15
28	14	14	14	14	14	14	14	14	14	21	21	21	21	16	14	15	14	14	14	14	14	14	14	14
29	15	17	14	14	14	14	16	18	14	15	14	21	18	17	14	14	14	14	15	17	17	14	14	14
30	14	14	14	14	14	15	17	14	17	17	21		20	18	15	18	18	17	14	14	14	14	15	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	29	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30
MED	14	14	15	14	14	14	15	15	18	19	20	21	21	20	19	18	15	14	14	14	14	14	14	14
U Q	15	16	16	18	17	17	16	17	20	20	21	22	22	21	20	20	17	15	15	14	15	15	15	15
L Q	14	14	14	14	14	14	14	14	16	17	18	20	18	17	17	15	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Kokubunji

SEP. 2002

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	54	56	54			70	77	90	86	90	102	116	121	108	100	106	102	88	82	75	74	76	58	55
2	55	68		54	54	55	69	75	86	84	98	101	107	115	108	113	106	105	91	80	76	77	74	
3	76		54	45	54	56	88	84	87	91	98	107	112	100	101	107	111	107	108	100	86	84	68	64
4	73			52	54	A	85	106	91	81	97	98	105	111	106	105	109	118	114	83		77	54	
5	46	55	54	45			67	66	49			48		57	71	75	78	82	78	66	52		56	52
6			68			43	63	72	47	54			88	69	73	75	75	80	76	64	64	59	53	55
7	53	68					74	83	96	84	82	92	92	96	92	98	94	82	85	76	70	70	54	52
8	55	56	53				72	57	83	105	113	117	98	80	92	86	87	86	84	76	66	67	54	42
9	67		49	61		56	80	91	93	85	96	94	95	98	97	95	96	85	90	77	78	82	77	81
10	82	78	69	66	67	61	85	116	120	108	103	110	110	104	100	105	101	96	97	85	82	77	77	76
11	66	73	69	57	58	67	88	92	93	81	85	91	102	101	97	100	93	91	93	75	73			65
12	54	49	47	44		47	67	76	75	71		83	81	91	82	82	86	90	80	67	61	62		51
13	55	52	54	53	46	47	72	85	82	84	81	77	78	84	80	80	84	86	85	76	64		54	54
14	53		54	51	53	53	80	116	98	97	98	102	107	102	102	97	96	94	101	78	64	65	66	66
15	66	69	61	55	62	59	81	115	94	94	104	107	114	112	110	104	104	100	97	80	73	66	66	66
16	55	55	55	56	54	62	82	88	100	100	92	98	101	104	104	102	105	100	94	84	66	70	66	70
17	74	74	72	69	66	69	88	101	102	105	112	123	124	121	120	115	110	107	107	86	74	70	70	77
18	76	74	66	56	59	69	91	91	102	107	123	121	126	119	115	112	104	104	102	83	73	67	65	73
19	55	61	54	55	52	58	84	104	100	98	100	113	122	C	C	C	C	C	101	77	64	73		72
20	54	54	52	55	55	53	81	93	98	C	112	115	114	121	112	110	C	C	105	78	67	72	73	70
21	72	72	66	62	54	54	81	100	86	97	104	103	105	110	107	114		115	102	78	66	66	65	64
22	64	66	55	56	52	58	85	108	104	106	117	124	125	124	116	120	118	118	108	78	66	72	77	77
23	73	69	66	55	56	66	92	91	100	114	112	124	127	121	114	117	117	112	82	66	66	71	65	66
24	72	66	54	56	54	52	73	93	102	105	116	122	128	122	117	106	106	110	105	85	65	63	71	66
25	66	62	62	61	54	59	82	98	100	114	114	118	118	118	116	110	111	105	88	73	73	67	66	54
26		62	58	52	54	62	86	84	104	111	111	115	122	115	116	114	115	107	101	73	65	65	66	54
27	64	66	66	62	56	51	81	97	96	100	106	118	108	104	111	104	94	102	96	80	78	65	76	74
28	72	80	76	67	66	66	82	92	97	106	114	121	117	112	114	106	102	102	84	68		66	66	64
29	69	69	68	64	51	55	77	101	112	115	114	120	124	110	105	104	101	97	90	75	64	73	73	64
30	66	66	62	57	55	58	77	100	118	128	127	115	117	104	105	115	114	105	98	85	66	72	49	78
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	25	27	26	23	26	30	30	30	28	27	29	29	29	29	29	27	28	30	30	28	27	27	28
MED	66	66	58	56	54	58	81	92	96	99	104	113	112	108	105	105	102	101	95	78	66	70	66	66
U Q	72	70	66	61	58	62	85	101	102	106	114	119	122	116	114	112	110	107	102	83	73	73	73	72
L Q	55	56	54	53	54	53	74	84	86	84	98	98	101	99	97	97	94	89	85	75	64	66	56	54

HOURLY VALUES OF fEs AT Kokubunji

SEP. 2002

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	49	34	41	33		G	G	G	G	G	G	G	G	G	G	G	40	G	32	34	53	G	G	G
2	G	G		G	G	G	G	G	G	G	G	G	G	G	G	50	83	36	34	42	26	G	G	G
3	G	33	30	G	G	G	G	G	G	55	58	65	47	50	43	60	54	52	32	28	60	37	G	G
4	G		G	G	G	11	G		G	G	G	G	G	G	G	G	G	G	35	27	G	26	G	37
5	28	G	G	29			G	G	G	53		66	G	50	G	49	45	40	37	G	G	51	29	30
6		G				G	G	G	G	G	53			G	G	G	41	40	39	31	26	G	G	G
7	G			G			G	G	G	G	G	G	53	G	56	48	40	60	34	G	G	G	G	G
8	G	G	G				G	37	G	51	G	G	G	G	G	G	40	42	36	G	G	G	G	G
9	52	G	G	G	G	G	G	53	48	54	G	48	90	49	G	50	45	40	38	G	26	G	G	G
10	G	G	G	G	G	G	G	G	45	47	G	G	G	G	G	G	37	35	G	G	G	G	G	46
11	G	G	23	27	G	G	G	45	51	53	52	G	55	50	G	47	G	G	38	47		60	60	51
12	42	48	33	26		G	G		44	G	G	G	G	G	G	G	55	44	28	35	54	43	84	57
13	27	27	24	24	G	G	G	G	G	G	50	G	54	G	G	G	37	48	45	34	33	68	39	29
14	52	60	47	36	32	28	G	G		G	G	G	G	G	G	G	43	41	G	26	33	30	30	33
15	35	31	23	23	G	G	G	G	40	46	53	G	G	G	G	G	G	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	28	G	G	G	G	G
17	G	G	G	G	G	G	G	G	G	45	49	G	61	49	G	G	36	68	60	G	G	G	G	28
18	G	G	G	G	G	G	G		G	G	45	G	50	G	G	43	G	42	34	27	27	G	G	G
19	G	G	G	G	G	G	G	G	G	G	55	58	47	C	C	C	C	C	30	36	34	36	29	G
20	G	G	G	G	G	G	29	G		C	G	G	G	G	G	G	C	C	26	37	56	58	28	G
21	G	G	G	G	G	G	28	42	45	46	G	G	G	G	G	G	G	43	56	G	26	24	26	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	G	G	G	G	G	G
23	G	G	G	G	G	G		G	G	G	57	47	G	G	G	G	G	34	G	32	40	53	G	G
24	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	39	33	G	G	G	G	28	G
25	G	G	G	G	G	G	G		G	43	G	G	G	G	49	G	G	40	G	G	33	26	G	G
26	G	G	G	G	G	G	G	G	G	52	G	G	G	G	G	G	G	30	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	58	44	35	35	33	44	34	G	G	G
28	G	G	G	G	G	G	47	G	G	G	G	G	G	52	44	50	59	60	62	43	52	59	39	50
29	29	G	G	G	G	G	30	G	51	G	50	G	G	G	G	G	43	33	26	48	50	G	27	33
30	G	G	G	G	G	G	29	G	G	G	G	G	G	G	G	G	G		29	G	G	25	31	29
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	27	28	24	27	28	26	28	29	29	29	29	29	29	29	28	27	30	30	29	30	30	30
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	40	32	26	26	G	G	G
U Q	27	G	23	12	G	G	G	G	20	46	50	G	47	G	G	45	43	43	37	35	37	37	29	30
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	33	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

SEP. 2002

LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	17	21	18									17		29	28	23	18	13	13	13	13	14	15	21
2					20		36	20	20	40			20		30	23	18	14	14	13	15	13	20	
3		15	15			21	28	17	20	40	42	40	39	38	23	20	15	13	15	13	15	13	21	
4	20			21			31	18	21	43		42	42	40	39		17	18	13	13	18	13	20	15
5	18							22	22	29	34	44	55	40		28	20	18	18	17	20	13	17	15
6		17						17	20		39	37		30	23	21	18	14	13	13	17	18	18	
7	20			21			26	17			35		40	31	34	31	21	15	13	13	17	18		20
8	20	21	18					15	21	37		51	58	45	28	20	17	22	14	13	15	14	18	20
9	17	20			20	20	30	18	20	22	23	33	36	30	24	20	15	13	13	17	13	14	18	14
10	13	13	13	13	14	13	14	15	17	18	29	44			41	22	35	17	20	17	14	14	20	14
11	14	13	14	13	14	14	23	15	33	21	23	51	33	37	23	23	20	13	13	13	13	14	13	13
12	14	13	13	15	13	14	17	14	20	21		31	40	22		18	18	15	13	13	13	13	14	13
13	13	13	14	13	14	13	23	13	17		30	47	31	29	40	20	17	14	13	13	13	13	13	14
14	13	14	13	14	13	13	22	21	20		44	44	43	42	39	21	20	17	17	13	13	13	13	13
15	13	13	14	14	15	13	23	17	18	23	25	44	42	28		20	17	14	17	13	14	13	14	14
16	13	14	13	14	14	13	23	20	18	29	42	40		46	42	14	13	14	13	13	14	13	14	14
17	13	14	13	13	13	14	24	17	18	21		44	42	34	42	22	22	14	13	14	13	13	17	15
18	14	13	13	15	18	14	23	17	18		45	43	21		40	20	13	15	13	13	14	13	15	14
19	14	13	14	13	14	14	22	15	18		36	36	37	C	C	C	C	C	13	14	15	14	15	17
20	17	18	18	14	18	18	20	23	21	C	42	42	43	30	26	22	C	C	15	13	13	13	13	14
21	13	13	13	13	13	13	14	15	22	34		37				20	15	14	15	13	15	14	13	13
22	14	13	13	13	13	14	13	13	17	23	24		42			20	18	13	13	13	13	13	13	13
23	13	13	14	13	13	13	13	13	17	24	30	22	40	40	25	23	20	14	13	13	13	13	15	15
24	14	17	13	13	14	17	14	13	15	18	26		21			18	13	13	13	13	17	13	13	14
25	13	13	13	13	13	13	15	18	18	18	40	17			17	20	15	14	14	15	13	14	14	15
26	14	14	14	13	14	13	21	13	21	24			40	28		21	15	13	13	13	13	13	13	17
27	13	13	13	13	14	13	22	14	18	20	43	43	42	42	21	18	14	13	13	13	14	14	17	14
28	14	13	13	14	13	13	15	13	15	22	43	42	26	21	15	17	14	13	15	15	13	13	13	13
29	13	18	13	13	13	13	15	14	20	18	18			20	18	13	20	13	13	13	14	17	15	13
30	13	13	13	13	17	14	13	14	17	20	23	43	25	23	22	17	14	13	14	13	13	15	13	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	24	23	23	23	26	29	28	22	22	24	23	22	22	28	28	28	30	30	30	30	29	27
MED	14	13	13	13	14	13	22	15	19	22	34	42	40	30	27	20	17	14	13	13	14	13	15	14
U Q	17	17	14	14	15	14	23	18	20	29	42	44	42	40	39	22	20	15	15	13	15	14	17	15
L Q	13	13	13	13	13	13	15	14	17	20	25	36	31	28	23	19	15	13	13	13	13	13	13	13

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

SEP. 2002

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	66	79			52	52	80	83	81	82		112	127	132	115	147	134	114	110			66	74	78
2		74	52	47	54		62	77	81	82	99	85	111	114	113	115	113	111	102	77	75			78
3	66			53	50	54	70	83	80	81	83	99	111	105	110	111	120	121	111		99	78	77	79
4				75		52	94	114	83	78	80	86	111	113	111	114	132	127	116		77			76
5	76	52					63	60	62	59	68	75	80	80	81	112	84	93	85	77		62		52
6		49	52				55	77	78	77	75	78	80	83	80	78	84	86	86	78		66		
7			49	52		47	62	82	79	77	80	82	84	92	86	105	114	114	88					
8							68	56	78	111	110	130			87	111	106	88	86	80	69	59	67	73
9		57	51	59	51	45	66	80	79	84	77	104	106	119	131	137	133	111	114		80	86	80	78
10	82	81	80	76	72	67	73	107	115	86	86	86	111	92	86	107	111	111	105		81	78	80	77
11	78	74	70	62	61	66	80	114	116	104		110	110	112	115	108	135	114	111	86	78	77	74	77
12	73		54	54	42	46	66	94	98	105	85	111	127		115	107	114	108	108	83	73	66	52	67
13			67	62	52	51	61	80	79	84	99	99	84	87	114			115	110	86	78	77	66	78
14		74	72	53	54	53	66	91	98	82	110		123	126	111	111	114	112	112	85	77	78	77	78
15	76	77	66	62	56	54	65	99	94	88	111	112	114	116	114	130	126	118		86	81	55	66	72
16	66	70	58	67	54	58	70	86	94		86	87			114	114	111	111		86	78	78	78	78
17	76	77	75	78	67	66	78	84	112	97	110	115	128	149	141	143	140	133	114	109	80	78	80	82
18	81	77	78	57	62	72	74	80	97	111	115	115	131	131	130	130	128	126	110	110	80	76	78	82
19	77	54	64	67	51	46	60	93	93	84	109	113	130	130	130	131	151	133	111	84	78	66	76	65
20	74	73	54	55	61	58	62	80	114	112	112	111	132	130	128	129	128	130	111	106	78	77	80	82
21	84			65	55	51	64	80	92	77	114	103	110	112	133	140	140	133	115	86	78	78	77	78
22	80	80	76	58	60	56	66	93	115	105	112	110	115	122	114	115	128	135	133	84	78	79	85	85
23	79	78	78	70	64	66	73	75	116	111	114	111	129	130	134	122	128	110	86	78	77	66		78
24	78	74	64	56	52	47	54	82	115	87	107	126	129	128	114	111	124	127	114	85	73	76	76	73
25	72	78	74	60	61	61	74	91	86	86	107	114	125	114	116	120	112	112	106	78	76	77	74	73
26	55	66	62	66	63	61	66	84	92	86	105	113	129	128	130	119	126	122		80	78	78	76	66
27	73	76	76	73	62	54	61	77		86	91	112	114	110	113	109	98	96	82	80	78	78	76	66
28	72	76	72	67	61	54	58	82	87	99	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	121	112	111	112	112	114	111	116		86	73	76	64	66
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	21	22	24	23	24	28	28	27	27	26	27	26	25	28	27	27	28	24	22	24	25	22	26
MED	76	74	66	62	56	54	66	82	92	86	106	111	114	114	114	114	124	114	110	84	78	77	76	78
U Q	78	77	75	67	62	61	73	92	112	104	111	113	128	129	129	130	132	126	113	86	79	78	78	78
L Q	72	68	54	55	52	51	62	80	80	82	85	87	110	107	111	111	111	111	95	80	76	66	74	72

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Yamagawa

SEP. 2002

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G	G		G	G	G	G	G	G	40	35	75	43	29	G	29
2	G	G	G	G	G	G	G	G	G	G	G	75	G	G	53			48	50	53	G	84	56	43
3	G	35	44	G	G	G	G	G	46	G	G	G	60	66	G	G	G	50	42	38		G	46	30
4	28		G	G	G	G	G	G	G	42	G	53	56	G	52	44	G	38	30	23	26	27	43	26
5	G	24			G		G	G	G	G	57	G	G	50	G	G	G	G	G	G	25	32	29	G
6		G	29			G	G	G	49	52	50	G	59	54	G	49	42	50	48	49	58	G	G	33
7	G		G	G		G	G	39	40	52	56	G	57	G	G	50	58	59	32	37	32	24	G	G
8	G	G	G	G	G		G		G	G	G	G	G	G	G	G	49	52		39	G	G	G	G
9	G	G	G	G	G	G	G	G	G	G	G	63	G	G	77	70	54	53	29	60	38	26	G	G
10	G	G	G	G	G	G	27	G	G	G	G	G	52	G	G	56	76	80	50	67	54	34	27	22
11	G	G	G	G	26	G	28	38	119	G		G	G	G	G	G	G	G	G	G	23	41	48	43
12	30	G	G	26	28	40	G	39	42	52	56	50	52	70	61	G	48	46	53	60	G	G	40	55
13	60	39	27	26	26	27	24	G	G	G	G	G	G	53	55	53	45	44		30	24	24	28	79
14	39	29	23	G	29	29		G	42	G	G		G	G	54	66	52	50	37	23	23	25	28	27
15	24	27	26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	27	25	50	40	43
16	28	27	25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	43	G	23	28	G	G	24
17	G	G	G	40	G	G	G	G	51	45		G	G	G	66	G	G	G	28	24	37	25	23	27
18	G	G	G	G	G	G	G	G	G	G	G	56	G	G	G	G		G	29	26	25	30	28	34
19	26	24	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	41	34	52	23	G	35	29
20	27	25	G	G	G	G	G	36	G	G	G	G	G	G	G	G	G	40	G	23	25	G	G	43
21	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G				38	38	34	27	41	G
22	G	G	G	G	G	G	26	G	G	G	49	G	G	G	G	G	G	G	G	25	G	G	G	G
23	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	26	42	51	35	G
24	26	23	G	G	G	G	G	G	G	G	G	G	G	G	G	G		42	G	34	31	35	G	G
25	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G		39	32	G	27	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	36	28	24	25	G	G	G
27	24	G	G	G	G	G	G		G	42	G	G	G	G	G	42	44	40	28	34	32	30	G	G
28	G	G	G	G	G	G	G	48	G	G	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	G	G	G	G	G	G	44	50	40	38	G	G	G	29
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	26	27	26	26	26	27	25	27	28	25	27	28	28	28	26	23	27	26	28	27	28	28	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	30	32	25	25	25	26
U Q	26	24	G	G	G	G	G	G	40	21	G	G	G	G	26	44	48	50	38	44	34	31	37	33
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	23	23	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Yamagawa

SEP. 2002

LAT. 31°12.1'N LON. 130°37.1'E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

HD \ 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	22	18	15	17	15	16	17				50			22	17	14	15	14	14	20	14
2	20	18		17	16	17	17	15		20	20	22	20					14	14	15	16	16	14	15
3	17	14	16	15	14	15	15	16	33		48		44	39			18	15	14	14	14	16	15	15
4	18			18	15	20	22		18			38	43	48		36		17	14	14	14	14	14	14
5	18	15			16		16	29			39	56			15		14	20	15	14	16	15	15	15
6		15				20	28	18	20	27			44			32	33	17	15	14	15	17		15
7	20		15	17		17	17	16	21	28	40		44			28	17	23	14					
8							18	15	17	26		48	45	47			17	15	15	14	15	16	16	16
9	18	16	18		17	17	18	18		18		42	35	34	34	28	20	16	14	14	14	16	15	15
10	15	14	14	15	15	14	16	14	17	18			38				17	14	14	15	15	14	14	15
11	15	15	15	14	15	15	14	15	17	17		28			20	22	18	17	14	15	15	14	14	14
12	14		26	14	14	14	14	14	17	18	34	35	36	38	34	33	28	15	15	14	14	14	14	14
13	14	14	14	14	14	14	18	14	16	16	28			38	36	37	14	15	14	14	14	15	14	14
14	14	14	14	14	14	14	16	16	24	39			50	46	42	38	20	15	14	14	15	15	15	14
15	15	14	15	15	15	15	16	15	17	39	49	45	53	47	44		21	17	26	14	14	14	14	14
16	14	14	14	14	14	15	17	18	15	14		53	52	66			18	14		14	14	14	15	14
17	14	15	15	14	14	14	15	14	15	20	43	49			39		40	17	14	14	14	14	14	14
18	15	15	14	14	15	15	17	15	15	21	43	33			44		17	15	15	14	14	14	14	14
19	15	15	14	14	14	15	15	15	20		14		47	48		40	20	16	14	15	14	14	14	14
20	15	16	15	15	14	14	16	15	17	24	32	33	44	44		42	24	16	18	15	15	15	14	15
21	17		14	14	14	14	15	16	18			45	49	48	34	27	18	14	14	14	14	14	14	14
22	14	15	14	15	15	14	14	14		18	20	17		45	46	38	15	14	18	14	14	14	14	14
23	15	14	15	15	15	14	14	17	16	20			46	45	44	14	21	15	20	15	15	14	14	15
24	14	15	14	14	15	14	15	14	16	16				22	20		18	16	14	14	14	14	14	15
25	14	15	14	14	15	14	15	21	18			47		46		16	16	14	17	14	14	15	15	15
26	15	14	15	14	14	15	15	18	15	20	17	47	43	48	40		17	15	15	14	15	15	14	15
27	14	14	14	15	14	15	15	21		34		45	48	49	43	33	21	17	14	14	14	14	14	15
28	15	14	15	14	14	14	14	14	18		C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C		49	45	45	42	20	17	14	16	14	15	14	16	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	23	23	24	25	26	28	27	23	21	13	18	19	20	16	16	26	28	27	27	27	27	26	27
MED	15	15	15	14	15	15	16	15	17	20	34	45	44	46	40	32	18	15	14	14	14	14	14	14
U Q	17	15	15	15	15	15	17	18	18	26	43	48	48	48	43	37	21	17	15	15	15	15	15	15
L Q	14	14	14	14	14	14	15	14	16	17	20	33	43	41	34	24	17	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Okinawa

SEP. 2002

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		92	85	74	74	74	81	91	92	97	100	119	140	138	131	142	152	150	150	126	84	88	85	87
2			75	69	70	66	67	78	84	97	100	110	118	120	125	122	134	125	109	87	87	88	88	98
3	88	76	76		64	60	66	88	87	82	92	108	106	117	122	122	131	140	140	131	113	128		108
4				C	75	78	85	C	C	85	C	96	C	122	C	140	143	152	128	C	C	C	C	78
5	81	66		C			C	65	71	80	76	91	C	C	111	C	108	C	C	C	C	C		C
6			C		C		C		C	C		C	C			C		C	116	108	86	76		
7	84	74	73	76	72		61	86	85	83	87	106	118	122	132	131	141	142	152		108		86	88
8	87	75		65	44		47	56	84	121	126	140	108	90	108	124	124	123	114	87	86	81	80	83
9		65	83	76	67	53	62	86	92	100	101	111		147	150	171	172	148	148		143	145	144	144
10	142	145	126	107	108	102	100	127	114	94	C	116	124	118	110	120	124	127	123	110	118	98	108	
11	106	86	78	71	66	70	81	121	114	107	115	121	125	134	130	127	135	137	135	122	102	88	89	88
12	87	66	54	54	54	51	62	87	115	116	110	A	144	141	131	135	135	131	130	109	100	88	88	87
13	88	83	80	74	64	61	60	87	88	97	111	125	121	119	116	123	134	142	137	131	131		130	142
14	141	130	108	88	87	82	75	106	100	101	101	120	138	141	140	132	136	130	125	126				
15	99	102	101	75	66	63	66	101	96	102	114	126	134		147	146	148	144	131	110	110	87	85	86
16	87	88	86	80	72	66	66	90	95	94	98	108	124	125	126	129	135	131	128	108	121	107	88	90
17	104	108	103	88	88	81	80	89		101	117	126	145	147	151	170	171	171	147	150			86	131
18	123	104	88	71	72	80	66	77	102	115	121	126	140	146	146	150	149	152	151	147	141		88	121
19	110	99	88	86	67	54	54	88	91	105	110	125	136	142	150	174	149	154	144	131	108	88	88	101
20	90	88	76	54	63	53	53	91	115	116	101	120	139	150	148	152	151	150	146	141	130	143	143	140
21		149	137	87	66	54	53	86	97	97	104	113	122	139	151	168	154		147	151	142		110	127
22	120	125	108	83	72	70	70	90	89	106	116	118	125	126	125	129	142	146	137	110	109	107	120	139
23	108	97	86	64	54	61	66	88	101	123	120	120	129	146	151	152	146	134	118	107	108	88	88	88
24	87	86	67	53	52	44	54	90	93	116	111	122	135	130	131	137	142		127	100	87	87	105	87
25	87	87	84	58	64	61	67		91	98	107	117	130	131	140	136	132	126	120	105	89	88	87	87
26	78	76	75	74	68	58	54	82	90	106	108	124	152	150	148	171	147	137	126	120	124		108	90
27	88	88	90	88	76	51	54	84	84	98	102	116	126	118	122	116	106	100	98	97	84	90	86	81
28	81	83	80	71	60	48	52	84	92	102	106	125	142	143	142	138	136	127	122	104	101	90	86	87
29	87	101	101	73	54	52	54	101	117	111	125	131	137	125	137	132	121	110	100	85	87	88	85	88
30	84	86	80	54	54	54	62	87	102	119	117	117	125	128	128	125	118	100	110	108	88	88	87	77
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	27	26	26	28	26	28	27	27	29	27	28	26	27	28	28	29	26	29	26	26	21	25	26
MED	88	88	84	74	66	61	64	88	92	101	108	120	130	131	132	136	136	137	128	110	108	88	88	88
U Q	107	102	101	83	72	70	68	91	102	113	116	125	139	143	147	151	148	148	145	131	121	102	108	121
L Q	87	76	76	65	61	53	54	84	88	97	101	112	124	122	125	126	131	127	119	105	87	88	86	87

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

SEP. 2002

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	28	G	G	G	G	G	G	G	G	G	G	52	G	G	52	51	52	47	40	G	28	G	G	G
2	G	G	G	G	G	G	G	G	42	G	G	G	G	G	46	45	G	52	88	53	50	32	33	24
3	40	35	35	G	G	G	G	G	G	50	G	52	G	59	54	51	50	116	45	48	42	40	G	G
4	G	G	G	C	G	G	G	C	C	47	C		C	G	C	G	46	46	57	C	C	C	C	G
5	G	G		C			C	G	G	G	G	48	C	C	G	C	50	C	C	C	C	C	G	C
6	G		C		C	G	C		C	C		C	C			C	G	C	61	G	G	G	G	G
7	G	G	G	G	G	G	G			G	G	G			63	62	60	91	112	54	G	24	G	G
8	G	G	G	G	G		G	32	G	48	73	62	G	47	G	G	49	49	44	34	34	G	G	G
9	G	G	G	G	G	G	G	G	G	G	52	67	174	68	53	G	G	40	31	44	G	G	G	G
10	G	G	G	G	G	G	26	36	G	45	C	G	G	49	89	80	65	49	47	37	70	69	31	24
11	G	G	G	G	G	G	G	36	46	47	50	55	G	G	G	47	41	38	G	G	G	G	G	G
12	G	G	30	26	G	G	26	55	68	82	80	136	124	64	68	83	G	41	45	51	G	G	31	25
13	53	37	30	27	26	G	G	G	G	48	87	56	G	54		54	58	50		38	30	28	G	G
14	60	46	G	G	G	G	G	G	42	48	50	56	G	G	G	G	48	50	48	53	80	50	G	26
15	34	29	27	25	G	G	G	G	G	43	G	G	G	G	G	G	G	G	35	39	31	G	44	39
16	29	25	G	G	G	G	G	G	G	G	50	G	48	G	60	59	91	67	61	32	30	G	24	G
17	G	G	G	G	G	G	G		44	46	62	G	G	54	51	G	G	G	42	G	29	38	29	G
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	120	42	51	49	29	47	26
19	28	30	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	67	G	24	25	24	G
20	G	G	G	G	G	G	G	34	41	G	G	G	G	G	G	G	50	40	G	G	G	G	G	G
21	G	G	29	28	G	G	G	32	42	50	51	59	51	G	G	47	G	46	33	40	34	G	G	49
22	G	28	24	G	G	G	G	G	G	G	G	G	G	G		G	G	G	G	31	25	G	G	G
23	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G	G	G	G	G	G	25	G	G	48
24	G	G	24	24	G	G	G	G	G	G	G	G	G	G	49	46	45	40	35	41	G	G	35	36
25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	41	32	G	31	24	G	G
26	G	G	G	G	G	G	G	G			G	G	G	G	G	G	44	41	36	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	58	G	64	55	57	68	36	28	42	G	25	G
28	G	G	G	G	G	G	G	N	G	G	66	79	52	60	69	70	59	64	40	40	46	36	25	34
29	26	26	28	25	G	G	G	32	44	49	48	G	G	G	48	46	46	50	32	24	65	38	G	26
30	26	26	25	G	G	G	G	36			G	G	G	G	48	G	98	64	86	48	26	25	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	28	27	28	28	28	25	25	27	27	28	26	27	26	28	30	28	28	28	28	28	29	29
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	47	23	46	46	41	36	30	G	G	G
U Q	26	26	24	G	G	G	G	32	42	48	51	55	G	49	54	52	52	58	52	46	42	30	27	26
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	32	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

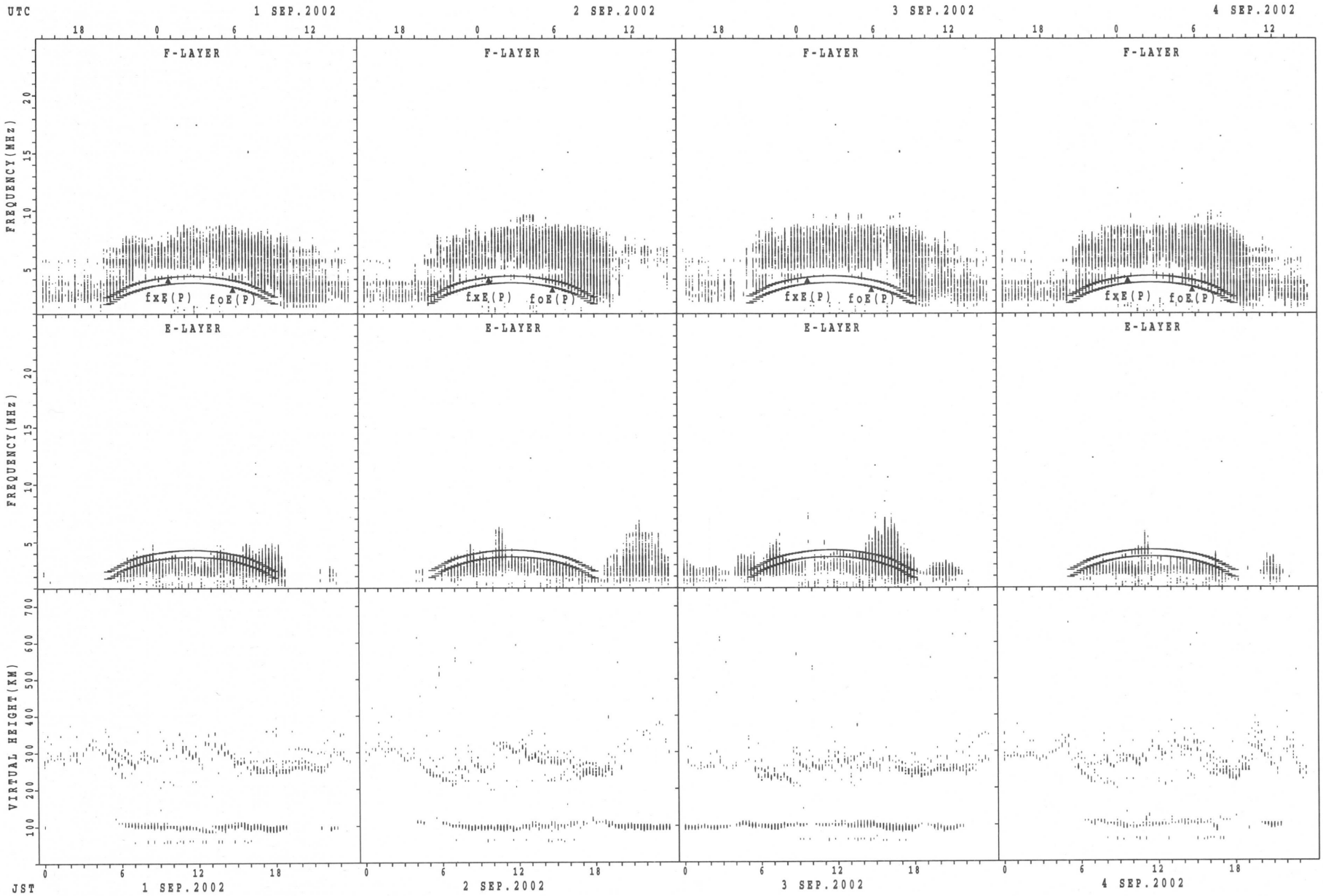
HOURLY VALUES OF fmin AT Okinawa

SEP. 2002

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

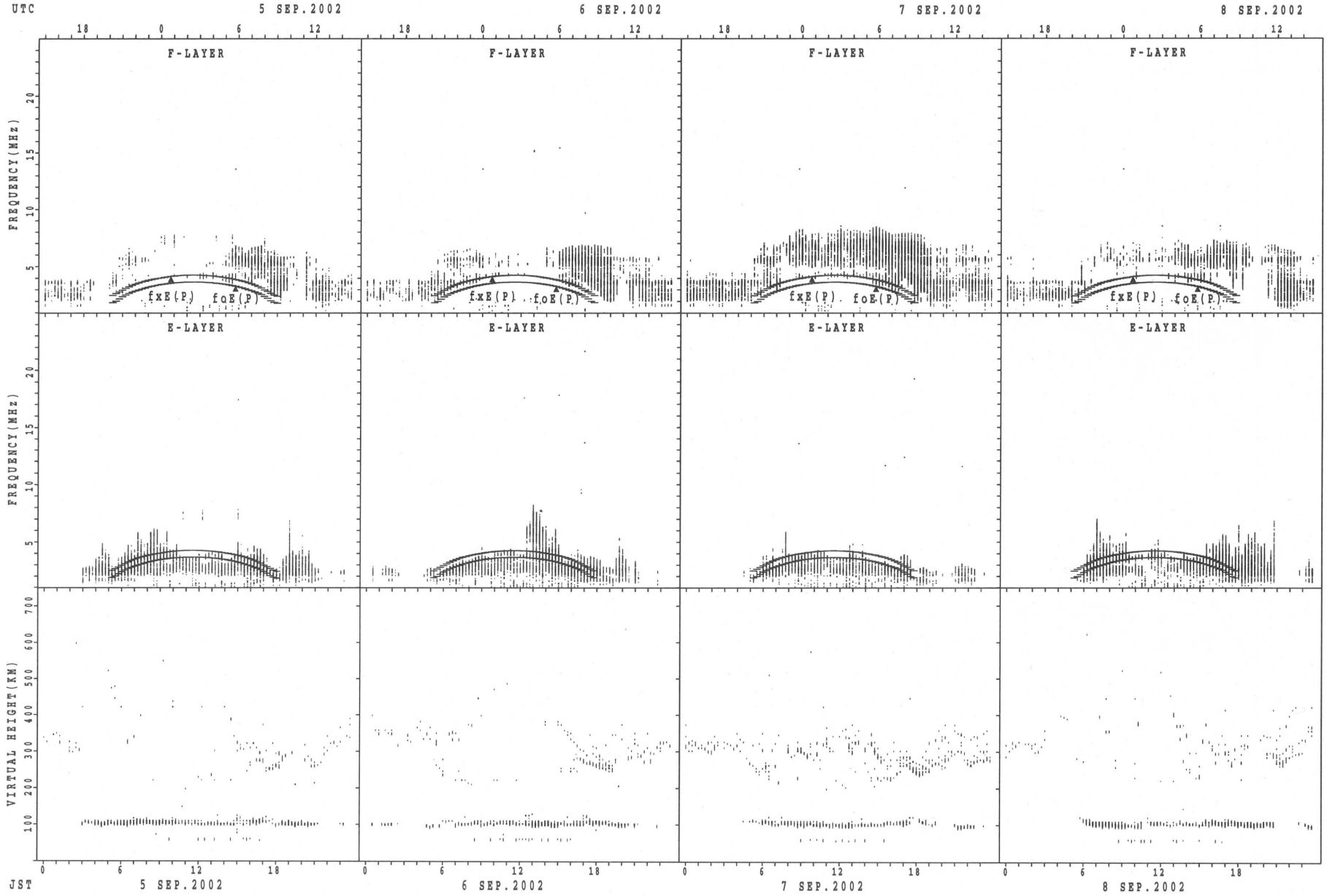
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14		21		21		18	18	27	20		39			34	29	27	18	14	15	14	15	20	18
2	21	24	20		21	18	21	17	18	16	17	22	23		20	16	16	18	14	16	17	15	16	15
3	15	15	14	21		20	18	18	22	29	46	40	49	42	39	38	28	20	14	20	14	15		21
4		21	18	C	28	22	20	C	C	27	C	40	C		C	45	26	17	15	C	C	C	C	20
5		17		C			C	27		38	40	55	C	C		C	34	C	C	C	C	C		C
6			C		C		C		C	C		C	C			C		C	20	20	18	21		
7															40	35	27	17	14		17	14		21
8	18	28	18	18	20		20	17		23	39	43		46	42		24	18	15	14	14	22	17	36
9				20		18	17	32	18	24	27	30	42	39	36	42	21	16	14	14	15	15	14	18
10	14	15	15	15	15	14	14	14	16	18	C				43	39	18	20	16	14	14	14	14	15
11	15	15	14	14	15	15	15	14	17	21	26	27	28		33	32	27	21	14	15	15	15	14	14
12	14	15	15	14	14	14	14	14	16	20	32	35	40	40	40	39	26	17	15	14	14	14	14	15
13	14	15	14	14	14	15	14	15	15	20	35	35	52	43	40	38	21	18	15	14	14	14	15	16
14	14	14	14	14	14	15	16	18	21	33	36			54	50	44	27	18	15	14	14	17	14	14
15	14	14	14	14	15	15	14	14	17	21		49	43	43	51	42	23	17	15	14	14	14	14	15
16	14	15	16	15	15	14	15	14	17	22	39	49	55	56	24	38	22	16	14	14	14	15	15	15
17	14	15	15	14	14	15	14	14	17			50	55	42	40	39	39	21	16	15	14	14	14	15
18	15	14	14	15	15	14	14	14	15	21	29		47	29		28	21	14	14	15	14	14	14	14
19	14	14	15	18	14	15	15	15	17	36	21		53		44	42	38	18	15	15	14	14	14	15
20	14	15	15	15	14	15	15	17	17	21	32	52		42	30	38	23	18	22	14	14	15	14	15
21	14	15	14	14	15	15	14	16	20	24	29	36	39		43		17	18	15	14	14	21	16	14
22	16	14	14	15	17	15	14	14	14	18	21	20	26			38	26	17	20	14	15	15	15	14
23	14	15	15	14	15	14	14	14	16	20		47	50	44	40	40	18	17	21	14	16	15	15	14
24	14	14	14	14	15	15	15	26	17	20			46		17	17	14	14	14	14	15	15	16	15
25	18	15	15	15	14	15	14		15	38		39	51	45	42	38	20	15	15	15	14	15	14	16
26	15	15	15	15	15	15	14	24	15	18			47	44		40	20	17	14	14	15	16	16	15
27	15	15	15	14	15	15	15	20	30	37	42	54	40	54	39	35	18	18	15	15	15	14	14	15
28	15	15	15	14	15	15	14	20	18	26	39	43	42	40	39	35	32	20	14	14	14	15	14	14
29	15	14	14	17	15	14	15	15	17	20	20	45	40		21	27	27	14	15	15	15	14	15	14
30	14	14	14	16	17	18	15	14	18	18	40	50	55		41		20	15	14	14	14	14	14	17
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	26	24	25	25	27	26	25	27	19	22	21	16	24	25	29	28	29	27	28	28	25	28
MED	14	15	15	15	15	15	15	16	17	21	32	42	46	43	40	38	23	18	15	14	14	15	14	15
U Q	15	15	15	15	16	15	16	18	18	27	39	49	51	45	42	40	27	18	15	15	15	15	15	16
L Q	14	14	14	14	14	14	14	14	16	20	26	35	40	41	33	33	20	16	14	14	14	14	14	14

SUMMARY PLOTS AT Wakkanai



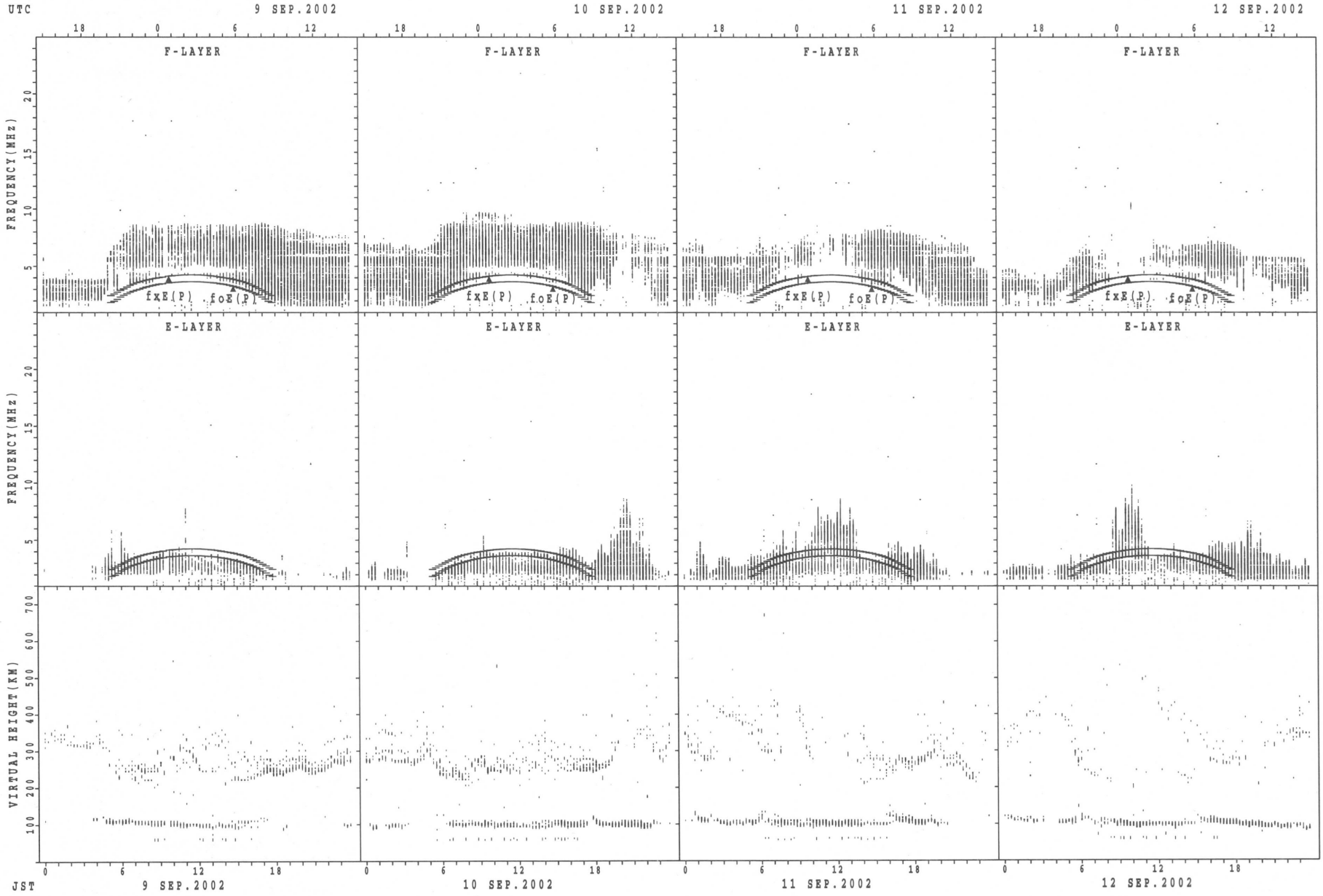
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



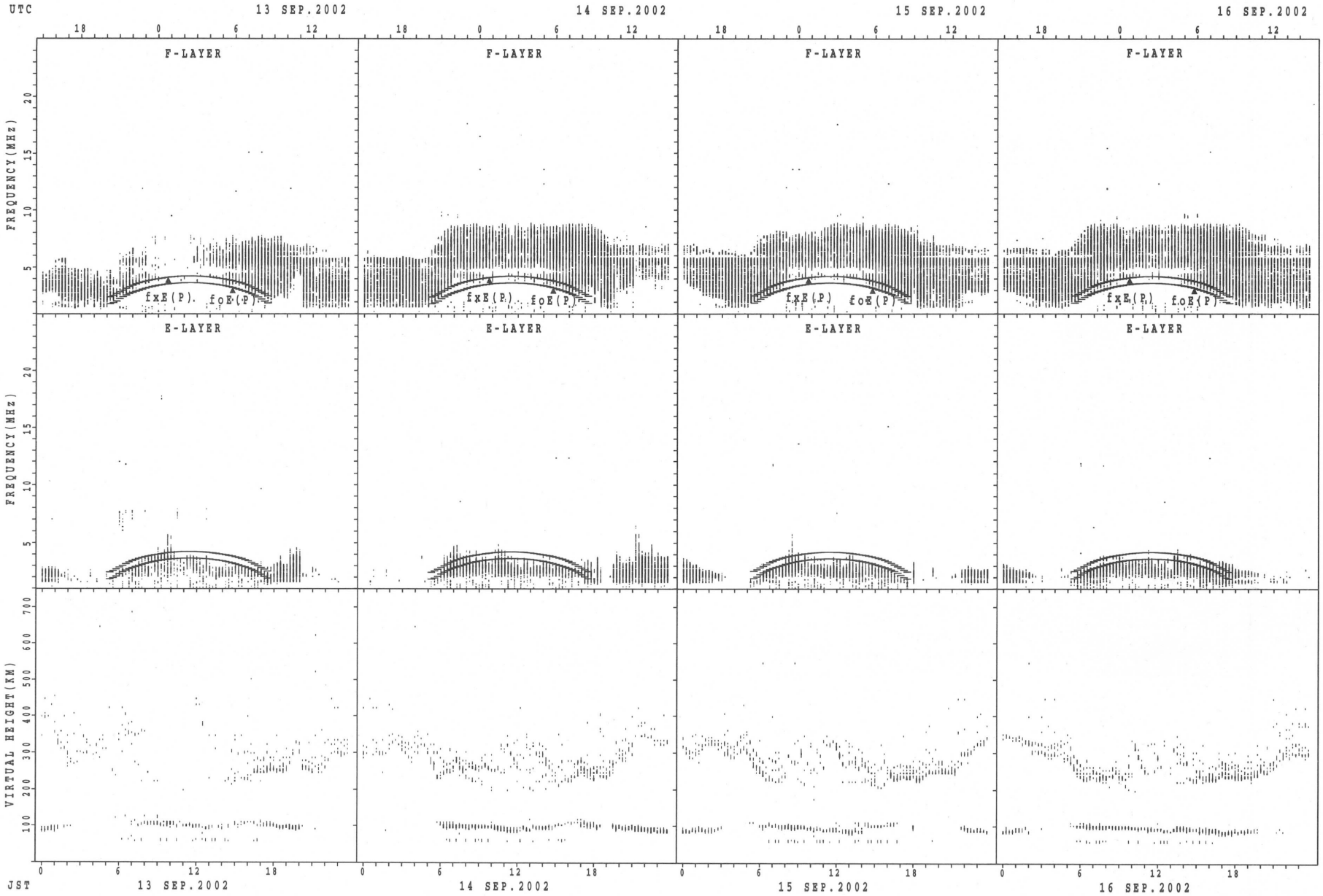
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



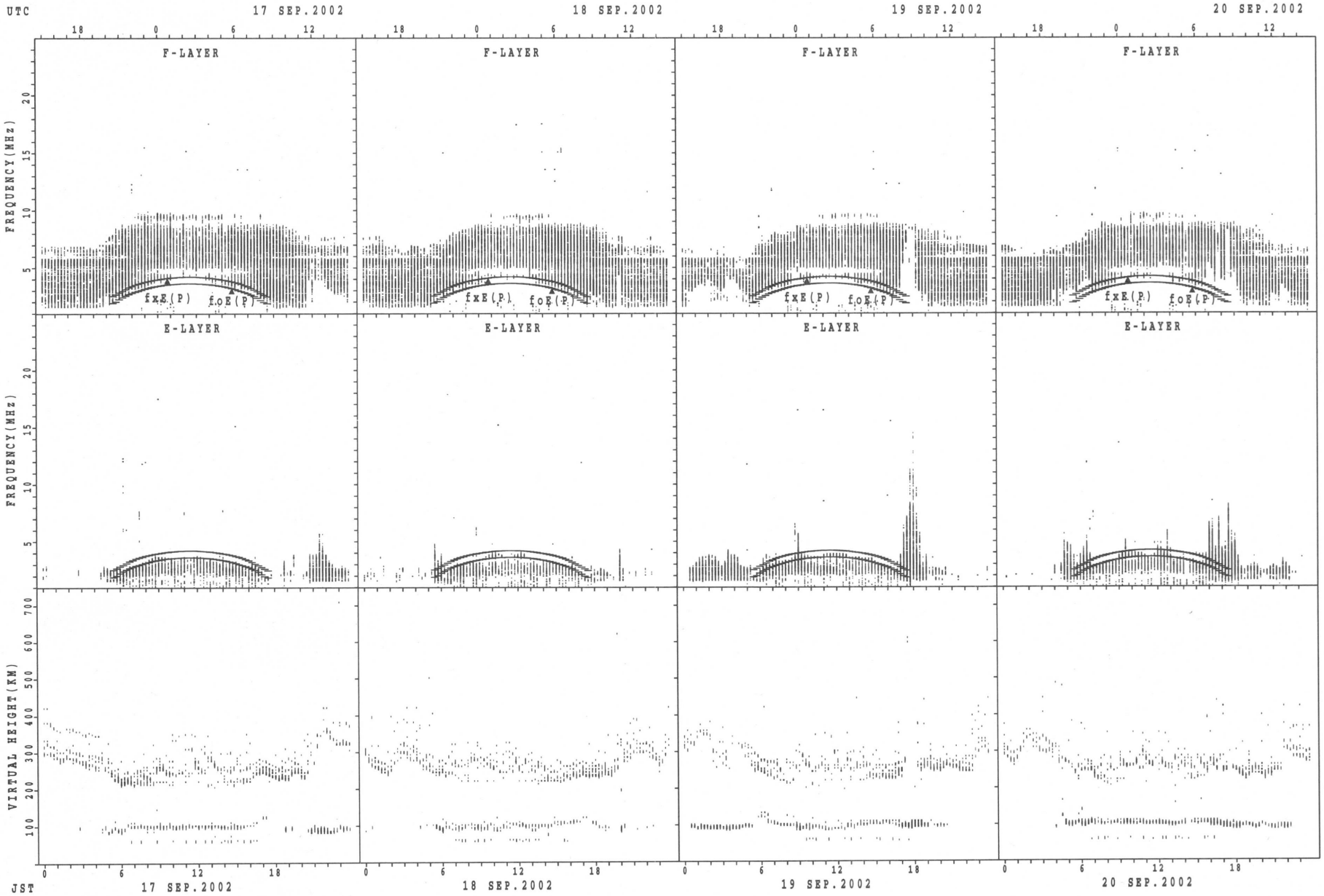
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



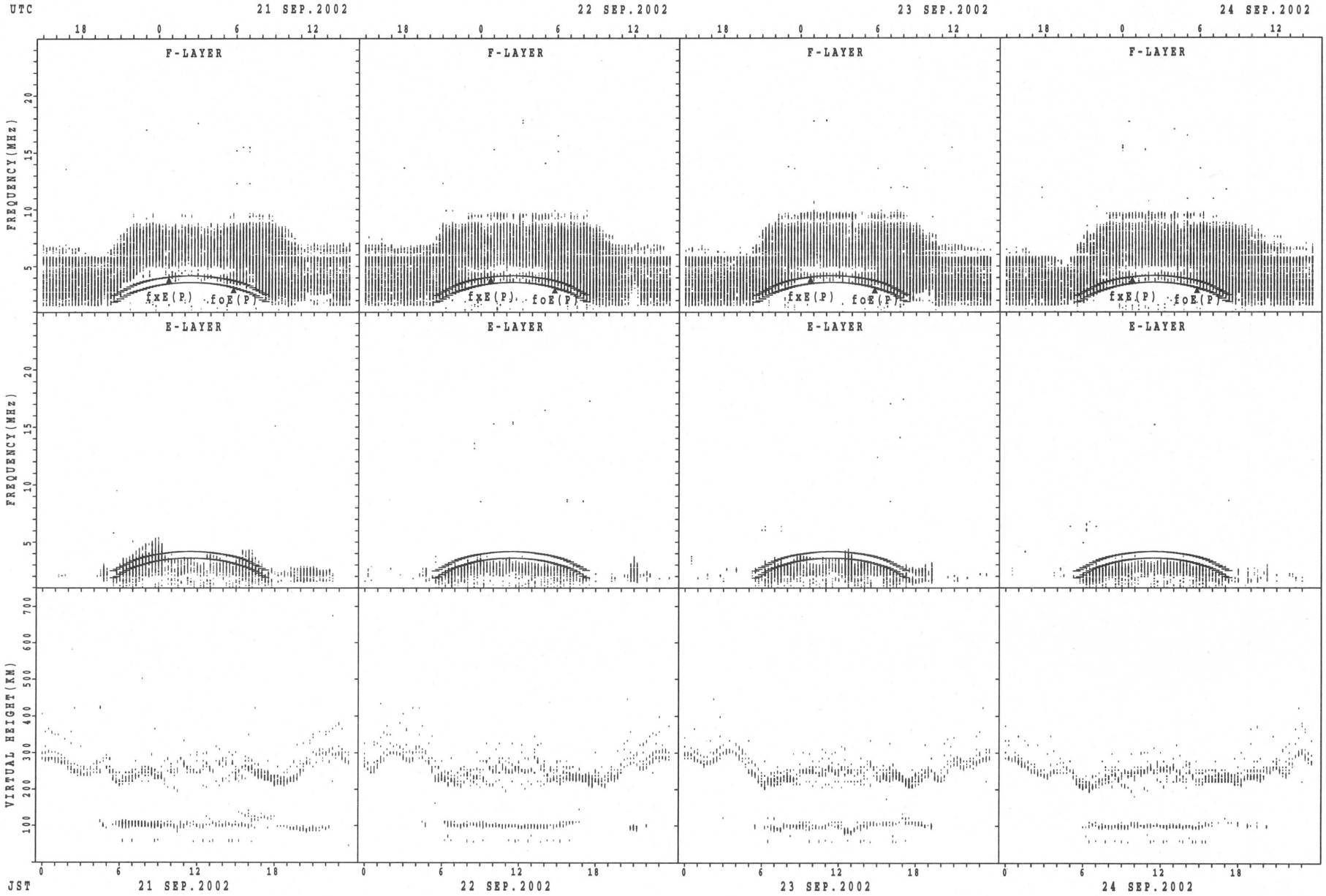
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

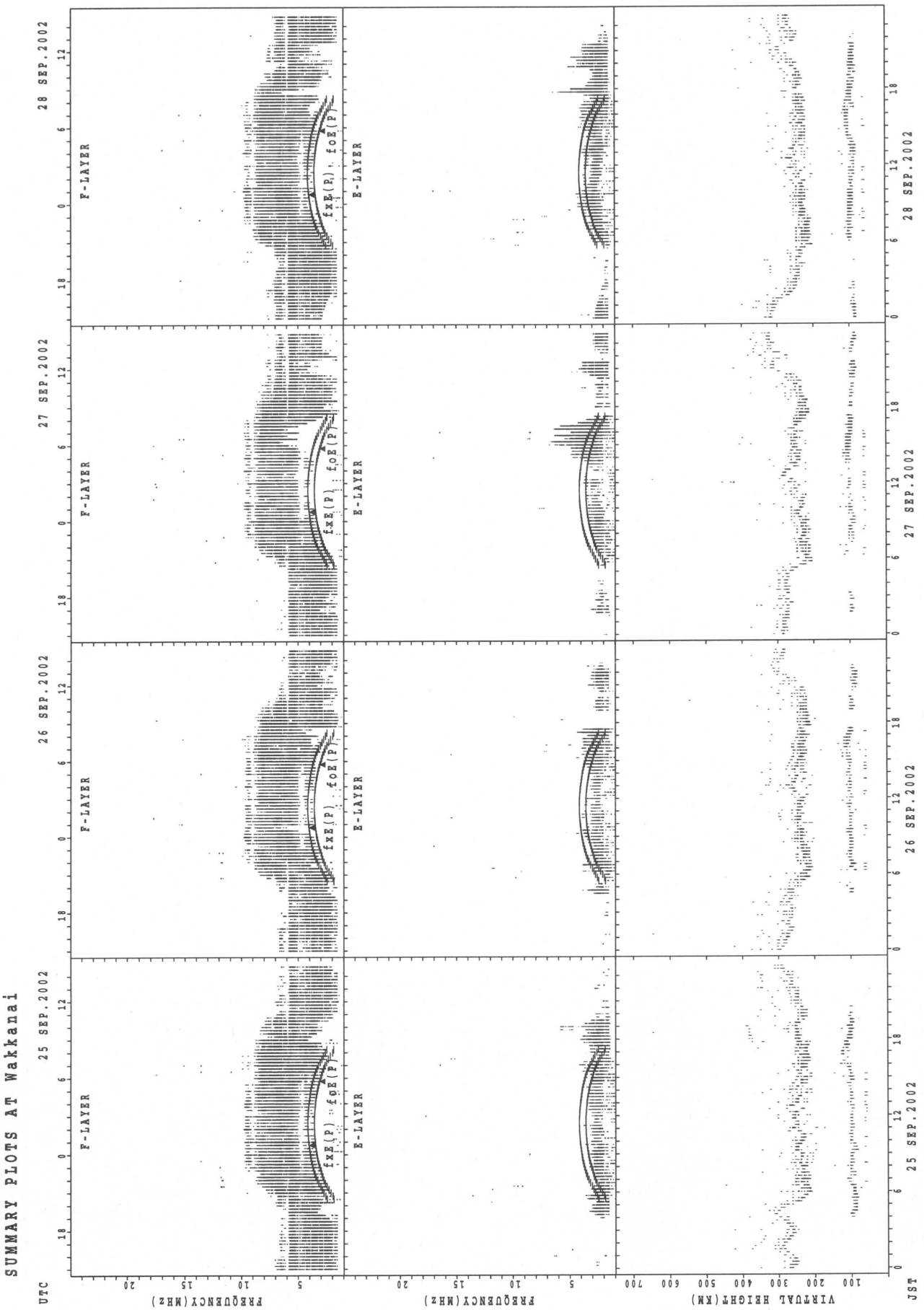


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

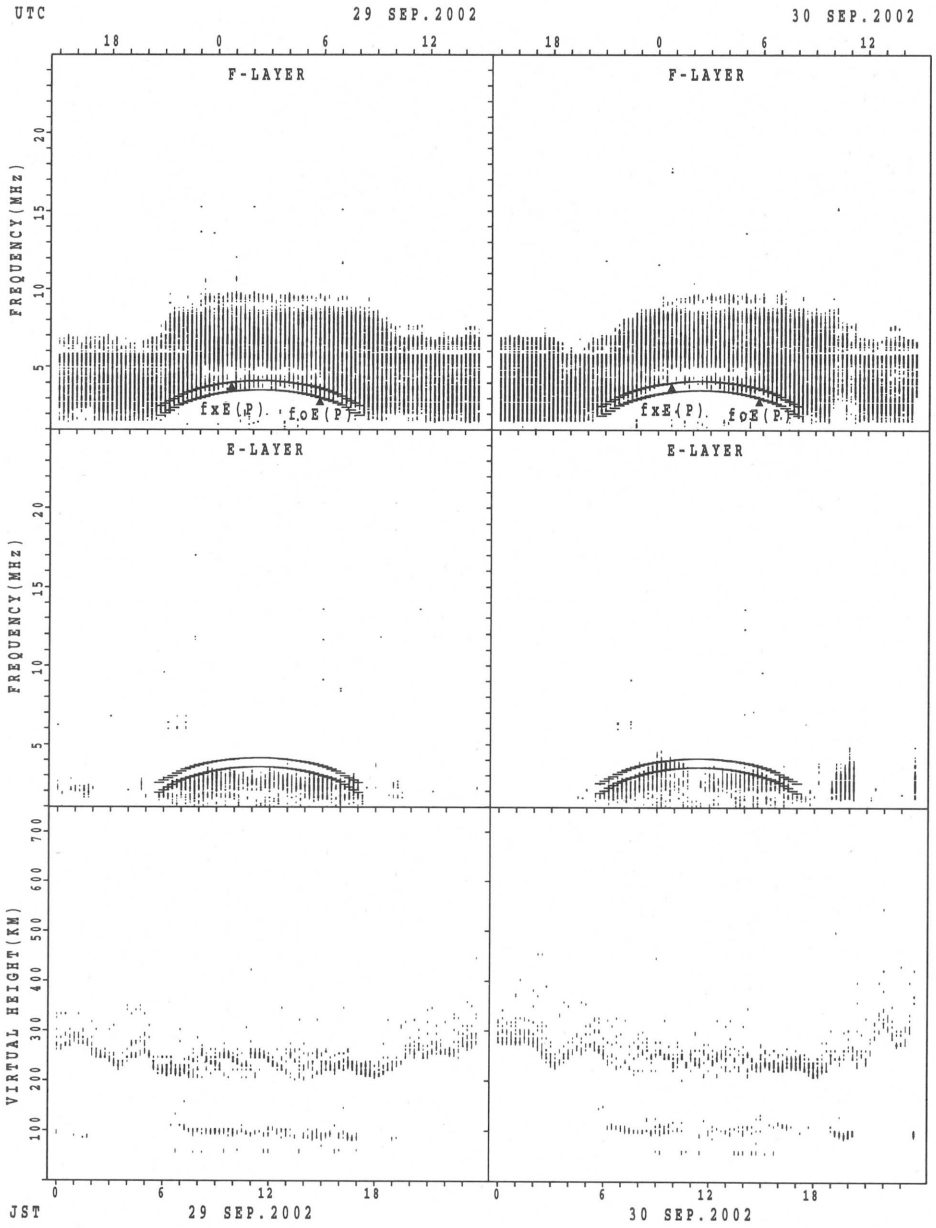
SUMMARY PLOTS AT Wakkanai



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

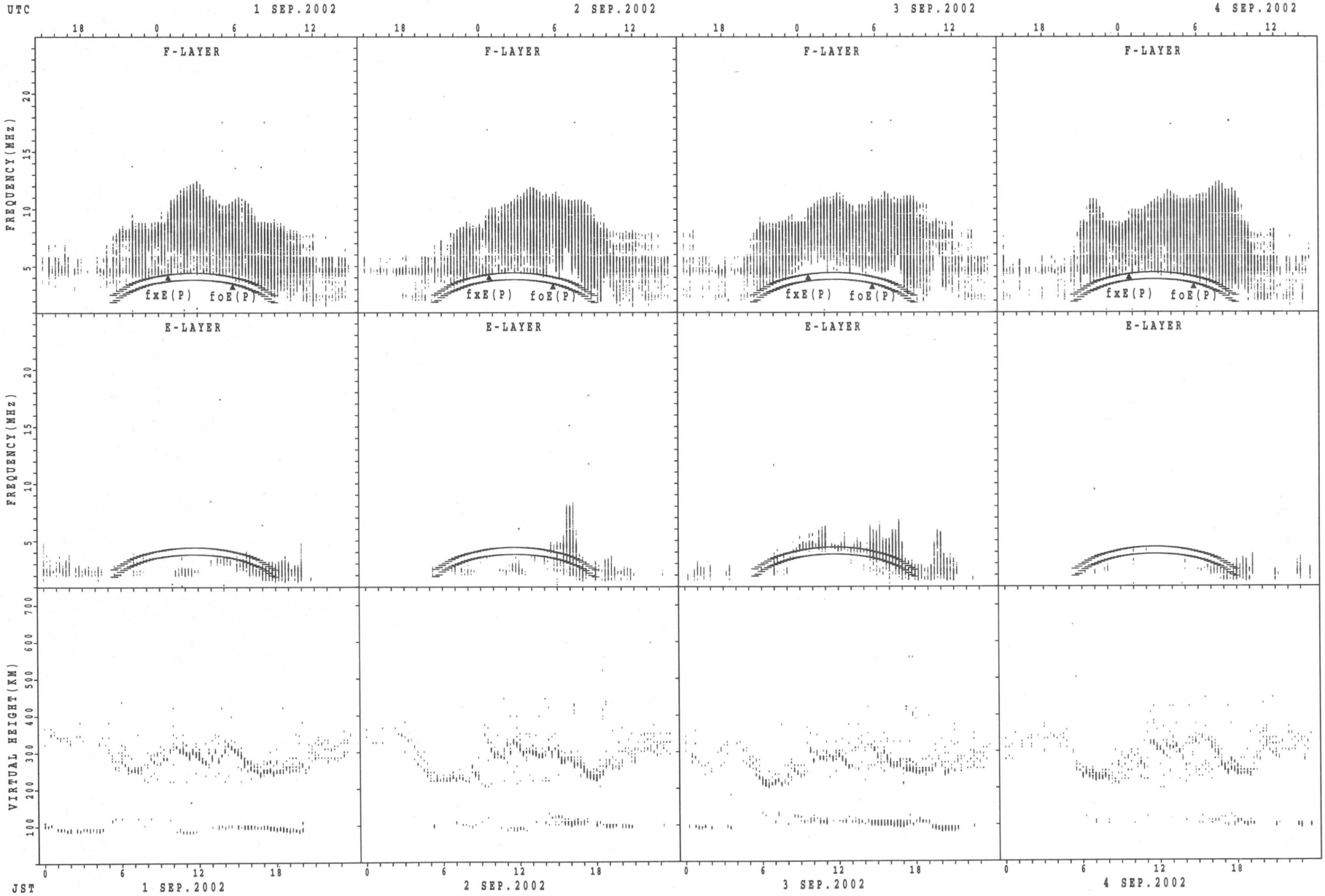

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 SEP.2002
26 SEP.2002
27 SEP.2002
28 SEP.2002
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



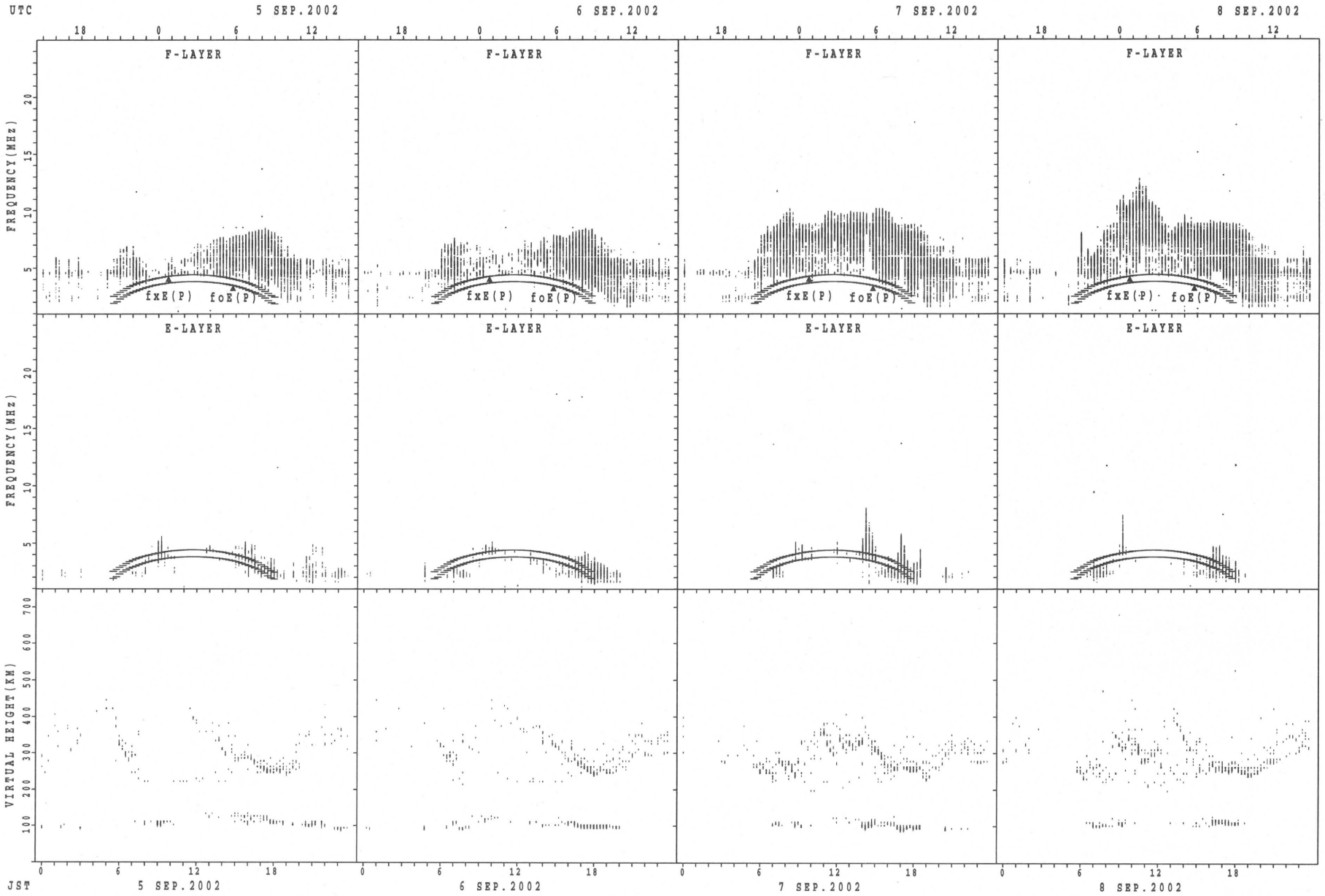
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

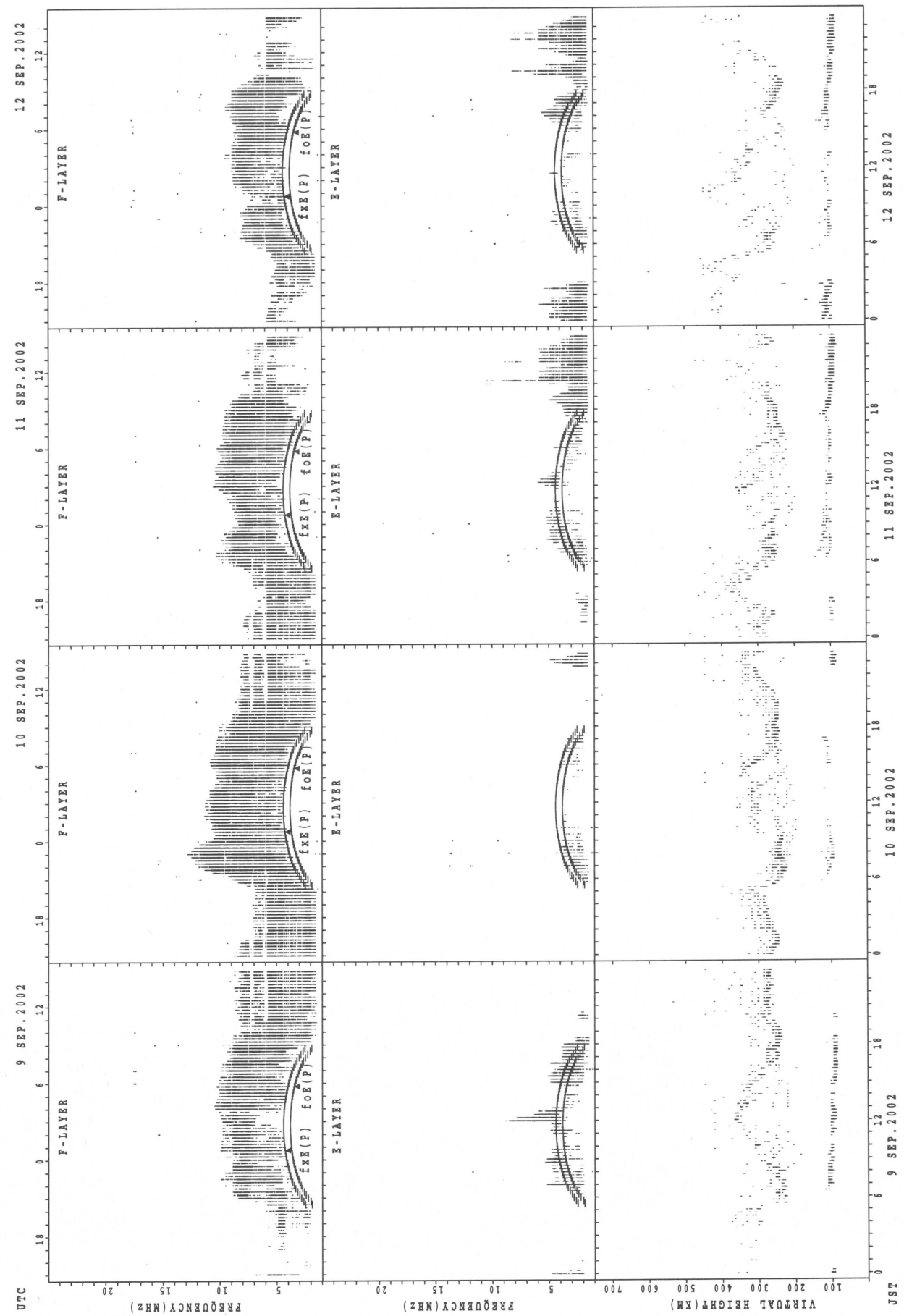


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

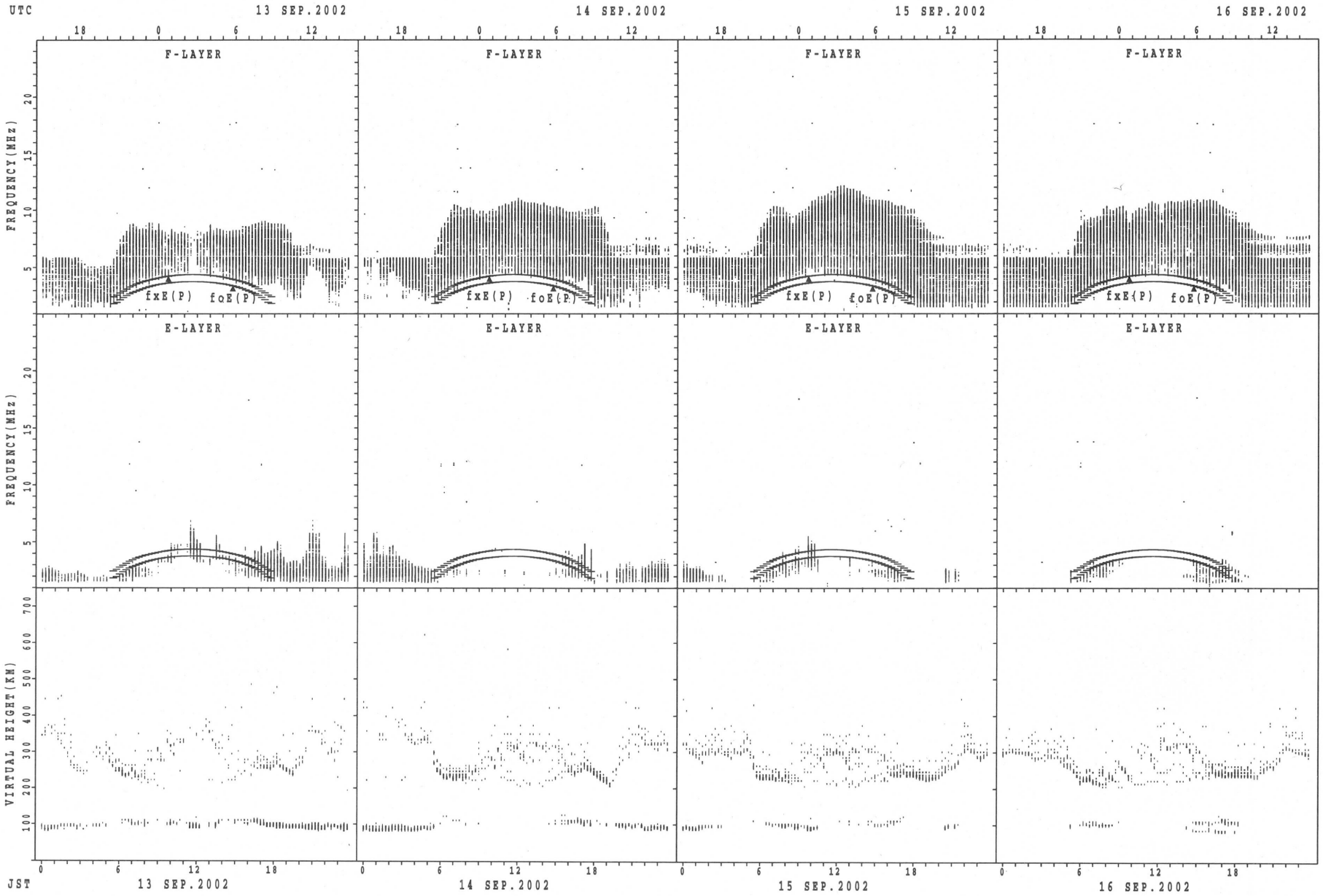
SUMMARY PLOTS AT Kokubunji



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

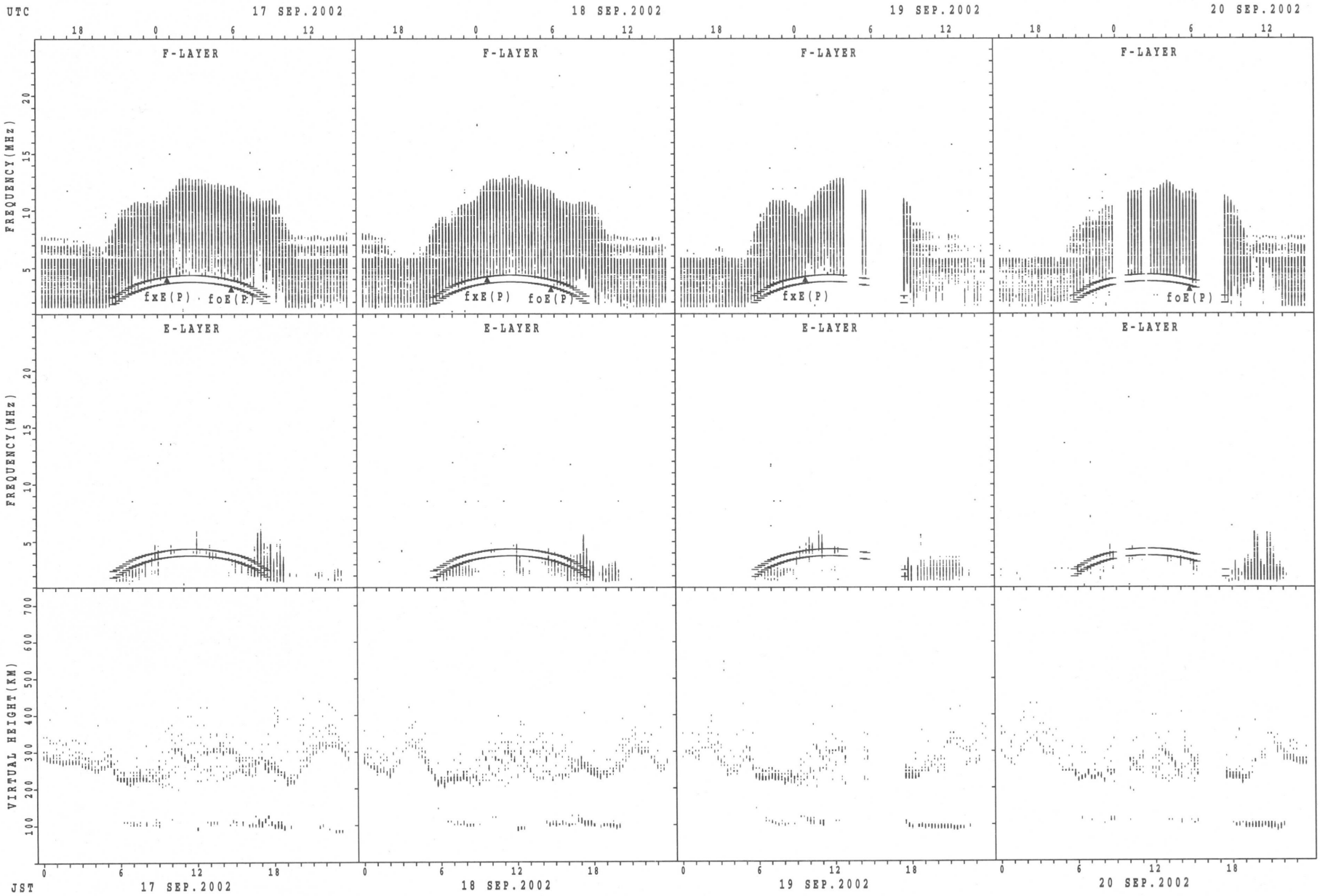

SUMMARY PLOTS AT Kokubunji
UTC
JST
9 SEP.2002
10 SEP.2002
11 SEP.2002
12 SEP.2002
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



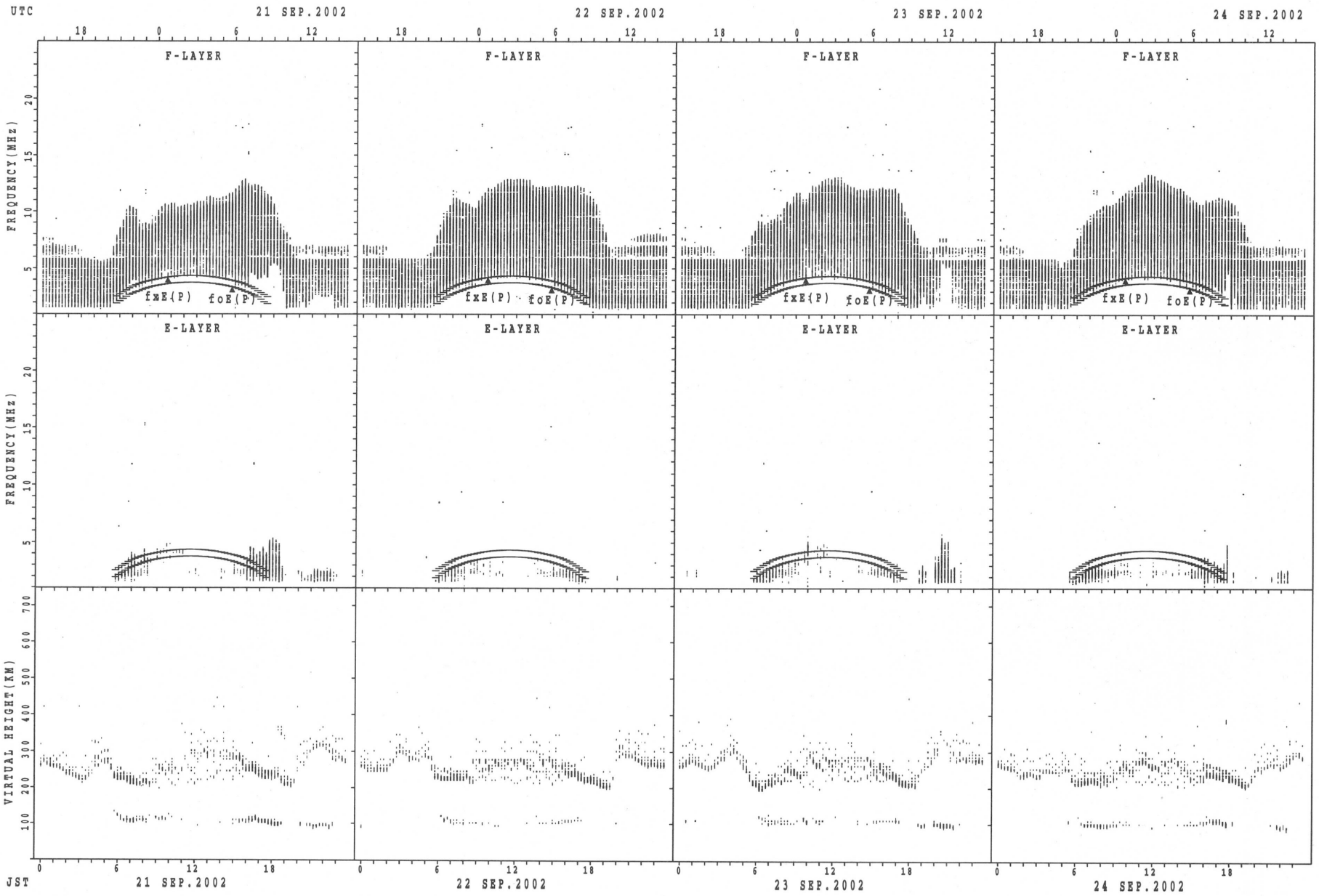
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



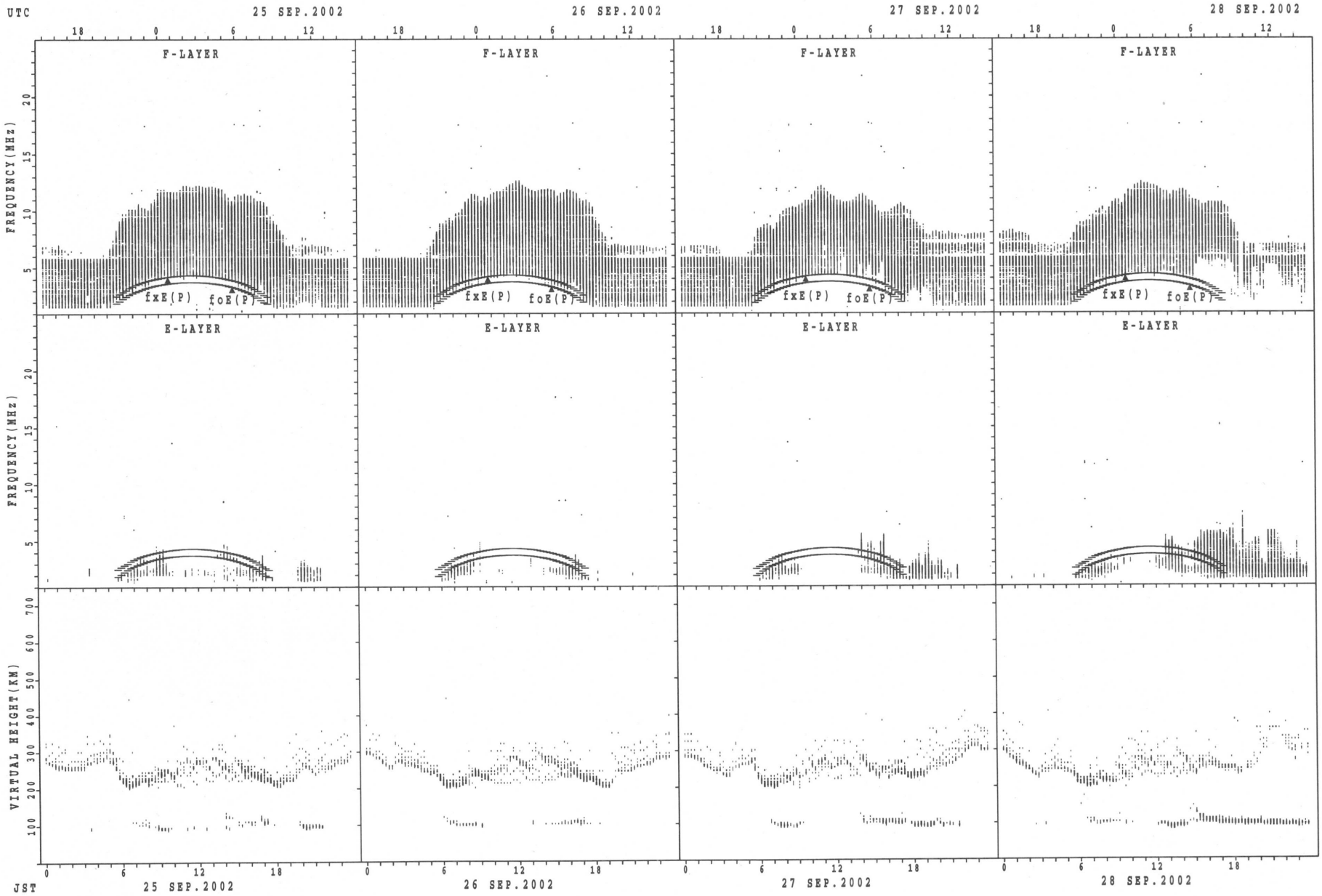
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



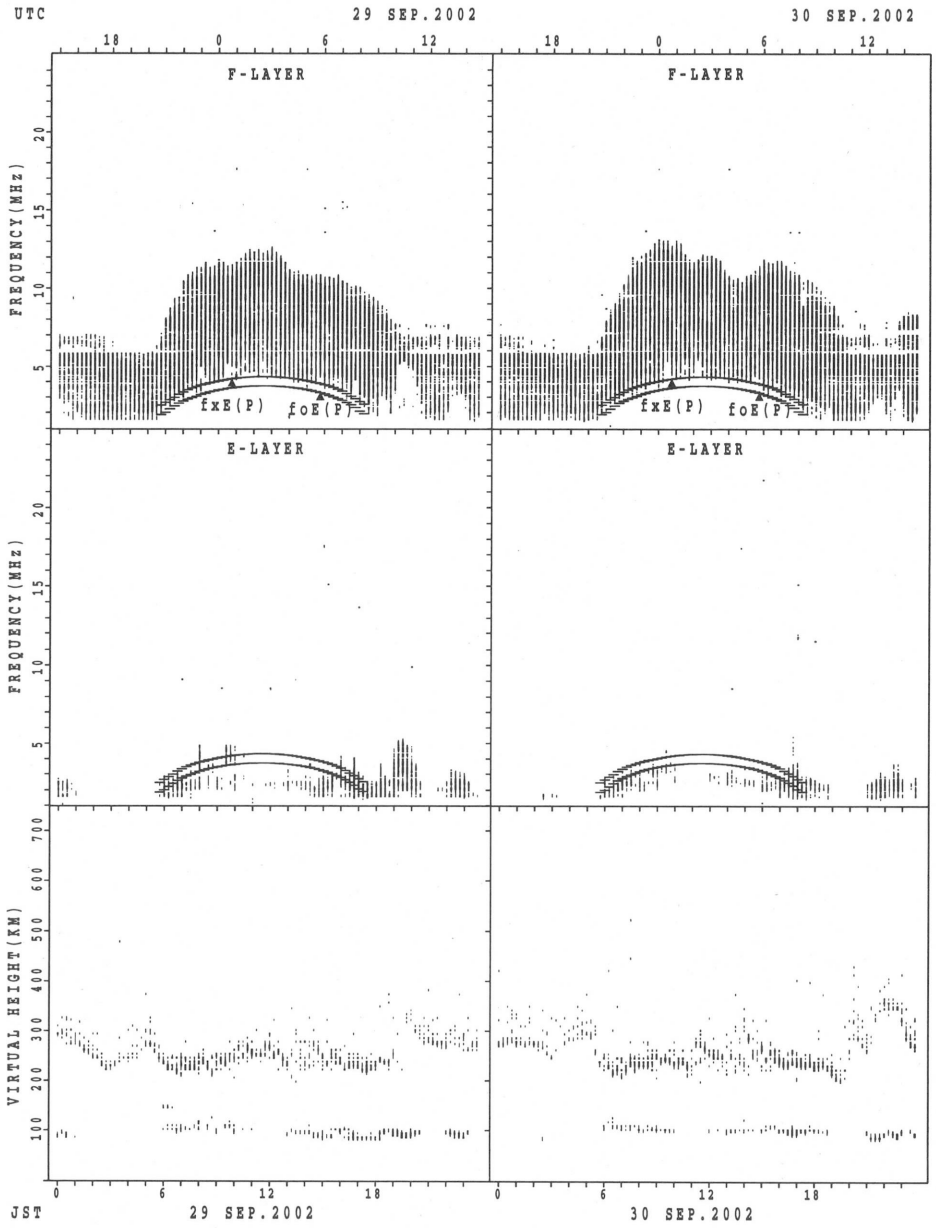
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



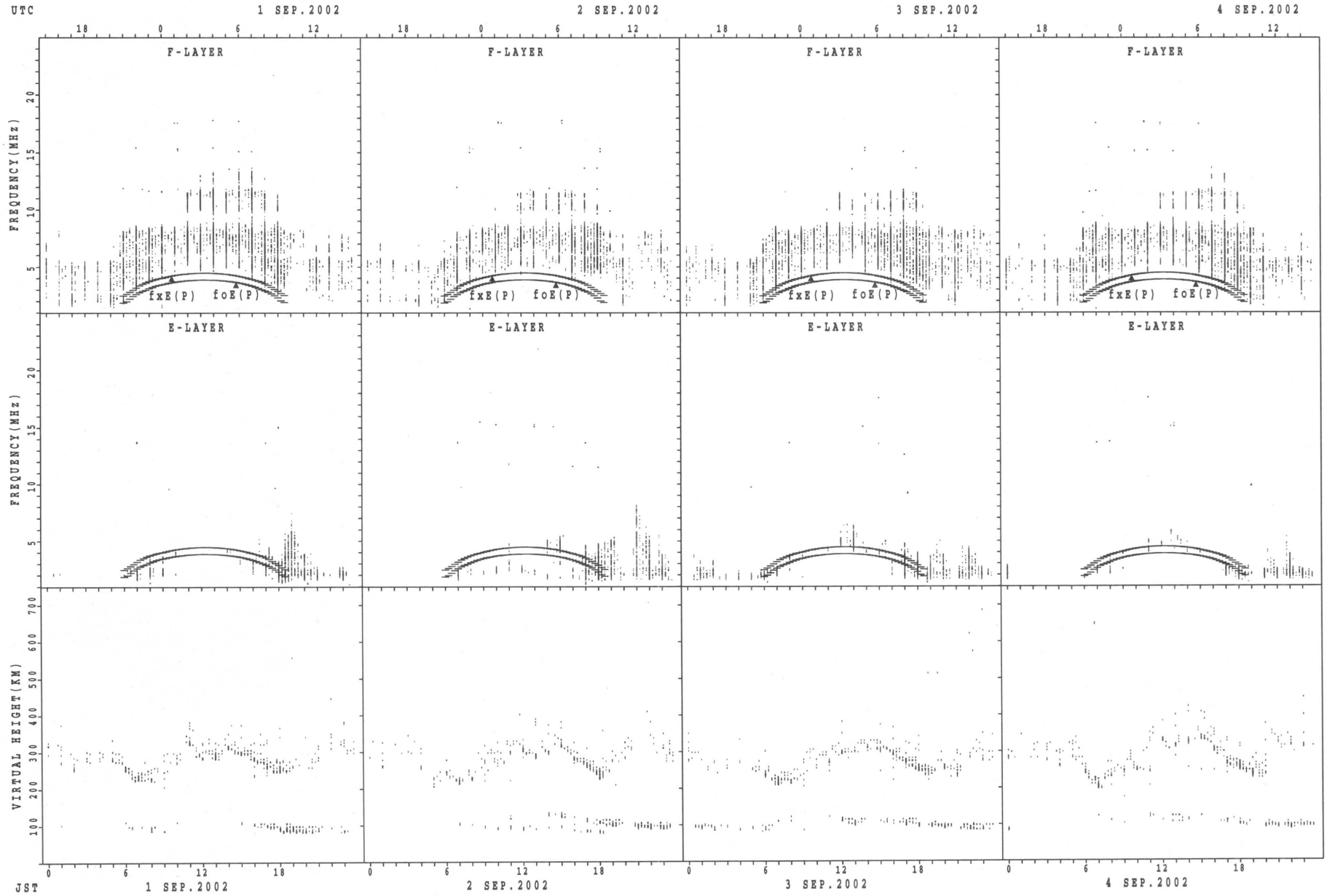
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



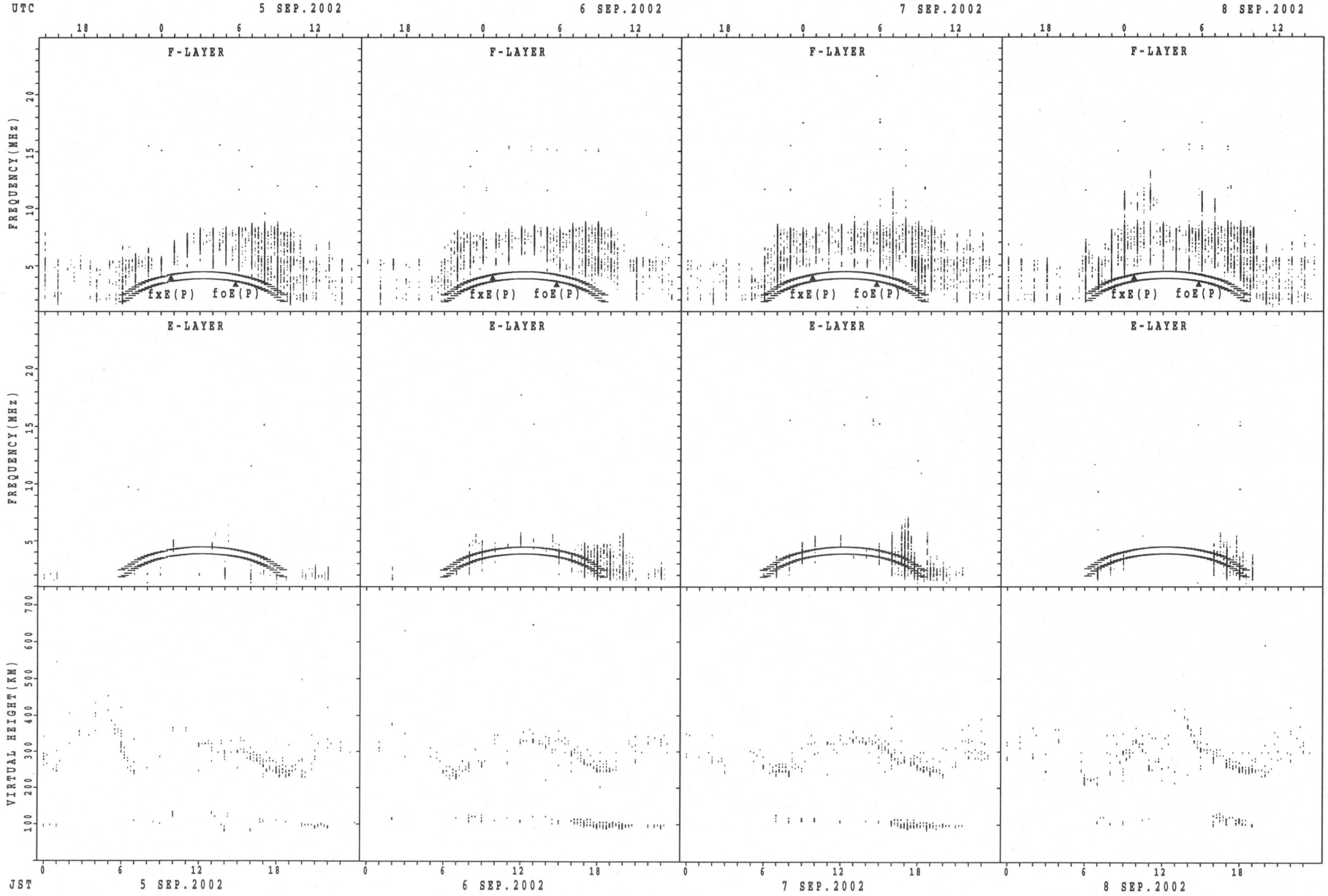
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



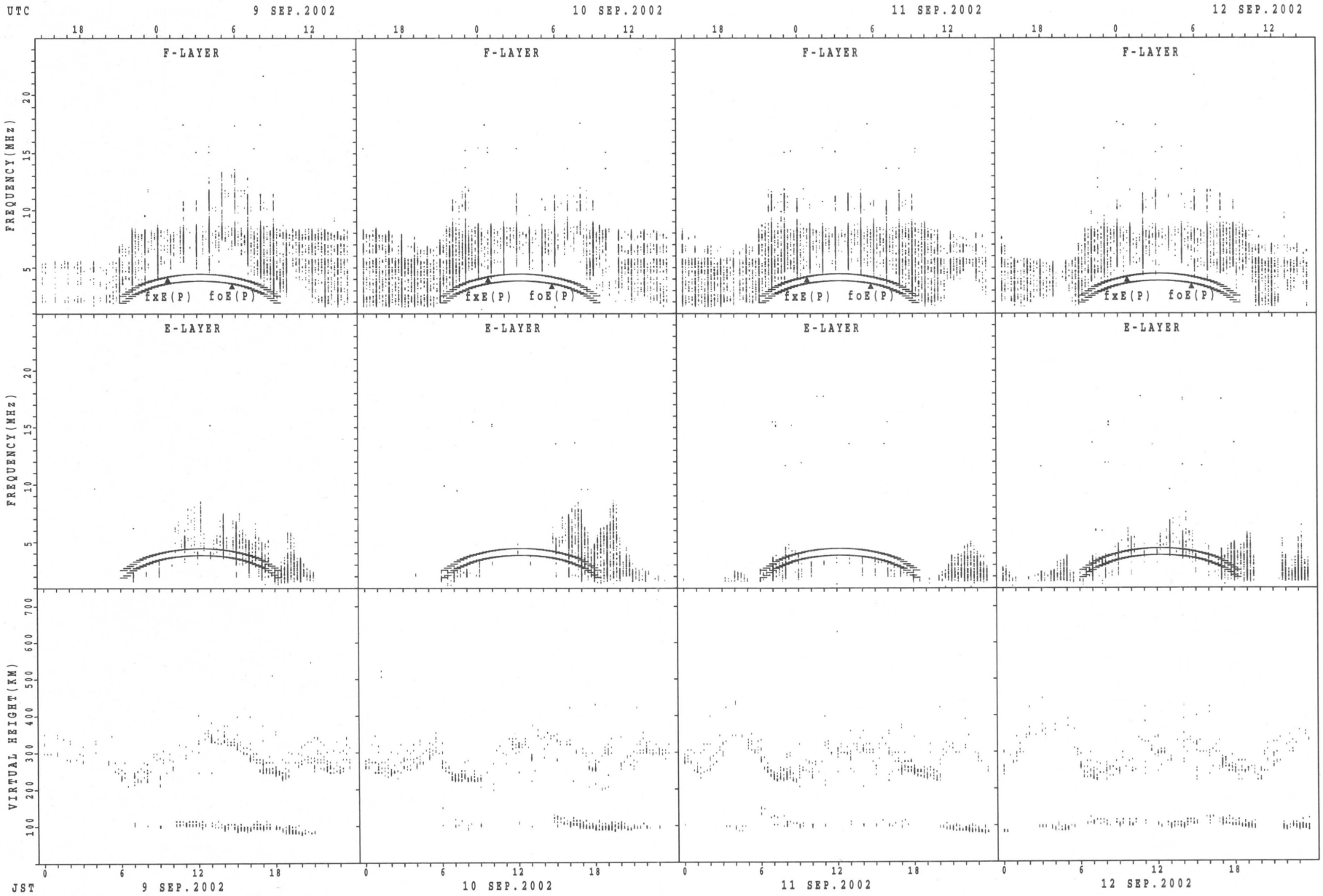
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



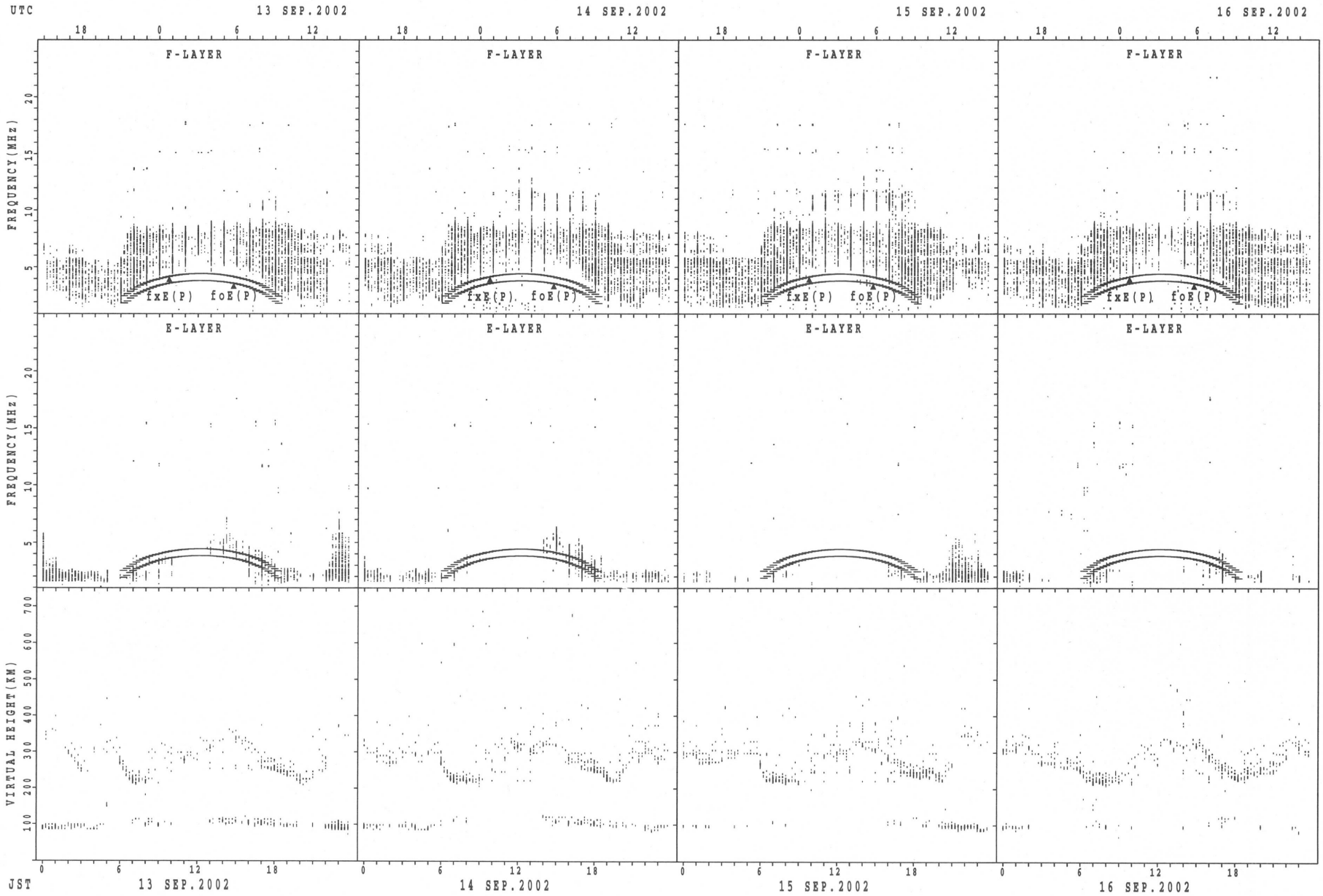
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



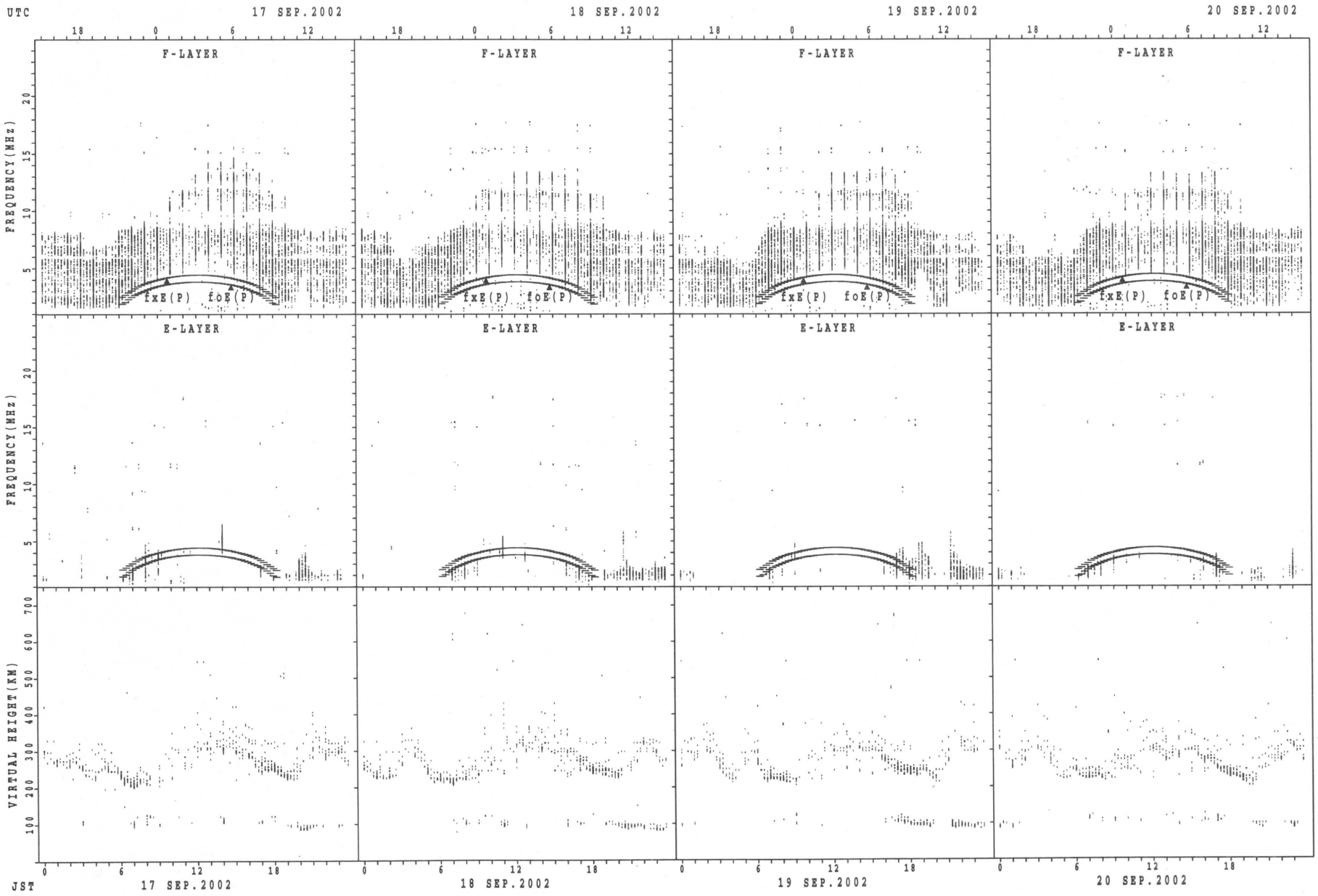
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



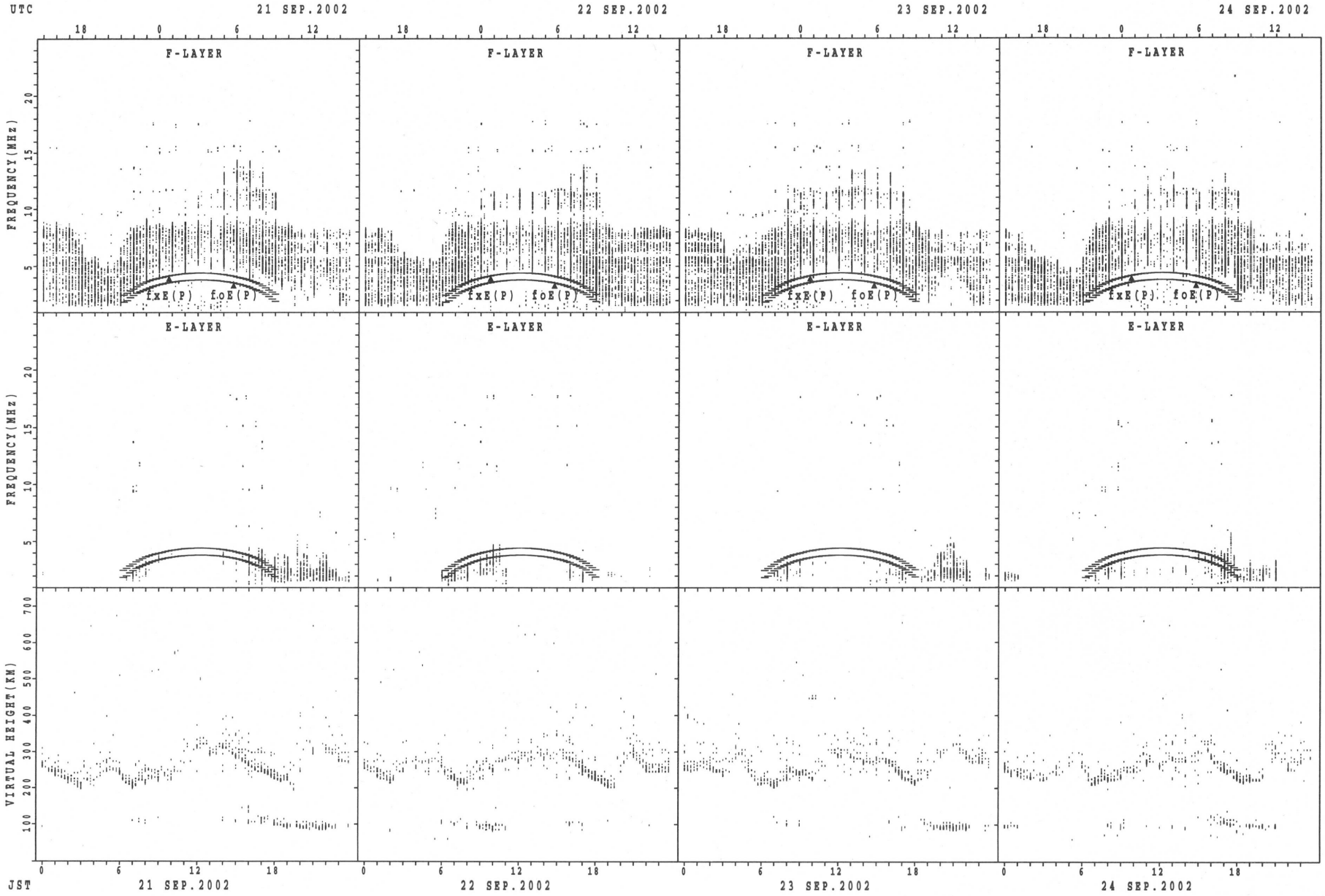
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



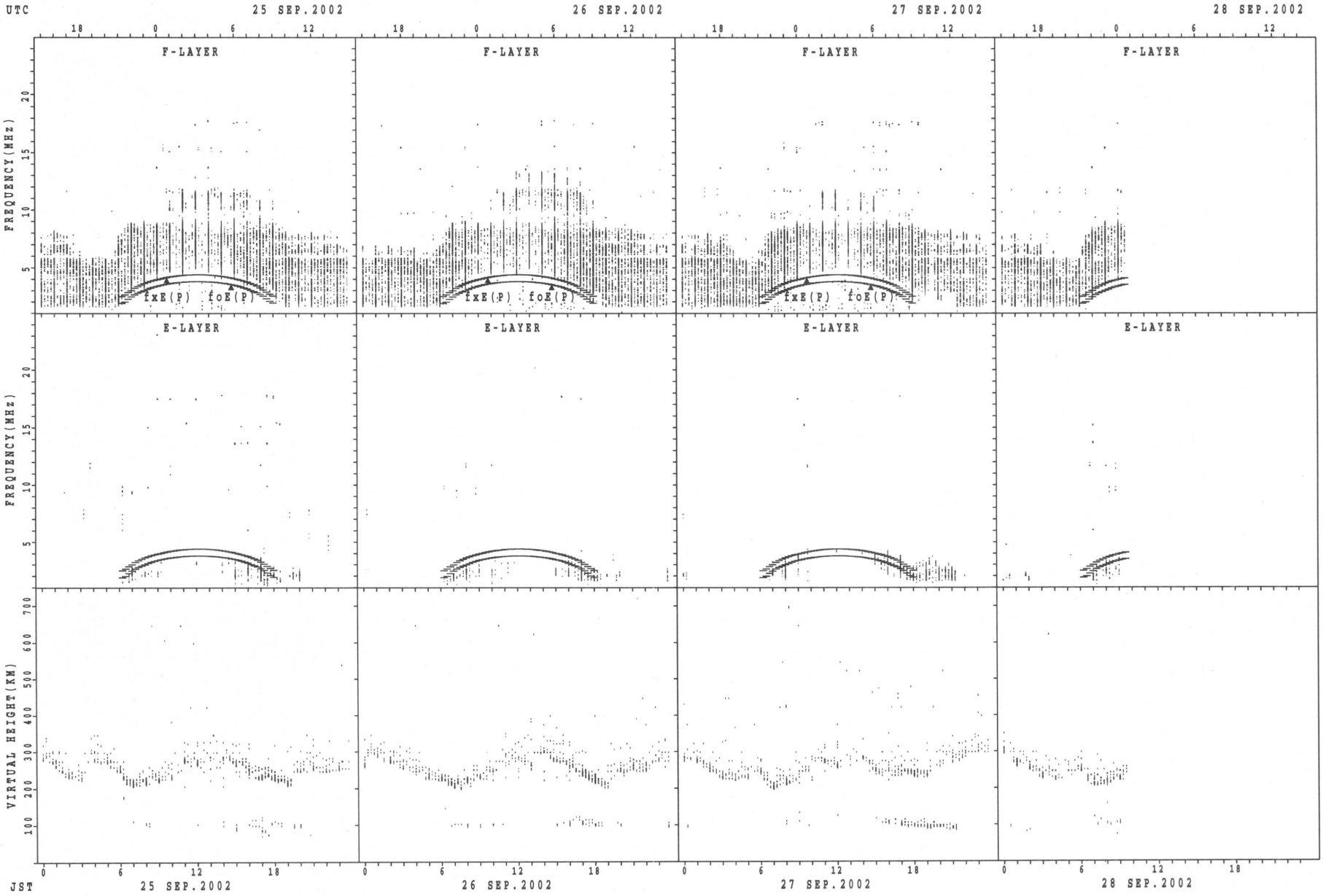
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

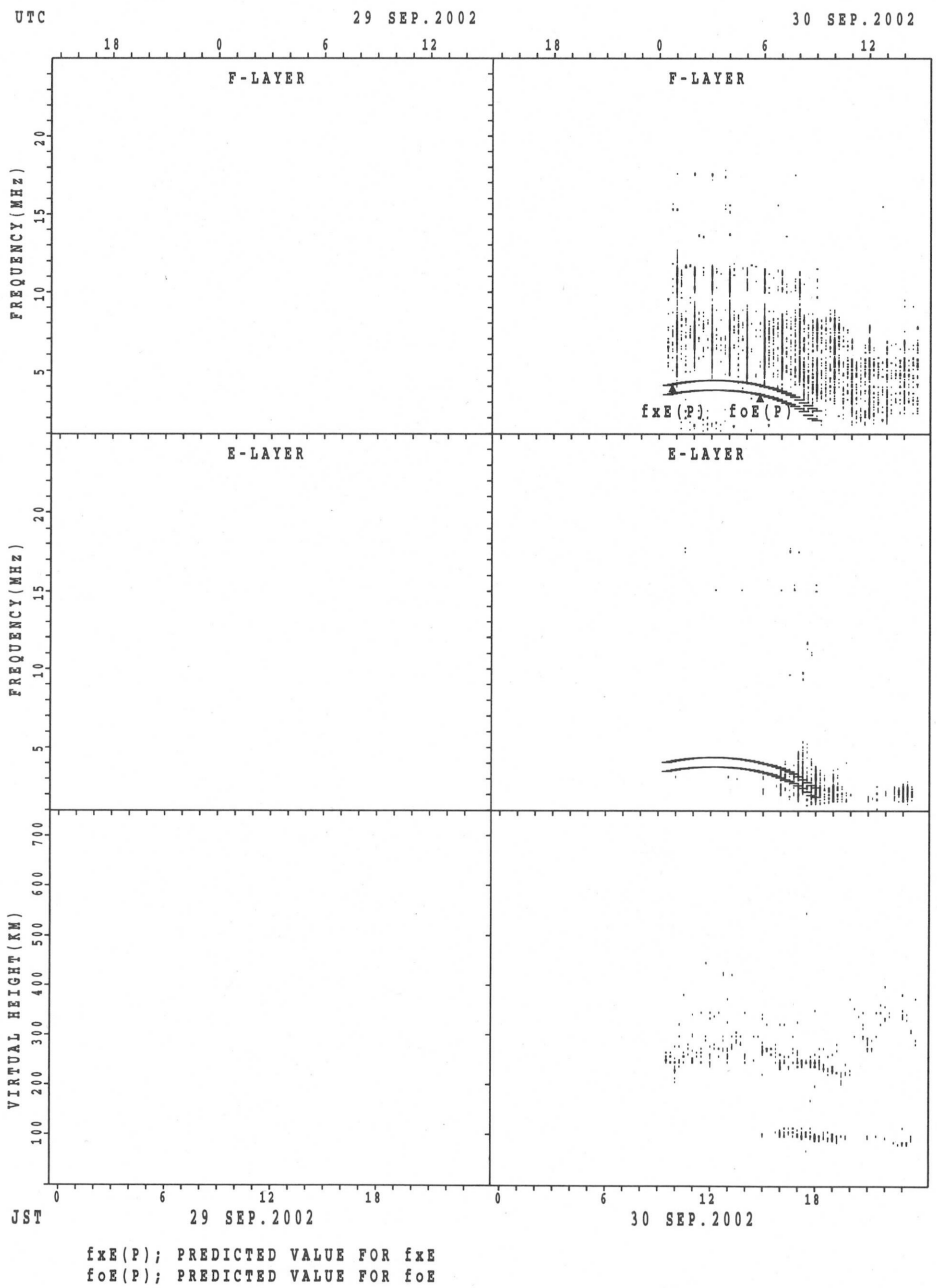


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

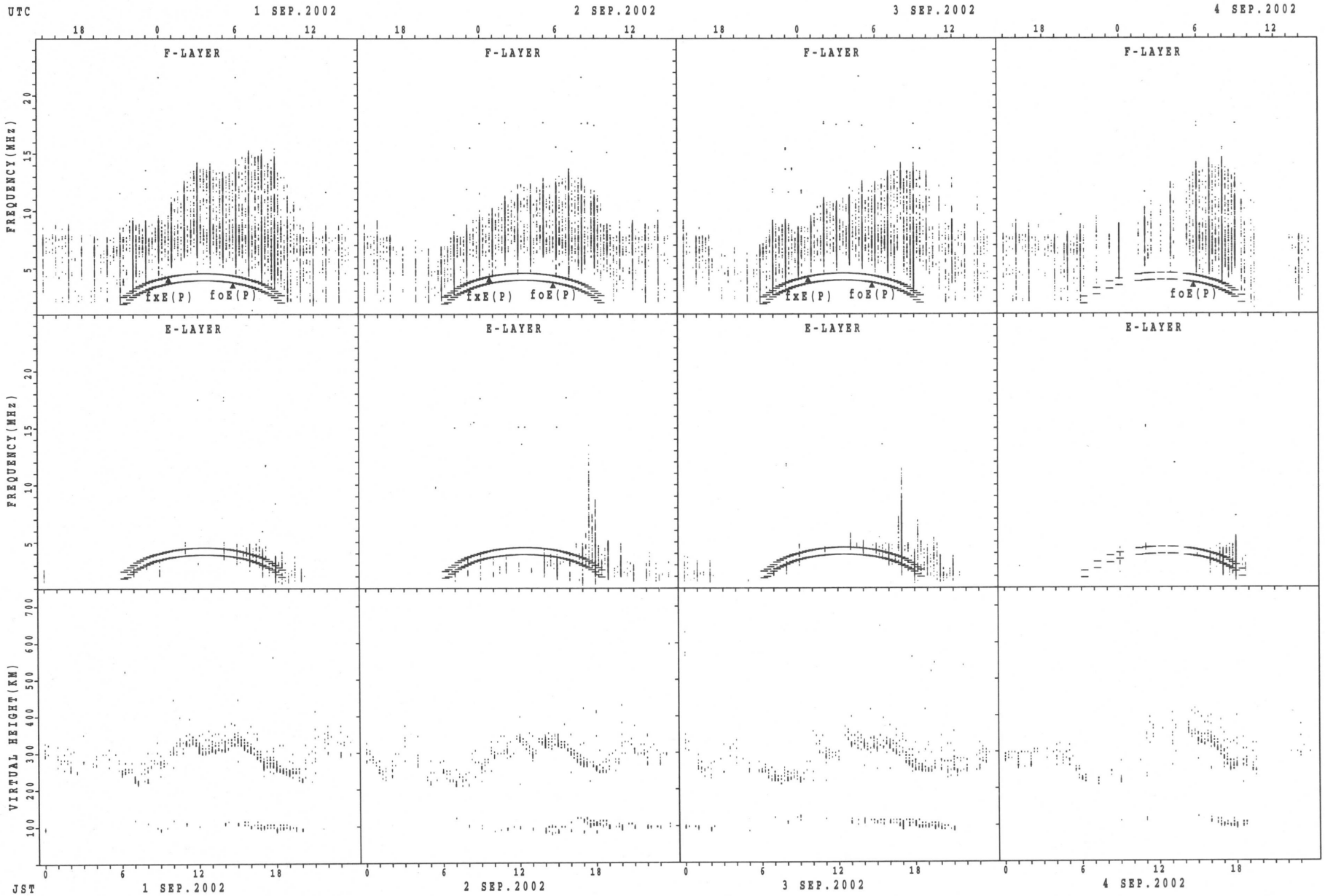
SUMMARY PLOTS AT Yamagawa



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

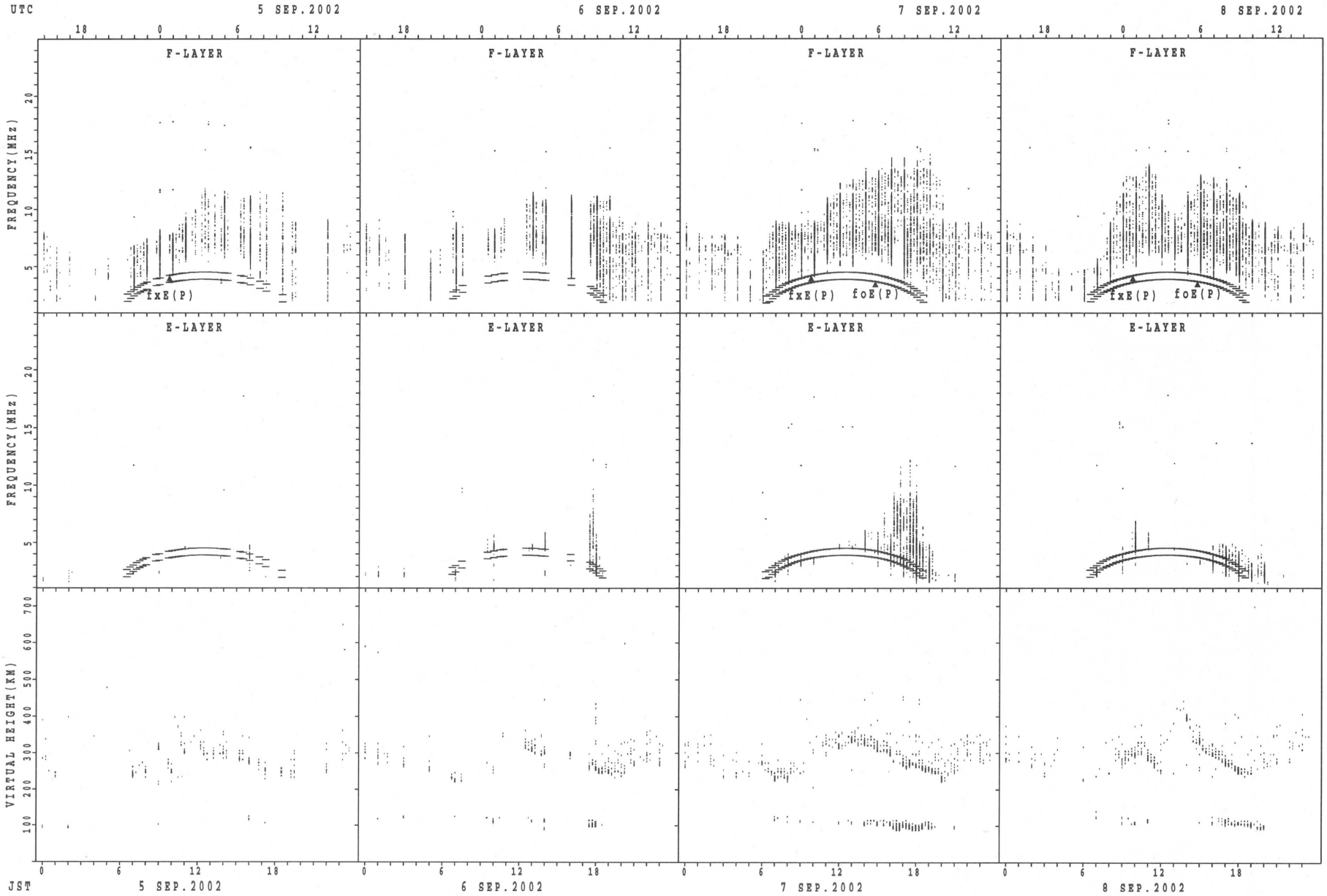

SUMMARY PLOTS AT Yamagawa
UTC
29 SEP.2002
30 SEP.2002
F-LAYER
F-LAYER
FREQUENCY(MHz)
fxE(P)
foE(P)
E-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
29 SEP.2002
30 SEP.2002
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

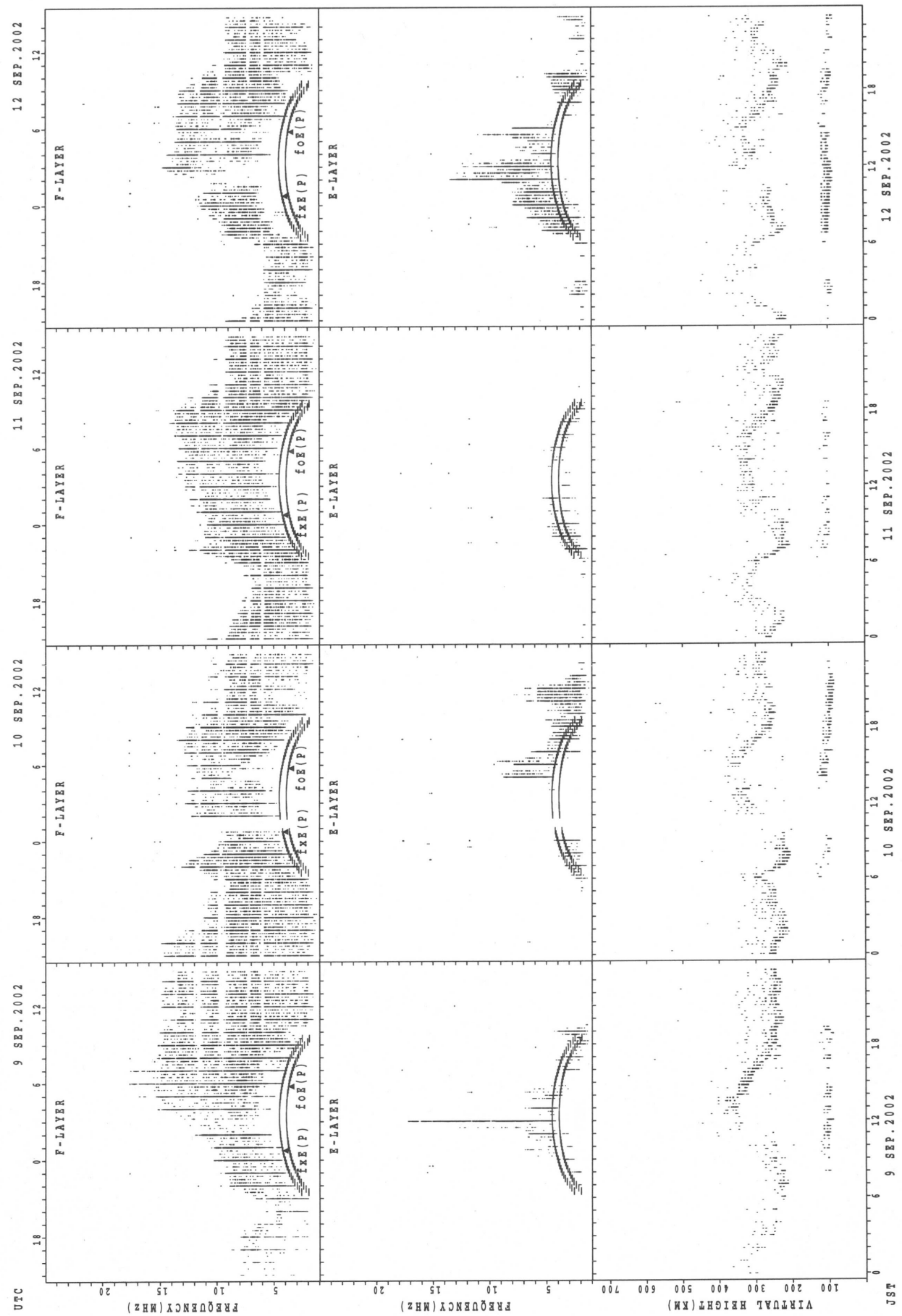


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

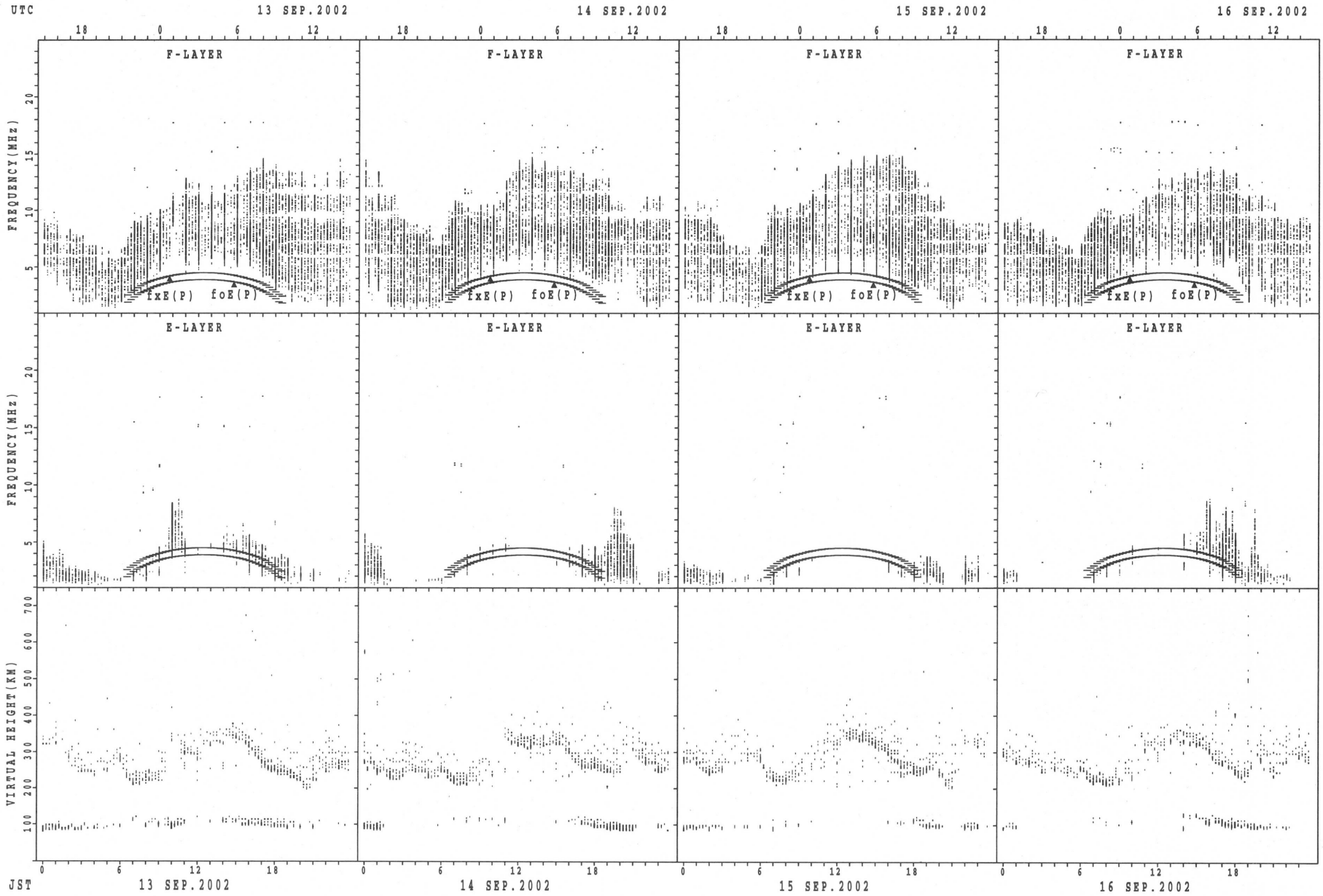
SUMMARY PLOTS AT Okinawa



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

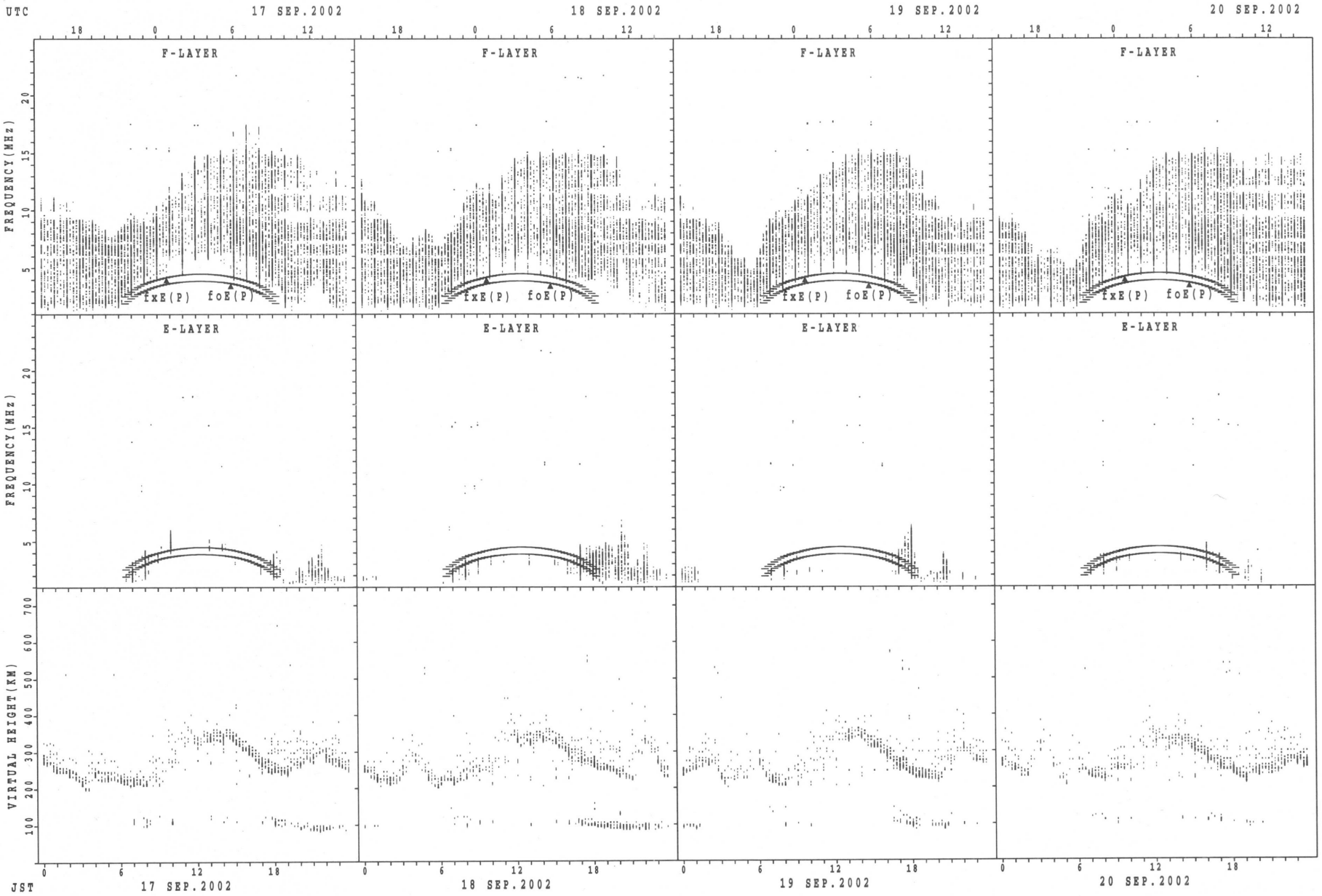

SUMMARY PLOTS AT Okinawa
UTC
JST
9 SEP.2002
10 SEP.2002
11 SEP.2002
12 SEP.2002
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



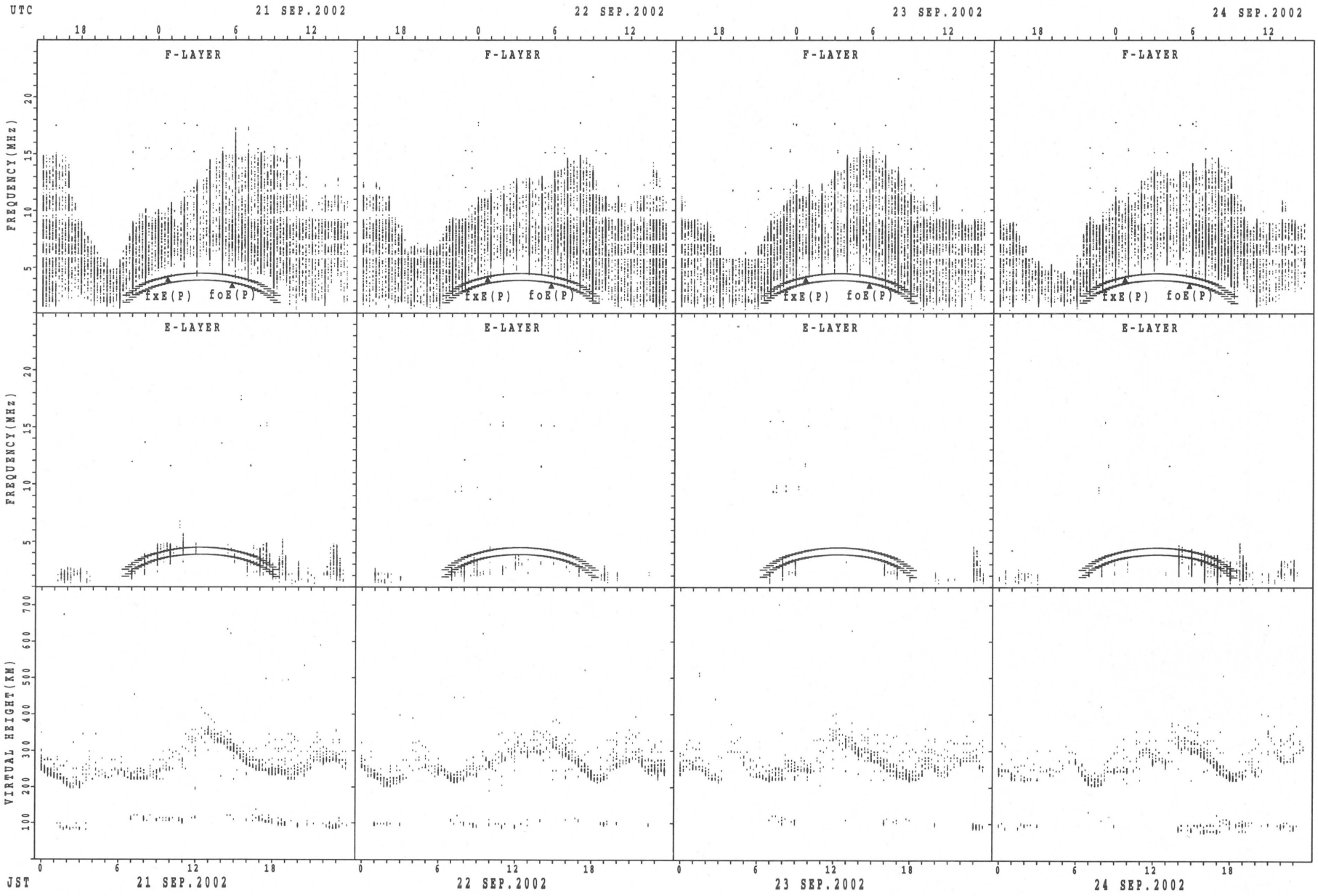
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



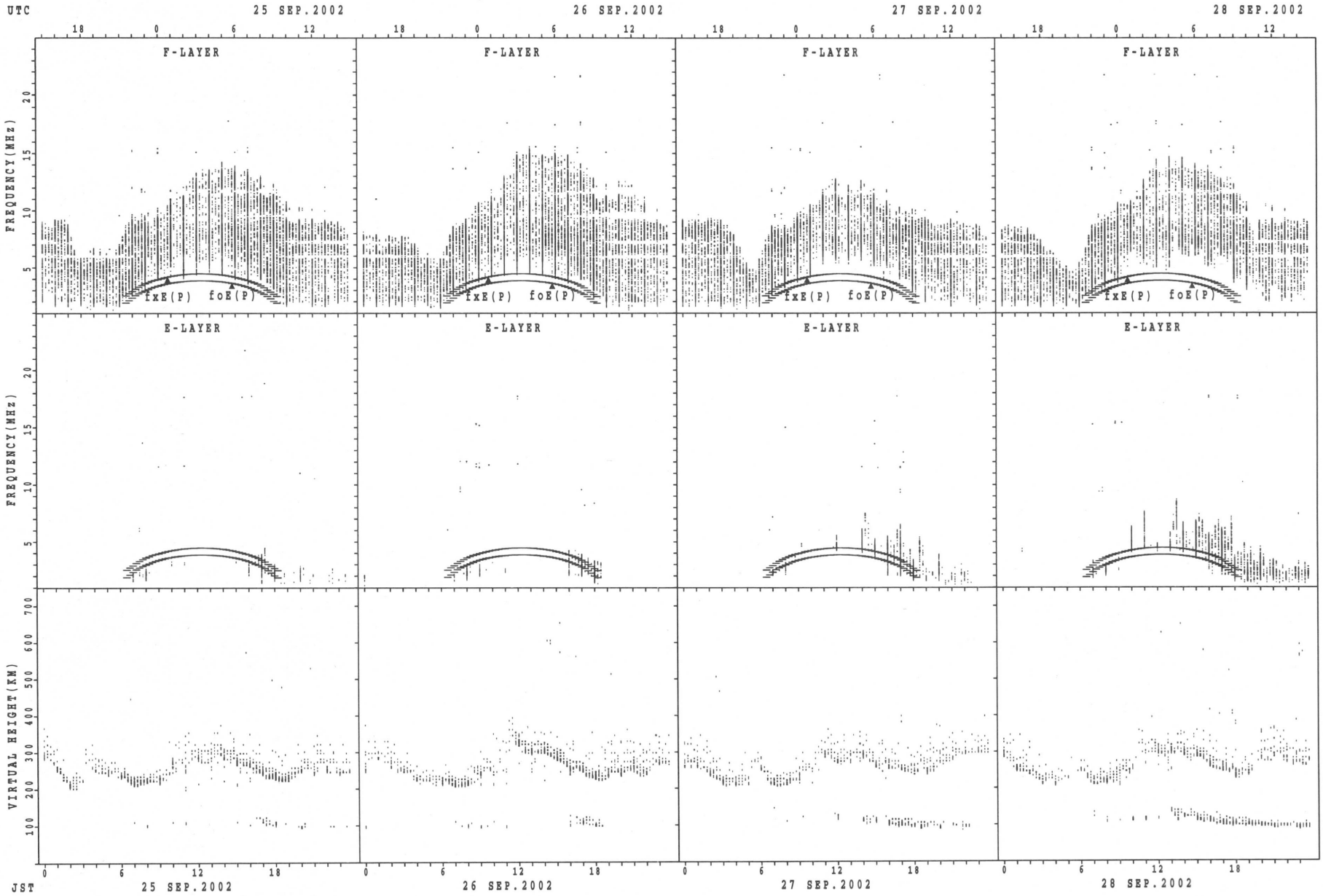
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



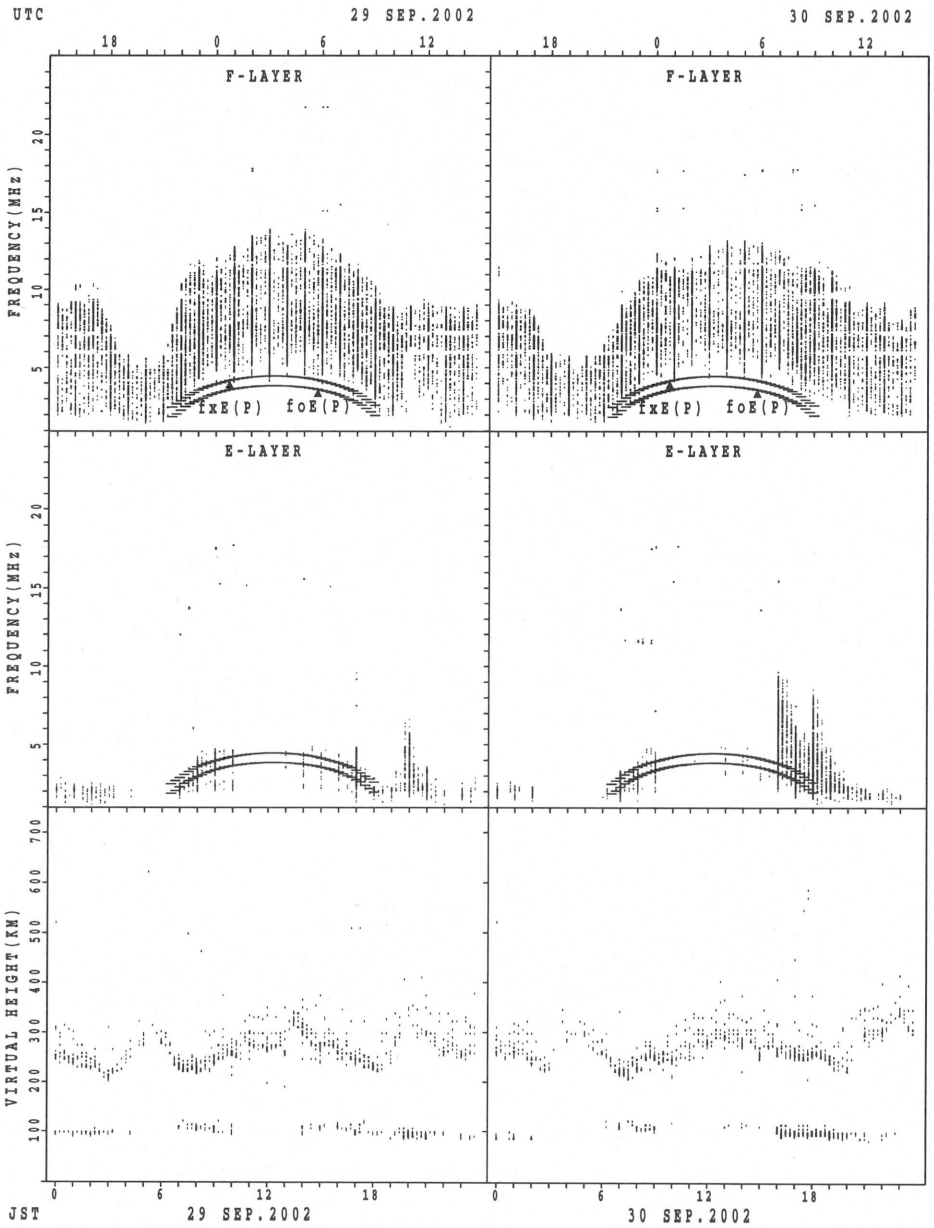
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

SEP.2002 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	2	1				20	25	24	4					7	24	24	26	24	15	11	7	2	3
MED	354	340	352				255	256	246	238					248	257	265	264	263	276	304	320	336	342
U Q	464	342	176				284	280	275	246					270	277	279	278	269	304	312	334	352	352
L Q	346	338	176				246	240	238	234					246	250	246	248	252	264	278	302	320	336

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	10	9	8	11	12	13	12	12	14	7	6	3	5	4	6	15	22	20	21	19	18	12	9
MED	92	92	97	99	107	101	103	105	103	107	107	105	105	99	102	106	113	103	103	101	101	97	95	97
U Q	101	97	111	105	117	108	108	107	110	111	109	115	107	105	112	109	123	111	106	105	105	101	100	101
L Q	87	89	92	95	97	97	97	100	97	97	103	95	99	92	97	103	103	95	97	96	95	91	91	93

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	4	4					27	27	28	3						27	27	27	30	16	3	2	4	2
MED	342	320					254	232	238	246						286	264	256	256	271	344	332	355	356
U Q	354	334					272	250	263	250						308	294	270	264	289	428	340	386	392
L Q	334	301					236	224	232	242						262	248	238	244	256	270	324	335	320

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	8	6	7	7	1	1	5	4	7	11	10	4	8	6	5	9	17	23	22	16	17	14	12	11
MED	96	94	95	95	89	91	137	106	113	109	113	105	102	106	107	113	107	107	102	97	99	97	95	95
U Q	103	97	99	97	44	45	150	112	119	113	115	108	115	113	120	117	113	111	107	102	103	99	98	97
L Q	90	91	91	93	44	45	119	104	111	97	107	103	95	101	96	101	103	101	97	95	95	95	95	89

h'F STATION Yamagawa LAT. 31°12.1'N LON. 130°37.1'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	8	4	1			7	26	25	27						12	28	28	28	26	12	9	7	11
MED	312	297	307	328			266	230	236	246						278	285	263	256	260	320	346	330	338
U Q	348	334	309	164			336	240	245	266						291	294	276	264	280	355	369	342	374
L Q	306	281	279	164			264	226	223	238						267	270	253	243	254	272	317	294	336

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	9	6	3	4	3	4	5	6	7	5	5	6	5	7	8	10	20	18	25	22	17	15	17
MED	96	95	97	97	92	93	132	119	117	121	115	107	111	111	111	113	110	106	100	99	99	95	95	91
U Q	97	96	113	107	93	155	137	153	121	137	121	121	113	130	125	119	113	113	103	103	101	98	95	97
L Q	93	92	95	93	90	89	117	114	113	107	96	102	111	100	97	111	105	103	97	96	97	94	91	89

MONTHLY MEDIANS OF h'F AND h'Es

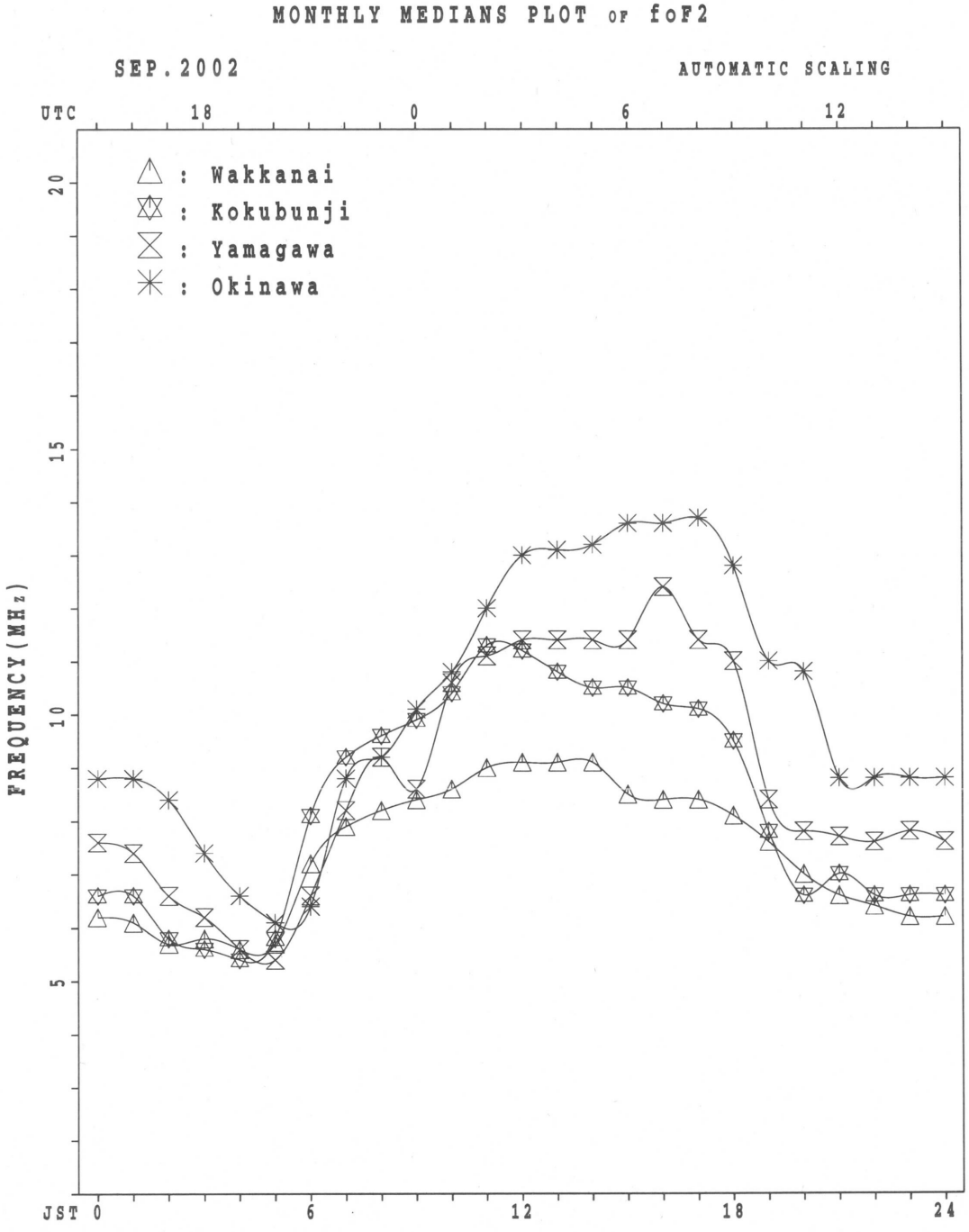
SEP.2002 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	24	17	9	6	7	27	27	29						8	30	28	29	27	26	27	28	28
MED	298	280	270	278	284	274	284	228	234	246						274	293	264	252	254	269	304	300	295
U Q	315	304	296	293	315	294	308	234	246	254						285	300	272	262	262	290	326	325	317
L Q	269	258	250	253	263	270	248	222	226	238						266	266	256	238	246	256	280	282	279

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	9	9	6	1		2	8	9	12	11	11	6	8	14	14	18	23	24	19	20	13	11	11
MED	95	95	93	96	95		120	120	111	113	111	113	118	117	112	111	111	107	103	99	97	95	95	97
U Q	97	96	96	99	47		127	128	114	117	115	117	121	132	115	113	113	115	105	101	99	98	97	97
L Q	90	91	91	91	47		113	113	108	106	105	105	111	107	107	107	103	103	99	97	95	91	95	93


MONTHLY MEDIANS PLOT OF foF2
SEP. 2002
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

SEP.2002 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 79	X 77	X 78	X 77	X 73															X 89	X 83	X 82	X 81	X 77
2	X 78	X 74	X 70	O X 71	X 73															X 89	X 85	X 88	X 86	X 85
3	X 86	X 88	X 74	X 70	X 69															X 107	X 100	X 92	X 87	X 84
4	X 81	X 76	X 74	X 71	X 70	X 69													X 119	X 93	X 84	X 86	X 80	X 81
5	X 75	X 68	X 68	X 67	X 60	X 59														X 73	X 65	X 66	X 65	X 64
6	X 63	X 59	X 57	X 58	X 56															X 76	X 72	X 70	X 71	X 69
7	X 66	X 63	X 62	X 61	X 57															X 84	X 78	X 79	X 81	X 80
8	X 75	X 70	X 68	X 59	X 55															X 83	X 77	X 75	X 73	O X 73
9	X 74	X 73	X 73	X 65	63															X 86	X 86	X 88	O X 89	X 87
10	X 90	X 84	X 77	X 75	X 74															X 92	X 89	X 85	X 85	X 85
11	X 77	X 80	X 76	X 70	X 72														X 98	X 87	X 79	X 79	X 74	X 77
12	X 62	X 60	X 56	X 57	X 52														X 92	X 73	X 67	X 69	X 64	X 62
13	X 63	X 60	X 66	X 58	X 53														X 90	X 88	X 75	X 73	X 70	X 66
14	X 66	X 65	X 62	X 60	X 61														X 106	X 83	X 75	X 78	X 78	X 77
15	X 75	X 76	X 74	X 70	X 68														X 103	X 86	X 80	X 73	X 74	X 76
16	X 75	X 72	X 72	X 68	X 68														X 100	X 90	X 82	X 78	X 78	X 80
17	X 81	X 80	X 78	X 76	X 72															X 94	X 81	X 80	X 80	X 83
18	X 83	X 79	X 73	X 66	X 69	X 74													X 108	X 89	X 81	X 79	X 79	X 80
19	X 70	X 69	X 67	X 70	X 64	X 63								C	C	C	C	C	X 106	X 90	X 86	X 82	X 85	X 78
20	X 75	X O 73	X 68	X 68	X 69	X 74				C							C	C	X 111	X 88	X 77	X 78	X 81	X 81
21	X 80	X 78	X 74	X 67	X 59	X 62													X 108	X 85	X 74	X 75	X 76	X 75
22	X 75	X 74	X 67	X 64	X 64	X 65													X 114	X 86	X 73	X 77	X 82	X 83
23	X 79	X 76	X 73	X 67	X 65	X 71													X 92	X 75	X 78	X 76	X 77	X 76
24	X 77	X 74	X 68	X 65	X 61	X 58													X 110	X 92	X 76	X 75	X 77	X 72
25	X 74	X 75	X 68	X 67	X 65	X 66													X 95	X 78	X 78	X 74	X 71	X 70
26	X 68	X 69	X 65	X 65	X 66	X 67													X 105	X 79	X 77	X 74	X 73	X 70
27	X 70	X 72	X 73	X 68	X 62	X 62													X 101	X 86	X 84	X 83	X 82	X 82
28	X 82	X 85	X 80	X 73	X 73	X 72													X 96	X 75	X 73	X 75	X 76	X 75
29	X 74	X 75	X 74	X 67	X 63	X 62													X 95	X 80	X 76	X 78	X 79	X 76
30	X 74	X 72	X 69	X 64	X 64	X 66													X 103	X 93	X 74	X 78	X 75	X 84
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	15													20	30	30	30	30	30
MED	X 75	X 74	X 71	X 67	X 64	X 66													X 103	X 86	X 78	X 78	X 78	X 77
U Q	X 79	X 77	X 74	X 70	X 69	X 71													X 108	X 90	X 83	X 82	X 81	X 82
L Q	X 70	X 69	X 67	X 64	X 61	X 62													X 96	X 80	X 75	X 75	X 74	X 73

IONOSPHERIC DATA STATION Kokubunji

SEP. 2002 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	73	71	72	S 71	67	70	83	88	R 87	90	105	114	121	109	99	105	101	87	88	83	77	76	75	71
2	72	S 68	64	S 65	67	64	70	76	85	84	98	100	110	114	110	111	104	104	92	82	79	82	80	79
3	80	82	68	64	63	68	91	83	88	91	97	107	111	101	100	107	110	106	109	101	93	86	81	78
4	75	70	68	S 65	64	63	87	106	90	87	96	98	108	111	107	107	112	118	112	87	S 78	80	J S 74	75
5	64	62	62	61	54	53	66	66	S 53	S 55	S	60	66	68	73	74	78	80	78	67	59	60	59	58
6	S 57	53	51	52	50	S 48	65	72	67	67	65	65	68	69	72	74	74	80	77	70	66	64	65	63
7	60	57	56	55	51	52	74	83	95	86	85	92	92	96	95	98	94	83	84	78	72	73	75	74
8	69	S 64	S 62	S 53	49	46	80	S 67	86	106	S 111	117	97	81	90	85	88	86	86	77	70	69	67	S 67
9	68	67	S 67	59	F	S 58	78	90	93	90	96	95	94	100	98	97	96	91	89	80	80	82	83	81
10	84	78	70	69	68	66	88	114	125	108	104	110	109	106	99	104	100	98	96	86	83	79	78	79
11	71	74	70	64	66	69	90	91	92	81	84	90	100	99	96	98	93	92	92	81	S 73	73	68	71
12	56	54	49	51	46	51	68	V 76	74	71	76	83	89	92	83	82	87	88	86	67	61	63	58	56
13	57	54	60	52	47	47	71	84	82	S 86	80	77	78	82	80	79	83	86	84	82	69	67	64	60
14	60	59	56	54	55	54	81	100	97	97	97	102	107	102	101	98	96	94	100	78	69	72	72	71
15	69	70	S 67	64	62	62	81	S 100	94	94	103	110	116	114	111	107	103	100	97	80	74	67	67	S 70
16	69	66	66	62	62	62	81	90	100	99	92	98	102	102	103	104	104	98	94	84	76	72	72	74
17	75	74	72	70	66	68	94	101	102	105	113	126	123	122	121	118	112	106	108	88	75	74	S 74	77
18	77	73	66	60	63	68	92	92	102	110	123	124	126	122	118	112	103	102	102	83	74	73	73	74
19	S 64	63	61	64	58	57	84	102	104	97	100	116	122	C	C	C	C	C	99	84	80	76	79	S 72
20	S 69	S 67	S 62	62	S 63	68	81	93	97	C	112	114	114	122	112	112	C	C	105	82	70	72	S 73	75
21	74	72	68	61	53	56	82	100	87	97	103	102	105	110	109	115	121	117	103	79	68	69	70	69
22	69	68	61	58	58	59	84	108	104	106	115	124	124	124	119	120	118	118	108	80	67	71	76	77
23	73	70	67	61	60	65	88	89	99	113	114	124	128	121	116	117	116	112	86	68	72	70	71	70
24	71	68	62	59	55	52	71	92	101	104	116	122	128	121	117	106	105	108	104	86	70	69	70	66
25	68	69	62	61	59	60	89	98	99	112	114	118	119	117	114	109	110	104	89	72	72	68	65	63
26	62	62	59	59	60	61	86	89	104	110	110	114	122	114	114	113	113	107	99	73	71	68	67	64
27	64	66	67	62	56	56	79	82	96	99	106	118	108	103	110	104	94	100	95	80	78	77	76	76
28	76	79	74	67	66	66	82	87	98	105	112	121	117	111	113	105	101	102	90	68	S 67	69	70	69
29	68	69	68	61	57	56	77	101	111	114	113	120	123	108	105	103	101	98	89	74	70	72	S 73	70
30	68	66	63	58	58	60	76	98	117	128	127	114	117	104	104	114	113	104	97	87	68	72	69	78
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	29	29	30	30	29	29	29	28	28	30	30	30	30	30	30
MED	69	68	65	61	59	60	81	90	96	97	104	112	110	108	105	105	102	100	94	80	72	72	72	71
U Q	73	71	68	64	64	66	87	100	102	107	113	118	122	116	114	112	111	106	102	84	77	76	75	76
L Q	64	63	61	58	54	54	76	83	87	86	96	98	100	100	97	98	94	90	88	74	69	69	67	67

SEP. 2002 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L	L	L	L	L 580	L 556	L 556	L 576	L	L							
2									L	L 684	L 564	L	L 552	L	L	L	A	L						
3									L		L	L	L	L	L	L	A	A						
4								L			L	L	L	L	L	L	L 520							
5							L 364	L 420	U L 508	U L 504	U L 544	L 520	544	L 584	L 532	L	L	L						
6							L	L	L	L 512	552	L 556	L 548	L 564	L 528	L 532	L	L						
7									L	L	L 584	L 592	L	L 568	L 608	L								
8						L				L 572	L 504	L	L	U L 640	L 580	L	L							
9										L	L	L	A	L	L	L	L							
10									L	L	L	L	L	L	L	L								
11							L	L	L	L	L 648	L	L	L	L	L								
12									L	L 584	L 592	L	L 616	L										
13									L	L 576	L 556	L	A	L	L	L								
14									L	L	L 580	L	L	L	L	L								
15									L	L	L	L	L	L	L	L	L							
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L		L	L	L	L							
19										L		L	L	C	C	C	C	C						
20									L	C	L	L	L	L	L	L	C	C						
21										L	L	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	L							
23											L	L	L	L	L	L								
24									L		L	L		L	L		L							
25										L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L								
27									L	L	L	L	L	L	L	L								
28									L	L	L	L	L	L	L									
29								L	L		L	L	L	L	L	L								
30									L	L			L 572		L	L								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	1	1	6	9	4	7	6	5	1	1							
MED							L 364	L 420	U L 508	L 574	L 564	L 568	L 556	L 568	L 576	L 532	L 520							
U Q										L 584	L 588	L 586	L 616	L 584	L 594									
L Q										L 512	L 548	538	548	L 564	L 530									

SEP.2002 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	A 300	R	R	R	R	R	R	R	U R 348	U R 332	256	B					
2							B	U R 252 U R 316	U R 340	R	R	R	R	A	U R 368	A	308	256	B					
3							B	228 300	344	B	B	A	B	U A 380	A	A	A	A	B					
4							B	288	U R 320	B	U A 388	B	B	R	U R 356	R	R	U R 252						
5							U A 188	U R 280	332	A	A	B	B	A	R	U A 356	A	240	B					
6							B	U R 232 300	U A 348	A	A	A	U A 412	U A 392	U R 384	A	A	A	B					
7							B	U R 228 U R 292	R	A	A	R	U R 408	U A 388	U A 360	A	A	A	B					
8							B	232 A	U A 344	U A 360	A	B	B	U R 416	U R 376	352	A	240	B					
9							B	U R 244 A	A	A	A	A	A	A	U R 364	A	A	A	B					
10							B	224 296	340	364	R	R	R	U R 388	U R 380	U R 348	U A 312	244	B					
11							B	244 A	U A 348	A	A	R	A	A	R 368	A	316	U R 256						
12							B	212 288	A	A	A	U R 400	U R 404	R	U R 372	U R 344	U A 304	228						
13							B	220 U R 288	U A 308	U R 368	A	B	A	R	U A 364	A	304	A						
14							B	U R 232 U A 272	R	R	B	B	B	B	R	U R 332	304	U A 216						
15							B	208 292	A	A	A	B	R	U R 384	R	U R 316	U R 292	236						
16							B	U R 228 U R 296	U R 344	U R 368	R	R	R	B	U R 376	344	304	236						
17							B	228 292	R	U A 360	A	R	A	A	A	A	A	A	B					
18								216 U R 296	U R 336	R	A	B	A	R	R	A	U A 288	212						
19								216 U R 288	U R 328	U R 384	A	A	A	C	C	C	C	C						
20								200 U A 284	U R 344	C	U A 376	U R 388	R	U R 392	A	U R 340	C	C						
21								208 A	A	A	A	A	A	R	R	U R 328	288	212						
22								220 U R 292	U R 336	R	R	R	R	U R 360	R	U R 316	U R 272	188						
23								220 292	340	U R 376	A	A	B	B	R	324	280	U A 196						
24							U R 212	U R 276	A	R	R	U R 372	R	R	U R 336	U R 316	284	196						
25								224 272	316	A	B	R	R	R	A	U A 320	276	A						
26								196 U R 272	U R 328	U R 344	R	R	R	U R 368	R	U R 312	276	B						
27								180 272	A	U A 348	A	B	B	B	U A 352	320	A	A						
28								172 272	320	U R 356	R	U A 392	U R 404	A	U A 356	324	280	A						
29							U A 180	260	U A 320	R	A	R	R	R	U A 348	U R 304	A	B						
30							U A 208	276	R	U R 344	R	B	U R 396	U R 368	R	U R 312	U R 272	A						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							28	26	19	11	2	4	5	10	15	19	18	16						
MED							220	288	U 336	U R 360	U A 382	U R 390	U R 404	U R 386	U R 364	U R 324	290	236						
U Q							U R 228	296	U A 344	U R 368		U 396	U 410	U R 392	U R 376	U R 344	U 304	248						
L Q								276	U 320	U R 348		U R 380	U R 400	U R 368	U A 356	U R 316	280	212						

SEP.2002 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 52	J A 30	J A 38	32	31	27	30	34	G	G	43	G 27	G 26	G 34	G 36	G 32	J A 35	29	J A 26	J A 28	J A E B 50	15	22	18
2	23	19	E B 16	E B 15	E B 14	J A 18	G	G	G 26	G	G 25	G 26	G 37	44	G	46	J A 76	30	J A 27	J A J A 38	J A J A E B 20	23	16	J A 20
3	24	J A 28	J A 24	22	22	22	28	34	38	48	51	J A 59	46	46	44	J A 55	J A 48	J A 46	26	J A 22	55	J A 32	22	20
4	J A 20	J A 16	A E B 16	E B 14	E B 16	E B 16	E B 24	33	G	E B 43	43	44	43	G	G	G	G 27	G 20	J A 29	J A 22	A E B 16	J A 21	E B 16	J A 39
5	J A 24	22	J A 21	J A 25	E B 16	E B 21	25	G	37	J A 47	41	E B 44	E B 44	48	G	43	38	33	J A E B 33	E B 15	B J A J A 15	52	33	J A 25
6	28	J A 23	E B 21	E B 15	E B 16	23	G	32	38	43	48	46	45	43	G 32	40	35	J A 35	J A 35	J A J A 30	J A E B 19	E B 15	E B 14	17
7	E B 16	E B 14	E B 19	E B 16	E B 16	E B 16	G	G	G	48	42	G	47	44	J A 50	J A 43	36	J A 54	J A 30	A E B 15	B E B 15	J A 20	J A 23	20
8	E B 16	E B 15	E B 14	E B 13	E B 20	E B 15	27	35	38	J A 44	44	E B 44	E B 42	G	G	41	40	J A 37	36	J A E B 19	J A E B 14	J A E B 16	E B 15	E B 16
9	J A 48	24	E B 20	E B 16	E B 15	E B 18	G	50	41	J A 47	43	47	J A 83	48	G J A 35	J A 44	J A J A 42	J A 34	J A E B 32	J A 16	E B 21	E B 15	E B 15	E B 16
10	E B 14	E B 15	E B 14	E B 16	B J A 21	E B 16	26	32	39	40	G 34	G	G	G	G 30	40	37	29	E B 19	E B 16	E B E B 16	E B 15	E B 16	J A 41
11	E B 16	21	22	J A 22	E B 15	E B 16	G	38	42	46	46	G	J A 48	44	G 33	40	36	G	J A J A 32	J A 45	A J A 34	J A 53	J A 63	J A 51
12	J A J A 39	J A 43	J A 29	J A J A 21	A E B 27	14	26	33	38	38	39	G 38	G 36	G 33	G	40	47	36	J A 21	J A 30	J A J A 48	J A 39	J A 84	J A 54
13	J A J A 21	J A 20	J A 20	J A 18	20	20	G	G	35	G J A 34	E B 46	44	52	G 36	41	38	37	J A 41	J A 39	J A 28	J A J A 27	J A 64	J A 35	J A 26
14	J A J A 46	J A 53	J A 41	J A 33	J A 26	J A 23	J A 25	30	G 28	G E B 28	E B 43	E B 43	E B 43	E B 41	G	G	38	34	18	J A J A 20	J A 27	28	30	J A 32
15	J A 30	J A 27	J A 18	J A 21	A E B 15	E B 14	G	G 25	34	J A 41	J A 48	E B 42	G	G	G	G	G 26	G	E B 16	E B 15	E B E B 16	E B 16	E B 16	E B 15
16	E B 15	E B 16	E B 15	E B 14	E B 16	20	G 19	G 27	G 32	G 34	G	G	G E B 31	44	G	G 24	35	30	21	J A E B 16	E B 15	E B 15	15	E B 16
17	E B 16	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	G	44	43	G J A 54	48	40	36	35	67	42	E B J A 16	J A 17	J A 22	J A 22	J A 24	
18	J A 19	E B 15	E B 14	E B 16	E B 15	E B 15	24	G	G	G 29	44	E B 44	49	G 27	G	35	33	35	J A 28	J A J A 22	A 22	20	E B 16	E B 15
19	E B 16	E B 15	E B 16	E B 16	E B 15	E B 15	G	G	G	G 27	48	J A 52	44	C	C	C	C	C	J A 24	J A J A 30	A J A 29	J A 38	J A 25	E B 16
20	E B 16	20	E B 16	E B 15	E B 15	E B 16	24	32	G 29	C	43	G	G	G	40	G	C	C	19	J A J A 32	J A 53	J A 52	J A 25	E B 16
21	E B 15	19	E B 15	B J A 24	A E B 14	E B 15	25	J A 37	38	J A 42	44	44	40	G	G 29	G	35	J A 38	J A E B 50	E B 15	B J A 15	J A 19	J A 22	J A 20
22	J A E B 25	E B 15	E B 15	E B 16	E B 15	E B 15	G	G	G 30	G 34	G 32	G 29	G	G 30	G 27	G	G	23	E B 15	E B J A 15	17	E B 15	E B 16	E B 15
23	E B E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	G	G	G	G	J A 53	41	E B 43	E B 42	G	G	32	26	E B 15	J A J A 26	A J A 35	J A 48	J A 24	J A 18
24	E B 15	E B 17	E B 15	E B 16	E B 16	E B 16	G	G	35	G 31	G 32	G 27	G 28	G 28	G	G 28	32	26	E B 15	E B 15	B J A 17	E B 14	J A 23	19
25	E B 16	E B 15	E B 16	E B 15	E B 15	E B 14	G	G	34	43	E B 41	G 26	G 27	G	42	37	G	J A 34	E B 16	E B 16	B J A 28	J A 20	E B 15	E B 16
26	E B E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	G	G	G 31	J A 45	G 30	G 33	G	G	G	G 28	G	E B 23	E B E B 15	E B 15	B J A 14	E B 19	J A 15	E B 16
27	E B 16	E B 15	E B 15	E B 15	E B 15	E B 14	G	G 21	36	38	40	E B 42	E B 43	E B 42	J A 51	38	J A 31	J A J A 29	J A 27	J A J A 40	J A 30	J A 21	J A E B 18	15
28	E B 16	18	E B 15	20	18	E B 16	24	G 20	36	G 30	G 34	43	G J A 36	46	40	43	J A J A 53	J A 54	J A J A 62	45	58	J A 53	J A 41	J A 49
29	J A 26	21	E B 15	E B 16	E B 15	E B 15	23	29	J A 45	G J A 26	45	G 26	G 27	G 27	39	G 23	G J A J A 38	27	J A 24	J A J A 42	A J A 44	E B 17	J A 21	J A 28
30	19	E B E B 16	B J A 16	E B 20	A E B 15	E B 16	B J A 23	G 25	G 30	G 33	G E B 36	43	G 32	G 32	G 29	G 25	G J A 26	J A 34	J A 28	19	E B 15	J A 20	J A 28	J A 29
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	30	30	30	29	29	29	28	28	30	30	30	30	30	30
MED	18	18	E B 16	E B 16	E B 16	E B 16	G	G	34	38	43	E G 42	E G 41	G	G	36	35	34	J A J A 26	A J A 21	A J A 20	J A 20	22	20
U Q	J A 25	J A 22	J A 20	A J A 21	18	18	25	33	38	44	45	44	45	44	40	40	J A J 38	A J 36	A J A 32	J A 30	A J A 34	J A 38	J A 25	J A 28
L Q	E B 16	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	G 34	G	G 38	G 36	G 35	G 36	G	G 32	26	E B 19	E B 16	B E B 16	E B 16	E B 16	E B 16

SEP.2002 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	29	34	29	31	25	28	33	G	G	U Y 43	G 24	G 26	G 34	G 36	G 32	G 31	26	24	23	32	E B 15	E B 15	16
2	20	E B 15	E B 16	E B 15	E B 14	E B 15	G	G	G 26	G	G 25	U Y 26	G 32	43	G	43	61	28	24	33	E B 15	E B 14	E B 16	17
3	19	26	21	18	E B 16	E B 15	26	33	36	46	50	56	46	44	43	42	46	42	24	18	50	26	E B 16	E B 15
4	E B 16	E B 15	E B 16	E B 14	E B 16	E B 16	E B 24	33	G	E B 43	42	43	42	G	G	G	G 27	G 18	26	20	E B 16	17	E B 16	23
5	20	20	20	21	E B 16	E B 21	24	G	36	43	40	E B 44	E B 44	48	G	41	36	30	29	E B 15	E B 15	23	19	21
6	25	16	E B 21	E B 15	E B 16	E B 20	G	31	36	42	47	44	44	42	G 32	38	34	31	24	19	E B 15	E B 15	E B 14	E B 17
7	E B 16	E B 14	E B 19	E B 16	E B 16	E B 16	G	G	G	44	41	G	46	42	48	38	34	52	25	E B 15	E B 15	E B 16	21	E B 16
8	E B 16	E B 15	E B 14	E B 13	E B 20	E B 15	25	24	36	40	42	E B 44	E B 42	G	G	40	37	35	32	E B 14	E B 14	E B 14	E B 15	E B 16
9	E B 14	20	E B 20	E B 16	E B 15	E B 18	G	45	38	45	42	45	68	44	G 35	41	36	31	24	E B 16	E B 15	E B 15	E B 15	E B 16
10	E B 14	E B 15	E B 14	E B 16	E B 16	E B 16	24	31	37	40	G 34	G	G	G	G 30	38	36	27	E B 19	E B 16	E B 16	E B 15	E B 16	36
11	E B 16	E B 15	E B 15	E B 16	E B 15	E B 16	G	34	40	44	43	G	46	42	G 33	37	34	G	24	36	20	28	35	32
12	32	31	23	18	E B 15	E B 14	26	32	37	U Y 38	39	G 38	G 36	U Y 33	G	38	46	35	18	24	35	28	49	30
13	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	34	G 34	42	E B 44	47	G 36	40	36	36	35	36	24	23	41	21	E B 16
14	31	40	32	28	20	16	G 16	29	G 28	U Y 28	E B 43	E B 43	E B 43	E B 41	G	G	36	32	17	16	19	18	24	19
15	19	E B 16	16	E B 15	E B 15	E B 14	G	G U Y 25	34	39	46	E B 42	G	G	G	G	G 26	G	E B 16	E B 15	E B 16	E B 16	E B 16	E B 15
16	E B 15	E B 16	E B 15	E B 14	E B 16	E B 16	G 19	G U Y 26	32	G 34	G	G	U Y 31	E B 44	G	G 24	33	29	20	E B 15	E B 15	E B 15	E B 15	E B 16
17	E B 16	E B 15	E B 15	E B 15	E B 15	E B 16	G	G	G	41	42	G	45	46	U Y 40	U Y 36	35	66	42	E B 16	E B 14	E B 16	E B 16	20
18	E B 15	E B 15	E B 14	E B 16	E B 15	E B 15	23	G	G	G 29	43	E B 44	45	U Y 27	G	35	32	34	25	18	19	E B 16	E B 16	E B 15
19	E B 16	E B 15	E B 16	E B 16	E B 15	E B 15	G	G	G	U Y 27	47	48	44	C	C	C	C	C	20	29	E B 15	28	22	E B 16
20	E B 16	E B 16	E B 16	E B 15	E B 15	E B 16	22	31	G 29	C	42	G	G	G	39	G	C	C	16	28	32	29	E B 16	E B 16
21	E B 15	E B 15	E B 15	E B 16	E B 14	E B 15	22	30	35	39	44	42	40	G	U Y 29	G	33	33	36	E B 15	E B 15	E B 16	17	E B 15
22	E B 15	E B 15	E B 15	E B 16	E B 15	E B 15	G	G	G 30	U Y 34	G 32	G 29	G	G 30	G 27	G	G	22	E B 15	E B 15	E B 16	E B 15	E B 16	E B 15
23	E B 15	E B 15	E B 15	E B 14	E B 14	E B 15	G	G	G	G	42	41	E B 43	E B 42	G	G	31	25	E B 15	23	E B 15	29	E B 15	E B 15
24	E B 15	E B 17	E B 15	E B 16	E B 16	E B 16	G	G	35	G 31	G 32	U Y 27	G 28	G 28	G	G 28	31	25	E B 15	E B 15	E B 15	E B 14	18	E B 15
25	E B 16	E B 15	E B 16	E B 15	E B 15	E B 14	G	G	34	40	E B 41	U Y 26	U Y 27	G	40	36	G	23	E B 16	E B 16	17	17	E B 15	E B 16
26	E B 16	E B 16	E B 15	E B 16	E B 16	E B 15	G	G	G 31	36	G 30	G 33	G	G	G	G 28	G	21	E B 15	E B 15	E B 14	E B 15	E B 15	E B 16
27	E B 16	E B 15	E B 15	E B 15	E B 14	E B 15	G	G 21	35	36	39	E B 42	E B 43	E B 42	45	36	30	22	19	20	E B 16	E B 16	E B 15	E B 15
28	E B 16	E B 15	E B 15	E B 16	E B 15	E B 16	22	G 20	35	G U Y 30	34	42	U Y 36	43	38	40	48	46	51	28	20	23	19	22
29	19	19	E B 15	E B 16	E B 15	E B 15	22	28	35	G 26	43	U Y 26	U Y 27	U Y 27	37	G 21	34	24	17	23	39	E B 17	18	16
30	E B 15	E B 16	E B 16	E B 15	E B 15	E B 16	G 20	G 23	G 23	G U Y 29	36	E B 43	G 32	G 31	G 29	G 25	G 24	25	17	E 15	E B 15	17	22	E B 14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	30	30	30	29	29	29	28	28	30	30	30	30	30	30
MED	E B 16	E B 15	E B 16	E B 16	E B 15	E B 16	G	G	34	36	42	E G 42	E G 41	G	G	36	34	28	22	17	E B 16	E B 16	E B 16	E B 16
U Q	19	17	19	16	E B 16	E B 16	23	31	36	42	43	44	44	42	38	38	36	34	25	23	20	23	19	19
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	G	G	G	G 32	G 36	38	G 36	G 35	G 36	G	G	24	E B 17	E B 15	E B 15	E B 15	E B 15	E B 15

SEP.2002 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

SEP.2002 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	262	268	275	S 276	282	283	307	326	R 311	296	275	298	305	290	294	300	315	314	305	293	291	274	280	268
2	269	S 278	272	S 273	289	335	337	332	322	289	304	294	291	291	286	306	300	318	318	294	274	276	266	269
3	269	309	296	279	290	302	349	352	326	315	308	302	303	293	289	296	306	304	316	305	304	287	291	282
4	278	273	276	S 277	277	275	322	344	333	306	298	290	285	286	269	266	276	299	312	292	S 252	268	S 254	272
5	302	261	263	261	239	235	295	299	S 276	S 267	S	270	291	286	308	303	311	323	321	305	271	265	267	271
6	S 265	255	264	267	271	S 271	298	325	308	310	276	278	285	283	304	302	297	313	318	301	278	268	271	277
7	276	269	271	288	277	272	328	320	318	322	290	284	279	288	288	293	306	303	305	288	273	265	274	284
8	283	S 269	S 269	S 271	247	241	320	S 313	277	283	S 277	297	294	262	292	293	308	305	302	299	277	269	263	S 267
9	263	267	S 275	285	F	S 282	312	325	321	305	301	281	280	278	285	292	299	302	303	292	269	273	276	278
10	288	294	277	275	278	266	288	318	326	320	291	290	287	290	276	288	296	301	291	289	277	268	261	260
11	264	267	275	246	245	251	294	S 321	313	316	289	296	305	300	297	307	301	310	305	293	S 268	282	262	297
12	271	254	246	251	227	257	297	V 289	294	278	259	289	287	294	294	296	292	319	312	296	268	274	254	249
13	251	243	277	284	266	283	324	330	299	S 308	308	297	287	292	291	283	293	297	300	306	281	265	275	264
14	257	267	267	257	272	260	321	329	317	306	306	289	291	283	289	291	293	297	311	318	260	263	266	269
15	273	282	S 264	269	271	262	312	S 331	329	306	295	288	286	285	284	288	299	300	307	305	285	276	262	S 276
16	263	266	267	270	272	283	320	336	316	317	293	290	283	292	285	291	301	309	307	298	282	270	259	262
17	270	276	279	283	288	290	331	331	318	312	282	288	283	278	281	286	288	298	309	312	275	261	S 261	264
18	286	293	303	259	268	299	344	329	314	287	292	286	281	279	282	293	292	303	307	301	278	262	259	278
19	S 256	267	258	280	292	277	338	333	330	322	285	285	286	C	C	C	C	C	313	302	283	262	S 279	S 281
20	S 274	S 283	S 256	266	S 272	291	331	333	321	C	305	296	289	291	287	298	C	C	315	316	275	273	S 278	285
21	290	294	302	319	286	287	346	360	343	314	322	304	294	296	290	296	313	325	328	304	270	272	266	284
22	291	302	296	271	276	273	323	334	329	302	303	298	296	296	290	297	304	318	324	323	266	277	296	290
23	291	282	290	277	268	294	343	346	314	322	295	294	293	292	294	302	312	337	315	281	285	283	283	289
24	291	296	301	299	302	291	336	343	328	313	305	300	303	300	301	303	308	318	324	333	289	279	292	271
25	280	293	285	288	283	286	341	346	337	315	307	298	297	298	306	306	318	327	318	308	293	297	292	284
26	273	285	283	289	297	310	353	339	335	337	307	295	302	295	297	309	315	321	331	294	291	287	288	278
27	283	285	302	309	285	290	356	355	338	322	312	311	307	305	307	318	310	314	319	295	281	278	271	266
28	271	292	297	292	289	293	344	347	339	324	304	304	300	295	298	307	306	319	329	290	S 277	272	277	281
29	282	291	301	301	294	284	324	341	341	326	312	309	314	304	307	313	329	326	313	296	278	281	S 294	288
30	292	285	285	279	276	279	303	321	318	324	317	304	312	306	298	314	320	312	313	317	264	282	255	277
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	29	29	30	30	29	29	29	28	28	30	30	30	30	30	30
MED	274	280	276	277	277	283	324	332	321	313	301	294	291	292	291	297	305	312	313	300	277	273	271	277
U Q	286	292	296	288	288	291	341	343	330	322	307	298	302	296	298	306	312	319	318	306	283	279	280	284
L Q	265	267	267	269	270	271	312	325	314	304	290	288	286	286	286	292	296	302	307	293	270	268	262	268

SEP.2002 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2002 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							L	L	L	L	L	L 341	L 359	L 364	L 345	L	L							
2									L	L 335	L 368	L	L 369	L	L	L	A	L						
3									L		L	L	L	L	L	L	A	A						
4								L		L	L	L	L 339	L 355	L	L	L 334							
5							L 336	L 360	U L 348	U L 351	U L 354	385	359	L 323	L 359	L	L	L						
6							L	L	L	L 357	363	L 346	L 369	L 345	L 366	L 337	L	L						
7									L	L	L 350	L 351	L	L 356	L 334	L								
8						L				L 361	L 389	L	L	U L 332	L 342	L	L							
9										L	L	L	A	L	L	L	L							
10									L	L	L	L	L	L	L	L								
11							L	L	L	L	L 350	L	L	L	L	L								
12									L	L 340	L 326	L	L 332	L										
13									L	L 349	L 359	L	A	L	L	L								
14									L	L	L 363	L	L	L	L	L								
15									L	L	L	L	L	L	L	L	L							
16										L	L	L	L	L	L	L								
17											L	L	L	L	L	L								
18											L	L		L	L	L	L							
19										L		L	L	C	C	C	C	C						
20									L	C	L	L	L	L	L	L	C	C						
21										L	L	L	L	L	L	L	L							
22										L	L	L	L	L	L	L	L							
23											L	L	L	L	L	L								
24									L		L	L		L	L		L							
25										L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L								
27									L	L	L	L	L	L	L	L								
28									L	L	L	L	L	L	L									
29								L	L		L	L	L	L	L	L								
30									L	L			L 342		L	L								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	1	1	6	9	4	7	6	5	1	1							
MED							L 336	L U 360	L 348	L 350	L 359	L 348	L 359	L 350	L 345	L 337	L 334							
U Q										L 357	L 366	368	L 369	L 356	L 362									
L Q										L 340	L 350	L 344	L 339	L 332	L 338									

SEP. 2002 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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							292	258	286	294	318	300	288	292	306	302	274							
2									280	356	290	324	310	294	298	292	278	254						
3									262		284	296	290	268	320	298	272	252						
4								226		270	288	310	306	312	336	320	316							
5							324	288	430	494	S	460	386	378	316	320	302	278						
6							332	284	302	302	420	402	394	362	332	324	314	276						
7									264	282	308	354	314	322	332	312								
8						440				322	304	288	310	366	344	298	298							
9										264	308	330	364	352	322	314	294							
10									256	248	316	310	322	324	352	312								
11							306	276	258	266	332	286	318	298	294	300								
12									330	380	432	352	330	328										
13									278	310	320	332	304	356	312	352								
14									258	278	286	314	314	312	318	316								
15									250	294	310	290	310	292	304	310	288							
16										274	316	302	318	320	326	312								
17											330	296	310	322	306	300								
18											304	304		338	316	300	300							
19										254		294	304	C	C	C	C	C						
20									272	C	280	292	300	298	320	280	C	C						
21										278	272	280	306	306	302	296	256							
22										280	276	282	280	280	294	280	264							
23											300	278	292	294	294	276								
24									248		276	286		290	282		282							
25										254	254	292	286	290	274	282	264							
26										242	258	276	288	280	292	282								
27									244	250	270	286	272	272	290	262								
28									236	262	298	296	290	278	290									
29								250	252		264	264	276	254	280	260								
30									248	252			268		308	272								
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						1	4	6	18	23	27	29	28	28	28	26	14	4						
MED						440	315	267	260	278	300	296	306	302	307	300	285	265						
U Q							328	284	280	302	316	319	316	326	321	312	300	277						
L Q							299	250	250	254	276	286	289	290	294	282	272	253						

SEP.2002 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2002 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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 A 306	E A 322	E A 316	E A 312	E A 306	E A 288	E A 248	E A 232	220	226	216	202	206	194	216	216	226	236	246	244	E A 264	E B 280	268	E A 272
2	E A 292	272	278	E B 288	260	220	210	224	210	216	204	202	212	218	216	E A 232	A	E A 236	228	260	252	268	E B 292	E A 282
3	E A 284	258	234	250	270	260	218	208	208	226	A	A	224	210	214	228	A	A	244	240	258	240	244	244
4	268	278	E B 300	E B 284	E B 288	E B 292	232	A	H 190	208	190	214	H 196	214	H 210	228	224	248	238	228	E B 296	E A 282	E B 292	E A 300
5	236	E A 312	E A 312	E A 282	E B 372	E B 406	262	220	224	222	226	214	220	E A 264	216	222	E A 234	240	242	236	246	E A 300	E A 312	E A 324
6	E A 318	E A 328	E B 332	E B 304	E B 294	E B 328	256	224	214	204	E A 234	218	220	220	212	212	216	E A 238	238	246	250	266	280	282
7	E B 292	E B 300	E B 290	E B 272	270	E B 302	248	222	E A 244	218	200	194	E A 246	204	E A 258	228	238	E A 276	252	230	244	E B 290	E A 284	264
8	268	E B 288	E B 288	E B 280	E B 378	E B 344	240	222	218	204	214	210	200	H 192	222	232	E A 238	E A 250	E A 260	238	244	258	272	E B 296
9	E B 306	E A 306	E B 290	258	278	E B 296	226	228	232	210	210	204	A	218	212	224	E A 234	E A 246	246	240	264	262	266	262
10	264	248	256	266	E B 282	310	236	224	214	204	198	202	206	216	214	214	234	E A 246	252	240	246	260	E B 292	E A 332
11	270	276	252	E B 302	E B 352	E B 326	254	E A 244	E A 232	230	206	200	218	220	228	214	228	248	244	E A 272	E A 272	E A 294	E A 318	E A 270
12	E A 308	E A 356	E A 384	E A 360	E B 382	E B 318	250	244	224	214	212	212	202	214	220	226	E A 266	248	236	234	E A 316	E A 292	E A 434	E A 362
13	E B 324	E B 342	274	242	262	E B 280	244	226	216	206	194	222	A	220	208	216	238	E A 254	E A 258	244	254	E A 320	E A 288	276
14	E A 344	E A 360	E A 340	E A 346	E A 304	E A 306	242	226	214	200	H 184	226	210	208	204	224	244	242	242	218	E A 266	E A 296	E A 316	E A 294
15	E A 290	E B 278	E A 290	E B 294	282	E B 306	232	226	212	210	E A 238	206	210	214	210	222	224	236	236	226	226	250	E B 294	E B 284
16	E B 290	E B 298	E B 294	E B 278	E B 286	262	220	220	204	200	200	208	224	210	216	230	230	240	238	236	234	252	E B 306	E B 296
17	E B 286	268	266	260	246	256	224	218	224	220	208	224	208	222	228	H 220	240	E A 284	E A 244	210	244	E B 290	E B 314	E A 312
18	274	242	232	E B 284	E B 306	254	218	220	222	214	204	H 204	228	250	226	218	228	E A 258	234	228	246	288	E B 292	254
19	E B 280	E B 280	E B 302	262	236	272	230	232	220	206	210	E A 230	198	C	C	C	C	C	228	246	236	E A 302	E A 282	260
20	E B 286	258	E B 308	E B 306	274	236	220	220	218	C	H 194	208	224	216	228	214	C	C	224	216	E A E A 276	288	278	266
21	260	260	240	224	238	258	222	216	208	196	218	208	208	224	228	220	A	236	224	206	240	270	E A 298	276
22	260	244	244	E B 286	272	278	232	222	212	204	H 190	214	212	228	218	212	222	230	224	206	266	E B 286	266	266
23	262	272	258	260	E B 286	258	210	216	220	H 204	202	202	230	222	222	218	222	228	206	E A 242	272	E A 294	276	274
24	268	250	230	230	242	240	218	216	206	214	218	220	H 220	214	210	220	222	236	222	214	230	252	262	274
25	276	256	248	252	272	276	220	214	214	204	216	202	204	210	228	216	230	226	212	220	252	240	250	258
26	E B 294	E B 278	252	264	254	236	214	208	204	194	210	208	206	216	212	230	234	228	212	202	236	246	256	274
27	E B 280	274	252	232	246	260	214	206	196	198	H 190	216	220	226	230	220	228	240	222	226	248	254	E B 288	E B 304
28	E B 296	268	246	232	248	236	210	208	202	H 184	214	232	222	E A 226	216	228	E A 246	E A 238	E A 240	232	E A 278	E A 292	E A 290	E A 288
29	272	272	246	224	232	260	238	208	212	222	202	H 190	210	206	198	212	238	230	220	232	E A 308	E B 278	266	256
30	264	268	262	240	E B 280	E B 286	226	212	208	204	228	214	188	218	218	228	232	234	222	216	248	260	E A 332	E B 298
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	29	30	29	29	29	28	29	29	29	25	27	30	30	30	30	30	30
MED	E 282	U 260	U 252	269	U 256	U 256	227	220	214	206	206	208	210	216	216	220	230	238	232	230	248	U 260	E 288	U 266
U Q	E 294	E A 300	E A 300	E B 288	E B 294	E B 306	242	226	220	217	216	217	221	222	227	228	238	E A 248	244	240	E A 266	E A 292	E A 298	E A 296
L Q	268	260	248	250	254	258	218	215	208	204	199	202	206	210	212	216	225	236	224	218	244	258	268	266

SEP. 2002 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2002 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	118	110	110	110	110	108	112	112	116	120	118	114	B					
2						B	124	114	114	112	110	112	112	114	110	116	116	116	B					
3						B	120	114	108	B	B	112	B	114	A	A	A	A	B					
4							B	110	110	B	114	B	B	120	110	112	118	114						
5							112	108	110	A	A	B	B	118	118	114	110	114	B					
6						B	120	114	116	112	A	112	110	112	116	118	110	A	B					
7						B	118	112	110	A	A	120	116	112	112	A	A	A	B					
8						B	138	A	108	110	110	B	B	112	114	114	114	112	B					
9						B	118	A	A	A	A	A	A	A	114	A	A	A	B					
10						B	122	112	110	110	116	116	110	112	110	116	114	114	B					
11						B	122	106	118	112	A	114	A	A	116	A	120	114						
12						B	122	110	116	A	A	110	112	110	112	112	108	110						
13						B	120	114	116	120	A	B	A	118	112	A	110	A						
14						B	114	114	120	116	B	B	B	B	120	110	114	114						
15						B	114	116	A	A	A	B	110	110	110	106	116	116						
16						B	122	122	122	116	112	112	110	B	112	110	108	112						
17						B	124	112	112	112	112	116	A	A	A	A	A	A	B					
18							126	112	108	118	116	B	A	110	114	A	118	116						
19							120	114	106	118	114	A	A	C	C	C	C	C						
20							114	116	122	C	114	118	118	116	110	112	C	C						
21							122	110	A	116	114	116	116	116	118	114	112	114						
22							112	114	118	114	114	110	112	114	114	108	114	114						
23							114	116	116	108	A	A	B	B	114	114	112	114						
24							114	114	A	112	116	112	114	112	108	120	114	114						
25							126	112	110	A	B	R	R	112	112	110	112	110						
26							116	112	118	116	116	118	116	112	108	116	112	B						
27							122	108	A	120	114	B	B	B	112	116	A	A						
28							126	116	118	118	118	116	114	A	114	120	118	A						
29							108	118	118	114	A	R	118	116	116	102	A	B						
30							112	118	116	120	R	B	120	116	120	118	118	A						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							29	28	25	21	16	16	16	21	27	22	22	17						
MED							120	114	116	114	114	113	113	112	114	114	114	114						
U Q							122	115	118	118	116	116	116	116	116	116	118	114						
L Q							114	111	110	112	112	112	111	112	110	110	112	113						

SEP. 2002 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.2002 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

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	104	94	90	94	92	116	118	118	G	G	118	88	90	92	100	100	98	114	96	90	110	B	90	90
2	90	88	B	B	B	102	G	G	96	G	94	92	94	120	G	122	110	118	108	98	98	102	B	100
3	98	92	92	94	92	92	134	126	128	114	112	110	112	112	106	104	104	102	112	108	90	88	92	92
4	94	92	B	B	B	B	B	116	G	B	124	110	120	G	G	G	106	96	110	100	B	96	B	98
5	98	98	98	92	B	B	128	G	118	106	106	B	B	122	G	126	122	124	110	B	B	104	102	90
6	94	98	B	B	B	94	G	134	126	122	110	118	120	120	102	116	112	102	100	98	96	B	B	B
7	B	B	B	B	B	B	G	G	G	106	102	G	116	120	110	106	104	96	100	B	B	94	94	94
8	B	B	B	B	B	B	156	104	122	118	112	B	B	G	G	128	122	116	114	112	B	108	B	B
9	98	94	B	B	B	B	G	106	104	100	104	104	98	102	100	98	94	94	92	B	92	B	B	B
10	B	B	B	B	96	B	142	132	118	118	102	G	G	G	94	130	122	120	B	B	B	B	B	94
11	B	98	94	94	B	B	G	122	116	112	106	G	100	102	102	100	136	G	108	100	96	96	98	94
12	118	106	108	98	118	B	130	138	118	100	102	100	104	98	G	136	114	108	104	98	100	94	92	92
13	94	90	94	90	94	92	G	G	110	104	102	B	98	96	116	110	122	102	100	98	94	94	92	96
14	92	90	90	90	90	94	96	116	104	102	B	B	B	B	G	G	116	110	102	102	102	100	92	96
15	92	92	98	94	B	B	G	106	98	98	94	B	G	G	G	G	104	G	B	B	B	B	B	B
16	B	B	B	B	B	104	108	104	104	104	G	G	98	B	G	90	144	118	110	104	B	B	B	B
17	B	B	B	B	B	B	G	G	G	112	118	G	96	104	110	106	122	108	100	B	94	104	96	88
18	94	B	B	B	B	B	150	G	G	100	118	B	94	96	G	102	130	110	104	102	98	92	B	B
19	B	B	B	B	B	B	G	G	G	98	108	104	106	C	C	C	C	C	96	94	94	94	92	B
20	B	92	B	B	B	B	116	118	102	C	116	G	G	G	118	G	C	C	102	94	96	94	96	B
21	B	96	B	106	B	B	128	110	108	114	114	114	118	G	104	G	128	112	104	B	B	98	94	92
22	92	B	B	B	B	B	G	G	104	102	102	94	G	96	102	G	G	106	B	B	104	B	B	B
23	B	B	B	B	B	B	G	G	G	G	106	106	B	B	G	G	128	116	B	100	104	98	106	104
24	B	B	B	B	B	B	G	G	100	102	98	96	98	96	G	106	124	112	B	B	104	B	98	100
25	B	B	B	B	B	B	G	G	122	94	B	92	94	G	122	124	G	110	B	B	100	96	B	B
26	B	B	B	B	B	B	G	G	102	100	100	100	G	G	G	102	G	108	B	B	B	98	B	B
27	B	B	B	B	B	B	G	94	96	136	130	B	B	B	118	114	102	102	96	92	104	94	96	B
28	B	96	B	94	94	B	146	102	150	104	102	150	98	92	134	128	112	98	96	96	100	98	94	90
29	92	90	B	B	B	B	136	140	120	100	108	96	98	98	122	92	100	104	104	98	94	B	96	94
30	94	B	B	88	B	B	112	110	102	102	102	B	100	96	100	102	102	98	104	98	B	96	96	98
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	16	8	11	7	7	14	18	23	25	27	16	20	17	17	22	25	26	23	19	20	21	18	18
MED	94	93	94	94	94	94	129	116	108	104	106	102	98	98	106	106	114	108	104	98	98	96	95	94
U Q	98	97	98	94	96	104	142	126	120	113	114	110	109	116	118	124	123	114	108	102	103	99	96	98
L Q	92	91	91	90	92	92	116	106	102	100	102	95	97	96	101	102	104	102	100	96	94	94	92	92

SEP.2002 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 2002 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

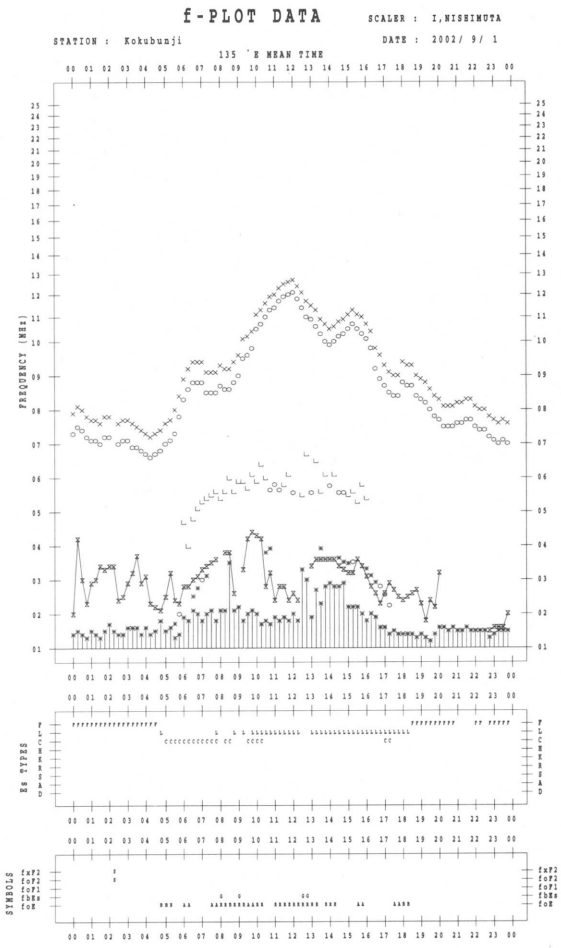
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

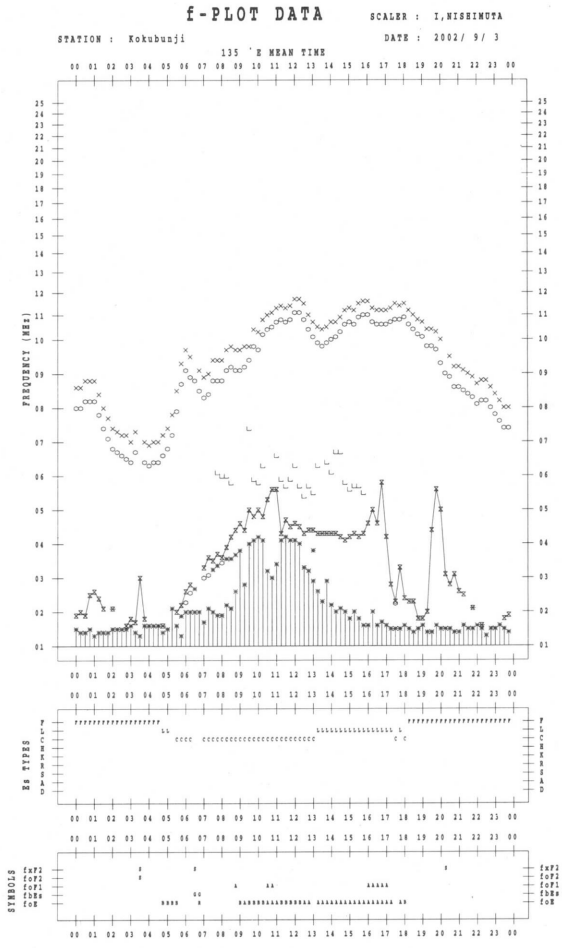
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F3	F3	F3	F2	C1	C1	C1			CL11	L2	L1	L1	L1	L1	L1	CL11	L3	F3	FF32		F1	F1
2	F1	F1				L1			L1		L1	L1	L1	CL11		CL11	CL31	C2	C2	F3	F1	F1		F1
3	F2	F4	F2	F1	F2	L1	C1	C1	C1	C1	C1	C2	C1	C1	L1	L1	L3	L2	C2	F3	F4	F4	F1	F1
4	F1	F2						C1			C1	C1	C1				L1	L1	FF41	F2		F2		F2
5	F1	F1	F1	F2			C1		CL11	L1	L1			C1		C1	C1	C1	C2			F2	F1	F3
6	F3	F1				L1		CL11	CL12	C1	L1	C1	C1	C1	L1	CL11	C1	L3	L2	F2	F1			
7										L1	L1		C1	C1	C2	L1	L1	L3	L3			F1	F1	F1
8							HL11	L1	C1	C1	C1					C1	C1	C2	C2	F1		F1		
9	F2	F1						L2	L1	L2	L1	L1	L2	L1	L1	L2	L2	L2	L3		F2			
10					F1		C1	C1	CL11	CL11	L1				L1	CL11	C1	C2						F4
11		F1	F2	F2				C2	CL21	CL21	L1		L1	L1	L1	L1	CL11		F5	F6	F3	F4	F3	F3
12	FF32	F5	F5	F1	F1		H2	H2	CL11	L1	L1	L1	L1	L1		CL11	C2	C2	F2	F3	F4	F4	F5	F4
13	F3	F2	F2	F2	F1	L2			CL11	L1	L1		L2	L1	C1	L1	C1	L2	F3	F4	F5	F3	F2	F2
14	F5	F5	F4	F6	F4	L2	L1	C1	L1	L1							C1	C3	F1	F1	F2	F2	F3	F2
15	F2	F2	F1	F2				L1	L1	L1	L2						L1							
16						L1	L1	L1	L1	L1			L1			L1	HL11	CL12	FF21	F1				
17										C1	C1		L1	L1	L1	L1	CL11	L2	L2		F1	F1	F1	F2
18	F1						H1			L1	C1		L1	L1		L1	CL11	CL21	F6	F3	F3	F1		
19										L1	C1	L1	L1	C	C	C	C	C	F3	F3	F2	F4	F2	
20		F1					C1	C1	L1	C	C1				C1		C	C	F1	F4	F2	F3	F2	
21		F1		F1			C1	L1	L1	C1	C1	C1	CL11		L1		C1	C3	F4			F2	F1	F1
22	F2								L1	L1	L1	L1		L1	L1			C1			F1			
23											L1	L1					C1	C1		F3	F3	F2	F1	F1
24									L1	L1	L1	L1	L1	L1		L1	C1	C2			F1		F2	F1
25									C1	L2		L1	L1		CL11	CL11		C3			F2	F2		
26									L1	L1	L1	L1				L1		C2				F1		
27								L1	L2	HL11	C1				C1	CL11	L1	L2	F3	F3	F1	F2	F1	
28		F1		F1	F1		H1	L1	HL11	L1	L1	HL11	L1	L2	CL11	CL11	CL31	L4	F5	F5	F3	F3	F2	F3
29	F3	F1					CL11	CL21	CL11	L1	L1	L1	L1	L1	CL11	L2	L2	LL22	FF12	F3	F4		F2	F3
30	F1			F1			C1	L1	L1	L1	L1		L1	L1	L1	L1	L1	L2	F3	F1		F2	F3	F2
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

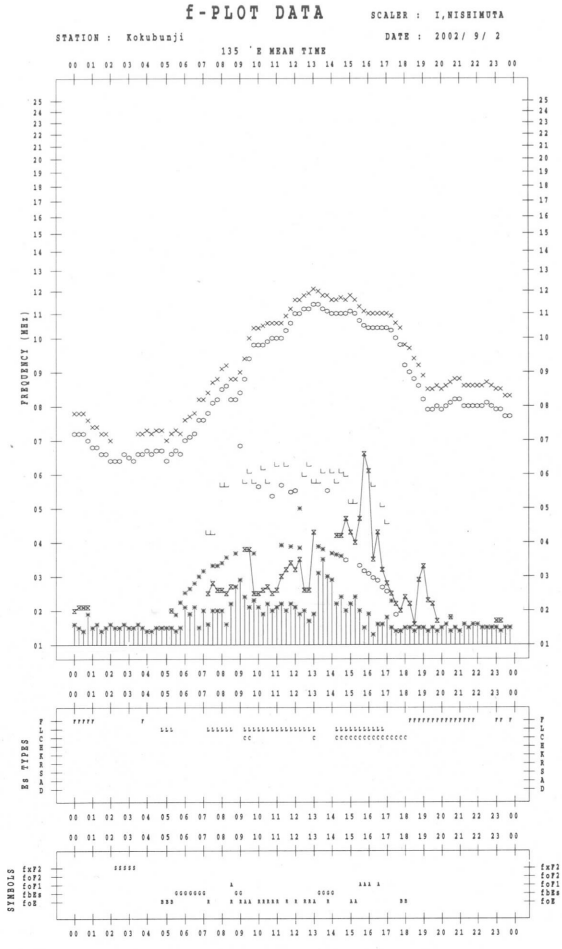
SEP. 2002 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

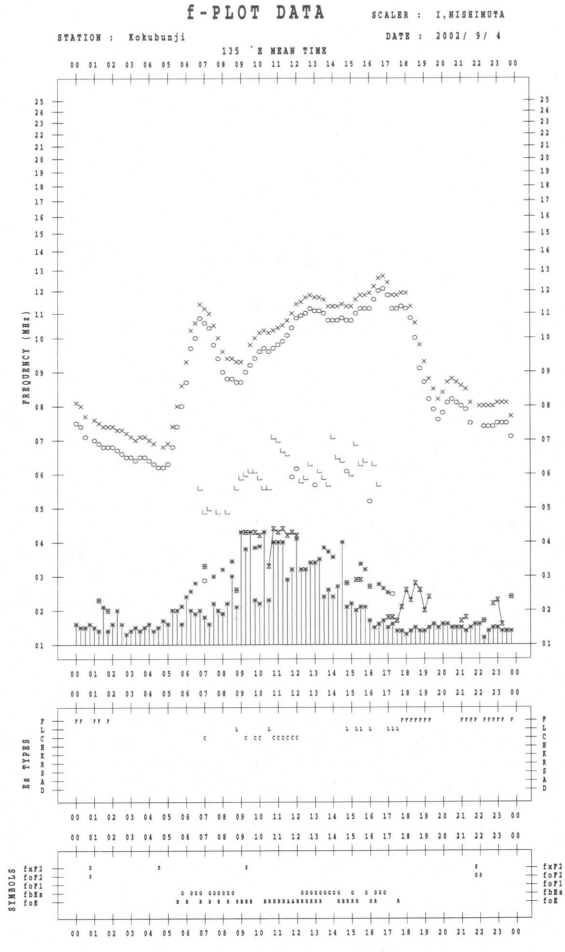
f-PLOTS OF IONOSPHERIC DATA

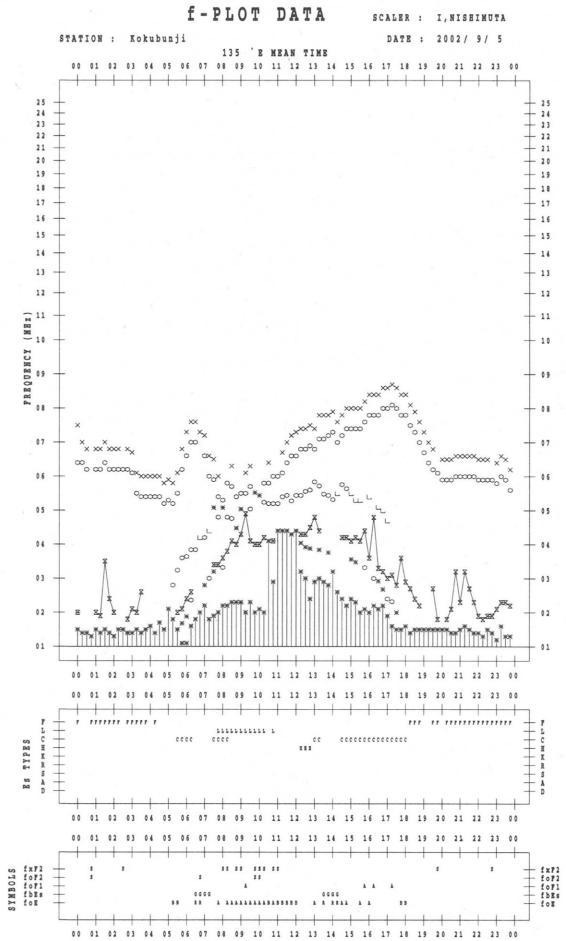
KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

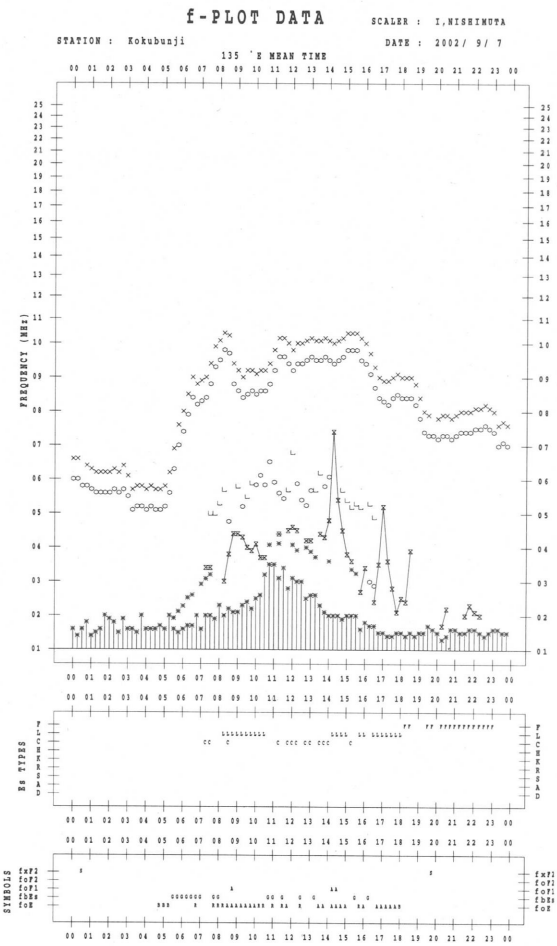

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

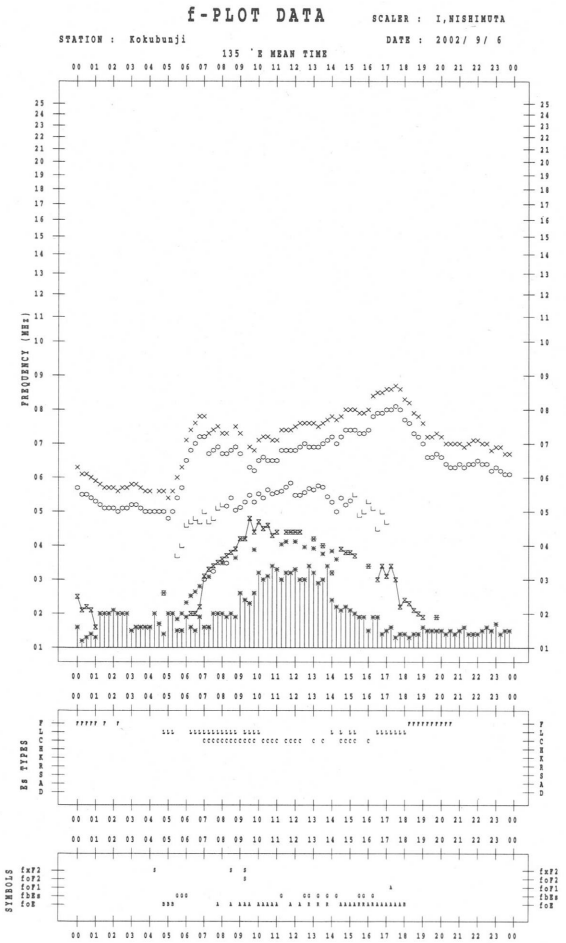

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

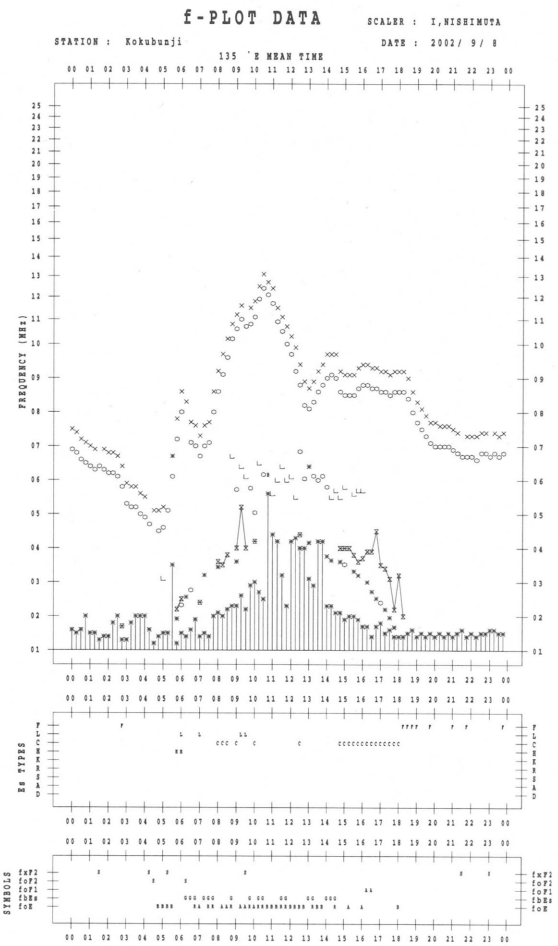

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

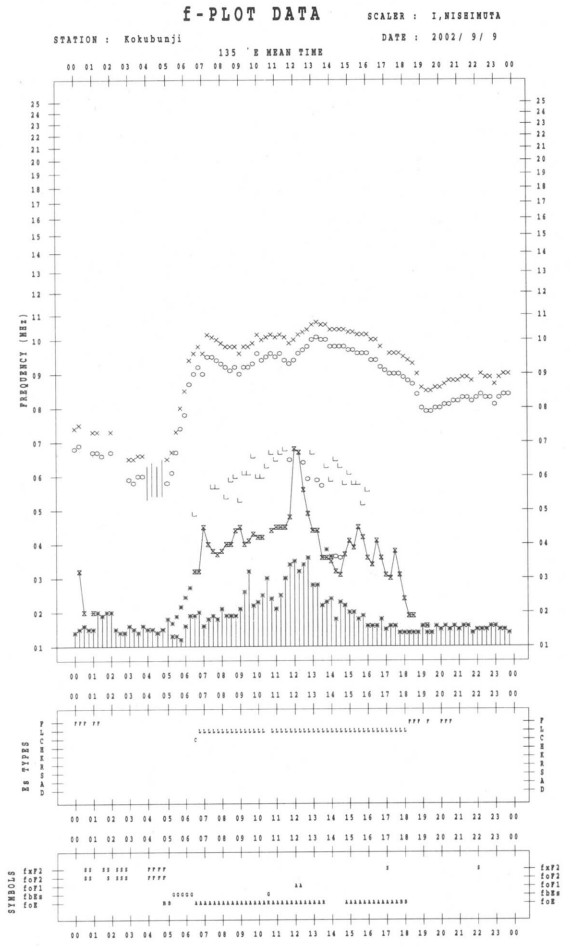

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

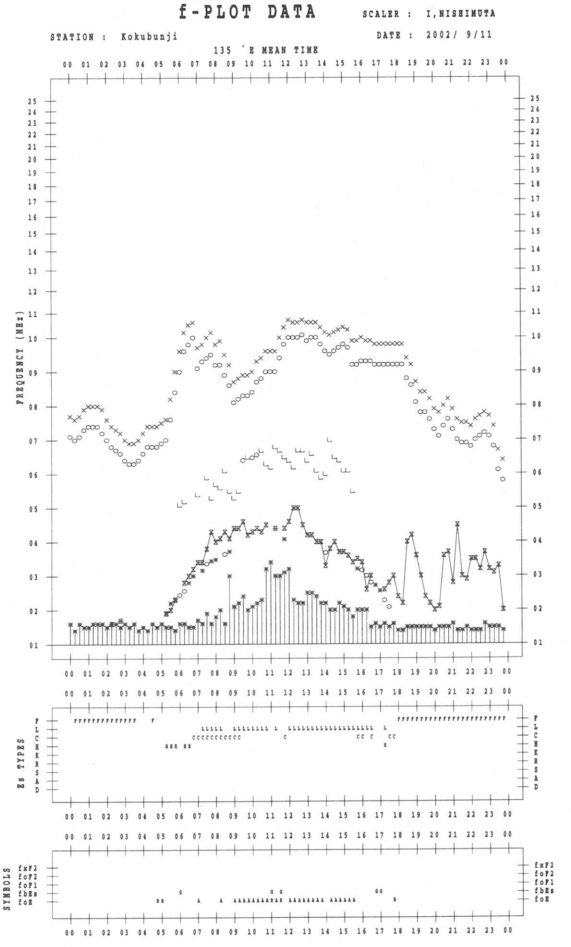

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

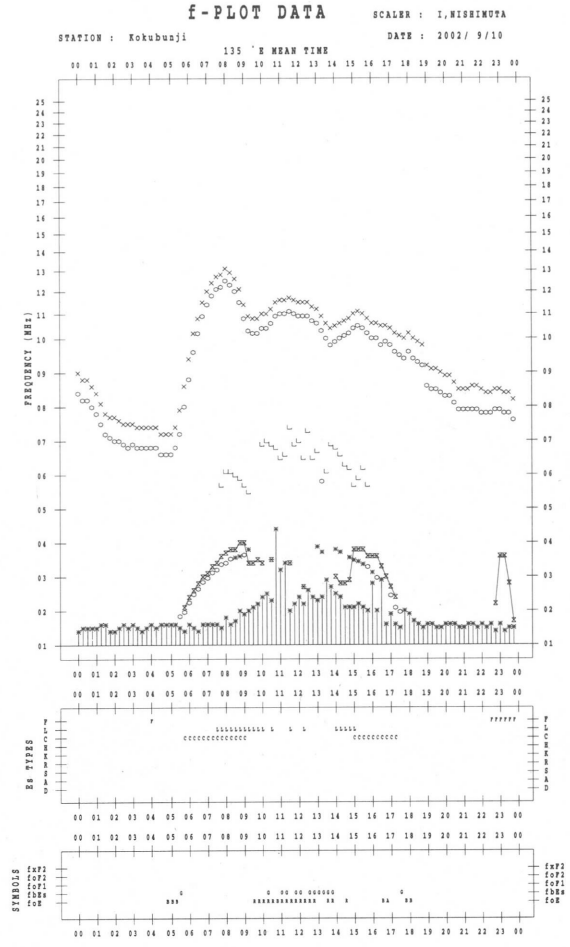

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

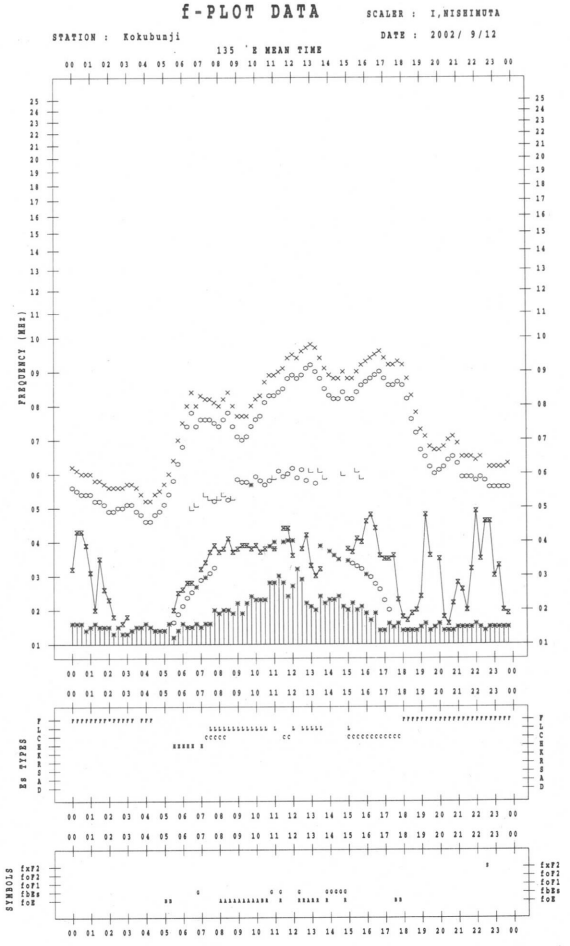

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

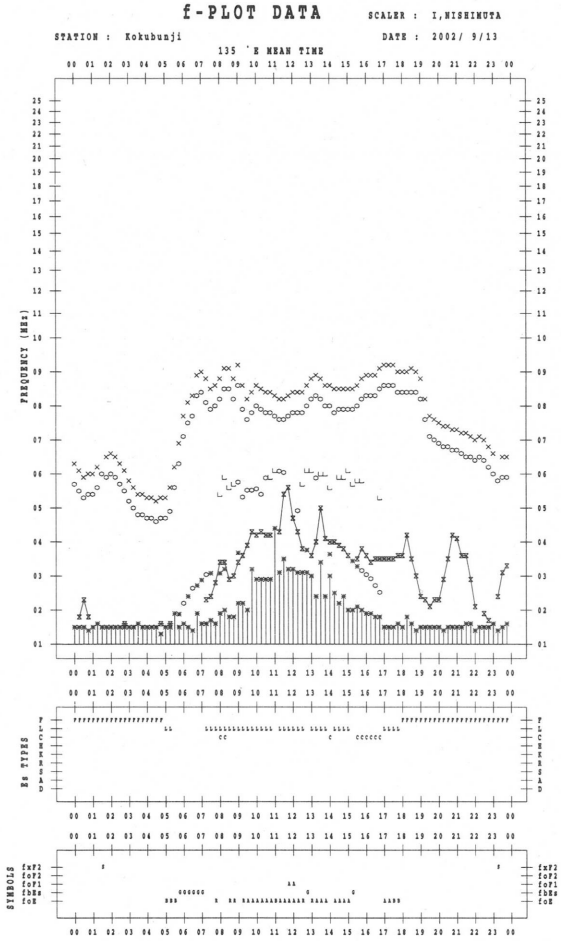

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

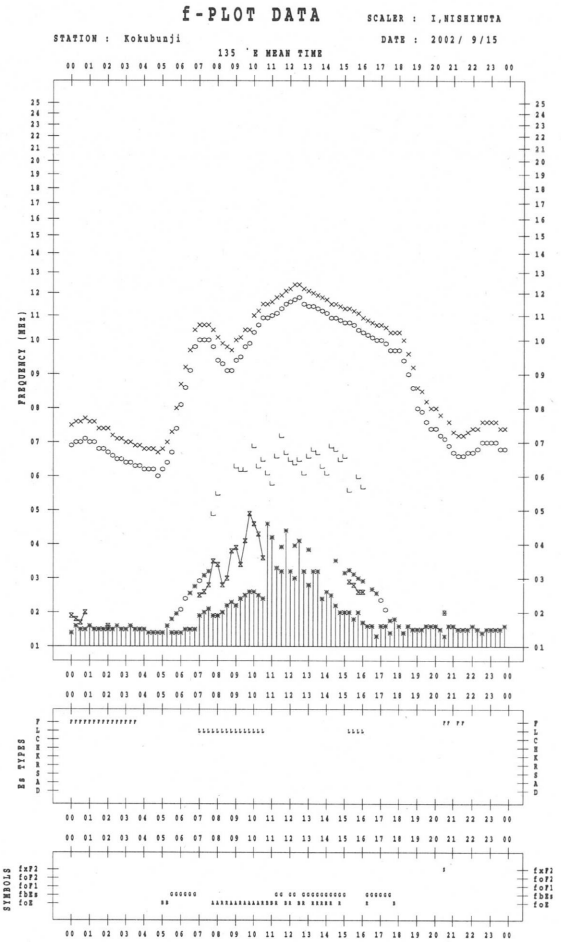

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

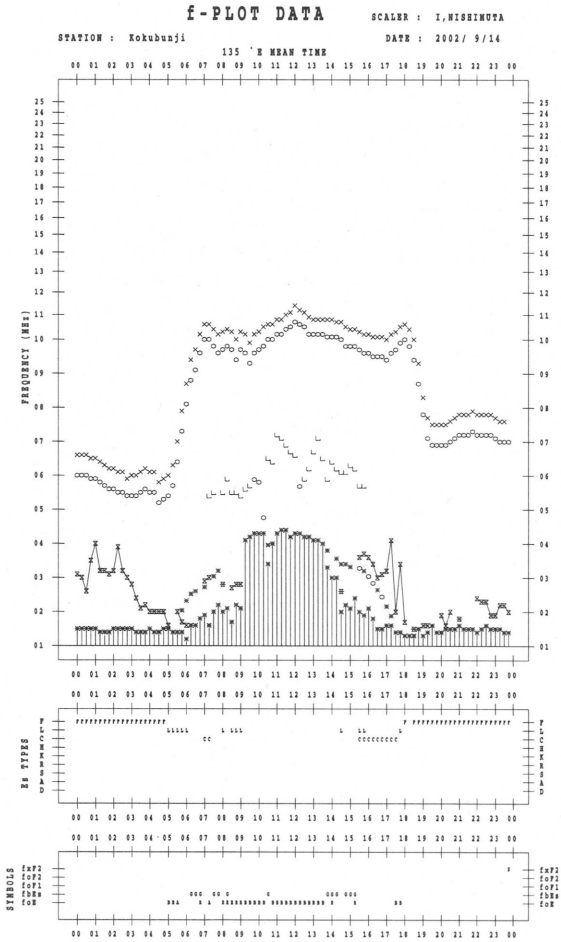

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

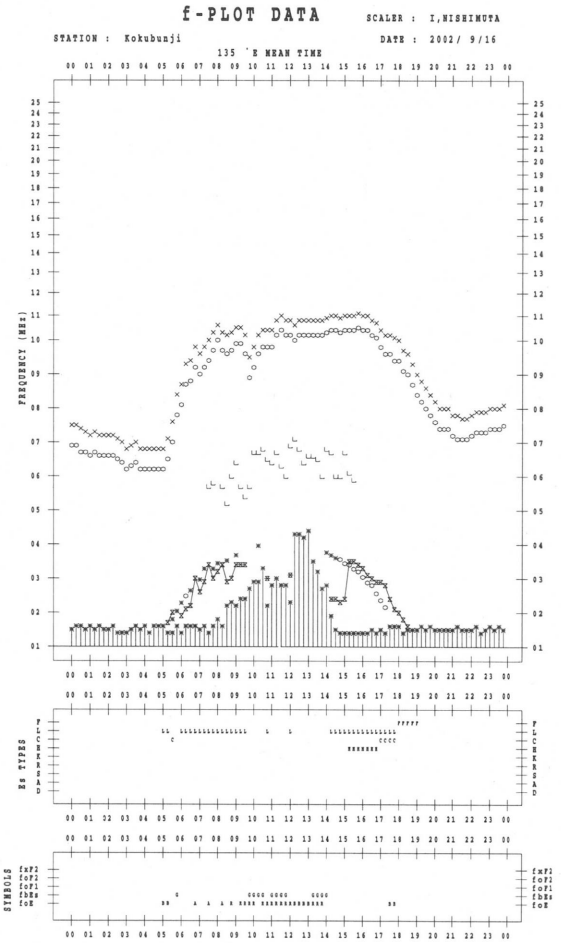

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

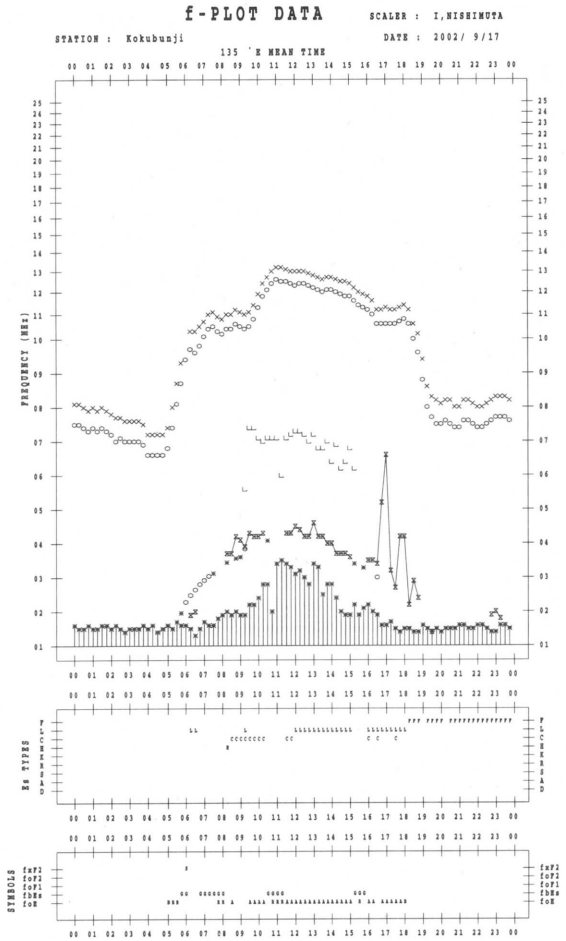

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

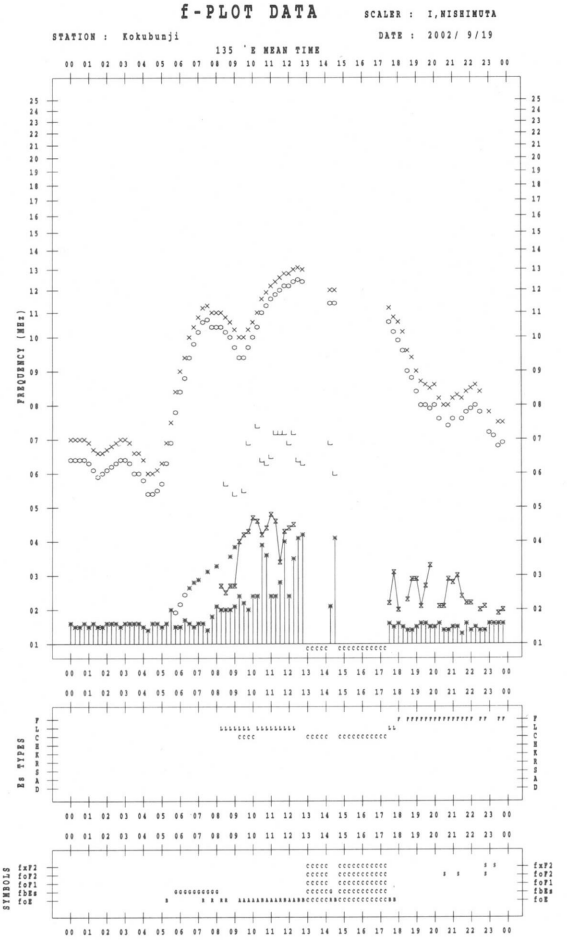

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

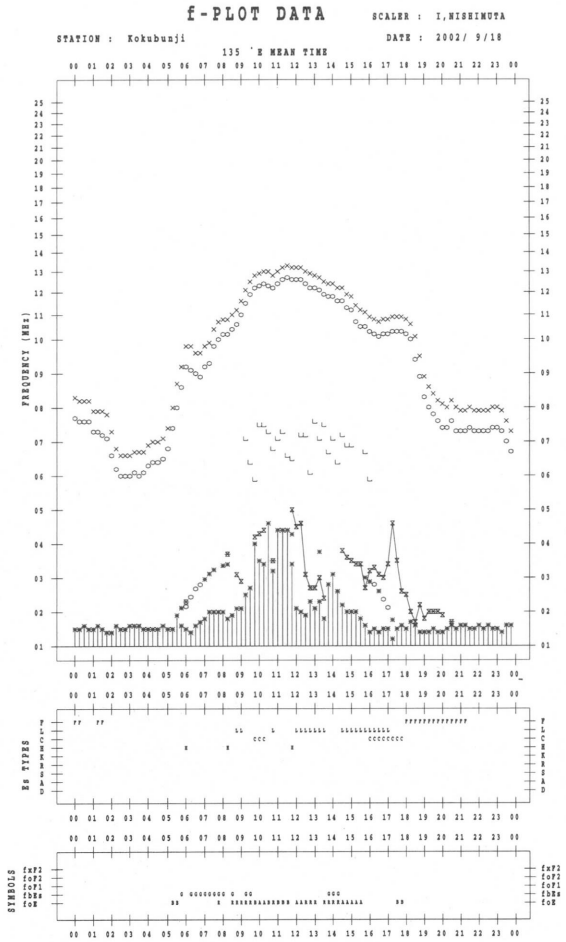

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

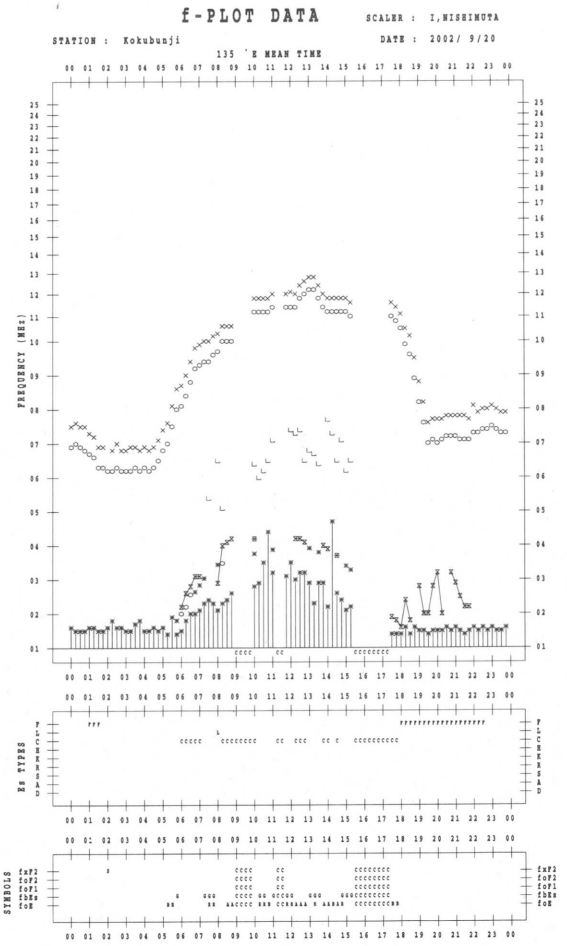

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

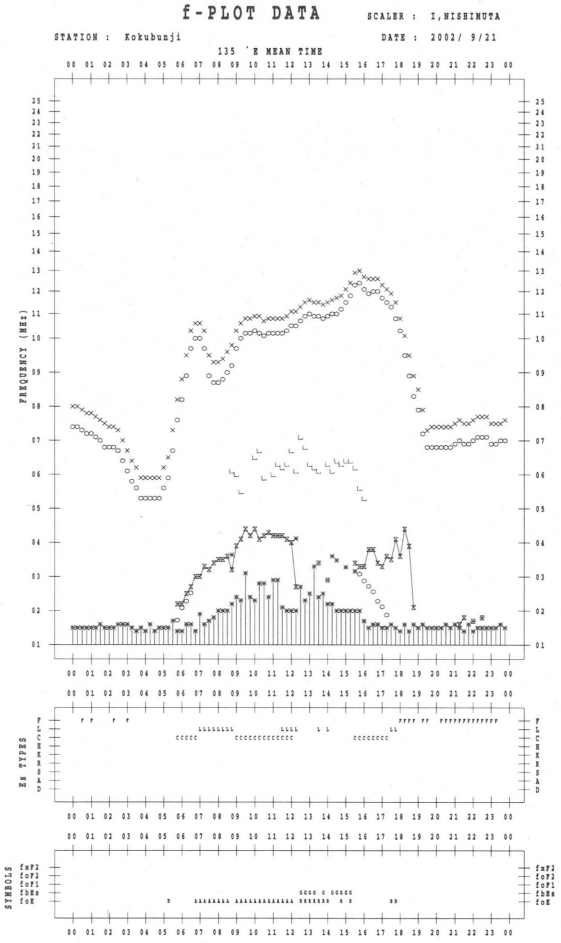

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

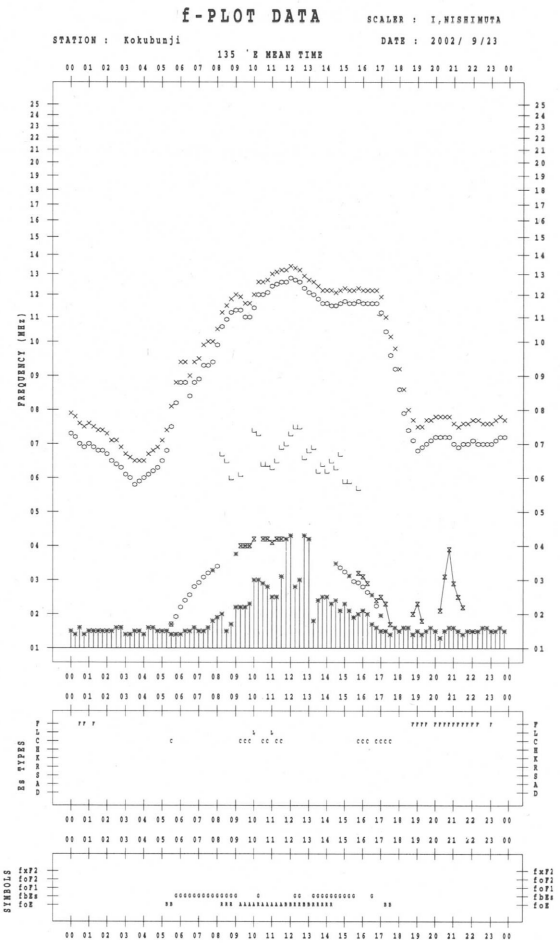

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

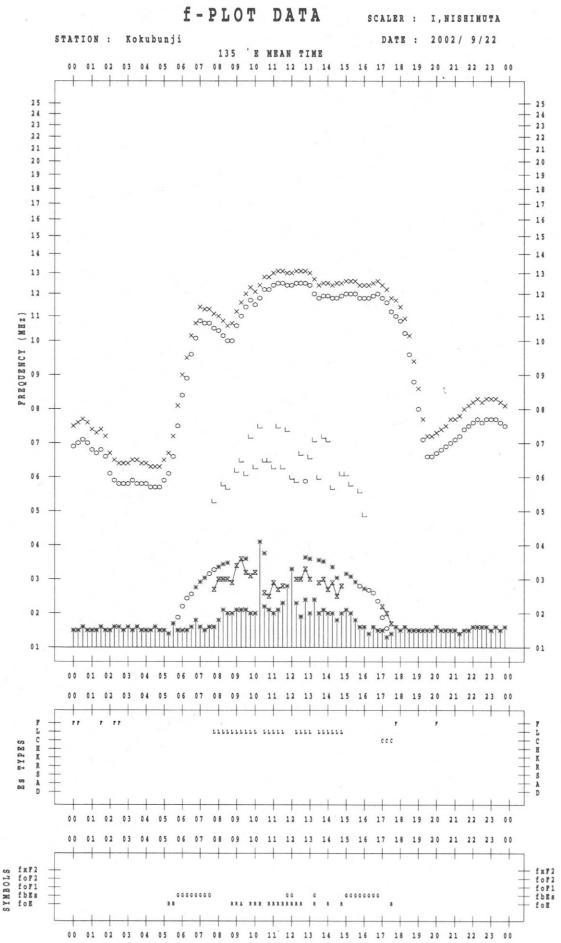

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

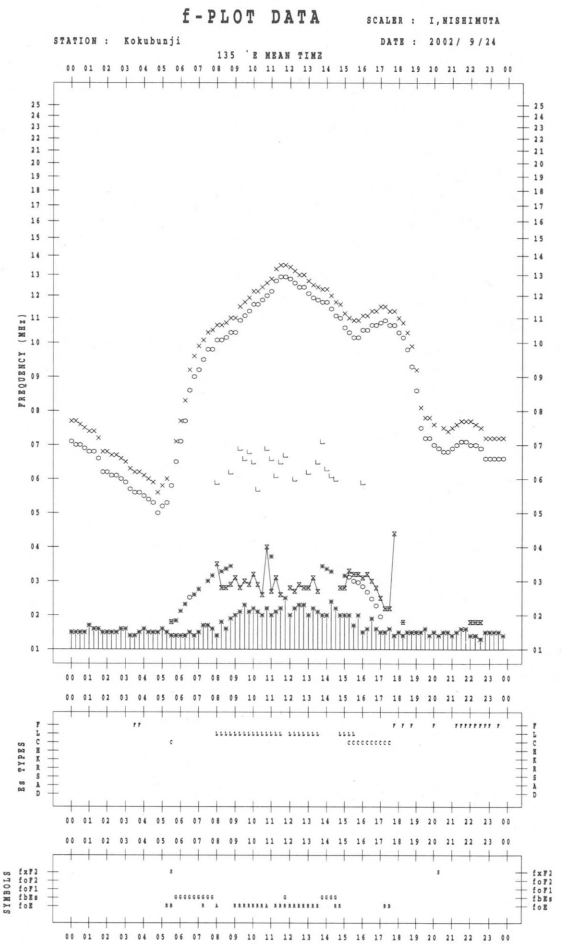

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

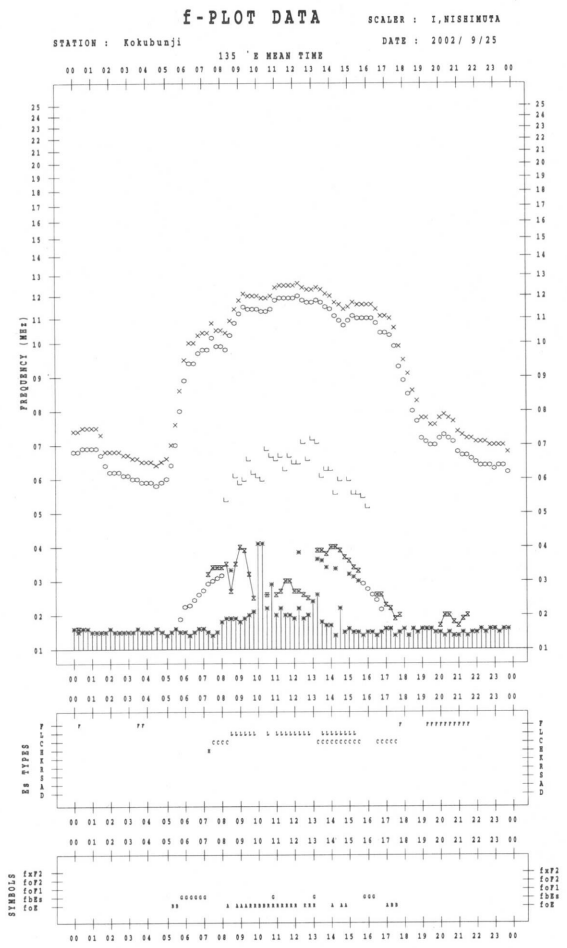

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

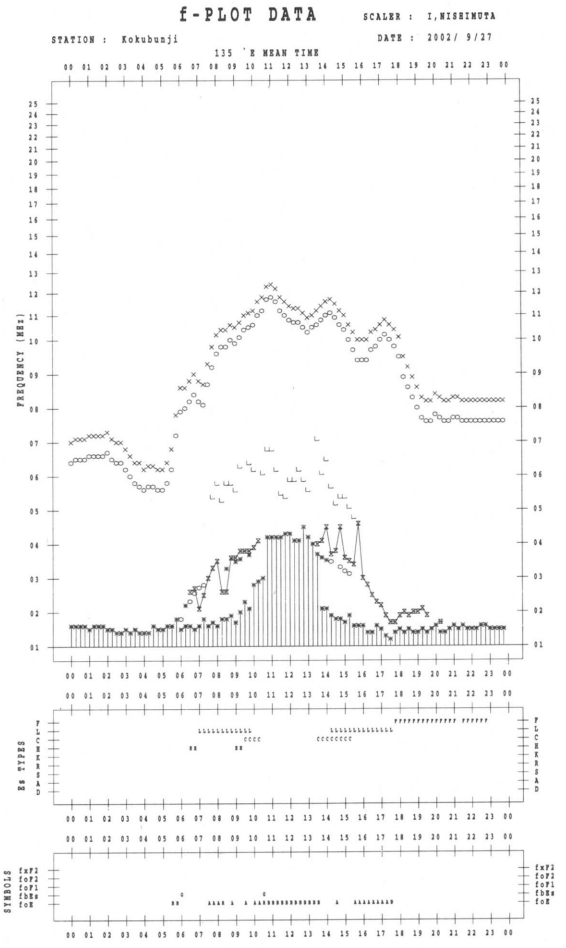

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

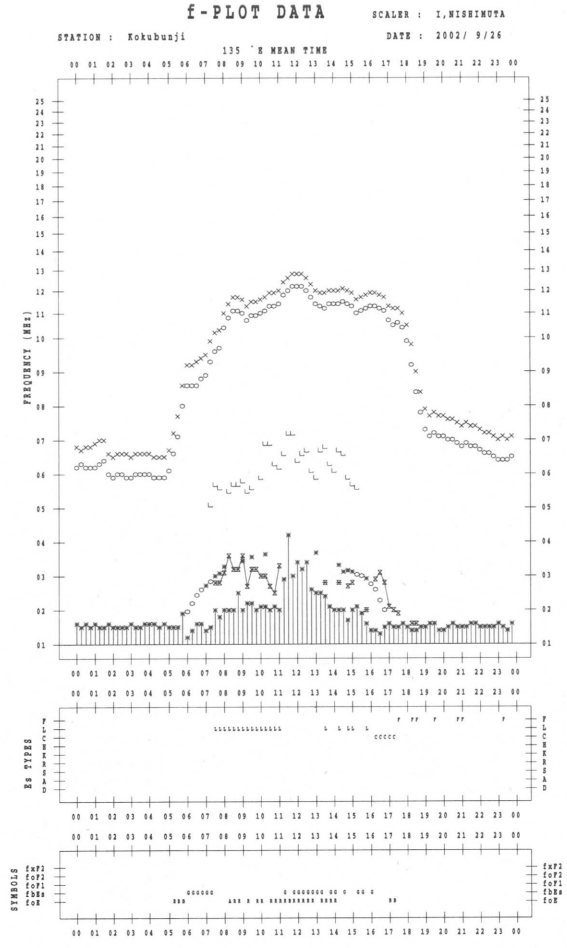

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

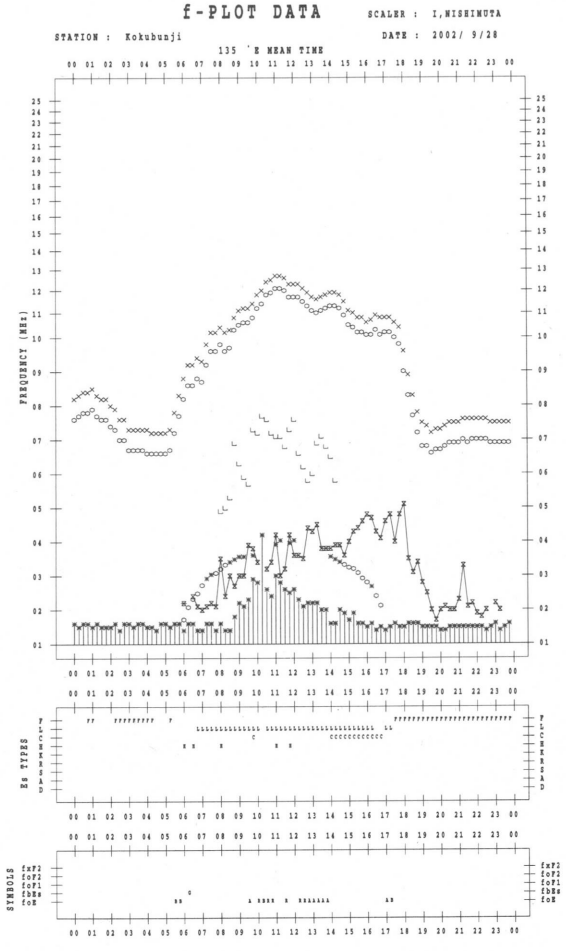

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

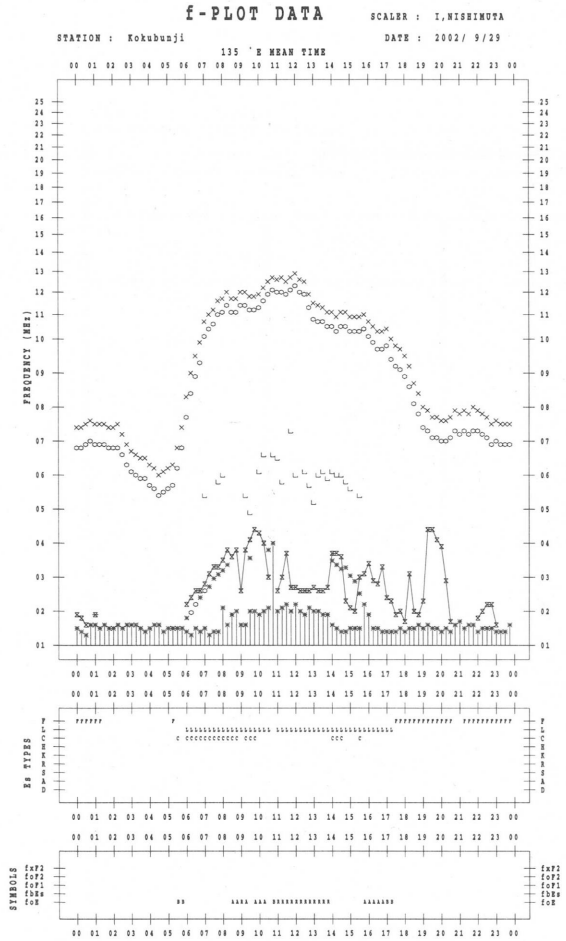

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

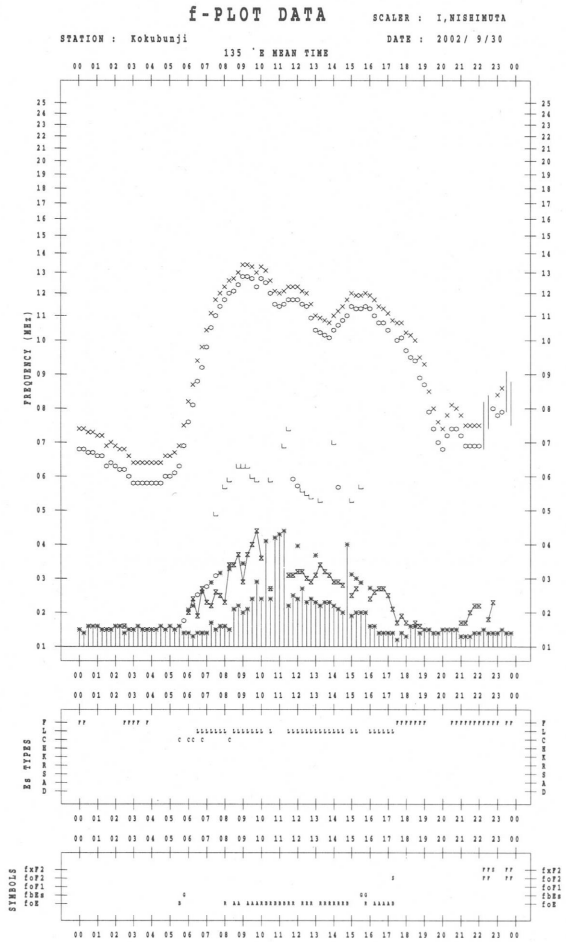

f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I,NISHIMUTA
STATION : Kokubunji
DATE : 2002/ 9/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

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

Hiraiso September 2002

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	36	36	36	35	36
2	34	34	35	33	34
3	32	32	33	33	33
4	33	34	35	37	35
5	35	35	36	34	35
6	35	32	31	35	33
7	34	34	34	34	34
8	34	33	34	31	33
9	33	32	32	35	33
10	34	34	34	37	35
11	35	33	35	35	34
12	34	33	35	36	35
13	37	37	36	40	38
14	39	39	39	37	38
15	38	37	36	18	32
16	22	27	14	38	28
17	37	35	44*	39	37
18	38	36	35	42	38
19	39	37	38	40	39
20	38	37	38	43	39
21	42	38	41	40	40
22	39	39	37	39	38
23	37	35	35	41	37
24	39	35	36	38	37
25	36	35	35	38	36
26	36	36	37	37	36
27	38	37	37	32	36
28	32	34	33	36	34
29	34	33	32	35	33
30	34	35	35	35	35
31					

Note: No data is available during the following periods.

A superscript * stands for being superposed on a burst.

B. Solar Radio Emission

B2.Outstanding Occurrences at Hiraiso

Hiraiso September 2002

Single-frequency observations

Normal observing period: 2020 - 0845 U.T. (sunrise to sunset)

SEP. 2002	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	02240	02240	1.0	45	-	WR
1	500	47 GB	02240	02240	1.0	535	-	0
1	200	8 S	02240	02240	1.0	70	-	0
1	500	8 S	04480	04480	1.0	150	-	0
1	500	8 S	04440	04440	1.0	20	-	0
1	500	8 S	05120	05120	1.0	35	-	0
1	500	8 S	06550	06550	1.0	170	-	0
1	200	8 S	05440	05480	1.0	85	-	0
1	200	8 S	08300	08320	2.0	145	-	0
1	500	8 S	20570	20570	1.0	25	-	0
1	200	8 S	20570	20570	1.0	305	-	0
1	500	8 S	22340	22340	1.0	85	-	0
1	200	8 S	22340	22350	1.0	95	-	WR
2	500	3 S	00070	00080	17.0	170	-	WL
2	200	47 GB	00070	00070	1.0	1165	-	WR
2	200	47 GB	01170	01170	1.0	530	-	0
2	200	8 S	01290	01290	1.0	100	-	0
2	200	8 S	02460	02460	1.0	655	-	0
2	500	3 S	02470	02470	5.0	25	-	0
2	500	8 S	07150	07150	1.0	145	-	0
2	200	8 S	07160	07160	1.0	245	-	0
2	200	8 S	07350	07360	1.0	70	-	WL
3	200	8 S	00020	00020	1.0	240	-	0
3	200	8 S	01060	01060	1.0	60	-	0
3	200	8 S	01540	01540	1.0	140	-	0
3	200	8 S	02550	02550	2.0	60	-	ML
3	200	8 S	06180	06180	1.0	165	-	0
3	200	8 S	07410	07420	2.0	40	-	ML
4	200	8 S	03430	03430	1.0	115	-	0
4	200	47 GB	05130	05140	2.0	575	-	0
4	500	8 S	05140	05140	1.0	15	-	0
4	200	8 S	07340	07350	1.0	165	-	WR
4	200	8 S	08280	08280	1.0	180	-	WR
4	200	8 S	22480	22480	1.0	25	-	0
5	200	8 S	07290	07290	1.0	50	-	0
6	200	8 S	00060	00060	1.0	70	-	ML
6	200	8 S	02180	02180	1.0	125	-	WL
6	200	8 S	05120	05120	1.0	85	-	0
6	200	8 S	21430	21440	3.0	105	-	0
7	200	8 S	02080	02080	1.0	135	-	0
7	200	8 S	05130	05140	1.0	80	-	0
7	200	8 S	05370	05370	1.0	75	-	0
7	200	7 C	07190	07220	4.0	150	-	0
8	200	8 S	00400	00400	1.0	35	-	0
8	200	8 S	00420	00420	1.0	75	-	0
8	2800	7 C	01370	01390	12.0	225	-	0
8	500	7 C	01370	01390	16.0	85	-	0

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 2002

Single-frequency observations

Normal observing period: 2020 - 0845 U.T. (sunrise to sunset)

SEP. 2002	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
8	200	7 C	01380	01430	13.0	175	-	0
9	200	8 S	01400	01400	1.0	25	-	0
9	200	8 S	06330	06330	1.0	110	-	0
9	200	7 C	21550	21570	4.0	260	-	0
10	200	8 S	00040	00040	1.0	85	-	0
10	200	7 C	03090	03110	3.0	145	-	0
10	200	47 GB	05570	05580	2.0	540	-	0
10	200	42 SER	21130	21140	11.0	140	-	
10	200	8 S	22520	22520	1.0	35	-	
10	200	8 S	23150	23150	1.0	55	-	
11	200	8 S	04170	04170	1.0	25	-	
11	2800	3 S	07280	07340	10.0	225	-	
13	200	7 C	21480	21480	5.0	50	-	0
14	2800	4 S/F	05570	05580	3.0	225	-	0
14	500	7 C	05570	05590	2.0	20	-	0
14	200	8 S	05580	05580	1.0	35	-	0
14	200	8 S	07510	07510	1.0	175	-	0
16	2800	1 S	01450	01450	3.0	25	-	0
16	200	8 S	01470	01470	1.0	95	-	WL
16	500	8 S	01540	01540	1.0	40	-	0
16	200	8 S	01540	01540	1.0	170	-	WL
16	2800	1 S	03080	03090	1.0	35	-	0
16	200	8 S	03080	03090	3.0	215	-	WL
16	200	8 S	22130	22140	2.0	140	-	0
17	200	7 C	01570	02020	7.0	60	-	0
17	500	3 S	01580	02020	5.0	15	-	0
17	2800	1 S	03060	03070	3.0	25	-	WL
17	500	8 S	04110	04110	2.0	25	-	WR
17	2800	8 S	04120	04120	1.0	50	-	ML
17	200	8 S	04160	04160	1.0	30	-	0
17	500	8 S	04210	04210	1.0	55	-	WR
17	200	8 S	04210	04210	1.0	100	-	WR
17	2800	8 S	04220	04220	1.0	55	-	0
17	2800	4 S/F	05490	05520	3.0	120	-	0
17	200	4 S/F	05490	05510	4.0	210	-	0
17	500	4 S/F	05500	05540	4.0	65	-	0
17	200	8 S	07000	07010	2.0	245	-	0
17	500	8 S	07060	07060	1.0	45	-	0
17	200	8 S	21320	21320	1.0	35	-	WR
17	200	8 S	21460	21460	1.0	65	-	0
17	200	8 S	23280	23280	1.0	240	-	0
17	200	8 S	23580	23580	2.0	300	-	0
18	200	8 S	00100	00100	1.0	40	-	0
18	200	8 S	02150	02150	3.0	265	-	0
18	200	8 S	05270	05270	1.0	15	-	0
19	500	8 S	01320	01320	1.0	10	-	0
19	500	7 C	05130	05230	17.0	15	-	0

B. Solar Radio Emission
B2.Outstanding Occurrences at Hiraiso

Hiraiso September 2002

Single-frequency observations
Normal observing period: 2020 - 0845 U.T. (sunrise to sunset)

SEP. 2002	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
20	200	8 S	00200	00200	1.0	45	-	0
20	200	8 S	01110	01110	1.0	90	-	MR
20	200	8 S	02540	02540	1.0	120	-	0
20	200	8 S	04140	04140	1.0	50	-	0
20	200	4 SER	04500	05000	29.0	75	-	0
20	500	7 C	05340	05410	19.0	85	-	MR
21	200	8 S	03170	03180	2.0	145	-	WL
21	200	7 C	04110	04110	4.0	30	-	0
21	200	8 S	06520	06520	1.0	70	-	0
22	500	8 S	04290	04290	1.0	25	-	0
22	200	8 S	04290	04290	1.0	190	-	0
22	500	8 S	04390	04390	1.0	25	-	0
22	200	8 S	06560	06560	1.0	30	-	WL
23	500	8 S	04370	04370	1.0	10	-	0
23	500	8 S	05130	05140	1.0	140	-	0
23	200	8 S	06490	06490	1.0	75	-	0
23	200	8 S	07350	07350	1.0	180	-	0
23	200	8 S	20540	20540	1.0	85	-	0
23	200	8 S	21290	21290	1.0	20	-	0
24	200	8 S	02250	02260	1.0	115	-	0
24	500	8 S	06010	06020	1.0	25	-	
25	200	8 S	00490	00490	1.0	15	-	0
25	200	8 S	01590	01590	1.0	35	-	0
25	200	8 S	04120	04120	1.0	135	-	0
25	200	8 S	04470	04470	1.0	35	-	0
25	200	8 S	04530	04530	1.0	15	-	0
25	200	8 S	07350	07350	1.0	20	-	0
25	200	8 S	08010	08010	1.0	360	-	0
25	200	47 GB	20550	20550	1.0	1880	-	0
25	200	8 S	21270	21270	1.0	40	-	0
25	200	47 GB	22590	22590	1.0	860	-	0
26	500	8 S	02060	02060	2.0	30	-	0
26	200	8 S	02060	02060	1.0	125	-	0
26	500	8 S	02360	02360	1.0	45	-	0
26	200	8 S	02360	02370	1.0	215	-	0
26	200	8 S	03400	03400	1.0	60	-	0
26	500	8 S	03500	03500	1.0	50	-	0
26	500	8 S	05110	05110	1.0	45	-	0
26	500	42 SER	05160	05160	4.0	25	-	0
26	500	8 S	07480	07480	1.0	30	-	0
27	500	4 S/F	03310	03310	9.0	10	-	0
27	200	8 S	04190	04190	2.0	15	-	0
28	500	7 C	01010	01050	10.0	190	-	0
28	200	42 SER	01030	01070	7.0	15	-	WL
28	200	8 S	06570	06580	1.0	105	-	0
28	200	8 S	07250	07250	1.0	140	-	WL
28	200	8 S	08080	08080	1.0	15	-	WR

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 2002

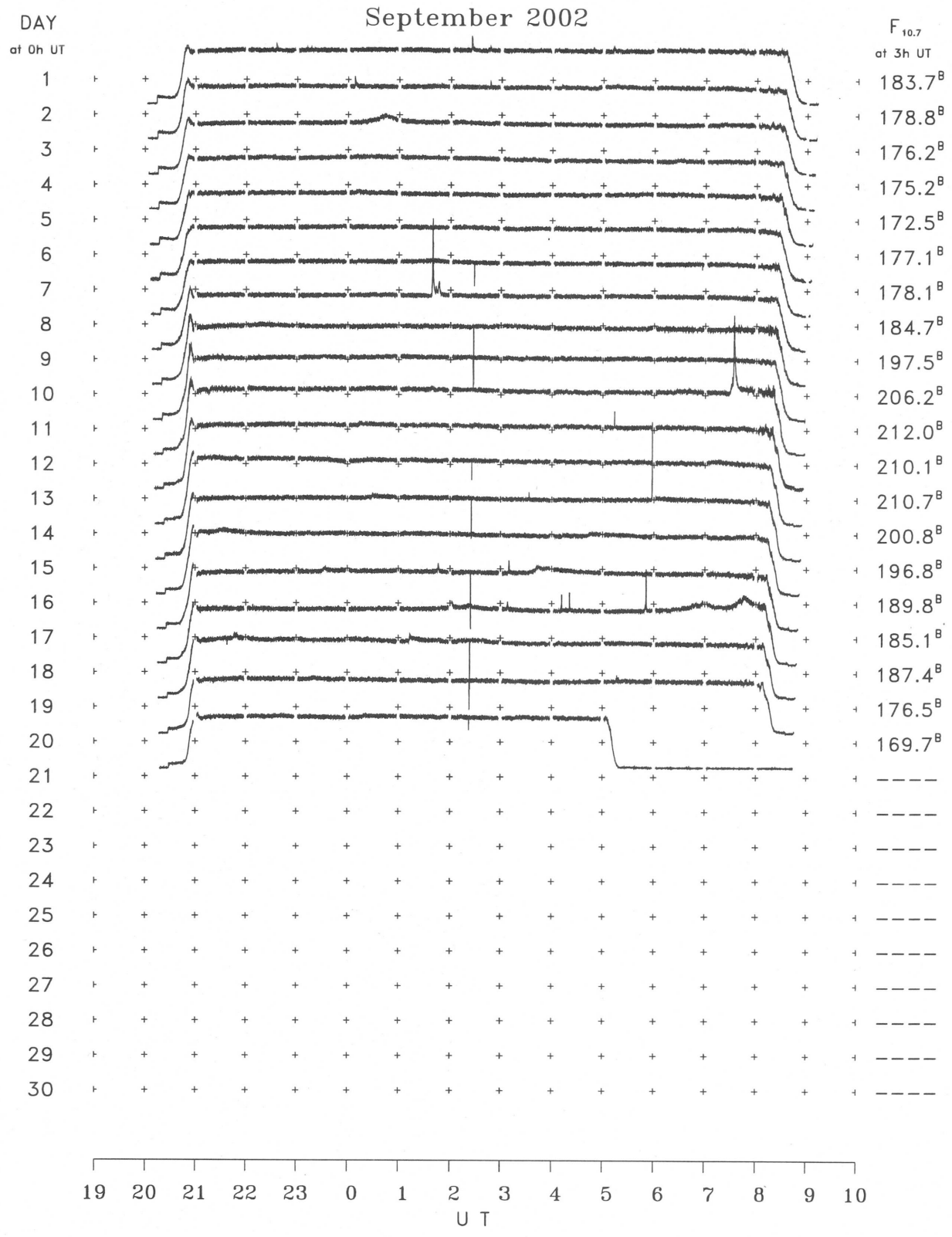
Single-frequency observations

Normal observing period: 2020 - 0845 U.T. (sunrise to sunset)

SEP. 2002	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
28	200	47 GB	20440	20440	1.0	785	-	0
28	500	8 S	21260	21260	1.0	60	-	WL
28	500	8 S	21310	21330	3.0	285	-	ML
29	500	42 SER	06040	06060	5.0	45	-	WL
29	200	42 SER	06040	06090	13.0	330	-	ML
29	200	8 S	06200	06200	1.0	280	-	0
29	500	42 SER	06300	06410	15.0	455	-	SL
29	200	47 GB	06300	06360	14.0	810	-	WL
30	500	7 C	03090	03110	3.0	20	-	0
30	200	7 C	03090	03130	4.0	355	-	0
30	200	8 S	04040	04040	1.0	80	-	0
30	500	8 S	04050	04050	1.0	25	-	WL
30	200	47 GB	04200	04210	4.0	2810	-	0
30	500	7 C	04210	04220	3.0	125	-	ML
30	200	8 S	05220	05220	1.0	35	-	0
30	200	47 GB	05420	05430	4.0	1070	-	0
30	500	7 C	05430	05430	3.0	100	-	ML
30	200	7 C	06590	07020	9.0	185	-	0
30	500	7 C	07000	07000	3.0	40	-	0
30	200	8 S	21250	21250	1.0	20	-	0
30	200	8 S	21580	21590	2.0	235	-	0

B. Solar Radio Emission

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



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

IONOSPHERIC DATA IN JAPAN FOR SEPTEMBER 2002
F-645 Vol.54 No.9 (Not for Sale)

電離層月報（2002年９月）
第54巻 第９号（非売品）
2003年１月15日 印刷
2003年１月20日 発行
編集兼 独立行政法人通信総合研究所
発行所 〒184-8795 東京都小金井市貫井北町４丁目２－１
☎ (042) (327) ７４７８(直通)

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