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IONOSPHERIC DATA IN JAPAN

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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, Ministry of Posts and Telecommunications of 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°16.9′N	127°48.4′E	15.3°N	196.0°	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

Ionospheic 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 as well as graphically on 35 mm photographic film. 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*).

B Impossible measurement because of absorption in the vicinity of *fmin*.

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 Handbook 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 spread *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 transmisson 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 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.

Z 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 particle *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 normnal *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 measurements, 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 percent.

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 $F_{10.7}$ 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. 1999

LAT. 45.4N LON. 141.7E 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	57	53	70	57	57	58		A									63	63	64	69	67	85		57
2	61		70	A	42		A	55	A							77	77	77	77	82	63	66	62	58
3	A	38	A	56	58	48	A	64	53	A		59				66	A	81	90	93	A		38	
4	57			49	57	A	A	A	80		A	A	A	A		62	68	68	A	70	72	66	60	57
5	57	52	46	48	50	55	77	59	82	80	70		66		71	A	A	78	83	94	71	83	61	52
6	58	57	57	56	59	57	70	70		88	67	60	74	78	76	70	76	77	94	82	92	72	60	59
7	57	58	54	62	50	60	70	76	81	101				70	82	78	76	77	77	81	83	78	84	64
8	67	58	60	54	53	51	57	69	46	68	61	66	72	66	70	80	80	81	86	71	83	69	58	51
9	55	55	52	49	52	52	58	66	69	76	67	70		76	66	67	62	63	78	84	83	70	58	
10		56	57	52	49	50	61	68	78	82		66	79	78	78	70	77	80	82	81	80	73	66	68
11	62	57	58	56	50	56	58	70	70	99	66		77	58	76	82	89	77	74	79	66	68		54
12	61	58	54	49	57	50	73	88	96		86	86	73	81	82	76	92	78	82	93	95	94	80	71
13	54	69	A	A	35		A	A	A		A					66	65	60	63	A	62	67	57	
14	49					A		64	70	64		49	80	80	78	81	80	78	73	63	63	A	A	
15	32	A	A	25			58	72	81	77		77	78	81	83	80	80	75	80	67		49	57	70
16				59		43	A	A	A								A	58	58	56	32	A	34	A
17	41	58			59	A	56	58	58					53	61	64	64	58	63	71	74	57		
18	43		37	37	40	47	57	68	75	64		62	80	74	73	68	78	74	72	72	68		58	
19	50	52	47	45	48	48	60		66	80	78		80	77	76	72	82	80	82	71	65	A	A	35
20	47	44		52	50		57	74	97		78	80	78	78	82	76	78	92	92	80	68	48	52	
21	58	49	48	47	49		58	68	76	68	76	64	59	68	81	84	80	92	81	38		56	57	A
22	A	59	35	30	A	29	57		67	80	82	78		78	80	74	76	82	95	91		54		53
23	49	A		56	A	58	62	77	70	67		68	70	68	80	78	92	91	92	70	60	A		56
24	49		48	56		63	71	75	90	89	90	90	78	90	87	91	82	81	80	70	79	69	51	52
25	69	46	45	52	A	69	72	83		90	87	87	78	88	87	82	84	80	76	70	80			69
26	48	54	57	65	47	54	59	82		91	87	80	83	78	88	77	78	80	83	82	74	68		70
27	64	60	60	48	55	60	73	74	74	80	88	88	88	89	96	84	86	91	92	95	74	64	57	59
28	52	62		57	44		55	56	57					N		58	60	64	57	57		47	48	38
29	A	A	A	59		34	58	57	76	75	68	81	81	76	80	78	80	78	68	58	51	58		A
30	48	48	50	51	60		69	61	71	79		86	88	88	83	87	82		68	58	59		58	50
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	21	19	26	22	20	23	24	23	20	15	19	19	22	23	27	27	29	29	29	25	22	20	20
MED	55	56	54	52	50	53	59	68	74	80	78	77	78	78	80	77	78	78	80	71	71	68	58	57
U Q	59	58	58	56	57	58	70	74	81	88	87	86	80	81	83	81	82	81	84	82	80	72	60	66
L Q	48	50	47	48	48	48	57	62	67	71	67	64	73	70	76	68	76	71	70	68	63	57	54	52

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Wakkanai

SEP. 1999

LAT. 45.4N LON. 141.7E 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	42	48	36	33	28	G	G	62		G	G	G	G	G	G	G	G	33	35	31	37	44		G
2	G	G	G	34	G	G	37	G	41	G	G	G	G	G	G	G	38	56	35	35	G	29	44	60
3	69	50	33	29	30	29	42	42	G	56	G	G	G	G	G	G	72	64	64	71	98		G	G
4	G	G	G	32	G	44	41	43	G	G	53	44	44	66	G	G	42	56	68	60	45	33	G	44
5	G	G	G	24	G	29	34	G	G	52	42	G	G	G	58	53	44	45	34	32	24	G	32	31
6	40	33	44	28	27	29	32	G	G	G	G	45	G	G	G	G	G	G	G	24	G	G	G	26
7	32	28	29	23	24	26	G	G	G	G	G	G		G	G	G	G	G	G	G	29	G		24
8	27	26	27	26	G	G	G	G	G	G	G	G	G	G	G	G	G	34	27	36	47	29	G	25
9	G	G	G	28	G	G	G	G	G	G	44	45		G	G	G	G	G	G	25	33	26	G	
10		G	G	30	27	G	G	G	G	G		G	G	G	G	G	G	33	G	28	32	G	50	G
11	G	G	32	24	28	30	33	G	G	G	G		G	G	G	G	G	G	29	38	36	50	43	43
12	37	34	28	26	G	G	G	G	G		G	G	G	G	G	G	G	G	38	G	G	G	G	G
13	G	G	32	39	28	G	38	38	62	G	44	G	G	G	G	G	G	G	29	59	34	46	50	G
14	G	G	G	G	G	44	G	40	G	G	G	G	G	G	G	G	G	39	47	40	G	60	71	
15	32	28	46		G	G	34	46	G	G		G	G	G	G	G	G		29	G		G	34	G
16	G	G	G	32	G	28	62	46	57	G	G	G	G	G	G	G	36	G	G	G	29		G	28
17	G	G	G	G	G	34	G	39	G	G	G	G	G	G	G	G	G	G	G	30	G	30	G	
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
19	24	G	G	26	30	G	G	G	G	G	G	G	G	G	G	56	60	61	29	43	59	71	50	G
20	G	G	G	G	G	G	G	G	G	G	G	43	G	G	G	G		G	37	28	50	G	27	
21	G	G	G	G	11	G	G	50	66	64	G	42	58	G	G	38	50	49	51	59	40	G	G	48
22	27	34	36	36	51	33	40	42	G	G	G	G		G	G	G	G	G	28	47		G	G	G
23	G	28	G	G	32	31	30	46	43	G	G	G	G	G	G	G	35	28	32	G	G	32	G	G
24	G	G	26	G	G	28	G	G		G	G	G	G	G	G	G	G	31	G	G	28	30	32	26
25	G	G	G	28	43	26	G	G		G	G	G	G	G	G	G	G	G	G	29	33	28		G
26	25	25	22	G	G	G	G	G	G	G	G	G	G	G	G	36	35	56		56	G	G	G	G
27	28	23	G	30	G	G	30	G	G	43	G	G	G	G	G	G	G	G	36	38	29	23	28	26
28	26	27		24	26		33	41	G	G	G	G	G	G	G	G	37	27	28	30		28	G	G
29	28	28	29	31	29	26	36	44	G	G	G	G	G	G	G	G	G	G	G	26	30	37		33
30	G	G	22	G	G		34	34	G	G		G	G	G	G	G	G		29	30	28		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	29	30	29	29	30	28	30	30	27	29	27	29	27	30	30	30	29	28	29	30	27	27	26	25
MED	G	G	G	26	G	14	16	G	G	G	G	G	G	G	G	G	G	14	29	30	29	28	G	G
U Q	28	28	30	30	28	29	34	42	G	G	G	G	G	G	G	G	36	42	35	40	37	33	34	29
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Wakkanai

SEP. 1999

LAT. 45.4N LON. 141.7E 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	14	15	15	16	17	15	16		17	26	22	23	22	23	18	21	15	15	16	21	15		27
2	14	22	23	17	20	28	23	24	22	22	20	21		21	22	22	20	23	16	16	16	16	15	15
3	15	14	15	15	15	15	16	23	18	26	26	24	26	23	26	20	24	17	22	21	17		18	18
4	17	16	28	16	18	15	16	17	17	16	21	23	17	18	17	18	17	15	15	15	15	15	14	15
5	14	14	15	17	15	15	15	15	17	16	17	27	17	20	17	16	16	16	15	14	15	15	15	14
6	14	15	14	16	14	14	15	16	16	17	16	16	16	16	17	16	16	16	17	15	15	15	15	15
7	14	15	15	15	15	16	15	15	16	17	20	18		21	17	16	16	17	16	15	15	16	16	14
8	15	15	15	15	15	15	15	15	16	20	20	17	17	20	18	21	17	16	18	15	15	16	15	15
9	15	15	15	15	15	16	23	18	15	18	21	20		18	15	15	28	22	15	15	16	15	15	
10		15	15	15	15	16	18	15	17	17		18	21	18	20	17	18	18	16	15	15	15	14	15
11	15	16	15	15	15	15	16	16	16	16	21		22	18	22	16	17	18	15	14	15	15	15	17
12	15	14	15	15	15	15	15	15	16		23	22	23	22	17	32	29	21	18	23	23	18	23	22
13	16	18	15	20	18		21	17	26	18	22	23	21	18	17	22	17	22	15	16	15	23	15	24
14	23	18	21	17	17	18	16	17	16	17	21	24	22	22	21	24	23	20	16	17	21	17	17	
15	15	16	21	16	26	16	20	21	22	23		20	23	20	21	34	16	20	20	16		15	17	18
16	17	16	20	15	16	16	15	24	16	21	22	20	21	22	20	20	20	22	16	18	16	18	15	15
17	15	18	23	16	17	20	30	16	20	22	21	21	22	20	20	18	28	23	17	15	15	16	18	
18	17	18	18	17	15	16	16	21	22	23	23	22	23	18	22	21	20	21	17	17	15	20	15	
19	15	15	15	14	15	15	16	16	16	16	18	17	17	16	15	17	17	17	17	16	16	16	20	17
20	16	17	16	16	20	17	23	20	18	23	21	21	21	21	22	18		23	17	17	17	15	15	
21	15	14	15	15	15	15	22	16	18	22	21	46	21		18		16	21	17	16	18	15	17	15
22	16	15	15	15	15	15	15	16		22	20	23		21		18	27	22	20	16		17	16	15
23	20	16	16	15	16	15	18	17	22	21	17	23	20	23	23	22	22	16	16	16	16	15	15	15
24	15	15	15	15	15	15	23	16	16	16	17	18	24	17	17	16	15	17	15	15	16	15	15	15
25	15	15	15	15	15	15	15	15		15	16	17	17	15	16	17	16	18	15	15	15	15		15
26	15	15	14	15	15	15	15	15	15	16	17	18	17	16	16	17	23	17	15	15	17	17	16	18
27	16	15	15	15	15	15	15	15	15	17	17	18	16	17	15	15	20	18	15	14	15	15	16	16
28	15	15		15	16		15	16	17	15	17	17	17	16	17	15	15	18	15	15		15	15	15
29	15	15	14	14	15	15	15	15	17	16	16	17	17	17	16	16	15	16	15	15	15	15		15
30	15	14	15	15	15	15	15	15	15	15		18	16	16	16	15	16		15	15	15		15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	30	28	30	30	27	29	27	29	26	29	29	29	29	29	30	30	27	28	27	25
MED	15	15	15	15	15	15	16	16	17	17	20	20	21	18	17	18	17	18	16	15	15	15	15	15
U Q	16	16	17	16	16	16	20	17	18	22	21	23	22	21	21	21	22	21	17	16	17	16	17	17
L Q	15	15	15	15	15	15	15	15	16	16	17	18	17	17	16	16	16	16	15	15	15	15	15	15

HOURLY VALUES OF foF2 AT Kokubunji

SEP. 1999

LAT. 39.7N LON. 140.1E 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	62	68	57	58	56	61	94	93	91	82	82	82	86	A	83	83	81	82	82	74	62	A	A	
2	55	62	57	51	54	56	67	75	67	72	75	74	79	81	84	88	91	93	93	80	60	A	68	66
3	68	57	62	55	56	56	68	68	80	84	91	98	86	90	91	91	86	115	100	94	73	58		A
4	A	68	57	A	48	60		92	115	81	77	81	88	81	80	81	83	86	83	94	79	68	68	57
5	57	54	51	A	A	A	79	95	94	80	86	96	97	92	81	83	88	94		92	93	A	58	63
6	68	68	61	60	54	57	72	93	116	106	83	84	84	81	85	81	85	80	86	98	94	58	47	58
7	57	51	57	51	50	51	74	93	98		84	85	83	86	91	88	84	83	91	82	83	80	73	68
8	67	54	57	60	60	56	94	116	95	75	72	84	97	88	82		94	97	104	92	72	68	57	58
9	57	50	56	56	52	34	62		82	82	80	85	95	85	81	82	81	86	93	94	94		68	57
10	58	57	56	70			69	94		82	81	85	94	91	87	83	82	88	97	93	92		64	70
11	57	56	58	56	56	59	94		81	88	86	101	98	95	110	98	96	87	83	A	68	68	67	68
12	68	62	63	72	59	A	93	94		76	82	86	111	94	95	86	83	96	105	106	96	95	93	92
13	81	68	61	57	51	34	74	116	84	75	78		83	100	97	80	78	74	73	67	68	66	A	51
14	68	48	56	48	42			93	84	83	64	81	94	96	A	102	91	88	83		67	69	56	57
15	52	A	A	47	50			94	82	91	94	104	104	103	100	94	91	92	82	82	57	56	57	92
16	49	38		37	40	48		50							54	56	66	93	72	A	A	A		46
17		44	46	40	37	A	A	92	73	78	84	76	67		66	71	71	73	74	64	60	58	52	57
18	50	47	56	47	46	56	69	81	81	81	81	86	81	82	84	83	82	84	82	66	60	52	57	57
19	52	56	57		47	59	60	93		81	97	98	97	91	92	82	86	96	94	68	60	57	58	60
20	56	58	A	51	47	A	68		93	95	84	94	98	93	84	86	92	98	107	93	63	56	A	50
21	58		A	46	48		71	81	92	90	101	101	114	104	83	85	91	91		58	A	52	58	57
22	51	51	57	57		A	A	92	100	97	111	106	97	94	88	82	81	92	100	94	56	60	52	57
23	58	47	53	58			51	94	106		85	82	105	106	85	91	94	112	97	58		60	62	56
24	50	54	57	57	56	56	76	94		100	88	92	98	101	96	92	106	106	123	93	68		57	52
25	52	56	51	48	51	57		101	82	90	98	101	102	95	95	87	94	112		82	56	69	57	52
26	57	57	54	59	59	57		93	94	105	105	98	96	93	96	96	92	92	91	82	58	56	57	57
27	56	57	57	48		68		93	81	115	110	115	110	112	113	115	105	123	99	93	69	57	73	58
28	58	57		58	52	54	61	94	70	64			82	80	75	73	81	83	73	58	59	48	50	
29			69	41	41		72	93	93	93	90	93	96	87	95	114	94	93	73	46	50	57	56	57
30	50	58	56	44	44	A	69		87	84	95	111	116	102	105	106	102	108	94	57		47	59	48
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	27	25	27	25	18	21	26	25	27	28	27	29	27	29	29	30	30	27	27	26	23	25	27
MED	57	56	57	55	51	56	71	93	87	83	84	92	96	93	87	86	87	92	91	82	68	58	58	57
U Q	62	58	57	58	56	59	77	94	94	93	94	101	100	100	95	93	94	97	99	93	79	68	67	63
L Q	52	51	56	47	46	54	67	92	81	80	81	84	85	86	82	82	82	86	82	66	60	56	56	56

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Kokubunji

SEP. 1999

LAT. 39.7N LON. 140.1E 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	26	G	G	G	G	48	44	G	51	53	46	50	G	42	129	126	33	39	31	60	34
2	27	G	G	G	G	25	36	G	45	G	G	G	G	G	G	G	48	51	42	37	39	89	58	
3	32	61	36	32	28	G	33		65	56	G	82	68	60	50	52	66	65	52	54	34	35	162	
4	59	54	39	31	24	32	34	62	92	72	123	48	G	G	G	G	G	G	28	27	G	G	27	59
5	34	25	26	35	29	40	32	44	47	51	52	50	52	54	G	52	54	48	72	46	60	62	32	27
6	31	33	G	G	32	44	35	40	39	48	G	54	G	G	G	G	58	41	51	35	G	30	27	G
7	25	23	G	G	G	G	31	40	G	G	G	G	G	G	G	G	G	G	G	G	27	32	26	33
8	27	24	G	G	26	28	G	G	G	G	G	G	G	G	G		38	35	38	30	29	24	G	G
9	G	G	G	G	G		G	G	G	G	G	G	G	G	G	53	43	31	G	25	34		G	G
10	G	G	G	26	28	G	33		G	G	G	G	G	G	G	G	G	34	73	G	G	G	30	G
11		31	G	G	G	32	34	G	45	G	G	G	G	G	46	G	G	G	36	91	46	32	G	G
12	30	G	G	G	G	31	30	46	47	G	G	G	G	G	G	G	G	36	G		26	39	32	36
13	G	G	G	G	G	G	34	G	58	G	G	G	G	G	G	G	G	G	24	26	53	39	61	G
14	29	31	30	27	G	29		53	G	G	G	G	G	G	116	G	G	33	57	40	54	32	32	G
15	G	57	40	51	50	37	32	G	G	49	54	G	G	G	48	G	43	54	37	G	55	62	37	31
16	27	G	G	23	G	G	34	G	G		G	G		G	G	G	G	G	32	48	37	40	G	27
17	G	G	G	G	G	34	53	36	G	G	G	G	G	G	G	G	G	32	30	32	24	26	32	G
18	G	G	G	G	G	G	G	35	G	G	G	G	G	G	G	G	G	34	31	29	G	G	G	G
19	G	26	31	27	G	25	G	G	G	G	G	G	G	G	G	G	37	34	29	29	26	G	G	G
20	G	G	58	38	39	31	G	34	G	G	G	G	G	G	G	G	56	46	31	27	35	33	30	25
21	G	G	34	31	G		G	G	G	G	G	G	G	G	G	G	G	32	G	G	55	47	30	G
22	27	28	26	G	32		80	36	G	G	G	G	G	G	G	G	G	34	32	35	26	G	G	G
23	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	37	G	G	G	33	28	G
24	G	G	G	32	G	32	G	G	G	G	G	G	G	G	G	40	37	40	29	38	G		G	G
25	G	G	G	G	G	G	30	G	G	G	G	G	G	G	G	G	G	G	G	G	G	33	G	G
26	G	G	G	G	G	22	29	36	G	G	G	G	G	G	G	42	46	36	40	39	39	G	29	G
27	23	23	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	34	30	35	G	G	G	G
28	G	G		G	G	G	29	35	39	G	G	G	G	G	G	G	G	32	29	30	32	30	G	28
29	G	G	G	G	G	G	29	36	38	G	G	G	G	G	G	G	G	G	26	G	G	G	27	G
30	G	G	G	G	G	24	29	44	G	46	G	G	G	G	G	G	34	47	G	G		26	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	29	30	29	30	29	27	29	28	30	29	30	30	29	30	30	29	30	30	30	29	29	28	30	28
MED	G	G	G	G	G	24	30	18	G	G	G	G	G	G	G	G	G	34	30	30	29	32	27	G
U Q	27	26	28	27	27	32	34	38	45	45	G	G	G	G	G	G	43	41	40	37	39	37	32	27
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31	24	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

SEP. 1999

LAT. 39.7N LON. 140.1E 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	15	14	15	16	17	15	26	17	21	18		33	30	27	22		17	15	15	14	15	14	15	14
2	16	16	15	14	14	15	15	14	17	20		54	61	57	23	21	15	15	14	14	14	15	15	14
3	14	16	14	14	14	16	17	16	16	35	36	39	35	34	30	18	15	15	15	17	15	14	15	15
4	14	15	17	14	14	15	16	14	17	32	35	38		48	47	18	16	15	15	15	14	14	16	15
5	14	15	15	14	14	16	14	16	18		22	34	36	40	33	18	15	14	14	15	14	14	15	17
6	14	14	15	15	15	16	14	14	16	18	17	16	17			44	15	14	14	15	15	15	14	14
7	16	14	15	15	16	15	15	15	15	21	18		46		21		17	15	17	16	16	14	15	15
8	14	14	16	15	15	15	16	15	15		42	26	26	21	20		16	14	16	14	14	14	14	15
9	15	14	15	15	14	14	16	18	15	46	44	52	21		17	18	16	14	17	15	14		15	15
10	15	15	14	15	14	15	15	17	16	17	21			24	17	14	14	17	15	16	15	14	15	15
11	15	15	15	15	15	15	16	17	17	30	33		46	20	24		18	15	15	14	14	14	14	16
12	15	18	15	15	15	15	15	16	16	24		23	23	18	16	14	17	14	16	15	15	15	15	15
13	17	15	14	15	15	16	20	17	17	18	27		52	51	18	15	16	14	14	16	15	16	15	16
14	15	15	15	15	15	14		15	15		24		50	47	32	21	15	15	14	15	15	15	15	15
15	17	14	14	14	14	15	17	15	15	30	36		45	48	20	15	15	16	15	14	15	15	15	14
16	15	16	14	14	14	15	15	18	21		66	71				20	16	15	14	14	15	14	15	17
17	16	15	15	15	14	15	16	14	14		22	26	27	26	17	14	14	14	15	15	14	14	14	15
18	15	14	14	15	15	15	18	17	16		50			23		17	15	15	14	15	16	15	15	15
19	15	14	14	15	15	15	24	17	18	18		49	46	50	45	17	16	15	15	14	14	16	15	16
20	16	16	14	14	14	15	23	15	20		46	49			47	17	14	14	14	14	14	15	15	15
21	22		14	14	15	14	14	17	20		48	34	52	62	43	21	17	15	15	14	14	14	15	15
22	16	15	14	15	15	15	14	15	16	21		46	50	42	23	17	15	14	14	15	15	14	14	14
23	15	15	15	14		15	21	15	15	20	18	45	17	18	16	17	29	16	14	15	14	14	15	14
24	14	15	15	15	15	15	16	14	15	16	18	24	23		20	15	14	16	14	14	15		15	15
25	15	14	14	14	16	15	15	15	18	17	24	17		20	17	16	16	23	16	14	14	14	14	15
26	15	14	15	18	15	14	18	14	16	18	24	21	21	23	17	17	15	17	14	14	15	15	15	15
27	14	15	16	15	15	15	16	15	16	18		46	46	44	39	18	16	15	15	15	15	14	15	14
28	15	14		15	14	18	15	15	16	17		20	20		41	17	17	16	15	15	14	14	14	15
29	15	15	15	14	15	15	14	15	18	21		45	20	16	14	17	15	21	15	14	14	15	14	14
30	14	14	14	14	14	15	14	15	16	16	18		23	17	18	16	14	14	16	14		14	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	30	29	30	29	30	30	22	22	22	24	23	27	26	30	30	30	30	29	28	30	30
MED	15	15	15	15	15	15	16	15	16	19	26	36	32	27	21	17	16	15	15	15	15	14	15	15
U Q	16	15	15	15	15	15	17	17	18	24	42	46	46	48	33	18	16	16	15	15	15	15	15	15
L Q	14	14	14	14	14	15	15	15	15	18	21	24	22	20	17	16	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Yamagawa

SEP. 1999

LAT. 35.7N LON. 139.5E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		70		54	60	66	74	108	90		97	90	110	119	102	104	102	106	103	97	64	73	119	
2		129		55		56	72	83	73	78	80	76	88	100	101	101	107	106	104	88		68		
3	65	73	71	72	52	51	53	92	101	96			111	118	111	111	100	108	117	128	107	A	149	
4			72	60	48			94	90	86	83	90	101	98	106	94	95	105	111	121	104	74		57
5		55				53	67	80	80	84	85	91	110	111	104	103	107	111	116	110	112		A	
6	73	88		95	70	62	82	112	110	90	83	A	124	107	98	96	92	86	103	119	87			
7	53	54	65		60	58	55	93	99	88	85	91	102	111	108	100	96	109	110	110		100	71	
8		119	119	55	46	54	60	86	92	75		88	116	106	95	98	103	111	104	119	111	78	63	
9			53	51	59		52		84	83	92			111	102	90	98		105	111	90		74	84
10						63		103	92	81	81	94	107		116	107	102	104	102	110	112			
11					48			97	81	91	91					118				117	109		84	78
12	74	63	54	54	60		73	94	84	86			111				97	107	120	130	108	110	106	
13						79		99	87		90		104		122	96			85	86	67		71	
14							55	80	81		82	86		110	110	107	103	97	108		88	54		
15						99	60	70		86							96	96	98		80			86
16		139	129		59	61	62	80	81			80	83	90	97	106	105	111	107	89	149			
17		52		54	69			73	84	80		86	76	85	87	87	81	88	87		59			
18					51			83	82				97	101		96			96	92	58		A	
19				72	58			82	88	91	96						112	120			68			
20		60	99	99		64		79	87						108		98	107	120	122	88			
21		60	42	79	46			93	84	91	110	125			110		100	107				72	61	
22	49	50		63	55			80	105	98	118	121		105		97	97	104						
23				54	59		52	94					111	121	108	98	106	117	107	105		65		
24										99	96	97		116	104		106			130				
25						62	67	94	96		97	110		102		98		121	133	121		49		
26				81	53		57	83	93	98		108	113	118	117	110	105	110	119	110				
27			69		79		52		91	105	109	107	111	122	127	130	127	122		110				
28				53			54	92	118	91	108	98		98	110	101	90	104	108					
29								82	85	96	96	100	111	123	121		121	107						
30									81	86	106	115	118	106	122		124	116						
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	5	13	10	16	18	13	17	26	27	22	20	19	19	22	23	22	26	25	22	21	18	10	9	4
MED	65	63	70	58	58	62	60	89	87	89	94	94	110	108	108	100	102	107	107	110	89	72	74	81
U Q	73	103	99	75	60	65	69	94	93	96	101	108	111	118	116	107	106	111	116	121	109	78	112	85
L Q	51	54	54	54	51	55	53	80	82	84	84	88	101	101	102	96	97	104	103	101	68	65	67	67

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Yamagawa

SEP. 1999

LAT. 35.7N LON. 139.5E 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	34	G		G	G	G	G	G	G	G	G	G	29	G	G	32	31
2	31	33	30	G	30	30	25	G	G	54	G	G	G	G	G	G	G	38	31	33	G	G	G	G
3	40	G	28	G	25	G	G	G	G	G	86	167	93	G	G	G	G	G	40	38	G	33	G	G
4	G	38	26	26	46	36	28	G	G	60	81	62	G	68	59	G	G	G	32	26	G	G	29	29
5	G	G	G	G	25	G	G	G	G	G	G	54	G	G	61	60	39	G	32		29		31	G
6	28	G		G	G	G	G	32	G	G	72	139	G	61	G	53	83	55	78	30	30	29	G	G
7	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	29	30	G	29	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	58	53	G	G	G	G
9		G	28	G	G	G	G	G	G	G	G			G	G	G	G		32	29	G	G	26	G
10	G		G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	31	G	G	G	G
11	G	G	G	G	G	G		40	40	60	G					G				32	G	G	G	G
12	G	G	G	G	G	G	G	G	G	41			G				G	G	G	G	G	G	G	
13						G		G	40		62		G		G	46			47	G	G	G	30	
14	G					G	G	G	G		G	G		G	G	G	G	48			29	27	29	G
15	G		26	G	G	30	30	G		G							G		33	32	29		G	29
16	28	G	G	G	G	G	G	G	G			G	G	G	G	G	G	G	G	G	G		G	G
17	G	G		G	G	G	G	31	G	G		G	G	G	G	G		G	G	G	G	G	G	G
18	G	G	G	G	G	G	G	G	G				78	84		G					28	28	28	G
19	28	29		G	G	G	G	G	G	G	G						G	G			G	G		G
20	G	G	G	G		G	G	G	G						G		G	37	G	30	G	G		G
21		G	G	G	G	G	31	G	G	G	G	G			G		G	G				G	G	G
22	G	G	G	G	G	G	G	40	39	70	G	G		G		G	G	G			G		G	G
23		G	G	G	G	G	G	G					G	G	G	G	G	33	G	G		G	G	G
24	G									G	G	G		G	G		G			G	G			G
25	G		G	G	G	G	G	G	G		G	G		G		G		G	G	G	G	G		G
26	G			G	G		G	31	G	G		G	G	G	G	G	G	51	G	G	G			G
27	G		G		G	G	G		G	G	G	G	G	G	G	G	G	G		G	27	G		G
28			G	G	G	G	G	G	40	G	G	G		G	G	G	G	G	G				G	G
29	G			G	G		G	G	39	40	G	G	G	G	G		G	G		27	27	G	28	29
30	G	G	G	G	G	G	G		G	G	G	G	G	G	G		G	G				G		G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	20	22	25	26	27	27	27	27	22	22	21	19	23	23	22	25	24	20	22	26	23	23	28
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	30	28	G	G	G	G
U Q	14	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G	17	32	31	27	G	28	G
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 Yamagawa

SEP. 1999

LAT. 35.7N LON. 139.5E 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	16	15	15	14	17	15	18	23	38		55	54	66	66	48	44	23	22	23	16	15	15	16	14
2	17	18	17	15	18	17	17	22		45	46	48	49	55	55	45	21	21	21	18	15	14	14	18
3	17	16	17	15	15	15	20	21		43	46	48	45	55	53	45	44	21	20	18	24	16	15	15
4	20	17	15	17	15	16	16	21	35	39	48	46	50	47	44	48	35	21	22	16	16	15	15	17
5	20	17	16	24	17	15	18	24	24	40	44	38	53	49	44	44	42	30	21	21	17	17	20	21
6	20	23		16	15	15	18	26	35	44	46	46	53	48	48	44	23	24	21	17	20	21	15	15
7	17	14	15	15	14	14	17	20	24	48	45	50	53	50	50	46	48	32	21	17	21	15	16	16
8	18	15	15	15	16	15	18	27	35	38	48	50	49	49	46	23	34	18	22	16	17	16	16	15
9		15	16	16	15	18	16	24	33	44	44			49	43	44	38		18	16	16	15	17	16
10	17		20		17	14	17	28	36	42	38	49	49	48	49	44	44	39	18	20			17	15
11	16	15	15	15	21	15		18	22	34	45					44				16	18	16	21	20
12	17	17	15	15	15	15	16	18	33	22			50				46	21	18	16	16	15	17	
13						15		18			44		52		46	44			17	17	15	16	17	16
14	16					15	16	20	22		46	48		54	48	43	34	36	18		16	16	17	17
15	16		17	16	16	15	16	29		22							39	26	18	17	16		15	17
16	21	16	17	17	15	18	17	26				49	50	49	48	44	42	21	18	16	14		15	15
17	15	15		15	16	15	17	20	21	24		45	55	55	52	45	22	24	17	17	16	16	16	16
18	15	16	15	16	14	15	16	27	35				45	51		46			21	15	15	20	17	17
19	15	15		16	15	15	16	27	22	46	46						36	30			15	16		16
20	15	15	16	16		15	17	22	22						48		23	20	18	20	20	23		16
21		15	14	14	14	15	21	27	24	42	45	50			47		43	28				16	15	14
22	15	15	16	15	17	15	14	21	20	23		49		46		39	36	27			17		16	15
23		15	15	16	16	14	15	21					48	50	45	38	36	22	18	15		15	15	15
24	15									39	24	46		50	45		22			15	16			15
25	15		14	16	15	16	15	26	33		45	48		45		46		28	17	17	16	14		17
26	15			15	17		15	24	34	44		48	44	49	48	44	34	41	20		20			15
27	14		15		14	14	15		21	37	44	55	54	54	45	44	21	28		16	20	16		15
28			16	14	14	16	15	20	20	23		48		50	45	45	36	24	20				22	
29				14	15		17	23	21	23	24	45	53	46	46		42	26		17	17		17	15
30	17	15	15	15	15	16	15		45	43	54	56	50	48	44		34	21				15		15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	20	22	25	26	27	27	27	23	22	20	21	19	23	23	22	26	25	22	23	25	22	23	28
MED	16	15	15	15	15	15	16	23	24	40	45	48	50	49	47	44	36	24	19	17	16	16	16	16
U Q	17	16	16	16	17	16	17	26	35	44	46	50	53	54	48	45	42	29	21	17	19	16	17	17
L Q	15	15	15	15	15	15	15	20	22	24	44	46	49	48	45	44	23	21	18	16	15	15	15	15

HOURLY VALUES OF foF2 AT Okinawa

SEP. 1999

LAT. 31.2N LON. 130.6E 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	83	68	68	62		95	95	93	100	102	94	116	117	118								
2															117	121	125	127	125	129	84	82	92	86
3	83	81	93	93	67	58	64	94	94	84	94	116	121	125	143	132	117	141	156	145	94	84	84	80
4	72	68	A	64	56	60	67	99	92	78														
5																								
6											91	116		123	122	103	92	113	122	125	92	79	68	95
7	95	95	N	94	72	60	68	93	92	82	92	98	124	149	149	143	151	140	121		81	64		57
8	68	55	57	56	57	41	42	94	96	83	81	92	125	133	116	116	126	128	139	159	122	63	82	96
9	70		83		70	44	38	68	84	82	89	115	139	121	119	111	115	111	93	88	64	64	67	68
10	64	A	68	68	44		36	92	90	93	91	111	134	160	176	164	161	147	128	135			67	70
11	91	94	69	94	44	58	44	81	83	84	92	100	112	125	134	136	120	121	124	128	91	72	70	92
12	77	94	70	67	58	56	58	83	92	83	81	102	117	123	123	126	121	138	120	141		82	91	82
13	81	72	58	49	47	43	53	75	92	79	95	106	117	150	154	128	132	133	129	88	79		68	64
14	50	A	40	44	41	44	57	82	71	94	94	92	94	124	125	117	117	124	123	126	116		51	
15		68	42	41	44	67		73	76	87	84	123	142	150	150	132	123	117		84	90	92	66	60
16	68	38	A	42	40		57	78	95	115	90	94	102	115	150	173	170	180	170	168	121	91	95	82
17	93	76	81	80	68	44	44	95	92	91	91	93	90	112	112	92	123	106	94	A	71	79	78	81
18	81		69	58	39	41		77	77	83	93	94	106	114	106	94	A	111	112	A	A	60	64	68
19	A	70	60	69	37		43	82	92	94	92	111	124	136	150	139		153	139		117	154	151	
20	117	90	95	67	60	44	44	94	94	94	91	122	126	124	118	113	112	122	122	110	95	72	69	72
21	62	70	68	63	60	54	54	93	112	94	114	125	150	150	125	124	120	119	124	140	94	90	83	80
22	95	79	94	70	48	41		82	94	94	115	134	140	118	123	123	89							
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
	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	16	15	16	18	19	16	15	19	19	19	19	19	18	19	20	20	17	18	17	14	15	15	17	16
MED	79	76	69	67	56	49	53	83	92	87	92	106	122	124	124	124	121	126	124	128	92	79	70	80
U Q	92	92	83	70	67	59	58	94	94	94	94	116	134	149	149	134	129	140	134	141	116	90	87	84
L Q	68	68	59	56	44	43	43	78	84	83	90	94	106	118	117	114	116	117	120	110	81	64	67	68

HOURLY VALUES OF fEs AT Okinawa

SEP. 1999

LAT. 31.2N LON. 130.6E 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	44	34	G	G	G	G	G	34	G	44	G	58	G	G	G	G								
2															G	G	52	45	54	78	67	42	34	26
3		59	34	G	G	G	G	39	44	52	66	G	G	G	G	G	66	67	74	72	86	39	G	G
4	G	35	69	35	36	32	44	50	44	48														
5																								
6											58	56	58	67	61	66	47	88	60	88	84	60	73	40
7	42	39	29	G	G	G	G	G	43	41	44	52	46	G	G	G	G	47	76	170	108	83	44	29
8	G	G	G	G	G	G	G	37	42	44	G	G	G	G	96		68	60	92	94	95	76	41	G
9	G		G		G	G	G	G	G	G	G	G	G	51	60	G	62	43	47	34	44	55	G	G
10	28	33	26	G	G	G	23	59	40	G	G	G	G	G	51	G	70	G	60	44		56	47	34
11	G	24	G	G	G	G	24	46	75	45	62	G	G	G	G	G	G	G	32	46	36	78	37	43
12	51	36	G	G	G	G	G	G	36	G	G	G	G	G	46	43	52	45	38	26	27	27	G	G
13	G	G	G	G	G	G	G	35	45	G	G	52	G	G	G	G	G	G	33	30	24	G	35	56
14	36	28	25		G	G	G	G	49	40	76	47	G	57	60	G	G	G	60	86	58		37	
15	G	G	G	34	G	G	24	G	40	G	G	G	G	G	G	G	G	39		48	31	60	38	33
16	G	36	32	34	28	36	26	G	G	G	G	G	G	G	G	G	G	G	33	52	39	28	G	G
17	G	G	G	G	G	G	G		G	42	G	47	G	G	G	G	40	51	40	59	90	G	G	G
18	G	G	G	G	G	G	G	G	40	G	G	70	59	60	61	57	100	40	44	59	86	30	29	44
19	46	59	36	G	G	G	G	G	G	G	G	G	G	G	G	G	G	61	31		G	G	G	G
20	99	G	G	G	G	G	25	34	G	G	G	G	G	G	45	G	40	40	G	33	32	28	32	G
21	G	G	G		G	G	G	39	44	47	89	G	56	G	G	42	40	35	G	37	G	G	G	G
22	G	39	38	32	42	G	G	G	G	G	43	G	G	G	G	G	G							
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	18	19	16	19	19	19	18	19	19	19	19	19	19	20	19	19	18	17	17	17	17	18	17
MED	G	30	G	G	G	G	G	18	40	G	G	G	G	G	G	G	40	42	44	52	44	39	33	G
U Q	42	36	32	16	G	G	24	39	44	44	58	52	G	G	55	G	62	51	60	82	86	60	38	37
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32	35	29	14	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Okinawa

SEP. 1999

LAT. 31.2N LON. 130.6E 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	14	15	16	15	15	17	15	17	29	30	32	53	57	55	57								
2															54	27	17	15	14	15	14	14	15	14
3	14	15	14	16	18	16	21	15	17	33	38	48	30	56	29	49	16	16	15	14	14	14	14	15
4	15	14	15	14	14	14	16	14	16	32														
5																								
6											30	33		48	41	38	20	16	15	15	15	15	14	14
7	15	14	15	16	18	16	16	15	16	22	34	35	36	28	28	27	27	15	14	14	14	14	14	14
8	15	14	16	15	14	14	16	14	16	29	46	50	32		29	26	20	16	15	14	14	14	14	16
9	30		15		14	14	16	15	16	18	22	49	52	27	35	24	16	15	14	14	15	15	15	15
10	15	15	15	15	15	15	15	14	16	35	33	47	29	29	29	27	16	15	15	14		14	15	15
11	15	14	17	14	21	14	15	15	17	27	30	28	30	29	26	20	33	16	15	14	15	14	14	14
12	14	15	14	15	15	15	15	15	15	18	26	50	33	28		48	33	17	14	14	15	15	15	15
13	15	14	17	16	17	15	15	16	17	23	30	28		28	20	47	32	18	16	15	15	15	15	15
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15	18	14	16	14	16	17	14	16	15	20	47	51	28	50	49	29	23	17		15	14	14	14	14
16	14	15	14	14	14	15	14	14	16	22	28	30	49	52	52	49	23	16	14	14	14	15	18	17
17	15	15	16	15	15	16	16	14	16	18	20	28	26		35	18	38	29	15	14	15	15	15	16
18	16	16	14	15	15	15	15	16	16		46	42	44	24	42	52	17	15	14	15	15	15	15	15
19	14	15	15	15	14	14	15	16	15	20	47	48	48	50	49	44	46	18	15		15	15	15	15
20	15	15	14	14	14	15	15	20	44	40	48	52	53	48	29	29	18	14	21	15	14	14	14	17
21	16	15	15	15	15	15	15	16	18	27	29	49	26	55	28	20	17	15	20	14	14	15	15	15
22	14	14	14	15	14	15		16	18	40	21	26	50	49	49	38	54							
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	18	19	18	19	19	18	19	19	18	19	19	17	17	19	20	19	18	17	17	17	17	18	17
MED	15	14	15	15	15	15	15	15	16	27	30	42	33	48	35	29	23	16	15	14	15	15	15	15
U Q	15	15	16	15	16	15	16	16	17	32	46	49	49	51	49	47	33	17	15	15	15	15	15	15
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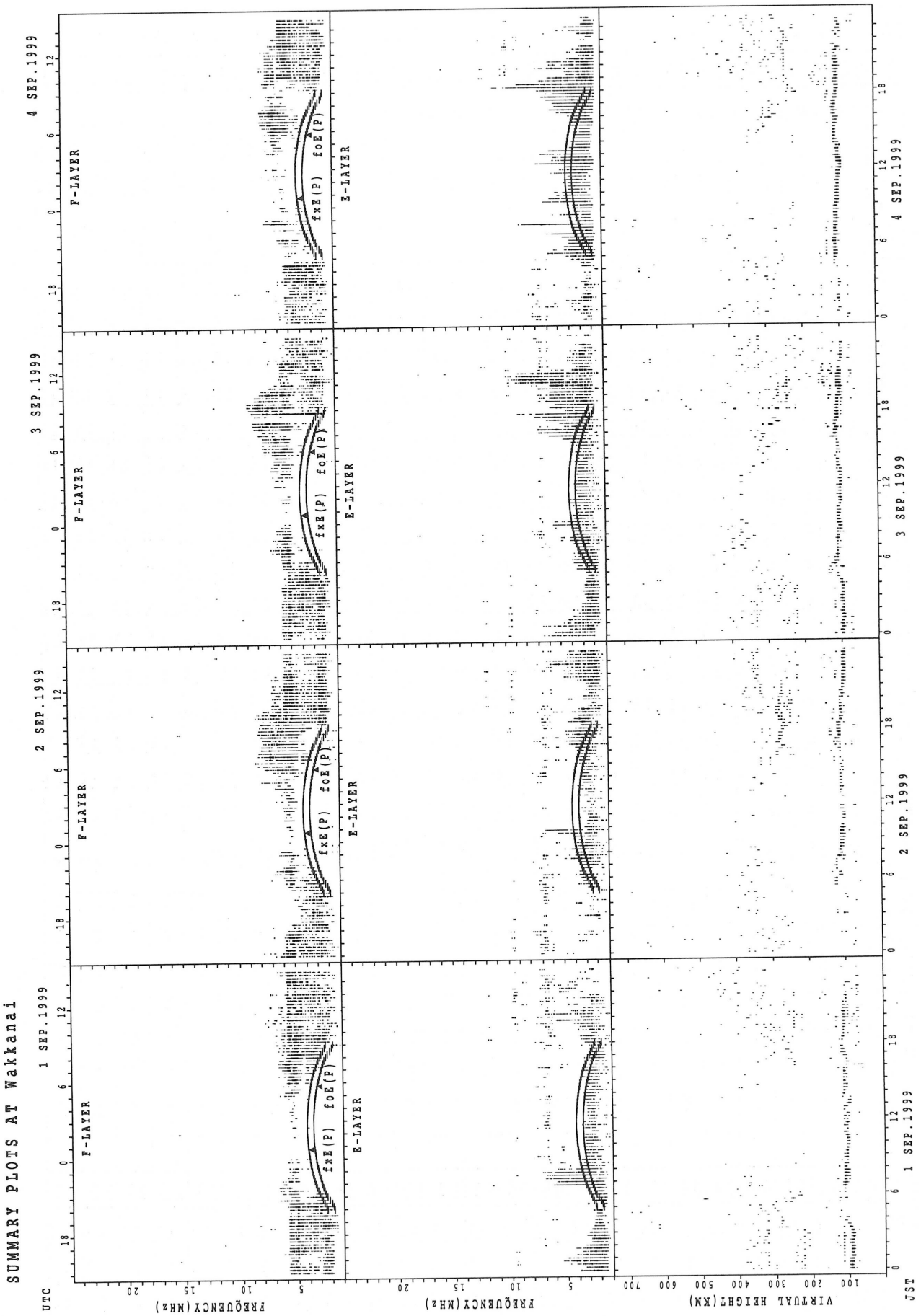
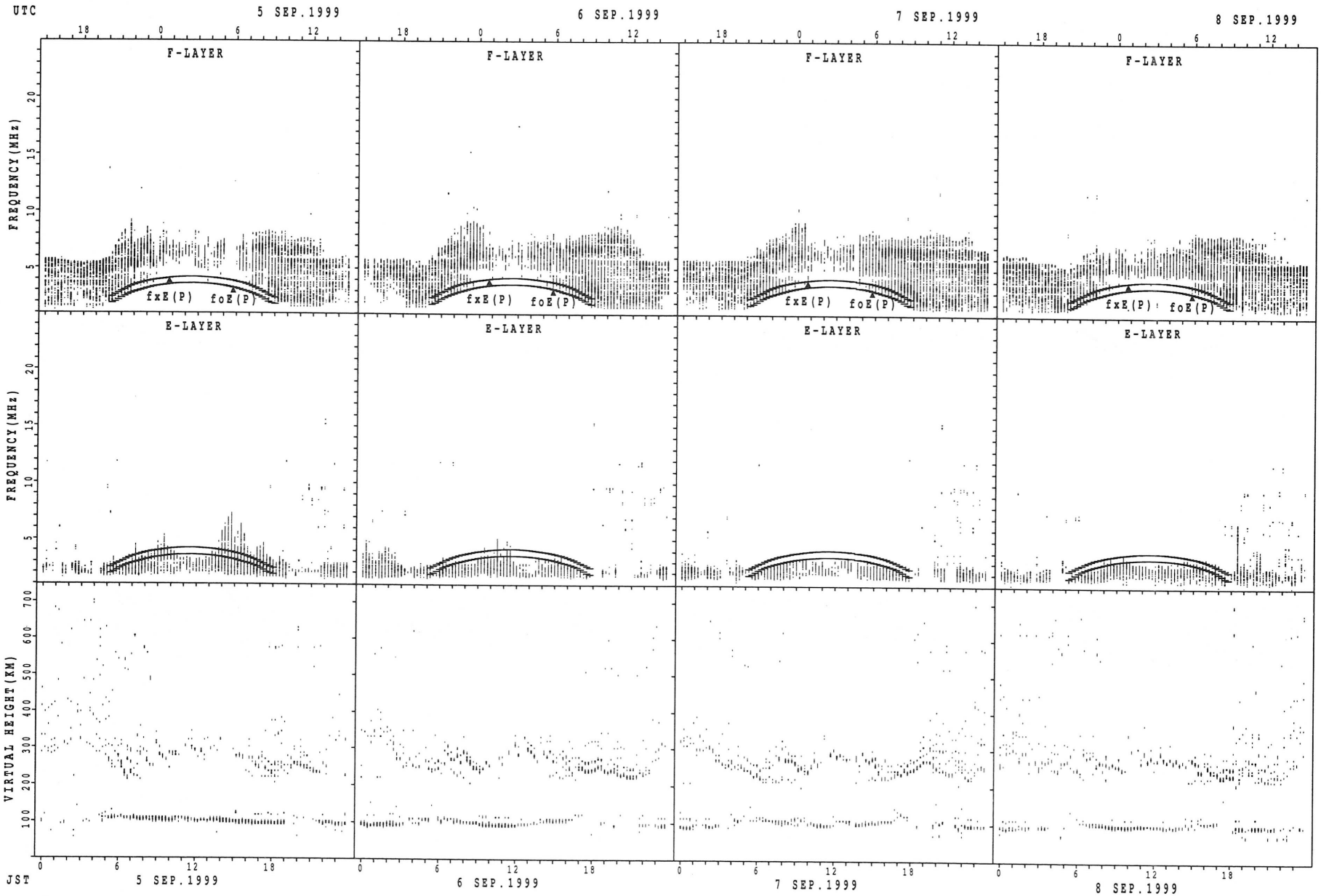
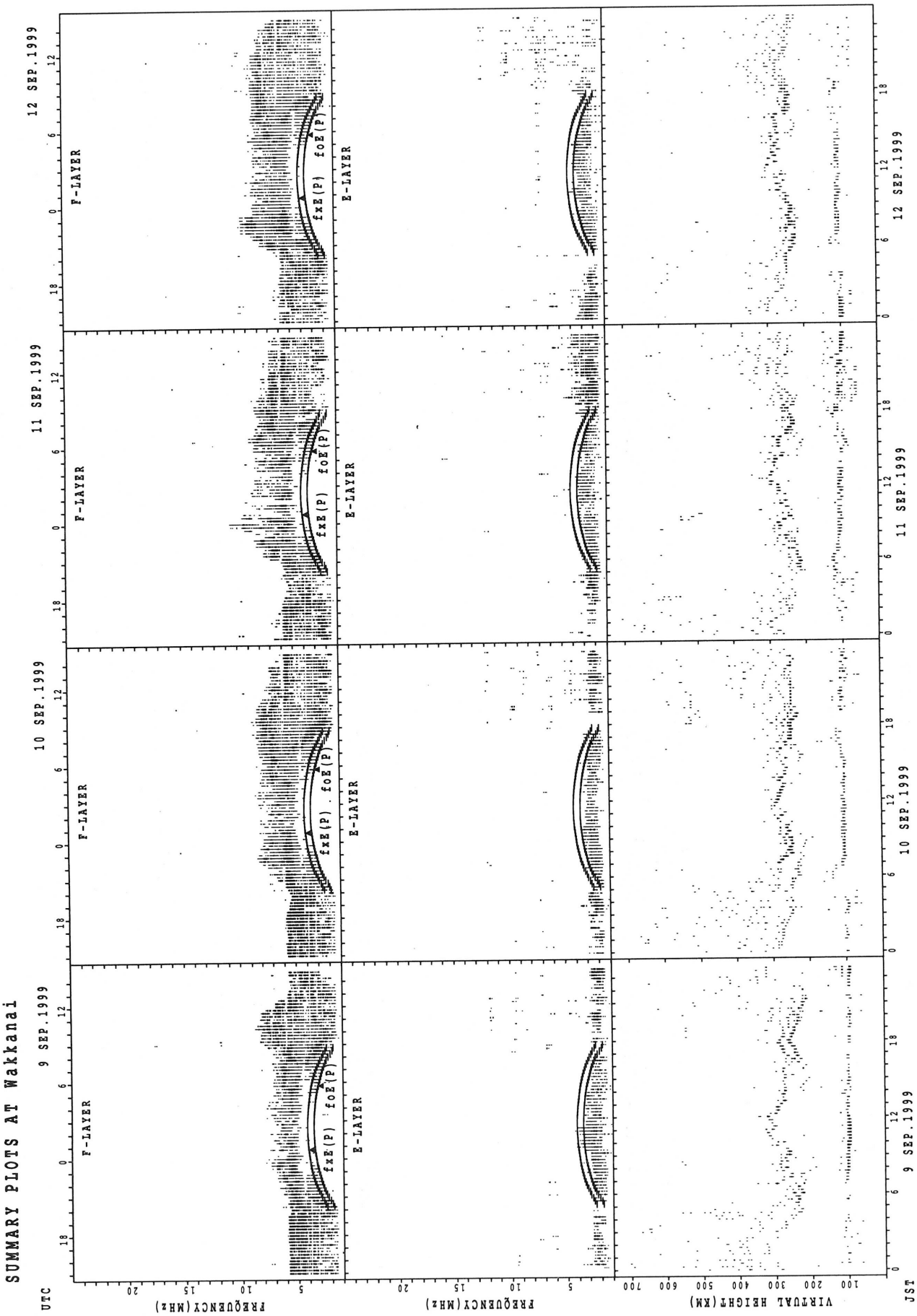

SUMMARY PLOTS AT Wakkanai
1 SEP.1999
2 SEP.1999
3 SEP.1999
4 SEP.1999
UTC
JST
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

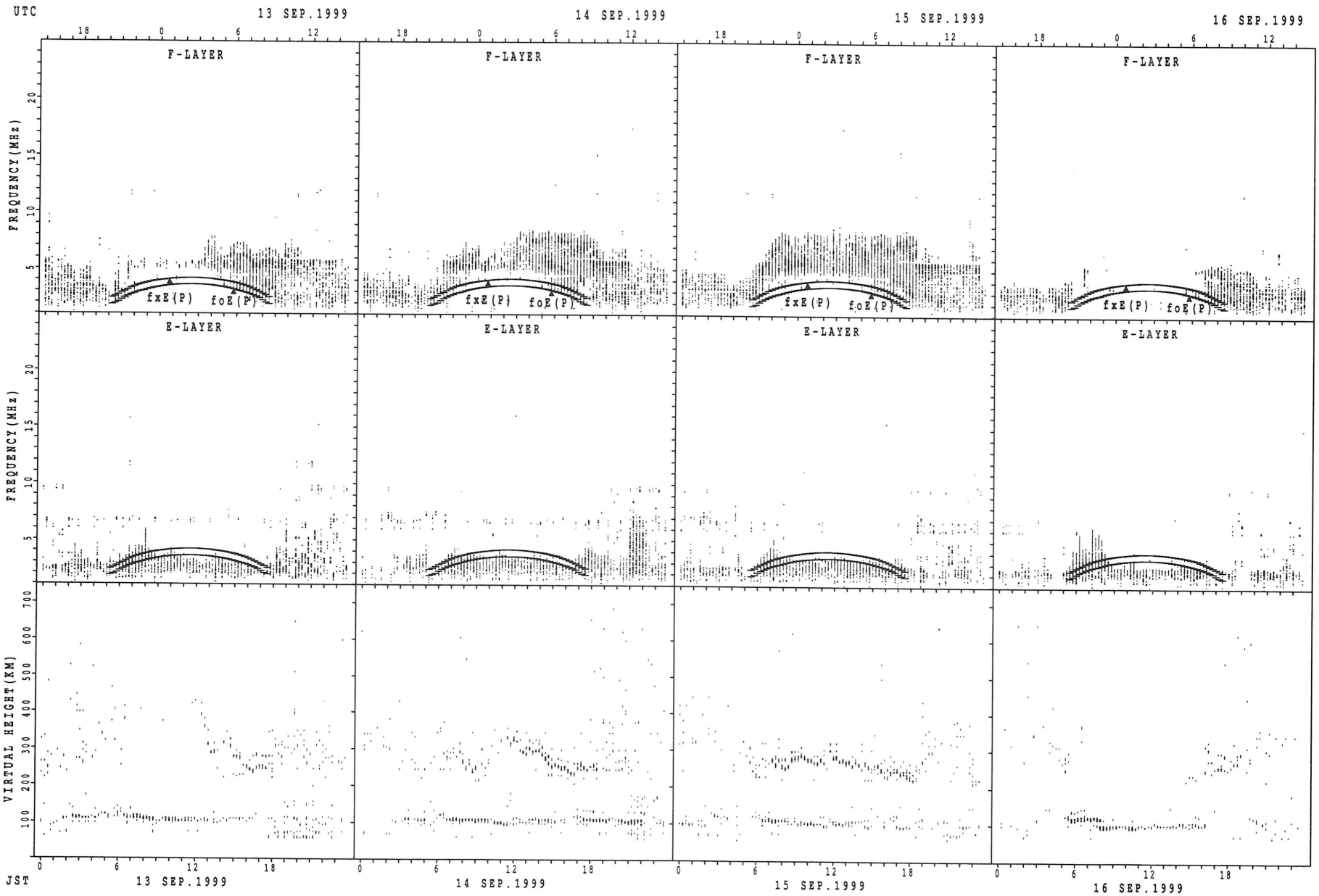
SUMMARY PLOTS AT Wakkanai



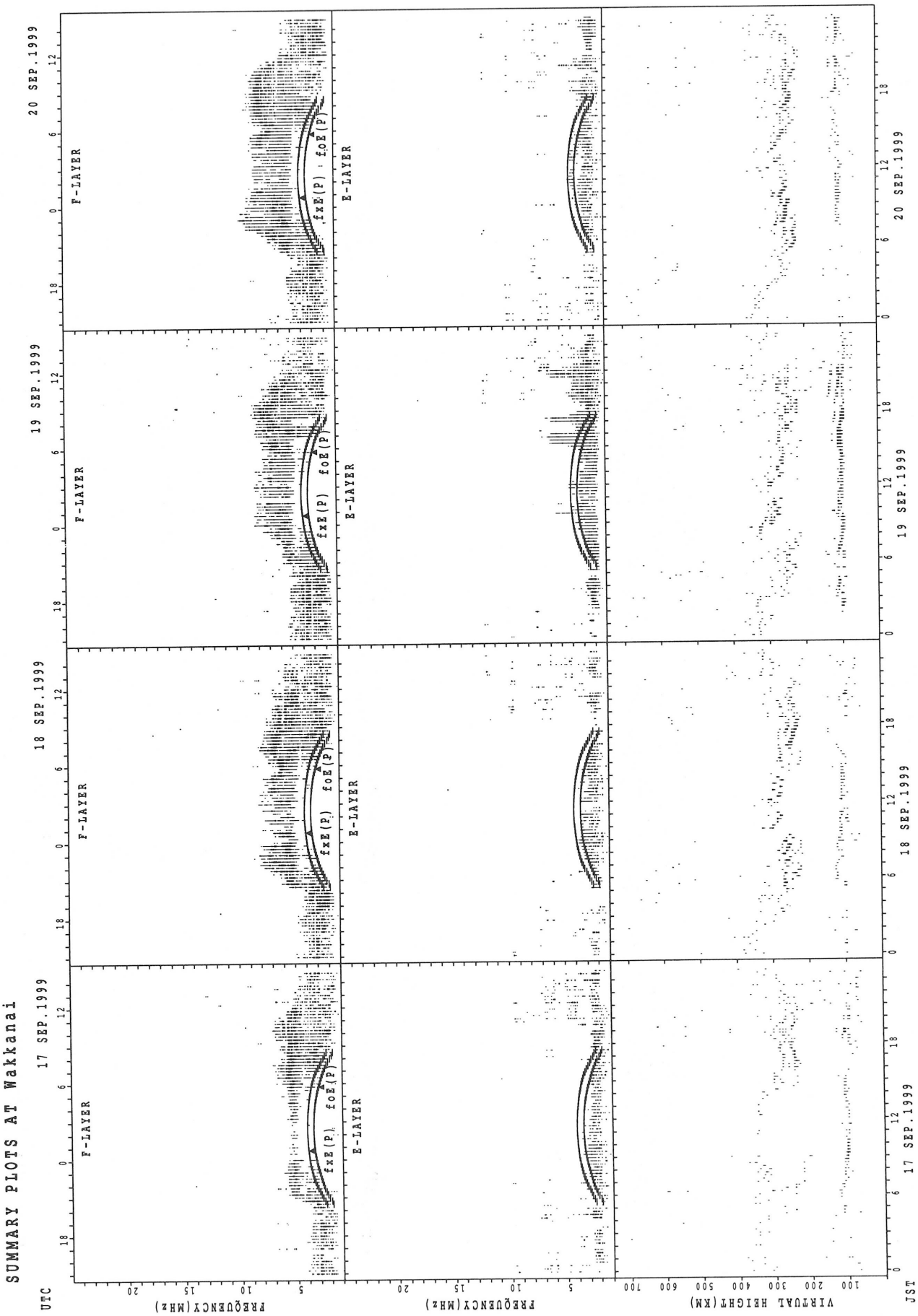
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

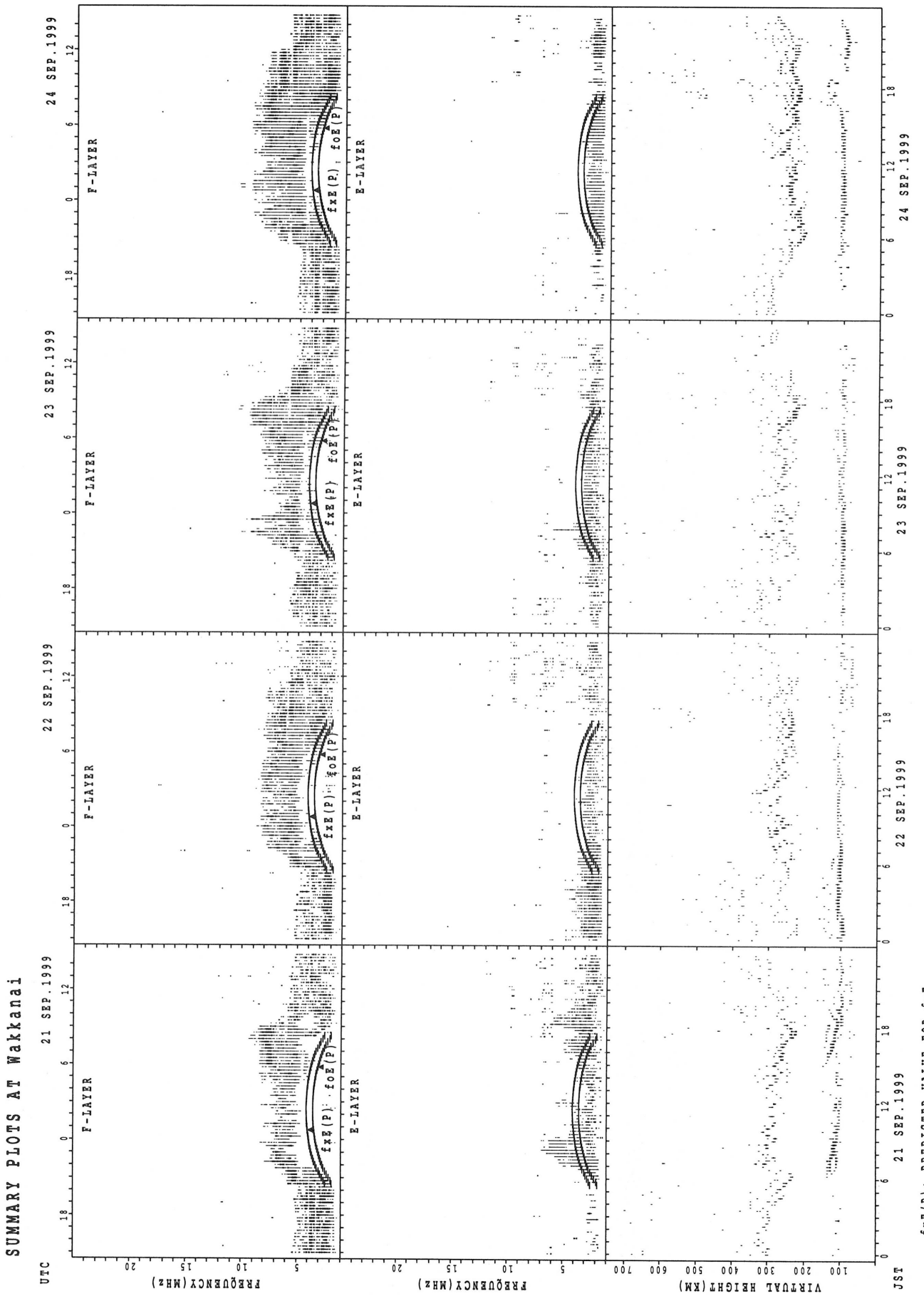

SUMMARY PLOTS AT Wakkanai
UTC
JST
9 SEP.1999
10 SEP.1999
11 SEP.1999
12 SEP.1999
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

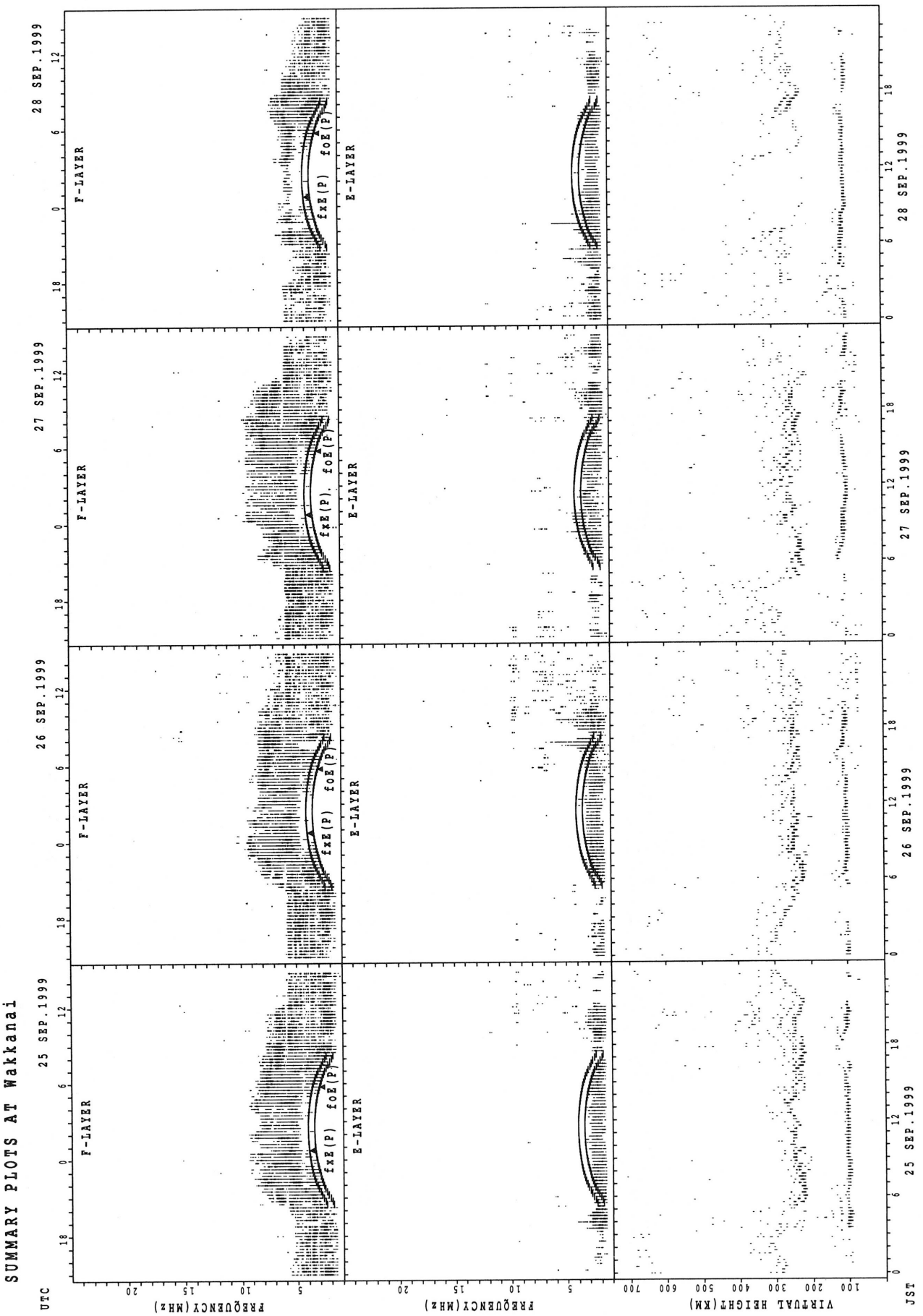
SUMMARY PLOTS AT Wakkanai



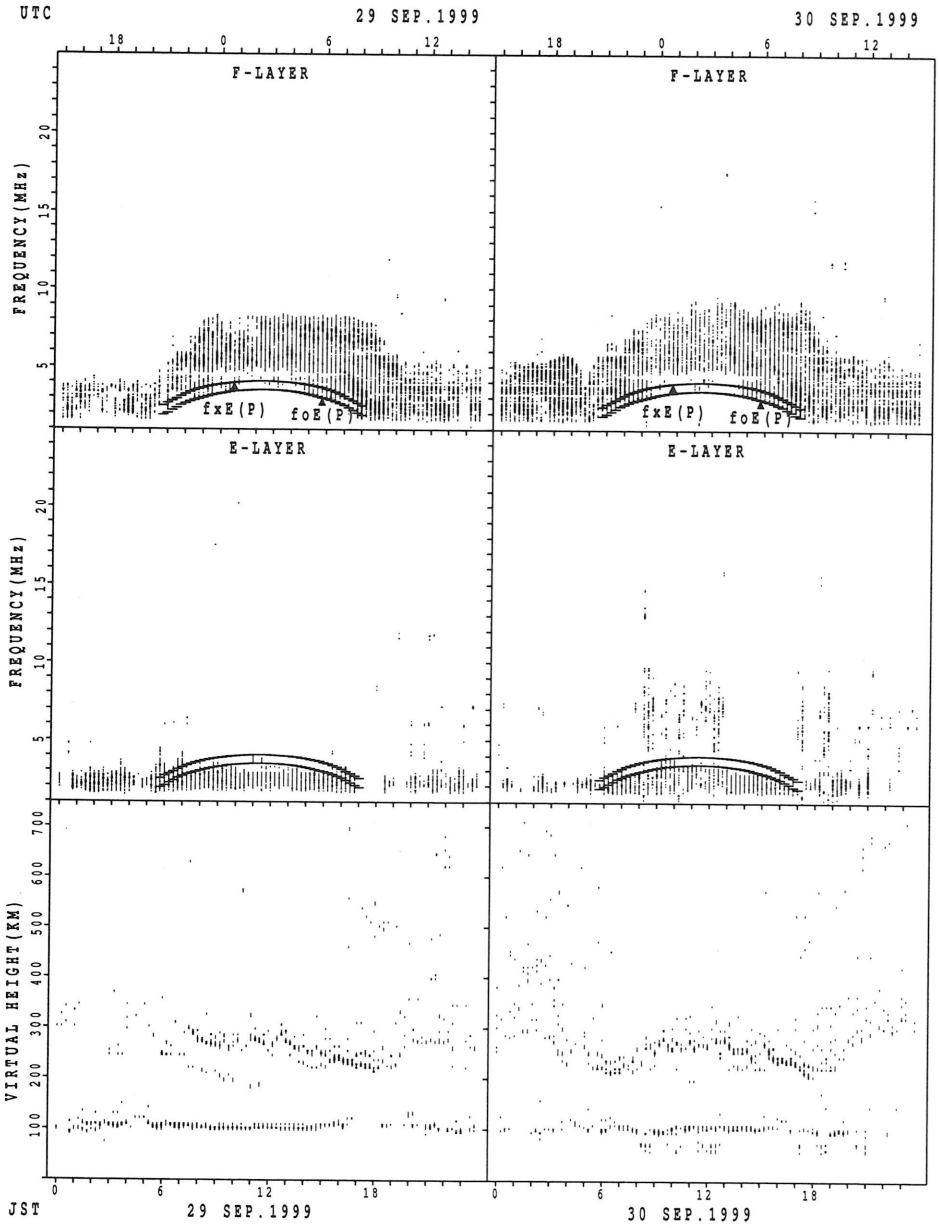
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
17 SEP.1999
18 SEP.1999
19 SEP.1999
20 SEP.1999
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

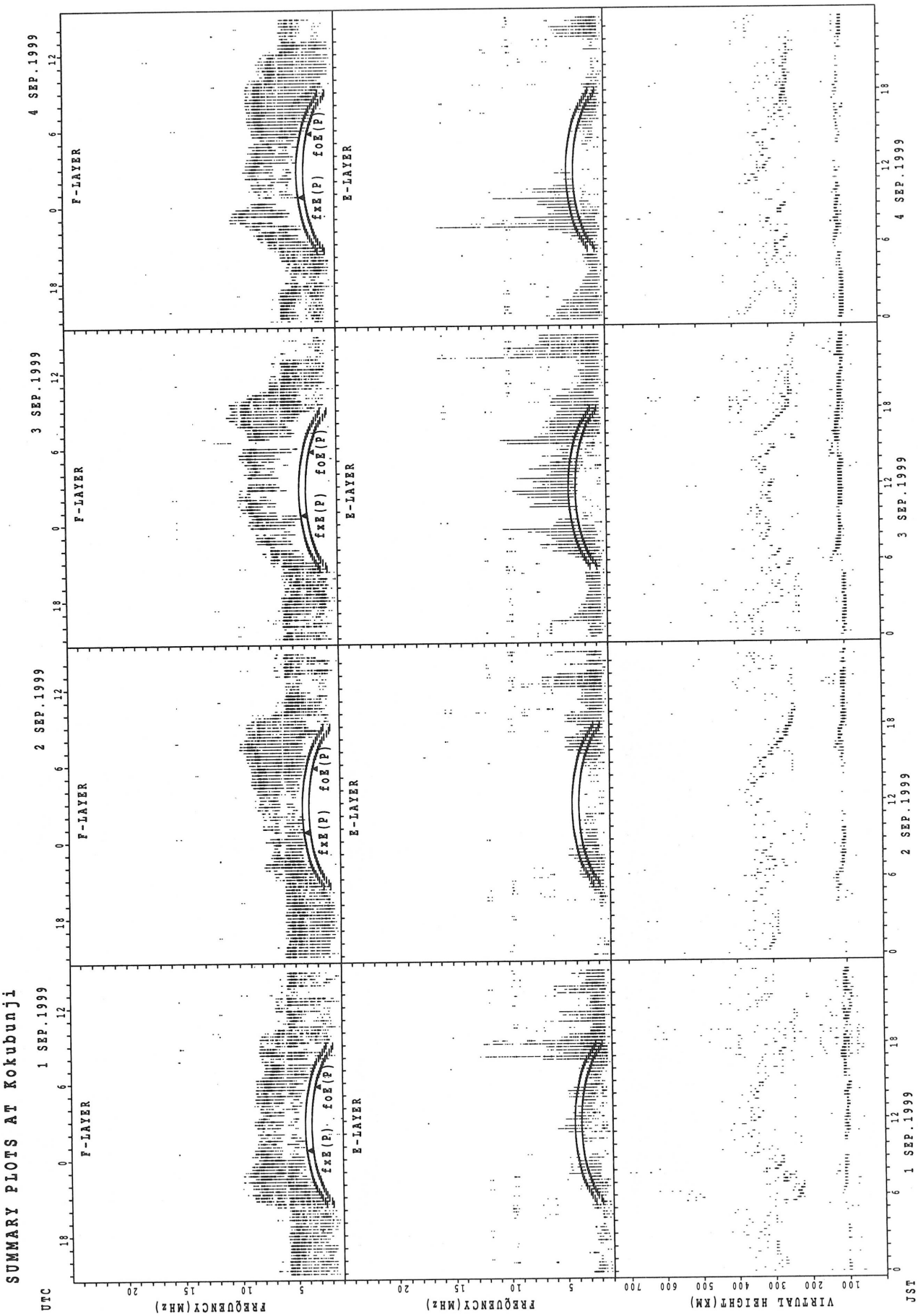

SUMMARY PLOTS AT Wakkanai
UTC
JST
21 SEP.1999
22 SEP.1999
23 SEP.1999
24 SEP.1999
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

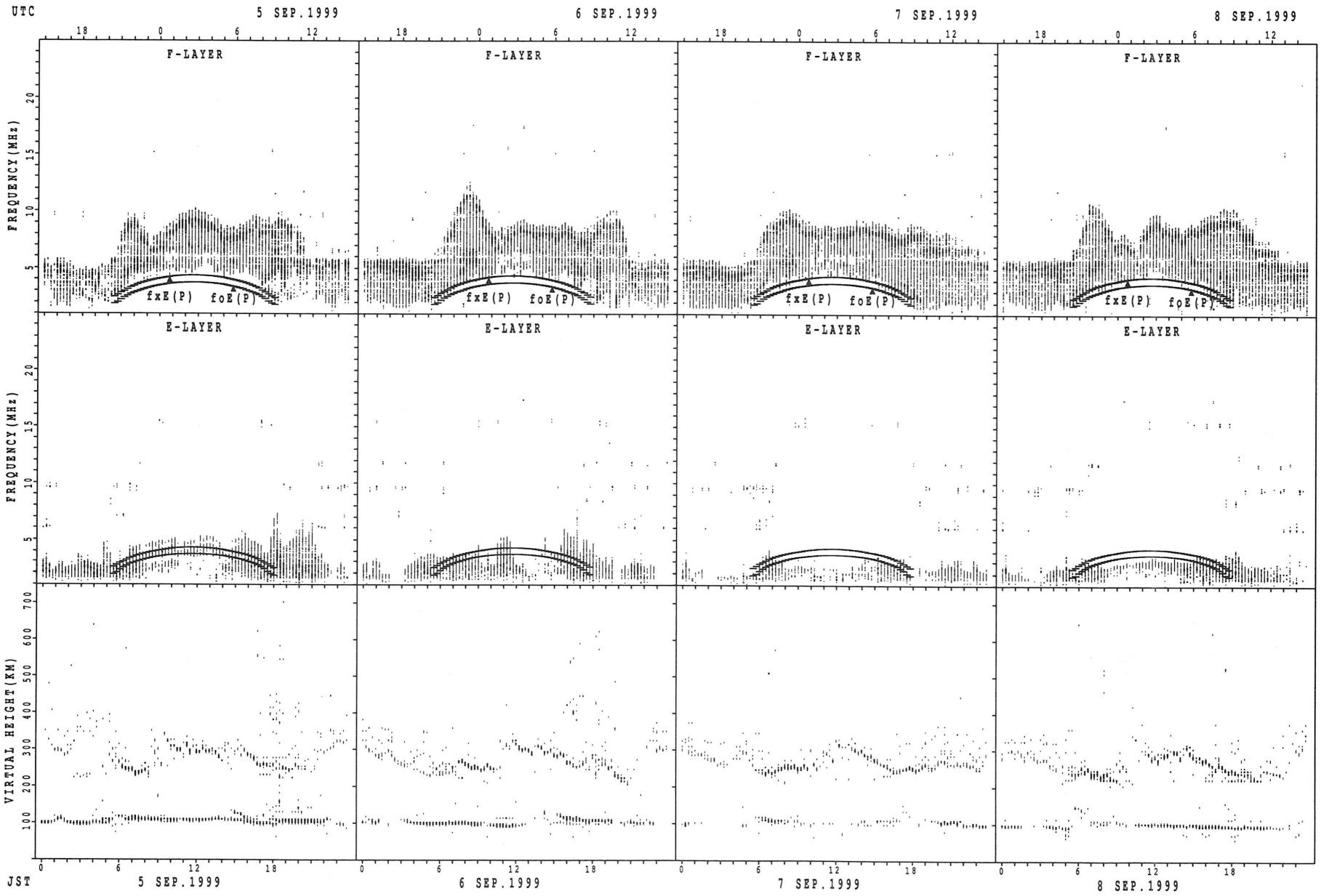

SUMMARY PLOTS AT Wakkanai
UTC
JST
25 SEP.1999
26 SEP.1999
27 SEP.1999
28 SEP.1999
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

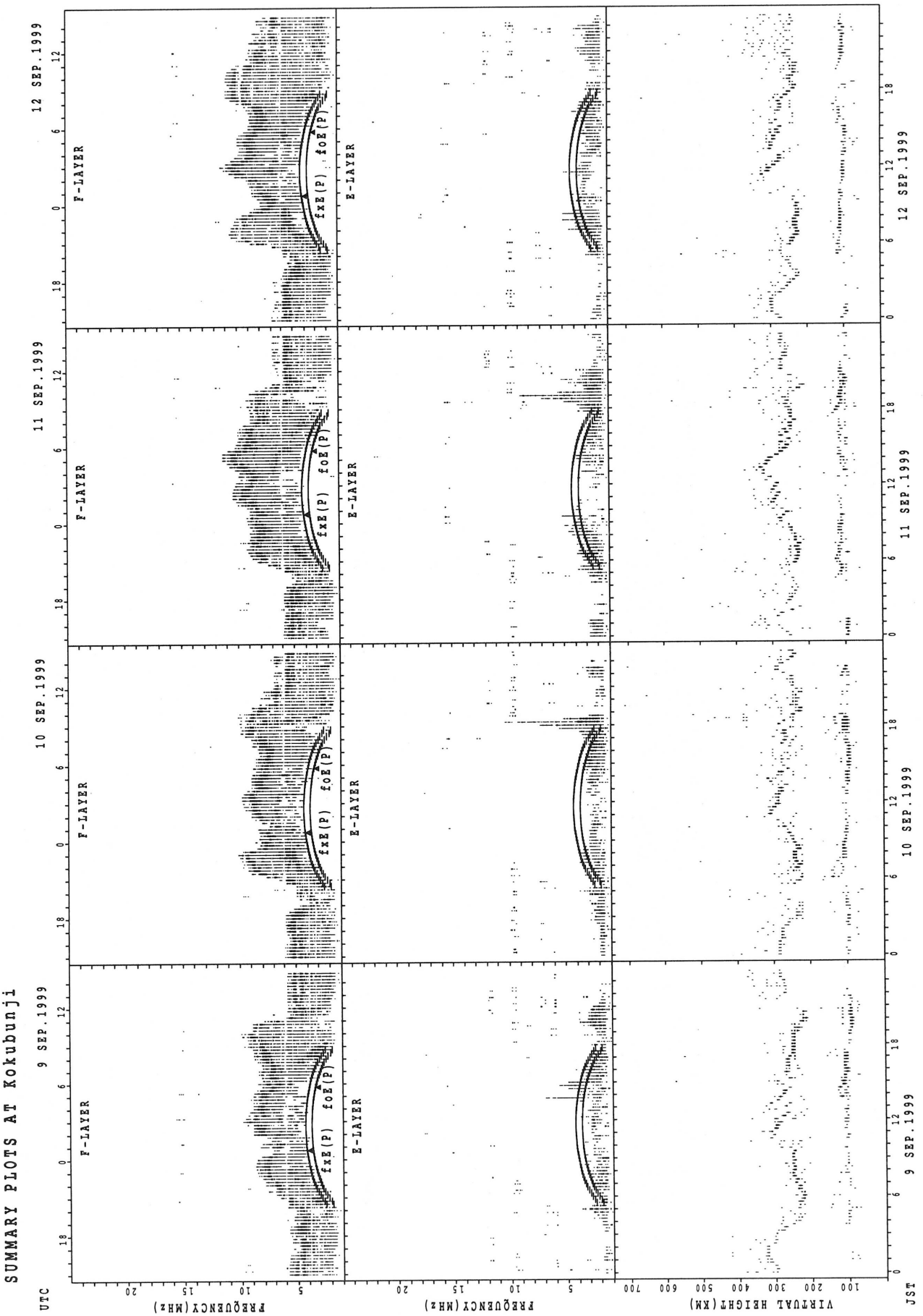
SUMMARY PLOTS AT Wakkanai



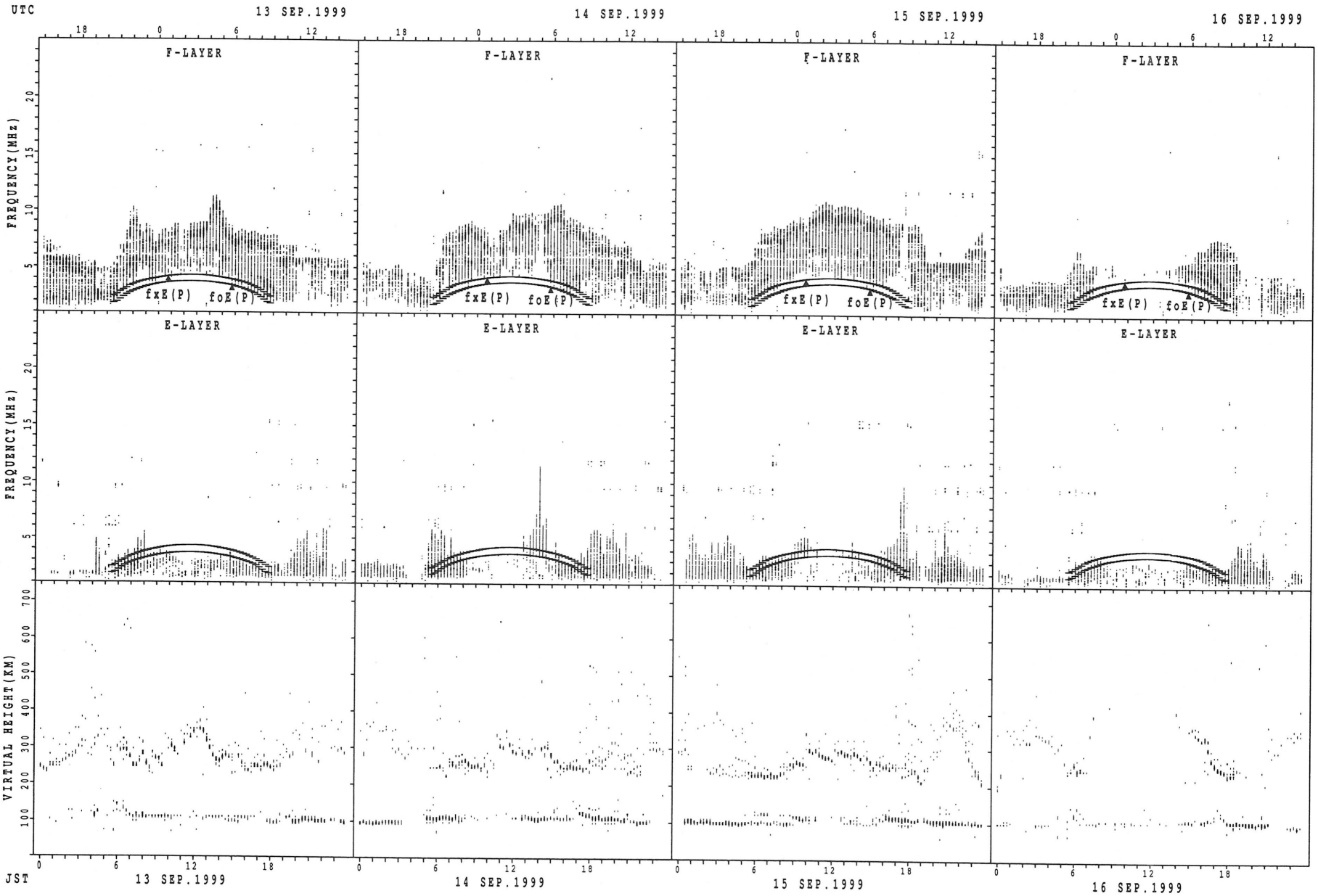
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
1 SEP.1999
2 SEP.1999
3 SEP.1999
4 SEP.1999
UTC
JST
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

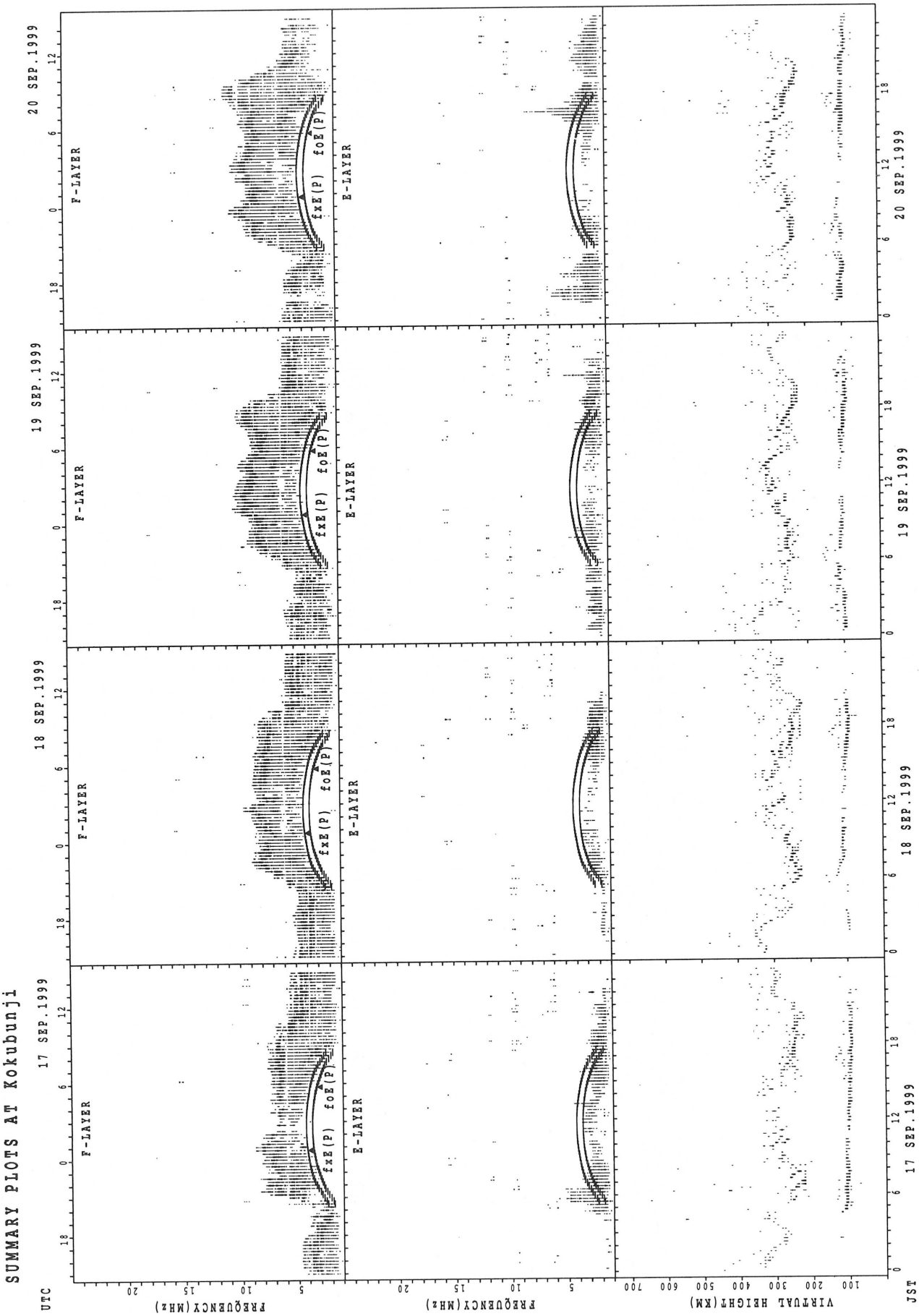

SUMMARY PLOTS AT Kokubunji
UTC
5 SEP.1999
6 SEP.1999
7 SEP.1999
8 SEP.1999
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
9 SEP.1999
10 SEP.1999
11 SEP.1999
12 SEP.1999
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

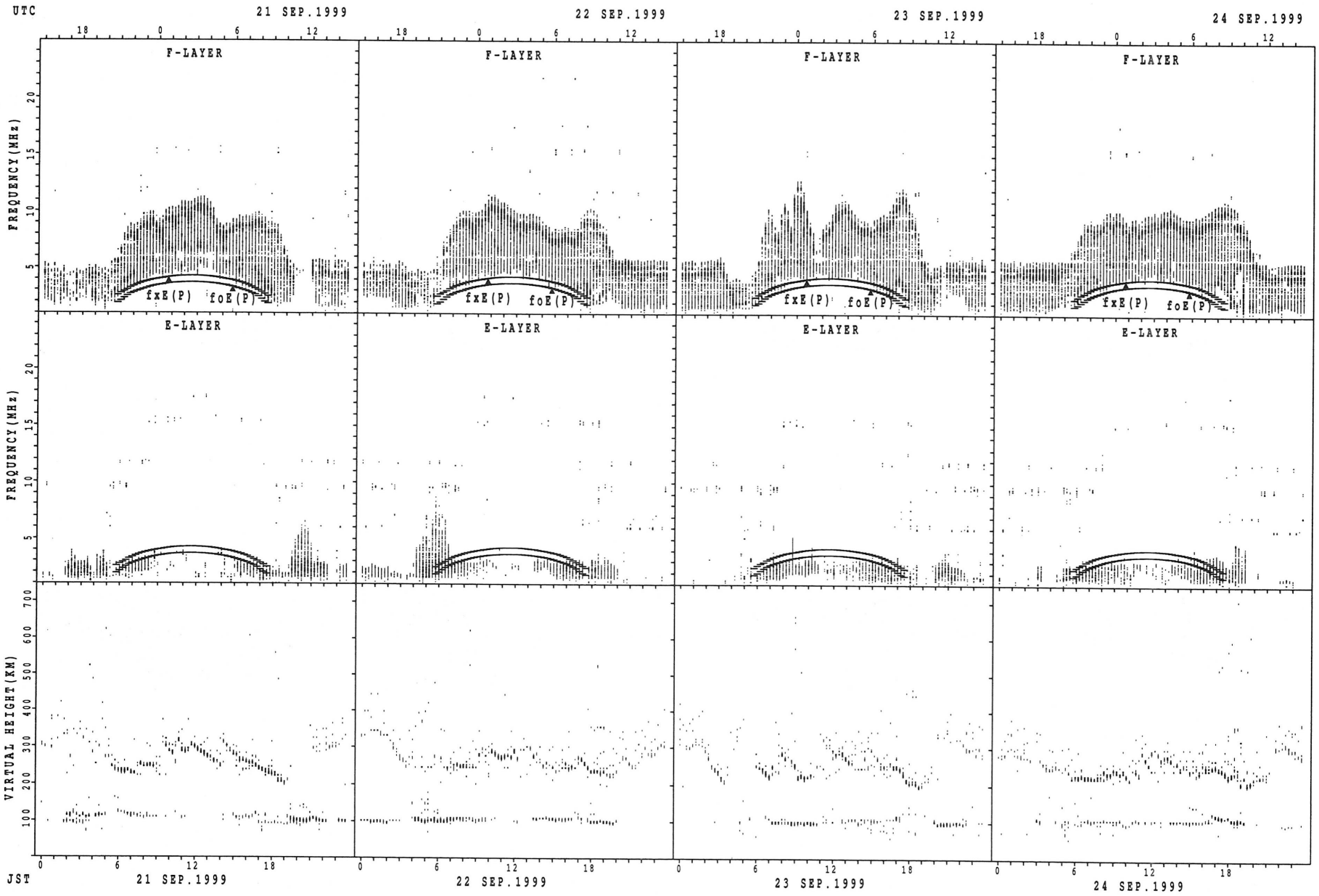
SUMMARY PLOTS AT Kokubunji



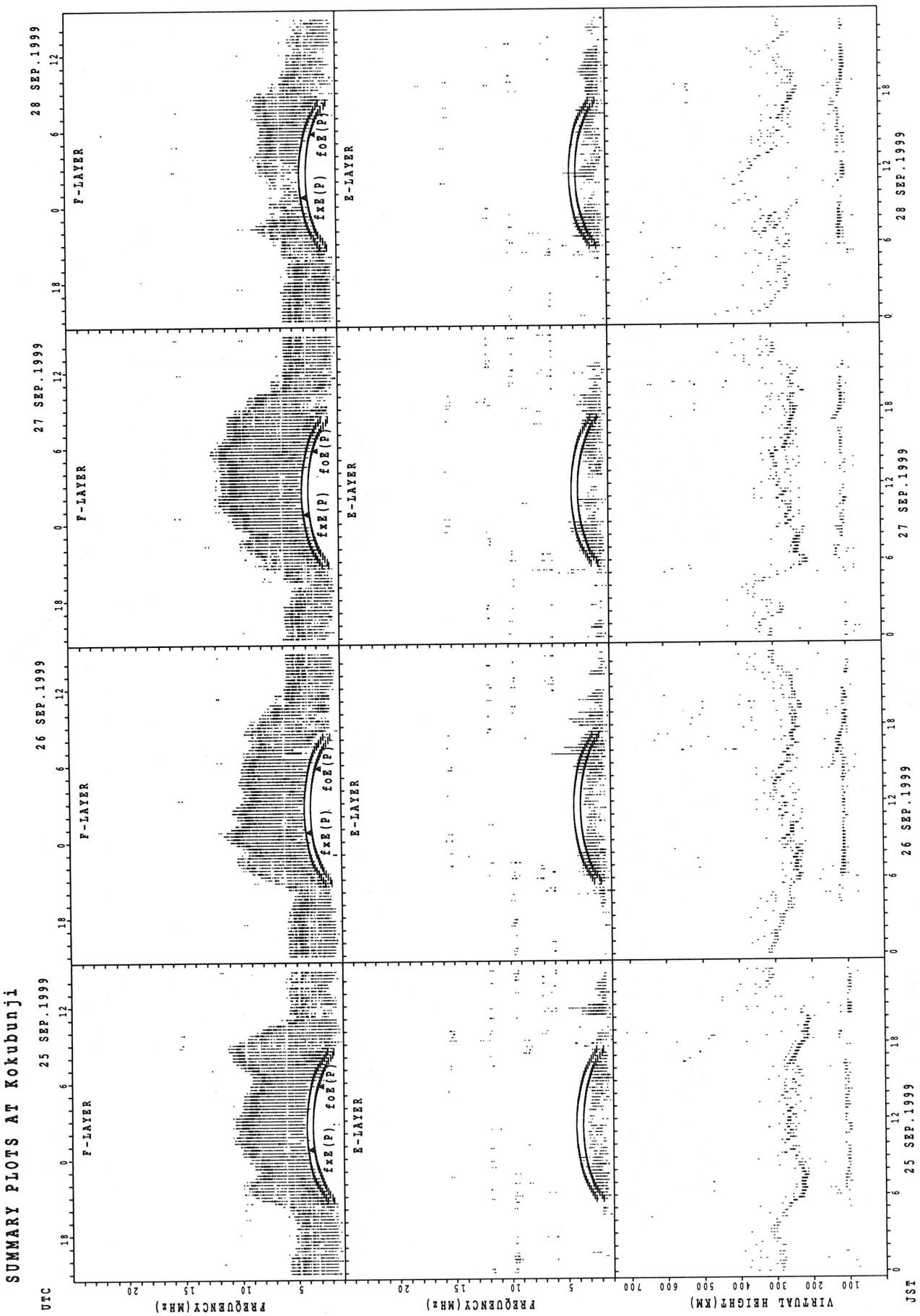
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
17 SEP.1999
18 SEP.1999
19 SEP.1999
20 SEP.1999
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

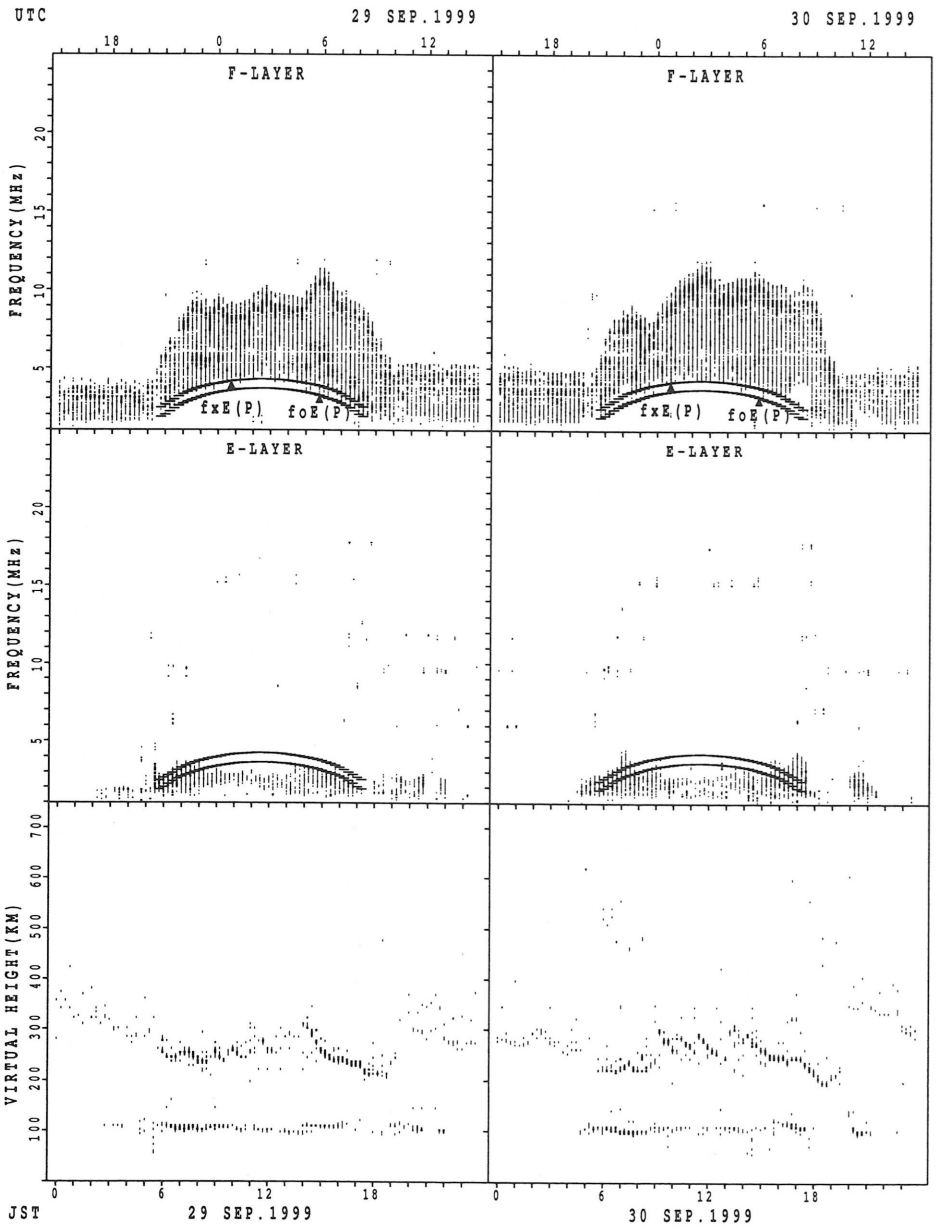
SUMMARY PLOTS AT Kokubunji



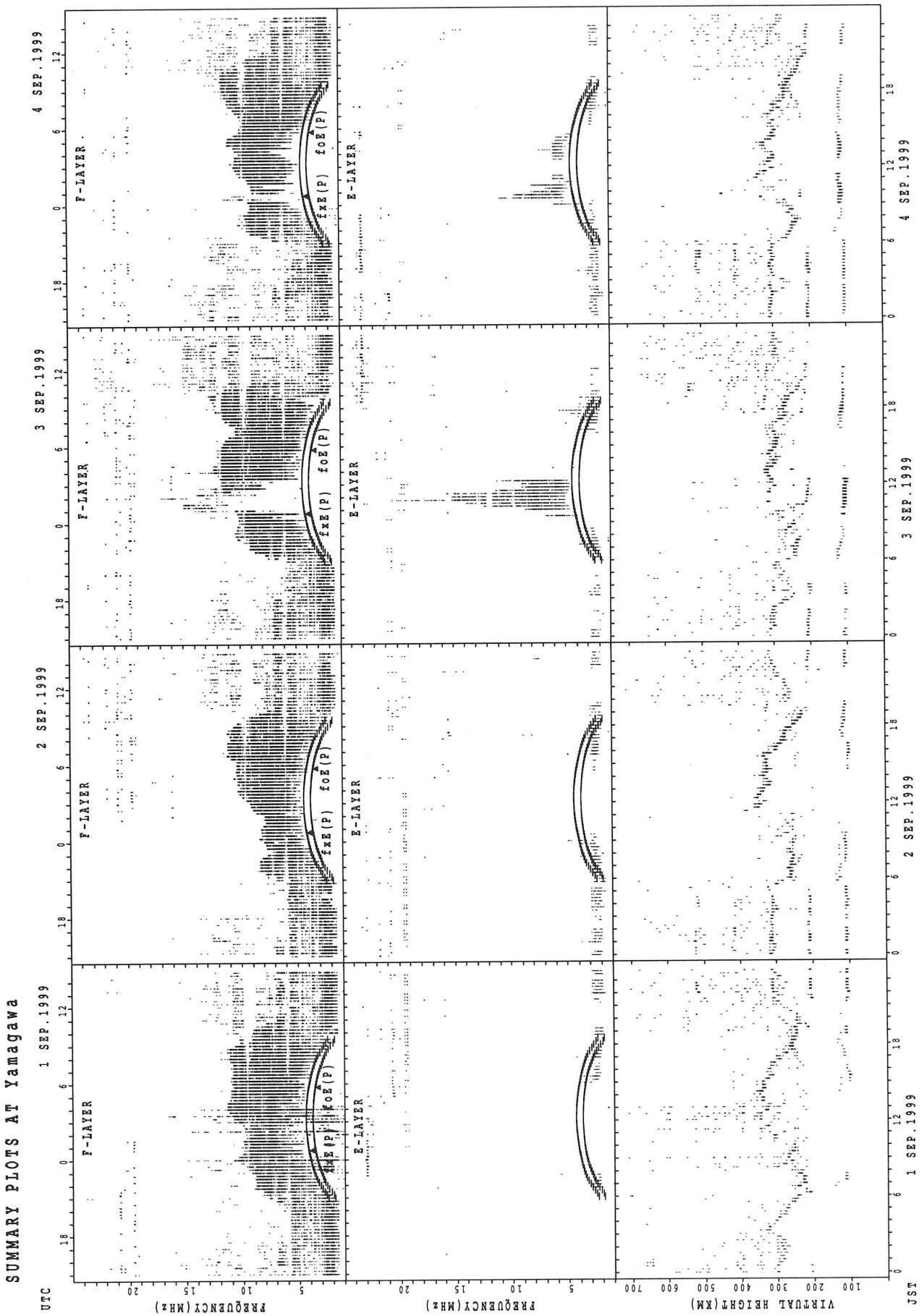
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Kokubunji
UTC
JST
25 SEP.1999
26 SEP.1999
27 SEP.1999
28 SEP.1999
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

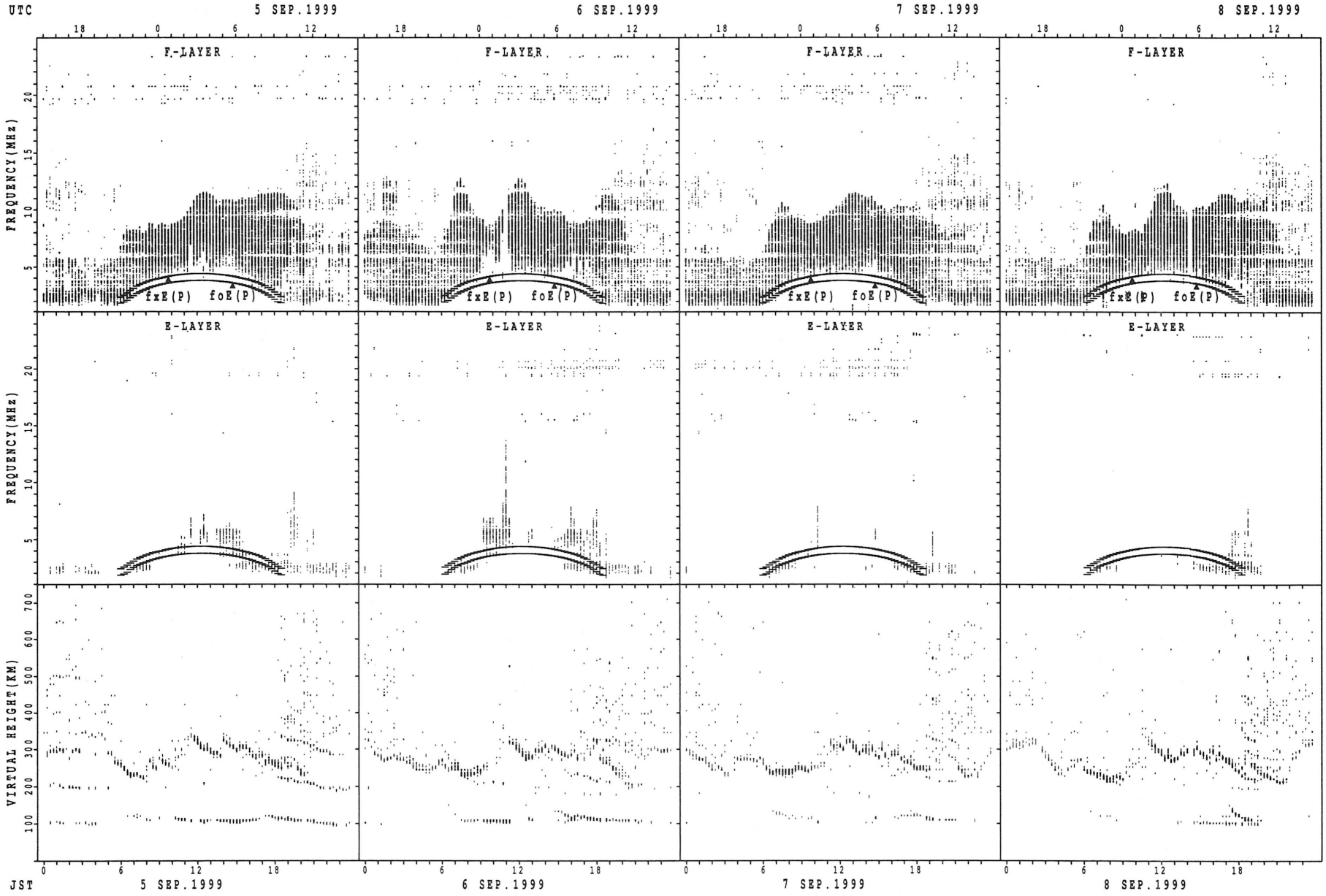
SUMMARY PLOTS AT Kokubunji



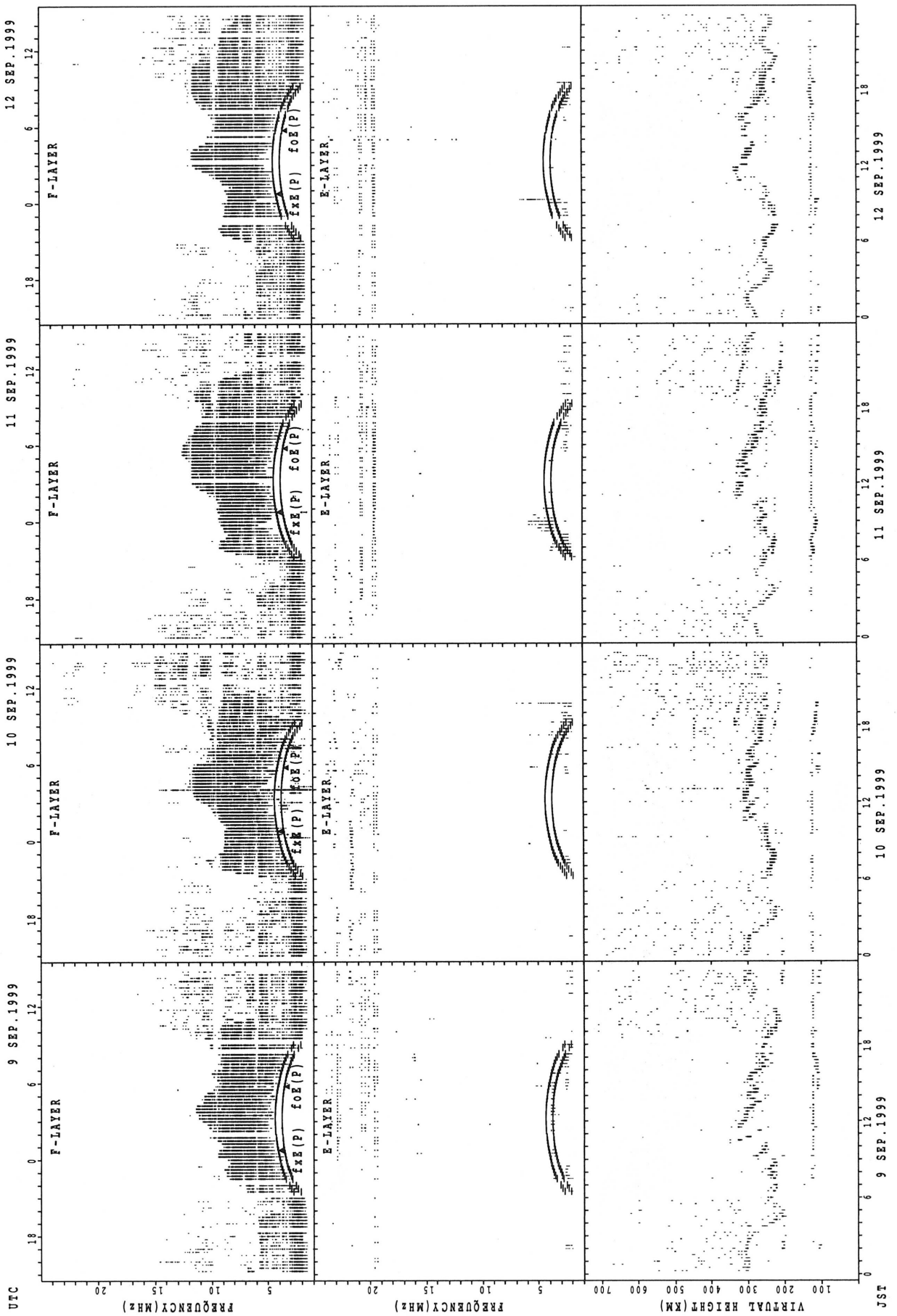
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

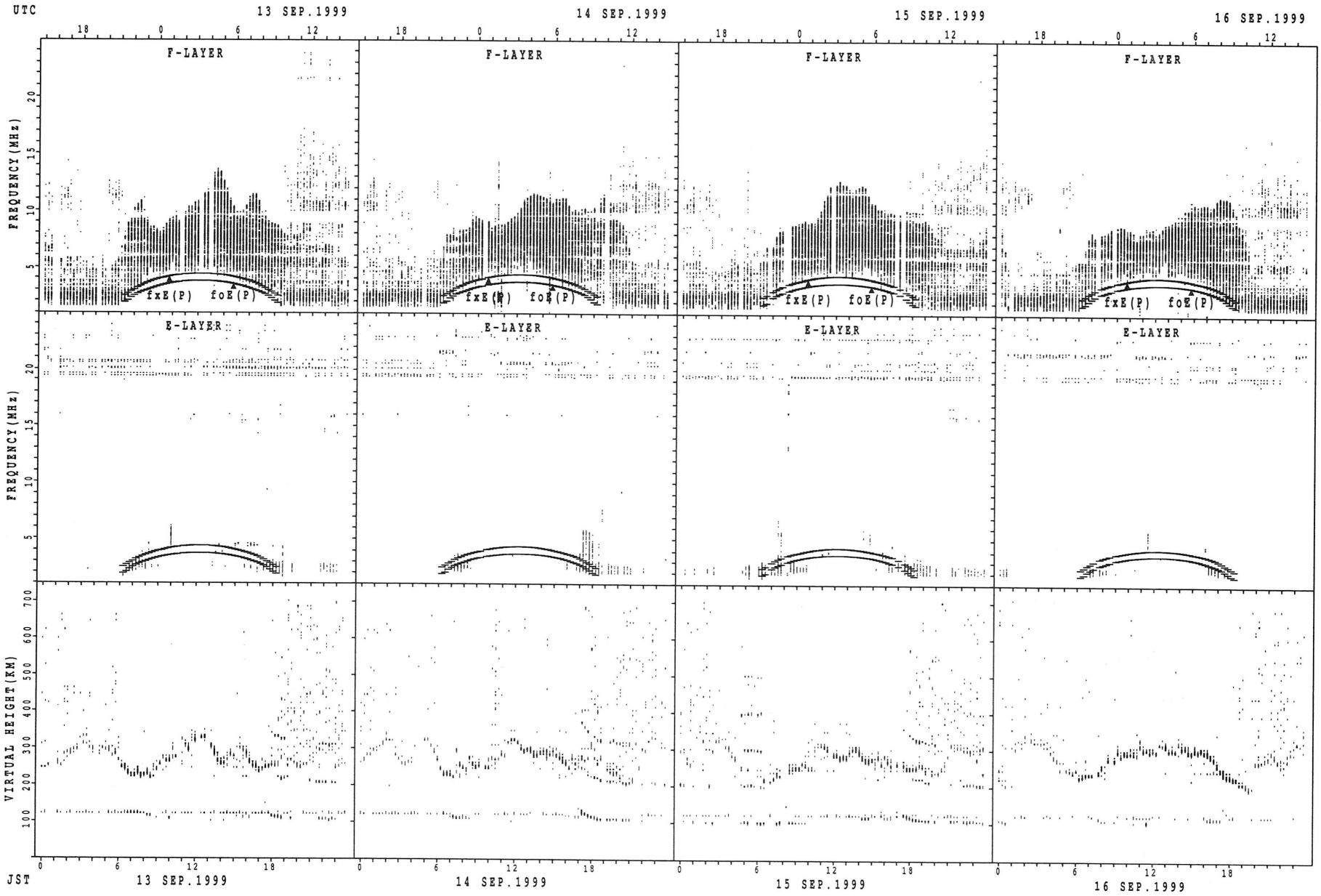

SUMMARY PLOTS AT Yamagawa
UTC
JST
1 SEP.1999
2 SEP.1999
3 SEP.1999
4 SEP.1999
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa

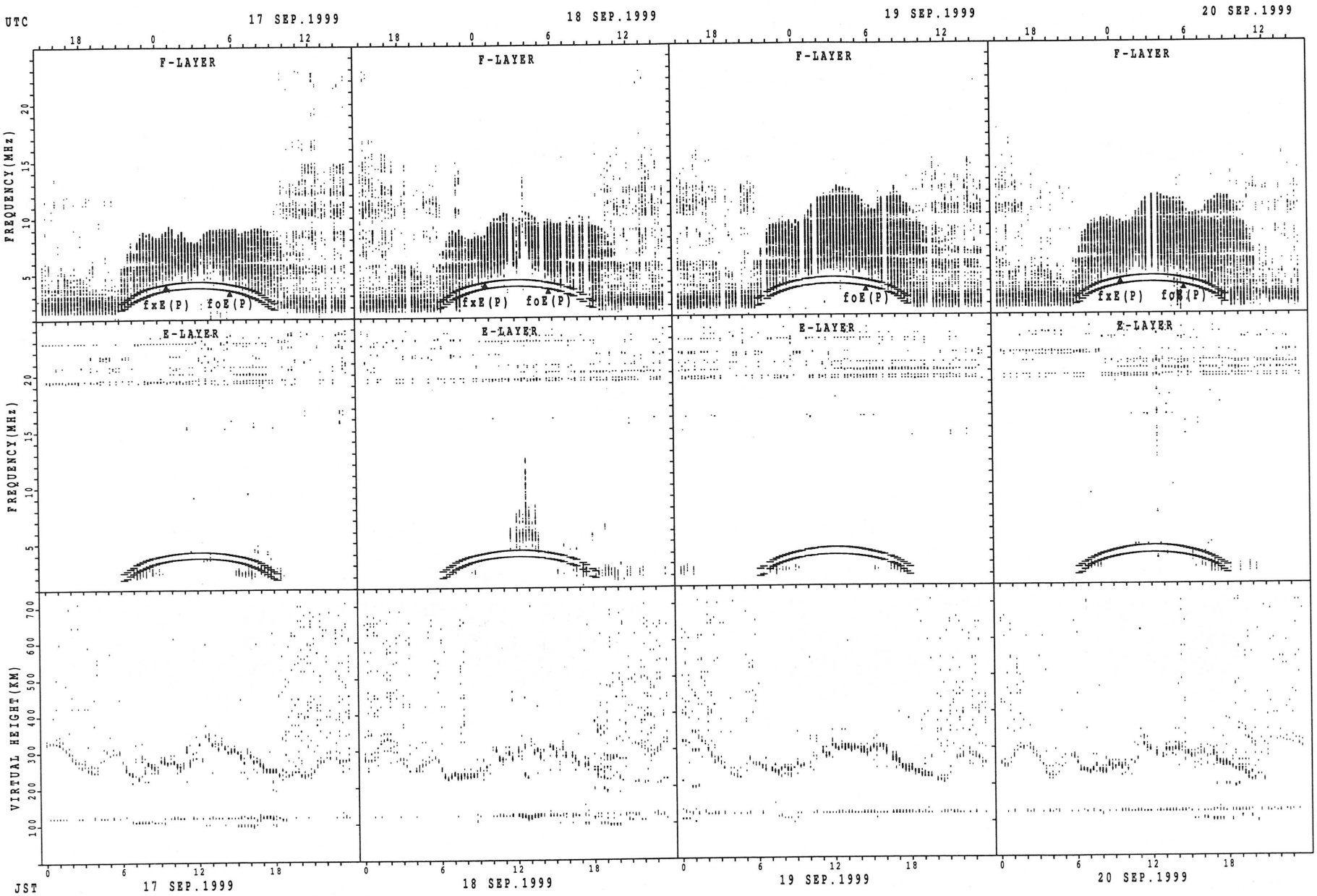


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

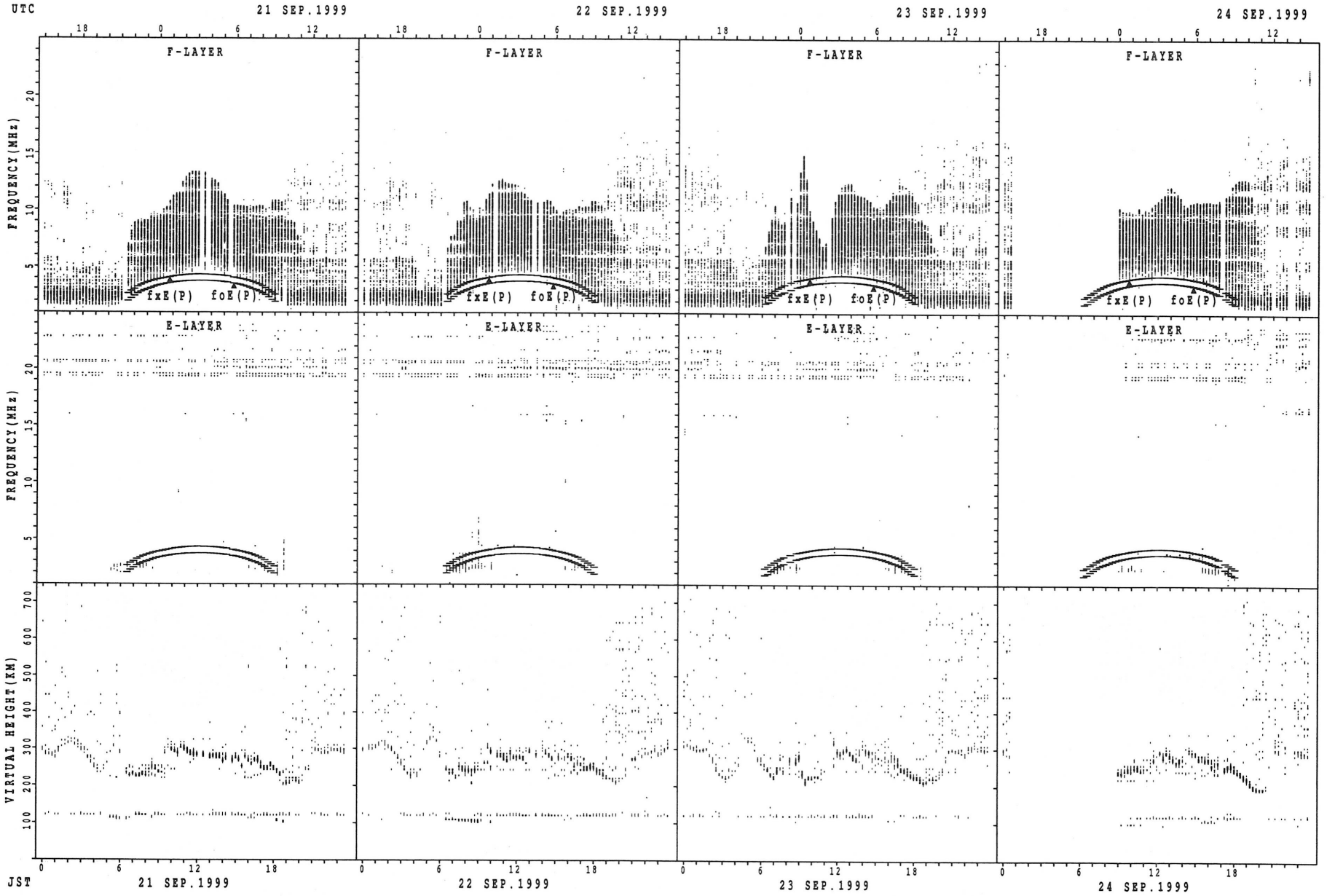

SUMMARY PLOTS AT Yamagawa
UTC
JST
9 SEP.1999
10 SEP.1999
11 SEP.1999
12 SEP.1999
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE



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

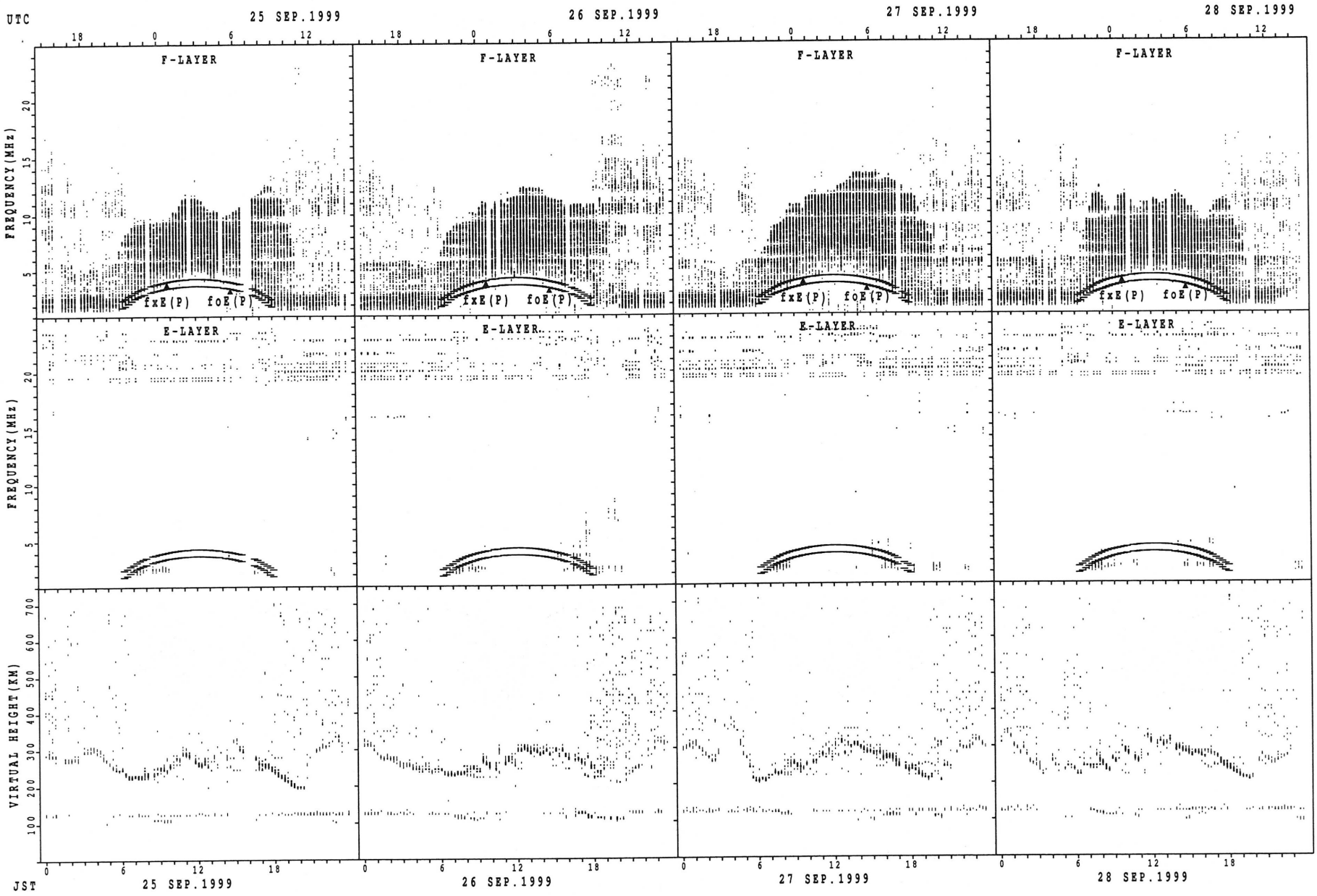

SUMMARY PLOTS AT Yamagawa
UTC
17 SEP.1999
18 SEP.1999
19 SEP.1999
20 SEP.1999
F-LAYER
fxE(P)
foE(P)
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



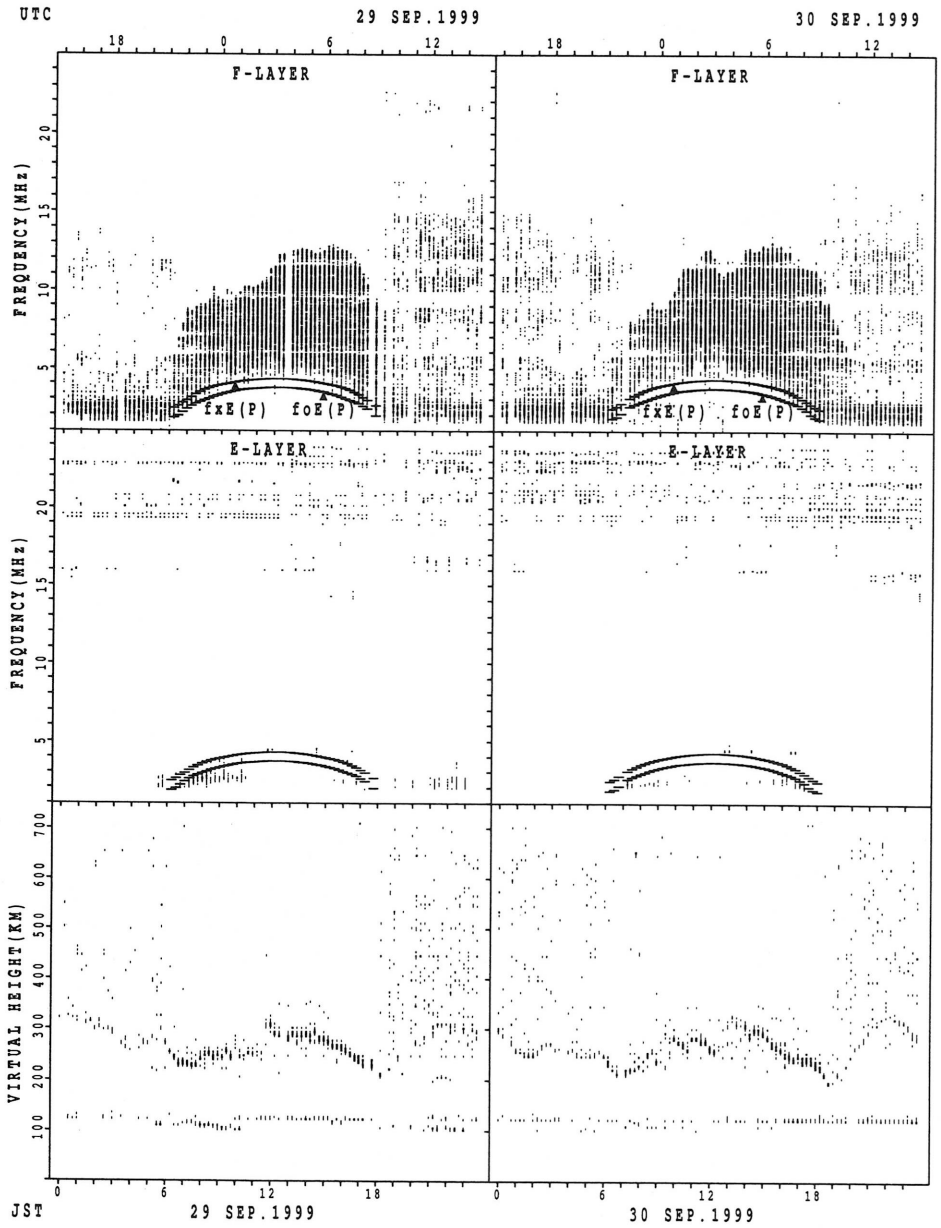
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



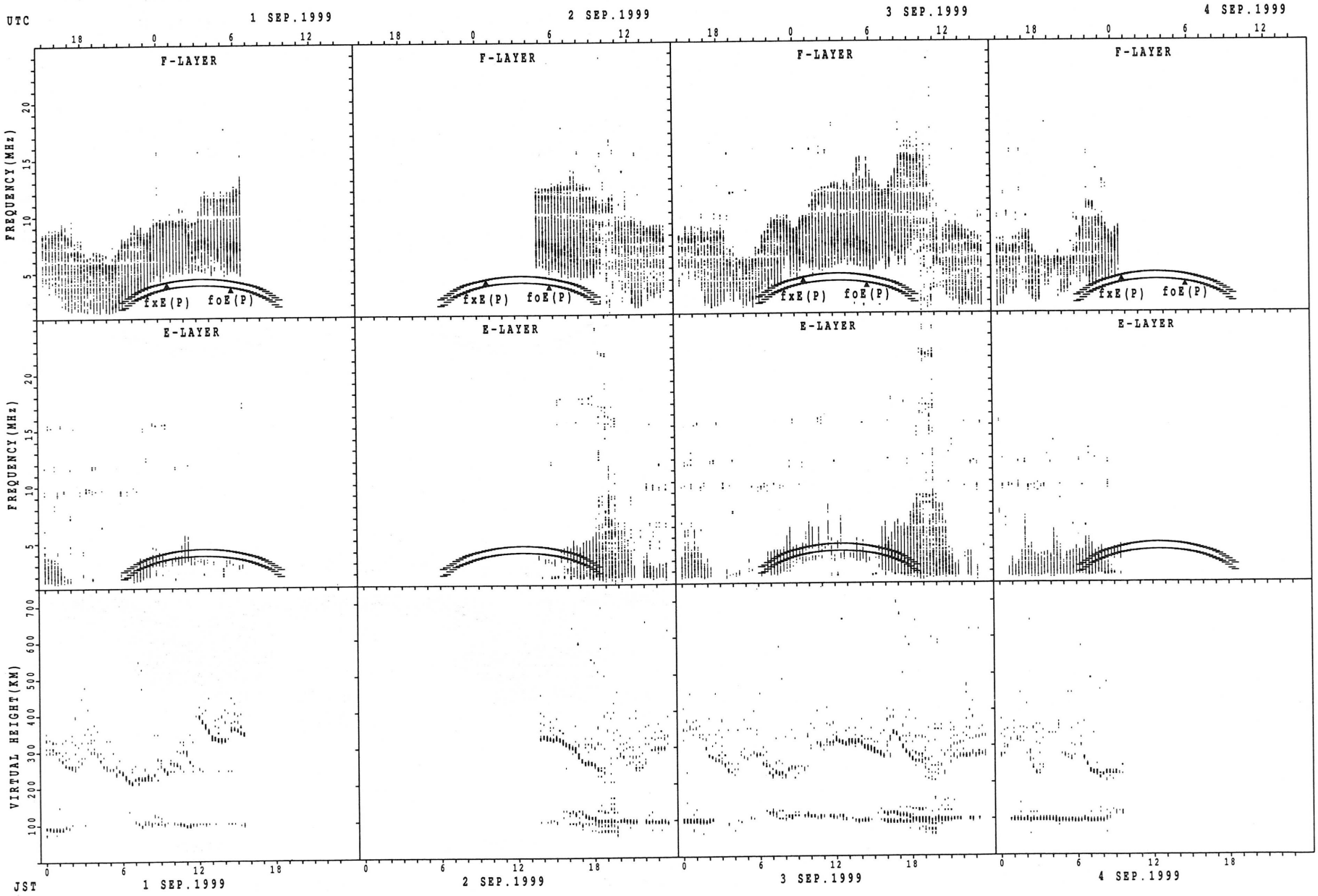
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



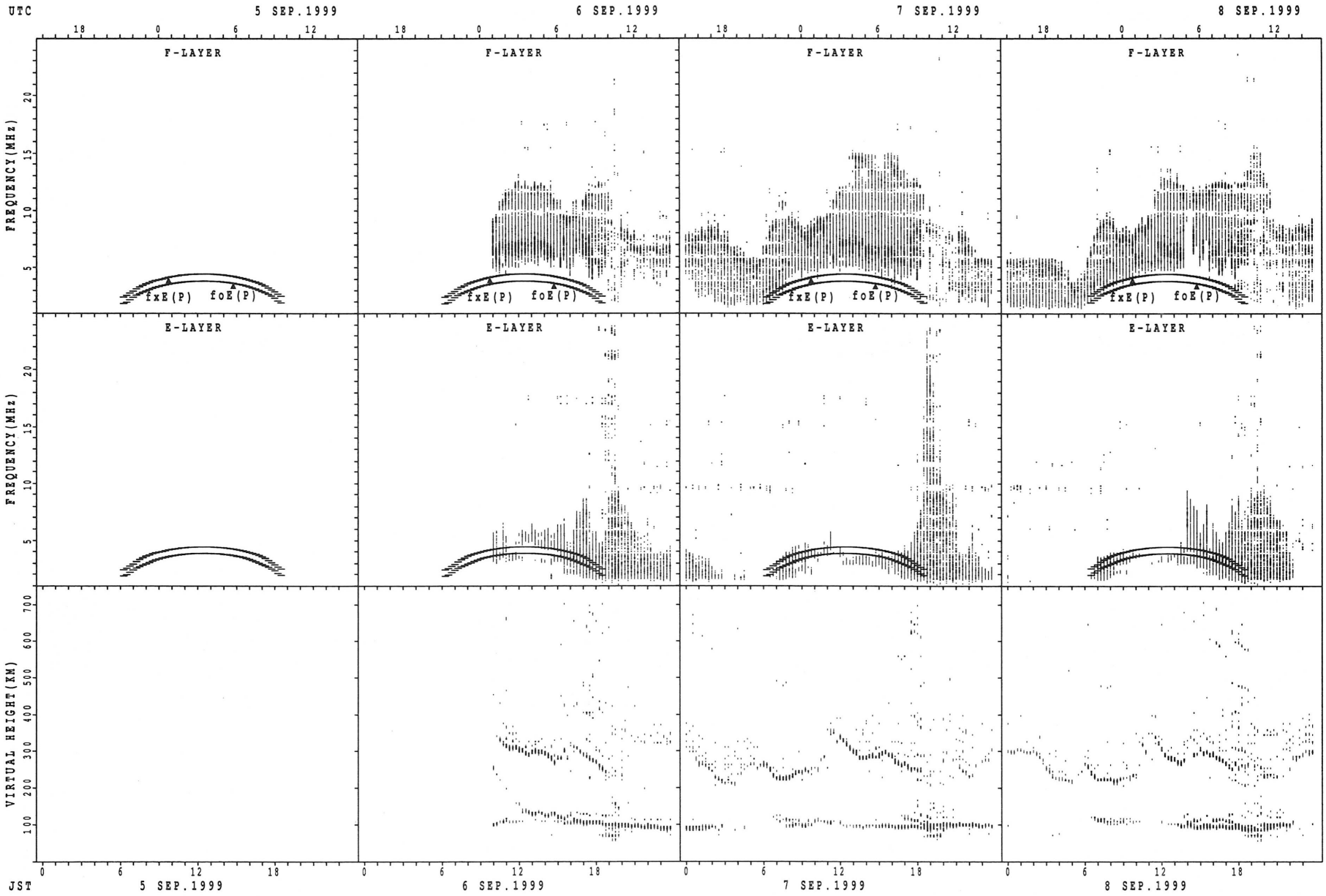
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

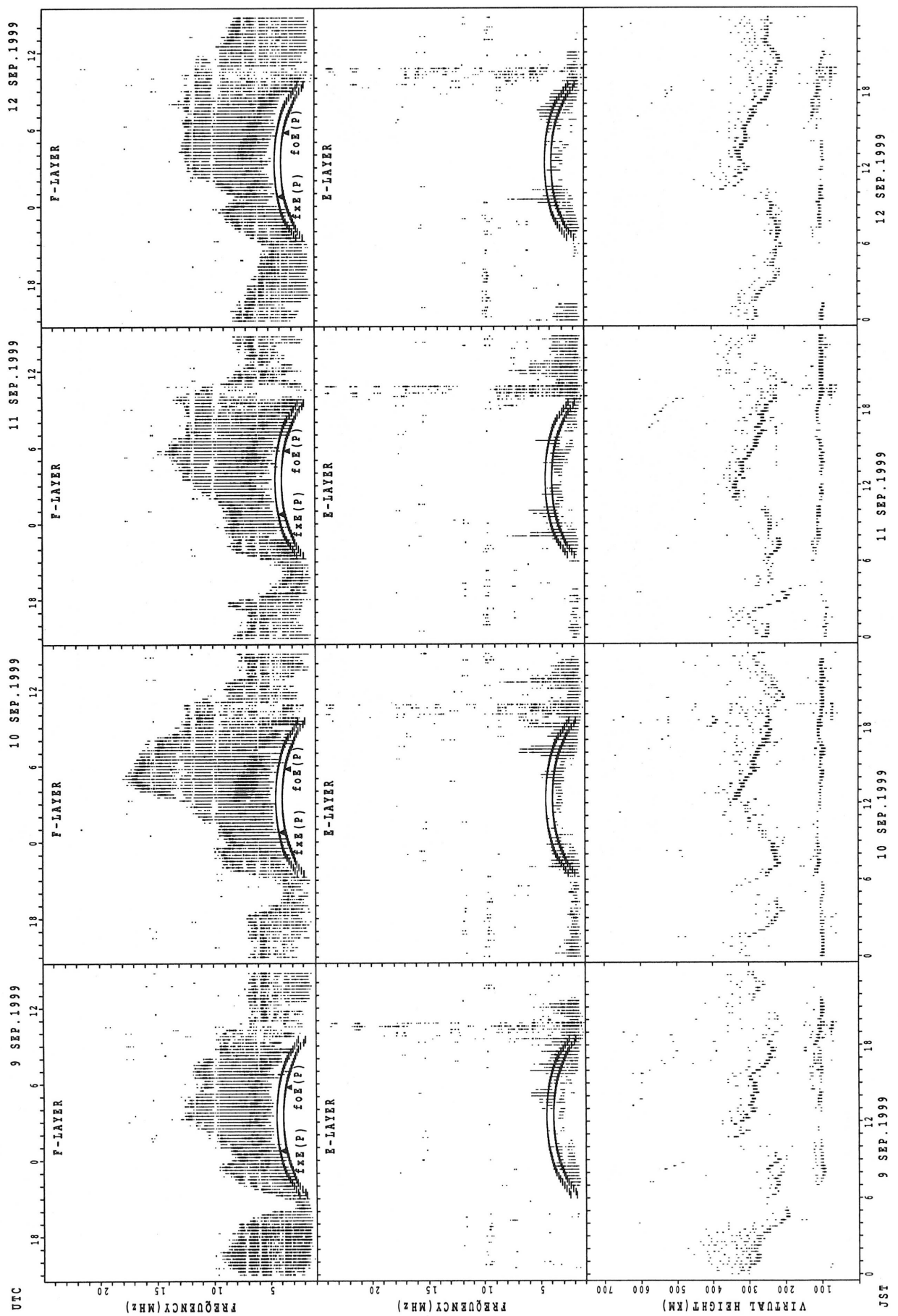


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

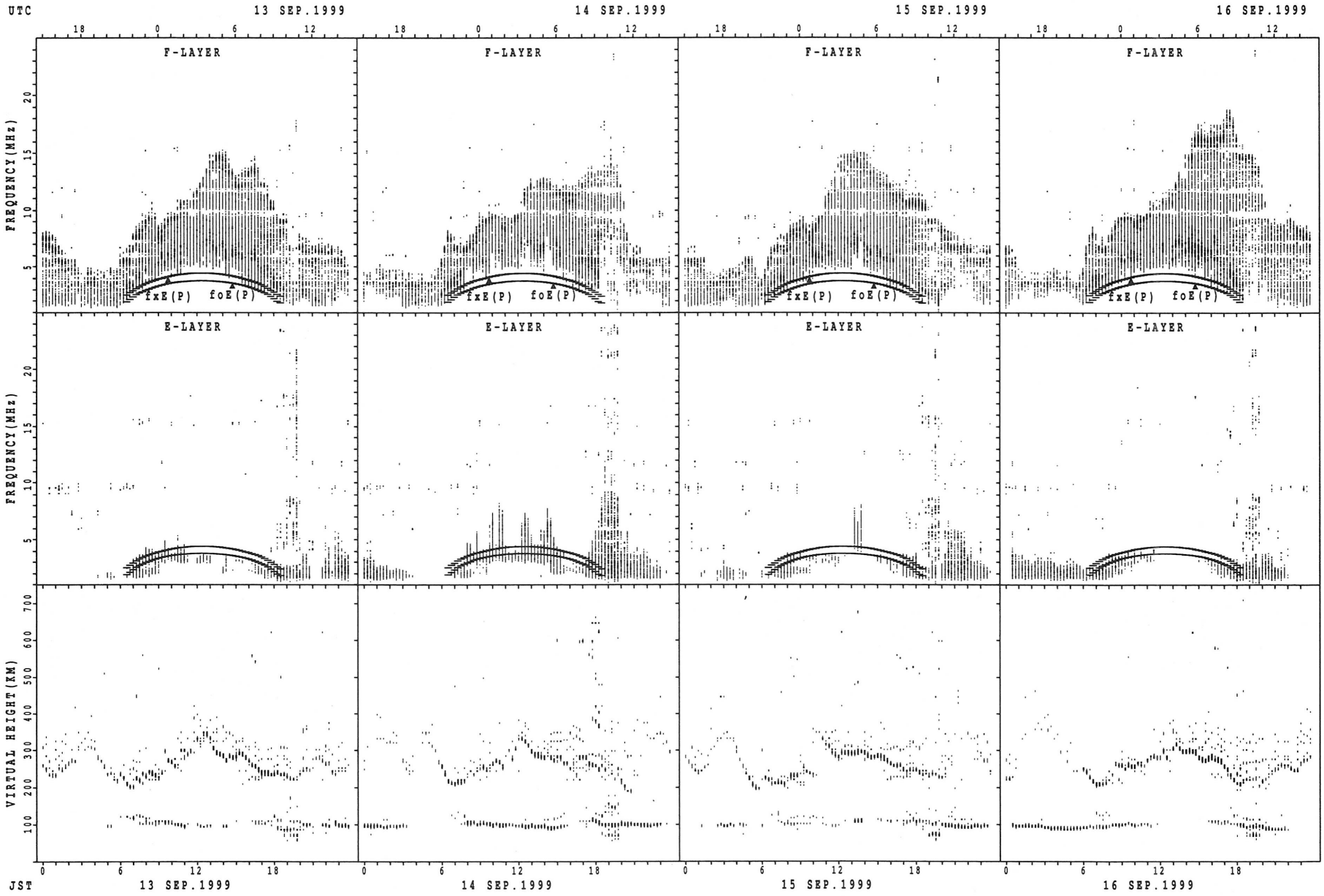
SUMMARY PLOTS AT Okinawa



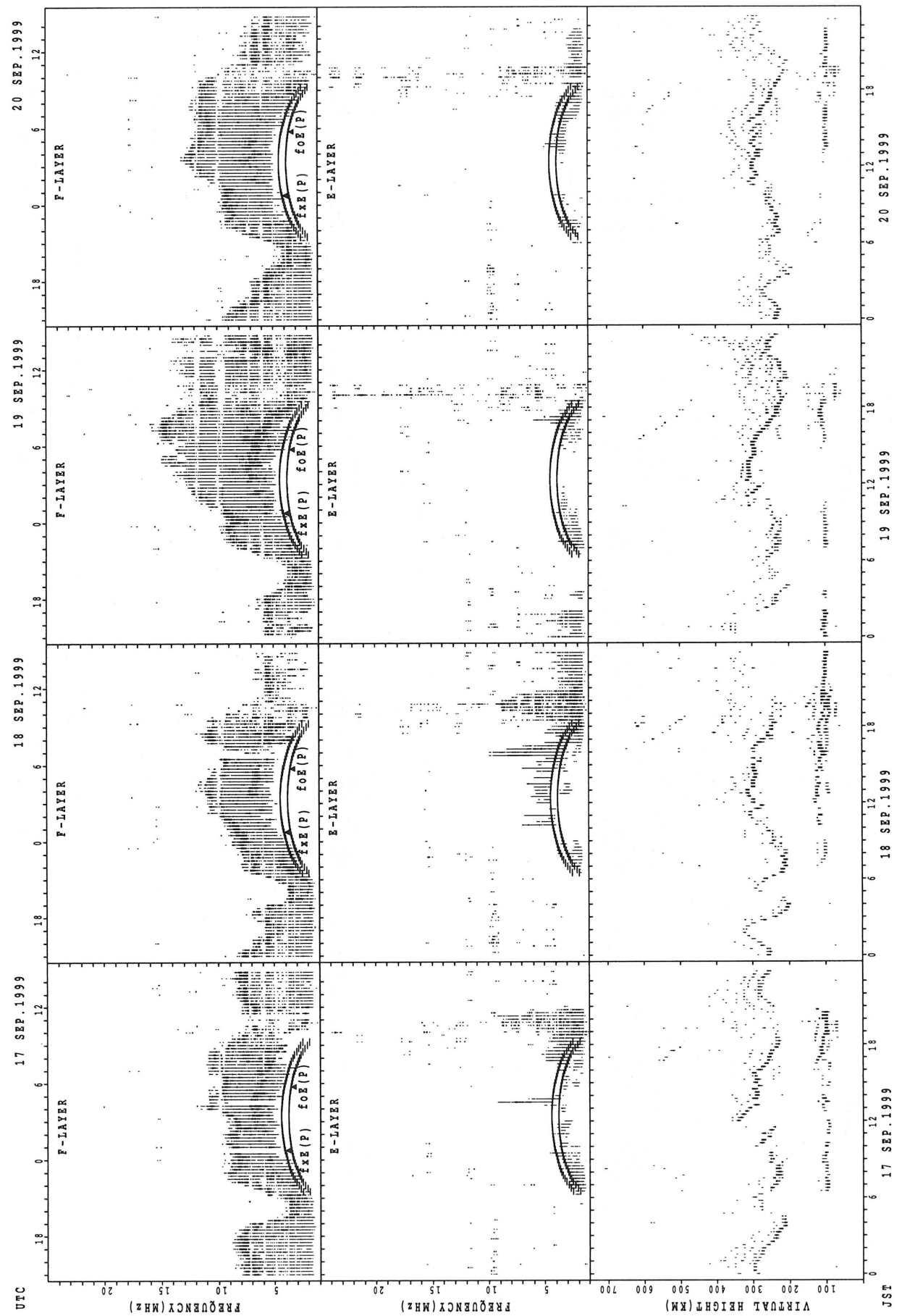
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Okinawa
UTC
JST
9 SEP.1999
10 SEP.1999
11 SEP.1999
12 SEP.1999
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

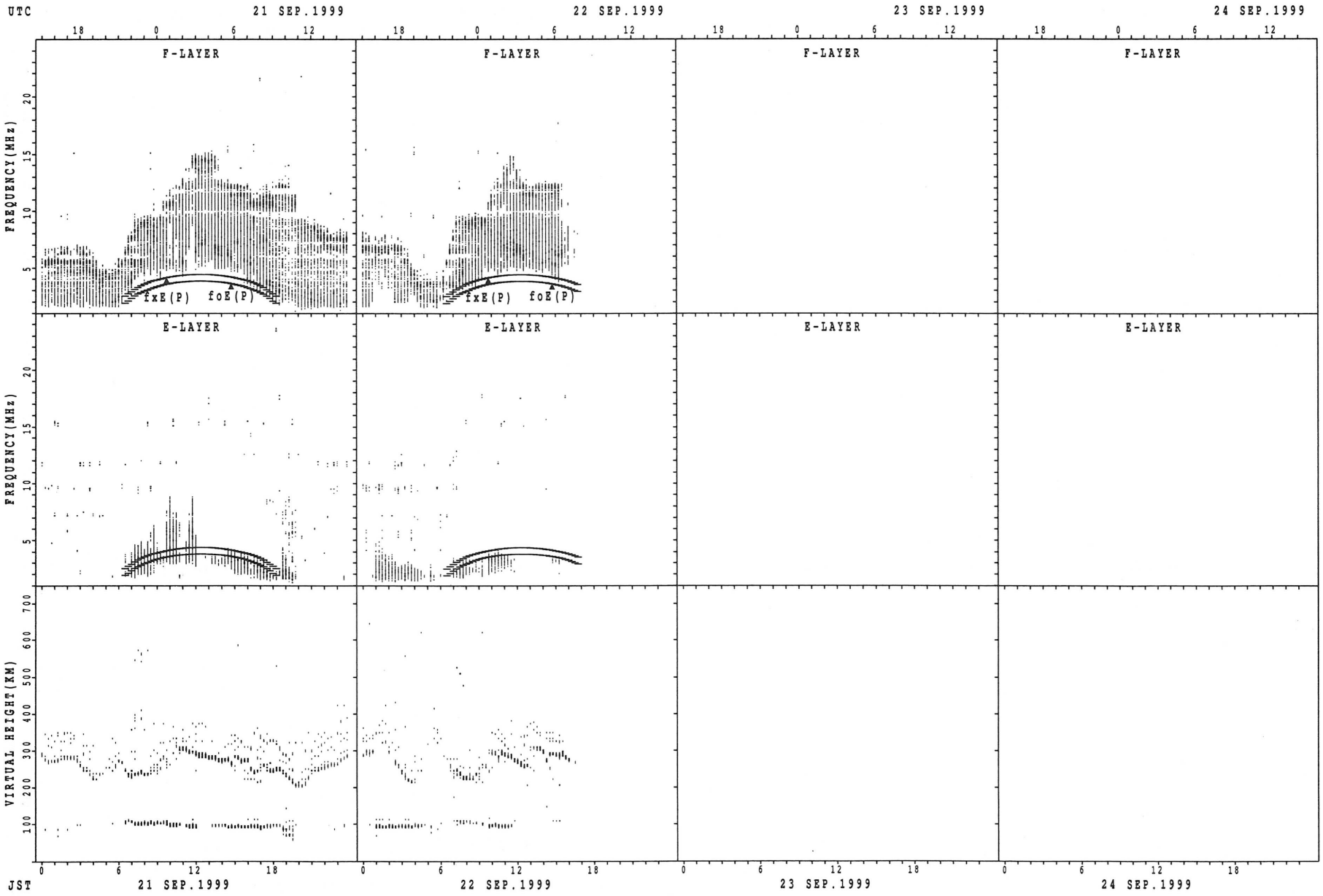
SUMMARY PLOTS AT Okinawa



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

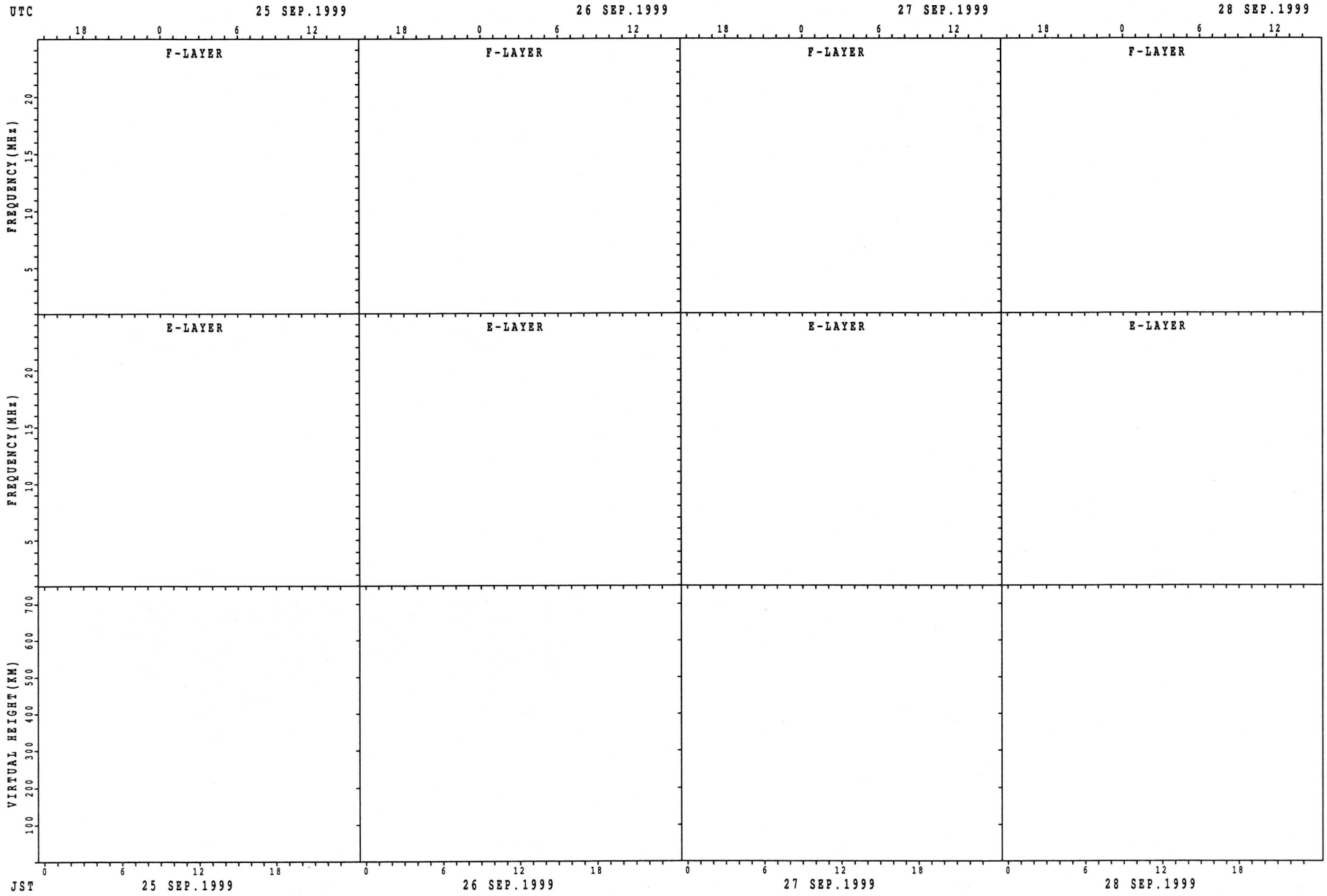

SUMMARY PLOTS AT Okinawa
UTC
JST
17 SEP.1999
18 SEP.1999
19 SEP.1999
20 SEP.1999
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



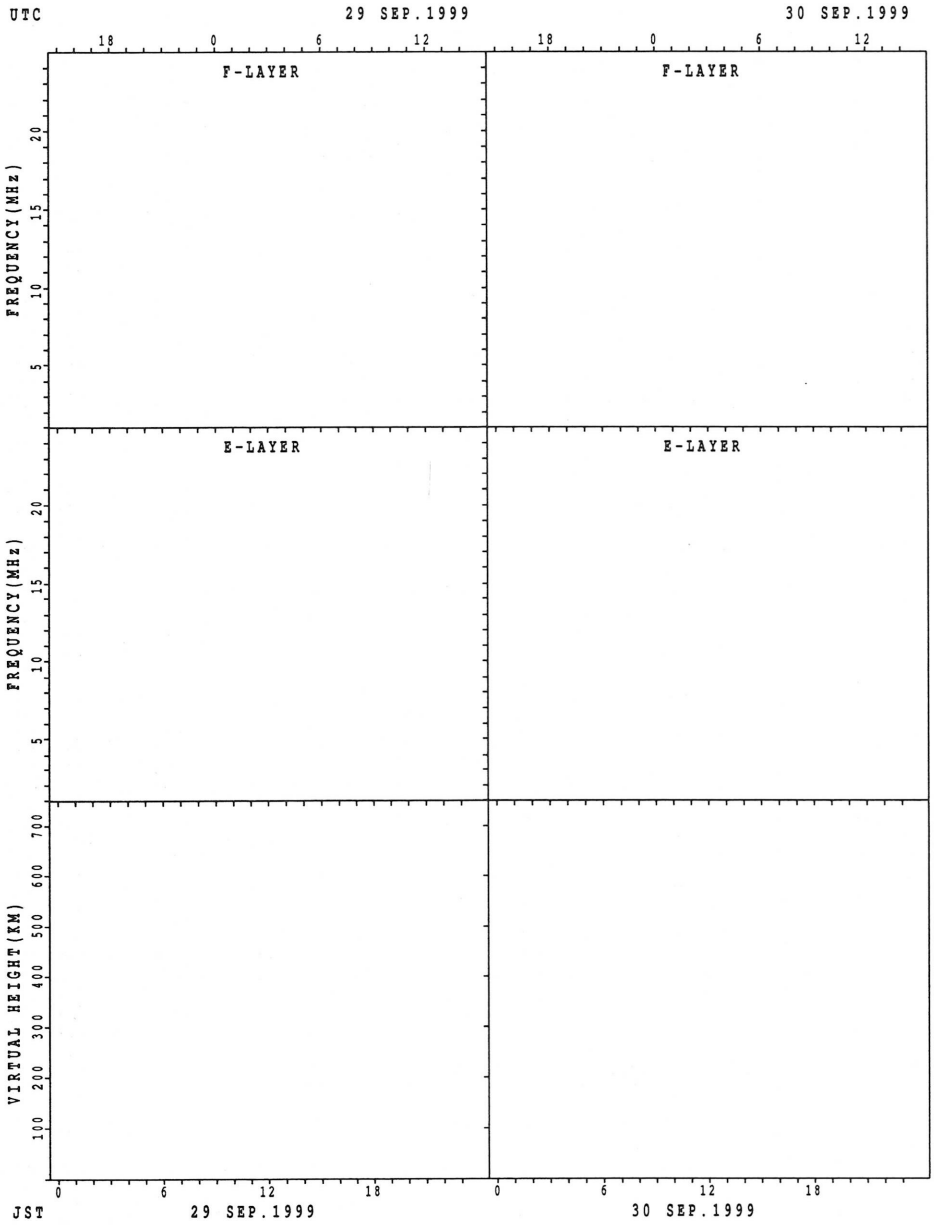
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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

SUMMARY PLOTS AT Okinawa



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

MONTHLY MEDIANS OF h'F AND h'Es

SEP. 1999 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Wakkanai LAT. 45.4N LON. 141.7E

	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	13	22	2					6	20	21	23	22	18	13	7	5	2
MED							272	264	285	278					267	281	274	268	271	294	288	302	354	391
U Q							392	289	310	282					272	295	295	282	300	326	313	304	367	430
L Q							256	244	260	274					262	267	263	256	258	282	268	272	327	352

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	13	14	20	13	14	15	14	5	4	4	5	2	1	1	4	10	14	19	23	19	16	11	12
MED	97	97	96	109	109	113	111	108	111	108	105	101	105	105	103	117	113	111	105	107	107	102	105	99
U Q	102	103	101	115	115	121	119	113	115	112	106	109	115	52	51	128	119	119	113	111	115	107	111	103
L Q	95	94	95	98	102	107	107	107	103	107	101	97	95	52	51	106	109	107	97	97	99	93	99	95

h'F STATION Kokubunji LAT. 39.7N LON. 140.1E

	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	17	29	28							27	28	29	30	21	8	4	4	3
MED	358		226			412	272	250	250							288	276	266	262	266	287	308	341	326
U Q	179		113			206	280	274	276							314	286	284	274	296	334	335	417	340
L Q	179		113			206	255	235	240							274	262	257	248	255	247	301	316	318

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	12	9	12	9	15	19	14	11	8	3	5	3	3	5	5	13	23	23	21	20	20	18	9
MED	103	103	101	101	103	113	119	108	111	112	115	107	109	109	107	129	113	115	107	107	107	105	105	103
U Q	105	106	105	105	106	117	127	113	117	118	119	113	109	111	108	144	119	121	113	111	108	109	107	106
L Q	97	99	100	99	96	103	111	105	105	111	109	101	105	103	105	117	106	111	101	98	97	99	103	101

h'F STATION Yamagawa LAT. 35.7N LON. 139.5E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	5	2	2		1		4	27	26	21						6	26	25	22	23	19	8	7	11
MED	422	418	394		310		304	246	247	256						284	289	266	262	272	266	331	354	338
U Q	457	432	432		155		344	258	256	270						296	296	278	272	282	306	363	450	476
L Q	347	404	356		155		285	232	234	245						274	272	261	252	248	248	293	338	292

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	6	3	5	1	4	3	4	6	5	6	4	4	2	3	2	3	2	6	11	13	7	5	8	4
MED	110	107	109	107	109	109	112	119	117	112	112	113	114	115	116	131	117	123	119	115	113	113	111	110
U Q	113	111	111	53	109	111	122	129	119	119	113	117	123	119	121	139	121	127	123	115	113	114	112	112
L Q	107	105	107	53	107	107	107	113	111	109	111	109	105	115	111	107	113	119	117	113	111	112	108	108

MONTHLY MEDIANS OF h'F AND h'Es

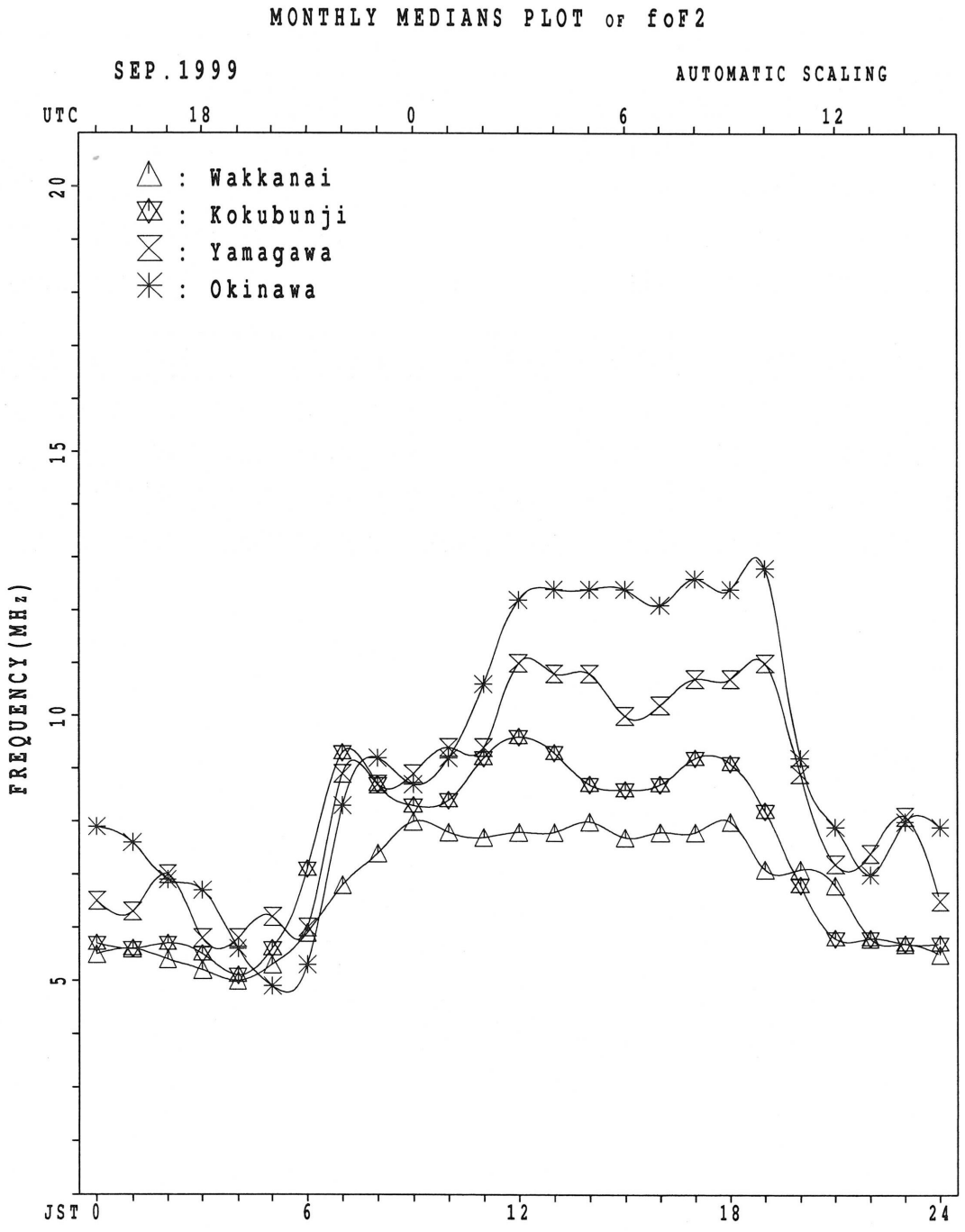
SEP.1999 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION Okinawa LAT. 31.2N LON. 130.6E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	11	7	8	2	1	1	17	18	19							18	18	17	15	15	11	7	12
MED	330	336	328	296	292	266	272	236	236	250							282	261	254	266	240	298	312	327
U Q	364	356	352	332	296	133	136	263	252	264							290	272	256	286	288	332	332	344
L Q	289	314	294	274	288	133	136	228	230	238							274	254	238	238	232	270	280	305

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	11	8	4	3	2	6	9	12	9	7	7	4	4	8	4	11	13	15	17	15	13	11	8
MED	97	97	98	96	93	92	110	121	111	111	103	99	119	115	107	125	111	115	109	95	105	99	99	99
U Q	103	97	99	97	97	95	127	138	113	114	111	113	145	127	122	139	117	121	111	98	111	103	101	101
L Q	95	91	97	94	87	89	95	113	105	106	99	97	102	102	99	108	101	109	105	88	101	96	97	91


MONTHLY MEDIANS PLOT OF foF2
SEP.1999
AUTOMATIC SCALING
UTC
18
0
6
12
△ : Wakkanai
⛛ : Kokubunji
⧖ : Yamagawa
✳ : Okinawa
FREQUENCY(MHz)
5
10
15
20
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 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 71	X 69	X 68	X 64	X 64															X 80	X 69	X 74	X 75	X 66
2	X 68	X 68	X 64	X 63	X 61															X 74	X 68	X 67	X 71	X 70
3	X 69	X 66	X 68	X 65	X 59															X 99	X 76	X 69	X 67	X 70
4	X 68	X 68	X 66	X 56	X 56															X 84	X 81	X 74	X 64	X 62
5	X 61	X 60	X 58	X 53	X 54															X 100	X 86	X 69	X 67	X 69
6	X 70	X 73	X 66	X 66	X 60	X 60														X 104	X 101	X 62	X 59	X 62
7	X 62	X 62	X 60	X 59	X 57	X 59														X 88	X 84	X 83	X 78	X 75
8	X 69	X 68	X 65	X 66	X 64	X 62														X 98	X 80	X 76	X 64	X 62
9	X 63	X 61	X 58	X 58	X 58	X 56														X 102	X 82	X 61	X 64	X 61
10	X 62	X 62	X 64	X 64	X 51	X 50														X 100	X 88	X 79	X 71	X 76
11	X 66	X 64	X 62	X 64	X 59	X 55													X 91	X 94	X 72	X 73	X 74	X 71
12	X 71	X 69	X 68	X 70	X 59	X 58														X 112	X 101	X 94	X 88	X 85
13	X 81	X 70	X 66	X 59	X 56	X 52														X 73	X 68	X 70	X 63	X 60
14	X 58	X 54	X 52	X 54	X 48	X 45														X 82	X 74	X 72	X 56	X 58
15	X 58	X 56	X 49	X 52	X 55															X 77	X 68	X 66	X 66	X 80
16	55	X 41	X 42	X 43	X 44	X 46														O X 55	X 46	X 48	X 49	X 48
17	X 46	X 50	X 50	X 46	X 42	X 41		80												X 74	X 66	X 59	X 58	X 59
18	X 56	X 53	X 52	X 54	X 51	X 51														X 79	X 64	X 64	X 63	X 62
19	X 58	X 58	X 59	X 56	X 52	X 48														X 80	X 66	X 62	X 62	X 64
20	X 60	X 56	X 56	X 57	X 52	X 44													X 112	X 96	X 69	X 59	X 57	X 57
21	X 58	X 55	X 52	X 52	X 54	X 54													X 95	X 67	X 55	X 60	X 60	X 59
22	X 58	X 58	X 58	X 58	X 52	X 52													X 104	X 86	X 67	X 66	X 60	X 61
23	X 60	X 59	X 60	X 64	X 46	X 45													X 104	X 66	X 58	X 61	X 62	X 64
24	X 64	X 62	X 63	X 62	X 61	X 62													X 111	X 98	X 68	X 58	X 60	X 61
25	X 60	X 60	X 58	X 55	X 56	X 60													X 112	X 89	X 61	X 61	X 59	X 60
26	X 59	X 59	X 59	X 59	X 57	X 55													X 95	X 82	X 72	X 66	X 60	X 60
27	X 61	X 59	X 63	X 57	X 56	X 66													X 104	X 92	X 74	X 66	X 64	X 64
28	X 60	X 62	X 60	X 58	X 58	X 57													X 83	X 68	X 57	X 55	X 56	X 51
29	X 47	X 46	X 46	X 46	X 46	X 45													X 80	X 60	X 58	X 56	X 58	X 56
30	X 55	X 54	X 51	X 51	X 50	X 48													X 98	X 59	X 51	X 53	X 55	X 57
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	24		1											12	30	30	30	30	30
MED	X 60	X 60	X 60	X 58	X 56	X 53		80											X 101	X 83	X 68	X 66	X 62	X 62
U Q	X 68	X 66	X 64	X 64	X 59	X 58													X 108	X 98	X 80	X 72	X 67	X 69
L Q	X 58	X 56	X 52	X 54	X 51	X 47													X 93	X 74	X 64	X 60	X 59	X 59

SEP. 1999 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1999 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	65	63	62	58	58	60	88	90	93	84	H 80	81	86	84	84	82	76	79	80	74	63	68	69	60
2	62	62	58	57	55	55	R 64	74	68	72	R 74	75	79	81	84	88	91	92	91	68	62	61	65	64
3	63	60	R 62	59	53	55	66	71	80	84	91	96	92	90	91	90	85	98	99	93	70	63	60	64
4	62	62	60	50	50	54	68	76	100	H 86	76	81	88	82	78	80	84	86	84	78	R 75	68	58	56
5	55	54	52	47	48	51	79	96	R 78	78	88	94	96	92	80	82	89	90	91	94	80	R 63	61	63
6	64	67	60	60	54	54	69	93	120	108	83	83	90	88	85	84	86	80	85	98	95	57	53	56
7	56	56	54	53	51	53	73	92	97	96	87	86	83	86	91	89	84	81	87	82	78	77	72	69
8	63	62	59	60	58	56	77	104	92	76	72	84	97	88	83	89	94	R 98	100	91	74	70	58	56
9	57	55	52	52	52	50	62	H 75	82	84	79	86	94	86	86	82	79	83	90	96	76	55	58	55
10	56	56	58	58	45	44	62	90	97	82	80	86	94	92	86	82	79	86	97	93	82	73	65	70
11	60	58	56	58	53	49	77	90	84	89	89	101	98	96	109	99	92	86	85	88	66	67	68	65
12	65	63	62	64	53	52	84	101	97	76	83	92	110	94	96	86	84	97	104	106	95	88	82	79
13	75	R 64	60	53	50	46	R 65	99	84	R 76	78	80	85	100	96	78	78	73	75	67	63	64	58	54
14	52	48	46	48	42	38	64	79	84	82	71	81	94	96	95	102	91	88	83	76	68	67	50	52
15	52	50	43	46	49	49	71	82	82	90	94	104	101	103	99	93	90	88	87	71	62	60	60	74
16	F 46	35	37	37	38	40	66	51	U R 46	52	E G 46	E G 47	52	56	60	R 62	65	75	73	49	40	41	43	42
17	40	44	44	40	36	35	62	F 74	73	78	84	76	68	69	70	71	71	72	73	68	60	53	52	53
18	50	47	46	48	45	45	62	80	80	80	80	86	86	82	84	82	82	79	80	73	58	58	57	55
19	52	52	53	50	46	42	60	78	86	84	97	98	96	92	92	82	86	94	94	74	60	56	56	58
20	54	50	50	51	46	38	68	86	92	94	88	93	97	94	90	87	89	97	106	90	63	53	51	51
21	52	49	46	46	48	48	71	84	92	90	100	106	110	103	84	91	92	93	89	61	49	54	54	53
22	52	52	52	52	46	46	62	87	98	98	111	104	96	94	89	80	82	88	98	80	61	60	54	55
23	54	53	54	58	40	39	60	99	107	126	92	84	103	105	92	90	94	114	98	60	52	55	56	58
24	58	56	57	56	55	56	74	90	93	98	90	92	98	100	95	92	98	106	105	92	62	53	54	54
25	54	54	52	50	50	54	89	95	82	90	98	99	103	96	96	88	94	106	106	83	55	55	53	54
26	53	53	53	53	51	49	73	93	92	105	104	98	96	93	94	94	89	89	89	76	R 66	60	54	54
27	55	53	57	51	50	60	73	89	86	100	109	114	110	111	112	117	104	105	98	86	68	60	58	58
28	54	56	54	52	52	51	61	76	70	65	U R 62	72	75	77	74	73	76	80	77	62	51	49	50	45
29	41	40	40	40	40	39	R 62	81	92	94	89	94	96	93	95	111	95	90	74	54	52	50	52	50
30	49	48	45	45	44	42	66	H 82	V 80	84	99	109	112	102	104	106	100	98	92	53	45	47	48	51
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	54	54	54	52	50	49	67	86	86	84	88	89	96	92	90	88	88	88	90	77	63	60	56	56
U Q	62	60	58	58	53	54	73	93	93	94	94	98	98	96	95	92	92	97	98	91	74	67	60	63
L Q	52	50	46	48	45	42	62	78	80	78	79	81	86	86	84	82	82	81	83	68	58	54	53	53

SEP.1999 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 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 452	L 552	U L 528	U L 560	U L 612	572	U L 580	L 560	L	L							
2							L 412	U L 532	L 492	L 536	U L 560	L 556	L 580	U L 576	L	U L 560	L	A						
3							L	L	A	L	U L 600	A	A	L	L	L	L	A						
4								A	A	A	L	L 560	L	L	L 520	L	L 472	L						
5							L	U L 432	L	A	U L 552	L	U L 560	L	U L 508	L	A							
6								L	U L 488	U L 512	L	U L 580	L 556	L 540	U L 540	U L 480	A							
7								L	U L 480	L	L	U L 540	U L 608	U L 568	L 536	U L 484	L							
8								L	L	L		U L 548	L 524	L 508	L	U L 496	L 476	U L 404						
9								L	U L 472	L		L 560	L	U L 500	U L 516	U L 524		L						
10								L	U L 460	L	U L 516	L 560	U L 528	U L 516	U L 536		L	L						
11								L	L	L	L	U L 520	L 512	L 544	U L 540	L	L							
12								L	L	L	L	L	U R 528	L 516	U L 500	L	L	L						
13							L	U L 432	A	U L 484	L	U L 556	L 548	L 540	L 508	L								
14								L	L	L	L	L 548	U L 532	U L 524	A	L 484	L							
15								L	L	L	U L 724	L	L	U L 544	U L 548	L 460	L							
16							L		U R 408	440	U R 456	R 468	460	468	492	484	L 448	U L 360						
17							A		L	U L 508	528	500	L	L	L	U L 508								
18									L	U L 500	L	L	L 532	L 540	L 524	L	L							
19								L	L	L 480	U L 552	L	L	L 532	U L 496	L	U L 456							
20									L	L	U L 496	L	L	U L 548	L	L	A							
21								L	L	L	U L 572	L 560	L 564	U L 540	L	U L 468	L							
22								L	L	L	L	B	U L 564	L	L	L	L	L						
23									U L 480	L	L	L	L	U L 548	L	L	L							
24									L	L	L	L	U L 620	L	L		L							
25								L	L	L	L	L	L	L	L	L	L							
26									L	L	L 460	L	L	L	U L 508	L	L							
27									L	L 480	U L 488	U L 548	L	L	U L 556	L	L							
28								U L 420	L 460	520	L	L 532	L 512	U L 512	L	L	L	L						
29								L	U L 456	U L 480	U L 500	U L 500	L	L	L	L	L							
30								L	U L 420	L	L 464	U L 536	L	L	L	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	5	11	11	15	18	17	19	16	10	4	2						
MED							L 412	U L 432	U L 472	U L 500	U L 528	L 548	L 548	U L 540	U L 522	U L 484	L 464	U L 382						
U Q								L 492	L 488	L 520	U L 560	L 560	U L 568	U L 548	U L 540	U L 508	L 474							
L Q								U L 426	U L 456	L 480	L 488	L 532	L 526	L 516	U L 508	U L 480	L 452							

SEP. 1999 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1999 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	204	296	340	364	R	A	A	A	A	R 352	A	A	B					
2						B	A	296	A 332	R	R	R	B	R	R	344	324	268	A					
3						B	U A 220	292	332	R 356	A	U A 368	A	A	A	A 360	308	A	B					
4						B	A	A 268	324	A 356	U A 376	A	B	B	R	348	312	252	A					
5						B	A	U A 268	A	A	A	A	A	A	A	A 336	308	A	B					
6							A	A	A	A	R	A	U R 376	B	364	340	A 308	A	B					
7							212	A	300	A	U R 352	U R 368	B	R	356	R	296	232	B					
8							212	272	308	U R 336	R	380	A	R	R 356	332	A	A	B					
9							216	272	308	B	R	U R 372	R	R	348	328	A	A	B					
10							A	264	A 296	R 348	U R 356	R	R	R	U R 352	320	280	A	B					
11							A	264	U A 308	A	A	R	R	R	A	A	292	224						
12							192	A 264	A	R	R	R	R	R	U R 340	304	292	A	B					
13							200	276	304	A	A	B	U R 376	364	344	328	272	236	A					
14							A	A	A	R	R	R	R	A	A	R 340	304	U A 236	B					
15						B	192	272	320	A 344	R 360	A	A	A	A	324	300	232	B					
16							A	272	316	B	R	R	R	U R 364	R 348	320	288	236	B					
17							A	276	316	R 348	U R 364	A	A	R	348	320	296	U A 224	B					
18							212	296	U R 324	R	B	B	R	R	R 348	320	296	232	B					
19							200	272	R 320	356	R 376	R	B	R	R	R 332	A	A	B					
20							196	A	U R 336	R	R	R	R	R	R 344	332	A	A						
21							200	U A 268	A 324	R 348	A	A	B	B	B	R 336	284	204						
22							A	A	312	R 356	R	B	R	R	R	316	276	188						
23							192	276	312	R 344	R	R	R	R	352	R 332	276	A						
24							192	268	U R 316	R 352	U R 368	R	U R 376	R	348	324	280	A 196						
25							A 180	260	312	348	R 372	R	R	R	336	312	272	204						
26							204	280	A	344	R	U R 372	R	360	R 344	320	280	192						
27							180	276	308	A 344	U A 348	R	R	U R 356	R	324	276	208						
28							A	A	A	328	R	364	R	R	340	316	272	B						
29							A	A	A	R	R	R 380	384	368	348	324	260	196						
30							A	A	296	328	U R 356	U S 376	U R 376	R	348	324	268	U A 168						
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							17	22	23	17	10	8	5	5	18	28	25	18						
MED							200	272	316	348	U R 362	U 372	U R 376	364	348	326	288	224						
U Q							212	276	324	356	R 372	378	380	366	352	336	302	236						
L Q							192	268	308	344	U R 356	U 368	U R 376	358	344	320	276	196						

SEP.1999 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 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	27	21	E B 15	J A 20	E B 15	E B 15	G	33	J A 43	43	G	49	52	48	J A 45	G	J A 36	J A 122	J A 120	J A 26	38	32	J A 57	34
2	J A 20	E B 16	E B 14	E B 14	20	J A 19	J A 30	33	J A 41	G 33	G 32	G	E B 44	G	G	G	J A 41	J A 45	J A 38	37	J A 33	J A 80	J A 52	J A 24
3	J A 24	J A 50	J A 31	J A 23	J A 20	J A 23	J A 27	J A 48	J A 59	J A 50	44	J A 76	J A 60	59	50	J A 46	J A 61	J A 59	50	54	J A 30	29	J A 154	78
4	J A 52	J A 47	J A 32	30	22	J A 23	J A 28	J A 56	J A 86	J A 66	J A 117	J A 48	44	E B 43	G	38	G	29	J A 24	J A 20	21	22	J A 23	J A 52
5	J A 28	24	J A 19	J A 30	J A 24	J A 33	J A 26	J A 38	J A 41	47	J A 46	J A 43	J A 46	J A 48	40	J A 46	J A 47	J A 40	J A 64	44	J A 53	53	J A 27	28
6	J A 25	J A 26	18	E B 15	J A 25	J A 32	J A 29	J A 33	J A 34	46	G 27	J A 48	G 31	E B 38	42	39	J A 51	J A 36	J A 44	34	E B 14	J 23	J A 20	E B 15
7	24	22	E B 14	20	18	J A 16	J A 24	J A 33	34	34	G 26	G	E B 41	G 23	G	G	G	28	E B 16	J A 18	J A 20	J A 24	24	J A 27
8	26	21	18	E B 15	24	J A 21	25	32	G 26	38	G 30	G 32	38	G 32	G 30	34	38	33	J A 32	24	29	24	J A 20	E B 16
9	E B 16	19	18	18	20	J A 18	22	29	34	E B 37	G 28	G	G	G	41	J A 47	J A 38	J A 25	20	24	J A 30	J A 22	19	E B 15
10	19	20	20	24	23	J A 18	J A 28	31	36	G 28	G 30	G 25	G	G	G 30	35	31	J A 27	J A 66	E B 17	J A 17	19	J A 24	E B 15
11	J A 22	J A 26	E B 16	E B 16	E B 15	J A 26	J A 28	31	J A 38	40	40	G 36	G 36	G 33	40	35	G	G	J A 28	J A 84	J A 44	J A 23	22	E B 15
12	27	20	19	18	E B 14	J A 26	22	J A 39	J A 40	G	G 34	G 32	G 34	G 34	G 28	G 30	32	J A 30	J A 22	J A 20	J A 20	33	J A 26	J A 32
13	E B 16	20	E B 15	19	20	J A 18	J A 30	G 25	J A 52	38	37	E B 45	G 31	G	G	G 22	G 26	G	J A 18	J A 19	J A 47	41	J A 54	J A 21
14	J A 22	J A 24	J A 23	J A 22	E B 14	J A 18	J A 44	46	35	G 26	G 34	G 36	G	J A 46	110	G	G	J A 28	J A 50	J A 34	J A 49	J A 27	29	E B 14
15	E B 14	J A 50	J A 36	J A 44	J A 45	J A 32	23	32	36	J A 42	J A 48	42	39	41	41	36	37	J A 48	36	21	J A 48	J A 52	J A 30	J A 25
16	27	21	21	22	19	20	28	G	38	E B 35	G	G 31	G 29	G	G 24	G	30	G	J A 24	48	J A 32	37	E B 15	25
17	E B 14	E B 15	E B 14	18	20	J A 29	52	34	G 30	G	G 31	39	44	G 36	G 29	J G 27	G 21	28	29	J A 25	21	J A 22	18	E B 15
18	E B 14	E B 15	18	18	17	18	G 20	G 29	G	G 33	E B 43	E B 44	G 32	G 29	G	G 25	G 23	29	31	28	22	E B 15	E B 16	E B 15
19	18	24	30	25	23	J A 23	G 19	30	G	G	G	G	E B 44	G 30	G	G	36	J A 27	J A 24	J A 24	24	J A 27	J A 19	E B 16
20	E B 15	E B 15	J A 51	J A 37	J A 33	J A 25	25	34	G 32	G	G 36	G	G 27	G 30	G 28	G 30	J A 50	J A 40	J A 28	J A 21	J A 30	31	J A 26	22
21	E B 15	E B 17	32	31	20	J A 23	26	33	36	G	42	42	E B 41	E B 48	E B 40	G 21	G	24	J A 19	19	J A 50	J A 40	J A 26	E B 15
22	24	27	24	20	J A 26	J A 46	J A 74	J A 33	G 30	G 30	G E B 28	46	G 27	G	G	G 28	32	27	J A 27	J A 30	J A 19	E B 15	E B 14	E B 14
23	E B 14	E B 15	E B 15	E B 14	E B 15	E B 14	G	30	G	G 29	G 34	G 31	G	G 27	G 26	G 32	G	J A 30	E B 15	E B 14	J A 25	J A 27	J A 21	E B 15
24	20	E B 14	E B 15	J A 24	E B 15	J A 25	J A 22	30	G	G	G 26	G	G	G	38	39	36	J A 34	J A 24	J A 33	E B 15	E B 13	18	E B 15
25	E B 15	E B 14	E B 14	E B 15	19	20	22	29	G 29	39	G	G 26	G	G 30	G 27	G	G 25	G	E B 15	21	E B 15	J A 28	21	20
26	E B 15	E B 14	E B 15	E B 15	20	20	J A 22	34	36	G	G	G	G 32	G	G	40	J A 40	J A 30	J A 32	J A 32	J A 34	E B 15	J A 21	17
27	21	21	E B 14	E B 14	E B 13	E B 15	G	G	35	J A 41	38	G	G	G	G	G	G	27	J A 26	34	22	23	E B 13	E B 14
28	E B 15	E B 14	E B 14	E B 15	E B 14	E B 15	J A 22	J A 31	J A 33	G	G	G 28	G 30	G	38	36	32	J A 26	J A 24	28	J A 26	J A 24	E B 13	J A 21
29	21	J A 21	E B 14	E B 14	20	19	J A 24	J A 32	36	G 33	G 30	G 30	G 29	G 24	G 21	G	G 25	23	J A 20	J A 22	J A 23	E B 14	27	E B 16
30	E B 13	E B 15	E B 15	E B 14	E B 15	J A 20	J A 23	J A 37	G 24	38	G 28	G	G	G	G 29	G	34	J A 40	E B 21	E B 15	J A 25	25	E B 15	E B 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	20	20	18	18	20	J A 20	24	32	35	G	G	G	G	G	G	G	32	J A 28	26	24	J A 26	24	22	E B 16
U Q	24	J A 24	J A 23	24	J A 23	J A 25	J A 28	J A 34	J A 38	40	38	43	41	38	40	36	J A 38	J A 36	J A 36	34	J A 34	32	27	25
L Q	E B 15	E B 15	E B 15	E B 15	E B 15	18	G 22	30	G	G	G 30	G 32	G 32	G 32	G 29	G 32	G	26	21	20	21	E B 22	E B 18	E B 15

SEP. 1999 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1999 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	18	E B 14	E B 15	17	E B 15	E B 15	G	32	41	40	G	45	44	48	43	G	34	32	48	18	37	21	28	20
2	19	E B 16	E B 14	E B 14	E B 13	E B 15	26	33	39	U G 33	U G 32	G	E B 44	G	G	G	38	42	27	30	25	39	27	19
3	E B 14	17	20	18	19	E B 15	24	42	54	47	42	64	58	52	47	44	49	53	33	43	24	22	24	41
4	48	31	22	22	16	E B 14	24	52	82	62	42	44	42	E B 43	G	37	G	27	20	17	E B 15	E B 14	17	23
5	18	17	17	22	17	22	23	32	39	46	41	42	44	45	39	42	44	35	30	35	24	40	20	E B 14
6	20	22	E B 14	E B 15	20	22	23	31	33	38	U G 27	45	G 28	E B 38	40	37	44	32	40	28	E B 14	E B 15	18	E B 15
7	18	16	E B 14	E B 14	E B 14	E B 15	G 19	31	34	U Y 34	G 26	G	E B 41	U G 21	G	G	G	26	E B 16	16	17	19	18	20
8	E B 14	16	E B 14	E B 15	18	19	24	30	G 19	36	U G 30	G U 32	Y 38	U G 32	G 29	G 28	29	22	21	20	20	18	E B 15	E B 16
9	E B 16	16	E B 14	E B 14	E B 13	E B 14	22	28	32	E B 37	U G 28	G	G	G	38	42	29	24	16	18	18	20	E B 14	E B 15
10	E B 14	E B 15	18	17	17	E B 14	22	29	35	G 27	G 28	G 24	G	G	G 29	G 26	G 22	24	58	E B 17	E B 14	16	E B 14	E B 15
11	18	20	E B 16	E B 16	E B 15	20	22	30	35	40	40	U G 36	G U 36	G U 33	37	32	G	G	E B 16	67	19	17	E B 15	E B 15
12	E B 15	E B 15	E B 15	E B 14	E B 14	E B 16	22	35	38	G U 33	G U 32	G U 34	G U 33	G 28	G 25	32	24	E B 15	E B 14	E B 14	18	18	20
13	E B 16	E B 15	E B 15	E B 13	E B 13	E B 14	G 27	22	50	37	35	E B 45	G 30	G	G	G 22	G 23	G	17	16	36	30	26	18
14	18	22	19	20	E B 14	E B 14	21	34	35	U G 26	U G 34	U G 36	G	42	88	G	G	26	22	26	29	E B 15	20	E B 14
15	E B 14	26	24	29	27	22	21	31	34	40	46	42	38	41	40	35	34	40	29	E B 14	20	21	20	E B 14
16	18	E B 14	E B 13	E B 14	E B 14	14	25	G	36	E B 35	G	G 31	G 29	G	G 22	G	29	G	21	46	28	23	E B 15	17
17	E B 14	E B 15	E B 14	E B 15	E B 14	21	43	G 25	G 28	G	G 30	39	41	U G 36	G 26	G 21	G 18	25	19	18	E B 15	16	E B 15	E B 15
18	E B 14	E B 15	E B 14	E B 14	16	E B 15	G 17	G 25	G U 33	G E 43	B E 44	B 46	G 30	G 28	G	G 24	G 21	27	23	E B 16	E B 15	E B 15	E B 16	E B 15
19	E B 15	17	E B 14	18	E B 14	18	G 18	28	G	G	G	G E 44	B U 30	G	G	G	30	25	18	18	18	17	14	E B 16
20	E B 15	E B 15	22	18	22	17	24	31	G 30	G	U G 35	G	U G 27	G 28	G 26	G 25	40	26	19	18	20	24	23	18
21	E B 15	E B 17	21	22	18	20	23	31	35	G	40	41	E B 41	E B 48	E B 40	G 19	G	23	E B 15	E B 14	26	22	18	E B 15
22	18	19	17	E B 14	E B 14	18	42	28	G 28	G 29	G 27	E B 46	G 26	G	G	G 27	30	24	18	20	E B 14	E B 15	E B 14	E B 14
23	E B 14	E B 15	E B 15	E B 14	E B 15	E B 14	G	30	G	G 26	U G 32	U G 31	G	G 26	G 25	G 26	G	26	E B 15	E B 14	E B 14	18	18	E B 15
24	E B 14	E B 14	E B 15	E B 15	E B 15	E B 14	G	29	G	G	G 25	G	G	G	38	38	36	28	E B 15	18	E B 15	E B 13	E B 15	E B 15
25	E B 15	E B 14	E B 14	E B 15	E B 13	E B 15	21	28	G 24	37	G	G 24	G U 29	G 26	G	G 22	G	E B 15	E B 15	E B 15	17	18	E B 14
26	E B 15	E B 14	E B 15	E B 15	E B 12	16	G 17	G 24	32	G	G	G U 32	G	G	G 38	35	26	22	20	23	E B 15	17	E B 14
27	E B 14	E B 14	E B 14	E B 14	E B 13	E B 15	G	G	34	38	37	G	G	G	G	G	G	22	17	29	E B 14	E B 14	E B 13	E B 14
28	E B 15	E B 14	E B 14	E B 15	E B 14	E B 15	20	26	31	G	G	G U 27	G 30	G	38	34	30	20	E B 15	18	19	19	E B 13	E B 14
29	E B 14	E B 13	E B 14	E B 14	E B 15	E B 15	20	24	32	U G 33	U G 29	G 30	G 27	G 22	G 19	G	G 23	22	E B 15	E B 12	17	E B 14	E B 14	E B 16
30	E B 13	E B 15	E B 15	E B 14	E B 15	E B 15	18	30	G 21	37	G 26	G	G	G	G 26	G	32	28	E B 14	E B 15	E B 13	17	E B 15	E B 16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	E B 15	E B 15	E B 15	E B 15	E B 15	E B 15	22	30	34	G	G	G	G	G	G	G	29	26	18	18	18	18	17	E B 15
U Q	18	17	17	18	17	18	24	31	36	38	37	42	41	38	38	35	34	28	23	26	24	21	20	18
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	G	G 26	G	G	G 29	G 32	G 30	G 32	G 28	G 26	G	22	E B 15	E B 16	E B 15	E B 15	E B 15	E B 14

SEP.1999 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1999 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	14	15	15	15	15	14	16	18	17	34	23	28	26	20	20	17	17	15	15	16	16	15	15
2	15	16	14	14	13	15	16	15	17	20	20	26	44	25	24	20	17	16	15	15	15	16	16	15
3	14	14	14	14	14	15	14	15	17	21	23	23	24	22	22	19	16	14	15	14	17	15	15	16
4	15	15	15	15	13	14	16	16	15	20	20	27	41	43	21	18	15	15	13	14	15	14	15	15
5	15	14	14	14	14	14	15	14	18	18	18	20	20	33	19	19	15	14	15	16	14	15	15	14
6	14	14	14	15	13	15	14	14	15	20	19	16	16	38	22	18	16	15	14	14	14	15	15	15
7	15	14	14	14	14	15	16	13	16	20	20	24	41	20	18	16	16	15	16	13	14	15	15	15
8	14	14	14	15	15	15	14	14	15	18	25	26	23	20	20	19	14	15	17	14	15	15	15	16
9	16	14	14	14	13	14	14	15	14	37	18	19	20	18	18	17	15	14	16	14	15	15	14	15
10	14	15	16	15	15	14	15	15	15	19	20	19	22	22	18	15	15	16	15	17	14	14	14	15
11	15	15	16	16	15	16	14	16	17	19	24	26	29	20	26	16	17	15	16	16	16	14	15	15
12	15	15	15	14	14	16	13	14	16	21	26	22	24	22	22	15	17	18	15	14	14	15	14	15
13	16	15	15	13	13	14	15	18	15	20	22	45	24	22	19	18	16	16	12	14	14	16	15	14
14	15	15	15	14	14	14	14	15	16	20	20	28	22	31	25	20	17	14	16	15	15	15	15	14
15	14	14	14	14	14	15	14	15	17	19	24	26	28	22	21	17	17	14	16	14	14	14	16	14
16	15	14	13	14	14	14	15	15	17	35	21	22	26	22	20	20	17	15	15	14	15	15	15	14
17	14	15	14	15	14	14	13	14	15	18	22	20	28	22	19	15	15	13	16	14	15	15	15	15
18	14	15	14	14	14	15	14	16	16	21	43	44	26	19	20	17	16	15	16	16	15	15	16	15
19	15	14	14	14	14	15	16	18	18	17	20	20	44	21	18	16	16	16	16	14	15	15	14	16
20	15	15	15	14	15	14	15	16	20	21	27	24	22	25	22	18	13	13	15	14	15	15	15	14
21	15	17	14	14	14	15	13	16	20	20	21	31	41	48	40	16	18	14	15	14	14	14	14	15
22	14	14	14	14	14	15	15	15	17	21	22	46	22	30	20	18	16	14	16	14	14	15	14	14
23	14	15	15	14	15	14	17	16	16	18	16	20	20	20	20	20	16	16	15	14	14	13	15	15
24	14	14	15	15	15	14	14	15	18	18	18	22	20	18	18	16	15	15	15	15	15	13	15	15
25	15	14	14	15	13	15	13	15	16	16	17	15	17	18	15	17	15	14	15	15	15	16	15	14
26	15	14	15	15	12	13	14	15	17	18	19	22	20	22	18	17	15	15	16	15	15	15	15	14
27	14	14	14	14	13	15	14	15	15	18	22	21	19	21	16	18	15	16	15	15	14	14	13	14
28	15	14	14	15	14	15	14	14	16	16	19	20	16	26	16	16	18	16	15	15	15	14	13	14
29	14	13	14	14	15	15	14	16	18	20	21	19	20	16	15	19	15	14	15	12	13	14	14	16
30	13	15	15	14	15	15	15	15	15	16	18	22	17	20	19	16	14	14	14	15	13	14	15	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	14	14	14	14	15	14	15	16	20	20	22	22	22	20	18	16	15	15	14	15	15	15	15
U Q	15	15	15	15	15	15	15	16	17	20	23	26	28	26	22	19	17	16	16	15	15	15	15	15
L Q	14	14	14	14	13	14	14	15	15	18	19	20	20	20	18	16	15	14	15	14	14	14	14	14

IONOSPHERIC DATA STATION Kokubunji

SEP.1999 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	272	275	274	256	266	275	328	321	311	285	H 296	280	300	275	284	289	303	293	295	294	265	255	274	259
2	256	277	274	266	249	258	R 281	303	308	312	R 309	307	291	283	292	287	304	311	319	313	260	259	266	265
3	260	265	R 274	286	269	273	293	301	297	287	295	298	313	305	300	303	293	296	303	313	294	296	263	250
4	262	273	283	261	279	292	313	301	326	H 321	294	286	307	301	309	301	312	310	310	304	R 292	296	275	272
5	273	283	280	264	260	278	318	350	R 340	307	301	292	316	306	290	297	301	309	309	323	312	R 291	275	267
6	270	286	285	287	286	290	298	308	324	335	335	298	307	315	311	309	314	309	294	308	331	293	270	282
7	281	282	281	286	285	282	314	336	332	338	320	309	297	300	308	311	320	308	314	291	288	292	287	299
8	280	279	282	279	291	296	313	342	364	339	321	290	314	319	315	308	312	R 312	321	309	290	307	282	278
9	276	270	271	275	307	326	344	H 327	341	330	308	301	309	310	317	321	313	318	314	326	359	268	283	282
10	281	286	294	312	306	275	310	345	356	336	334	313	315	318	309	305	309	300	306	329	293	293	278	302
11	294	272	311	300	317	299	341	336	324	305	296	297	295	283	300	308	320	324	309	329	308	279	293	280
12	282	276	289	313	297	301	328	349	365	355	316	288	312	293	299	307	301	299	320	320	324	282	287	288
13	293	R 293	296	264	276	275	R 301	311	340	R 311	291	290	285	284	310	311	318	331	320	271	283	276	290	271
14	280	271	267	281	288	296	312	326	323	331	331	318	313	298	A 301	311	313	327	319	305	279	312	290	273
15	277	286	273	263	290	310	332	339	320	317	293	304	298	299	310	327	327	326	322	322	276	259	257	295
16	F 343	271	275	275	279	291	341	294	U R 249	287	G	G	266	276	281	R 297	287	320	332	A	265	285	278	263
17	272	270	285	294	294	303	306	F 310	323	319	328	331	301	298	305	306	309	323	319	312	303	281	275	272
18	271	260	271	275	295	295	334	329	329	325	312	303	325	297	305	308	323	322	316	320	300	280	280	288
19	260	259	279	295	293	304	332	326	322	297	304	291	305	296	313	302	310	325	332	342	290	271	272	289
20	277	274	274	295	319	315	340	342	315	349	327	308	308	310	316	304	305	310	323	328	324	271	268	269
21	282	264	272	272	285	289	319	334	325	312	300	302	300	329	283	304	320	329	323	314	261	268	276	275
22	274	266	266	293	272	279	326	317	320	297	298	308	311	303	312	307	318	306	317	331	272	279	277	277
23	265	264	284	320	276	270	308	341	309	321	329	283	301	318	304	294	296	312	330	311	259	273	268	276
24	275	275	273	284	297	314	333	349	336	336	313	305	309	307	317	299	302	313	327	332	320	270	266	274
25	277	280	275	269	279	297	356	359	348	319	308	311	307	307	310	307	300	320	342	341	317	269	278	271
26	271	281	281	292	298	306	343	341	340	322	330	306	308	291	304	311	326	327	326	313	R 313	298	283	280
27	276	269	284	256	260	299	342	330	320	318	299	306	295	291	290	306	303	312	319	327	280	287	268	268
28	257	272	281	294	291	283	297	302	323	291	U R 293	269	289	302	307	308	317	330	345	309	289	276	286	298
29	280	280	269	284	284	293	R 332	335	343	331	324	306	312	307	298	321	327	332	326	302	273	280	280	280
30	277	283	289	291	299	308	329	H 333	V 339	297	304	304	311	290	292	310	319	313	342	305	263	261	260	271
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30
MED	276	274	280	284	287	294	327	332	324	319	308	302	307	300	305	307	312	313	320	313	290	280	276	276
U Q	280	281	284	294	297	303	334	341	340	331	324	307	312	307	310	310	319	325	326	328	312	292	283	282
L Q	271	270	273	269	276	279	310	311	320	305	296	290	298	291	298	302	303	309	314	306	273	270	268	271

SEP.1999 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 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 350	L 329	U L 351	U L 362	U L 329	368	U L 336	L 335	L	L							
2							L 318	U L 306	L 344	L 351	U L 351	L 366	L 352	U L 334	L	U L 328	L	A						
3							L	L	A	L	U L 336	A	A	L	L	L	L	A						
4								A	A	A	L	L 357	L	L	L 359	L	L 352	L						
5							L	U L 370	L	A	U L 352	L	U L 332	L	U L 365	L	A							
6								L	U L 361	U L 361	L	U L 352	L 350	L 345	U L 338	U L 356	A							
7								L	U L 370	L	L	U L 371	U L 345	U L 342	L 346	U L 361	L							
8								L	L	L		U L 345	L 367	L 378	L	U L 347	L 353	U L 346						
9								L	U L 367	L		L 347	L	U L 381	H 354	U L 345		L						
10								L	U L 386	L	U L 367	L 343	U L 357	U L 358	U L 343		L	L						
11								L	L	L	L	U L 361	L 381	L 346	U L 327	L	L							
12								L	L	L	L	L	U R 350	L 368	U L 354	L	L	L						
13							L	U L 332	A	U L 378	L	U L 345	L 335	L 337	U L 360	L								
14								L	L	L	L	L 358	U L 352	U L 353	A	L 356	L							
15								L	L	L	U L 311	L	L	U L 354	U L 341	L 369	L							
16							L		U R 386	365	U R 357	R 389	393	379	353	336	L 322	L						
17							A		L	U L 355	354	388	L	L	L	U L 342								
18									L	U L 371	L	L	L 363	L 354	L 348	L	L							
19								L	L	L 379	U L 338	L	L	L 357	U L 356	L	U L 352							
20									L	L	U L 392	L	L	U L 351	L	L	A							
21								L	L	L	U L 335	L 342	L 344	B	L	U L 357	L							
22								L	L	L	L	B	U L 352	L	L	L	L	L						
23									U L 343	L	L	L	L	U L 338	L	L	L							
24									L	L	L	L	U L 355	L	L		L							
25								L	L	L	L	L	L	L	L	L	L							
26									L	L	L 427	L	L	L	U L 356	L	L							
27									L	L 377	U L 385	U L 349	L	L	U L 341	L	L							
28								U L 346	L 337	L 341	L	L 345	L 355	U L 340	L	L	L	L						
29								L	L	U L 371	U L 379	U L 384	L	L	L	L	L							
30								L	U L 415	L	L 405	U L 350	L	L	L	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	5	10	11	15	18	17	18	16	10	4	1						
MED							L 318	U L 346	U L 364	U L 365	U L 357	L 351	L 352	U L 352	U L 350	U L 352	L 352	U L 346						
U Q								L 360	U L 386	L 377	L 385	L 366	L 365	L 358	U L 356	U L 357	L 352							
L Q								U L 319	L 343	L 351	U L 338	L 345	L 348	L U 340	L U 341	U L 342	L 337							

SEP. 1999 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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SEP.1999 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								278	306	H 290	310	366	350	356	356	332	L 310							
2							362	338	324	326	322	320	338	346	326	338	302	270						
3							308	304	312	308	336	316	302	316	326	300	336	A 288						
4								A 278	A 308	A 250	284	338	312	L 314	288	L 322	280	270						
5							280	246	248	270	314	306	296	298	280	296	296							
6								262	264	254	256	312	322	302	310	292	270							
7								244	262	252	274	300	334	324	306	278	264							
8								240	240	230		322	290	296	288	296	284	270						
9								248	252	254		312	308	278	282	298		264						
10								236	244	252	272	316	288	284	294		286	280						
11								236	244	280	278	292	290	330	304	262	262							
12								234	228	234	288	316	298	H 274	294	280	294	292						
13							312	276	280	276	320	348	350	322	266	278								
14								264	268	256	244	312	300	290	A	284	252							
15								232	240	262	354	292	276	292	292	270	258							
16							270		538	416	G	G	516	460	414	364	342	268						
17							A 296		280	288	284	292	308	L 304	332	314								
18									252	272	292	308	278	312	302	298	272							
19								264	256	254	298	316	298	318	296	316	280							
20									266	252	266	304	288	288	288	316	262							
21								234	252	260	294	296	302	280	256	288	264							
22								272	254	264	L 302	282	294	308	282	262	266	280						
23									290	260	232	L 344	302	276	L 290	302	262							
24									244	248	236	H 246	302	288	268		272							
25								228	236	256	282	276	270	278	282	266	284							
26									234	278	254	272	280	306	282	272	270							
27									238	260	260	276	288	276	304	264	258							
28								294	306	398	L 354	412	352	310	316	292	276	256						
29								262	242	258	266	264	276	294	308	266	250							
30								232	226	L 328	276	278	272	320	292	272	258							
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							6	22	30	30	28	30	30	30	29	28	27	10						
MED							302	255	253	260	284	310	299	303	294	292	272	270						
U Q							312	276	280	280	312	320	312	318	309	308	286	280						
L Q							280	236	242	254	266	292	288	288	282	272	262	268						

SEP.1999 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 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	298	282	296	326	302	306	234	218	238	220	226	H 220	224	E A 276	A 254	232	240	A 274	284	258	A 348	330	306	308
2	336	296	294	292	348	330	268	240	238	210	202	202	212	224	242	248	252	A	248	246	A 284	E A 388	336	312
3	320	324	328	274	282	296	246	E A 272	A	A 264	218	A	A	A E	A 268	A 260	E A 294	A	256	246	258	272	368	E A 380
4	E A 404	A 324	302	324	304	280	264	A	A	A	200	220	Y 238	226	208	224	230	244	260	244	254	240	254	330
5	312	308	290	346	334	316	250	A 238	228	A	216	224	232	A 256	220	A 250	A	256	262	250	250	A 290	300	316
6	318	290	290	264	268	280	236	240	218	230	240	A 230	Y 240	222	214	224	A	252	A 274	264	228	216	304	298
7	302	294	282	266	278	290	242	234	216	232	220	206	220	216	216	216	232	246	254	266	270	264	260	246
8	288	282	286	274	252	260	242	246	228	200	216	208	220	H 208	H 212	218	228	218	244	238	226	244	234	302
9	302	316	320	298	238	238	224	218	224	200	234	210	246	210	H 194	A 252	240	236	254	248	220	248	276	284
10	282	280	280	240	232	288	228	230	218	210	204	H 214	196	208	H 200	238	216	242	A 284	232	240	244	266	262
11	256	310	248	250	236	272	234	234	218	240	218	204	196	220	238	228	228	242	248	A 278	224	276	268	268
12	276	294	282	242	242	264	246	232	A 238	206	210	242	E Y 250	236	218	238	240	242	242	244	236	264	262	258
13	246	252	262	284	276	334	274	254	A	226	204	B 238	210	222	230	224	242	252	250	276	A 318	312	278	296
14	288	318	344	294	282	306	256	230	A 240	218	206	208	Y 240	212	A	222	238	248	262	260	298	236	250	296
15	286	A 294	A 346	A 378	324	278	236	230	222	230	234	204	222	222	230	228	252	252	248	218	292	350	352	274
16	208	320	318	326	324	294	256	254	254	232	236	228	234	230	226	224	258	256	236	A	E A 374	A 358	296	338
17	342	322	278	262	308	308	A	228	218	210	212	204	222	Y 238	234	226	254	254	248	248	236	250	300	294
18	314	344	336	270	264	288	232	238	236	208	228	B 240	222	218	220	244	246	252	252	232	240	296	286	278
19	328	350	316	276	246	242	244	246	226	214	200	220	E B 268	210	Y 234	234	234	258	240	228	238	254	294	284
20	270	296	334	258	246	268	242	240	226	232	202	H 218	218	234	236	236	A	260	250	222	216	290	340	320
21	306	310	340	336	292	282	240	240	228	232	204	218	220	B	238	210	242	244	234	208	324	324	296	304
22	324	334	324	276	272	306	A 258	234	236	206	H 206	B	222	234	220	220	242	252	244	232	226	262	280	286
23	308	308	296	234	254	348	262	228	236	242	210	H 200	242	222	238	238	244	256	212	204	278	320	314	292
24	284	286	288	270	250	246	230	228	228	224	212	206	242	216	236	242	244	260	236	216	214	228	306	306
25	288	284	284	308	296	268	230	230	214	208	210	210	212	198	220	228	H 220	248	230	218	216	280	310	308
26	314	300	292	274	254	254	238	242	230	208	206	218	232	220	226	248	246	248	240	240	242	242	254	302
27	300	324	280	330	354	268	214	234	224	212	210	216	228	224	224	238	238	246	236	240	250	236	300	302
28	338	296	278	258	278	324	256	258	240	222	214	242	224	226	234	240	244	242	228	244	258	288	276	276
29	284	310	316	308	290	288	260	222	220	232	204	210	216	218	228	252	238	236	218	234	290	278	292	266
30	282	274	278	278	262	254	232	212	216	244	202	238	246	246	220	246	246	246	224	208	312	336	338	314
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	29	29	27	28	30	28	29	28	29	30	27	28	30	29	30	30	30	30
MED	300	304	293	276	277	285	242	234	228	221	210	217	223	222	226	235	241	248	248	240	248	271	295	296
U Q	318	320	320	308	302	306	256	241	236	232	218	226	240	232	236	244	246	255	254	249	290	312	306	308
L Q	284	290	282	264	252	268	233	229	218	209	204	207	219	216	219	224	234	243	236	225	228	244	268	278

SEP. 1999 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 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	128	116	116	116	116	A	A	A	A	118		A	A	B				
2						B	A	114	114		A	A	116	B	114	118	114	114	114	A				
3						B	132	118	114	112		A	112	A	A	A	118	118	118	B				
4						B	A	118	116	116	114	A	B	B	118	116	114	116	A					
5						B	A	126	114		A	A	A	A	A	A	A	132	A	B				
6							A	A	A	A	A	A	116	B	116	122	120		A	B				
7							A	A	116	116	112	116	B	A	110	122	116	120	B					
8							142	122	122	124	A	124	A	A	124	A	A	A	B					
9							126	110	110	B	A	114	114	112	114	112	A	A	B					
10							A	120	A	120	118	114	118	114	124	A	120	A	B					
11							124	124	120	120	A	A	A	A	A	A	116	130						
12							122	A	A	120	A	A	A	A	122	120	122	A	B					
13							134	128	A	A	A	B	122	114	118	116	126	128	A					
14							A	A	A	A	A	A	122	A	A	116	114	130	B					
15						B	A	126	122	122	120	A	A	A	116	118	118	120	B					
16							A	120	114	B	116	122	120	118	118	116	118	124	B					
17							A	A	130	118	120	A	A	A	122	120	120	124	B					
18							154	A	118	A	B	B	122	116	118	118	118	132	B					
19							136	128	118	116	114	112	B	A	118	116	A	A	B					
20							124	A	136	118	A	120	A	122	120	A	A	A						
21							146	126	116	120	118	A	B	B	B	118	114	118						
22							A	A	A	126	122	112	B	118	124	120	A	A						
23							128	116	118	116	A	A	116	118	118	122	124	A						
24							134	122	120	116	114	118	116	114	114	114	120	124						
25							132	122	120	114	114	118	112	A	122	118	132	124						
26							A	A	A	120	118	120	A	116	114	116	116	116						
27							142	124	116	120	116	118	118	120	118	118	118	132						
28							A	A	A	116	122	120	A	120	120	118	126	B						
29							A	A	A	A	A	124	118	116	116	114	132	126						
30							A	A	122	114	122	120	116	116	124	118	116	118						
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							18	21	22	21	16	16	14	15	24	28	25	19						
MED							133	122	118	118	116	118	118	116	118	118	118	124						
U Q							142	127	122	120	119	120	120	120	121	121	125	128						
L Q							128	118	116	116	114	115	116	114	116	116	116	118						

SEP. 1999 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1999 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	106	106	B	108	B	B	G	126	132	124	G	108	108	106	110	G	112	116	108	112	110	110	110	110
2	110	B	B	B	128	124	126	126	122	110	104	G	B	G	G	G	130	120	114	110	108	110	108	108
3	106	116	102	102	102	102	138	122	114	116	118	110	112	112	112	134	122	116	110	110	110	108	122	104
4	108	102	100	102	106	108	122	114	112	114	116	116	124	B	G	148	G	128	120	114	114	114	110	108
5	106	124	110	104	110	112	122	114	120	168	116	114	112	116	118	130	122	122	120	110	110	112	114	106
6	110	108	100	B	110	104	102	108	110	102	100	98	98	B	138	144	118	114	110	112	B	108	108	B
7	108	108	B	102	102	100	124	116	120	122	102	G	B	110	G	G	G	152	B	120	116	114	102	108
8	100	100	98	B	96	98	144	142	110	130	108	106	106	106	106	104	102	104	106	104	102	102	106	B
9	B	100	102	104	108	98	144	146	122	B	106	G	G	G	130	118	106	112	106	98	100	100	96	B
10	106	102	102	104	106	114	140	138	122	110	106	102	G	G	100	98	98	132	110	B	104	100	118	B
11	102	100	B	B	B	118	124	124	122	120	116	116	114	102	116	120	G	G	124	118	112	116	112	B
12	106	100	98	98	B	120	126	124	118	G	110	106	106	102	100	100	136	128	128	124	118	110	110	112
13	B	110	B	128	130	174	150	118	122	120	116	B	110	G	G	100	112	G	104	112	110	106	108	116
14	102	100	102	100	B	122	112	114	120	110	110	112	G	116	108	G	G	138	122	116	114	126	106	B
15	B	108	108	108	106	104	128	128	128	126	120	118	120	120	116	148	134	124	118	120	114	114	108	112
16	106	110	106	104	108	110	130	G	136	B	G	110	108	G	108	G	128	G	118	116	110	110	B	102
17	B	B	B	132	120	118	112	114	112	G	106	108	110	106	102	104	96	124	98	100	98	110	100	B
18	B	B	102	102	104	104	120	120	G	112	B	B	112	108	G	106	102	146	96	100	100	B	B	B
19	108	102	120	102	130	120	120	162	G	G	G	G	B	110	G	G	108	102	106	98	100	142	100	B
20	B	B	106	108	100	126	168	126	120	G	112	G	102	104	104	106	120	106	126	102	108	112	100	100
21	B	B	122	120	100	122	160	124	122	G	120	116	B	B	B	104	G	126	98	98	108	108	108	B
22	110	106	104	106	150	108	108	110	110	110	100	B	106	G	G	108	142	124	108	106	108	B	B	B
23	B	B	B	B	B	B	G	170	G	100	104	112	G	106	104	108	G	122	B	B	110	104	102	B
24	108	B	B	118	B	102	108	172	G	G	104	G	G	G	146	158	140	126	124	120	B	B	102	B
25	B	B	B	B	154	134	134	128	110	128	G	106	G	108	106	G	112	G	B	130	B	104	108	98
26	B	B	B	B	118	118	118	114	112	G	G	G	108	G	G	142	128	124	112	110	108	B	102	102
27	100	102	B	B	B	B	G	G	128	122	122	G	G	G	G	G	G	130	118	116	116	122	B	B
28	B	B	B	B	B	B	122	116	110	G	G	108	100	G	160	148	128	130	110	108	106	104	B	106
29	108	110	B	B	116	110	114	110	110	110	110	108	106	104	102	G	110	132	118	118	118	B	108	B
30	B	B	B	B	B	112	112	106	106	122	112	G	G	G	108	G	130	120	116	B	136	108	B	B
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	19	16	19	21	26	27	28	26	20	23	18	18	16	20	20	23	26	27	27	27	25	24	14
MED	106	106	102	104	108	112	124	123	120	118	110	109	108	107	108	113	120	124	112	112	110	110	108	107
U Q	108	110	107	108	124	120	138	128	122	123	116	114	112	111	117	143	130	130	120	118	114	114	110	110
L Q	106	100	101	102	103	104	114	114	110	110	104	106	106	105	104	104	108	116	106	104	106	105	102	102

SEP.1999 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1999 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

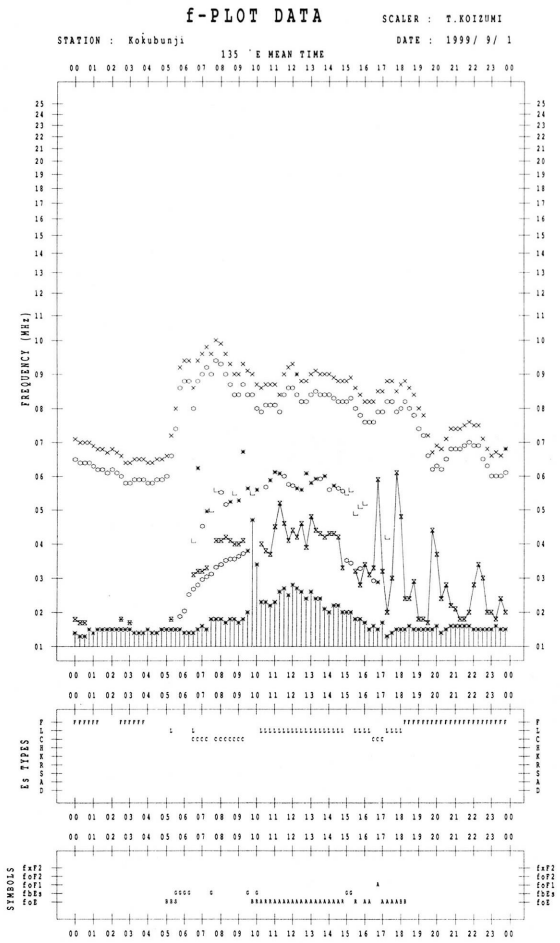
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

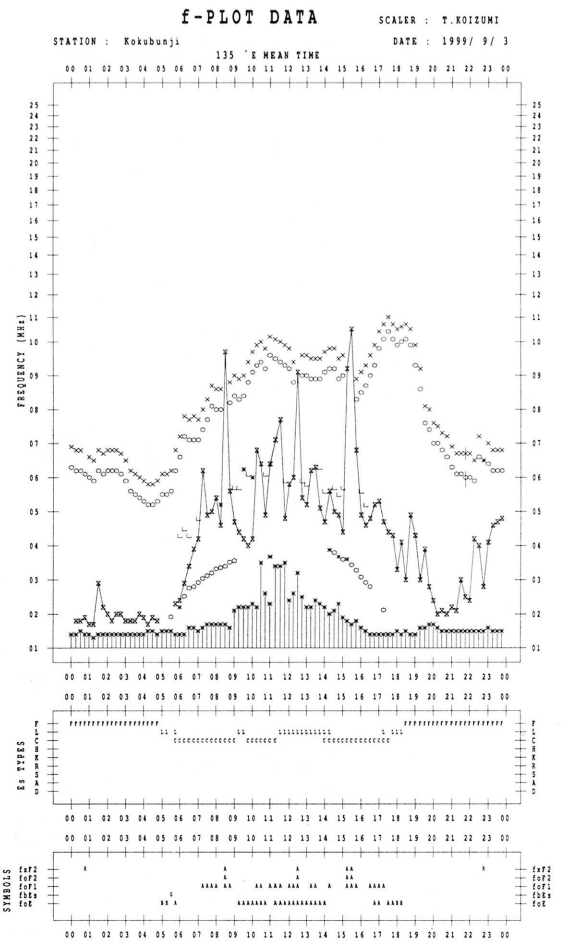
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 21	F 1		F 2				C 1	C 1	C 1		L 2	L 1	L 1	L 1		L 2	C 2	L 4	FF 31	F 4	FF 22	FF 32	F 2
2	F 2				F 1	C 1	C 2	C 1	C 1	L 1	L 1						C 1	C 2	L 3	F 3	F 3	F 3	F 5	F 2
3	F 2	FF 12	F 3	F 3	F 2	L 2	C 1	C 2	C 2	C 1	C 1	C 2	L 2	L 2	LC 11	C 1	C 2	C 3	L 3	F 3	F 3	F 4	FF 33	F 3
4	F 5	F 5	F 4	F 4	F 2	L 2	L 2	C 2	C 2	C 2	C 1	C 1	C 1			H 1		C 1	L 1	F 2	F 1	FF 11	F 2	F 3
5	F 2	FF 11	F 2	F 3	F 2	CL 42	L 2	C 2	C 1	HC 11	C 1	L 1	L 1	C 1	C 1	CL 11	CL 21	CL 23	CL 33	F 4	F 3	F 3	F 2	FF 11
6	F 2	F 2	F 1		F 4	F 4	L 3	L 2	L 2	L 2	L 1	L 2	L 1		C 1	HL 11	CL 21	C 3	L 3	F 4		F 1	F 1	
7	F 1	F 1		F 1	F 1	F 1	L 1	C 2	C 1	C 1	L 1			L 1				H 1		F 3	F 2	F 2	F 1	F 2
8	F 2	F 1	F 1		F 2	F 2	C 2	H 1	L 1	CL 11	L 1	L 1	L 1	L 1	L 1	L 2	L 2	L 2	L 4	F 2	F 3	F 2	F 1	
9		F 2	F 1	F 1	F 1	F 1	H 1	H 1	CL 11		L 1				C 1	C 2	L 2	L 3	LC 11	F 1	F 2	F 2	F 1	
10	F 2	F 2	F 2	F 3	F 2	F 1	CL 21	C 1	CL 11	L 1	L 1	L 1			L 2	L 2	L 2	CL 11	CL 51		F 1	F 1	F 1	
11	F 2	F 2				F 2	C 1	C 1	C 1	C 1	C 1	L 1	L 1	L 1	CL 21	CL 11			FF 11	F 4	F 2	F 1	FF 11	
12	F 1	F 2	F 1	F 1		F 2	C 1	CL 21	C 1		L 1	L 1	L 1	L 1	L 1	L 1	C 1	C 1	C 1	F 1	F 1	F 3	F 3	F 2
13		F 1		FF 11	F 1	F 1	C 2	L 1	CL 21	C 1	L 1		L 1			L 1	L 1		LC 21	F 1	FF 31	F 2	F 3	F 2
14	F 2	F 2	F 1	F 2		F 1	L 3	C 2	CL 11	L 1	L 1	L 1		C 1	L 3			CL 11	C 4	F 2	F 3	F 1	F 2	
15		F 3	F 4	F 6	F 5	L 4	CL 11	CL 12	CL 11	CL 11	C 2	C 1	L 1	C 1	CL 11	HL 11	C 1	C 2	L 3	F 1	F 2	F 2	F 3	F 2
16	F 1	F 1	F 1	F 1	F 1	F 1	C 2		H 1			L 1	L 1		L 1		C 1		C 3	F 6	F 4	F 5		F 1
17				F 1	F 2	F 4	C 3	L 2	L 1		L 1	L 1	L 1	L 1	L 1	L 2	L 1	CL 12	L 2	F 2	F 3	FF 12	F 1	
18			F 1	F 1	F 1	F 1	L 1	L 1		L 1			L 1	L 1		L 1	L 2	HL 23	L 4	F 2	F 1			
19	F 1	F 3	FF 21	F 3	F 1	F 1	L 1	HL 11						L 1			L 2	L 2	L 2	F 2	F 2	FF 11	F 1	
20			F 3	F 2	F 3	FF 22	HL 11	CL 11	L 1		L 1		L 1	L 1	L 1	L 1	CL 23	L 2	FF 21	F 2	FF 11	FF 12	F 2	F 1
21			FF 31	FF 51	F 1	F 3	HL 11	C 1	C 1		C 1	C 1				L 1		CL 21	F 2	F 1	FF 21	F 1	F 1	
22	F 2	F 3	F 2	F 1	FF 11	F 3	L 3	L 2	L 1	L 1	L 1		L 1			L 1	CL 11	C 3	F 3	F 3	F 1			
23								H 1		L 1	L 1	L 1		L 1	L 1	L 1		C 2			F 1	F 2	F 2	
24	F 1			F 2		F 2	LH 11	H 1			L 1				C 1	H 1	CL 11	CL 31	F 3	F 3			F 1	
25					F 1	F 1	C 1	C 1	L 1	C 1		L 1		L 1	L 1		L 1			F 1		F 2	F 1	F 1
26					F 1	F 1	L 1	L 2	L 1				L 1			H 1	C 3	C 4	F 3	F 3	F 3		F 2	F 1
27	F 2	F 2							C 1	CL 11	C 1							C 1	F 2	F 3	F 1	F 1		
28							L 2	L 2	L 2			L 1	L 1		HL 11	HL 11	CL 11	C 2	F 1	FF 21	F 1	F 1		F 1
29	F 2	F 1			F 1	FF 11	L 2	L 3	L 2	L 2	L 1	L 1	L 1	L 1	L 1		L 1	C 1	FF 11	FF 11	F 1		F 1	
30						F 2	L 3	L 3	L 1	C 1	L 1				L 1		C 2	C 3	FF 11		F 1	F 1		
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																								

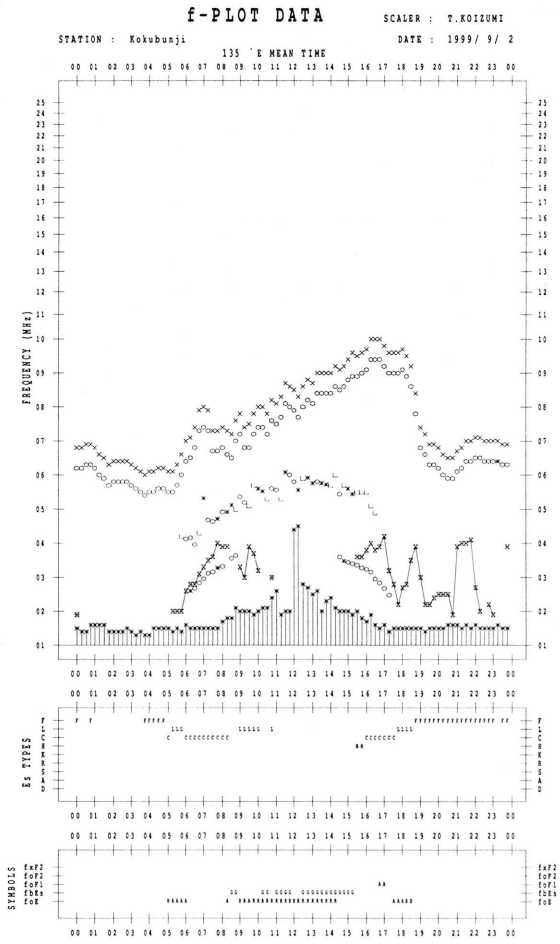
SEP. 1999 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

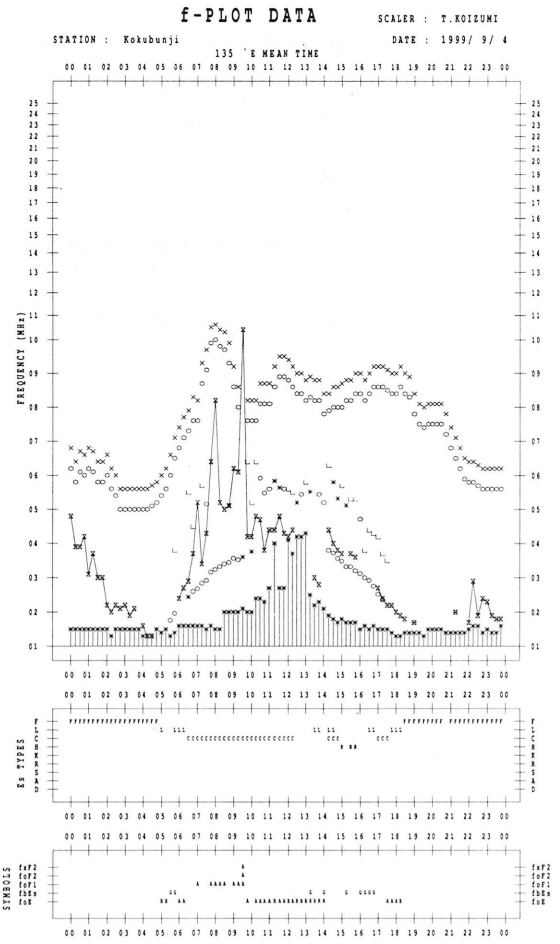
f-PLOTS OF IONOSPHERIC DATA

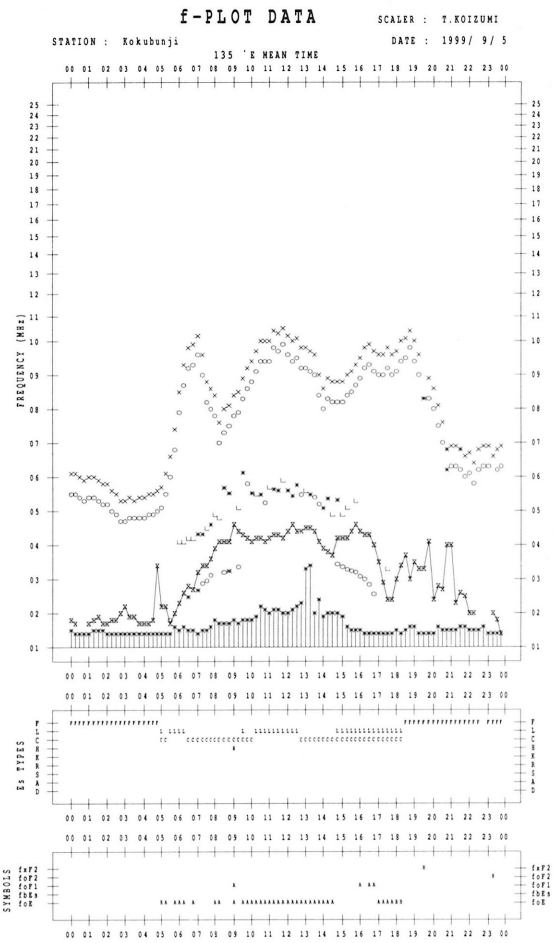
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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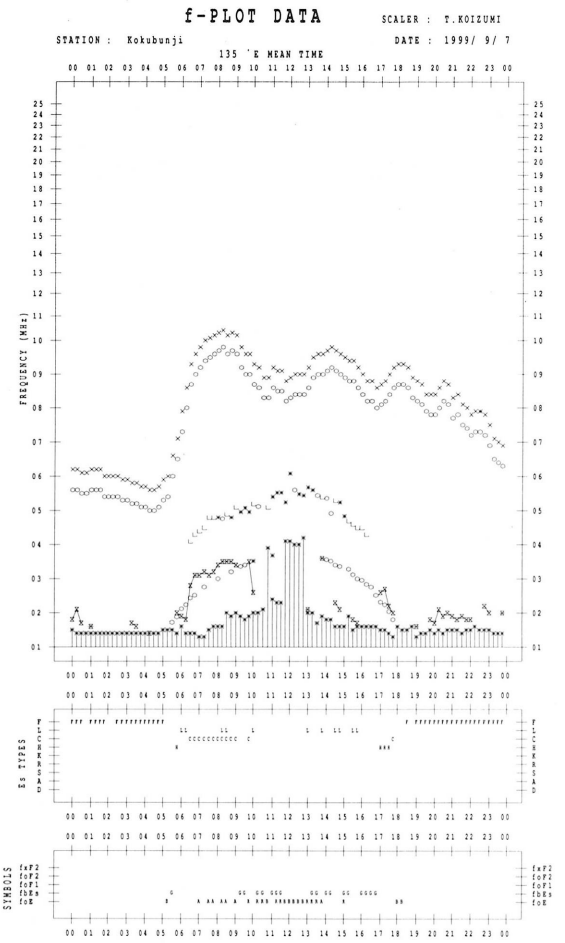
STATION : Kokubunji
DATE : 1999/ 9/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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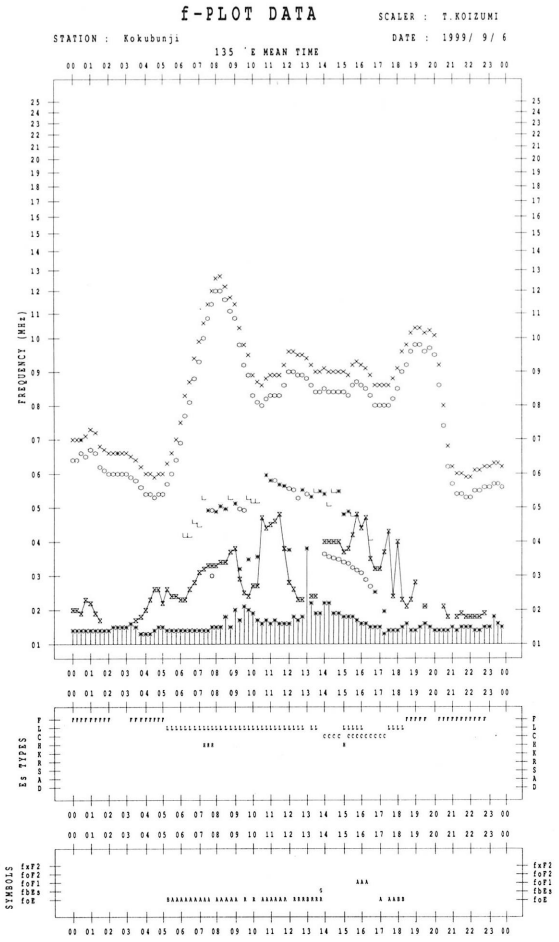
STATION : Kokubunji
DATE : 1999/ 9/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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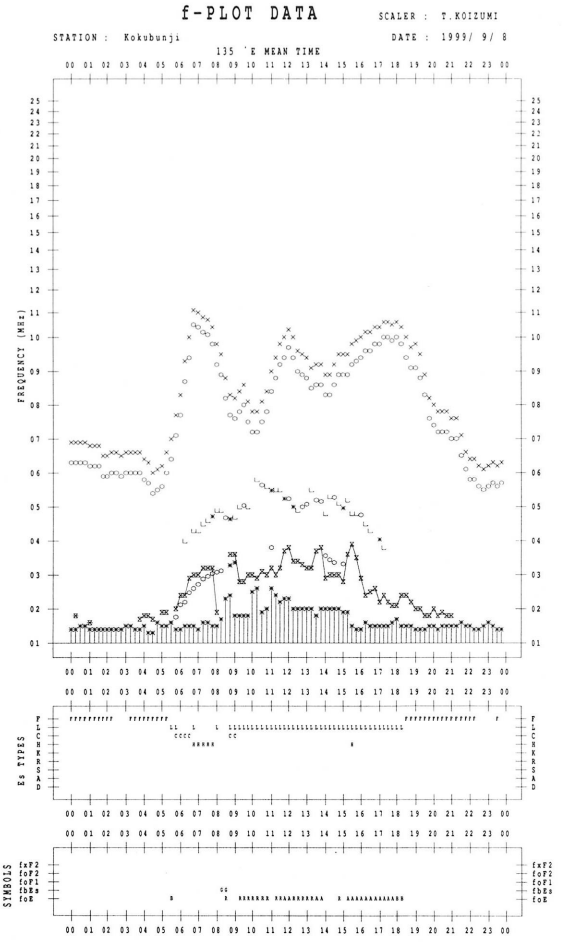
STATION : Kokubunji
DATE : 1999/ 9/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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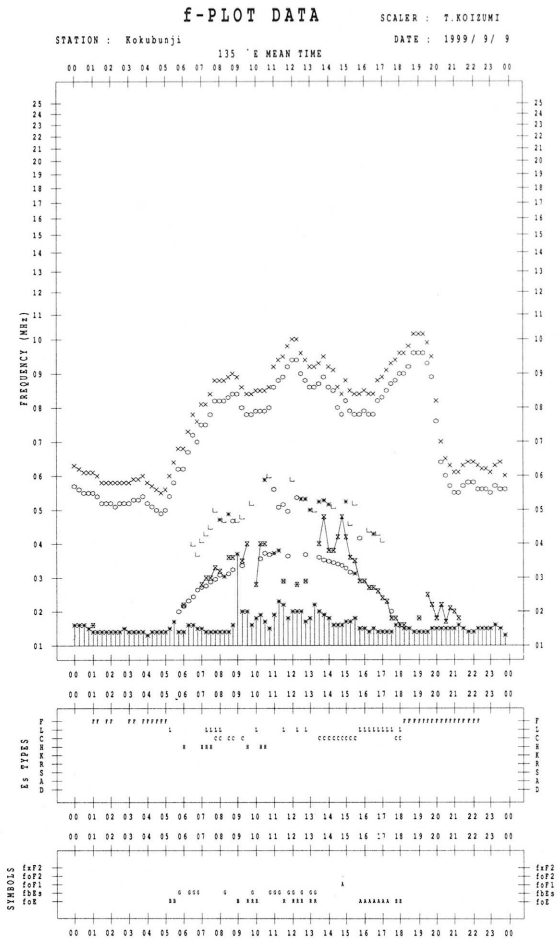
STATION : Kokubunji
DATE : 1999/ 9/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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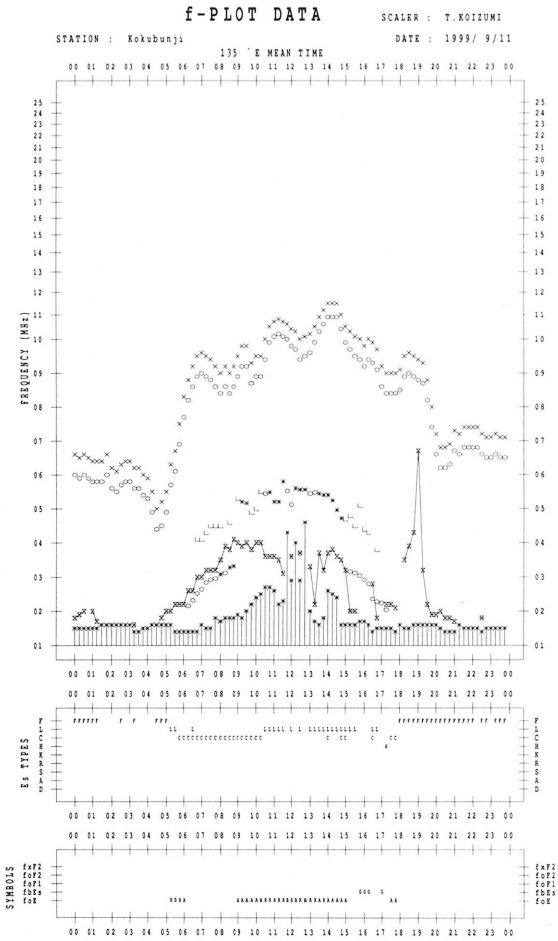
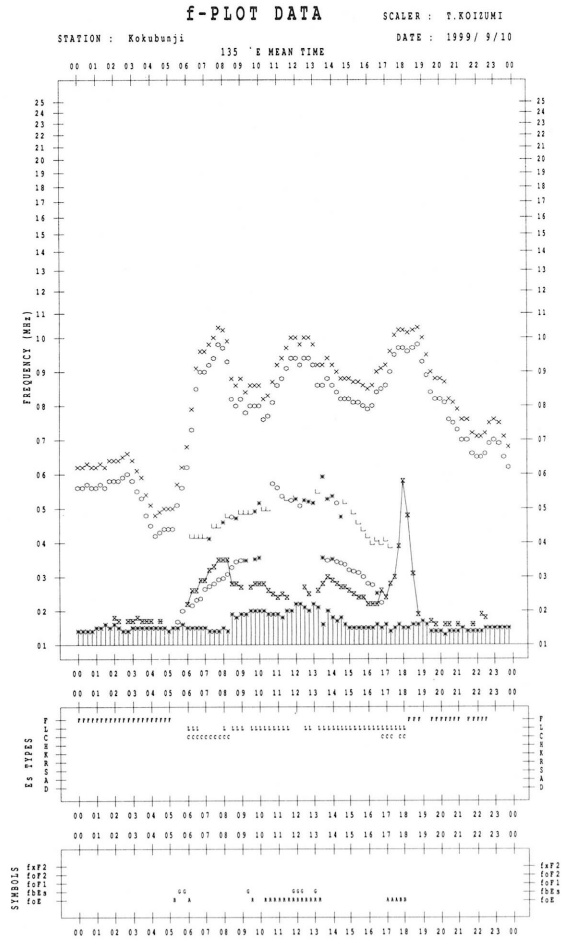
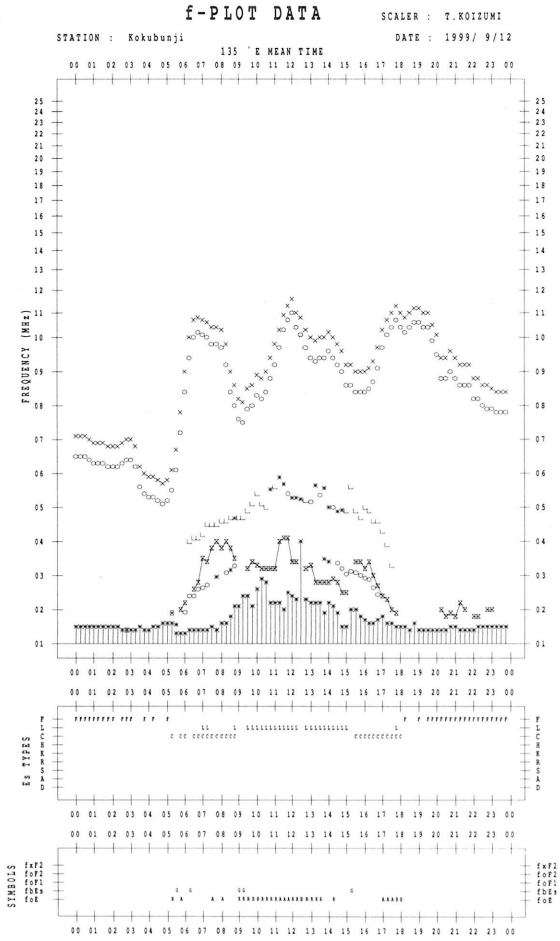
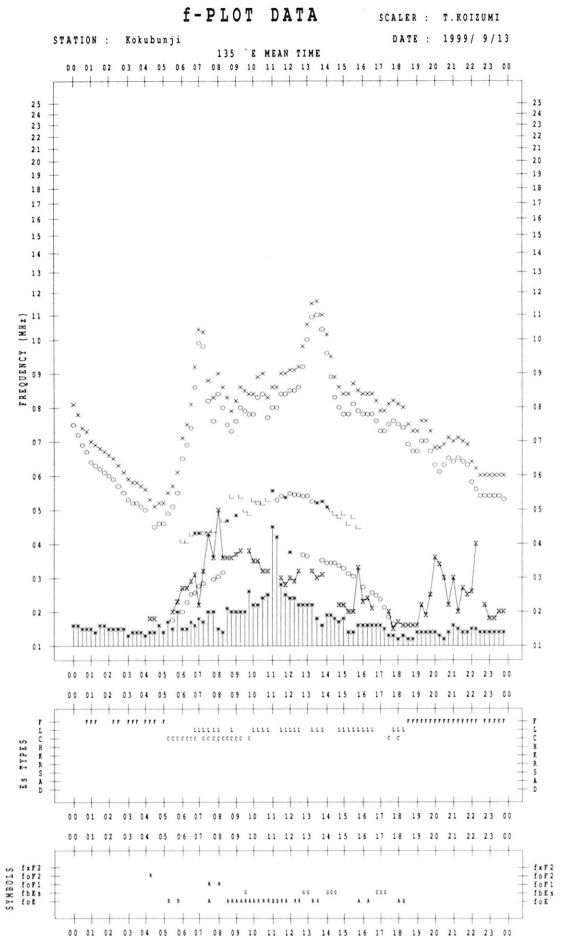
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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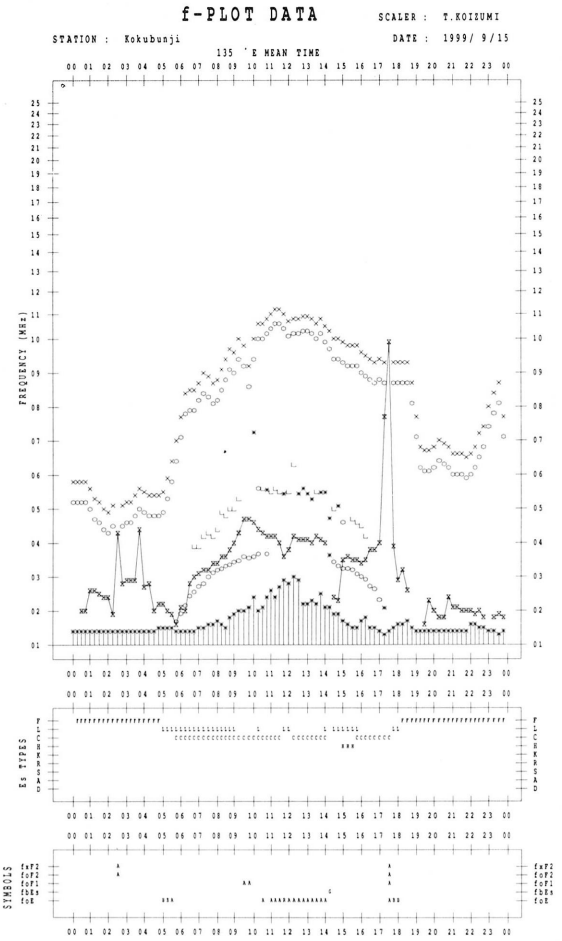
STATION : Kokubunji
DATE : 1999/ 9/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE


f-PLOT DATA
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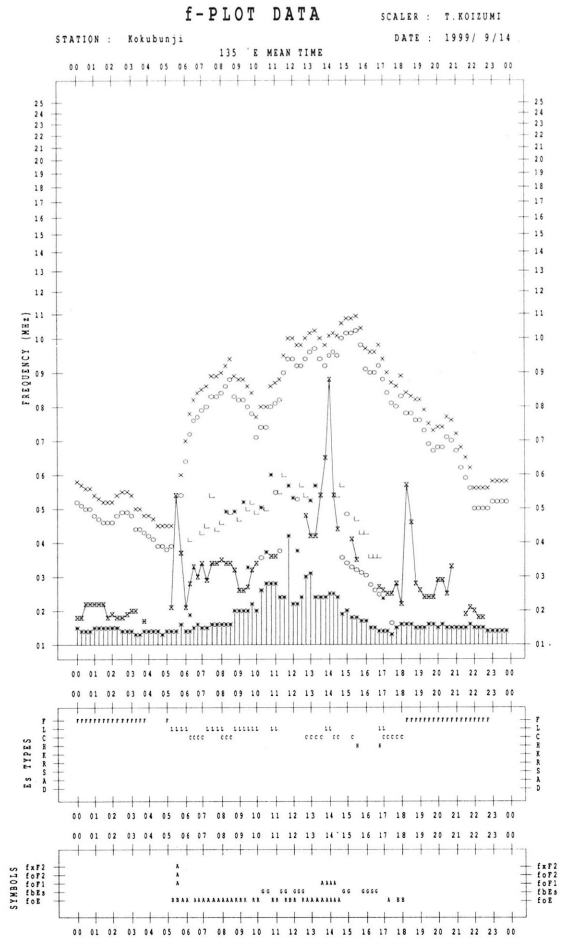
STATION : Kokubunji
DATE : 1999/ 9/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE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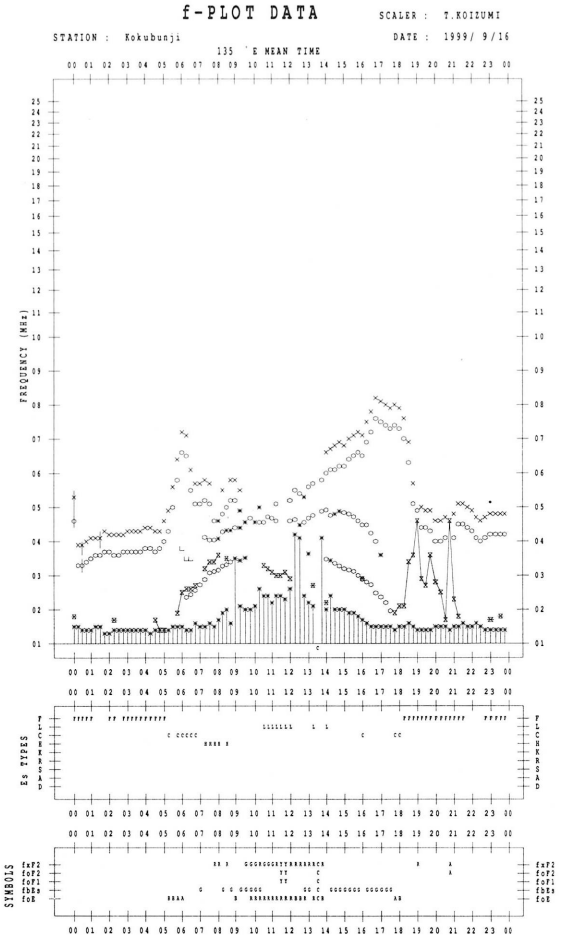
STATION : Kokubunji
DATE : 1999/ 9/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE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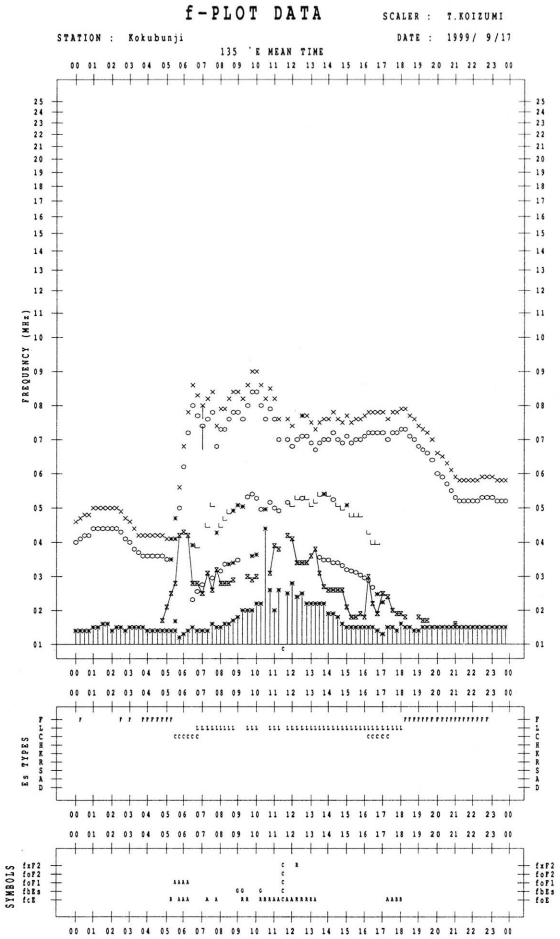
STATION : Kokubunji
DATE : 1999/ 9/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE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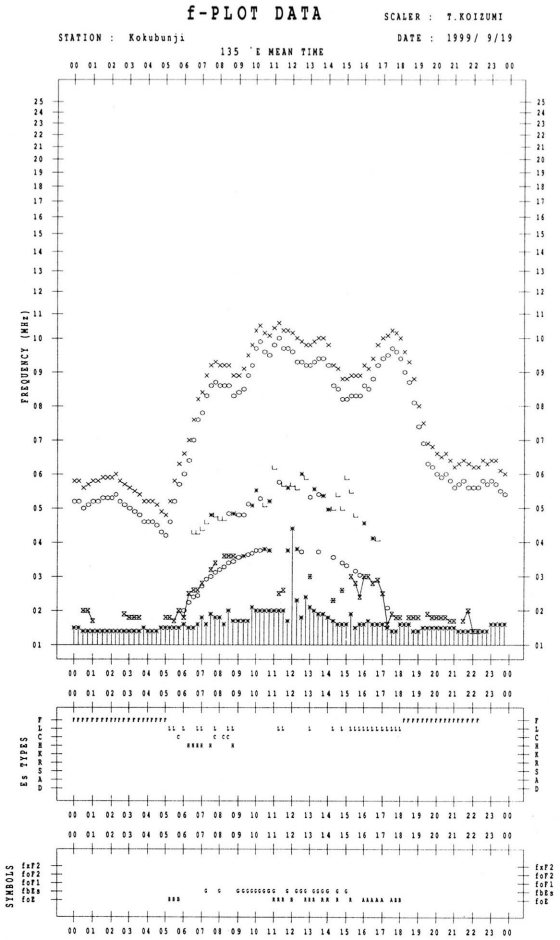
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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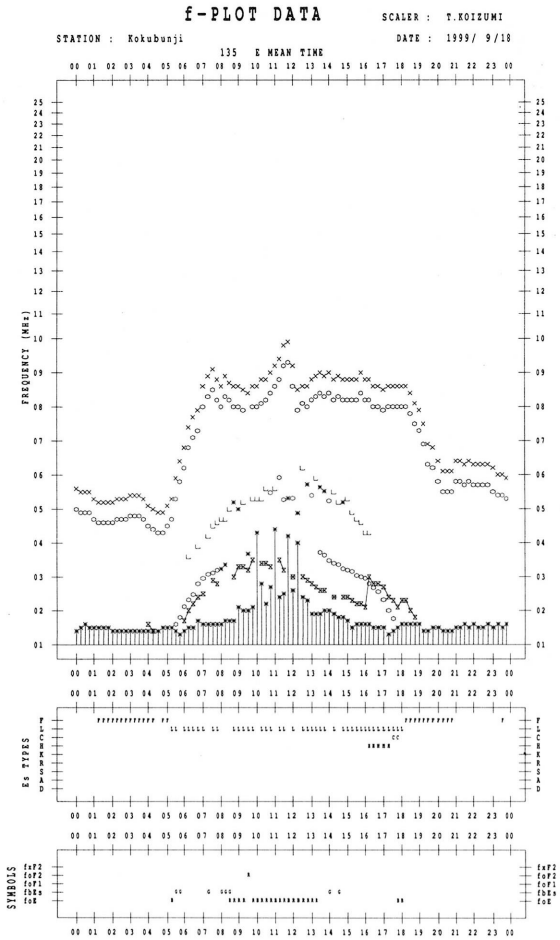
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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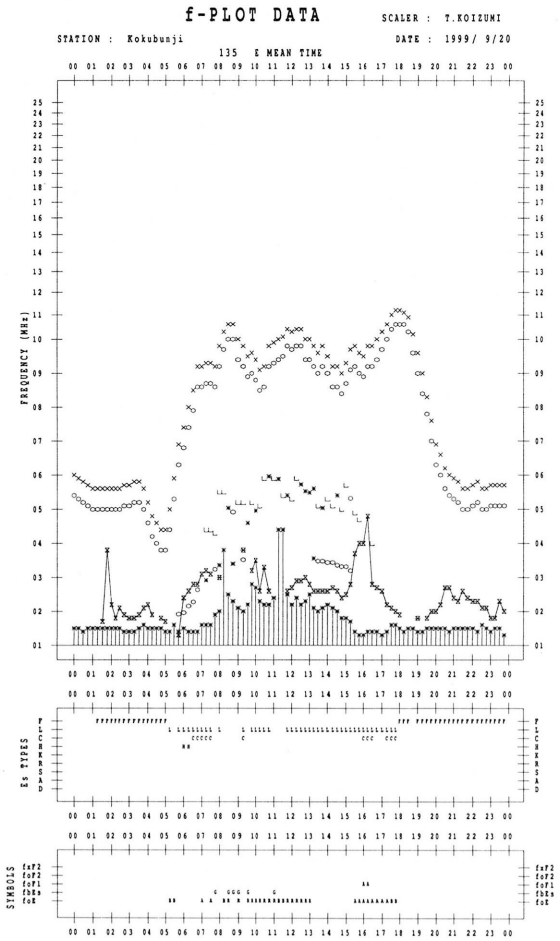
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/18
135 E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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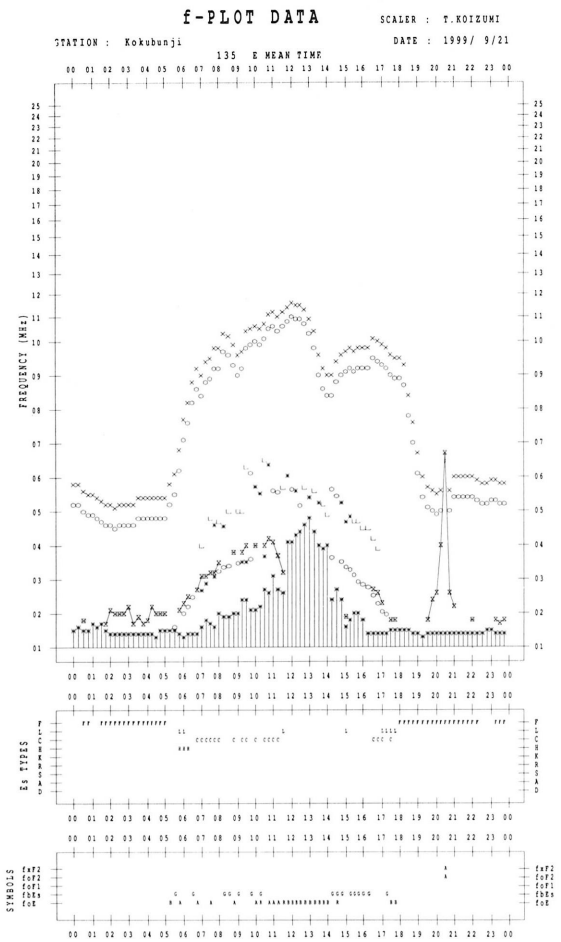
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/20
135 E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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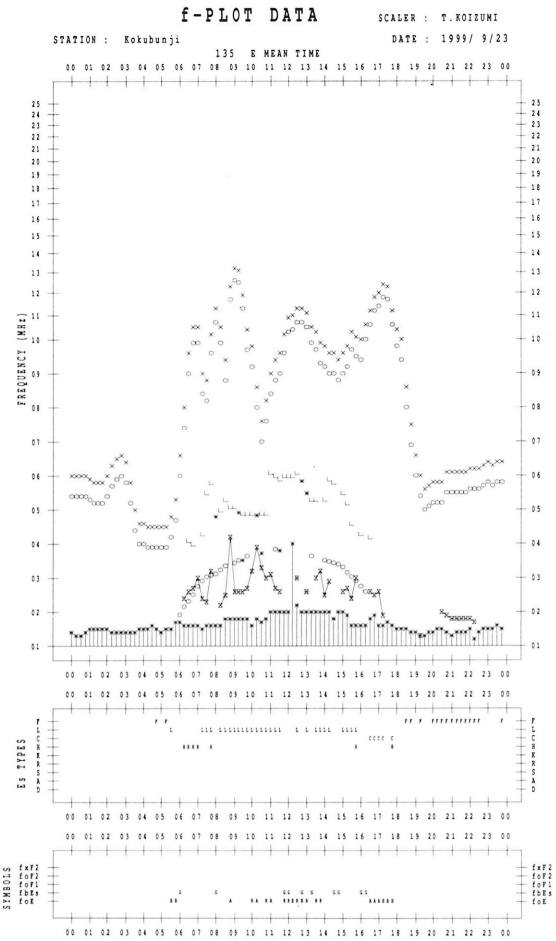
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/21
135 E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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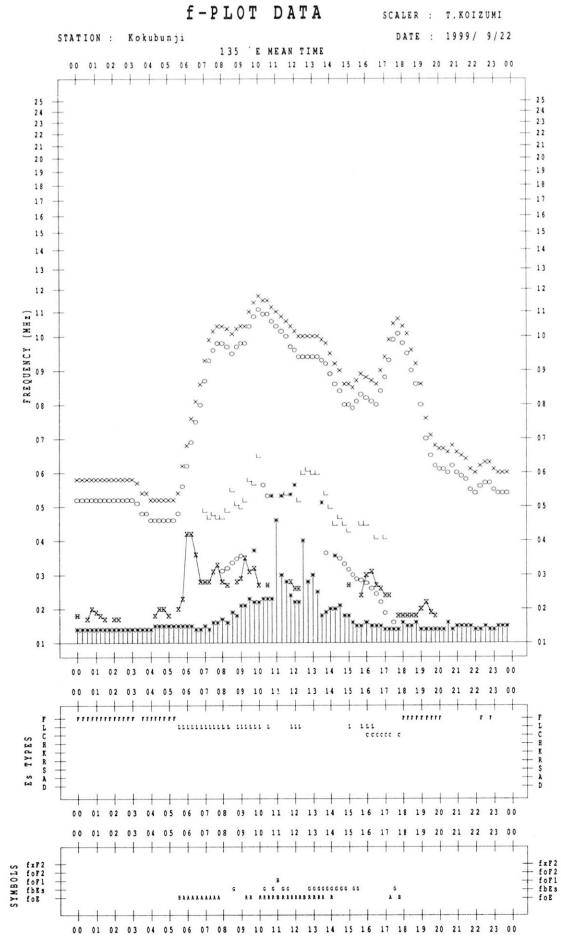
STATION : Kokubunji
DATE : 1999/ 9/23
135 E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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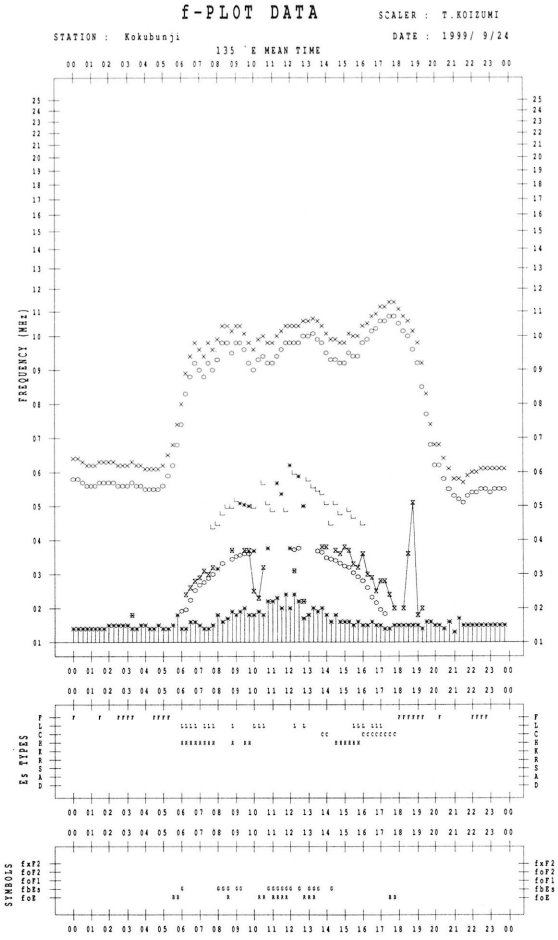
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/22
135 E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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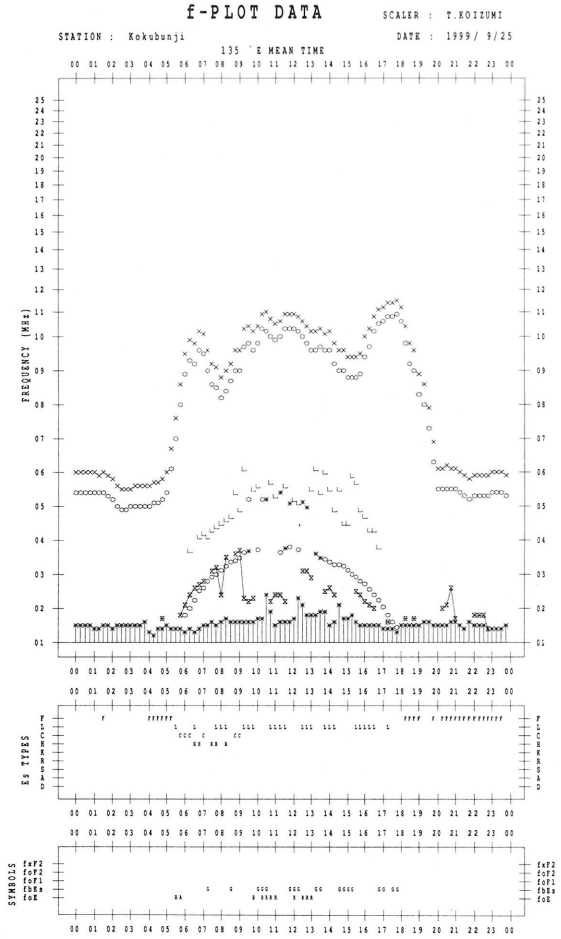
STATION : Kokubunji
DATE : 1999/ 9/24
135 E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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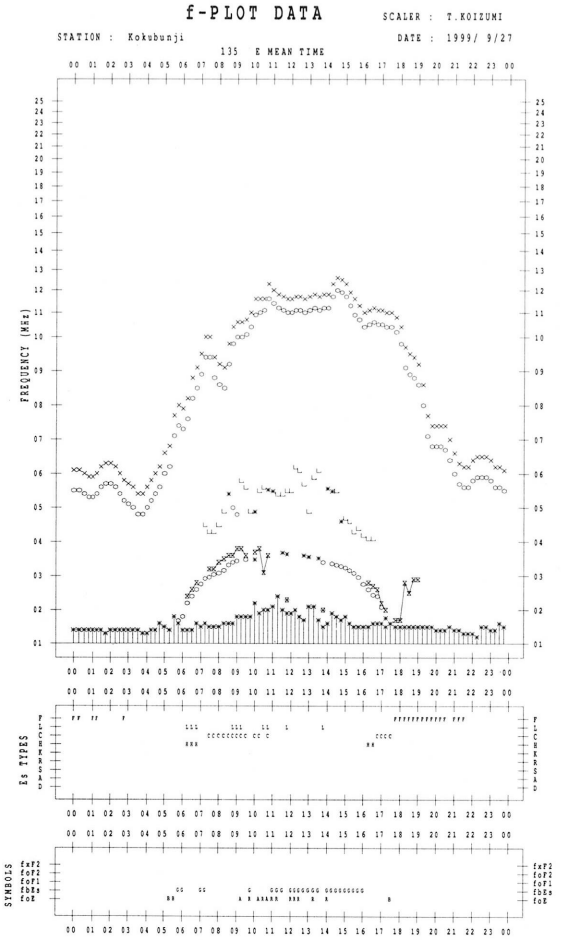
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 9/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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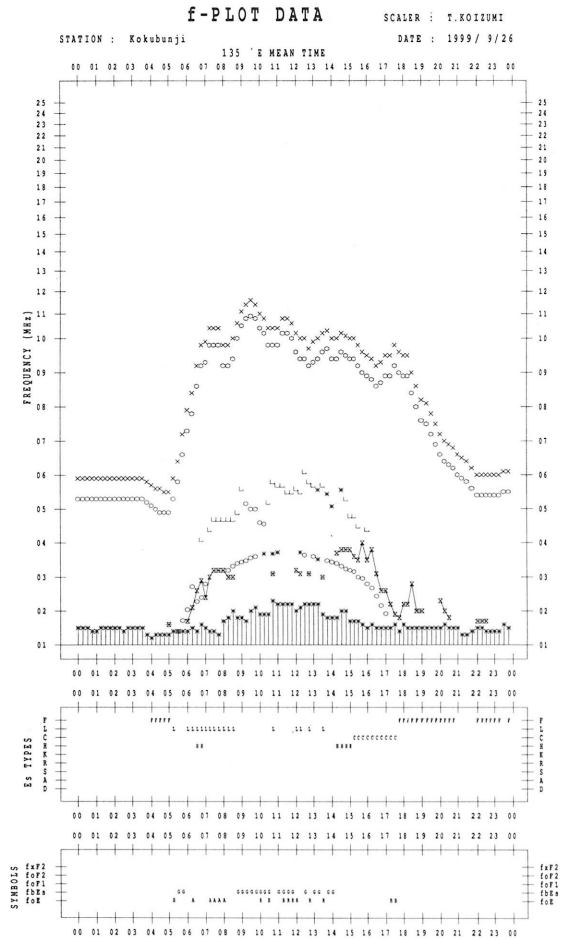
STATION : Kokubunji
DATE : 1999/ 9/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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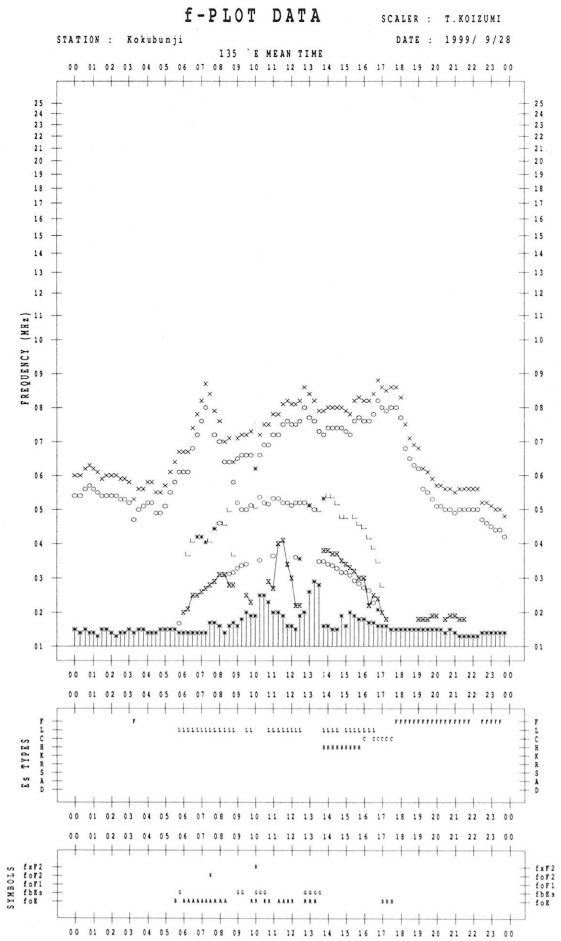
STATION : Kokubunji
DATE : 1999/ 9/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
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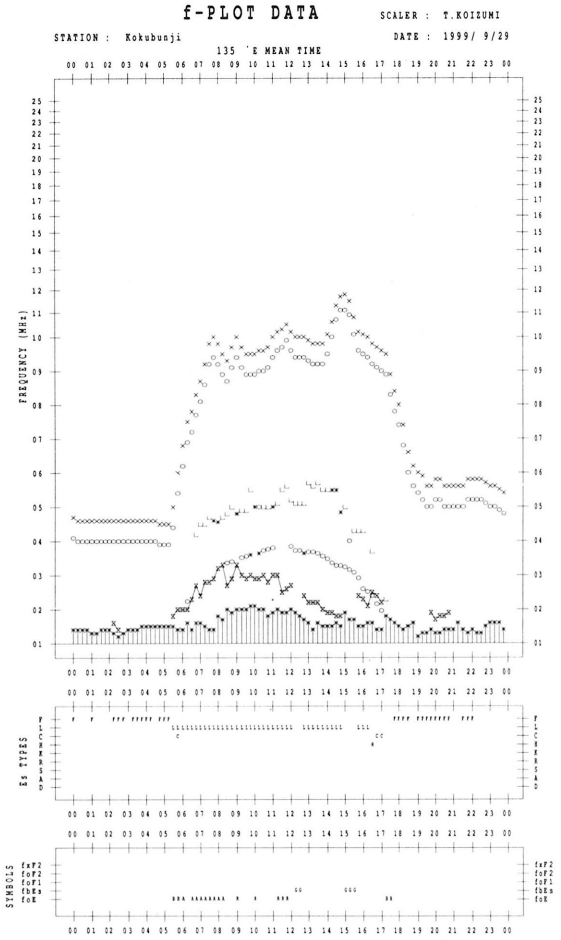
STATION : Kokubunji
DATE : 1999/ 9/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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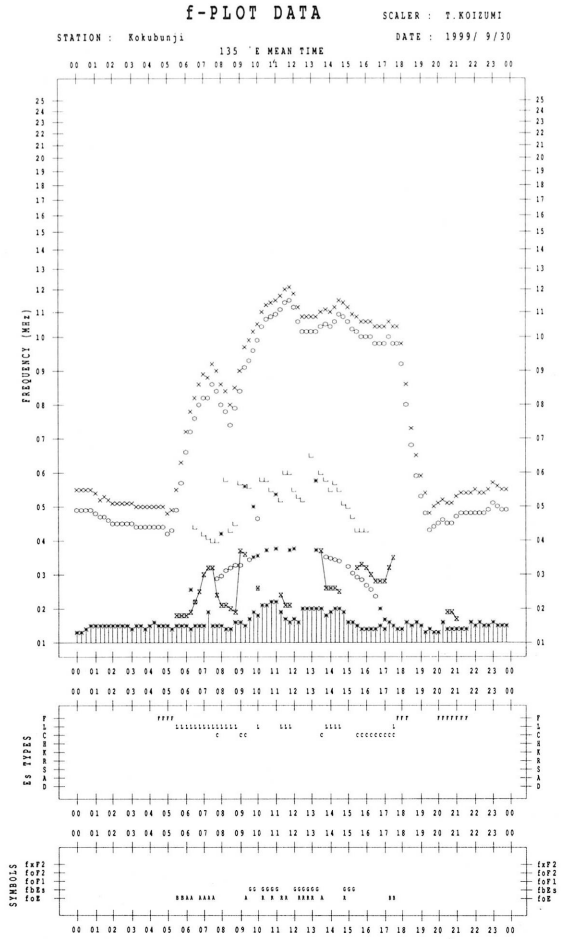
STATION : Kokubunji
DATE : 1999/ 9/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1999/ 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 1999

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} $Wm^{-2}Hz^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	-	-	-	-	-
2	39	41	42	40	40
3	40	40	39	40	40
4	39	38	38	38	38
5	37	37	37	36	37
6	36	37	37	37	37
7	36	36	36	37	36
8	36	36	36	36	36
9	35	35	35	35	35
10	34	34	34	34	34
11	33	32	32	34	33
12	34	34	34	35	34
13	35	34	34	37	35
14	36	36	36	37	36
15	36	37	37	38	37
16	38	38	38	38	38
17	39	39	39	39	39
18	38	38	37	37	38
19	37	36	36	37	36
20	36	36	37	36	36
21	36	36	36	35	36
22	35	36	37	39	37
23	38	38	37	38	38
24	37	36	36	36	36
25	36	36	37	37	36
26	37	37	37	39	37
27	39	39	38	39	39
28	38	37	38	39	38
29	39	38	38	39	38
30	38	38	38	40	38

Note: No observations during the following periods.
1st 0000 - 2nd 0030

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 1999

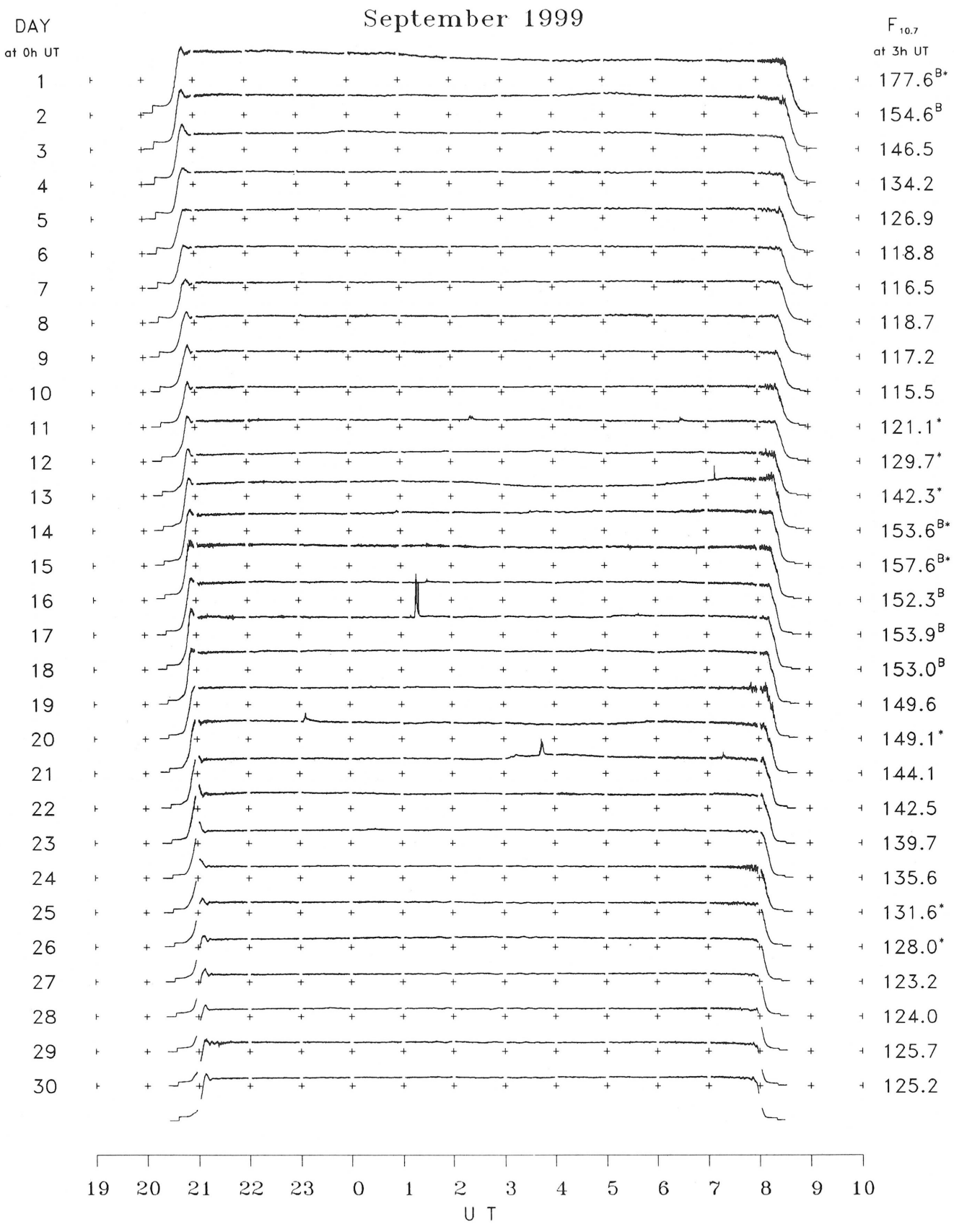
Single-frequency observations

Normal observing period: 2020 - 0850 U.T. (sunrise to sunset)

SEP. 1999	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
4	200	42 SER	0502.8	0503.0	2.8	180	-	O
7	200	42 SER	0815.0	0815.2	0.6	440	-	WR
8	200	8 S	0522.2	0522.4	0.4	380	-	O
	200	8 S	0553.4	0553.6	0.4	280	-	O
9	200	8 S	0151.2	0151.4	0.4	60	-	O
12	500	8 S	0339.8	0340.0	0.4	50	-	ML
	200	47 GB	0558.4	0558.8	1.0	550	-	WL
14	200	8 S	2346.0	2346.4	0.8	90	-	O
15	200	8 S	0427.8	0428.0	0.4	220	-	O
	500	42 SER	2105.0	2108.0	3.2	440	-	O
16	200	8 S	2057.8	2058.2	0.8	90	-	O
	200	8 S	2145.2	2145.6	0.8	140	-	O
17	200	8 S	0114.2	0114.4	0.4	70	-	O
	2800	4 S/F	0117.4	0118.6	5.0	100	-	O
	500	42 SER	0118.4	0118.6	3.6	120	-	O
21	2800	46 C	0342.2	0344.0	5.0	30	-	O
	200	46 C	0342.6	0344.0	3.8	260	-	O

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 1999
F-609 Vol.51 No.9 (Not for Sale)

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☎ (042) (327) ７４７８(直通)

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