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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 l etters 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. 1997

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	40	A	38	37	38	38	A	56	56	65	50	56	50	A	A	54	54	58	64	71	68	60	56	48
2	46	38	35	37	38	A		55	69	50	62	59	A	A	A	57		62	60	57	60	55	58	40
3	40	46	38	37	34	47	57	56	65	59	A	A	A	62	59	60	60	60	63	69	71	68	57	
4	A	38		41			28	A	34	49		A	A	A	58	55	57			56	57			A
5	A	44	A	38	40	47		56	50		A	A	55	A	57	A	A	A	58	68	58	57		44
6		35		32	38	A	54	57	56	66	A	64	64	56	58	56	60	63	71	74	57	60		50
7	A	38	40	38	37	38	50		63	57		64	55	54	64	65	64	58	58	60	59	63		
8	48	44		41				56	A	A	70	56	64	A	63	66	60	56	58	68	58		40	
9		38	34	36	40	A	56	A	62	59	76	67	A	58	56	62	55	63	73	70	68	57	56	
10		48	A	38	32		A	A	A	A	A	A	A	A	A	A	54	A	35	29	A	A	A	A
11	38		56	37	29	38		A	38	A	60	A	A	A	A	64	59	58	58	57	58	56	57	55
12	49	37	38	36	38	A	46			A	A	53	58	A	58	59	57	59	57			40	44	41
13	38		38	28	34	A	A	A	65	60	A	59	57	59	68	58	57	57	60	57		40	A	35
14	A	32	A	34	38	36		58	56	54	58	A	A	62	A	A	61	68	61	55	57	56		A
15	37		40	38	32	A	A	68	66	70	65	A	67		65	67	57	70	71	56	57	57	58	55
16	37	38	40	38	35	43		58			78	66	A	57	60	68	65	60	58	56	57			35
17	38			34	40	40	56	56	61	56	59	67	63	55	58	58	57	61	58	61		57	31	A
18		35	35	38	31	30	35	33	A	A	56	A	54		57		60	56	57	56	A	58	58	58
19	43		37	42	35	30	60	60		70	56	A	70	68	68	60	61	56		56	56	56	40	A
20	38	36	36	38		36	48	57	64	70	69	67	62	68	64	57	56		70		57		56	56
21		38	36		38	A	56	56	71	68	69	64			60	A	54	58	67	34		A	38	
22	31	37		32	35	34	35		A	62	66	A	A	A	67	64		58	60	46		37	36	A
23	37	28	35	29	35	39			64	65	67	66	65	68	71	62	58	66	64	56	56	40	38	40
24	38	35	38	38	29	A		57	71	68	78	A	A	68	67	65	58	57		57		40	36	44
25		35	41	41	40		57	58	72	72	64	69	66	72	64	62	56		56	60	57		40	
26				34	40	44	56	58	63	66	66	78	75	67	66	61	60	61	70		57	60		A
27	A	38	37	40		38	57	50	67	72	74	73	68	68	73	67	56	62	58	56	51			57
28			36	41	38				58	65	68	83	81	80	72	62	67	68	64	58	57		A	40
29	35	35	A	40	40	36		60	68	59	78	80	68	64	A	60	60	58	63	58	56	56	A	38
30		38	36	38				60	64	77	66	78	72	67	67	A	A	67	69	57	57		40	40
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	14	19	18	28	24	15	11	18	21	20	17	16	18	18	24	24	25	25	26	24	20	18	15	16
MED	38	38	38	38	38	38	56	57	63	65	67	66	64	66	64	62	58	60	60	57	57	56	44	44
U Q	40	38	38	39	39	40	57	58	65	69	72	68	68	68	67	64	60	63	67	64	58	60	57	55
L Q	37	36	36	36	34	36	46	56	56	59	62	61	57	58	58	58	56	58	58	56	57	55	38	40

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT WAKKANAI

SEP. 1997

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	30	40	G	G	G	C	32	38	36	43	37	32	32	30	28	29	27	38	40	39	42	28	34	39
2	34	G	29	24	29	28	30	46	54	44	35	34	38	59	47	31	34	34	40	58	62	24	39	34
3	24	23	G	30	27	G	32	40	35	35	65	68	30	46	39	33	30	31	47	52	38	43	32	36
4	36	29	26	27		34	31	32	28	42	38	38	34	36	30	29	32	28	G	G	G	29	G	40
5	33	30	31	31	28	27	30	34	28		33	34	36	35	42	91	61	60	42	35	G	25	G	34
6	G	28	G	26	G	31	23	32	37	57	44	46	32	32	30	30	35	39	47	G	24	28	66	29
7	42	35	30	34	30	42	44	46	37	36	42	39	38	29	31	27	26	34	28	44	35	23	27	G
8	G	G	G	G	G	G		30	37	31	32	43	36	30	31	30	26	26	25	29	26	G	G	G
9	G	G	G	24	24	28	32	40	30	36	32	35	34	34	30	28	21	22	27	G	G	25	26	29
10	23	25	37	G	G	29	23	44	36	32	34	44	41	62	60	40	46	36	32	34	44	58	58	38
11	28		G	G	G	G		31	32	30	29	29	31	28	40	47	67	40	62	36		60	32	32
12	35	G	24	34	29	29	28	29	33	34	50	33	33	34	45	44	58	30	31	25	25	39	34	27
13	27	32	30	32	25	29	47	34	27	37	44	39	53	34	32	28	32		29	G	27	24	40	34
14	38	30	35	34	24	26	27	28	27	34	38	37	37	38	45	38	43	59	49	59	62	44	28	37
15	29	G	23	31	36	40	60	48	45	38	36	56	62		37	45	36	30	25	31	26	29	32	34
16	32	32	27	25	33	35	40	58	62	55	33	31	30	30	29	28	32	32	35	39	30	31	34	30
17	34	G	G	G	29	47	63	39	32	31	42		33	28	30	27	46	37	26	25	45	35	33	29
18	29	27	G	G	27	34	G	N	31	32	36	41	30		38	28	G	38		28	34	G	G	G
19	G	G	G	G	G	29	34	31		37	46	32	56	44	39	39	35	42		33	60	30	28	33
20	29	28	26	24	G	G	40	31	35	29	31	30	36	32	32	37	42	35	39	39	32	36	G	G
21	G		G	24	G		28	27	30	32	40	31	37	29	54	76	39	60	61	74	36	43	38	30
22	25	24	24	G	24	39	40	30	42	40	58	64	61	68	36	30	30	28	38	38	37	28	26	36
23	28	34	37	34	28	28	G	29	28	30	32	33	43	62		27	43	44	57	G	G	G	G	G
24	G	G	G	25	G	29	G	26	31	50	34	53	45	62	58	41	56	G	32	37	36	32	27	26
25	26	26	G	G	G	G		30	27	35	45	35	38	49	44		29	42		90	62	60	37	31
26	27	25	G	G	G	G	G	28	30	30	32	36	36	35	32	40	36	29	28	38	41	31	29	39
27	47	33	27	32		32	29	29	34	34	38	40	37	41	36	36	40	40	30	32	27		G	G
28	G		G	G	G		G	35	32	37	32	32	56	28	G	27	30	34	34	37	G	32	34	23
29	29	28	35	G	28	30	28	33	39	35	34	34	37	34	76	29	40	30	40	46	33	28	56	G
30	G	G	G	24	28		34	29	31	34	36	34	55	61	55	81	87	66	38	30	28	29	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	26	30	28	28	25	26	27	28	28	27	27	28	27	28	29	28	29	26	28	28	27	30	29
MED	28	26	12	24	24	29	30	31	32	35	36	35	36	34	36	31	35	35	34	34	32	29	30	30
U Q	32	30	29	31	28	33	34	39	36	37	40	40	39	46	44	40	42	41	40	39	39	35	34	35
L Q	G	G	G	G	G	13	23	29	30	32	32	32	33	30	30	28	30	30	28	26	25	25	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

SEP. 1997

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	15	15	15	15	15	15	15	15	15	16	16	20	17	16	16	16	16	15	15	15	15	16	15	14
2	15	15	15	15	16	16	15	16	17	16	17	20	16	18	18	16	16	17	16	15	16	15	15	15
3	15	15	16	15	15	15	16	16	16	16	17	18	17	17	15	15	15	15	15	15	15	15	15	16
4	15	15	15	16		15	16	16	15	17	17	18	16	17	16	16	15	14	17	15	15	15	15	15
5	15	14	15	15	15	16	15	15	17		16	16	16	15	17	16	16	15	15	15	16	15	15	16
6	17	15	16	15	15	14	21	15	15	17	16	16	21	16	16	16	15	15	15	15	16	16	15	15
7	15	14	15	15	15	15	15	15	15	16	17	20	16	16	17	15	16	15	14	15	15	15	15	15
8	16	16	16	15	15	15		15	16	17	16	18	17	15	16	15	15	17	16	15	15	15	16	15
9	15	15	15	15	15	16	15	15	16	18	16	18	18	17	16	16	15	14	16	15	15	15	15	15
10	15	15	15	15	15	15	15	16	15	16	15	16	16	16	16	16	16	16	15	15	15	15	15	15
11	15		15	16	16	20		15	15	16	16	16	16	16	15	15	15	15	15	16	15	15	15	15
12	16	16	15	15	16	14	20	15	16	17	16	17	18	16	16	16	15	15	15	15	15	15	16	15
13	15	15	15	15	15	15	15	16	16	16	17	16	17	16	17	15	15	20	15	15	16	15	15	15
14	15	15	15	15	15	16	15	15	16	16	16	16	17	17	16	17	16	15	15	15	15	15	15	15
15	15	16	15	16	15	14	15	15	15	16	16	17	17		16	16	15	15	15	15	18	16	16	16
16	15	15	16	16	15	15	15	16	15	17	16	17	16	16	17	16	15	15	15	15	15	16	15	15
17	15	20	16	16	15	15	15	15	16	16	15	16	15	17	16	17	15	15	15	16	15	15	15	15
18	15	15	15	15	15	15	21	15	18	17	15	22	21		16	17	15	16	15	15	14	15	15	15
19	15	15	16	16	15	14	16	16		17	17	22	17	15	15	15	15	15		15	15	15	15	16
20	15	15	15	15	15	14	15	15	15	17	17	16	17	17	16	17	20	15	15	15	15	15	15	15
21	15	15	16	15	15	18	17	15	15	16	15	15	17	16	16	15	15	15	15	15	15	15	15	15
22	15	15	14	16	15	16	14	15	16	16	16	16	16	16	16	15	16	18	16	15	15	15	15	15
23	15	15	15	14	16	15	22	15	15	15	15	17	17	18	21	17	18	20	15	15	17	15	15	15
24	16	15	16	15	16	14	21	16	15	15	16	17	32		16	15	15	16	15	15	15	15	16	15
25	16	16	16	15	16	15	16	15	16	16	17	17	16	16	16	16	15	15	14	15	15	15	14	15
26	15	15	16	16	15	15	20	15	15	16	16	16	16	18	16	15	15	16	15	15	15	15	16	15
27	15	15	16	15		15	15	16	15	16	16	16	17	15	15	14	14	15	15	15	15		15	15
28	16		15	15	15		17	15	15	15	16	16	16	16	17	15	15	16	15	16	15	15	14	15
29	15	15	15	15	15	15	18	15	16	15	17	16	16	17	16	15	16	15	15	15	16	15	15	15
30	15	15	15	15	15		15	15	16	15	16	16	15	16	15	16	15	15	15	16	16	16	16	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	28	30	30	28	28	28	30	29	29	30	30	30	27	30	30	30	30	29	30	30	29	30	30
MED	15	15	15	15	15	15	15	15	15	16	16	16	17	16	16	16	15	15	15	15	15	15	15	15
U Q	15	15	16	16	15	15	17	16	16	17	17	18	17	17	16	16	16	16	15	15	16	15	15	15
L Q	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	15	15	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT KOKUBUNJI

SEP. 1997

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	A	37	35	35	30	C	C	C	56	54	59	66	C	A	A	59	60	68	85	85	C	A	45	
2		38	37	36	30	34				68		A	A	A	66	64	60	61	67			67	A	A
3		A	36	A	35	41	57	73	66	52	A	A			64	61	60	64				51	56	56
4		46	46	45	35	36				68	64	A	A	62	78	74	62	62	60		63	46	46	
5	46	44					50	55	71	62	63	68		70	63	64	55	64	81	77	67		45	A
6	44	42	A	40			57	56	67											82	58		A	46
7	44		41	38	37	41	56	67	75	64	A	66	78	80	68	66	63	61	70	78	70	52		48
8		45	48	45		32	52		64	72	60	69	74	64	65	66	64	71			67	57		
9	45	43	40	32	A	A	56		64	76	81		65	65	67	70	68	74			63			
10		46	42	36		38		47	A	A	A	A	A	A	A	52	55	56	58	57	56	56	48	A
11		A	A	38	38	36	45		51	58	54	64	A	49	62	54	62	64	74		57	44	46	
12	43	44	35				A	56	58	52	A	A	49	62	A	52	62	70		57	47	48	56	44
13	44	42	42		37		57	56	61	63	68		70	A	67	68	73	74	68	56	A	A	A	A
14		36	36	37	N	34	55	59		62	68	58	A	77	71	64	67	71			51	A	46	44
15	A	A	40	42	36		A	A	63	72	68	61	A	A	66	70	77	80		68	56	45	46	
16	47	46	46	56	42		60	68	74	76	77	76	68	60	67	70	67	72	68	69	57	A	47	44
17	A	42	41	46	31			70	66	82	66	68	71	63	63	61	62	71	76		57	46		43
18		46	42	40	41		58	57	63	53		76	74	68	67	71	67	67	69		A		50	44
19	48	45	47	44			57	68	62	64	68	92		68	64	64	63	61	69	61	56	56	51	57
20	48	46	43	40	38			64		90	68	A	67	76	66		68	73		59	48	48		44
21	44	46	43	36	32	34		68	84	78	68	72	70	64	63	63	60	73	81	73	69	57		A
22		37			36	38		57	73		81	66		68	71	78	77	74	66	56				A
23	A	A	43		37			58	66	62	71	74	68	72	72	71	69	84	81		56	46	A	44
24	35	44			38		57	70		86	64	70	77	70	74	75	78	71	70	56	57		40	38
25	43		40	40	35	A	A	68	78	74	86	76	77	75	62	59		70	95		43		37	A
26		38	A	38	37	A	57	68	59	63	68	77	70	67	60	64	71	86	94	90	A	A	A	36
27	37	36				34				72	76	78	67	70	70	75	71	70	70		62	51		
28	46	46	47	40	41				72	81	74	70	83	78	80	73		74	84		A		A	43
29	36		35	41	34		58	68		81	91	74	67	78	78	75	75	74		69	58			36
30		A	36	A	A			68		77	78	66	83	92	78		74	86		61	A		40	38
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	13	17	21	21	17		13	20	16	24	20	17	16	20	25	27	25	29	17	15	16	12	13	14
MED	44	44	42	40	36		57	66	65	70	68	70	70	68	67	66	67	71	70	69	57	52	46	44
U Q	46	46	44	43	38		57	68	73	77	77	76	74	75	71	71	72	74	78	78	60	56	50	46
L Q	40	40	36	36	33		56	56	62	62	66	66	67	63	63	61	61	64	67	59	56	47	45	38

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

SEP. 1997

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	34	29	27	G	G	25	40	50	44	44	54	30	52	50	58	36	32	35	29	C	28	40	30	
2	29	30	29	G	28	G	32	30	36	54	55	57	58	56		49	43	52	55	40	41	30	39	62
3	28	32	29	34	26	38	35	34	59	40	51	50	31	G	G	30	28	35	50	60		49	33	
4		33	28	26	23	26	28	28	28	35	46	48	34	28	29	30	27	30	G	G	G	27	G	G
5	G	G	G	29	G	G	G	25	30	31	32	32	39	27	25	29	39	30	42	40	33	30	35	44
6	28	25	33	26	G	28	20	34	31											28	33	48	33	34
7	34	30	G	G	G	G	24	27	42	44	59	43	30	30	38	31	33	34	31	24	G	G	35	G
8	G	G	G	G	G	G	28	27	30	31	31	G	35	32	31	30	27	32	29	28	G	28	24	G
9	G	G	G	G	30	25	28		31	33	41	30	28	29	30	29	26	36	G	G	G	G	G	G
10	G	G	G	26	G	34	G	28	30	29	49		33	39	39	29	28	34	27	44	47	28		53
11	48	44	36	27	G	G	28	23	41	52	G	39	30	G		48	52	34	48	56	28	G	28	G
12	G	G	G	G	G	34	32	32	27	31	30	28	43	34	32	30	26	24	G	G	G	33		G
13	G	G	G	28	G	G	28	31	27	36	49	47	47	62	57	58	52	42	42	34	58	59	45	37
14	G	25	G	26	G	26	21	26	28	30	51	56	44	36	46	44	53	58	54	48	42	53	41	54
15	59	33	36	26	26		106	58	42	49	57	33	61	56	41	32	27	33		52	54	41	G	G
16	34	35	29	33	25	G	28	30	55	38	36	30	32	G	G	43	44	37	56	34	33	55	42	
17	30	28	G	G	G	G	G	38	30	29	27	G	23	G	G	29	30	25	G	G	29	27	G	29
18	30	G	G	29	G	41	30	30	27	28	G	G	38	G	30	30	28	33	26	27	50	27	24	G
19	G	G	G	G	26	24	26	47	29	30	32	G	55	38	42	29	28	G	26	34	52	31	54	29
20	G	G	G	G	G	28	31	39	44	52	58	40	26	27	31	28	32	32	25	42	28	49	G	24
21	24	23	25	G	G	G	29	34	39	59	43		38	45	30	43	40	44	25	G	G	30	58	55
22	39	G	G	G	G	G		29	29	47	36	33	31	40	30	27	27	31	37	36		28	27	34
23	34	24	G	G	26	28	G	33	33	32	39	41	33	31	29	29	34	54	56	54	35	39	41	32
24	25	26	25	G	G	G		35	52	43	51	38	G	30	32	29	27	30	G		43	40	G	G
25	G	29	29	30	30	30	36	42	35	33	42	30	32	30	27	27	26	29	28	29	G	G	28	29
26	G	30	50	50	24	29	32		28	31	31	32	34	31	31	30	28	G	30	37	55	40	27	G
27	G	G	G	G	G			26	39	46	43	44	31	37	31	28	28	30	32	G	G	G	G	G
28	G	G	G	G	G	G	33	30	34	56	44	48	46	34	29	40		40	35	30	30	28	33	23
29	G	G	G	G	G	G	30	31	36	31	32	30	28	25	32	28	31	48		56	50	25	G	G
30	34	39	60	53	34	G	G	34	30	29	30	31	40	30	34	58	54	53	49	29	28	G	24	30
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	30	29	29	25	26	25	28	29	27	27	29	29	25	26	28	28	26	26	28	29	27	27
MED	12	24	G	G	G	G	28	30	31	35	42	33	34	31	31	30	29	34	30	32	32	30	28	24
U Q	34	30	29	27	25	27	32	34	39	46	51	44	43	38	36	40	39	38	42	42	45	40	39	34
L Q	G	G	G	G	G	G	21	27	29	31	31	30	30	27	29	29	27	30	25	24	G	26	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

SEP. 1997

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

HOURLY VALUES OF foF2 AT YAMAGAWA

SEP. 1997

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	30	30	32	C	C	C	C	60	60	62	64	65	64	59	57	C	67	84	87	92	C	C	C	C
2	38	48	48				32	62	63	66	A	A	70	69	A	64	62	65	82	86	104	67		
3	31	32	32			26		72	58	57	61	60	65	65	64	67	75	80	86	86		58		
4					26			67	73	88	62	60	65	70	86	94	71	63	68	67	62	59	59	59
5	43	49				31		67	61	68	61	67	74	75	71	73	82	98	100					N
6	37	49					49	65	58	62	65	67	66	71	74	78	76	82	91	81	67	62	60	
7	60	48				30	31	64	72	71	61	62	76	87	86	82		66	66	83		59		59
8		58		48			32	57	75	77	68	70	67	75	67	64	72	81	84	82				
9								62	73	84	68	57	61	A	80	71	70	78	86	85			57	61
10	50	59	59	59	59	60	59	68	61	56	56	58			62	57	60	66	66	69		49	61	A
11	37	34			42			59	59		62	70	59	62	62	61	64	72	70	73			37	
12	48	37					32	58	68		62	64	61	60	66	66	69				60	56		53
13		42	32	37			49	59	58	67	64	64	61	65	75	75	77	78	75	60	60	60	A	
14		38		32	32			60	59	67	68	67	77	75	81	70	A	79	91	80				
15	39	49			36			60	64	66	72	72	70	58	72	74								
16																	72	71	C	82	C	36	32	C
17	43	C	38	31	25	C	C	71	61	77	71	74	85	86	75	71	67	72			53	41		
18			36					55	A	71	70	75	86	90	84	81	71	78	86	82	66	38		54
19	55			54	30			59	67	71	74	92	95	81	78	74	71	80	85		65	A		
20	55	55						51	77	90	67	76	70	76	76	72	71	82	82		49	54		
21	53		41	42	32			79	74	78	77	71	72	65	66	66	72	77	92	90			49	
22	34		26	34	28			68	67	82	82	75	62	67	78	97	91	84		57	54	38		A
23						35		60	70	66	65	84	77	72	72	78	72	85	97	83	65		42	
24	30		A	30			44		76	78	67	75	91	94	87	91	78	82	81	85				
25		37	38				30	60	70	78	78	75	86	86	74	71		81	90	86				N
26								57	61	74	74	70	72	80	74	70	77	96	105	113		N		
27							36	68	69		67	72	81	80	78	76	85	87	84	84			37	
28		38	N					60	74	91	72	74	78	93	91	81	86	84	85	69	54			
29			38	47		28		68	71	92	82	67	74	91	100	90	80	83	80	84			A	A
30								72	72	97	71	75	84	100	100	86	85	102	92	72				
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		12						23	24	22	22	27	23	23	27	27	25	27	25	21		12		
MED		45						60	66	71	68	70	70	75	75	73	72	80	85	83		57		
U Q		52						68	70	78	74	75	77	86	84	81	78	84	91	86		59		
L Q		36						59	60	66	62	64	65	65	67	67	69	72	80	77		39		

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

SEP. 1997

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	G	32	26	31	G	G	G	35	33	50	71	35	C	38	56	60	35	31	32	32	32	30	32	G
2	G	G	G	G	G	G	G	36	32	30	53	50	55	G	60	31	31	33	32	53	59	32	58	25
3	33	G	28	26	G	28	G	38	38	33	38	34	G	30	28	36	34	33	28	34	G	G	G	90
4	33	32	G	26	28	35	36	34	54		38	G	37	37	31	31	30	31	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	31	30	G	G	G	31	G	31	30	32	30	G	G	G	G	G
6	G	G	G	31	28	30	G	33	28	30	32	33	28	G	G	31	31	34	33	32	G	G	G	G
7	G	G	G	G	G	G	G	31	32	G	G	34	28	G	G	G	31	37	32	G	G	G	26	G
8	G	G	G	G	G	G	G		29	31	32	34	G	30	30	32	30	26	30	G	G	G	26	32
9	32	G	G	G	G	G	G	32	30	28	G	32	34	79	26	G	32	26	30	G	G	G	G	G
10	G	G	G	G	G	G	G	26	28	28	38	30		G	G	37	28	25	33	33	32	32	28	34
11	25	30	33	32	28	32	G	30	33		52	56	G		G	33	35	36	34	G	G	G	G	G
12	G	G	G	G		G	11	28	29	G	32	32	G	31	G	31	31	36	G	G	G	G	G	G
13	31	32	G	G	G	24	G	32	38	28	56	54	G	33	G	31	31	29	G	G	G	G	32	33
14	33	26	G	33	31	G	G	30	33	35	30	37	G	28	30	38	80	35	39	33	27	28	G	24
15	58		32	33	32	27	25	26	36	32	28	56	31	38	28	G								
16																	49	56	58	26	G	G	32	24
17	32	G	28	G	G	G	G	32	30	34	34	32	32	G	G	31	G	30	29	G	G	G	G	G
18	G	28	28	G	G	G	G	33	60	38	G	G	32	G	G	G	28	30	G	G	G	G	G	G
19	G	G	G	G	G	G	G	26	33	36	34	G	G	G	G	31	29	G	G	G	G	32	31	34
20	32	G	G	G	G	27	27	36	32	36	30	28	29	G	51	36	28	G	G	G	G	32	27	G
21	G	G	G	G	G	G	G	30	32	G	G	G	G	G	32	30	34	39	30	32	32	G	31	31
22	115	26	28	G	30	G	G	32	32	30	33	33	31	32	31	30	26	G	G	G	G		33	32
23	32	32	24	32	33	G		50	30	37	38	32	36	60	32	30	31	30	G	30	32	32	30	30
24	32	57	31	32	G	G	G		32	33	32	36	G	32	36	34	32	32	31	30	G	G	G	G
25	27	31	32	32	25	31	26	30	34	39	32	32	30	G	31	27	28	35	G	G	G	G	G	G
26	G	G	G	G	G	G	G	32	34	35	32	32	32	G	G	G	36	30	G	G	G	G	G	25
27	G	G	G	24	27	26	G	27	G	34	36	G	36	35	28	G	28	G	G	33	G	G	G	G
28	G	G	G	G	G	G	G	33	34	34	G	G	35	35	51	36	60	59		28	G	G	30	G
29	G	G	G	G	G	G	G	G	34	50	32	36	32	37	32	30	G	30	G	G	G	60	32	31
30	29	28	27	26	24	G	G	32	G	31	31	32	G	G	32	32	36	36	30	32	27	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	22	24	24	25	27	28	28	18	29	26	27	29	27	27	27	28	27	29	28	25	27	26	27	27
MED	G	G	G	G	G	G	G	32	32	32	32	32	29	30	28	31	31	31	30	G	G	G	G	G
U Q	29	26	12	26	27	25	G	33	34	35	36	35	32	35	32	33	34	35	32	30	G	G	30	30
L Q	G	G	G	G	G	G	G	28	30	30	28	14	G	G	G	28	28	27	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

SEP. 1997

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

HOURLY VALUES OF foF2 AT OKINAWA

SEP. 1997

LAT. 26.3N LON. 127.8E 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	C	N	A	A	A	A	A	68	68	61	61	A	A	C	68		81	A	89	A	A	A	A	C
2								65	56		63		86	80	A	66		72		120	89	A	A	
3				58				68	A	A		A	70			81	91	92	98		A	57		
4				A	A	A	A	64			A	A	A	82	92		88	77	83	A	A	A	A	A
5										68	64	71	81	82	85	84		115		A	57			
6				58						A		72	71	84	93	91	92	93		A	68		A	
7				41		29			83		72	58	80	93	90	83	80	81	82	88	68	54	A	A
8						N		69			74	62		82		75	87	93	93	A	A	57	A	
9	57			40			30			80	64	66		83	85		83	92	84	88	54		A	A
10					36	A		64	71		74	68	62	71	70	72	61		79	A	55		A	60
11	A	A		A	38	A	A	60		A	61				66	61	70		90	87	68	A	49	
12					N	N	29			68	66	71	68	C	76	74	72		79	67				
13		46						57	58		A	A	72	66		84	94	82			A	37		
14					N			57	57		70		83	90	81	81	84	105	100		A	A	A	46
15	A	A			A	A	A	57	64	64	64	81	81	78	70	71	81	78			58	55		A
16	A		A	38	A			68			80	85	98			80			88	84	59		38	A
17	37	A		A			N		68		78	97	103		116		96				A	A	A	
18			N		29		35		63		70	81	102	114	91	93	86	83		69	56	38		49
19			53								71	84		94	94		84		93		68		A	
20		A	38	A	A				83	92														
21																								
22											70	75	71	71	87	97	103	82	76		52	44	40	A
23		A	A			A		60	70	65	58	78	84		82	81		97	108	91		49		
24		A	A		A		30			71		87			114		103	105		87	61		59	
25		49	59					56	67		81	73	92	91	84	82	91	101		70			N	
26									68		72	68	71	92			92	110			68	69		
27		38					A	73	83	73	70	74	88	94	92	94	110	132					A	
28								60	83	97		72	91	N	103	112	112	90	83		60			
29	57	55		44				69	94	94										A	57	41		
30		A	A	A			31	59	82											A	70	68	60	49
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	16		15	17	19	16	16	19	20	15	15		13	10		
MED								64	68		66	72	81	82	85	81	90	92	88		60	52		
U Q								68	82		74	79	91	91	92	91	95	101	93		68	57		
L Q								58	63		63	68	71	79	78	74	81	82	82		57	41		

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

SEP. 1997

LAT. 26.3N LON. 127.8E 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	42	29	30	35	32	35	49	44	41	60	40	43	58		90	96	C	91	C	81	31	G
2					G		G	30	36	G		39	52		68		44	55	60	58	66	39	32	G
3				27	G	G	G	35	74		60	32	G	G	G	G	G	60	64	46	37	29		
4				33	37	29	41		43	51	54	56	42	36	G	G	G	G	50		86	54	66	36
5	G	G	G	G					32	G	G	G	G	G	G	G		57			G	G	G	G
6		G		G	G	G	G	27	30	31	32	G	G	G	G	G	39	42	43	40		36	29	
7	24	G	G	G	G	G	G	29	32	31	28	G	G	G	54	42		34	33	G	G	29	37	29
8	G	G	G	G		G	G	29	28	G	G	G	G	G	G	G	G	28	42	37	24	G		24
9	G	G	G	G		G	G	31	35	G	28	G	G	28	G	59	53	47		G	G	27	54	29
10	26		G	G	G	27	G	31	24		G	G	G	G	G	41	36	38	40	36	34	32	33	28
11	30	37	G	41	24	32	38	36	50	37	42				G	39	36	42	32	32	27	28	G	G
12	G	G	G	G	G	G	G	30	36	G	G	29	28	G	G	G	29		35	28	30	G	G	G
13	G	32	27	G	G	G	G	30	40		64	57	38	G	G	G	G	28	29	29	29	G	G	G
14	G		G	G	G	G	G	34	G	39		G	G	G	G	54	51	44	59	72	54	73	66	G
15	37	29	G	30	31	35	32	33	35	42	G	G	31	52	G	G	G	30	32	G	G	G	G	37
16			29	G	36		G	32	30	29	32	G	G		G	41	48	44	49		35	29	G	32
17	29	30	27	25			G	29		37	G	G	36	38	37	G	30			38	34	36	35	G
18	G	G	G	G	G	G	G	37	34	G	G	30	G		G	G	G		G	G	28	25	24	G
19	G	G	G	G			G	31	28	G	42	G		28	G	G	29	30	38	G	G	G	30	28
20		28	G	24	25			21	G	41														
21																								
22											G	G	37	G	28	29	G	27	G	G	G	G	42	30
23	38	40	37		G	32	G		30	61	31	38		G	G	31	26	39	35		G	G	G	G
24	G	52	32	30	26	G	G	36	36	42	61	G	G	G	31		G		27	28	G	G	G	G
25	G	G	G	G	G			37	30		32	32	29	30	G	G	G	30	G	G	G	G	G	G
26	G	G	G		G				G			31	G	G	G	G	29	51	34	G		G		G
27	G	G	G	G	G	G	28	36	30	29	37	G	G	G	32	40	39	G	60	146	58	32		26
28	G	G	G		G	G	G	34	45	27	G	32	G	G	31	30	26	38	34	29	G	G	G	G
29	G	G		G	G			G	35	32											11	G	G	G
30	82	34		50	G		24	G	34	39										48	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	19	21	23	23	17	22	21	25	23	22	25	22	22	25	23	23	22	22	21	22	27	21	25
MED	G	G	G	G	G	G	G	31	32	31	30	G	G	G	G	G	29	38	35	29	6	G	G	G
U Q	12	28	14	27	25	28	G	35	38	41	41	32	31	28	29	40	39	47	49	39	30	32	31	28
L Q	G	G	G	G	G	G	G	29	29	G	G	G	G	G	G	G	G	30	32	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

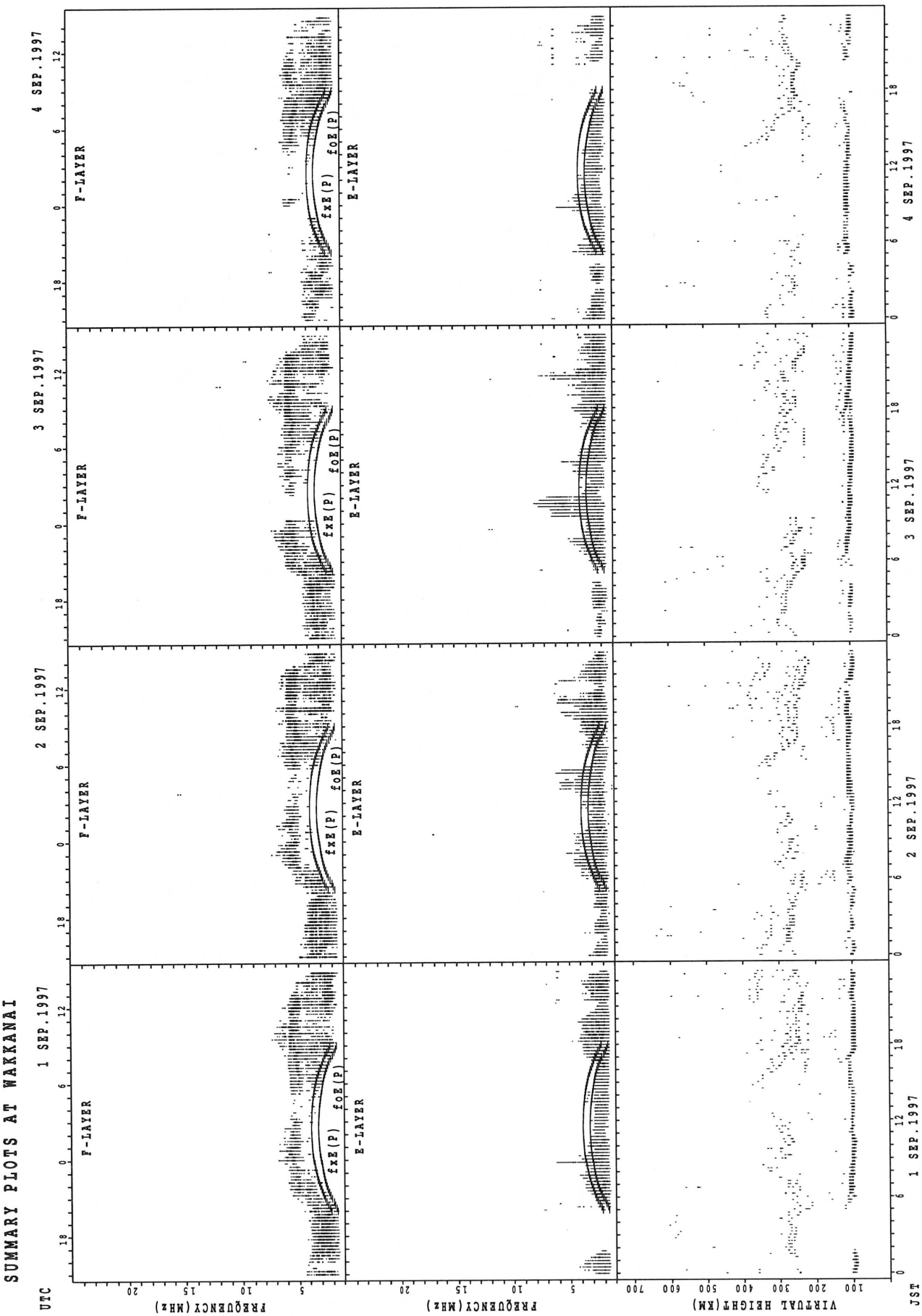
HOURLY VALUES OF fmin AT OKINAWA

SEP. 1997

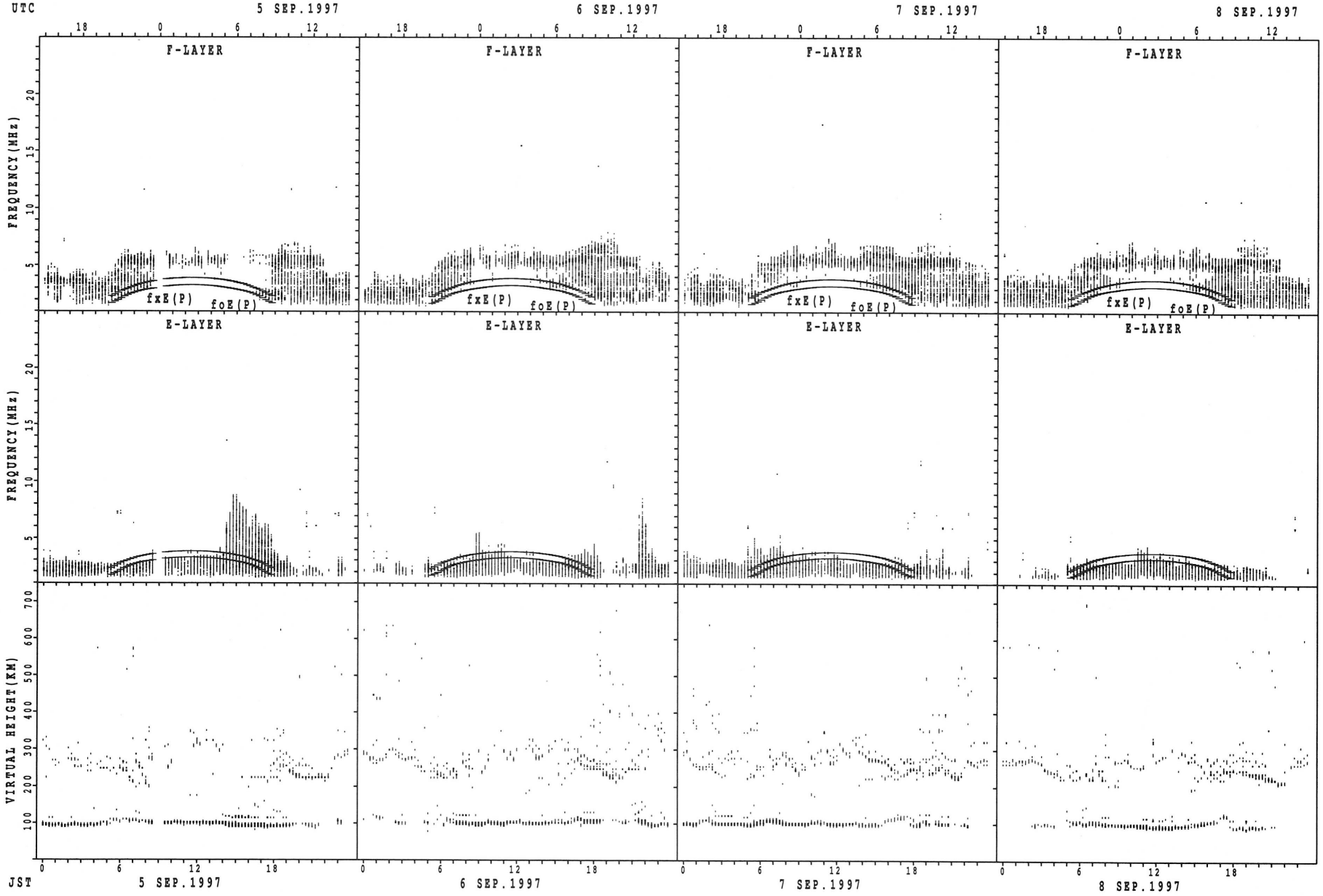
LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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	21	16	17	15	16	16	16	17	C	C	C	33	32	30		22	15	14	15	16	17	17	C
2					22		29	16			20	21	21	20		20	18	15	16	14	16	16	18	
3				16	17	18	23	18	17		22	23			53			17	14	14	18	22		
4				18	16	18	16	15	20	28			32		52	49		20	15	15	16	17	18	16
5	18	18	22	18					17				52	50	52		21	20	15	14	24	20	21	
6		20		17	18	16	15	23	17	20	26		54	52	53	50	21	20	16	14	15	14	16	
7	17	17	18	16	16	16	15	15	18		21		54					18	14	15	16	16	14	15
8	16	15	16	17		18		15					52	53		49		15	15	15	16	16	14	15
9	16			16		17	15	16	16		21	50	52			18		20	15	14	16	15	16	15
10	18		16	16	17	14		17			52	52	49	52	52			20	16	14	15	15	14	14
11	15	15	18	15	17	16	14	14	15						53	32		20	15	15	16	16	20	20
12	20	18	17	15		18	16	15	16			C	C	C	52		21	17	14	15	15	15	21	
13	16	17	16	21	17	18	16	17	15	20	34	33	30	50	50	52		16	15	14	15	20	21	21
14	18		17	20	16		16	14	17	22	30		50	52	50	36	20	17	15	14	15	15	16	23
15	15	16	18	17	15	15	15	14	17	27	49	52	21	20	52	52		15	16	16	22	17		15
16	17		15	16	15		23	16	16	20	23					20		17	14	15	14	15	15	14
17	15	14	15	16			17	15	16	18						50	20	18	15	14	16	15	15	15
18	16	15	17	16	16	20	15	18		33				20				18		15	14	17	16	18
19	17	16	16	15			15	16	20		34	52		21		49	21	14	15	14	17	15	15	15
20	15	15	15		15					20														
21																								
22													28	52	21	18	32	27	17	15	16	16	16	15
23	16	15	17	14	16	15	20	18	20	21			30			21	18	17	14	15	16	20	17	21
24	20	14	15	16	18	15	17	14	18	21	26		56	50	20		20	14	14	14	17	16	21	21
25	18	17	16	17	16			14	16		23	23			53			16	14	16	22	22	17	18
26	17	22	17		17			16	17					52	48	49	20	20	14	14	15	17		17
27	18	15	18	18	16	17	16	15	16	20	21				20	16	20	14	15	15	17	18	14	17
28	17		20		17	15	21	16	16	18						22		16	15	14	14	17	20	18
29	17	18		16				22	18	16										15	14	15	15	
30	15	14	14	15	15		14	14	15	20										14	14	15	14	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	23	20	22	24	21	17	21	26	23	14	13		13	13	15	15	12	21	25	28	28	28	25	21
MED	17	16	16	16	16	16	16	16	17	20	26		50	50	52	49	20	17	15	14	16	16	16	16
U Q	18	18	18	17	17	18	18	17	18	22	34		53	52	53	50	21	20	15	15	16	17	19	19
L Q	16	15	16	16	15	15	15	15	16	20	21		31	20	48	20	20	15	14	14	15	15	15	15

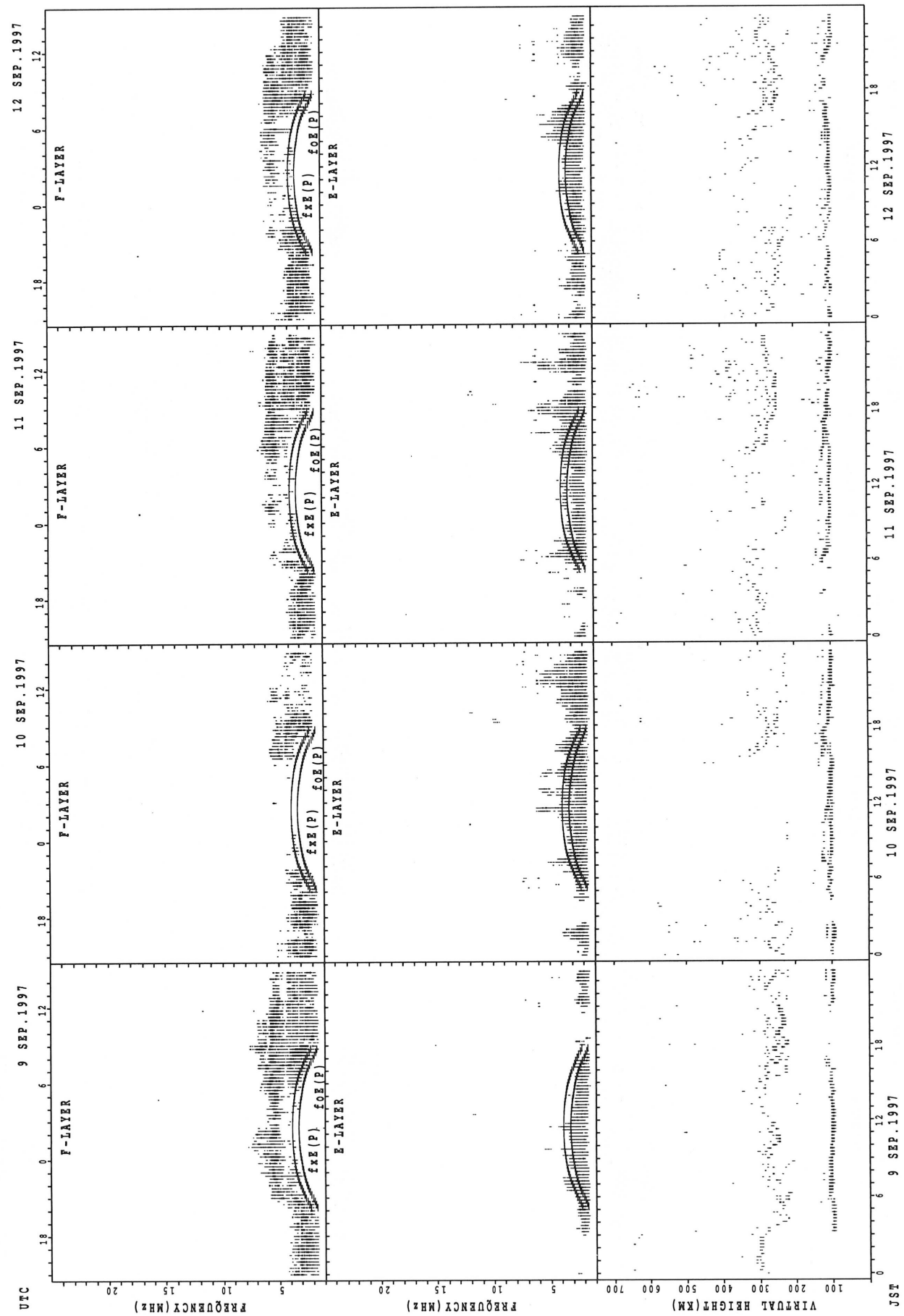
COMMUNICATIONS RESEARCH LABORATORY, JAPAN


SUMMARY PLOTS AT WAKKANAI
UTC
JST
1 SEP.1997
2 SEP.1997
3 SEP.1997
4 SEP.1997
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

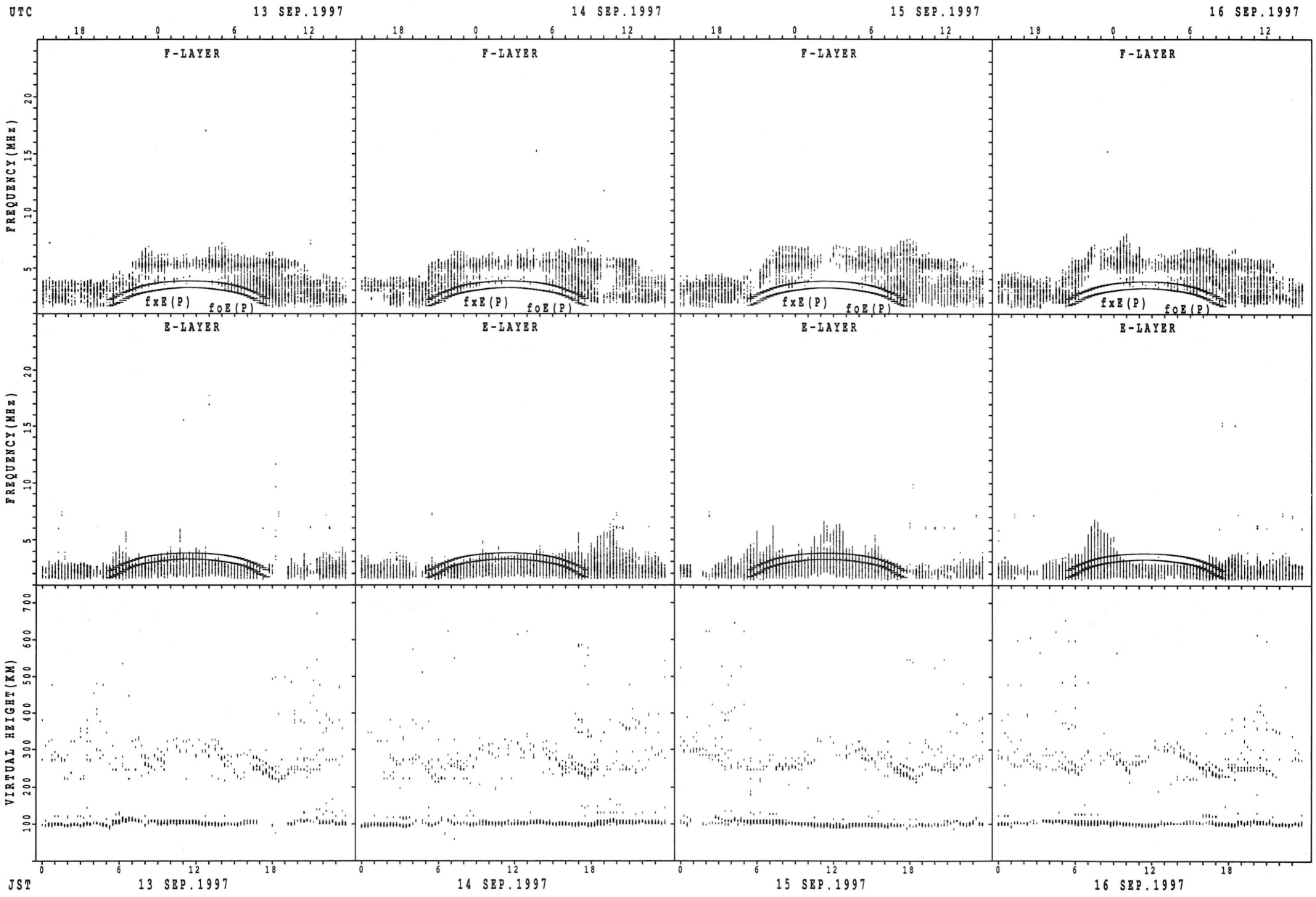
SUMMARY PLOTS AT WAKKANAI



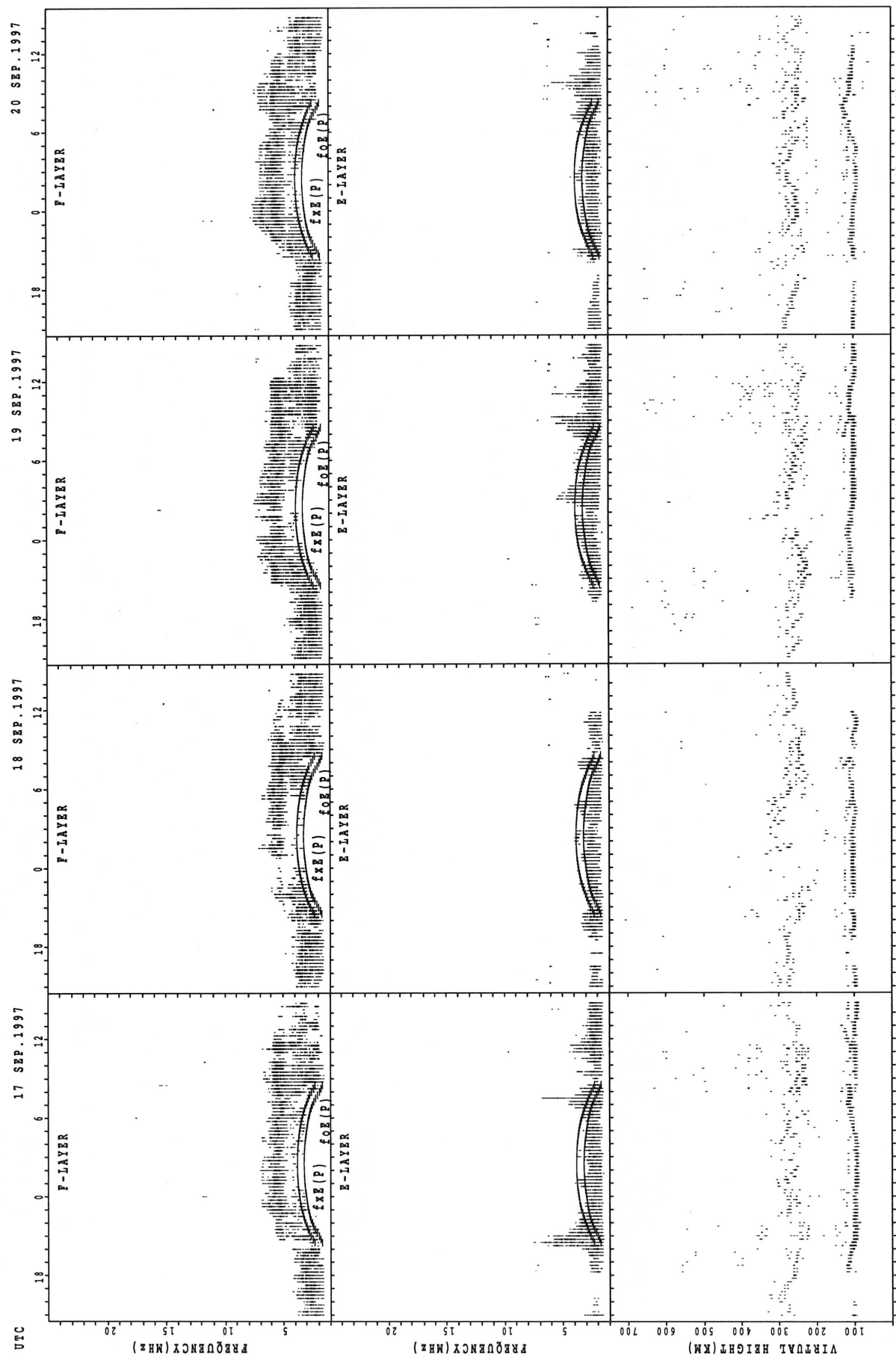
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
9 SEP.1997
10 SEP.1997
11 SEP.1997
12 SEP.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
JST
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

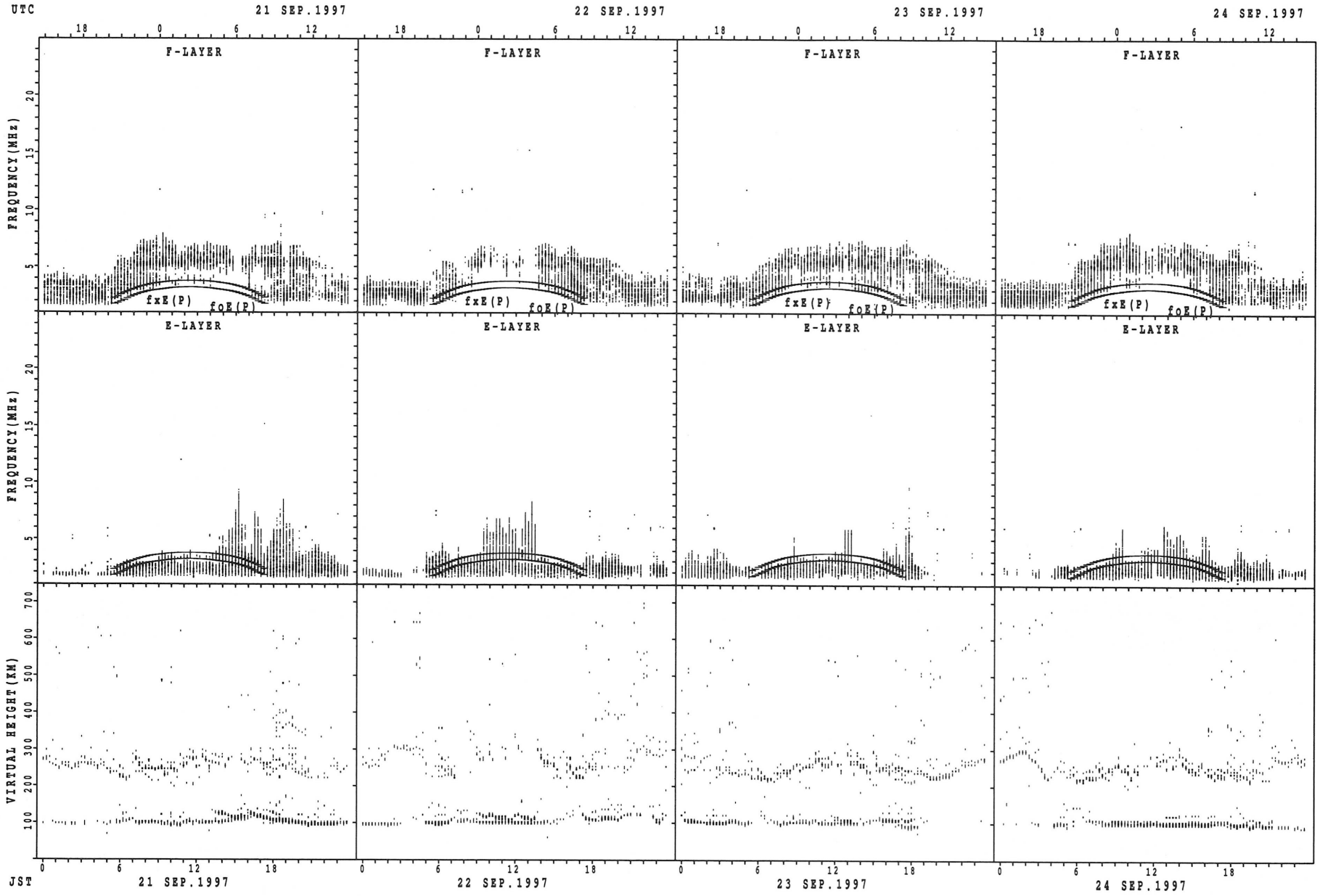
SUMMARY PLOTS AT WAKKANAI



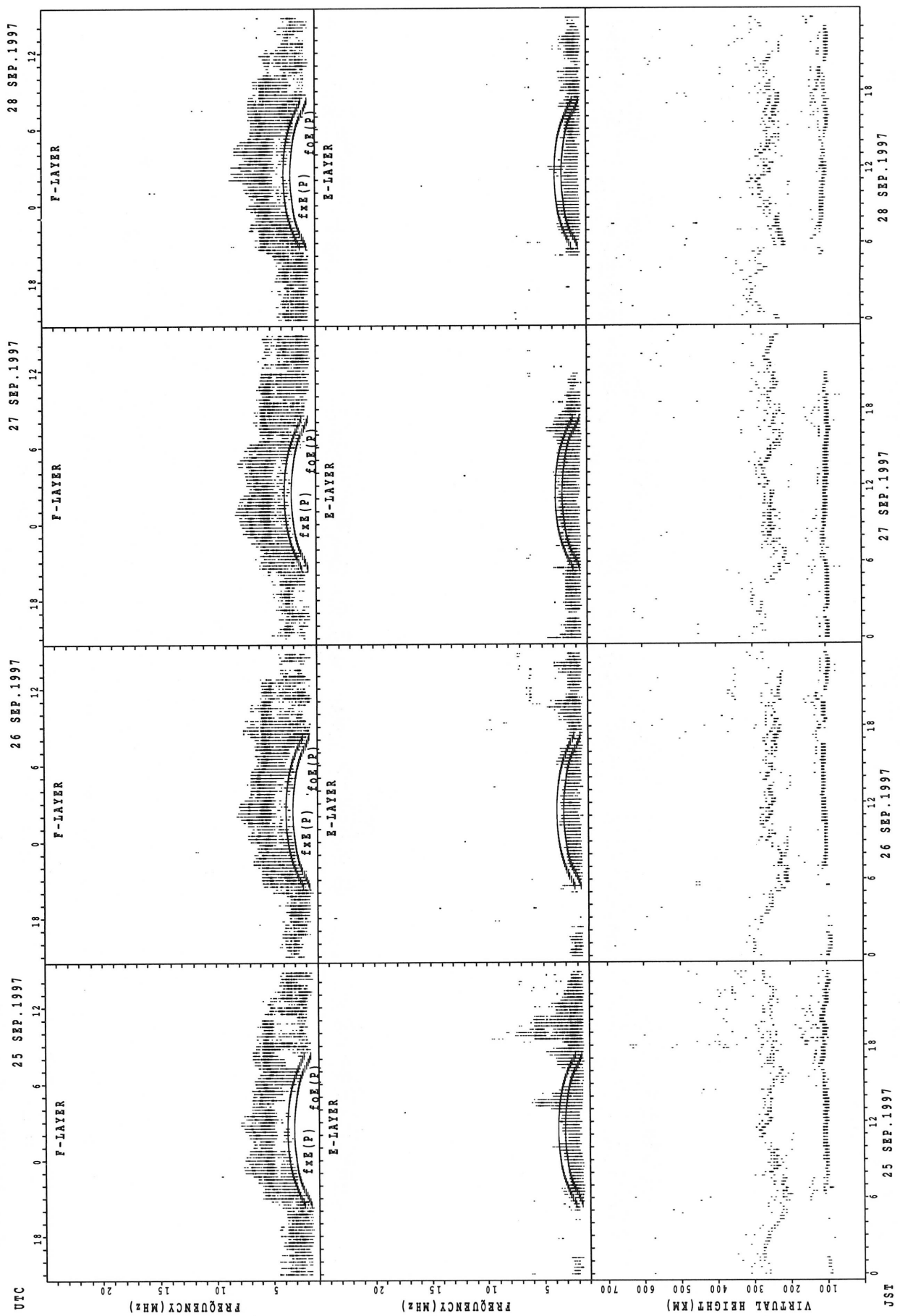
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
17 SEP.1997
18 SEP.1997
19 SEP.1997
20 SEP.1997
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

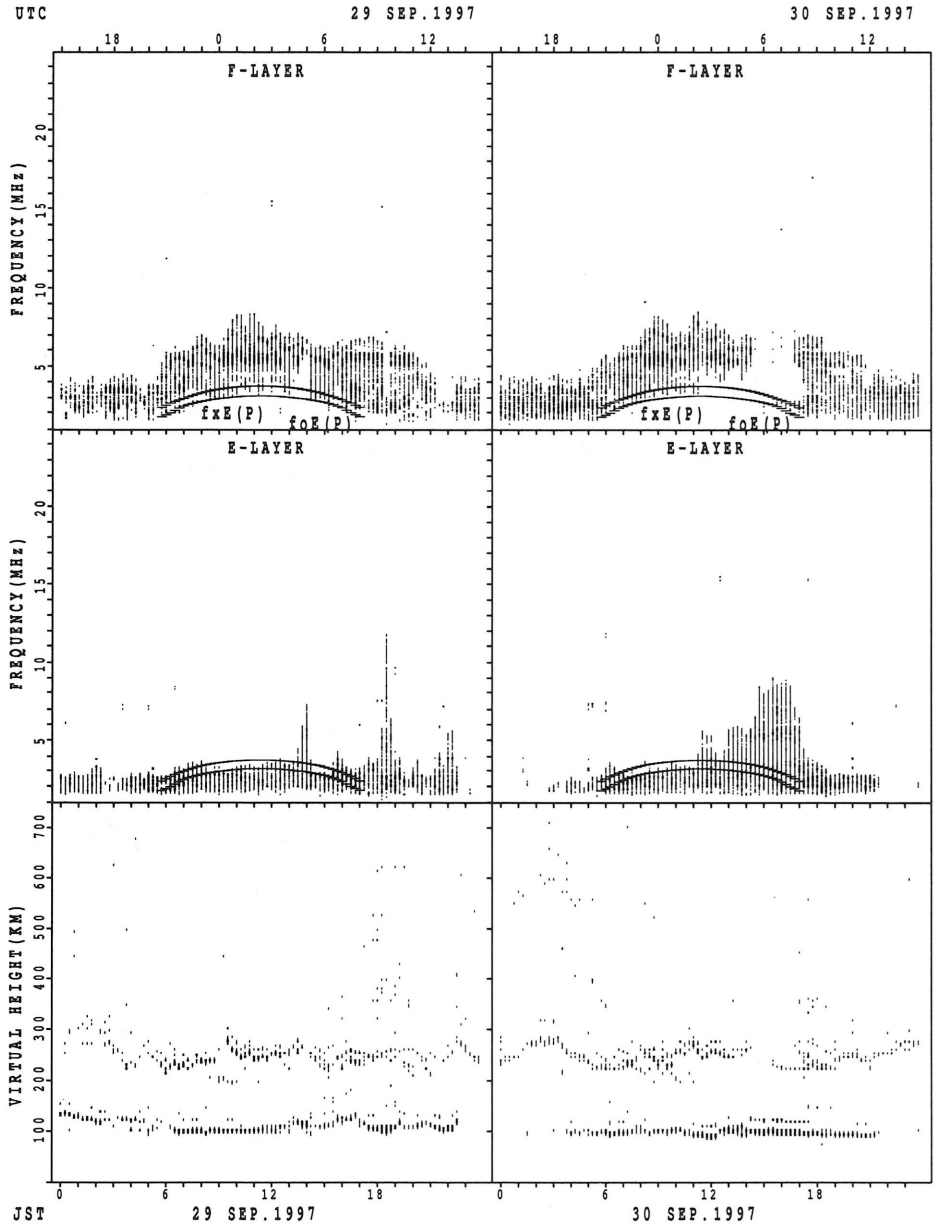
SUMMARY PLOTS AT WAKKANAI



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

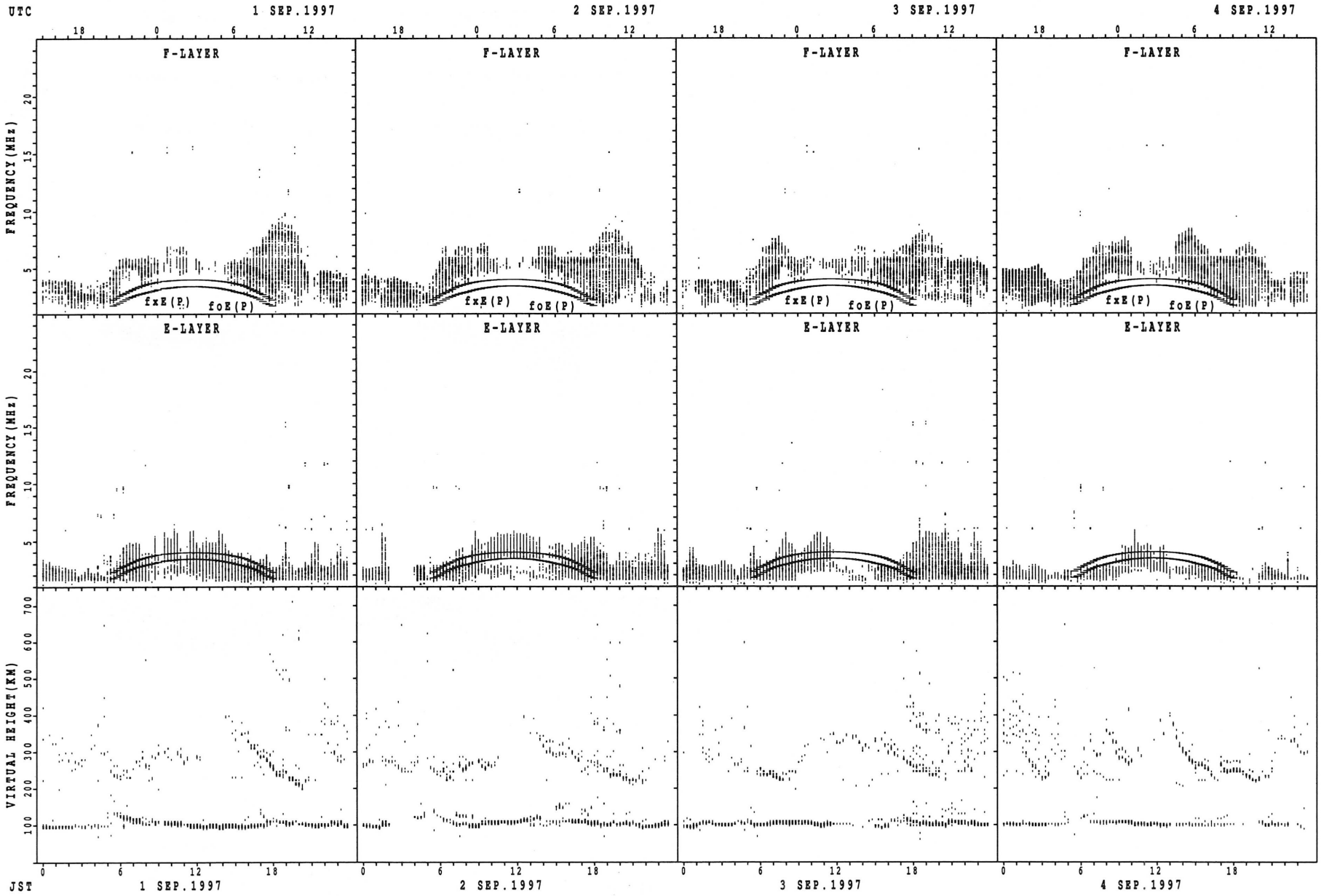

SUMMARY PLOTS AT WAKKANAI
UTC
JST
25 SEP.1997
26 SEP.1997
27 SEP.1997
28 SEP.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



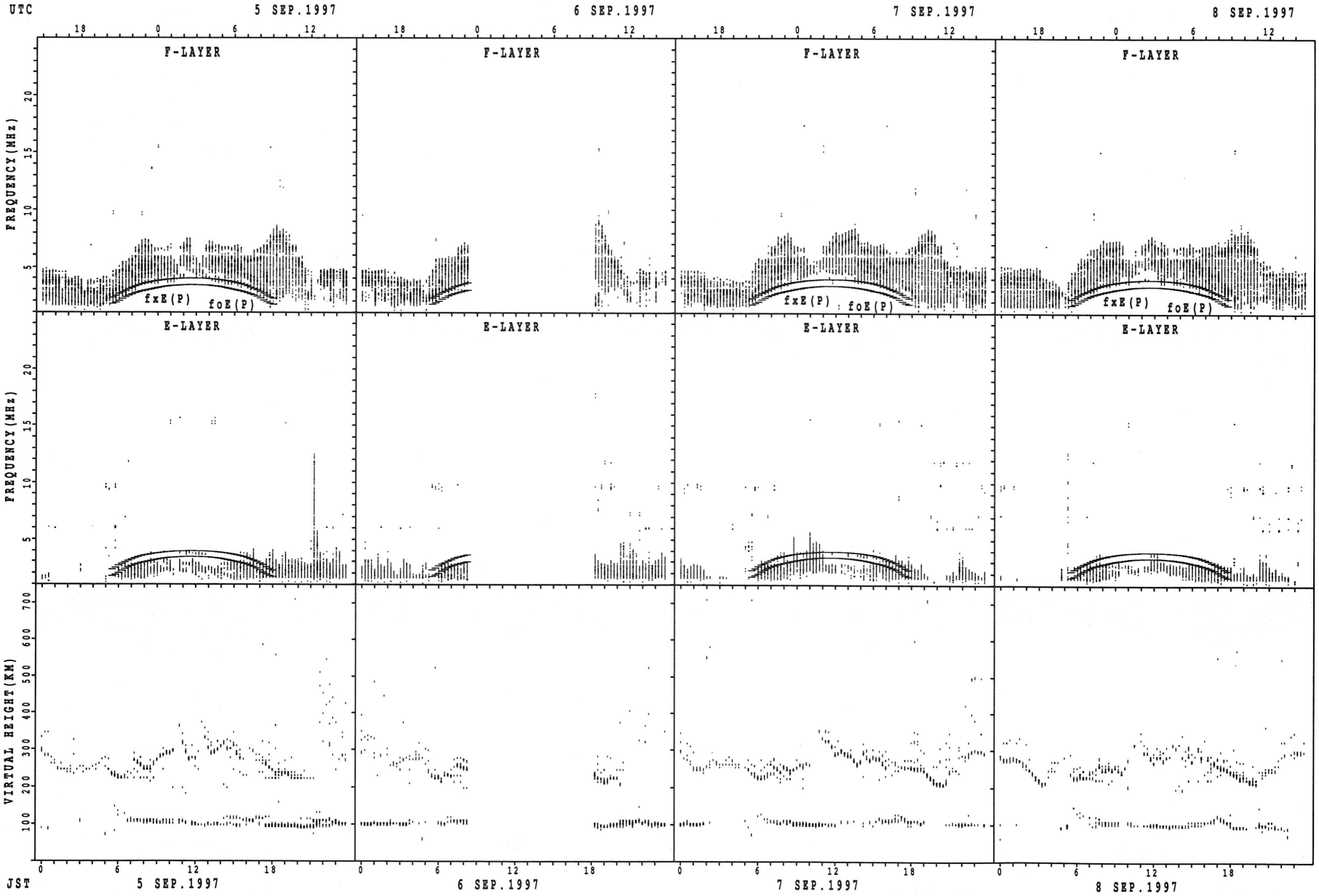
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

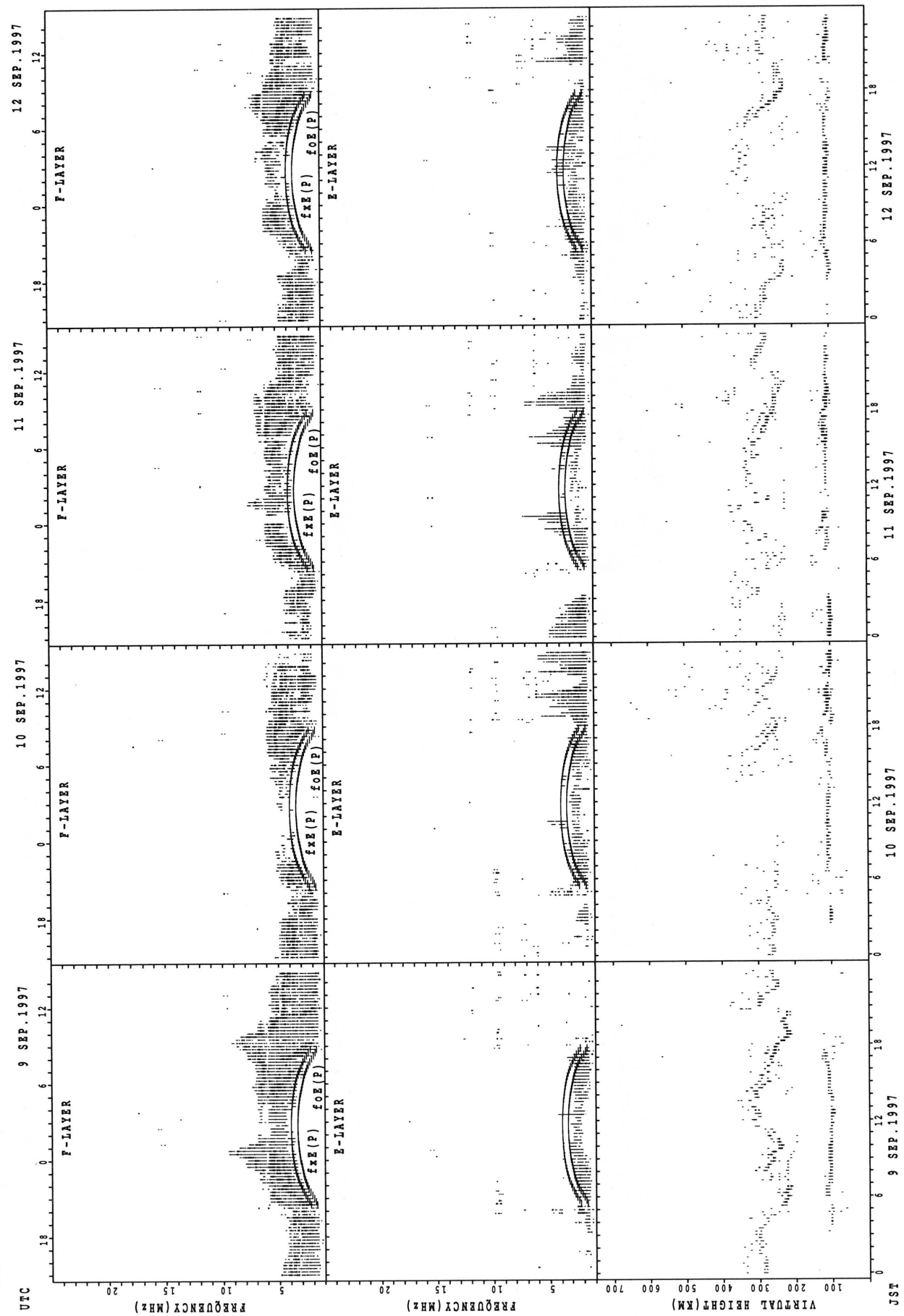


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

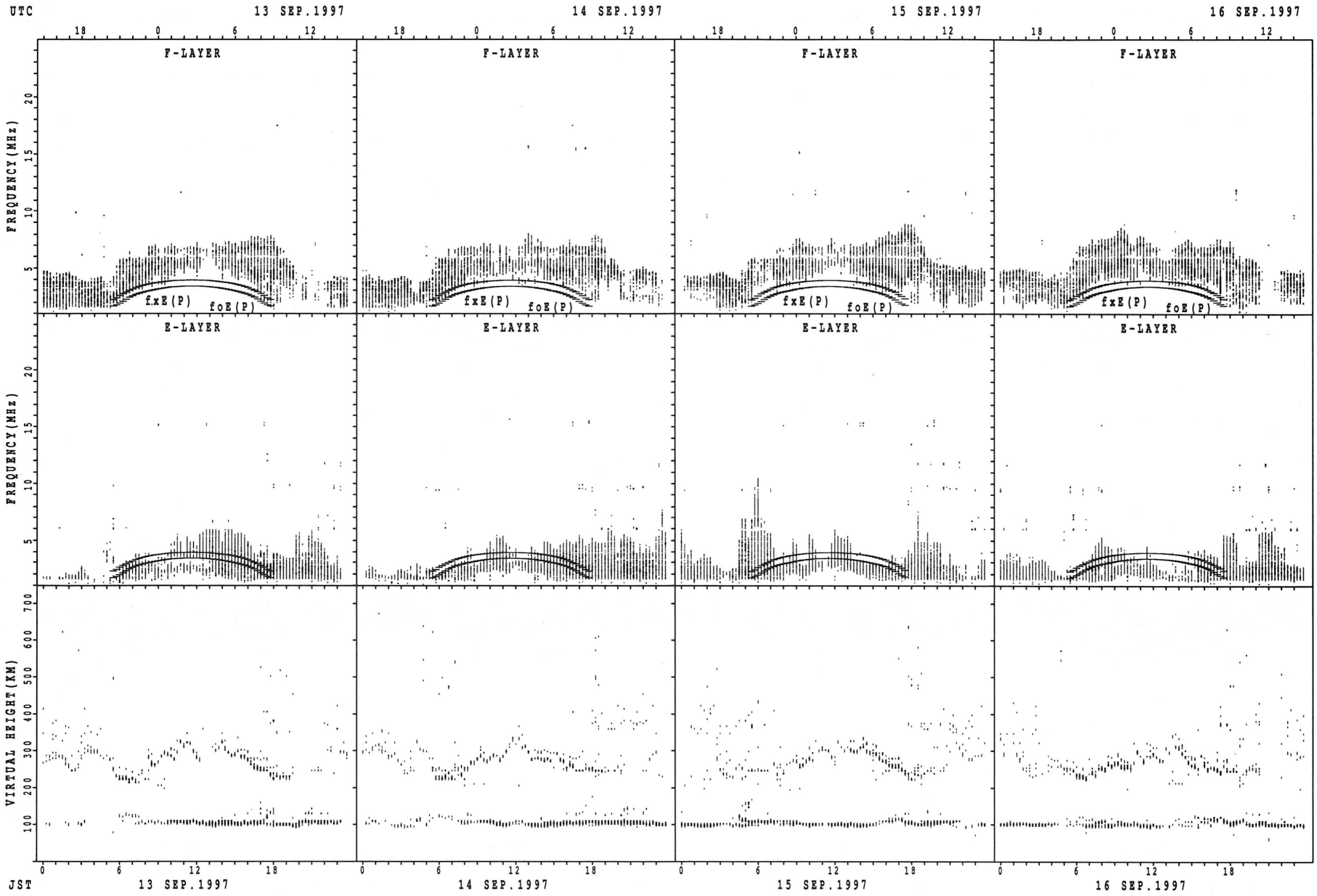
SUMMARY PLOTS AT KOKUBUNJI TOKYO



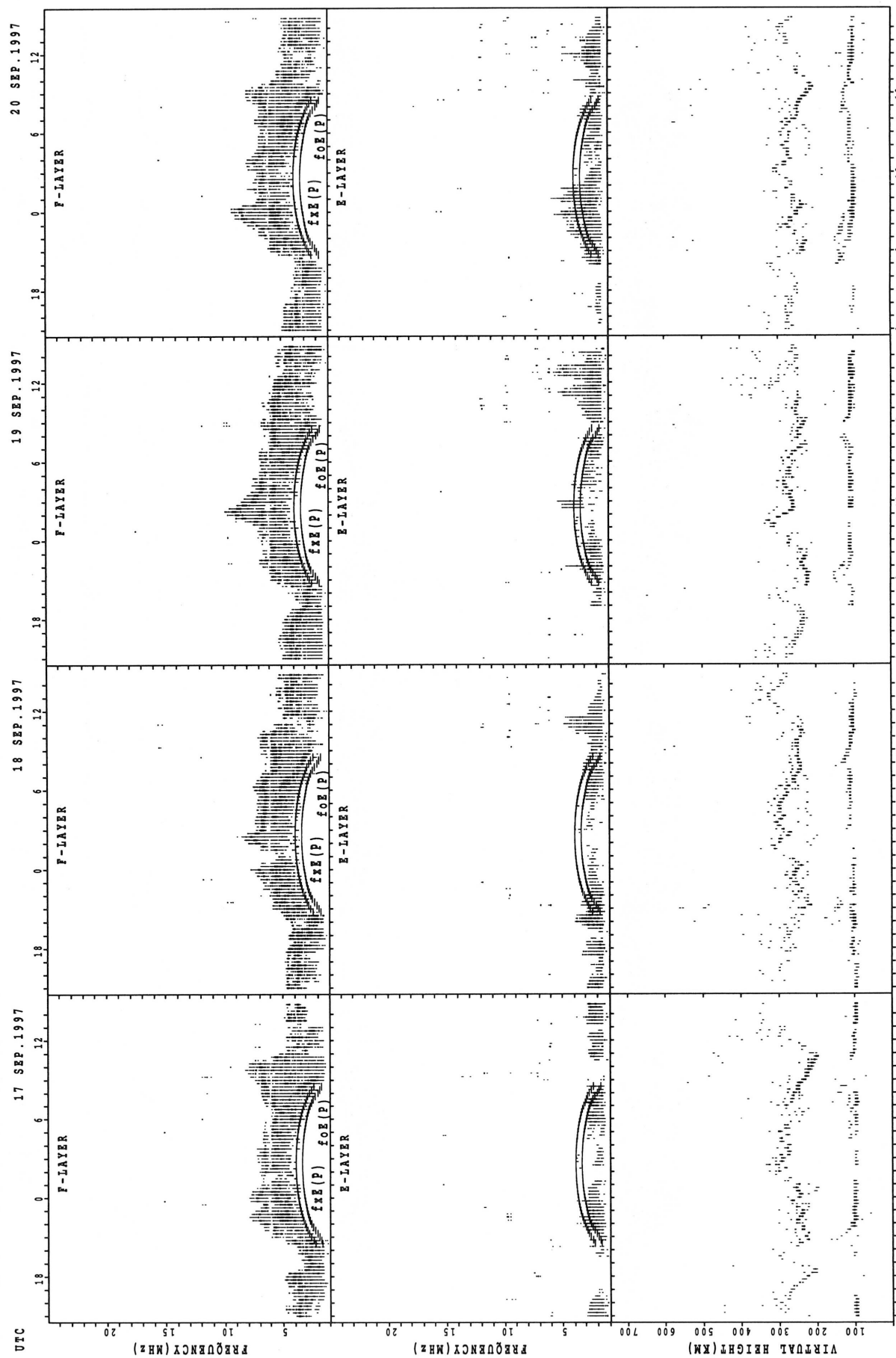
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
9 SEP.1997
10 SEP.1997
11 SEP.1997
12 SEP.1997
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

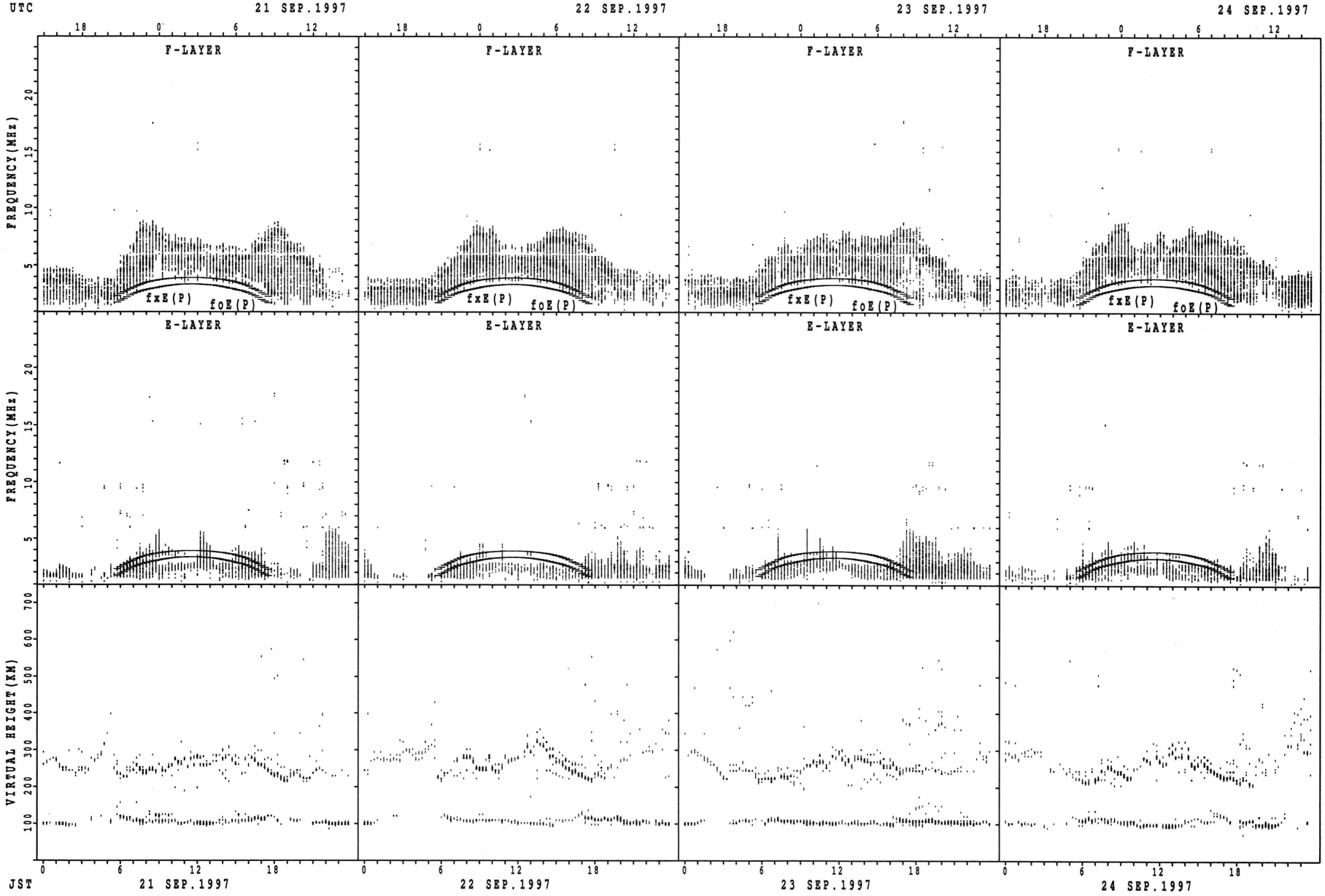
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

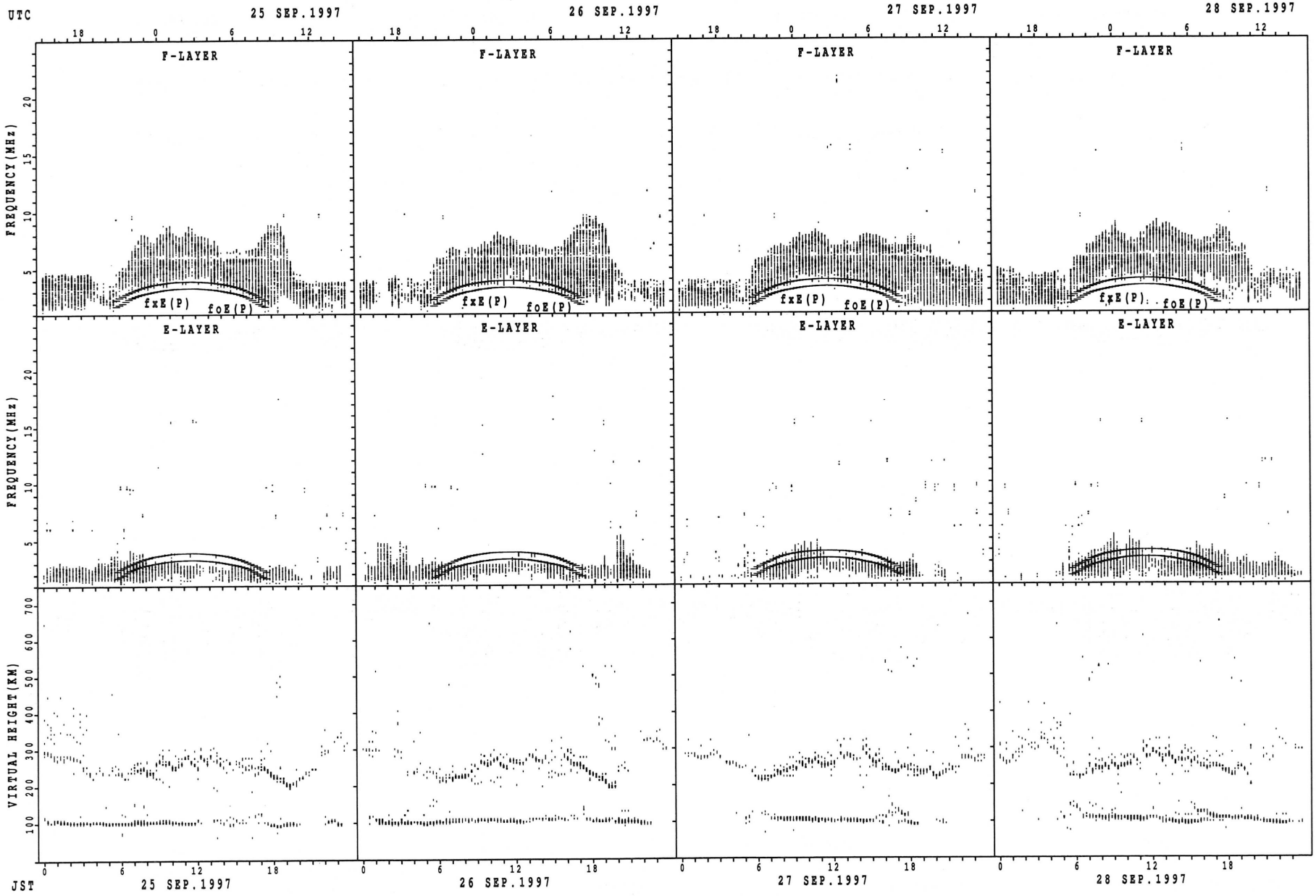

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
17 SEP.1997
18 SEP.1997
19 SEP.1997
20 SEP.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



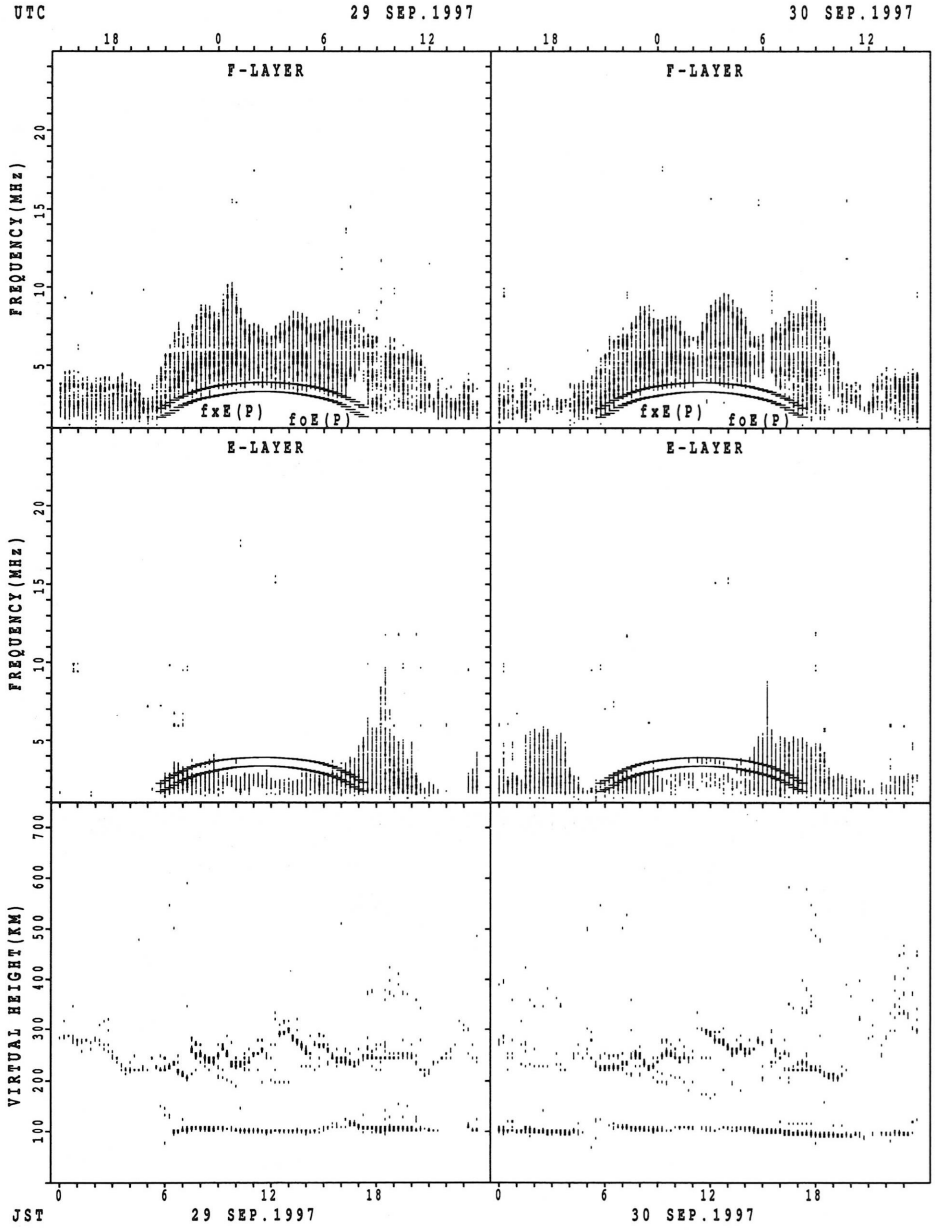
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

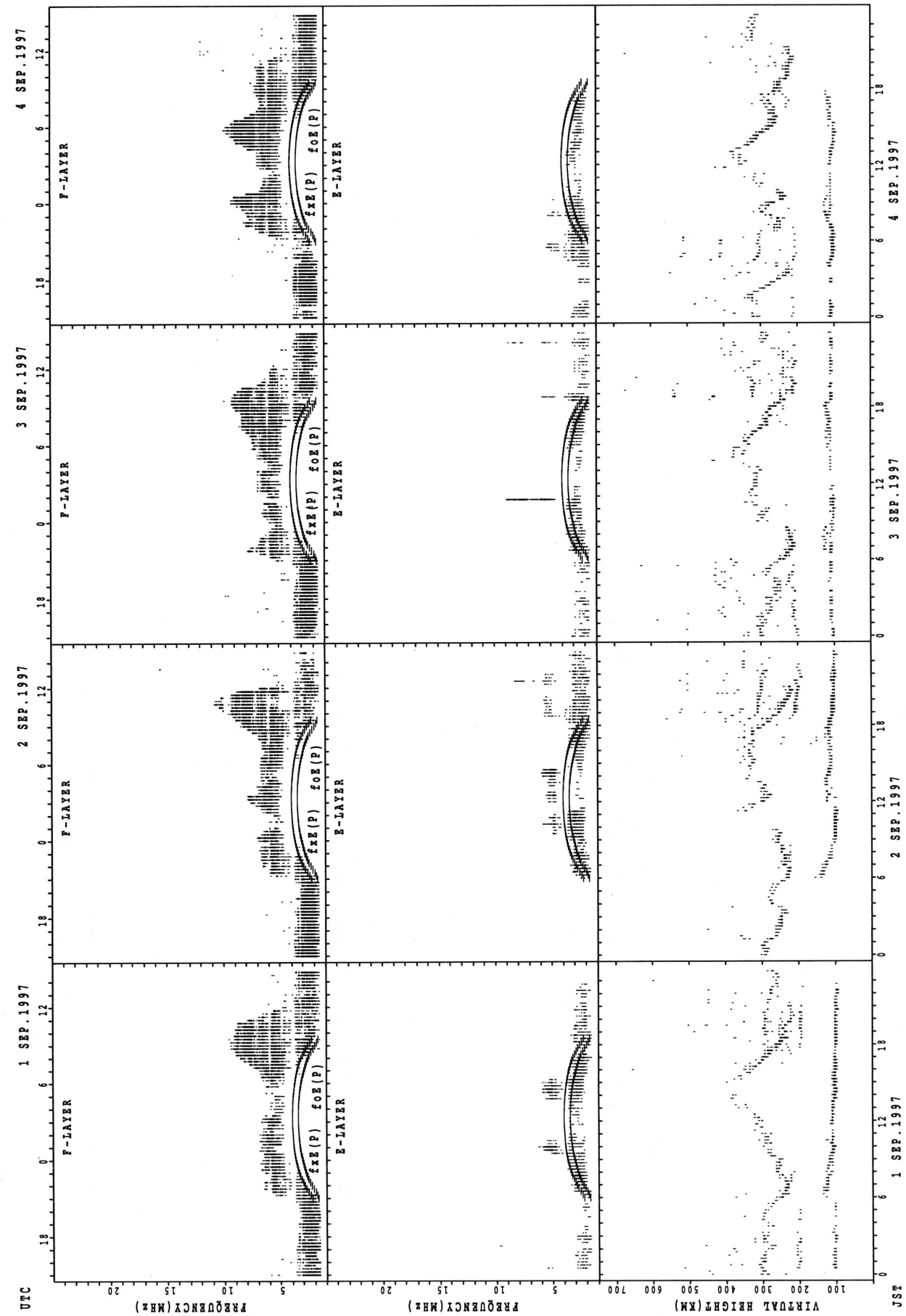


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

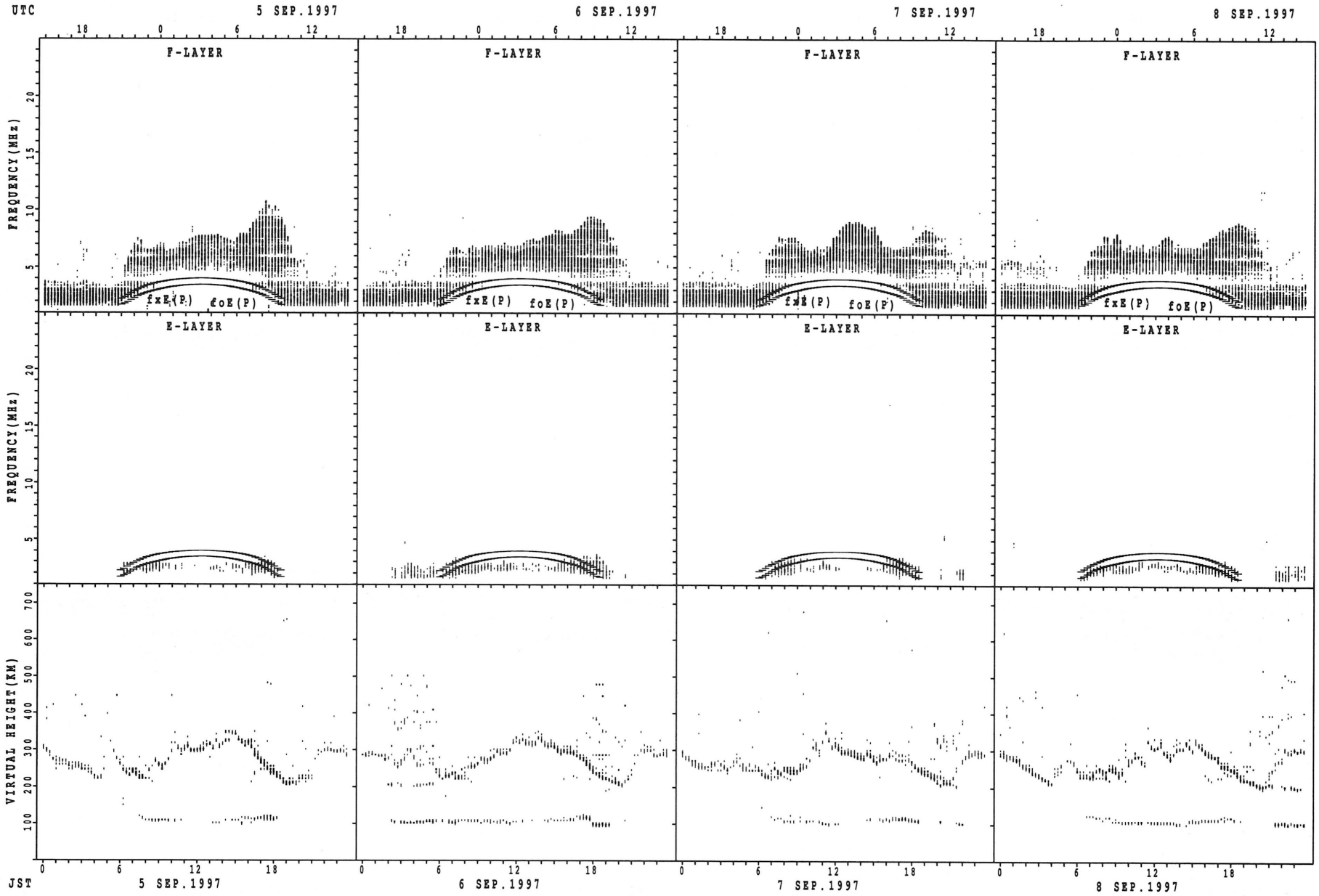
SUMMARY PLOTS AT KOKUBUNJI TOKYO



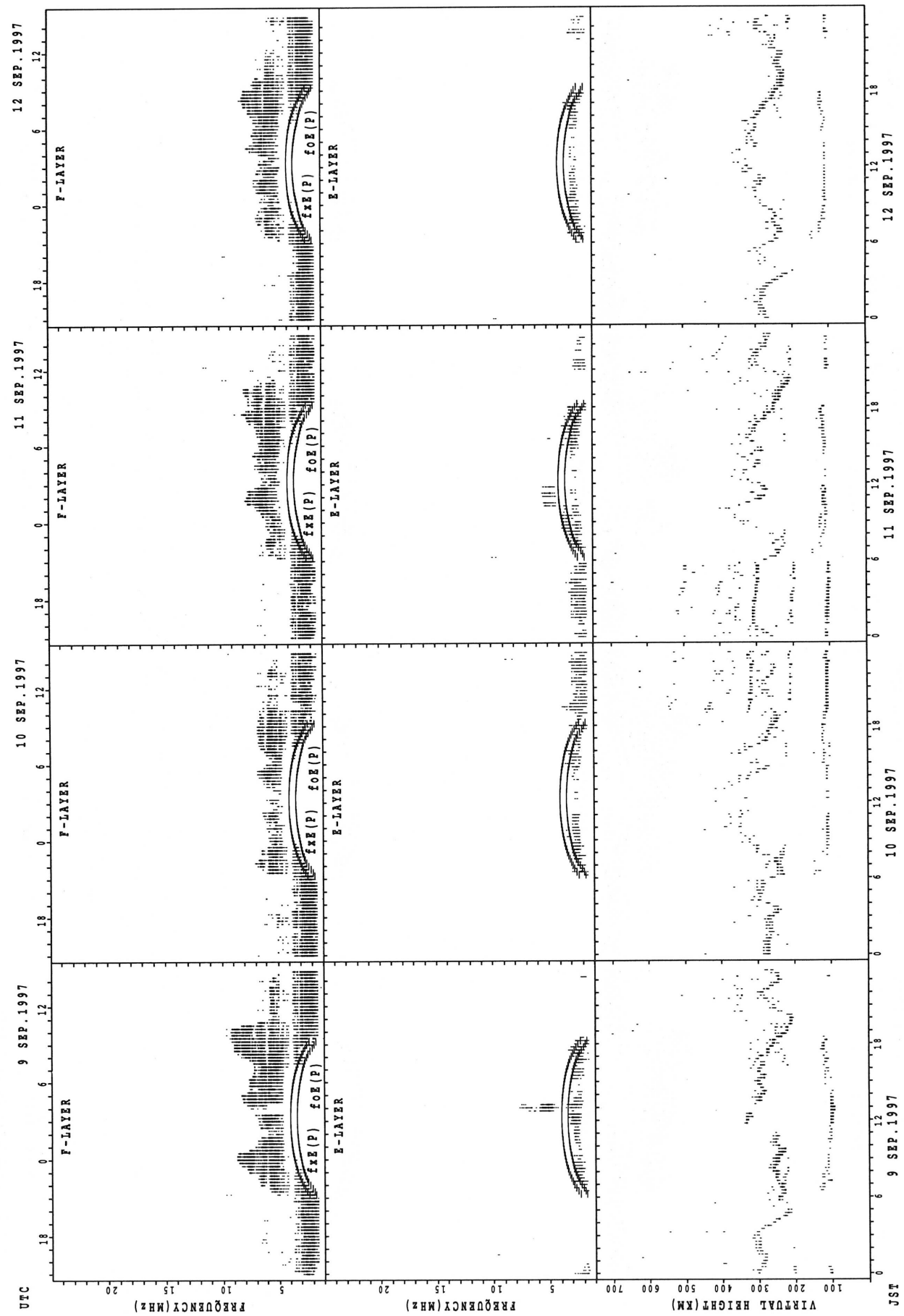
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
1 SEP.1997
2 SEP.1997
3 SEP.1997
4 SEP.1997
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

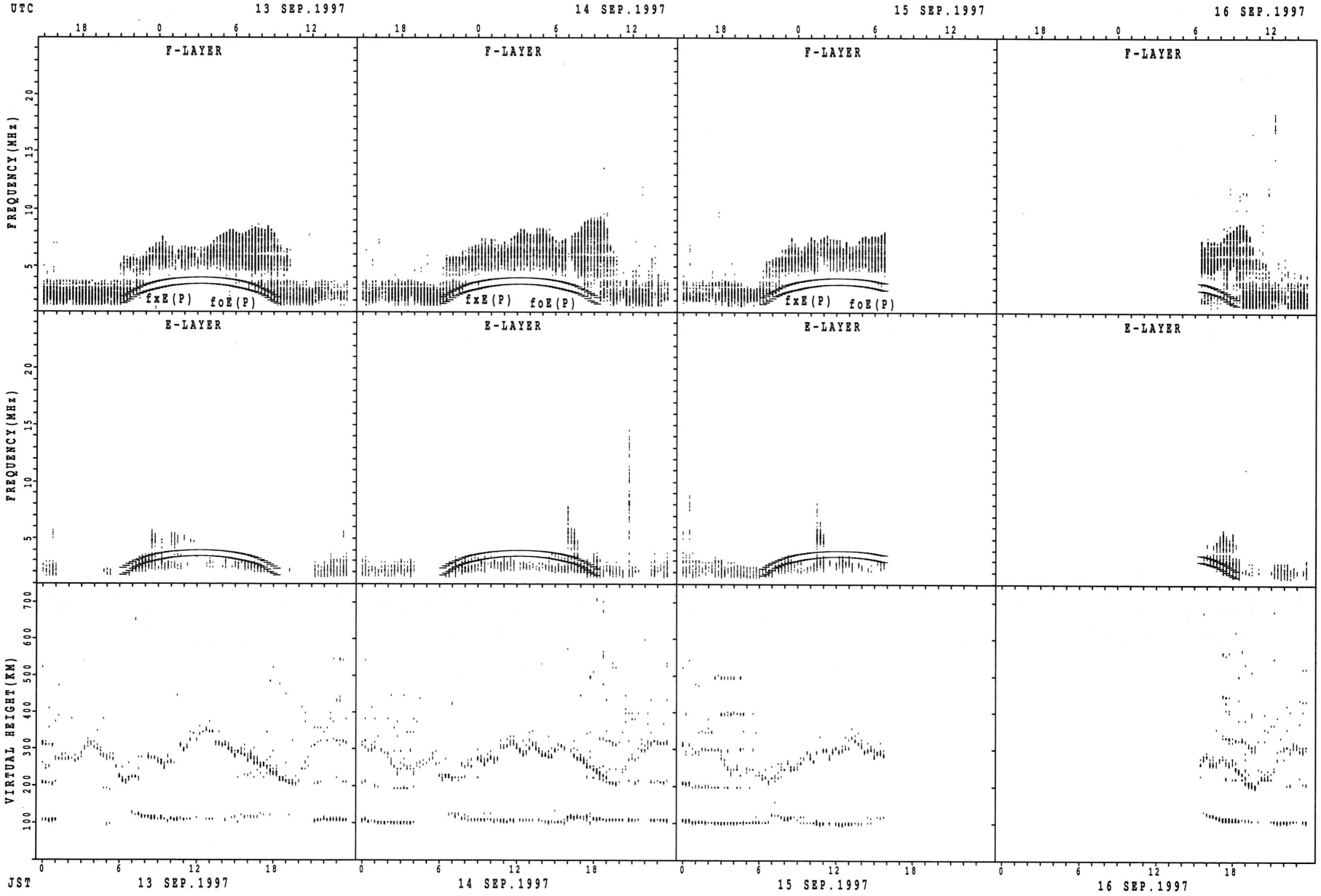
SUMMARY PLOTS AT YAMAGAWA



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

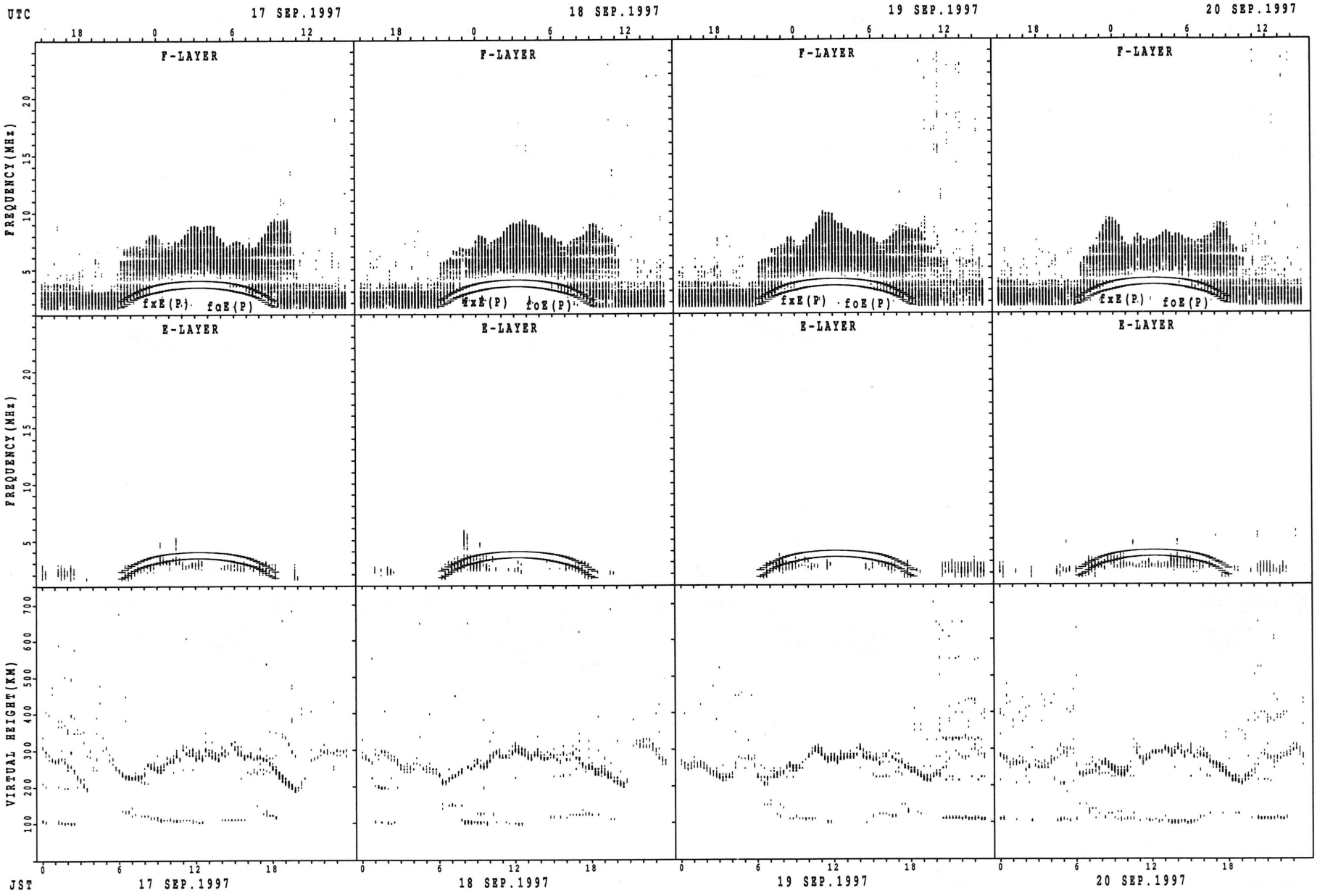

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
9 SEP.1997
10 SEP.1997
11 SEP.1997
12 SEP.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



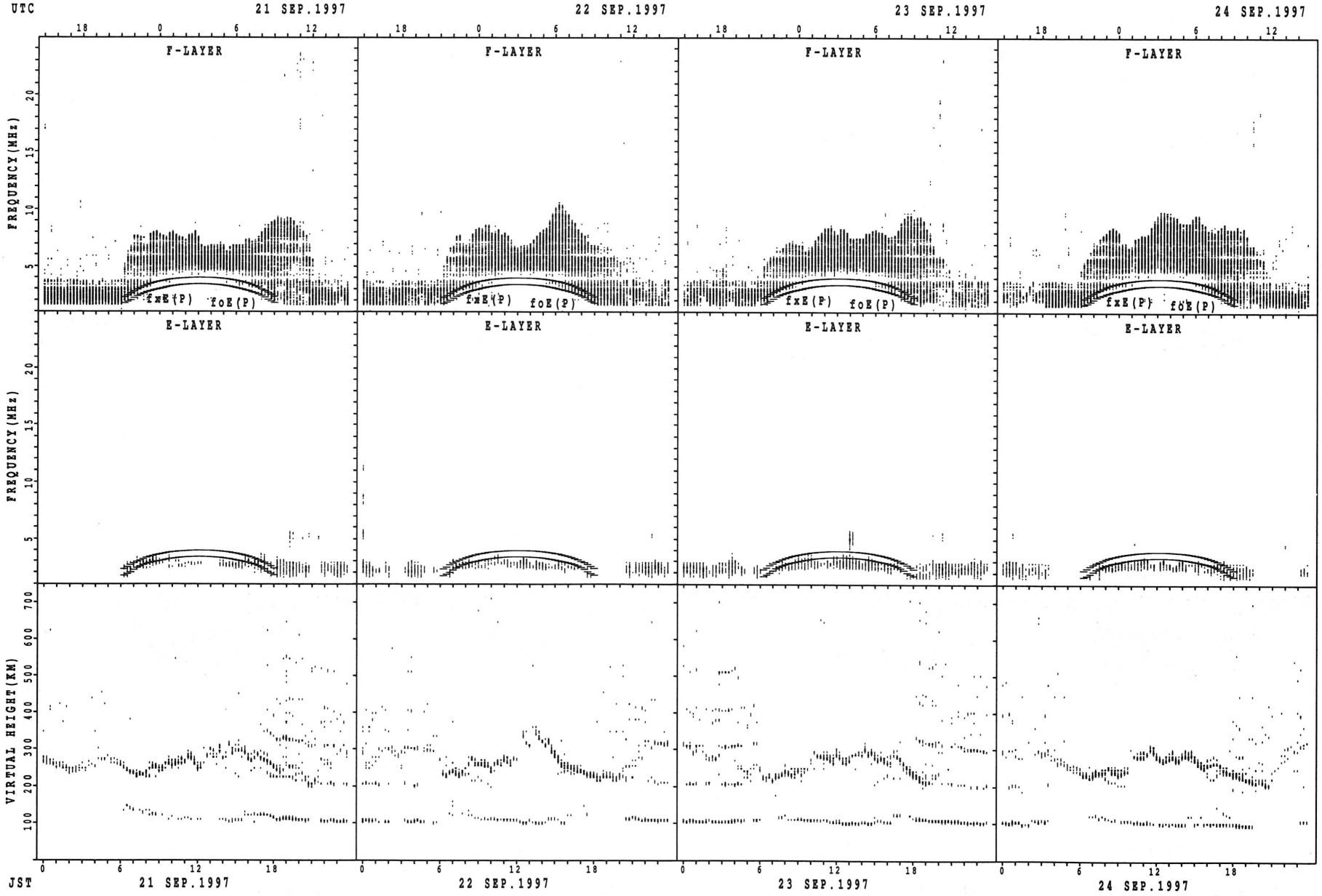
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

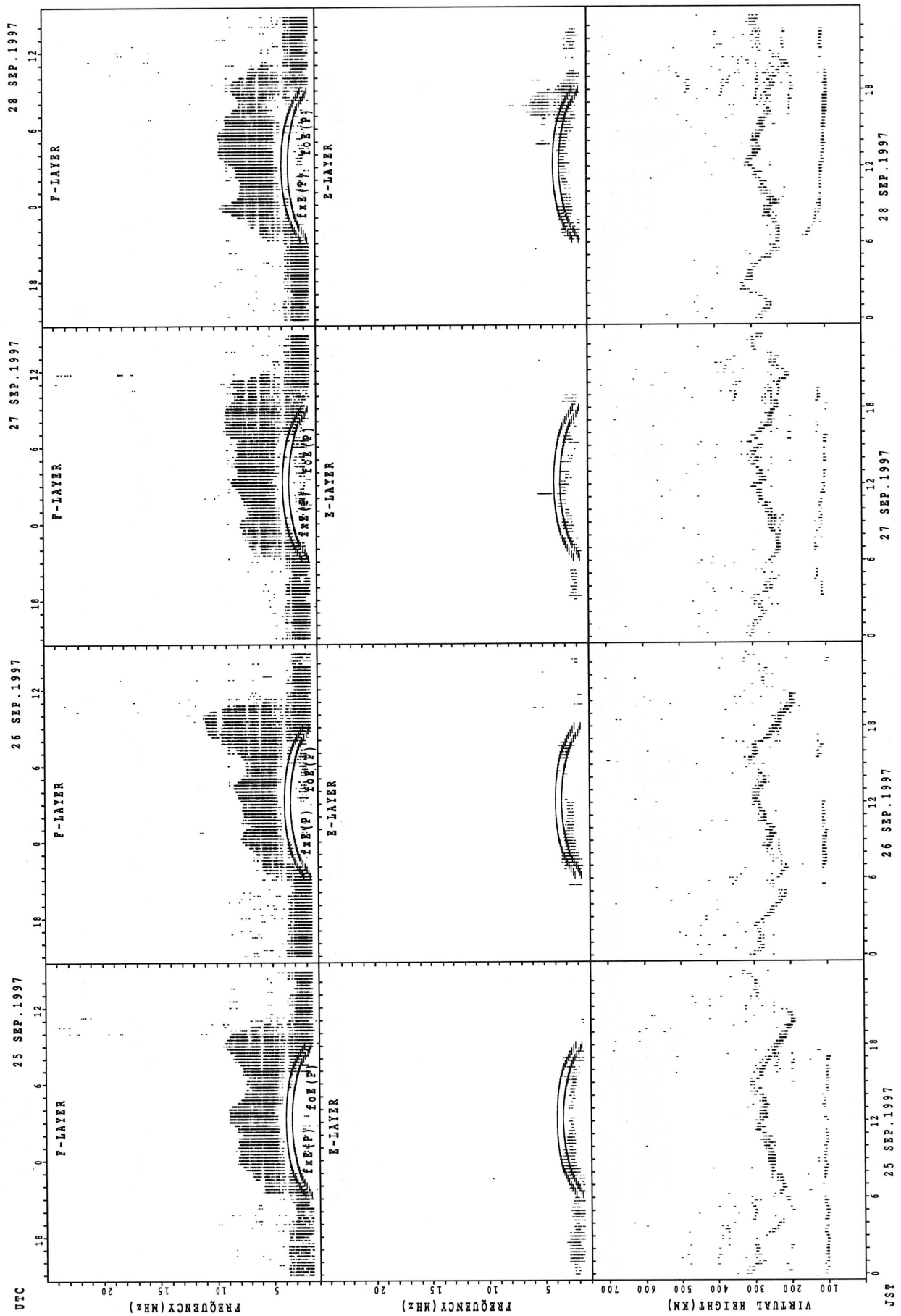


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

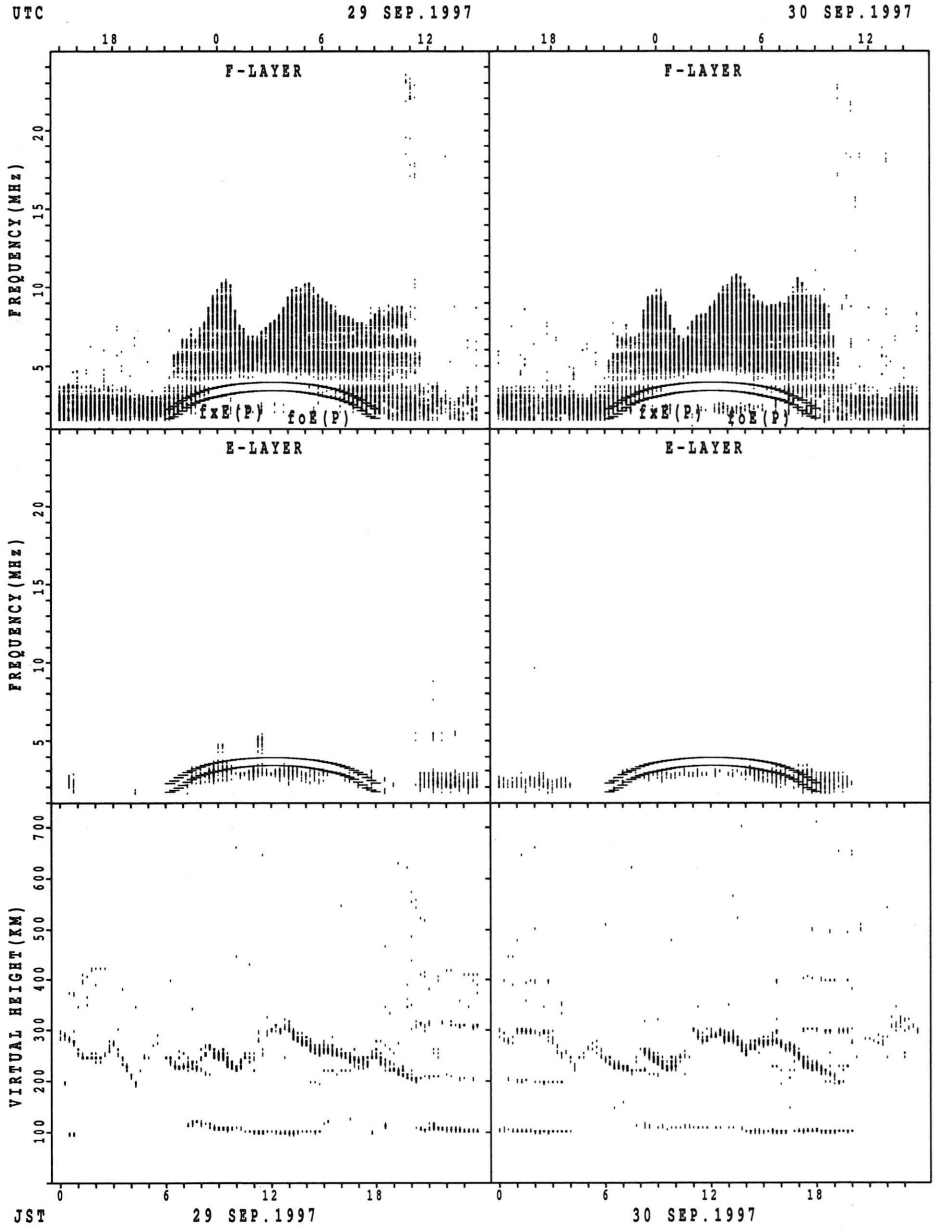
SUMMARY PLOTS AT YAMAGAWA



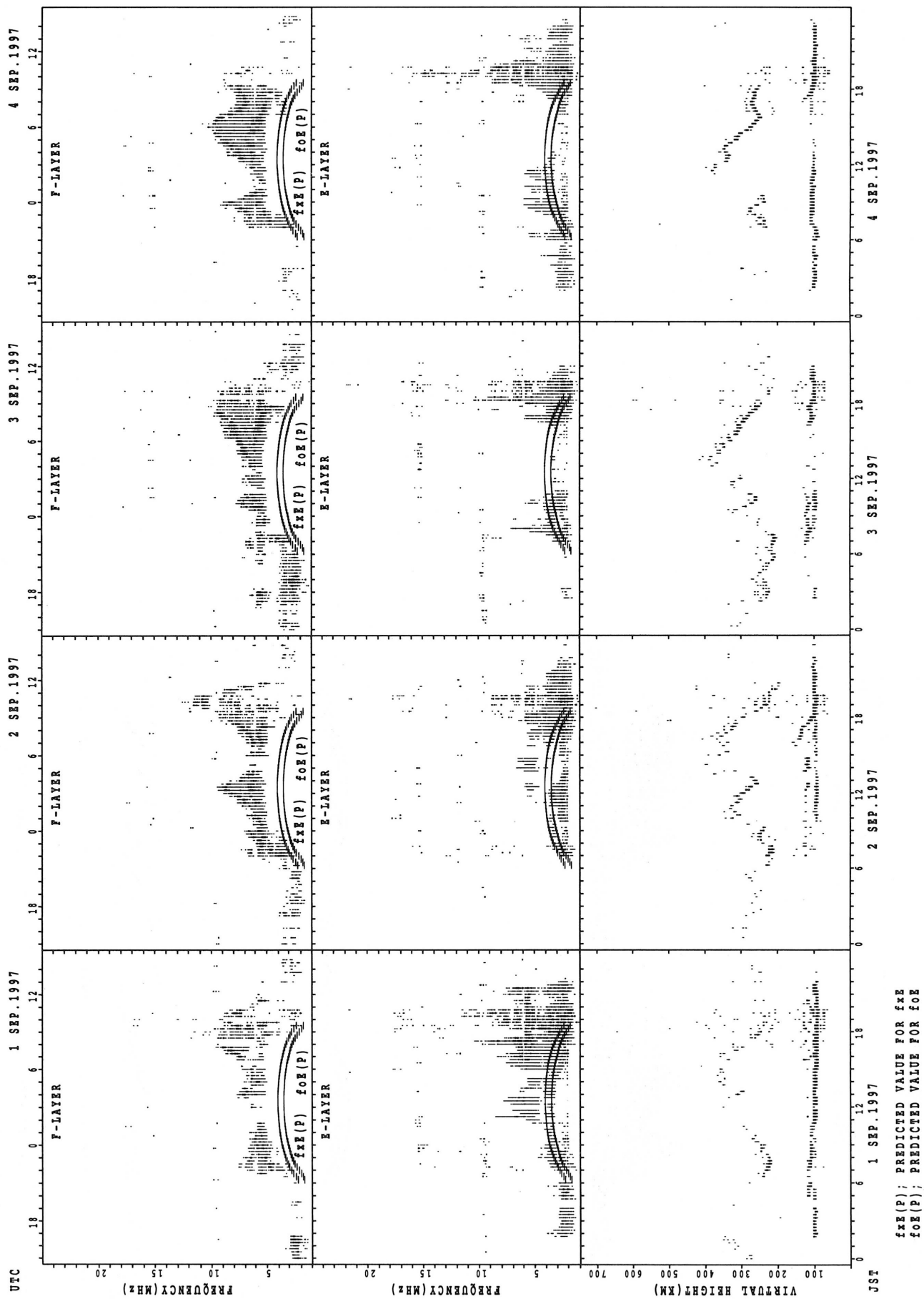
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
25 SEP.1997
26 SEP.1997
27 SEP.1997
28 SEP.1997
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

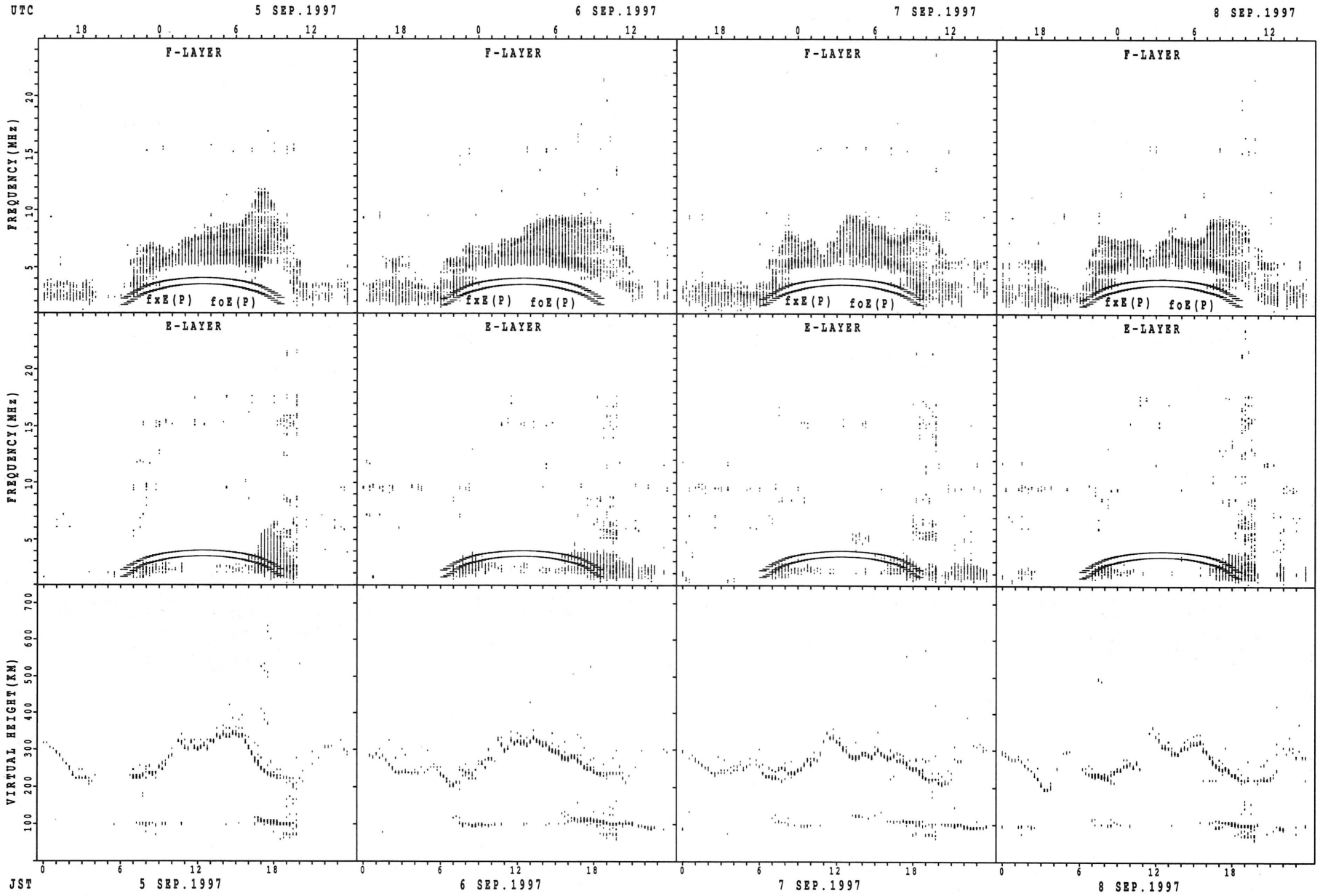
SUMMARY PLOTS AT YAMAGAWA



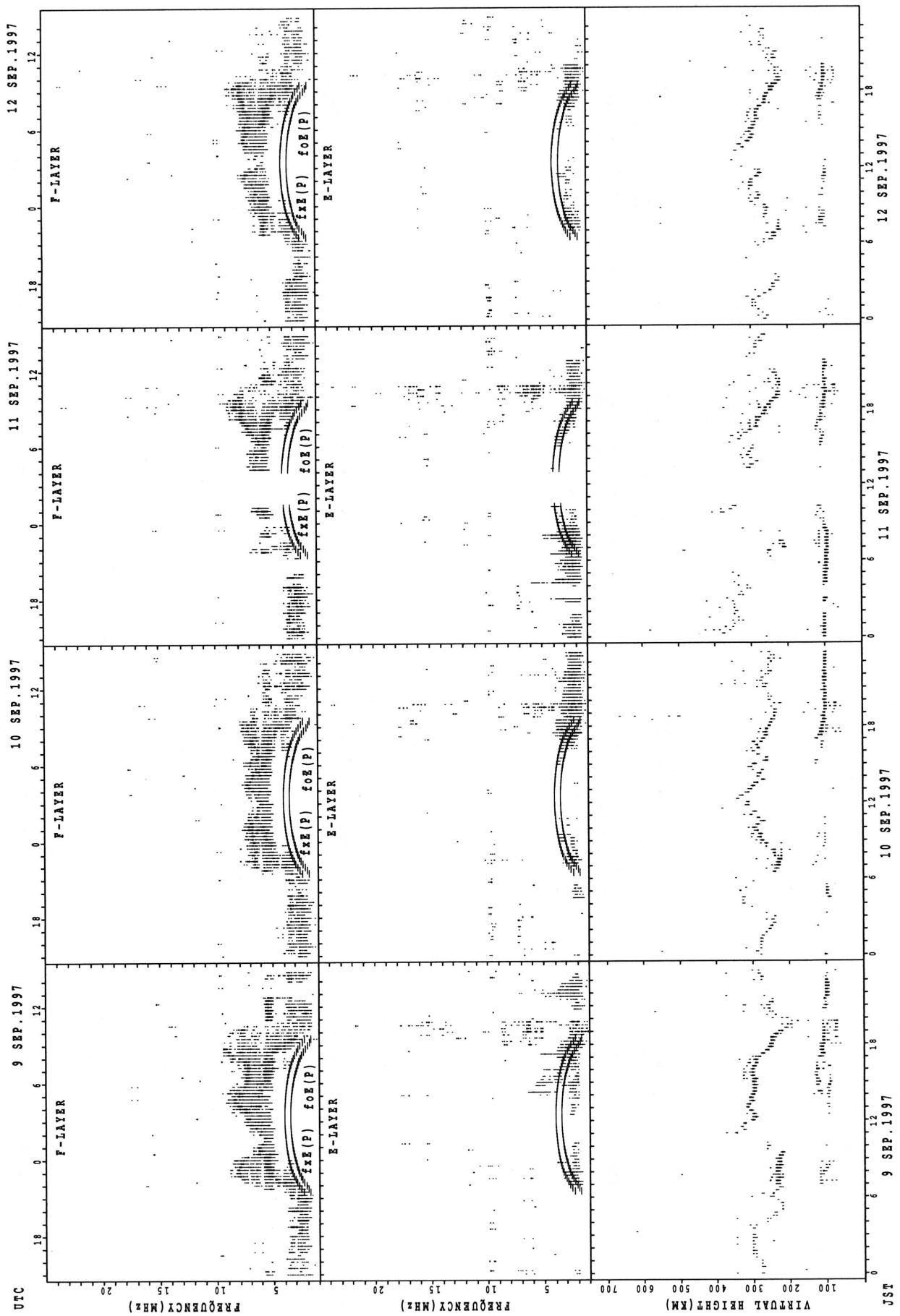
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
1 SEP.1997
2 SEP.1997
3 SEP.1997
4 SEP.1997
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

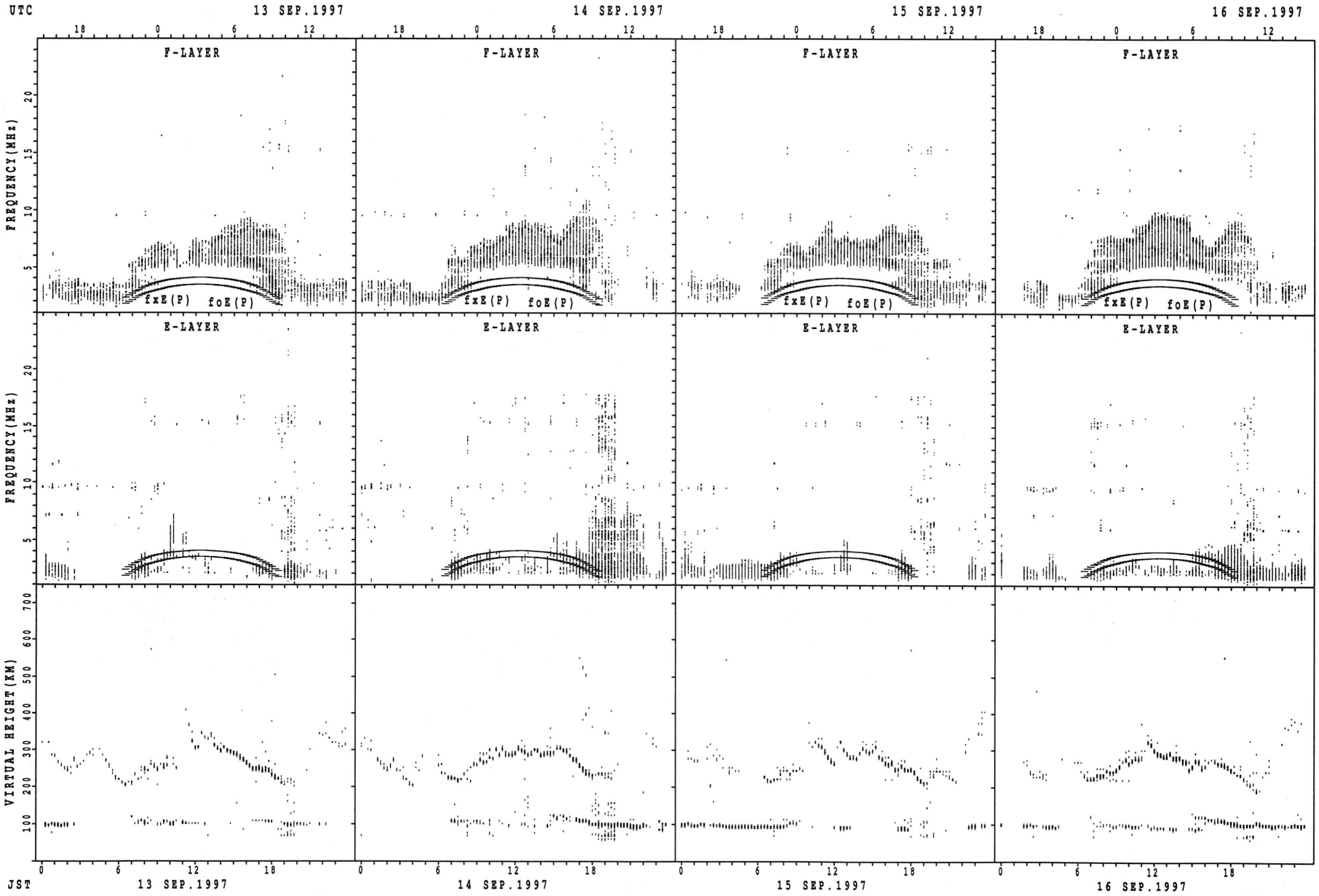
SUMMARY PLOTS AT OKINAWA



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

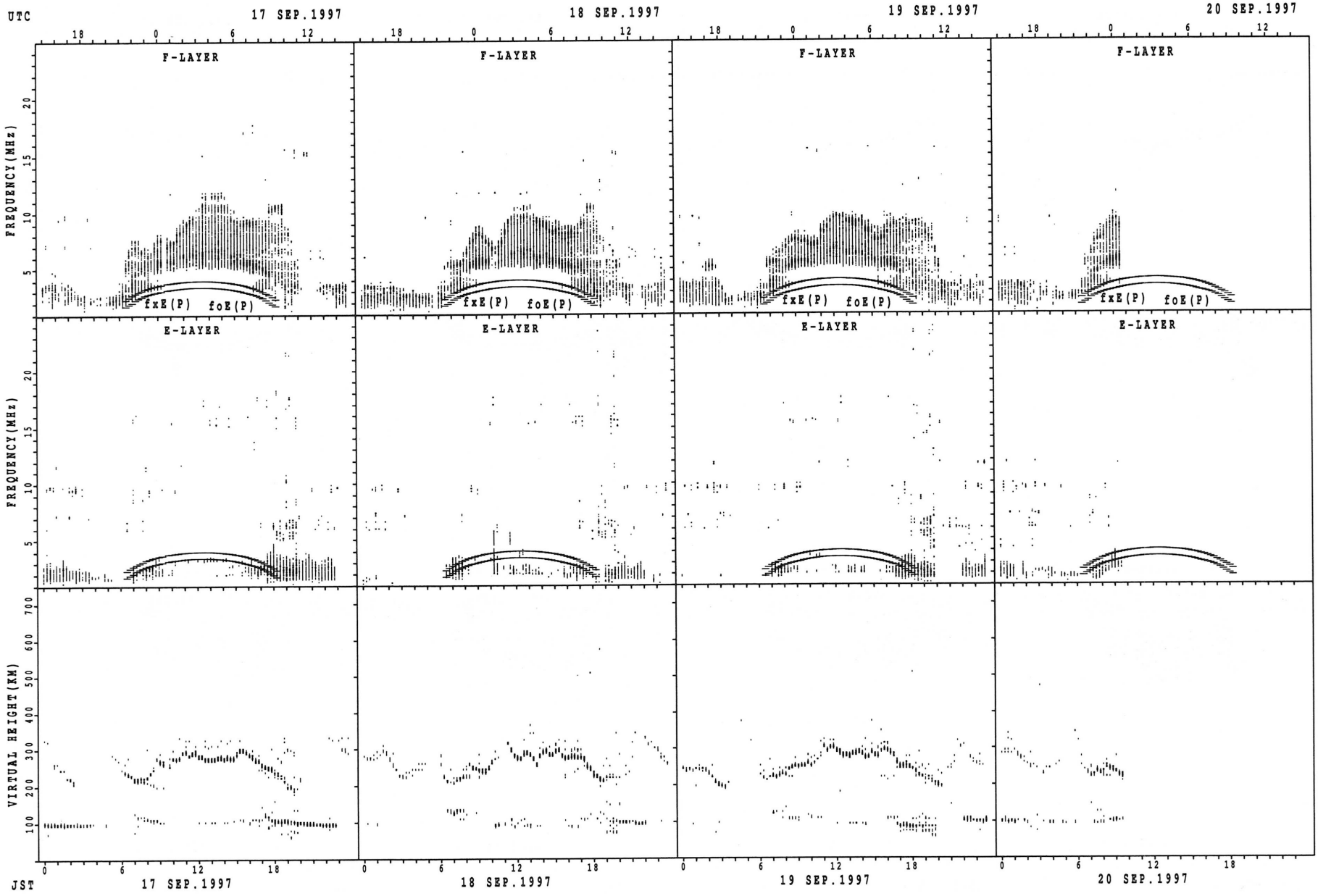

SUMMARY PLOTS AT OKINAWA
UTC
JST
9 SEP.1997
10 SEP.1997
11 SEP.1997
12 SEP.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



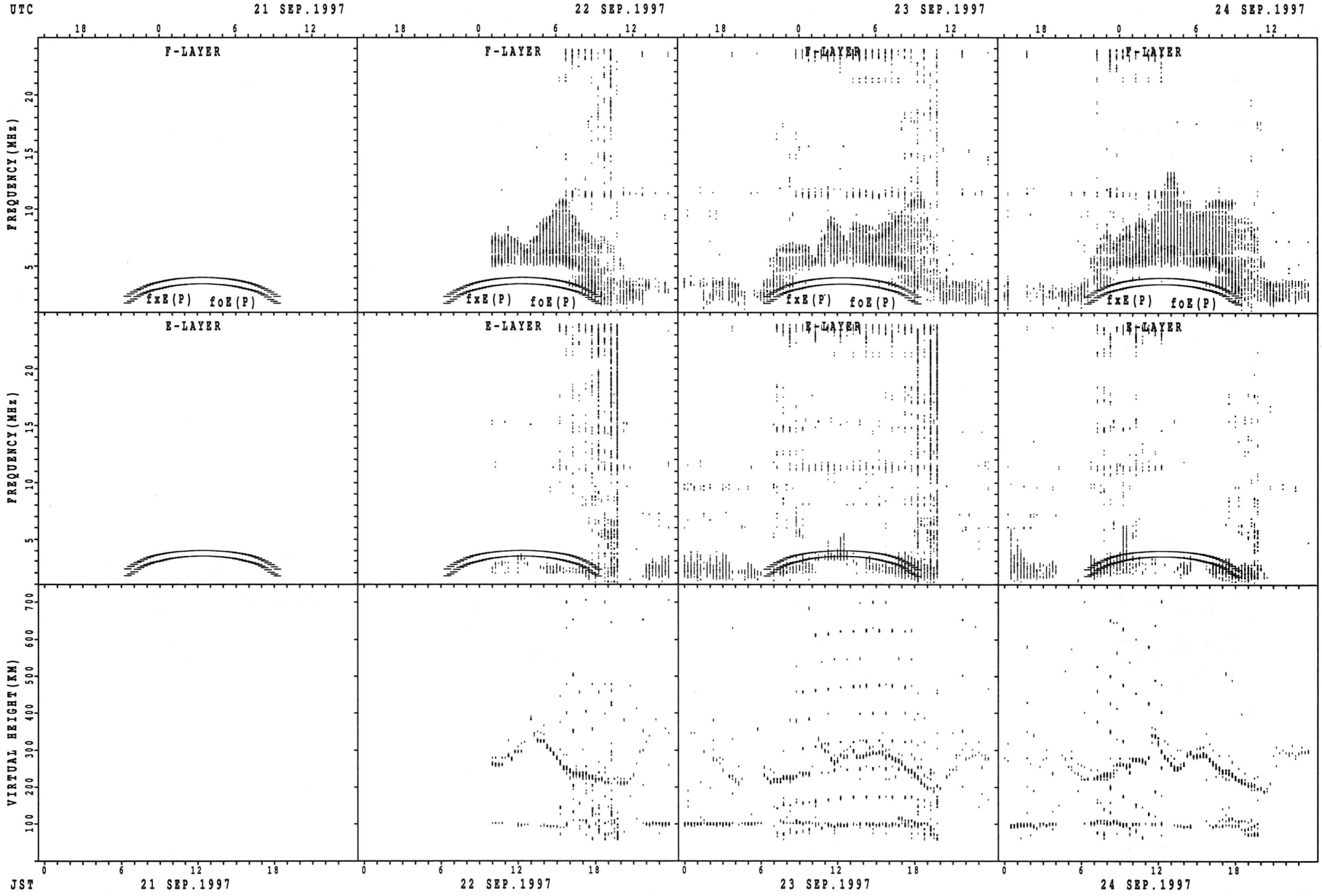
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

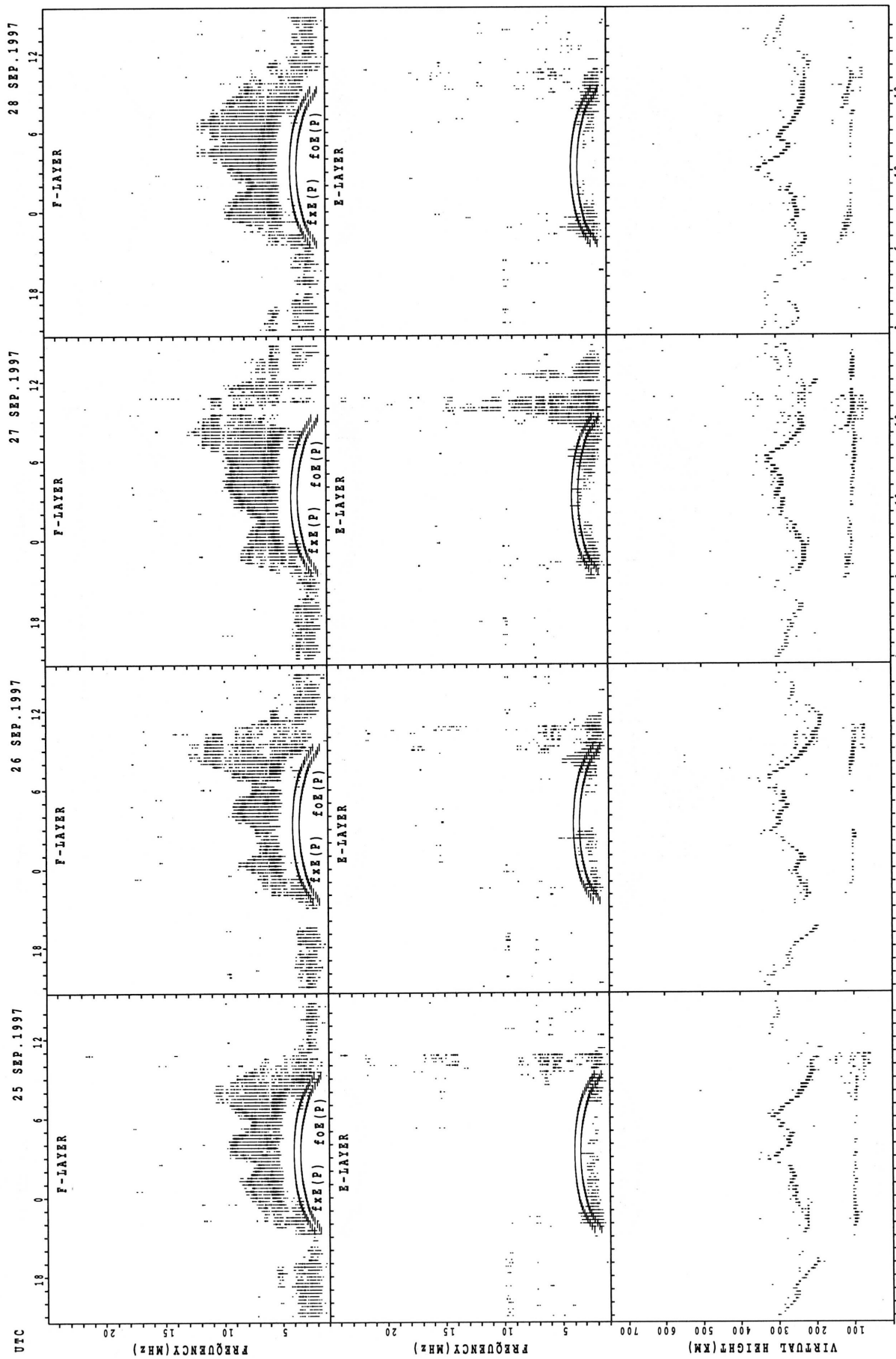


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

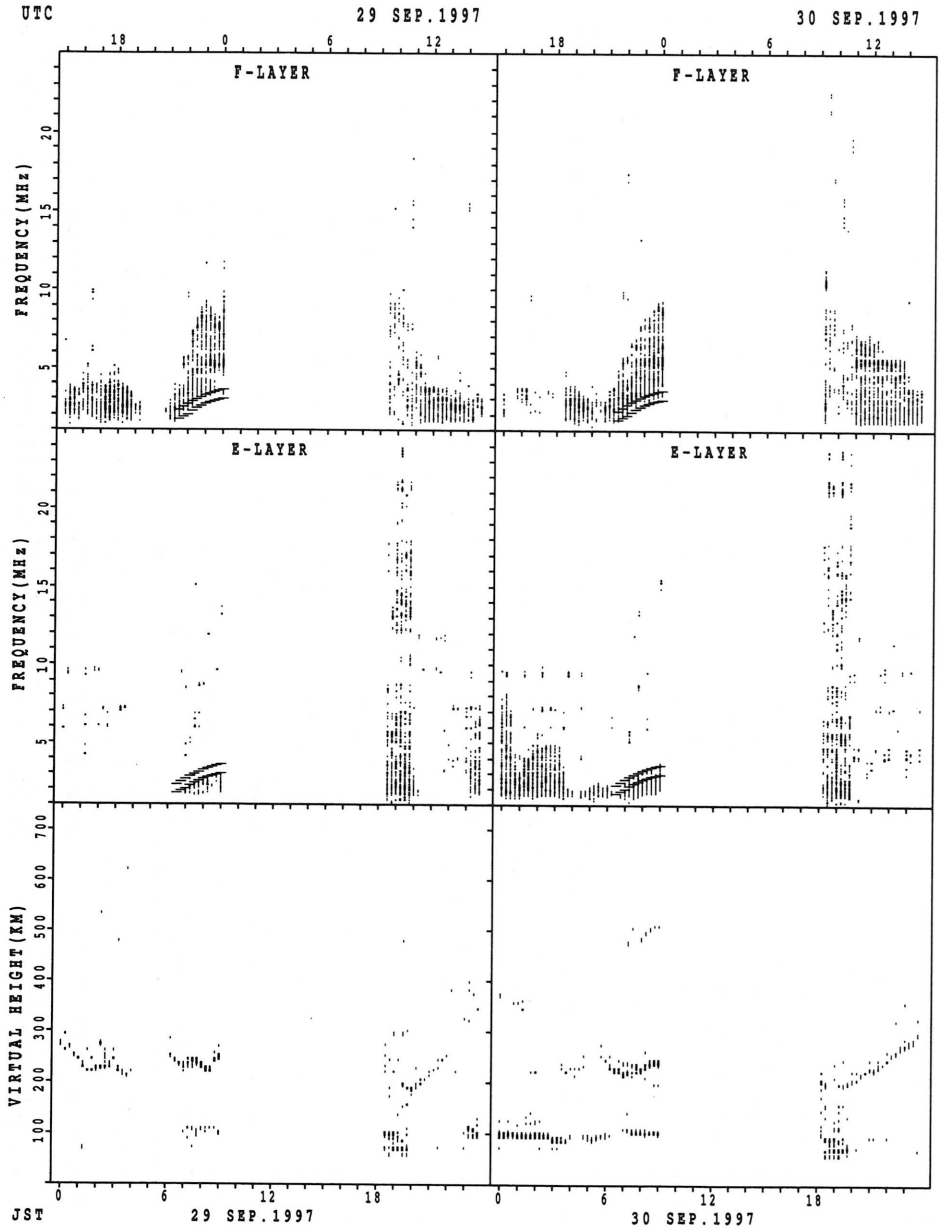
SUMMARY PLOTS AT OKINAWA



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


SUMMARY PLOTS AT OKINAWA
UTC
JST
25 SEP.1997
26 SEP.1997
27 SEP.1997
28 SEP.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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

MONTHLY MEDIANS OF h'F AND h'Es

SEP.1997 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

STATION WAKKANAI LAT. 45.4N LON. 141.7E

h'F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									16	14	14	15	13	14	16	10								
MED									268	273	261	280	280	285	286	282								
U Q									287	286	294	292	308	312	313	298								
L Q									259	264	246	264	260	270	280	272								

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	22	19	15	18	16	22	23	29	29	29	30	30	29	28	29	30	29	29	28	25	25	26	22	22
MED	99	97	99	103	105	102	111	107	107	105	104	103	105	104	107	108	113	113	104	107	105	106	103	99
U Q	103	101	105	105	111	107	131	113	113	111	109	109	109	109	111	115	119	125	111	112	111	109	105	103
L Q	97	95	95	99	100	97	105	105	103	103	101	97	102	103	103	103	104	102	98	99	101	101	97	95

STATION KOKUBUNJI LAT. 35.7N LON. 139.5E

h'F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								15	20	21	15	14	16	17	17	12	15	19	21	17				
MED								260	251	264	262	282	288	294	300	278	280	274	258	254				
U Q								278	266	275	288	298	294	318	326	293	304	280	270	274				
L Q								248	246	249	252	262	277	280	275	271	272	254	244	236				

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	15	17	13	14	11	15	25	29	30	29	27	25	28	24	26	29	27	27	23	24	21	24	22	17
MED	103	103	103	103	105	105	125	113	110	109	107	105	105	105	107	111	113	117	107	107	107	105	105	105
U Q	105	106	105	105	107	111	139	123	119	111	111	109	110	109	111	119	131	125	113	112	111	111	109	105
L Q	97	99	101	103	105	101	113	108	107	107	105	103	103	103	103	106	107	111	99	101	103	103	99	99

STATION YAMAGAWA LAT. 31.2N LON. 130.6E

h'F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								15	18	25	20	24	24	21	24	25	23	26	28	22				
MED								248	252	250	268	283	300	294	299	292	286	274	258	247				
U Q								262	264	263	279	303	307	302	312	315	304	292	277	256				
L Q								244	248	239	252	278	283	280	282	275	272	262	246	234				

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	14	12	11	12	10			27	27	25	23	22	17	17	18	23	26	25	17	13			14	13
MED	111	107	107	107	107			131	119	113	111	110	107	111	107	113	119	119	115	111			111	109
U Q	113	111	109	111	109			155	127	117	115	113	112	113	111	119	123	122	121	114			113	113
L Q	107	107	105	105	105			123	113	113	111	107	106	103	105	107	115	115	106	101			109	106

MONTHLY MEDIANS OF h'F AND h'Es

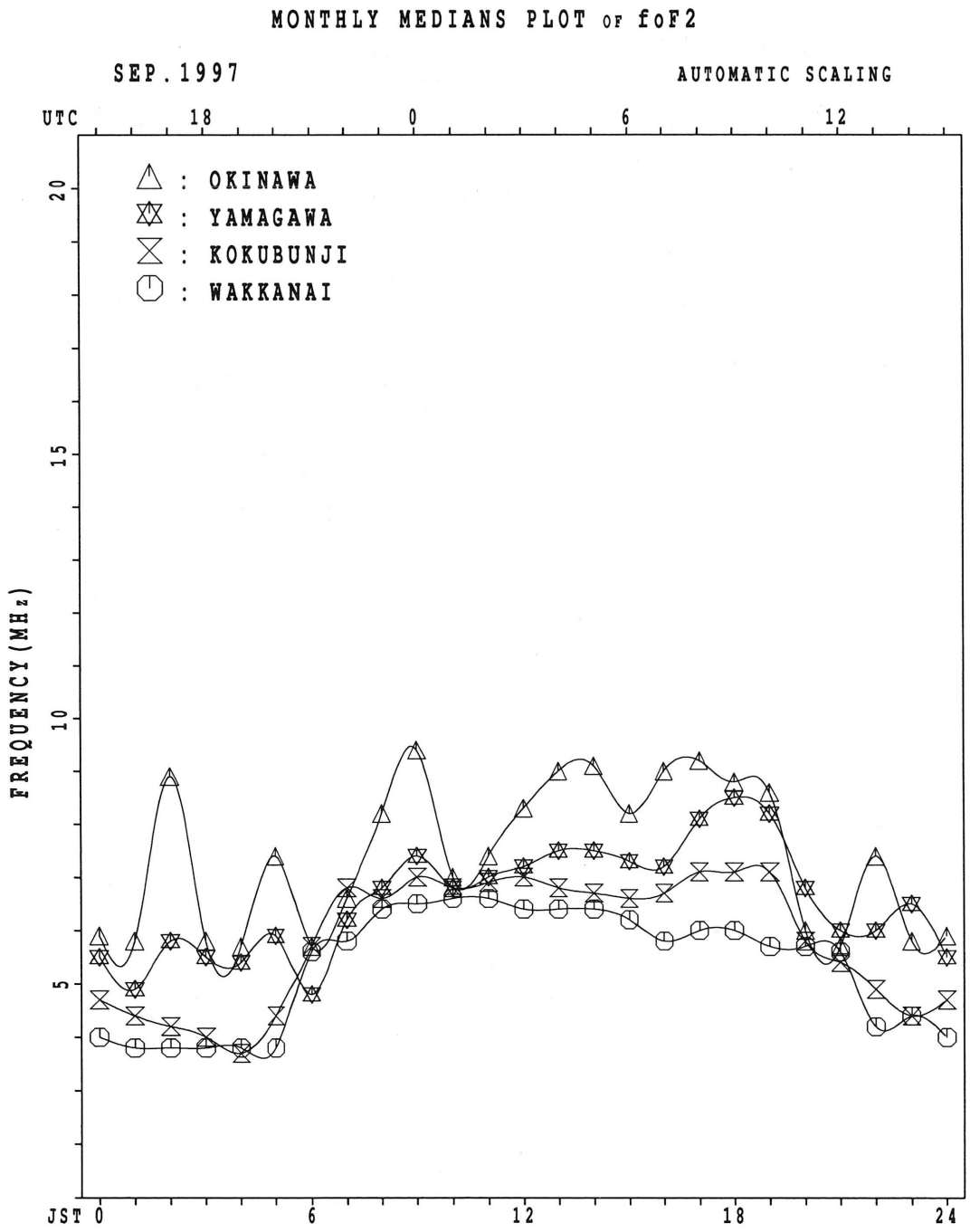
SEP.1997 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION OKINAWA LAT. 26.3N LON. 127.8E

	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								12	22	24	18	15	19	20	23	22	25	24	25	18				
MED								240	240	250	268	298	302	292	290	294	286	258	242	235				
U Q								251	252	259	280	306	308	315	304	306	303	274	257	252				
L Q								223	232	242	262	288	280	275	282	288	273	252	233	214				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT				10				25	25	20	17	11	10			11	17	24	23	20	16	14	14	10
MED				99				121	107	105	107	105	103			115	111	113	107	100	105	103	99	103
U Q				103				131	111	107	109	107	107			129	122	115	107	103	109	105	101	105
L Q				99				114	105	103	103	99	99			97	107	109	101	89	103	103	95	101


MONTHLY MEDIANS PLOT OF foF2
SEP.1997
AUTOMATIC SCALING
UTC
18
0
6
12
△ : OKINAWA
⛛ : YAMAGAWA
⧖ : KOKUBUNJI
⏀ : WAKKANAI
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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 40	X 42	X 40	X 37	X 36	X 38														X 93	X 82	R	50	47
2	47	44	43	42	X 36	X 37														X 85	X 86	X 72	X O 50	X 42
3	X 42	X 42	X 40	40	X 39	X 41														X 86	X 70	61	62	58
4	52	51	51	51	X 38	41														X 73	X 65	X 48	X 47	X 49
5	X 48	X 49	X 46	X 42	X 40	X 44														X 83	X 69	X 44	48	50
6	51	50	X 48	X 45	X 42	X 43				C	C	C	C	C	C	C	C	C	C	X 82	X 60	X 46	X 47	X 49
7	X 49	X 50	X 46	X 44	X 42	X 40														X 84	X 77	X 58	X 55	X 54
8	X 55	X 53	X 53	X 51	X 40	X 39														X 83	X 73	X 56	X 52	X 51
9	X 51	X 49	X 46	X 43	X 45	X 48														X 80	X 69	X 60	X 60	X 56
10	X 54	X 51	X 50	X 48	X 42	X 42														X 59	X 56	X 57	X 54	X 52
11	X 46	X 45	X 44	X 44	X 40	X 38														X 74	X 58	X 49	X 51	X 52
12	X 49	X 48	X 46	X 48	X 38	X 36														X 59	X 52	54	X 52	X 50
13	X 48	46	47	42	X 43	X 43														X 64	X 45	A	44	45
14	X 44	44	42	45	X 37	40														X 72	X 57	50	52	50
15	X 45	46	46	48	43	49													X 89	X 74	57	X 55	54	X 52
16	X 50	X 51	X 52	X 47	X 46	X 48													X 77	X 60	X 58	A	50	49
17	X 47	X 46	X 46	X 50	X 36	X 39													X 80	X 82	X 57	X 50	X 48	50
18	49	48	X 47	48	46	X 45													X 69	X 75	X 60	X 55	X 56	X 56
19	X 55	X 54	X 52	X 49	X 41	X 40													X 70	X 66	X 63	59	57	X 56
20	X 53	X 50	X 48	X 46	X 41	X 39													X 83	X 60	X 54	X 52	X 51	X 50
21	X 51	X 48	X 48	X 44	X 40	40													X 90	X 78	X 71	X 58	X 49	A
22	X 42	X 42	X 42	X 42	X 41	X 42													X 68	X 58	X 54	X 49	X 48	X 46
23	X 48	X 47	X 45	X 43	X 41	X 42													X 84	X 68	X 62	X 49	X 46	X 46
24	X 45	X 45	X 43	X 43	X 41	X 42													X 76	X 64	X 56	X 48	46	46
25	46	47	47	47	X 43	X 33													X 96	X 82	X 49	X 42	X 41	X 45
26	X 42	X 41	43	45	X 43	X 40													X 100	X 95	X 57	X 42	X 40	X 40
27	X 42	X 41	X 40	X 40	X 39	X 38													X 80	X 72	X 68	X 58	X 52	X 50
28	X 50	X 50	X 45	X 45	X 45	X 46													X 87	X 69	X 48	X 49	X 48	X 47
29	X 47	X 48	X 46	X 47	X 43	X 35													X 73	X 70	X 64	X 47	X 42	X 40
30	X 44	X 42	X 42	X 38	X 43	X 45													X 94	X 67	X 40	X 43	45	45
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													16	30	30	27	30	29
MED	X 48	X 48	X 46	X 45	X 41	X 40													X 82	X 74	X 59	X 50	X 50	X 50
U Q	X 51	X 50	X 48	X 48	X 43	X 43													X 90	X 82	X 69	X 58	X 52	X 52
L Q	X 45	X 44	X 43	X 42	X 39	X 39													X 74	X 66	X 56	X 48	X 47	X 46

SEP.1997 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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	34	36	34	31	30	32	53	56	60	60	66	65	R 62	52	53	56	61	68	85	87	76	R	F 41	F 40
2	F 40	F 38	F 34	F 34	30	31	51	60	64	67	R 62	57	56	58	66	64	58	60	65	78	80	66	44	U R 36
3	36	36	34	F 33	33	34	56	71	64	54	54	58	R 62	59	64	61	61	62	73	80	64	F 51	F 50	F 50
4	F 44	F 42	F 44	F 42	32	F 34	50	63	64	71	64	54	55	62	77	74	60	62	59	67	59	43	41	43
5	42	43	40	36	34	38	49	58	71	62	62	69	R 63	69	62	64	59	64	80	77	63	R 38	F 40	F 42
6	F 42	42	42	39	36	37	56	55	67	C	C	C	C	C	C	C	C	C	C	76	54	40	41	43
7	43	44	40	38	36	34	54	66	75	64	55	66	78	78	68	65	63	59	66	78	71	52	49	48
8	49	47	47	45	34	33	51	62	70	71	R 62	68	72	R 64	65	65	64	68	75	77	67	50	46	45
9	45	43	40	37	39	42	56	57	63	76	82	R 64	64	65	66	68	68	74	83	74	R 63	54	54	50
10	48	45	44	42	36	S 36	44	46	R 48	R 48	45	50	53	50	52	51	54	55	54	53	51	52	48	46
11	40	39	38	38	34	31	47	49	57	59	60	R 65	61	55	60	60	63	64	65	68	52	43	45	46
12	43	42	40	42	32	30	39	55	58	52	51	R 58	R 58	R 61	57	57	60	68	62	53	46	F 47	46	44
13	42	F 39	F 41	F 36	37	37	56	56	60	64	67	64	70	66	68	68	72	74	74	58	R 39	A	36	F 38
14	38	F 36	F 35	F 36	31	F 32	54	58	Z 66	62	66	62	R 60	R 77	70	64	66	65	74	66	51	F 42	F 44	F 42
15	39	F 40	F 39	F 40	F 35	F 40	57	55	62	73	68	67	67	R 67	66	70	77	79	83	68	F 51	Z 49	F 47	46
16	44	45	46	41	40	42	60	70	74	76	77	76	67	59	67	70	66	72	71	54	52	A	F 42	F 41
17	41	40	40	44	30	33	52	68	72	77	64	68	70	63	R 62	60	61	66	74	76	52	44	42	42
18	F 42	F 41	41	F 42	F 40	39	56	57	62	72	56	76	73	70	68	71	66	60	63	69	54	49	50	50
19	49	47	46	43	35	34	54	R 63	R 62	64	68	92	79	70	66	64	62	60	64	60	57	F 49	F 50	50
20	47	44	42	40	35	33	56	61	75	88	68	73	69	75	66	R 64	68	68	78	54	48	46	45	44
21	45	42	42	38	34	F 34	51	68	83	78	68	71	70	63	64	62	62	73	84	72	65	52	43	A
22	36	36	36	36	35	36	47	57	68	81	81	64	61	67	72	78	76	74	62	52	V 48	43	42	40
23	42	41	39	37	35	36	50	59	65	62	70	72	72	72	72	71	74	83	78	62	56	43	41	40
24	39	39	37	37	35	36	52	67	74	86	64	69	77	70	75	74	77	71	70	58	50	42	F 37	F 39
25	F 39	F 40	F 40	F 39	37	27	46	64	77	75	85	76	78	74	62	64	61	71	90	76	43	36	35	39
26	36	35	F 35	F 37	37	34	53	64	59	62	68	76	73	67	64	63	71	82	94	89	52	36	34	34
27	36	35	R 34	34	33	S 33	R 52	60	66	71	75	77	66	69	70	75	71	65	74	66	62	52	46	44
28	44	44	39	39	39	40	53	68	72	80	V 73	72	84	83	80	72	69	72	81	63	42	43	42	41
29	41	42	40	41	37	29	53	67	82	81	90	73	68	78	77	74	74	72	67	64	58	41	36	34
30	38	36	36	32	37	39	59	71	85	77	78	65	85	91	78	67	73	81	88	61	34	37	F 38	F 37
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	29	30	30	27	30	29
MED	42	41	40	38	35	34	53	60	66	71	67	68	68	67	66	65	66	68	74	68	53	44	42	42
U Q	44	43	42	41	37	37	56	67	74	77	74	73	73	73	71	71	72	74	82	76	63	51	46	46
L Q	39	38	36	36	33	33	50	57	62	62	62	64	62	62	63	62	61	63	65	60	50	42	41	40

SEP.1997 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP. 1997 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	A			U A			L	A			L	L					
									440	436	468	468	464			440	424	384						
2								U L			A	U A	U A					L						
								420	428			460	468	464	476	456	436	436	L					
3							L	L	A		L					L		U L						
								408		440	452	460	464	464	456	448	416	392						
4								L				L	L			L	U L	L						
								424	436	440	460		464	496	456	448	400							
5							L	L	L	L	L		L		L		L	L						
									436	444	464	468	468	472	460	452	444							
6									L	C	C	C	C	C	C	C	C	C	C					
									428															
7								U L	L						L	L	U L	L						
								436	440	456	464	484	472	468	460	460	428							
8								L	L		L			L		L	U L	U L						
									428	452	464	492	476	468	472	448	444	360						
9								L	L					L	L	L	L	U L						
									444	452	444	464	484	488	464	444	432	364						
10								L			U A		Y					L						
									416	424	408	436	448	440	420	420	396	360						
11								L	L		L					L	L	L						
							340			440	460	460	460	456	456	444		364						
12							L	L		L	L				U L	L	L	L						
									416	444	468	456	448	456	444	456	404	352						
13									L					A		L	U L	U L						
									448	464	480		460		460	448	420	344						
14										L	L	L	L	L	U A	L	L	U L	L					
									420	452	460	472	488	484	436		364	336						
15										L	L		A	U L	L	L	L	U L						
									412	460		472		472	468	460	432	364						
16							L	L	A		L	L	L	L			L							
										460	468	492	480	480	464	424	388							
17								L	U L						L	L	U L	L						
									440	440	456	492	472	448	468	432	412							
18							U L	L	L				L			U L								
							308			452	460	496	492	456	444	464	348							
19								L	L	L					L	L	L							
										444	500	472	460	460										
20									L	L	L		L		L	L	L	L						
									452	440	456	468	480	476	464	424								
21								L	L	A	L			L	L	U L	L	A						
									432		464	500	464	456	472	440								
22												U L	L	L	L	L	U L							
									432	444	452	484	460	480	472	452	400							
23									L	U L	L	L		L	L	L	U L	L						
										452	464	480	480	464	464	456	412							
24								L	A		L	L	B	L	U L	L	L							
									444		448	496		472	496	436								
25								L	L	L		L	L	L	L	U L	L	L						
										460	464	480	476	488	452	412	364							
26									L	L	L		L	L	L		U L	L						
										452	464	464	476	468	440		428							
27									L	L	L	L	L	L	U L	U L								
										452	472	464	472	464	472	432								
28								L	L	U L	L	U L		L	L	L	L							
										456	460	468	472		452									
29								L	U L	L	L	L	L	L	U L	U L	L							
									440	452	464	464	464	492	468	456								
30								L	L	U L	L	U L	L		L	A	L							
									436	444	456	468	500	444	452									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							2	4	18	27	28	28	27	26	27	24	20	10						
MED								L	L	L	L				L	L	L	U L						
							324	422	434	448	462	470	472	468	460	446	414	362						
U Q								L	L	L	L		L	L	L	L	L	U L						
								430	440	452	464	484	480	480	468	454	430	364						
L Q								L							L	L	L	U L						
								414	428	440	456	464	464	456	452	434	398	352						

SEP. 1997 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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							208	268	304	A 324	A	R	A	A	A	A	276	224	184					
2							204	260	304	A	A	A	A	344	336	332	288	A	B					
3							A	A	U A 288	A	A	A	R	R	320	308	288	232	B					
4							208	264	304	316	A	A	R 348	R	328	316	272	224	B					
5							184	264	A	R	R	R	R 356	R	R	320	280	A	B					
6							192	A	A	C	C	C	C	C	C	C	C	C	C					
7							196	256	284	A	A	A	U R 352	360	344	328	288	220	B					
8							212	272	R 296	R 332	R	R	A	R	332	312	280	228	B					
9							A	A	A	A	A	R	R	R 340	320	308	276	212	B					
10							S	252	296	R 316	U A 336	R	R	R 352	332	308	280	220	B					
11							204	248	288	316	A 336	A	R	R 340	324	300	268	212	B					
12							A	256	300	A 312	R	A	A	A	A	304	268	212	B					
13							200	252	292	320	332	348	U A 348	A	A	A	A	A	B					
14							192	264	288	328	A	A	A	A	A	A	A	A	B					
15							A	A	A	A	A	R	A	A	A	316	276	208						
16							A	A	U A 268	A	A	R	R	R	324	304	256	A						
17							192	264	300	U R 316	U R 336	R 356	U R 352	R	R 324	312	264	212						
18							A	248	292	316	R	R	A	R	324	304	272	204						
19							180	248	284	312	340	B	A	A	A	R	260	196						
20							U A 196	256	292	316	A	A	R	R	336	300	260	188						
21							200	248	304	328	344	R 340	A	A	320	300	248	188						
22							168	252	288	316	R 340	R	U R 348	340	324	300	244	192						
23							196	244	U A 284	A	A	A 344	R	332	R 324	296	A 248	A						
24							A	A	300	320	A	A	B	U R 340	U R 320	292	256	A						
25							A	260	300	A 328	A	U R 344	352	R 344	312	292	260	208						
26							A	244	296	R	R	R	A	348	328	308	244	U S 180						
27							164	240	300	A	A	A	R	A	A	288	244	172						
28							A	256	292	316	A	A	348	332	320	296	240	172						
29							B	236	A	R	328	R 344	R	R	312	292	256	A						
30							164	A	R 296	R 304	332	U R 340	352	R 344	A	A	A	A						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							18	23	25	18	9	7	9	12	20	24	26	20	1					
MED							196	256	296	316	336	R 344	R 352	342	324	304	266	210	184					
U Q							204	264	300	324	340	348	U R 352	346	330	312	276	220						
L Q							184	248	288	316	332	R 340	348	340	320	298	256	190						

SEP.1997 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 29	J A 26	J A 21	22	22	J A 18	J A 33	J A 43	37	38	J A 48	G 30	J A 46	J A 45	J A 51	J A 36	J A 34	28	28	J A 46	26	40	J A 23	J A 35
2	28	J A 24	28	E B 13	J A 22	J A 19	27	30	34	J A 50	J A 48	J A 51	J A 53	J A 49	40	43	36	J A 46	J A 47	J A 34	J A 35	28	J A 33	J A 50
3	J A 22	J A 28	J A 22	J A 27	24	26	34	28	J A 53	40	J A 44	J A 44	G 30	G 28	G 20	G 25	G 26	28	J A 43	J A 54	J A 48	J A 43	J A 26	J A 48
4	27	J A 28	28	24	23	26	G 20	31	G 26	35	J A 40	J A 41	G 34	G 29	G 28	G 27	G 22	28	20	E B 14	20	27	22	J A 22
5	18	18	21	J A 22	E B 14	E B 14	G	G	30	G 26	G 31	G 32	40	G 27	G 24	G 22	32	23	J A 35	J A 34	J A 27	27	J A 29	J A 39
6	27	24	34	24	20	20	23	30	31	C	C	C	C	C	C	C	C	C	C	27	J A 26	J A 44	J A 27	J A 33
7	33	29	19	18	E B 14	E B 16	24	29	J A 36	J A 38	J A 52	41	G 29	39	37	36	33	28	J A 24	22	E B 14	20	J A 30	22
8	19	E B 16	E B 14	E B 14	E B 15	E B 15	G	30	G 29	G 29	G	G	41	30	G 27	G 22	G	J A 26	J A 23	27	20	27	J A 20	E B 16
9	E B 14	E B 14	E B 15	E B 15	20	20	21	28	31	32	36	G 29	G 27	G 26	G 23	G	30	29	J A 16	E B 16	E B 14	E B 13	E B 15	E B 15
10	E B 14	E B 14	E B 15	J A 21	18	E B 15	E S 22	28	34	G	43	G	G 32	39	38	G 23	30	26	J A 21	J A 40	J A 42	28	J A 50	J A 50
11	J A 45	J A 40	J A 30	J A 21	E B 14	E B 16	G	27	35	J A 46	36	39	G	38	36	J A 40	J A 46	27	J A 41	J A 54	J A 22	J A 18	27	20
12	21	18	18	20	J A 18	J A 23	J A 26	28	G 26	33	G 30	37	J A 36	34	34	G	G	J A 23	20	E B 14	18	J A 27	J A 48	21
13	20	19	21	27	E B 14	E B 15	20	30	32	37	J A 42	41	J A 42	J A 56	J A 52	J A 52	J A 46	J A 36	J A 36	J A 30	J A 52	J A 52	J A 42	J A 30
14	E B 17	25	E B 15	25	20	24	22	29	32	G	J A 45	J A 50	45	36	47	45	J A 46	J A 51	J A 48	J A 44	J A 44	J A 46	J A 36	J A 47
15	J A 52	33	J A 32	J A 20	24	J A 70	J A 100	J A 53	J A 36	J A 44	J A 50	G 32	J A 55	J A 49	J A 34	G 27	29	J A 26	39	J A 46	J A 48	J A 39	E B 17	19
16	33	J A 30	J A 22	J A 27	24	19	22	29	J A 48	37	36	G 30	G 31	22	G 22	J A 37	J A 38	J A 31	J A 49	J A 27	J A 27	53	J A 34	J A 29
17	J A 24	28	21	E B 14	E B 14	18	G	J A 34	G 30	G 28	G 27	G	G 23	G 21	G 19	G 23	28	24	E B 15	E B 14	J A 22	J A 21	E B 16	J A 26
18	28	J A 20	20	J A 22	J A 17	J A 36	J A 25	30	G 27	G 28	G 25	G	37	G	G	G	G	25	J A 19	J A 21	J A 44	J A 20	23	19
19	E B 15	E B 14	E B 15	E B 15	J A 20	21	24	J A 41	33	G	G	E B 37	J A 48	J A 38	34	G 27	28	G	J A 19	33	J A 47	J A 25	J A 49	J A 24
20	E B 15	17	21	20	E B 14	J A 21	25	32	J A 38	J A 45	J A 54	J A 38	G 25	G	36	32	32	J A 27	J A 19	J A 36	J A 22	41	26	22
21	22	24	23	18	E B 13	E B 15	J A 22	31	35	60	43	36	J A 37	J A 39	G 22	37	J A 33	J A 38	J A 19	J A 16	19	J A 25	J A 52	J A 49
22	J A 34	19	E B 15	20	E B 14	E B 16	21	28	35	40	G 30	G 32	G 28	G 27	G 27	G 20	26	24	J A 34	J A 30	J A 45	28	J A 22	J A 28
23	J A 30	23	E B 15	E B 14	24	J A 22	G	27	32	31	38	37	G 32	G 28	G 25	G 23	32	J A 47	J A 51	J A 49	34	J A 32	J A 36	32
24	J A 21	25	24	25	E B 15	20	J A 43	28	J A 46	37	J A 46	39	E B 52	G 29	G 23	G 20	28	J A 23	J A 21	28	J A 40	J A 36	E B 16	18
25	25	28	28	J A 24	J A 24	28	J A 30	J A 38	34	37	J A 36	G 30	G 26	G 26	G 25	G 25	G	G	27	28	21	20	J A 22	28
26	19	30	J A 45	J A 44	J A 22	28	J A 24	G 23	G 25	G 28	G 30	G 30	35	G 31	G 28	G	28	G	29	J A 30	J A 49	J A 33	J A 21	E B 15
27	E B 14	17	E B 15	19	18	21	20	25	J A 32	J A 39	43	J A 38	G 30	37	35	G 22	28	25	J A 27	E B 14	J A 22	21	E B 13	E B 16
28	E B 15	E B 15	17	18	E B 14	J A 23	J A 27	30	J A 35	J A 50	J A 41	J A 42	42	G 24	36	J A 36	J A 34	J A 34	34	J A 25	J A 24	J A 22	J A 28	24
29	18	E B 13	E B 14	E B 14	16	E B 14	23	27	J A 30	G 29	G 27	37	G 27	G 24	G 26	G 21	31	47	J A 55	J A 49	J A 44	24	E B 14	18
30	J A 34	26	J A 55	J A 50	J A 30	E B 14	20	J A 27	G 28	G 27	G 24	G	40	G 29	34	53	J A 49	J A 47	J A 42	28	J A 22	19	23	J A 23
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30
MED	22	24	21	20	18	20	22	29	32	37	38	37	E G 35	G 31	G	G	30	27	J A 28	J A 29	J A 26	J A 27	J A 26	24
U Q	J A 29	28	28	J A 24	22	23	J A 26	J A 31	J A 35	J A 40	J A 44	J A 40	J A 42	J A 38	36	36	J A 34	J A 35	J A 42	J A 40	J A 44	39	J A 34	J A 33
L Q	E B 18	E B 17	E B 15	E B 18	E B 14	E B 16	G 20	28	G 30	G	G 30	G 32	G 30	G 27	G 24	G 23	G 27	24	J A E B 20	22	22	21	E B 21	19

SEP.1997 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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	24	20	18	16	16	18	24	34	34	37	47	U G 30	42	38	45	33	31	26	20	33	17	26	20	16
2	18	18	17	E B 13	E B E B 15	14	25	28	34	42	46	47	46	45	38	42	35	26	20	18	19	19	20	19
3	18	17	17	19	18	18	24	28	43	37	39	38	U G 30	G 24	G 20	G 24	G 20	27	20	33	22	32	20	27
4	18	21	17	17	E B E B 16	16	G 16	29	G 23	34	36	38	G 32	G 28	G 27	G 26	G 20	26	E B 14	E B E B 14	E B 14	17	E B 15	17
5	17	E B E B 15	E B E B 14	E B 14	E B E B 14	14	G	G	30	G U 24	G U 31	G U 31	38	U G 26	G 24	G 20	31	23	22	23	20	18	18	34
6	19	17	24	18	E B 14	14	22	28	30	C	C	C	C	C	C	C	C	C	C	17	18	18	17	17
7	24	18	17	E B 13	E B E B 14	E B 16	22	28	33	36	38	40	G 29	39	37	36	32	26	21	16	E B 14	15	20	17
8	E B E B 13	E B E B 16	E B E B 14	E B 14	E B E B 15	E B 15	G	29	G 26	G 28	G	G	38	U G 30	G 26	G 22	G	25	20	25	E B 14	15	17	E B 16
9	E B E B 14	E B 14	E B 15	E B 15	E B E B 14	E B 15	21	28	30	U Y 32	35	U G 29	U G 27	G 25	G 22	G	29	24	16	E B 16	E B E B 14	E B 13	E B 15	E B 15
10	E B E B 14	E B 14	E B 15	17	E B E B 14	E B E B 15	E S 22	28	33	G	41	G	U G 31	38	36	G 20	U Y 29	26	E B 16	32	20	17	16	32
11	24	25	21	17	E B E B 14	E B 16	G	27	34	42	35	37	G	37	36	36	32	25	27	25	16	E B 14	16	14
12	E B E B 14	E B 14	E B 14	E B 14	18	17	20	28	G 26	32	U G U Y 29	37	35	34	34	G	G	G	E B E B 14	14	16	18	21	E B 14
13	E B E B 14	E B 15	16	17	E B E B 14	E B 15	G 16	28	32	35	40	38	39	55	34	40	36	22	E B 15	21	29	A A 52	18	17
14	E B 17	16	E B 15	E B 15	E B 14	17	22	28	32	G	39	40	40	36	44	35	28	24	26	27	25	22	26	19
15	33	24	23	17	16	21	50	36	34	35	41	U G 32	52	43	33	G 25	28	24	30	32	22	20	E B 17	17
16	24	22	18	23	18	E B 15	20	27	46	36	35	U G 30	U G 30	20	G 19	36	31	25	39	16	17	A A 53	22	21
17	20	19	E B 14	E B 14	E B E B 14	E B 15	G	G 20	G 24	G 26	G 25	G	G 22	U G 21	G 19	G 20	28	23	E B 15	E B 14	E B E B 14	E B 14	E B 16	19
18	21	17	18	17	E B 14	18	23	28	G 26	G 26	G 24	G	37	G	G	G	G	23	16	18	38	19	E B 14	18
19	E B E B 15	E B 14	E B 15	E B 15	16	18	20	29	33	G	G	E B 37	44	36	33	U G 27	27	G	17	21	E B 14	19	17	E B 13
20	E B E B 15	E B 14	E B 14	E B 14	E B 14	18	22	30	35	39	39	36	G 24	G	35	31	31	22	16	26	E B 16	21	E B 16	18
21	E B E B 15	E B 14	17	17	E B 13	E B E B 15	G 18	29	33	58	38	35	36	35	G 19	35	32	34	E B 15	15	E B 15	18	17	A A 49
22	28	E B 15	E B 15	17	E B 14	E B 16	20	27	34	38	G U 29	G U 32	G 27	G 25	G 21	G 18	26	22	19	26	20	18	18	17
23	24	17	E B 15	E B 14	16	18	G	26	32	U Y 31	35	36	U G 32	G 26	G 20	G 20	28	23	23	17	21	18	19	20
24	E B E B 15	E B 14	17	21	E B 15	18	21	27	44	36	42	36	E B 52	G 27	G 22	G 18	28	17	E B 15	18	21	21	E B 16	E B 14
25	E B E B 15	E B 15	18	17	22	21	25	G 20	32	35	35	G 27	G 24	G 24	G 21	G 23	G	G	18	18	17	E B 14	17	19
26	17	18	23	18	16	18	21	G 20	G 23	G U 26	G U 30	G U 30	U Y 35	G 30	G 24	G	26	G	18	21	25	20	18	E B 15
27	E B E B 14	E B 14	E B E B 15	E B E B 16	E B 15	16	18	G 22	G 25	35	38	37	U G 30	35	34	G 19	27	22	18	E B 14	16	E B 14	E B E B 13	E B 16
28	E B E B 15	E B 15	16	16	E B 14	E B E B 15	25	30	33	38	36	37	40	G 22	36	G 22	29	22	24	17	E B 15	19	20	17
29	16	E B 13	E B E B 14	E B 14	16	E B 14	21	26	28	U G 29	G 26	36	U G 26	G 24	G 23	G 20	29	30	53	20	19	17	E B 14	16
30	17	17	E B 15	18	20	E B 14	18	25	G 27	G 26	G 24	G	39	G U 28	Y 34	42	33	25	25	27	20	18	18	17
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30
MED	17	16	16	16	E B 15	E B 16	20	28	32	35	35	36	E G 35	G 30	G	G 27	28	24	19	19	18	18	17	17
U Q	21	18	18	17	16	18	22	29	34	37	39	37	40	36	36	35	31	26	24	26	21	20	20	19
L Q	E B 15	E B 14	E B 15	E B 14	E B E B 14	E B 15	G	G 26	G 27	G	G U 30	G U 32	G 30	G 25	G 22	G 20	G 26	G 22	E B 16	E B 16	E B 15	E B 17	E B 16	E B 16

SEP.1997 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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	14	14	14	14	16	16	15	21	16	21	16	15	16	16	15	15	14	16	14	16	15	15
2	14	15	15	13	15	14	15	14	15	17	16	19	16	16	17	14	15	14	16	16	16	15	14	14
3	14	14	14	14	15	16	16	16	15	20	22	22	23	18	16	15	15	15	16	14	15	17	14	15
4	15	13	15	14	16	16	13	16	15	16	15	26	22	17	19	17	15	14	14	14	14	14	15	14
5	14	15	14	14	14	14	15	15	14	14	17	19	16	16	19	15	14	14	15	16	16	16	15	15
6	16	13	15	15	14	14	14	16	14	C	C	C	C	C	C	C	C	C	C	15	15	13	14	14
7	15	15	16	13	14	16	16	15	16	17	21	19	21	18	17	14	14	14	17	15	14	13	16	15
8	13	16	14	14	15	15	14	15	17	17	22	23	23	22	20	17	16	15	15	16	14	13	14	16
9	14	14	15	15	14	15	14	14	15	17	20	21	22	19	16	15	15	14	13	16	14	13	15	15
10	14	14	15	14	14	15	E 22 S	16	16	16	20	19	20	20	16	15	15	15	16	15	14	14	13	16
11	15	14	16	15	14	16	15	15	15	17	17	22	20	22	21	16	15	14	13	15	13	14	13	14
12	14	14	14	14	15	15	15	16	15	16	21	19	16	17	21	16	15	16	14	14	15	16	14	14
13	14	15	15	15	14	15	14	16	15	16	18	20	20	17	16	16	13	13	15	15	16	15	15	15
14	17	15	15	15	14	14	16	16	15	20	18	18	26	21	20	15	15	15	15	14	13	16	16	16
15	16	14	14	14	14	15	14	15	14	17	18	22	24	22	18	16	15	16	16	16	16	14	17	14
16	16	12	14	14	14	15	15	14	15	15	18	17	18	17	16	15	16	15	14	14	14	16	16	15
17	15	16	14	14	14	15	14	14	16	18	18	27	16	18	16	14	16	15	15	14	14	14	16	14
18	15	15	15	12	14	14	13	14	20	20	21	28	20	21	20	17	15	15	12	16	14	14	14	14
19	15	14	15	15	14	14	13	15	16	17	18	37	20	16	15	17	16	15	16	15	14	15	15	13
20	15	14	14	14	14	15	15	14	14	17	18	16	16	16	15	16	14	14	15	16	16	14	16	15
21	15	14	14	14	13	15	15	15	14	16	18	22	17	19	16	15	14	15	15	14	15	13	14	15
22	15	15	15	14	14	16	14	14	14	16	17	21	16	18	16	15	16	14	15	16	14	16	14	15
23	15	15	15	14	14	16	14	15	18	15	16	20	20	18	15	16	15	15	16	15	15	15	16	15
24	15	14	13	14	15	15	15	16	14	15	18	17	52	16	16	15	16	14	15	15	15	15	16	14
25	15	15	14	14	14	14	16	14	15	16	16	18	18	19	14	16	14	16	15	16	15	14	14	13
26	14	15	14	15	13	16	13	15	16	16	17	19	20	21	20	16	16	E 18 S	16	16	15	16	14	15
27	14	14	15	16	15	15	14	15	15	15	18	26	21	23	17	14	16	14	16	14	15	14	13	16
28	15	15	14	13	14	15	15	14	14	14	16	18	18	15	16	16	16	14	16	14	15	16	16	15
29	14	13	14	14	14	14	16	15	16	17	16	16	16	16	14	15	15	14	16	13	14	14	14	15
30	15	14	15	15	13	14	14	16	16	15	17	19	18	18	16	15	16	15	16	16	14	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	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	29	30	30	30	30	30
MED	15	14	14	14	14	15	14	15	15	16	18	20	20	18	16	15	15	15	15	15	14	14	15	15
U Q	15	15	15	15	14	15	15	16	16	17	19	22	22	20	19	16	16	15	16	16	15	16	16	15
L Q	14	14	14	14	14	14	14	14	14	16	16	18	16	16	16	15	15	14	14	14	14	14	14	14

IONOSPHERIC DATA STATION Kokubunji

SEP. 1997 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	309	302	306	314	307	312	354	355	357	336	341	349	R 339	321	288	314	303	311	321	340	363	R	F 278	F 292
2	F 307	F 306	F 302	F 314	324	308	344	351	358	331	R 353	328	326	303	317	330	311	310	300	315	345	349	U 310	R 278
3	299	296	313	F 301	314	325	339	361	387	353	320	320	R 314	304	305	308	318	305	310	329	318	F 281	F 319	F 301
4	F 273	F 289	F 298	F 320	307	F 295	309	308	281	315	342	327	316	282	317	340	352	328	323	319	340	283	278	270
5	285	305	329	316	318	316	362	323	355	341	325	315	R 345	322	314	313	319	310	330	332	336	R 286	F 271	F 306
6	F 291	292	294	306	300	307	367	366	360	C	C	C	C	C	C	C	C	C	C	344	344	291	281	284
7	291	315	314	309	316	323	357	335	351	359	363	311	333	329	336	334	340	328	301	318	346	303	296	282
8	289	300	314	347	318	322	345	356	361	347	R 330	310	335	R 333	307	335	318	328	319	328	342	314	289	295
9	293	292	295	292	293	325	349	325	328	331	358	R 355	324	310	310	331	317	320	322	339	R 324	283	297	299
10	303	299	313	324	305	S 293	308	318	R 292	R 292	282	286	296	278	325	330	322	323	328	302	295	288	311	307
11	292	279	272	283	285	285	321	309	319	310	297	R 339	318	321	329	315	315	316	315	333	329	281	284	292
12	287	295	297	319	358	306	322	321	350	338	293	R 326	R 326	R 313	315	301	319	341	343	317	315	F 288	296	302
13	305	F 300	F 308	F 295	294	291	355	369	317	334	337	319	337	309	305	314	331	335	350	344	R 347	A	290	F 291
14	287	F 287	F 303	F 329	311	F 303	352	360	Z 348	334	336	320	R 326	R 328	339	309	329	336	331	332	338	F 304	F 287	F 277
15	A 297	F 277	F 289	F 319	F 337	F 325	391	383	346	339	339	318	332	R 308	313	318	331	326	339	348	F 301	Z 287	F 289	296
16	300	291	318	313	303	327	346	340	351	336	346	330	322	336	320	342	340	342	349	326	321	A	F 298	F 289
17	299	305	318	356	309	318	350	338	362	357	361	326	330	334	R 331	328	327	326	331	346	347	290	293	290
18	F 288	F 284	312	F 317	F 306	315	361	352	337	372	343	321	319	321	320	318	344	327	318	328	345	281	279	281
19	292	308	321	331	313	312	364	R 352	R 352	320	311	330	334	331	334	328	339	330	333	327	318	F 288	F 308	310
20	310	301	310	307	313	297	344	327	327	350	336	339	316	336	326	R 332	340	337	338	333	296	288	296	294
21	303	313	317	324	311	F 287	337	337	360	337	342	342	343	339	337	343	320	317	329	339	328	329	314	A
22	307	305	299	294	298	297	337	332	330	348	359	334	328	316	302	329	337	354	341	323	V 309	289	286	280
23	279	294	306	335	320	322	359	360	377	350	332	347	326	345	337	321	334	342	336	328	336	319	282	300
24	298	306	296	299	300	319	371	373	344	360	333	331	337	322	309	326	341	344	349	345	335	328	F 287	F 288
25	F 295	F 300	F 295	F 311	343	331	354	340	366	331	353	322	331	327	345	320	333	322	348	378	335	310	308	276
26	298	300	F 290	F 298	336	335	374	360	370	355	344	352	331	331	320	312	321	323	347	369	344	293	290	280
27	301	311	R 306	306	320	S 315	R 359	356	355	359	344	351	341	323	311	326	331	328	327	320	336	319	298	305
28	319	303	291	292	299	305	351	352	350	355	V 340	315	316	314	328	331	336	332	345	332	309	305	305	298
29	298	301	304	323	359	355	348	369	352	331	362	342	312	318	339	330	350	357	334	332	332	348	315	294
30	309	320	279	300	307	321	358	345	346	341	359	312	320	341	340	323	326	340	360	380	293	273	F 294	F 274
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	29	29	29	29	30	30	27	30	29
MED	298	300	305	314	311	315	352	352	351	339	341	327	326	322	320	326	331	328	331	332	335	290	294	292
U Q	303	305	313	323	320	323	359	360	360	354	353	340	334	332	335	331	340	338	344	344	344	314	305	300
L Q	291	292	295	300	303	303	344	332	337	331	331	318	318	312	310	314	319	321	322	326	318	286	286	280

SEP. 1997 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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	A	365	407	A	Y	392	L	A	367	342	L 341	L					
2								U L 368	371	A	A	A	A	A 324	365	A	L 342	L						
3							L	L 381	A	L 409	414	417	379	379	372	L 358	366	U L 350						
4								L 339	358	376	368	L	L 379	337	367	L 357	U L 349	L						
5							L	L	L 363	L 380	L 380	399	L 368	384	L 365	349	L 340	L						
6									L 382	C	C	C	C	C	C	C	C	C	C					
7								U L 343	L 379	375	399	388	391	369	L 354	L 353	U L 360	L						
8								L	L 369	380	L 389	372	381	L 366	377	L 351	U L 356	U L 358						
9								L	L 355	377	405	402	376	L 354	L 355	L 346	L 345	U L 366						
10								L	344	371	A	386	Y	393	407	401	352	L 353						
11							343	L	L	A	360	358	373	364	347	L 351	L	L 347						
12							L	L	377	L 371	L 372	412	415	382	U L 386	L 343	L 349	L 354						
13									L	386	371	356	381	A	349	A 359	A	U L 377						
14									391	L 377	L 394	A 371	L 353	L 339	A	L	L 387	U L 367	L					
15									394	L 362	L	376	A	A	L 354	L 340	L 354	L						
16							L	L	A	L 367	L 370	369	L 365	L 358	355	369	L 364	L						
17								L	U L 370	388	397	366	389	399	L 368	L 355	U L 339	L						
18							U L 384	L	L	361	384	357	H 358	376	369	U L 350	381							
19								L	L	L 377	351	362	A	369	L	L	L							
20									L 358	L 377	L 410	392	L 383	356	L 359	L 362	L	L						
21								L	L 367	A	L 374	360	394	L 373	L 345	U L 357	L	A						
22									343	367	371	U L 368	L 377	L 378	L 338	L 346	U L 359							
23									L	U L 385	L 379	L 370	370	L 367	L 355	L 357	U L 360	L						
24								L	A	386	A 393	L 354	B	L 374	U L 338	L 349	L							
25								L	L	L 364	360	L 359	L 381	L 368	L 372	U L 377	L 358	L						
26									L	L 376	L 375	373	L 375	L 378	L 373		U L 349	L						
27									L	L 374	L 370	L 370	L 380	L 373	U L 362	U L 350								
28								L	L	A 366	L 373	U L 383	375	L	L 359	L	L							
29								L	U L 374	L 379	L 375	L 386	L 392	L 346	U L 349	U L 358	L							
30								L	L 368	U L 399	L 387	U L 393	L 349	396	L 369	A	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							2	4	18	26	25	26	24	25	26	23	19	9						
MED							364	L 356	L 368	L 377	L 375	372	379	369	L 360	L 355	L 354	U L 354						
U Q								L 374	377	385	394	388	386	378	L 369	359	L 360	U L 366						
L Q								L 341	358	371	370	362	L 372	L 357	L 354	L 349	L 345	L 348						

SEP.1997 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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SEP.1997 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							246	248	266	298	284	276	294	320 L	396	338	336	292	260					
2								250	260	278	268	320	326	354	322	290	314	296						
3							264	238	226	278	328	338	328	348	310	338	302	298						
4								312	362	290	276	288	318	406	308	260	258	268						
5							232	242	254	276	296	326	282	310	310	320	298	288						
6									258	C	C	C	C	C	C	C	C	C	C					
7								268	258	256	266	340	296	290	270	286	264	264						
8								246	250	256	284	334	276	288	322	278	288	266						
9								298	290	266	244	264	316	318	314	280	292	276						
10								318	396	404	448	422	378	440	320	316	308	284						
11							312	320 L	298	334	354	274	322	328	314	312	292	276						
12							288 L	286	260	294	392	322	330	342	324	334	302	264						
13									296 L	268	292	320	286	334	326	294	282	252						
14									254	282	288	288	320	302	282	298	260	248	260					
15									248	272	280	310	268	300	314	300	272	260						
16							242	246	258	270	260	292	296	312	314	266	270	252						
17								256	242	248	252	308	296	278	304	282	286	266						
18							238	258	264	254	290	300	292	292	298	288	256							
19								238	240	276	322	282	268	280	274	272	252							
20									282	250	264	270	304	272	290	274	260	252						
21								256	244	256 A	264	276	284	268	280	272	286	262						
22									284	256	254	288	284	302	320	276	256							
23									228	248	276	260	298	266	276	278	262	236						
24								224	264	246	254	284	276	306	298	268	256							
25								260	240	276	256	286	258	290	258	270	260	260						
26									230	254	264	258	266	288	272		280	260						
27									242	250	268	258	264	288	294	270								
28								258	248	256	260	268 H	294	282	272	266	254							
29								218	256	258	232	260	278	302	264	276	244							
30								240	252	242	252	272	290	268	260	276	264							
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							7	21	30	29	29	29	29	29	29	28	28	21	2					
MED							246	256	257	266	268	288	294	302	304	279	271	264	260					
U Q							288	277	266	278	291	320	317	324	317	299	292	280						
L Q							238	241	244	254	258	271	277	285	275	272	259	256						

SEP.1997 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 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	300	292	284	268	290	286	232	A	218	208	A	Y	214	194	A	234	224	230	262	246	218	S	324	290
2	270	278	284	252	258	276	246	228	232	A	A	A	A	A	222	A	256	246	270	252	238	226	240	298
3	282	294	286	A 324	274	264	236	234	A	202	196	176	Y 232	200	202	224	226	242	264	252	246	356	264	284
4	314	324	290	242	268	290	238	242	234	218	214	224	214	228	210	244	218	246	254	242	226	238	322	314
5	294	266	246	244	246	256	236	216	222	218	210	206	248	208	212	250	236	242	252	240	228	316	334	E A 330
6	290	290	A 284	270	280	268	230	230	204	C	C	C	C	C	C	C	C	C	C	214	220	280	324	306
7	300	264	256	258	268	262	234	236	232	220	210	202	194	220	232	232	234	242	256	246	218	226	282	292
8	290	280	264	228	246	272	234	234	224	216	210	200	190	214	214	236	240	240	248	232	220	240	280	294
9	290	290	296	302	288	240	224	218	230	222	214	192	194	202	228	228	230	242	254	220	236	300	284	254
10	268	270	262	256	288	280	260	250	244	238	A	218	Y	238	204	214	252	250	254	A 294	282	292	260	A 292
11	338	362	352	316	316	322	236	H 222	A 268	A	224	218	212	222	236	230	A 262	246	254	242	228	290	302	288
12	290	292	278	258	226	268	H 182	252	230	230	212	192	180	206	218	230	H 208	H 190	230	232	242	296	280	274
13	270	280	262	278	298	290	228	228	220	212	A 236	224	212	A	214	E A 264	A	242	228	226	264	A	336	322
14	296	308	286	270	248	286	232	230	212	202	208	A 252	A 242	A 236	A	226	220	232	244	242	236	280	A 348	298
15	E A 376	A 336	322	264	236	268	A 240	228	192	192	A	218	A	A	228	234	248	236	236	238	262	294	296	284
16	304	310	258	272	268	248	240	224	A	234	200	204	196	224	216	A 232	216	266	244	226	254	A	316	298
17	288	288	270	228	236	270	232	218	228	H 202	H 188	192	192	196	218	214	230	250	240	218	210	272	292	308
18	306	288	276	264	274	282	224	226	240	218	212	210	H 198	218	218	220	232	246	248	244	A 256	290	314	292
19	284	266	244	232	242	286	226	234	216	204	206	234	A	218	244	228	234	248	240	254	240	320	256	256
20	260	272	268	254	258	312	238	234	214	A 240	194	206	194	Y 246	214	216	H 230	240	228	232	252	312	290	292
21	264	268	252	H 246	270	308	242	244	234	A	216	192	208	212	238	A 244	242	A	240	224	232	238	246	A
22	A 324	280	276	284	284	292	228	238	242	A 258	H 208	210	214	184	202	236	228	236	226	238	274	280	294	314
23	A 326	294	270	228	248	256	220	228	230	216	194	238	212	210	226	226	232	240	230	222	244	240	294	304
24	282	282	296	292	246	250	224	232	A	210	234	204	B	188	H 200	H 198	238	232	222	218	256	260	306	306
25	294	282	284	266	220	A 328	226	230	242	226	216	210	218	202	206	234	H 206	248	230	210	218	240	294	326
26	298	292	A 346	294	234	270	220	224	228	210	214	200	206	204	196	H 222	230	246	234	212	224	274	302	314
27	296	284	280	286	260	252	224	222	226	222	202	200	198	200	210	H 200	242	240	244	234	224	242	268	272
28	272	270	304	306	H 286	268	224	232	234	A 240	204	214	234	H 190	234	242	A 246	246	232	238	214	274	288	290
29	288	274	268	256	226	222	228	222	228	216	H 192	212	206	198	228	H 206	246	234	A 282	242	248	216	244	294
30	280	262	326	312	280	258	230	232	210	206	206	200	244	210	232	A	A 238	238	230	216	292	314	292	318
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	29	27	26	25	27	24	26	27	27	28	28	29	30	30	27	30	29
MED	290	283	279	265	264	270	231	230	228	217	210	206	210	209	218	229	233	242	244	236	237	280	293	294
U Q	300	292	290	286	280	286	236	234	234	226	214	218	216	220	228	236	242	246	254	242	254	296	314	311
L Q	282	272	264	252	246	258	224	224	218	208	201	200	195	200	210	220	227	237	230	222	224	240	280	289

SEP.1997 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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SEP. 1997 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							130	122	116	120	A	A	A	A	A	A	A 124	A 132	116					
2							126	126	122	A	110	110	112	112	118	126	122	A	B					
3							A	A	116	A	A	A	A	120	120	124	120	120	B					
4							E A 166	132	128	116	A	A	E A 136	120	120	120	122	120	B					
5							132	120	A	116	A	A	130	A	116	120	118	118	B					
6							130	114	A	C	C	C	C	C	C	C	C	C	C					
7							134	124	122	A	A	A	124	114	114	114	114	114	B					
8							140	120	128	124	116	112	A	A	120	122	118	120	B					
9							A	A	124	A	A	A	A	120	120	118	116	120	B					
10							S	124	116	116	116	116	A	124	124	122	120	120	B					
11							148	118	114	120	116	118	116	126	116	118	122	120	B					
12							A	A	A 132	116	A	112	A	A	A	116	116	128	B					
13							E A 160	122	122	120	120	120	120	120	A	116	116	A	B					
14							138	122	124	120	A	A	A	A	A	A	A	A	B					
15							A	118	A	A	A	A	A	A	A	120	128	122						
16							A	A	124	120	A	A	A	114	118	120	122	A						
17							138	A 140	A 132	116	120	124	118	A	118	116	124	A 140						
18							A	110	A 122	120	122	122	120	118	116	116	116	134						
19							134	120	122	116	116	B	116	A	A	A	120	128						
20							144	116	A 130	A 124	A	A	118	116	116	118	120	122						
21							A 144	A 142	A 132	116	124	124	A	A	118	114	A 132	126						
22							126	E A 162	116	114	A 130	A	116	118	116	116	122	130						
23							152	A	A 116	A	A	A	A	122	116	124	A	A						
24							A	A	114	124	120	A	B	120	122	122	A 140	A						
25							A	A 140	136	A 126	A	122	120	118	118	126	120	128						
26							A	A 134	124	120	A	A	A	A 130	124	116	116	146						
27							158	A	A 136	A	A	A	A	A	A	120	A 136	128						
28							A	A 140	A 134	A 134	A	A	A 128	114	122	A 134	118	118						
29							B	A 132	A	A	124	122	A	120	A 126	126	118	120						
30							142	A	A 128	124	120	116	116	122	A	A	A	A						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							18	22	26	21	13	12	14	19	21	25	26	22	1					
MED							138	122	124	120	120	119	118	120	118	120	120	122	116					
U Q							148	A 134	A 130	124	123	122	124	122	121	123	A 122	128						
L Q							132	120	116	116	116	114	116	116	116	116	118	120						

SEP. 1997 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

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SEP. 1997 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	100	100	100	104	102	134	134	124	120	116	110	108	102	102	100	100	124	138	124	112	110	104	106	108
2	104	100	110	B	126	152	136	134	126	102	114	114	116	118	138	150	164	112	112	108	108	110	114	110
3	104	104	112	106	108	114	108	110	110	112	110	104	108	108	104	100	102	130	116	106	106	112	110	106
4	106	108	106	106	106	122	126	166	112	120	112	104	106	104	108	104	106	130	106	B	112	108	110	106
5	98	98	106	112	B	B	G	G	122	108	112	110	158	106	106	106	124	118	102	102	102	100	114	112
6	108	106	108	108	112	114	176	120	116	C	C	C	C	C	C	C	C	C	C	100	108	110	112	110
7	106	108	110	112	B	B	178	142	120	106	106	106	104	180	158	142	136	126	114	112	B	110	108	110
8	106	B	B	B	B	B	G	156	120	112	G	G	110	104	104	108	G	126	112	110	104	112	100	B
9	B	B	B	B	110	108	118	122	118	118	112	108	106	110	108	G	154	124	126	B	B	B	B	B
10	B	B	B	106	108	B	S	150	136	G	116	G	108	140	132	110	140	134	126	116	112	114	120	106
11	106	104	106	106	B	B	G	158	138	124	126	124	G	142	140	132	120	124	116	112	116	116	112	112
12	112	112	112	106	104	110	122	176	114	124	114	118	112	110	112	G	G	102	104	B	102	116	110	110
13	106	112	108	106	B	B	130	132	126	122	116	116	116	108	118	110	108	108	112	106	108	110	112	108
14	B	114	B	102	96	104	162	142	130	G	114	104	118	114	116	112	110	106	112	128	110	110	110	108
15	106	102	102	104	104	116	114	112	116	108	102	104	104	104	104	104	160	120	112	108	110	112	B	98
16	108	108	110	106	108	110	112	104	110	118	116	102	106	106	104	130	126	116	108	120	108	108	122	104
17	102	102	108	B	B	108	G	110	106	108	106	G	100	102	102	102	186	146	B	B	110	106	B	102
18	100	102	122	110	110	108	152	146	104	110	106	G	126	G	G	G	G	128	118	114	106	110	104	104
19	B	B	B	B	110	108	150	132	146	G	G	B	110	112	112	110	162	G	124	116	112	116	112	112
20	B	108	106	104	B	144	140	148	130	108	106	104	104	G	148	164	136	126	128	116	114	108	108	108
21	108	106	104	106	B	B	122	166	142	128	128	126	108	104	110	132	132	118	124	118	116	110	108	106
22	104	114	B	124	B	B	144	172	140	126	112	112	110	106	106	102	154	130	122	118	116	110	112	106
23	104	110	B	B	108	112	G	170	114	114	108	172	106	110	106	108	124	116	110	112	110	110	108	108
24	114	110	106	102	B	112	120	116	116	120	112	118	B	104	112	108	148	130	124	118	104	104	B	100
25	120	112	108	106	108	106	104	106	154	132	110	110	110	108	108	106	G	G	100	102	102	112	116	104
26	112	116	106	108	108	100	106	108	110	110	112	110	108	108	114	G	178	G	112	108	108	106	102	B
27	B	104	B	122	126	118	156	120	112	110	112	108	104	108	130	104	170	132	100	B	108	104	B	B
28	B	B	148	104	B	114	142	148	134	118	110	108	140	106	154	98	126	116	112	112	108	102	98	96
29	98	B	B	B	110	B	142	128	108	108	108	160	104	108	102	108	138	120	112	110	110	112	B	114
30	108	108	106	104	104	B	168	118	110	110	110	G	170	110	116	106	104	102	98	98	98	100	98	100
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	23	24	21	23	19	20	24	29	30	26	27	23	27	27	28	25	25	26	28	25	28	29	24	26
MED	106	108	108	106	108	112	135	132	119	113	112	110	108	108	111	108	136	124	112	112	108	110	110	107
U Q	108	111	110	108	110	117	151	153	130	120	114	118	116	110	124	121	157	130	123	116	111	112	112	110
L Q	104	103	106	104	104	108	119	117	112	108	108	104	104	104	105	104	122	116	109	107	106	106	107	104

SEP. 1997 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

SEP.1997 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

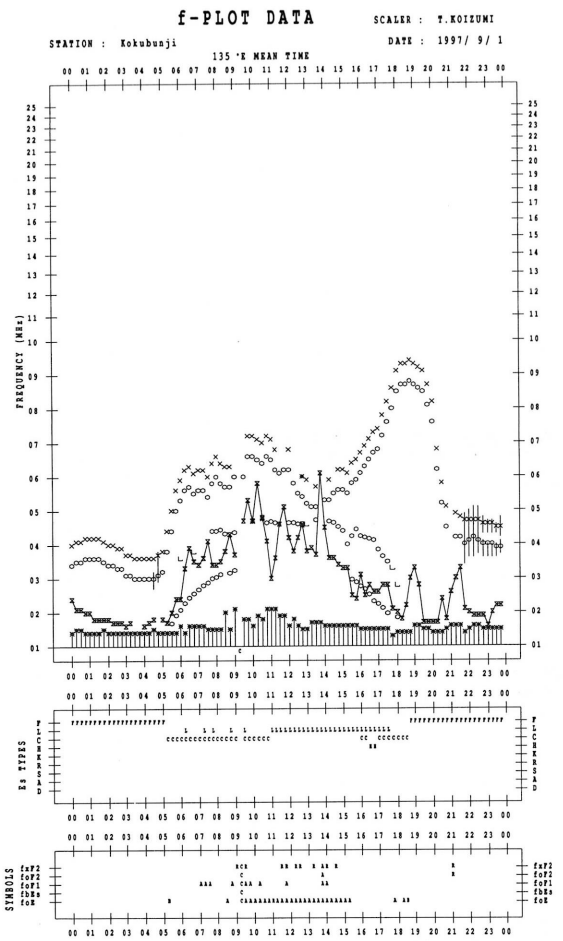
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

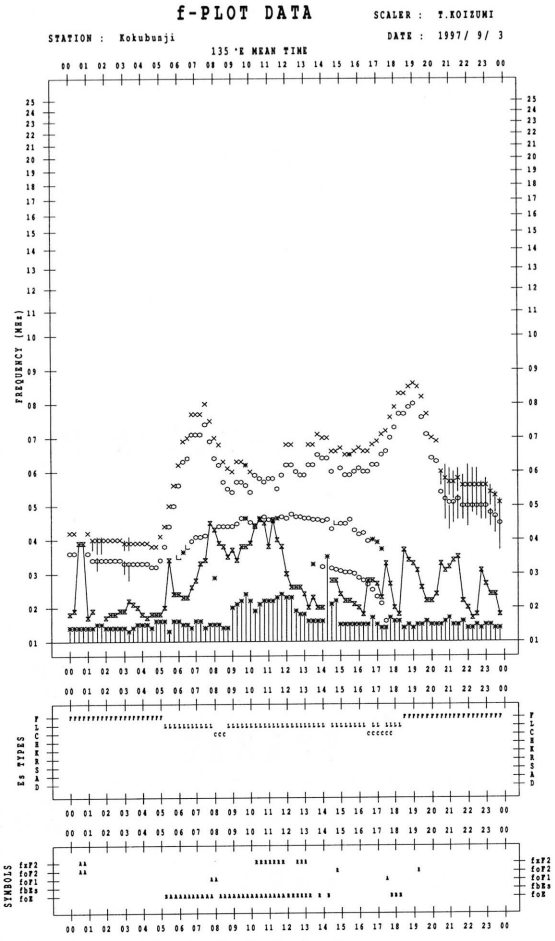
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F2	F2	F2	F2	F2	FF11	C2	C2	C1	C1	C2	L1	L2	L2	L2	L2	CL12	CL21	C2	F6	F1	F2	F3	F2
2	F2	F2	F2		F1	F1	C2	CL21	CL11	L2	C1	C1	C2	CL21	CL11	HL11	H1	L2	L3	F2	F3	F1	FF12	FF32
3	F2	F2	F1	F4	F2	F2	L3	L2	C2	L1	L2	L1	L1	L1	L1	L1	L1	CL21	L4	F4	F3	F4	F1	F3
4	F2	F4	F2	F3	F2	FF11	L1	HLC12	L1	C1	C1	L2	L1	L1	L1	L1	L1	CL11	L1		F1	F2	F1	F1
5	F2	F1	F1	F1					C1	L1	L1	L1	HL11	L1	L1	L1	CL11	CL21	L4	F3	F3	F3	FF21	F3
6	F1	F2	F5	F3	F1	F1	HL11	C1	C1											F3	FF12	FF21	F2	F2
7	F2	F3	F2	F1			HC11	CL11	CL11	L1	L1	L2	L1	H1	H1	HL11	C1	C2	C3	F2		F1	F4	F2
8	F2							H1	L1	L1			L1	L1	L1	L1		C1	C2	FF22	F1	FF21	F1	
9					F2	F1	L2	CL21	CL11	C1	L1	L1	L1	L1	L1		H1	C1	C1					
10				F2	F1			H1	C1		C1		L1	HL11	CL11	L1	H1	C2	C1	FF21	F4	F2	FF22	F6
11	F5	F4	F4	F2				H1	H1	C2	CL11	CL11		HL11	H1	C1	C1	C2	C5	F3	F2	F1	F2	F1
12	F1	F2	FF11	F2	F2	F2	L2	HL11	L1	C1	L1	CL11	L1	L1	L1			L1	L1		F1	F3	F3	F1
13	F1	F1	F2	F3			L1	C2	CL11	CL11	CL21	CL11	CL11	CL21	CL11	CL32	CL31	L2	L2	F3	F2	F3	F3	F2
14		F1		F2	FF11	F1	HL11	H1	CL11		L2	L1	CL11	CL11	CL22	CL21	L2	L2	L3	FF15	F3	F3	F4	F3
15	F3	F3	F5	F2	FF21	FF32	L3	L3	CL11	L1	L2	L1	L2	L2	L1	L1	HL11	C1	F4	F3	F2	F2		F1
16	F3	F3	F4	F3	F3	F1	L3	LC21	CL21	CL12	CL11	L1	L1	L1	L1	CL11	C2	C2	F5	F2	F2	F3	FF22	F3
17	F3	F2	F1			F1		L1	L1	L1	L1		L1	L1	L1	L1	HL11	CL11			F1	F1		F2
18	F2	F1	FF11	FF21	F1	F2	CL11	C1	L1	L1	L1		CL11					C2	F2	F3	F5	F2	F1	F1
19					F1	F2	C1	C2	CL11				L2	L1	L1	L1	H1		C1	F5	F2	FF21	F2	F1
20		F1	F1	F1		FF31	C2	H2	CL21	LC21	L1	L1	L1		HL11	H1	C1	C2	F1	F3	F2	F2	F2	F2
21	F2	F1	F2	F1			L1	HL12	CL21	C1	CL11	CL11	L1	L2	L1	C1	CL12	C3	F1	F1	F1	F3	F2	F5
22	F4	F1		FF21			C1	HL11	H1	C1	L1	L1	L1	L1	L1	L1	HL11	C1	F3	F2	F3	F1	F2	F3
23	F4	F2			F2	F2		HL12	C1	C1	L1	HL11	L1	L1	L1	L1	CL11	L2	F4	F2	F3	F2	F3	F4
24	F2	F1	F2	F1		F1	CL12	L2	C2	CL11	CL21	CL11		L1	L1	L1	HL11	C1	FF11	FF11	F3	FF21		F1
25	F1	F2	F2	F2	F3	F6	L3	LC22	HL11	CL11	L1	L1	L1	L1	L1	L1			F2	F2	F1	F1	F1	F2
26	F1	FF21	F3	F2	F2	F3	L3	L2	L1	L1	L1	L1	L1	L1	L1		H1		F3	F3	F2	F1	F1	
27		F1		F1	F1	F2	C1	L1	L1	LC11	L1	L2	L1	L1	CL11	L1	HL11	CL21	F2		F1	F1		
28			F1	F1		F1	C3	CL22	CL12	CL11	L1	L2	CL11	L1	HL12	LH21	CL31	C4	F5	F3	F1	F1	F2	F2
29	F2				F1		C2	CL12	L1	L1	L1	HL11	L1	L1	L1	L1	C1	C5	F5	F3	F3	F1		F2
30	F3	F3	F6	F2	F4		H1	L2	L1	L1	L1		H1	L1	L1	L3	L3	L4	F5	F4	F2	F1	F1	F1
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

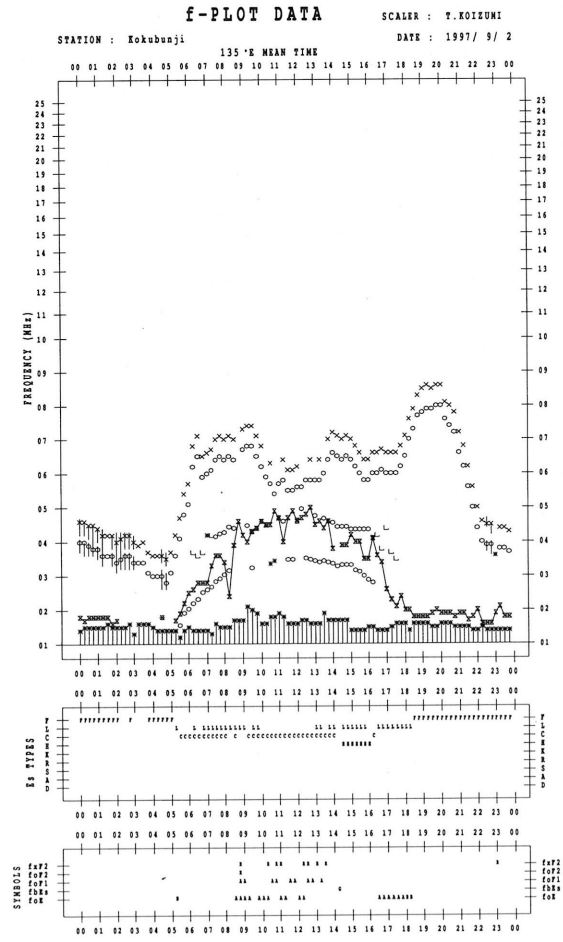
SEP.1997 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

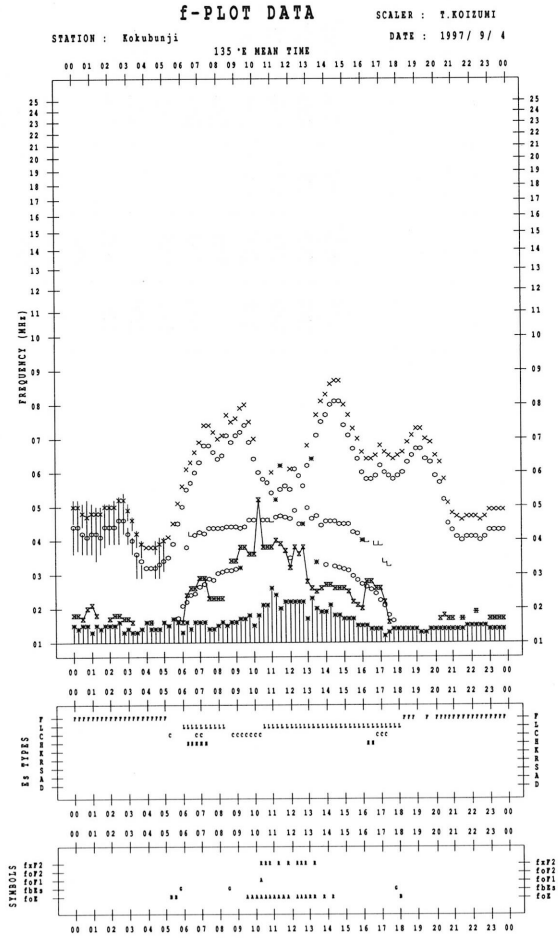
f-PLOTS OF IONOSPHERIC DATA

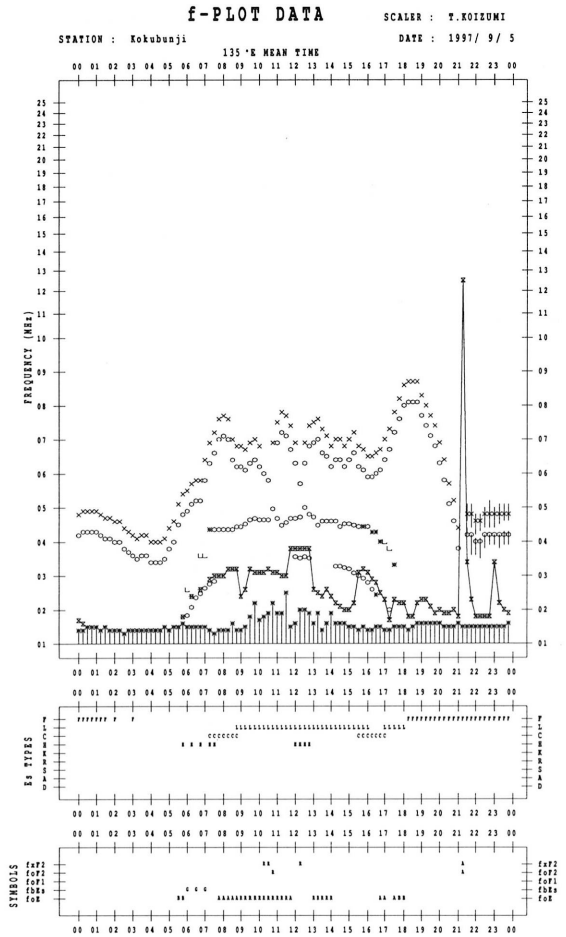
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE
fbEs


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE
fbEs


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE
fbEs


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE
fbEs


f-PLOT DATA
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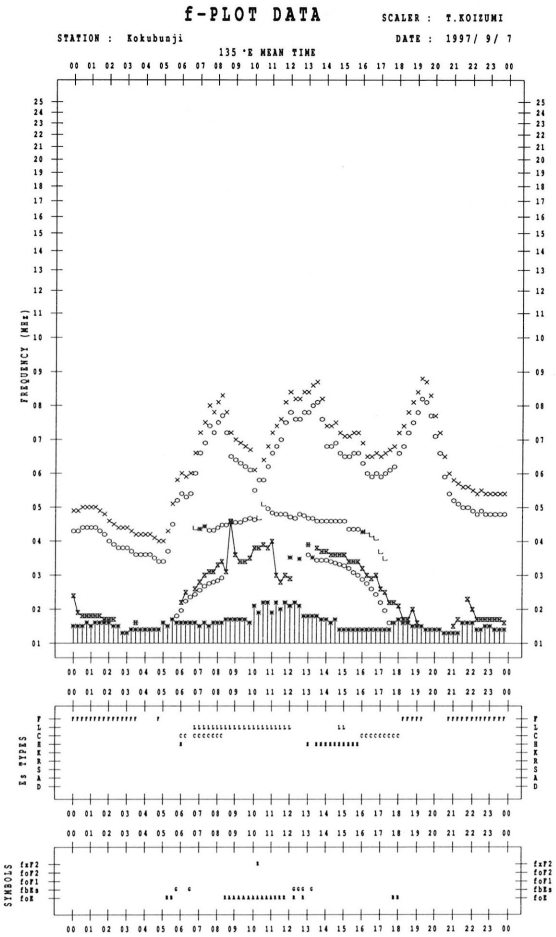
STATION : Kokubunji
DATE : 1997/ 9/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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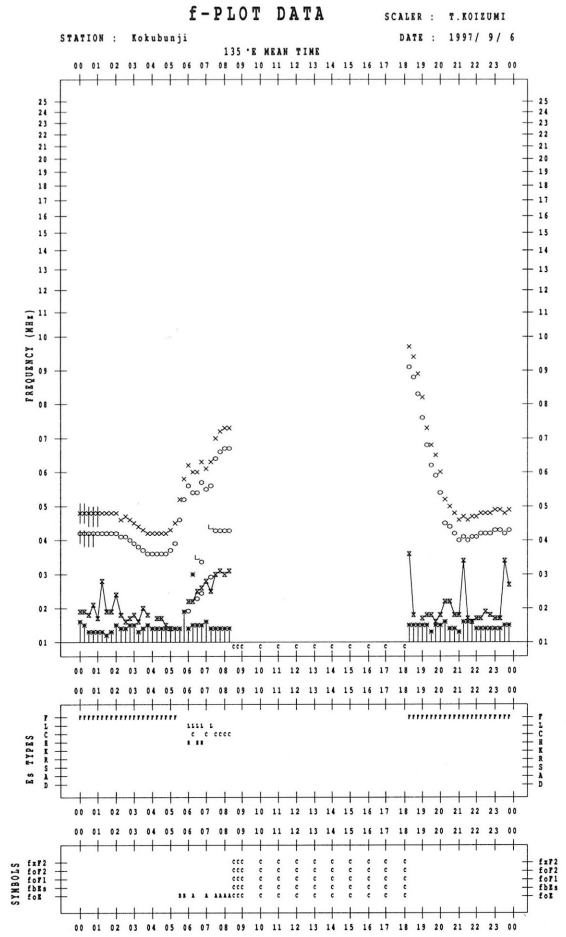
STATION : Kokubunji
DATE : 1997/ 9/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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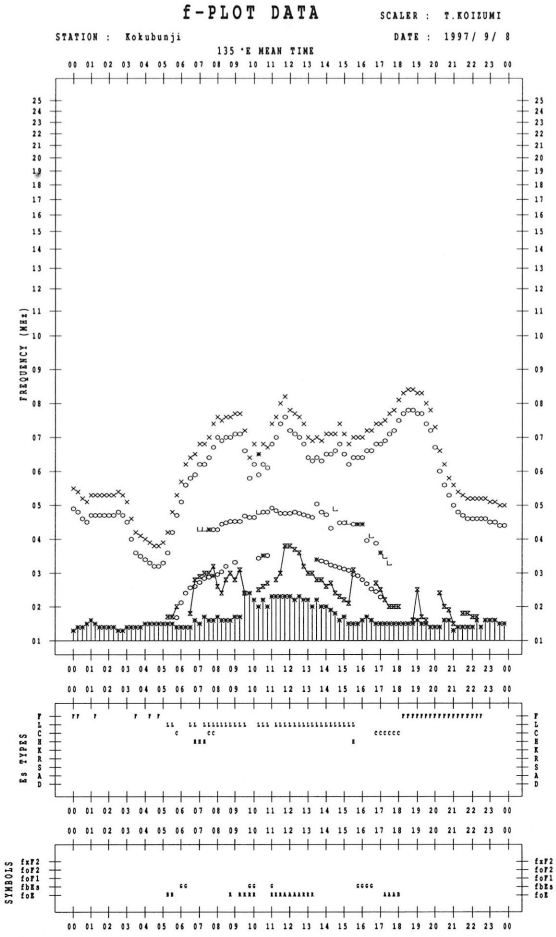
STATION : Kokubunji
DATE : 1997/ 9/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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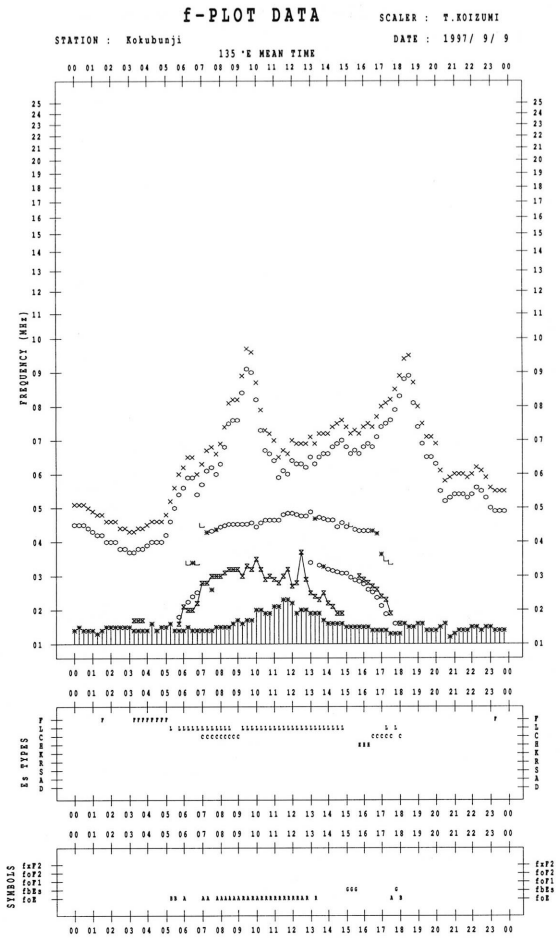
STATION : Kokubunji
DATE : 1997/ 9/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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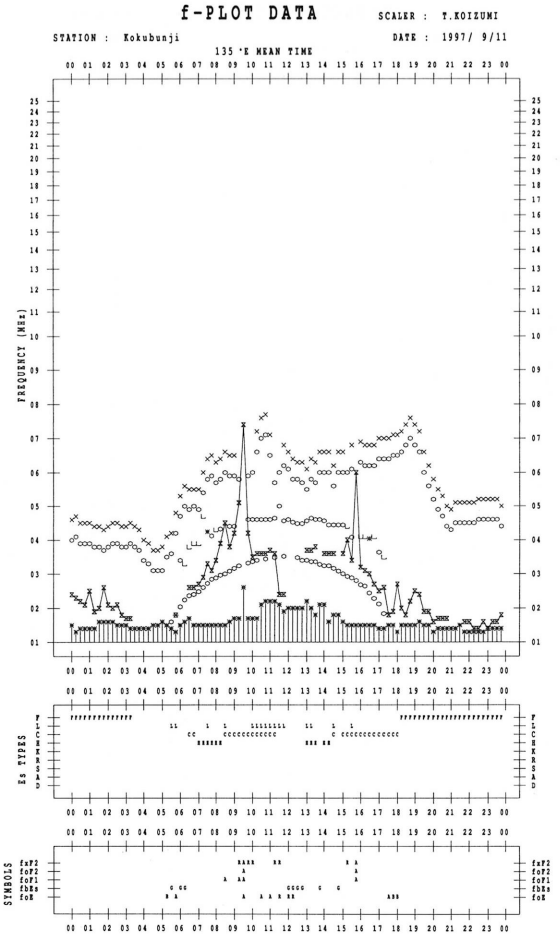
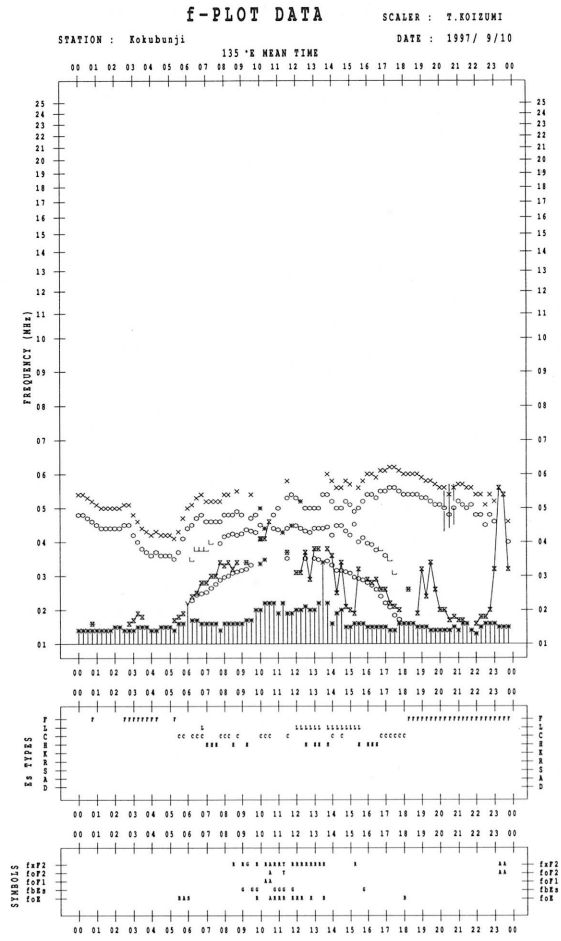
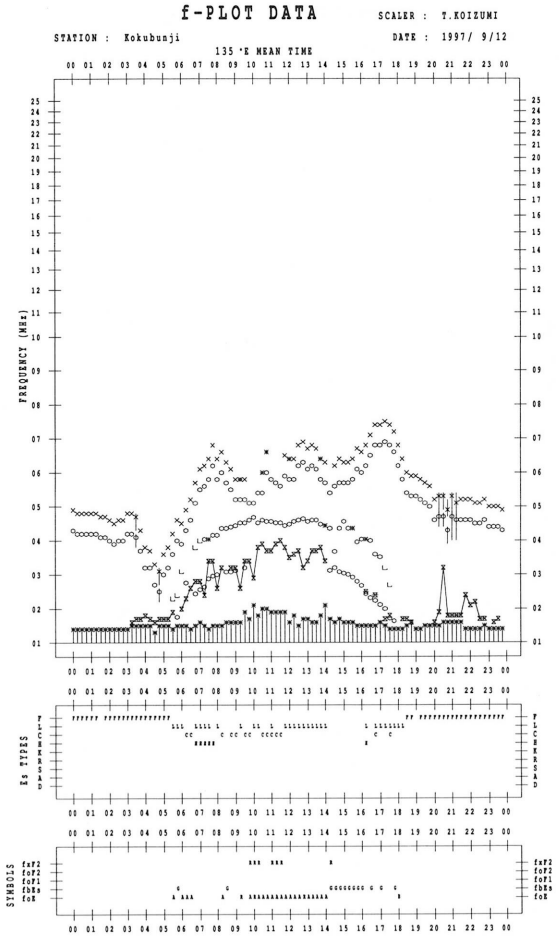
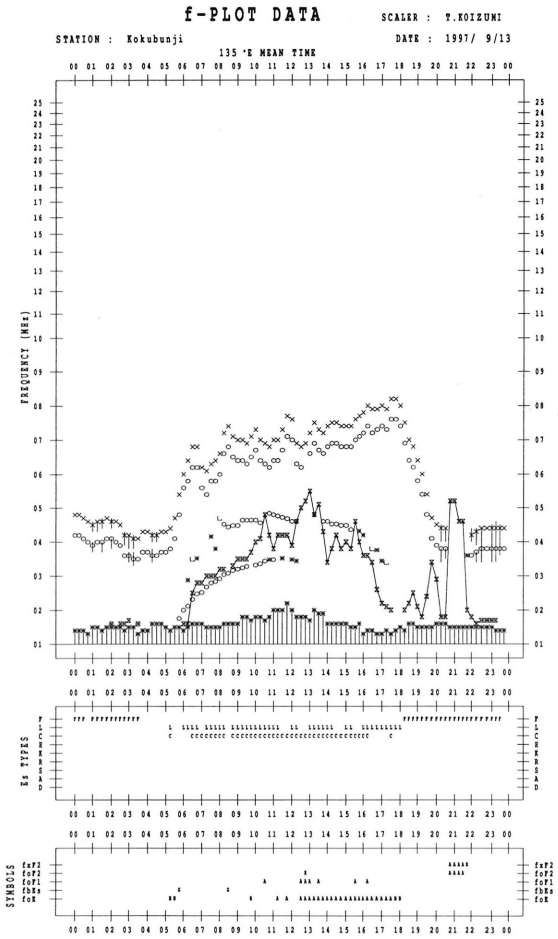
STATION : Kokubunji
DATE : 1997/ 9/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 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 : 1997/ 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 : 1997/ 9/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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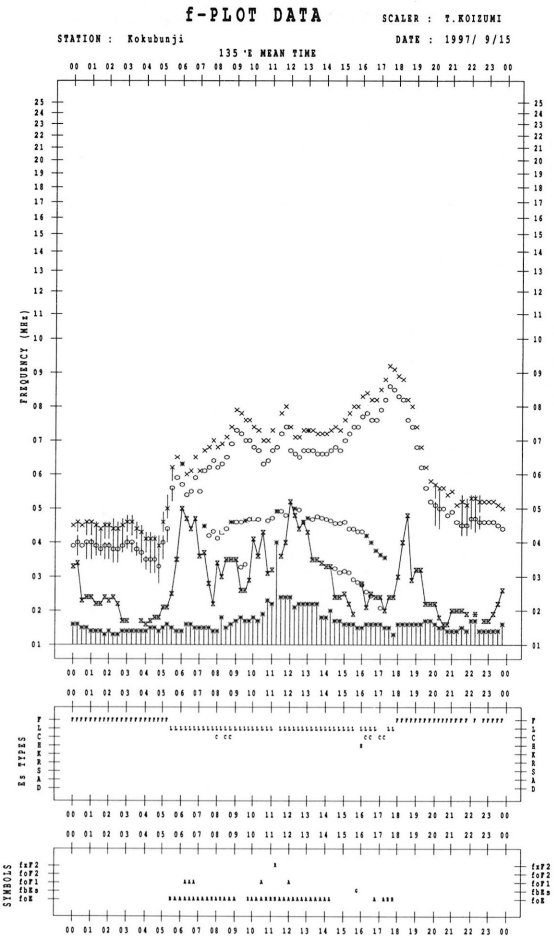
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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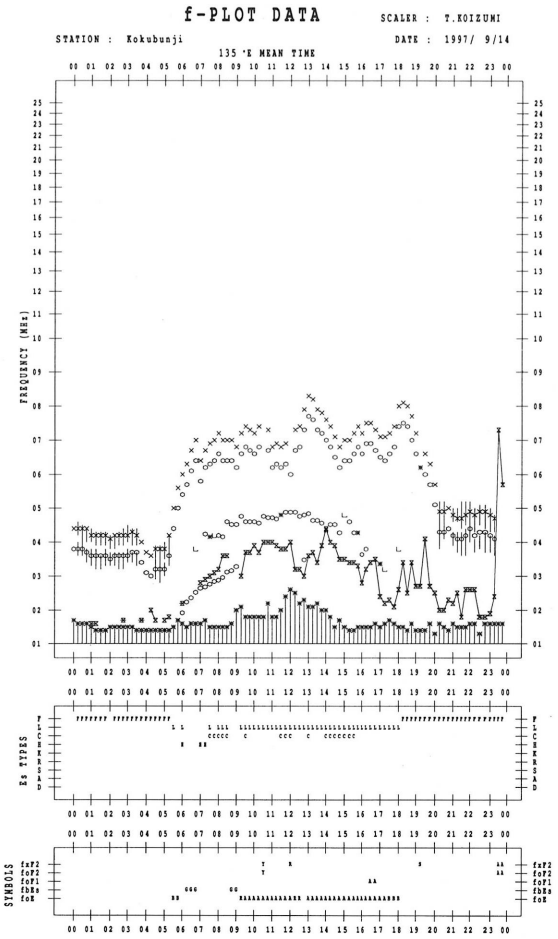
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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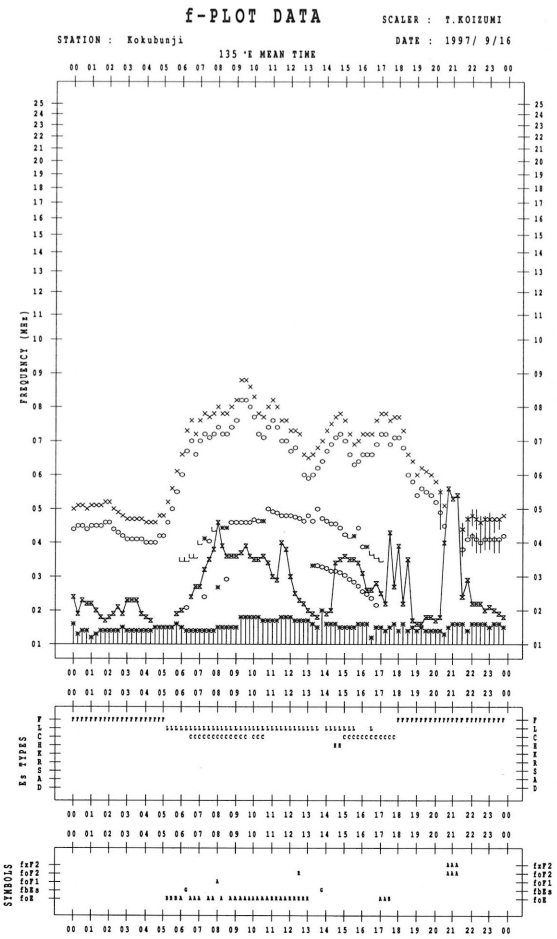
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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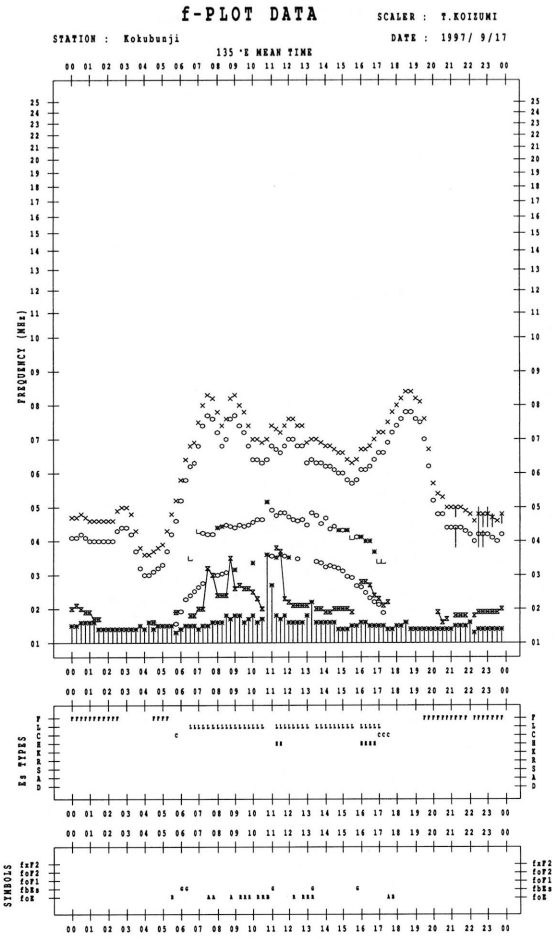
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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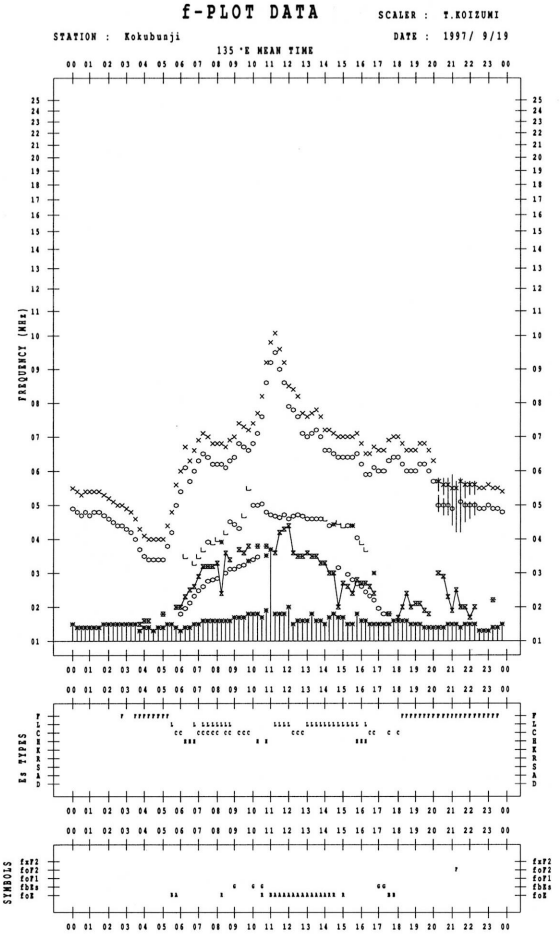
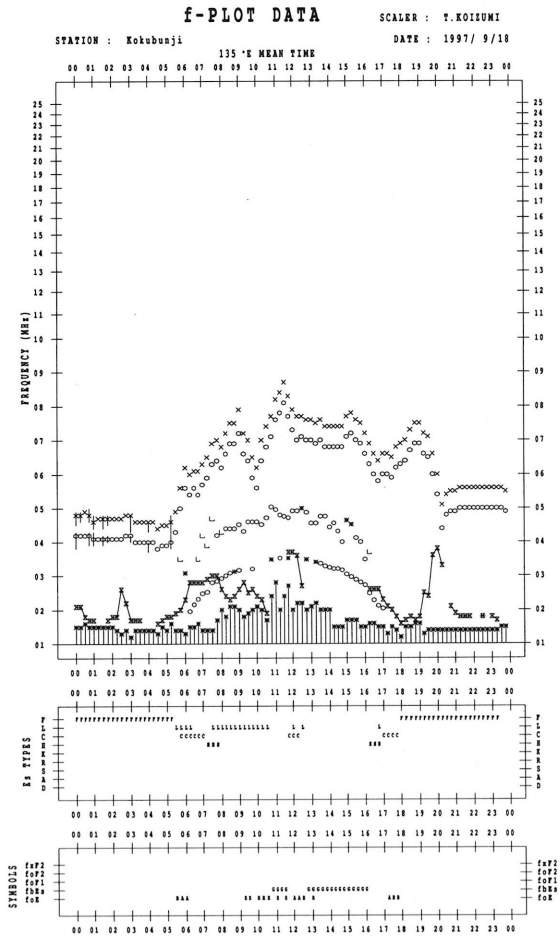
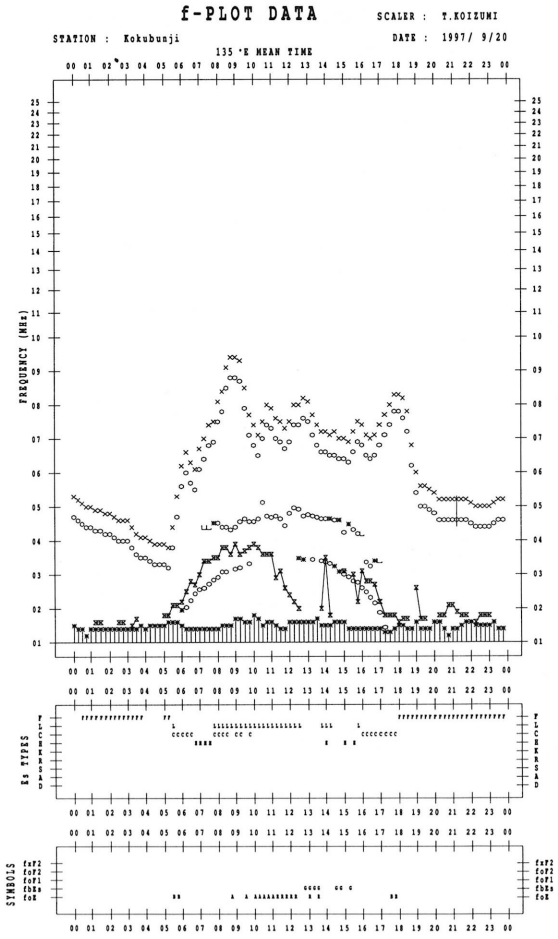
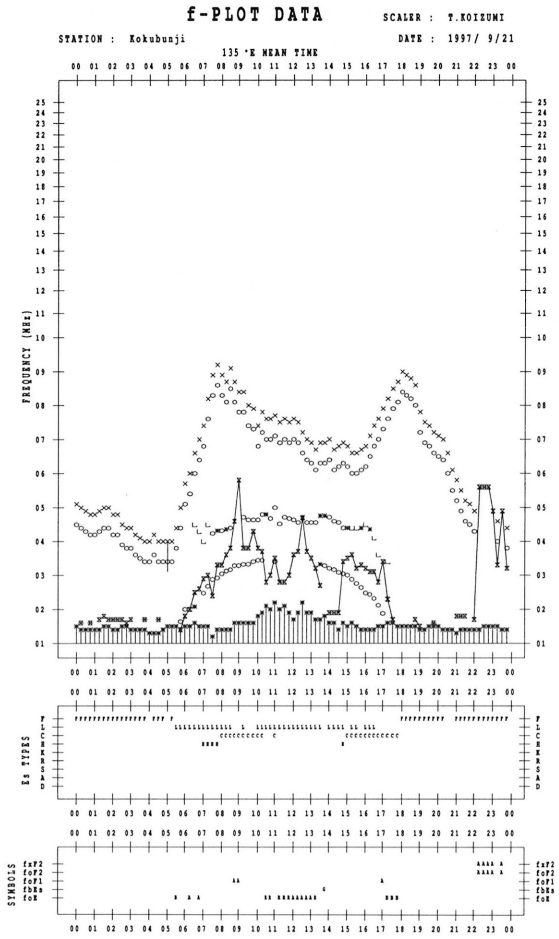
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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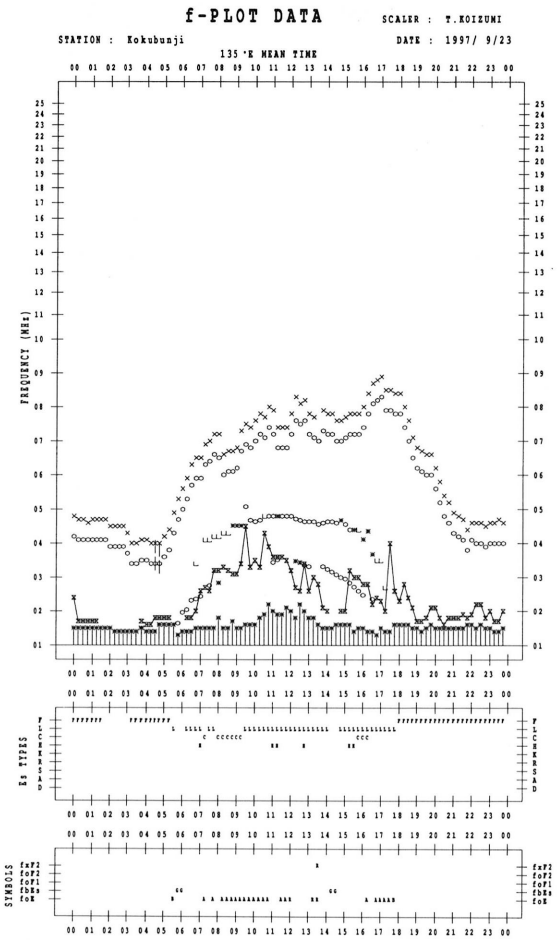
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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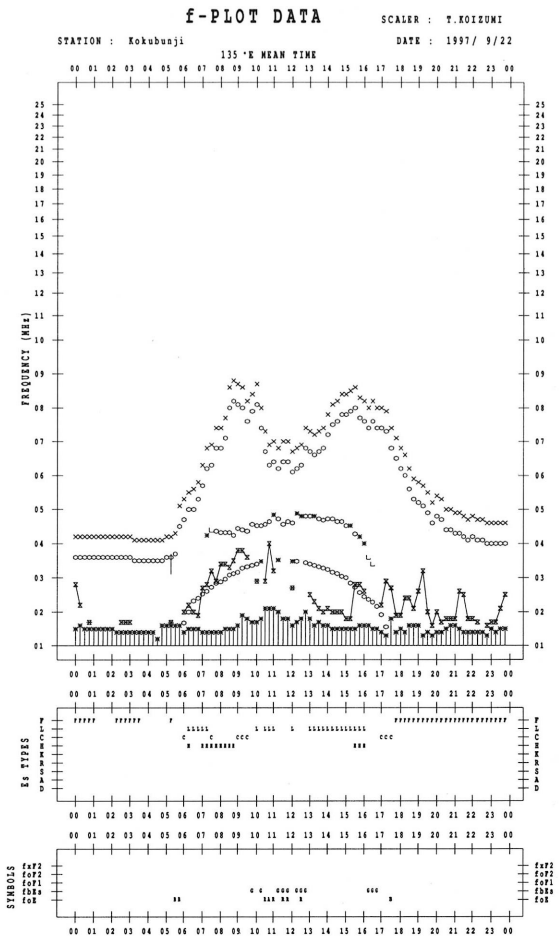
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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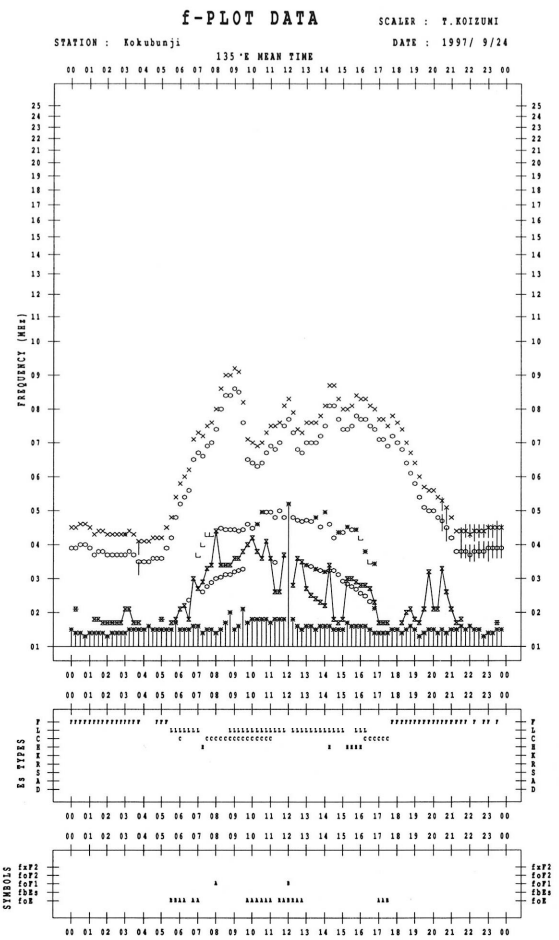
STATION : Kokubunji
DATE : 1997/ 9/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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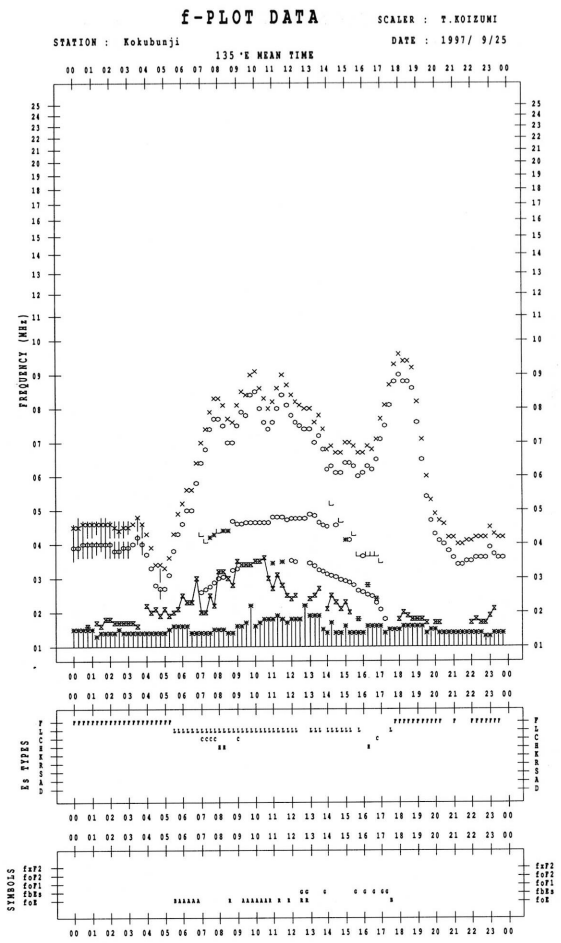
STATION : Kokubunji
DATE : 1997/ 9/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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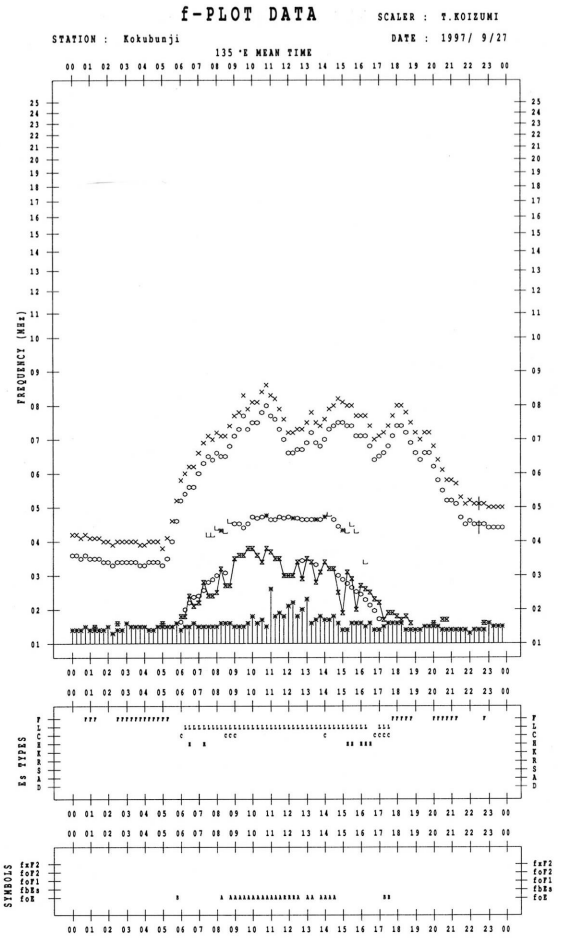
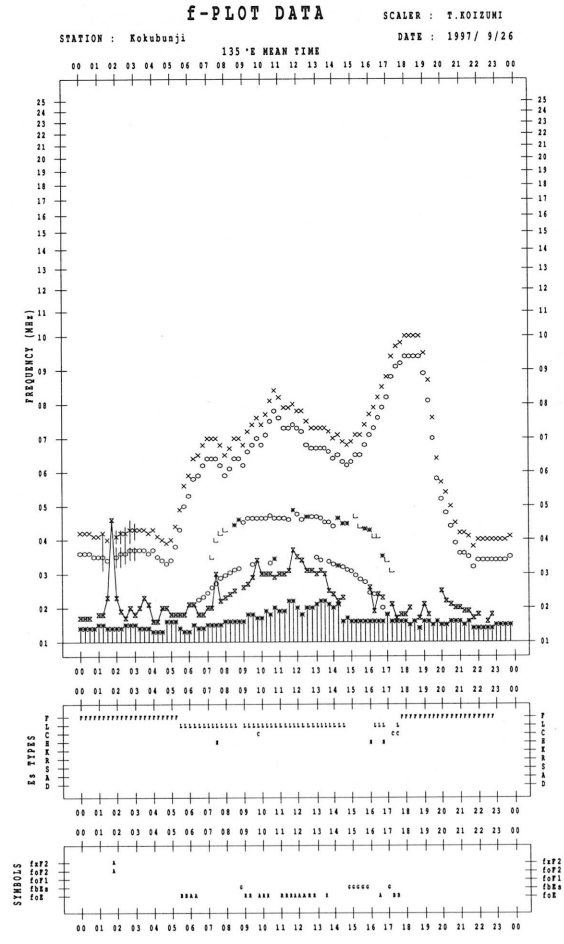
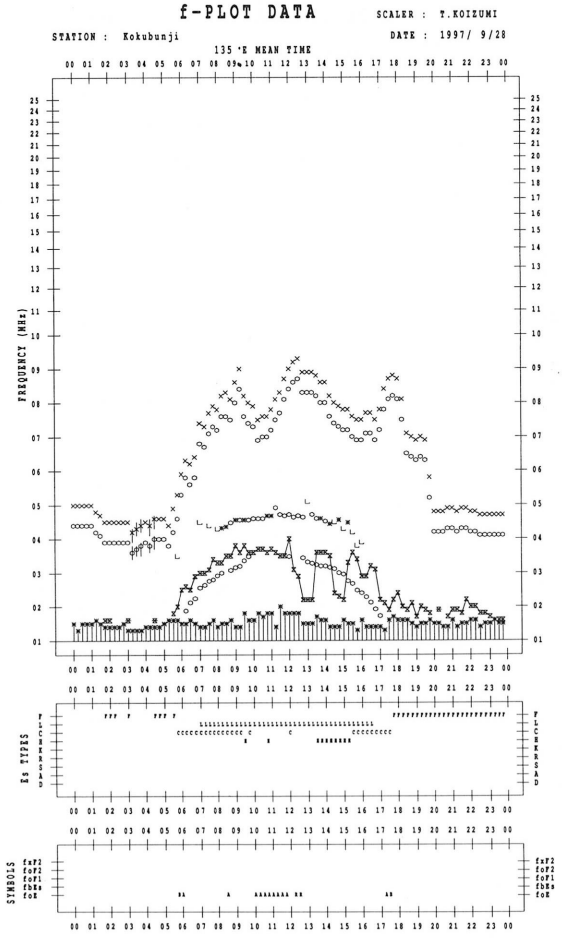
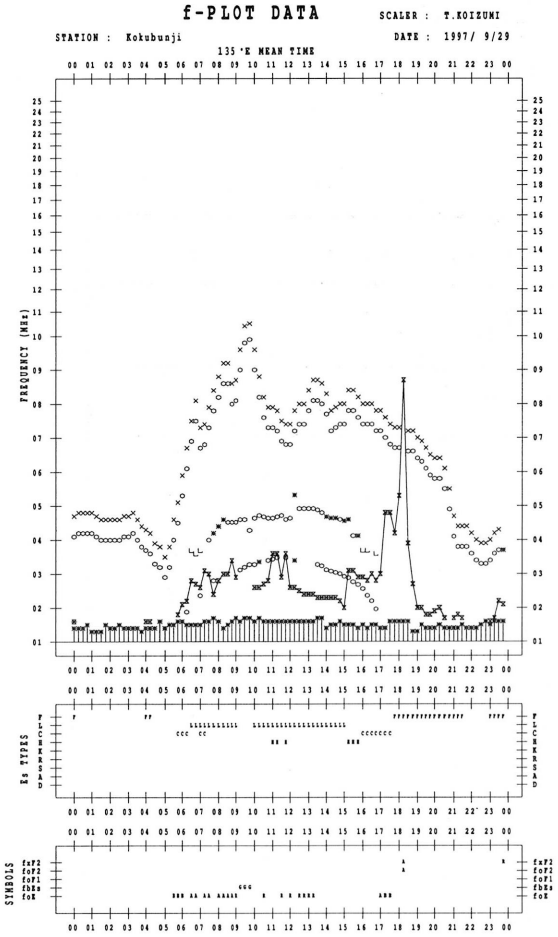
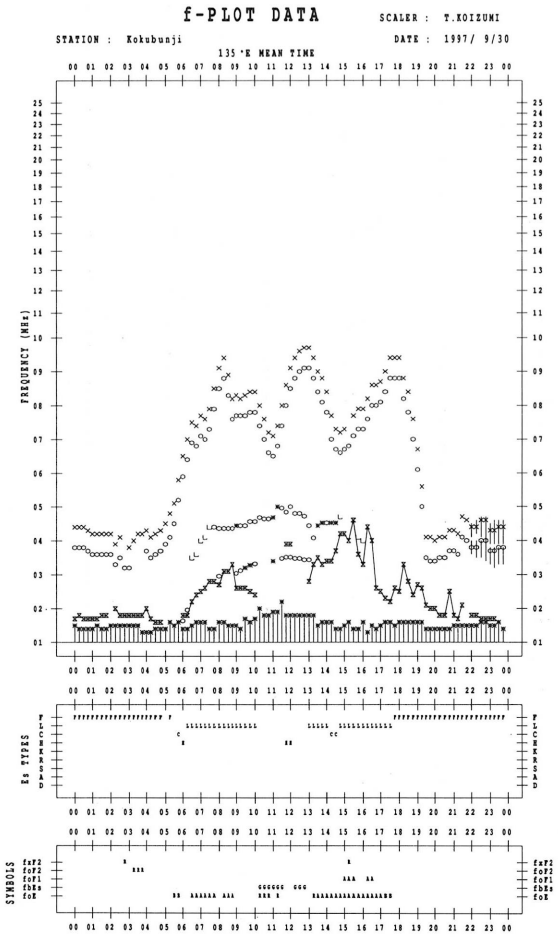
STATION : Kokubunji
DATE : 1997/ 9/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE
foF1
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1997/ 9/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE
foF1
foF2
foF1
fbEs
foE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso September 1997

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	25	25	26	26	26
2	25	24	24	26	25
3	25	25	25	26	25
4	27	28	28	26	27
5	27	27	28	27	27
6	26	27	27	27	27
7	29	30	29	30	30
8	30	31	30	29	30
9	29	30	29	29	29
10	28	28	28	27	28
11	28	28	28	28	28
12	29	29	30	27	29
13	25	25	27	26	26
14	26	26	25	27	26
15	27	26	26	26	26
16	26	25	25	25	25
17	26	24	25	26	25
18	27	27	26	-	27
19	25	26	26	27	26
20	26	26	26	26	26
21	26	26	27	27	26
22	26	26	26	26	26
23	26	26	26	34	28
24	30	29	29	29	29
25	28	29	28	26	28
26	28	32	34	28	30
27	26	26	28	29	27
28	27	26	28	28	27
29	27	26	27	29	27
30	27	26	27	30	27

Note: No observations during the following periods.
18th 2110 - 19th 0030

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 1997

Single-frequency observations

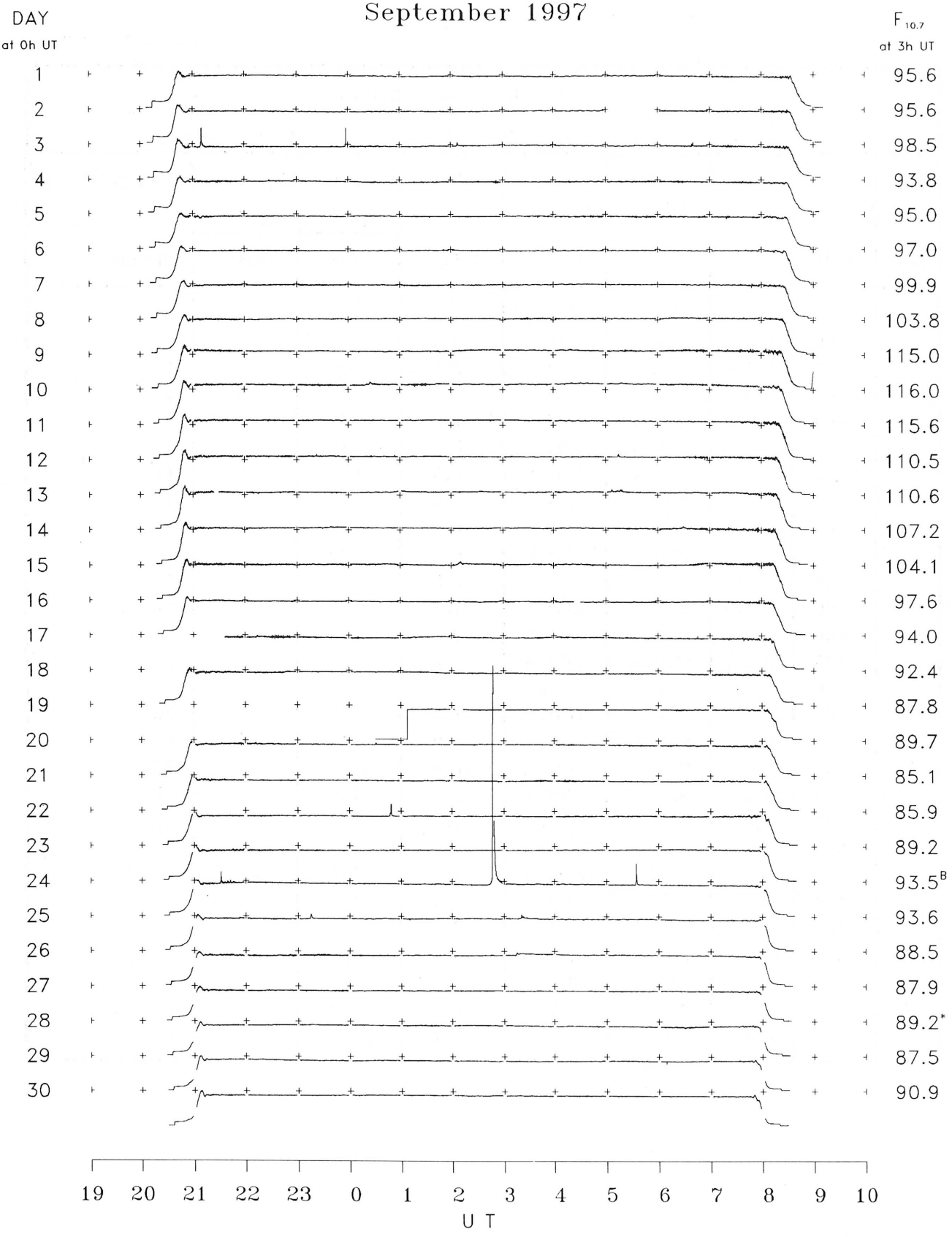
Normal observing period: 2020 - 0850 U.T. (sunrise to sunset)

SEP. 1997	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
2	500	42 SER	2109.9	2110.0	1.0	27	-	O
	2800	6 S	2109.9	2110.9	3.4	42	8	O
	500	42 SER	2357.1	2357.7	2.5	500	-	O
	2800	6 S	2357.1	2357.7	1.7	41	8	O
11	500	8 S	2322.2	2322.6	0.9	30	-	WR
12	500	42 SER	0024.7	0025.0	3.4	17	-	WR
	500	8 S	0137.0	0137.2	0.5	3	-	WR
	500	42 SER	0209.7	0211.1	1.5	14	-	WR
	500	8 S	0234.9	0235.0	0.4	6	-	WR
	500	8 S	0356.4	0356.6	0.5	20	-	O
	500	42 SER	0451.4	0451.5	0.9	6	-	O
	500	42 SER	0514.0	0515.1	2.2	80	-	MR
	2800	1 S	0515.0	0515.3	0.7	6	2	O
	500	42 SER	0656.0	0656.6	2.2	30	-	WR
22	500	8 S	0048.0	0048.1	0.2	5	-	O
23	500	27 RF	2130.1	2131.0	41.0	17	5	WR
24	2800	48 C	0245.9	0247.8	5.0	510	110	O
	500	48 C	0246.2	0247.0	10.0	1250	-	WR
	200	48 C	0246.7	0248.7	8.0	4750	-	WL
	200	48 C	0533.2	0534.2	2.5	2000	-	MR
	500	46 C	0533.4	0534.2	2.7	270	50	MR
	500	46 C	2313.6	2314.0	2.0	16	5	WR
	2800	3 S	2314.1	2315.1	2.4	9	3	O
25	500	42 SER	0319.7	0320.7	7.7	10	-	O
	2800	45 C	0320.4	0321.1	3.7	8	3	O
28	200	8 S	2346.0	2346.1	1.0	90	-	O
29	200	8 S	0413.2	0413.5	0.7	130	-	O
	200	8 S	0709.4	0709.7	0.9	80	-	O

B. Solar Radio Emission

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

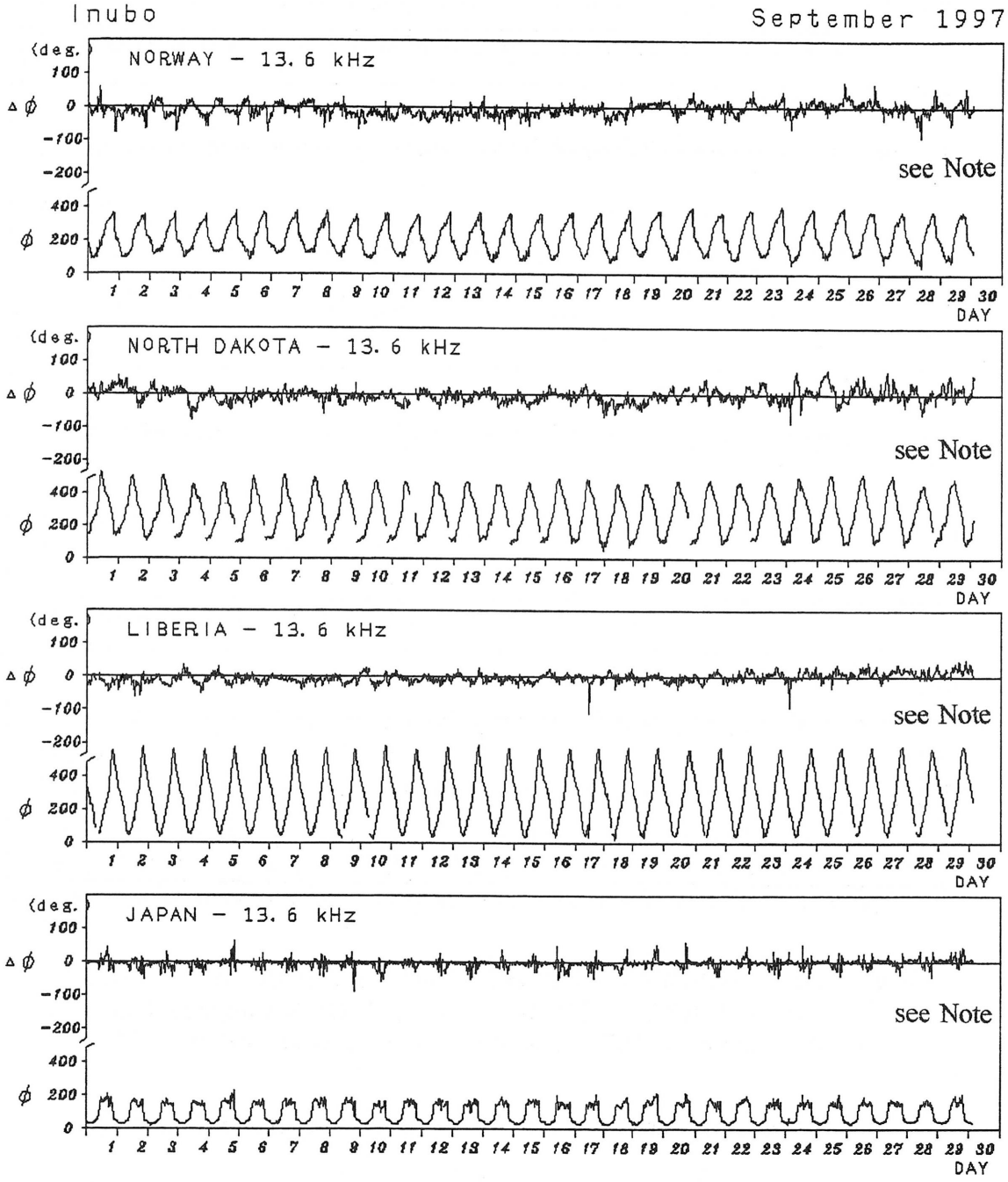
September 1997



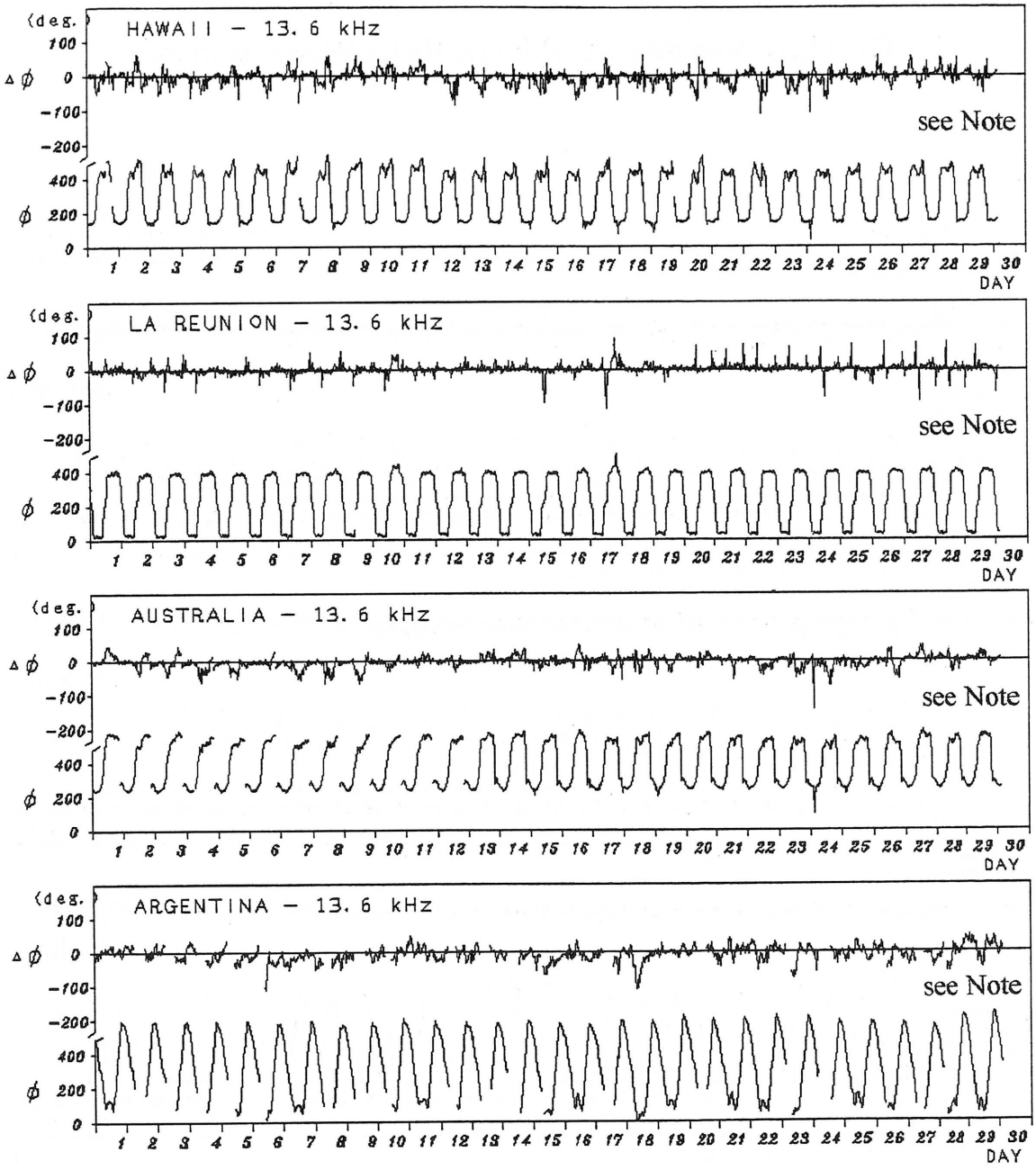
Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. Radio Propagation

C1. Phase Variation in OMEGA Radio Waves at Inubo



Inubo September 1997



Note : As for NORWAY, NORTH DAKOTA, LIBERIA, JAPAN, HAWAII, LA REUNION, AUSTRALIA and ARGENTINA no record, due to discontinue of OMEGA system at 30 September 1997 0300 UT.

Polar Cap Phase Anomaly (PCPA) on Norway-Inubo Circuit

NONE

C2. Sudden Phase Anomaly (SPA) at Inubo

Inubo

Sep. 1997	S P A								
	Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
1				27	20		0155	0320	0213
2		56					1231	1331	1245
2				24	23		2111	2148	2119
2				29	27		2359	0048	0007
3			10	23	26		0210	0254	0218
3			5	9			0538	0615	0545
7			7	20	9		0305	0435	0319
7			22	18			0615	0735	0627
8					43	–	2000	2110	2012
9		–	139				0948	1050	1005
12				9	5		0211	0300	0215
14			7	18	13		0254	0342	0258
15			18	56	43	34	0205	0330	0222
15			14	13			0643	0740	0656
16				31	42		2212	2326	2225
17	11			40	33	28	0135	0233	0140
17			5	15			0349	0443	0404
17		102	15				1139	1258	1156
17	41			67	70	37	2242	0100	2258
19				29	25		0006	0110	0018
19	20	34	54	76	56	24	0144	0316	0153
19			7				0542	0640	0550
19			59				0916	0942	0922
20				11	7		0030	0200	0038
21			11	25	9		0416	0530	0422
22				11	9		0050	0135	0052
22			4	5			0612	0640	0617
22		20					1415	1510	1420
23					13		2110	2200	2120
24	72	76	189	180	115	73	0246	0500	0250
24	11		20	32	36		0534	0620	0542
24			9	9			0700	0800	0707
24	14	–	32			59	1025	1205	1100
24				14	11		2316	0010	2330
25	18		20	41	23	29	0322	0440	0334
25		59					1149	1248	1200
26			13	32	18	24	0317	0430	0330

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