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IONOSPHERIC DATA IN JAPAN

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INTRODUCTION

This Series contains data on ionosphere (I) , solar radio emission (S) and radio propagation (P) obtained at the following stations under the Communications Research Laboratory, Ministry of Posts and Telecommunications of Japan.

Station	Geographic		Geomagnetic		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.5′N	141°41.2′E	35.3°N	206.5°	Vertical Sounding (I)
Kokubunji	35°42.4′N	139°29.3′E	25.5°N	205.8°	Vertical Sounding (I)
Yamagawa	31°12.1′N	130°37.1′E	20.4°N	198.3°	Vertical Sounding (I)
Okinawa	26°16.9′N	127°48.4′E	15.3°N	196.0°	Vertical Sounding (I)
Hiraiso	36°22.0′N	140°37.5′E	26.3°N	206.8°	Solar Radio Emission (S)
Inubo	35°42.2′N	140°51.5′E	25.6°N	207.0°	Radio Receiving (P)

A. IONOSPHERE

Ionospheic observations are carried out at the above four stations in Japan by means of vertical sounding using ionosondes.The ionosonde produces ionograms,which are recorded digitally on computer storage medium as well as graphically on 35 mm photographic film. The digitally-recorded ionograms are collected from each station by the central computer and reduced to numerical values and Summary Plots by the automatic processing system. The ionograms obtained at Kokubunji are manually scaled as well by experienced specialists to supplement automatically-scaled parameters.

A1. Automatic Scaling

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

The published data consist of tabulations of hourly values of three factors (*foF2, fEs, fmin*) and monthly medians of two factors (*h′Es, h′F*) , daily Summary Plots and monthly medians plot of *foF2*.

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

All symbols and terminology in the tables or figures of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction (Second Edition) 1972 " and its revision of chapters I-4, published in July 1978.

a. Characteristics of Ionosphere

fxI	Top frequency of spread *F* trace
foF2 *foF1* *foE* *foEs*	Ordinary wave critical frequency for the *F2,F1, E* and *Es* including particle *E* layers, respectively
fbEs	Blanketing frequency of the *Es* layer, e.g. the lowest ordinary wave frequency visible through *Es*
fmin	Lowest frequency which shows vertical ionospheric reflections
M(3000)F2 *M(3000)F1*	Maximum usable frequency factor for a path of 3000 km for transmisson by *F2* and *F1* layers, respectively
h′F2 *h′F* *h′E* *h′Es*	Minimum virtual height on the ordinary wave for the *F2*, whole *F, E* and *Es* layers,respectively
Types of *Es*	See below b.(iii)

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to replaced a numerical value on the monthly tabulation sheets, if necessary.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer,for example *Es*.
B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.
C Measurement influenced by, or impossible because of, any non-ionospheric reason.
D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.
E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.
F Measurement influenced by, or impossible because of, the presence of spread echoes.
G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.
H Measurement influenced by, or impossible because of, the presence of a stratification.
K Presence of particle *E* layer.
L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
N Conditions are such that the measurement cannot be interpreted.
O Measurement refers to the ordinary component.
P Man-made perturbations of the observed parameter; or spur type spread *F* present.
Q Range spread present.
R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
S Measurement influenced by, or impossible because of, interference or atmospherics.
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V Forked trace which may influence the measurement.
W Measurement influenced or impossible because the echo lies outside the height range recorded.
X Measurement refers to the extraordinary component.
Y Lacuna phenomena, severe layer tilt.
Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

(iii) Description of Types of *Es*

When more than one type of *Es* trace are present on the ionogram, the type for the trace used to determine *foEs* must be written first. The number of multiple trace is indicated after the type letter.

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.
l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the particle *E* layer minimum virtual height.
c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normnal *E* trace. (Usually a daytime type.)
q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
d A weak diffuse trace at heights below 95 km associated with high absorption and large *fmin*.
n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.
k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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

Median count (CND) is the number of values from which the median has been computed. In addition to numerical values, the count may include certain descriptive letters.

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of three parabolic antennas, one with 10-meter diameter for 200 MHz measurements, one with 6-meter diameter for 500 MHz measurements and one with 2-meter diameter for 2800 MHz measurements, each being equipped with a pair of crossed doublet antennas as a primary radiator, and three appropriate receivers. Each pair of the crossed doublet antennas is used as a polarimeter. Observations are continuously carried out almost from sunrise to sunset.

B1. Daily Data at Hiraiso

The three-hourly mean and daily mean values of the solar radio emission intensities are tabulated for 500 MHz measurements. The intensities are expressed by the flux density in 10^{-22} Wm^{-2} Hz^{-1} unit.

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

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

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

One of the following symbols may be attached after numerical values, if necessary.

D	greater than, or later than,
E	less than or earlier than,
U	approximate, or uncertain.

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

The 10.7 cm solar radio flux at Hiraiso is plotted over a one month period. The 10.7 cm flux ($F_{10.7}$) is determined by adjusting the 10.7 cm radio flux measured at Hiraiso to the Pentincton 10.7 cm radio flux. The figure on the right-hand side shows the $F_{10.7}$ index estimated at Hiraiso.

The following symbols are used in the $F_{10.7}$ index:

*	Measurement made not at 3h U.T..
B	Measurement affected by bursts.

C. RADIO PROPAGATION

C1. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C2. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

JUN. 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	57			46	36	50	57	A	A	A	A	A	A	A	51	48	57	57	57	70	71	57	62	70
2	56	57	51	54	51	52	A	40	A	A	A	A	A	A	51	A	55	A	58		70	69	58	46
3		56	46	47	38	A	56	57	50	A	A	A	A	54	A	68	A	A		73		59	56	
4			38	42	40	58	A	A	A	A	A	A	A	A	A	56	A	60	61		68	58	58	60
5		57	57	47	57	60	57	57	A	A	A	A	A	49	A	A	56	54		70	77	57		A
6	35	37	31	36	40		56	54	A	A	59	54	A	A	A	A	A	57	58		68	69	60	56
7	55	56		41	38	A	A	A	A	A	A	A	A	A	A	A	A	A	A	79	71	70	58	58
8			28	A	35	A	A	A	A	A	A	A	A	A	A	A	A	A	A	60	58	57	56	
9		38	38	39	41	A	A	A	A	A	A	A	A	A	57	A	51	A	A		A	60	57	A
10	36			38	A	A	A	A	A	A	A	A	65	A	A	54	54	62	A	76	68	41	58	A
11	A	57		36	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	36	56	57	
12	30	A	35	A	A	A	A	A	A	A	A	A	A	A	A	A	49	A	A	A	63		57	57
13	56		50		A	A	A	A	A	A	A	A	A	A	A	A	A	A	35		60	58		A
14	35		A	31	32	35	A	A	A	A	A	A	A	A	A	A	A	A	41	50	57	A	A	56
15	51	48	38	38	36	32	A	A	A	A	A	A	60	A	A	A	A	A	A	57	A	56	57	57
16	56	52	A	36	34	A	57	58	A	50	A	A	A	A	A	A	A	54	A	58	67		57	57
17		33			30	A	A	A	A	A	A	A	A	A	A	A	A	A	58		68	68	57	A
18	A	A		36	30		A	A	A	A	A	A	A	A	A	A	A	A	A	55	69	70		56
19		A	A		A	A	60	A	A	A	A	A	A	A	A	A	55	58	56		A	58	57	56
20	56				38		A	A	A	A	A	A				49	53	A	54		58	57		
21	47	57	50	50	41	50	A	A	A	A	A	A	A	A	A	A	A	A	56	69	67		49	36
22	36	38			38		A	A	A	A	A	A	A	A	A	A	36	A	A		57	56		38
23	A	A	35	31	A	A	A	A	A	A	A	A	A	A	A	A	A	A		49		56	56	57
24	57		25	38	31	A	A	A	A	A	A	A	A	A	A	A	A	A	A	52	62	57	57	57
25		28	36	35	37	56	A	A	56	A	A	A	A	A	A	A	A	A	72		57	60	56	
26	33	35	56		A	35	A	A	59	A	A	A	A	A	A	A	A	A	27		57	57		A
27	38	35	37	30	38	A	A	A	A	A	A	A	A	A	A	A	69	A	A	69	61	68		57
28			A	35	29	A	A	62	62	A	A	A	A	A	A	A	57	53	A	59	59		56	
29	57	57		30		37	A	56		A	A	89	A	A	A	A	57	60	A	70	A	70		A
30	57	52	A	A	41	41	A	A	A	A	A	A	A	A	A	52	54	A	30		63	58	57	56
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	17	16	21	22	11											13		13	16	24	25	21	17
MED	53	52	38	38	38	50											55		56	64	63	58	57	57
U Q	56	57	50	44	40	56											57		58	70	68	68	58	57
L Q	36	36	35	35	34	35											52		38	56	58	57	56	56

HOURLY VALUES OF fEs AT WAKKANAI

JUN. 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	33			G	G		31	44	40	55	38	33	35	34	30	30	34	38	44	70	63	G	G	56
2			44		34	34		58	85	68	55	33	30	39	37	34	36		46	38	33	38	35	29
3	44	35	28	30	28	38	42	44	38	38	45	40	40	34		64	63	72	41	27	75	40	36	40
4	29	31	26	24	G	38	45	59	69	66	44	57	81	39		40	29	30	40	74	40	34	57	34
5	42	26	27	29	G	30	40	46	46	60	71		33	45	38	44	33	43	40	40	33	37	38	36
6	34	33	30	34	G	32	45	32	35	38	37	40	34	34	31	76	84	29	45	30	28	G	26	65
7	59	35	39	40	27	39	40	61	58	39	42	33	34	33	32	40		36		90	76	70	65	66
8	39		61	74	43	86	64	61	74	84		133	63	42	40	38	42	39	56	75	56		40	36
9		G	34	28	28	41	40	70	75	72	56	64	40	41	55	62		58			89	58	32	31
10	26	25	27	G	47	36	47	61	57	52	74		39	38	61	40	63	63		61	54	65	41	60
11	46	43	40	42	38	47	42	78	39		70	44	37	37	36	31	26	28	46	74	37	44	46	48
12		46	30	38	35	34	74	94	63		95	63	44	42	72	84	47	77			72		38	33
13	60		45	35	38	34	44	55	57	60	39	62	38	28		72	87		41		61	64	36	42
14	33		40	32	G	30	30	48	72	78	95	74	68		43			56		47	58	54	80	G
15	34	32	26	28	25	27	37	47	62	38	58	65	42	60	62	76	62	46		57	65	80		60
16	62	28	42	37	36	43	44	54		37	33	40	41	39	32	31	41	51	52	58		60	32	34
17	25	36	25	42	29	29	46	65	36		37	30	44	86	40	44	46	47	40		36	45	35	54
18	46	62		40	46	34	50	68	74		38	58	42	36	61	71	83		86	74	58	62	36	32
19		39	56	43	30	47	44	60	36		60	62	59	60	40	71	39	50	56			66	41	38
20	35	30	29	28	27	35	40	56	45		42	38				32	29	32	32	36	33	32	32	28
21	26	G	G	G	26	41	70	35	38		43	39	37	34	35	30	31	30	31	30	32	40	35	35
22	29	29	35	30	G	38	74	57		38	36	40	44	41	36	45	29	34	39	43	26	28	62	45
23		46	41	36	27	36	35	60	61	67	41	51	37	36	44	38	36	43	35		44	61	54	58
24	29		30	32	G	32	34	46	63	44		42		40	36	36	40	42	63	58	29	60	62	32
25	27	35	30	33	27	38	47	60	56	54	39	44	74	64	41	60	86	67	33	36	67	40	26	
26	33	G	G	G	34	31	32	34	37		56	38	43	40	44	73	44	37	32		45	61	55	50
27		27	26	G	G			61	33	36	63	64	44	40		62	70	56	39		28		G	G
28	28	28	30	28	G		37	36	38	46	39		42	40	58	67	46	37		31	34		44	
29	31	33	G	G	G	26	42	36		61	95	81	96				56	47	58		93	77		64
30		63	40	60	41	46	56	56	75	64	96	98	65	60	31	31		76	75		36	70		44
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	28	29	30	27	28	30	27	22	28	27	28	27	24	28	26	27	23	20	28	26	27	28
MED	33	32	30	32	27	36	43	56	57	54	44	44	42	40	40	44	43	43	41	52	44	56	38	39
U Q	44	37	40	39	35	41	47	61	69	66	66	64	51	42	49	69	63	56	56	72	64	64	54	55
L Q	29	27	26	26	G	32	38	46	38	38	39	39	37	36	35	35	34	36	39	36	33	38	32	32

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT KOKUBUNJI

JUN. 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	45	48	42	44	40	48	57	A	A	A	A	A	A	58	64	A	74	71	70		69	68	58	63
2	63	54	52	52	50	47	A	56	A	A	49	A	89	A	A	79	A	A	A	54	A	68	57	
3	58	57		49	45	A	56	56			A	49		A	68		84		81	92			57	52
4	57		47	46	48	47	57	56	49	A	A	A	A	A	54	68	71	76	83	81	74	69		57
5	57	47	44	42		68	57	56	A	A	A	A	A	66	81	76	72	71	82			A	36	A
6	A	38	37	36	A	40	56	A	54	A	A	A	A	A	A	71	68		A	94		56	48	45
7	A	A	37	A	A	45		76	A	A	A	A	A	A	A	A	A	67		67	66		56	A
8	58	50	57	A	44	A	82	A	A	104	A	A	A	A	A		A	A	A	56	62	57	A	A
9	A	A	40	A	A	A	A	A	A	A	A	A	A	A	A	A	77	62	60	72	58	54	57	58
10	A	57	48	48	45	A	A	A	A	A	A		119	A	A	66	A	75	93	93	63	57	57	49
11	47	42	57	A	30		A	A	79	A	A	A	A	A	A	A	55		56	56	57	48	46	A
12	A	44	36	35			48	56	49	A	A	A	A	A	A	A	56	53	56	60	61	47	A	48
13	A	46	A	A	45	44	51	A	A	A	A	A	A	A	A	A	A	A	51		57	A	43	A
14	42	38	48		A	38	A	A	57	52	A	A	A	A	A	56	A	A	50	58	A	A	59	A
15		A	44	40		A	47	A	58	A	A	A	A	A		A	A	A	56	109	45	A	A	A
16	A	A	A	A	36		A	A		A	A	A	A	A	A	A	60	60	68		56	57	A	
17	45	46	45	42	43	A	54	A	A	A	A	A	A	A	A	53	50	A	60	55	68		A	46
18	46	36	42	36	40	42	47	A	A	A	A	A	A	A	A	A	62		66	67		44		38
19	35	48	38	35	35	A	A	46	A	A	A	A	A	A	A	60	64	68	63		44	68	A	A
20	51	56	56	A	46	48	56	A	76		A	A	A	66		56	60	66	66				41	A
21	A		38				A	51	50	A	A	A	A	49	A	A	A	80		69	57	48	46	
22	46	44			34	A	A	58	53	52	A	A	A	A	A	A	A	67	74		69	44	46	47
23	43		42	37	34		46	A	A	A	A	A	A	A	A	A	A	46	A	44		62		45
24	47	48		36	A	38	A	56	A	A	A	A	A	58	A	A	A	52	A		68	58	50	46
25			44	37	38	46	A	A	63	A	54	A	A	A	A	A	54	A	58	67	63	57	56	63
26	57	57				34		61	63	62	A	A	A	A	A	A	53	54	51	59	51	45	45	43
27	46	36	37	38	32			A	A	A	A	A	A	A	A	A	A	A	A	A		A	56	
28	42	46	44	37	40	36	A	54	54	51	A			A	50	60	62	73	72		A	57	50	48
29	44	48	47	43	44	44	A	65	72	52	A	A		62	63	70	75	78	81	81		56	56	56
30	57	50	48	45	46	44	A	58		A	A	A	A	A	49	55	A	A	56	72	59	61	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	20	22	24	19	20	16	13	14	13							12	17	17	22	20	19	21	20	16
MED	46	48	44	40	42	44	56	56	57							63	62	67	64	67	61	57	53	48
U Q	57	50	48	45	45	47	57	58	67							70	73	74	74	81	68	61	57	56
L Q	44	44	39	36	35	39	47	56	51							56	55	57	56	57	57	48	46	45

HOURLY VALUES OF fEs AT KOKUBUNJI

JUN. 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	36	58	41	50	28	59		60	84	69	70	76	72	39	G	82	52	42	29	43	G	27	27	
2	41	G	G	30	30	28		57	55	147	40	57	72	60	73	74	70	59	55			57		
3	30	33		31		34	36	49	50	48	56	42	40	52	57	57	74	70	53	58	49		31	34
4	38	41	40	33	29	29	41	45	52	58	72	40	52	49	54	32	27	28	26	41	45	38	33	49
5	43	43	48	30		32		52	72	133	94	61	55	50	40	30	30	52	40	28		54	60	57
6	54	32	28	30	32	47	45	84	50	128	122		54	59	96	56	56		83	73	60	55	46	45
7	53		50	48	50	29	61		94	94	81	59	69	92	86	123	57	55		45	24		54	61
8	29	31	33		49	55	93	77	68	111	116	60	70	77	56	92	54	84	58		51	54	55	
9		60	52	53	57		54	59	57	60	76			82	118	92	61	43		63	35		32	56
10		44	G	30	51	53	74	70	55	72	82		112	84	74	52	58	58		28	25	G	G	80
11	49	41	33	29	G	28	40	86	74	69	86	85	59	81		59	32	32	30	28	29	29	27	
12	72	42	57	G	G	G	27		50	50	51		55	46	32	39	44	42	34	73	70	94	68	74
13	79	53	50	68		42	36	60	70		59	58		40	54	79	62		43	G	34	58	31	54
14	58	38	34	34	30	29	40	41	30	41	41	61	69	59	32	39	39	52	49	34	60	58	73	73
15		82	73	52	110	60	57	48	48	85	148	101	92	87		28	60		57	58		72	52	86
16	62	71	41	34	32		56	82		87	78	59	76		56	61	45	48	41		58	57		
17	32	29	G	G	G	29		76	72			82	58	71		47	50	51	49	49	48	45		36
18	30	57	39	32	33	26		61	110	34	51	55	54	30		40		57	41	38		28	G	34
19	32	34	34	28	30	36	61		70	63	55	61	60	103	32	38	46	54	50		34		76	106
20	50	G	30	52	29	28	48	45	48			68		47	48	44	53	50	26	43	32	30	47	46
21	40	32	28	G	G	28		48	32	37		49	47		84	61		30		38	32	32	23	
22	G	G	G	34	30	57	49	59	54	50	50	60	75	72	80	91	69	42	32	59	46	32	27	33
23	G	29	30	G	G		30	44	42	51	48	55	62	43	61	61	86	50	33	G	27	27	57	58
24	28	29		54	30	33	38	52	53	34	35	40	28	48	61	48	43	44	54		63	50	29	60
25	49	49	28	25	26	29	40	50	53	84	48	58	48	56	47	56	43	61	40	36	G	24	31	34
26	43	46	33	G	28	28		48	47	56	62	61	84		26		47	35	30	24	29	58	30	25
27	G	41	29	30	35	27	39			51	73	75	52	59	104	85	77	91	61		71	58	62	30
28	29	42	49	24	29	34	53	38	51	46	50			58	50	54	50	60	60	41	60	34	34	28
29	34	44	29	34	G	28	60	41	58	52	47	38	G	40	32	29	27	26	40			58	38	52
30	49	29	28	24	G	29	50	56	46	50	51	31	58		48		61		28	28	32	29	47	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	27	29	28	29	27	27	23	26	28	27	27	25	26	26	26	28	28	26	26	23	25	26	27	24
MED	40	41	33	30	30	29	48	54	54	58	59	59	58	58	55	56	52	50	41	41	35	48	34	50
U Q	50	47	44	41	33	42	57	61	70	85	81	64	72	77	74	76	61	58	54	58	59	58	55	60
L Q	30	30	28	24	G	28	39	48	49	50	50	52	52	47	40	39	43	42	32	28	29	29	29	34

HOURLY VALUES OF fmin AT KOKUBUNJI

JUN. 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	15	14	14	14	14	15	16	15	14	20	21	34	34	18			17	16	15	15	14	14	15	15
2	14	14	15	14	14	15	15	15	15		22		33	33	20	18	14	14	15	14	14	14	15	
3	15	15		14	16	18	15	15	17	21	17				30	14	15	14	15	14	15	15	15	14
4	14	14	15	15	15	15	14	15	20	21	24		33	35		17	16	15	18	14	14	14	15	14
5	15	15	15	15		15	16	14	16	16	21		33	33	21	18	14	15	14	15	15	14	15	14
6	15	14	14	15	14	15	15	15	15	15	23	29	32	34	26	21	14	16	14	15	15	14	15	15
7	14	14	14	14	15	15	14	14	17			32	34	28	33		16	14		15	15		15	15
8	14	14	15	15	14	15	15	15	20	17	34	23	33	34		16	16	18	15	15	14	14	14	15
9	14	14	14	14	14	15	15	15	16	16	18	22	30	26	22	20	27	16	14	15	14	15	14	15
10	14	15	15	14	16	15	15	16	15	20			22	22	18	16	16	14	15	15	14	15	15	14
11	14	14	15	15	16	14	14	14	14	15				23	20	16	18	15	15	14	14	14	14	14
12	15	14	14	14	15	20	14	15	16	32	33	36	32	29		22	16	14	14	14	15	14	14	15
13	15	14	14	14	15	14	14	14	15	17	22	20			17	15	14	15	14	16	15	15	14	15
14	15	14	14	15	16	16	15	15	18	17	23	29	24	23		18	14	15	15	14	14	15	14	15
15		14	14	15	14	15	15	15	16	21		21	22			17	14	14	15	14	14	14	15	14
16	14	14	15	14	14		15	14	15	18	16	32	32	34	32	26	15	15	14	16	14	14	15	
17	15	15	15	14	16	15	14	15	15	20		22		35		17	14	15	14	14	14	15	14	15
18	15	14	14	14	14	17	15	17	17	17	22	22	23	21	21	16	16	15	15	15		15	15	15
19	15	14	14	14	14	15	14	16	14	18		33	24	32	22	20	17	15	14		14	14	15	14
20	14	14	15	14	15	15	14	14	17		18		33	21	18	20	18	15	17	14	14	14	15	14
21	14	14	14	16	15	16	14	15	16	21	21	17			16	15	14	15	15	15	14	14	15	
22	15	15	14	14	14	14	15	14	14	17	21	23	32	24	17	16	16	14	15	15	14	14	15	15
23	15	14	14	14	15		15	15	16	15	20	15	18		18	16	15	14	14	15	14	15	15	14
24	15	15		14	14	15	15	15	15	17	23	18		23	32	17	16	14	14		15	14	15	14
25	14	14	15	14	14	15	14	14	15	16	17	22		21	22	17	16	15	15	15	15	15	14	14
26	14	14	15	15	14	17		14	18	20	21		34		16	18	20	16	16	14	14	15	14	16
27	15	15	15	14	14	15	14	16	15	17	17	24	33	33	21	18	14	15	14	14	14	14	15	14
28	14	14	15	14	14	15	14	15	16	15	21			23	17	18	14	15	15	15	14	14	14	14
29	15	14	14	14	15	15	14	14	14	15	18	17		20	21	18		14	15	15		15	14	14
30	15	15	14	14	14	16	15	14	14	20	17	23		23	20	15	16	14	15	14	15	15	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	28	30	29	28	29	30	30	27	24	21	20	24	23	28	29	30	29	28	28	29	30	27
MED	15	14	14	14	14	15	15	15	16	17	21	23	32	25	21	17	16	15	15	15	14	14	15	14
U Q	15	15	15	15	15	15	15	15	17	20	22	30	33	33	22	18	16	15	15	15	15	15	15	15
L Q	14	14	14	14	14	15	14	14	15	16	18	20	24	22	18	16	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

JUN. 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	B	B	B		B	B	B	52	A	A	A	78	79	A	A	89	79	76		A		B		B
2	B	B	B	B		B		52	52	51	60	A	B	63	73	74	76	78		A	B		B	B
3	B	B	B	B	B				63	A	55	57	A	72		87	99		49		B	B	B	B
4	B	B	B	B	B	B		A	53	A	57	59	A	58	72	80	89	72	42		B	B	B	
5	B	B	B	B	B	B			A		A							A	110	36			B	B
6		A	B	B			43	A	67	A	A	A	A	63	A	A	97	93	90	84	83	73		38
7	32	34	40	32			A	A	A	A	A	A	89	A	62	64		87	92	81		67	68	69
8	54	56	56	39			A	61	A	79	A	A	A	A	A	A	60	64	66	70	66		38	35
9	34	30	57	37		35	A	A	A	A	A	A	A	A	74	72	A	76	A	64	61	56		62
10	56	56			47	36		57		A			67	67	75	A	78	81	86	90	82	72		
11					32		36	57	A	A	A	A	A	A	A	B	A	55	58	59	62	A	48	43
12	37	38	34	36	35	A	A	A	B	A	A	A	B	A	A	66	57	59	60	67	61			
13	38	36		37	32		A	57	55	54	A	A	56	57	58	60	60	54	56	62	53		61	54
14	54	59	60		24	34		A	52	A	A	54		A	61	68	65		58	60			34	A
15	A	A	39		30		39	A	A	A	A			B	B		B			59	A			A
16	B	B		34		22		B	68		A	A	89		A	66		93		A	A	51		B
17	55	59		34			A	54	51	A	A	A	A	A	66	64	60	A	82	83	86	89		
18	79	38		59		59		A	53		A	A	A	A	57	63	72	82	84	70	67	76		
19	55		47	55	49		50	52	58	A	A	82	N			65	73	80	A	73		85		49
20	53		A	37	·	48	39	60	59	A	A		A	75	A	67	72	81	84	84			36	32
21					24		59	67	58	53	A	A	A	55	60		91	82	72	74		A	32	53
22	54	53			59	69	47		66	A	52	60	A	A	55	A	57	76	88	84	60	60	69	N
23	79					30	42	A	A	A	A	A	A	A	51	A	A	A	57	52				53
24				55	42			A	A	54	A		57		56	A	A	53	60	66	73			49
25	53		N	A	59		40	53	70	61	58	57	57	A	A	67	70	72	82	83	54		60	60
26	42	37	32	43			30	A	76	84	A	A	A		59	60	65	71	72	75			34	
27	46			42		32	34	A	60	58	68			A	49	A	A	A	66	82	73		42	
28	60	55		30	30																			
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30																66	66	56	B	72			A	79
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	12		14	12		11	11	16						15	17	19	21	21	23	13		11	13
MED	54	46		37	34		40	57	58						60	66	72	76	72	72	66		42	53
U Q	55	56		43	48		47	60	66						72	73	79	81	85	83	77		61	61
L Q	40	36		34	30		36	52	53						56	64	60	61	58	62	60		34	40

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HOURLY VALUES OF fEs AT YAMAGAWA

JUN. 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	B	B	B	G	B	B	B	G	59		71	72	72		118	92					G	B	G	B
2	B	B	B	B	G	B	G	40	50	60	G	40	B	60		71	41	G	71	48	B	G	B	B
3	B	B	B	B	B	G	G		53	50	40			60			G	69	G	G	B	B	B	B
4	B	B	B	B	B	B	G	43	G	43	60	85	90		G	69	59	G	G	G	B	B	B	G
5	B	B	B	B	B	B	G		117		77							69	136	58	G	G	B	B
6	G	89	B	B	G	G	G	49	39			136	150	49	81	95	75		51	33	32	G	G	G
7	G	G	G	G	85	32	41			92		125	107	92	52	31	38		42			G	G	29
8	G	G	32	G	G	25	50	55	91	96	152	82		149	92	38	35	39	32	41	G		G	G
9	G	28	26	31	28	G		41	73	72	63	73	74	96	G	60	112	74	59	41	91	31	24	41
10	32	25	32	G	G	24	33	39	92	81	G	G	42	G	G	78	80	60	58	43	68	30	26	G
11	G		40	G	11	G	33		75	87	80		65		84	B	91	36	31	27	42	34	36	G
12	11	G		G		32	40	50	B	66	60	64	B	52	30	28	34	33	36	33	26	24	G	31
13	28		40	40	27	29	41	37	41	56	62	83		G	27	60	54	49	57	33	30	31	29	28
14	G	G	G		33	G		36	43	36	40	G	G	37	G	30	28	29	32	32	32	G	34	42
15		59	25	32	26	25		46		64	91	G		B	B	G	B	G	G	31	32	31	32	
16	B	B	28	28		G	G	B	G			70		151	80	45	G	60	61		36	30	40	B
17		G	G		28		39	34		92	150	51	56	116	60	32		60	84	51	41	31	30	32
18	31	29	30	26	31	G					50		29	31		51		60	49	58	30	G	G	G
19		30	G	G	24	G	27		50	54	56		115	135		38	28			32	29		26	31
20	28		33	27	G		42	51		64			150	60	82	76	30	27	47	G	G	G	24	30
21	32	24	G	G		G	27			44	50	40	45	31	33	54	57	60	55	82	66	31	32	26
22	G	28	30	31	28	G		32	30			61	62		49	67		52	33	26	G	29	30	G
23	G	G	G		24	G			32	50	50	57	55	28	36	60	45	28	30	G	30	27	G	G
24	G		31	G	G	G		39	57	46	50		46		G	39	95	30	47	40	40	30		G
25		24	G	28	G	G	32	31		26	38	26	53	59	91	60	50		58	57	30		29	25
26	31	27		G	32	G	32	45	60	60	68	60	94		G	32	32	30	32	30		G	G	G
27	G	25	28	28	24	G		31	48	56	62	60			G	52	30	35	30	28	26	G	G	24
28	G	26	28	30	G	G																		
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30											G			G		62	27	30	B	32	26	40	30	26
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	18	20	20	21	22	18	18	19	21	23	20	18	19	21	25	22	23	25	25	23	22	23	22
MED	G	25	28	14	24	G	32	40	50	60	60	60	64	59	36	54	40	36	47	33	30	28	26	24
U Q	28	28	31	29	28	24	40	46	73	76	71	77	94	96	81	68	59	60	58	45	40	31	30	30
L Q	G	G	G	G	G	G	G	34	39	48	40	40	46	31	G	35	30	29	31	27	26	G	G	G

HOURLY VALUES OF fmin AT YAMAGAWA

JUN. 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	B	B	B		B	B	B	17		33	33	34	35	34	35	33	32	21	17			B		B
2	B	B	B	B		B	35		33	33		32	B	33	33	32	32	20	15		B		B	B
3	B	B	B	B	B		30		33			34	34	33	33	32		20	21		B	B	B	B
4	B	B	B	B	B	B		20	23		34	33	34	33		33	23		34		B	B	B	
5	B	B	B	B	B	B	40		24		32							30	17	15			B	B
6			B	B		35	28	26	21	20		33	24	33	34	22	20	18	17	15	17	15	15	16
7	15	15	14	16	15	16	16	16	18	22	21	34	45	35	34	20	18	18	17	17	15	15	16	16
8	15	15	15	15	15	15	16	17	18		36	34		47			20	17	16	16	18		15	15
9	15	16	15	15	15	15	17	16	17	18		34		44	52		20	18	17	15	17	16	15	15
10	15	14	15	16	15	15	17	20			33		50	34	44	21	18	20	18	16	15	14	16	16
11	15	15	15	14	14	17	15	18	18	20	34				53	B	50	44	20	15	15	16	14	14
12	14	16	15	15	14	16	21	33	B	23	34	34	B	24	22	20	18	17	16	17	14	15	16	16
13	15	14	16	15	15	16	17	17	17	18	20	20	20		45	35		18	16	16	15	14	15	15
14	15	14	14	15	15	15	16	17	18	20	21	24		23			20	18	16	16	16	16	15	14
15	15	15	15	15	15	14	15	20	22		48	51		B	B	48	B			17	15	16	16	17
16	B	B	18	17		17	17	B	45		20	22	14	68	34	20		16	17	14	18	16	14	B
17	16	14		15	15		18	17	17	18	18		41	41	38	45	21	17	17	15	15	16	16	15
18	15	16	15	15	15	15	17	16	18		21	20	21		23	18	18	18	17	15	15	16	15	16
19	15	16	15	14	15	14	16	16	18	21	21		20	22		21	20	16	20	17	16	15	15	14
20	15	14	15	15	16	16	17	17	18	18	20		23	32	22	20	18	18	17	16	14	15	15	15
21	15	14	14	14	15	14	15	17	18	20	21		21	22		21	20	17	18	18	16	15	15	16
22	14	15	15	15	14	16	17	16	20	20	18		21	22	20	21	18	18	15	16	15	14	15	14
23	14	15	14	15	14	14	16	17	18	18	20		42		21	22	20	17	16	16	15	16	14	14
24	15		14	15	14	14	15	16	18	22	20		30		45	22	21	18	21	15	17	15		15
25	15	14	15	16	14	14	15	18			22		46	46	39	32	21	20	16	21	16		15	14
26	15	15	15	15	15	15	16	17	17	21	34	33	36		46	22		20	23	17	15	15	18	17
27	15	15	18	15	15	15	17	16	30	33	33					22	20	18	15	15	15		15	14
28	16	15	17	15	14	14																		
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30														20		34	44		B	18	14	16	15	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	20	21	22	21	22	25	23	23	18	23	15	18	19	19	23	22	25	26	24	23	20	22	22
MED	15	15	15	15	15	15	17	17	18	20	21	33	32	33	34	22	20	18	17	16	15	15	15	15
U Q	15	15	15	15	15	16	17	18	23	22	34	34	41	41	45	33	21	20	18	17	16	16	16	16
L Q	15	14	14	15	14	14	16	16	18	18	20	24	21	23	23	21	18	17	16	15	15	15	15	14

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HOURLY VALUES OF foF2 AT OKINAWA

JUN. 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	59	56		57	46	37		56	64	A	65	A	A	A	A	91	92	90	84			80	71	68
2	70	58	58	69			35			A	A	A	57	77	80	82	91	91	92	A	72	A	A	A
3	56	57	56		35	31		A	A	A				A	86	87	104	A	A	A	89		76	81
4		65		57		46	55	A	58	A	A	79	70	69	84	90	81	92	111		93	63		B
5	55	57	56	55	56	41	44		58	A	A	A	67	92	90	A	107		125	A	A	A	A	59
6	56	55	60	67	67		57		83	62	A	A	A	A	A	96	A	106	91	A	83		55	
7	49	57	59		A	35	34		67	A		A	63	70	A	71	88	102		A	59	61		57
8	63	58	54	56			71	64	A	A	A	A	A	A	54	70	78	82	82	83	55	A	58	
9	23	38	48		A	A	37	A	A	A	A	A	A	A	A	74	85	84	A	65	58	43	A	A
10	70	63	58		B	B		54	74	A	A	A	A	A	84	93		A	A	A	84	81	69	68
11	58	61	70		38	35		A	A	A	A	66	A	68	76	A	66		A	A	60	62		B
12	B	59	32	31		69		47	A	A	A	A	A	A	63	72	73	72	71		63	56	46	A
13	A	A	35	A	A	27		A	56	61	A	A	62	75	77	77	70	A	A	59	57	54	57	56
14			38	35	A	38	A	58	A	A	56	A	A	58	A	78	71	58		A	A	38	A	A
15	A	A	N	A	A	A	A	A	A	A	A	61	A	A	59	60	58			A	A	A	37	A
16	A	39	38	35	31		32	60		A	A	A	A	A	A	65	82	72	70	A		56		39
17	48	44	A	A	31		A	A	56	A	A	A	60		75	68	71	A	A	A	70	A	A	A
18	A	A	A	30	29		58	56		51	A	A	A	63	A	A	81	84	A		83		54	68
19		60	57	58	56	35		61	62	A	A	A	A	60	A	A	A	80	84	A	A	A	54	57
20	50	A	A	A	A	A	A	61	A	A	A	A	A	A	72	A	80	107	90		81	38	44	A
21	38	30	31	35	35	32		62	58	A	A	A	A	56	66		94	93			69		53	A
22	51	57	48	41	37	31	A	59	A	A	62	A	A	A	A	56	60	80	87	A	A	A	A	A
23	A	32	32	37	35		B	A	A	A	58	A	A	A	A	A	A	A	61		57	40	43	46
24	47	44		31				48	54	A	A	58		A	A	58	A	55	66		71		A	38
25	37	43	37	A	A	A	A	57	56	56	64	59	A	A	66	A	78	86	88	86	63	58	59	46
26		38	36	38	A	A	A	A	90		A	A	B		70	76	78	83	90		68	38		44
27	43		38	32	B	B	B	47		71	A	A	A	A	A	60	A	54		84		52		57
28		49	41	44	35	30	35			70		A	A	A	60	68	63		89		38		A	69
29		38	46				56	52	68		A	A	A	A	71	74	74	83	84	88	57	64	A	44
30	49	51		42	38		61	66	57	A	A	A	57	61	60	68	68	66	82	A	58	63	A	47
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	24	22	19	14	13	12	16	15					11	18	22	24	21	18		22	17	14	17
MED	50	56	47	41	36	35	50	58	58					68	72	73	78	83	86		66	56	54	57
U Q	58	58	57	57	46	39	57	61	68					75	80	82	86	91	90		81	63	59	68
L Q	47	41	37	35	35	31	35	53	56					60	63	68	70	72	82		58	41	46	45

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HOURLY VALUES OF fEs AT OKINAWA

JUN. 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	G	26	30	34	35	38	42	59	60			111	81	80	85		61	58	49	25		38
2	36		36	G	G	G	G	38	60	93	68	68	59		69		49	69	50	95	42	49		36
3	29		66		G	G	27	71	80	95				76		78	81	112	179	177	64		30	28
4	G	28	G	G	G	G	G	92	40	41	47	63	64	38		71	117	92	71	59		30		B
5	33	34		38		26	34		55	63	66	105	36	66	62	146	110	68	61	61	82	72	72	45
6	40		28	G	28		33		48	71	73	97	91	114	150	82	119	96		49	38	28	24	G
7	G	G	G			40		33	37			91	78	62	80	53	37	40	60	49	31	29	38	32
8	32	G	G	G	G	G	22	39		57	85	178	112	90		35		37	31	32	25	32	G	28
9	31	G		46	41	39	30	49	73	76	127	75	65		64		59	60	56	G	28	36	59	29
10	32	G	G	G	B	B	G		49	62	73		79		37	51	126	178			72	39	35	24
11	28	26	G	G	G	G	32	43		72	76		94		76	150	83	80	60		25	G	G	B
12	B	G	G	G	G	G	32	41	46	53	62	66	72	36	37		36	39	49		63	65	G	32
13	39					24	46	95	72	50	59	87	60	57	53	59	48	65	60	68	60	39	34	42
14	50		27	34	43	28	35	44	67	66		61	41	38		62	54	59	52		41	30	48	43
15		79	48	26	36	40	33	42	50	61	44	55	66	66	55	74		49	61		42	42		60
16		37	38	27	G	G	G	38		113	137	131		151	104		72	43	57	50	30	42	45	36
17			46	51	51	39	38	44	42		69	63		G	64	75	81	130	84	58	69	94	70	58
18	36		40	38	32	38	34	35	42	40	39	43	36		66	72	66	78	81		37	41	27	29
19	24	G	G	G	G	G	G	39	36	46	64	83	58	59	82	70	151	56		59	50	69	45	38
20			77	74		53	43	60	76	84	99	94	142		68	60	85	50	30		25	25	29	26
21	G		33	25	G	G	G	34	42	71	46	49	40	50	51	41	40	51			42	38	48	
22	G	30	G	37	27	36	36	42	49	38	33	36	40	37	42	55	62	38	42		39		47	46
23	42	26	G	25	G	32	B	39	46	40	37	47	55	62	62	50	42	58	58	64	24	26	27	G
24	G	G	G	G	G	G	G		34	40	46	47		72		39	43	38	28		58	32	41	35
25	27		40	26	31		38	39	44	47	48	66		37	49		109	39	31	39	24	G	G	24
26	28	30	G	G	37		80	67	50	56	134		B	G	42	48	66	33	26	28	G	G	G	G
27		G	G	G	B	B	B	34	44		95	96	81	68	106	49	47	48	42		38	31	G	27
28	34	39		38	32	26	G	34	40	45	49	49	65		50	45	37	53	82		38	29	40	25
29	G	G	G	G	G	G	G	30	35	42	35	55		43	50	50	44	42	38	59	40	36	28	24
30	28	G	G	G	G	G	G	29	26	26	40	40	41	34	38	64	51	50	36		46	40	42	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	24	20	26	27	24	25	27	26	27	27	27	25	22	22	25	25	28	29	26	17	29	28	26	27
MED	28	G	G	25	G	24	32	39	46	57	62	66	64	58	62	60	64	53	56	58	40	34	34	29
U Q	35	30	38	37	32	37	35	44	55	71	76	92	79	68	78	74	85	73	61	62	54	41	45	38
L Q	G	G	G	G	G	G	G	35	40	42	46	49	41	37	49	49	45	41	38	44	29	28	24	24

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HOURLY VALUES OF fmin AT OKINAWA

JUN. 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	14	17		14	14	15	15	14	16	18	23	22	28	37	33	33	16	14	14	14	14	14	15	15
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4	15	18	15	15	15	15	18	14	15	18	26	20	29	28	16	20	18	15	14	15	14	15		B
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6	14	15	14	15	15		15	14	15	17	18	28	26	27	23	24	18	15	14	15	15	15	15	18
7	15	15	15	15	14	15	16	14	15	17		26	28	18		20	17	16	14	15	15	14	15	15
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9	14	15	14	14	14	14	16	14	15	16	20	28	30	29	33	32		16	15	16	14	16	14	15
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12	B	17	16	22	15	18	16	15	16	16	21	29	29	28	22	17		15	14		17	14	17	14
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26	14	15	15	15	14	14	14	14	15	18	27	28	B		22	18	16	15	18	14	14	15		14
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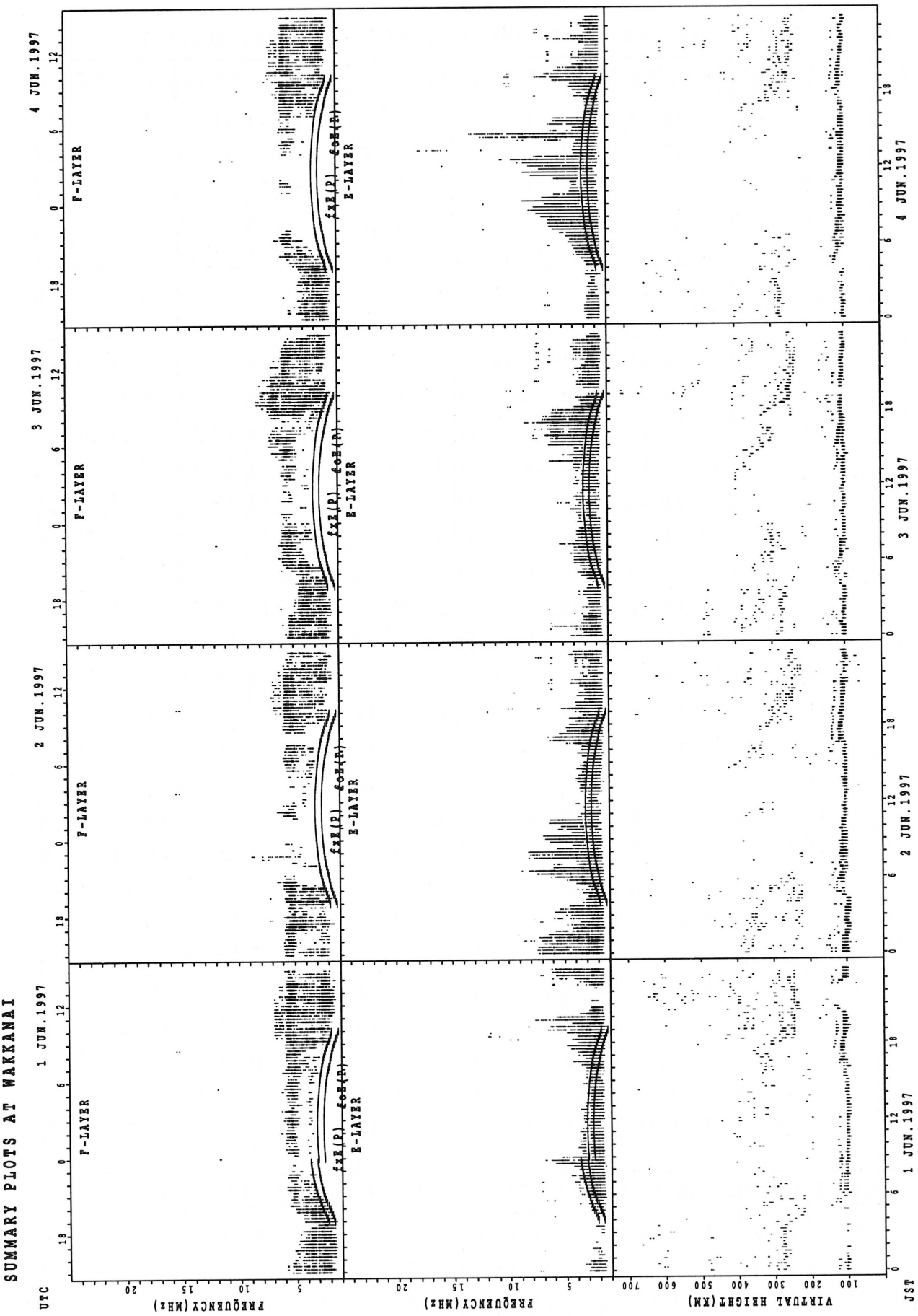
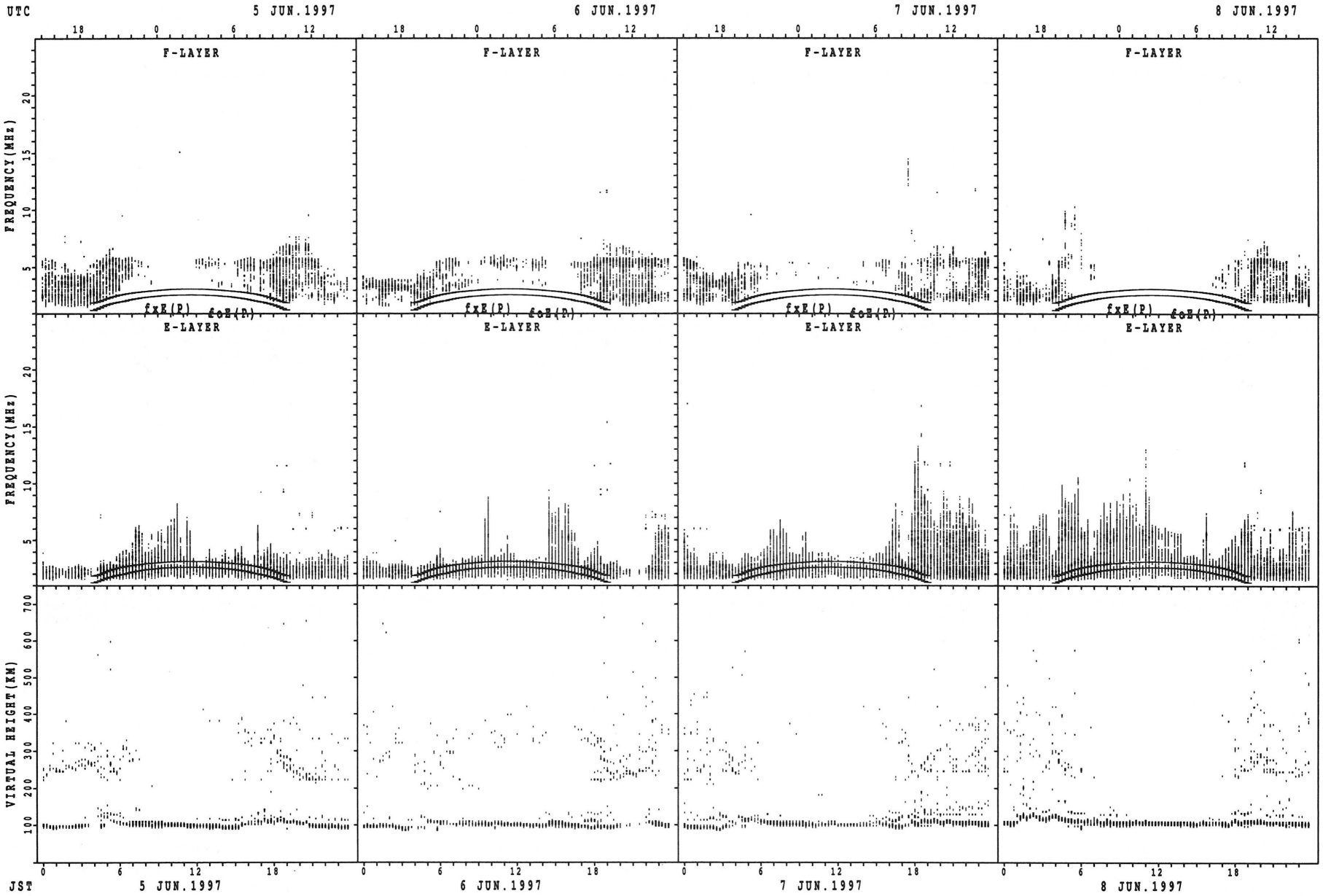
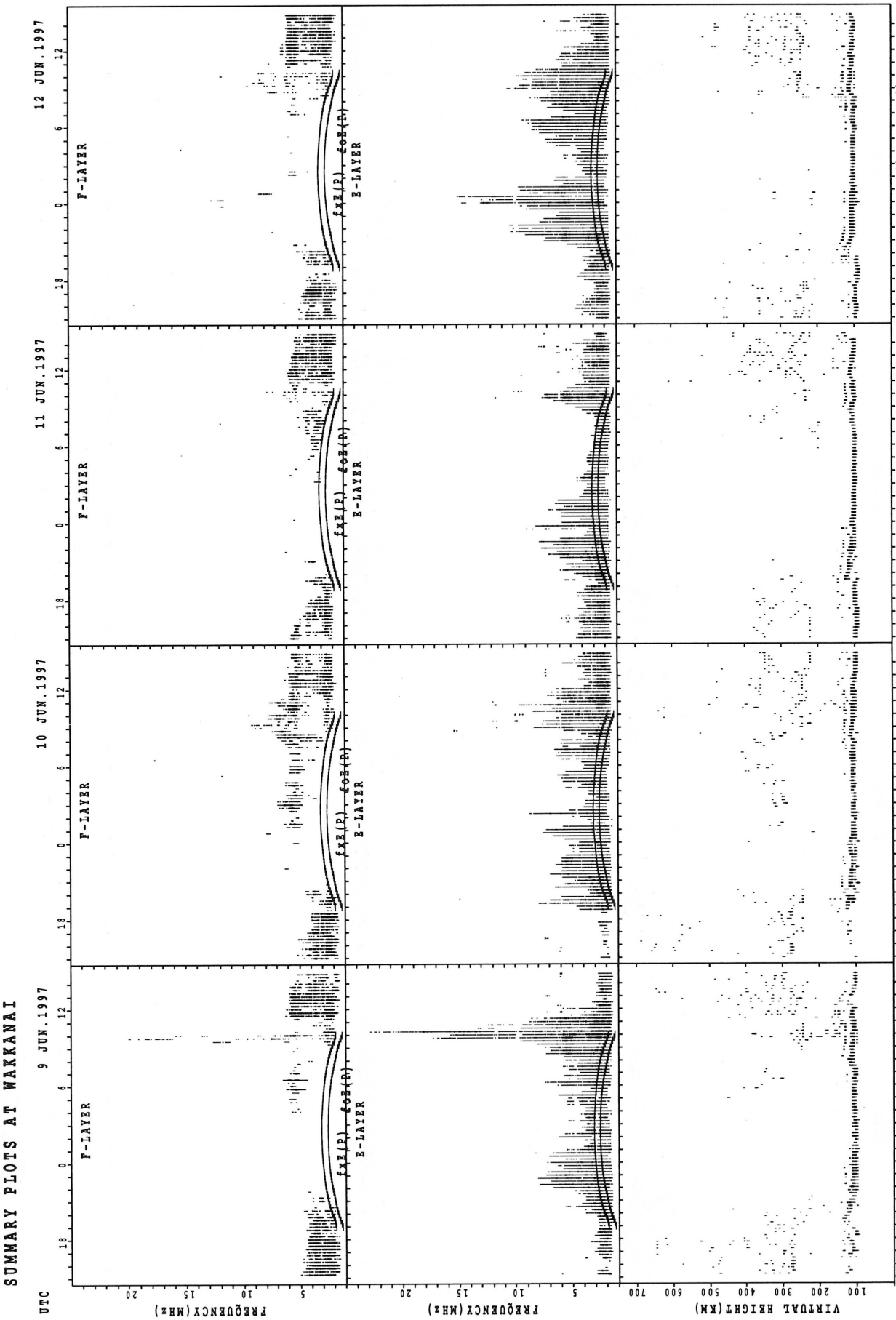
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	29	28	27	24	30	30	30	27	27	28	27	29	27	27	30	29	24	30	29	28	28
MED	15	15	15	15	14	15	16	14	15	17	20	23	28	27	23	20	17	15	14	14	15	15	15	15
U Q	15	15	15	15	15	15	17	14	15	18	21	27	29	29	28	22	18	15	14	15	15	15	15	15
L Q	14	14	14	14	14	14	15	14	15	16	18	21	26	24	21	18	16	15	14	14	14	14	14	14


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

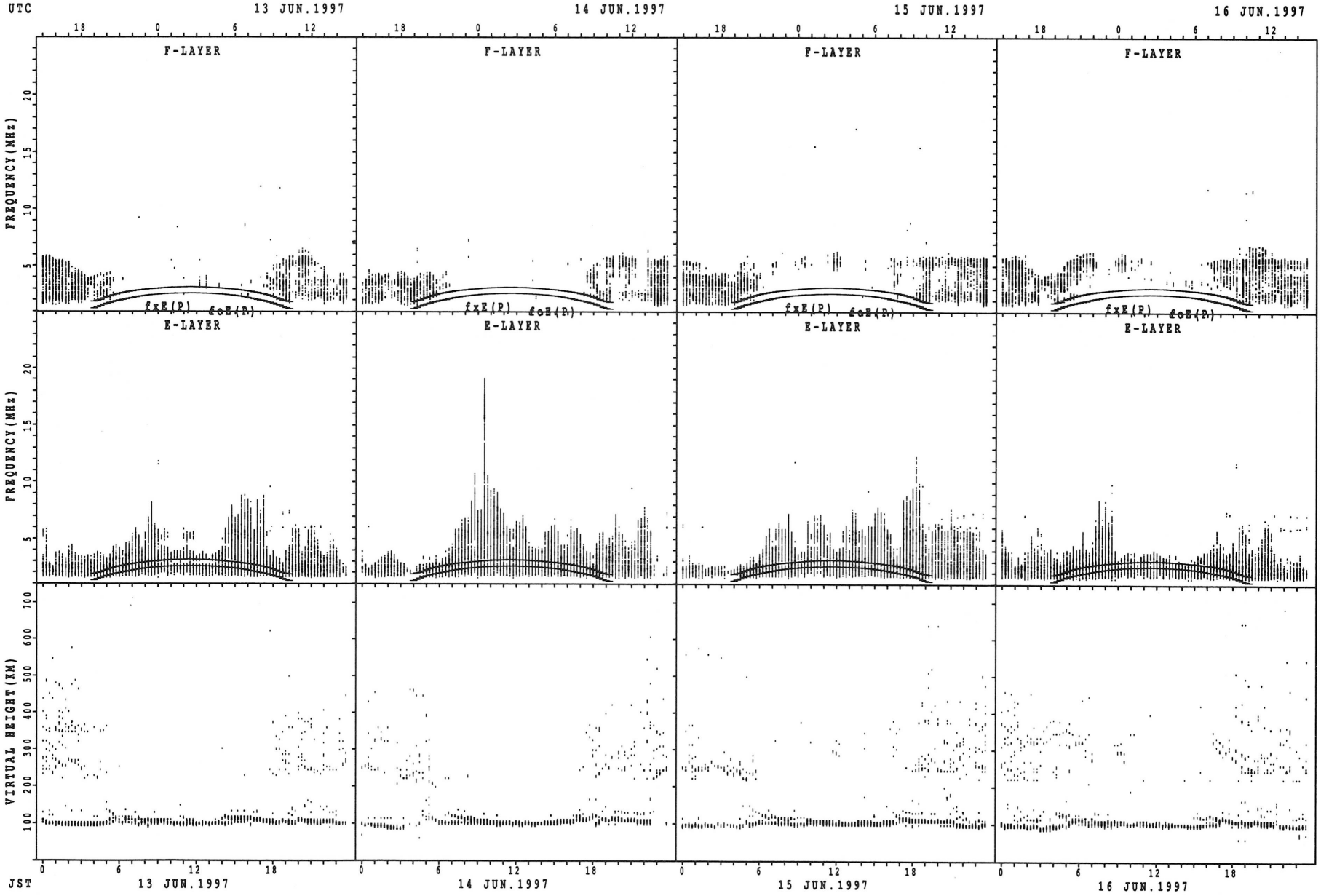
SUMMARY PLOTS AT WAKKANAI



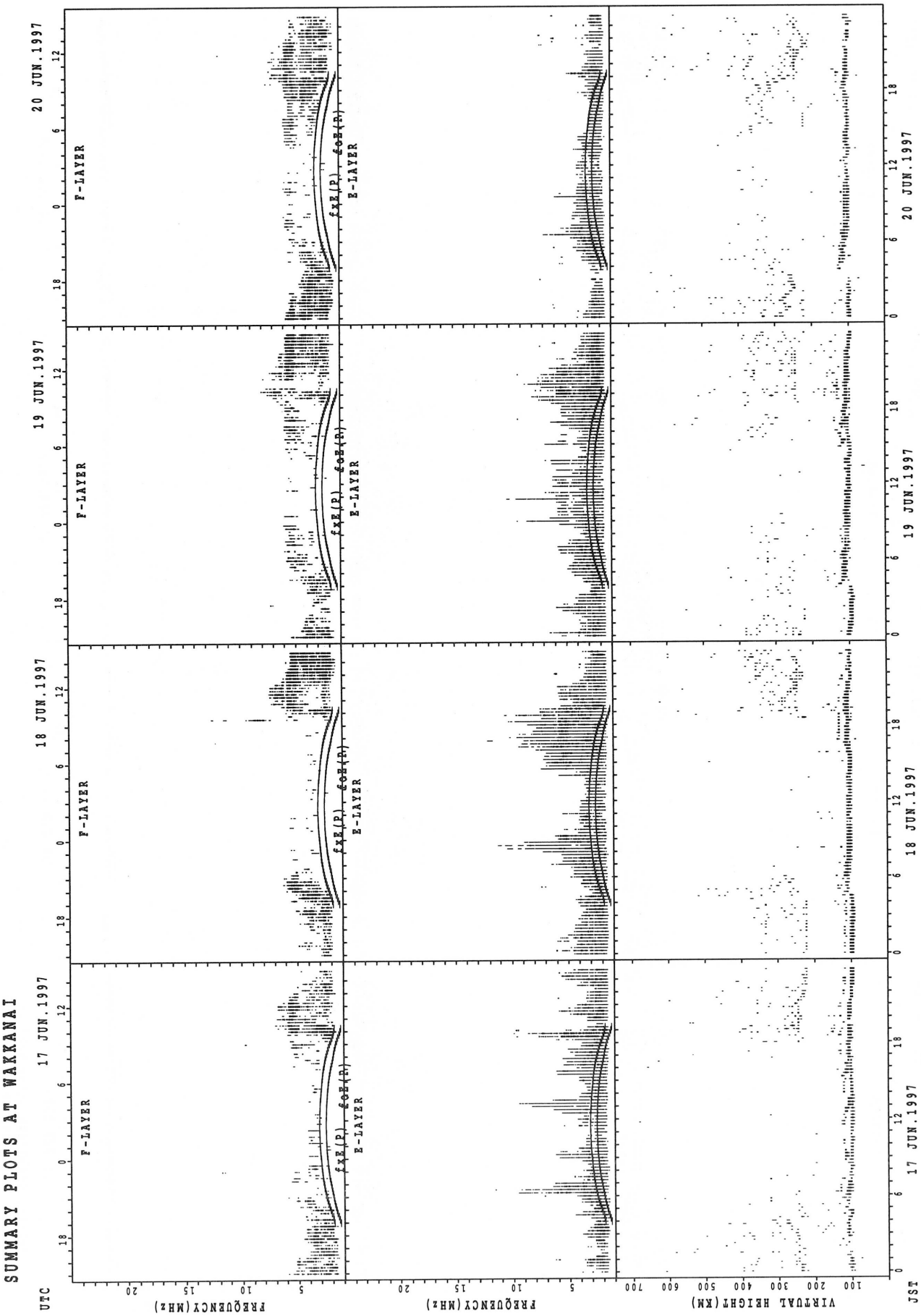
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
9 JUN.1997
10 JUN.1997
11 JUN.1997
12 JUN.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

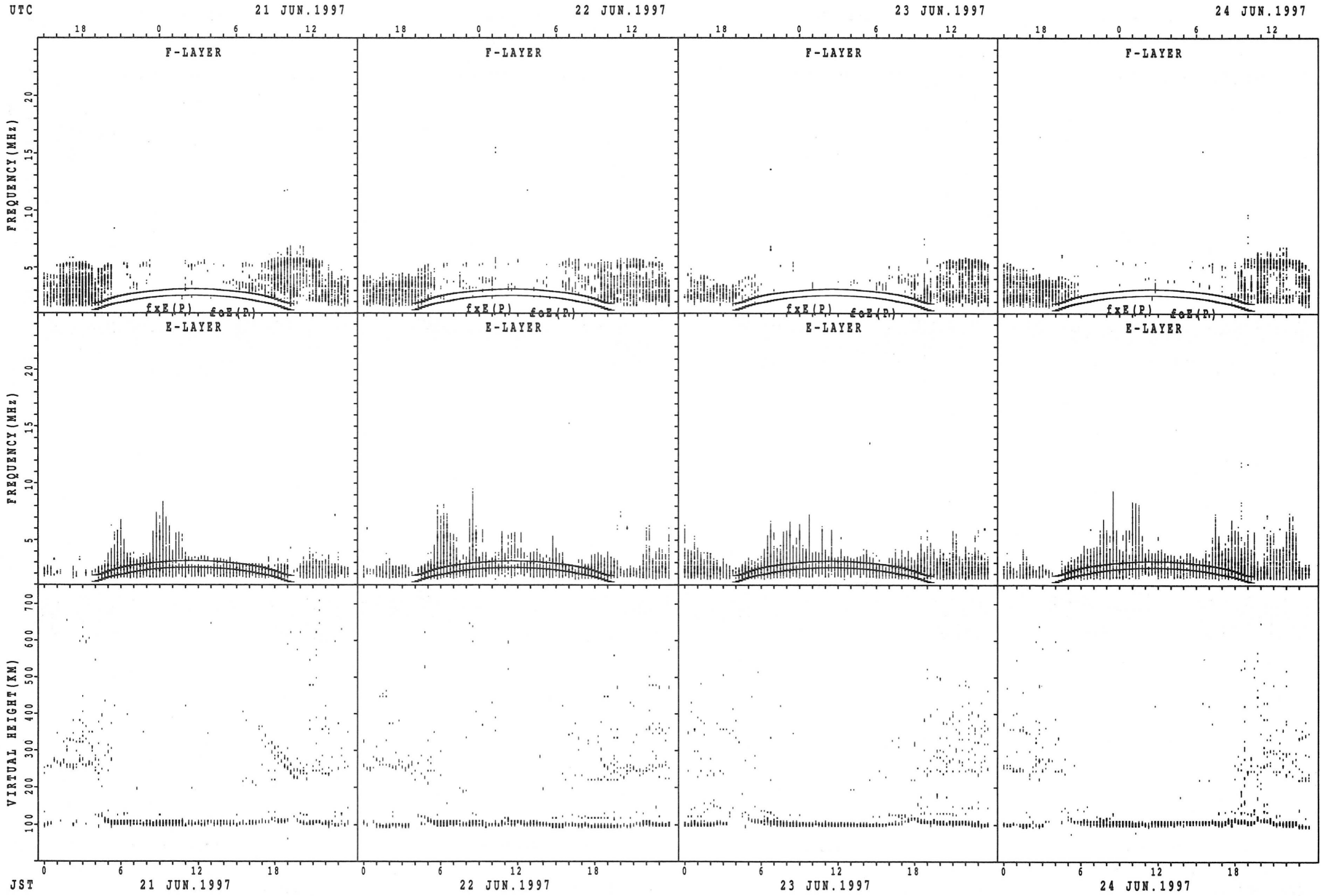
SUMMARY PLOTS AT WAKKANAI



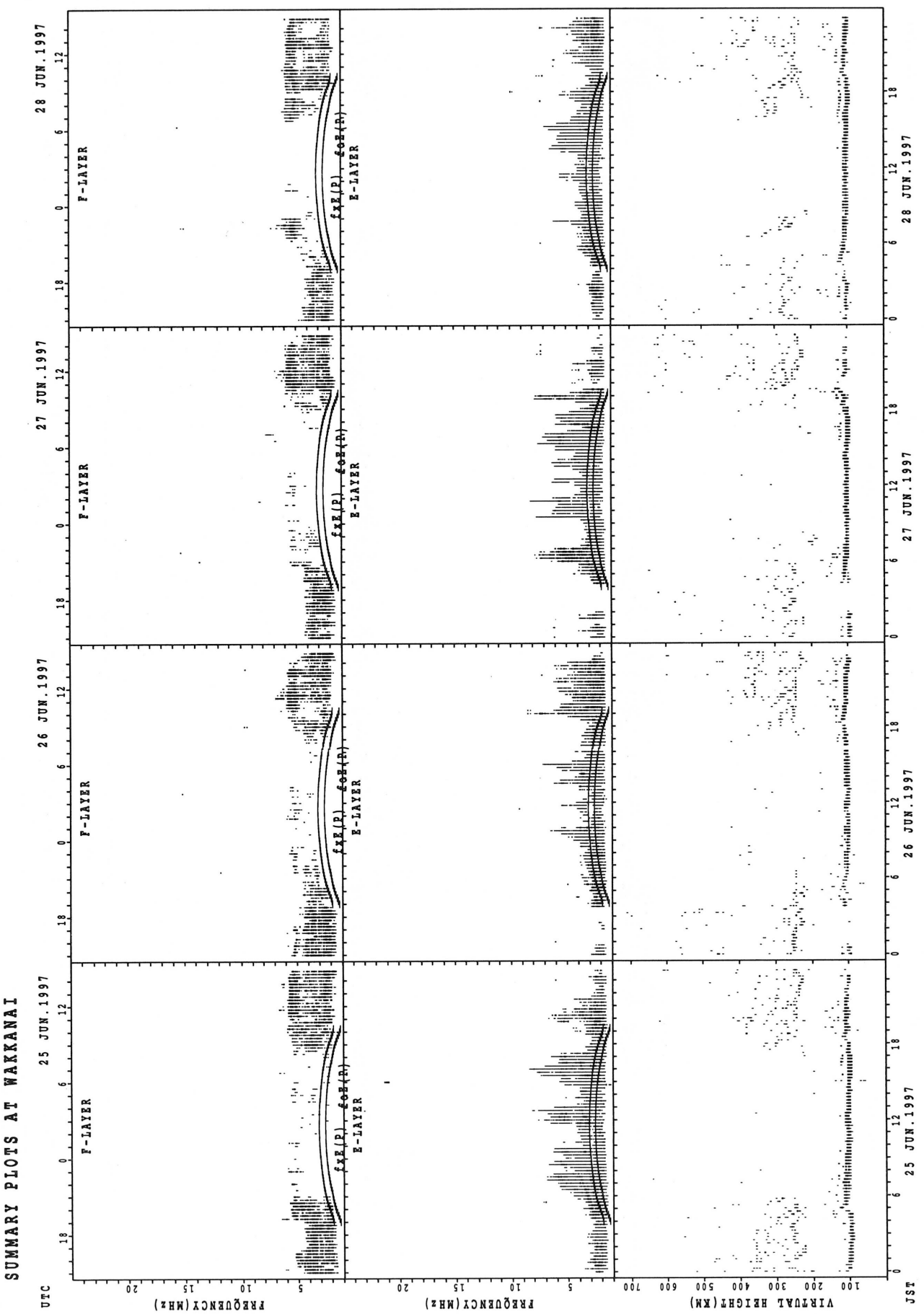
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

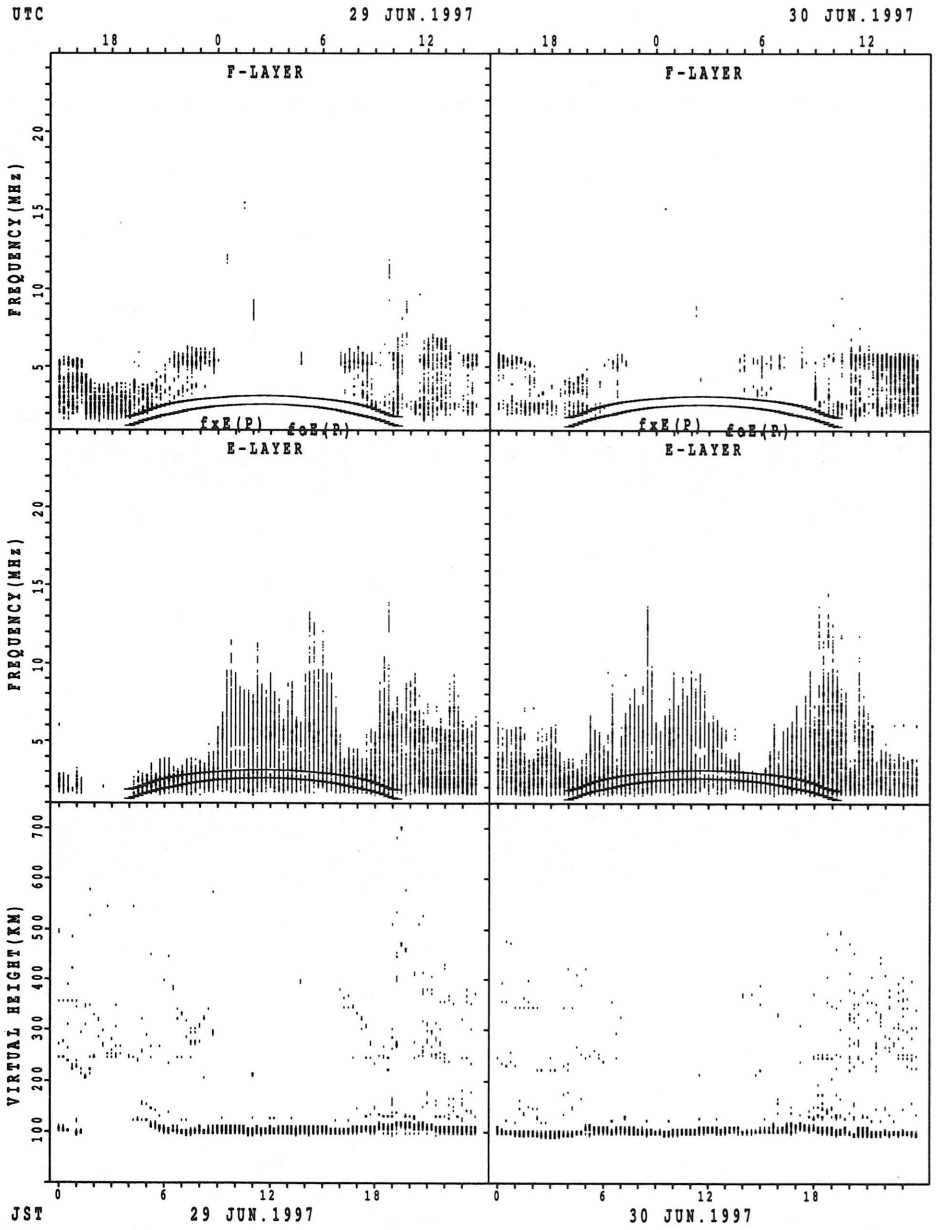
SUMMARY PLOTS AT WAKKANAI



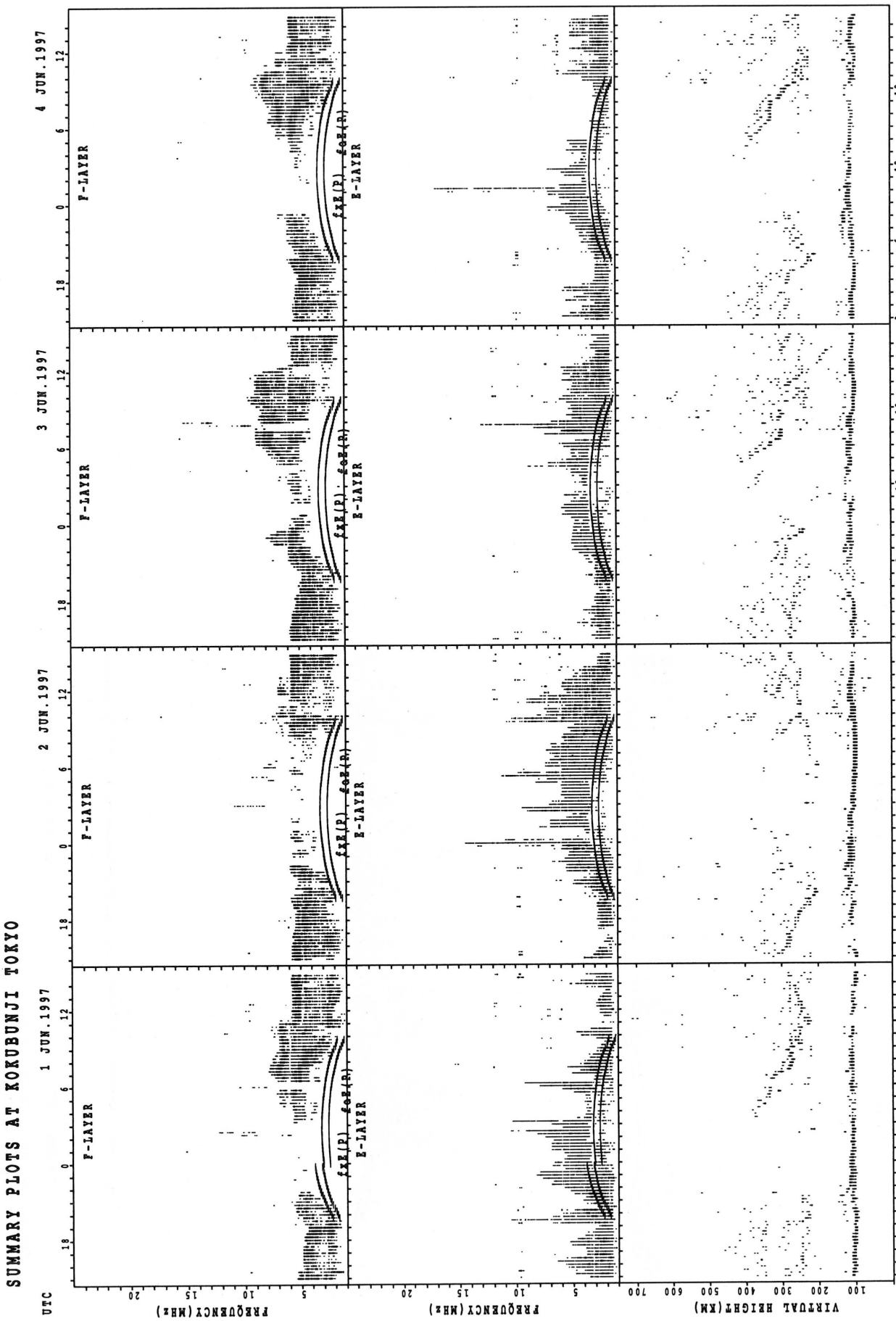
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
25 JUN.1997
26 JUN.1997
27 JUN.1997
28 JUN.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

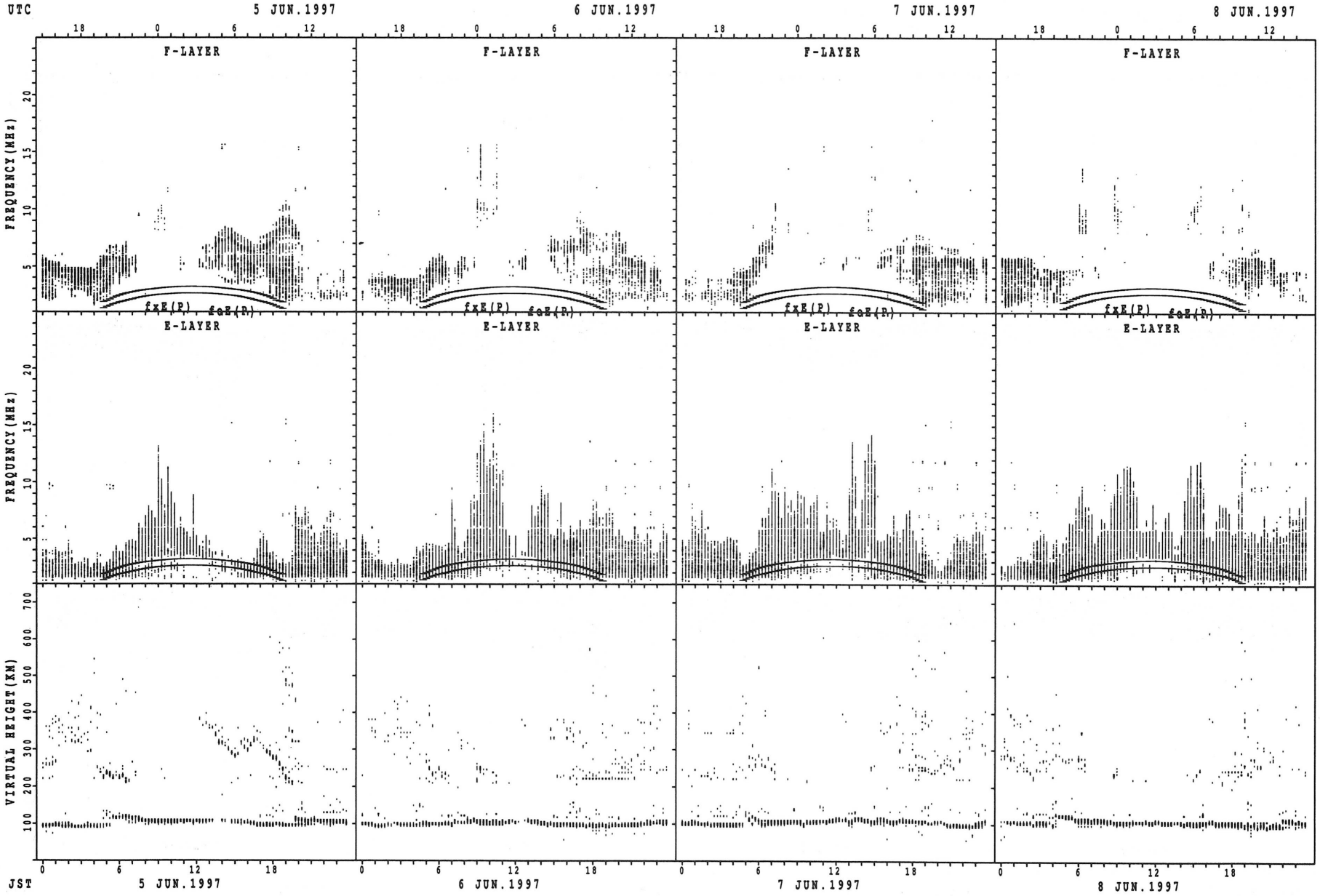
SUMMARY PLOTS AT WAKKANAI



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

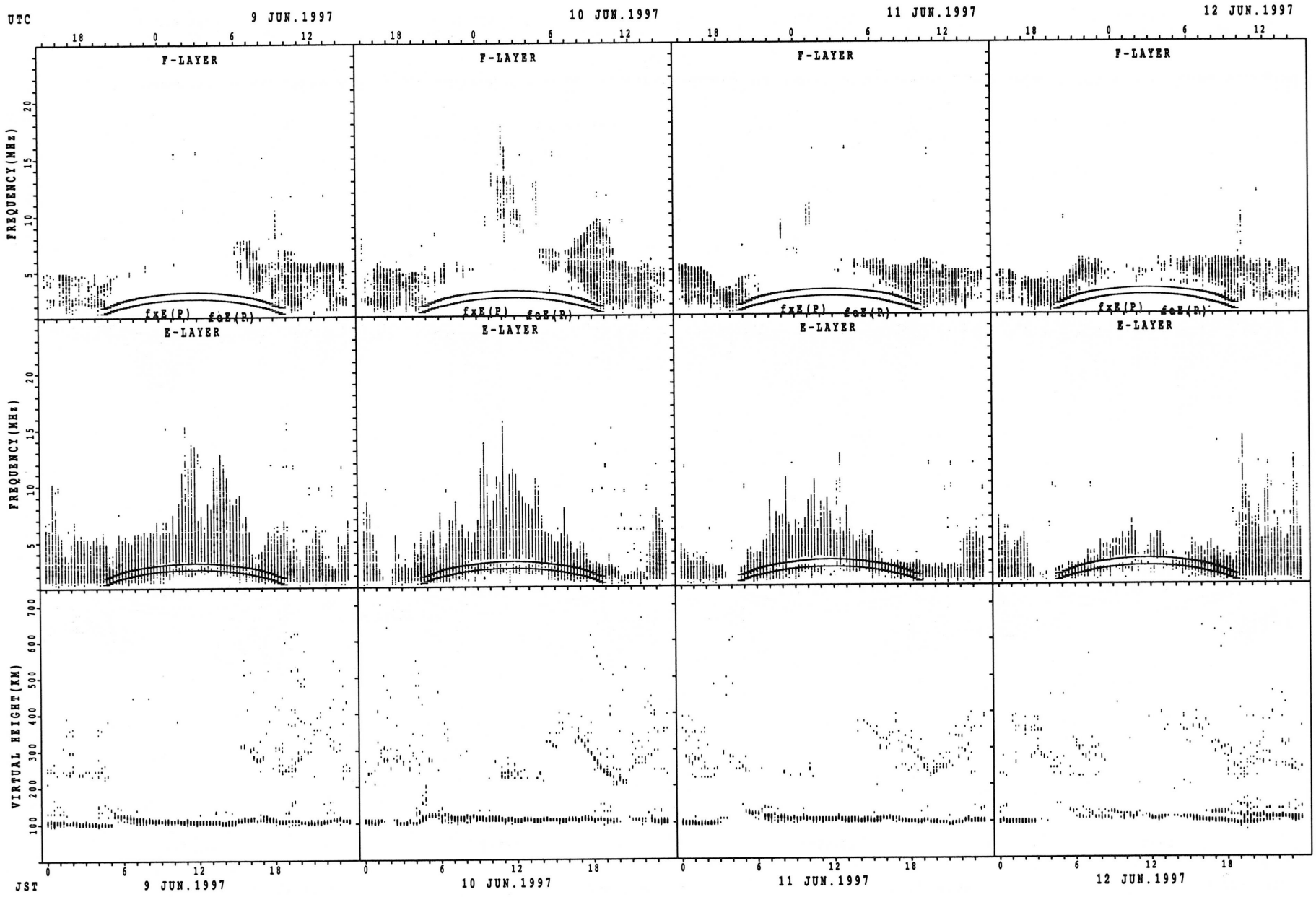

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
1 JUN.1997
2 JUN.1997
3 JUN.1997
4 JUN.1997
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



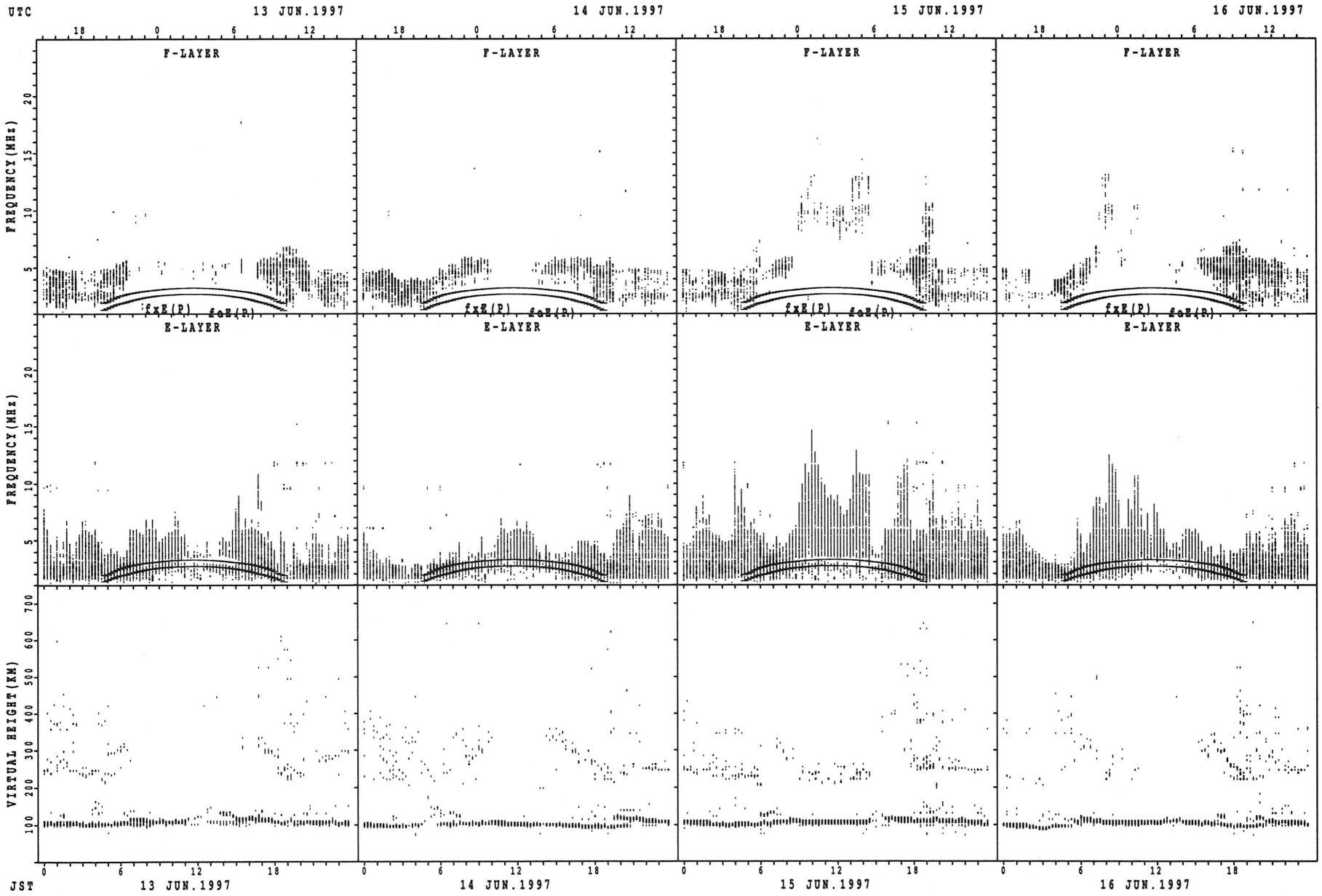
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

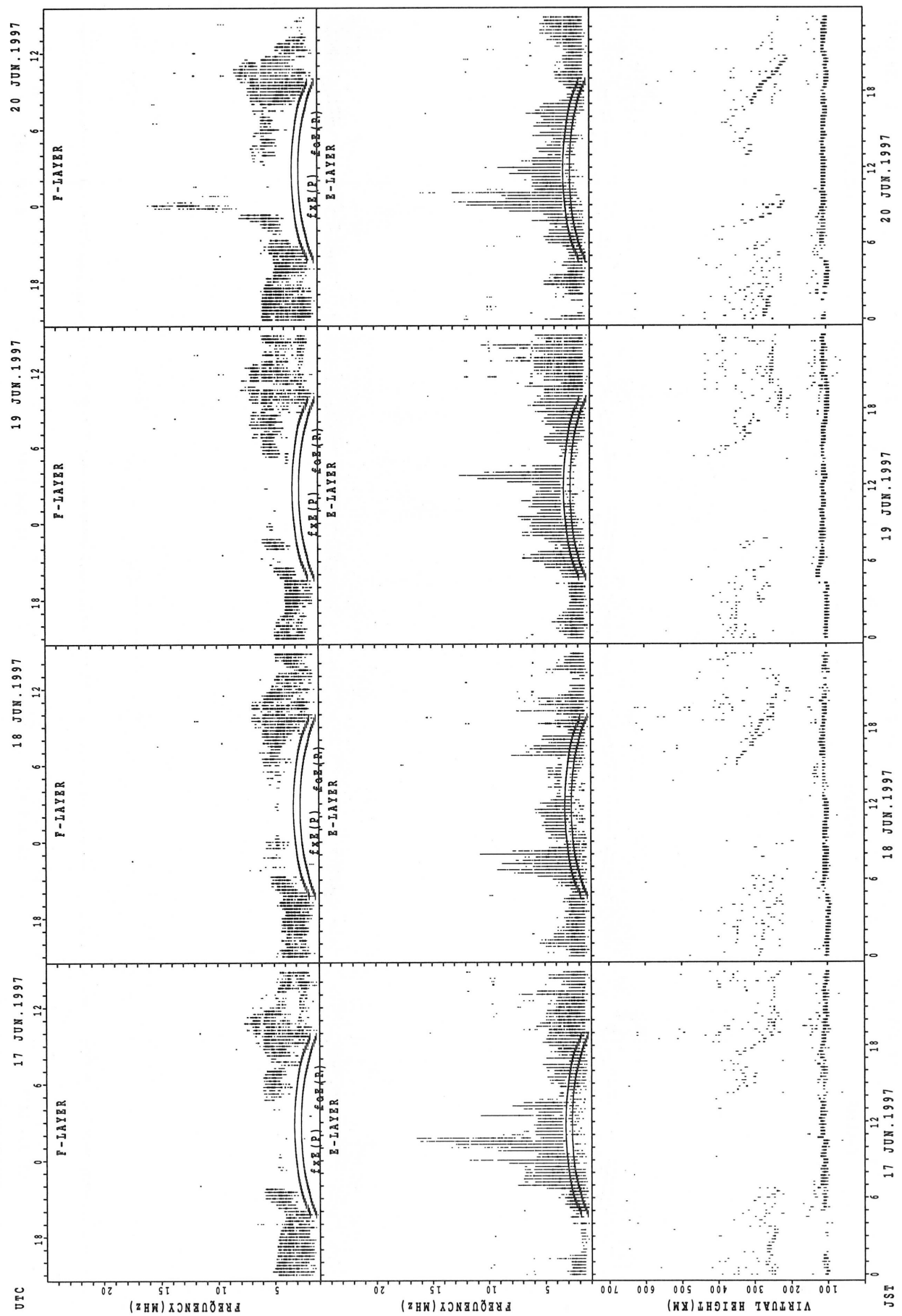


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

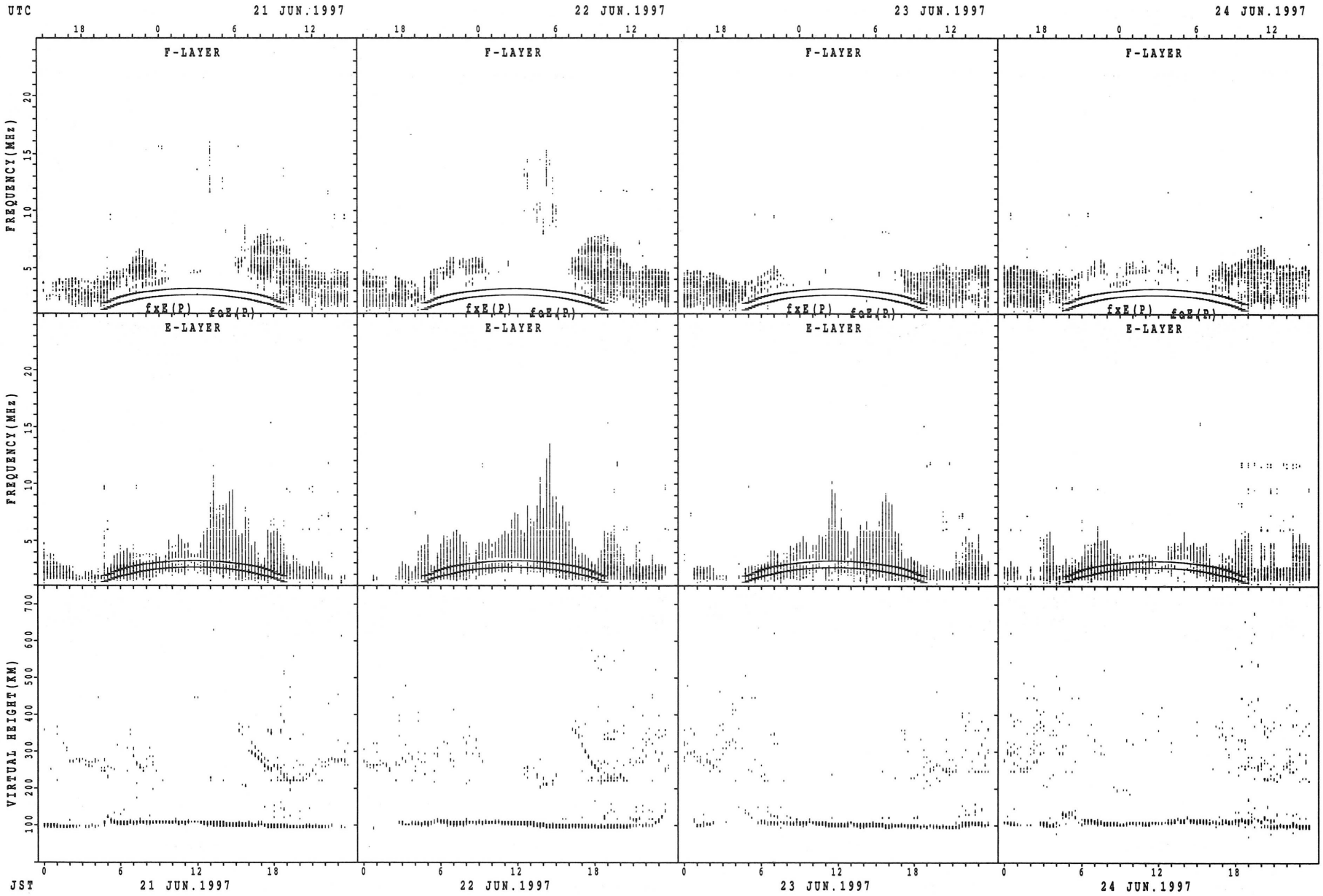
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

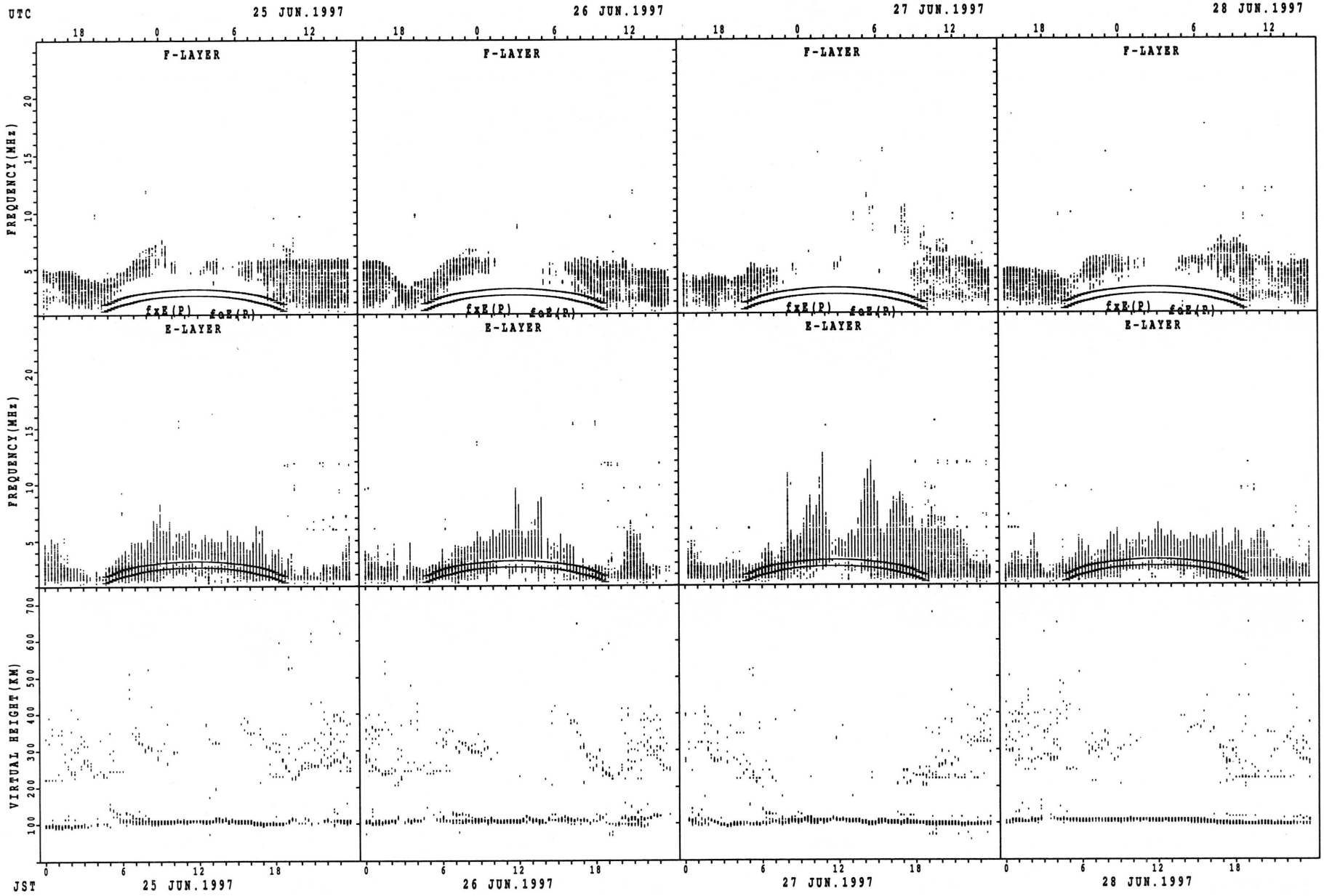

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
17 JUN.1997
18 JUN.1997
19 JUN.1997
20 JUN.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



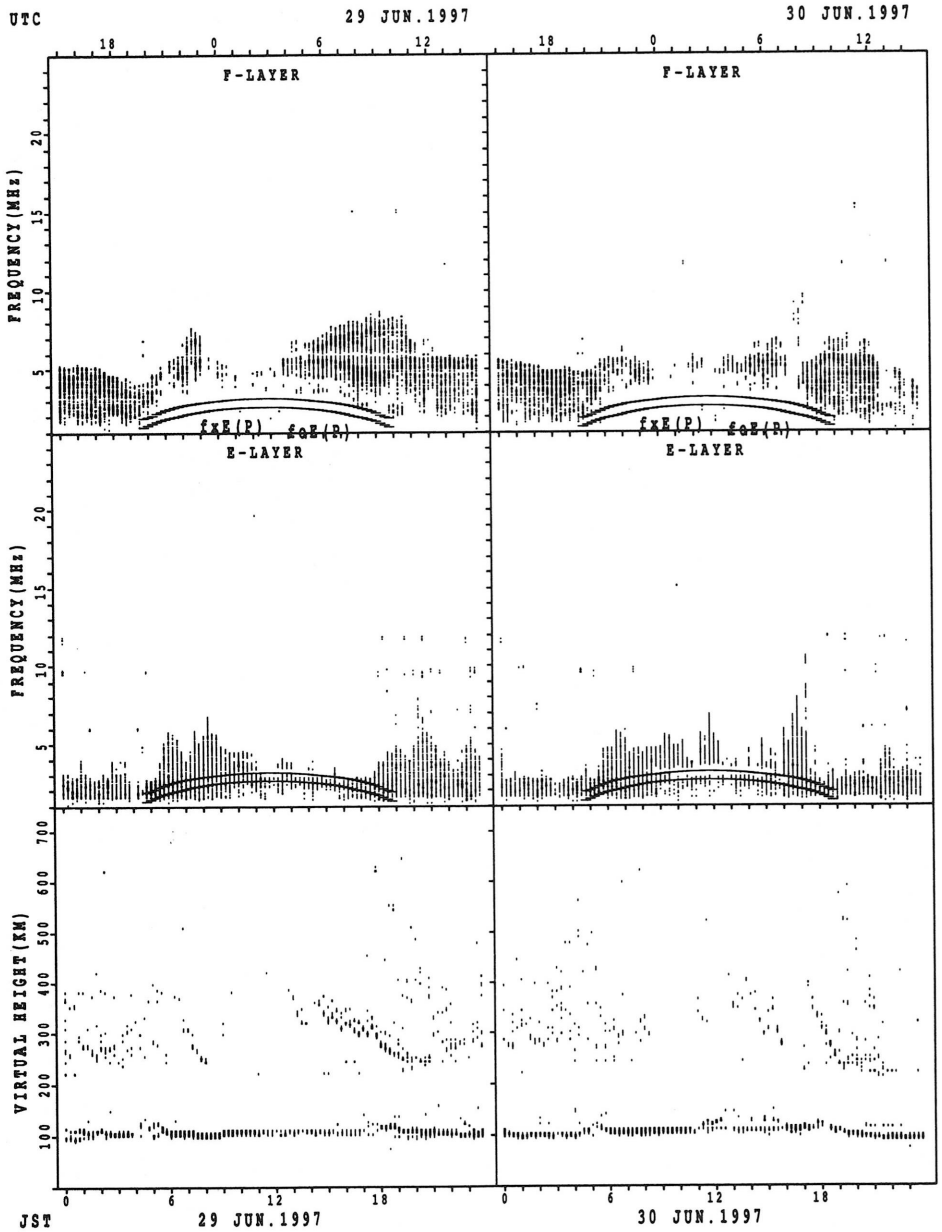
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

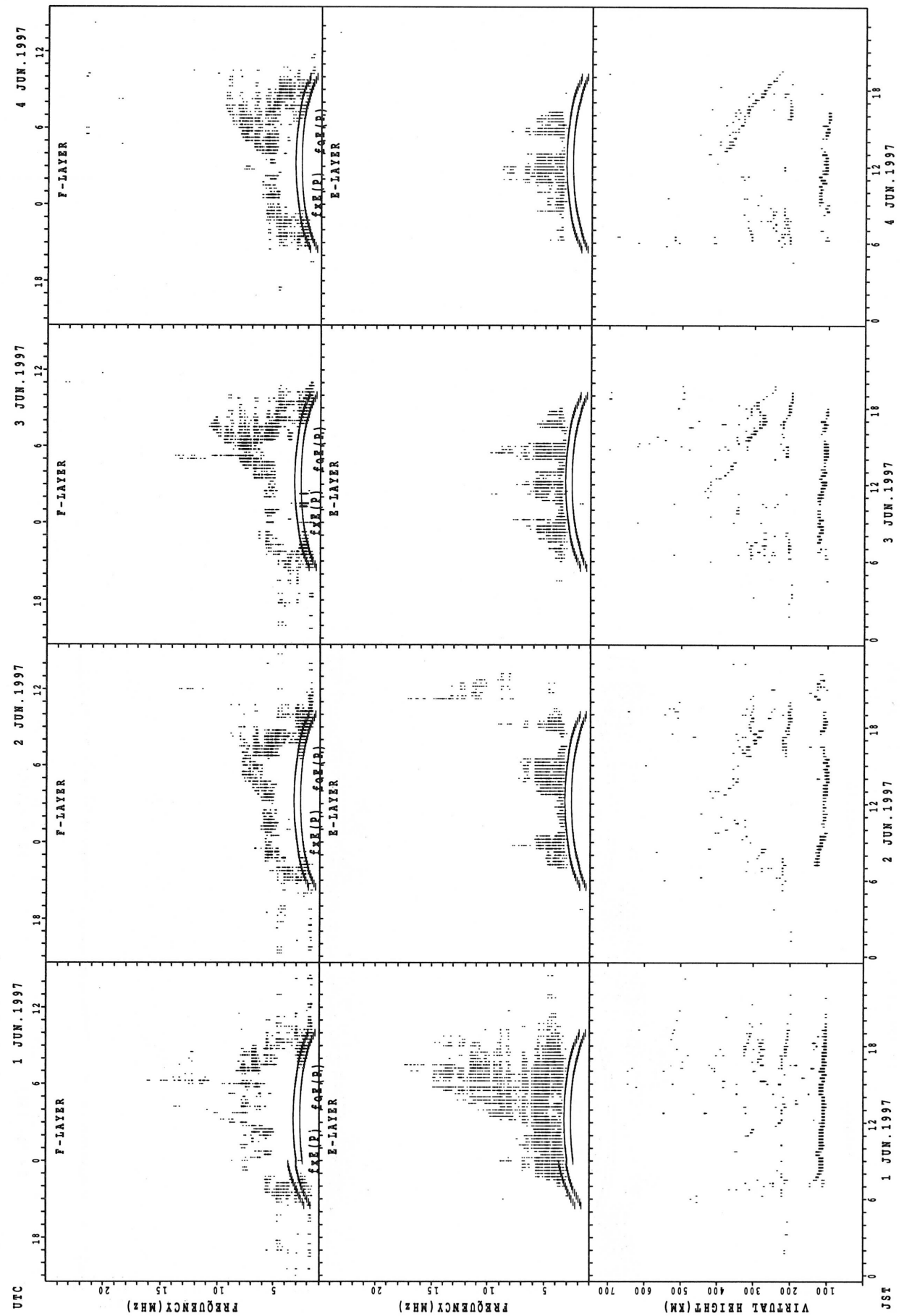


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

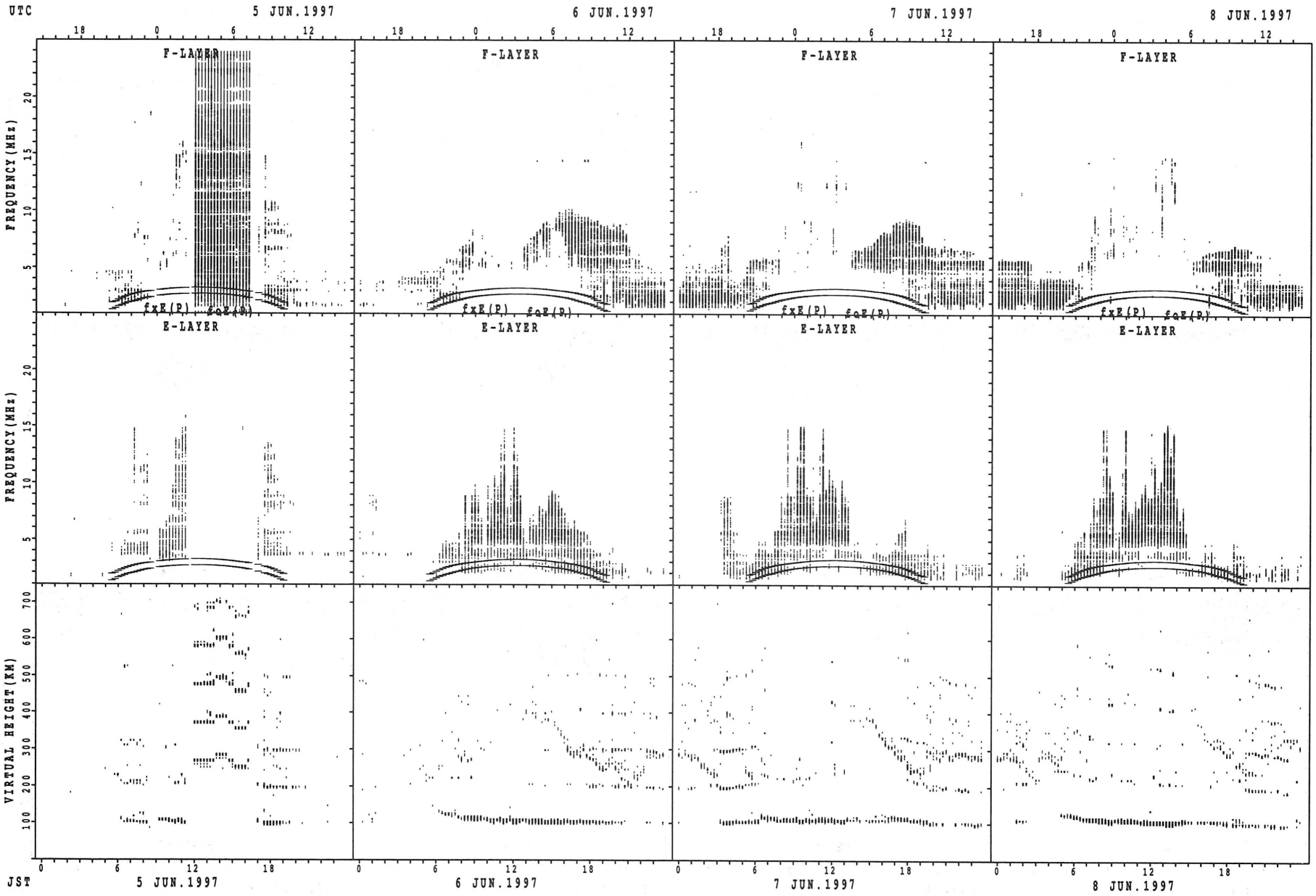
SUMMARY PLOTS AT KOKUBUNJI TOKYO



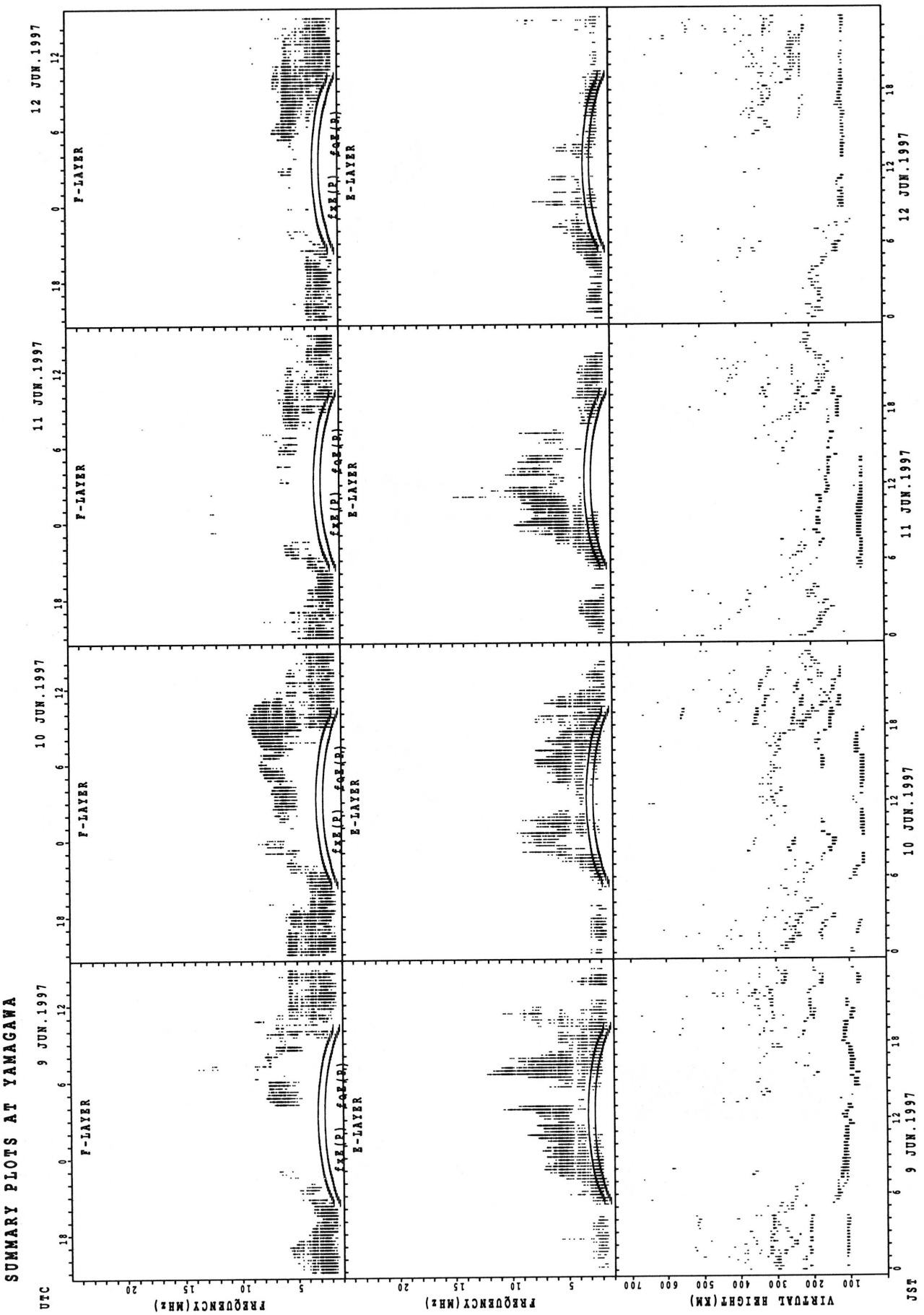
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

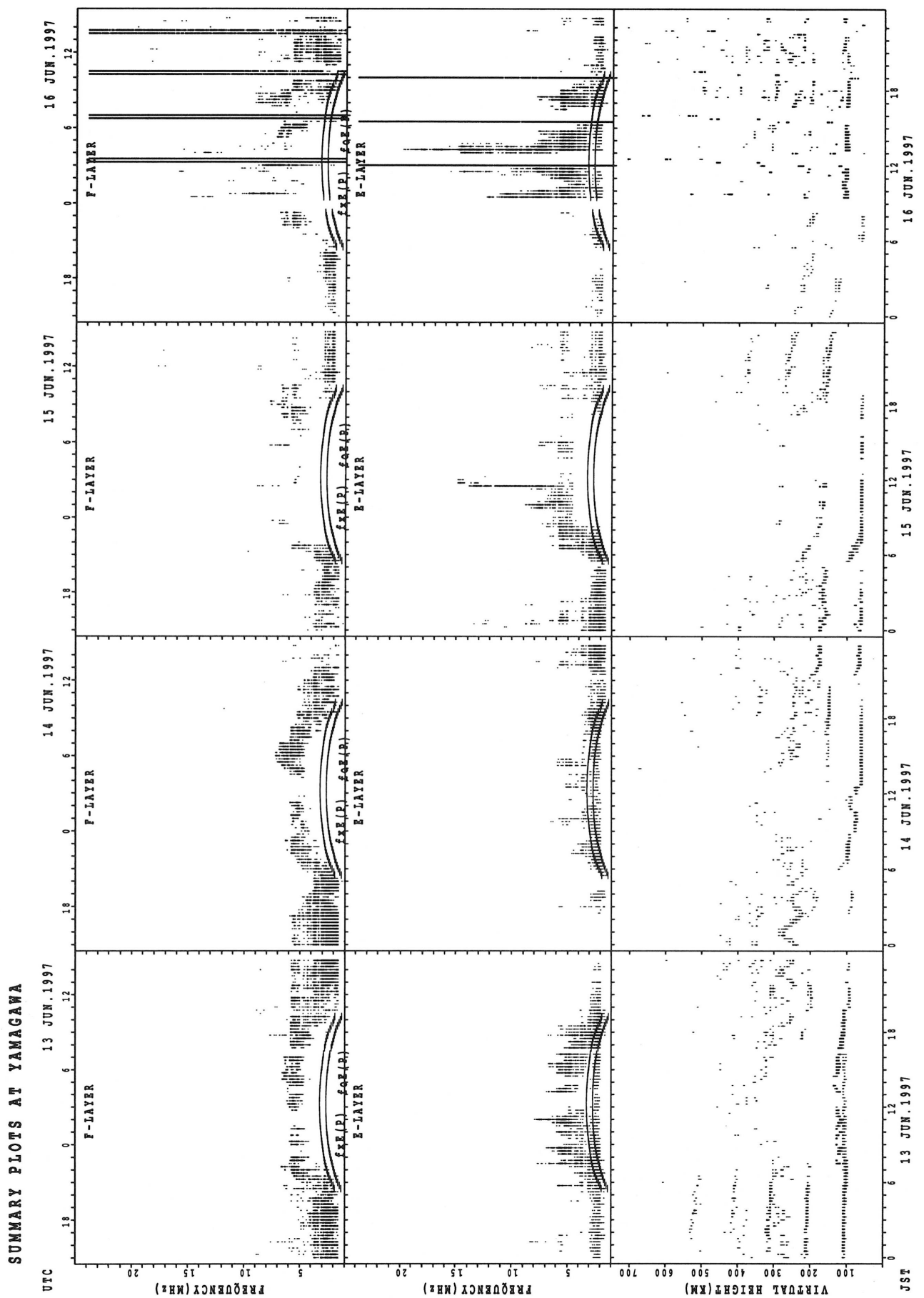

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
1 JUN.1997
2 JUN.1997
3 JUN.1997
4 JUN.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

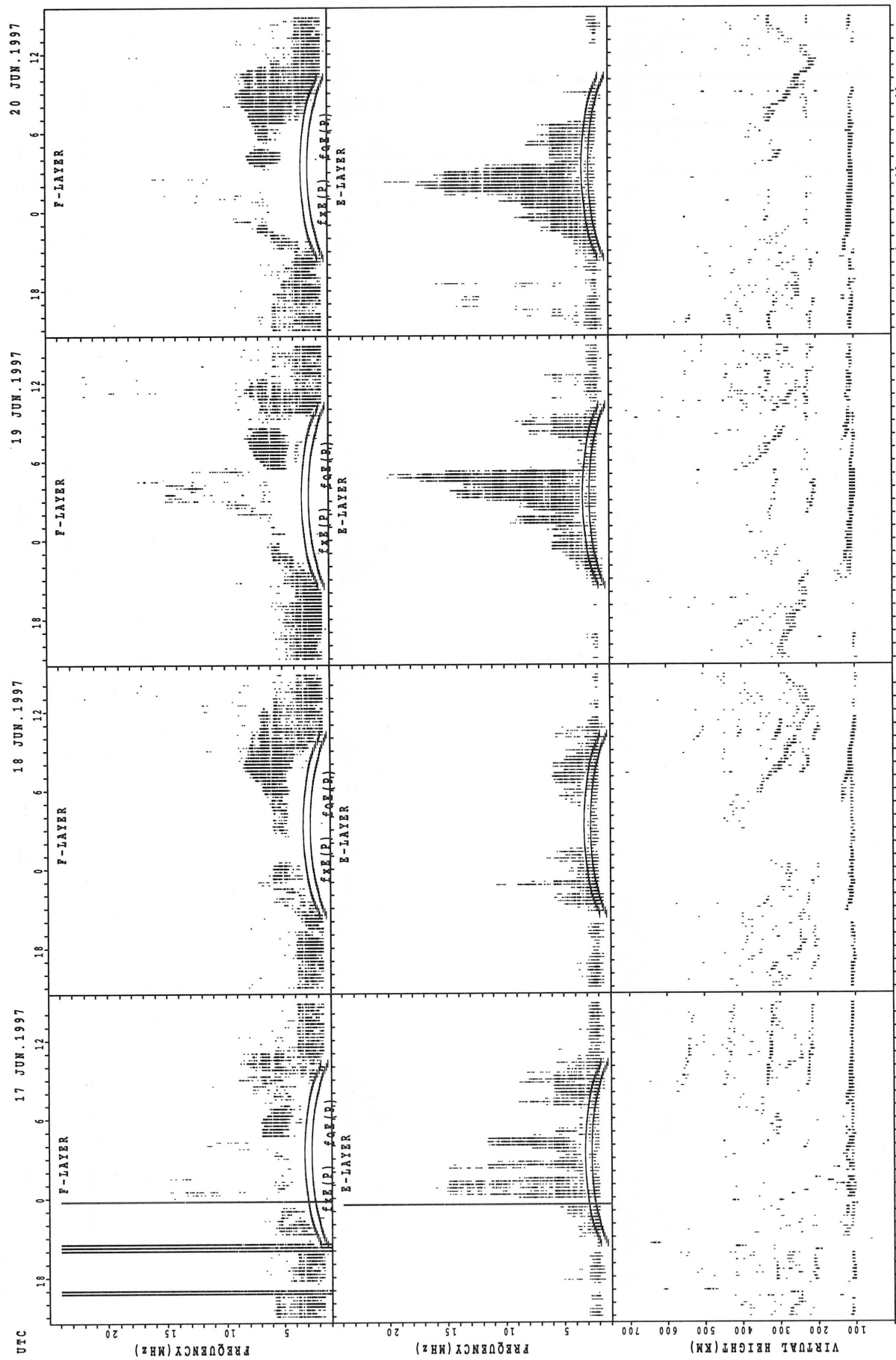
SUMMARY PLOTS AT YAMAGAWA



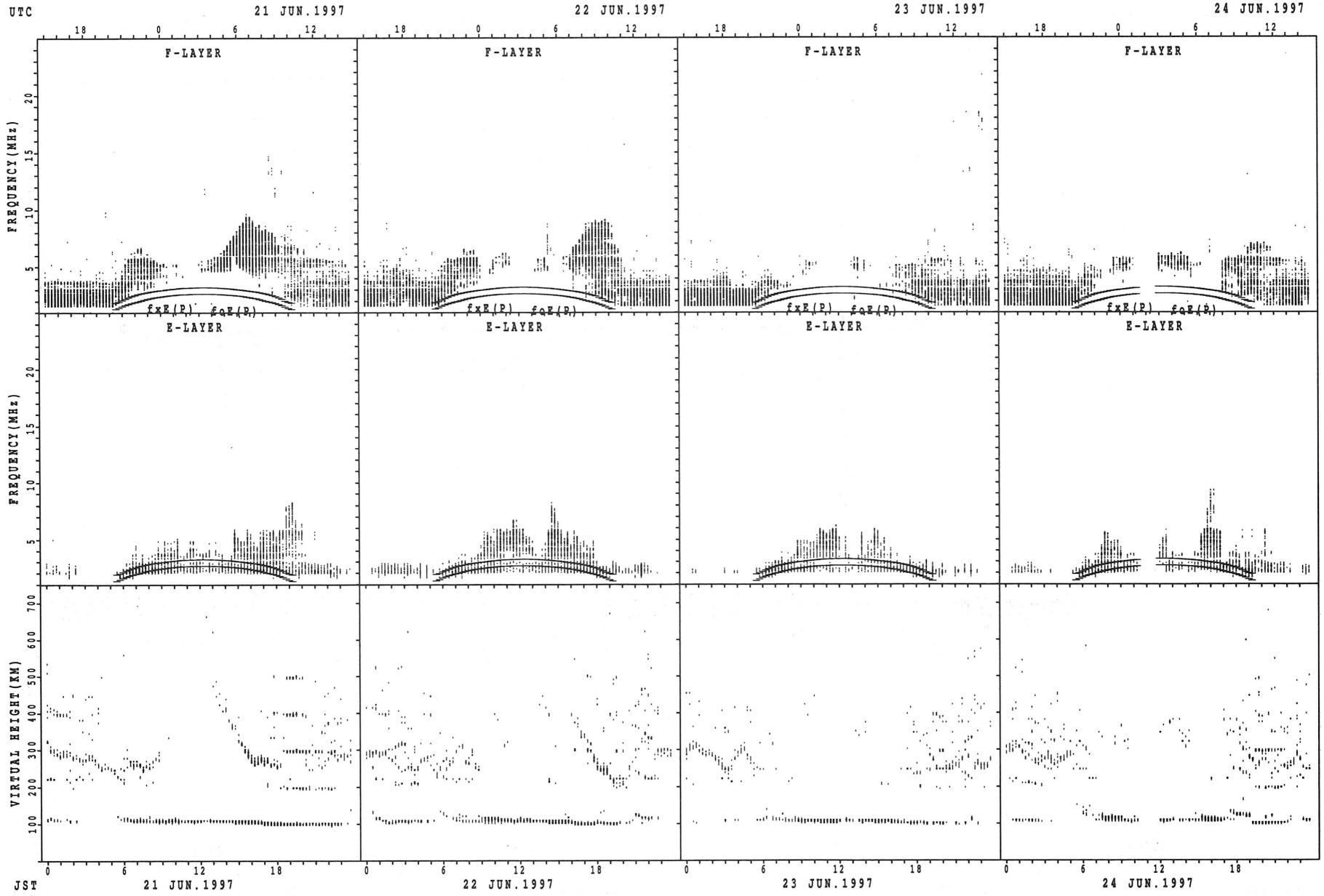
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
9 JUN.1997
10 JUN.1997
11 JUN.1997
12 JUN.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

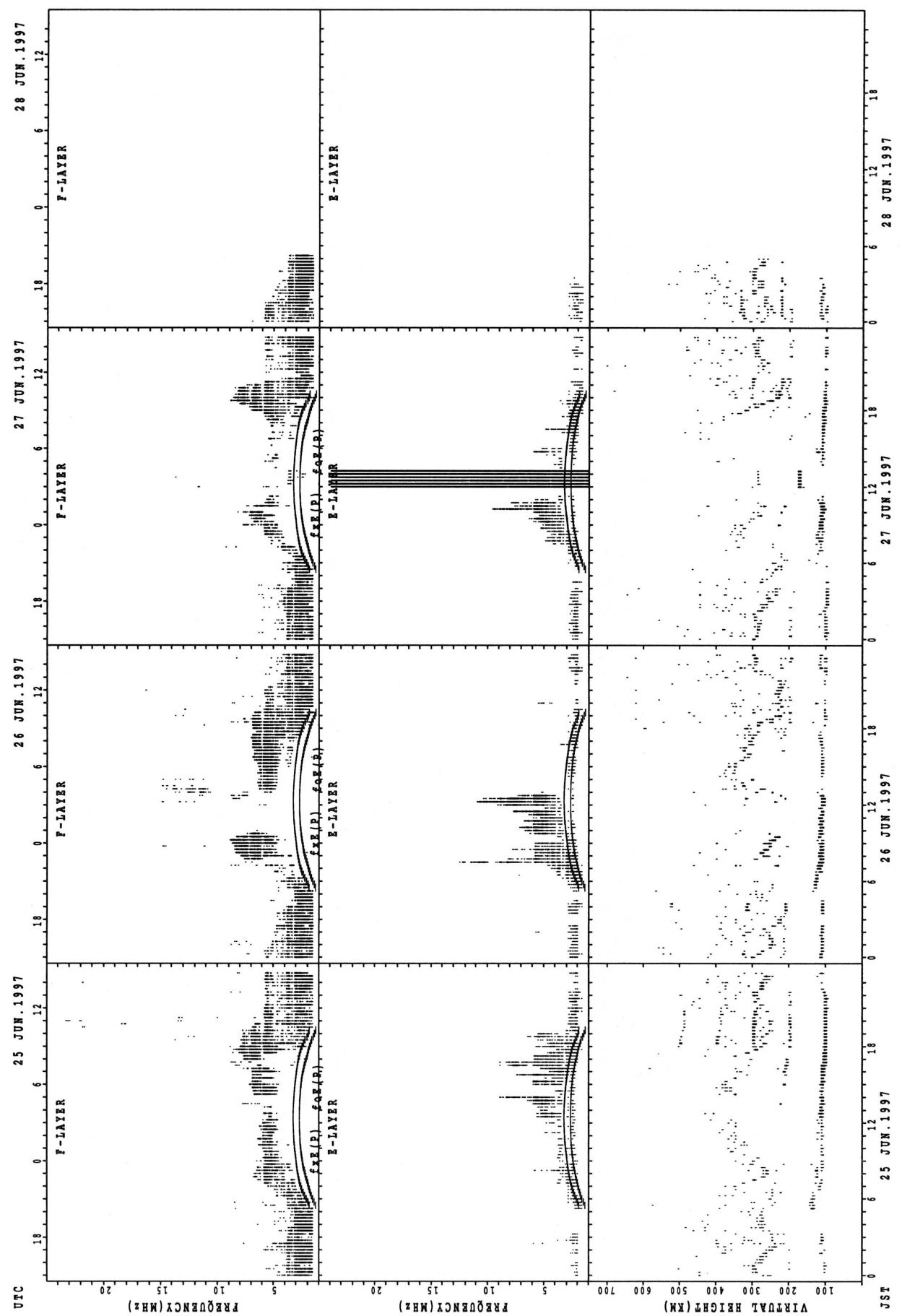

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
13 JUN.1997
14 JUN.1997
15 JUN.1997
16 JUN.1997
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
17 JUN.1997
18 JUN.1997
19 JUN.1997
20 JUN.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

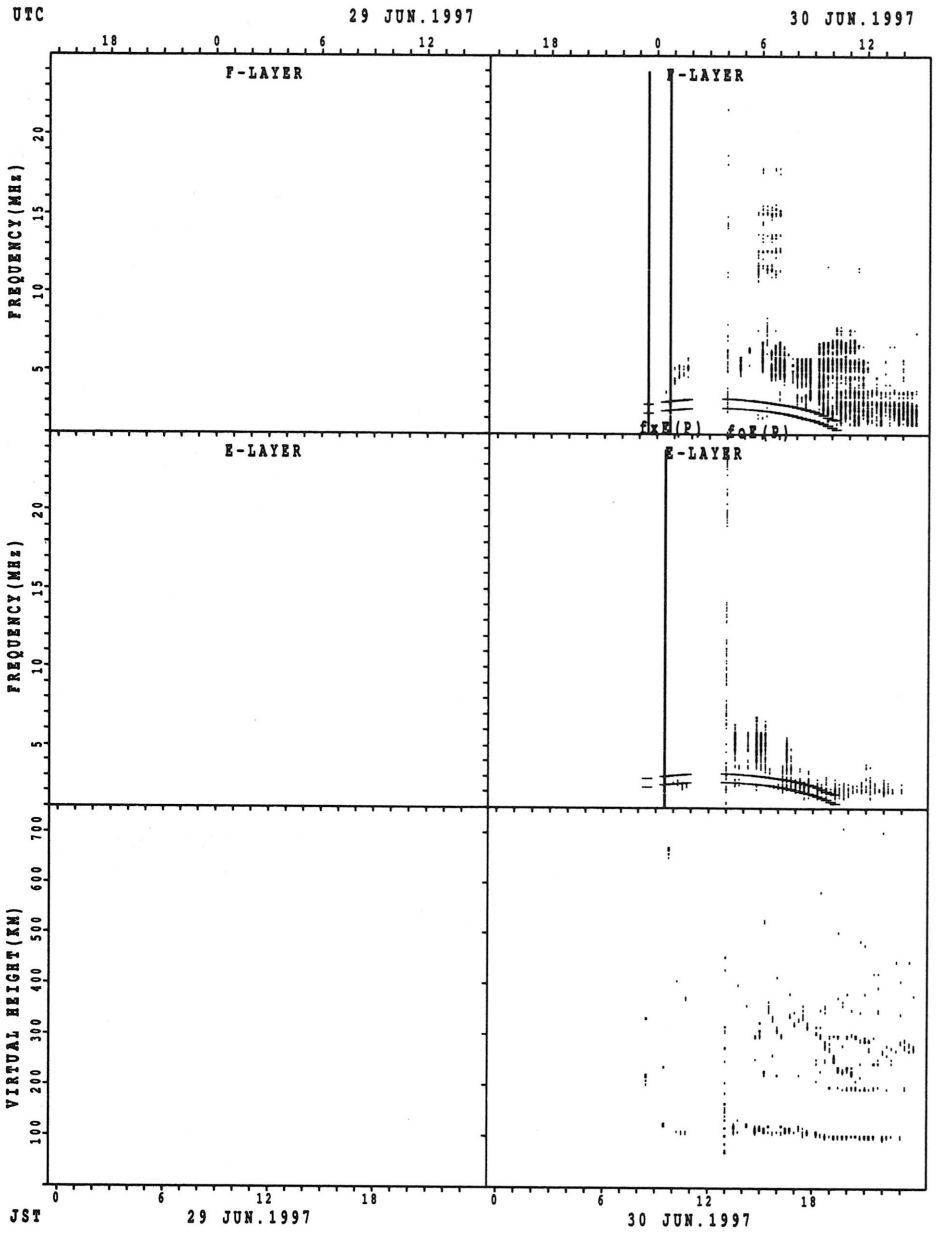
SUMMARY PLOTS AT YAMAGAWA



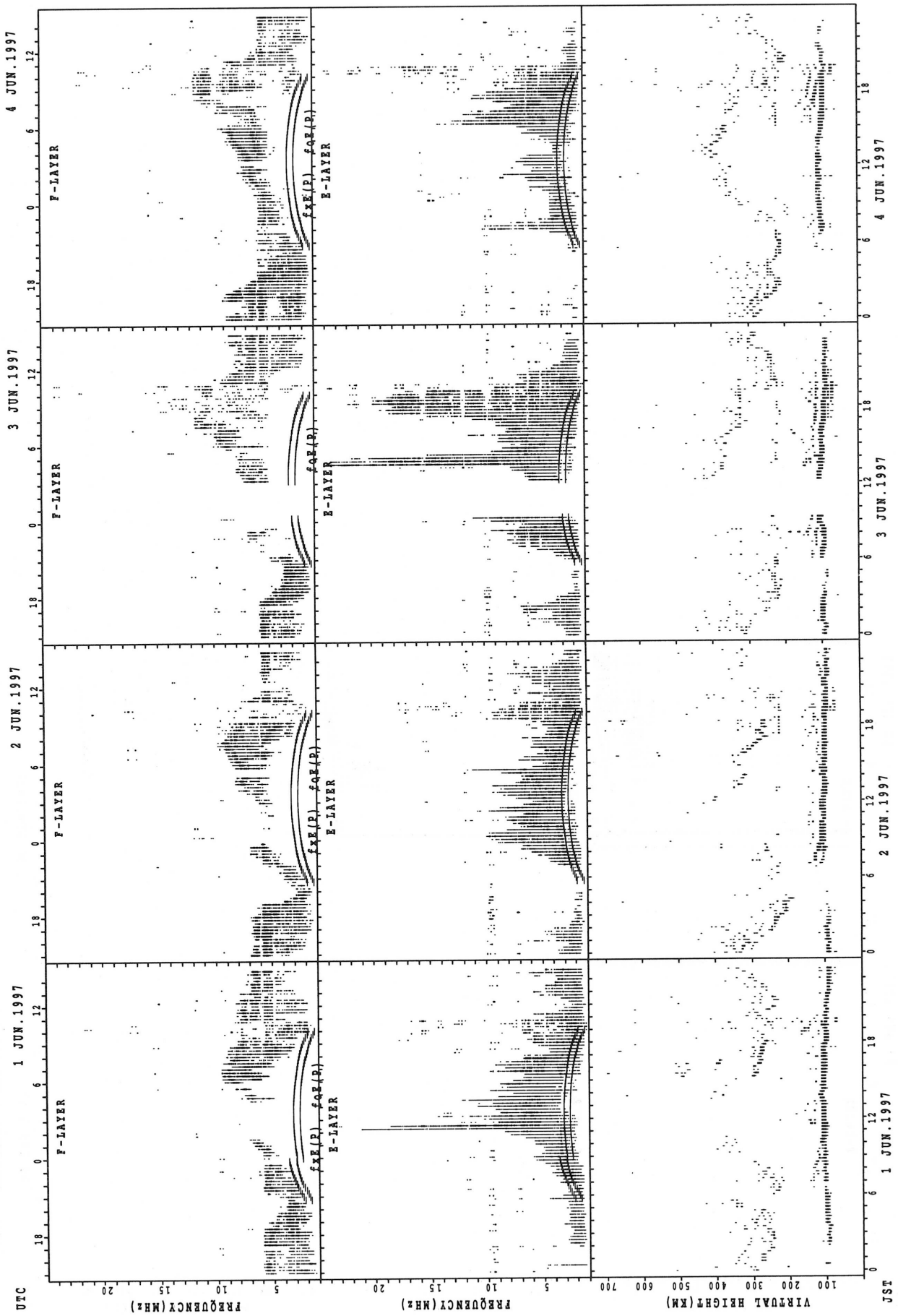
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

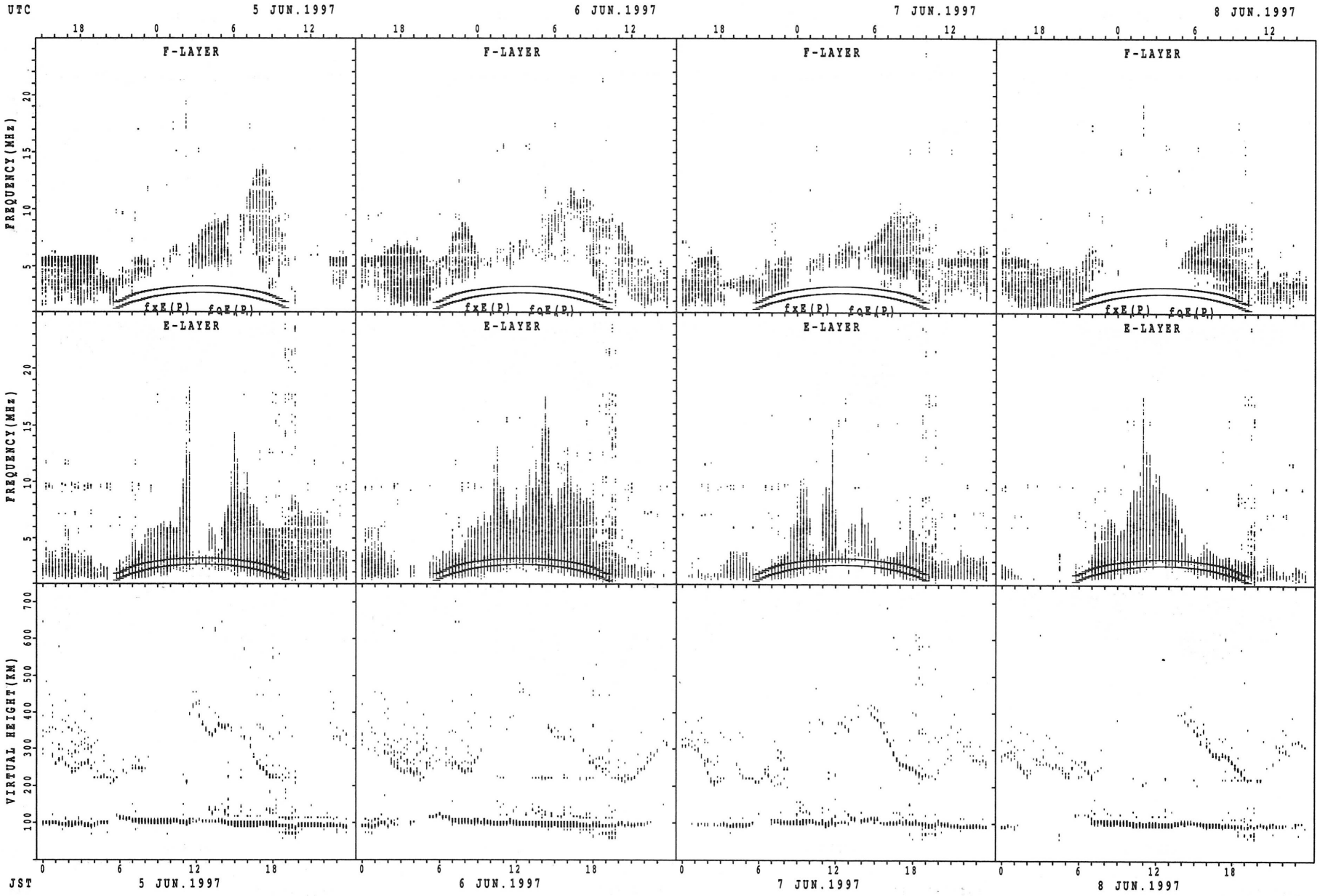
SUMMARY PLOTS AT YAMAGAWA



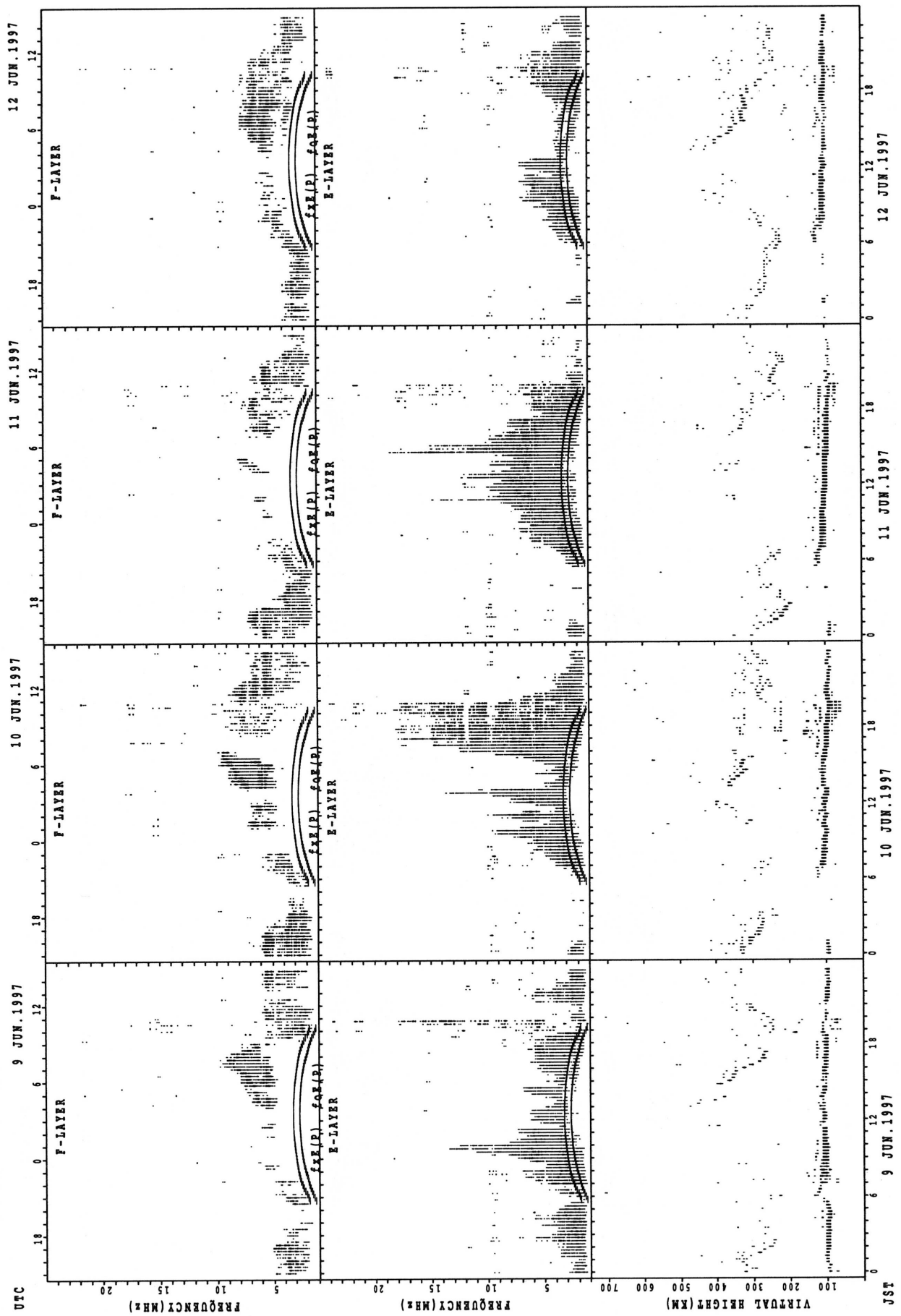
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
JST
1 JUN.1997
2 JUN.1997
3 JUN.1997
4 JUN.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

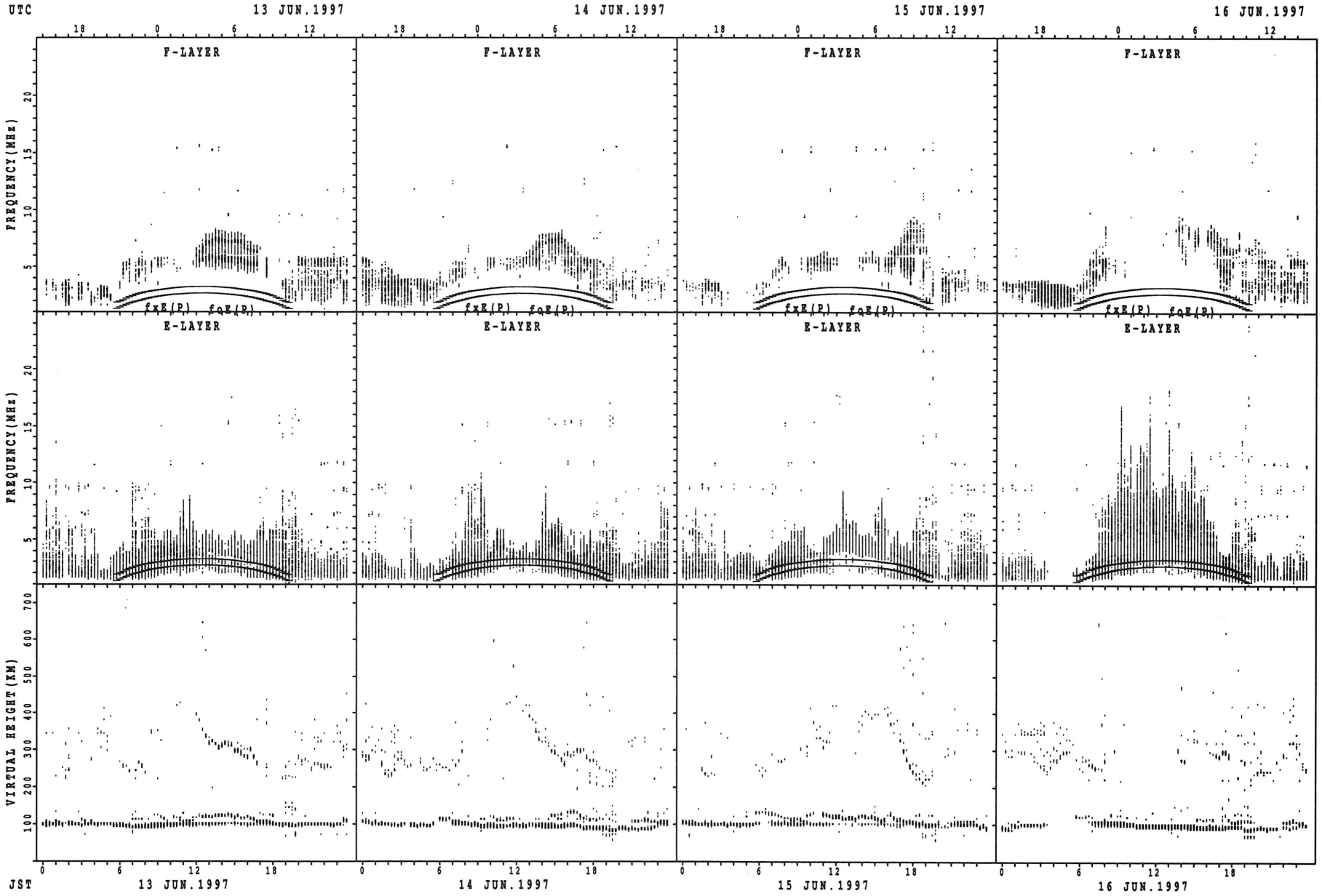
SUMMARY PLOTS AT OKINAWA



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

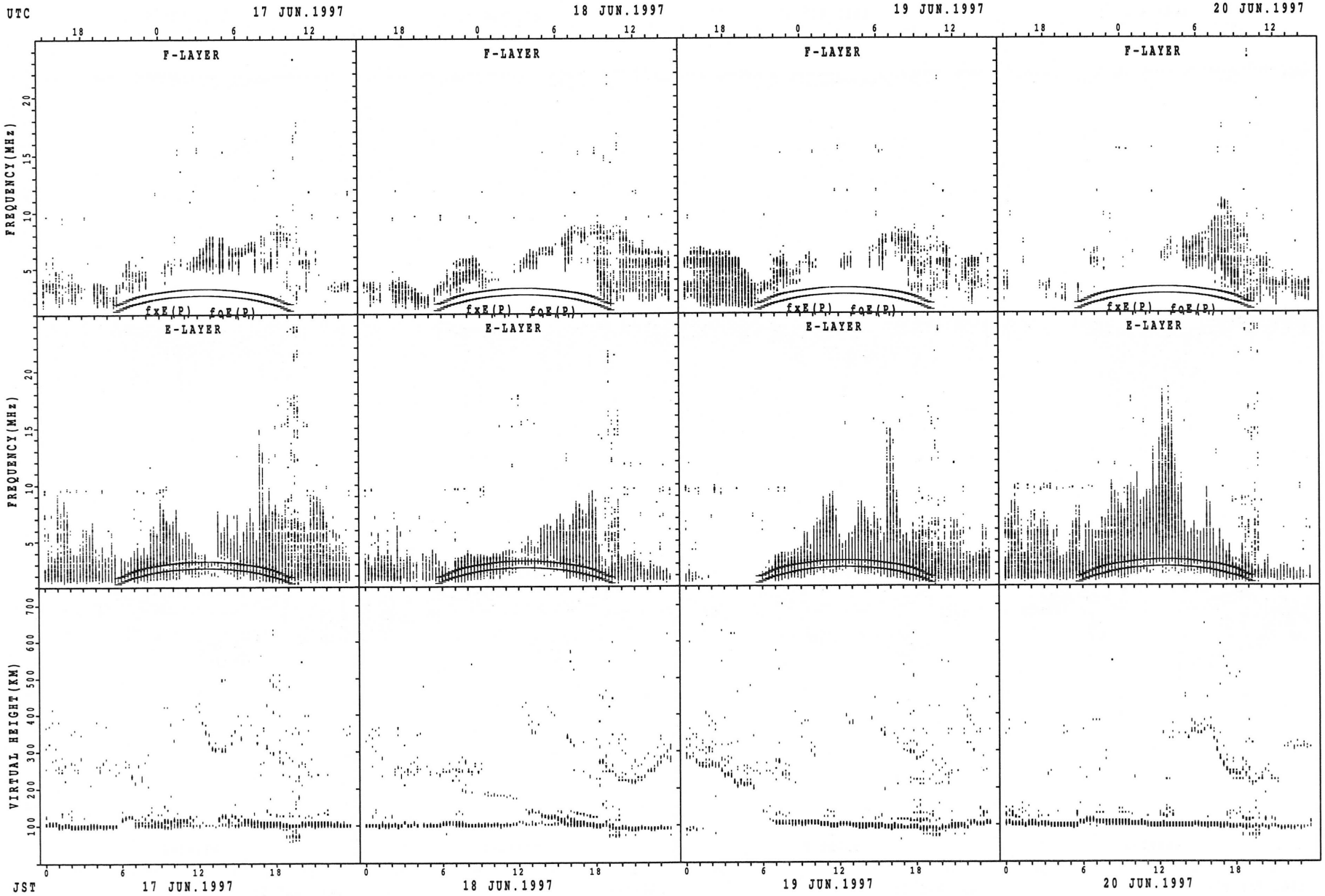

SUMMARY PLOTS AT OKINAWA
UTC
JST
9 JUN.1997
10 JUN.1997
11 JUN.1997
12 JUN.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



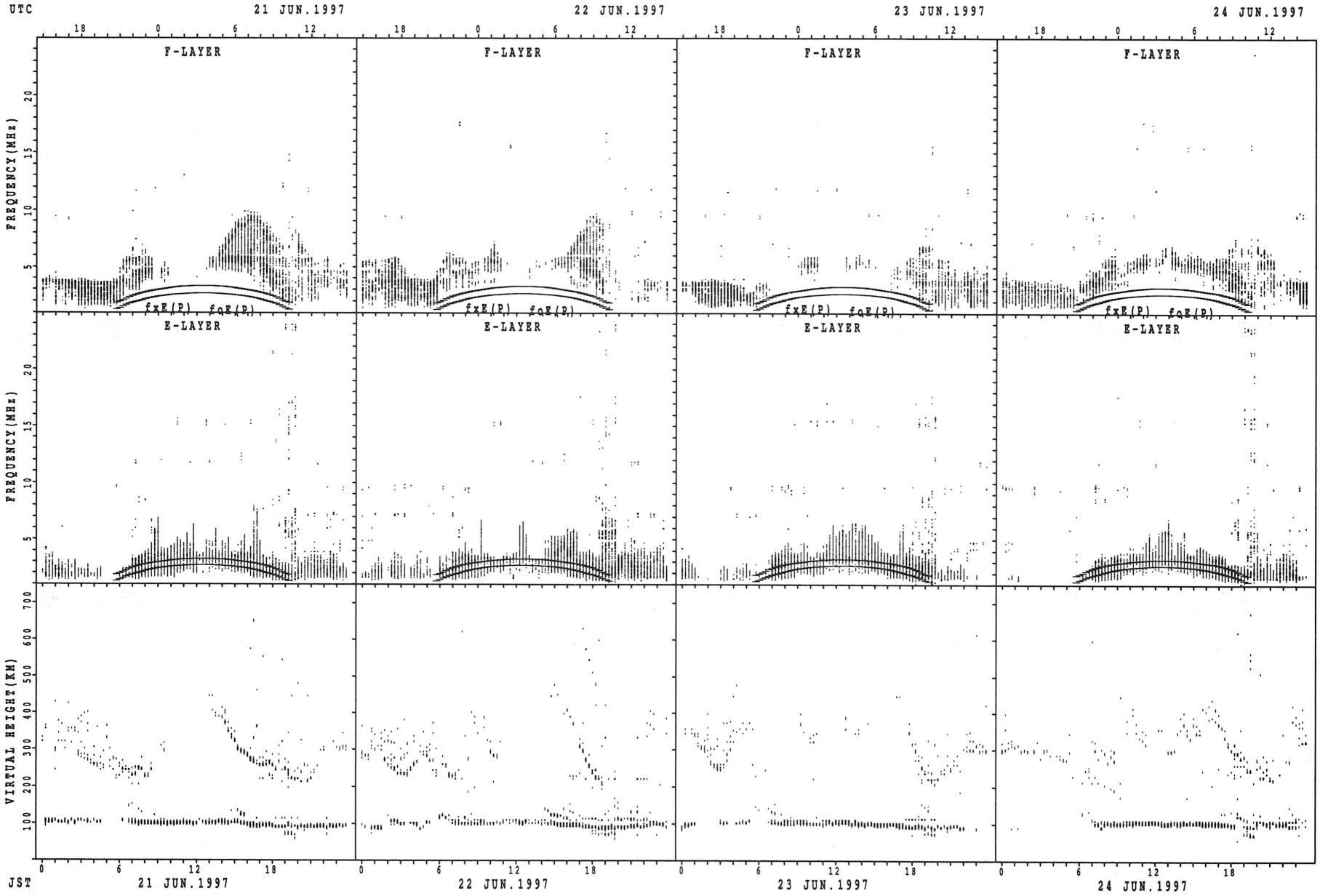
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

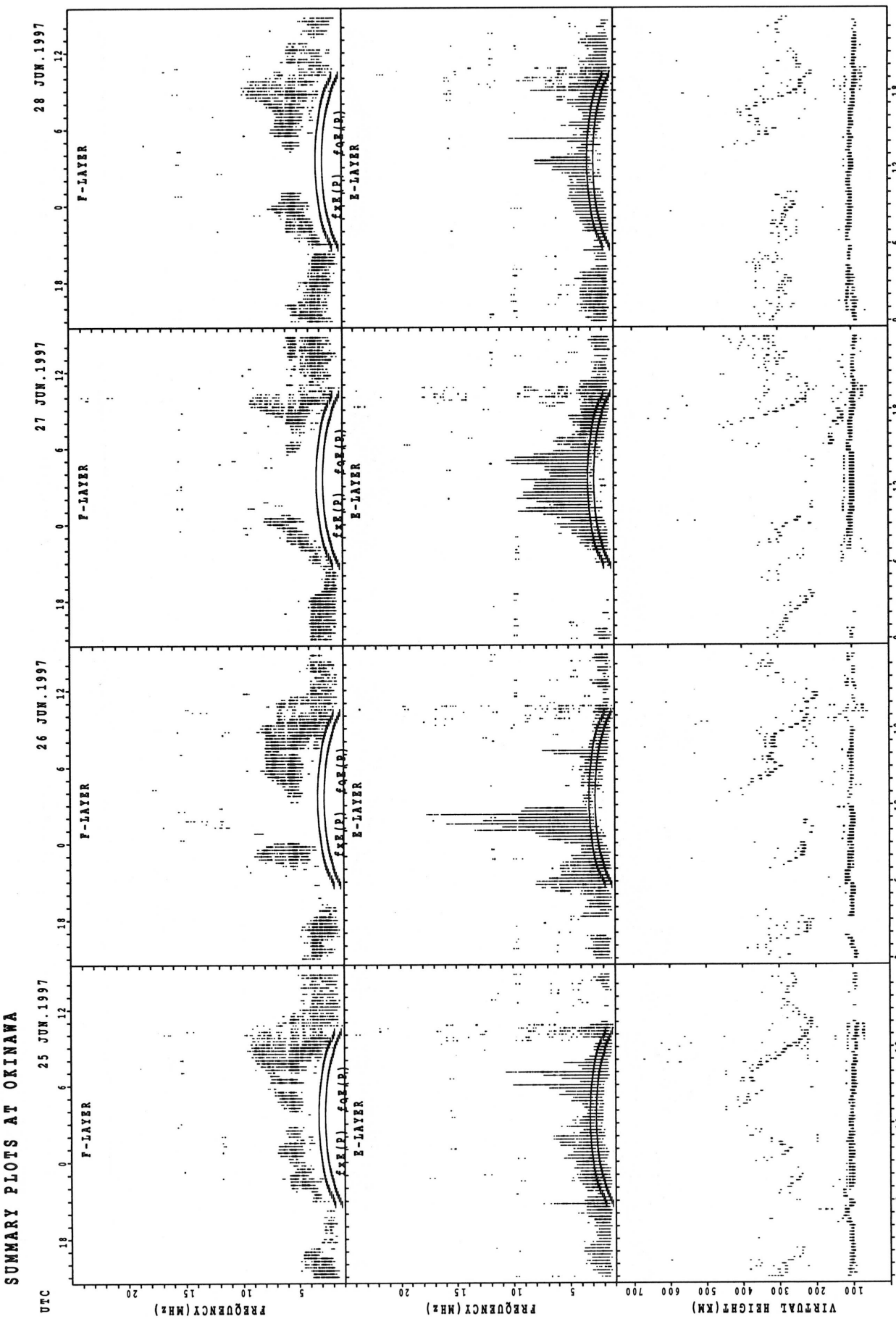


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

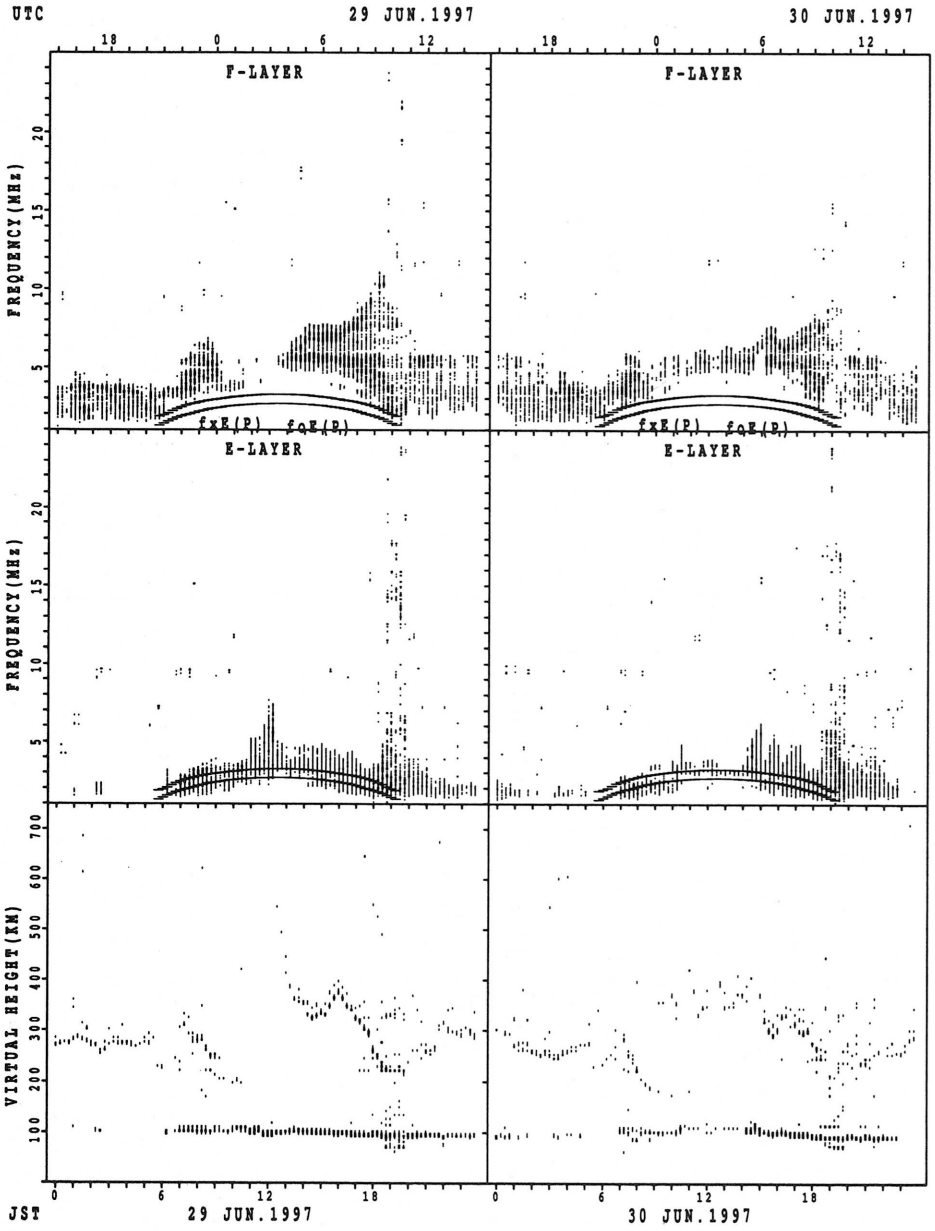
SUMMARY PLOTS AT OKINAWA



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


SUMMARY PLOTS AT OKINAWA
UTC
JST
25 JUN.1997
26 JUN.1997
27 JUN.1997
28 JUN.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

JUN.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																					10			
MED																					294			
U Q																					322			
L Q																					284			

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	29	22	25	24	20	29	30	30	29	30	30	29	29	29	29	30	30	30	30	28	30	26	27	27
MED	103	99	99	101	111	119	115	113	107	110	106	105	105	107	107	104	111	112	113	111	111	111	107	103
U Q	109	103	107	106	128	128	119	115	113	113	109	107	107	112	110	111	117	119	115	113	113	111	111	107
L Q	99	97	95	96	97	114	113	109	105	107	103	103	103	103	103	103	105	105	107	107	107	107	103	103

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																				17				
MED																				266				
U Q																				287				
L Q																				247				

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	26	27	24	25	22	27	29	30	30	29	30	28	28	30	28	30	30	30	29	26	26	28	28	27
MED	105	103	104	103	103	123	113	115	113	111	111	111	111	111	110	109	109	111	103	107	108	107	109	107
U Q	107	107	108	110	107	133	121	119	117	113	113	114	113	115	115	113	113	119	113	113	115	113	111	111
L Q	101	101	99	99	97	107	107	109	109	108	109	107	107	105	105	103	103	103	100	99	101	101	103	105

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																	12	15	15	13				
MED																	328	292	278	254				
U Q																	339	306	320	277				
L Q																	299	226	256	232				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	10	15	15	13	14		20	23	24	24	25	21	22	21	17	25	24	25	24	24	20	14	14	13
MED	112	113	111	111	111		123	119	120	116	115	115	113	113	111	111	113	113	114	109	105	111	112	113
U Q	115	119	131	113	117		130	125	125	121	123	122	127	118	116	120	123	119	125	117	126	115	121	131
L Q	107	107	107	109	109		110	115	113	113	113	111	111	109	110	107	108	105	105	105	103	103	105	104

MONTHLY MEDIANS OF h'F AND h'Es

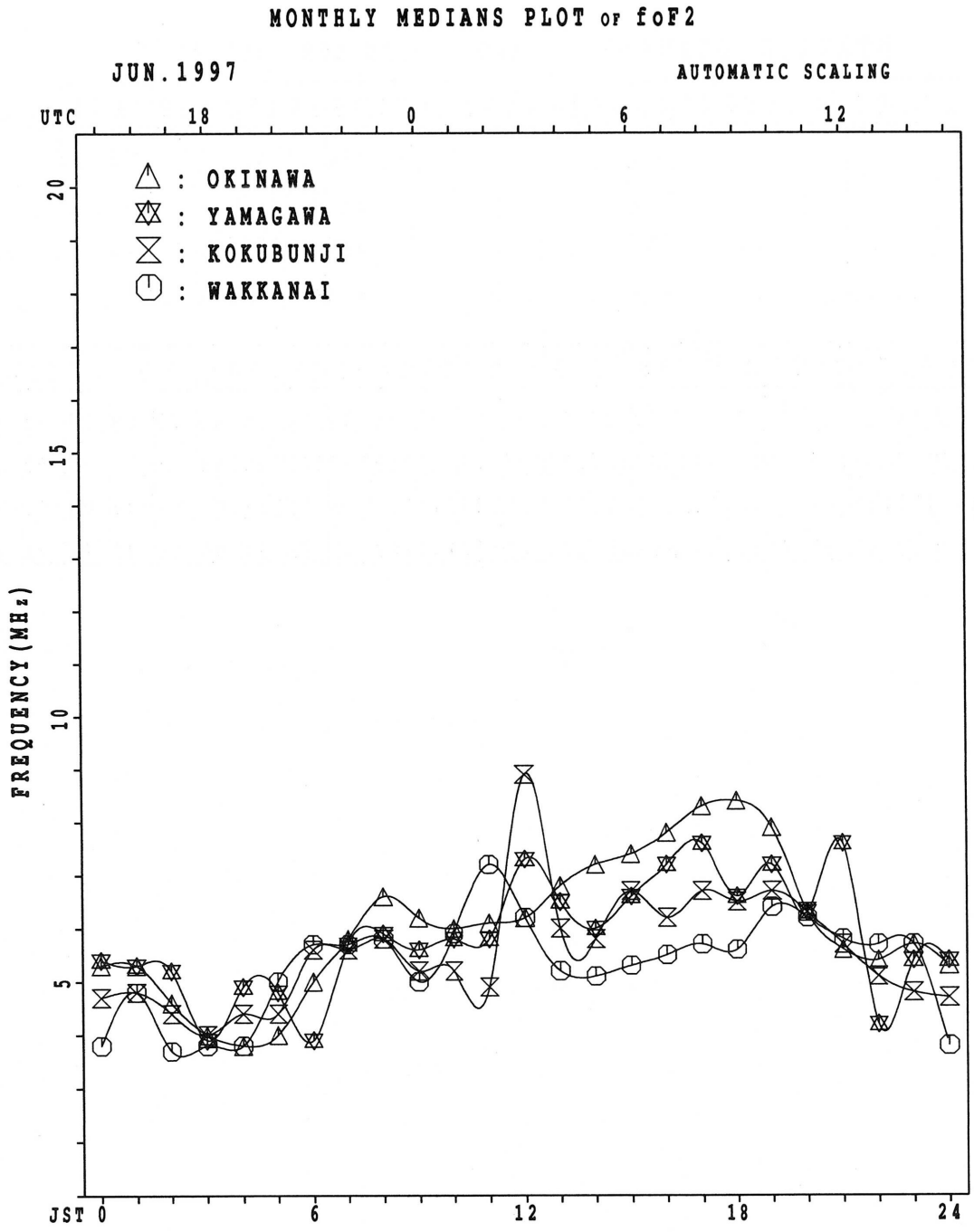
JUN. 1997 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									11							14	15	20	18		13			
MED									258							327	314	298	270		254			
U Q									296							346	328	336	272		285			
L Q									238							296	302	263	250		241			

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	16	15	15	18	30	30	30	28	29	28	28	30	30	30	30	29	23	29	27	23	24
MED	95	103	103	104	103	103	119	113	111	107	106	105	106	105	109	107	103	103	103	95	97	97	95	97
U Q	103	109	107	107	105	105	127	119	113	111	113	110	109	113	113	113	111	107	108	103	104	103	101	103
L Q	91	97	99	99	97	99	107	105	105	105	103	103	102	103	103	103	99	97	95	89	95	95	93	94


MONTHLY MEDIANS PLOT OF foF2
JUN.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

JUN. 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	56	54	51	50	46															X 77	X 76	X 68	X 65	X 63
2	X 60	60	58	X 56	X 56															X 76	A	76	73	62
3	62	62	57	55	52															X 98	92	X 85	58	X 58
4	56	56	54	52	55															X 90	X 80	X 72	57	62
5	60	56	53	51	52															X 106	82	A	A	A
6	49	47	44	41	42																X 81	X 63	56	52
7	X 39	A	43	42	44																X 65	68	62	X 57
8	62	61	62	45	48																X 68	62	49	51
9	A	48	51	49	48																X 66	X 61	X 63	59
10	A	X 53	54	54	50																X 77	X 56	X 54	55
11	59	55	51	X 37	X 35																X 58	X 54	51	51
12	X 53	48	42	42	X 42																X 62	56	A	56
13	A	52	48	A	A																X 64	X 56	X 47	46
14	50	48	50	38	42																X 55	O X 52	A	A
15	50	X 44	50	48	A																X 57	X 58	55	50
16	51	A	49	X 41	41																X 62	60	A	54
17	52	52	50	X 47	45																X 77	X 56	A	48
18	X 44	44	44	45	45																X 69	X 57	49	42
19	48	51	46	44	42																O X 77	X 75	X 58	X 67
20	63	63	59	57	51																X 81	X 50	X 44	X 40
21	X 40	X 41	X 42	X 42	X 41																X 59	X 52	X 48	X 49
22	X 49	X 46	X 43	X 41	X 40																X 69	X 54	54	X 50
23	X 48	X 50	X 46	43	39																X 56	X 53	52	54
24	55	54	50	46	47																X 72	X 65	X 54	54
25	53	51	51	45	42																X 64	X 61	X 63	62
26	58	59	53	38	X 38																X 60	X 56	51	51
27	47	45	47	45	43																X 76	X 68	60	57
28	52	51	50	49	46																X 61	X 59	X 55	X 56
29	56	X 53	X 52	X 47	X 45																X 80	X 68	X 64	X 60
30	59	56	X 53	52	52																X 72	67	52	X 46
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	30	29	28															5	29	29	25	28
MED	53	52	50	45	45															X 90	X 69	X 60	55	54
U Q	59	56	53	50	49															X 102	X 77	X 68	X 61	58
L Q	X 49	48	46	42	42															X 76	X 62	X 56	51	50

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 47	F 45	F 42	F 40	F 38	48	51	51	R 66	A	58	A	A	60	J R 64	68	73	71	71	71	70	63	59	V 56
2	54	F 53	F 52	50	50	53	48	V 57	53	A	55	54	A	A	A	59	A	61	62	70	A	F 68	F 64	F 54
3	F 53	F 52	F 50	F 48	F 44	43	53	59	76	55	A	54	R 59	61	66	79	84	80	79	92	F 83	79	F 50	52
4	F 48	F 46	F 45	F 44	F 48	48	54	56	R 64	52	A	U R 52	R 54	R 55	60	68	71	74	83	84	74	S 66	F 49	F 53
5	F 52	F 47	F 41	F 40	F 42	F 58	63	R 56	A	A	A	56	55	66	80	76	71	70	80	100	F 74	A	A	A
6	F 40	F 38	F 36	F 33	F 33	45	59	A	52	A	A	A	A	R 61	R 63	70	71	78	74	73	75	V 57	F 48	F 40
7	33	A	F 37	32	F 35	42	64	71	A	A	A	55	58	A	A	A	62	66	71	73	59	F 62	56	52
8	F 53	F 53	F 54	F 39	38	A	A	A	A	A	A	A	A	A	A	A	50	A	54	60	62	F 55	40	F 44
9	A	F 42	F 41	F 42	F 37	38	A	A	54	A	A	A	A	A	A	R 73	76	60	59	70	60	55	57	F 54
10	A	47	F 48	F 47	F 41	A	A	A	52	A	A	A	A	A	66	64	64	74	88	88	70	52	49	F 48
11	F 47	F 47	F 43	31	29	40	40	A	A	A	A	A	A	A	58	54	54	50	50	55	52	48	F 44	F 43
12	F 44	F 40	F 34	F 34	36	34	48	53	54	46	52	U R 51	50	56	55	57	55	56	57	59	56	J R 49	A	F 50
13	A	F 42	F 39	A	A	44	48	53	A	52	A	U R 49	48	48	50	52	A	54	56	66	58	50	41	F 39
14	F 40	F 41	F 40	F 30	F 34	36	45	49	59	57	52	A	A	A	50	56	54	54	50	52	49	46	A	A
15	F 42	38	F 42	F 41	A	A	A	48	57	A	A	A	A	A	A	51	U R 50	55	64	66	51	F 50	F 49	F 41
16	F 43	A	F 40	R 35	F 29	F 37	49	A	A	65	A	A	A	J R 48	55	60	60	60	67	61	56	F 52	A	F 48
17	F 46	F 45	42	41	F 38	J R 40	54	50	46	A	A	A	A	52	54	R 56	54	50	59	69	71	50	A	F 40
18	38	F 38	F 38	F 38	R 38	40	50	52	A	V 52	U R 47	U R 48	50	U R 54	R 50	57	61	R 62	62	65	62	51	38	F 34
19	F 40	F 40	F 36	F 32	F 32	40	A	50	A	56	52	A	51	A	50	58	63	66	62	69	U R 71	69	52	61
20	F 54	F 56	F 53	F 50	F 44	44	50	50	75	A	A	U R 52	A	R 65	60	61	60	R 65	68	77	76	44	38	34
21	34	35	36	36	35	41	44	56	57	47	R E 48	G 45	R 50	A	A	58	64	75	72	69	53	46	42	43
22	43	40	J R 37	35	34	42	48	57	54	57	48	A	A	A	A	A	56	66	74	74	63	48	F 46	44
23	42	43	40	F 36	F 31	R 32	40	48	E G 40	A	U R 44	R 52	A	45	A	47	A	46	41	44	50	47	F 43	F 46
24	F 46	F 46	F 42	F 38	F 39	F 36	43	52	50	49	56	54	52	58	J R 49	49	46	52	51	64	66	59	48	F 46
25	F 44	F 44	F 42	F 37	F 36	38	44	53	62	65	59	A	50	59	55	R 52	54	54	54	66	58	55	57	F 54
26	F 51	F 51	F 47	F 31	32	37	49	60	62	60	58	A	A	A	50	50	51	55	52	51	R 54	50	F 42	F 42
27	F 40	F 37	F 38	F 36	F 34	Z 46	45	44	A	49	A	57	57	U R 49	A	A	A	A	50	65	70	62	54	F 47
28	F 42	F 41	F 40	F 39	F 37	34	46	56	58	56	52	55	A	A	56	60	61	72	72	65	55	53	50	50
29	F 49	47	46	41	39	40	A	R 64	70	51	48	50	54	61	64	70	74	78	80	80	74	62	V 58	54
30	F 52	F 49	47	F 44	S 44	41	52	59	52	50	U R 48	U R 60	A	58	57	58	61	46	54	66	66	F 59	J R 42	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	27	28	30	29	28	27	24	24	21	17	15	16	13	17	21	26	26	28	30	30	29	29	25	28
MED	F 44	F 44	F 42	F 38	F 37	40	48	53	57	52	52	53	52	58	56	58	61	62	62	68	62	53	49	F 46
U Q	F 51	F 47	F 46	F 42	F 40	44	52	57	63	57	56	55	56	61	64	68	71	72	72	73	71	62	55	52
L Q	F 40	F 40	F 38	F 34	F 34	37	45	50	52	50	48	U R 50	50	50	50	54	54	54	54	64	56	50	42	F 42

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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	L	A	A	A	A	A	A	448	448	A	412	388	L 340					
2						L	L 400		A	A	448	A	A	A	A	A	A	A	A					
3						U L 296	L	404	U A 424	432	A	R 468	460	U A 444	U A 448	428	A	A	A					
4						L	U L 372	408	420	A	A	448	U A 448	448	436	432	408	388	352					
5						L		A	A	A	A	A	U A 460	U A 452	440	432	416	388	L 328					
6							U A 348	A	424	A	A	A	A	A	A	U A 428	U A 412	A	A					
7						L 340	A	A	A	A	A	460	A	A	A	A	A	U A 388	A					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9							A	A	A	A	A	A	A	A	A	A	A	L 376	L 336					
10						A	A	A	A	A	A	A	A	A	A	432	412	388	336					
11							L	A	A	A	A	A	A	A	420	416	396	368	332					
12							L 380	392	R 428	U A 424	U A 440	R 440	A	428	420	404	388	356	L 348					
13						A	L 368	A	A	A	A	U A 436	Y 440	U R 424	A	A	A	A	A					
14							360	388	412	424	R 436	A	A	A	440	416	396	380	A					
15						A	A	392	416	A	A	A	A	A	A	420	432	376	U A 332					
16							A	A	A	A	A	A	A	R 452	A	A	400	380	L 336					
17						U L 288	348	A	A	A	A	A	A	U A 444	432	420	416	372	340					
18						U L 288	L 372	A	A	440	444	436	A	U Y 472	R 428	R 428	U A 400	372	332					
19						L 348	A	392	A	A	U A 452	A	A	A	R 432	R 424	404	U A 372	A	A				
20						U L 328	A	404	400	A	A	A	A	444	440	420	A	380	340					
21							L	388	408	424	432	448	440	A	A	A	A	372	A					
22							A	A	412	428	R 444	A	A	A	A	A	U A 440	388	324					
23						288	340	U A 360	396	A	424	U A 440	A	420	A	404	A	L 380	L					
24						L 312	352	A	A	416	428	436	440	U A 432	A	420	404	372	A					
25							U L 372	U A 392	U A 408	A	432	A	448	U A 432	432	A	396	A	336					
26							U L 372	U A 388	420	U A 452	A	A	A	A	424	U A 416	A	384	U L 340					
27							352	392	A	420	A	A	U A 444	U A 444	A	A	A	A	A					
28						284	A	400	428	436	436	U A 424	A	A	U A 432	A	U A 424	A	A					
29						L 320	A	396	A	440	424	452	452	448	444	428	396	388	U A 320					
30						284	368	A	396	R 440	R 452	456	A	R 432	440	432	A	L	332	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						11	13	15	14	12	13	12	9	16	16	18	18	21	17					
MED						L 296	368	392	414	430	436	444	448	444	434	422	406	380	336					
U Q						L 328	U L 372	400	424	440	446	454	456	448	440	428	416	388	L 340					
L Q						288	350	388	408	424	430	436	440	432	430	416	396	372	332					

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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						A	248	284	320	A 336	U A 344	A 360	U A 360	U A 348	A	316	296	228	A					
2						A	A 232	288	308	328	348	A	A	A	A	A	A	A	A					
3						A	240	280	304	332	344	A	U R 376	348	332	324	288	252	A					
4						A	236	276	312	340	352	U A	U A 352	352	U A 336	324	292	248	208					
5						A	232	272	304	A	A	A	A	A	R	A	R	A	A					
6						A	A	A 324		A	A	A	A	A 352	A	A	A	A	A	B				
7						A	232	A	A 308	A 320	A	A	A	A	340	316	A 288	244	U A 196	B				
8						A	A 240	296	A 316	A	A	A	A	A	A	A	U A 284	A	A	B				
9					168	232	276	304	336		A	A	A	A	A	320	288	252	A	B				
10						A	240	A 284	308	332	344	352	360	U A 352	A	U A 308	A	A	A	B				
11						A	224	272	304	328	A	352	A	A	A	A	A	R 244	A	B				
12					176	232	268	296	320	A 344	U R 356	A	A	U R 348	A 328		A	252	A	B				
13						A	A	280	300	328	U A 348	U A 352	360	356	348	332	300	260	A	B				
14					172	240	280	300	A	A	A	A	A	A	A	A	A 300	A	A	B				
15						A	A	A 280	316	340	A	A 348	A	A	A	328	292	256	A 208	B				
16					192	224	280	316	A	A	A	A	A	A	A	U A 316	A	A	A	B				
17						A	A	288	308	A	A	356	356	348	R 336	312	292	248	200	B				
18					176	A	A 284	A	A	A	A	A	A	356	344	336	292	260	A	B				
19						A	248	284	320	340	352	A	A	A	R 344	A	A	A	A	B				
20						A	236	276	300	324	A	A	A	A	A	A	A	A	200	B				
21					172	U A 220	A		308	A 336	U A 352	A	A	A	A	A	A	A 252	A	B				
22						A	240	A	308	332	A	U A 360	A	A	A	A	A	A	A	B				
23						A	256	304	316	A 336	A	A	A	A	A	A	A	A	A	B				
24					188	232	284	304		A	R	U R 360	R	U A 352	U A 336	328	296	A	208	B				
25					192	252	284	312	A 328	U A 336		A	A	A	A	A	A	A	A	B				
26					200	240	284	316	340	356	A	A	A	A 352	R 344	320	292	A	204	B				
27						A	240	292		A	A	A	A	A	A	A	A	A	A	B				
28						A	A	276	A 312	A	A	A	A	A	A	A	A	A	A	B				
29						A	A 232	A	A	A	A	A	R	348	332	R	284	252	184	B				
30						A	A	A	A	A	A	R	360	348	332	332	300	252	A	B				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						9	23	24	26	18	11	9	7	12	12	15	15	14	8					
MED						176	236	282	308	332	A 348	A 356	360	352	338	324	292	252	202					
U Q						192	240	284	316	336	352	A U 360	A U 360	352	R 344	328	296	252	208					
L Q						172	232	276	304	328	344	A 352	356	348	334	316	288	248	198					

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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 52	J A 39	J A 44	26	J A 52	J A 36	J A 53	J A 77	J A 62	J A 64	75	71	38	39	82	J A 46	J A 36	J A 23	J A 38	19	26	28	J A 48
2	J A 34	J A 19	19	28	J A 23	22	J A 49	J A 50	J A 49	J A 142	39	J A 51	72	61	74	73	68	J A 54	J A 47	J A 66	J A 90	J A 51	43	28
3	28	30	J A 29	J A 30	25	J A 24	28	J A 42	J A 44	J A 42	J A 50	J A 45	42	J A 46	J A 52	J A 53	J A 66	J A 64	52	57	J A 42	J A 53	J A 26	35
4	J A 31	J A 36	J A 36	J A 27	28	J A 24	J A 40	J A 40	J A 46	J A 52	J A 156	40	52	42	J A 47	G	G	27	G	J A 35	J A 40	J A 33	31	J A 41
5	J A 39	J A 36	J A 43	30	26	25	J A 37	J A 46	J A 66	J A 128	J A 87	J A 56	J A 49	49	G 31	34	G 26	52	J A 34	27	J A 77	52	J A 53	J A 50
6	J A 49	J A 28	27	J A 24	J A 42	J A 43	J A 39	J A 80	J A 44	J A 122	J A 116	J A 116	54	J A 52	J A 90	J A 50	J A 49	67	J A 76	J A 66	56	J A 50	J A 43	J A 42
7	J A 46	J A 64	J A 43	J A 43	J A 45	J A 23	J A 54	J A 117	J A 87	J A 87	80	58	J A 62	J A 87	J A 79	J A 118	56	J A 49	J A 54	31	24	33	J A 47	J A 60
8	J A 23	J A 26	J A 27	J A 51	J A 40	J A 48	J A 90	J A 70	68	J A 104	J A 110	59	J A 65	J A 70	J A 51	92	J A 48	83	J A 50	J A 56	J A 46	J A 53	J A 48	J A 65
9	J A 67	J A 63	J A 49	J A 48	J A 49	23	53	J A 53	J A 51	J A 54	J A 69	J A 150	J A 125	81	J A 120	J A 85	J A 55	J A 36	58	56	J A 32	J A 48	J A 36	J A 51
10	68	J A 44	E B 14	J A 24	J A 42	52	J A 68	J A 63	J A 49	J A 64	J A 75	J A 157	J A 106	J A 78	J A 69	J A 46	J A 51	J A 52	J A 30	J A 21	J A 21	21	23	J A 76
11	J A 42	J A 35	J A 27	27	E B 14	J A 23	33	J A 80	74	68	86	J A 79	J A 53	J A 74	J A 49	J A 52	31	29	30	J A 22	J A 23	J A 22	27	J A 49
12	J A 66	J A 35	J A 51	E B 14	E B 14	20	29	J A 36	J A 44	J A 43	J A 46	39	J A 48	40	G	37	J A 38	41	J A 28	J A 65	J A 66	J A 88	J A 63	J A 60
13	J A 75	J A 45	J A 44	68	J A 60	40	J A 30	J A 56	J A 64	J A 50	J A 54	J A 51	40	40	J A 47	J A 74	J A 57	J A 80	J A 37	27	33	J A 50	J A 32	J A 48
14	J A 51	J A 33	J A 26	27	28	24	34	34	34	38	39	J A 54	J A 64	59	35	38	34	J A 46	J A 43	J A 31	J A 56	J A 52	J A 66	J A 66
15	J A 43	J A 74	J A 68	J A 48	J A 108	62	57	J A 42	J A 42	83	J A 142	96	90	86	J A 103	39	60	J A 99	J A 52	57	J A 53	J A 68	J A 47	J A 81
16	J A 49	J A 65	J A 41	32	J A 26	24	J A 50	J A 75	89	J A 80	78	58	J A 70	J A 44	J A 50	J A 55	J A 39	J A 42	J A 37	J A 54	J A 52	J A 50	J A 66	J A 50
17	28	28	19	20	26	J A 23	34	J A 69	J A 65	J A 117	J A 130	J A 81	J A 53	J A 64	40	40	J A 43	J A 45	J A 43	J A 43	40	J A 40	J A 70	J A 30
18	30	J A 50	J A 35	J A 26	J A 27	J A 18	J A 42	J A 54	J A 104	34	J A 44	J A 49	J A 48	41	42	40	J A 65	J A 50	J A 37	34	J A 50	28	20	J A 28
19	J A 25	J A 28	J A 29	26	J A 22	J A 30	J A 55	34	J A 63	J A 56	J A 48	60	J A 55	J A 98	G	36	J A 42	J A 47	50	J A 50	29	J A 54	J A 74	J A 100
20	J A 46	E B 14	J A 33	J A 46	J A 24	J A 22	J A 40	J A 39	J A 41	J A 124	J A 154	J A 62	J A 96	J A 40	J A 42	J A 37	52	J A 45	J A 22	J A 36	J A 26	30	J A 41	J A 43
21	J A 36	32	J A 22	19	21	J A 21	J A 38	J A 44	34	37	J A 43	42	40	J A 79	J A 77	J A 55	J A 76	30	J A 62	J A 32	27	31	22	18
22	E B 14	18	E B 14	J A 27	J A 24	56	J A 43	J A 53	J A 48	42	43	J A 53	J A 68	J A 66	80	91	J A 62	J A 36	31	J A 52	J A 40	32	J A 21	J A 26
23	18	J A 23	J A 24	20	E B 15	21	G	37	39	52	J A 42	J A 50	61	41	60	J A 55	85	49	32	30	26	25	J A 51	J A 50
24	27	J A 23	J A 25	J A 50	J A 24	J A 26	32	J A 45	J A 46	35	G 33	G 33	G	47	J A 54	J A 42	J A 36	J A 41	J A 47	J A 54	J A 44	J A 46	28	J A 54
25	J A 43	J A 44	27	J A 22	24	28	33	J A 43	J A 46	J A 77	J A 40	J A 52	43	J A 50	J A 42	J A 49	J A 37	J A 55	J A 33	J A 30	19	23	30	J A 31
26	J A 39	J A 40	31	22	28	26	J A 38	J A 41	40	J A 50	J A 55	J A 54	82	J A 61	G	42	47	J A 29	24	23	28	J A 53	28	J A 20
27	E B 14	J A 39	27	J A 24	J A 28	24	31	J A 35	J A 117	J A 48	J A 68	J A 68	J A 46	J A 52	J A 97	86	J A 70	90	J A 53	J A 68	J A 64	J A 52	44	28
28	28	J A 36	J A 42	24	28	J A 26	J A 48	32	J A 46	J A 40	J A 44	J A 43	J A 59	J A 52	J A 44	J A 46	J A 44	J A 53	J A 54	J A 35	J A 54	J A 28	J A 27	J A 22
29	32	J A 40	28	J A 28	E B 16	J A 23	60	J A 36	J A 51	J A 47	J A 42	38	G	40	G	G	G	29	J A 34	J A 47	J A 51	J A 54	J A 34	J A 48
30	J A 43	28	J A 22	J A 20	J A 25	28	J A 44	J A 48	J A 40	J A 44	50	40	J A 51	38	42	38	J A 54	82	28	J A 21	J A 28	28	J A 40	J A 34
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A 38	J A 36	J A 28	J A 27	J A 26	24	J A 40	J A 46	J A 48	J A 53	J A 54	J A 54	J A 54	J A 52	48	48	J A 48	J A 48	J A 37	J A 37	J A 40	J A 47	J A 38	J A 48
U Q	J A 46	J A 44	J A 41	J A 43	J A 28	30	J A 50	J A 56	J A 66	J A 83	J A 86	J A 68	70	J A 70	J A 74	73	J A 60	55	J A 52	J A 56	J A 53	J A 52	J A 48	J A 54
L Q	28	28	25	24	24	23	33	39	44	43	43	45	48	41	G 40	38	38	36	30	30	27	28	28	J A 30

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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	21	28	22	22	20	20	20G	47	67	62AA	56	75AA	71AA	37	37	62	35	29	20	21	14EB	18	14EB	17
2	22	13EBE	15BE	13BE	15EB	19	28	36	46	142AA	38	47	72AA	61AA	74AA	51	68AA	46	36	23	90AA	28	24	17
3	18	18	19	16	19	22	26	34	42	39	50AA	40	40	44	45	38	46	53	42	50	30	29	17	23
4	19	17	18	20	14EB	16	26	38	38	46	156AA	39	45	40	42	G	G	26	G	24	30	21	20	18
5	20	20	24	23	18	22	34	41	66AA	128AA	87AA	48	46	45	31UG	34	25G	34	28	16	24	52AA	53AA	50A
6	28	22	17	17	18	26	35	80AA	40	122AA	116AA	116AA	54AA	49	52	43	41	62	44	40	46	27	28	24
7	28	64AA	22	20	22	18	51	60	87AA	87AA	80AA	42	56	87AA	79AA	118A	48	39	44	15EB	16	19	34	43
8	19	17	19	16EB	25	48AA	90AA	70AA	68AA	104AA	110AA	59AA	65AA	70AA	51AA	92A	44	83AA	45	40	26	34	26	21
9	67AA	30	24	34	20	21	53AA	53AA	50	54AA	69AA	150AA	125AA	81AA	120AA	64	54	32	27	22	21	20	17	16
10	68AA	14EB	14BE	18	18	52AA	68AA	63AA	44	64AA	75AA	157AA	106AA	78AA	53	42	36	28	22	17	15EBE	14BE	15EB	24
11	27	21	19	17	14EB	19	32	80AA	74AA	68AA	86AA	79AA	53AA	74AA	39	35	31UY	28	22	18	18	19	16	22
12	34	20	17	14EBE	14EB	20	26	33	39	42	44	38	46	36	G	35	32	29	23	25	31	14EB	63AA	18
13	75AA	14EB	23	68AA	60AA	33	27	50	64AA	48	54AA	44	40UY	40UY	45	50	57AA	44	34	18	26	22	18	19
14	19	22	19	18	15EB	22	32	33	33	37	38	54AA	64AA	59AA	35	36	33	35	29	20	42	38	66AA	66A
15	23	30	21	20	108AA	62AA	57AA	35	39	83AA	142AA	96AA	90AA	86AA	103AA	38	40	35	33	50	24	35	38	37
16	34	65AA	21	23	18	18G	37	75AA	89A	62	78AA	58AA	70AA	39	46	52	35	28	24	26	27	33	66AA	34
17	14EBE	14BE	13BE	14BE	14EB	20	27	48	44	117AA	130AA	81AA	53AA	44	38	36	40	32	27	22	28	27	70AA	18
18	19	21	20	18	18	17G	32	46	104AA	34UY	40	40	44	41UY	37	38	40	31	25	20	28	16	17	18
19	22	22	18	13EB	17	25	55AA	34	63A	51	45	60AA	46	98AA	G	36	37	37	33	37	19	27	43	34
20	25	14EBE	14B	34	18	20	34	37	36	124AA	154AA	48	96AA	40	35	36	44	29	17G	21	18	27	19	20
21	22	20	17	14EBE	14B	G	31	29	32	35	38	41	38	79AAA	77A	51	44	30	48	20	19	21	13EB	16
22	14EBE	14BE	14B	17	20	30	41	42	35	38	42	53AA	68AA	66AA	80AA	91A	44	29	20	26	22	18	14EB	17
23	17	18	18	14EBE	15B	18	G	36	34	52AA	37	44	61AA	36	60AA	36	85AA	33	22	22	16	19	18	19
24	21	17	16	17	16EB	22	29	42	44	33	33UG	33UG	G	43	48	38	35	27	39	32	26	18	14EB	31
25	30	28	17	18	17	G	30	39	41	53	37	52AA	41	43	36	45	35	44	24	25	18	15EB	17	18
26	16	20	19	15EB	17	22	31	39	36	45	53	54AA	82AA	61AA	G	42	42	26	22	15EB	26	19	19	17
27	14EB	16	17	18	22	21	30	32	117AA	38	68AA	51	44	44	97AA	86A	70AA	90A	40	47	36	34	22	21
28	14EB	17	18	14EBE	14B	19	37	31	40	36	39	42	59AA	52AA	43	46	42	51	47	22	37	24	24	17
29	17	16	14EB	21	16EB	19	60AA	32	47	39	36	37	G	39	G	G	G	28	32	37	27	34	19	22
30	22	20	17	17	17	22	34	45	37	40	43	40	51AA	37UY	40	37	51	35	23	16	19	17	35	28
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	22	20	18	18	18	20	32	40	44	52	54	50	54AA	44	44	40	40	32	28	22	26	22	20	20
U Q	28	22	20	20	20	22	41AA	50AA	66AA	83AA	86AA	60AA	70AA	70AA	60AA	51	46	44	39	32	30	29	35AA	28
L Q	18	16EBE	17BE	15BE	15EB	19	28	34	38	39	39	41	44	40	36G	36	35	29	22	20	19	18	17EB	18

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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	13	14	15	16	16	17	18	22	20	16	26	16	16	15	15	15	14	13	14	14
2	15	13	15	13	15	13	16	15	14	15	20	22	22	20	16	14	15	14	16	16	14	15	15	14
3	14	14	14	13	16	14	16	14	16	17	17	34	23	22	18	15	16	13	14	15	15	16	15	15
4	16	16	14	14	14	14	14	15	16	17	20	22	24	22	20	19	17	15	14	14	16	14	15	15
5	15	16	14	14	14	14	13	15	14	13	16	18	18	21	21	15	16	15	15	16	16	14	14	13
6	16	15	15	14	16	16	15	17	15	16	21	21	23	20	24	21	14	14	15	15	16	13	15	14
7	15	15	15	16	14	16	14	14	15	20	15	21	20	23	18	17	16	13	12	15	13	15	15	16
8	15	16	16	16	16	15	15	14	18	16	18	19	28	18	19	16	17	18	16	15	16	16	16	15
9	14	15	14	13	14	14	14	14	16	15	18	20	16	19	16	18	16	16	12	14	14	16	15	14
10	15	14	14	14	14	15	13	15	17	16	20	20	18	21	16	16	14	15	14	15	15	14	15	16
11	15	16	16	14	14	15	14	14	15	16	16	18	19	16	20	15	16	15	16	14	14	14	15	14
12	16	15	15	14	14	14	16	15	16	22	21	17	21	20	22	18	16	15	12	15	14	14	15	16
13	14	14	12	15	15	15	15	16	15	18	17	18	17	20	16	15	16	16	13	16	15	14	15	16
14	14	16	16	16	15	14	16	14	17	15	24	21	16	23	22	20	15	15	16	13	15	15	14	15
15	15	14	15	15	15	17	14	15	15	17	22	17	21	32	20	18	16	14	14	15	16	15	15	15
16	15	14	15	15	15	15	14	15	15	14	17	20	30	21	20	16	16	14	15	15	14	16	16	14
17	14	14	13	14	14	16	15	16	15	18	19	22	22	18	16	15	14	14	14	14	14	14	13	16
18	17	15	15	13	14	15	15	15	15	15	20	20	20	23	21	17	16	14	14	15	16	15	14	15
19	16	14	14	13	16	16	13	15	16	16	18	18	21	22	18	18	16	16	14	16	14	14	16	15
20	15	14	14	13	15	15	14	14	17	14	16	21	20	20	18	18	19	15	13	16	14	16	15	16
21	14	15	15	14	14	14	14	15	16	16	21	16	24	18	16	15	14	14	15	16	15	15	13	14
22	14	14	14	14	14	14	14	14	15	18	18	19	22	21	19	16	16	15	15	15	15	15	14	14
23	15	15	14	14	15	14	14	15	15	13	16	16	18	20	16	16	15	15	14	15	15	15	15	16
24	16	15	14	13	16	14	13	15	15	16	23	16	21	21	18	17	16	15	14	16	16	15	14	15
25	15	16	15	15	15	14	13	14	16	15	15	20	20	19	21	16	16	15	16	16	15	15	14	14
26	14	15	15	15	13	15	15	15	15	15	18	17	21	17	17	16	15	16	15	15	14	15	14	14
27	14	15	15	15	16	15	12	16	15	16	16	24	20	18	19	15	14	14	15	14	14	14	15	15
28	14	13	14	14	14	14	16	13	15	16	21	20	21	19	19	16	15	16	14	15	15	14	15	13
29	15	15	14	16	16	14	13	14	15	16	17	18	22	18	18	17	14	14	14	14	13	14	14	15
30	16	14	16	15	14	16	16	13	14	14	17	18	18	20	18	16	14	14	15	15	16	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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	14	14	14	14	14	15	15	16	18	20	21	20	18	16	16	15	14	15	15	15	15	15
U Q	15	15	15	15	15	15	15	15	16	17	20	21	22	21	20	18	16	15	15	16	16	15	15	15
L Q	14	14	14	14	14	14	14	14	15	15	17	18	19	18	17	15	15	14	14	15	14	14	14	14

JUN. 1997 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 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	F 296	F 292	F 289	F 287	F 300	324	362	A 304	A 327	A	A	A	A	287	J R 284	A 296	316	326	317	313	305	308	301	V 301
2	295	F 299	F 296	314	357	374	328	V 336	336	A	304	293	A	A	A	299	A	316	314	313	A	F 307	F 302	F 299
3	F 304	F 304	F 301	F 311	F 332	319	312	331	357	331	A	278	R 306	293	280	289	294	299	284	332	F 315	354	F 297	298
4	F 296	F 300	F 283	F 306	F 323	361	336	357	R 338	323	A	U R 314	R 295	R 281	295	285	291	293	303	308	327	S 332	F 283	F 306
5	F 307	F 307	F 305	F 304	F 307	F 329	361	R 361	A	A	A	289	290	287	294	317	306	291	299	348	F 363	A	A	A
6	F 297	F 295	F 287	F 297	F 322	336	354	A	309	A	A	A	A	R 303	R 282	289	284	282	312	306	338	V 328	F 320	F 292
7	330	A	F 282	311	F 325	322	338	369	A	A	A	319	A 287	A	A	A	302	308	288	327	307	F 307	291	308
8	F 312	F 305	F 316	F 353	332	A	A	A	A	A	A	A	A	A	A	A	302	A	296	323	319	F 308	308	F 294
9	A	F 287	F 299	F 323	F 305	312	A	A	283	A	A	A	A	A	A	R 292	312	311	294	313	284	276	264	F 285
10	A	314	F 287	F 312	F 299	A	A	A	333	A	A	A	A	A	302	313	293	287	308	333	333	301	290	F 284
11	F 309	F 308	F 328	341	339	344	294	A	A	A	A	A	A	A	313	304	332	320	316	327	319	306	F 307	F 314
12	F 325	F 316	F 293	F 294	328	337	321	355	351	281	299	U R 310	259	305	290	317	313	326	308	318	319	J R 297	A	F 326
13	A	F 324	F 290	A	A	327	331	307	A	314	A	U R 269	279	342	A 283	A	A	312	311	334	333	318	309	F 305
14	F 295	F 292	F 310	F 308	F 290	332	326	337	337	334	327	A	A	A	285	309	306	335	341	332	310	299	A	A
15	F 306	292	F 336	F 342	A	A	A	305	339	A	A	A	A	A	A	290	U R 277	307	319	335	317	F 289	F 298	F 331
16	F 304	A	F 313	R 307	F 309	F 298	309	A	A	A 341	A	A	A	A	J R 260	302	320	323	313	322	317	308	F 319	A	F 297
17	F 304	F 312	327	329	F 323	J R 346	339	A 334	A	A	A	A	A	298	302	R 313	310	302	298	310	329	327	A	F 294
18	303	F 293	F 316	F 313	R 337	321	346	328	A	V 321	U R 276	U R 287	306	U R 256	R 277	300	305	R 311	294	320	335	350	308	F 293
19	F 298	F 301	F 299	F 300	F 299	317	A	319	A	345	339	A	318	A	263	289	305	316	293	302	U R 300	323	295	313
20	F 309	F 297	F 295	F 315	F 328	313	334	282	343	A	A	U R 320	A	R 312	304	317	304	R 293	308	320	342	313	318	292
21	299	302	315	317	312	337	317	336	347	320	R 314	G	R 281	A	A	307	310	325	331	347	320	322	306	305
22	305	316	J R 297	304	316	314	309	350	336	343	276	A	A	A	A	A	286	301	322	334	337	305	F 285	302
23	299	311	307	F 294	F 301	R 290	291	329	G	A	U R 238	R 301	A	264	A	291	A	311	305	317	306	314	F 263	F 290
24	F 282	F 305	F 317	F 277	F 276	F 289	286	329	328	273	326	321	308	334	A	319	276	297	300	309	312	338	309	F 323
25	F 310	F 312	F 318	F 301	F 319	318	305	308	314	321	340	A	267	313	308	R 314	317	305	303	326	310	308	300	F 311
26	F 307	F 321	F 332	F 327	328	329	312	314	316	336	A 340	A	A	A	287	303	304	321	328	319	R 318	340	F 286	F 300
27	F 298	F 272	F 302	F 306	F 340	Z 342	360	297	A	297	A	319	326	U R 286	A	A	A	A	294	311	328	293	289	F 277
28	F 285	F 299	F 308	F 303	F 325	288	293	327	318	331	315	337	A	A	303	305	293	321	310	341	311	298	280	286
29	F 299	306	307	308	321	297	A	R 311	359	350	304	270	279	287	261	288	287	295	301	315	321	293	V 307	309
30	F 306	F 289	299	F 280	S 301	291	318	345	335	285	U R 286	U R 302	A	307	293	309	336	316	300	321	327	F 336	J R 311	303
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	30	29	28	27	24	24	20	17	14	16	13	17	20	25	26	28	30	30	29	29	25	28
MED	F 304	F 303	F 304	F 308	F 322	322	324	329	336	323	309	302	290	293	292	304	304	311	306	320	319	308	300	F 300
U Q	F 307	F 312	F 316	F 316	328	337	338	341	341	338	327	319	307	310	302	314	312	318	316	332	331	328	308	F 308
L Q	F 297	F 294	F 295	F 300	F 303	312	309	310	317	306	U R 286	282	279	R 284	282	290	293	298	298	313	310	300	F 288	F 292

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JUN. 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	L	A	A	A	A	A	A	394	374	A	359	352	L 342					
2						L	L	A 357	A	A	H 396	A	A	A	A	A	A	A	A					
3						U L 383	L	357	A	404	A	R 394	367	A	A	369	A	A	A					
4						L	U L 375	A 371	A 363	A	A	403	A	403	A	360	375	349	342					
5						L		A	A	A	A	A	A	A	H 403	367	353	A 343	A 357					
6							A	A	375	A	A	A	A	A	A	A	A	A	A					
7						L 333	A	A	A	A	A	377	A	A	A	A	A	A	A					
8						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
9							A	A	A	A	A	A	A	A	A	A	A	A 361	L 338					
10						A	A	A	A	A	A	A	A	A	A	A	348	327	333					
11							L	A	A	A	A	A	A	A	A 353	371	376	359	329					
12							L 343	H 378	R 380	A	A	R 406	A	428	381	423	412	A	L 359					
13						A	L 361	A	A	A	A	A	Y	R	A	A	A	A	A					
14							364	370	396	404	R 388	A	A	A	394	368	375	A	A					
15						A	A	379	A	A	A	A	A	A	A	363	A	384	A					
16							A	A	A	A	A	A	A	R 376	A	A	A 364	H 359	L 366					
17						U L 364	372	A	A	A	A	A	A	A	358	374	A	358	337					
18						U L 385	A 383	A	A	426	420	428	A	Y	R 391	A 366	A	379	345					
19						L 330	A	401	A	A	A	A	A	A	R 381	R 368	405	A	A	A				
20						U L 345	A	A 342	409	A	A	A	A	381	374	366	A	353	337					
21							L	387	386	416	411	376	379	A	A	A	A	373	A					
22							A	A	390	390	R 421	A	A	A	A	A	A	349	368					
23						346	374	A	379	A	405	A	A	412	A	404	A	A 347	L					
24						L 330	346	A	A	413	411	422	393	A	A	403	368	351	A					
25							U L 347	A	A	A	387	A	411	A	383	A	370	A	348					
26							A 340	A	361	A	A	A	A	A	403	A	A	368	U L 346					
27							426	396	A	401	A	A	A	A	A	A	A	A	A					
28						343	A	357	A 346	395	415	A	A	A	A	A	A	A	A					
29						L 321	A	373	A	393	424	396	380	384	378	386	382	357	A					
30						349	A 370	A	A	R 400	A	392	A	Y	A	372	A	L	350	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						11	12	12	10	10	10	9	5	7	12	15	12	17	15					
MED						L 345	367	372	380	402	411	396	380	394	381	369	372	357	345					
U Q						U L 364	374	383	390	413	420	414	402	412	392	386	379	364	357					
L Q						L 330	346	357	A 363	395	396	384	373	381	374	366	362	349	337					

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JUN. 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						L 278	238	A	A	A	A	A	A	388	344	A	312	276	278					
2						214	238	278	298	A	346	390	A	A	A	A 362	A	A 304	A 284					
3						300	L 314	290	260	294	A	436	374	354	382	338	304	A 306	312					
4						216	264	266	276	324	A	374	402	426	376	352	326	324	292					
5						246		256	A	A	A	396	418	368	326	290	302	326	282					
6							252	A	368	A	A	A	A	360	A 388	340	340	A 342	282					
7						330	A 284	252	A	A	A	352	A	A	A	A	336	300	308					
8						A	A	A	A	A	A	A	A	A	A	A	A 380	A	A 342					
9							A	A	A 416	A	A	A	A	A	A	A 362	304	284	320					
10						A	A	A	304	A	A	A	A	A	A 340	316	350	326	278					
11							L 368	A	A	A	A	A	A	A	340	352	310	324	308					
12							318	274	276	450	388	374	E A 512	352	380	320	338	300	284					
13						A 294	308	A 372	A	A 350	A	462	464	Y	A 424	A 412	A	322	296					
14							316	314	292	312	334	A	A	A	438	334	320	290	254					
15						A	A	364	282	A	A	A	A	A	A	398	468	340	278					
16							316	A	A	E A 326	A	A	A	552	358	A 328	292	304	262					
17						306	272	E A 336	A	A	A	A	A	398	366	304	348	348	306					
18						284	280	A 322	A	344	470	Y 426	380	534	Y 438	352	332	304	292					
19						338	A	328	A	A 300	316	A	A 350	A	Y 488	372	318	288	312	294				
20						294	272	404	274	A	A	A 336	A	324	340	318	330	308	286					
21							324	296	258	338	372	G	444	A	A	A 354	310	278	266					
22							A 328	264	304	294	Y 478	A	A	A	A	A	384	326	266					
23						410	392	320	G	A	580	376	A	512	A	410	A	336	L 328					
24						374	412	308	316	Y 448	326	336	362	310	452	352	440	350	A 346					
25							358	346	316	A 308	296	A	478	330	360	A 346	330	A 332	308					
26							318	318	318	292	E A 318	A	A	A	442	378	358	314	264					
27							258	390	A	398	A	338	318	426	A	A	A	A	A 348					
28						424	384	304	318	300	342	320	A	A	362	346	344	A 286	A 284					
29						372	A	312	254	304	352	472	424	382	H 398	332	324	314	284					
30						362	308	A 262	312	424	402	344	A	360	380	312	284	L 336	316	252				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						16	23	23	19	17	14	16	12	16	21	25	26	28	30	2				
MED						303	314	310	304	318	349	375	400	375	380	346	330	314	289	273				
U Q						367	328	336	318	374	402	431	454	426	431	362	348	329	312					
L Q						281	272	274	276	300	326	341	368	353	351	324	310	300	278					

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JUN. 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	294	A 348	304	312	294	238	226	A	A	A	A	A	A	212	206	A	A 256	230	224	254	236	242	260	272
2	306	288	274	258	224	214	218	A	A	A	H 206	A	A	A	A	A	A	A	A 256		A 308	254	274	
3	278	270	278	268	240	228	250	A 262	A	214	A	210	226	A	A	A 250	A	A	A	A 258	276	228	250	298
4	276	290	306	288	250	210	222	A	E A 276	A	A	212	A	208	A	238	230	232	234	242	254	236	316	266
5	264	270	306	310	280	236	232	A	A	A	A	A	A	A	H 186	H 202	222	A	A	230	224	A	A	A
6	A 348	332	310	306	274	A 260	A	A	A 254	A	A	A	A	A	A	A	A	A	A	A 282	246	246	A 266	A 338
7	A 316	A	338	328	310	236	A	A	A	A	A	242	A	A	A	A	A	A	A	244	240	268	A 314	A
8	294	290	256	224	254	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A 246	260	276	272	326
9	A	A 368	300	310	A 340	240	A	A	A	A	A	A	A	A	A	A	A	A	A 268	264	284	322	328	308
10	A	276	258	270	286	A	A	A	A	A	A	A	A	A	A	A	E A 270	224	236	240	216	240	268	A 308
11	320	278	244	234	266	250	A	A	A	A	A	A	A	A	A	212	242	228	H 212	258	240	260	288	300
12	332	268	294	292	254	240	H 222	H 222	A 236	A	A	202	A	200	Y 254	206	200	A	240	228	268	284	A	254
13	A	258	A 348	A	A	A	234	A	A	A	A	A	A	206	A	A	A	A	A	242	228	258	278	290
14	296	A 314	258	248	282	250	A 254	244	216	216	202	A	A	A	202	238	226	A	A	244	A	A	A	A
15	304	A 346	256	238	A	A	A	A 240	A	A	A	A	A	A	A	A 264	A	A 256	A	A 250	258	E A 364	E A 356	E A 344
16	A 342	A	294	A 326	A 298	242	A	A	A	A	A	A	A	222	A	A	A 268	H 212	226	228	282	288	A	E A 372
17	258	258	264	250	260	242	228	A	A	A	A	A	A	A	E A 268	224	A	E A 268	A 250	262	246	A 236	A	296
18	286	A 320	266	256	254	230	A 252	A	A	198	196	H 192	A	Y	224	A	A	A 248	A 254	246	250	212	234	310
19	300	302	318	290	260	A 240	A	220	A	A	A	A	A	A	208	232	A 226	A	A	A	250	250	A	288
20	304	266	254	A 294	252	234	A	A	212	A	A	A	A	220	212	A 242	A	242	230	262	222	248	260	300
21	A 328	310	280	272	262	244	A 232	H 206	208	204	200	E A 262	224	A	A	A	A	220	A	230	228	252	264	270
22	270	266	254	282	282	A 278	A	A	220	228	210	A	A	A	A	A	A	242	232	236	236	258	288	282
23	278	284	272	304	312	258	242	A	226	A	216	A	A	214	A	222	A	E A 278	H 226	262	266	252	304	314
24	282	270	260	298	310	254	E A 276	A	A	196	192	H 182	212	A	A	218	232	H 194	A	A 284	256	238	264	292
25	A 314	312	250	272	236	242	246	A	A	A	232	A	208	A	220	A	A 242	A	232	254	254	262	268	274
26	284	256	232	234	254	242	E A 276	A	256	A	A	A	A	A	198	A	A	218	226	238	250	252	302	274
27	266	306	292	286	276	228	204	212	A	218	A	A	A	A	A	A	A	A	A	A	264	270	288	322
28	304	274	280	284	276	252	A	222	A	214	198	A	A	A	A	A	A	A	A	224	A 292	288	318	286
29	280	280	262	292	270	254	A	226	A	226	196	H 186	206	222	H 208	224	242	234	A	252	248	A 292	280	264
30	288	300	282	288	294	262	A 260	A	A	A 232	A	206	A	Y	A	A 234	A	E A 262	246	242	238	236	E A 346	A 312
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	28	30	29	28	26	17	9	9	10	10	9	5	8	11	14	12	16	15	28	28	28	24	27
MED	294	286	276	286	272	242	233	222	223	215	201	204	212	213	208	228	234	230	232	246	250	254	274	293
U Q	A 314	A 311	300	301	290	252	A 253	A 242	A 255	226	210	227	225	221	224	A 238	A E 249	A E 252	A 246	258	262	280	309	A 312
L Q	278	270	258	257	254	236	224	216	214	204	196	H 189	207	207	202	218	226	222	226	239	237	241	264	274

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JUN. 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						A 140	A 142	118	112	112	112	112	112	112	A	112	112	112	A					
2						A 120	120		112	112	112	116	118	114	114	A	A	A	A					
3						A 126	118		116	116	112	A	118	118	118	116	116	114	A					
4						A 128	A 138		122	114	110	116	116	116	114	112	112	112	122					
5						A 122	120		118	112	110	110	112	114	A	A	122	A	A					
6						A	A	A	116	112	116	A	A	118	A	A	A	A	A	B				
7						A 120		A	114	114	112	114	116	116	116	116	116	A 126	122	B				
8						A 122	120		118	118	118	116	116	116	112	112	110	A	A	B				
9					140	124	118		114	114	114	112	112	114	A	114	114	114	116	B				
10					120	122	122		116	116	116	116	116	118	118	116	A	A	A	B				
11						A 124	116		114	112	112	116	112	112	A	A	A 130		A	B				
12					138	124	120		116	114	122	110	110	108	114	A	A 128	E	B	B				
13						A	A	A 136	114	110	110	110	114	112	112	112	112	120	A	B				
14					130	126	A 140		A	A	A	112	A	A	A	A	A	A	A	B				
15						A	A	A	A 130	114	116	112	112	A	112	112	116	118	118	B				
16					118	118	116		116	114	114	112	A	114	114	114	112	A	A	B				
17						A 132	116		116	112	112	114	114	114	122	114	114	114	116	B				
18					134	A	112		112	112	110	110	A	E A 134	118	118	114	114	A	B				
19						A 118	118		114	114	114	114	114	114	114	114	114	A	A	B				
20						A 116	114		114	114	114	114	114	114	A	A	A	A	A 142	B				
21					120	118	A		116	116	114	114	116	114	114	110	110	A	A	B				
22						A 118	114		112	112	112	116	114	114	A	A	A	A	A	B				
23						A 120	118		114	112	112	112	114	A	A	A	A	A	A	B				
24					138	118	114		110	A	A	A	114	112	112	116	116	114	116	B				
25					144	120	116		116	112	116	114	114	114	110	A	110	A	A	B				
26					134	120	126		122	112	114	112	112	114	114	114	114	A	114	B				
27						A 126	128		118	118	A	A	112	112	110	A	A	A	A	B				
28						A	A 110		110	110	110	110	108	112	112	A	A	A	A	B				
29						A 112	112		A	A	A	116	116	114	114	114	112	122	A	B				
30						A 118	114		A	114	A	114	114	114	114	114	126	116	A	B				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						10	25	26	27	27	25	26	26	27	21	18	19	14	8					
MED						134	120	118	116	114	112	114	114	114	114	114	114	115	117					
U Q						138	125	120	116	114	115	116	116	116	115	116	116	122	122					
L Q						120	118	114	114	112	112	112	112	112	112	112	112	114	116					

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

IONOSPHERIC DATA STATION Kokubunji

JUN. 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	112	108	108	114	108	108	110	124	116	116	116	114	112	120	122	118	128	114	114	118	128	114	112	106
2	102	122	108	116	114	130	118	126	122	112	126	116	108	106	106	102	102	102	102	112	112	118	116	114
3	110	110	106	132	130	138	142	128	118	124	114	126	198	122	114	118	114	118	108	106	102	112	114	110
4	110	124	110	104	100	110	106	128	130	118	134	120	112	122	114	G	G	158	G	114	114	110	116	110
5	112	100	108	98	98	126	122	122	116	110	108	110	112	114	112	134	110	102	100	100	118	118	110	110
6	106	100	100	102	120	106	102	104	124	112	106	106	108	116	110	122	120	102	98	98	102	120	118	118
7	108	106	106	102	102	134	118	112	112	112	108	112	116	116	118	112	116	116	114	110	112	104	102	108
8	114	112	110	116	126	126	122	116	118	112	110	112	112	108	110	108	108	110	108	108	112	108	118	112
9	112	112	108	108	106	146	128	122	120	116	114	112	130	108	104	114	114	128	116	110	110	108	132	116
10	112	106	B	110	130	122	126	126	120	118	116	112	112	112	112	112	112	116	110	112	114	116	112	108
11	106	102	98	114	B	136	128	120	116	114	114	114	110	106	106	104	114	178	104	106	104	98	98	106
12	104	106	102	B	B	160	128	126	122	122	120	118	110	112	G	112	104	126	124	142	112	114	112	112
13	108	108	108	108	106	106	108	122	118	118	114	116	124	154	134	124	122	142	114	112	108	112	112	106
14	106	104	102	102	104	158	140	142	128	122	118	110	106	104	108	104	146	98	100	98	122	120	112	114
15	112	110	108	104	104	106	106	136	122	114	106	110	110	112	110	136	122	120	116	116	112	114	114	112
16	106	102	96	96	100	100	118	112	112	108	112	110	108	118	114	112	110	126	118	116	120	114	112	110
17	108	114	110	112	110	158	138	122	116	110	112	152	120	120	130	130	122	122	120	126	112	110	110	110
18	108	108	104	102	102	112	112	108	106	122	110	108	108	140	134	134	120	120	116	108	118	118	104	108
19	106	104	104	102	100	128	118	124	116	116	114	112	112	108	G	116	112	106	102	100	106	112	112	112
20	110	B	130	102	98	130	122	124	122	112	112	114	108	108	114	114	108	108	110	102	104	108	110	108
21	104	104	100	100	104	120	112	122	120	122	116	112	116	106	106	106	106	136	102	102	100	102	102	102
22	B	100	B	108	110	110	118	110	122	118	114	114	110	108	108	104	102	100	100	104	102	116	108	116
23	114	106	108	118	B	132	G	128	134	116	118	110	104	114	106	108	104	102	104	98	102	102	108	110
24	110	110	108	110	112	134	132	120	116	116	108	110	G	118	118	122	122	124	120	118	118	118	106	106
25	104	98	96	98	104	100	136	124	122	110	112	114	116	116	118	112	110	104	108	116	110	116	116	112
26	108	118	110	116	116	144	126	128	126	116	114	108	110	118	G	124	116	114	130	104	120	118	116	122
27	B	126	112	100	98	98	142	128	112	112	118	112	112	110	106	106	106	104	106	102	100	100	100	100
28	114	110	112	120	116	112	108	126	114	112	112	112	108	110	110	108	106	102	100	100	100	100	100	120
29	114	116	114	108	B	124	110	110	104	106	110	120	G	124	G	G	G	152	124	118	114	112	108	116
30	108	102	106	110	102	120	112	108	110	108	110	128	126	150	130	136	120	116	124	110	104	100	98	96
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	28	29	26	30	29	30	30	30	30	30	28	30	26	28	28	30	29	30	30	30	30	30
MED	108	108	108	108	105	125	118	123	118	115	114	112	112	114	112	113	113	116	110	109	112	112	112	110
U Q	112	112	110	114	114	134	128	126	122	118	116	116	116	120	118	123	120	126	117	116	114	116	114	114
L Q	106	103	103	102	102	110	111	116	116	112	110	110	108	108	108	108	107	104	102	102	104	108	106	108

IONOSPHERIC DATA STATION Kokubunji

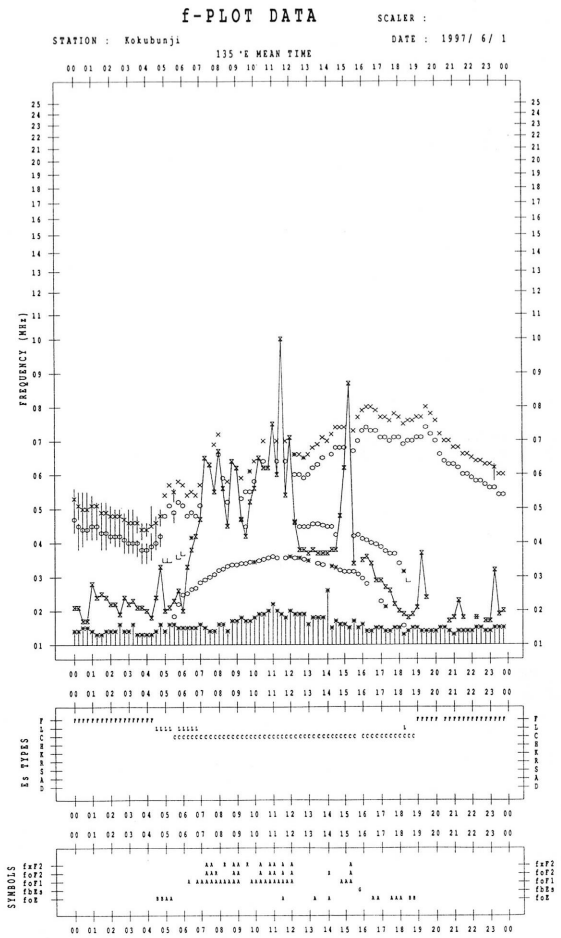
JUN. 1997 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

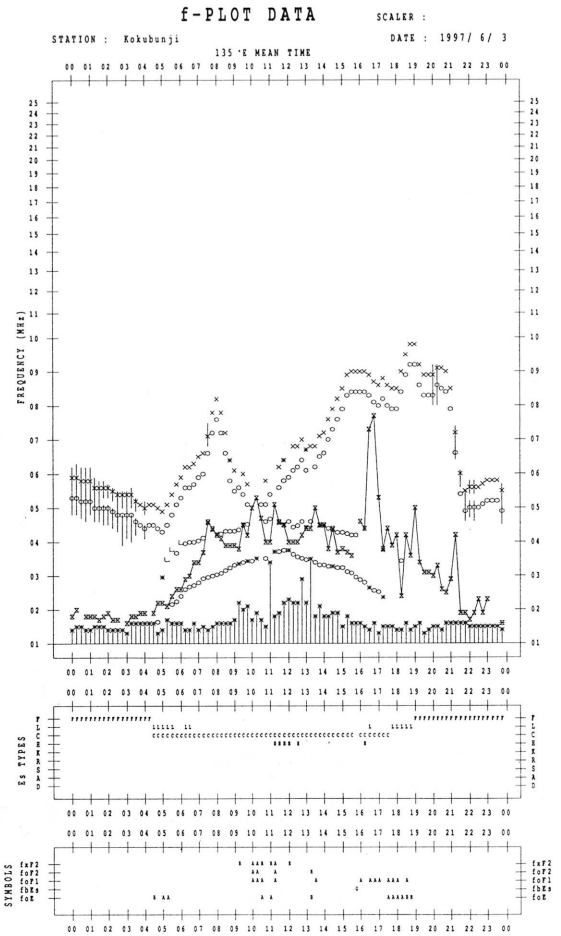
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

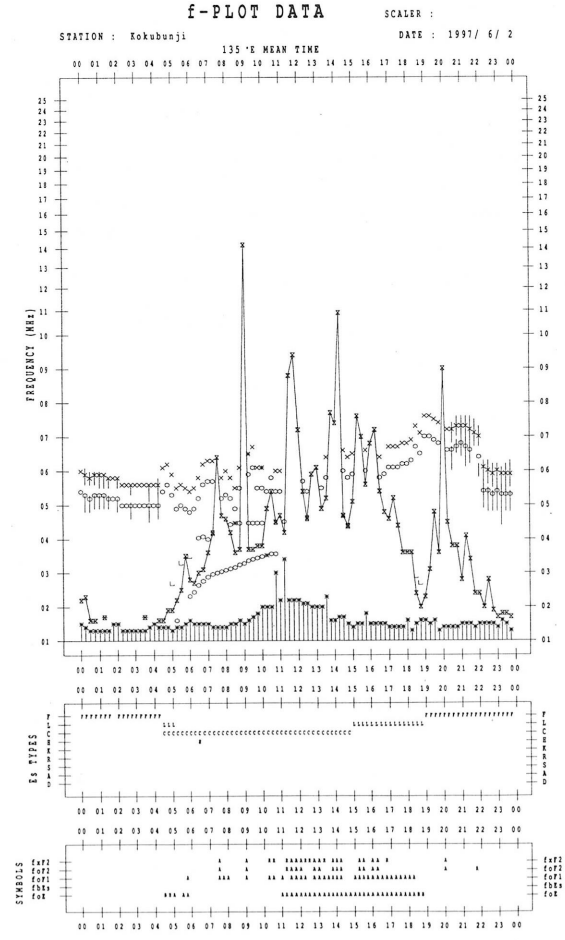
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 6	F 5	F 5	F 4	F 2	L 2	LC 21	C 3	C 3	C 2	C 2	C 2	C 3	C 1	C 1	C 3	C 2	C 2	C 2	F 4	F 1	F 3	F 2	F 3
2	F 2	F 1	F 1	F 1	F 1	CL 11	C 2	C 2	C 2	C 2	C 1	C 1	C 2	C 2	C 2	L 3	L 4	L 4	L 4	F 3	F 5	F 5	F 3	F 2
3	F 2	F 1	F 3	FF 12	FF 11	CL 11	C 1	C 3	C 2	C 1	C 2	C 1	HC 11	C 1	C 2	C 2	C 3	C 3	L 4	F 4	F 3	F 3	F 2	F 4
4	F 2	FF 11	F 2	F 2	F 1	L 1	LC 21	CL 21	C 1	C 2	HC 22	C 1	C 2	C 1	C 1			H 1		FF 41	FF 32	FF 31	F 5	F 3
5	FF 13	F 2	FF 13	F 3	F 2	CL 21	C 3	CL 31	C 2	C 2	C 2	C 2	C 1	C 1	L 1	CL 11	L 1	L 3	L 3	F 3	FF 23	FF 41	F 3	F 4
6	F 4	F 2	F 1	F 1	FF 12	L 3	L 3	L 3	C 2	C 2	C 2	C 2	L 2	C 2	C 2	CL 22	CL 22	L 3	L 4	L 3	F 5	FF 14	FF 24	FF 13
7	F 3	F 5	F 4	F 4	F 4	C 1	CL 42	CL 31	C 3	C 2	C 2	LC 11	C 2	C 1	C 3	C 2	C 3	CL 21	C 4	L 2	F 2	F 2	F 4	F 2
8	F 2	F 3	F 2	F 1	FF 23	C 4	C 3	C 2	C 3	C 3	C 2	C 2	C 2	C 2	C 2	C 3	C 2	L 3	L 4	L 4	FF 22	FF 22	FF 21	F 3
9	F 5	F 4	F 6	F 4	F 5	CL 21	C 3	C 3	C 2	C 2	C 2	C 2	CL 12	C 2	C 2	C 2	C 2	C 1	C 3	L 3	F 3	F 3	FF 12	F 4
10	F 4	F 3		F 3	FF 13	C 4	CL 31	C 3	C 2	C 2	C 2	C 3	C 3	C 2	C 2	C 2	C 2	L 2	L 2	L 1	F 1	F 1	F 2	F 4
11	F 3	F 4	F 3	F 2		C 2	C 2	C 3	C 2	C 2	C 2	C 2	C 2	C 2	L 2	L 1	L 2	HL 12	L 2	L 2	F 2	F 3	F 2	F 2
12	F 4	F 2	F 2			C 1	C 2	C 1	C 2	C 2	CL 11	C 1	C 1	C 1		LC 11	L 2	CL 22	CL 23	HCL 22	FF 22	FF 31	F 5	F 3
13	F 5	F 3	F 4	F 4	F 4	L 3	LC 21	CL 41	C 2	C 2	C 2	C 2	C 2	H 1	C 1	C 2	C 3	CC 12	C 3	L 2	F 2	F 3	F 2	F 2
14	F 3	F 2	F 3	F 2	F 2	H 1	HL 32	CL 12	CL 11	CL 12	LL 11	L 2	L 2	L 2	L 1	L 2	HL 13	L 2	L 3	L 3	FF 52	F 5	F 6	F 5
15	F 5	F 5	F 5	F 4	F 4	L 6	LC 32	CL 11	CL 22	C 3	C 4	C 3	C 2	C 2	C 2	C 1	C 2	C 2	C 2	C 4	F 3	F 6	F 6	F 3
16	F 4	F 3	F 3	F 2	F 1	LC 11	CL 21	C 3	C 3	C 2	C 2	C 2	C 2	C 1	C 2	C 2	C 2	CL 13	CL 22	CL 33	FF 54	F 4	F 4	F 6
17	F 2	F 1	F 1	F 1	F 1	CL 11	CL 22	C 2	C 2	C 2	C 2	HC 11	C 2	C 2	CL 11	C 1	C 1	C 2	C 3	C 3	F 3	F 3	F 6	F 3
18	F 3	F 3	F 2	F 3	F 2	L 1	C 3	C 3	C 2	C 1	C 2	C 1	C 1	HL 11	H 1	C 1	C 2	C 2	C 2	L 3	F 2	FF 11	F 1	F 2
19	F 3	F 3	F 3	FF 11	F 1	C 2	C 3	C 1	C 2	C 2	C 1	C 2	C 2	C 2		C 1	C 2	L 3	L 4	L 4	FF 21	F 2	F 3	F 3
20	F 6		FF 12	F 3	F 2	C 1	C 3	C 2	C 1	C 3	C 2	C 2	C 2	C 1	L 1	L 1	L 3	L 2	L 2	L 4	F 1	F 3	F 3	F 3
21	F 4	F 3	F 2	F 1	F 1	L 1	C 3	CL 11	C 1	C 1	C 1	C 2	C 1	C 2	C 2	C 2	C 2	CL 22	L 3	L 3	FF 42	F 4	F 2	F 1
22		F 1		F 2	F 3	L 4	C 3	C 3	C 1	C 1	C 1	C 2	C 3	C 2	C 2	L 3	L 2	L 2	LC 21	L 3	F 3	FF 41	FF 21	F 2
23	F 1	F 2	F 2	FF 11		C 2		C 1	C 1	C 1	C 1	C 2	C 2	C 1	L 2	L 2	L 3	L 4	LC 31	L 3	F 3	F 4	FF 22	F 5
24	F 3	F 2	F 2	F 2	F 2	CL 21	C 2	C 2	C 2	C 1	L 1	L 1		C 2	C 1	C 1	C 1	C 1	CL 31	C 4	FF 31	FF 12	F 2	F 3
25	F 4	F 3	F 2	F 2	F 1	L 1	CL 22	C 2	C 2	C 3	C 1	C 2	C 1	C 1	C 1	C 2	C 2	L 3	L 3	L 4	F 2	FF 21	F 2	F 2
26	F 2	FF 23	F 2	F 1	F 2	C 1	C 2	CL 21	C 1	C 2	C 2	C 2	C 2	C 2		C 1	CL 21	L 2	CL 11	L 1	FF 21	FF 21	FF 11	F 1
27		FF 12	F 1	F 2	F 3	L 2	HL 11	CL 11	C 2	C 1	CL 11	L 2	C 1	C 2	C 2	C 2	C 3	L 3	L 4	L 4	F 4	F 3	F 2	F 3
28	FF 22	F 3	F 2	F 1	F 2	L 4	L 3	C 1	C 2	C 1	C 2	C 1	C 2	C 2	C 2	C 2	L 3	L 3	L 3	L 5	F 5	F 4	F 4	FF 11
29	FF 32	FF 22	F 2	F 3		CL 21	C 3	C 2	L 3	L 2	L 1	L 1		C 1				HL 11	CL 22	C 5	F 5	F 3	F 3	FF 13
30	F 2	F 3	F 2	F 1	F 2	L 2	C 3	C 2	C 2	C 2	C 2	C 1	C 1	H 1	C 1	H 1	CL 21	C 2	C 2	C 3	F 3	F 3	F 4	F 3
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																								

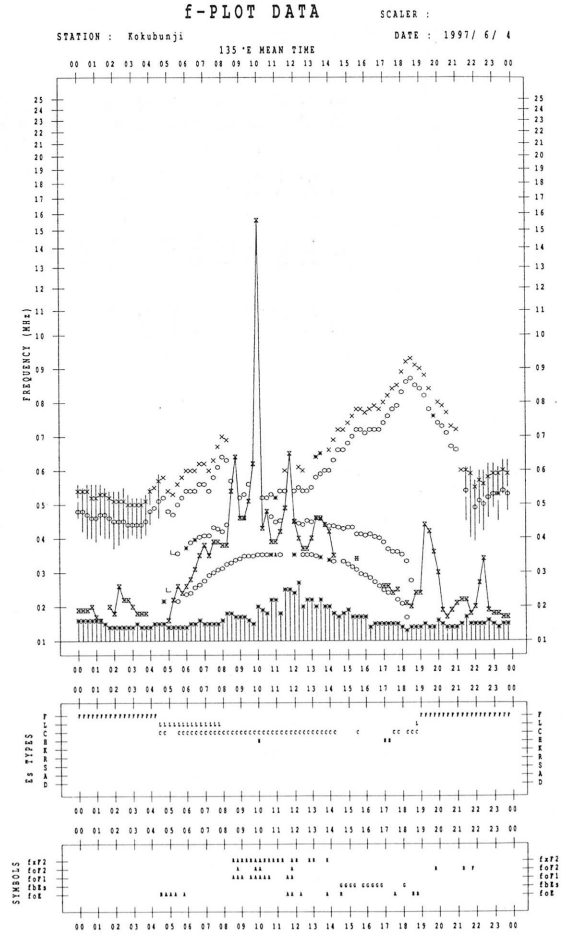
f-PLOTS OF IONOSPHERIC DATA

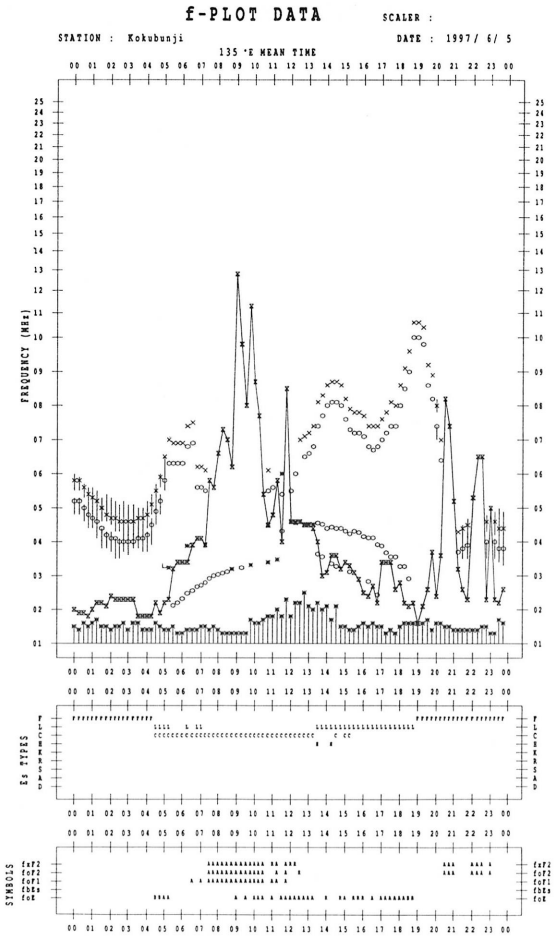
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

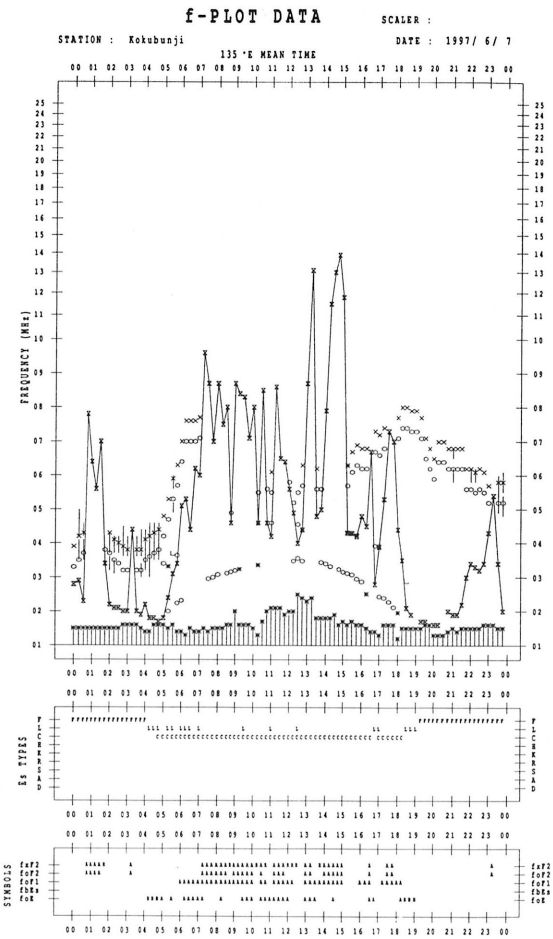

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

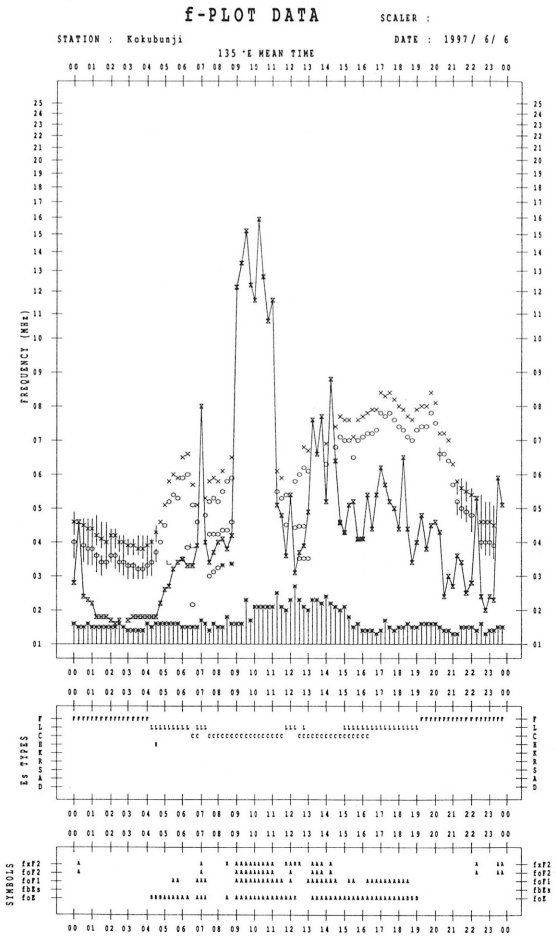

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

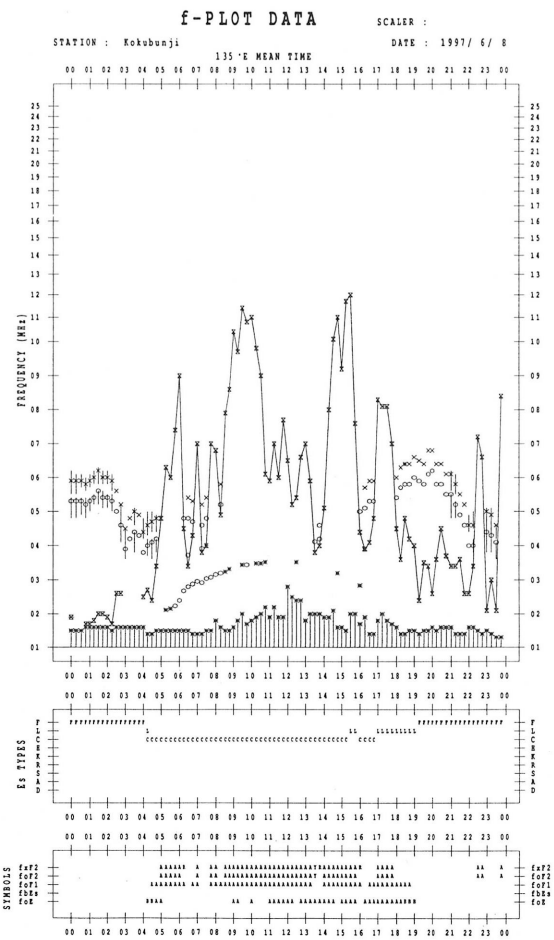

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

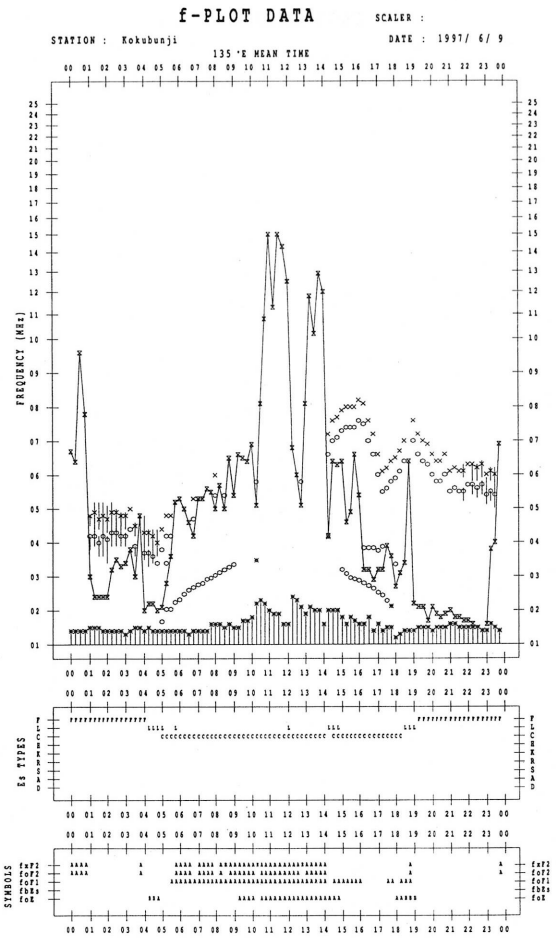

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

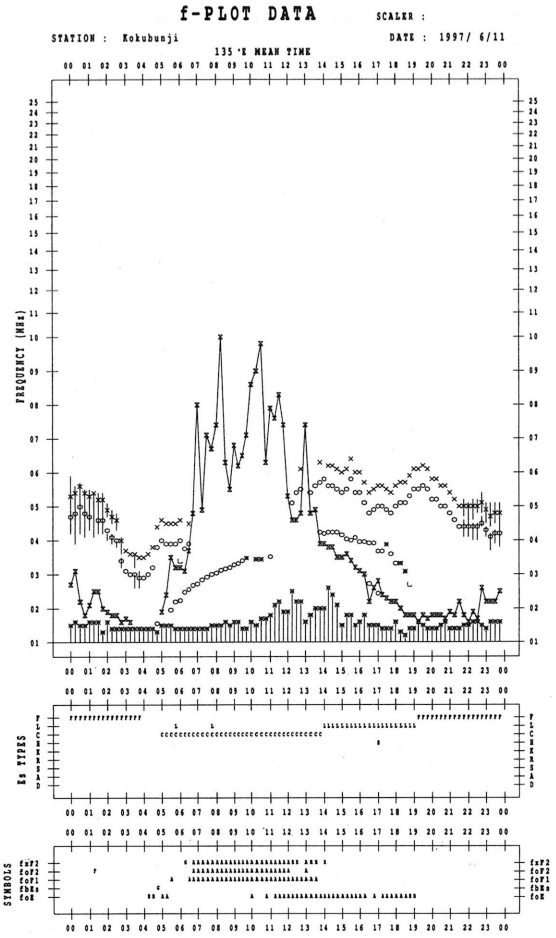

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

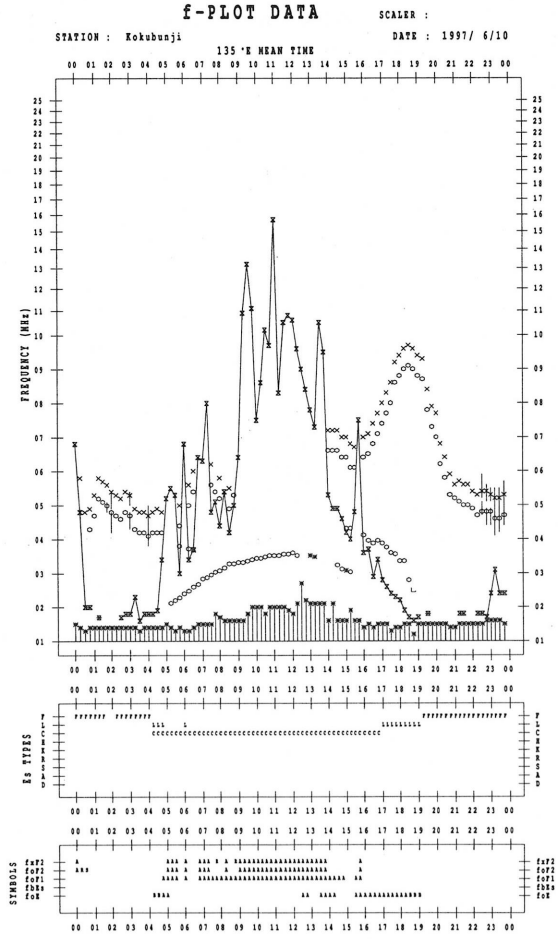

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

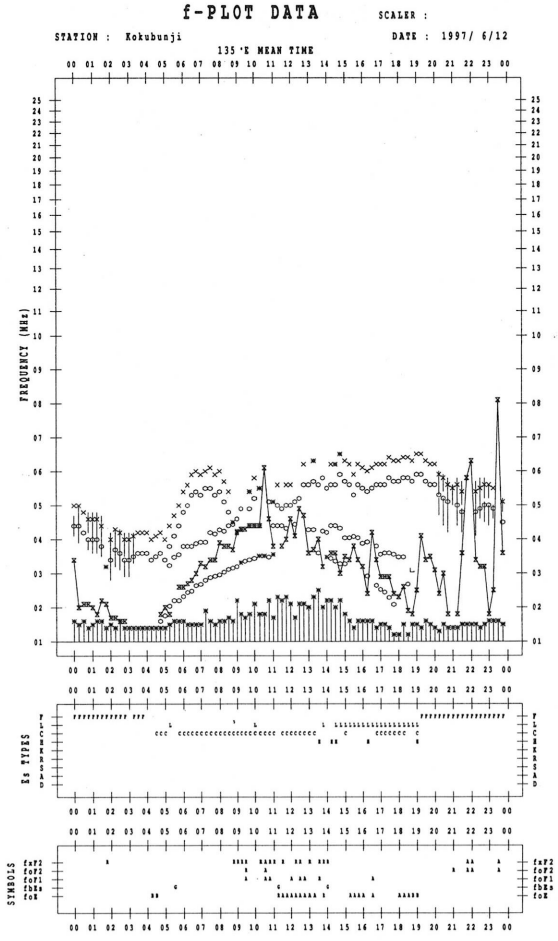

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

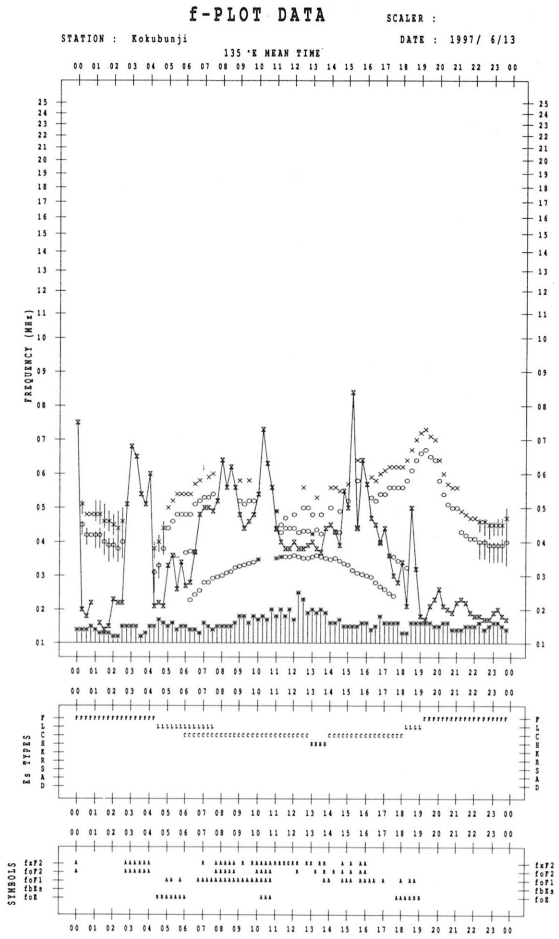

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

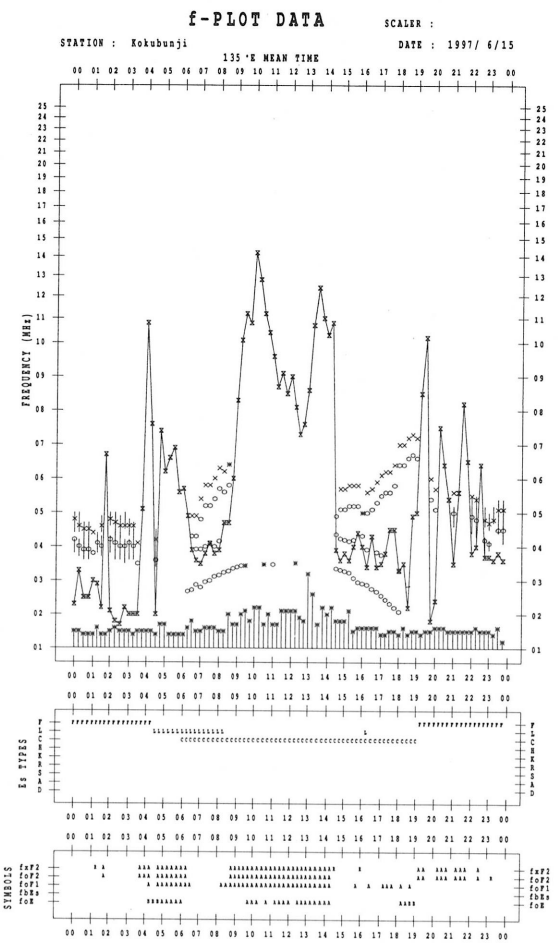

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

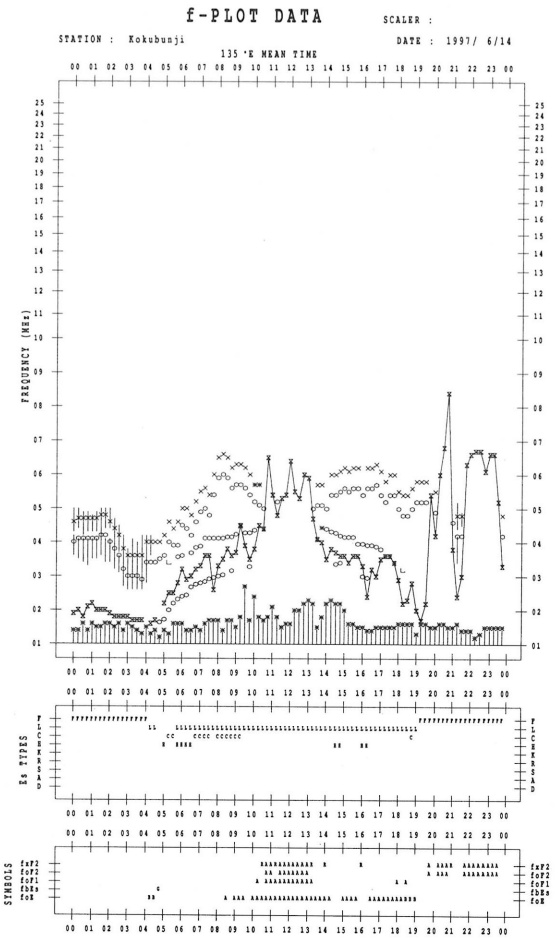

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

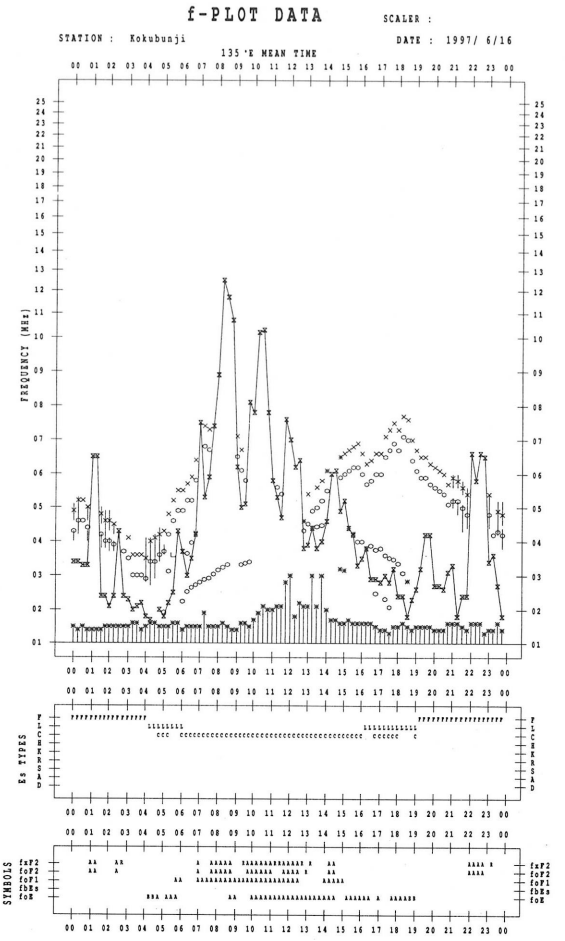

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

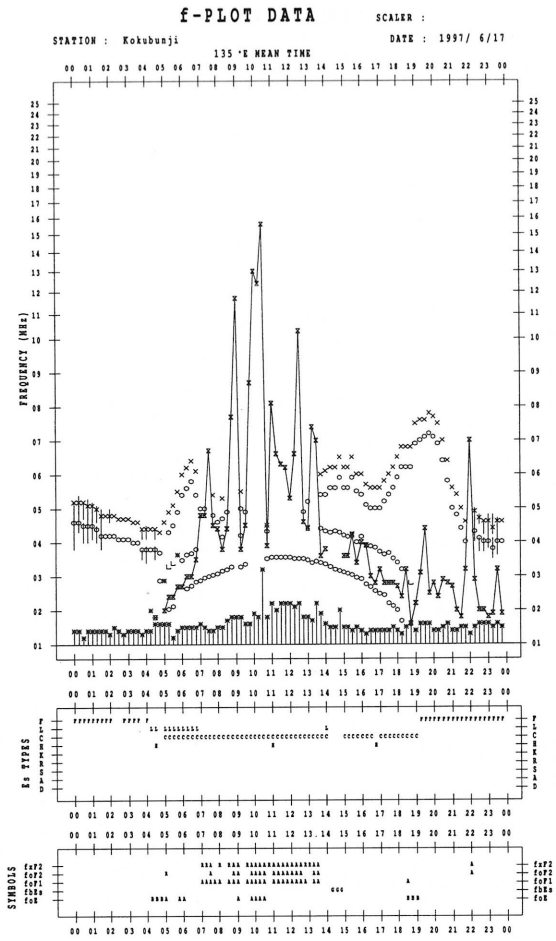

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

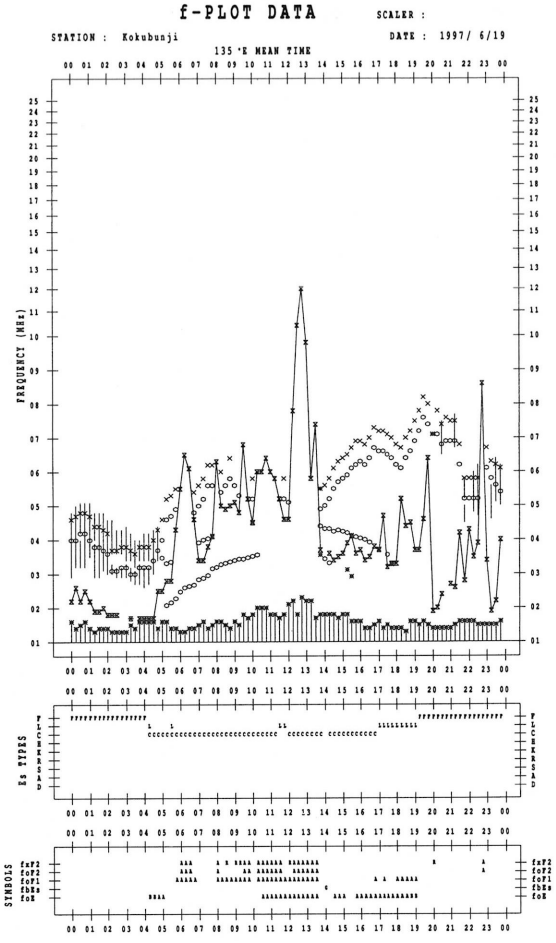

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

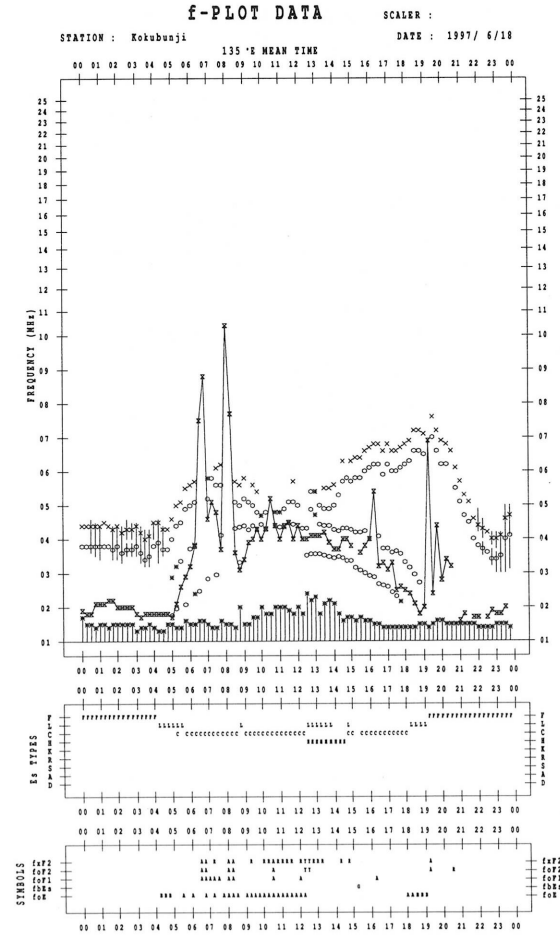

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

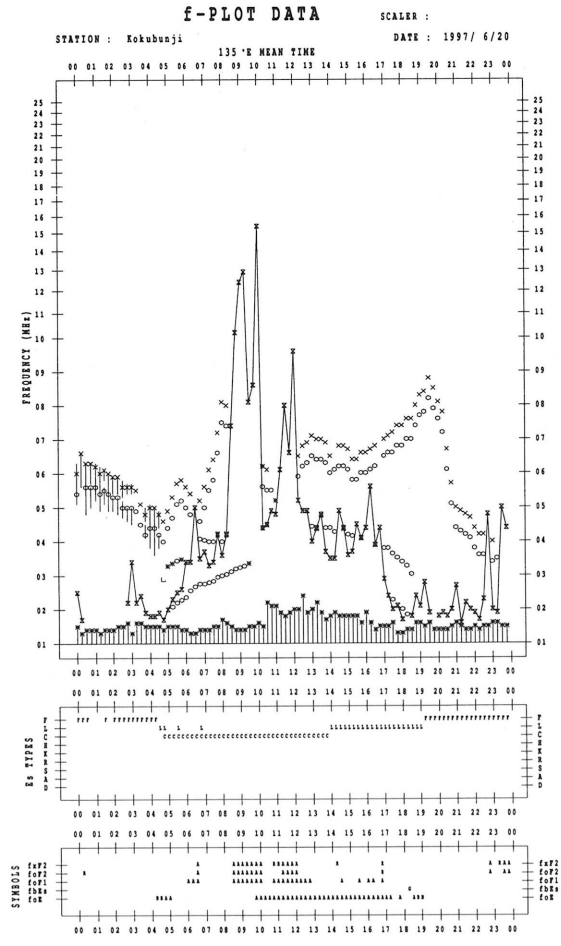

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

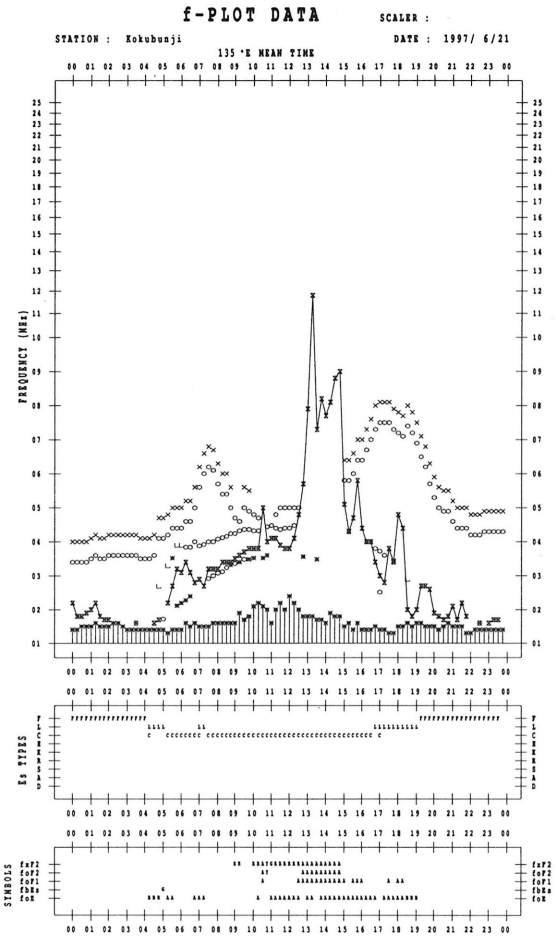

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

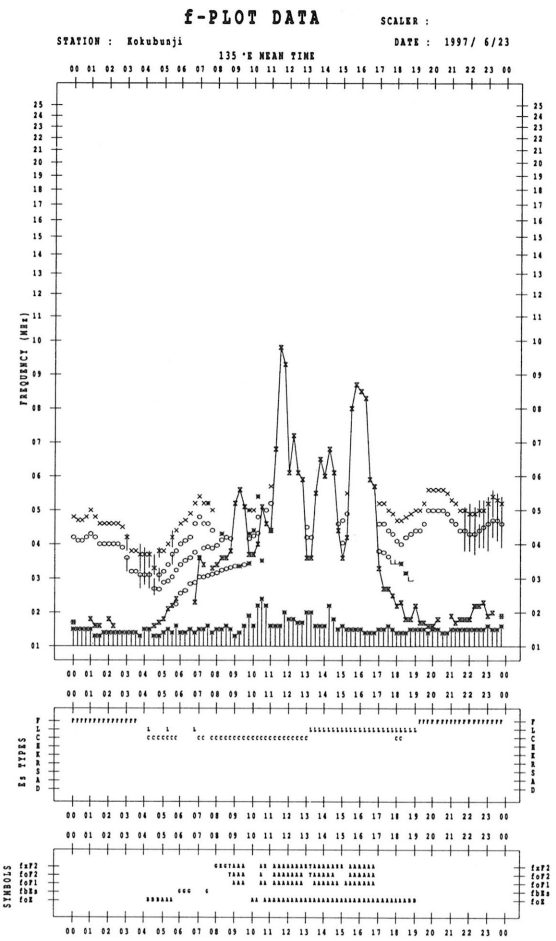

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

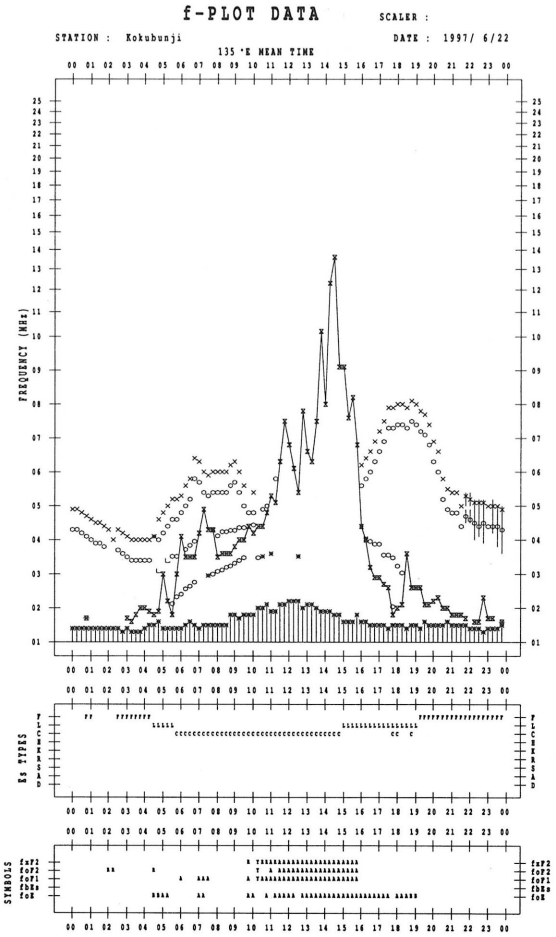

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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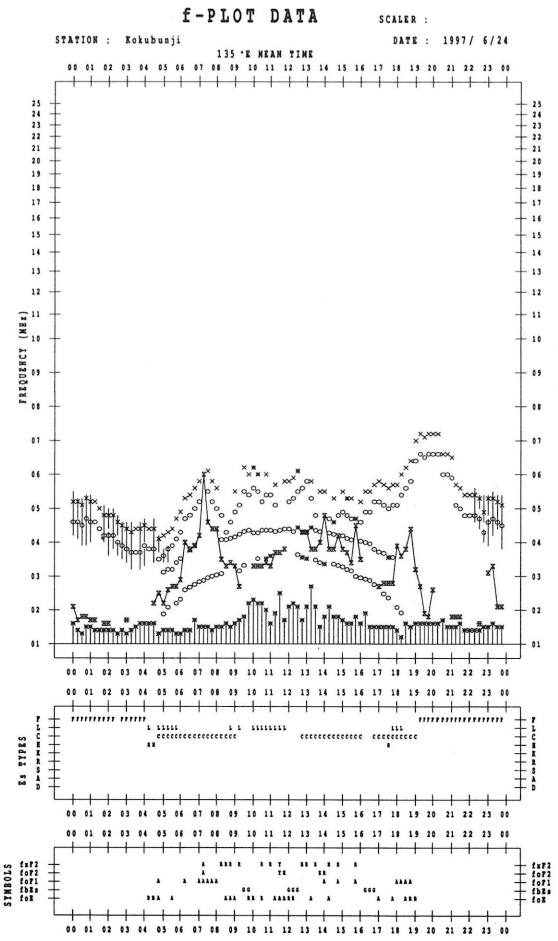
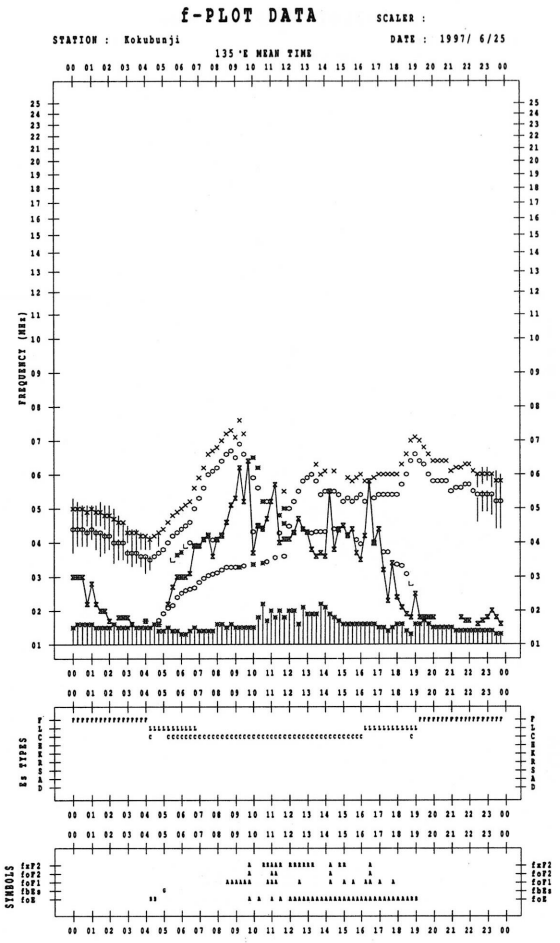
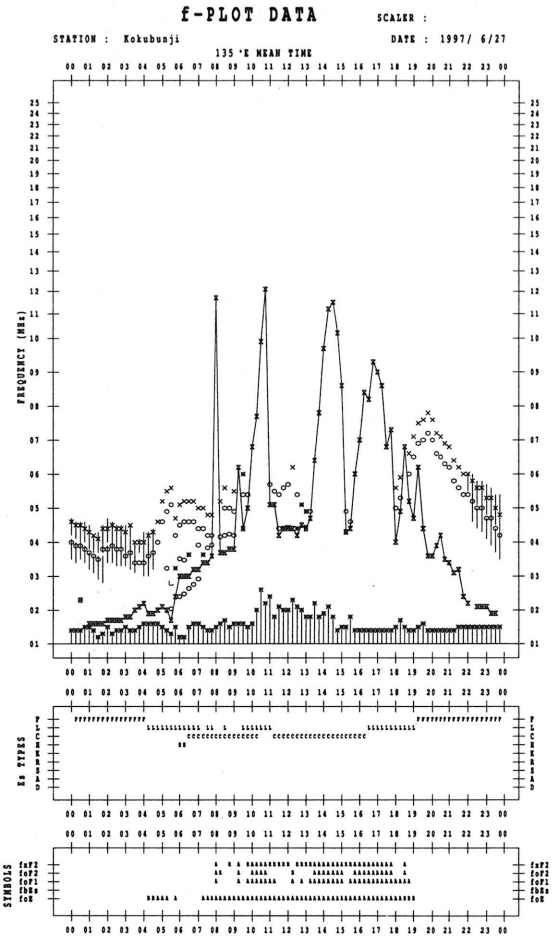
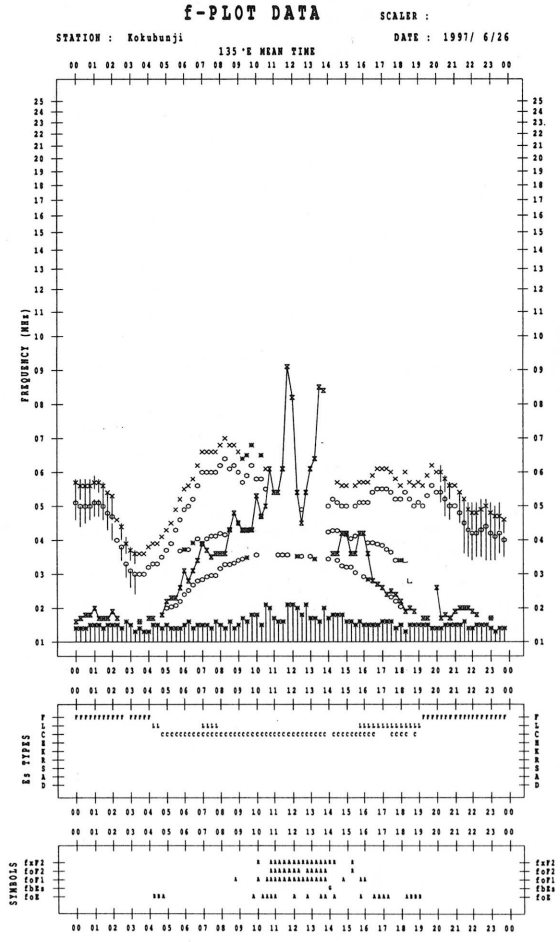
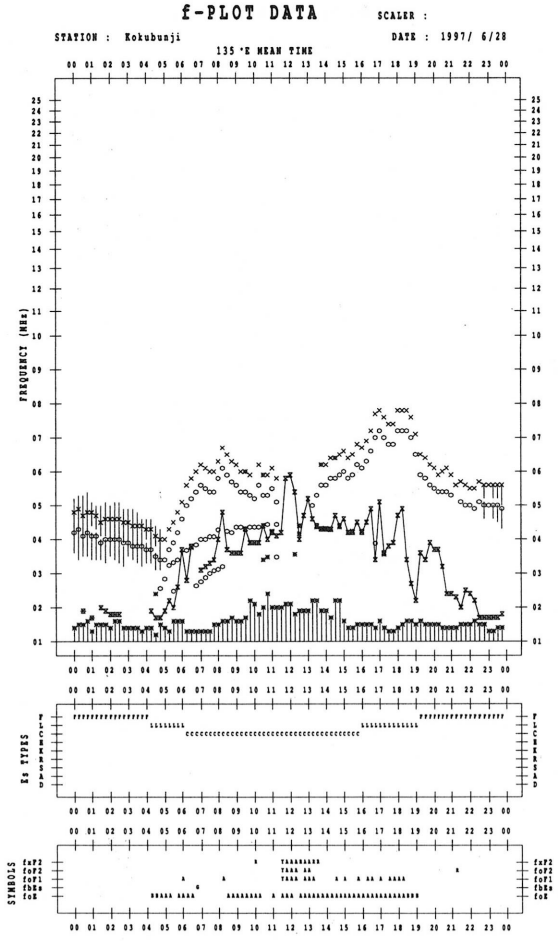
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

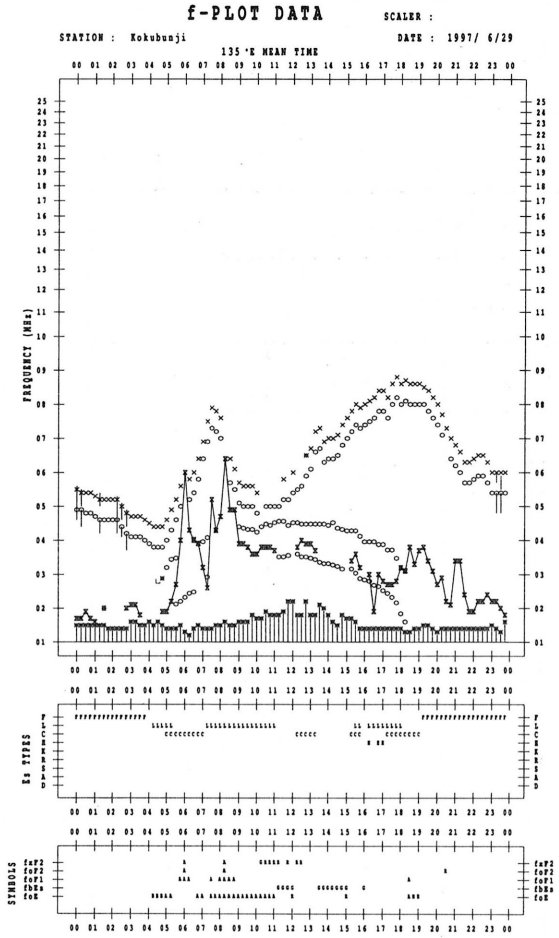

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

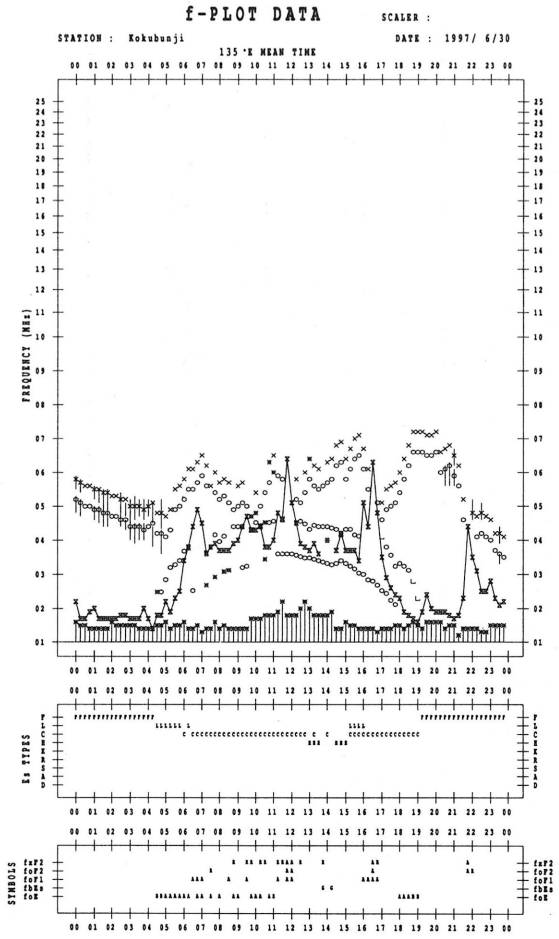

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 6/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso June 1997

Single-frequency observations

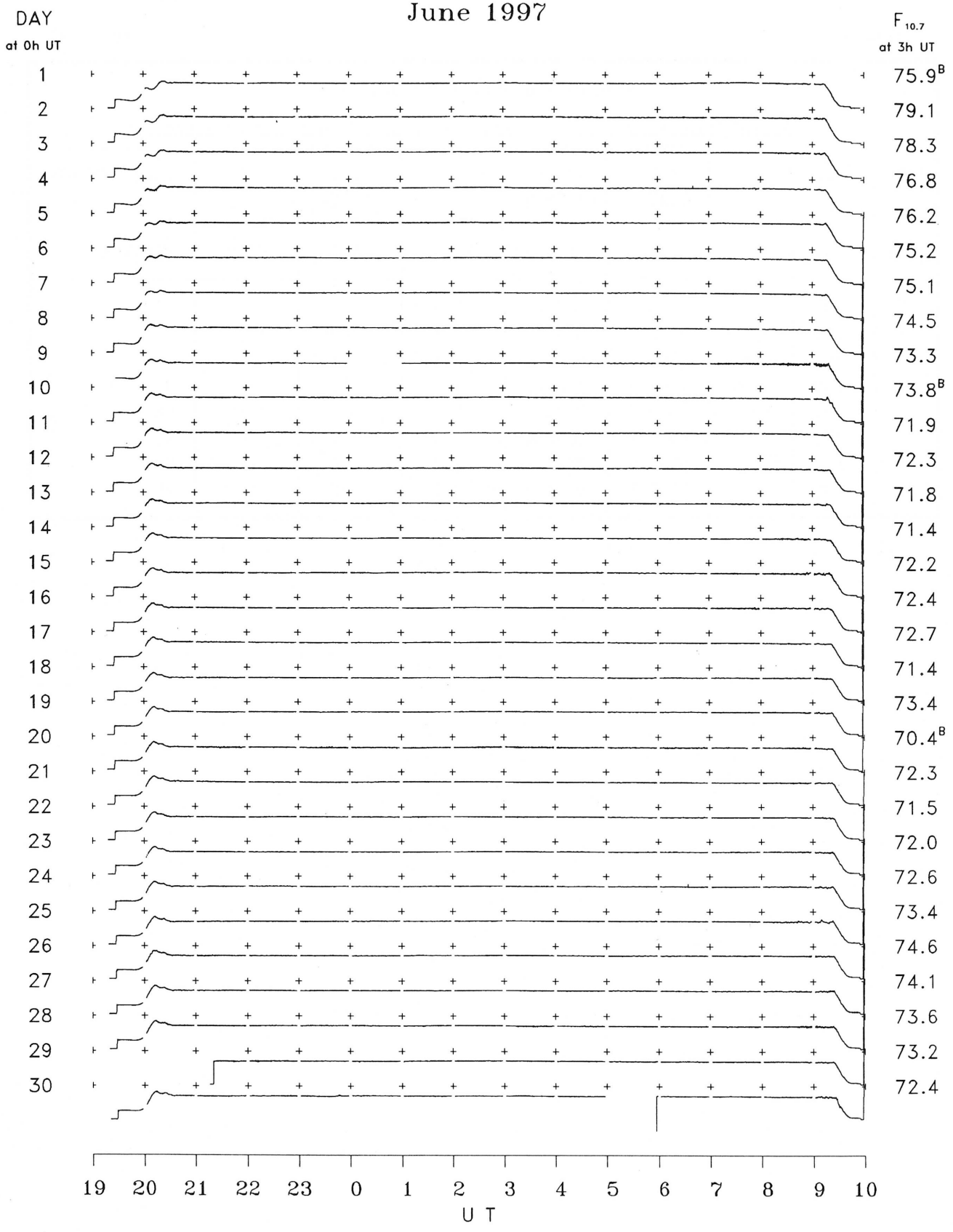
Normal observing period: 1920 - 1000 U.T. (sunrise to sunset)

JUN. 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
28	200	8 S	0303.5	0303.7	0.6	26	-	O
	200	42 SER	0429.6	0431.0	2.0	30	-	O
	200	8 S	0557.2	0557.5	1.0	11	-	O
	200	42 SER	0606.2	0607.2	1.4	31	-	O
	200	8 S	0645.5	0645.7	0.9	7	-	WL
	200	42 SER	0650.2	0650.4	1.6	11	-	WL
	200	42 SER	0734.2	0735.1	2.0	9	-	WR
30	200	46 C	0315.5	0317.2	2.7	22	4	WL

B. Solar Radio Emission

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

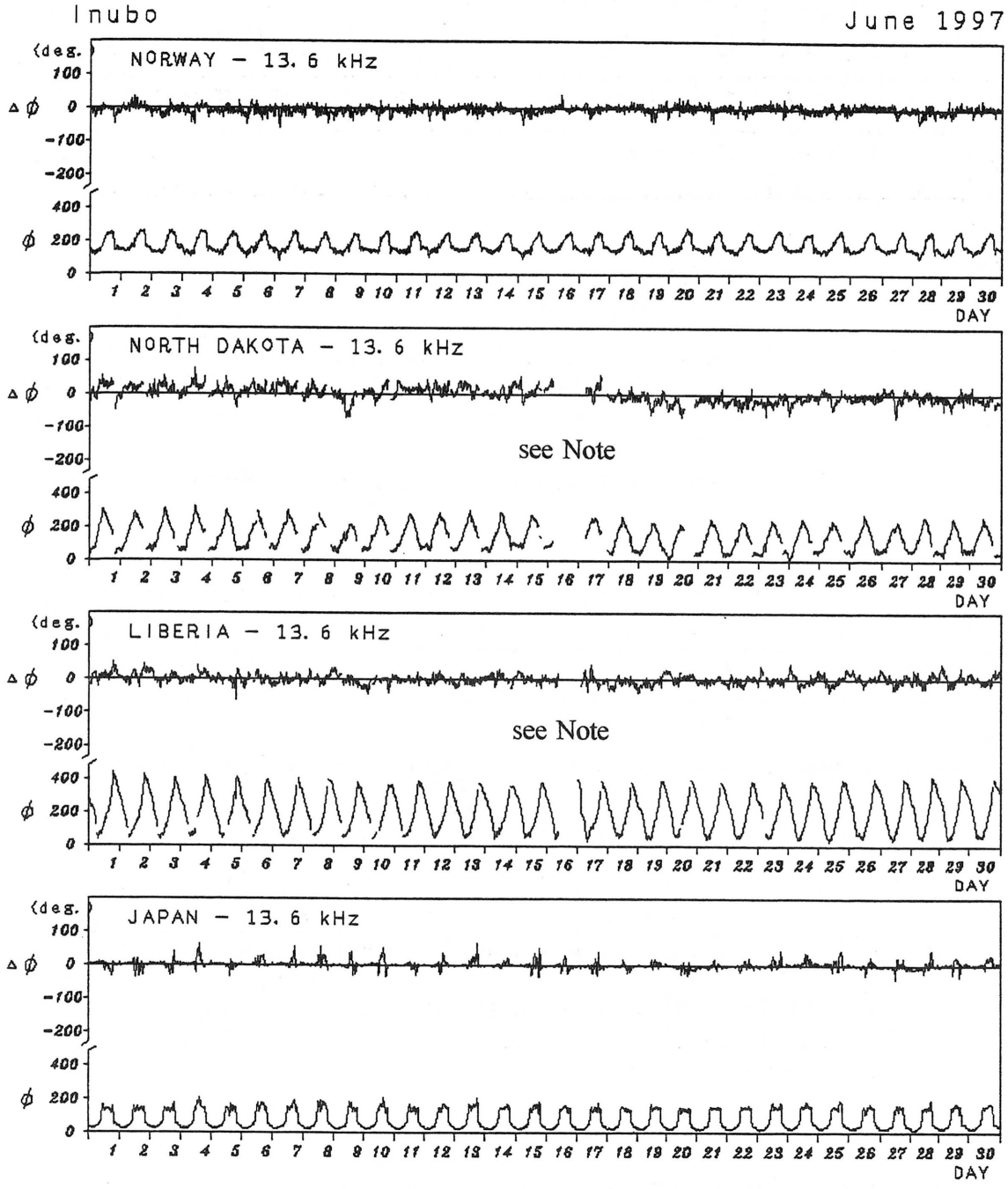
June 1997

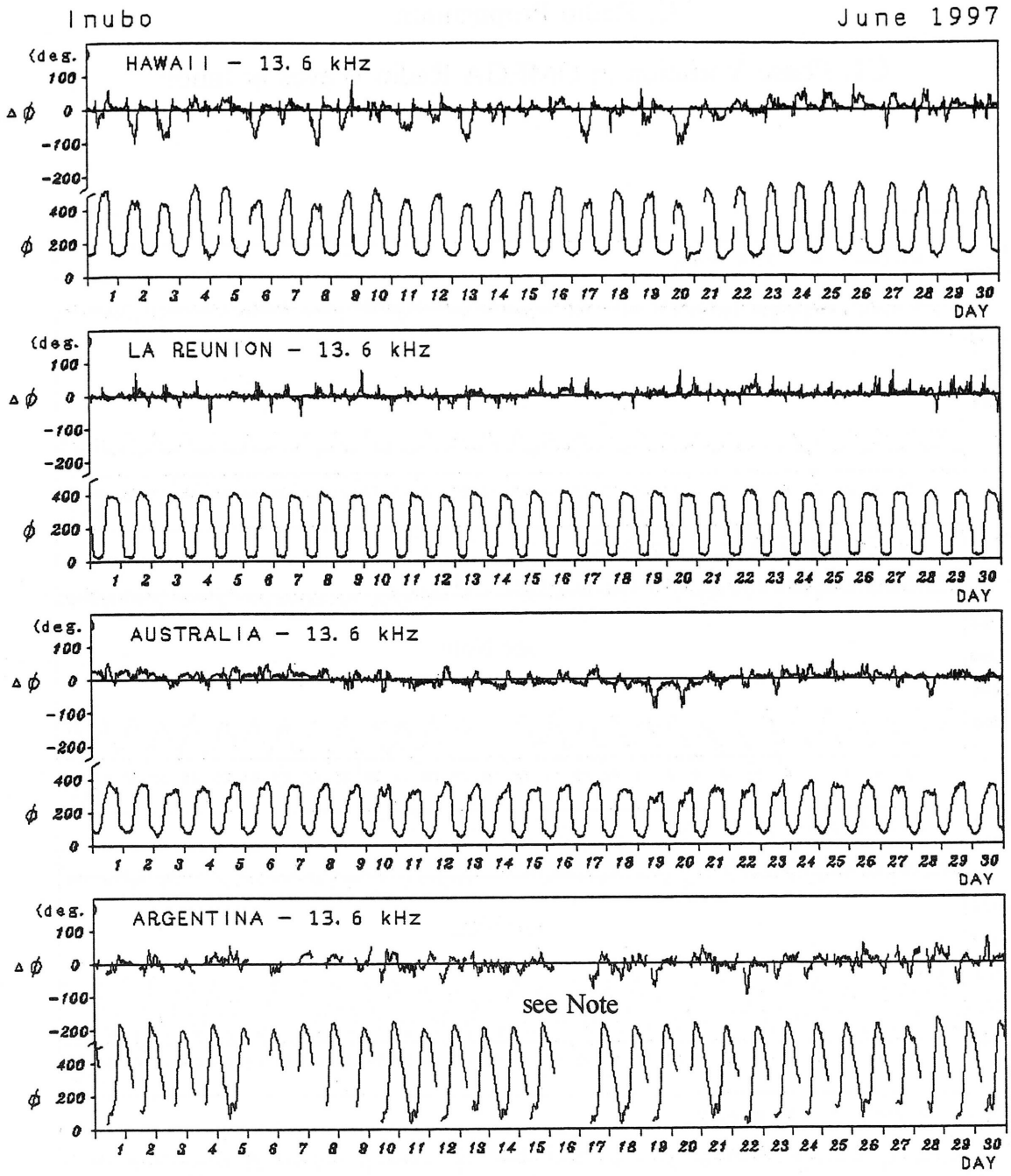


Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. Radio Propagation

C1. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for NORTH DAKOTA-13.6 kHz, LIBERIA-13.6 kHz, ARGENTINA-13.6 kHz, no record during 16 June 0410 UT to 17 June 0515 UT, due to the receiver trouble.

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

NONE

C2. Sudden Phase Anomaly (SPA) at Inubo

Inubo

Jun. 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
			NONE						

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2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184 JAPAN