ISSN 0021—0382

F—579

IONOSPHERIC DATA IN JAPAN

FOR MARCH 1997

VOL. 49 NO. 3

CONTENTS

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MINISTRY OF POSTS AND TELECOMMUNICATIONS
TOKYO, JAPAN

INTRODUCTION

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

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

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

(ii) Qualifying Letters

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

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

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

B. SOLAR RADIO EMISSION

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

B1. Daily Data at Hiraiso

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

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

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

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C2. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

MAR. 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	36	37	38	37	31	35	40	58	61	62	60	62	59	68	71	62	61	55	41	A	31	37	38	36
2	31	35	31	32	37	38	38	57		68	58		81		66	62	58	55	54		28		59	
3	35	32	35		31	N	30		58	62	59		67	77	62	69		56	53				35	N
4	N	34	35			29	30	58	56	66		59	66	56	66	60	67		50		37	31	32	31
5		31	32	31	28	30	40	57	57	56	64	72		68	64	59	63		47			38	35	38
6	31	38	40		38	40	31		69	62	61	74	81	77	68	69	60	60			38		38	35
7		38	35	40	38	28	30		62	65	56		73	69	69	61	62	58	37	38	37	40	35	40
8	37		41	43	N	30	26	56	60	70	64	71	70	70					44	41	38	35	35	
9		29	31	38	37	38	30		58	60	58	A	64	55	64	61	63		44		36	35	A	46
10	31	37	29	31	30	35	35	30			68	58	67	64	63	58	61	60	A	A	59	59		37
11	37	35	35	34	34	29		58	60	60	60	58		66				58	37	36	40	29		37
12			43		32	41	28				60		66			58	58	58	56			58		40
13	31	35	38	41	28	B	29			66	60	72	72	67	76	68	60	58	57			56	30	A
14	35	32	32	A	23	28	37	57	56	65	A	68	68	72	66	67	60	60		41	36	38	37	36
15	38	29	38	35	34	38	38			61	64	57	68				56	58	58	36			56	
16		36	37	38	31	31	35	56	55	58	A	A	57	54		60	58	54	60		35	40	40	38
17	31	30	31	38	30	N	N	60	69	60	61	70	67	70	72	68			48	36	31		58	59
18	59	49	35	31	34		35		58	61	64	70	69	61	63	67	70		54	38	37			
19	36	35	35	31	29		40		56	57	68	N	70	67	70	59	54	56		41	38	38	37	36
20	38	31	41	31	32	38	N	29	57	64	61	66	62	69	65	61	69		40		40	36	40	
21	40	38		41	47	38	37		57	60	64	58	A		67	60	56	60	56		31	38		
22				31	32	29	37	57	56	60	68	66	64	62	66	69	60	57		41	38	A	49	30
23			34	30	38	31		49	55	57	67	58	57		64	61	56	57	54	38		38	42	
24	56	38	48	42	41	40	48	58	52	A	60	64	68	67				53	52		37	32	37	35
25		55	38	41	32	N	34	39		66	69	A	81		65	60	60	56	55		36		44	
26					31	35	35		56	A	61	68	63	63	67		56	57	55	60	40	50	58	58
27	58	56	37		28	28	29	39		58		68	59	57	58	57	61	54	50		40	44	38	
28	31		46	38	31	29	36	42	50	A	56	66	59	67	67	61	54	54	46	38	38	38		35
29	35	38	34	35	40	47		43	40		A	71	68	66	60	62	57	54		38	36	38	36	37
30	35	37	35	34	31	38	35	35	A	A	A	A	60	58	66	66	56			37	38			
31		34	38		32	29	35		51	58	58	62	67		60	64	56	59	56	56	48			55
	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	25	28	23	29	25	26	19	23	24	25	22	28	24	25	26	26	23	24	15	25	21	22	19
MED	36	35	35	35	32	35	35	56	57	61	61	66	67	67	66	61	60	57	52	38	37	38	38	37
U Q	38	38	38	40	37	38	37	58	60	65	64	70	69	69	67	67	61	58	55	41	39	42	44	40
L Q	31	32	34	31	30	29	30	39	55	59	59	59	62	61	63	60	56	55	45	37	36	35	35	35

HOURLY VALUES OF fEs AT WAKKANAI

MAR. 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	G	G	G	G	G	G	G	G	24	31	27	36	35	37	28	31	27	30	28	26	G	G	G	G
2	G	G	G	G	G	G	G	G	23	28	32		30	30	28	28	G	G	G	G	G	G	G	G
3	G	G	G	G	G	G	G		29	31	32	30	30	30	29	30	33	37	32	G	G	G	G	26
4	29	G	G	G	G	G	G		28	28	29	31	30	30	30	27	G	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G		25	28	30	32	30	29	28	31	N	G	G	G		G	G	G
6	G	G	G	G	G	G	G		24	32	35	35	41	34	32	32	31	G	G		G	G	G	G
7	G		23	24	G	G	G	23	30	28	33	31	30	31	37	26	26	G	G	G	G	G	G	
8	G		G	G	G	G	G	23		34	31	33	32	31	29	34	32	27	G	G	G	G	G	G
9	G	G	G	G	G	G	G	33	30	34	30	34	35	35	34	36	34	28	G	G	G	26	30	26
10	G		25	28	G	G	G	29	32	32	31	32		37	37	43	38	32	33	39	G	G	33	29
11	29	G	G	G	G	G		30	31	34	34	36	36	39	30	37	35	28	G	G	G	G	G	G
12	G	G	G		G	G	G	29	33	35	N		35	30	28	26	29	G	G	G	G	G	G	G
13	G	G	G	G	G	B	G	29		32	33	32	30	30	28	35	43	31	30	32	25	G	29	42
14	G	29	26	33		G	G	29	32	34	30	30	30	30	35	32	35	26	24	27	G	28	G	G
15	G	G	G	G	G	G	G	30		28	29	34	29	30	29	32	G	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	29	31	38	34	35	35	30	29	27	24	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	29	33	28	29	32	30	34	29	28	30	G	G	G	G	G	G	G
18	G	G	G	G	G	G	G	27	30	32	29	30	30	30	29	28	23	G	G	G	G	G	G	G
19	G	G	G	G	G	G	G	30	25	34	29	30	31	36	29	27	26	G	G	G	G	G	G	G
20	G	G	G	G	G	G	G		31	34	32	36	30	36	29	28	34	26	G	G	G	G	G	G
21	G	G		G	G	G	G	27	32	36	34	32	31		35	30	30	G	G	G	G	G	G	G
22	G	G	G	G	G	G	28	27	31	34	29	36	32	32	31	27	31	G	G	G	G	29	G	G
23	G	G	G	G	G	G	30	27	31	34	32	31	32	30	29	31	28	21	G	G	G	G	G	G
24	G	G	G	G	G	G		34	34	34	32	31	30	35	33	34	32	29	G	25	G	G	G	G
25		G	G	G	G			31	30	32	31	31	30	30	30	31	32	G	G		G	G	G	G
26	G	G	G	G	G	30	28	28	30	28	30	32	33	37	34	35	34	20	G	G	G	G	G	G
27	G	G	G		G	G	G		34	30		37	35	30	29	27	G		G	G	G	G	G	G
28	G	G	G	G	G	G	26	30	32	32	33	34	33	34	31	26	24	28	G	G	G	G	G	G
29	G	G	G	G	G	G	G		31	29	37	36	29	33	28	28	24	26	G	G	G	G	G	G
30	G	26	23	26	G	G	29	30	29	28	33	30	33	32	30	41	36	G	34	G	28	28	G	G
31	G	G	G	G	G	G	G	30	34	29	35	36	30		34	30	26	G	G	G	G			28
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	28	30	29	30	29	28	24	28	31	29	29	30	29	31	31	30	30	31	29	30	30	30	30
MED	G	G	G	G	G	G	G	29	31	32	32	32	30	31	29	30	30	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	30	32	34	33	35	33	35	33	34	34	28	G	G	G	G	G	G
L Q	G	G	G	G	G	G	G	27	29	28	29	31	30	30	29	27	24	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT WAKKANAI

MAR. 1997

LAT. 45.4N LON. 141.7E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

MAR. 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	35	36	36	36	N	49		56	58	60		70	92	83		59	66	67		37				
2	46			38		30				69	66	76	93	84		67	70		44	44		69		
3				38		N		69		56			87	81	76	66	66	61	47					35
4	34	35	32	41	B	A	29		67			68	75	85	93		62	68	51			69		56
5		36	34				38		57	56	56	64	81	89	84		62	67	N	69				
6	38	35		60		30		75			67	88			101		68	68					31	N
7	69		69			N		57			69	76	67	82			72	72	59	A	A	A	36	
8		58		36	30	32		57		73	71	66		73	67	69	67	68			36		A	35
9	31				N	A	40	53	58		59	51	73	76	66	66	56	70	69			34	A	38
10		32	32	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B													
12															66	64	62	67	58	44	32	N		
13	49	N	N	69	B	B		68		69	69	88	91	90		68	72	69	61	56	A	A	A	A
14	B	N	28		31					50		53		95		65	63	67	66	57			A	57
15		59	49		42	35	40		58	68		81	86	84	72	68	66	71	57	57		46		48
16					59	N		50		54	61	71	88	96	71	71	66	60	51	57	56		49	
17			56	49		N	48	57	58	67	67	83	89	86	95	70	60	67	69	26	N	89		
18			65	59	B	B		74	58	62	55		83	85				74	69					69
19	59	N	32	36	N		37		59	65			81	81	68	58	56	61	51		B	89	N	69
20	79		44		N	B	59	68	74		70	72	75	70	70	62	60				32			B
21	59				69			68	63	54	55	73	85	80		63	59	60	56		59		69	
22			36		58	B	40			53	63	65	84	86	80	62	60	69	63	A	36	B	B	
23	48	46		35	B	N	37		56	56	55						64	55	54	56	58			
24		39		37			A	70	73	60	53	72	76	81	88	61	58	55	57			89		
25	32		56	56	49	N		72	70	60	70			90	68	58	54	67	75			35	38	
26	58	N	35	32	31	31		57	68	61	71	72	77	77		60	58	67	69	56	59			
27	34	34		38	32	31	41		58	68	84	88	91			60	56			47		56		28
28		59	49	N	B	N	40	58	58	56		81	82	72	75		56	56	58	56		32	59	59
29	35				N	30	47	47	46	56	68	63	80	88	86		63		60	44	43	44	44	46
30		45	45	47		N	48	57	56	61		83	98	100	78		71	68						41
31					B	N	34		58	52	69			87	72		63	60	56	45				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	12	16	16			14	18	19	23	20	22	22	25	19	19	28	25	22	15		11		12
MED	46	38	40	38			40	58	58	60	67	72	84	84	75	64	62	67	58	56		56		47
U Q	59	52	52	52			47	69	67	67	69	81	89	88	86	68	66	68	66	57		89		58
L Q	34	35	33	36			37	57	58	56	57	66	77	80	68	60	58	60	54	44		35		36

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

MAR. 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	16	14	15	14	15	14	14	21	14	18	15	16	14	15	14	14	14	14	15	14	14	16	15	15
2	15	14	15	14	14	15	16	16	15	15	14	15	15	24	16	14	14	20	14	15	14	15	15	15
3	15	14	15	15	15	17	17	16	15	15	14		15	14	15	14	15	18	15	14	15	17	14	14
4	14	14	14	15	B	14	15	17	14	15	14	15	15	15	17	15	15	15	15	15	16	14	15	15
5	15	14	15	15	14	15	17	14	15	14	18	16	17	16	16	15	14	15	15	14	14	14	15	14
6	15	15	14	14	14	15		17	14	15	15	15	23	16	18	15	17	21	14	17	15	15	15	15
7	15	15	15	15	14	15	15	24	15	15	15	15	15	18	14	21	15	15	15	14	14	15	14	15
8	15	14	14	15	15	14	14	14	16	16	16	16	16	15	16	14	14	14	15	15	16	14	14	14
9	15	15	15	15	14	14	17	15	14	14	15	15	16	15	16	16	15	14	15	14	15	14	15	14
10	14	14	15	B	B	B		B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11	B	B	B	B	B	B	B	B	B	B	B													
12															21	14	15	24	14	15	14	15	15	18
13	17	15	16	14	B	B	16	15	15	16	17		48	45	17	15	15	14	16	15	15	15	15	15
14	B	15	15	14	15	16	16	16	15	15	17		26		21		14	15	16	15	15	15	15	15
15	15	14	15	14	16	14	16	23	15	18		42	46	46	40	39	15	20	15	15	14	15	17	15
16	15	15	14	15	14	16	16	16	18		42	45	48	48	44		18	16	15	14	14	16	14	18
17	14	21	15	14	15	16	17	24	15	16	16		48	44	24	16	15	18	15	16	17	16	14	15
18	18	15	14	15	B	B	17	26	15	14	20	17			18	15	16	18	15	15	20	17	17	15
19	16	15	16	15	15		16	21	16	16	18		50	45	43	16	14	21	15	15	B	14	16	15
20	14	15	15		14	B	16	26	15	16	16		46	45	40	38	16	22	14	14	18	17	17	B
21	15	15	15	16	16	14	16	21	15	16	16		48	48	44	18	15	20	14	15	16		16	16
22	15	15	14	14	15	B	18	14	15		14		50	47	17	21	16	22	16	14	16	B	B	20
23	14	15	15	15	B	15	16	15	14	14	16	21	18			14	15	22	16	14	14	15	14	14
24	15	15	15	15	15	14	15	14	15	14	15	21	16	14	18	15	15	14	15	15	15	14	14	15
25	15	15	15	14	15	16	14	18	15	16	18	17	21		17	16	15	15	15	14	14	15	15	15
26	14	15	14	15	14	15	17	15	14	15	15	20	18	17	16	16	18	22	15	14	14	14	16	15
27	14	14	15	14	14	15	17	15	15	15	20	17	17	21	16	16	15	20		15	14	17	15	14
28	14	15	15	14	B	15	20	15	14	14	17	18		23	21		15	16	17	15	15	14	14	14
29	15	14	15	15	15	14	16	14	15	16	15	17	23	16	44	18	15	14	15	15	15	14	15	15
30		15	15	14	16	16	15	22	15	15	16		48		24	17	16	14	16	14	14	16	15	15
31	14	14	15	14	B	16	14	15	15	15	15	17	17	17			14	22	16	15	14	14	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	29	29	27	22	23	27	28	28	26	27	19	26	23	27	25	29	29	28	29	28	27	28	28
MED	15	15	15	15	15	15	16	16	15	15	16	17	20	18	18	16	15	18	15	15	15	15	15	15
U Q	15	15	15	15	15	16	17	21	15	16	17	20	48	45	24	17	15	21	15	15	15	16	15	15
L Q	14	14	14	14	14	14	15	15	14	15	15	15	16	15	16	14	14	14	15	14	14	14	14	14

HOURLY VALUES OF foF2 AT YAMAGAWA

MAR. 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		A		N		30		43		A	82	85		97		66	61		A	69	32	41		
2	49		30			49	59		B	54		A	74	101		77	A	69	53		69	B	89	
3	A	32	59		79		49		53	58		A	A	83	86	84		83				32	34	
4			34	34		A		53		B	70	72	69		85	84	84	B	54		41		59	
5	79		79	79	69		N	53	53	57		60	68	93			73	63				50		A
6	69		32			31	34	30		57	66	B	98	122	135	B		86			30	A	41	
7	30	69		A				41		A	70	69	74		74	66	62	72			89		36	
8	B	N			A	N	B		59			70	72	69	B	72	78	73				N	79	B
9	34	A	32		89	B	N		66	60	54	B	69	71		71	66	66	A			B		
10	A	69				32			B	54		71	80	97		74		66	73	57		31	36	
11		A	30	25		A		50		55	57	66		A	82	72	73	66					B	A
12				49				53		A	82		82	B	86	79	67	62		A	89	30	A	B
13	32		49		69			66			A	75	91		83	86	82	A	85	76			A	A
14		A	A	53		31	32			69	67	66		101	107			74			69	A	A	79
15				34	A	30	26		54	52	67		92	90	88		82	69		N		79		
16					89				66	66	66	74				78		66		52		59	B	32
17	N		A	32				31		73	71		103	102	111		A	73	55	39		59		
18		N	A	43			N	54	A	B	58	70			A	66	70	72		59		B		26
19	37		35	31		59	31	41	B	66	69	70		91	76	66		66				31		N
20		79	79		32		B	52	A	83	80		82	88		66	66	74		54				
21		69	30		79	N		53	60	70		74	90		A	87	70		55	52				40
22		B	49				30		B	68	69		86			82	58		A	66	42			
23		49	49	29			32		A	55	71		80	91		66	66	A	A	74				49
24	53		36		49		32	53		71	58		A	101	112		65	69	72			79		
25	42			59		49	B	38		70		82	92	A	86		80		A	52		B		79
26	A	A	60			29	31			70	60	66		68	67	62	B	67	70		79			41
27	43	41		47		69		54	54	70	N	A	84		82	A	80	83		54		A	A	34
28			36	49		B	59	53	A		74	80	91	B	88		66	69		A	59		42	
29	B	69																						
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31										A		85	84	A	A	74	72	A	A	53	59		A	40
	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		16	13		10	11	16		20	19	17	20	16	16	20	20	21		13	11	10		
MED	42		36	43		32	32	53		66	69	71	83	92	86	73	70	69		54	59	46		
U Q	53		54	51		49	49	53		70	71	77	91	101	97	80	79	73		67	79	59		
L Q	34		32	31		30	31	42		56	60	67	74	85	82	66	66	66		52	41	31		

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

MAR. 1997

LAT. 31.2N LON. 130.6E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	31	27	G	G	G	G	G	G		29	38	G	29	31	49	49	G	60	G	G	G		G
2	G	G	G		G	G	G	G	B	31	38		G	29	32		79	29	G		G	B	G	
3	26	G	G		G	G	G	G	30	32				30	31	30	79	30	G	G	G	G	G	G
4	G	G	G	G	G	28	G	26		B	31	36	30	G	29	30	28	B	G	27	G	G	G	G
5	G	G	G	G	G	G	G	G	30	33	G	30	30	30	30	G	29	30			G	G	G	
6	G	G	G	G	G	G	G	G	31	34	29	B	32	30	31	B	31	28	27	G	28	32	G	G
7	G	G	G		G	G	G	28		58	31		56	G	53	30	34	30	G	G	G	G	G	G
8	B	G	G	G	32	G	B	30	30	24		38	30		B	50	36	41	G	G	G	G	24	B
9	29		G	G	G	B	G	G		31	33	B	38	37		29	30	30		G	28	B	G	
10	32	G	27	23	G	G	G		B	30	28		77	48	31	32	G		G	G		G	G	G
11		30	G	G		26	G		G	28	29	29		79	38	30	33	31		G		G	B	
12	29	G		G		G	G	28	G		31	38	32	B	31	30	30	31	G		30	G		B
13	G	G	G	G	G	G	G	28	31	G	64	31	29	G	32	31	32	36	32	38		11	24	32
14		30		29	G	G			G	31	30	30	G		36		G		27	G	G	30	29	29
15	36	G	G	G		24	G		30	28	30	G	30	30	30	G	30	31	24	22	G	G	G	G
16	G	G			G	G	G	G	29	30	31		31	30	G		30	31	G	G	G	G	B	G
17	G		30	G	G	G	G	30	29	30	32	G	31	31	32		70	30	25	G	G	G	31	30
18		22	28	G		G	G	32		B	30	30	30	G	74	29	29	31	G	G	G	B	G	G
19	G	11	G	G		G	G	31	B	30	29		G	30	37	30	G	24	26	G	G	G	G	G
20	G	G	G	G		G	B	30		31	30		31	31		30	30	30	G	G	G	G	G	G
21	G	G	G	G	G	G	G		30	28	G	29	31		92	30	30	G	30	25	24	G	G	24
22		B	G	G	G	G	G	11	B	30	31	G	31	30		30	30	11		24	G	G	G	G
23		G	G	G	G	G	G		58	31	31	G	30	30	G	30	27		30	G	G		G	G
24	G	G	G	G	G	G	G	30	11	31	30		80	30	29	G	30	26	24	27	G	G		G
25	G	25	G	G	G	G	B	38	31	30	G	30	30		G	30	30	G		26	G	B	G	G
26		30	28	G		G	G		G	29	31	30	G	31	31	30	B	30	28		G	G		G
27	G	G	G	G	G	G	G	28	37	32	G	85	32	30		76	22	28	G	24	G		30	G
28	G	G	G	G	G	B	28	27		G	30	30		B	29	33	28	30	G	32	G	G	G	G
29	B	G																						
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31											G	31	31		80	29	28	26	31	G	G	G	32	28
	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	26	25	24	21	26	24	21	18	24	27	19	26	22	24	24	28	25	24	25	26	23	23	23
MED	G	G	G	G	G	G	G	28	30	30	30	30	30	30	31	30	30	30	12	G	G	G	G	G
U Q	13	11	G	G	G	G	G	30	31	31	31	36	32	31	36	30	32	31	27	24	G	G	24	G
L Q	G	G	G	G	G	G	G	G	G	28	29	29	30	29	29	29	28	26	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

MAR. 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	17	14	14	15		15	14	16	14	49	14	15	14	16	17	17	16		16	14	14	15		16
2	14	14	14		18	15	15	16	B	14	16	14	69	17	16	14	45	14	16		17	B	15	
3	16	14	14		14	14	15		14	14	16	14	72	17	17	17		15	14	14		14	14	14
4	17	14	14	14	14	16	14	17		B	16	17	17		16	17	17	B	15	15	14		14	15
5	14	20	14	14	14	21	16	17	15	15		17	18	18	20		15	16		14	16	14	14	14
6	16	14	14	15	18	14	14	15	14	15	17	B	16	21	20	B	15	14	15		14	14	14	
7	14	14	14	14	20	16	16	14		46	17	17	18		18	16	16	14	14		14	15	14	
8	B	15	14	14	14	14	B	21	14	15		17	18	14	B	16	16	14	14		14	15	15	B
9	14	14	15	17	14	B	14		15	14	14	B	18	17		17	15	15	14		14	B	15	
10	16	15	15	14		14	17	14	B	14	15	14	50	16	16	16		14	16	14		18	14	14
11	15	16	14	15		14	15	14		14	14	17		48		17	15	14		15	14	15	B	14
12	16	14	15	15		15	14	14	14		17	18	20	B	17	17	16	15		14	14	14	15	B
13	14	15	14	18	14	14		15	14	14	46		20		18	18	15		14	14		16	14	14
14		16	14	15	15	15	14	14		15	16	16		17	17	17	44	15	15	18	14	14	20	15
15	14	16	14	14	15	14	15		14	15	17		18	20	18		15	14	16	14	16	14	15	14
16		14			14	15	16		14	15	17	46	18	21		18	16	14		15	14	14	B	15
17	15	14	15	15	14	15		16	15	15	16		17	20	18		45	14	16	14	17	14	14	15
18		16	14	14		16	15	16	14	B	15	17	22	14		17	16	14		14	14	B	16	14
19	14	16	14	14		17	14	16	B	15	17	14		18	18	16		16	15	15	14	14	14	14
20		14	14	18	14	18	B	14	14	14	16		18	20	14	17	16	14		15	15		14	15
21		14	14		14	14	14	14	18	16		17	18		48		17		14	15	15	17	14	15
22		B	14	14		18	14	14	B	15	15		18	17		16	16	14	18	14	14		15	18
23		15	14	15	18	18	15			15	17		18	22	14	18	16	14	21	14	14		15	14
24	15	17	15	15	15	18	14	16	14	15	17		52	18	18	14	16	14	18	16	15	18		15
25	15	15	20	14	15	15	B	15	14	15		17	18	14	69	17	15	14	18	15	14	B	15	15
26	15	15	15	14		15	14	16		16	17	18		21	18	17	B	14	16		15	14		15
27	15	14	18	14	15	15	20	15	14	15	14	49	18	20	14		14	15		14	15	14	15	14
28	15	15	14	15	14	B	15	15	14		16	18	14	B	18	18	17	15		15	14	15	15	16
29	B	14																						
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31										14		18	20	14	58	18	16	14		14	15	20	14	14
	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	28	27	24	20	26	23	23	18	25	24	20	25	23	23	23	25	25	20	23	26	21	24	23
MED	15	14	14	14	14	15	15	15	14	15	16	17	18	18	18	17	16	14	16	14	14	14	14	15
U Q	16	15	15	15	15	16	15	16	14	15	17	18	20	20	18	17	16	15	16	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	14	15	15	18	16	16	16	15	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT OKINAWA

MAR. 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	38	29	B	38	31	B	B	43	62	68	83		121		95	91	81	87	90			38		34
2	32				B	B		48		68		90	106	112	116		92	94	69	159				69
3			46	58		B	B		57	65	83	93		123		114	112		86	81		38	43	
4		38		31		B	B		58	68	81	83	81	76			94	83		64	48		46	B
5	37					B	B	69	56	56	68	81	88	91			105		87	A	44		34	
6	49			58			B	69	68	69	71					123	124	107	99	A	58	58	A	38
7	A		31			B	B		70	73	67	75	77		84	78	72		B	89		48		
8	B		A	59	58	B	B	46	54		82	83	80	73	85	90			96		62	38		
9	B	A	B		38		B	48		54	56	68	81	68		80	95	93	88		60	43		
10		69			35	31	32		54	57	64				90	96	91	82	89		82		B	
11		58			A	31		44		A	60		72	83	92	93	87	78		B	43	37		B
12			59		69	59	B	43		84	74	96	88		112	114	114	97	88		69	69		46
13	56	56		38		59				64	70	81			114	126	120			A	90	40	57	38
14	B	A	69	69	B		56	43	52		67	75			116	110	91	91			58		A	A
15	B				59	N	B	48	60	66	65		94	93	123	123		84	68	A	39	38		59
16	69		40	46	56	B	B	A	60	68	63	78	88			92	B	82	88		56		A	A
17	47			56	58	B		A	70	66	81	84			117	115		96		A	48	42		
18			56	58	B	B	B	A	71	67	76	67	82	103	94	76	77	83	91		55		43	44
19	35	B	B	38	38	B		48		68	76	77	86	90	86	75	71	72	83		43		35	A
20	58		56		69	B		48	58	67	77	82		106				84			55			48
21				58	59	B	B	43	58	57	67	82	92		116	111		88			57			B
22	69		40	69		B	B	45		67	81	87	91		124					A	43	49	A	A
23	37			32		B	B	A	68		67	71	77	95		87		80	86		55			59
24			59			B	B	48	59	69	72	85	93	115	133			84	72		36	44	35	
25				32		24	B	48		64		92	88		116		127	117				B		59
26	59	69			B	B	29				58					62	76		67	59	43		B	B
27	B	69		34	B			54	55	68	93	92		121	116	124	126	82	83	90	58	40		56
28	58	57	68	59	N		B	48		69	75		93		110	98		105	87				43	38
29	34		69		69	B	B	35		63	68	72	81		120		91	84	91					30
30		37	35	54	B	B	B	48	58	67	70	82	91	112	124			88	111				46	38
31		44	40	A	B	B		56		68	69	86			91			94	92		71		38	46
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	10	13	18	12			21	19	26	29	24	21	15	22	21	19	24	21		23	14	10	15
MED	48	56	56	55	58			48	58	67	70	82	88	95	115	96	92	86	88		55	41	43	46
U Q	58	69	63	58	64			48	68	68	79	86	92	112	117	114	114	94	91		60	48	46	59
L Q	37	38	40	38	38			43	56	64	67	76	81	83	92	83	81	82	83		43	38	35	38

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HOURLY VALUES OF fEs AT OKINAWA

MAR. 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	B	G	G	B	B	G	34	32	34	37	30	38	G	G	28	30	G	G	11	G	G	G
2	G	G	G	G	B	B	G		G 32	34	38	38	38	31	34	35	32	G	G	G	G	G	G	G
3	G	G	G	G	G	B	B	25	27	40	45	37	32	35	32	32	25	30	26	G	G	G	G	G
4	G	G	G	G	G	B	B	G	30	34	36	28	34	33	30	31	28	30		G	G		G	B
5	G	G	G	G	G	B	B	G	34	40	31	38	40	40	39	48	45	48	26		G	G	G	G
6	G	G	G	G	G	G	B	G		35	31	39	38	38	37	64	47	28	30		32	36		G
7		G	G	G	11	B	B	G	30	36	36	38	39	N	37	27	26	38	B	G	G	G	G	G
8	B	G		G	G	B	B	G	28	38	36	39	33			39	60	61			G	G	G	G
9	B	36	B	G	G	G	B	48	44		40	37	33	31	29		40	36	28		11		G	G
10	G	G	G		G	G	G		29	29	36	40	52		26		32	33	26		G	G	B	G
11	G	G	G	G	26	G	G	G		35	38	43	G	48	51	48		32		B	24	G	G	B
12	G	G	G	G	G	G	B	42		45	51	37	G	37	38	40	42	36	27	G		G	G	G
13		G	G	G	G	G	G			35	35	39			34	32	38	35		37	11	G	G	G
14	B	40	G	G	B	G	G		46	38	35	49	50	38	G	36	29	34	26	G	G			29
15	B	G	G	G	G	G	B	G	24	27	37	29	G	G	26	27	34	44	34	29	G	G	G	24
16	G	G	G	G	G	B	B	45	27	28	27	G	38	38	G	G	B	32	25		G	G	24	21
17	G	G		G	G	B	G	48		26	27	37	37	G	G	36	31	33	26	24	G	G	G	G
18	G	G	G		B	B	B	46	29	34	37	32	34	32	38	34	30	33	G	G	G	G	G	G
19	G	B	B	G	G	B	G	28	28	32	34	32	G	G	28	36	39	28	G	G	G	G	G	28
20	G	G	G	G	G	B	G		51	33	36	34	34	33	G	36	28	25	G	G	G	G		G
21	G	G	G	G	G	B	B	28	28	26	37	36	29	38	26	36		35		G	24	G	G	B
22	G	G	G	G		B	B	42	27	32	36	32	32	G	39	52	27	47	39	32	24	G	32	27
23	G	G	G	G	G	B	B	44	37	35	38	39	41	38	40	38	28	26		G	G	G	G	G
24	G	G	G	G	G	B	B	41	29	32	35	28		40	G	G	29	32	G		G	G	G	G
25	G	G	G	G	G	G	B	25	31	35	32	34	29	G	G	G	27	26	G	G	G	B	G	G
26	G	G	G	G	B	B	G	30		34	35					29	25	25	26	G	G	G	B	B
27	B	G	G	G	B	G	G	31	30	33	32	31	G	34	38	31	28	23	G		G	G		G
28	G	G	G	G	G	G	B	30	29	33	27	32	G	32	G	38	G	G	G	41	G	G	G	G
29	G	G	G	G	G	B	B	29	35	28	31	28	G		30	34	28	26	26	G	G	G	G	G
30	G	G	G	G	B	B	B	44	G	28	30	G	31	38	37	G	33	35	27	G	G	G	G	G
31	G	33	G	30	B	B	G		28	28	27	G	G	34	38		G	29	G	G	G	G	28	27
	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	30	26	29	23	11	11	25	25	30	31	30	28	25	29	28	28	31	24	22	30	27	25	27
MED	G	G	G	G	G	G	G	29	29	33	35	36	32	35	30	34	29	32	26	G	G	G	G	G
U Q	G	G	G	G	G	G	G	43	34	35	37	38	38	38	38	38	36	35	26	G	G	G	G	G
L Q	G	G	G	G	G	G	G	G	27	29	31	31	G	31	G	28	27	28	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT OKINAWA

MAR. 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	15	15	B	15	14	B	B	16	15	15	17	20		30			16	15	18	14	16		16	15
2	15	16	15	16	B	B		16	15	15	16	22	18	21		20	16	15	17	14	15	16	17	16
3	17	23	15	18	16	B	B	15	14	15	15	16	22		20	17		15	16	14	14	15	15	15
4	15	15	15	15	17	B	B	16	15	16	18	20	18	18	17	17	16	15		14			20	B
5	17	15	17	16	15	B	B	15	14	15	17	20	22	24	24	20	18	17	14	14		16	18	
6	16	18	17	15	15		B	17	15	16	18	20	23	20	28		18	14	14	14	15	15	15	15
7	16	15	15	15	14	B	B	18	14	15	17	20	20	22	18	18	15	14	B	14	15	17	15	15
8	B	18	15	15	15	B	B	17	14	14	16	18	21	23	21	16	17	15	15		15	24	24	17
9	B	14	B	14	15	16	B	18	15	14	15	17	21	22	18	17	16	16	14		15	16		
10		15	15		15	15	14	15	14	14	16	16	18		45	23	17	15	15	14	16	16	B	23
11	15	18	15	18	16	14	20	16	14	15			47	48	38	34	17	15		B	15	15	18	B
12	17	15	16	16	15	15	B	14		15	20	30		30	20	16	15	15	14	14	17	15	16	15
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14	B	15	18	17	B	16	16	17	15	15	18		33		46	44	16	15	14	14	18	14	14	15
15	B	17			14	15	B	14	15	15	18	22		45	50	41		15	14	15	15	14	15	14
16	15	17	15	16	15	B	B	14	15	16	20		45	49	43	48	B	16	14		15	17		16
17	16	15		15	14	B		21	14	15	17	20	29		52	23	18	15	14	14	16	15	15	15
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19	16	B	B	15	14	B	17	16	14	15	18	22		47	21	17	15	14	21	14	15	17	15	14
20	15	17	14	15	15	B		15	14	15	16	18	26		43	41	16	15	21	15	15	18		16
21	17	16	15	15	15	B	B	14	14	15	16	21		51	48	47		15		14	16	15	15	B
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25	16	16	17	16	14	15	B	15	14	16	17	20		48	44	42		15	18	14	14	B	16	15
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27	B	16	17	15	B		16	14	14	15	18		48	48	18	20	16	15	18	15	16	16		15
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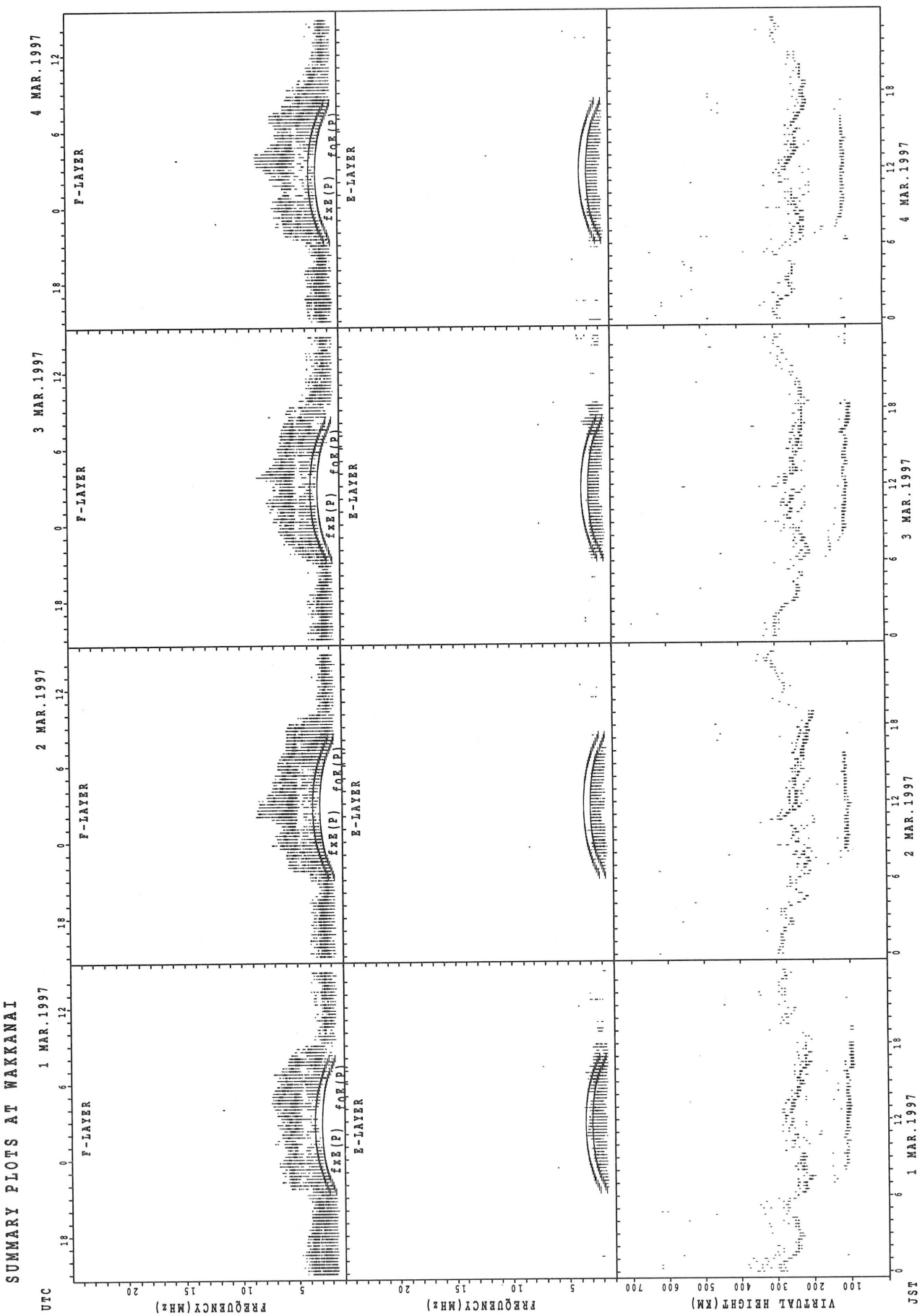
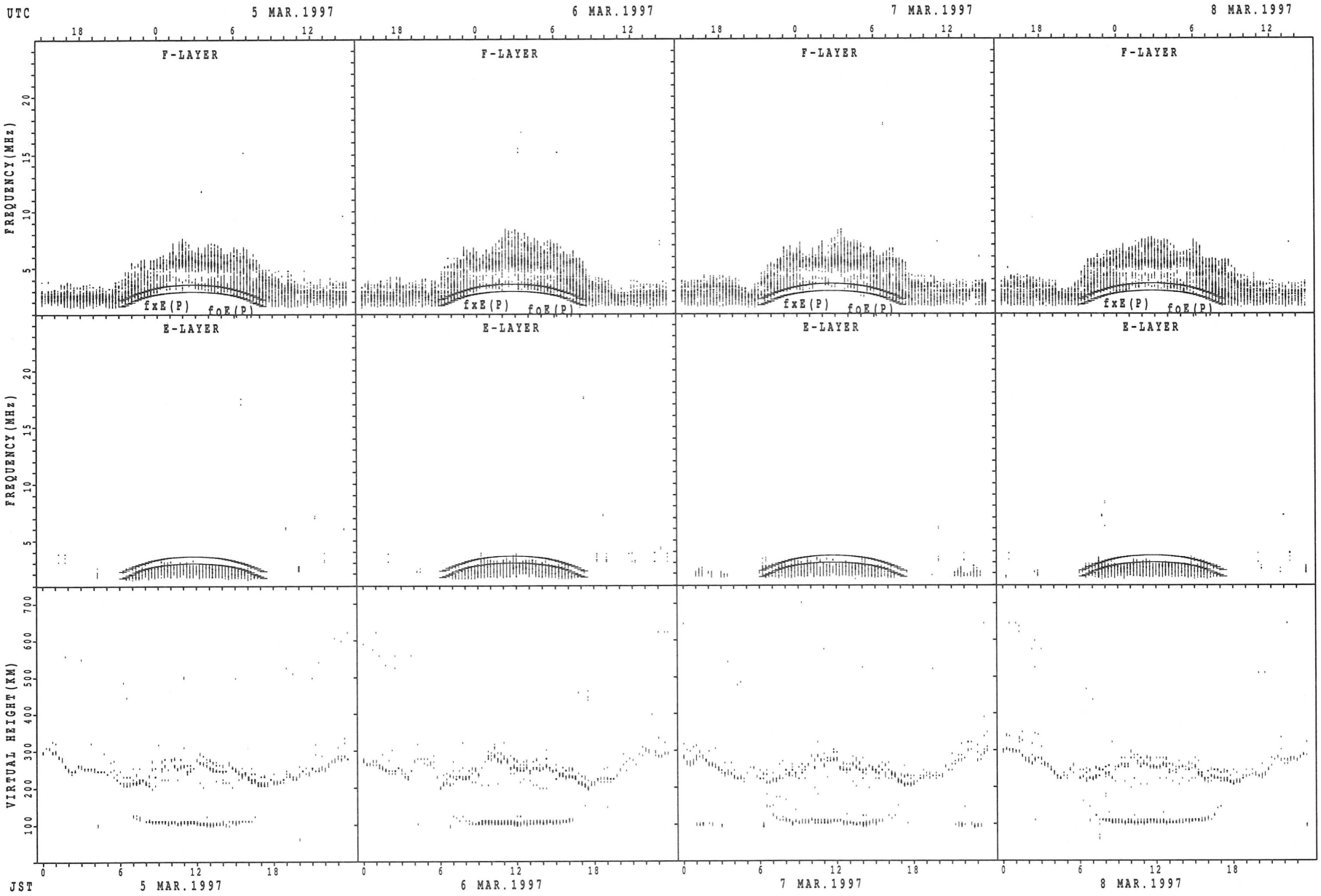
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	30	26	29	23			30	29	31	28	23	21	22	28	27	25	31	27	26	29	27	25	25
MED	16	16	16	15	15			15	14	15	17	20	26	38	34	20	16	15	14	14	15	16	16	15
U Q	16	16	17	16	16			16	15	16	18	22	45	48	47	42	18	15	18	15	16	16	17	15
L Q	15	15	15	15	14			15	14	15	16	18	21	22	20	17	16	15	14	14	15	15	15	15

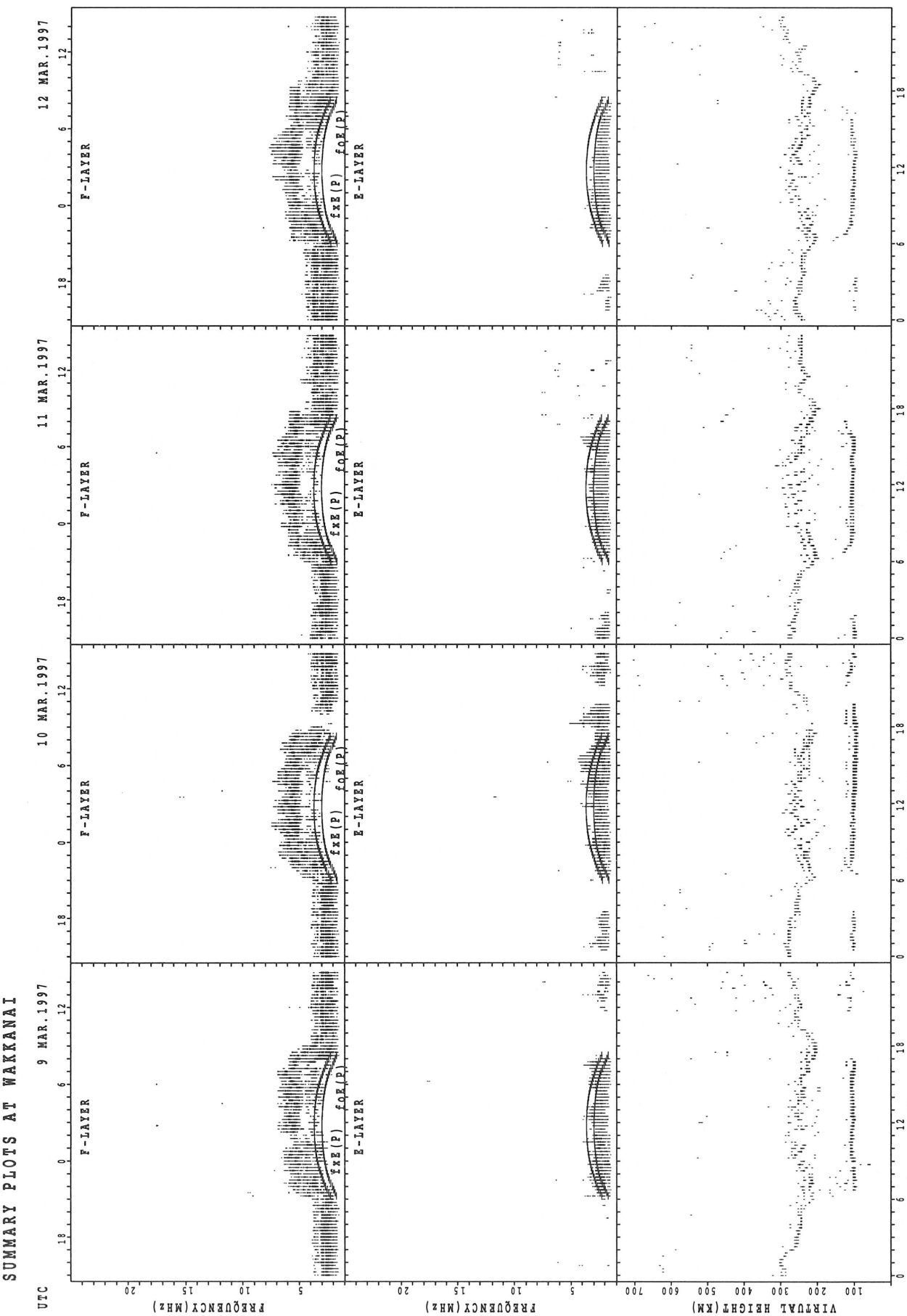
COMMUNICATIONS RESEARCH LABORATORY, JAPAN


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

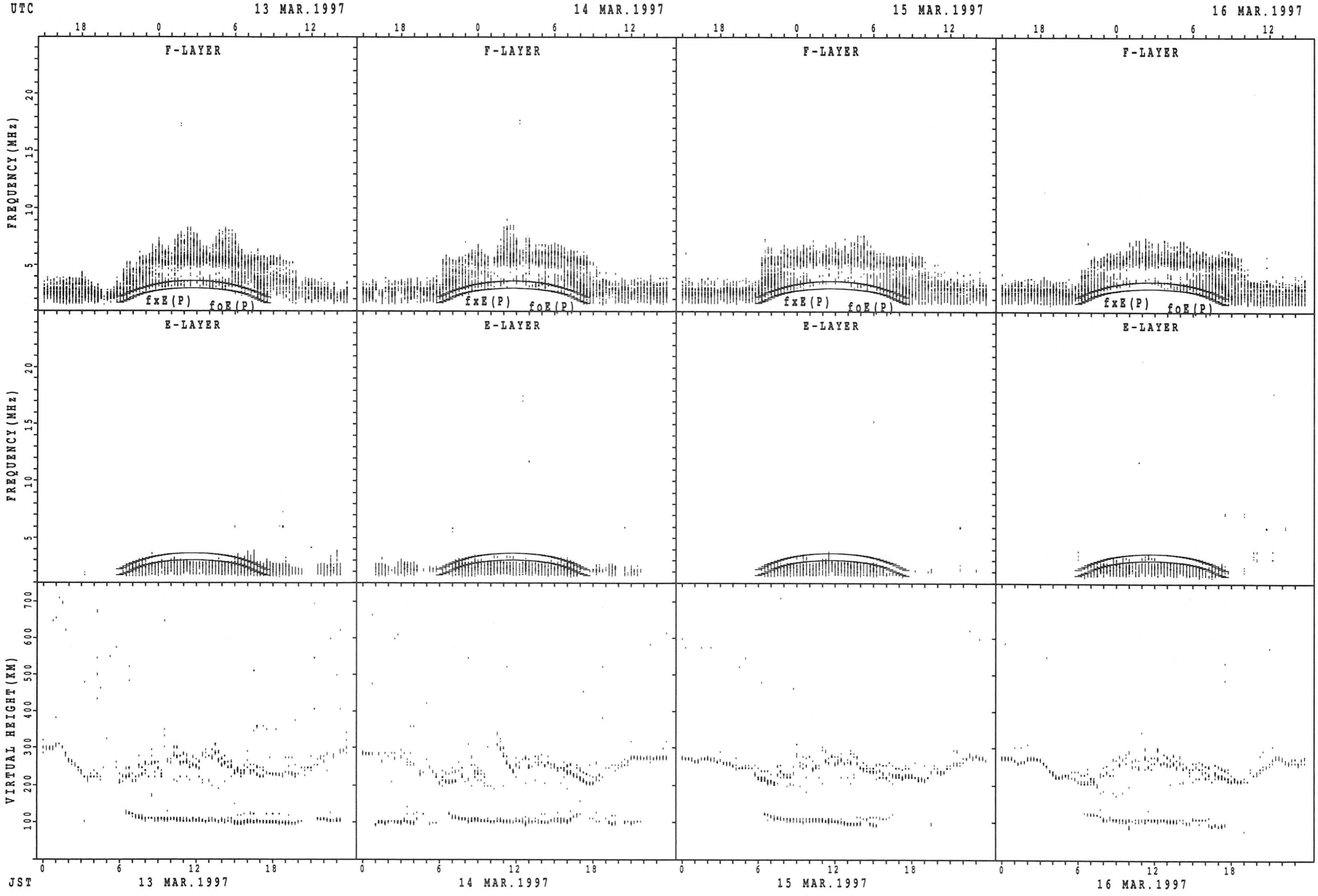
SUMMARY PLOTS AT WAKKANAI



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


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



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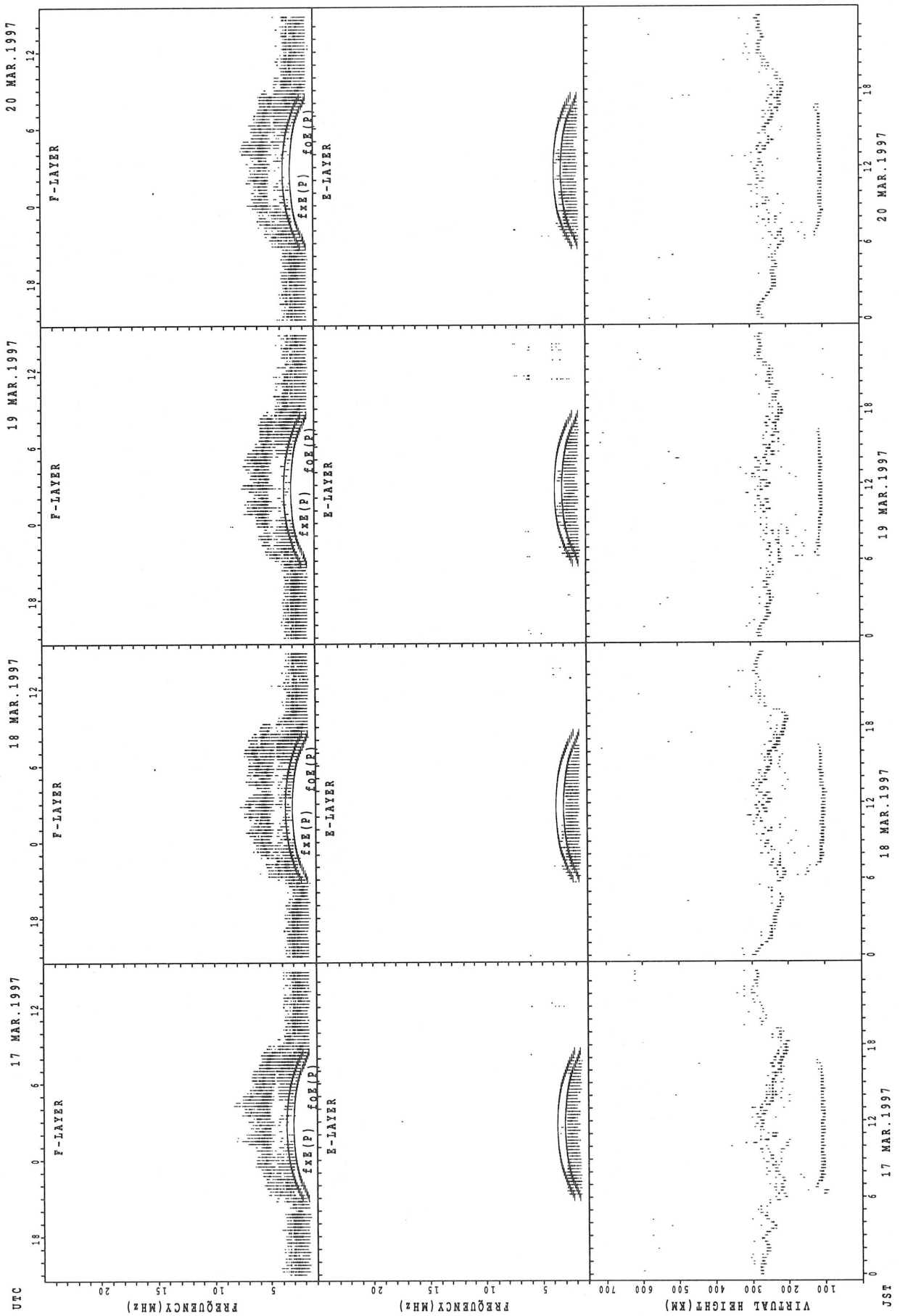
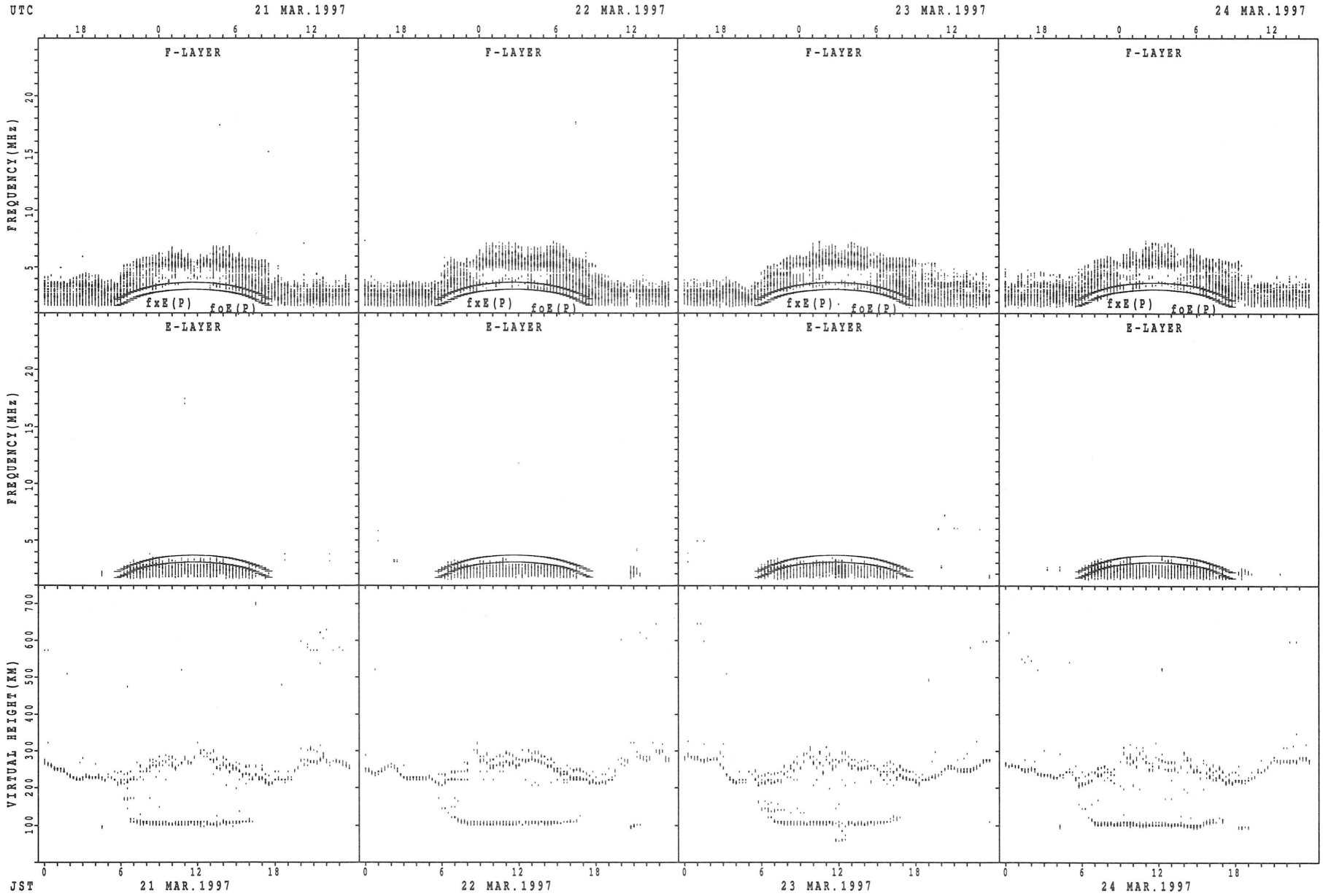
foE(P); PREDICTED VALUE FOR foE

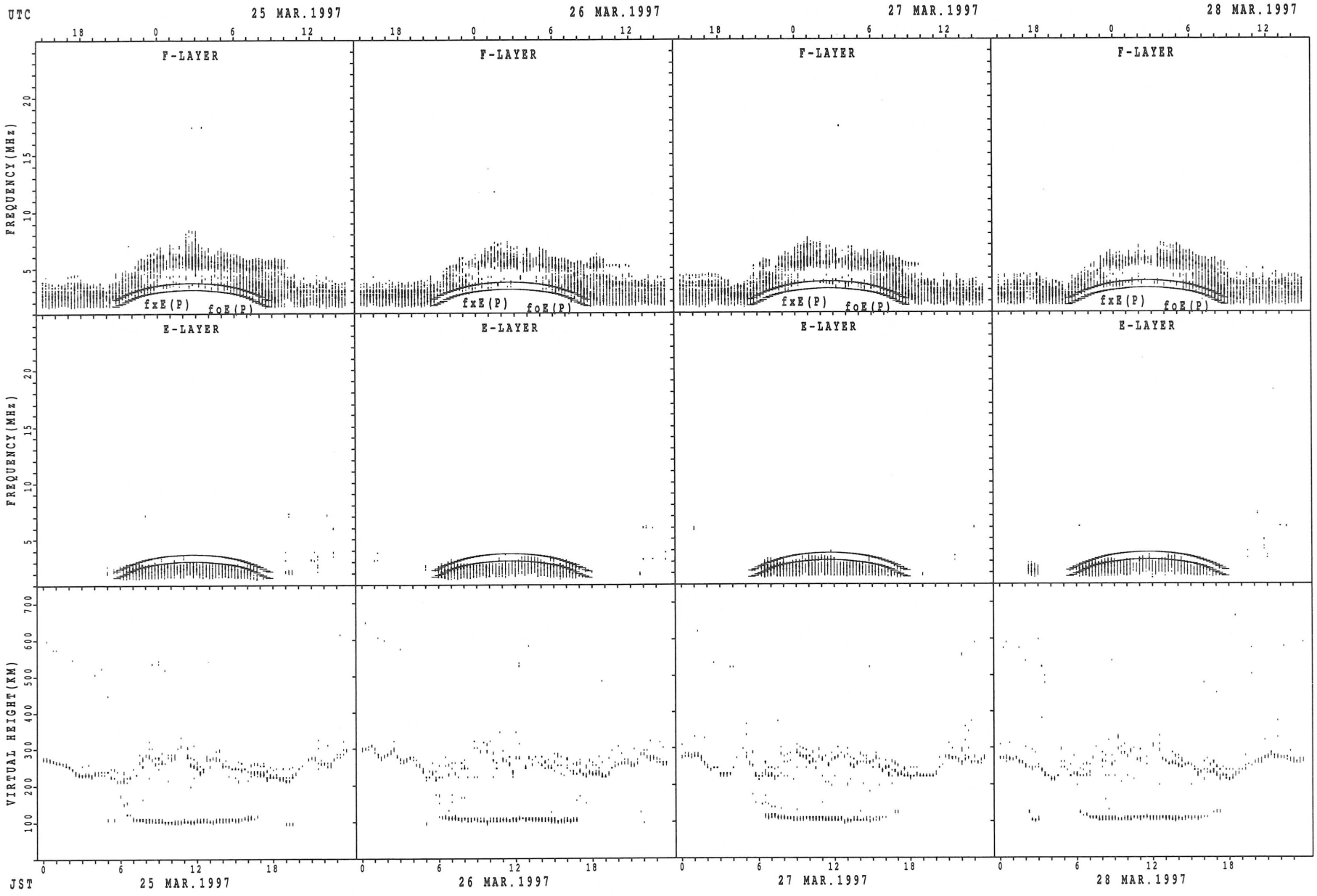

SUMMARY PLOTS AT WAKKANAI
UTC
JST
17 MAR.1997
18 MAR.1997
19 MAR.1997
20 MAR.1997
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



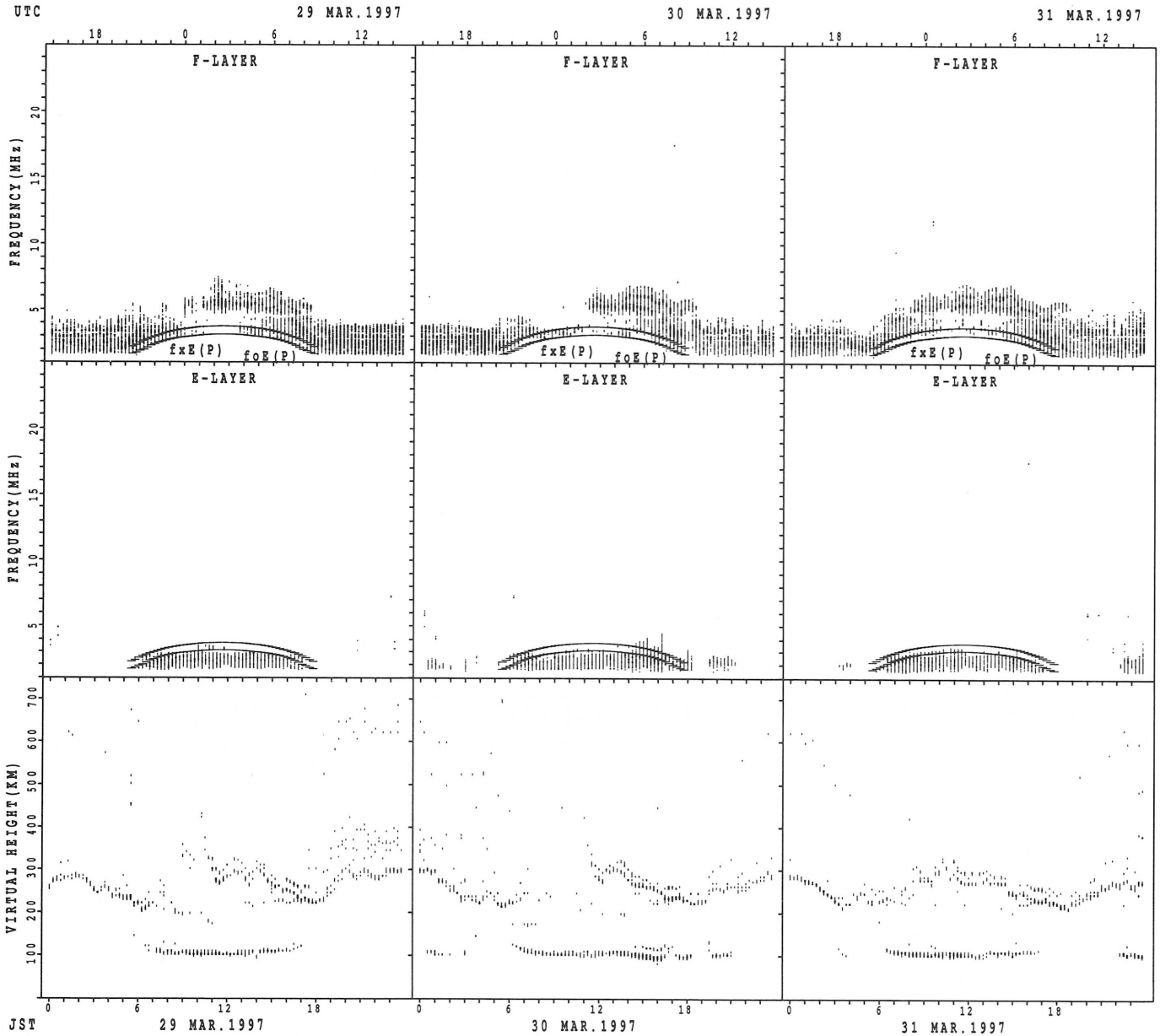
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



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

SUMMARY PLOTS AT WAKKANAI



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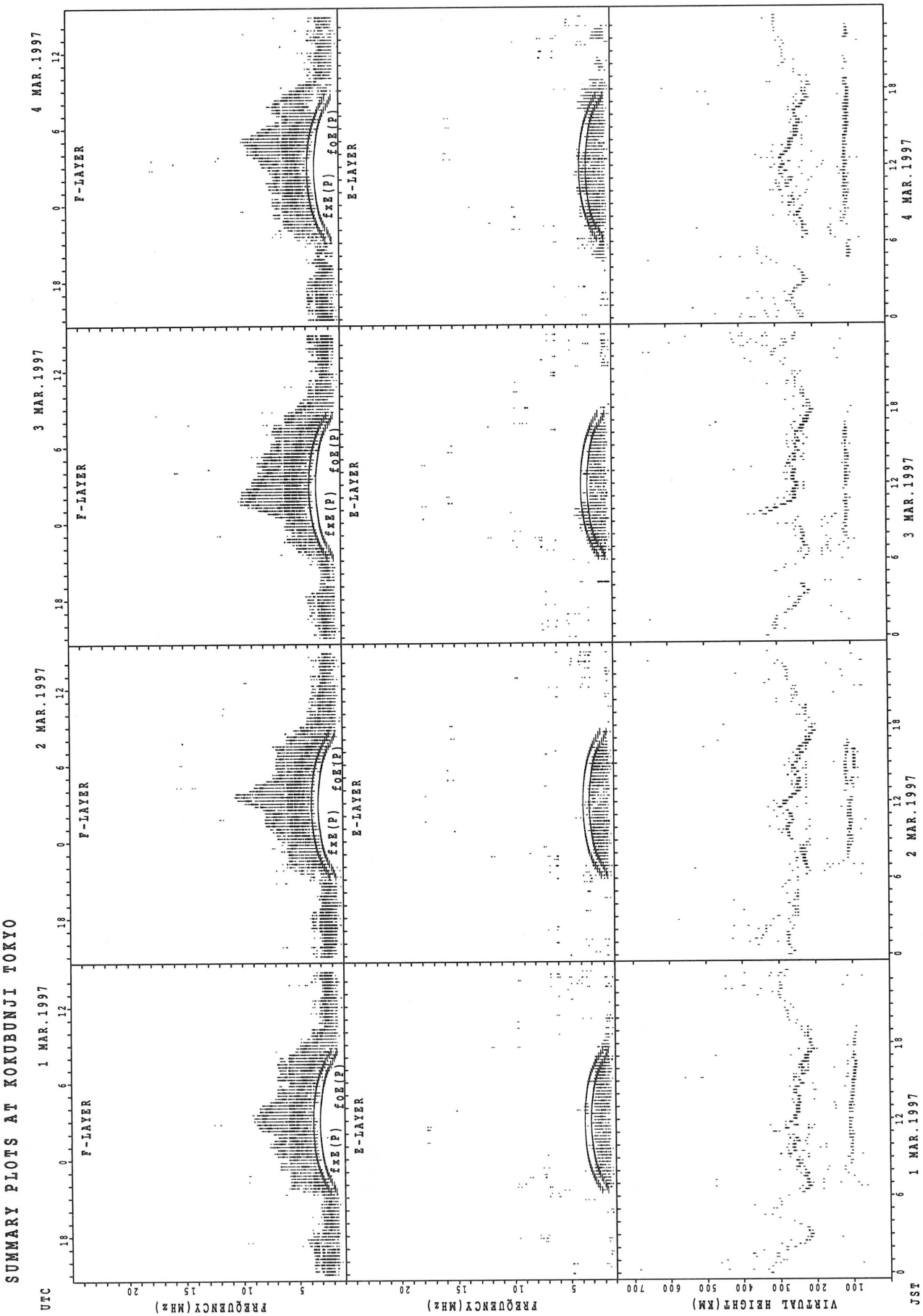
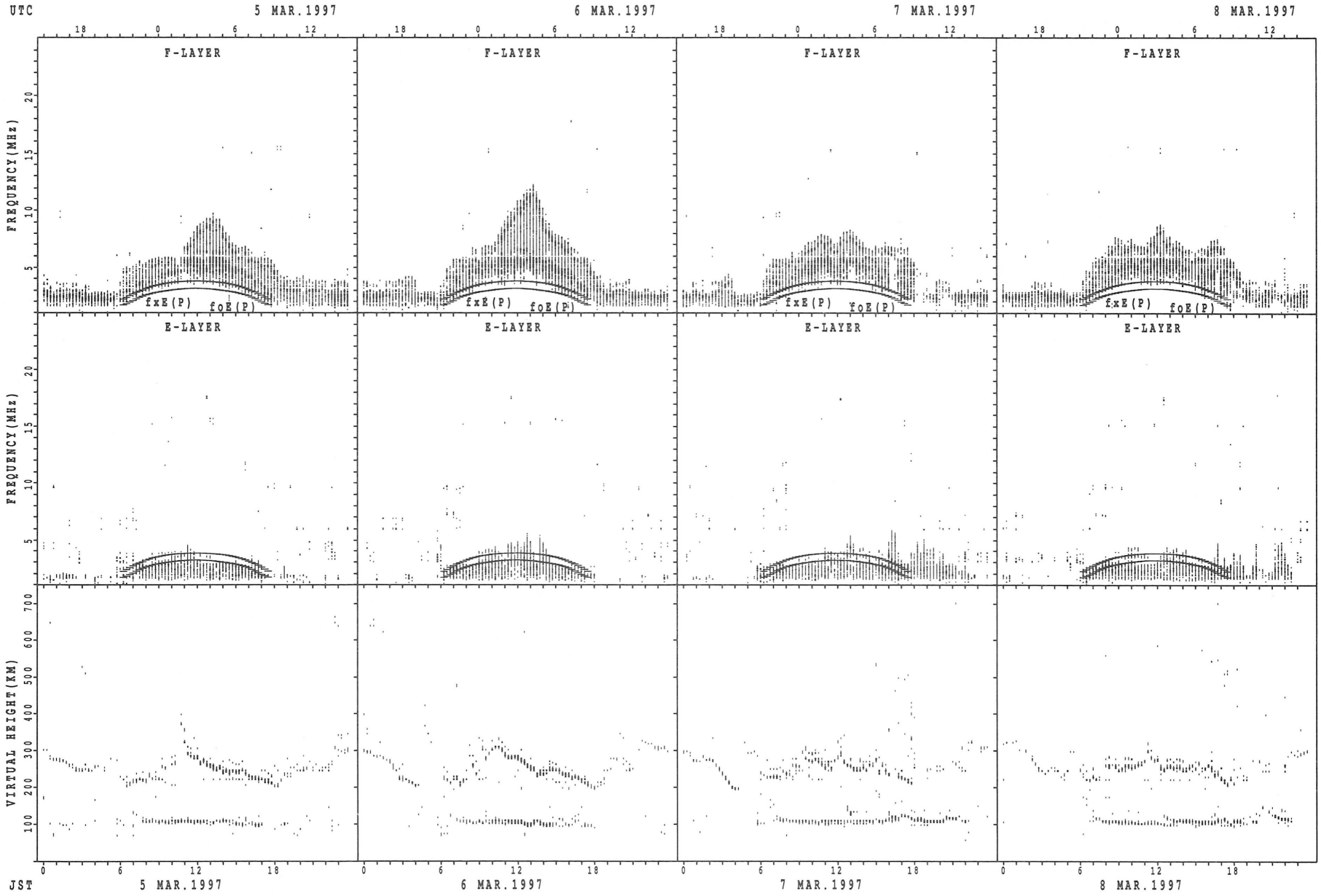
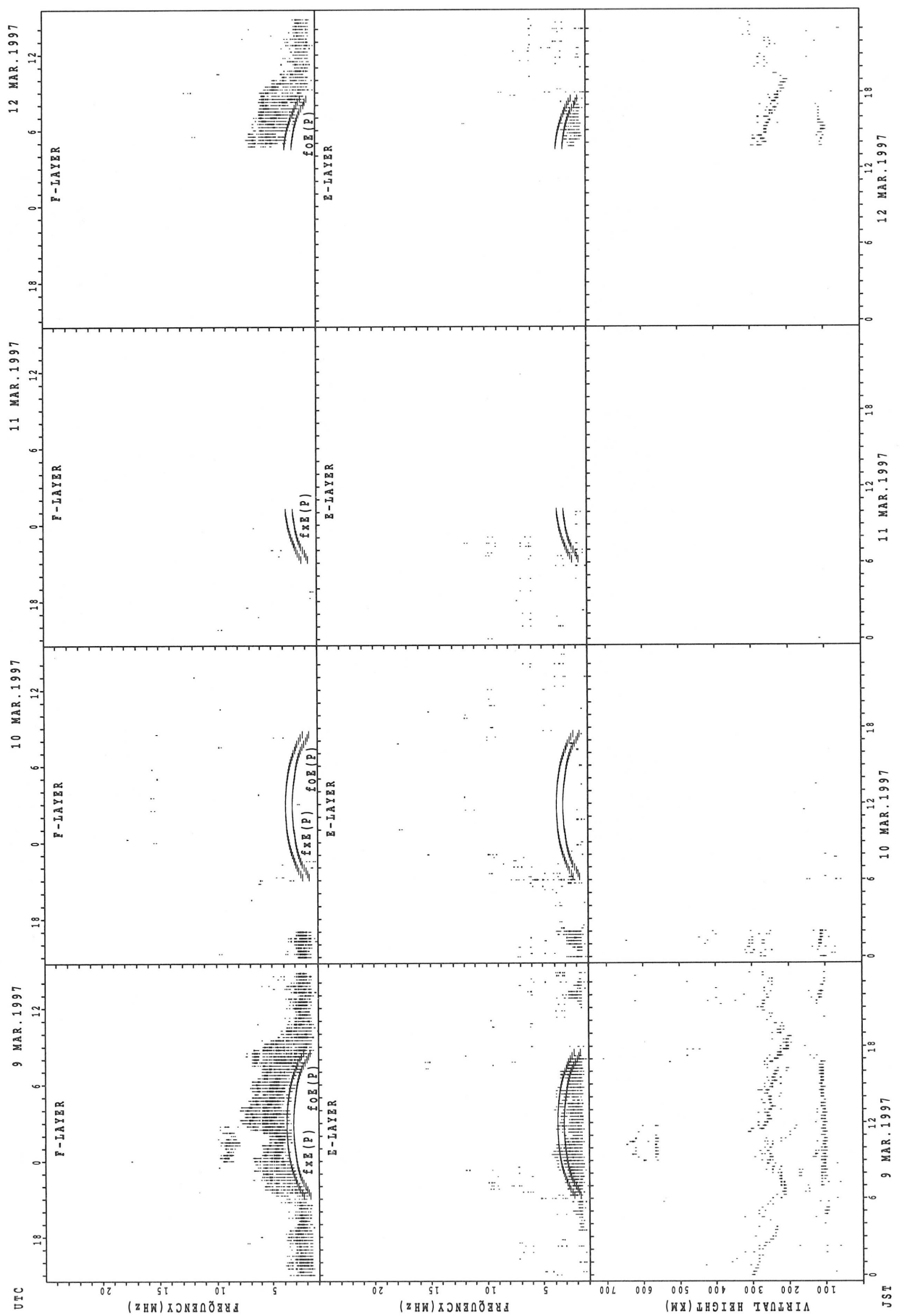
foE(P); PREDICTED VALUE FOR foE


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

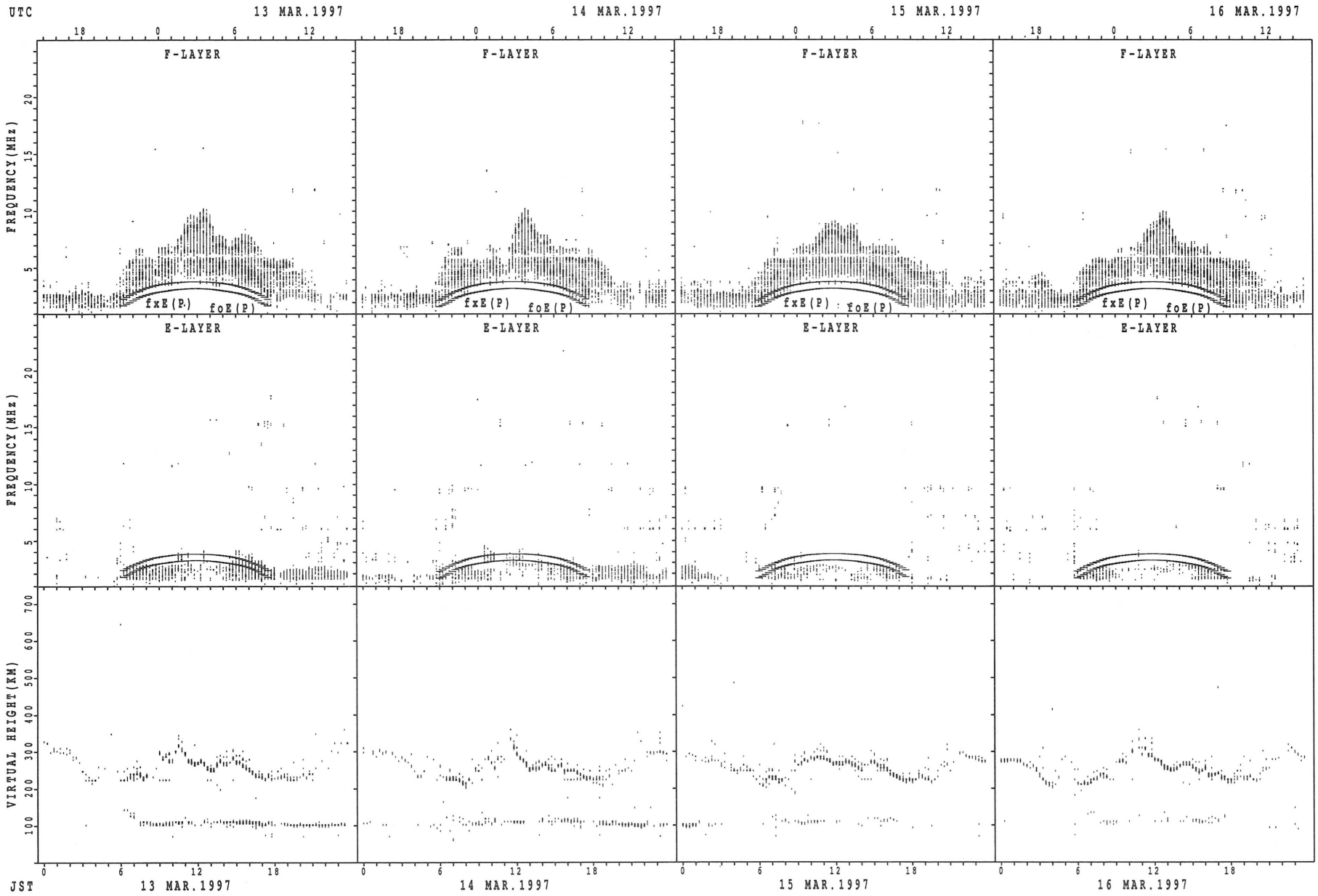
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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


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



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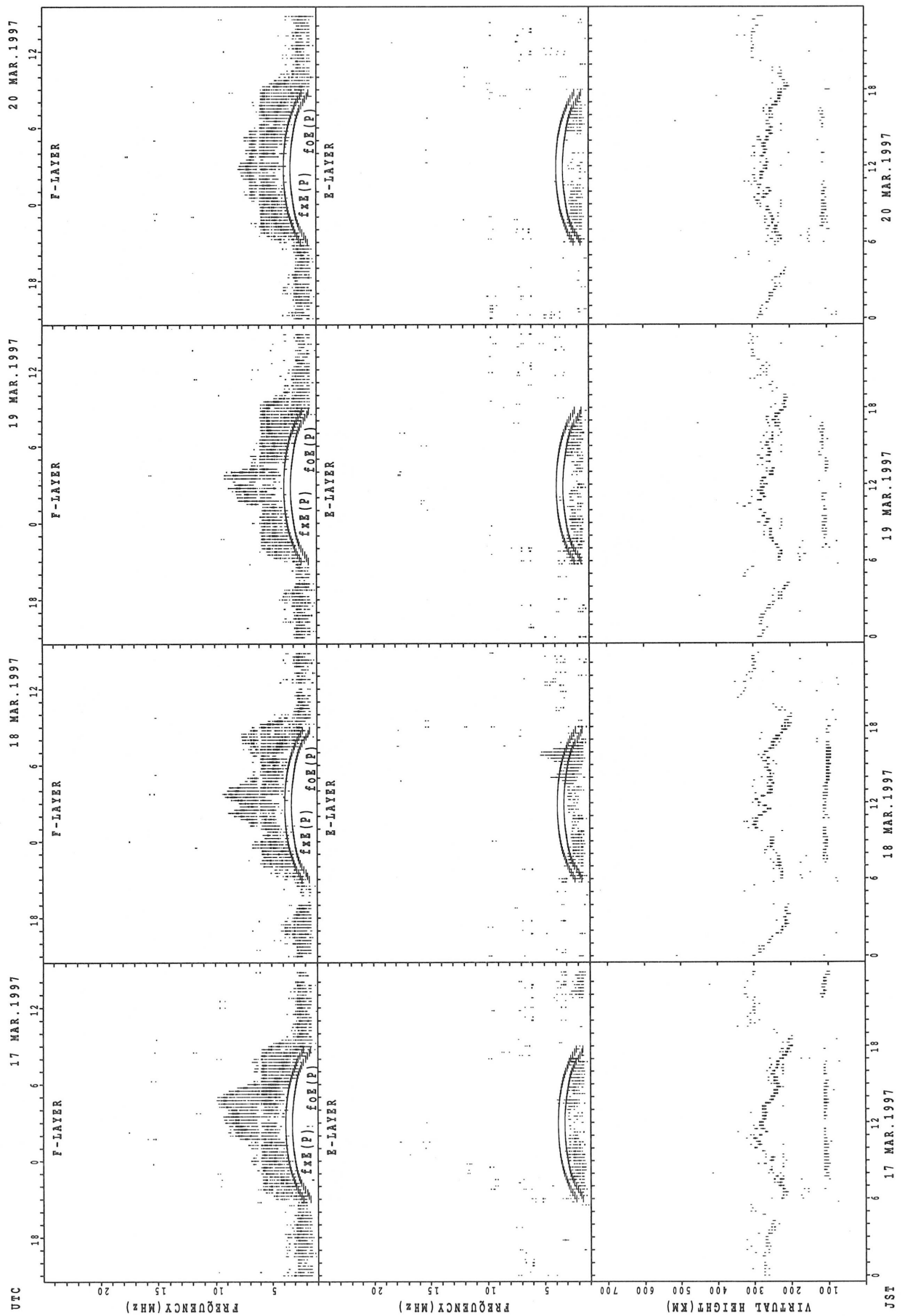
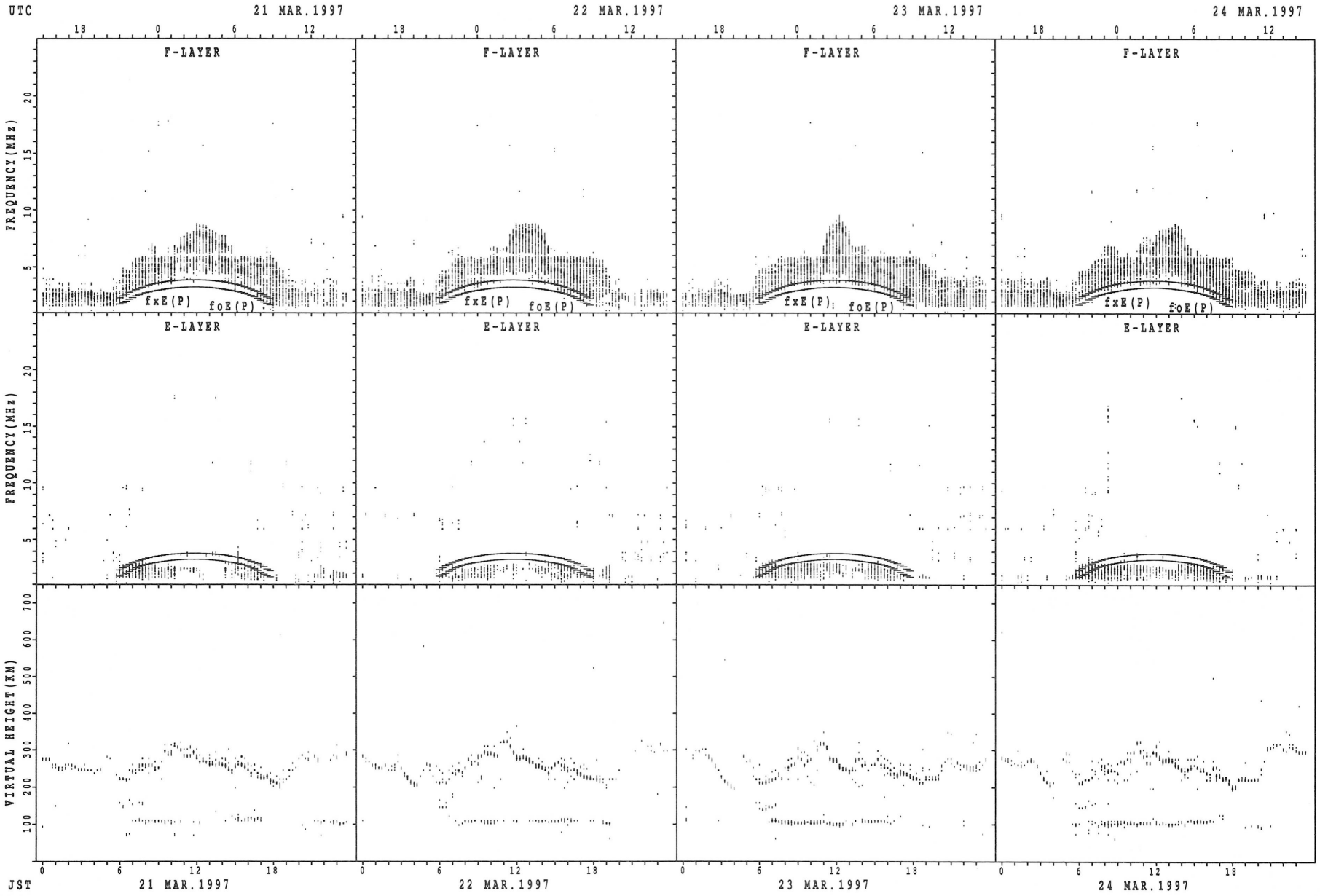
foE(P); PREDICTED VALUE FOR foE


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

SUMMARY PLOTS AT KOKUBUNJI TOKYO



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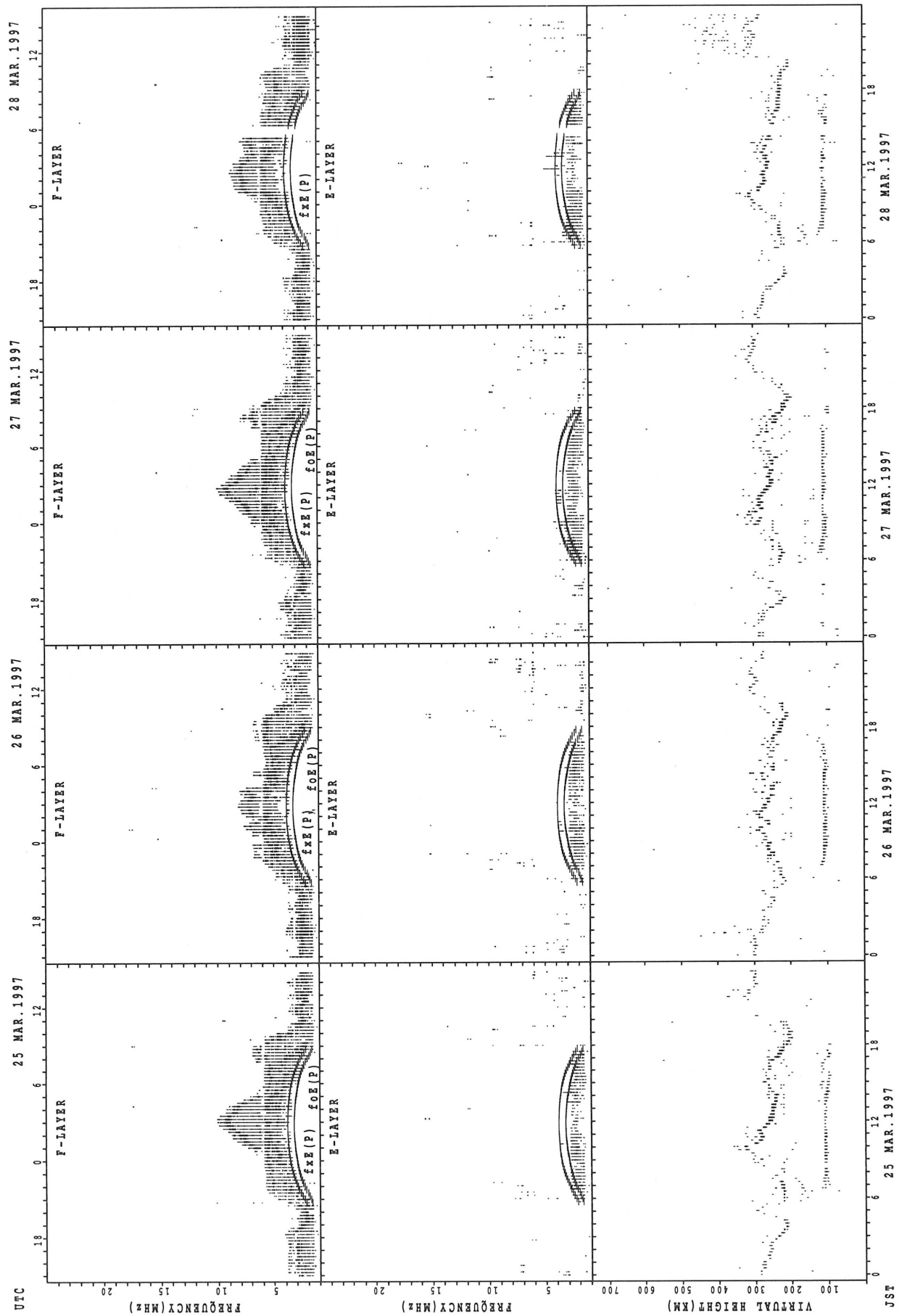
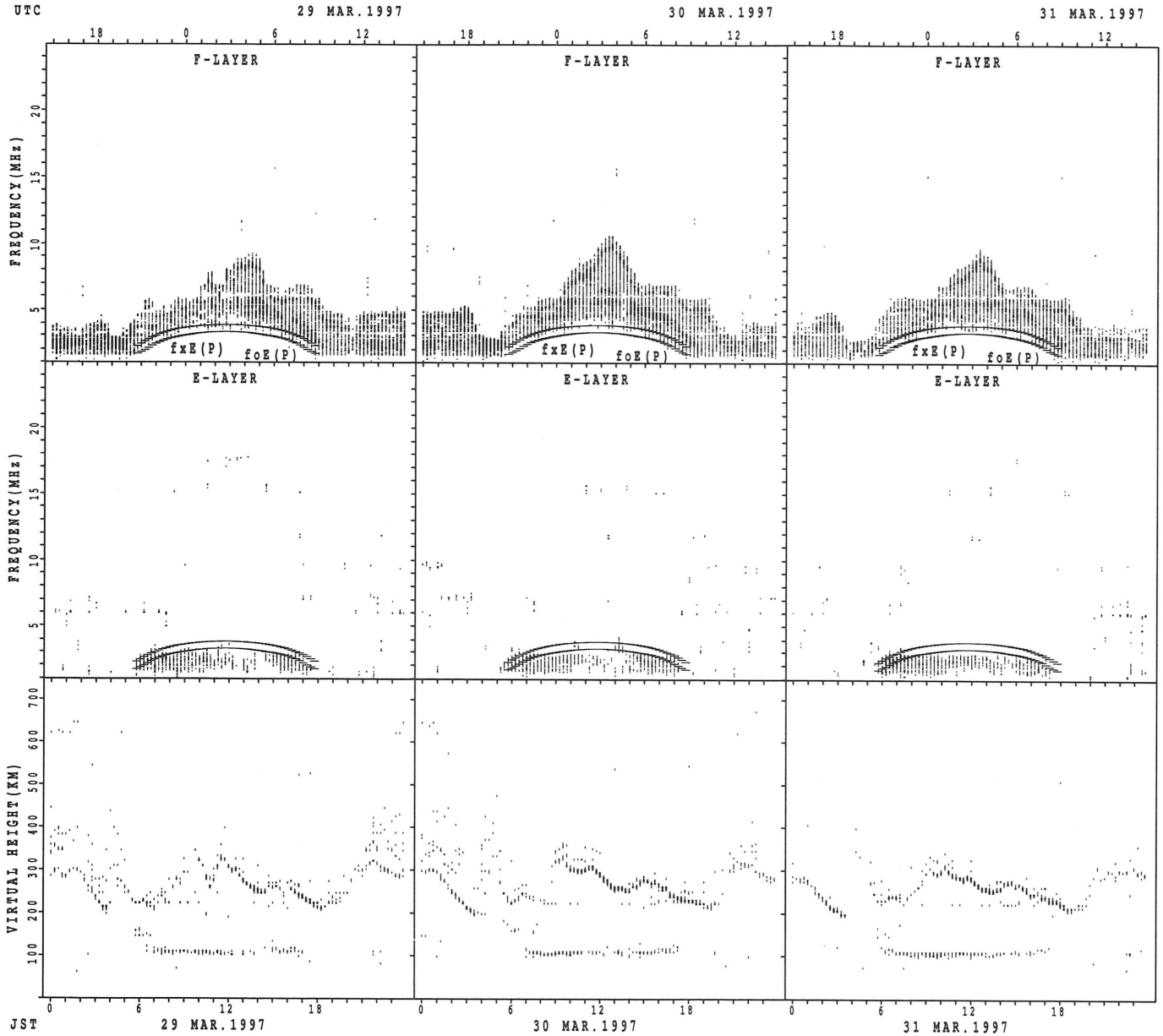
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
25 MAR.1997
26 MAR.1997
27 MAR.1997
28 MAR.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



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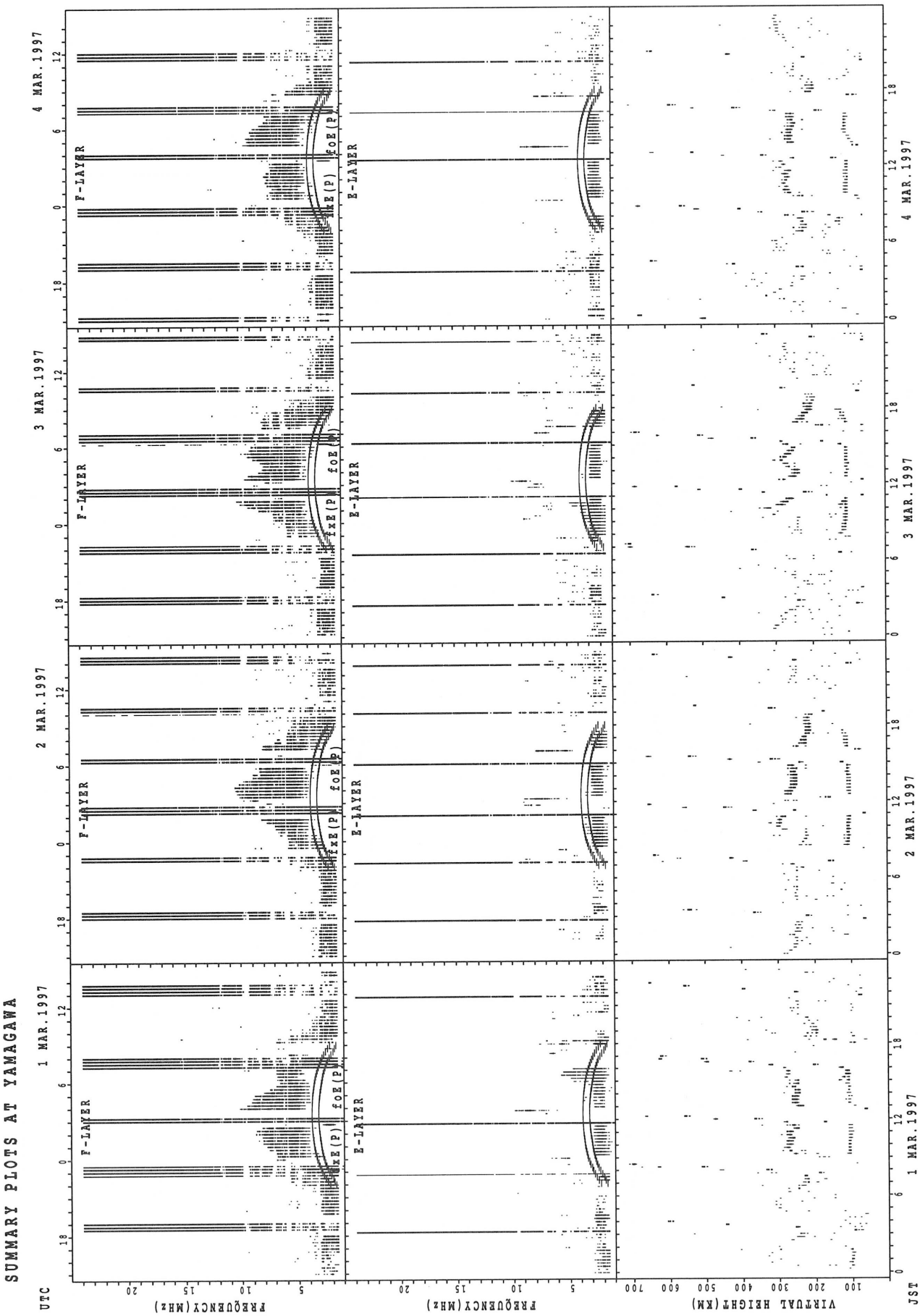
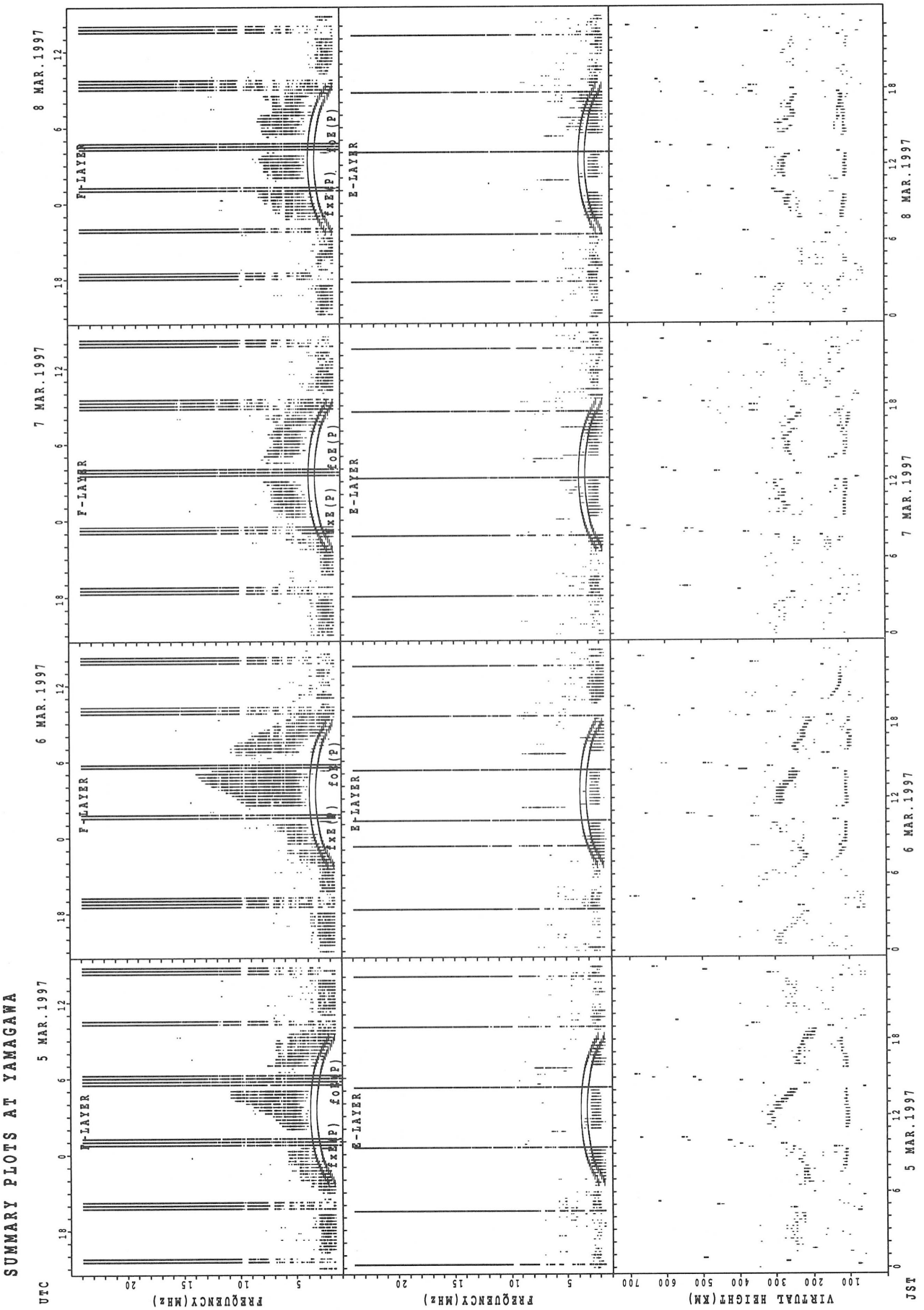
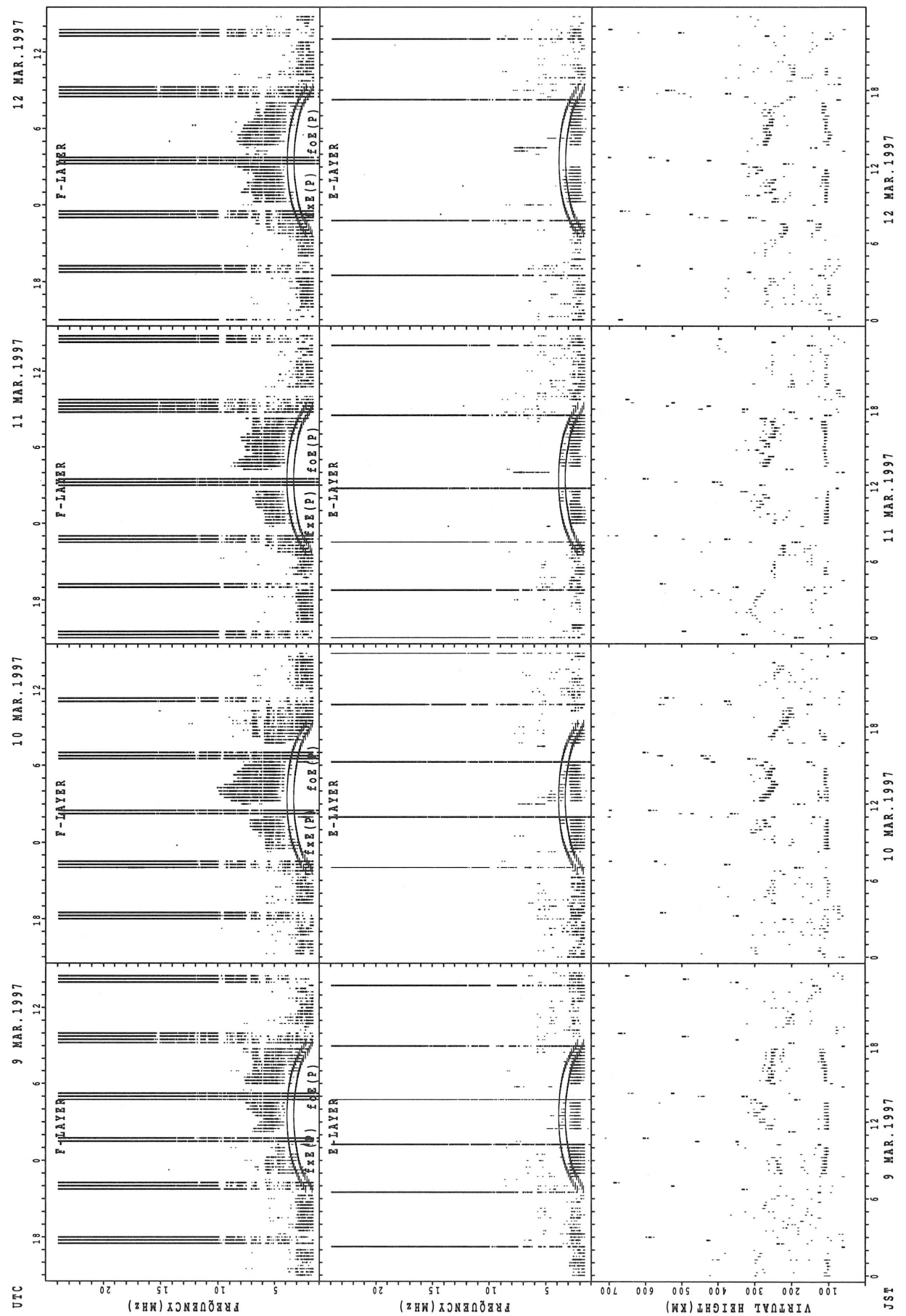
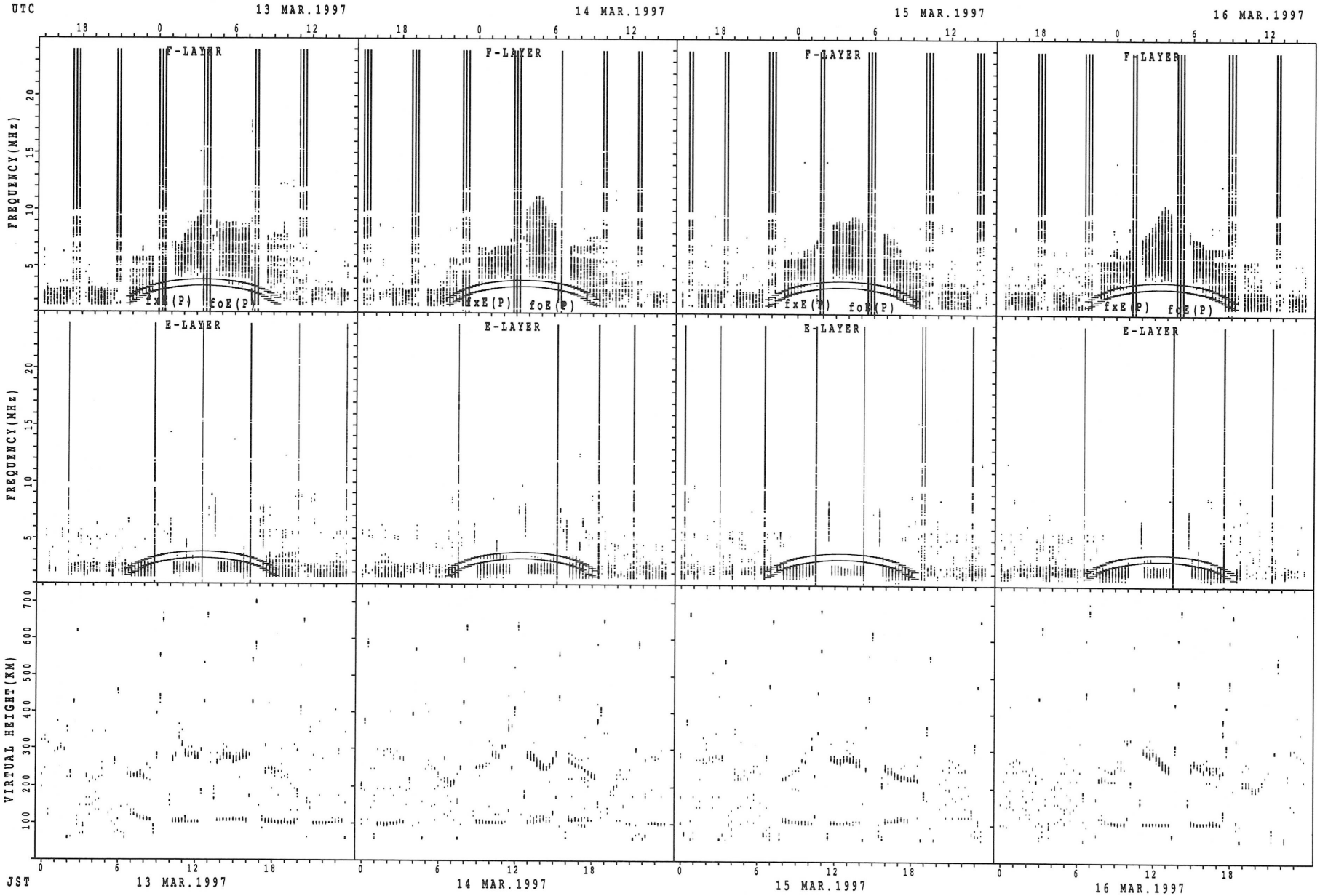
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
1 MAR.1997
2 MAR.1997
3 MAR.1997
4 MAR.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
5 MAR.1997
6 MAR.1997
7 MAR.1997
8 MAR.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
9 MAR.1997
10 MAR.1997
11 MAR.1997
12 MAR.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



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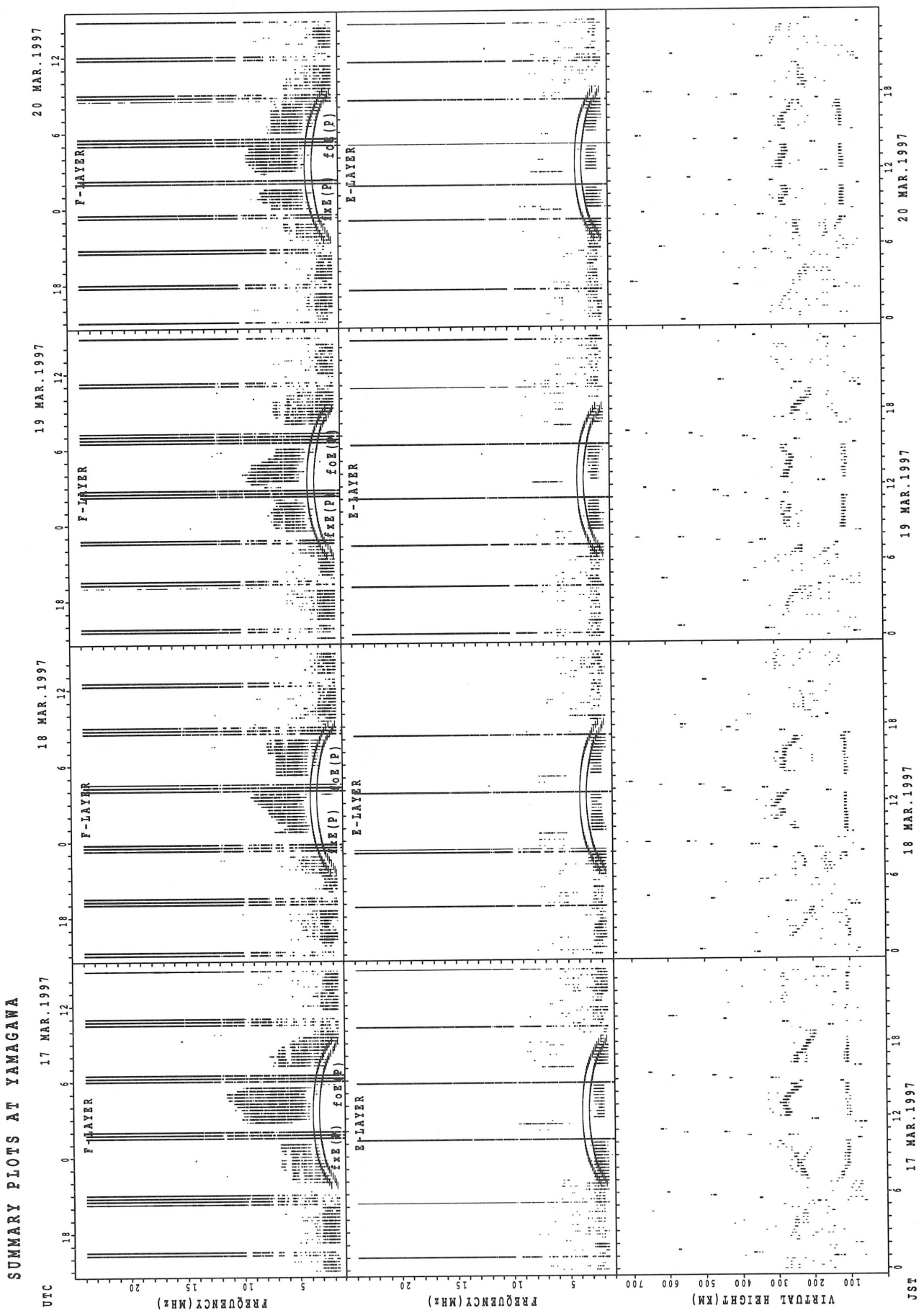
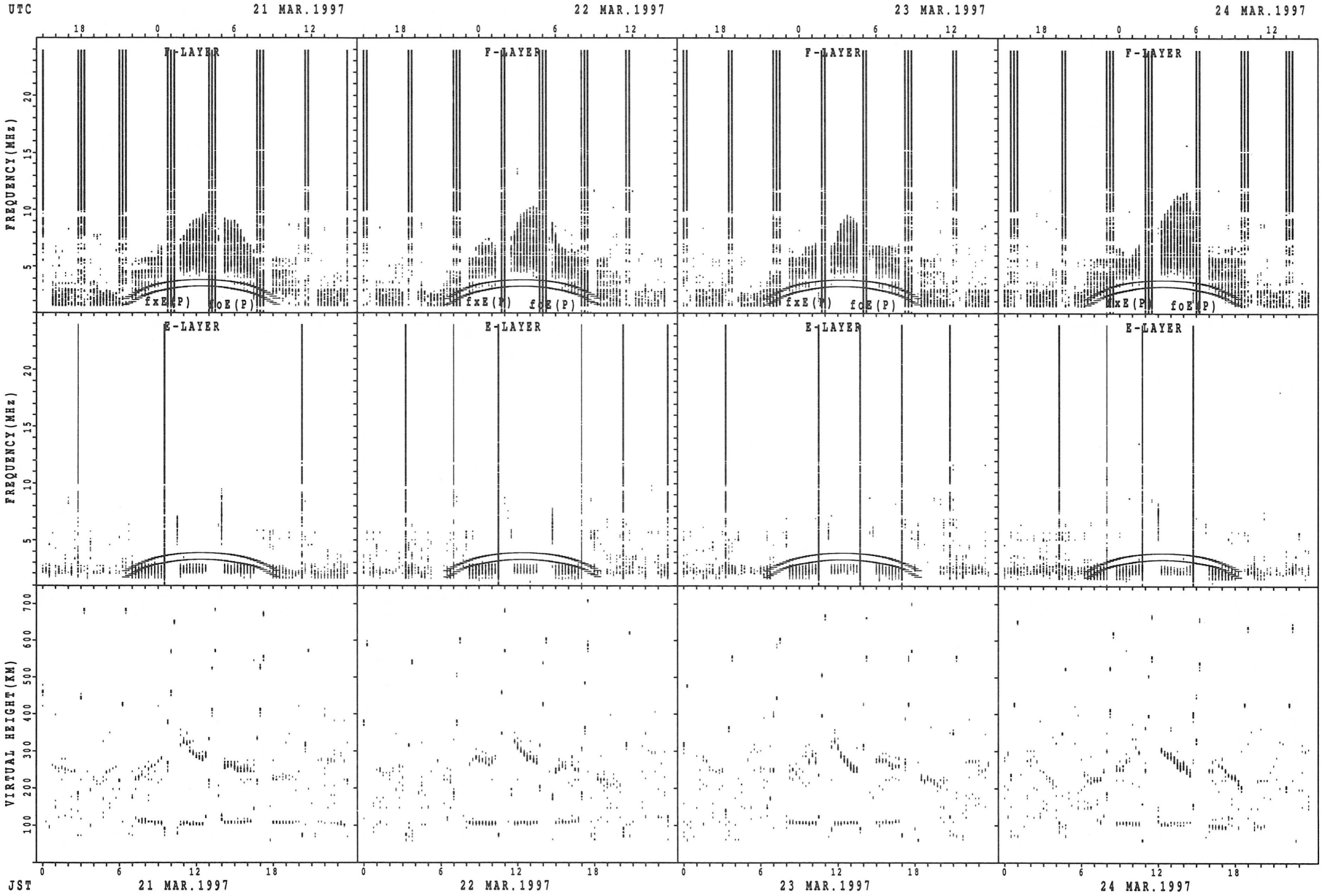
foE(P); PREDICTED VALUE FOR foE


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



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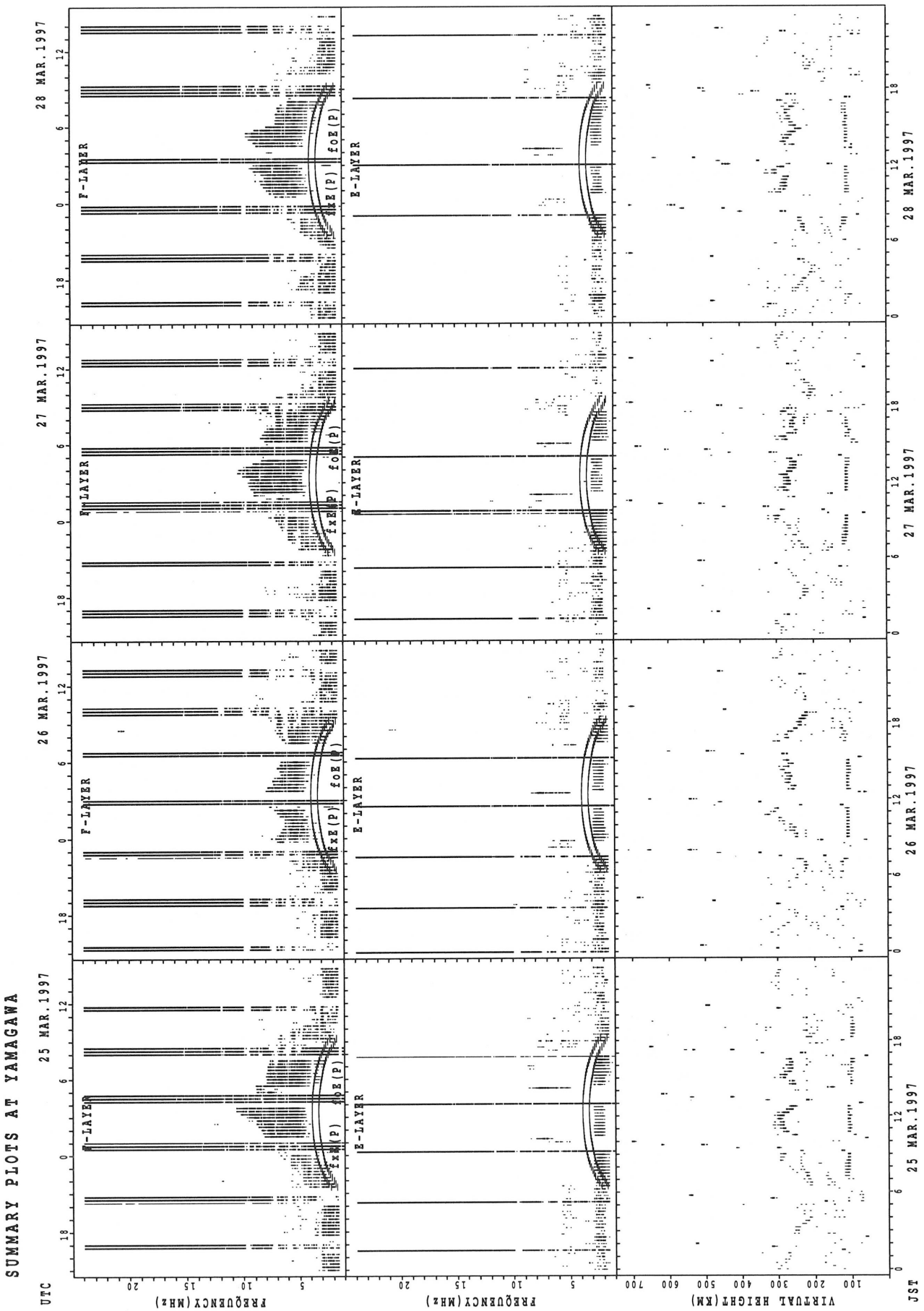
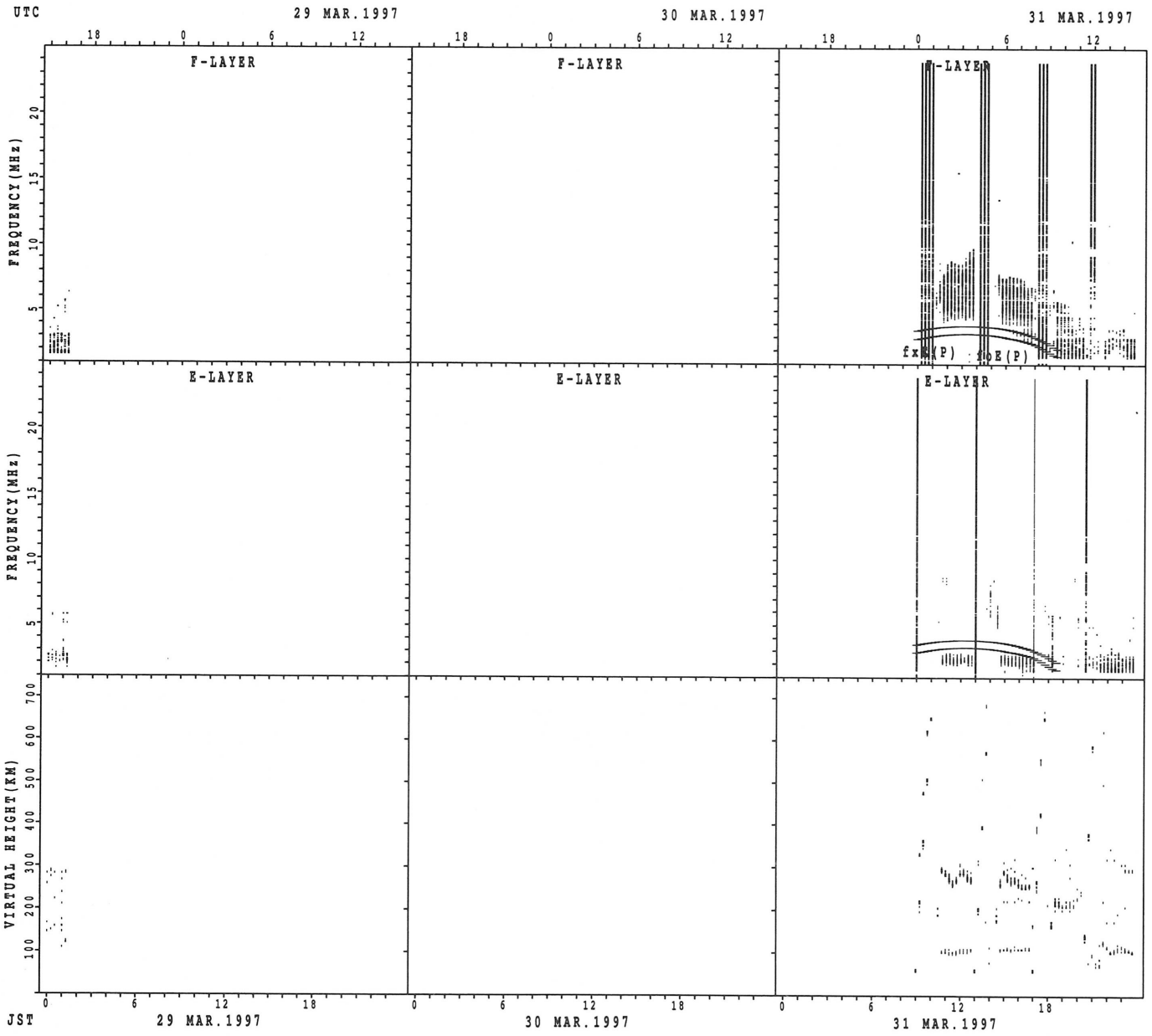
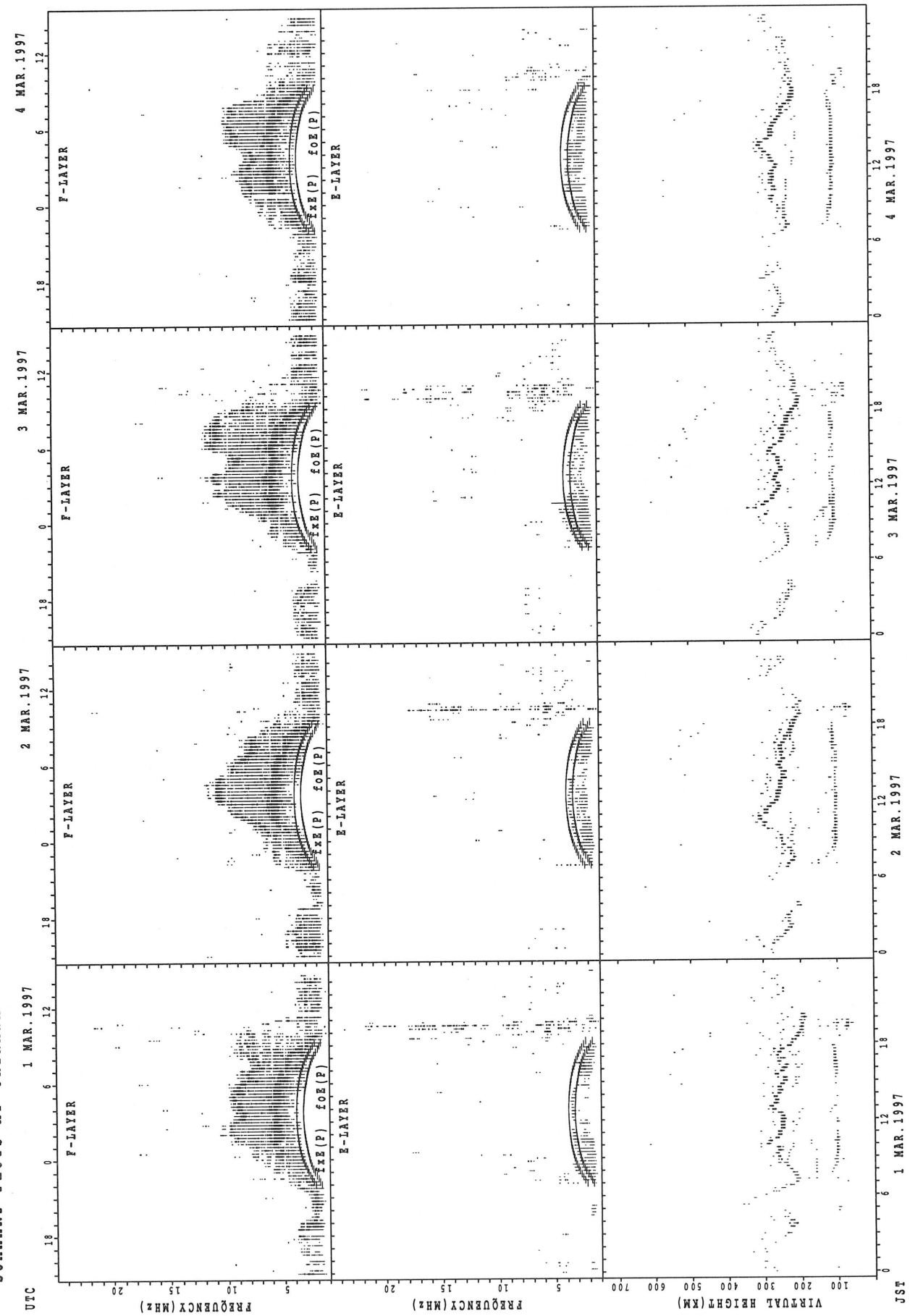
foE(P); PREDICTED VALUE FOR foE


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

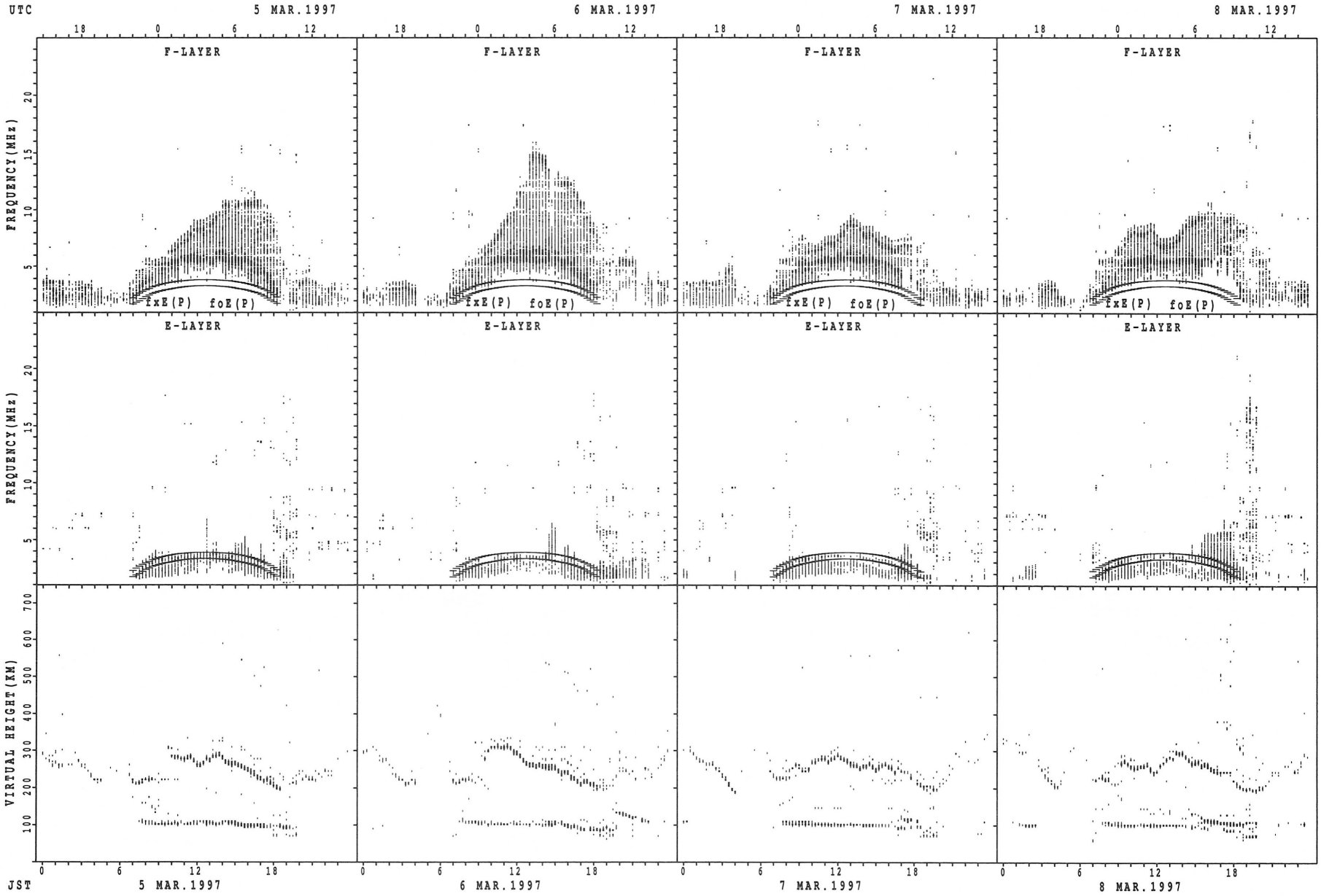
SUMMARY PLOTS AT YAMAGAWA



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


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



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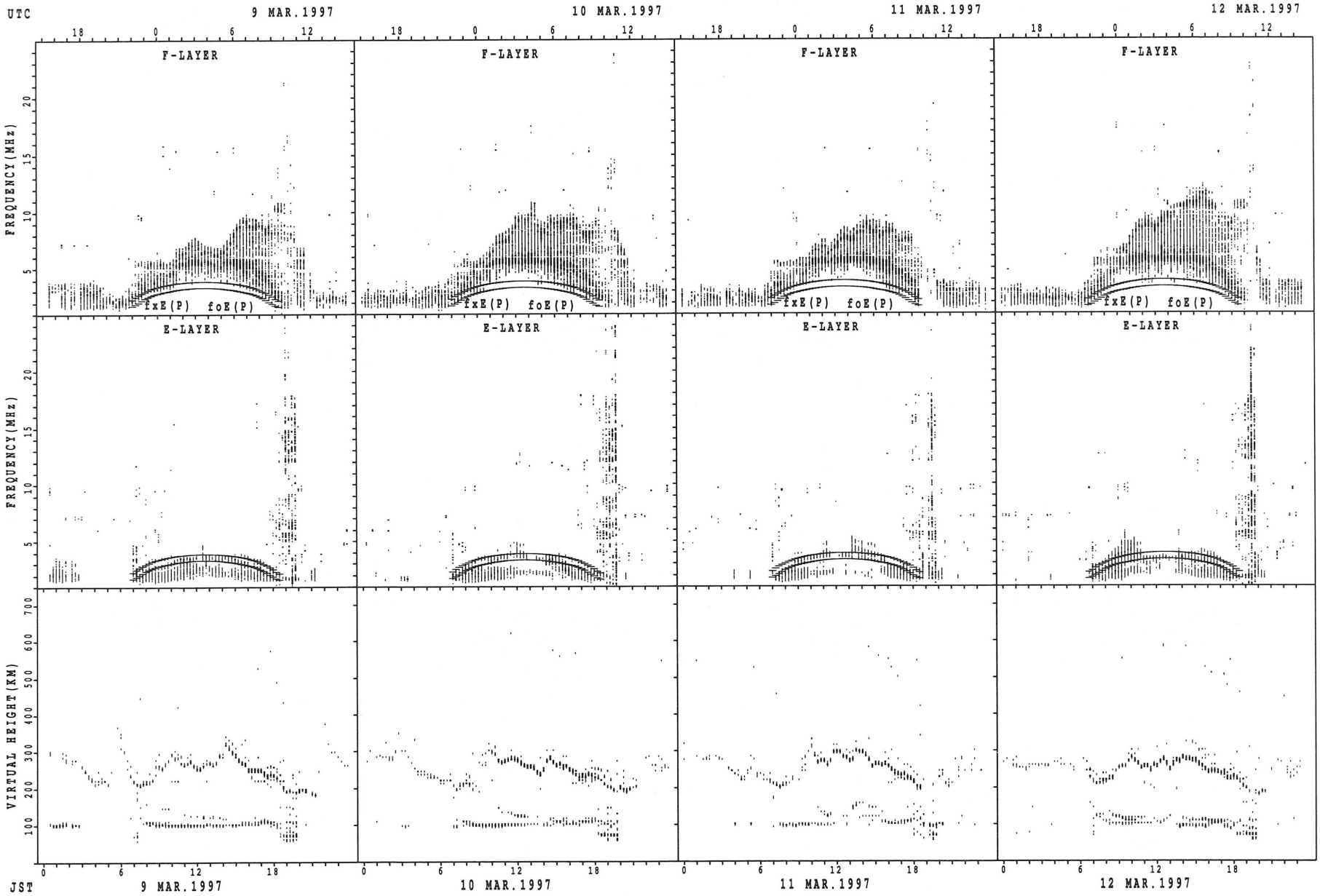
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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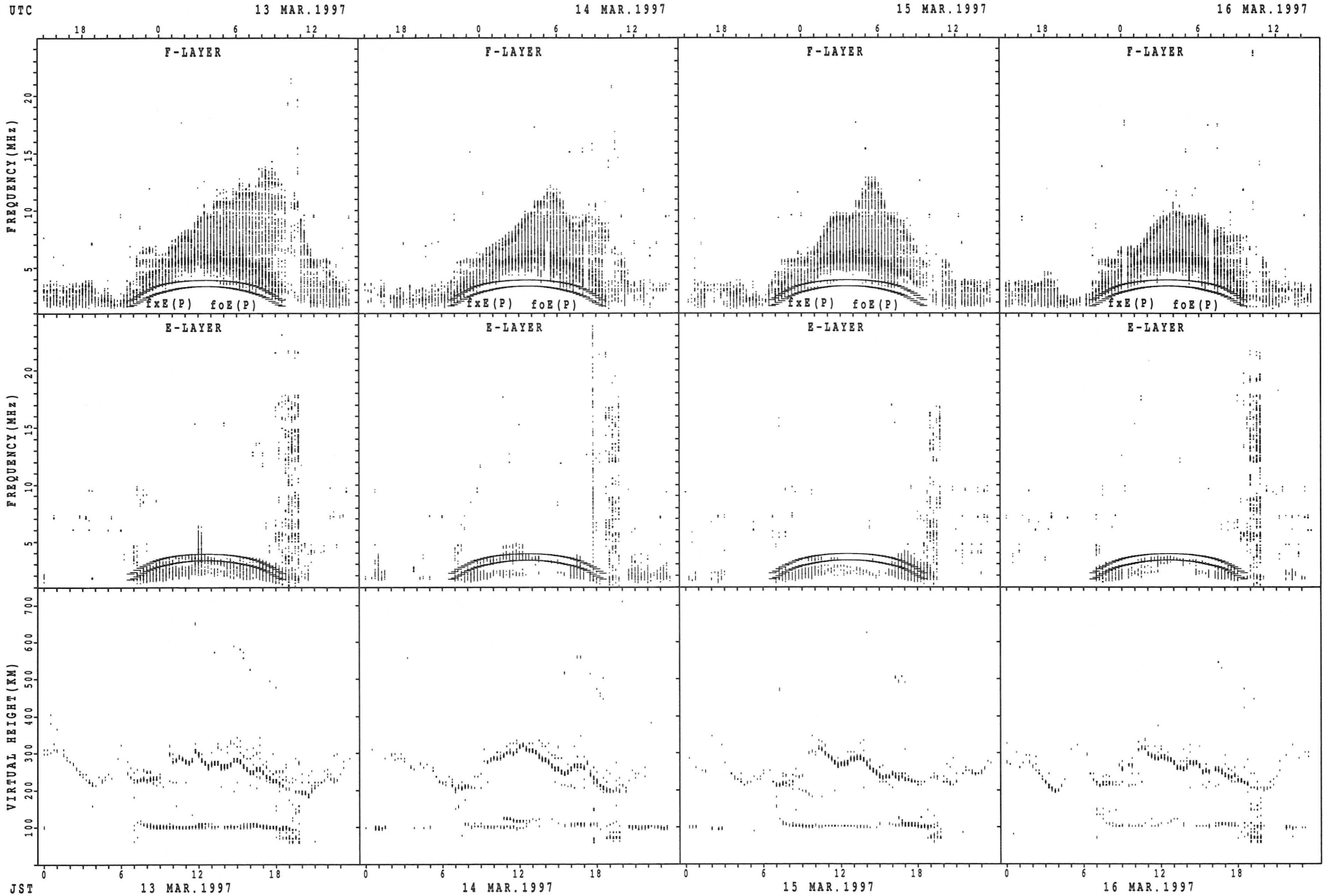
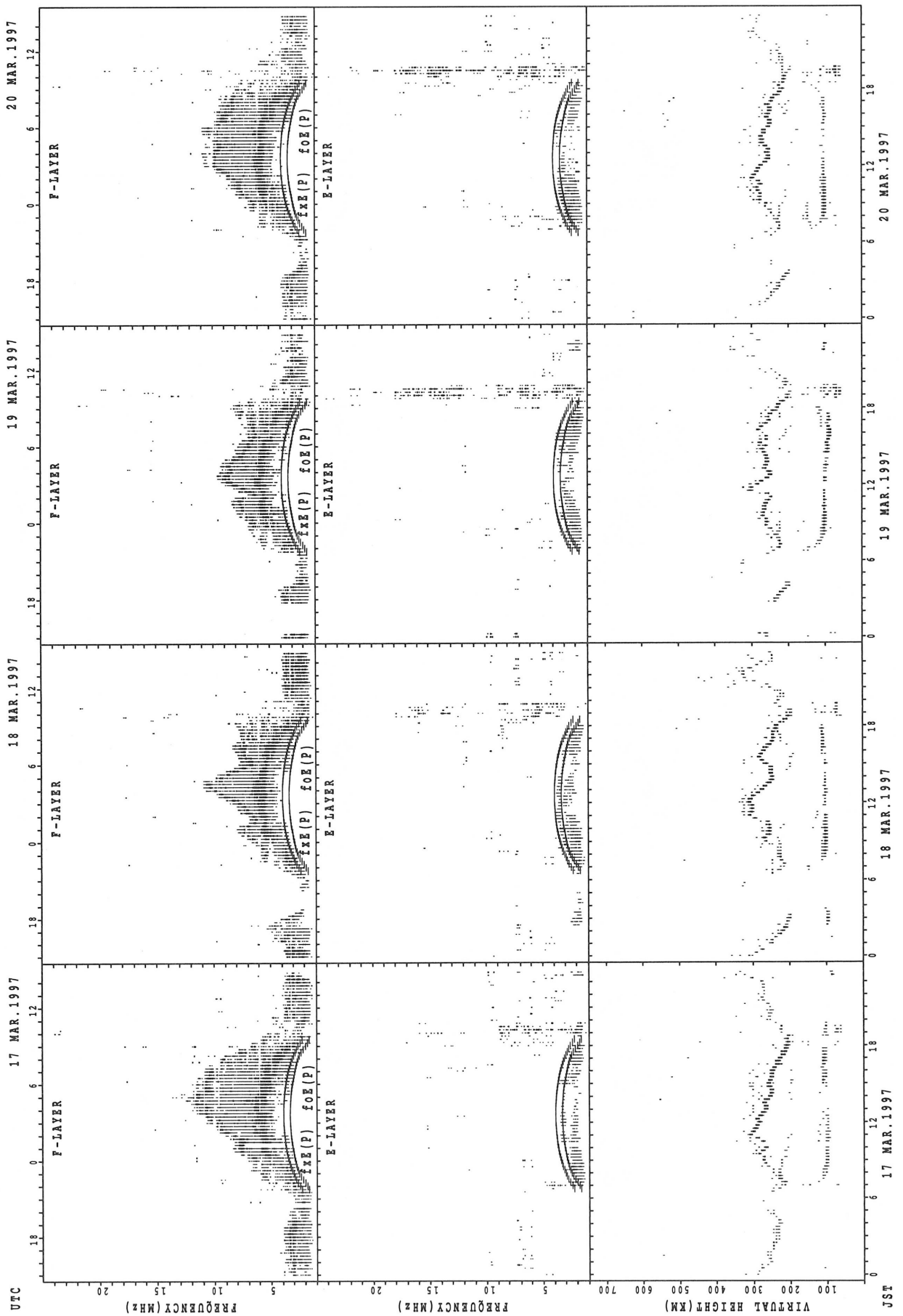
foE(P); PREDICTED VALUE FOR foE

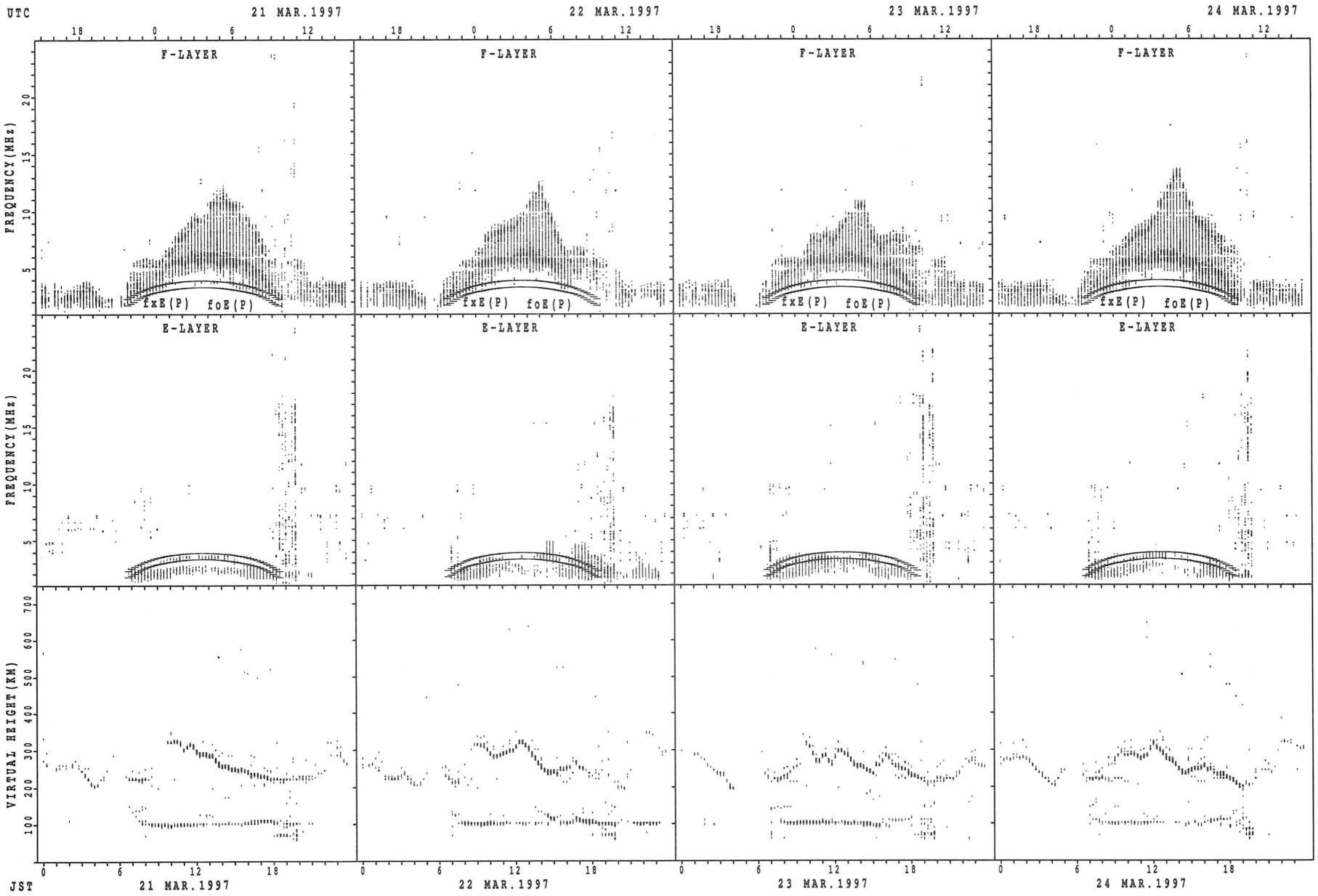
SUMMARY PLOTS AT OKINAWA



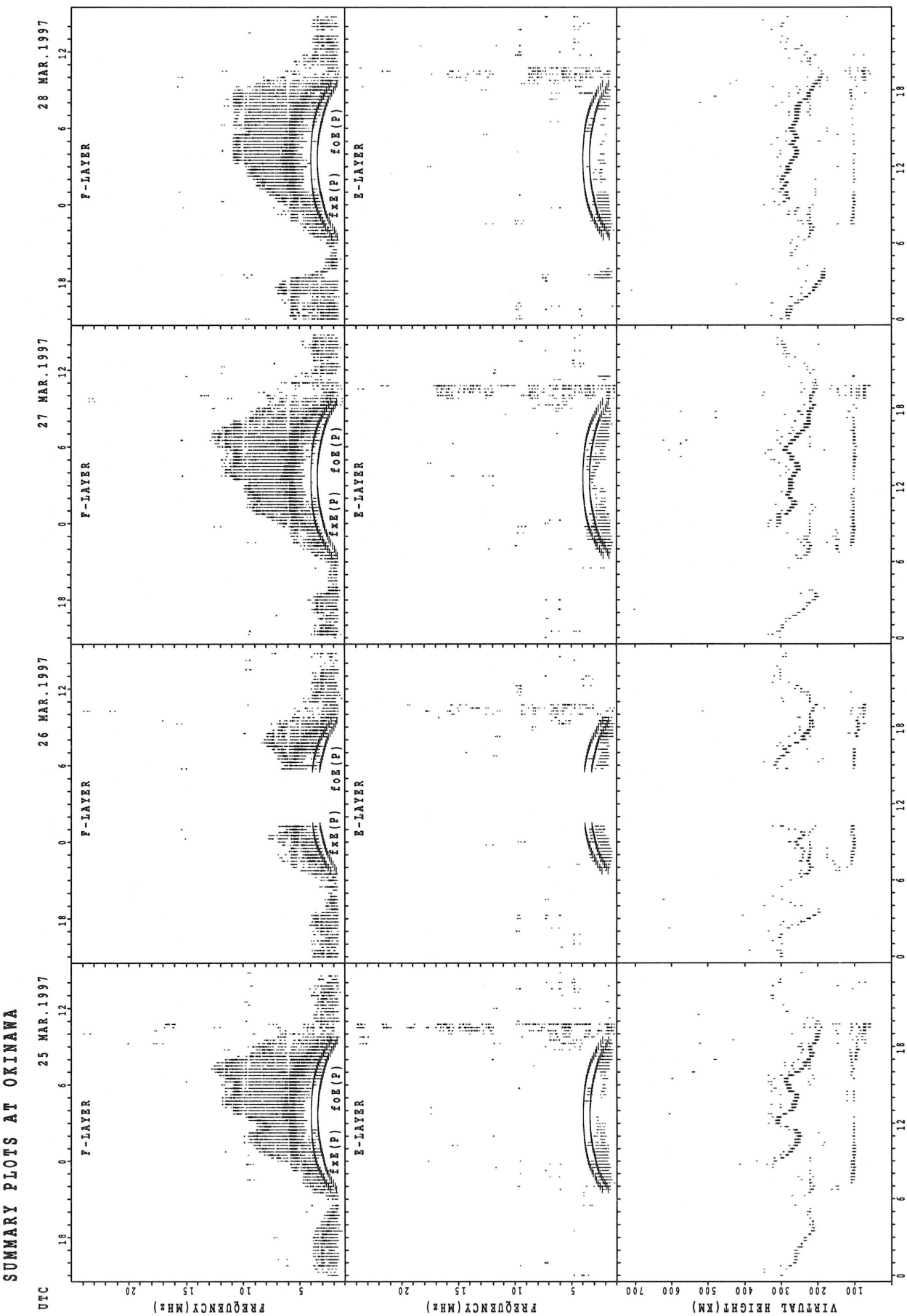
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

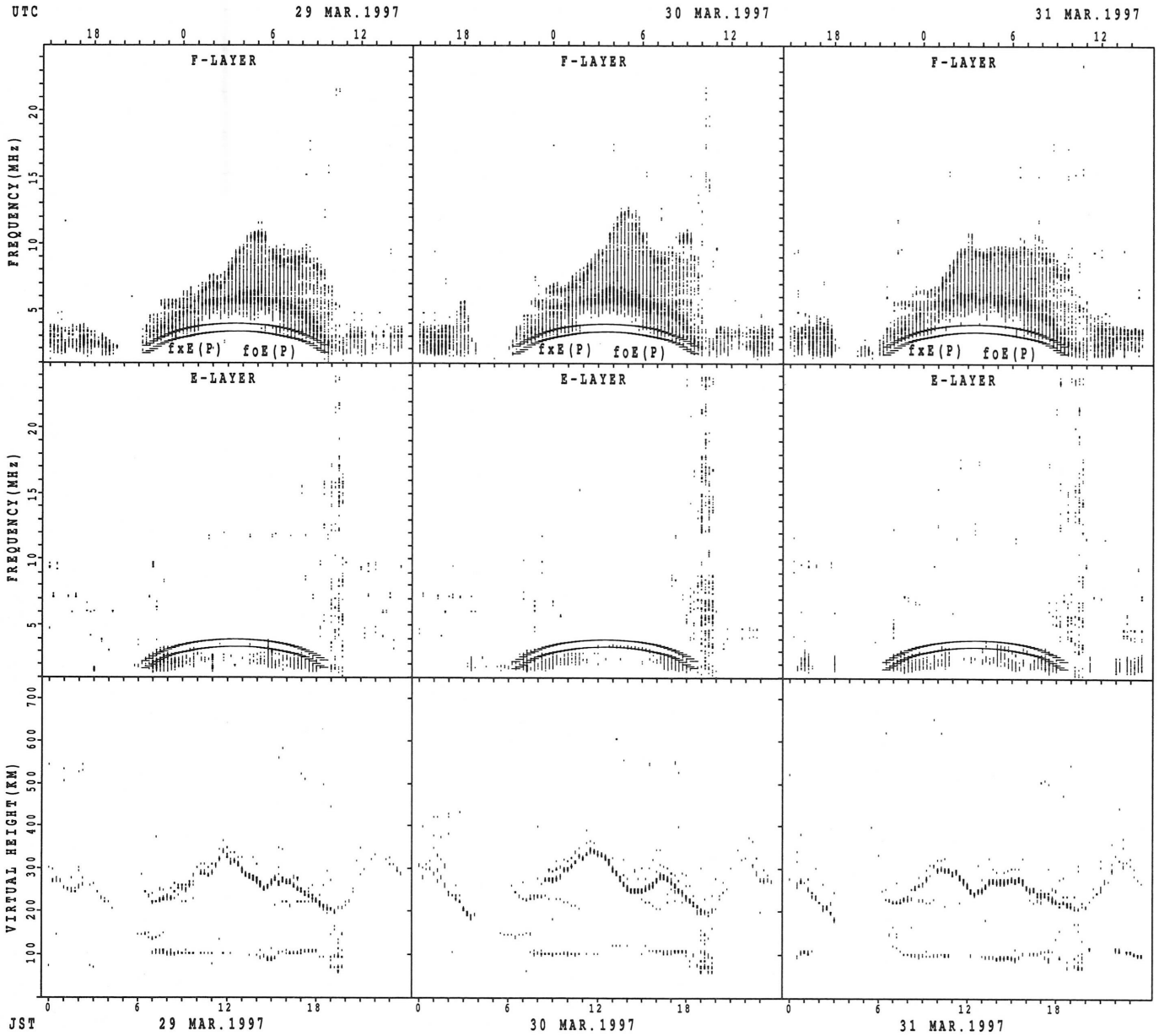
SUMMARY PLOTS AT OKINAWA



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


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

MONTHLY MEDIANS OF h'F AND h'Es

MAR. 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										18	21	20	26	25	30	22								
MED										273	284	284	278	272	272	264								
U Q										292	296	297	282	278	284	268								
L Q										248	268	270	254	262	258	254								

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	29	31	30	28	31	28	31	31	26	15						
MED								127	113	113	108	107	107	109	107	109	113	125						
U Q								155	119	137	113	112	109	113	111	113	115	133						
L Q								117	109	107	107	107	105	107	107	105	111	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									10	10	15	22	27	28	24	16	15	14						
MED									267	305	294	287	278	254	262	272	266	255						
U Q									280	316	298	300	282	270	266	277	276	282						
L Q									264	272	278	278	264	250	252	259	260	242						

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							11	25	28	25	26	20	17	22	22	24	29	16						
MED							155	149	111	107	108	109	109	112	111	111	113	115						
U Q							161	158	153	122	113	113	113	117	113	114	114	119						
L Q							147	115	107	107	107	107	105	107	107	106	107	109						

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										11	17	14	20	19	21	18	15	11						
MED										274	288	274	285	264	258	268	264	240						
U Q										304	319	286	293	280	269	286	278	280						
L Q										266	269	266	274	254	248	256	254	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								17	16	25	23	20	23	22	22	24	25	23	15	10				
MED								155	115	113	111	111	109	109	111	113	115	113	113	112				
U Q								161	125	157	123	145	113	113	113	129	125	115	139	139				
L Q								139	112	109	107	109	107	107	109	110	113	111	103	105				

MONTHLY MEDIANS OF h'F AND h'Es

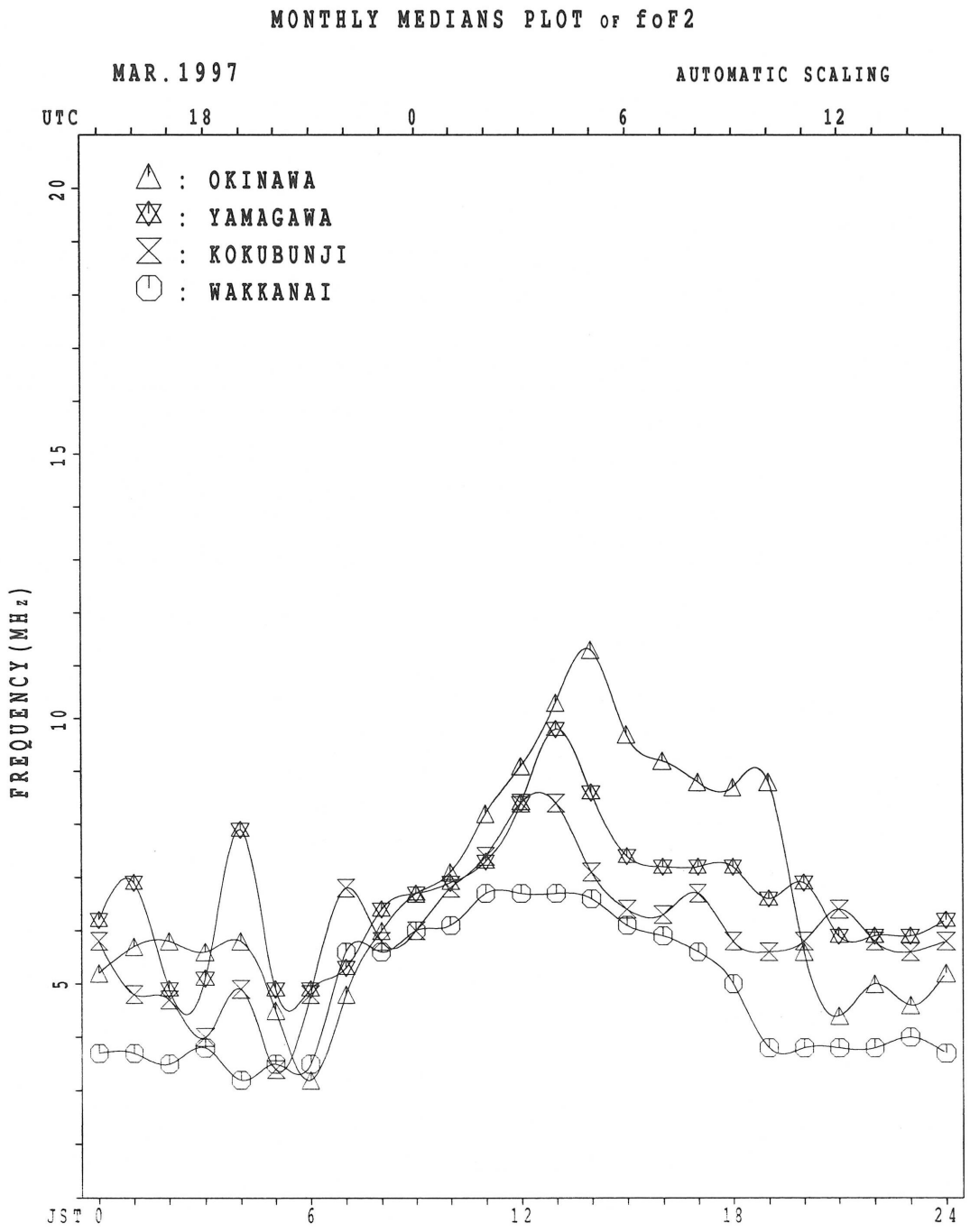
MAR. 1997 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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										14	23	30	29	28	29	30	29	29	23	14				
MED										267	286	282	282	272	260	262	256	240	236	234				
U Q										282	298	298	303	282	271	270	263	257	244	248				
L Q										260	270	268	262	257	254	248	247	228	224	216				

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	26	31	30	27	21	22	22	25	27	30	17					
MED								143	149	105	113	107	107	108	103	107	107	111	107					
U Q								149	161	153	155	133	115	125	107	127	109	113	112					
L Q								137	107	103	105	105	105	105	103	105	105	107	98					


MONTHLY MEDIANS PLOT OF foF2
MAR. 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

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 36	39	41	X 40	X 31	X 32														X 42	X 37	X 37	X 38	X 38
2	X 39	X 38	X 38	X 38	37	X 33														X 44	X 40	X 39	X 40	X 38
3	X 36	X 37	X 40	X 41	X 32	X 30														X 44	X 38	X 34	37	41
4	40	X 36	41	X 39	X 33	34														X 39	X 38	X 39	X 39	X 38
5	X 38	X 38	X 38	X 36	X 33	X 32														X 44	X 44	X 42	X 42	X 40
6	X 39	39	X 40	X 42	X 41	X 32														X 37	X 39	X 36	X 35	X 36
7	X 36	X 38	X 38	X 41	X 32	X 29														A	X 43	X 38	X 37	X 37
8	X 38	X 36	X 38	X 40	X 36	X 31														X 40	X 39	X 39	A	X 38
9	X 38	X 38	X 38	X 40	X 36	X 35														X 47	X 39	X 39	X 38	X 39
10	X 37	X 37	X 35	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C						X 50	X 38	X 42	X 40	X 38
13	X 39	X 38	X 38	X 42	X 32	X 28													X 63	X 64	X 50	X O 40	X 37	X 39
14	X 39	X 38	X 38	X 38	X 38	X 34													X 68	X 55		X 43	X 42	X 42
15	X 41	X 42	X 40	X 40	X 40	X 38														X 56	X 47	X 48	X 45	X 45
16	X 44	X 43	X 44	X 46	X 40	X 33														X 60	X 50	X O 44	X 43	X 44
17	X 44	X 40	X 43	X 40	X 40	X 38														X 36	X 37	X 38	X 38	X 38
18	X 39	X 40	X 45	X 38	X 27	X 26														X 43	X 33	X 38	X 38	X 38
19	X 39	X 39	X 40	X 42	X 37	X 31														X 49	X 43	X 44	X 40	X 39
20	X 41	X 40	X 38	X 38	X 34	X 30														X 46	X 37	X 38	X 39	X 38
21	X 40	X 40	X 38	X 38	X 36	X 33														X 48	X 44	X 42	X 44	X 41
22	X 42	X 44	X 40	X 40	X 40	X 31														X 51	X 34	X 38	X 39	X 39
23	X 38	X 38	X 38	X 38	X 30	X 28														X 56	X 46	X 45	X 45	X 44
24	X 43	X 41	X 41	X 43	X 36	X 32														X 50	X 44	X 40	X 41	X 43
25	X 38	X 41	X 39	X 42	X 35	X 31														X 50	X 38	X 39	X 38	X 39
26	X 39	X 38	39	X 37	X 38	X 36														X 57	X 46	X 46	X 45	X 45
27	X 45	X 44	X 42	X 43	X 35	X 33														X 49	X 39	X 37	39	X 38
28	X 38	X 37	X 37	X 41	X 31	X 31										C				X 59	X 44	39	42	41
29	38	39	38	45	34	36														X 50	X 44	46	49	53
30	52	52	54	54	32	29														X 60	X 43	X 40	X 42	X 43
31	X 45	X 44	X 49	X 46	X 28	X 32														X 50	X 40	X 40	X 42	X 42
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	28	28													2	28	28	29	28	29
MED	X 39	X 39	X 39	X 40	X 35	X 32													X 66	X 50	X 40	X 39	X 40	X 39
U Q	X 42	X 41	X 41	X 42	X 38	X 34														X 56	X 44	X 42	X 42	X 42
L Q	X 38	X 38	X 38	X 38	X 32	X 30														X 44	X 38	X 38	X 38	X 38

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 1997 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	F 31	F 34	34	25	26	31	57	58	59	72	70	86	83	65	60	65	62	46	36	31	31	32	32
2	33	32	32	32	F 27	27	32	R 53	59	62	70	75	93	90	68	65	63	59	43	38	34	33	34	32
3	30	31	34	35	26	24	32	R 44	51	56	81	94	88	79	R 75	68	66	59	48	38	32	28	S 30	F 32
4	F 33	30	F 33	34	27	F 27	S 34	50	63	66	65	67	74	86	92	73	61	67	50	33	32	33	33	32
5	32	32	32	30	27	26	S 36	48	50	56	56	65	82	90	83	65	62	56	49	38	38	36	36	34
6	33	32	34	36	35	26	32	56	54	58	67	87	103	116	R 98	R 77	68	58	42	31	33	30	29	30
7	30	32	32	35	26	23	32	53	58	58	68	75	67	80	68	64	65	R 64	52	A	37	32	31	31
8	32	30	32	34	30	25	33	R 51	60	73	70	65	83	73	66	60	66	68	53	34	33	33	A	32
9	32	32	32	34	30	29	S 42	52	59	64	57	51	73	75	64	66	57	69	56	41	33	33	32	33
10	31	J R 31	28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	66	R 63	60	58	58	43	33	36	S 34	32
13	33	32	32	36	26	22	S 38	58	54	J R 63	66	88	92	92	75	73	74	J R 63	57	58	44	R 34	R 31	33
14	33	32	32	32	32	28	41	J R 64	56	56	69	58	87	97	R 76	64	64	60	62	49	35	37	36	36
15	35	36	34	34	33	32	44	60	59	63	69	80	86	83	71	67	67	61	53	50	40	41	39	39
16	38	37	38	40	34	27	40	50	60	58	60	71	87	95	70	70	67	61	56	54	44	38	S 37	38
17	38	34	37	34	R 34	R 32	43	55	58	66	J R 65	83	88	88	94	68	61	R 64	50	30	31	32	32	32
18	33	34	39	32	21	20	S 35	52	56	61	60	79	76	84	68	61	65	71	R 65	37	27	32	32	32
19	33	33	34	36	31	24	38	53	60	64	58	77	81	80	R 63	59	53	56	56	43	37	38	34	S 32
20	R 35	34	32	32	28	24	39	57	61	58	70	70	74	70	71	61	58	R 64	57	40	30	32	33	32
21	34	34	32	32	30	27	40	51	62	R 65	R 64	72	83	80	74	60	59	54	54	42	38	R 35	38	35
22	36	38	34	34	R 34	24	40	R 50	55	59	R 64	64	83	86	80	62	59	61	53	45	29	32	33	33
23	31	32	32	32	24	22	42	48	54	57	56	67	90	77	65	58	59	55	61	50	40	39	39	38
24	37	35	35	37	30	26	44	50	64	62	60	71	76	81	80	61	56	57	51	44	38	34	35	37
25	32	35	34	36	29	25	43	54	56	61	70	83	96	88	67	58	58	64	66	44	32	33	33	33
26	33	32	F 32	31	32	30	42	J R 52	62	60	70	71	78	75	58	54	55	58	60	51	40	40	39	39
27	39	38	36	37	29	27	45	50	54	66	76	88	91	76	65	56	57	68	64	43	33	31	F 32	32
28	32	31	31	35	25	25	43	R 52	53	57	75	80	80	70	73	C	54	53	50	53	38	F 30	F 32	F 31
29	F 27	F 30	F 28	F 35	F 25	F 28	R 46	48	50	54	65	68	78	88	84	62	62	R 65	55	44	38	38	F 41	F 43
30	F 43	F 43	F 44	F 46	F 25	F 21	41	49	54	60	76	82	97	99	78	66	66	65	56	54	37	34	36	37
31	39	38	43	40	22	26	43	54	57	57	64	77	86	87	H 71	64	62	58	57	44	34	34	36	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	28	28	28	28	28	28	28	28	28	28	29	28	29	29	29	28	29	29	28	29
MED	33	32	33	34	28	26	40	52	58	60	66	74	84	84	71	64	62	61	55	43	34	33	34	33
U Q	36	35	34	36	32	27	43	54	60	64	70	81	89	89	79	66	66	64	58	50	38	36	36	36
L Q	32	32	32	32	26	24	34	50	54	58	62	68	78	78	66	60	58	58	50	38	32	32	32	32

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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										U L 428	L 436	476	432	444	L 424	360	U L 372							
2									L 432	U L 432	L 440	444	460	448	L 432	L 412	L 364	L						
3									L 340		440	448	436	444	L 436	L 412	L 372	L						
4									L	L 444	452	440	L 444	440	444	416	L							
5										L	L 444	448	432	440	L 432	404	L							
6									L		L 460	444	448	440	444	L 424	L 364							
7									L	L 424	440	460	436	U A 444	U L 456	L 408	L							
8									L	L 432	440	L 448	440	444	L 432	U L 428	L	L						
9									L	L 432	348	U L 416	456	444	L 440	L 420	L	L						
10							C	C	C	C	C	C	C	C	C	C	C	C	C					
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	C	C	C	C	C	L 432	L 416	L	L 264						
13								L	L	L 460	436	448	460	444	440	L 416	U L 384	L						
14									L 360	L 412	L 452	444	448	440	436	L 428	U L 404	L						
15								L	U L 384	L 436	452	456	456	448	432	L 436	L 392							
16									L	U L 452	U L 452	444	460	444	444	L 424	U L 352	U L 272						
17									L	L 436	L 452	448	460	456	444	L 412	U L 396	L						
18									L	L 424	L 448	456	452	448	440	L 428	A	L						
19									L	424	444	452	436	444	436	396	U L 368	L						
20								L	U L 416	U L 440	440	456	452	440	428	404	U L 372	L						
21									L 400	424	448	444	448	432	428	L 408	U L 376							
22									404	L 424	440	448	436	440	428	L 412	U L 380							
23									U L 388	L 428	432	456	436	440	428	396	L	L						
24									L 408	412	444	444	440	436	428	U L 424	L 368	U L 344						
25								L 292	L	420	460	440	436	428	428	L 420	U L 400	L						
26							L	L	L 404	L 436	420	440	440	436	L 420	L 412		L 264						
27										436	440	444	440	436	428	U L 428	324	L						
28									L	444	428	444	440	448	432	C	L	L 276						
29									L 432	L 432	432	L 452	440	440	436	L 420	U L 408							
30									L 416	L 444	440	444	448	440	432	L 424	L 396	U L 340						
31									L	440	436	448	452	440	440	L 424	L 388	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	11	26	28	28	28	28	29	28	19	6						
MED								L 292	L 404	L 432	440	448	442	440	432	L 416	U L 376	L 274						
U Q									L 416	L 440	L 450	452	452	444	440	L 424	U L 396	U L 340						
L Q									L 384	424	436	444	436	440	428	410	L 368	L 264						

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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							B	H 196	248	288	308	R 316	332	328	308	A	A	180	B					
2							B	184	244	288	312	316	328	324	A	A	A	164	B					
3							B	196	260	284	316	R 324	R	320	308	284	A	B	B					
4							B	196	264	292	316	328	328	A	308	288	244	A	B					
5							B	A	260	296	308	U A 324	A	328	308	280	248	192	B					
6							B	216	272	304	A 316	A	A	A	A	288	244	S 180	B					
7							B	200	256	292	320	U A 336	A	332	324	296	260	A	B					
8							B	196	260	304	324	324	336	320	324	A	256	A 188	B					
9							B	180	248	288	260	292	316	312	308	A	A	184	B					
10							C	C	C	C	C	C	C	C	C	C	C	C	C					
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	C	C	C	C	C	312	272	268	188	B					
13							B	228	280	R	R	R 328	336	R	R	A	A	A						
14							B	208	260	R 300	312	A	A	R	A	300	A	A			A			
15							B	208	268	R 292	R	U R 336	R	R	U R 324	300	256	A	B					
16							B	H 216	H 260	292	R	A	R	A	R	A	R 256	200	B					
17							B	224	268	300	A	324	R	A	A	296	R 256	188	B					
18							B	H 216	272	R 292	R	R	R	R	A	A	A	196	B					
19							B	224	272	292	312	336	R 344	R	R	296	252	192	B					
20							B	220	264	U R 296	R	U R 328	R 328	R 320	R	316	304	260	188	B					
21							B	212	272	R	316	R	B	B	U R 316	296	260	A	B					
22							180	228	268	296	R	R 332	R 348	U R 336	A	A	H	188	B					
23							B	208	256	308	R 328	A	R 336	312	308	288	248	192	B					
24							B	224	268	296	R 320	R	R	R 328	316	292	256	196	B					
25							B	228	A 272	R 312	R 320	336	R	R	316	292	256	192	B					
26							176	232	280	300	R 320	U R 336	U R 340	R 328	R	292	248	188	B					
27							B	240	276	304	332	348	348	336	312	288	256	188	B					
28							A	240	280	R	U R 316	R 340	A	340	332	C	A	A	B					
29							A	228	276	304	R 316	R	R	R 332	R 316	292	260	192	B					
30							A	224	272	304	R	332	U A 332	R	A	300	252	216	B					
31							160	236	284	R 316	328	U R 340	R	336	312	280	248	200	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	27	28	25	20	20	13	16	18	20	20	21						
MED							176	216	268	296	316	330	336	328	314	292	256	188						
U Q							180	228	272	304	320	U R 336	R 342	334	316	296	258	194						
L Q							160	200	260	292	312	324	328	320	308	288	248	188						

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

IONOSPHERIC DATA STATION Kokubunji

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

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

IONOSPHERIC DATA STATION Kokubunji

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

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	15	13	16	13	15	15	15	14	16	16	14	17	15	15	14	14	13	14	15	15	14	14	16	15
2	16	15	16	16	14	15	16	13	16	16	14	15	15	14	16	14	13	14	15	15	14	16	14	15
3	15	15	14	14	14	14	17	16	15	14	14	14	16	14	15	16	16	18	14	15	15	14	14	14
4	15	16	17	14	14	12	16	15	15	14	15	15	16	15	18	16	15	16	16	15	15	15	16	16
5	15	15	14	15	13	15	16	16	15	15	15	17	15	17	16	13	14	13	15	13	12	16	15	15
6	16	14	15	14	13	13	16	15	14	17	14	15	14	17	18	14	14	15	15	14	15	15	16	16
7	16	16	15	15	15	14	16	14	13	14	14	15	16	16	16	16	16	15	16	13	14	15	16	15
8	15	14	15	14	16	14	15	14	15	14	15	16	16	15	14	14	15	16	16	16	15	15	14	15
9	16	14	14	15	14	15	16	14	14	14	14	14	14	15	16	15	15	14	16	14	16	14	15	16
10	15	14	15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	16	15	16	14	14	15	14	15	13	14
13	14	16	16	15	15	15	14	15	14	14	16	21	18	15	16	15	14	15	15	14	14	16	16	15
14	15	14	14	15	14	14	16	16	14	16	15	19	18	19	23	15	17	14	14	14	14	13	13	15
15	13	15	14	15	14	14	14	14	14	15	17	18	18	21	23	21	16	16	16	15	15	15	14	14
16	16	15	15	14	15	15	17	13	13	16	18	16	20	19	17	17	16	15	14	14	14	14	16	15
17	14	15	14	14	14	15	16	13	14	14	16	16	15	20	16	16	16	16	16	15	15	16	16	16
18	14	16	14	15	14	15	13	14	16	16	19	16	16	18	19	15	17	14	15	13	15	16	18	16
19	15	15	16	15	16	16	16	16	16	16	17	16	25	20	16	16	16	14	16	16	15	15	16	14
20	12	14	15	14	16	15	14	16	15	16	16	14	16	18	22	17	16	13	15	15	15	15	15	15
21	16	15	14	15	15	14	16	14	17	15	16	17	36	36	17	19	14	14	16	14	15	17	14	14
22	16	14	14	14	16	14	14	16	16	16	15	18	19	19	17	15	14	14	15	15	15	15	13	17
23	16	16	16	14	14	16	15	14	14	14	16	15	18	17	17	16	16	15	15	16	15	14	14	15
24	16	14	15	15	15	15	16	13	14	15	14	16	16	14	17	15	15	14	14	14	15	14	15	14
25	14	16	15	16	14	15	14	14	14	16	18	16	19	22	16	15	15	12	14	14	14	15	15	16
26	16	16	15	15	15	14	14	15	16	13	15	18	17	21	15	16	16	14	14	13	16	13	14	14
27	14	14	16	16	14	14	14	15	14	16	16	15	18	16	16	15	15	15	15	14	13	14	14	14
28	16	14	13	16	14	14	13	15	14	15	17	16	20	17	16	C	15	16	16	14	14	14	14	16
29	15	15	14	15	15	13	16	13	15	16	15	16	18	14	17	15	15	15	15	16	16	14	15	16
30	13	14	13	14	15	16	16	15	15	14	15	18	16	18	18	15	16	15	14	14	14	15	14	14
31	12	17	14	15	15	14	12	15	16	14	13	15	18	18	17	17	14	14	15	14	14	16	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	28	28	28	28	28	28	28	28	28	28	29	28	29	29	29	29	29	29	29	29
MED	15	15	15	15	14	14	16	14	15	15	15	16	16	17	16	15	15	14	15	14	15	15	15	15
U Q	16	16	16	15	15	15	16	15	16	16	16	17	18	19	18	16	16	15	16	15	15	16	16	16
L Q	14	14	14	14	14	14	14	14	14	14	14	15	16	15	16	15	14	14	14	14	14	14	14	14

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	284	308F	335F	366	327	299	332	373	342	335	349	308	349	347	348	354	343	360	355	336	313	310	294	300
2	332	327	323	340	328F	331	349	365R	359	340	333	327	325	348	347	356	354	372	349	325	320	309	310	307
3	295	296	320	343	351	319	354	374R	351	329	311	340	324	346	335R	357	357	372	353	339	332	319	302S	315F
4	336F	325	319F	359	305	286F	344S	358	354	361	337	346	331	338	353	366	343	376	373	338	316	310	304	303
5	292	301	311	330	329	321	345S	373	373	349	347	313	330	335	361	358	352	354	364	322	321	319	326	301
6	282	309	315	349	369	286	332	364	366	319	310	312	322	338	334R	339R	360	369	371	312	309	317	298	298
7	305	315	304	347	386	308	333	369	357	348	339	336	319	348	360	344	345	346R	358	A	315	317	294	288
8	287	295	298	340	323	326	340	352R	342	350	355	321	335	348	355	346	333	363	356	327	325	325	A	318
9	311	315	304	327	324	317	352S	374	334	342	355	317	342	360	361	359	354	356	357	344	337	314	318	341
10	309	J R 302	325	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	338	R 344	347	344	352	343	330	309	S 320	313
13	290	299	303	336	346	310	S 350	358	364	J R 340	320	324	326	350	331	337	349	J R 336	325	344	331	R 352	R 329	306
14	297	313	307	314	331	335	349	J R 392	387	359	345	337	318	342	R 338	357	334	350	349	340	330	310	308	305
15	312	306	323	323	331	344	371	363	352	335	330	322	340	334	351	341	351	365	352	341	317	312	301	309
16	321	304	309	344	371	326	374	352	357	332	322	319	329	346	355	349	348	348	349	327	334	313	S 289	297
17	321	331	308	326	R 332	R 320	352	362	345	351	J R 345	329	322	326	346	366	348	R 364	361	327	295	313	294	308
18	300	319	368	383	378	316	S 356	355	333	354	335	336	319	354	342	343	328	351	R 354	347	309	293	301	307
19	310	317	318	335	368	319	354	344	360	338	332	331	341	357	R 331	343	350	342	355	330	323	316	305	S 325
20	R 311	327	352	347	339	320	365	361	358	332	353	342	341	341	338	354	332	R 350	355	336	322	302	310	317
21	311	326	336	340	326	325	360	341	342	R 339	R 316	325	330	333	343	343	365	344	351	322	304	R 316	316	323
22	313	310	339	343	R 368	357	384	R 342	354	333	R 318	306	329	327	348	336	346	353	338	374	320	304	285	294
23	298	309	307	349	347	339	386	372	347	343	332	307	339	357	348	332	340	348	352	324	317	322	325	314
24	301	320	316	335	339	313	376	364	353	363	340	333	321	327	357	331	349	351	373	340	327	310	296	282
25	318	298	309	338	363	318	358	361	345	327	298	315	337	350	355	343	339	340	359	356	313	293	296	306
26	300	296	F 335	306	319	344	348	J R 367	355	329	337	330	345	364	337	354	343	336	328	353	310	301	293	296
27	304	302	315	347	329	315	368	351	340	326	328	328	350	354	370	331	331	330	359	359	333	298	F 306	303
28	306	309	332	342	345	322	368	R 361	349	326	332	330	340	335	351	C	351	347	338	331	364	F 312	F 313	F 306
29	F 330	F 316	F 321	F 327	F 332	F 334	R 347	378	349	333	304	307	310	317	341	336	332	R 341	351	328	319	299	F 291	F 309
30	F 290	F 295	F 326	F 353	F 361	F 333	357	343	323	312	311	304	311	339	339	328	331	340	342	342	313	310	287	297
31	291	310	345	379	306	299	359	364	342	335	319	327	324	337	H 337	343	357	347	351	339	309	300	293	296
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	28	28	28	28	28	28	28	28	28	28	29	28	29	29	29	28	29	29	28	29
MED	305	309	319	341	336	320	354	362	352	336	332	326	330	344	347	344	347	350	353	338	320	310	302	306
U Q	312	318	334	348	362	332	366	370	358	348	342	332	340	350	355	355	352	362	358	344	330	316	312	314
L Q	294	302	308	332	328	314	348	354	342	330	318	314	322	335	338	338	336	343	349	327	313	303	294	298

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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										U L 377	L 361	359	373	363	L 375	416	U L 365							
2									L	U L 368	L 359	366	351	364	L 378	L 366	L 378	L						
3									L 405		355	364	371	365	L 378	L 367	L 372	L						
4									L	L 352	368	384	L 401	390	352	367	L							
5										L	L 381	396	383	366	L 356	382	L							
6									L		L 349	372	384	366	A 374	L 371	L 357							
7									L	L 367	376	366	396	A	U L 358	L 361	L							
8									L	L 373	A 364	L 389	376	367	L 373	U L 373	L	L						
9									L	L 366	A	U L 408	377	376	L 380	L 370	L	L						
10							C	C	C	C	C	C	C	C	C	C	C	C	C					
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	C	C	C	C	C	L 366	L 365	L	L 401						
13								L	L	L 352	376	380	346	365	362	L 357	L	L						
14									L 375	L 395	L 365	383	366	371	382	L 369	U L 363	L						
15								L	U L 410	L 364	367	363	363	364	370	L 357	L 333							
16									L	U L 353	U L 365	385	H 376	356	365	L 363	U L 352	U L 369						
17									L	L 364	L 359	368	348	358	360	L 369	L	L						
18									L	L 375	L 368	346	360	351	361	L 373	A	L						
19									L	371	370	360	391	365	374	398	U L 368	L						
20								L	U L 357	U L 363	357	369	368	385	378	365	U L 385	L						
21									L 368	385	370	368	353	387	371	L 375	U L 366							
22									361	L 372	378	378	357	361	369	L 376	U L 376							
23									U L 379	L 372	376	369	377	H 387	386	389	L	L						
24									L 371	382	368	377	397	390	365	U L 369	L 388	U L 374						
25								L 417	L	389	361	386	377	370	380	L 371	U L 355	L						
26							L	L	L 370	L 392	405	381	H 383	385	H 390	L 377		L 402						
27										349	363	A 352	366	376	375	U L 356	425	L						
28									L	362	385	368	400	393	391	C	L	L 390						
29									L 382	L 365	392	L 374	386	H 383	365	L 363	U L 344							
30									L 360	L 346	357	352	364	360	363	L 350	L 362	U L 377						
31									L	366	365	351	361	375	364	L 353	L 364	L						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	11	26	27	28	28	27	29	28	17	6						
MED								L 417	L 371	L 366	367	369	374	367	371	L 369	U L 365	L 384						
U Q									L 382	L 375	376	382	384	385	378	374	L 377	L 401						
L Q									L 361	L 362	361	364	362	364	364	L 363	U L 356	U L 374						

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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										262	264	320	266	252	260	244	240							
2									242	268	280	272	284	244	256	254	244	218						
3									234		302	250	246	248	250	250	244	220						
4									250	260	288	260	282	276	258	244	248							
5										262	272	326	286	262	246	246	236							
6									228	342	306	294	282	256	240	252	238							
7									244	264	276	258	284	264	258	274	244							
8									264	254	258	274	280	262	254	258	264	228						
9									256	260	258	294 L	270	256	254	248	240	236						
10							C	C	C	C	C	C	C	C	C	C	C	C	C					
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	C	C	C	C	C	264	264	268	248						
13								246	238	302	280	296	272	252	270	270	252	236						
14									218	248	272	284	298	256	268	248	252	240						
15								234	234	268	286	284	270	272	252	272	256							
16									244	286	298	298	284	258	266	260	256	244						
17									248	258	300	288	284	278	256	242	252	226						
18									284	254	294	284	288	256	258	268	276	246						
19									256	266	282	272	270	252	280	264	252	250						
20								242	248	284	258	280	270	272	262	256	264	244						
21									264	254	298	290	286	266	266	262	248							
22									258	270	294	324	286	272	258	264	256							
23									260	280	280	322	274	244	266	270	262	248						
24									264	246	280	286	296	280	252	272	246	238						
25								234	260	288	330	288	262	252	248	276	268	246						
26							226	252	254	272	284	292	266	256	264	248		256						
27										290	282	284	256	254	240	284	270	252						
28									252	296	286	270	268	280	260	C	248	242						
29									276	304	326	282	312	282	256	268	274							
30									294	322	306	302	296	264	258	282	272	244						
31									278	300	296	292	286	260	260	270	248	246						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							1	5	25	27	28	28	28	28	29	28	28	20						
MED							226	242	254	268	285	287	282	259	258	263	252	244						
U Q								249	264	290	298	295	286	272	264	270	264	247						
L Q								234	243	260	278	277	270	253	253	249	245	236						

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	H 302	292	256	218	258	302	262	226	236	226	226	228	190	256	202	208	224	230	218	224	260	272	308	290
2	264	276	266	256	258	240	238	228	234	218	218	184	224	230	222	222	222	238	208	230	258	258	266	296
3	324	302	262	238	228	280	218	220	204	248	230	240	218	H 198	230	220	H 214	226	212	226	246	254	296	274
4	234	248	256	218	256	320	238	224	240	228	220	202	174	196	222	H 198	222	220	216	220	260	266	284	306
5	296	280	264	246	256	266	240	220	222	230	212	H 188	194	228	222	226	228	230	212	230	248	252	248	290
6	306	292	266	224	206	332	252	230	214	H 222	228	208	210	218	A 246	222	196	222	198	238	256	248	296	312
7	296	270	280	244	204	280	244	232	H 212	H 200	224	244	H 178	A	226	232	216	234	224	A	278	290	314	324
8	318	316	298	244	252	238	252	234	228	244	E 254	A 218	220	218	210	226	240	234	218	216	252	256	A	292
9	302	298	286	242	240	272	226	218	226	232	A	204	188	H 204	224	226	210	238	208	222	236	266	266	254
10	C 286	314	292	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	H 210	222	H 204	222	222	206	266	266	250	302
13	318	298	298	236	218	294	232	234	224	218	216	196	238	220	228	228	252	234	228	226	224	234	254	314
14	308	294	288	280	246	272	238	232	202	204	208	210	208	194	218	236	218	230	222	218	238	252	300	290
15	284	278	274	264	250	252	222	H 208	208	196	222	H 192	226	212	216	226	202	232	222	228	236	248	288	284
16	274	280	260	236	212	272	218	224	194	206	218	198	H 174	226	228	212	206	222	222	230	224	256	298	290
17	266	266	266	268	246	300	234	232	222	218	216	224	216	230	216	228	226	234	208	224	290	294	318	314
18	294	270	226	212	216	312	232	234	236	220	210	250	232	208	230	232	A	240	216	202	276	318	312	298
19	284	276	266	236	214	298	236	236	H 180	220	214	240	214	H 198	210	212	222	232	218	216	242	268	286	304
20	290	274	252	240	220	290	240	234	H 190	220	222	204	222	208	200	202	226	244	220	208	264	286	294	294
21	280	260	264	256	238	266	230	244	206	230	200	H 212	228	216	214	204	224	230	224	220	266	284	286	290
22	286	260	254	252	212	252	220	242	H 192	212	210	214	E A 266	236	222	218	212	238	226	206	234	300	304	316
23	296	292	288	238	B 218	264	222	224	214	220	226	198	220	H 176	208	200	238	222	226	232	230	268	260	252
24	280	262	270	242	214	276	220	234	240	220	214	208	194	198	226	218	224	220	210	224	234	296	306	310
25	296	278	260	242	222	280	224	222	226	216	202	194	210	224	222	212	202	238	220	210	238	306	320	302
26	298	300	282	270	256	262	228	226	H 196	222	190	228	H 202	204	H 194	224	250	226	232	214	228	302	290	290
27	280	290	272	220	250	280	236	232	242	246	228	A	246	220	210	210	204	234	220	210	244	282	312	300
28	288	292	270	234	226	266	222	230	H 210	222	H 198	218	184	H 196	204	C	206	210	230	228	210	304	304	318
29	290	288	290	246	B 248	250	228	220	220	212	206	240	198	H 208	H 220	218	218	238	222	226	246	292	320	306
30	292	294	256	210	222	312	234	246	234	222	222	236	224	230	224	214	230	232	236	222	218	298	312	296
31	280	278	242	212	286	306	234	244	232	H 204	232	218	204	226	234	216	218	234	230	214	244	288	290	300
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	28	28	28	28	28	28	28	27	27	28	27	29	28	28	29	29	28	29	29	28	29
MED	290	280	266	241	233	278	233	231	221	220	217	212	211	216	222	219	220	232	220	222	244	272	296	298
U Q	300	294	284	249	251	299	238	234	233	227	226	228	224	226	226	226	226	236	225	227	260	295	310	308
L Q	280	272	258	229	217	265	223	224	205	214	210	198	194	H 198	210	212	208	224	214	214	234	256	285	290

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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							B	152	120	122	122	124	118	116	114	A	A	A 128	B					
2							B	134	124	118	132	A 134	112	126	A	A	A	132	B					
3							B	136	122	A 132	114	112	A	128	122	120	A	B	B					
4							B	124	118	116	114	A 128	118	A	124	A 126	130	A	B					
5							B	A 120	114	112	116		A	122	A 134	A 124	118	A	B					
6							B	130	116	114	112	112	A	A	A	120	126	132	B					
7							B	148	132	A 128	112	118	A	116	118	128	A 138	A	B					
8							B	118	A 136	A 144	126	116	122	120	C 136	A	116	112	B					
9							B	126	120	124	114	110	106	118	118	116	A	A 140	B					
10							C	C	C	C	C	C	C	C	C	C	C	C	C					
11							C	C	C	C	C	C	C	C	C	C	C	C	C					
12							C	C	C	C	C	C	C	C	120	A 122	116	124	B					
13							B	132	128	A 132	112	120	118	A	A	A	A	A						
14							B	124	118	122	116	A	A	112	A	118	118	A			A			
15							B	126	118	112	114	126	A	130	124	118	116	A	B					
16							B	128	128	124	116	116	122	A	118	A	118	122	B					
17							B	134	118	122	A	112	A	A	A	A 130	118	132	B					
18							B	A 134	128	E A 140	A	114	A	A	A	A	A	124	B					
19							B	126	124	116	120	112	120	114	118	116	114	130	B					
20							B	144	A 128	126	118	114	118	116	122	122	120	A 134	B					
21							B	124	120	118	114	122	B	B	116	118	118	A	B					
22							150	122	138	120	114	116	114	116	116	A	A	114	B					
23							B	A 154	A 150	A 134	128	A	118	116	118	116	110	122	B					
24							B	132	134	124	124	A	126	120	118	132	118	118	B					
25							B	A 138	A	114	114	114	114	114	126	126	120	120	B					
26							140	122	122	116	114	118	116	114	A	122	120	120	B					
27							B	126	114	114	116	116	114	114	114	114	112	122	B					
28							A	126	118	116	114	124	A	130	122	C	A	A	B					
29							A	120	130	118	114	A	112	114	118	A 130	118	132	B					
30							A	116	124	122	A	116	114	116	112	130	122	120	B					
31							140	118	134	116	114	108	112	110	116	120	120	122	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	27	27	28	25	24	18	21	22	21	21	20						
MED							140	126	124	120	114	116	117	116	118	122	118	123						
U Q							150	134	130	A 125	119	121	118	121	122	127	120	132						
L Q							140	124	118	116	114	113	114	114	116	118	116	120						

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

IONOSPHERIC DATA STATION Kokubunji

MAR. 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	B	B	B	108	B	B	B	G	G	112	110	112	G	150	102	106	96	100	96	96	98	B	B	B
2	B	B	B	B	B	B	B	154	108	172	160	112	G	116	120	98	100	156	B	B	B	B	138	128
3	B	B	B	B	B	B	B	G	168	170	140	G	112	114	168	156	120	B	B	B	B	B	B	130
4	B	B	B	B	B	102	100	158	146	148	122	126	126	114	112	110	108	106	106	B	112	B	112	114
5	B	114	104	106	114	B	B	134	G	128	120	124	116	154	114	104	106	100	98	106	B	B	B	102
6	B	B	B	B	B	B	B	172	G	130	122	118	110	104	102	106	96	G	92	B	B	B	126	B
7	B	124	126	B	B	B	B	158	114	110	G	128	118	134	142	194	136	128	114	112	112	122	114	B
8	112	B	B	B	B	B	B	174	184	164	140	152	154	122	114	114	G	122	114	108	126	134	122	B
9	B	116	B	B	106	102	B	156	176	136	122	126	126	124	122	120	112	118	B	B	B	134	118	112
10	106	118	112	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	110	132	G	G	B	B	B	140	B	B
13	B	B	B	B	B	B	B	G	112	112	G	110	G	108	114	120	110	108	110	110	112	108	106	106
14	112	B	112	B	B	B	B	G	106	110	120	118	114	G	118	124	120	116	114	110	108	108	104	110
15	108	106	106	B	B	B	B	G	G	G	G	110	110	114	G	G	G	120	100	B	B	B	B	B
16	B	B	B	B	B	B	B	G	146	112	G	132	G	120	G	116	G	G	B	B	102	B	B	B
17	B	B	B	B	B	B	B	174	G	110	124	G	110	114	114	110	G	G	112	116	B	B	116	110
18	112	B	B	B	B	B	170	176	164	112	112	G	110	110	104	104	102	G	102	B	B	B	B	B
19	B	B	B	B	B	B	164	164	166	G	158	162	G	G	G	G	G	G	B	B	B	B	B	B
20	B	B	B	114	B	B	166	172	112	112	G	G	G	G	G	G	G	120	B	B	B	B	B	B
21	B	B	B	B	B	B	154	162	160	G	G	112	B	B	G	G	134	118	B	B	B	B	114	112
22	114	B	B	B	B	B	168	G	112	G	G	G	192	G	118	116	116	136	108	108	B	B	B	B
23	B	B	B	B	B	B	148	152	172	164	110	132	104	G	G	G	G	G	100	100	B	B	B	B
24	B	126	B	B	B	B	150	158	164	180	110	126	108	108	108	114	G	192	B	102	100	98	B	B
25	B	B	B	B	B	B	162	178	182	G	G	G	G	G	112	106	104	100	B	B	B	B	B	B
26	B	B	B	B	B	B	G	G	G	G	G	G	G	G	112	176	G	G	106	100	100	100	100	B
27	B	118	B	B	114	B	162	172	G	150	158	140	144	140	G	G	G	G	100	134	B	B	B	120
28	B	B	B	B	B	B	160	184	176	G	G	110	124	114	112	C	124	116	B	B	B	B	B	B
29	102	130	B	B	B	B	152	158	118	138	G	114	G	G	G	118	G	116	B	B	B	B	B	B
30	B	100	B	B	B	B	162	168	170	170	110	120	122	118	118	112	G	G	B	118	B	B	130	B
31	B	B	B	B	B	B	150	G	178	G	G	G	G	130	G	G	G	G	B	B	B	B	B	116
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	7	9	5	3	3	2	14	19	21	20	16	20	17	19	20	21	15	17	15	13	9	8	12	11
MED	112	118	112	108	114	102	161	164	164	133	122	122	116	116	114	114	110	118	106	108	108	115	115	112
U Q	112	125	119	114	114		164	174	174	164	140	130	126	130	118	122	120	125	112	114	112	134	124	120
L Q	106	110	105	106	106		150	158	113	112	111	112	110	114	111	106	102	107	100	101	100	104	109	110

IONOSPHERIC DATA STATION Kokubunji

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

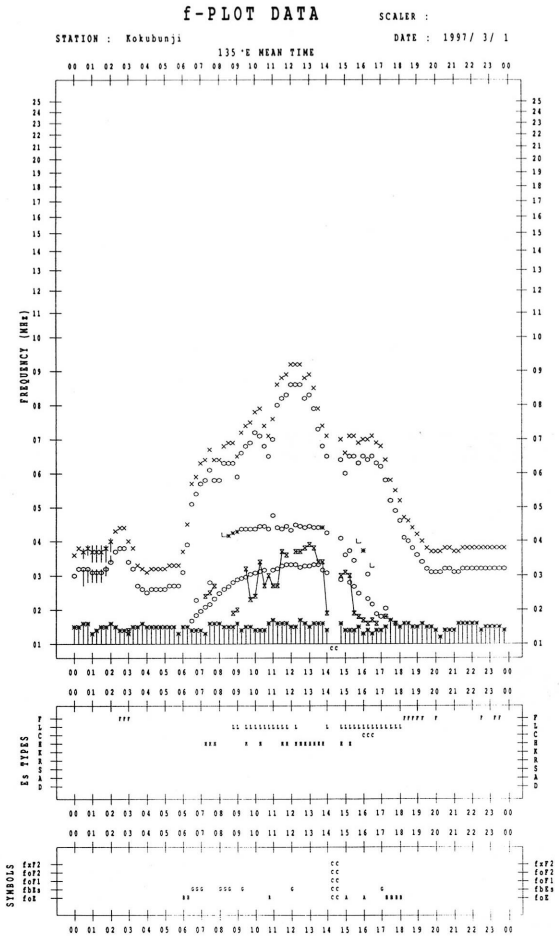
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

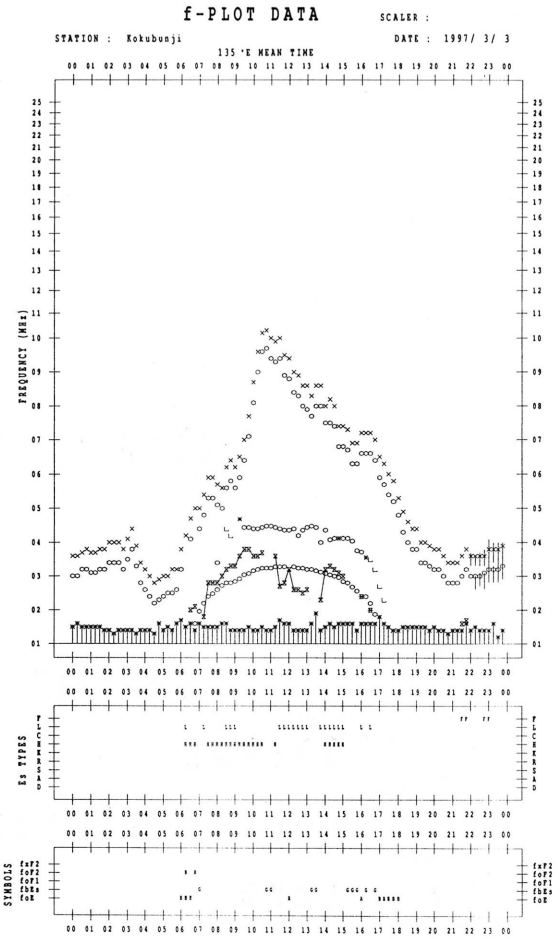
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				F1						L1	L1	L1		H2	L1	L2	LC31	L2	L1	F1	F1			
2								H1	L1	HL11	HL11	L1		LL11	CL11	LC32	LC21	H1					F1	F1
3									H1	HL11	H1		L1	L1	HL12	HL11	L1							F1
4						F2	L2	C1	C2	H1	CH11	CL11	C1	L1	L1	L1	L2	L3	L4		F2		F1	F1
5		F1	F1	F1	F1			C1		C1	C1	C1	C1	HL11	L1	L2	L1	L1	L1	F1				F11
6								HL11		C1	C1	C1	L1	L2	L2	L1	L1		L1				F1	
7		F1	F1					HL11	L2	L1		C1	L1	C1	HL11	HL11	CL11	LH21	L5	F4	F3	F5	F4	
8	F2							H1	HL11	HL11	HL21	HL11	HL11	CL11	LC11	L2		C2	C3	F1	F1	F1	F3	
9		F1			F1	F2		HL11	HL11	CL11	C2	C1	C1	CL11	C1	C1	C2	L2				F1	F2	F2
10	F2	F2	F2																					
11																								
12															L1	HL11						F1		
13									L1	L1		L1		L1	L1	L2	L2	L2	L1	F1	F2	F2	F3	F6
14	F2		F2						L1	L1	C2	C1	C1		L1	C1	C1	C1	F1	F1	F1	F2	F2	F1
15	F2	F1	F1									L1	L1	L1				L1	L1					
16									CL11	L1		C1		C1		C1					F1			
17								HL11		L1	CL11		L1	L1	L1	L1			L1	F1			F2	F2
18	F1						C1	HL11	HL11	L1	L1		L1	L1	L1	L2	L2		L1					
19							H1	HL11	HL11		HL11	H1												
20				F1			H1	HL11	L1	L1								L1						
21							C1	H1	H1			L1					C1	C2					F1	F2
22	F2						C1		L1				H1		C1	C1	C2	H1	C1	F1				
23							C1	HL21	HL11	HL11	L1	CL11	L1						L1	F1				
24		F1					HL11	CL21	HL11	HL11	L1	CL11	L1	L1	L1	L1		H1		F1	F1	F1		
25							H1	HL11	HL11						L1	L1	L1	L1						
26															L1	HL11			L1	F1	F1	F1	F1	
27		F1			F1		H1	H1		H1	H1	H1	H1	H1					L1	F11				F2
28							C1	H1	H1			L1	CL11	L1	L1		L1	L1						
29	F1	F1					C1	H1	L1	C1		L1				L1		L1						
30		F1					C2	H1	HL11	HL11	L1	C1	C1	C1	C1	L1				F1			F1	
31							C1		HL11					H1										F1
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

MAR. 1997 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE
fxF2
foF2
foF1
fbEs
foE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STATION : Kokubunji
DATE : 1997/ 3/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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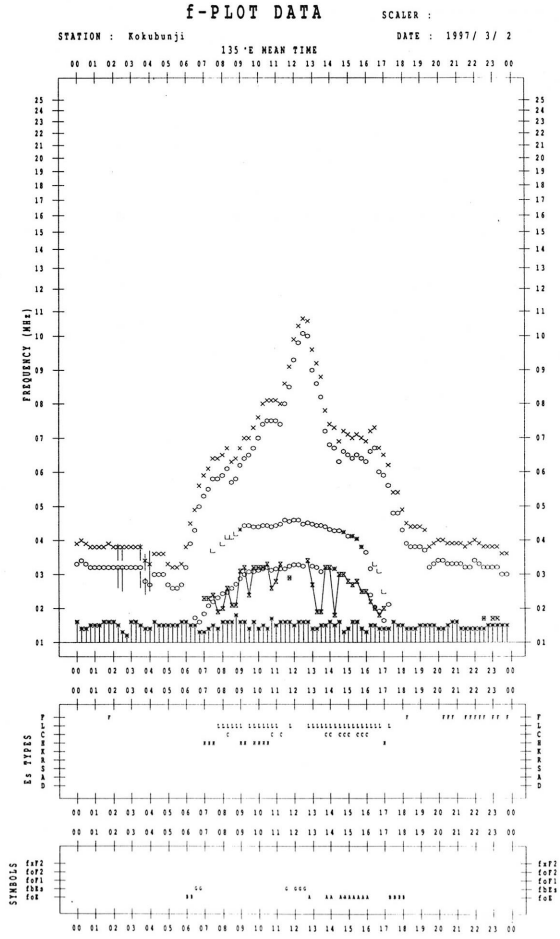
foF2
foF1
fbEs
foE
fxF2
foF2
foF1
fbEs
foE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STATION : Kokubunji
DATE : 1997/ 3/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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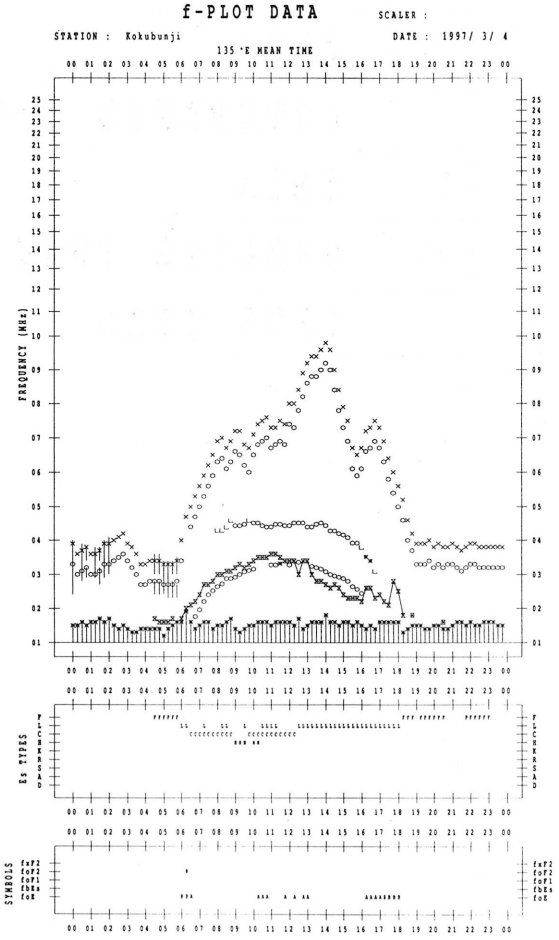
foF2
foF1
fbEs
foE
fxF2
foF2
foF1
fbEs
foE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STATION : Kokubunji
DATE : 1997/ 3/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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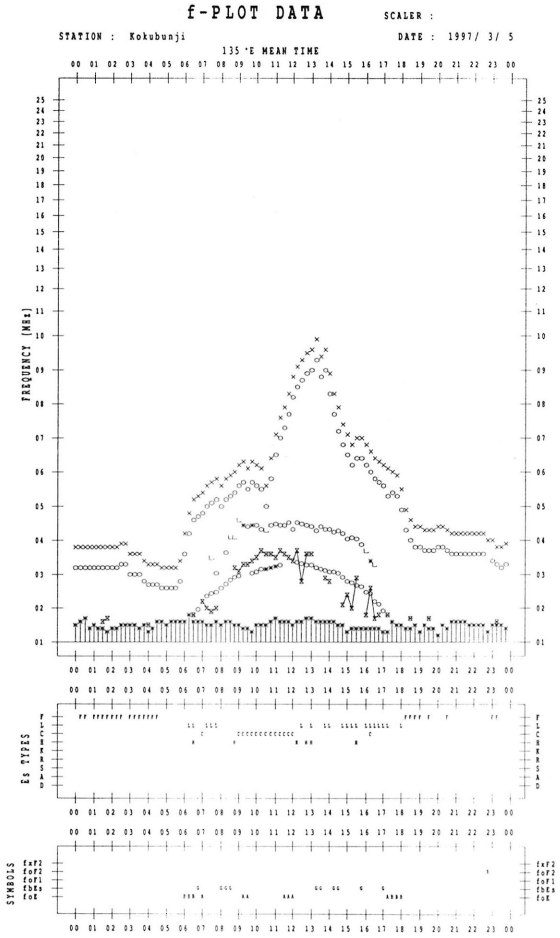
foF2
foF1
fbEs
foE
fxF2
foF2
foF1
fbEs
foE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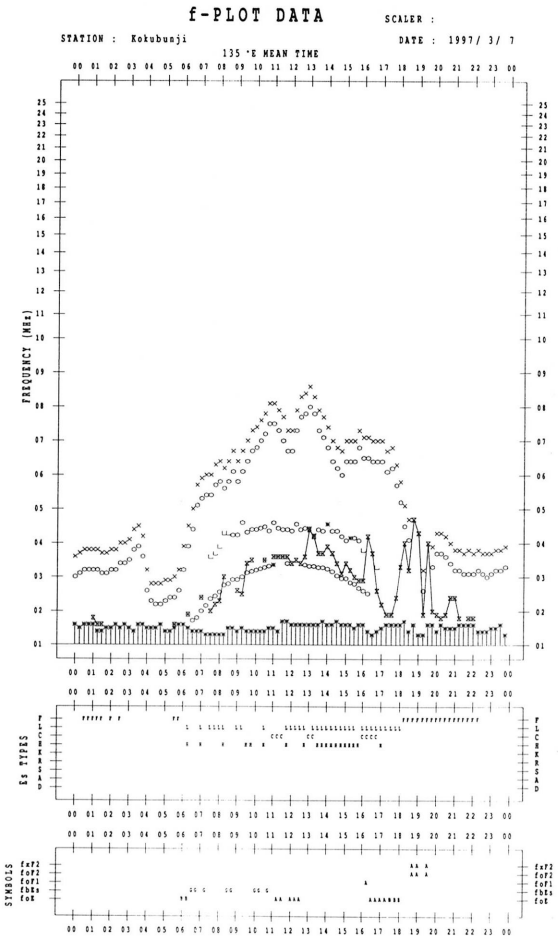
DATE : 1997/ 3/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE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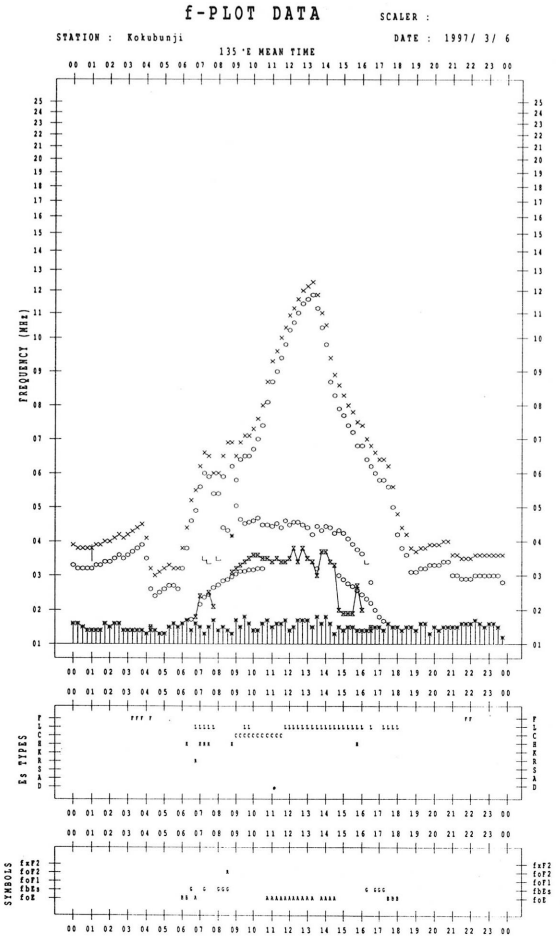
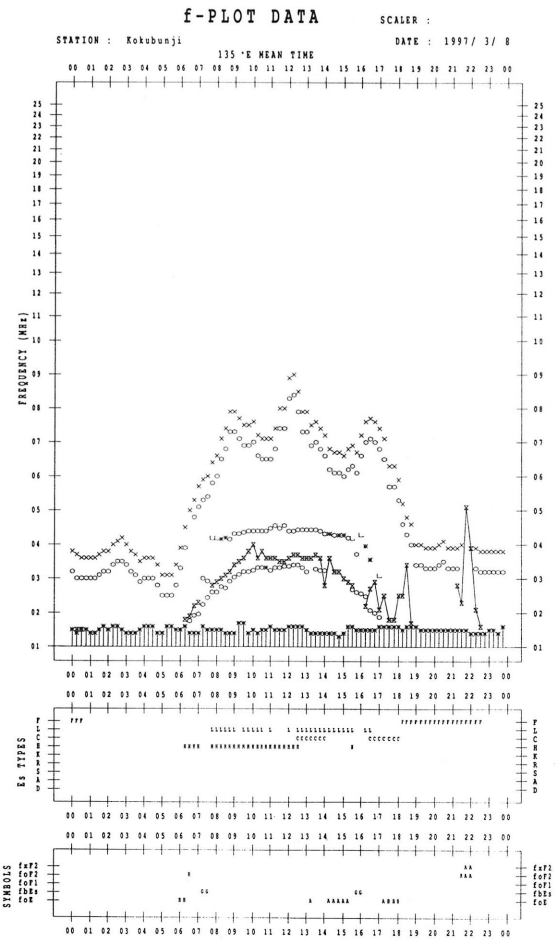
DATE : 1997/ 3/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE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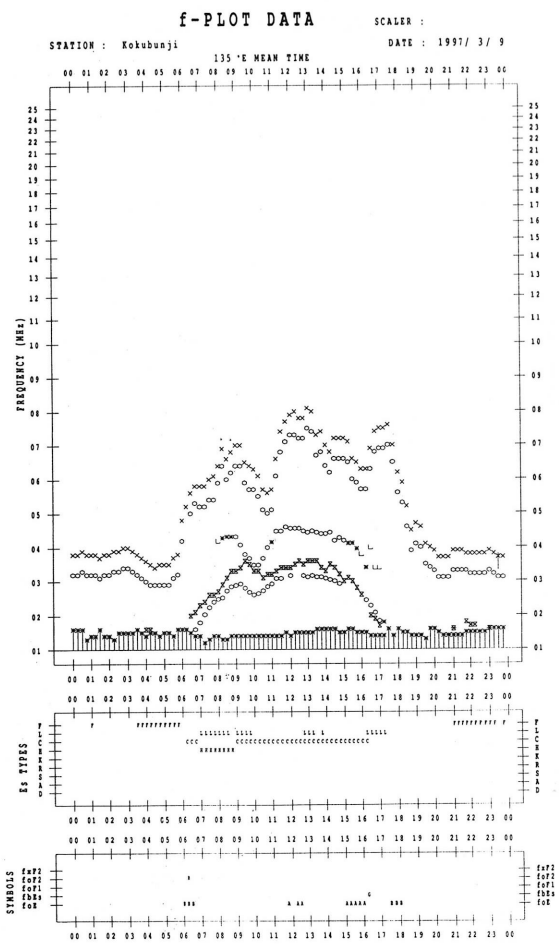
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE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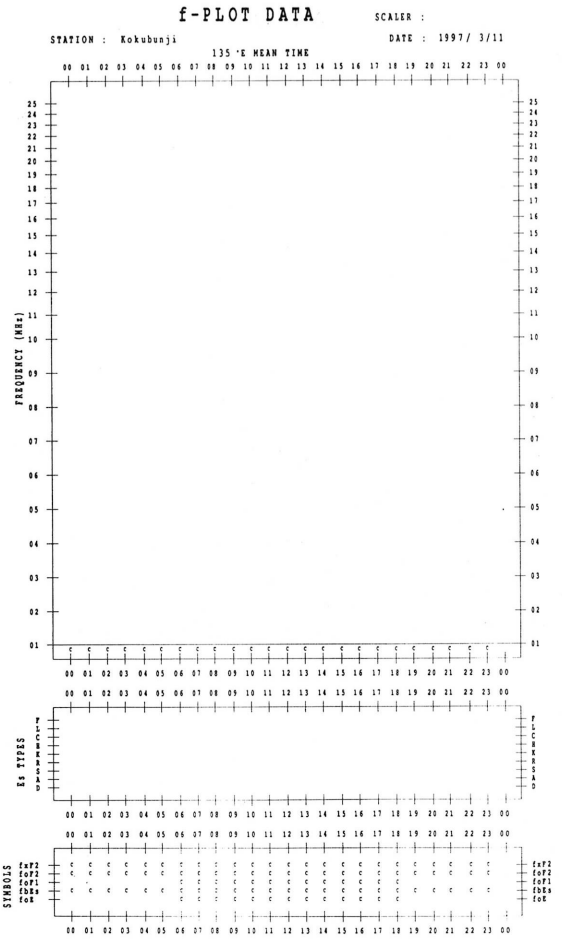
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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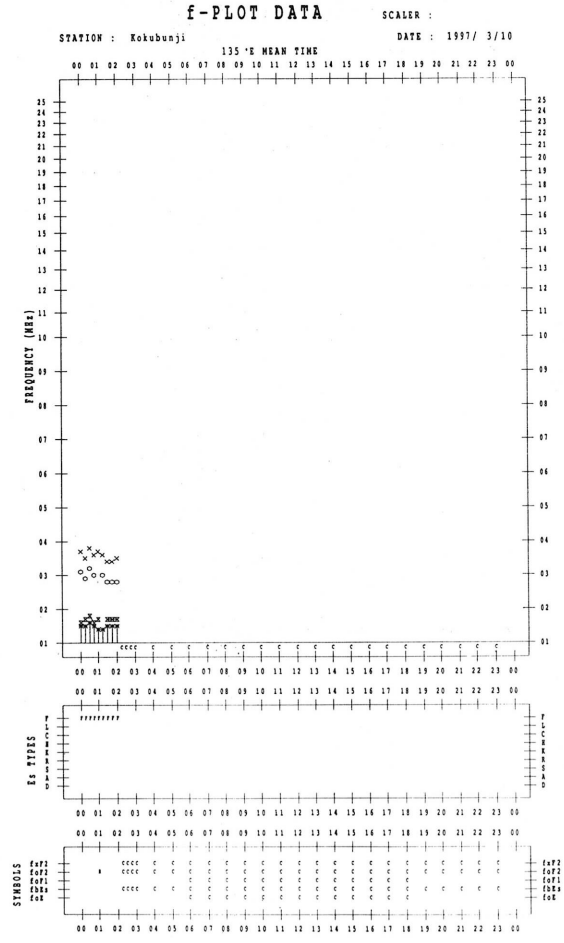
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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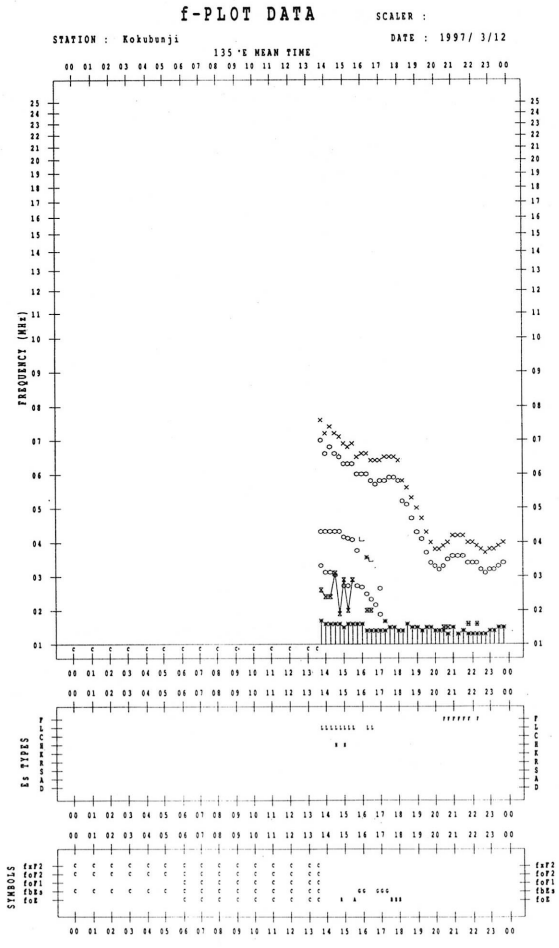
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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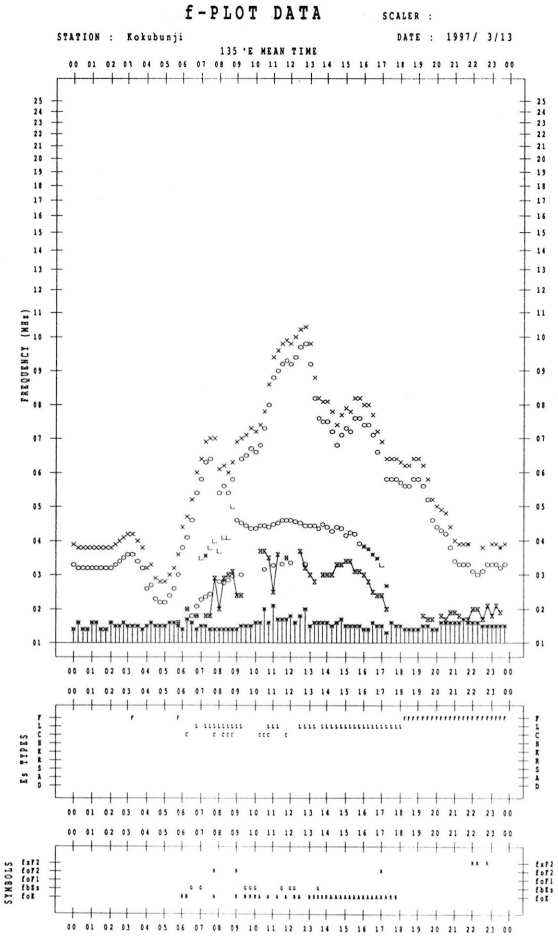
STATION : Kokubunji
DATE : 1997/ 3/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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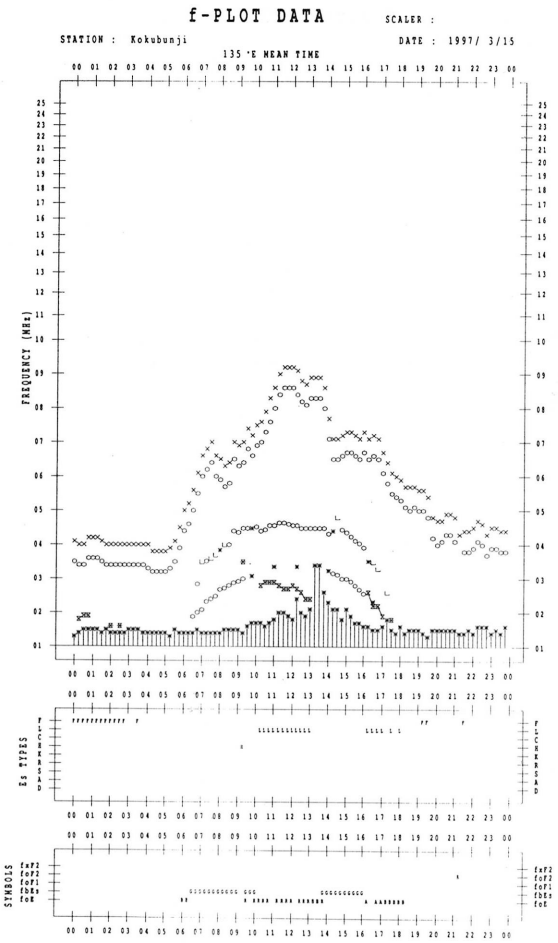
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
foF1
fbEs
foE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DATE : 1997/ 3/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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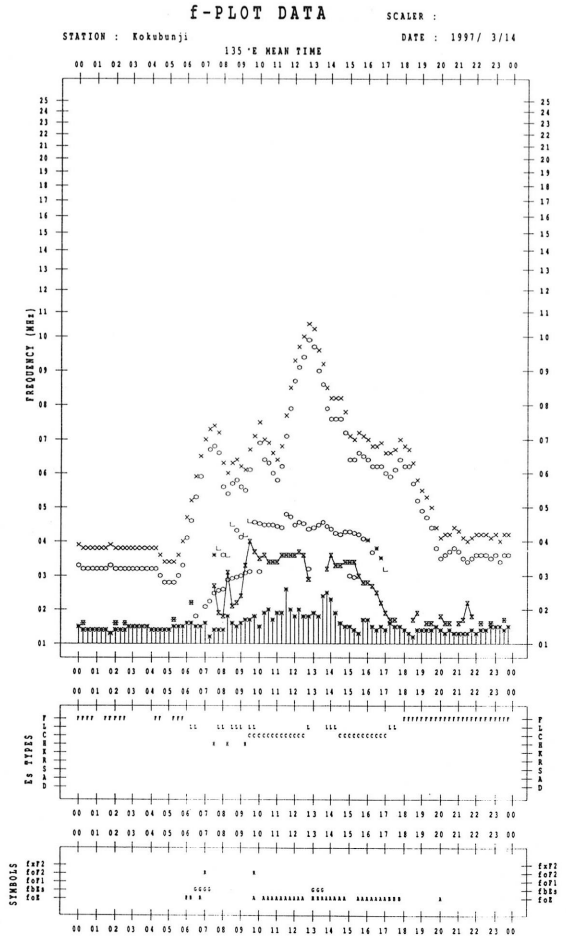
foF2
foF1
foF1
fbEs
foE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DATE : 1997/ 3/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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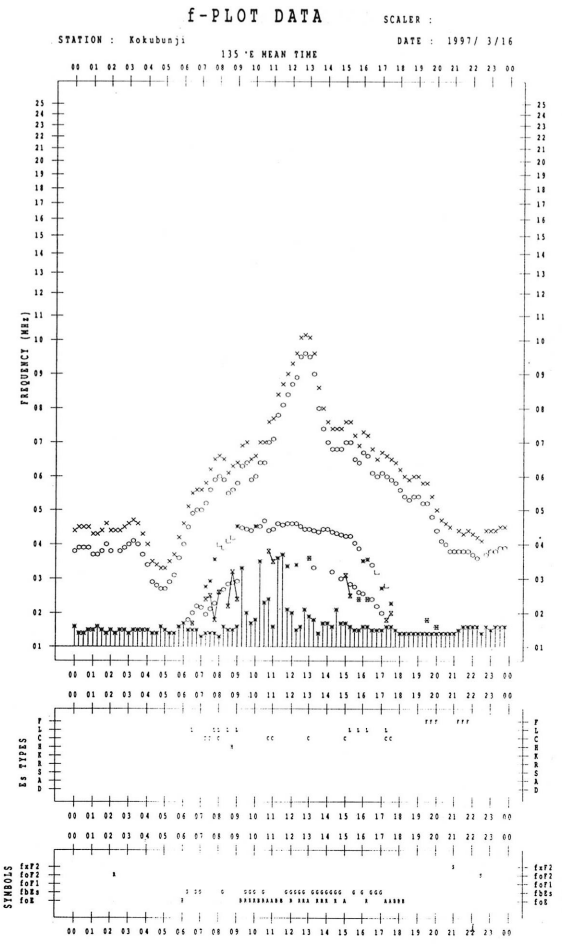
foF2
foF1
foF1
fbEs
foE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SCALER :
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DATE : 1997/ 3/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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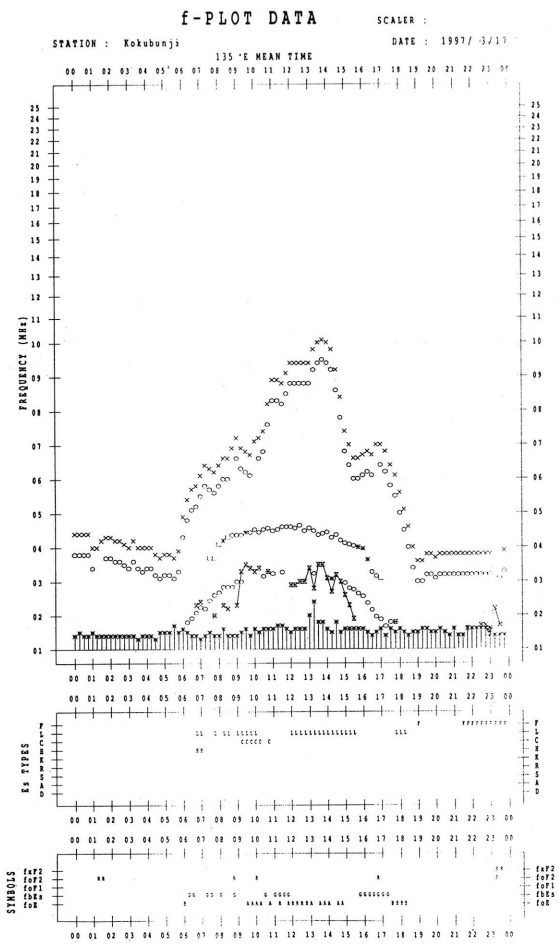
foF2
foF1
foF1
fbEs
foE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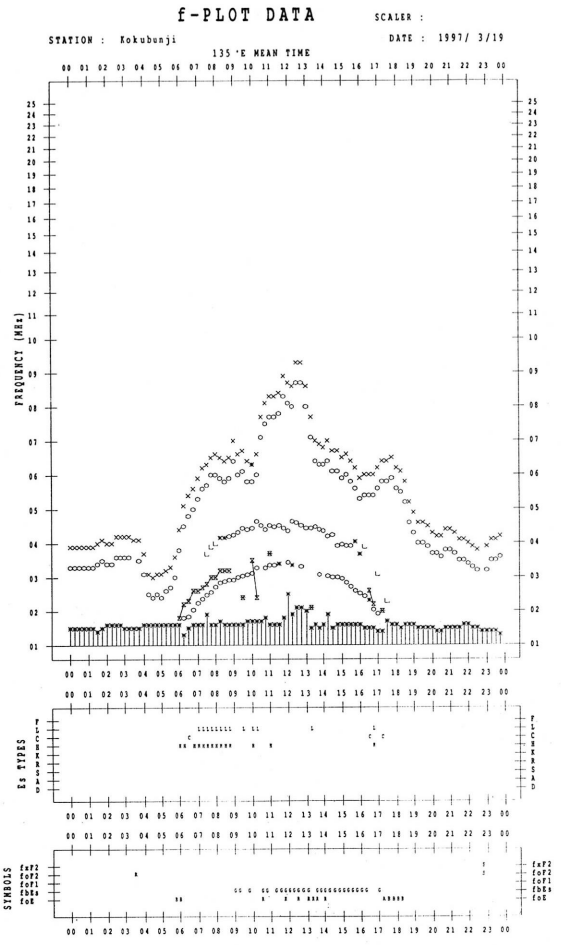
DATE : 1997/ 3/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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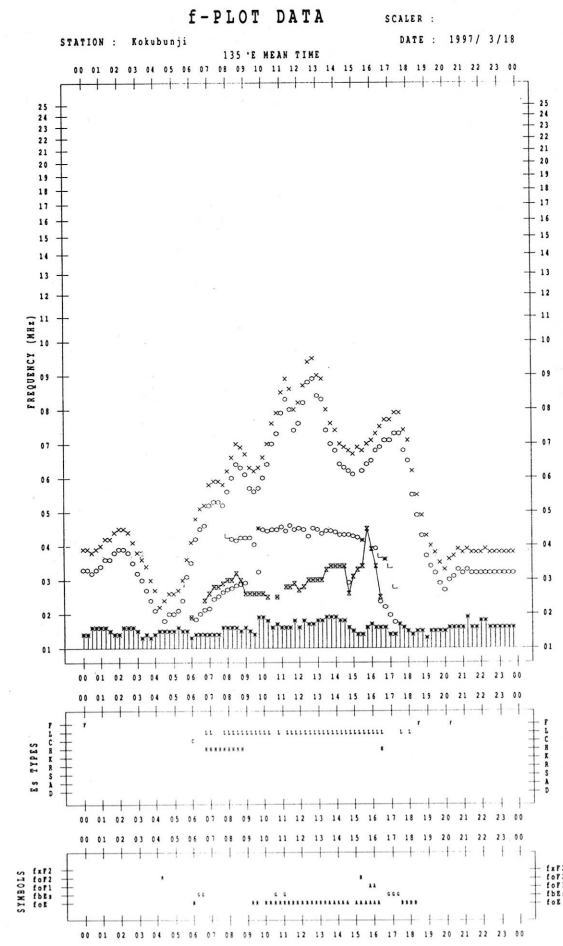
DATE : 1997/ 3/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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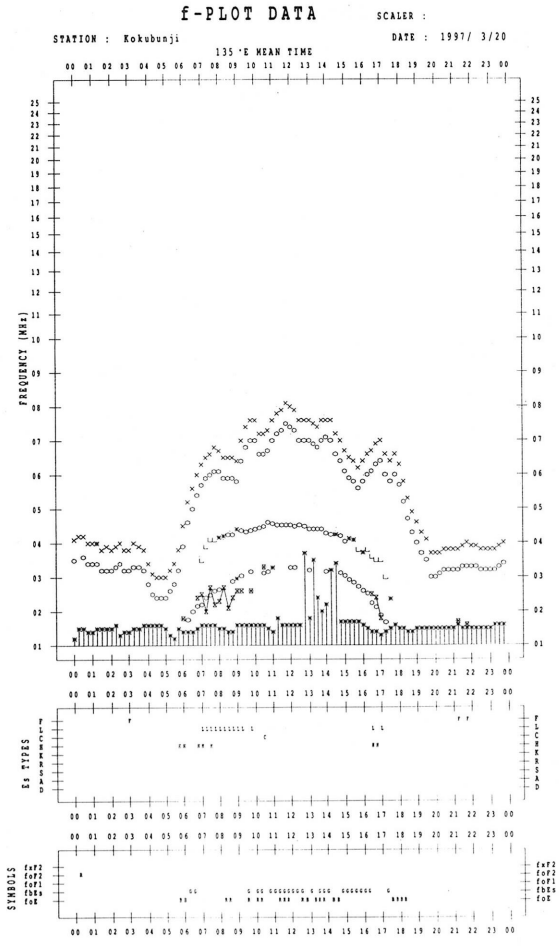
DATE : 1997/ 3/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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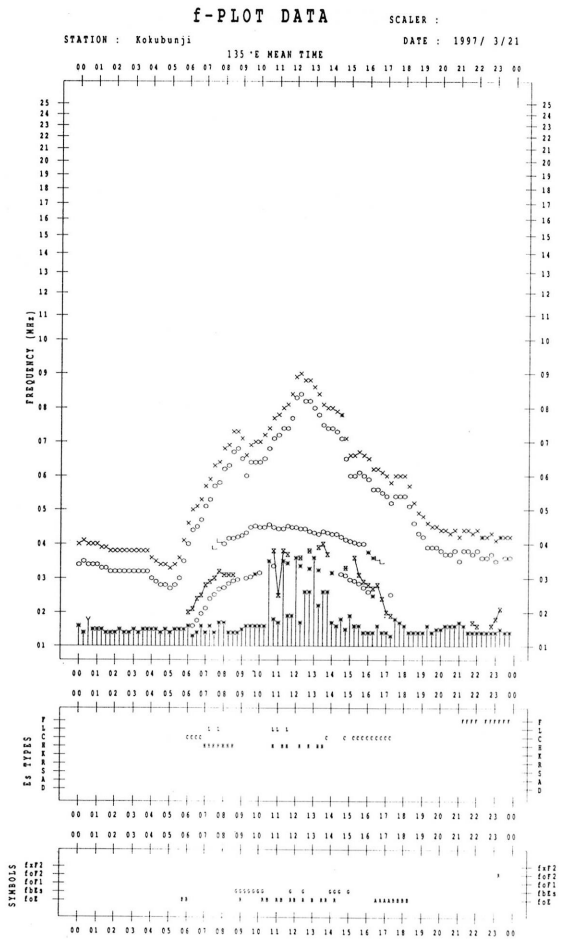
STATION : Kokubunji
DATE : 1997/ 3/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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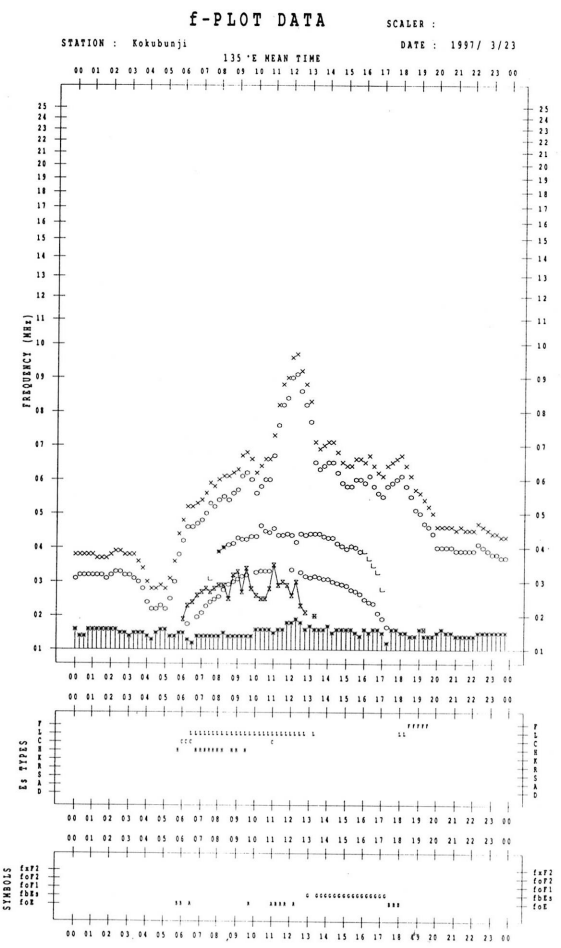
DATE : 1997/ 3/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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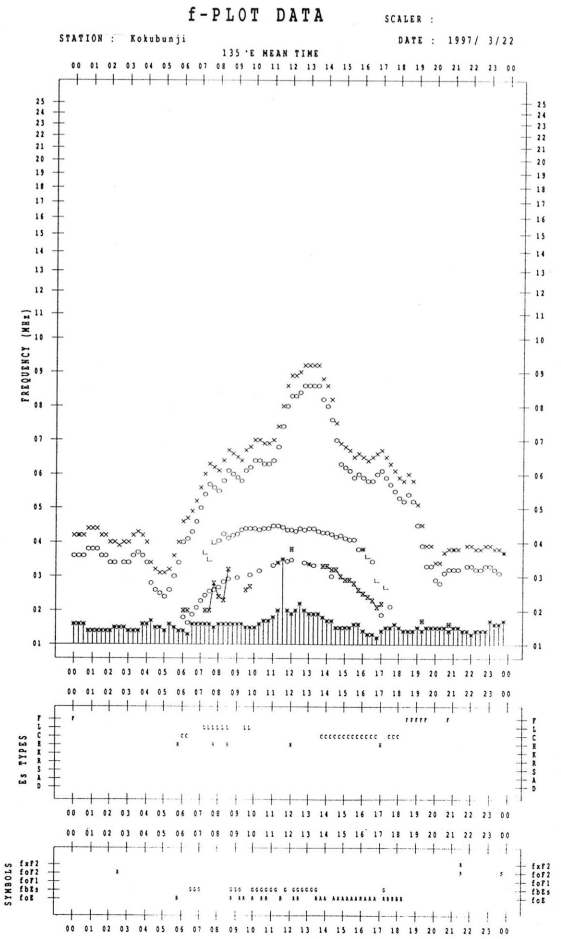
STATION : Kokubunji
DATE : 1997/ 3/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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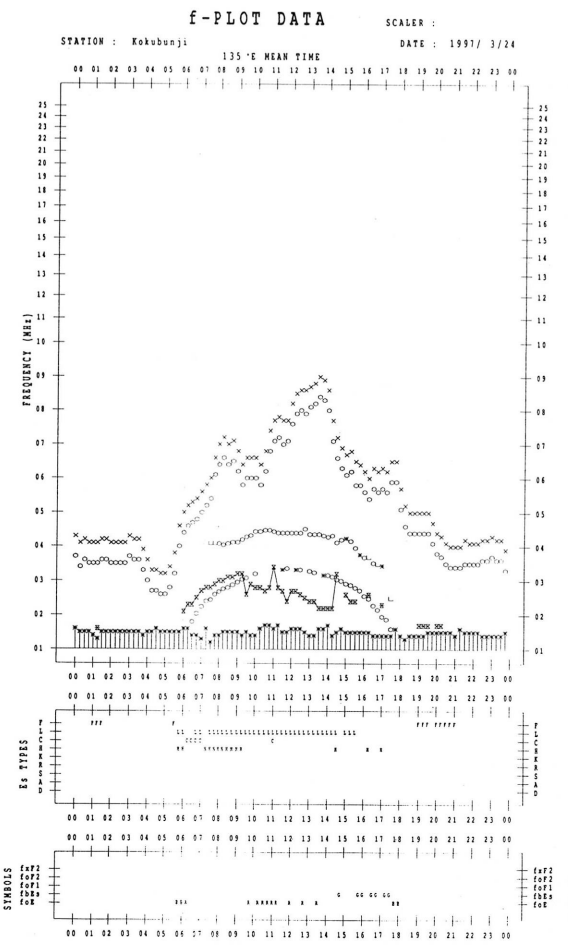
STATION : Kokubunji
DATE : 1997/ 3/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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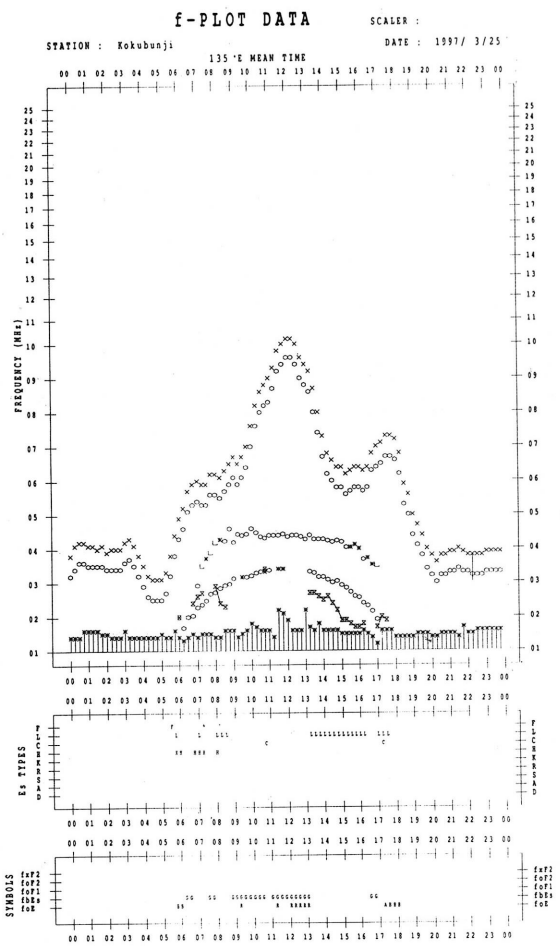
DATE : 1997/ 3/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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STATION : Kokubunji
DATE : 1997/ 3/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
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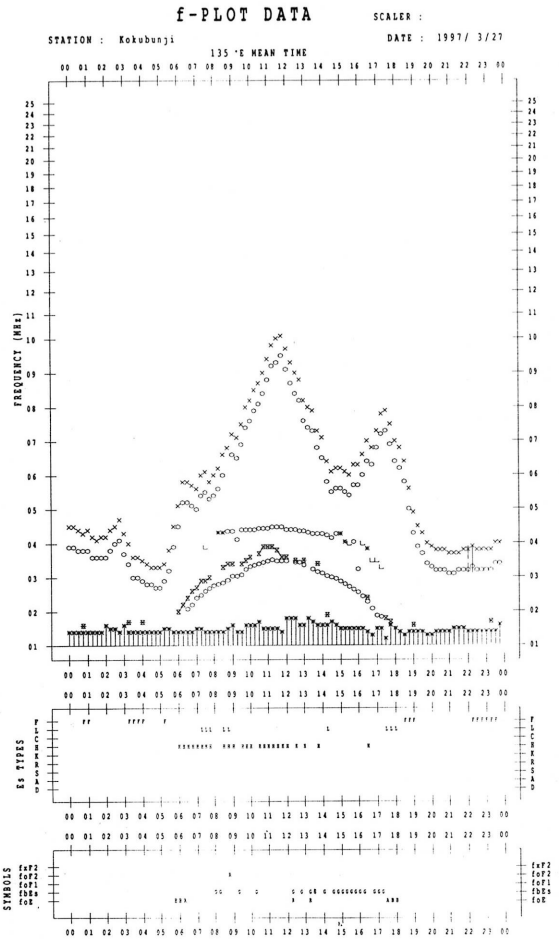
foF1
fbEs
foE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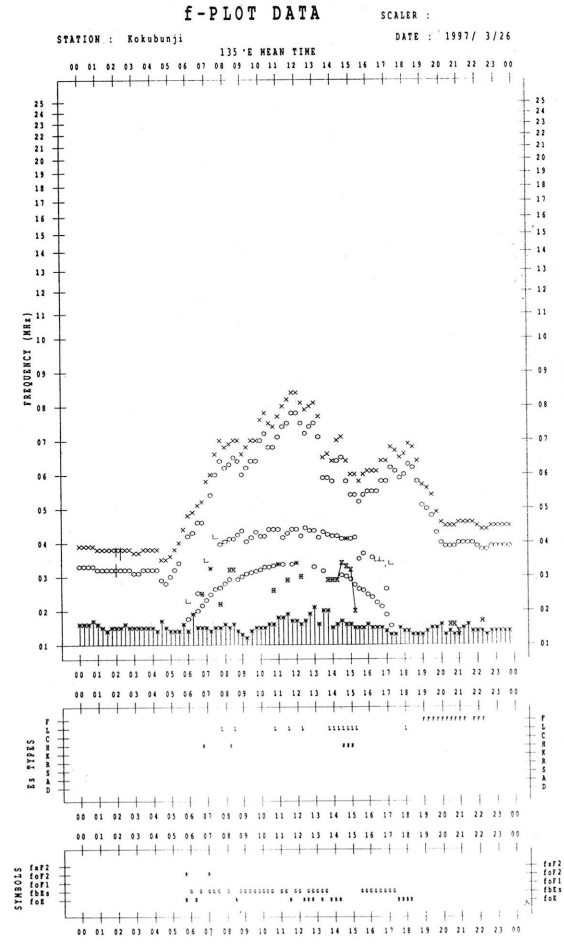
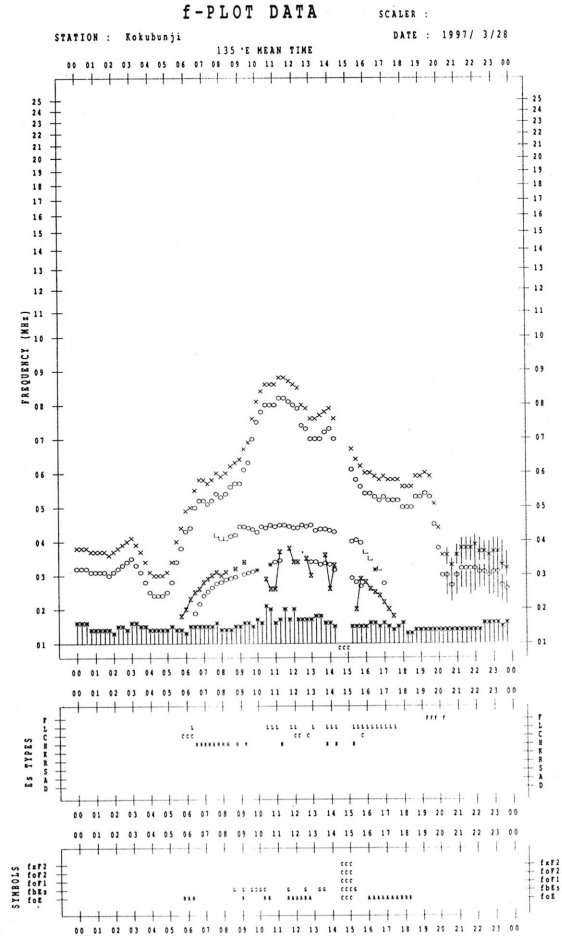
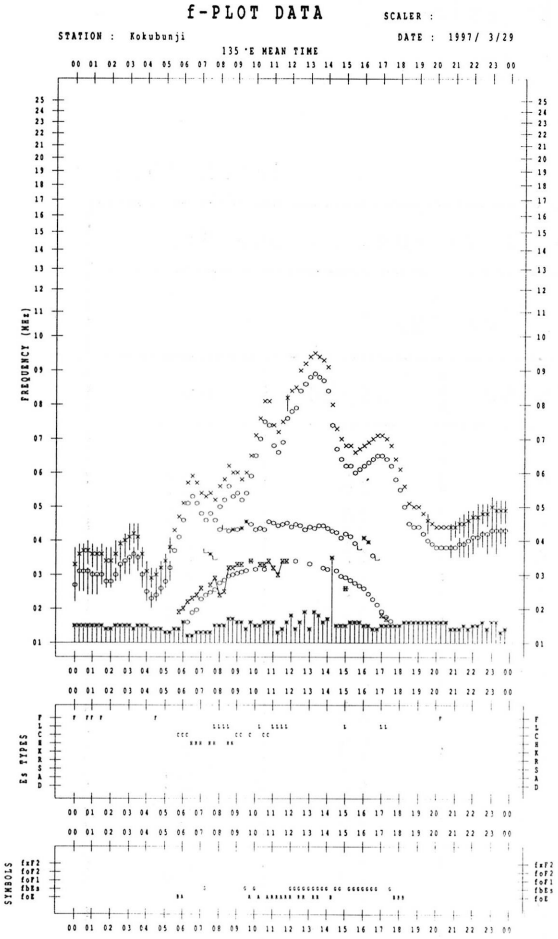
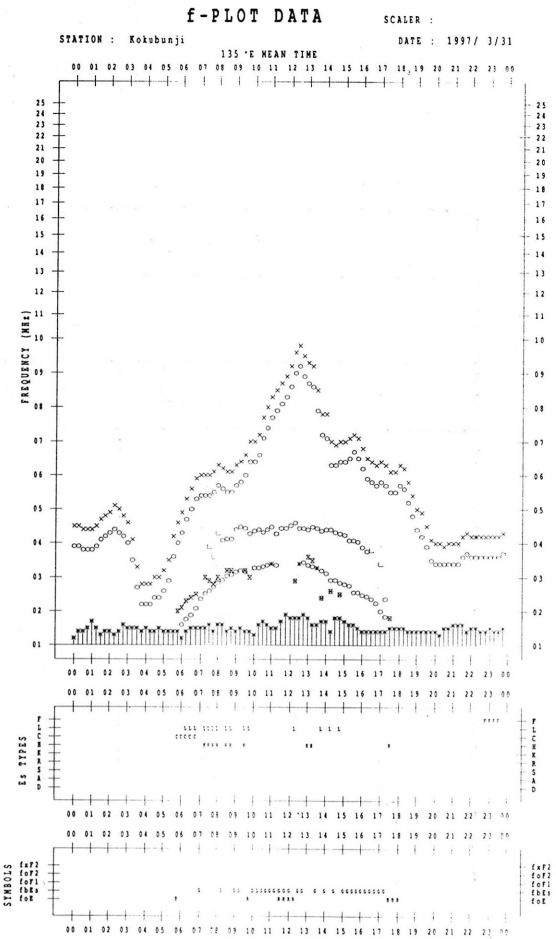
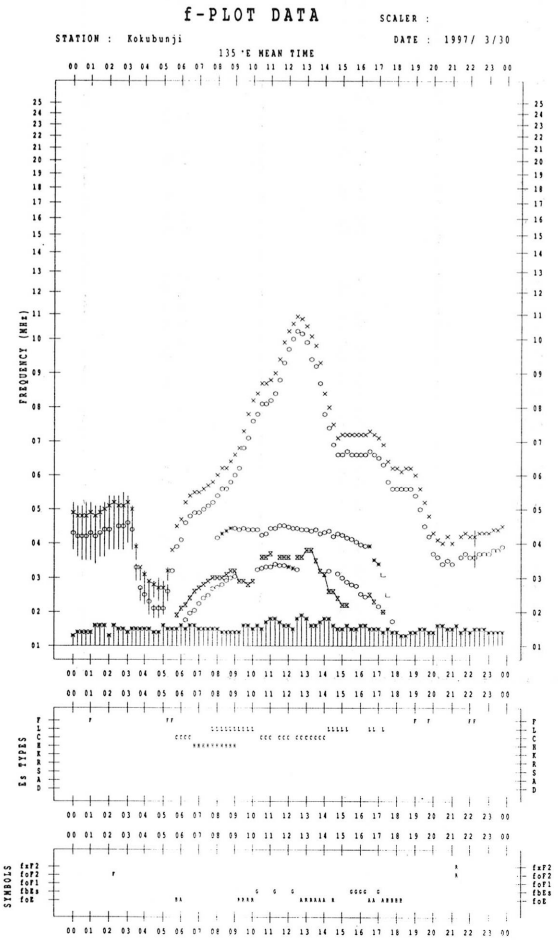
DATE : 1997/ 3/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/31
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1997/ 3/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso March 1997

Single-frequency observations

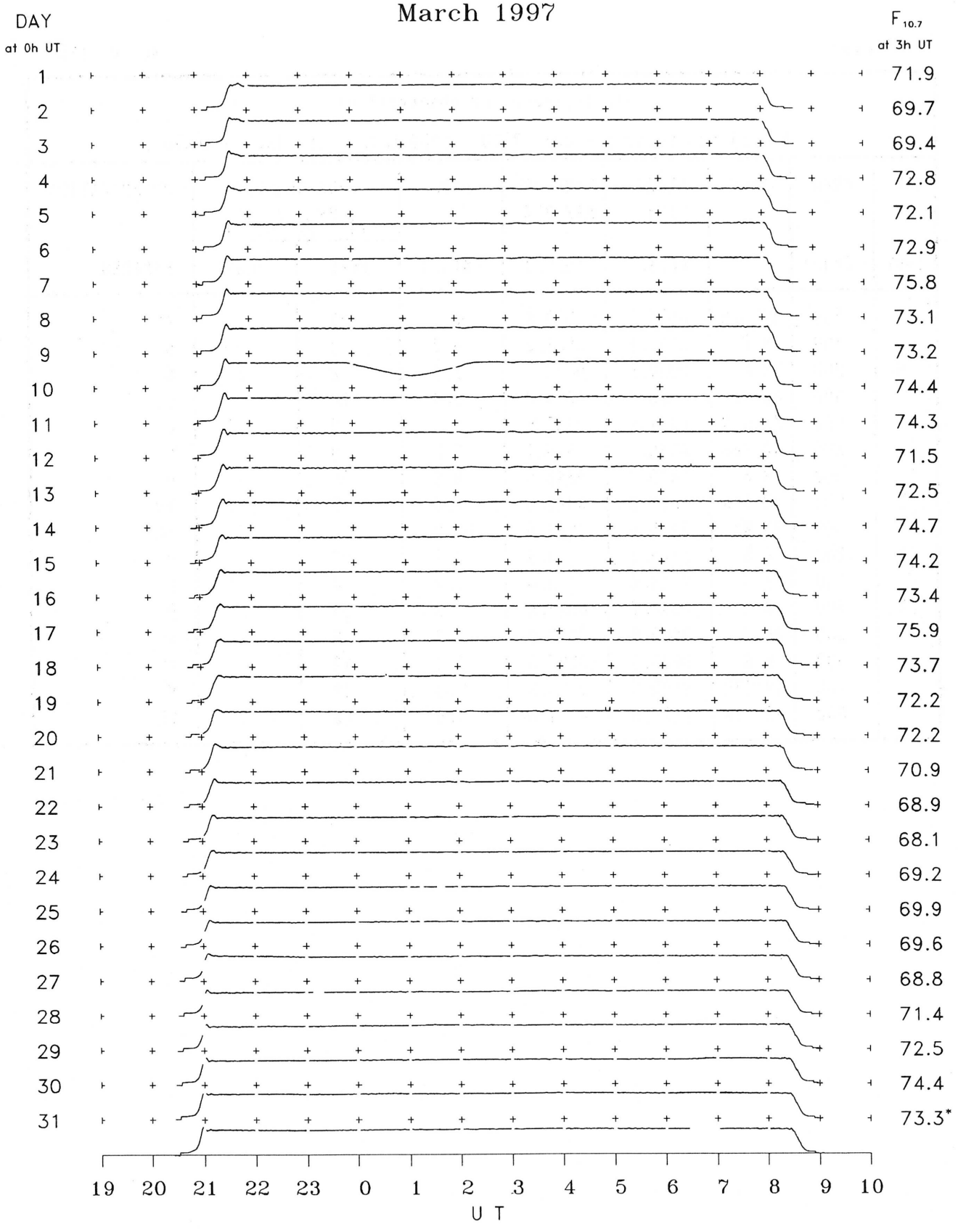
Normal observing period: 2050 - 0850 U.T. (sunrise to sunset)

MAR. 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
5	200	42 SER	0550.2	0550.8	0.7	30	-	WL
	500	8 S	0551.1	0551.2	0.2	3	-	0
6	200	46 C	0027.5	0028.7	2.5	78	4	0
	500	42 SER	0028.2	0029.0	2.6	24	-	0
	500	42 SER	0321.8	0322.5	2.6	3	-	0
	500	42 SER	0345.1	0346.1	2.5	3	-	0
	200	8 S	0345.7	0346.0	0.5	30	-	0
7	500	42 SER	0323.2	0323.8	2.0	5	-	WR
9	500	27 RF	0445.0	0554.3	92.0	11	3	WR
29	200	8 S	2124.7	2124.8	0.2	29	-	0
	500	8 S	2124.9	2125.0	0.2	4	-	0
31	500	46 C	0324.7	0325.6	1.3	57	5	0
	500	46 C	0535.0	0536.2	1.7	18	2	WL
	500	8 S	0607.6	0607.8	0.7	13	-	WL
	200	42 SER	2123.3	2123.5	1.3	37	-	WL
	500	42 SER	2124.6	2124.8	1.5	63	-	WL

B. Solar Radio Emission

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

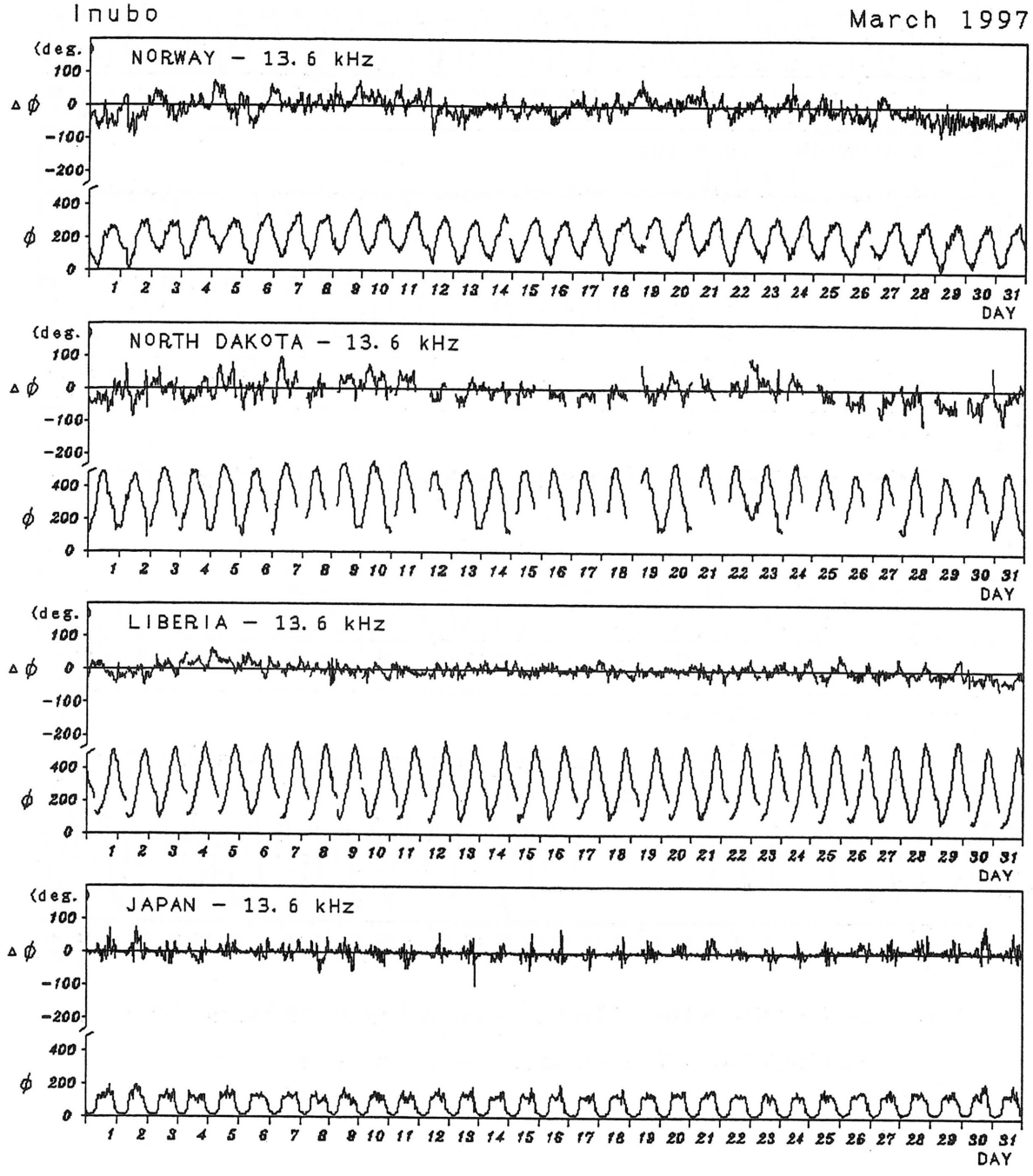
March 1997

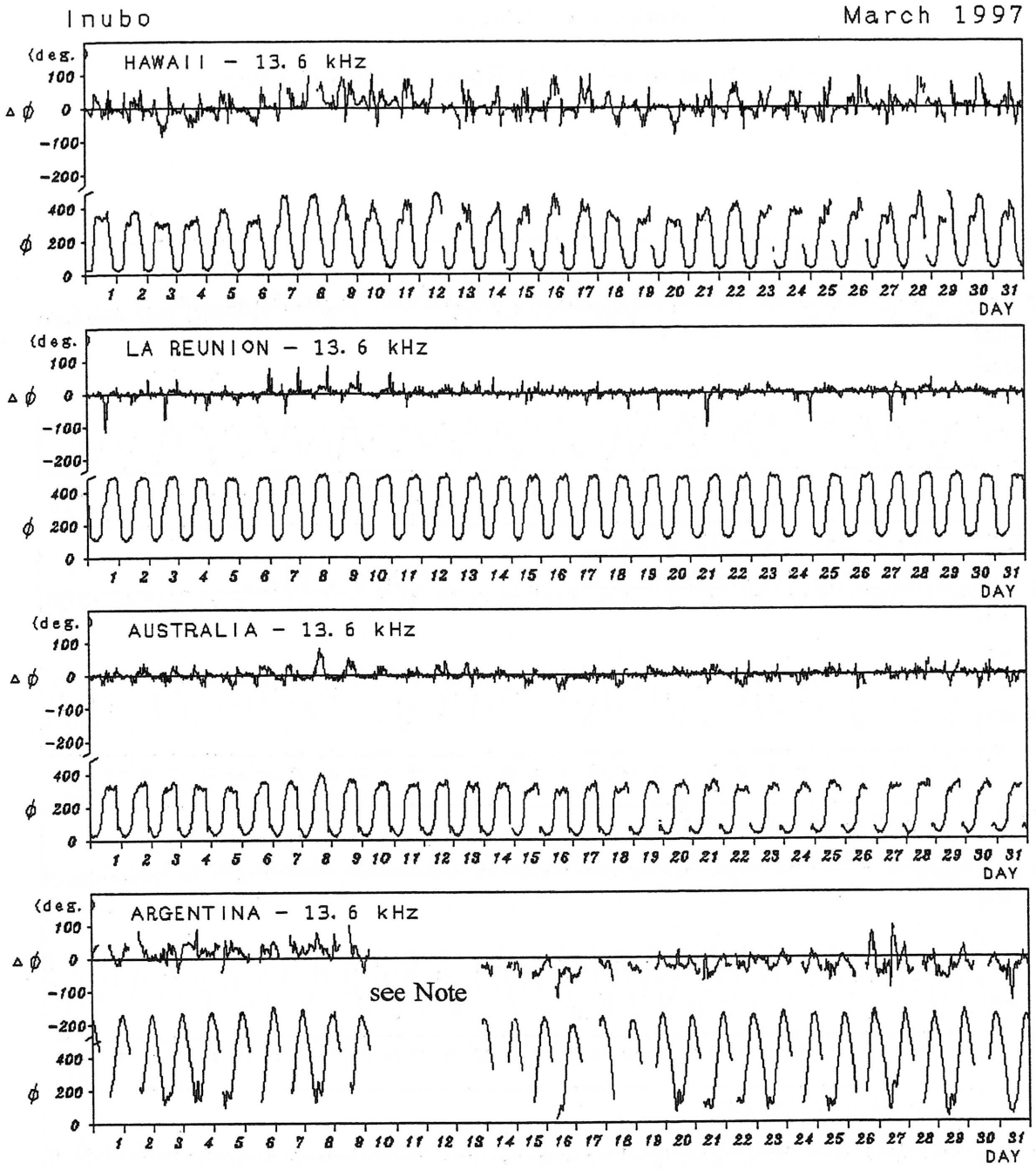


Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. Radio Propagation

C1. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for ARGENTINA-13.6 kHz, no record during 10 March 1200 UT to 14 March 2100 UT, due to transmitter maintenance.

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

NONE

C2. Sudden Phase Anomaly (SPA) at Inubo

Inubo

Mar. 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
6			7	7	11		0050	0130	0057
28			25	22	18		0110	0150	0125

IONOSPHERIC DATA IN JAPAN FOR MARCH 1997
F-579 Vol.49 No.3 (Not for Sale)

電離層月報（1997年３月）
第49巻 第３号（非売品）
1997年８月８日 印刷
1997年８月15日 発行
編集兼 郵政省通信総合研究所
発行所 〒184 東京都小金井市貫井北町４丁目２－１
☎ (0423) (27) ７４７８(直通)

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