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IONOSPHERIC DATA IN JAPAN

FOR JUNE 2003

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CONTENTS

COMMUNICATIONS RESEARCH LABORATORY
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INTRODUCTION

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

Station	Geographic		Geomagnetic		Technical Method	
	Latitude	Longitude	Latitude	Longitude		
Wakkanai	45°23.6'N	141°41.1'E	35.3°N	206.5°	Vertical Sounding	(I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	Vertical Sounding	(I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	Vertical Sounding	(I)
Okinawa	26°40.5'N	128°09.2'E	16.5°N	161.7°	Vertical Sounding	(I)
Hiraiso	36°22.0'N	140°37.5'E	26.3°N	206.8°	Solar Radio Emission	(S)

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

The following letters are entered after, or used to

replaced a numerical value on the monthly tabulation sheets, if necessary.

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

(ii) Qualifying Letters

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

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

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

B. SOLAR RADIO EMISSION

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

B1. Daily Data at Hiraiso

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

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

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

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

B2. Outstanding Occurrences at Hiraiso

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

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

The type of event is expressed by a combination of a

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

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

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

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

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

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

B3. Summary Plots of F10.7 at Hiraiso

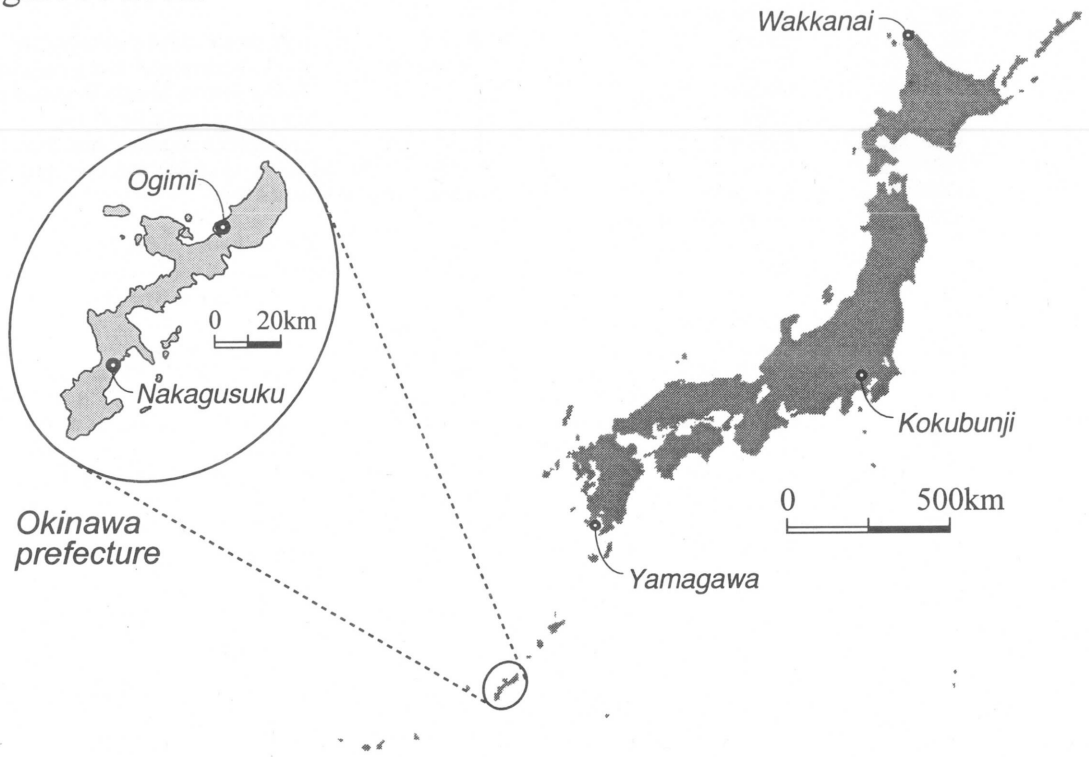
The 10.7 cm solar radio flux at Hiraiso is plotted over a one month period. The 10.7 cm flux ($F_{10.7}$) is determined by adjusting the 10.7 cm radio flux measured at Hiraiso to the Pentincton 10.7 cm radio flux. The figure on the right-hand side shows the $F_{10.7}$ index estimated at Hiraiso.

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

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

NOTICE

The ionospheric observation station at Okinawa has moved from Nakagusuku (26°16.9'N 127°48.4'E) to Ogimi (26°40.5'N 128°9.2'E) since 20:00 JST on August 30 2001.



Map of ionospheric observation stations of Japan

ERRATA

We have to correct the some parameters written in the pages of the automatic and manual scaling data because of replacing the new ionosondes.
Readers are requested to note the correction given in the table.

Stations and periods	Wrong	Corrected
automatic scaling : Wakkanai : Aug. 2002 to May 2003 Kokubunji : Jun. 2002 to May 2003 Yamagawa and Okinawa: Nov. 2001 to May 2003	SWEEP 1MHz TO 25MHz	SWEEP 1.0MHz TO 30.0MHz
manual scaling (Kokubunji) : Jun. 2001 to May 2003	SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC	SWEEP 1.0MHz TO 30.0MHz IN 15.0SEC
automatic scaling (Okinawa) : Sep. 2001 to May 2003	LAT. 26°16.9'N LON. 127°48.4'E	LAT. 26°40.5'N LON. 128°09.2'E

HOURLY VALUES OF foF2 AT Wakkanai

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	52	50	55	54	58	67	74	77	75	74			A	A	68	A	73	78	A	A	83	66	72	71
2	54	61	52	55	58	47	63	A	A	A		A	A	A				58	73	66	66	A	48	
3	54	A	A	41		46	49							A	A	39	A	A	A	56	52	64	66	60
4	53		46	43	45	47	A	A	57	A					A	A	A	A	A	A	A	A	42	65
5	A	55	44	45	40	A	A	A	A	A	A	A		A		55	57	54	A	58	67	73	66	66
6	54	53	55	53	47	55		A	59	A	A	A	56	61	66	64	64	63	66	67	A	65	65	67
7	66	55	55	50	44	47	59	A	A	A		A	A				60	54	53	58	61	67	65	61
8	62	55	55	55	47	57	61	56	A	A				A	A		55	55	58	A	69	A	54	54
9	58	44	54	52	58	73	55		A	A		A	A	A	A	A	70	A	A	A	66	A	64	67
10	64	61	60	53	44	A	A	A	A	A		A		A	A	A	58	67		77	68	67	64	60
11	54	55	50	47		A	57	A	A	A	A		A	A	A	A	A			A	A	63	66	61
12	64	52	52	55	56	60	64		70	A	A			A	64	66	67	A	72	81	77	68	64	65
13	72	74	66	66	64	67	76	71		A	A	A		61	66	68	67	70	77	80	72	72	64	73
14	55	53	64	61	60	66	81	74	A	72	66			A	57	A	A	68	A	82	66	75	27	58
15	58	54	53	47	A	51	63	58	A	A	A		A	A			61	56	55	60	66	66	66	62
16	66	66	65	64	71	73	74	77	72		A	A		A	62	68	67	64	A		80	66	82	64
17		66	52	61	54	54		A	A	A	A	59	62	A	66	67	C	C	C	75	72	66	76	66
18	53	63	52	59	51	52	A	A			C	A	C	C	A	C	C	61	76	C	72	74		51
19	54	A	61	65	67	64	A	A	58	A	C	C	C	C	C	C	C	C	C	82	72	A	75	66
20	65	65	48	62	64	67	76	A	65	A	A	A		A	A	61	57		61	64	55	70	73	71
21	64	53	57	55	55	67	72	A	A	A		A	A	A	A	A	A	66	70	A	75	74	72	61
22	50	54	53	40	47	60	73	66	A	A	A	A	A	A		A	A	A	A		A	79	77	55
23	54	52	46	53	51	56	66	73	A	A	59	A	A	54	56	60	A	A	68	72	77	A	72	64
24	63	60	53	57	49	63	60	60	A	72	A	65	A		74	77	85	71	80	81	73	80		76
25	55		47	55	47	A	52	A	A			59	A			64	68	61	70	71	73	73		66
26	63	66	53	54	54	62	45	66	A	A	A		62	A	60	A	A	63				A	74	72
27	76	64	54	52	51	51	63	A	66	67	A	68	67	56	A	A	67	52	A	78	62		66	63
28	51	52	51	52	43	45	A	A	A	A	A	A	A				56	56	58	60	A	54	54	54
29	66	54	A	A	40	48	A	A	A	A	A				A		39	55	58	62	63	70	66	52
30	51	45	48	42	45	A	39	49	A	A		62	A	60		57	A	63	61	66	63	68		61
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	28	29	27	25	21	11	8	4	2	5	4	5	10	12	17	20	16	20	24	22	26	29
MED	56	55	53	54	51	57	63	66	66	72	62	62	62	60	65	64	64	62	67	69	68	68	66	64
U Q	64	63	55	58	58	66	73	74	71	73	66	66	64	61	66	67	67	66	72	79	73	73	72	66
L Q	54	53	50	48	45	49	56	58	58	69	59	59	59	55	60	58	57	55	58	61	64	66	64	60

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Wakkanai

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	25	G	36	37	G	G	50	60	62	64	60	56	73	62	82	68	G	80	60	59	32	59	43
2	26	G	G	30	39	43	76	84	71	72		51	64	42	G	48	G	G	32	33	39	58	31	34
3	40	72	76	81	46	39	36	G	G	G		G		42	65	G	50	60	62	48	39	58	37	G
4	G	G	G	G	31	45	52	84	61	68	G	G	G	G	46	60	76	74	62	74	59	60	51	38
5	46	G	29	30	36	60	73	63	66	63	88	47	G	46	G	41	G	G	61	34		59	34	28
6	G	G	G	G	G	34	42	48	50	61	74	58	62	51	46	41	40	34	39	41	74	44	29	G
7	G	G	G	G	G	34	44	69	64	71		51	58	G	G	G	G	G	38	33	29	40	31	30
8	G	38	G	27	28	34	40	46	56	42	G	G	G	45	46	G	46	40	41	58	45	69	32	G
9	G	25	33	G	36	38	42	49		62	G	44	46	76	76	96	75	156	142	111	59	61	59	60
10	38	72	39	44	33	67	52	64	55	58	46	48		89	72	62	68	48	80	81	G	G	G	G
11	25	G	28	45		58	49	82	81	85	81		98	100	122	99	59	150	96	87	64	39	G	30
12	32	G	29	G	G	G	38	G	62	157	67			50	48	G	52	69	44	43	60	38	38	46
13		G	29	28	32	38	52	52	60	64	72	70		G	G	G	G	49	39	35	29	28	27	26
14	28	G	27	G	G	34	52	G	41	42	43	G		44	41	159	110	61	85	48	32	55	60	G
15	27	G	G	46	61	41	48	54	65	52	52		51	43	G	G	G	43	39	G	G	38	37	34
16	32	37	30	G	G	29	50	51	61		64	86	62	78	53	53	54	65	57	47	33	27	G	25
17	G	G	G	G	28	35	40	49	50	44	44	G	43	51	44	G	C	C	C	G	G	36	45	38
18	29	27	G	26	43	46	58	48			C	46	C	C	44	C	C	G	G	C	G	G	51	51
19	54	54	28	28	25	53	72	47	51	81	C	C	C	C	C	C	C	C	C		56	72	65	60
20	70	50	38	50	30	30	53	81	51	70	58	50		43	42				G	40	36	52	54	55
21	37	49	26	30	G	42	43	69	82	44	56	86	98	98	67	75		G	63	70	49	G	27	G
22	G	37	27	33	39	47	55	61	82	62	43	49	66	62		71	102	99	111	79	113	59	G	G
23	G	30	39	G	G	34	46	65	62	65	G	65	97	50	G	64	73	78	79	51	73	79		38
24	G	G	G	G	G	32	40		60	65	72			G	G	G	G		G	G	G	29	G	33
25	G	27	G	48	33	57		57	57	52	55	G		G		G		G	49	49	36	32	44	33
26	G	28	24	G	G	30	72	64	72	82	108	47		47	64	67	82	G					32	39
27	33	27	G	G	G	G	48	62	58	54	65	49	46	59	58	96	G	G	69	73	38	59	69	48
28	31	36	28	G	G		60	65	58	80	82	80	65	G	G	G	G	53	40	34	61	28	29	G
29	G	29	48	49	G	39	60	72	74	60	48	G			45	G	G	G		G	28	28	G	G
30	38	29	39	30	G	57	50	49	60	60	44	44	51	46	G	48	44	G	39	40	45	60	38	29
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	29	29	29	29	28	28	25	25	18	27	27	27	24	26	26	27	28	29	29	30
MED	26	27	27	28	28	38	50	57	60	62	56	48	57	46	45	48	48	42	53	47	39	40	34	32
U Q	35	37	30	36	36	46	56	67	65	70	72	59	65	62	62	71	70	65	79	70	59	59	51	39
L Q	G	G	G	G	G	33	42	48	55	53	43	G	46	42	G	G	G	G	39	34	29	28	27	G

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HOURLY VALUES OF fmin AT Wakkanai

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	15	14	14	14	14	14	17	21	22		22	48	35	32	24	18	18	18	14	15	16	15	14
2	14	15	14	15	14	18	23	23	20	35		32	34	29	22	20	17	18	21	14	14	14	14	14
3	14	14	14	14	15	16	16	18	18	21				21	22	18	21	26	14	14	14	14	14	14
4	15	28	14	14	14	16	15	20	18	22	23	21	23	23	21	20	17	20	17	14	14	14	15	14
5	14	14	15	15	14	14	14	15	21	23	21	21	28	29	22	22	20	20	14	14	14	15	16	15
6	15	15	15	14	17	16	15	18	22	22	21	22	21	22	26	21	18	15	14	14	14	14	15	14
7	14	14	14	14	24	20	14	15	18	38			23	30	24	18	15	17	15	14	14	14	15	15
8	14	14	18	15	18	14	15	15	18	23	22	21	21	29	26	23	21	20	15	14	14	14	15	21
9	15	14	15	15	14	14	14	22	20	20	22	22	36	23	28	23	22	20	15	15	15	14	14	14
10	15	14	14	14	14	14	21	24	24	22	36	36		35	33	24	21	18	21	14	14	15	15	14
11	14	15	15	23		20	18		22	53	49		40	38	34	29	18	18	20	14	14	14	14	15
12	14	15	14	14	20	26	21		26	24	26				29	24	20	21	17	14	14	14	15	15
13	15	15	15	14	17	15	15	21	22	23	24	36			24	24		21	14	14	16	16	18	17
14	16	14	15	16	20	21	20	22	22	21		27			27	38	23	21	14	14	14	15	14	17
15	18	15	14	14	15	18	15	18	21	23	23		24	24	23	20	20	18	14	21	15	14	14	15
16	14	14	14	14	18	14	20	21	21		53	44	35	27	22	21	18	18	15	15	15	18	15	15
17	15	21	16	14	15	15	16	20	21	24	24	22	20	26	23	21	C	C	C	20	15	14	14	14
18	14	15	17	16	14	14	18	20			C	23	C	C	22	C	C	18	14	C	15	16	15	14
19	14	14	14	14	15	18	21	17	22	21	C	C	C	C	C	C	C	C	C	15	14	15	14	15
20	14	14	14	14	14	14	18	18	18	18	24	22		20	22	17	18	17	15	14	14	14	14	14
21	14	15	14	15	17	14	15	14	20	18	21	34	23	24	26	21	18	20	14	14	14	16	15	14
22	15	14	16	14	14	14	15	17	22	21	26	22	35	21		23	20	18	14	15	14	14	15	15
23	14	14	14	16	16	15	16	14	18	20	22	21	23	24	21	21	20	17	14	14	14	14	16	15
24	14	14	17	14	16	14	15	15	20	21	23	32	24	21	52	22	21	22	23	22	17	15	15	15
25	14	16	15	14	15	17	14	15	23	24	34		22	23		22	21	15	15	14	15	15	14	15
26	15	14	18	14	20	15	16	20	22	21	21	22	18	26	21	18	20	18					15	14
27	14	15	14	14	16	14	14	16	18	23	22	22	34	24	24	21	22	17	16	14	14	15	14	14
28	15	14	14	15	23	14	15	20	20	24	21	21	26	22	22	20	21	15	15	14	14	15	14	14
29	14	17	14	14	16	14	16	18	21	22	22	21			23	21	22	21	14	26	14	16	15	15
30	14	14	14	15	17	14	15	18	21	22	22	27	30	23	24	20	20	14	15	14	14	15	14	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	28	29	28	23	23	21	24	27	28	26	28	27	28	29	29	30	30
MED	14	14	14	14	16	14	15	18	21	22	23	22	24	24	24	21	20	18	15	14	14	15	15	15
U Q	15	15	15	15	17	17	18	20	22	23	26	32	34	29	27	23	21	20	17	15	15	15	15	15
L Q	14	14	14	14	14	14	15	15	19	21	22	21	22	22	22	20	18	17	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT Kokubunji

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	55	56	A	54	55	57	66	88	84	78	87	88				94	100	102	104	98	86	79	74	54
2	54	54	62	54	58	55	62		A	A	A	A		62				64	85	90	72	52	59	
3	51	52	54	49	54	54	56	A	A	A	A	A	A	58		A		67	A	54	A	A	54	71
4	61	55	54	54	51	63	63	68	69	A	A	A	A	A	A	A	A	A	A	A	A	A	66	63
5	A	A	58	42			A	A	A	A	A	A	A		70	77	75	69	A	62	64	72	A	64
6	65	65	61	55	46	A	73	63	66	A	A		71	72	85	93	96	82	70	73	76	73		66
7	66	69	62	55	54	51	A	A		A				A	71	66	A		57	61	66	54	63	65
8	53	59	61	54	51	52	66	A	A				61	A		A	A	69	75	65	A	52	61	A
9	A	A	52		54	61	A	A	57	69	82	76		A		A	76	81	81	76		74	75	76
10	76	72	74	48	46	47	63	A	A	A			A	A	A	73	75			A	74	66	74	73
11	76	78	66	A	A	A		A	A	A	A	A			A	68	A	66	64	65	67	A	66	66
12	66	61	54	54	51		66			A	A	A	A		71	A	A	A	A	90	A	A	A	A
13	A	A	78	55	63	71	88	A	A		A		A	81	94	91	85	88	92	81	54	54	70	A
14	74	A	65	64	54	50	66	76	80		A	81	A				A	84	100		88	61	A	A
15	59	54	A	A	A	51	52		A	A	A	A	A		71			62	66	68	63	66	54	54
16	66	72	62	66	64	67	74	81	76		A				67	83	82	75	74	81	81	76	78	78
17	79	77	73	71	63	71	61		48		74	70	78			84	84	98	98	90	76	82	83	87
18	83	74	78	85	79	78	82	84				A	63			80	77	72	90	102	88	78	82	78
19		A		75	84	75	A	77	80	83	71	76	68	81	83	78	71	76	A	A	85	81	84	76
20	78	80	85	82	80	79	76	72	65		72	A	A	A	69	69	71	A	77	78	76	A	72	75
21	A	65	71	71	59	76	72	72	74	72					74	78	75	A	A	A	84	76	64	54
22	55	63	55	55	62	66	69	A	A	A	A	A	A	A		71	71	62	A		82	A	66	65
23	A	73	66	51	47	59	76	78	87	A	A	A	A	73	74	84	76	73	74	83	80	52	54	75
24	78	72	73	72	66	69	70	74	80	76	A	A	83	A	83	91	94	A	96	A	A	78	84	88
25	88	87	73	55	58	51	A	54	71	71	63	68	A	64	A	77	84	72	72	A	82	A	73	A
26	66	66	66	55	52	72	A	62	A	A	64	A	A	A	76	71	66	A	71	81	78	74	75	77
27	74		82	75	70	55	67	80	A	A	A	77	77	85	82	73	87	87	74	A	A	A	77	54
28	54	A	55	61		A	A	109	A	A	A	A	A	A	A	61	65	A	59	A	A	A	A	A
29	A	55		47	49		57		A	A		A		A			59	62	69	64	73	54	66	48
30	56	52	52	52	A	55	69	72	85	A	A	A		77	72	75	77	80	72	76	76	54	54	76
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	26	27	25	24	22	16	14	6	7	7	7	9	15	21	21	21	22	20	22	21	25	23
MED	66	65	64	55	55	60	66	75	75	74	72	76	71	73	74	77	76	73	74	77	76	72	70	71
U Q	76	73	73	71	63	71	73	80	80	78	82	81	78	81	83	84	84	83	90	86	82	77	76	76
L Q	55	55	55	54	51	53	63	70	66	71	64	70	63	63	71	71	71	66	70	65	72	54	62	63

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Kokubunji

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	43	80	49	32	31	26	37	45	G	50	61	57	85		78	109	68	60	102	84	51	59	48	45
2	29	28	39	34	G	36	39	73	72	77	136	84	47	55	50			49	40	27	G	25	56	45
3	60	40	59	59	78	51	69		91	118	126	71	86	G	60	64	60	68	83		61	48	38	50
4	40	35	G	23	G	32	56	56	61	106	121	109	78	104	93	75	73	117	146	150	150	107	82	40
5	81	72	41	30	40	48	68	74	71	60	76	70	62	84	86	93	64	49	69	53	83	82	111	45
6	49	59	40	50	27	69	42	50	61	84	87	61	82	74	50	50	62	69	57	42	39	36		37
7	46	35	29	47	G	40	60	73	86	90		49	56	80	51	48	64	67	59	47	43	52	33	40
8	29	29	47	35	29	28	40	76	106	104	52		59	76	85	81	78	48	67	71	58	50	47	58
9	72	67	46	48	26	57	61	111	47	58	G	71	G	132	73	82	64	44	59	41	70	58	55	40
10	60	45	45	G	G	G	49	81	113	104	90	95	61	96	73	53	64	73		63	58	60	41	49
11	66	60	48	86	94	60	60	65	73	75	63	71	56	48	61	66	81	38	G	G	49	77	37	52
12		57	54	47	35		53	79	81	82	94	84	110	62	G	78	131	150	124	79	103	105	94	85
13	93	72	46	33	29	G	57	96	119	104	77	72	92	60	G	G	48	61	52		G	35	45	83
14	68	105	41	31	G	G	41	G	49	82	124	G	106		60		152	56	112	71	80	49	85	94
15	60	70	61	60	92	G	50	62	78	83	71	73	83		G	62	86	65	40	43	G	40	G	31
16	29	G	G	40	G	G	G	52	66		83		82	71	50	G	45	50	43	58	72	42	56	G
17	G	G	G	G	G	G	44	62	G		50	G	G			G	G		42	G	G	39	29	43
18	53	40	25	G	G	43	52	52				63	81			G	G	G	G	G	G	G	G	55
19	59	86	70	G	23	G	90	71	70	73	52	G	G	63	62	G	50	77	102	96	35	50	33	91
20	52	40	36	76	53	39	59	51	65	105	59	96	91	71	53	62	104	80	40	32	43	84	50	83
21	83	70	48	61	G	45	67	66	51	G		56			57	62	83	153	107	112	46	40	28	37
22	41	58	37	43	37	G	42	104	127	76	76	88	91	83	76	52	G	40	96		90	94	60	55
23	92	60	41	50	G	G	67	74	74	97	86	148	87	46	G	G	39	G	50	34	28	G	43	41
24	70	48	G	28	41	43	G	G	50	60	136	100		123	61	55	41	178	159	165	104	57	67	48
25	G	G	G	G	37	45	54	44	63	66	50	61	90	77	70	G	G	41	G	116	104	84	60	83
26	59	47	41	38	24	G	61	61	53	96	49	86	62	132	62	54	55	136	39	31	G	36	42	28
27	40		64	30	35	G	40	71	134	176	136	G	70	G	50	G	G	51	41	108	132	116	70	50
28	40	59	41	29		60	71	115	88	84	97	61	99	96	80	62	60	80	70	80	104	71	94	78
29	81	60	33	45	G		39	71	94	161	148			58	50		G	49	35	45	G	G	56	46
30	87		45	36	60	43	G	56	48	82	60	73	68	47	79	G	G	G	G	G	G	60	46	71
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	30	30	29	28	30	29	29	27	27	27	27	24	28	27	29	29	29	27	30	30	29	30
MED	59	58	41	36	27	34	52	66	71	83	77	71	81	72	60	54	60	60	57	53	50	51	48	48
U Q	71	68	48	48	38	45	61	75	89	104	121	86	90	90	74	66	75	78	99	84	83	77	63	71
L Q	40	37	33	29	G	G	40	52	52	73	59	57	59	56	50	G	20	46	40	32	G	39	37	40

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Kokubunji

JUN. 2003

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT Yamagawa

JUN. 2003

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		64	55	54	52	54	71	78	77	73	76	80			88	87		110	110		84	77	77	79
2	85	76	76	77	78	64	A	A	70	A	A	A	A	A	A	A			86		80		54	
3		52	A	46		38		51	A	A	A		A	A	63	61	65	70	68	67	66	A	A	66
4		58	52	62	54	58	75	80	77	75	A	77		76	78	72	74	73	A	A	77	A	A	A
5	54			56		43	61	A	A	A	A	A	A		85			80	A	A		74	77	66
6	A	55	61	58	63	63	76	85		A	A	A	A	85			98	82	78	81	78	66		63
7	55	73	66	67	36	52	60	61	A	A	A	A	A	A	68	68	66	64	60	62	67		A	54
8	54	54	54	52	52	54	51	A	A	A	A	A	A	A	A	A		75	75	A	A	A	A	A
9	54	54	52	52	51	55	58	62			80	A		A	86	86	85	87	85	78	A	82	86	79
10	86		75	66	54	46	61	64	70	A	A	77		A	A	81	76	A	76	75	80	73	74	71
11	76	79	78	66	A	51	60		A		A	A	A	A	A	A	A	A	77	80	76	53	59	54
12	66	54	60	61	52	48	64	81	67	A	62				80	81	A	A	A	79	A	A	A	76
13	A	78	66	58		52	72	A	A	A	A	A	A			A				78		74		77
14		A	64	59	55	55	73	79	A	A	A	76	A	A		77	78			112	81	62	66	A
15		66	52	34	36	34	66	A	A	A	A	A	A		70		A	74	76	78	66	66	54	66
16	72	74	66	68	67	65	77	80	66								93	88	91		A	66		81
17	78	80	75	76	74	60	60	A		A			80	78	73	86	85	110		84	78		77	77
18	78	83	78	74	80	79	77	71				A		A		77		76	85	110	80	78	77	78
19	80	76	A	84	84	65	64	78		74		78	75		81	85	81	82	A	105	80	81	78	85
20	78	78		77	75	78	76	A	A			A	A	81	78		85	98	102		80	A	74	75
21	72	74	78	66	74	76	71	79	78		A		A		78	86	82	80	81	84	85	66	73	66
22	66	65	54	66	66	77	84	75	68	66		A			A	78	78	78	78	80	76		A	A
23	A	A	75	58	52	54	58	80	A	A	A	73	76	75	78	86	81	75	81	80		66	66	
24	77	74	66	66	60	54	62	80	74	A	A		78	A	A	99	110	108	78	81	73	87	87	88
25	88	84	85	75	73	56	62	77	87	70	A	77		A	77	80	80	77	75	80		66	64	A
26	72		78	A	66		74	65	67	70	A		67	90	A	A	A	A					83	78
27	78	77	77	71	74	71	66	77	78	71			78	80	78	77	80	81	74	78	72	66	66	A
28	76	78	72	61	54	48	A	A	A	A	A	A	A	A	A			A	A	58	A	A	52	A
29	66	A	51				64	68	A		A			A		67	67	67	68	66	66	55	64	54
30	52	53	55	61	53	51	64	82	72		A		78		80	82	84	84	84	80	66	66	66	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	24	26	28	25	28	27	21	13	7	3	7	7	7	16	19	19	22	21	22	20	19	21	20
MED	74	74	66	64	60	54	64	78	72	71	76	77	78	80	78	81	81	80	78	80	78	66	73	76
U Q	78	78	76	69	74	64	74	80	77	74	80	78	78	85	80	86	85	87	85	81	80	77	77	78
L Q	66	56	55	58	52	51	61	66	67	70	62	76	75	76	75	77	76	75	75	78	69	66	64	66

HOURLY VALUES OF fEs AT Yamagawa

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	43	38	28	G	24	54	41	42	48	G	63			G	57	58	56	74	44	36	83	59	54
2	84	60	40	31	26	28	72	92	54	81	115	90	117	84	116	88	77	84	72	82	71	60	37	43
3	41	39	69	43	50	G	34	54	108	96	56		87	90	G	G	41	56	74	42	40	93	69	60
4	71	60	56	57	G	28	52	51	67	80	70	G		G	62	G	52	58	62	105	52	92	82	58
5	59	60	70	41	50	26		63	74	118	103	119	184	104	112	92	98	59	95	80	69	69	42	59
6	60	43	50	57	39	27	37	66	78	76	72	78	105	66	90	89	78	60	66	39	35	38	G	28
7	28	28	G	G	G	G	35	51	81	175	118	173	174	64	61	65	55	46	53	38	30	36	39	40
8	40	38	G	G	28	G	38	56	59	88	82	81	83	84	152	157	84	60	55	86	71	95	70	71
9	25	37	34	26	G	G	37	41	68	83	81	128	79	104	57	58	81	88	90	50	86	72	80	60
10	32	31	28	33	G	G	42	60	66	89	93	82		68	76	64	62	72	46	57	38	36	39	69
11	49	41	60	50	42	28	86		110		112	132	110	136	128	90	86	94	64	35	G	G	54	43
12	40	46	40	40	30	27	G	G	66	58	58			G	57	58	92	91	135	96		132	102	78
13	58	49	40	37	52	28	39	88	173	85	157	117	163	97	94	140	76	78	97	58	68	31	40	54
14		89	52	41	38	36	52	59	90	94	194	76	80	128		G	59		80	50	50	43	39	60
15	82	71	G	G	G	G	84	107	84	68	86	86	114	72	60	73	76	60	48	56	36	32	29	33
16	28	28	25	34	56	30	48	47	47					69	86	94	44	56	60	108	105	61	46	58
17	34	57	34	24	G	G	G	68	75	83		78	53	G	60	G	G	G		G	G	57	54	40
18	30	36	41	41	40	28	46	60			57	77	58	76	94	77		46	51	40	34	G	26	34
19	28	51	40	44	26	G	44	44	80	86	106	65	62	82	66	G	G	50	91	92	49	57	40	68
20	60	44	41	28	56	23	35	84	136	136	88	50	117	G	51	91	60	75	52	74	49	70	40	28
21	G	G	38	84	79	90	60	58	54	63	86	65	88		59	G	G	47	53	42	35	27	27	30
22	79	27	51	55	36	51	G	G	53	83	84	161	81		79	G	55	G	G	57	43		61	83
23	81	85	32	47	41	33	52	61	106	128	174	62	55	G	43	52	40	53	40	49	40	40	57	29
24	43	37	29	43	40	44	40	45	58	81	88	64	69	78	114	71	104	83	83	93	57	50	59	90
25	82	36	49	92	28	28	54	45	60	69	82	52	79	117	43	57	G	G	39	42	43	G	G	116
26	44	56	73	70	60	83	29	46	41	60	58	62	67	75	114	148	110	117					66	50
27	40	48	44	35	G	G	29	56	57	50	43	52	G	G	G	G	41	G	44	34	G	40	50	83
28	80	39	47	43	43	27	81	116	70	151	95	67	105	170	58	G	70	114	76	55	87	72		82
29	60	79	58		53	43	G	50	50	G	47			64		G	G	59	66	45	G	G	39	32
30	27	37	40	38	G	28	59	57	53	65	125	64	58	80	63	52	61	41	34	32	G	33	34	60
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	30	30	29	29	29	27	28	26	24	27	28	30	29	29	28	29	28	28	29	30
MED	44	43	40	41	37	28	42	56	67	83	86	76	82	76	62	58	60	59	63	50	42	46	42	58
U Q	70	57	51	48	50	30	54	64	82	94	109	90	112	97	94	89	79	80	78	81	62	71	60	69
L Q	31	37	34	29	G	G	34	45	54	65	64	63	64	64	57	G	41	46	49	41	34	32	38	40

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT Yamagawa

JUN. 2003

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	15	15	14	15	14	15	17	20	26	52	44				38	34	20	17	16	15	15	14	15
2	15	15	15	14	14	14	15	17	20	34	49	42	39	52	40	29	24	18	20	20	17	15	14	15
3	15	16	14	14	15	15	15	16	21	23	30		36	33	32	28	33	17	17	15	14	15	15	14
4	15	14	15	14	14	15	15	15	17	18	29	33			39		32	18	17	15	15	14	14	15
5	15	15	14	14	14	16	15	15	18	20		34	35	30	29	33	28	24	16	14	15	15	14	15
6	14	14	15	14	14	15	15	16	20	30	34	35	43	34	29	28	23	18	17	14	15	15	16	17
7	15	16	17	15	15	20	17	17	20	44	42	33	33	33	29	28	24	18	16	14	14	15	14	15
8	14	15	16	16	15	15	18	15	18	24	34		40	46	49	41	18	33	16	15	14	16	15	14
9	15	14	14	15	15	16	16	17	17	27	39	39	39	40	38	29	22	21	15	15	15	16	15	15
10	14	14	15	14	16	15	15	26	32	35	38	39		43	46	36	27	21	17	15	15	15	15	14
11	15	15	16	21	15	15	15		28		62	52	60	44	46	42	24	33	15	14	16	15	14	15
12	15	18	14	15	14	14	28	45	28	36	44			63	34	33	43	32	20	16	16	15	15	15
13	15	15	16	14	15	15	20	20	30	33	40	71	58	48	44	34	41	22	17	15	15	14	15	14
14		14	15	15	14	14	17	17	22	35	39	42	48	46		62	37		16	16	15	14	14	16
15	15	14	18	17	15	14	15	17	21	36	38	44	40	44	36	34	21	21	16	14	15	15	14	15
16	17	14	15	15	14	15	20	17	17					44	39	32	28	18	15	14	15	15	15	16
17	15	14	15	15	15	16	17	16	18	22		33	43		34	24	18	20		20	15	15	15	14
18	15	14	14	14	15	14	17	17			45	42	44			35		20	17	15	14	16	17	15
19	14	15	15	16	16	14	16	17	20	23	20	35	36	42	33		22	29	16	16	15	15	14	15
20	14	14	15	14	17	17	16	18	18	27	29	38	35		36	24	18	20	18	15	16	15	14	15
21	22	21	14	15	16	15	14	17	20	27	27		44		42		23	18	14	14	15	15	16	15
22	14	17	14	15	14	22	23	17	20	22	30	34	40		39		24	22	17	15	15		14	15
23	21	14	15	15	14	14	18	16	21	22		40	42			36	22	17	17	14	15	14	14	14
24	14	15	21	15	15	14	14	16	20	21	24		37		38	34	20	24	18	15	16	14	15	15
25	15	15	14	15	15	15	15	16	17	33			36	29	28	26		20	17	15	15	18	21	15
26	14	17	14	15	16	16	15	18	18	26	28	33	42	44		42	22	18					14	14
27	15	15	15	15	21	15	15	20	21	29	29	30			56		24	33	23	14	14	15	15	15
28	14	15	14	14	15	14	16	18	18	27	33	28	34	33	30	26	34	29	17	15	15	14	15	15
29	16	14	14		14	14	15	18	18	23	27			33			23	20	15	17	23	18	15	15
30	15	15	15	15	15	14	16	16	20	21	30	32	33	28	29	21	18	17	15	14	16	15	14	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	29	30	30	30	29	29	27	25	22	23	20	24	24	28	29	28	29	29	28	30	30
MED	15	15	15	15	15	15	16	17	20	27	34	36	40	42	37	33	24	20	17	15	15	15	15	15
U Q	15	15	15	15	15	15	17	18	21	33	41	42	43	45	41	36	30	24	17	15	15	15	15	15
L Q	14	14	14	14	14	14	15	16	18	22	29	33	36	33	31	28	22	18	16	14	15	15	14	15

HOURLY VALUES OF foF2 AT Okinawa

JUN. 2003

LAT. 26°40.5'N LON. 128°09.2'E SWEEP 1.0MHz TO 30.0MHz 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	86	85	87	89	71	74	71	74	77	80	86	89			97	107	111	122	126	110	98	86	76	79
2	78	83	75	77	78	66	61	80	A	A	A	A	A		A		87	A	A	110	64	52	A	52
3	50	51	48	51	51	47	44	47	51	A	A	A		76	74	71	73	81	84	76	66	66	52	A
4	A	A	55	61	60	55	65	71	A	A	A	A	90	95	101	101	85	94	92	96	86	76	74	65
5	72	66	72	65	48	42	50	58	A	A	A		78	97	108	117	111	102	105	105	87	86	86	72
6	66	75	65	58	55	59	66	82	62	A	A		75	100	123	131	131	128	123	127	107	88	87	81
7	77	88	87	74	66	59	66	62			A		64	75	86	A		78	64	67	71	52	50	51
8	A	A	52	A	47	42	44	48			74	C	70			A	97	88	76	61	58	A	44	53
9	61	61	55	52	54	55	63	64	57	75	97	A	81	96	98	107	101	100	90	A	86	81	86	86
10	87	88	73	71	65	64	66		A	A	A	80		82	97	101	86	78	80	80	78	76	75	75
11	80	86	84	61	52	46	52	71	77		A	A		102	106	117	118	108		106	87	66	54	66
12	53	73	62	51	50	51	66	74	64	67			75	78		90	101	102	90	93	77	75	77	78
13	81	78	71	63	A	64	A	74	71		80		A	A	A	112	121	A	106	88	84	80	79	80
14	84	82	66	58	62	61	72	78	70	70	75	77	80	72		87	93	96	110	106			A	A
15	74	84	74	A	30	A	62	64	A	A	A	A	72	A	A	71	A	86	A	88	66	64	59	64
16	66	65	66	58	63	61	72	72	A			73	76	90		79	101	106	107	87	74	77	78	75
17	73	75	71	72	66	60	61	64	A	A		85	82	96	81	107	119	120	122	110	84	85	82	81
18	87	88	77	78	86	84	78	72		71	71	78	69	A	A	77	80	92	110	142	A	86	77	85
19	85	71	77	87	84	85	80	86	87	84		A	A	A		95	94	106	108	105	86	82	82	85
20	84	85	81	78	76	62	74	75	88	A	A	A	A	A	A	A		131	131	107	88	86	82	82
21	80	82	78	72		A	A	78	82	81	77	66	73		96	107	105	90	90	110	87	72	66	73
22	71	72	71	80	75	76	75	61	63	73	90	75		85	90	100	98	104	90	87	84	73	53	66
23	62	A	64	65	46	47	60	89	66	A	59	78	80	76	82	98	92	81	97	105	85	66	66	66
24	72	72	66	65	62	54	67	86	55	A		74		92	96	107	120	121	110	102	88	87	87	106
25	108	107	121	75	72	65	66	A	84	74	84	A	96	106	112	111	102	108	109	108	104		A	72
26	65	78	85	71	63	61	64	58	71	81	A		81	96	87	88	A	A				77	82	86
27	81	84	82	72	72	72	68	75	75	78	77	76	89	94	98	94	97	A	A	82	80	71	66	66
28	A	72	73	57	58	A	60	73	67	A	A	A	A	65	70	68	66	71	70	66	66	64	49	66
29	65	65	60	55	60	60	64	52			66	72	75	72	74	77	82	75	81	85	86	76	66	75
30	73	66	66	67	57	61	66	77	71	66	67	74	94	116	110	110	108	104	106	80	73	73	54	66
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	30	28	28	27	28	28	19	12	13	13	19	21	20	26	26	26	25	28	27	27	27	28
MED	74	78	72	66	62	61	66	72	71	74	77	76	78	92	96	100	100	101	105	99	84	76	75	74
U Q	84	85	78	74	71	65	69	77	77	80	85	79	82	96	103	107	111	108	110	107	87	85	82	81
L Q	66	71	65	58	53	54	61	63	63	70	69	73	73	76	84	87	87	86	87	83	73	66	54	66

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT Okinawa

JUN. 2003

LAT. 26°40.5'N LON. 128°09.2'E SWEEP 1.0MHz TO 30.0MHz AUTOMATIC SCALING

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	26	G	58	50	67	33	29	G	42	47	G	G			50	65	70	76	78	61	35	54	28	33
2	41	56	38	30	G	G	29	76	89	91	99	83	93	84	132	96	51	115	132	70	38	33	79	44
3	36	41	39	28	35	36	G	39	50	66	68	51		50	79	44	70	40	46	40	38	28	40	70
4	78	71	70	37		40	60	52	129	89	161	138	58	G	G	67	82	73	88	65	56	71	72	72
5	59	107	88	64	28	28	36	54	91	125	176	90	72	70	59	51	81	56	77	60	56	56	79	56
6	56	47	40	37	28	28	30	36	77	128	144	76	83	96	98	103	95	72	106	66	G	G	G	G
7	G	G	G	G	G	G	29	42	68	50	90	64	46	48	92	108	78	52	56	43	38	29	G	29
8	83	90	58	80	26	34	28	48	37	60	62	C	69	110	114	97	45	58	40	28	27	80	57	46
9	58	54	41	34	35	27	39	46	51	70	52	72	67	90	55	46	45	44	37	125	78	83	71	44
10	59	41	35	31	29	G	31	72	94	72	74	70	83	72	G	47	64	50	59	53	52	39	26	G
11	58	83	82	56	29	32	39	64	62		96	108	93	74	82	74	70	85	108	81	59	28	G	40
12	43	28	40	39	35	29	G	42	47	68	78		G	85		59	50	58	52	72	31	50	79	54
13	49	92	71	60	82	48	84	70	79	88	66		127	140	108	104	45	136	88	38	38	33	28	43
14	70	60	58	41	32	34	34	44	52	65	70	G	G	G		G	G	39	64	48	57	83	109	132
15	59	60	56	36	29	42	53	60	68	115	90	68	56	88	76	63	86	69	136	85	48	41	32	30
16	56	36	G	G	G	27	34	39	80			G	67	74	77	55	50	52	52	64	58	60	43	71
17	82	70	72	66	27	28	51	53	90	87	70	78	63	105	83	48	44	G	G	G	25	32	33	58
18	50	33	34	40	51	32	29	44		G	51	44	61	89	131	66	60	70	73	137	94	59	45	34
19	24	35	33	G	G	G	26	38	70	78	112		110	150	124	G	48	56	86	71	68	90	59	67
20	60	70	78		81	91	52	48	71	86	179	96	166	155	132		170		59	110	84	73	50	34
21	34	23	G	49		82	93	59	72	79	59	78	64		68	G	49	56	40	28	28	33	40	38
22	59	55	49	60	49	44	48	35	39	40	53	45		G	G	51	67	G		44				
23	56		90	41	25	38	32	49	60	71	62	79	72	63	59	52	G	50	48	50	47	26	36	42
24	38	40	35	28	G	26	G	38	77	74	98	82	114	88	G	107	60	39	42	38		42	28	40
25	34	38	34	G	G	G	40	95	56	52	76	155	98	G	G	59	G	G	G		56		79	72
26	43	43	45	58	61	25	G	44	52	82	78	58	61	63	83	72	98	93					35	78
27	66	G	G	G	G	G	G	34	44	G	45	46	G	59	68	84	65	96	113	41	48	39	37	70
28	78	67	48	27	54	57	60	92	96	102	111	100	103	55	G	G	64	65	61	42	41	34	38	66
29	59	49	41	32	34	40	G	35	70	64	G	G	G	G	69	53	48	G	G	41	26	G	G	27
30	25	24	G	G	G	27	G	44	57	58	48	68	66	62	58	90	66	48	51	60	60	25	29	30
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	29	28	30	30	30	29	28	29	26	27	28	28	29	30	29	28	28	27	27	29	29
MED	56	47	41	37	29	30	32	45	68	72	74	71	67	73	72	59	62	56	59	56	48	39	38	44
U Q	59	68	58	53	42	40	48	59	79	87	98	83	93	89	95	87	70	72	87	70	58	60	65	68
L Q	38	34	34	27	G	26	26	39	51	59	56	46	58	52	52	47	48	42	44	41	35	29	28	33

HOURLY VALUES OF fmin AT Okinawa

JUN. 2003

LAT. 26°40.5'N LON. 128°09.2'E SWEEP 1.0MHz TO 30.0MHz 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
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2	14	14	14	14	18	15	14	14	18	29	43	38	36	40	34	30	22	18	23	14	14	14	14	14
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4	14	14	14	14	14	14	14	14	16	21	21	27	29			36	23	20	16	14	14	14	14	14
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6	14	14	14	14	14	14	14	14	16	22	24	33	39	29	32	29	26	21	14	14	14	14	15	15
7	14	15	14	14	21	14	14	14	17	35	38	28	30	36	28	33	23	21	14	14	14	14	15	14
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12	14	15	14	14	14	14	23	28	30	35	38		58	42		44		21	15	15	14	14	14	14
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14	14	14	14	14	14	14	14	16	18	30	28		60			55	53		15	14	14	14	14	14
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16	14	14	14	14	15	14	18	14	17				42	36	29	29	21	15	14	14	14	14	14	14
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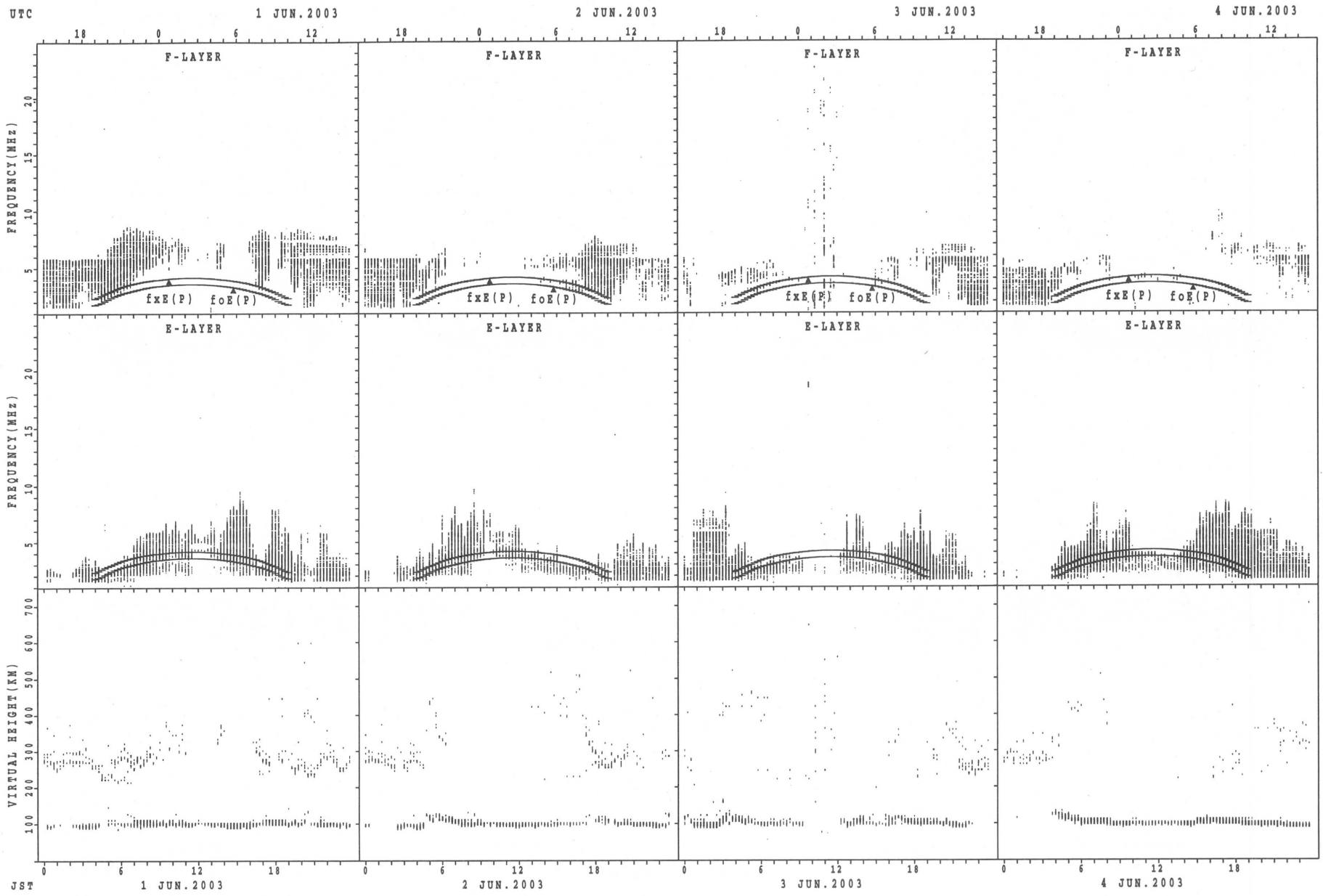
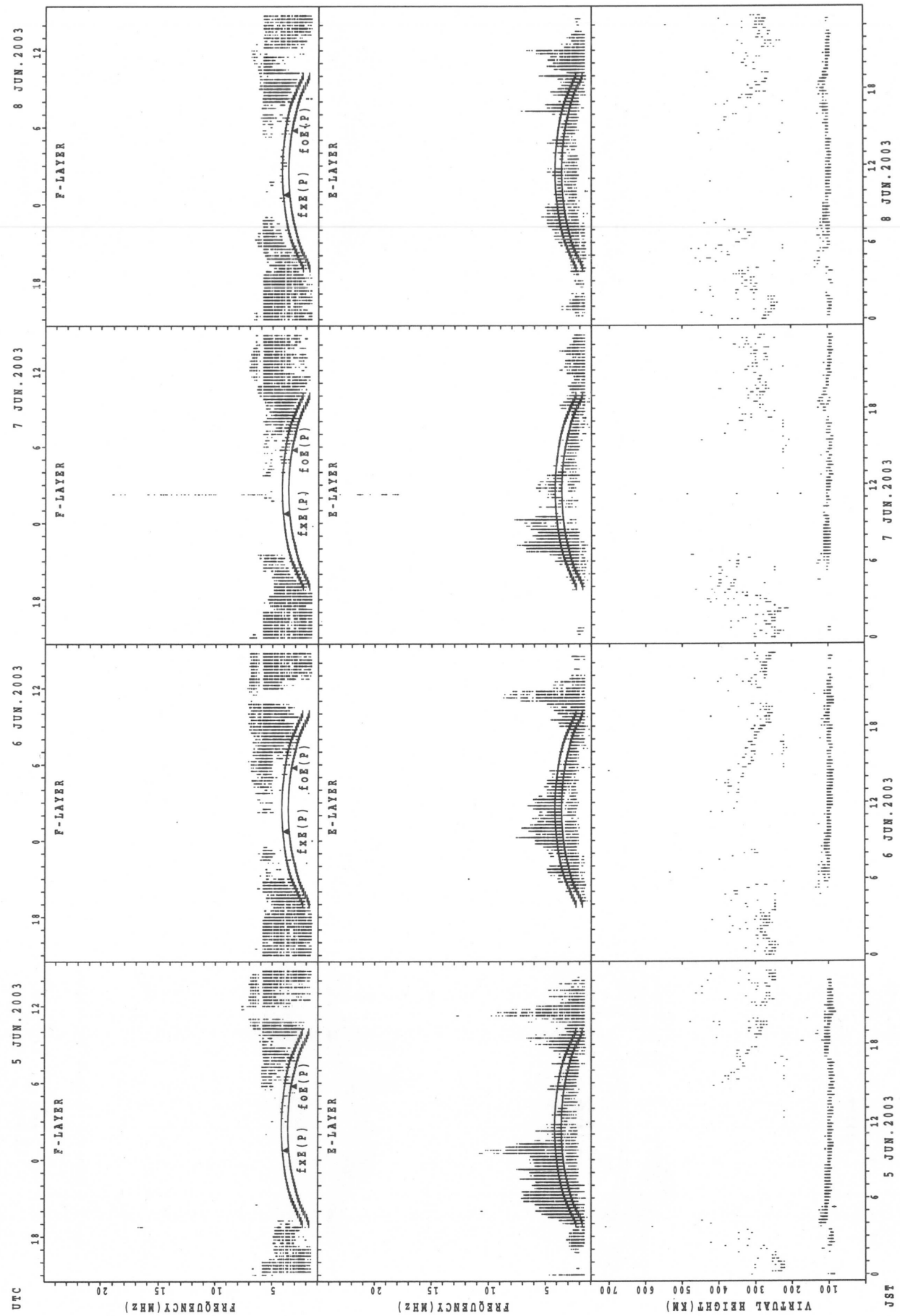
30	14	14	17	14	14	15	14	15	15	16	21	30	30	32	24	22	18	16	14	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	29	27	28	22	25	23	23	29	28	29	29	29	29	27	29	29
MED	14	14	14	14	14	14	14	15	18	21	28	33	39	38	32	30	22	20	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	16	20	29	36	36	42	40	38	35	24	21	15	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	16	20	25	29	32	32	29	27	21	17	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

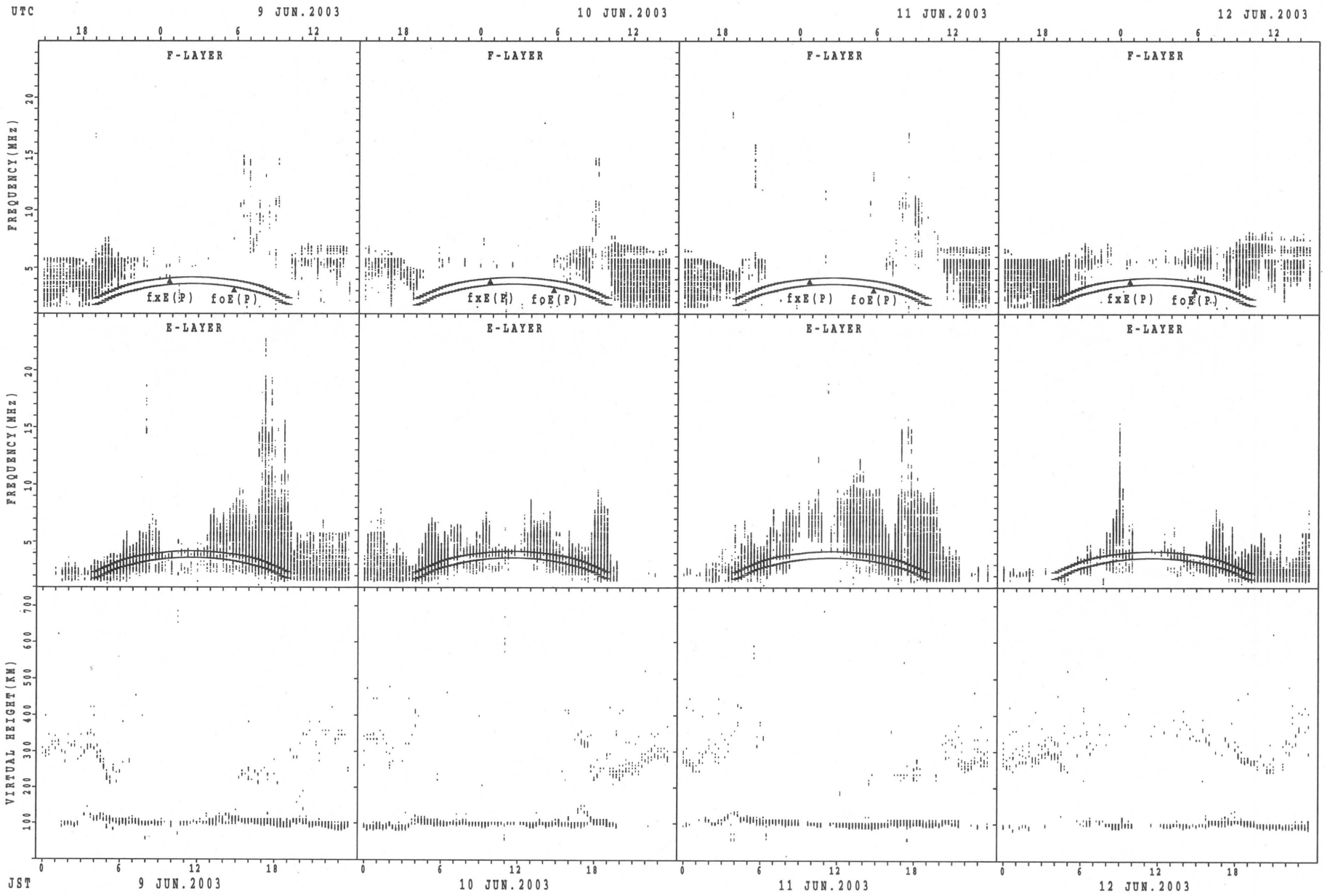
SUMMARY PLOTS AT Wakkanai



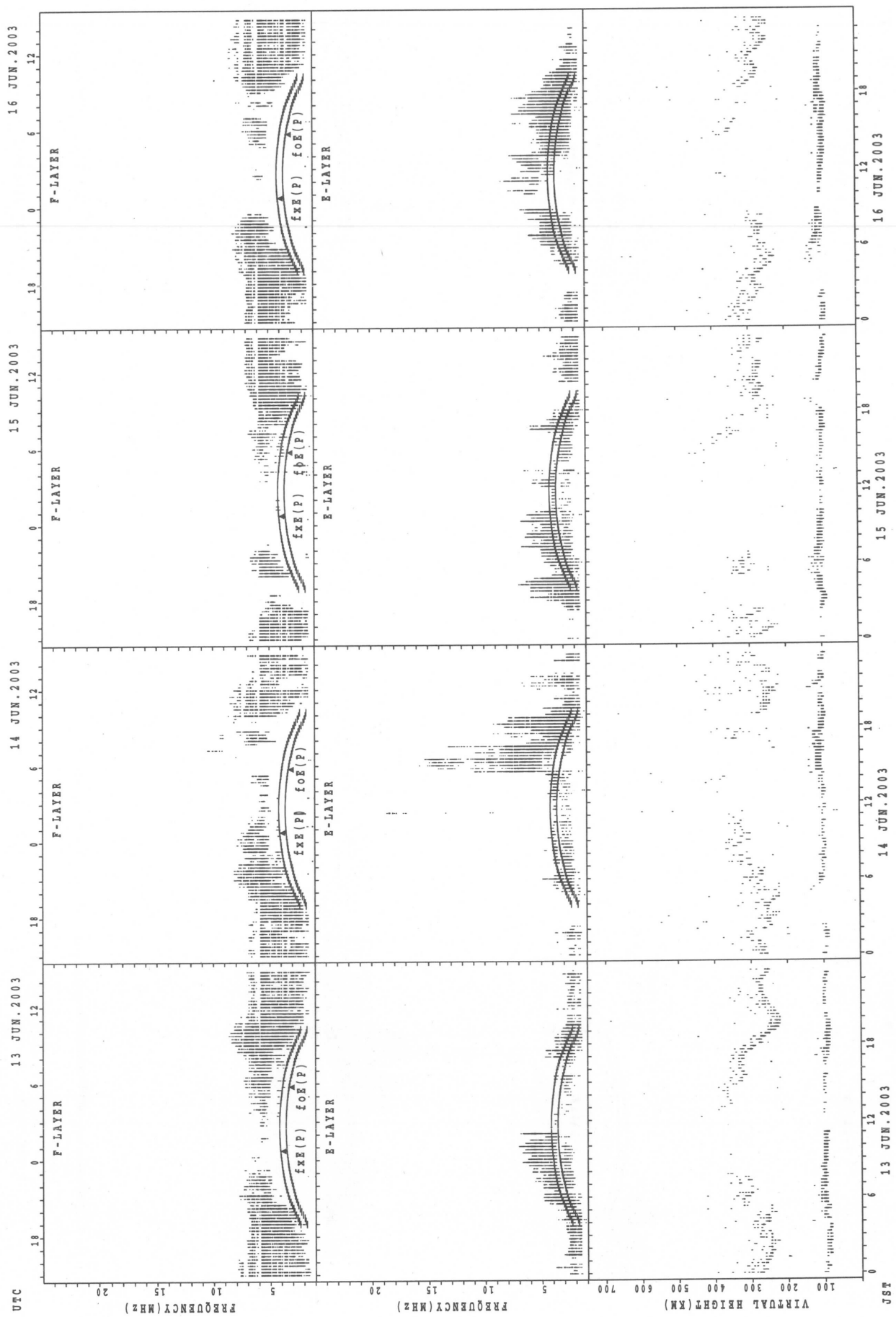
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Wakkanai
UTC
JST
5 JUN.2003
6 JUN.2003
7 JUN.2003
8 JUN.2003
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

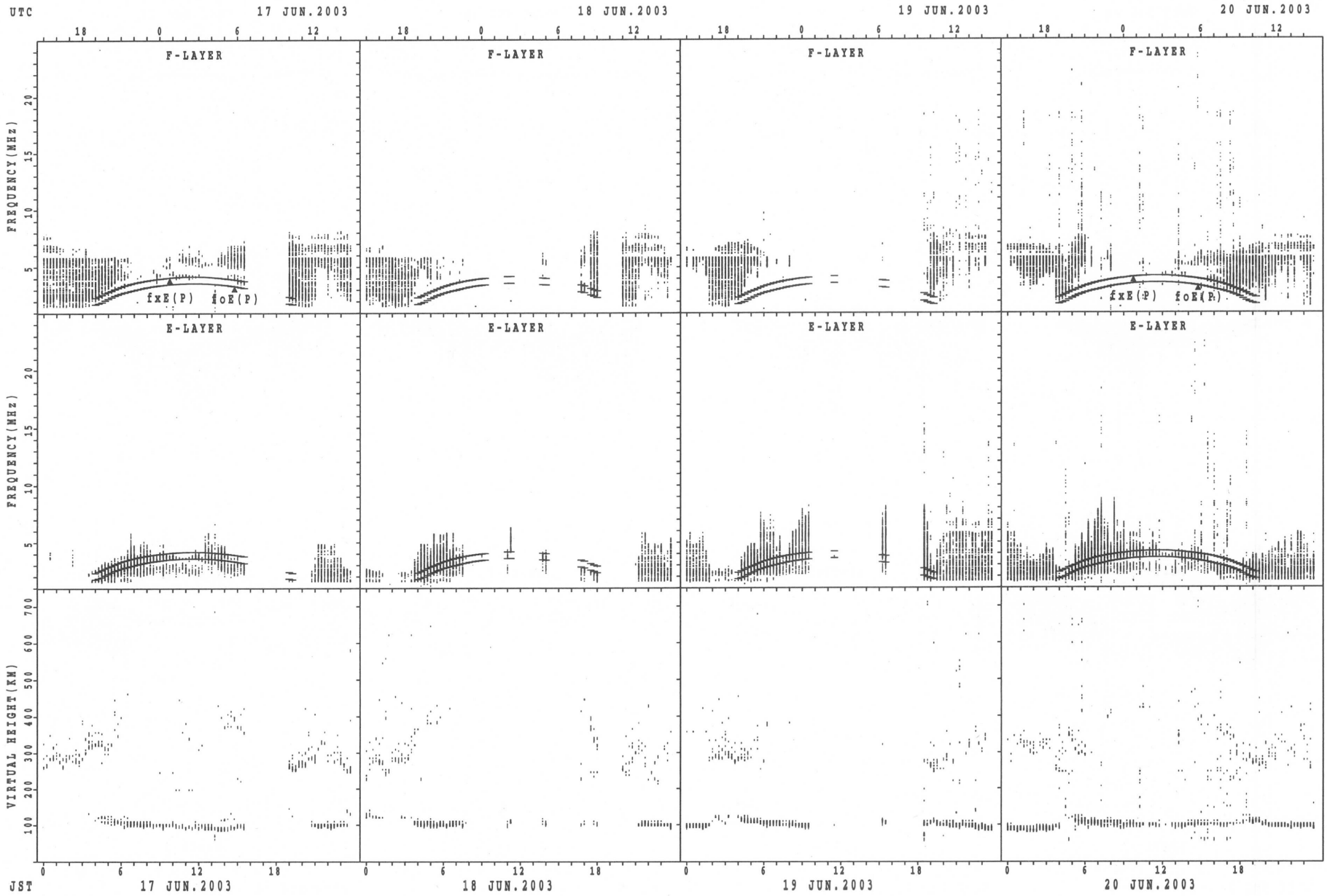
SUMMARY PLOTS AT Wakkanai



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

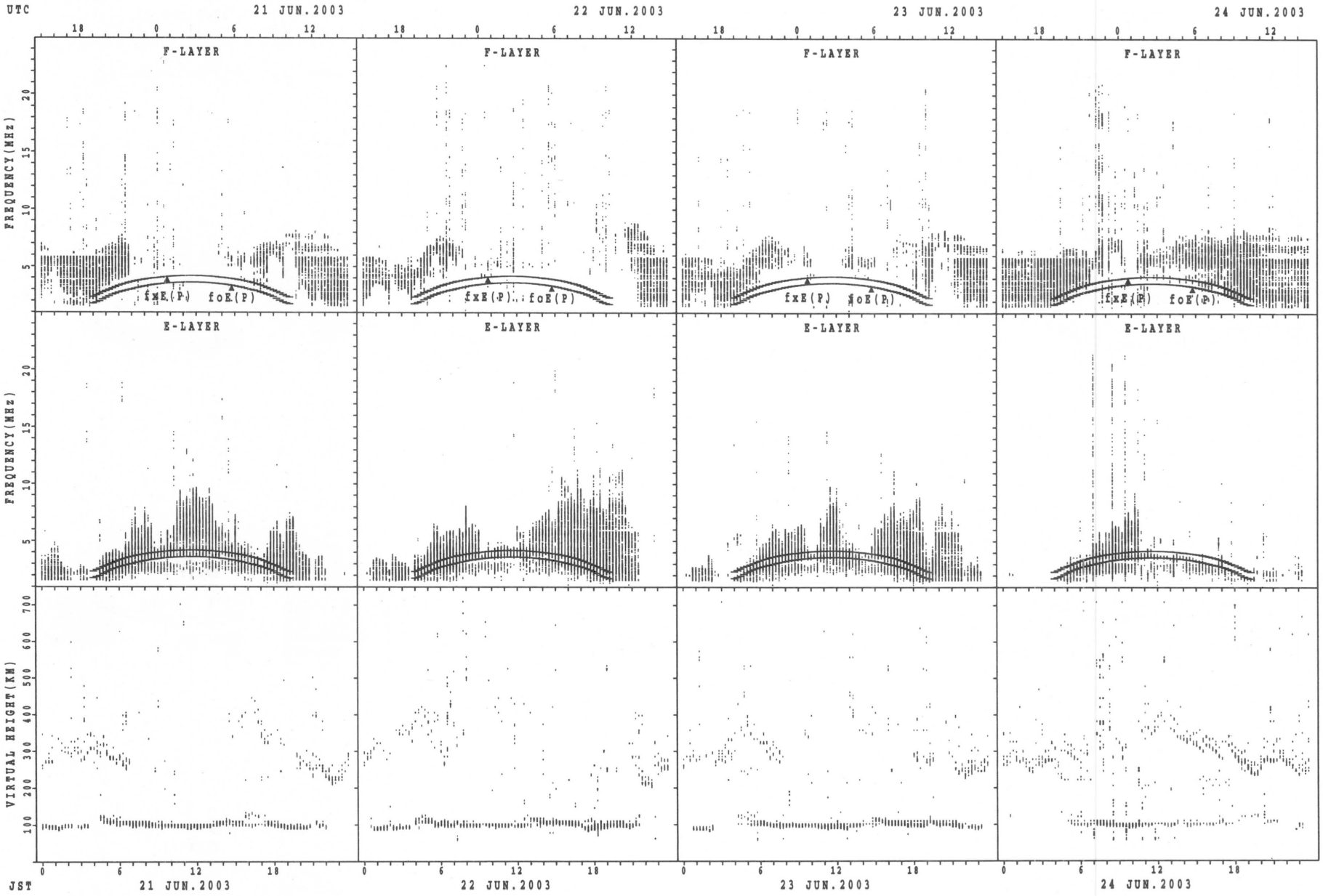

SUMMARY PLOTS AT Wakkanai
13 JUN.2003
14 JUN.2003
15 JUN.2003
16 JUN.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
foF(P)
UT
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



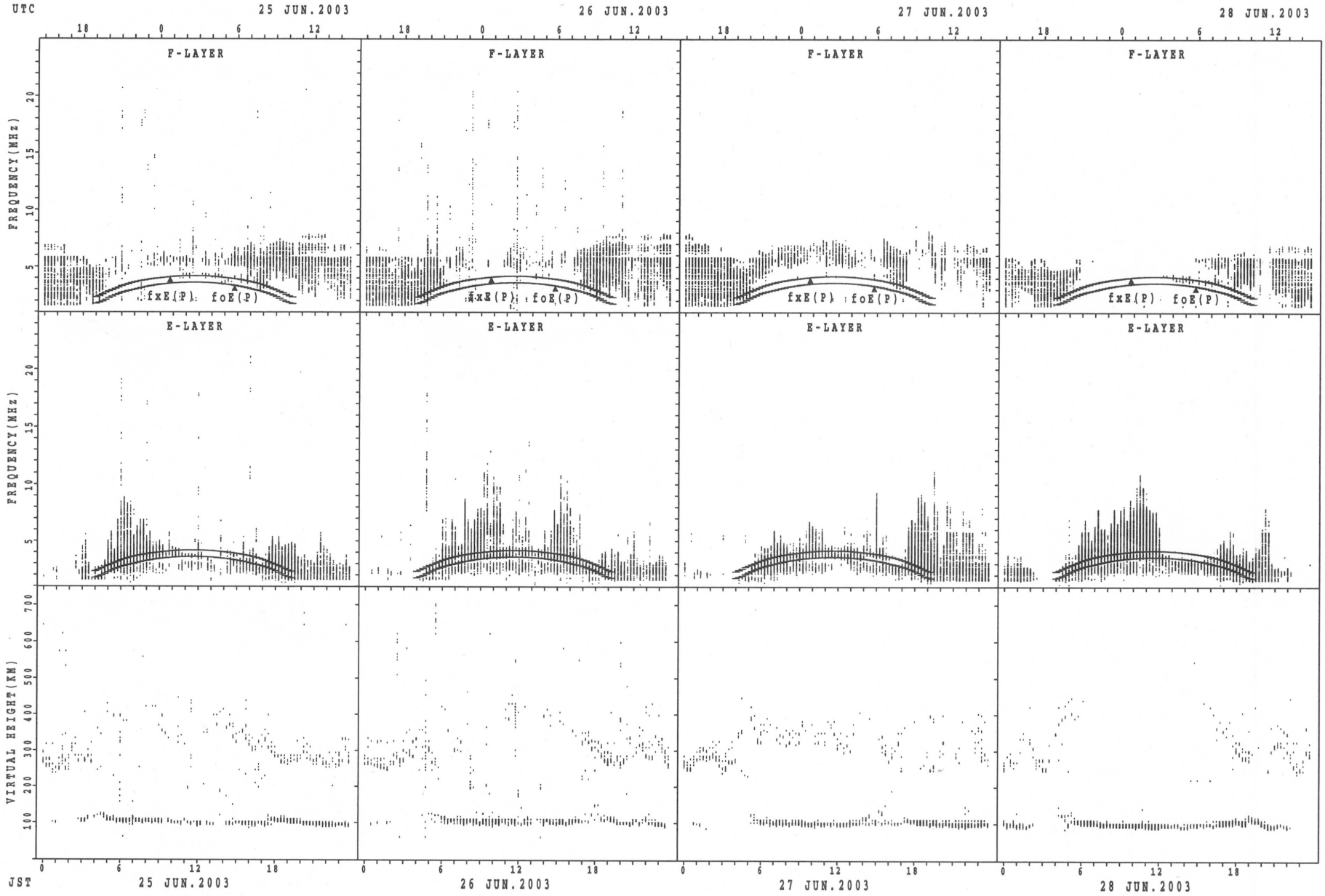
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



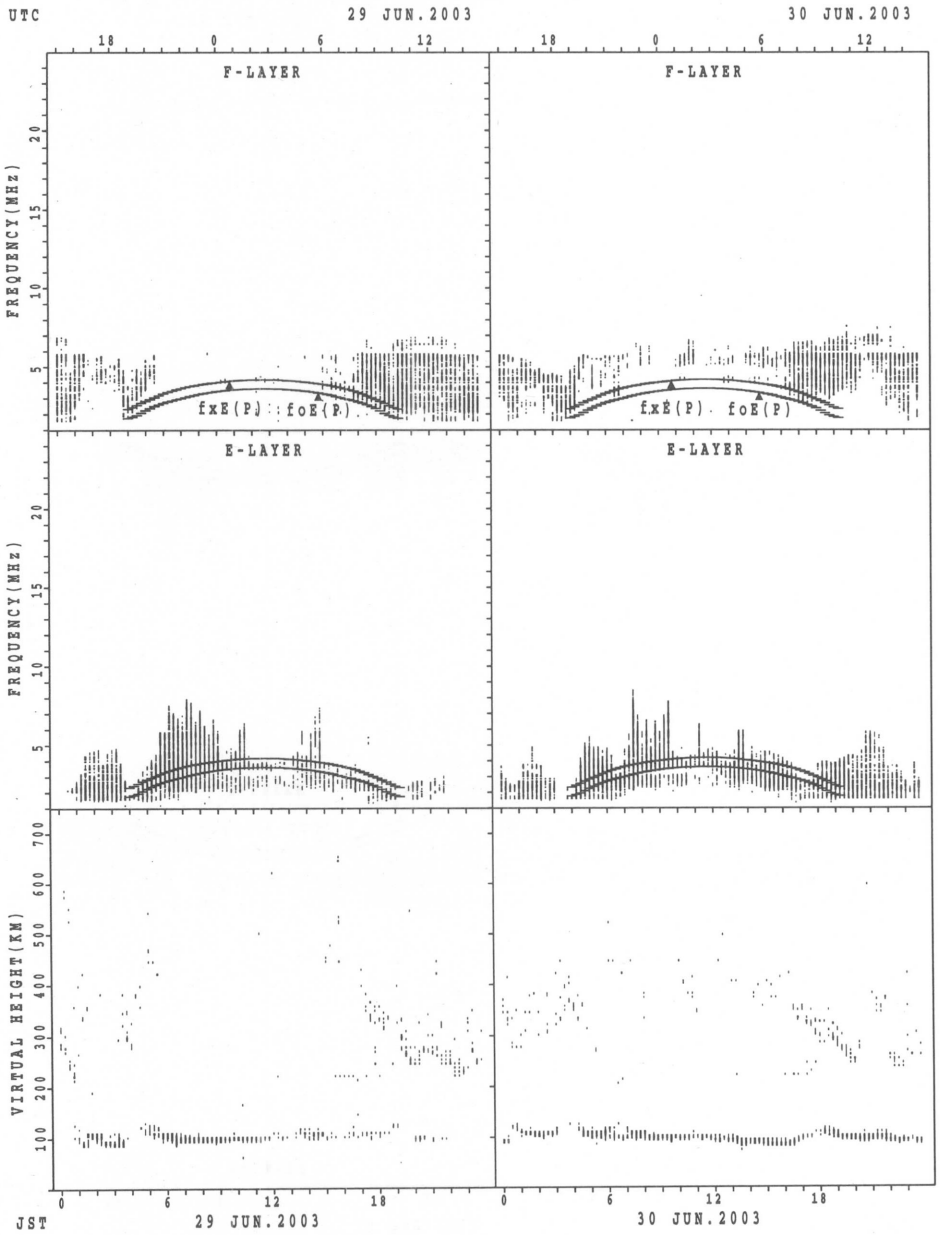
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai



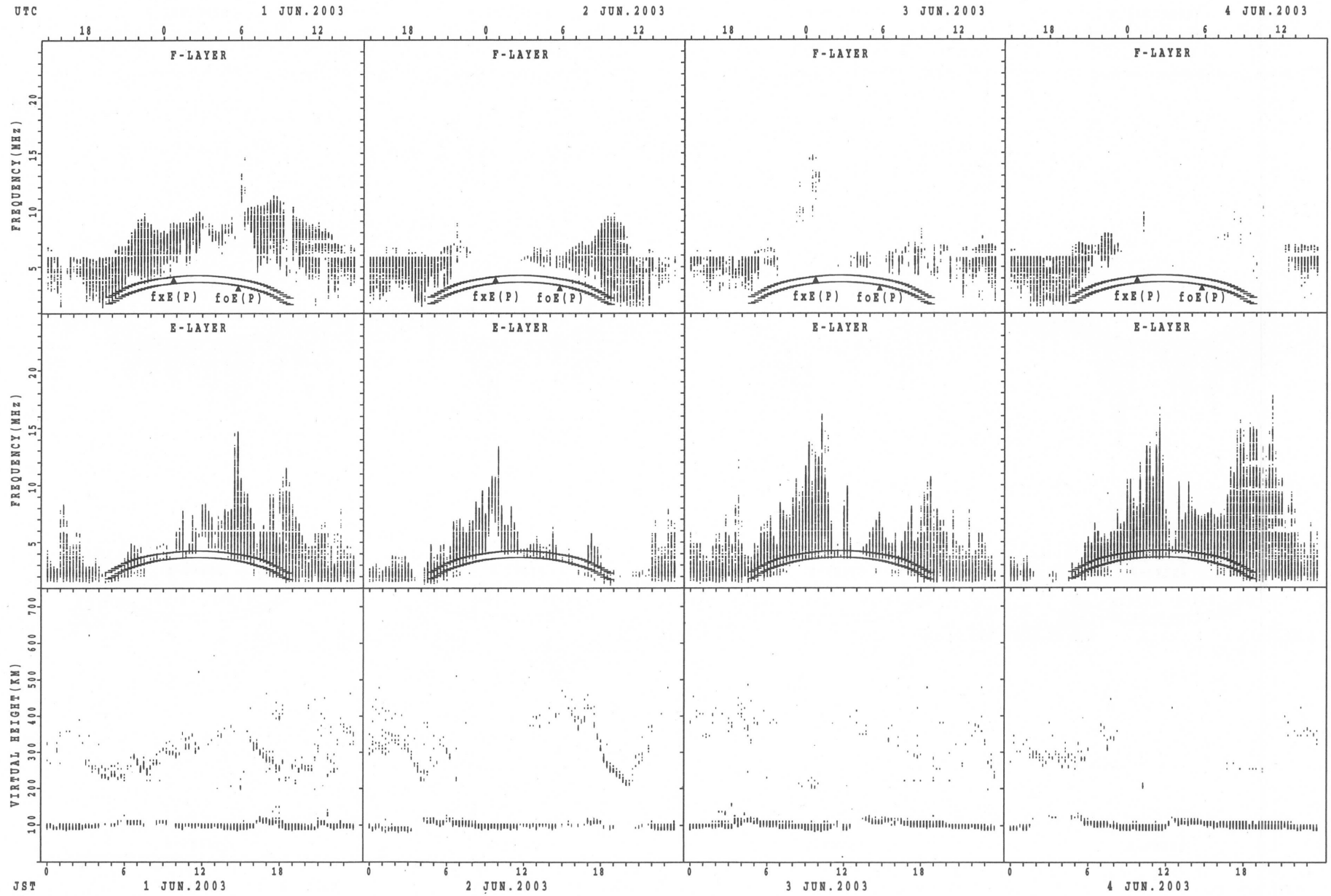
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Wakkanai

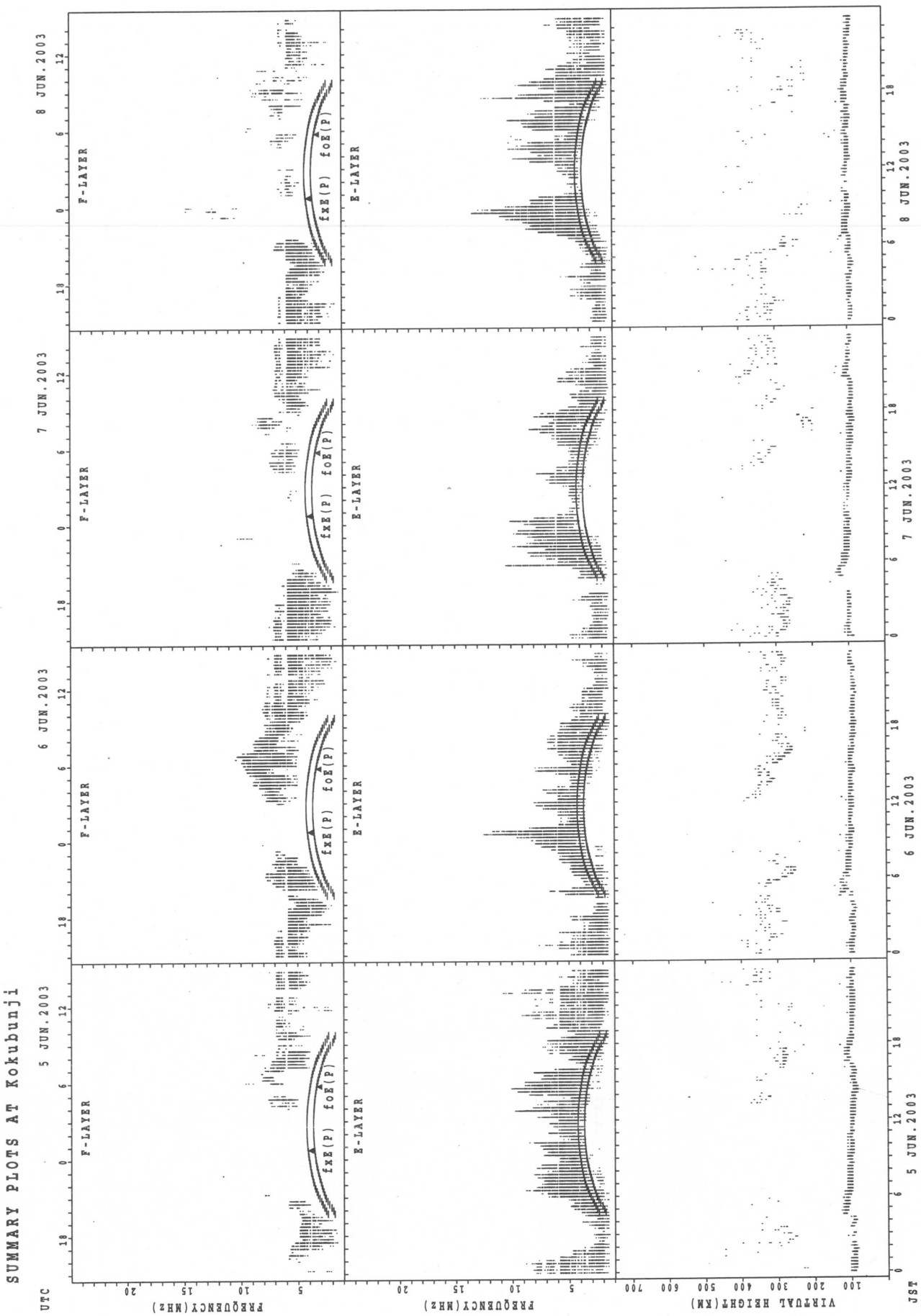


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

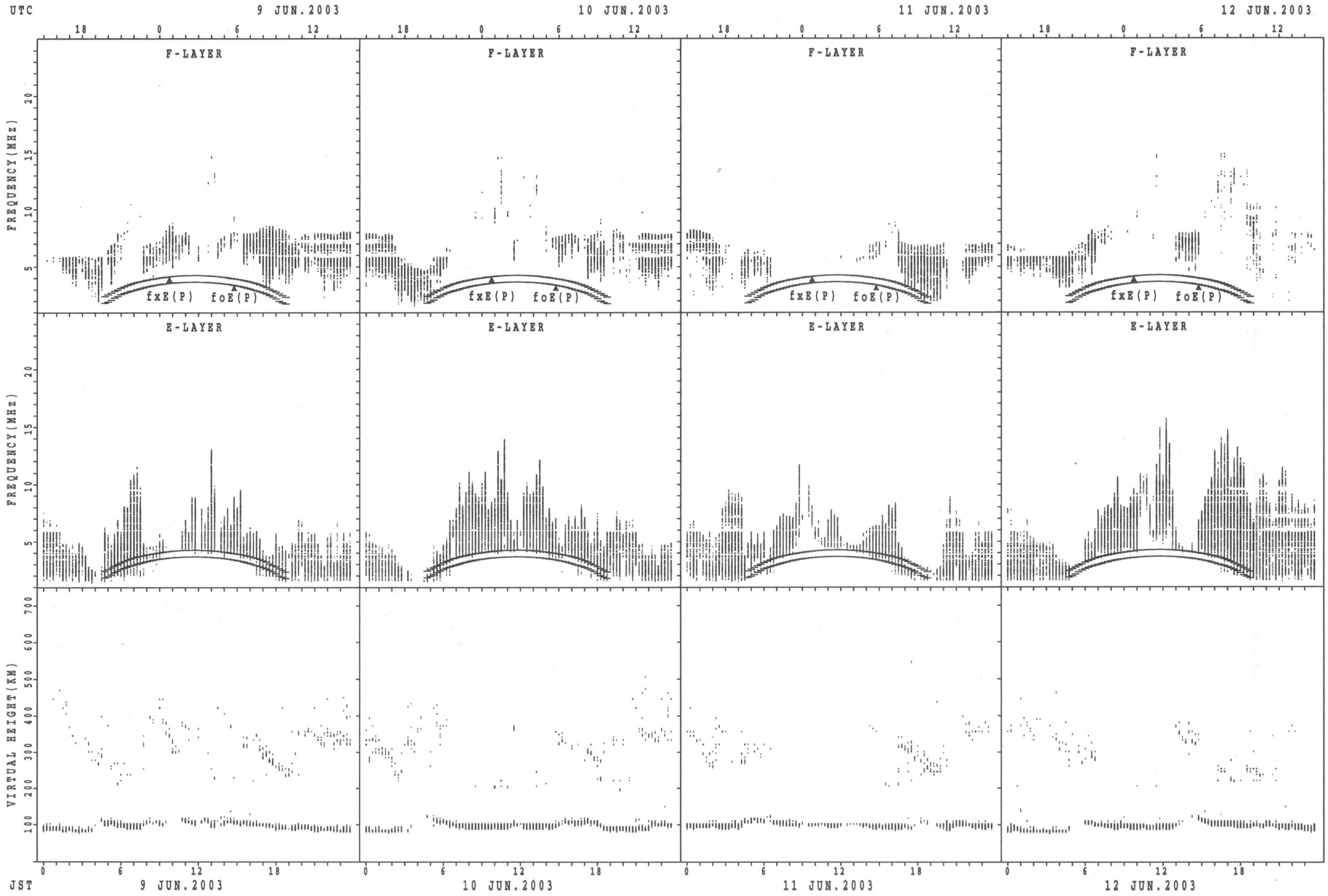
SUMMARY PLOTS AT Kokubunji



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

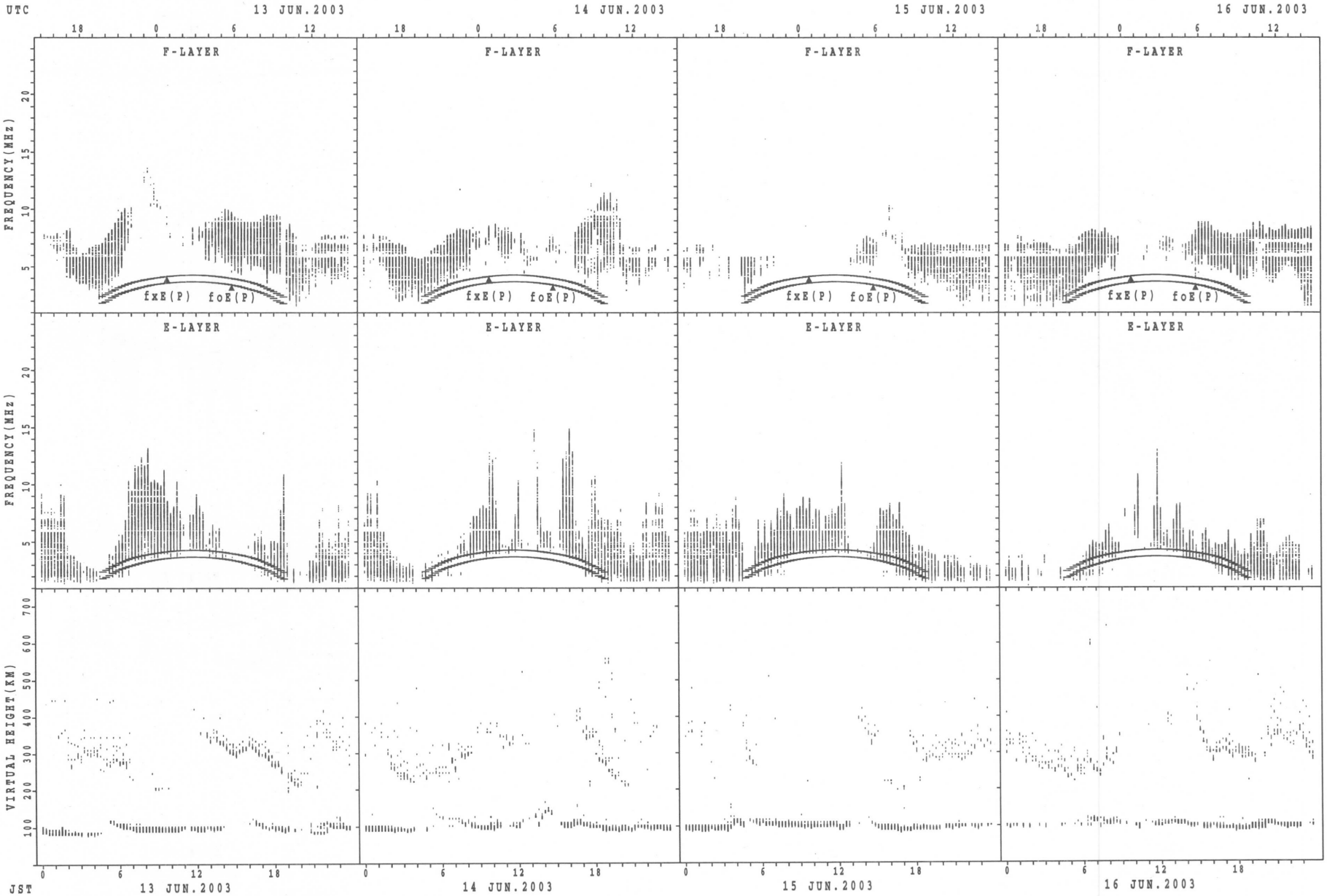

SUMMARY PLOTS AT Kokubunji
UTC
JST
5 JUN.2003
6 JUN.2003
7 JUN.2003
8 JUN.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



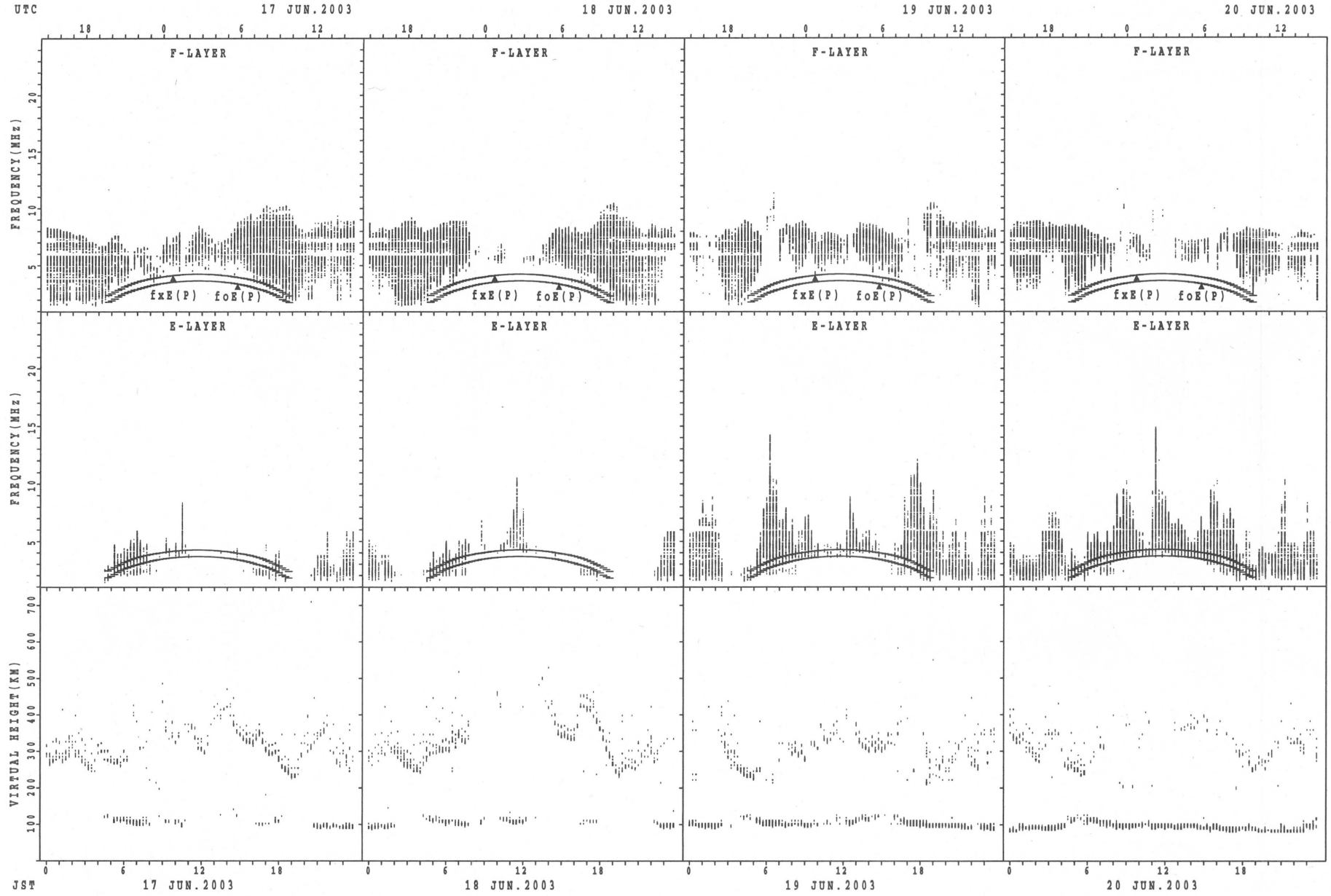
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



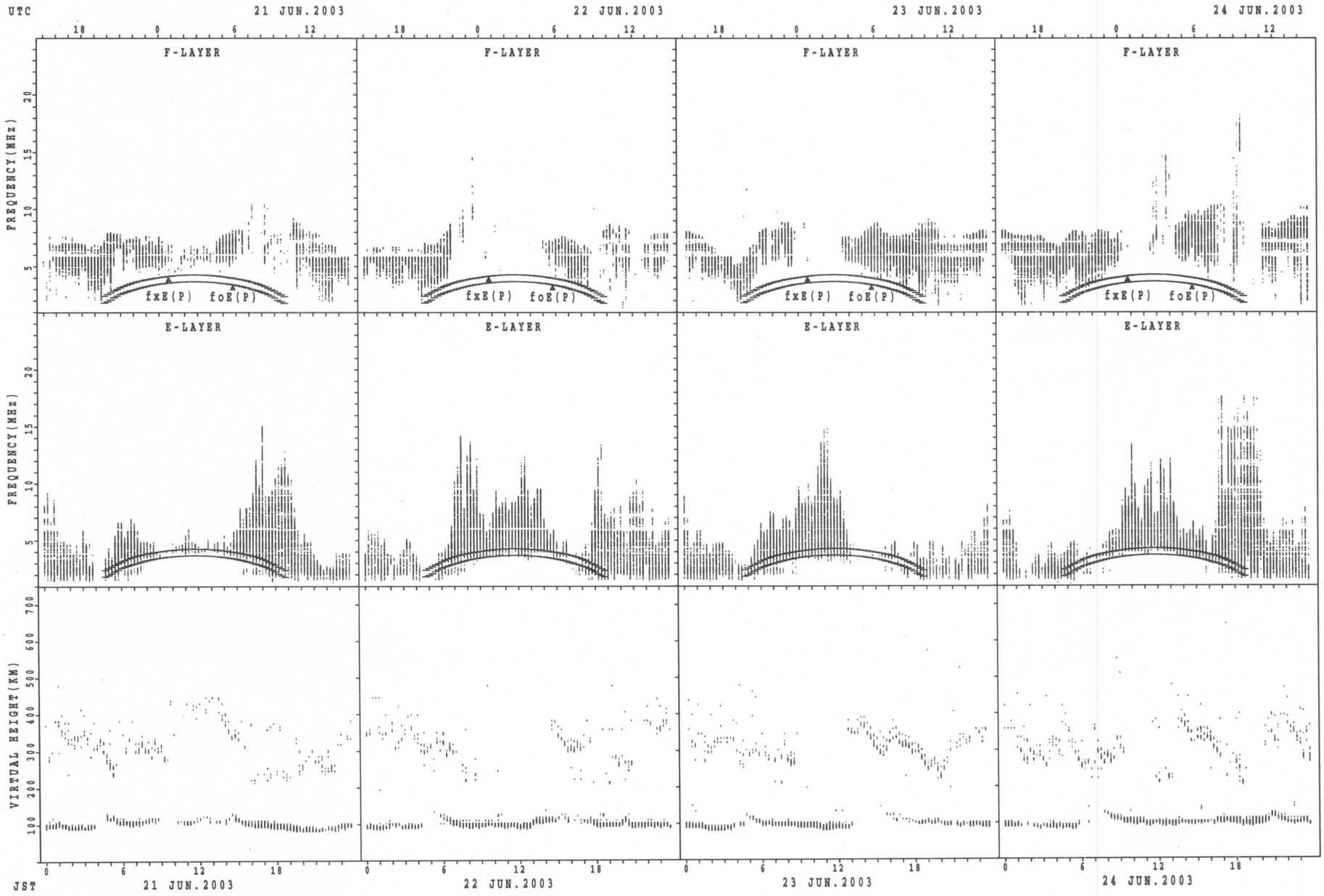
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



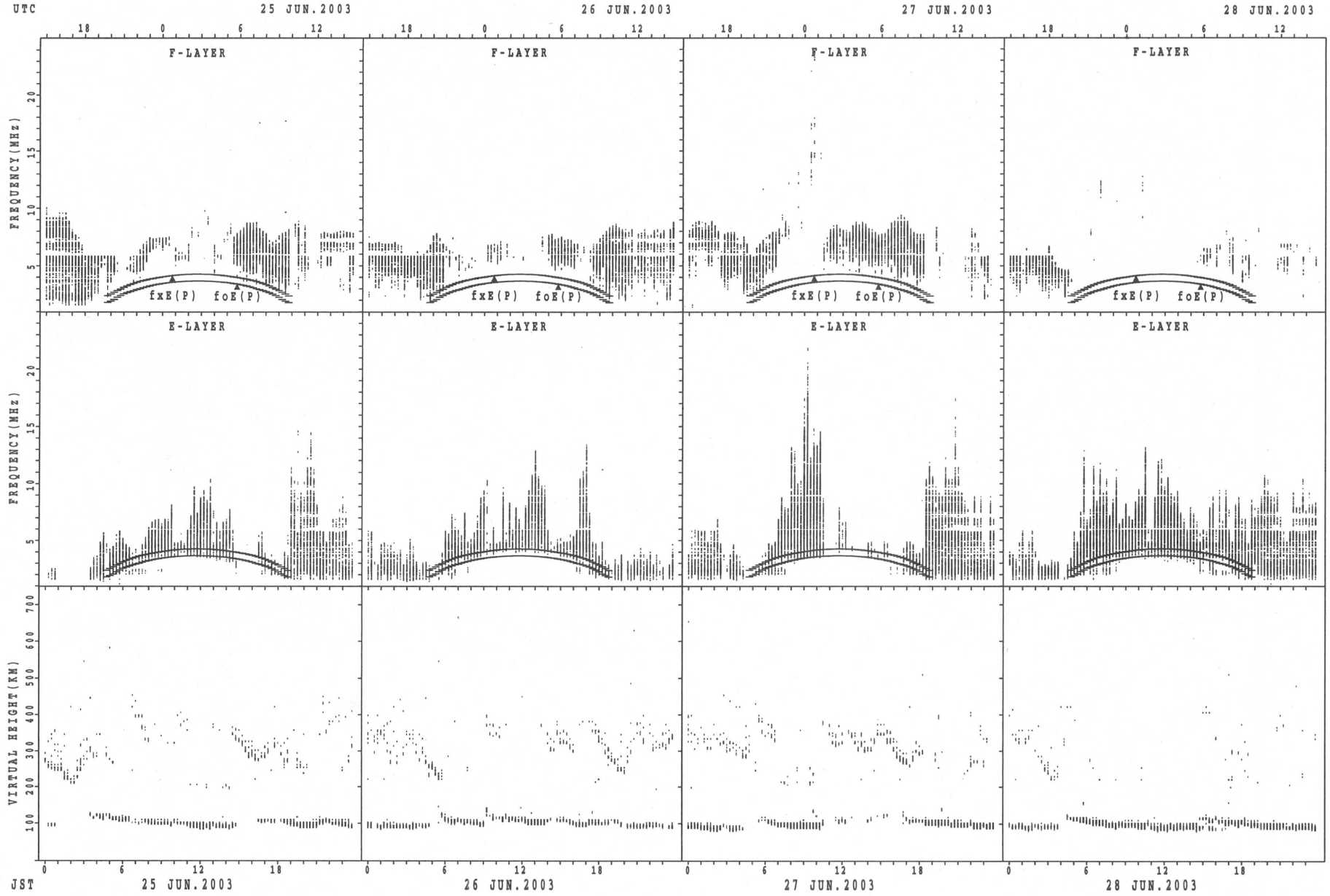
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji



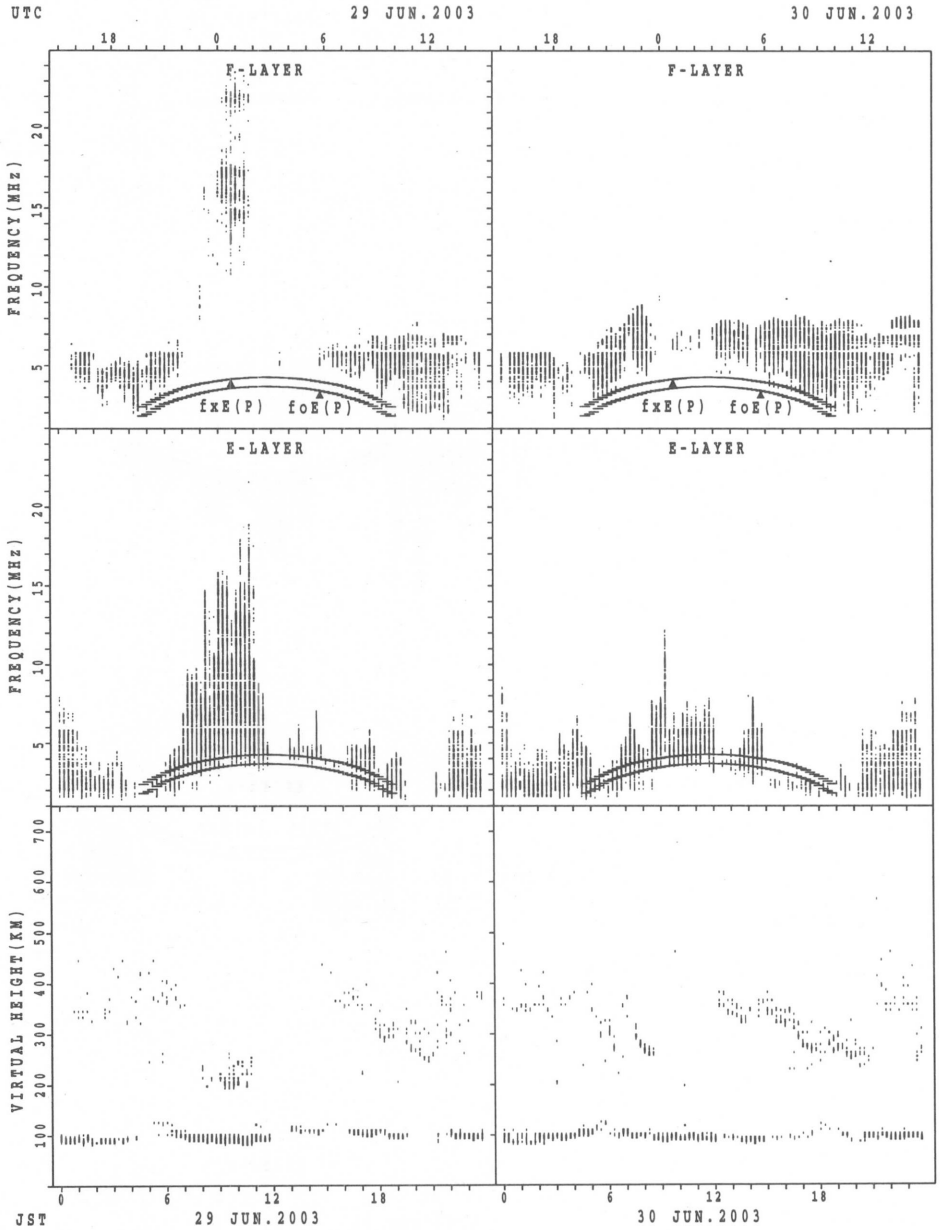
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Kokubunji

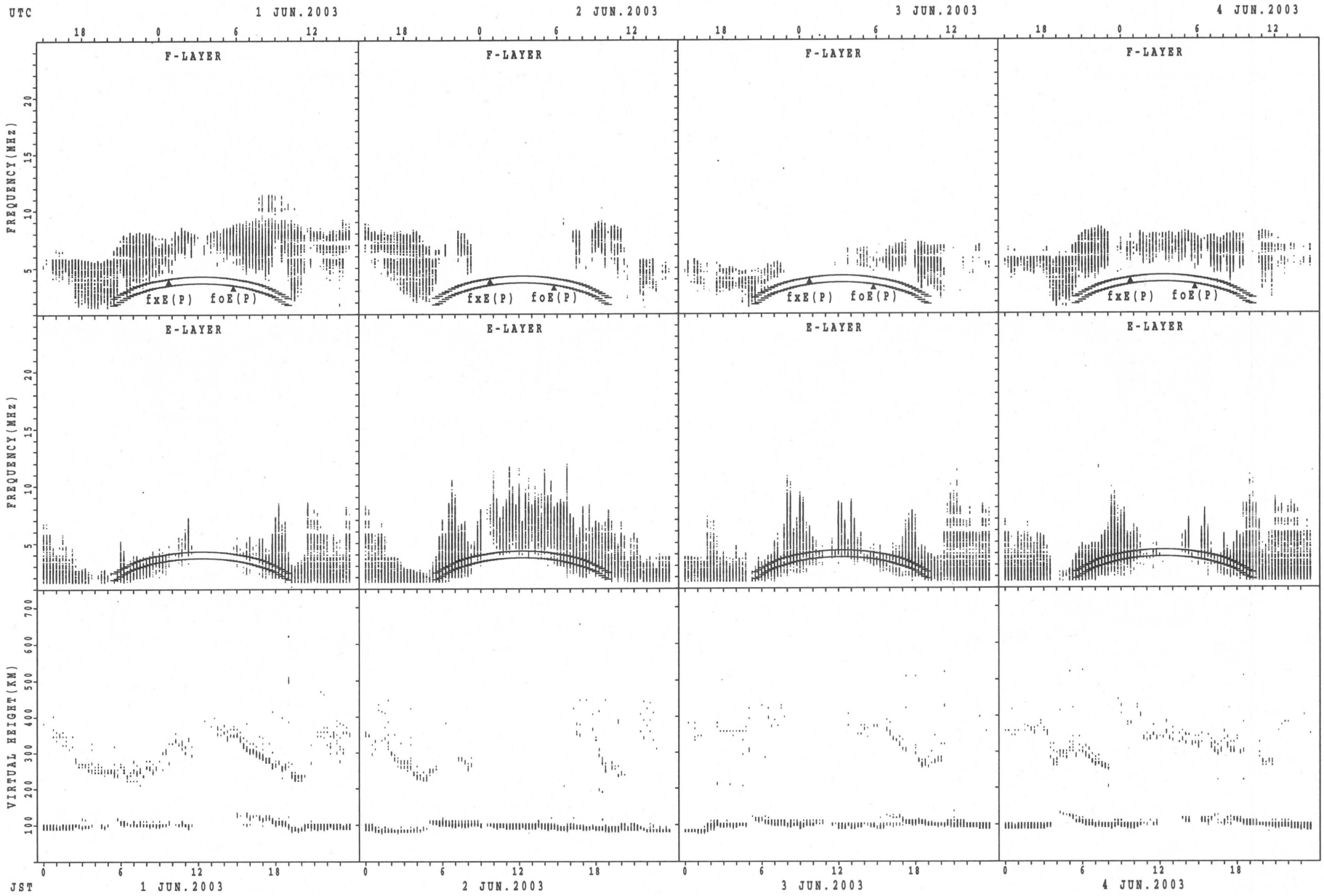


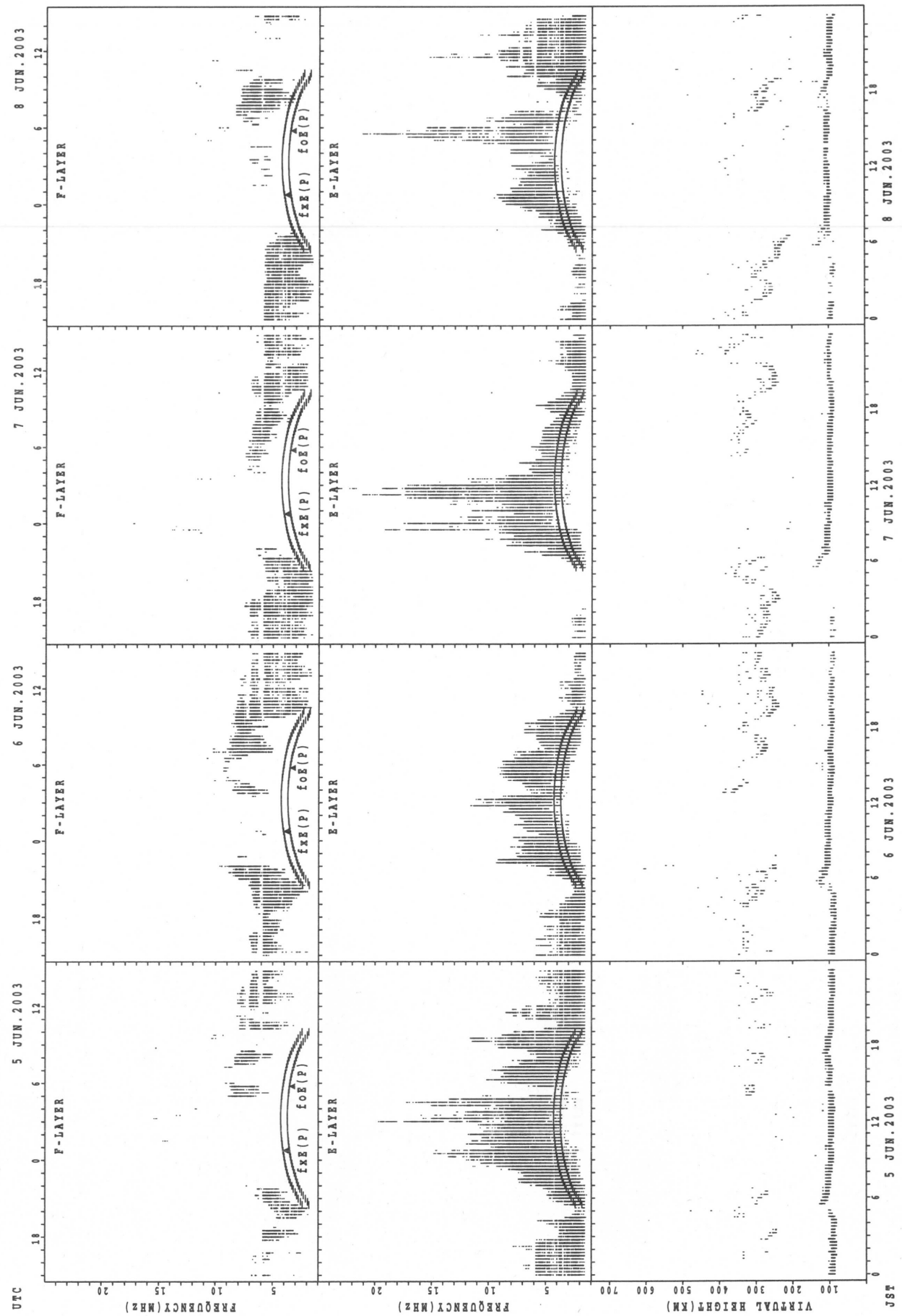
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

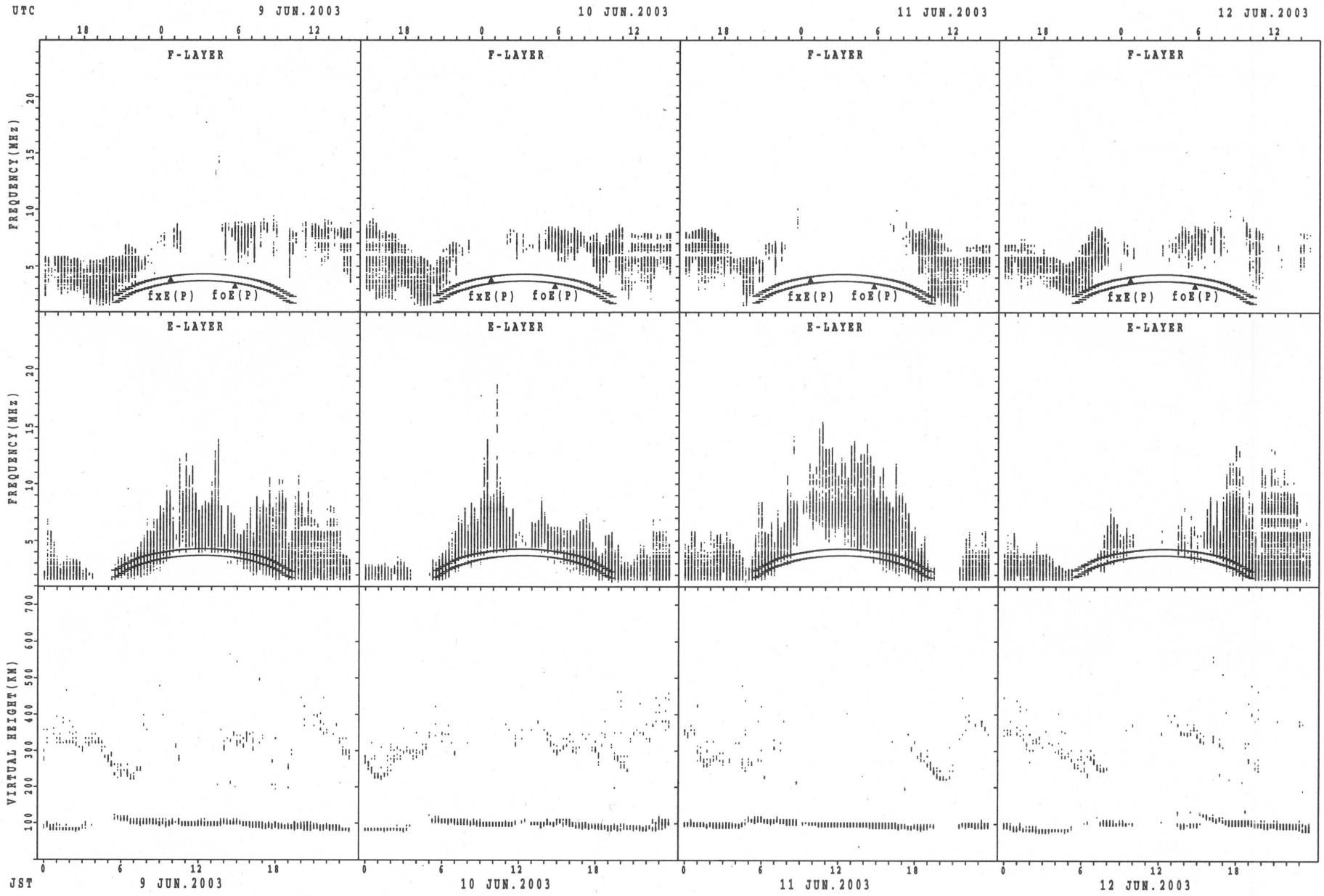
SUMMARY PLOTS AT Kokubunji



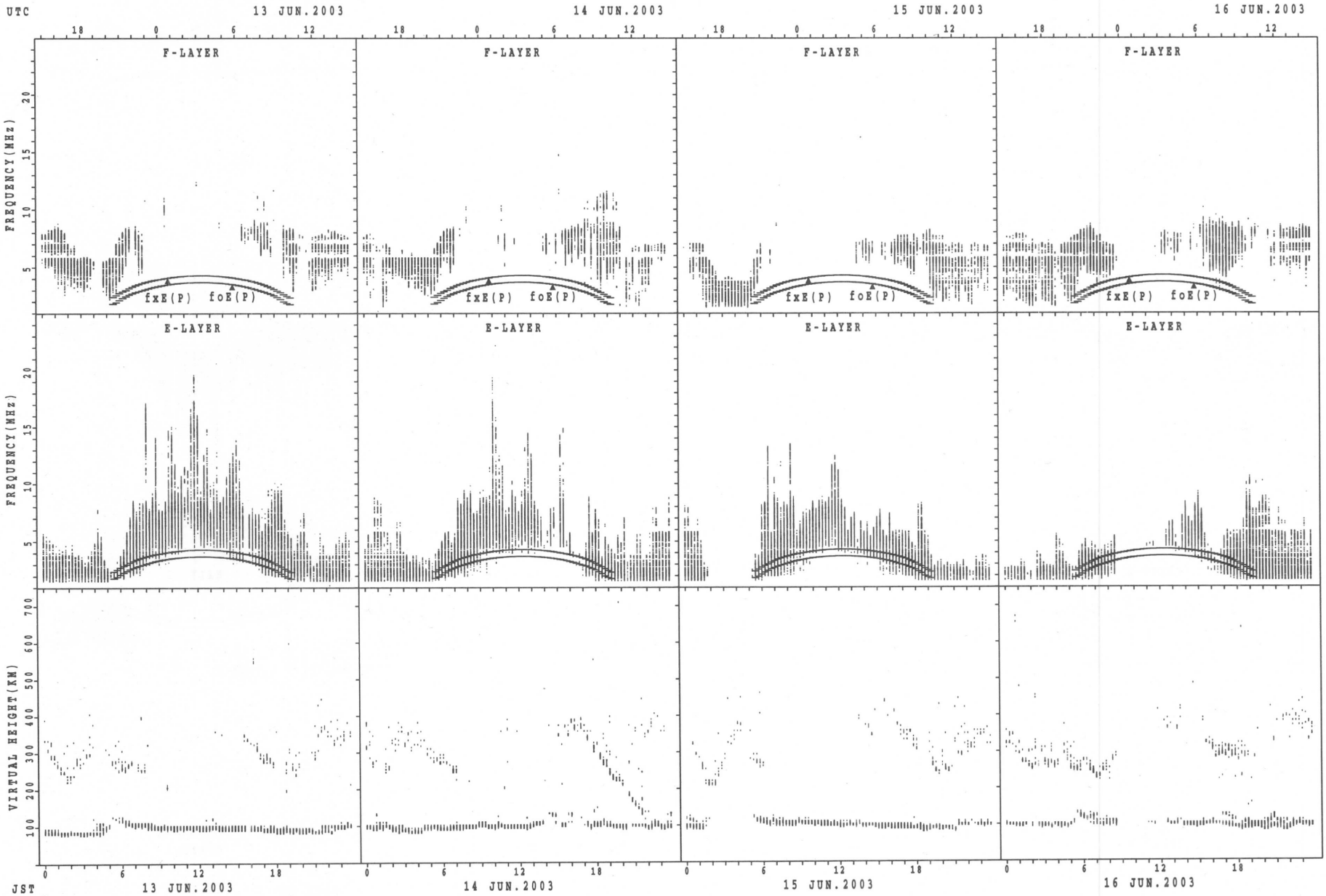
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Yamagawa
UTC
1 JUN.2003
2 JUN.2003
3 JUN.2003
4 JUN.2003
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT Yamagawa
UTC
JST
5 JUN.2003
6 JUN.2003
7 JUN.2003
8 JUN.2003
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

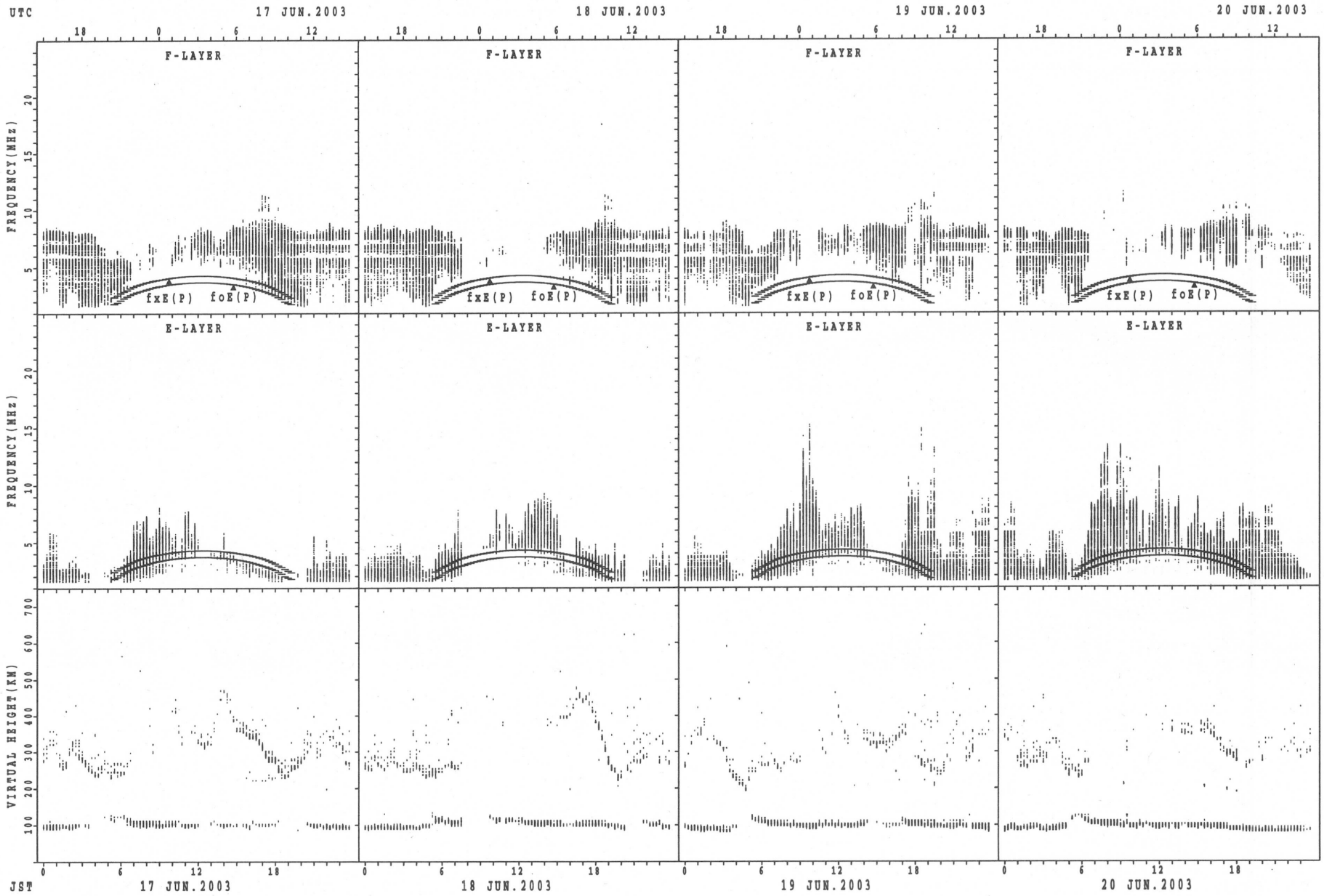

SUMMARY PLOTS AT Yamagawa
UTC
9 JUN.2003
10 JUN.2003
11 JUN.2003
12 JUN.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



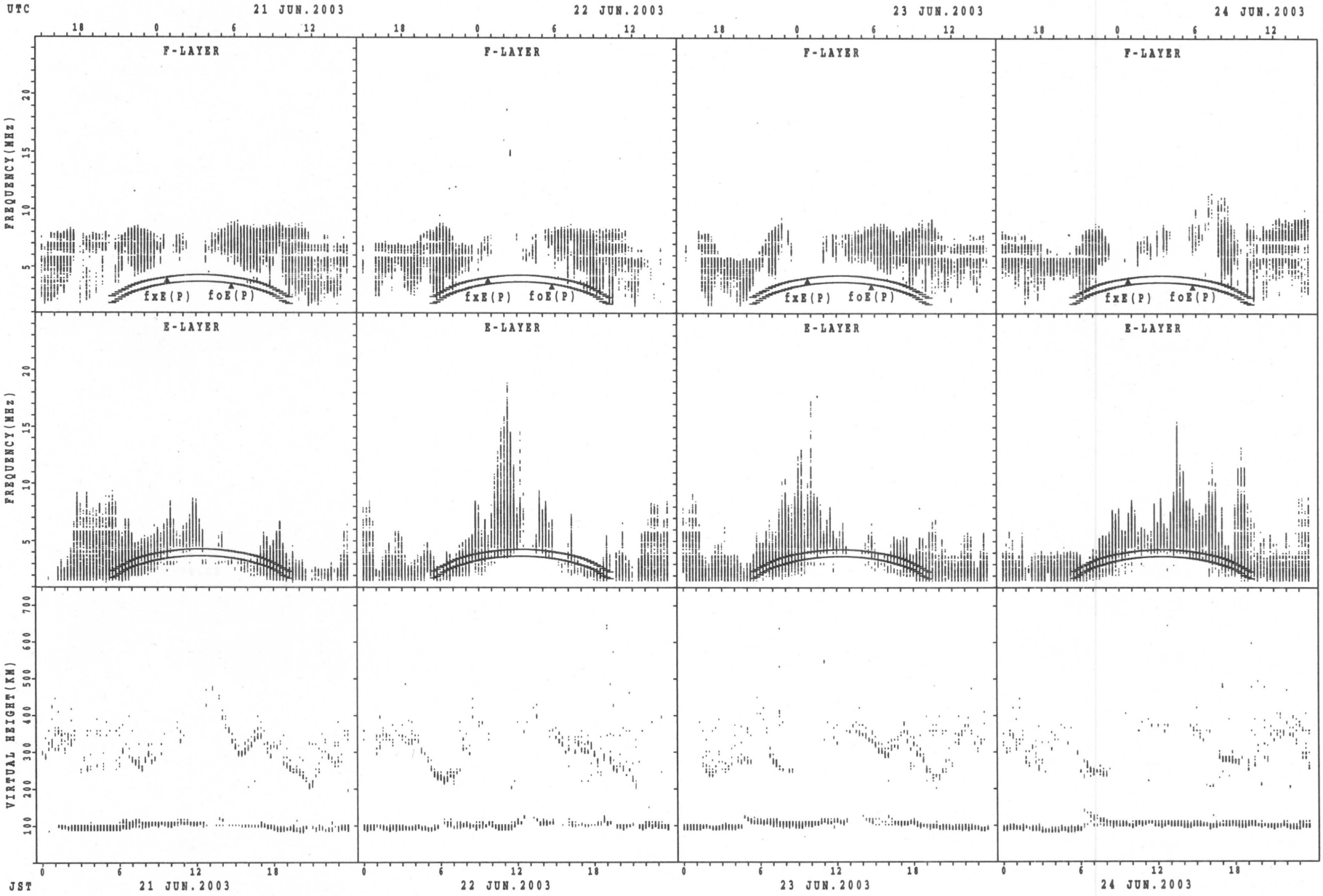
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



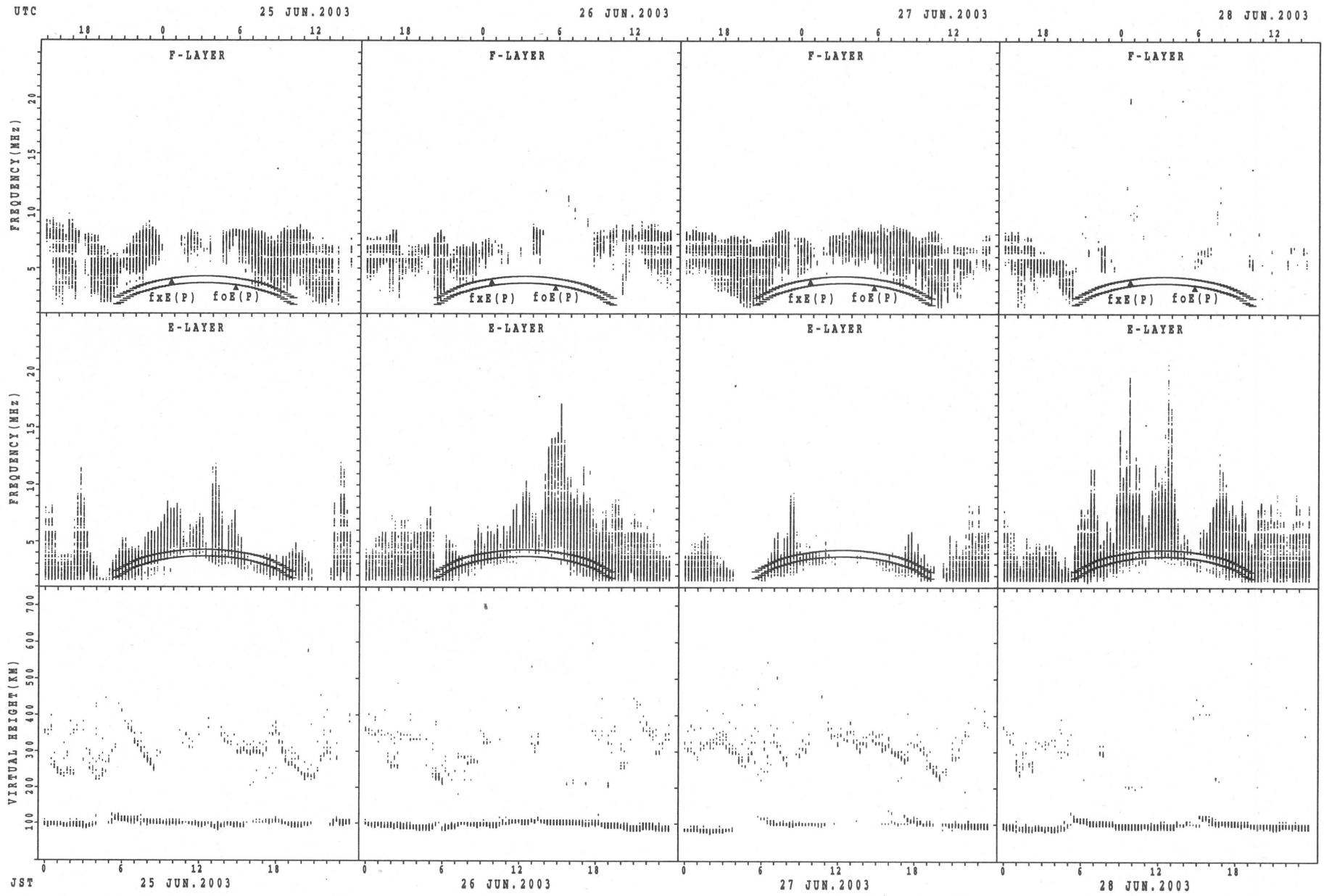
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



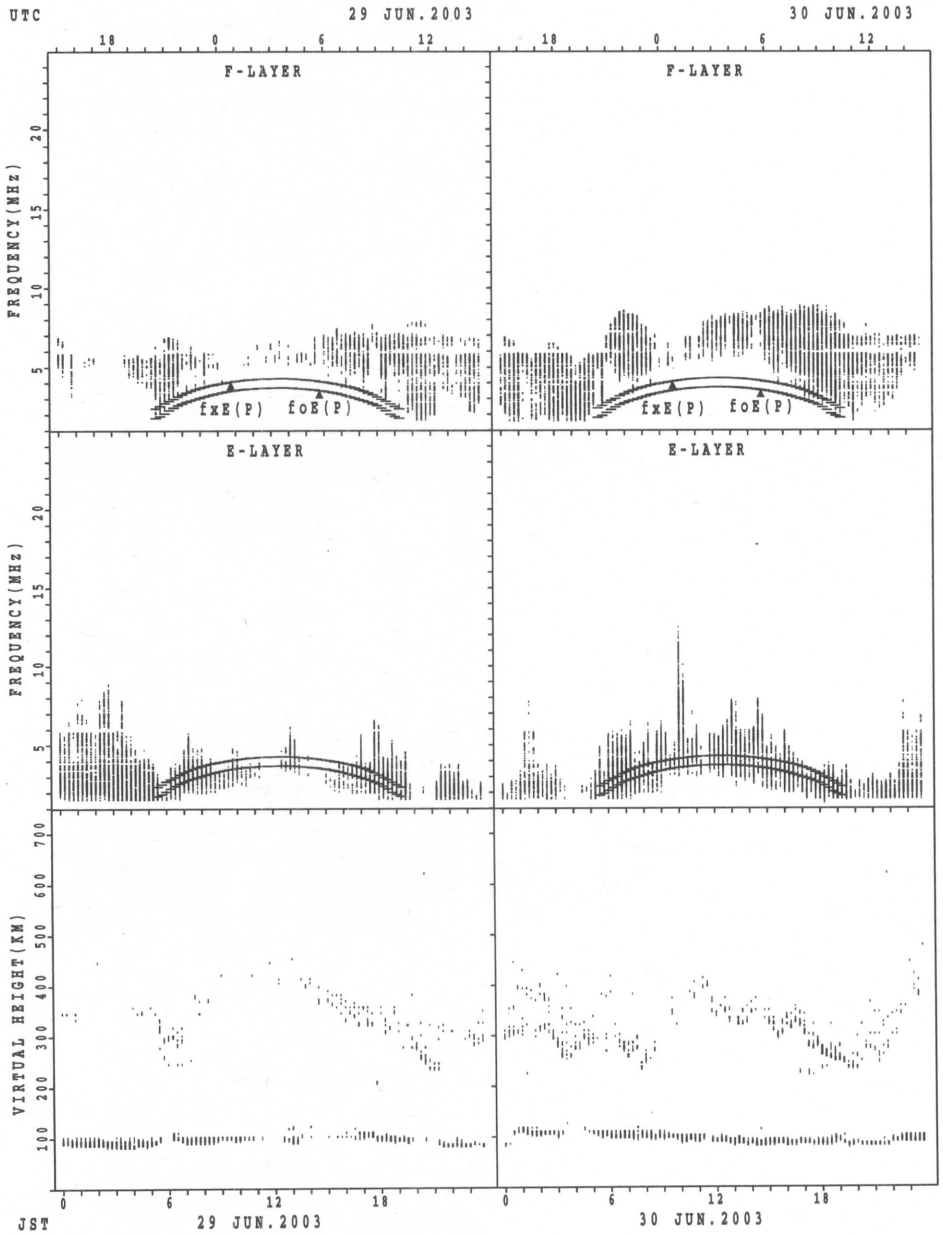
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



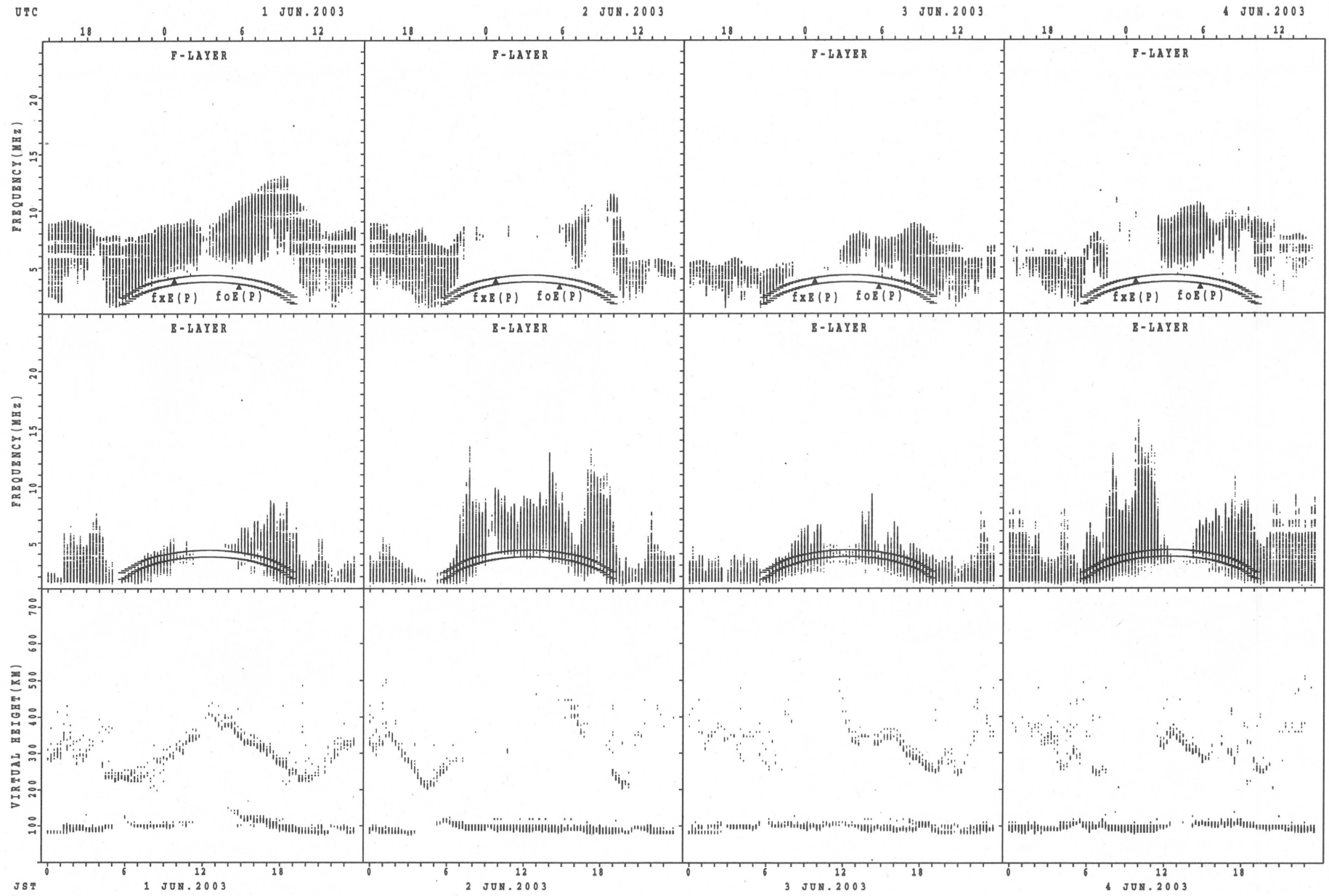
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Yamagawa



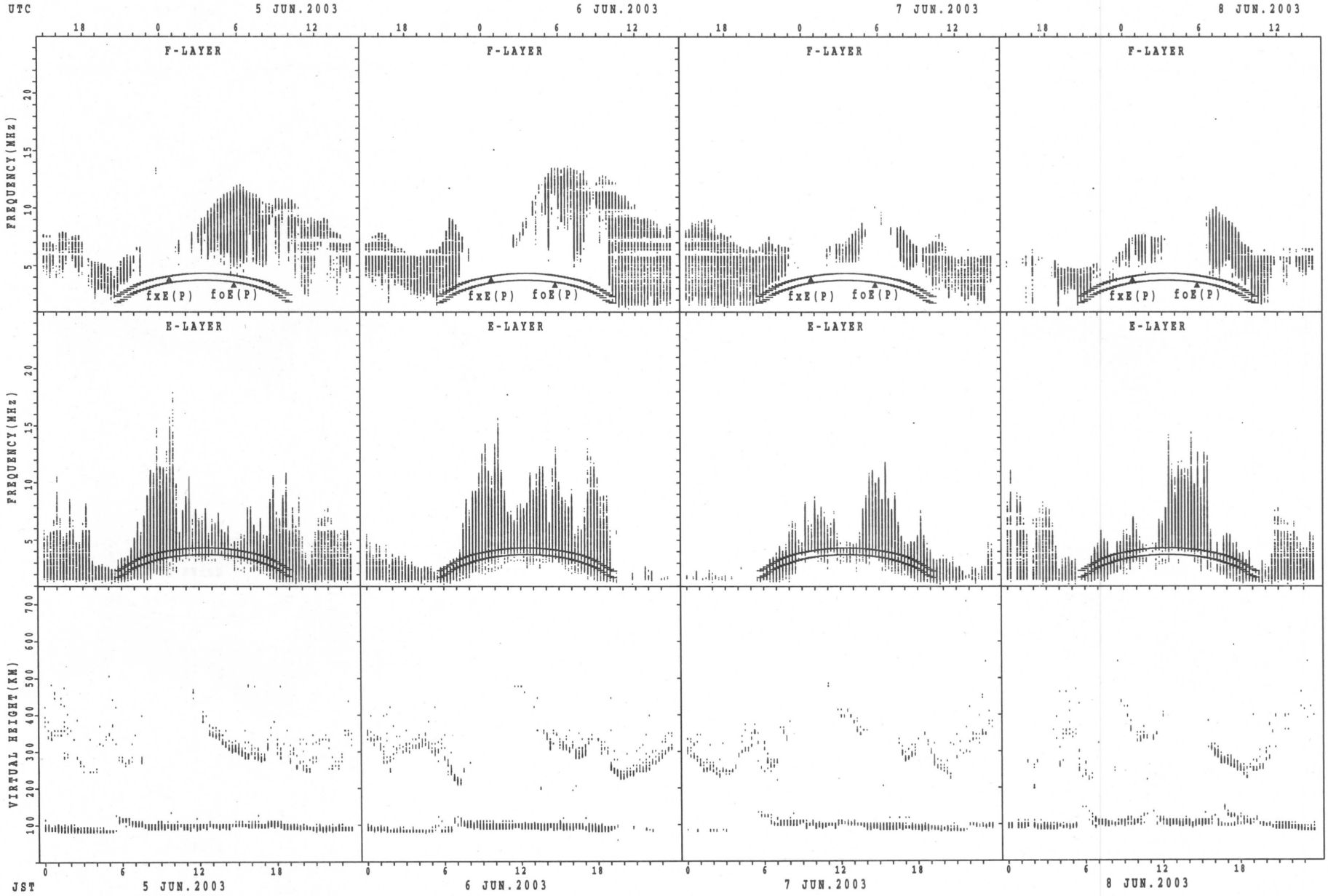
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



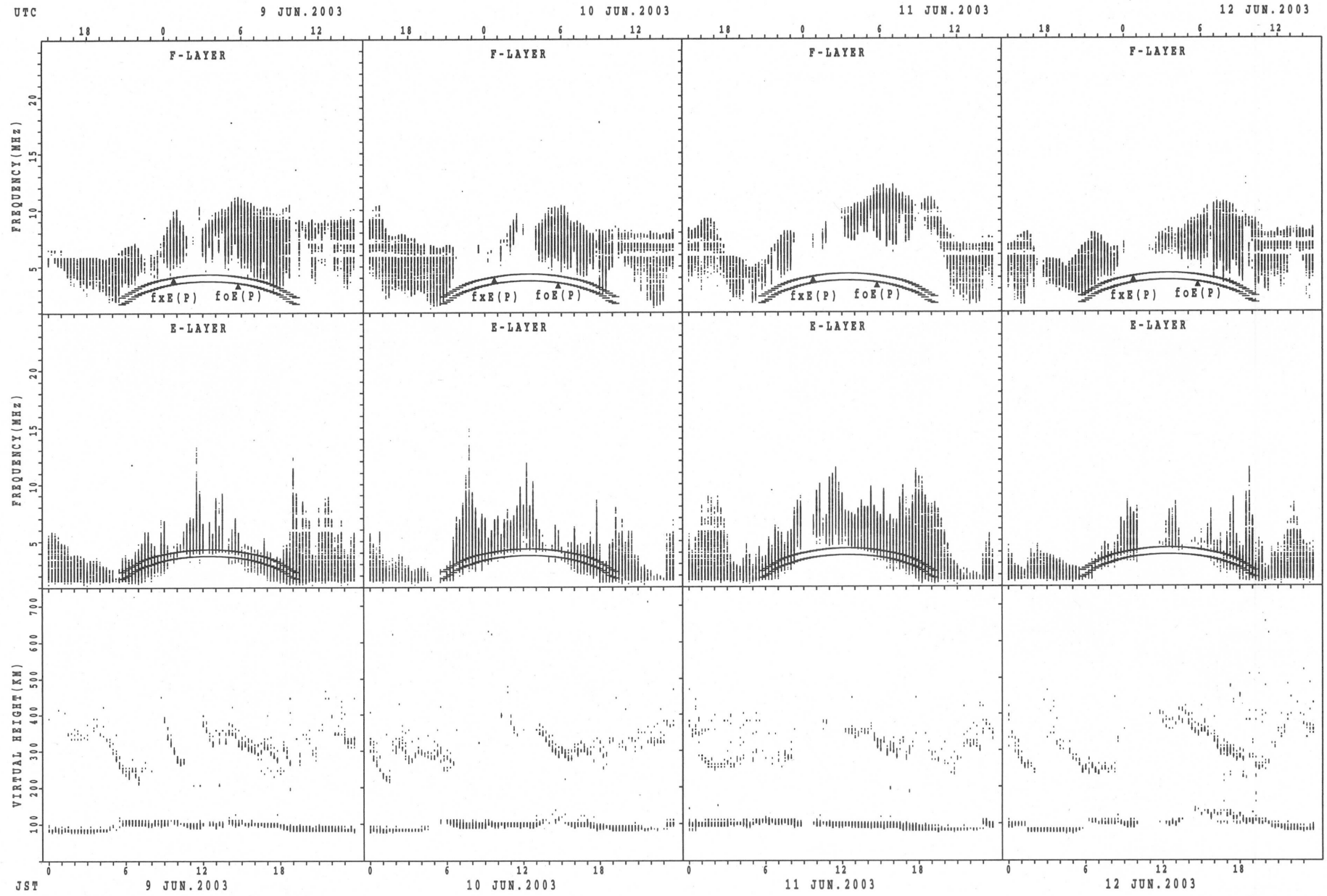
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



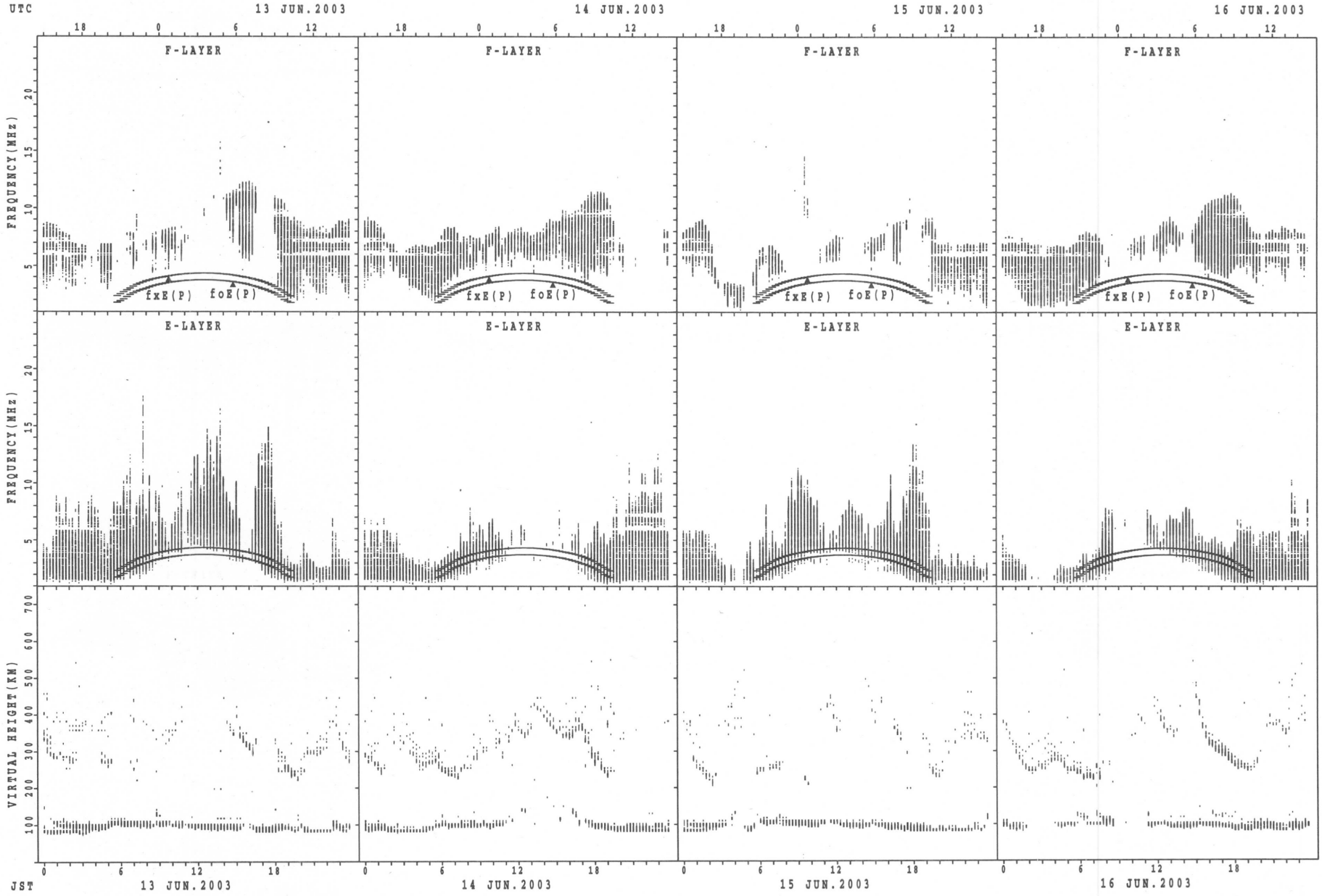
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



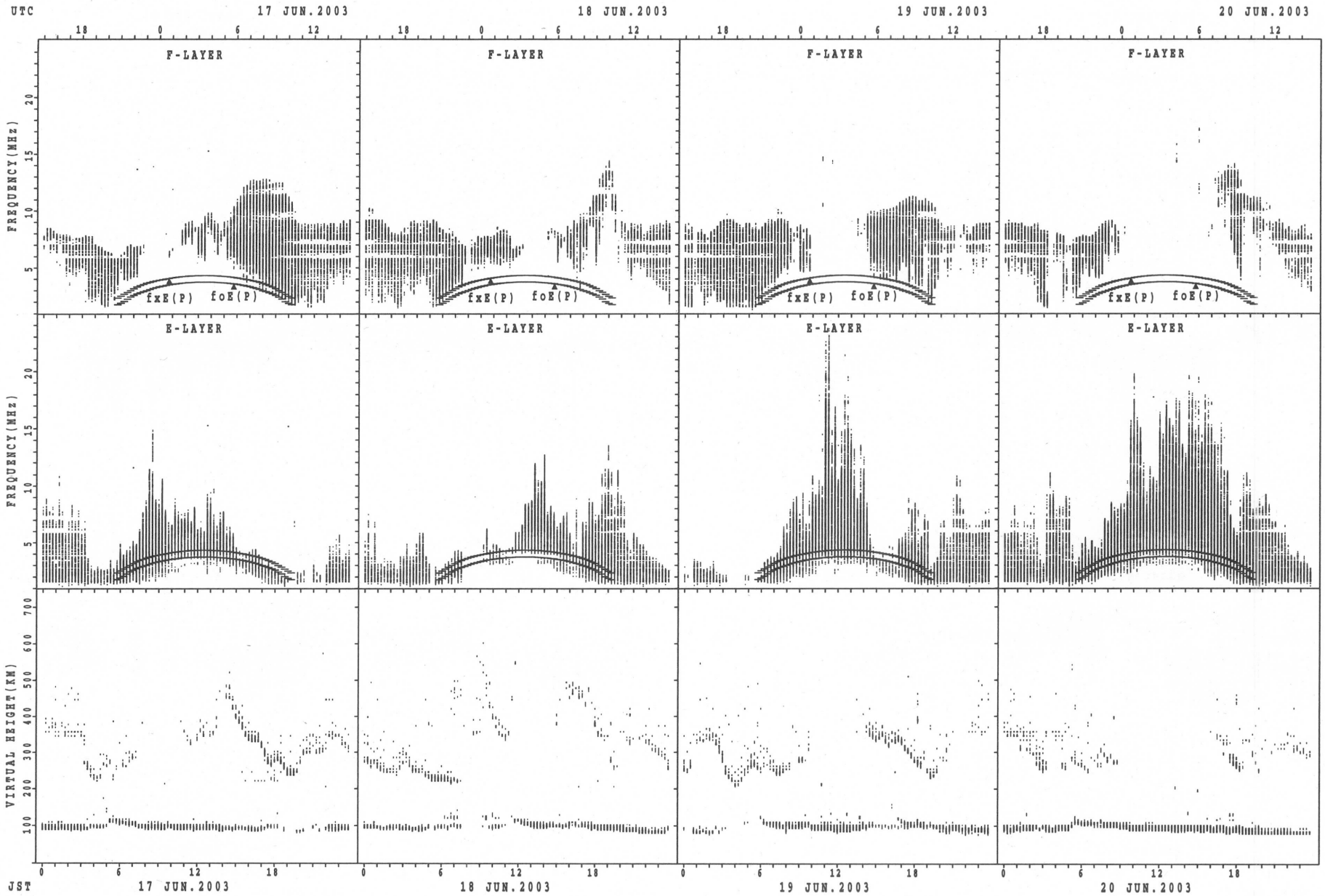
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



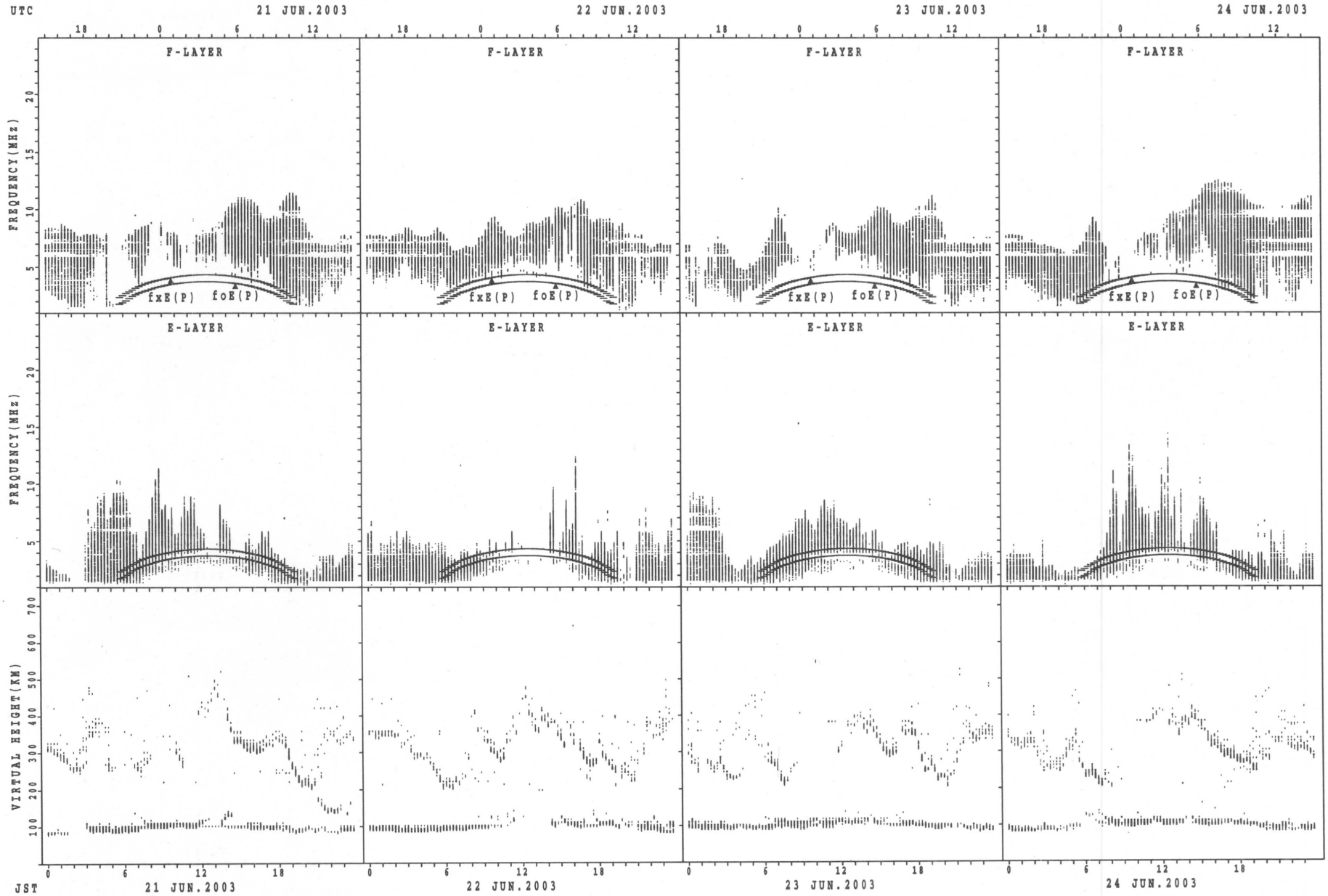
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



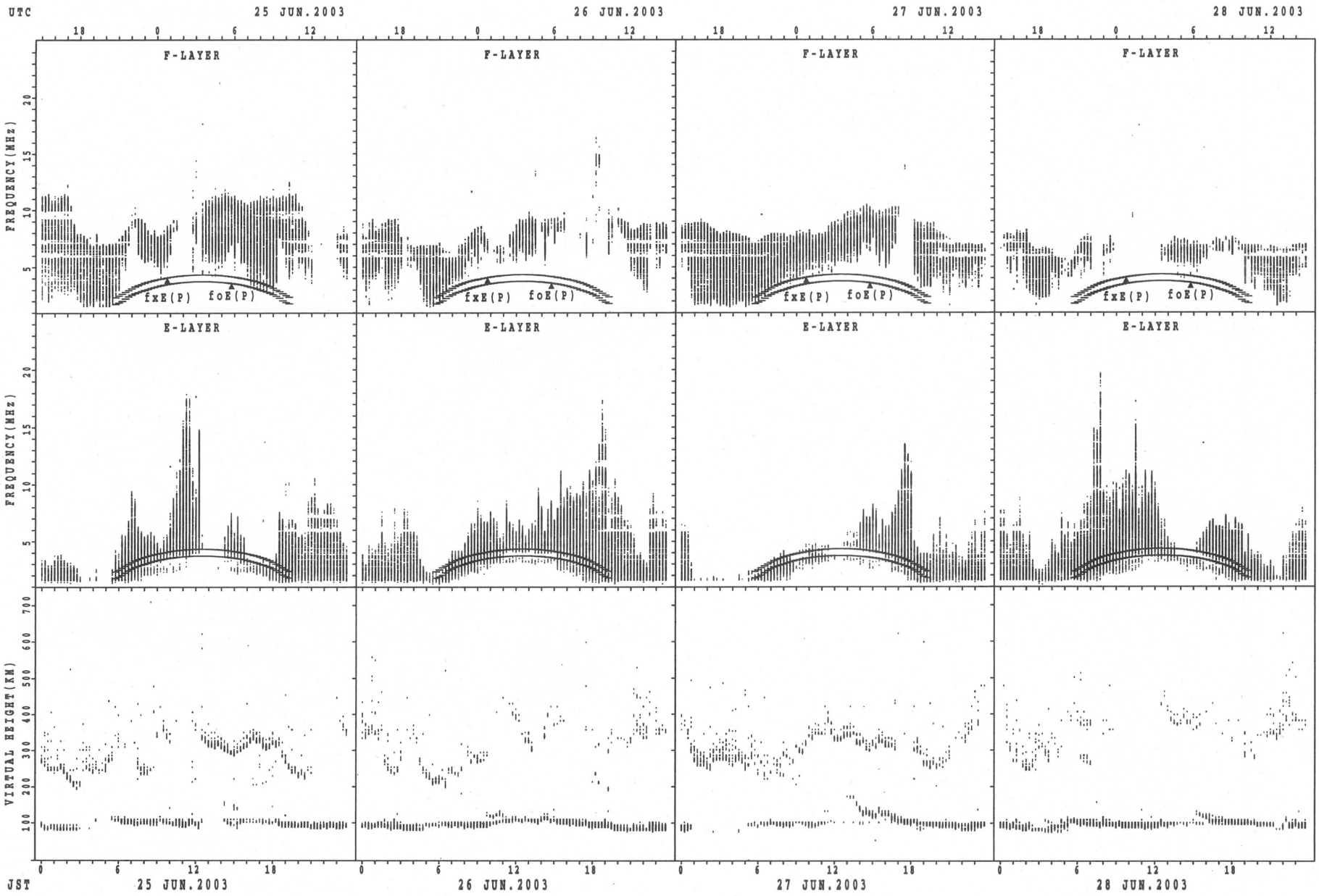
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa

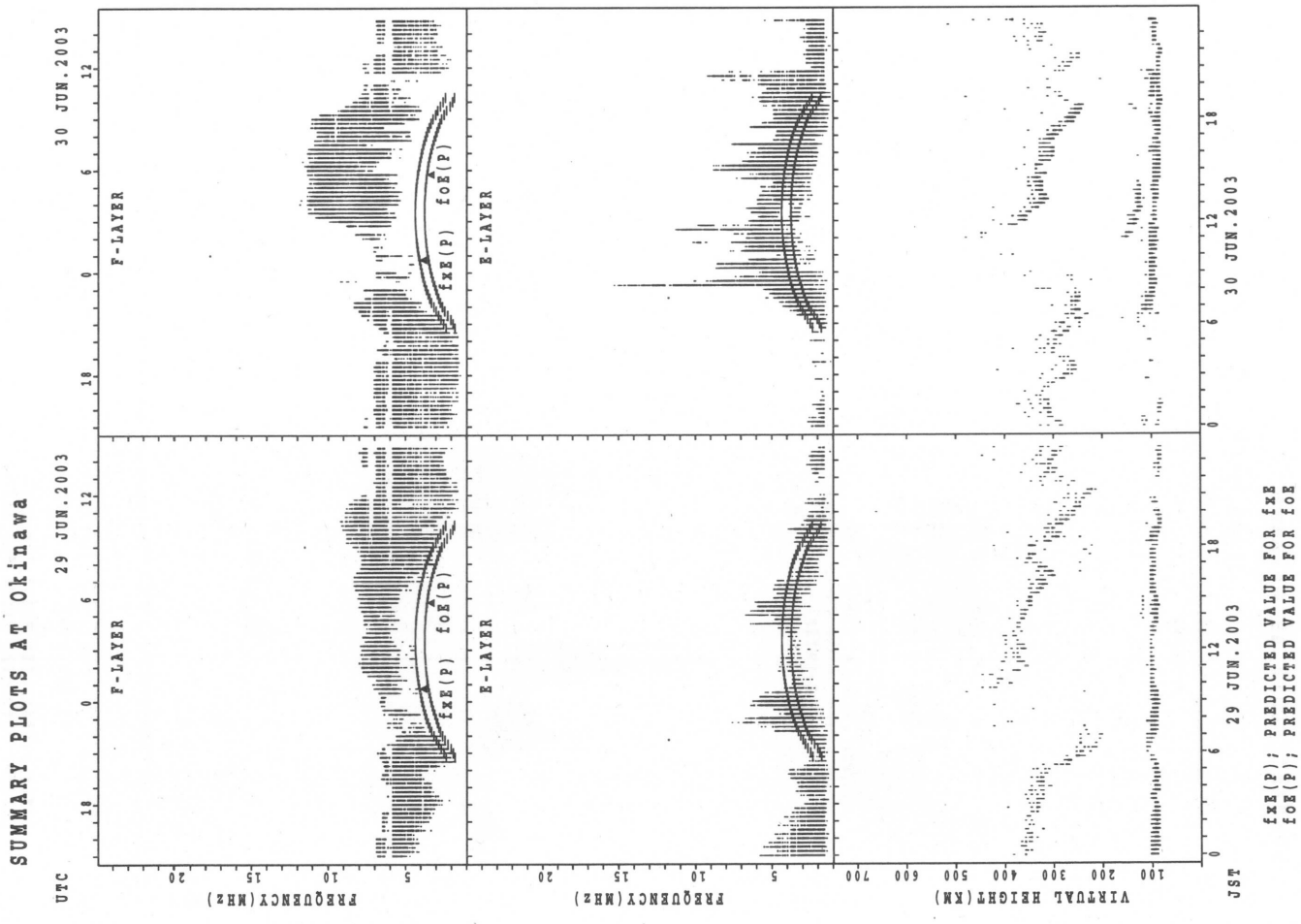


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT Okinawa



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


SUMMARY PLOTS AT Okinawa
UTC
29 JUN.2003
30 JUN.2003
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h'F AND h'Es

JUN. 2003 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	3	1	2			4	8	4										9	8	13	11	9	6	4
MED	330	358	339			272	304	297										344	304	304	318	330	312	316
U Q	336	179	352			300	346	333										366	327	311	334	348	316	343
L Q	326	179	326			248	292	272										302	261	285	290	299	308	295

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	16	18	18	17	16	26	28	26	27	27	21	18	15	21	18	16	15	15	23	23	23	26	23	21
MED	97	99	98	95	109	113	107	105	105	103	103	101	99	99	102	103	109	105	107	105	103	101	97	97
U Q	104	101	107	110	116	119	113	111	107	103	104	103	101	102	107	111	111	113	113	107	105	103	103	101
L Q	95	95	93	94	104	111	105	105	103	101	99	97	97	95	99	95	101	103	103	103	101	99	97	95

h'F STATION Kokubunji LAT. 35°42.4'N LON. 139°29.3'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	9	8	6	6	2	8	10	8									16	14	13	14	14	3	7	3
MED	338	333	307	338	290	289	281	267									311	283	316	263	266	320	342	352
U Q	386	377	346	362	308	319	310	317									331	302	327	280	296	394	356	356
L Q	310	299	286	304	272	273	276	233									270	230	273	254	244	318	328	308

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	27	25	25	25	18	17	27	27	27	26	26	23	24	22	24	18	22	26	25	23	22	27	27	29
MED	97	97	95	95	95	113	111	105	101	101	101	99	101	99	103	102	104	106	105	101	103	101	101	97
U Q	99	101	98	98	103	117	115	109	105	103	103	105	104	109	112	111	111	111	110	105	105	105	103	103
L Q	95	93	89	93	91	106	107	103	99	97	97	97	95	95	98	99	97	103	98	95	95	95	97	96

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	14	15	6	6	4	5	18	10									24	22	24	15	7	5	6
MED	349	296	282	324	315	264	262	263	255									294	278	263	278	344	354	343
U Q	360	334	328	336	350	354	307	296	290									319	322	286	306	356	375	388
L Q	322	260	246	312	262	228	238	248	228									275	258	246	254	292	326	332

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	26	25	23	20	24	23	29	29	26	27	22	23	23	22	25	27	25	25	27	26	25	25	27
MED	97	96	95	95	95	95	107	105	103	103	103	104	103	99	97	105	103	105	103	95	95	95	91	95
U Q	101	101	99	97	97	103	113	111	107	105	109	111	113	105	113	114	109	111	105	103	99	100	97	101
L Q	90	89	88	87	89	91	103	102	99	97	99	99	97	97	95	95	95	99	95	93	89	89	89	89

MONTHLY MEDIANS OF h'F AND h'Es

JUN. 2003 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

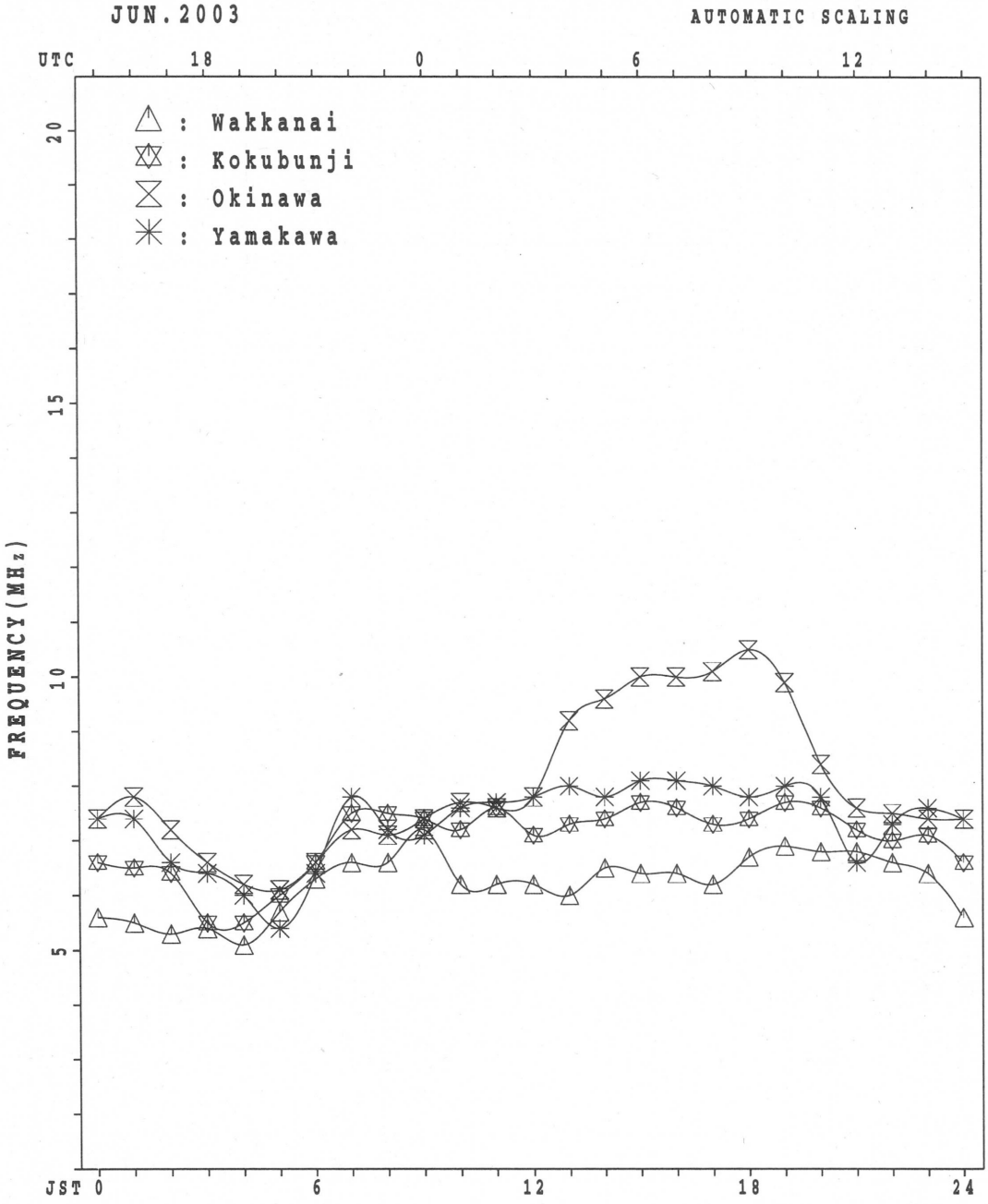
h'F STATION Yamakawa LAT. 31°12.1'N LON. 130°37.1'E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	10	7	6	6	3	7	17	9									20	17	17	15	2	3	6
MED	328	302	322	309	309	270	296	270	270									305	294	280	266	305	374	356
U Q	350	392	358	362	366	368	392	282	285									340	334	293	288	314	378	378
L Q	298	280	282	296	280	264	236	248	248									281	268	269	240	296	340	346

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	28	29	27	26	21	21	25	27	29	26	27	25	23	21	25	20	24	25	27	28	23	24	27	30
MED	96	95	95	92	95	101	111	107	105	103	103	101	99	99	103	100	105	103	103	98	95	97	99	99
U Q	100	99	97	97	100	107	115	111	105	103	103	105	105	105	108	105	116	111	109	103	101	103	103	103
L Q	94	90	89	89	89	94	106	103	103	101	99	99	99	96	97	95	95	95	95	95	91	92	93	95

MONTHLY MEDIANS PLOT OF foF2



IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 71	X 61	X 64	X 59	X 59															X 105	X 92	93	82	74
2	69	70	72	74	X 63															X 96	X 78	X 65	X 66	X 60
3	X 64	X 62	X 64	68	X 60															X 70	X 73	X 72	69	80
4	X 69	X 61	X 61	X 59	X 62															A	A	X 73	X 74	74
5	X 66	X 62	X 58	X 53	X 49															X 73	X 75	80	X 71	79
6	80	73	68	X 65	57															X 82	X 81	X 79	S 67	X 75
7	X 76	X 76	72	X 68	X 65															X 68	O X 73	75	X 70	X 71
8	X 66	X 66	X 66	X 62	X 58															X 71	X 64	X 67	X 66	X 66
9	X 66	X 63	65	X 59	X 60															X 82	X 78	X 82	X 81	X 81
10	X 82	80	80	X 56	X 47															X 83	X 81	X 75	X 81	X 80
11	X 82	X 82	X 74	X 73	68	68														X 71	X 72	X 62	75	X 72
12	X 71	X 67	X 64	X 63	X 62															X 97	X 86	A	X 81	X 81
13	X 82	82	85	72	70															X 91	X 75	O X 76	X 77	X 77
14	80	82	78	74	X 58															S 110	X 93	70	X 67	X 71
15	X 66	71	X 62	66																X 75	X 77	X 75	X 75	X 74
16	X 76	X 78	X 73	X 74	X 68															X 88	X 89	X 85	X 88	X 85
17	X 88	X 84	X 80	X 76	X 70															X 98	X 86	X 90	X 94	X 94
18	X 90	X 85	X 85	X 91	X 85				81	64	72									X 108	X 96	X 86	X 90	X 88
19	X 81	X 77	X 77	X 86	X 90															X 109	X 97	X 89	X 92	X 87
20	X 88	X 89	94	X 88	X 86	87														X 86	X 81	X 81	X 80	X 80
21	X 76	76	79	X 70	71															A	X 91	X 83	X 76	X 69
22	X 68	X 69	X 72	X 66	X 68															X 84	X 88	A	78	85
23	83	83	76	X 66	X 54															X 89	X 88	X 79	X 81	X 81
24	84	X 79	X 78	X 79	X 72															X 91	X 92	X 90	100	X 100
25	104	101	84	X 66	X 62															A	X 88	80	83	83
26	80	75	76	68	65															X 89	X 87	X 83	X 83	X 85
27	X 91	X 91	X 88	X 80	X 76															A	A	A	86	68
28	67	67	X 63	X 65	X 49															X 62	A	X 72	X 72	X 76
29	X 68	X 63	X 61	X 57	X 57															X 71	X 80	X 72	X 75	X 72
30	X 64	66	X 58	X 57	X 52															X 82	X 84	X 72	79	88
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	2			1	1	1									26	27	27	30	30
MED	X 76	X 76	X 72	X 67	X 62	78			81	64	72									X 85	X 84	X 79	X 78	X 80
U Q	X 82	X 82	79	X 74	X 70															X 96	X 89	X 83	X 83	X 85
L Q	X 68	X 66	X 64	X 62	X 58															X 73	X 77	X 72	X 72	X 72

JUN. 2003 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	65	55	57	53	53	57	67	88	84	79	86	88	94	84	86	93	100	105	104	99	86	F	F	F
2	F	F	F	F	56	53	66	66	A	A	A	A	62	63	62	59	66	67	84	90	72	58	60	54
3	58	56	58	F	54	57	61	A	A	A	A	A	A	60	59	59	62	67	63	64	67	66	F	F
4	63	55	55	52	56	62	62	71	70	A	A	A	A	A	A	A	A	A	A	A	A	67	67	F
5	60	56	52	47	43	49	A	A	A	54	A	A	63	68	72	76	77	67	64	67	69	F	64	F
6	F	F	F	59	F	A	73	64	65	A	A	58	71	80	86	93	96	83	74	76	75	73	S	69
7	70	69	F	62	59	51	53	A	A	A	57	59	58	A	70	66	58	A	57	61	67	F	64	65
8	60	60	60	56	52	54	66	A	A	A	60	63	63	A	70	A	68	69	73	64	58	61	60	60
9	60	57	F	53	54	60	61	A	65	71	83	77	67	A	74	78	76	80	79	76	72	76	75	75
10	S 76	F	F	S 50	42	47	61	A	A	A	A	A	S 69	A	69	73	75	72	72	S 77	75	69	75	74
11	76	76	68	67	F	F	58	A	A	A	A	A	R 66	61	64	68	A	67	65	64	66	56	F	66
12	65	61	58	56	56	60	66	79	78	A	A	A	A	75	77	74	A	A	A	91	80	A	75	75
13	76	F	F	F	F	68	87	90	A	A	77	73	A	88	95	91	86	88	92	85	69	S 70	71	71
14	F	F	F	F	51	54	66	74	79	78	84	81	79	67	68	74	R 74	84	100	S	87	F	S 61	65
15	60	F	56	F	46	56	56	56	A	A	A	A	A	62	72	68	A	62	66	68	71	69	69	68
16	70	72	67	68	62	66	72	78	76	B	A	72	74	72	67	85	82	75	74	81	83	79	82	79
17	82	78	74	70	64	70	61	63	56	66	74	70	80	68	72	86	89	98	98	92	80	84	87	88
18	84	79	79	85	78	77	83	84	F	F	F	62	65	60	69	80	80	76	92	102	90	80	84	82
19	75	71	71	80	84	75	A	76	80	83	72	75	70	81	84	79	71	76	A	103	91	83	86	80
20	82	83	F	82	79	F 77	77	70	65	71	74	66	71	68	69	69	70	77	79	80	75	75	74	74
21	70	F	F	64	F	74	71	72	73	73	66	63	64	65	75	79	74	A	A	A	85	77	70	63
22	62	63	66	60	62	66	72	83	A	66	A	A	A	65	70	71	71	64	A	78	82	A	F	F
23	F	F	F	60	48	59	76	78	88	70	66	A	A	74	75	84	76	73	77	83	82	73	75	75
24	F	73	72	73	66	70	74	S 73	77	76	A	A	84	83	88	93	99	102	98	85	86	84	F	94
25	F	F	F	60	56	55	52	58	70	71	64	67	A	66	66	77	83	75	71	A	82	F	F	F
26	F	F	F	F	F 56	71	S 62	S 58	59	A	67	S 64	63	A	75	71	66	S 66	70	83	81	77	77	79
27	84	85	82	74	70	S 63	70	80	A	A	A	79	79	85	80	74	87	87	74	A	A	A	F	F
28	F	F	57	59	43	41	A	A	A	A	A	A	A	A	A	62	65	A	58	56	A	66	66	69
29	61	56	55	51	51	51	58	63	A	A	A	A	57	A	55	60	61	S 61	66	65	74	66	68	66
30	58	F	52	51	46	56	67	72	84	A	68	67	72	78	73	75	76	78	72	76	78	66	F	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	18	18	24	26	28	27	22	16	12	14	17	21	22	28	28	26	25	25	25	27	22	21	22
MED	68	66	59	60	56	60	66	72	74	71	70	67	69	68	72	74	76	75	74	78	78	72	71	72
U Q	76	76	71	69	62	69	72	79	80	77	77	76	76	80	76	82	83	84	88	88	83	77	76	79
L Q	60	56	56	53	51	54	61	64	65	68	66	63	63	65	68	68	68	67	66	66	71	66	65	66

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L 504	L	A	A	A	A	A	A	A	A					
2							L	A	A	A	A	A	A	A	464	448	436	A	L					
3						A	A	A	A	A	A	A	A	472	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	A	A	A	A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	L 452	L	A	A	A	500	A	A	484	456	A	A						
7						A	A	A	A	A	A	476	A	A	A	456	A	A	A					
8						328	L 384	A	A	A	U 488	L 508	A	A	A	A	A	A	A					
9						A	A	A	L 544	A	476	A	A	A	A	A	A	L	A					
10						L 376	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						A	A	A	A	A	A	A	A	A	A	A	A	L 440	L					
12							A	A	A	A	A	A	A	A	L	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	L 472	A	A	A					
14									L 508	A	A	L 544	A	L 524	A	A	A	A	E C					
15							E C	A	A	A	A	A	A	U L 504	496	A	A	A	L					
16								A	A	B	A	E B	A	A	A	L 480	A	A	A					
17							A	A	488	504	L 504	528	L 508	520	L 516	L 492	L 476	L	A					
18							A	A	E B	A	U L 500	A	A	488	492	460	448	424	L 412					
19							A	A	A	A	L 512	L 508	L 508	A	A	L 488	L 480	A	A					
20							A	L	A	A	A	A	A	A	496	A	L 480	A	L					
21						A	A	A	L 468	484	L 508	A	U L 532	L 488	A	A	A	A	A					
22						L	L 432	A	A	A	A	A	A	A	A	480	L 456	L 460	A					
23							A	A	A	A	A	A	A	492	480	472	L 464	L 428	A					
24						L	L	L 552	L 480	A	A	A	A	A	A	A	L 480	A						
25							A	440	A	A	L 488	A	A	500	A	480	L 464	L 416						
26								L	L 516	A	A	A	A	A	A	476	A	A	L					
27							L 420	A	A	A	A	492	A	U L 520	492	480	L 460	A	A					
28						A	A	A	A	A	A	A	A	A	A	A	432	A	A					
29						U L 308	368	A	A	A	A	A	E B	A	A	460	440	L 432	L					
30						A	L	464	L 456	A	A	A	520	496	L 504	L 496	460	L 432						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	4	4	7	3	7	7	4	10	9	15	13	7	1					
MED						L 328	L 402	458	L 488	504	L 500	508	L 514	498	492	476	L 460	L 432	L 412					
U Q						L 376	L 426	508	L 516	L 504	L 508	528	526	L 520	L 500	L 480	L 478	L 440						
L Q						U L 308	376	446	L 468	484	488	492	L 508	488	482	460	444	424						

JUN. 2003 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	U A 252	A	A	A	A	A	B	B	A	A	A	A	A					
2						U A 204	U A 268	A	A	A	B	A	A	A	A	A	A	U A 264	U A 212					
3						A	A	A	A	A	A	A	A	A	U A 356	A	A	U A 260	A					
4						200	A	A	A	A	A	A	A	A	A	A	A	A	A					
5						212	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						208	U A 260	A	A	A	A	A	A	A	A	A	A	A	A					
7						U A 212	A	A	A	B	A	A	A	A	A	A	A	A	A					
8						A	A	A	A	A	A	A	A	A	B	A	A	A	A					
9						A	A	A	A	A	B	B	B	A	A	A	A	A	A					
10						U A 204	A	A	A	A	A	B	B	B	B	A	A	A	A					
11						U A 208	B	A	B	B	B	B	B	B	B	A	A	A	B					
12						E C	U A 300	B	B	B	B	B	B	A	A	B	B	A	A					
13						E C	A	B	A	B	A	B	A	A	A	R	B	A	A					
14						U A 216	A	A	A	A	A	B	A	A	U A 392	B	A	A	E C					
15					B	A	E C	E C	E C	A	A	A	A	A	A	A	A	A	A					
16						B	U A 260	B	A	B	B	B	B	B	A	A	E C	A	A					
17						E C	U A 256	U A 312	A	A	E C	A	U R 392	B	U A 372	A	R	R	A					
18						A	A	A	B	B	B	A	A	A	A	U A 348	R	U R 276	224					
19						E C	A	A	A	A	A	A	A	A	U A 372	A	A	A	A					
20						U A 208	U A 272	A	A	A	A	A	A	A	A	A	A	A	A					
21						U A 208	E C	A	A	U A 352	A	A	A	B	A	A	A	A	A					
22						U R 184	252	A	A	A	A	A	A	A	A	A	R	A	A					
23						U A 196	A	A	A	A	A	A	A	A	R	U A 344	A	A	C					
24						A	U A 252	A	B	A	A	A	A	A	A	A	A	A	A					
25						U A 184	U A 248	U A 304	A	A	A	A	A	A	A	B	U R 332	A	228					
26						C	A	A	A	A	B	A	A	A	A	A	A	C	A					
27						U R 220	A	A	A	A	A	B	A	B	A	A	R	U A 292	U A 216					
28						A	C	C	A	A	A	A	A	A	A	A	U A 332	U A 284	U A 212					
29						U R 216	A	A	A	A	A	A	B	U R 384	A	B	A	A	A					
30						A	U A 260	A	A	A	A	A	A	A	A	A	R	U R 280	U A 220					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						15	11	2		1			1	1	4	2	2	6	6					
MED						U A 208	U A 260	U A 308		U A 352			U R 392	U R 384	U A 372	U A 346	U 332	U A 278	U A 218					
U Q						U 212	U A 268								U A 382			U A 284	224					
L Q						U 200	U A 252								U A 364			U A 264	U A 212					

JUN. 2003 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 40	J A 76	J A 52	J A 28	J A 26	J A 21	31	39	38	J A 46	J A 56	50	84	J A 62	J A 72	J A 108	J A 62	J A 56	J A 98	J A 84	J A 45	J A 54	J A 43	J A 39
2	J A 26	J A 24	J A 36	J A 33	E B 14	28	32	J A 70	J A 70	J A 71	J A 131	77	50	J A 55	J A 47	J A 43	39	J A 44	J A 36	J A 22	J A 18	J A 19	J A 54	J A 44
3	J A 74	J A 36	J A 54	J A 56	J A 76	J A 45	J A 72	J A 80	J A 91	J A 117	J A 120	70	J A 86	41	53	J A 59	J A 55	J A 65	J A 79	J A 56	J A 58	J A 43	J A 35	J A 48
4	J A 33	J A 32	J A 18	J A 18	20	25	J A 50	J A 50	J A 56	J A 100	J A 117	J A 108	J A 76	J A 97	J A 91	J A 70	J A 69	J A 111	J A 152	J A 144	J A 144	J A 124	J A 82	J A 43
5	J A 78	J A 77	J A 37	J A 26	J A 35	J A 42	J A 62	J A 69	J A 65	J A 57	J A 73	J A 66	J A 57	J A 78	J A 84	J A 90	J A 59	J A 45	J A 73	J A 49	J A 78	J A 78	J A 118	J A 54
6	J A 45	J A 54	J A 35	J A 46	J A 23	J A 65	34	J A 45	J A 56	J A 89	J A 90	59	J A 78	J A 69	J A 46	J A 58	J A 55	J A 64	J A 53	J A 38	J A 34	J A 33	26	J A 32
7	J A 42	J A 39	J A 28	J A 42	E B J A 14	J A 35	J A 54	J A 69	J A 83	J A 85	J A 54	J A 52	J A 53	J A 93	52	J A 46	J A 59	J A 61	J A 52	J A 41	J A 39	J A 46	J A 30	J A 38
8	J A 24	J A 23	J A 41	J A 33	J A 26	J A 24	J A 34	J A 71	J A 99	J A 98	J A 58	44	J A 54	J A 70	J A 83	J A 78	J A 72	J A 42	J A 60	J A 64	J A 52	J A 44	J A 41	J A 52
9	J A 72	J A 61	J A 40	J A 45	J A 22	J A 52	J A 58	J A 105	J A 41	53	44	J A 68	J A 75	J A 126	J A 68	J A 75	62	J A 39	J A 53	40	J A 66	J A 53	J A 52	J A 40
10	J A 64	J A 41	J A 39	E C E B 30	15	24	J A 42	J A 76	J A 110	J A 101	J A 84	J A 90	J A 62	J A 90	J A 78	J A 50	J A 60	J A 68	J A 70	63	J A 52	J A 59	J A 40	J A 46
11	J A 55	J A 56	J A 43	J A 87	J A 100	J A 54	J A 53	J A 63	J A 69	J A 71	J A 65	J A 64	J A 57	48	J A 55	J A 60	J A 78	31	E B 30	20	J A 45	J A 74	J A 38	J A 47
12	J A 44	J A 43	J A 50	J A 43	J A E C 30	35	J A 48	J A 76	J A 74	J A 76	J A 90	J A 78	J A 113	J A 60	46	J A 73	J A 125	J A 144	J A 119	J A 78	J A 98	J A 100	J A 97	J A 84
13	J A 88	J A 78	J A 43	J A 32	J A E C 23	J A 36	J A 52	J A 91	J A 115	J A 98	J A 75	J A 69	J A 88	J A 59	45	G 34	48	J A 50	J A 46	J A 126	J A 20	38	J A 42	J A 90
14	J A 62	J A 104	J A 40	J A 28	E C 30	26	36	38	J A 58	J A 76	J A 119	48	J A 107	47	J A 58	49	J A 148	J A 50	J A 108	J A 64	J A 74	J A 44	J A 80	J A 88
15	J A 63	J A 73	J A 67	J A 59	J A 95	38	J A 53	J A 59	J A 73	78	J A 73	J A 68	J A 77	43	43	J A 59	J A 81	J A 66	J A 35	J A 39	E C 35	J A 45	J A 21	J A 26
16	J A J A E 32	B J A 36	A E 14	C J A 37	J A E C 20	30	32	J A 45	J A 60	B	J A E 79	B J A 55	J A 75	J A 65	52	J A 40	46	J A 43	J A 38	J A 52	J A 74	J A 38	J A E C 52	30
17	E B E 12	B E 15	E C E 36	B 14	E B E 15	B E C 36	J A 40	J A 56	38	42	J A 48	J A 47	G	44	44	40	G 28	G 21	J A E 37	B E 19	C J A 30	J A 34	J A 26	J A 39
18	J A 49	J A 35	J A 19	E B 16	E B J A 14	B J A 39	J A 46	46	E B 53	52	44	J A 65	J A 77	J A 53	J A 46	42	G 26	G	G	E B 19	E B 13	E B 15	B 22	J A 51
19	J A 64	J A 81	J A 68	E B 13	J A 18	E C 36	J A 86	J A 67	J A 65	J A 69	J A 49	J A 44	42	J A 66	J A 57	42	42	J A 78	J A 96	J A 95	J A 30	J A 44	J A 30	J A 88
20	J A 47	J A 35	J A 33	J A 69	J A 48	J A 34	J A 54	J A 45	J A 59	J A 107	J A 54	J A 95	J A 90	J A 66	J A 48	J A 56	J A 119	J A 74	J A 40	J A 32	J A 38	J A 83	J A 46	J A 85
21	J A 79	J A 71	J A 43	J A 56	J A 36	J A 40	J A 61	J A 60	J A 46	41	43	J A 50	J A E 46	B J A 41	J A 50	J A 59	J A 76	J A 155	J A 100	J A 110	J A 54	J A 40	J A 26	J A 36
22	J A J 38	A 58	38	J A 38	J A 32	G	35	97	J A 122	J A 73	J A 72	J A 84	J A 87	J A 91	J A 71	J A 52	G 27	34	J A 100	J A 73	J A 84	J A 89	J A 62	J A 49
23	J A J 91	A J 54	A J 40	A J 46	A J 33	A 25	J A J 61	A 74	J A J 76	A J 95	A J 84	A J 146	A J 82	A 44	G 26	40	39	32	E C 35	J A 28	J A 24	J A 24	J A 40	J A 40
24	J A J 76	A 43	24	J A 28	J A 40	J A 41	28	35	J A 47	J A 58	J A 134	J A 98	J A 72	J A 117	J A 56	J A 50	J A 44	J A 180	J A 146	J A 170	J A 103	J A 53	J A 61	J A 44
25	E B E 14	B E 15	B E 14	B E B 14	J A J 33	A J 39	A J 50	A J 42	J A J 57	A J 62	A J 64	A J 55	A J 83	A J 74	A J 76	A E B 40	G 27	J A 38	G 21	J A 110	A J 101	A J 77	A J 60	A J 87
26	J A J 53	A J 41	A J 38	A J 32	J A E 23	C 29	J A 54	J A 65	J A 48	J A 92	J A 50	J A 81	J A 59	J A 126	J A 61	J A 48	J A 50	J A 133	J A 34	J A 26	J A 27	J A 31	J A 37	J A 22
27	J A J 37	A J 62	A J 66	A J 38	J A A 33	G	36	J A 64	J A 128	J A 170	J A 129	E B J 41	A 75	44	J A 57	40	G 26	J A 46	J A 38	J A J 100	A J 130	A J 126	A J 87	J A 44
28	J A J 42	A J 67	A J 42	A J 27	J A E 36	C J 55	A J 65	A J 108	J A 86	J A 78	J A 99	66	J A 115	J A 100	J A 77	J A 58	J A 56	J A 75	J A 74	J A 75	J A 100	J A 77	J A 98	J A 75
29	J A J 78	A 55	33	J A 42	E C 35	G	31	J A 64	J A 94	J A 154	J A 147	J A 221	E B 51	J A 54	J A 55	43	J A 40	J A 47	J A 30	J A 42	J A 17	E B 16	J A 61	J A 54
30	J A J 88	A J 76	A J 40	A J 42	J A 54	A J 40	32	J A 52	J A 42	J A 76	J A 54	J A 69	J A 63	J A 42	J A 88	40	G 28	G 22	30	20	E C 28	J A 53	J A 43	J A 65
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A J 51	A J 54	A J 40	A J 35	J A A 28	36	J A J 49	A J 64	J A J 65	A J 76	A J 73	A J 67	A J 75	A J 64	A J 56	A J 50	J A 55	J A 50	J A 52	J A 54	J A 48	J A 46	J A 43	J A 46
U Q	J A J 74	A J 71	A J 43	A J 45	J A A 36	J A 40	J A 54	J A 74	J A 86	J A 98	J A 99	J A 81	J A 84	J A 90	J A 72	J A 59	J A 69	J A 74	J A 96	J A 84	J A 78	J A 77	J A 61	J A 65
L Q	J A J 38	A J 36	A 33	28	E B 20	25	34	J A 46	J A 53	60	J A 54	52	57	47	47	42	G 39	39	35	32	J A 30	J A 38	J A 35	J A 39

JUN. 2003 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 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	23	E B 16	36	18	18	20	30	36	36	42	50	49	81	55	68	78	59	54	47	56	42	35	34	29
2	E B 15	E B 16	24	23	E B 14	26	30	57	A A 70	A A 71	A A 131	A A 77	48	47	44	35	34	39	30	19	E B 16	E B 16	36	34
3	35	29	30	19	21	39	46	A A 80	A A 91	A A 117	A A 120	A A 70	A A 86	40	52	53	52	48	41	35	45	38	29	35
4	21	19	E B 15	E B 15	E B 14	25	44	46	50	A A 100	A A 117	A A 108	A A 76	A A 97	A A 91	A A 70	A A 69	A A 111	A A 152	A A 144	A A 144	21	32	30
5	52	41	20	15	29	38	A A 62	A A 69	A A 65	48	A A 73	A A 66	53	57	50	50	57	40	45	43	48	21	35	29
6	33	35	30	30	E B 15	A A 65	32	36	53	A A 89	A A 90	45	53	59	40	40	48	51	45	30	28	29	24	19
7	18	18	22	20	E B 14	31	45	A A 69	A A 83	A A 85	48	42	48	A A 93	48	40	55	A A 61	41	38	34	39	E B 15	18
8	18	19	28	E C 29	20	20	28	A A 71	A A 99	A A 98	42	42	48	A A 70	50	A A 78	62	40	45	48	50	36	E B 16	42
9	45	41	31	29	20	49	56	A A 105	38	53	42	56	51	A A 126	62	68	58	37	49	E C 36	54	47	35	29
10	20	35	32	E C 30	E B 15	22	40	A A 76	A A 110	A A 101	A A 84	A A 90	62	A A 90	63	49	47	61	48	58	47	43	32	34
11	35	45	23	35	39	46	50	A A 63	A A 69	A A 71	A A 65	A A 64	52	48	53	58	A A 78	30	E B 30	19	42	38	29	35
12	35	35	36	35	28	E C 35	45	66	65	A A 76	A A 90	A A 78	A A 113	51	44	70	A A 125	A A 144	A A 119	62	71	A A 100	36	47
13	57	47	36	21	20	E C 36	42	84	A A 115	A A 98	69	67	A A 88	53	U Y 45	G 34	46	48	44	28	17	35	30	24
14	30	35	28	20	E C 30	24	35	36	44	66	66	48	71	46	46	48	53	47	E C 35	51	36	36	50	49
15	36	42	39	35	36	36	40	48	A A 73	A A 78	A A 73	A A 68	A A 77	42	41	54	A A 81	51	32	38	E C 35	23	17	21
16	E B 16	34	E B 14	E C 30	E B 15	E C 30	U Y 32	44	57	B	A A 79	E B 55	49	61	49	38	44	41	37	50	44	34	40	E C 30
17	E B 12	E B 15	E C 36	E B 14	E B 15	E C 36	35	53	37	40	45	42	G	42	42	38	G 28	G 21	34	E B 19	E C 30	31	21	35
18	35	E C 29	16	E B 16	E B 14	36	44	43	E B 53	50	42	54	50	42	40	38	G 26	G	G	E B 19	E B 13	E B 15	19	49
19	45	60	46	E B 13	E B 15	E C 36	A A 86	54	47	49	45	42	42	52	47	41	40	56	A A 96	84	29	29	20	35
20	36	24	25	42	36	29	50	43	58	52	48	57	55	62	44	55	41	66	29	23	36	39	34	35
21	20	22	35	29	20	34	57	54	44	40	41	49	46	E B 41	49	56	58	A A 155	A A 100	A A 110	34	25	18	28
22	30	40	36	32	30	G	33	70	A A 122	61	A A 72	A A 84	A A 87	56	59	39	G 27	32	A A 100	51	46	A A 89	40	34
23	54	41	31	38	E C 29	23	55	56	55	67	59	A A 146	A A 82	40	U Y 26	39	37	31	E C 35	26	E B 15	E B 20	E C 36	36
24	43	20	E B 20	24	21	29	28	33	41	52	A A 134	A A 98	64	70	51	45	38	56	36	54	36	22	51	39
25	E B 14	E B 15	E B 14	E B 14	26	32	43	36	53	54	44	53	A A 83	42	56	E B 40	G 27	35	G 21	A A 110	32	43	43	57
26	34	27	31	30	20	E C 29	43	37	46	A A 92	47	56	54	A A 126	49	42	44	41	30	24	16	29	33	19
27	35	44	55	26	28	G	33	60	A A 128	A A 170	A A 129	E B 41	49	43	44	38	U Y 26	40	34	A A 100	A A 130	A A 126	20	21
28	29	28	37	20	E C 36	32	A A 65	A A 108	A A 86	A A 78	A A 99	A A 66	A A 115	A A 100	A A 77	49	37	A A 75	35	49	A A 100	42	56	62
29	20	22	30	20	E C 35	G	31	49	A A 94	A A 154	A A 147	A A 221	E B 51	A A 54	48	41	35	36	28	39	E B 15	E B 16	E B 15	33
30	22	22	30	20	36	33	30	42	39	A A 76	52	54	47	40	40	35	G 28	G 22	27	18	E C 28	29	38	20
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	32	29	30	22	20	30	42	54	58	A A 71	68	56	54	54	48	44	45	44	36	41	36	34	32	34
U Q	36	41	36	30	30	36	50	A A 69	A A 86	A A 95	A A 90	A A 77	A A 81	A A 70	53	55	58	A A 56	A A 47	56	47	39	36	36
L Q	20	20	23	E B 19	E B 15	24	32	43	46	52	47	49	49	42	44	39	G 35	36	30	26	E 28	23	20	28

JUN. 2003 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 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	16	15	15	15	14	16	20	20	18	35	34	45	40	35	32	18	19	17	15	15	16	15	16
2	15	16	14	16	14	14	15	20	18	35	40	35	35	20	29	21	20	17	15	13	16	16	16	15
3	15	15	12	15	14	14	17	19	20	22	35	35	20	26	24	20	19	16	13	15	15	15	13	16
4	15	15	15	15	14	16	15	19	30	21	23	36	34	23	21	18	18	15	14	14	16	15	14	16
5	15	15	14	13	15	14	16	19	20	18	20	23	32	31	20	18	20	20	15	14	15	15	16	14
6	14	14	14	14	15	16	16	18	22	22	24	23	26	26	29	28	20	17	13	14	15	15	14	15
7	15	15	14	15	14	16	15	18	21	38	38	34	26	34	29	20	20	19	14	16	14	12	15	14
8	16	15	14	E C 29	14	12	21	20	22	36	35	25	29	35	35	21	22	16	16	30	14	29	16	28
9	14	16	15	15	13	15	14	20	32	25	36	40	42	38	24	36	20	18	15	E C 36	20	14	16	14
10	16	16	15	E C 30	15	13	19	24	31	32	34	40	45	40	37	29	20	19	17	21	E C 36	22	14	14
11	20	24	15	14	14	16	36	18	35	59	45	43	42	38	37	29	20	16	30	14	15	E C 28	18	15
12	15	14	13	16	14	E C 35	18	35	37	41	40	47	45	36	35	38	35	19	14	16	15	15	16	19
13	16	14	15	14	16	E C 36	20	35	22	36	34	44	38	36	36	20	37	18	14	14	14	14	15	13
14	15	16	15	16	E C 30	13	20	20	22	31	36	38	40	36	34	42	29	19	E C 35	12	15	14	E C 36	16
15	15	15	E C 36	19	17	20	E C 36	E C 35	E C 35	36	35	36	36	36	28	32	22	17	14	15	E C 35	15	13	14
16	16	14	14	E C 30	15	30	16	33	22	B	E B 46	E B 55	E B 42	41	36	31	E C 35	19	15	14	14	E C 30	14	E C 30
17	12	15	E C 36	14	15	E C 36	18	18	20	22	E C 36	36	36	E C 36	28	24	20	15	13	19	E C 30	17	16	15
18	14	E C 29	13	16	14	14	19	22	53	40	38	39	32	36	35	20	20	18	16	19	13	15	17	16
19	15	14	14	13	15	E C 36	13	20	20	18	24	23	36	34	23	19	19	19	15	15	15	14	15	15
20	14	14	14	14	15	15	18	19	19	23	21	22	34	35	28	22	20	17	15	14	E C 29	14	15	E C 29
21	15	16	16	16	15	16	E C 30	21	23	21	20	28	31	41	30	20	20	16	15	14	14	15	15	15
22	15	16	E C 30	15	14	14	14	20	20	21	22	35	34	32	35	21	20	19	16	16	14	15	20	14
23	15	15	15	14	E C 29	14	21	17	16	17	21	28	31	23	19	24	19	19	E C 35	14	15	20	E C 36	15
24	15	14	20	13	14	16	18	20	E C 36	20	22	35	36	33	35	20	19	16	19	19	18	16	15	13
25	14	15	14	14	13	16	15	18	19	21	35	35	35	22	28	40	20	18	15	15	16	15	16	15
26	16	15	16	14	14	E C 29	20	19	20	35	40	32	34	30	23	19	21	E C 35	14	13	14	14	15	15
27	14	15	14	17	14	15	17	20	35	35	35	41	31	38	29	22	19	20	15	15	15	17	15	15
28	E C 22	16	E C 35	16	E C 36	20	E C 36	E C 35	21	36	28	30	30	31	22	20	17	14	14	29	16	15	15	14
29	15	16	16	15	E C 35	15	18	14	20	17	22	28	E B 51	32	18	36	20	18	15	12	15	16	15	14
30	14	14	15	16	15	14	16	19	20	20	35	30	30	29	21	22	22	16	16	13	E C 28	14	15	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	15	15	14	15	14	15	17	20	21	24	34	35	34	34	29	22	20	18	15	14	15	15	15	15
U Q	15	16	16	16	15	E C 20	20	21	31	36	36	39	40	36	35	31	21	19	16	16	E C 16	16	16	16
L Q	14	14	14	14	14	14	16	19	20	21	23	28	31	30	23	20	19	16	14	14	14	14	15	14

JUN. 2003 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 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	289	270	280	302	313	323	319	328	316	296	302	298	312	276	285	283	284	306	317	317	305	F	F	F
2	F	F	F	F	315	299	313	313	A	A	A	A	280	280	285	265	277	253	286	318	337	277	274	260
3	270	267	257	F	265	276	278	A	A	A	A	A	A	293	307	305	309	306	286	295	284	290	F	F
4	283	280	281	278	290	290	299	283	306	A	A	A	A	A	A	A	A	A	A	A	A	276	270	F
5	280	298	305	286	275	303	A	A	A	263	A	A	279	299	292	301	324	323	305	288	289	F	284	F
6	F	F	F	286	F	A	327	292	309	A	A	248	289	294	289	302	326	314	303	284	294	283	S	284
7	277	302	F	306	278	295	280	A	A	A	272	274	279	A	300	327	303	A	300	292	290	F	268	274
8	274	278	291	274	275	268	337	A	A	A	271	278	286	A	297	A	304	305	323	322	274	266	272	275
9	284	272	F	267	295	297	258	A	280	262	292	297	303	A	283	295	303	311	313	321	269	279	264	263
10	S 273	F	F	S 277	263	263	287	A	A	A	A	A	S 294	A	301	306	311	294	307	S 298	288	252	270	263
11	281	297	288	285	F	F 314	323	A	A	A	A	A	R 276	273	278	301	A	305	294	309	287	253	F	280
12	273	280	288	279	289	292	298	314	326	A	A	A	A	290	287	282	A	A	A	316	303	A	271	268
13	286	F	F	F	F	290	301	322	A	A	261	272	A	284	289	301	287	288	305	315	293	S 270	269	270
14	F	F	F	F	290	316	318	321	304	283	290	295	305	278	267	285	R 268	266	290	S	351	F	S 286	278
15	287	F	318	F	261	316	303	302	A	A	A	A	A	265	287	292	A	284	298	297	288	281	271	264
16	277	272	281	291	294	299	315	333	328	B	A	288	284	280	253	280	303	300	290	296	294	256	279	261
17	282	280	273	292	281	306	313	295	302	261	302	288	311	280	267	278	281	288	297	303	266	264	277	288
18	293	277	278	287	289	282	285	286	F	F	F	257	266	245	267	287	279	246	255	292	282	267	277	282
19	277	274	265	285	317	344	A	315	312	330	299	299	283	290	306	312	283	274	A	323	313	280	281	297
20	264	269	F	287	292	F 307	312	306	290	286	310	288	256	292	289	284	293	298	284	298	284	278	290	290
21	272	F	F	281	F	312	303	309	308	323	309	269	266	265	278	291	299	A	A	A	301	293	300	279
22	279	276	289	264	285	284	301	332	A	338	A	A	A	277	300	298	307	285	A	282	308	A	F	F
23	F	F	F	272	290	293	287	322	328	328	293	A	A	294	278	309	280	291	283	296	323	272	280	262
24	F	276	285	304	280	278	319	293	319	317	A	A	296	281	271	280	275	299	308	261	280	264	F	286
25	F	F	F	283	302	320	255	275	317	309	309	301	A	306	267	298	313	300	281	A	319	F	F	F
26	F	F	F	F	F 292	328	S 319	S 328	264	A	302	S 286	268	A	306	313	313	S 288	285	289	282	260	266	268
27	273	277	296	267	287	S 275	271	285	A	A	A	288	293	307	307	291	301	316	298	A	A	A	F	F
28	F	F	296	341	264	246	A	A	A	A	A	A	A	A	A	279	306	A	303	295	A	258	258	298
29	279	275	292	259	270	271	282	294	A	A	A	A	274	A	258	282	294	S 297	307	279	278	280	263	290
30	269	F	273	286	278	290	309	293	338	A	291	287	281	300	280	293	303	309	297	290	304	278	F	F
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	18	18	24	26	29	27	22	16	12	14	17	21	22	28	28	26	25	25	25	27	22	21	22
MED	278	276	286	285	288	295	303	308	310	302	296	288	283	282	286	292	302	298	298	296	290	274	272	276
U Q	283	280	292	289	292	313	318	322	322	326	302	296	295	294	298	302	307	306	306	316	305	280	280	286
L Q	273	272	278	276	275	280	285	293	303	273	290	273	275	277	274	282	283	286	286	290	282	264	268	264

JUN. 2003 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	L 377	A	A	A	A	A	A	A	A					
2							L	A	A	A	A	A	A	A	392	370	354	A	L					
3						A	A	A	A	A	A	A	A	371	A	A	A	A	A					
4							A	A	A	A	A	A	A	A	A	A	A	A	A					
5						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
6						A	L 369	L	A	A	A	381		A	A	374	378	A	A					
7						A	A	A	A	A	A	328		A	A	A	380	A	A	A				
8						323	L 368	A	A	A	U 376	L 371	A	A	A	A	A	A	A					
9						A	A	A	L 331	A	378	A	A	A	A	A	A	L	A					
10						L 306	A	A	A	A	A	A	A	A	A	A	A	A	A					
11						A	A	A	A	A	A	A	A	A	A	A	A	L 336	L					
12							A	A	A	A	A	A	A	A	L	A	A	A	A					
13							A	A	A	A	A	A	A	A	A	L 384	A	A	A					
14									L 355	A	A	L 342	A	L 365	A	A	A	A	E C					
15							E C	A	A	A	A	A	A	U L 375	360	A	A	A	L					
16								A	A	B	A	E B	A	A	A	L 345	A	A	A					
17							A	A	366	368	L 367	376	L 388	379	L 340	L 356	L 344	L	A					
18							A	A	E B	A	U L 376	A	A	343	376	357	358	335	L 300					
19							A	A	A	A	L 379	L 397	L 397	A	A	L 374	L 358	A	A					
20							A	L	A	A	A	A	A	A	362	A	L 352	A	L					
21						A	A	A	L 361	384	L 400	A	U L 332	L 374	A	A	A	A	A					
22						L	L 329	A	A	A	A	A	A	A	A	349	L 357	L 338	A					
23							A	A	A	A	A	A	A	388	373	378	L 357	L 347	A					
24						L	L	L 310	L 362	A	A	A	A	A	A	A	L 347	A						
25							A	350	A	A	L 373	A	A	382	A	355	L 360	L 363						
26								L	L 356	A	A	A	A	A	A	325	A	A	L					
27							L 333	A	A	A	A	412	A	U L 344	374	377	L 382	A	A					
28						A	A	A	A	A	A	A	A	A	A	A	379	A	A					
29						U L 329	350	A	A	A	A	A	E B	A	A	366	370	L 342	L					
30						A	L	366	392	A	A	A	343	386	L 366	L 370	351	L 364						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						3	4	4	7	3	7	7	4	10	9	15	13	7	1					
MED						L 323	L 342	358	L 361	377	L 376	376	L 366	374	373	370	L 357	L 342	L 300					
U Q						U L 329	359	368	366	384	L 379	397	L 392	382	375	378	365	L 363						
L Q						L 306	L 331	330	L 355	368	L 373	342	338	L 365	361	355	L 352	336						

JUN. 2003 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 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								272	270	310	292	314	E A 322	E A 304	E A 362	E A 368	E A 306	284						
2							304	E A 332	A	A	A	A	404	388	378	430	390	414	310					
3						E A 348	E A 356	A	A	A	A	A	A	382	E A 344	E A 360	E A 342	E A 302	E A 286					
4							E A 310	352	316	A	A	A	A	A	A	A	A	A	A					
5						E A 316	A	A	A	E A 478	A	A	E A 398	E A 358	324	326	E A 276	280	E A 292					
6						A	280	306	E A 318	A	A	518	356	342	322	304	262	278						
7						E A 282	E A 402	A	A	A	430	432	420	A	340	298	E A 404	A	E A 318					
8						374	274	A	A	A	438	402	392	A	350	A	E A 372	296	276					
9						E A 338	E A 490	A	386	418	300	340	344	A	E A 374	E A 352	308	290	256					
10						458	342	A	A	A	A	A	E A 380	A	374	324	314	E A 362	272					
11						E A 316	E A 302	A	A	A	A	A	406	440	402	E A 338	A	308	298					
12							E A 278	E A 318	E A 290	A	A	A	A	364	350	E A 426	A	A	A					
13							276	E A 342	A	A	A	E A 446	A	334	330	300	330	294	270					
14									302	E A 366	E A 322	340	E A 358	336	440	362	E A 382	362	298					
15							E A 276	366	A	A	A	A	A	460	368	E A 344	A	E A 374	310					
16								246	272	B	A	368	348	E A 380	466	362	280	302	290					
17							278	E A 356	356	432	326	356	306	390	418	342	320	310	280					
18							308	340	332	E A 532	456	E A 480	424	502	418	342	336	412	364					
19							A	280	294	276	306	334	330	348	302	304	330	E A 356	A					
20							252	314	E A 376	364	312	E A 374	E A 430	E A 394	362	368	342	E A 340	312					
21						258	E A 320	E A 302	302	310	344	404	424	442	376	330	E A 336	A	A					
22						318	322	E A 296	A	E A 308	A	A	A	E A 408	E A 342	342	304	324	A					
23							E A 318	274	278	E A 350	E A 368	A	A	350	366	308	320	316	292					
24						350	264	356	284	310	A	A	332	E A 366	366	330	324	284						
25							E A 450	398	306	E A 312	314	360	A	338	E A 402	330	290	286						
26								290	422	A	348	E A 378	444	A	324	322	298	318	332					
27							346	328	A	A	A	354	320	324	304	346	306	272	296					
28						E A 426	A	A	A	A	A	A	A	A	A	402	336	A	E A 280					
29						384	368	342	A	A	A	A	456	A	498	404	358	352	298					
30						E A 322	302	338	266	A	376	382	376	342	344	340	322	282						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	23	21	17	13	14	17	21	22	28	28	26	25	20					
MED						E A 338	U 292	U 317	298	U 330	330	365	U 369	355	360	336	315	301	293					
U Q						379	E A 346	347	344	425	376	418	422	394	390	362	E A 342	354	310					
L Q						E A 316	278	293	281	310	312	347	338	342	341	325	306	285	280					

JUN. 2003 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 272	262	E A 308	264	240	234	218	226	212	208		A	A	A	A	A	A	A	E A 248	260	E A E 250	E A E 290	236	E A 326
2	E B E 288	B E 292	E A E 316	E A 294	228	E A E 240	E A 238	A	A	A	A	A	A	A	230	216	228	A	A	248	212	E A E 266	E A E 332	E A 362
3	E A E 334	A E 336	A E 336	A E 314	E A 332	A	A	A	A	A	A	A	A	224	A	A	A	A	A	E A 278	E A E 330	E A E 298	E A E 328	E A 302
4	E A E 252	A E 294	A E 280	B E 276	260	256	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A E 302	E A E 296	E A 328
5	E A E 388	A E 314	A E 270	A 256	E A 346	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E A E 302	E A E 328	262	E A E 312	E A 310
6	E A E 318	A E 318	A E 308	A E 308	E B 312	A	E A 248	228	A	A	A	234	A	A	216	E A 238	A	A	E A E 270	E A E 264	E A E 282	E A E 288	E A E 288	E A 276
7	E A 280	262	E A 260	254	E B 282	A	A	A	A	A	A	E A 298	A	A	A	222	A	A	A	E A E 298	E A E 278	E A E 348	E B E 294	E A 294
8	E A E 296	A E 298	A E 284	C E 310	E A 308	256	242	A	A	A	226	220	A	A	A	A	A	A	A	E A E 282	E A E 402	E A E 332	E B E 300	E A 386
9	E A E 360	A E 380	A E 358	A E 346	250	A	A	A	216	A	214	A	A	A	A	A	A	A	A	238	E A E 376	E A E 336	E A E 332	E A 316
10	E A 302	286	258	E C 300	E B 324	264	A	A	A	A	A	A	A	A	A	A	A	A	A	E A E 318	E A E 282	E A E 358	E A E 328	E A 340
11	E A E 310	A E 296	250	E A E 280	E A 276	A	A	A	A	A	A	A	A	A	A	A	A	228	E B 246	242	E A E 292	E A E 384	E A E 332	E A 320
12	E A E 334	A E 314	A E 320	A E 320	A E 302	E C 260	A	A	A	A	A	A	A	A	E A 282	A	A	A	A	E A E 272	E A E 334	A	E A E 316	E A 374
13	E A E 318	A E 336	A E 262	A E 268	A E 266	E C 266	A	A	A	A	A	A	A	A	A	E A 240	A	A	A	224	214	E A E 310	E A E 332	E A 308
14	E A E 270	A E 312	A E 264	234	E C 246	220	E A 236	E A 250	226	A	A	E A 272	A	E A 240	A	A	A	A	E C	254	206	E A E 346	E A E 386	E A 352
15	E A E 322	A E 328	A E 274	A E 324	A E 362	A E 282	E C	A	A	A	A	A	A	222	228	A	A	A	E A E 278	E A E 282	E C 284	E A E 282	E A E 286	E A 318
16	E B E 296	A E 312	B E 270	C 266	250	232	E A 242	A	A	B	A	B	A	A	A	230	A	A	A	E A E 288	E A E 286	E A E 334	E A E 314	E C 338
17	270	272	E C 314	258	E B E 286	C 270	A	A	208	206	222	196	200	210	230	228	224	228	A	230	E C 300	E A E 324	E A E 294	E A 276
18	E A E 270	C E A 272	298	256	246	E A 292	A	A	B	A	222	A	A	E A 280	218	E A 244	228	228	244	264	252	252	E A E 292	E A 310
19	E A E 318	A E 400	A E 368	B 280	242	230	A	A	A	A	204	196	192	A	A	204	E A 236	A	A	E A E 290	232	E A E 268	E A E 266	E A 296
20	E A E 336	A E 302	A E 274	A E 294	A E 298	246	A	E A 268	A	A	A	A	A	A	E A E 260	A	E A E 258	A	238	246	E A E 262	E A E 308	E A E 306	E A 284
21	E A E 302	A 294	306	E A 300	E A 288	A	A	A	E A 280	202	H 192	A	E A 290	220	A	A	A	A	A	A	E A E 244	E A 260	244	E A 292
22	E A E 322	A E 346	A E 306	A E 340	A E 308	256	E A 248	A	A	A	A	A	A	A	A	248	E A 238	226	A	E A E 320	E A 268	A	E A E 344	E A 328
23	E A E 348	A E 298	A E 274	A E 308	A E 292	C E 250	A	A	A	A	A	A	A	H 184	H 186	232	226	226	A	244	228	E B E 280	C E 304	E A 324
24	E A E 326	A E 300	A E 278	B 268	E A 286	242	E A 230	214	234	A	A	A	A	A	A	A	232	A	260	E A 338	E A E 298	E A E 312	E A E 352	E A 310
25	264	238	212	246	E A E 284	A E 266	A	232	A	A	228	A	A	216	A	220	218	E A 238	220	A	226	E A E 348	E A E 344	E A 376
26	E A E 298	A E 320	A E 256	A E 298	A E 272	E C 256	E A 272	E A 232	E A 246	A	A	A	A	A	A E 250	A	A	A	E A E 278	E A 274	234	E A E 322	E A E 334	E A 300
27	E A E 304	A E 312	A E 304	A E 296	A E 278	A 256	E A 242	A	A	A	A	198	A	E A E 258	E A 236	214	H 188	A	A	A	A	A	E A E 258	E A 266
28	E A E 326	A E 336	A E 290	A 236	E C 374	A	A	A	A	A	A	A	A	A	A	A	234	A	A	E A 368	A	E A E 354	E A E 428	E A 354
29	E A E 270	A E 288	A E 290	A E 332	A E C 344	236	232	A	A	A	A	A	B	A	A	E A 258	218	E A 248	E A E 236	E A E 298	E B 262	248	E B 290	E A 264
30	E A E 322	A E 330	A E 330	A E 278	A E 372	A	234	E A 290	200	A	A	A	E A 284	202	212	214	208	222	228	266	E C 254	E A 254	E A 328	E A 286
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	21	12	8	8	3	7	7	4	10	10	15	13	8	11	26	27	27	30	30
MED	E A E 307	A E 307	A E 287	A E 287	A E 286	246	E A 240	226	216	206	222	U 208	242	214	222	222	223	227	E 246	E A E 273	E A E 268	E A E 308	E A E 313	E A 313
U Q	E A E 326	A E 328	A E 308	A E 308	A E 312	E 265	E A E 245	A E 259	E A 240	208	226	E A 272	E A E 287	E A E 240	E A E 236	E A E 244	E A E 235	E A E 233	E A E 270	E A E 298	E A E 298	E A E 336	E A E 332	E A 338
L Q	E A 280	292	E A 270	264	260	238	233	227	210	202	204	196	196	210	216	216	218	226	236	248	234	E A E 268	E A E 292	E A 294

JUN. 2003 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A		A	A	A	A	A	B	B	A	A	A		A					
							110											112						
2									A	A	B	A	A	A	A	A	A							
						112	120	112										108	114					
3							A	A	A	A	A	A	A	A					A					
						120									114	112	114	112						
4							A	A	A	A	A	A	A		A		A	A	A					
						120								112	116									
5								A	A	A	A	A	A	A	A	A	A	A	A					
						122	118																	
6								A	A	A	A	A	A	A	A	A	A	A	A					
						118	116																	
7								A	A	B	A	A	A	A	A	A	A	A	A					
						130	112																	
8						A	A	A	A	A	A	A	A	A	B	A	A	A	A					
9						A	A	A	A	A	B	B	B	A	A	A	A	A	A					
10								A	A	A	A	B	B	B	B	A		A	A					
						112	112										112							
11							B	A	B	B	B	B	B	B	B	A	A	A	B					
						118																		
12						E	C		B	B	A	B	B	B	A		B	A	A					
							114								116									
13						E	C	A	B	A	B	A	B	A	A	A		B	A					
																112								
14									A	A	A	B	A			B	A	A	E	C				
						112	112	112						120	128									
15					B		A	E	C	E	C	E	C	A	A	A	A	A	A	A	A	A	A	A
16							B		B	A	B	B	B	B	B	A	A	E	C	A	A			
							118																	
17						E	C			A		E	C	A		B								
							110	114			108			112		110	116	114	112	112				
18								A	B			B	A	A	A	A								
						116	112									114	118	108	114					
19						E	C	A	A	A	A	A	A	A	A	A								
															114	112	116							
20								A	A	A	A	A	A	A	A	A	A	A	A					
						112	112																	
21							E	C	A	A			A	A	B									
						132				108	108				116	112		A	A	A				
22								A	A	A	A	A	A	A	A	A								
						114	108									116	118	110		A				
23							A	A	A	A	A	A	A	A	A									
						112									112	114	118	116		C				
24						A			B		A	A	A	A	A	A	A	A	A					
							122	118		110														
25										A	A	A	A	A	A	B								
						120	118	108	114								116	A	120					
26						C			A	A	B	A	A	A	A		A	C	A					
							116	116								112								
27								A	A	A	A	B	A	B										
						120	110								114	124	122	114	116					
28							C	C	A	A	A	A	A	A	A	A								
						120											112	108	112					
29								A	A	A	A	A	B		A	B								
						128	118							112			116	A	A					
30						A		A	A	A	A	A	A	A	A	A								
							110										112	110	116					
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						18	19	6	1	3	1		1	3	9	10	12	10	7					
MED						119	112	113	114	108	108		112	112	114	113	116	111	114					
U Q						120	118	116		110				120	116	116	118	112	116					
L Q						112	110	112		108				112	113	112	113	108	112					

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 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	98	96	96	96	102	104	120	106	106	106	100	100	102	104	100	98	102	118	112	98	96	100	100	100
2	98	96	94	92	B	116	122	110	102	96	98	100	102	100	100	102	104	120	116	94	94	100	100	98
3	98	100	102	100	114	118	106	100	100	94	96	98	100	102	116	116	114	112	104	104	106	98	102	98
4	96	96	102	122	134	118	106	106	102	98	102	100	100	114	114	108	104	104	102	102	102	102	100	96
5	96	94	96	96	92	118	112	104	106	106	102	102	100	98	92	94	94	110	106	102	100	98	98	102
6	100	96	94	94	92	118	118	108	104	102	98	100	98	100	100	96	98	94	90	92	94	90	94	102
7	104	102	102	100	B	126	116	106	100	104	104	106	106	96	96	96	96	94	94	96	108	106	104	100
8	96	92	94	96	94	92	96	104	104	98	104	106	104	100	100	104	98	124	108	102	104	100	100	96
9	92	92	90	88	94	102	100	98	102	106	112	112	120	100	120	106	104	102	96	94	96	92	90	88
10	92	90	88	C	B	128	112	102	100	96	96	98	102	100	100	100	110	106	106	94	92	92	110	102
11	100	98	104	98	100	114	118	104	104	104	104	104	102	104	100	96	96	96	B	108	100	106	104	98
12	90	90	86	86	86	C	114	104	102	100	98	96	98	102	130	118	106	102	104	102	104	98	100	92
13	92	88	88	86	84	C	106	102	98	96	96	98	96	98	100	106	114	102	100	98	90	104	110	104
14	102	98	96	94	C	136	122	116	110	102	100	106	106	128	138	128	104	108	102	94	96	100	104	100
15	94	96	100	98	112	112	116	114	104	104	104	104	100	108	108	102	96	96	96	96	C	98	100	102
16	106	102	B	100	100	C	126	118	106	B	102	B	104	110	104	102	98	94	92	96	106	102	96	C
17	B	B	C	B	B	C	116	110	104	120	106	106	G	112	124	132	98	104	116	B	C	98	98	94
18	96	96	98	B	B	118	110	106	B	114	120	108	110	112	112	148	102	G	G	B	B	B	116	98
19	104	100	98	B	114	C	104	104	102	102	102	104	108	108	116	130	120	104	102	96	100	98	94	92
20	88	94	96	94	98	118	116	106	104	98	100	100	98	98	102	96	98	94	92	92	90	86	88	100
21	98	104	96	98	102	122	110	106	108	116	114	104	110	B	114	116	102	102	100	94	92	90	90	96
22	96	94	98	96	98	G	120	106	98	100	100	98	100	106	108	116	104	114	100	100	104	100	98	96
23	98	94	92	90	96	118	106	102	100	96	100	90	96	96	98	136	122	118	C	106	100	100	100	100
24	96	96	94	92	92	94	146	128	126	112	104	102	102	100	106	100	106	106	106	102	106	120	106	102
25	B	B	B	B	122	122	116	118	110	102	102	102	98	98	96	B	108	106	110	104	98	102	108	100
26	98	92	96	96	94	C	116	112	104	102	116	108	110	104	104	110	102	100	102	110	100	96	98	94
27	94	98	92	90	92	G	118	104	100	96	98	B	110	116	112	132	104	120	116	106	102	98	106	98
28	98	94	92	96	C	114	112	108	102	100	100	100	94	94	96	116	116	110	112	102	98	98	94	94
29	94	94	90	92	C	G	120	104	98	96	92	94	B	116	106	116	118	104	108	100	100	B	108	100
30	104	110	98	98	100	106	120	104	102	96	96	96	96	96	90	96	98	92	118	108	C	100	100	98
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	27	25	22	21	30	30	29	29	30	28	28	29	30	29	30	29	27	28	26	28	30	29
MED	97	96	96	96	98	118	116	106	102	102	101	101	102	102	104	106	104	104	104	100	100	99	100	98
U Q	99	98	98	98	102	120	120	110	105	105	104	105	106	109	114	117	108	111	110	103	104	101	104	100
L Q	94	94	92	92	92	109	110	104	100	96	98	98	98	98	100	99	98	98	100	95	96	98	98	96

IONOSPHERIC DATA STATION Kokubunji

JUN. 2003 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

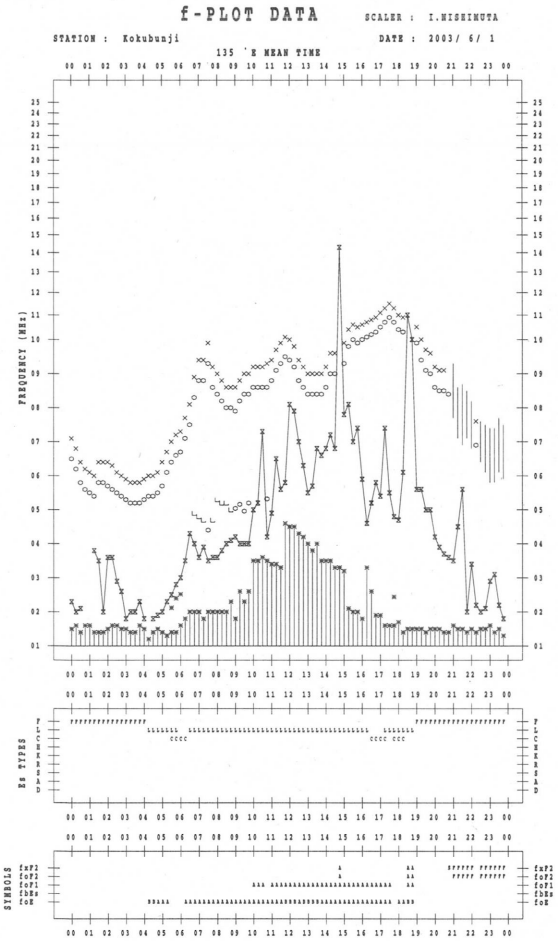
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

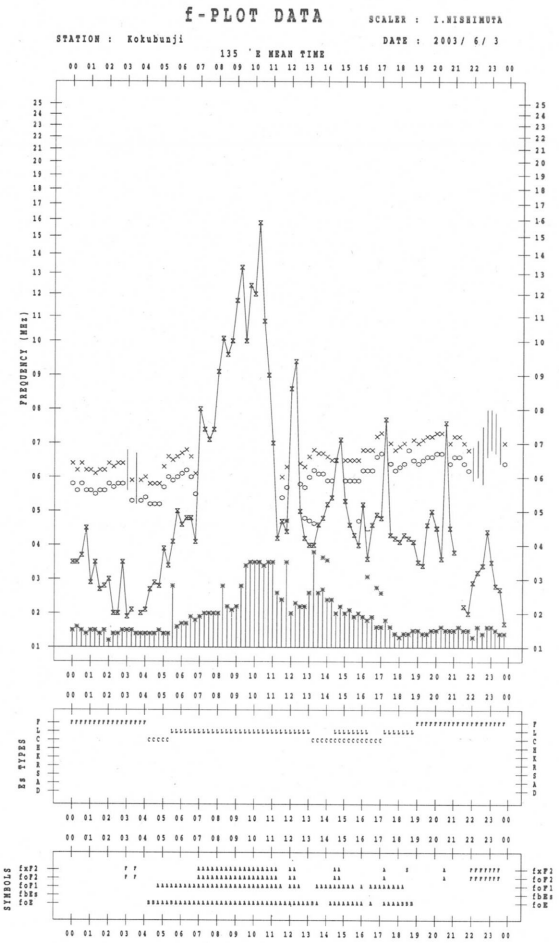
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F3	F2	F4	F2	F2	L1	C1	L1	L1	L1	L1	L1	L1	L2	L2	L3	L3	C3	CL41	F4	F4	F4	F5	F3
2	F2	F2	F2	F2		C3	CL11	CL31	L3	L2	L2	L2	L1	L2	L1	L1	L1	C2	CL21	F2	F1	F2	F3	F3
3	F3	F4	F3	F3	F2	C3	L4	L3	L3	L3	L2	L1	L2	L1	C2	CL31	CL21	C3	L3	F3	F5	F5	F4	F5
4	F3	F2	F1	F1	F1	C2	L3	L2	L2	L2	L3	L2	L2	CL21	CL21	L3	L4	L4	L5	F4	F4	F2	F4	F6
5	F5	F5	F2	F3	F4	C3	CL31	L3	L2	L2	L3	L2	L2	L3	L2	L2	L3	L2	L5	F4	F4	F2	F3	F2
6	F3	F4	F3	F3	F1	CL32	C2	L1	L2	L3	L2	L1	L2	L2	L2	L1	L3	L3	L3	F2	F5	F3	F2	F3
7	FF22	F2	F2	F3		C3	C2	L3	L3	L2	L1	L1	L2	L2	L2	L2	L3	L4	L3	F3	FF24	F6	F2	F2
8	F2	F2	F4	F2	F2	L1	LC11	L3	L3	L3	L1	L1	L2	L2	L2	L3	L4	CL22	L4	F3	F5	F3	F2	F4
9	F3	F3	F3	F3	F1	L3	L3	L3	L1	L1	C1	C2	C1	L3	CL22	L3	L3	L2	L3	F3	F5	F6	F4	F4
10	F2	F5	F3			C1	C2	L3	L4	L3	L3	L3	L1	L4	L3	L2	CL21	L4	L3	F4	F5	F3	FF33	F5
11	F4	F5	F5	F4	F3	C4	C3	L3	L3	L1	L1	L2	L1	L1	L2	L2	L4	L1		F1	FF52	F4	F4	F3
12	F3	F4	F4	F3	F3		CL21	L2	L2	L2	L3	L1	L2	L2	C1	C2	L4	L3	L5	F5	F5	F4	F5	F3
13	F3	F3	F3	F2	F2		L3	L3	L4	L3	L3	L1	L2	L2	L1	L1	C1	L2	L2	F4	F2	FF23	FF22	F3
14	F2	F4	F4	F2		CL11	C1	CL11	L2	L3	L2	L1	L2	C1	C1	C1	L2	L2	L2	F4	F2	F3	F5	F5
15	F4	F3	F4	F3	L3	L1	C2	C3	L3	L3	L2	L2	L2	L1	L1	L2	L4	L3	L3	F4		F2	F1	F2
16	F2	F2		F2	F1		CL11	C1	L2		L1		L1	L2	L2	L1	L2	L3	L4	FF33	FF42	F3	F3	
17							C1	CL21	L1	CL11	L1	L1		C1	C1	CL11	L1	L1	C1			F3	F2	F4
18	F3	F3	F2			C2	C3	L2		L1	C1	L2	L2	L1	L1	HL11	L1						F1	F3
19	F5	F4	F5		F1		L4	L2	L2	L2	L2	L1	L1	L2	CL21	CL11	CL11	L4	L3	F4	F4	F3	F2	F3
20	F4	F3	F3	F3	F2	C2	C3	L2	L2	L2	L2	L3	L2	L3	L2	L2	L3	L3	L2	F3	F4	F4	F3	F2
21	F2	F2	F4	F3	F1	C2	C4	L3	L1	CL11	CL11	L2	L1		CL21	CL21	L3	L4	L3	F4	F3	F3	F2	F3
22	F4	F4	F1	F3	F3		C1	L3	L3	L2	L3	L2	L3	L2	L3	CL21	L1	C1	L3	F2	F2	F4	F3	F4
23	F6	F4	F4	F3	F2	C1	L4	L3	L3	L3	L3	L3	L3	L1	L1	CL11	CL11	CL11		F3	F1	F1	F2	F6
24	F5	F2	F1	F3	F2	L3	HL11	CL11	C2	CL21	L2	L3	L2	L3	L2	L2	L2	L3	L3	F3	F3	F3	F4	F5
25					F4	C3	C3	C1	CL31	L2	L2	L2	L3	L2	L3		L1	L2	L1	F3	F3	F3	F4	F5
26	F2	F5	F3	F4	F2		C3	CL21	L2	L3	C1	L3	L2	L3	L2	CL21	L2	L2	L2	F2	F2	F3	F3	F2
27	F3	F4	F3	F2	F2		C1	L3	L3	L2	L3		L2	C1	C2	CL11	L1	CL21	CL11	F4	F4	F4	F2	F3
28	F2	F3	F2	F2		C3	C3	L4	L2	L3	L3	L2	L3	L3	L2	CL21	CL22	CL21	C3	F5	F4	F3	F5	F4
29	F3	F2	F3	F3			C2	L3	L4	L4	L3	L2		C1	L2	C1	CL11	L2	L2	F3	F1		F3	F4
30	FF23	FF13	F3	F3	F3	L2	C1	L2	L1	L2	L2	L2	L2	L2	L2	L1	L1	L2	CL21	F1		F3	F4	F5
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

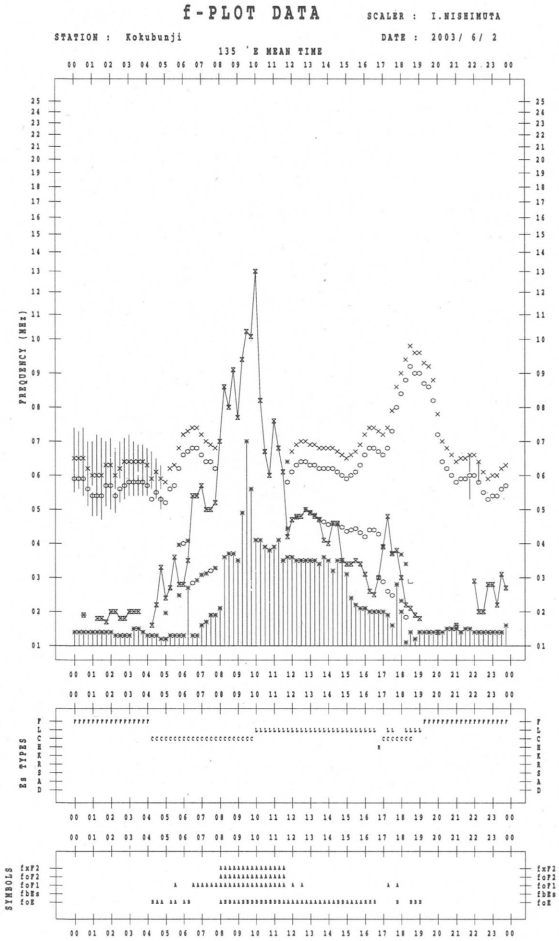
JUN. 2003 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

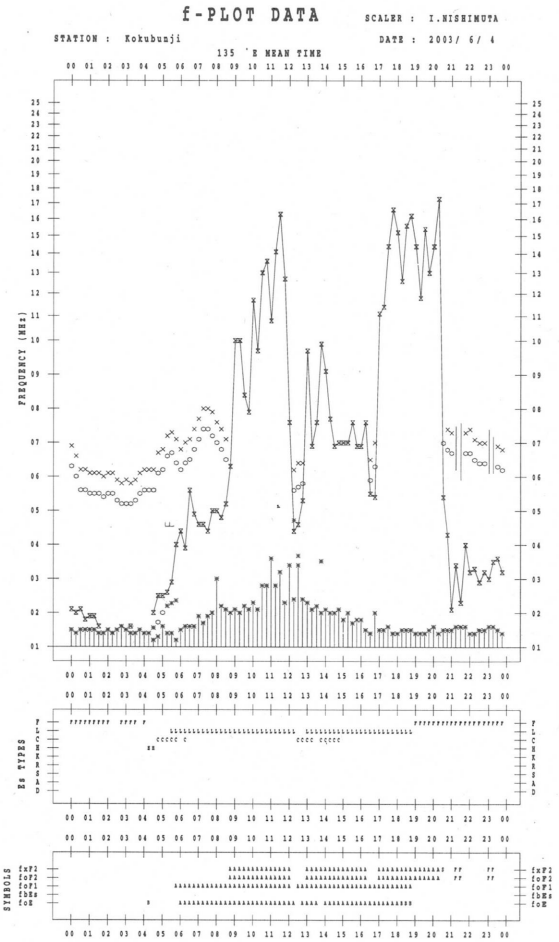
f-PLOTS OF IONOSPHERIC DATA

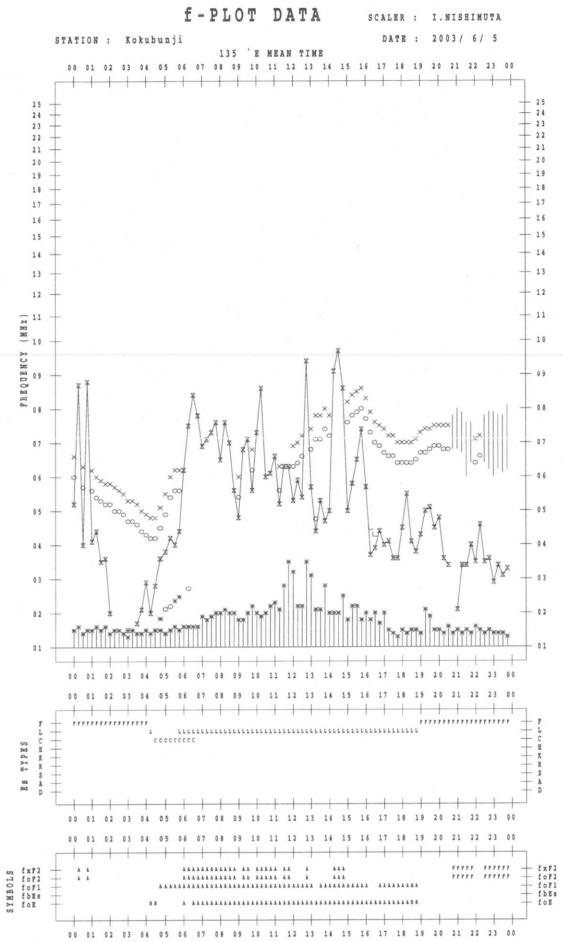
KEY OF f-PLOT	
	SPREAD
	foF2,foF1,foE
	fxF2
	DOUBTFUL foF2,foF1,foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

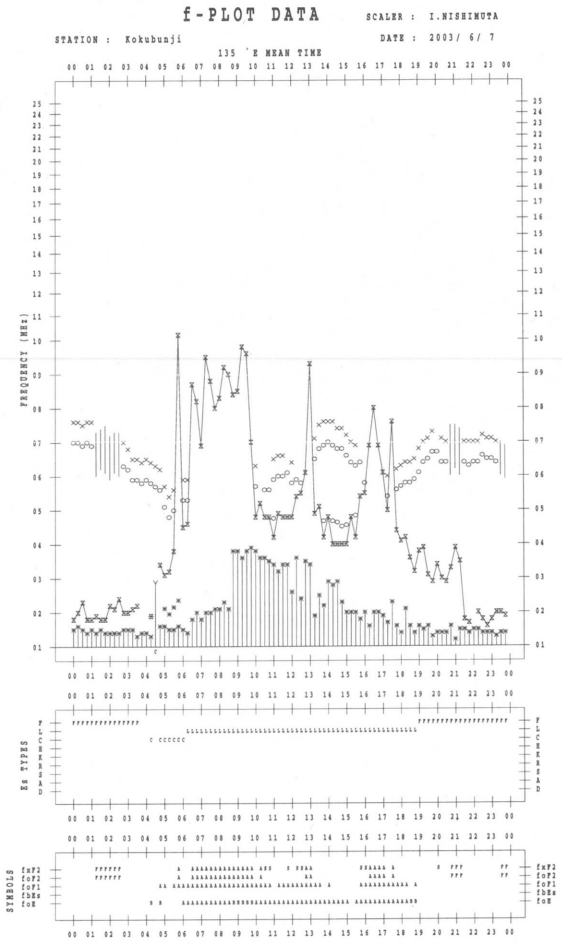

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

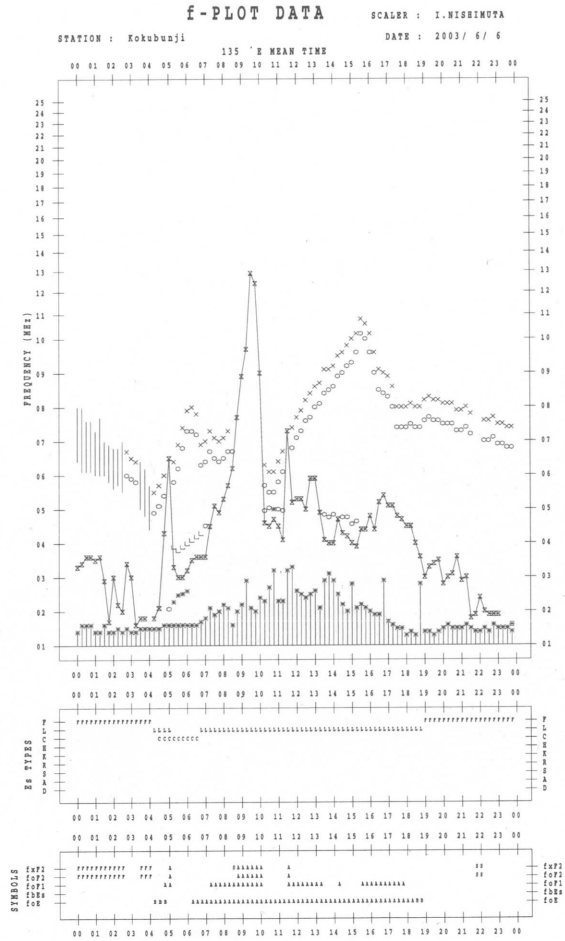

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

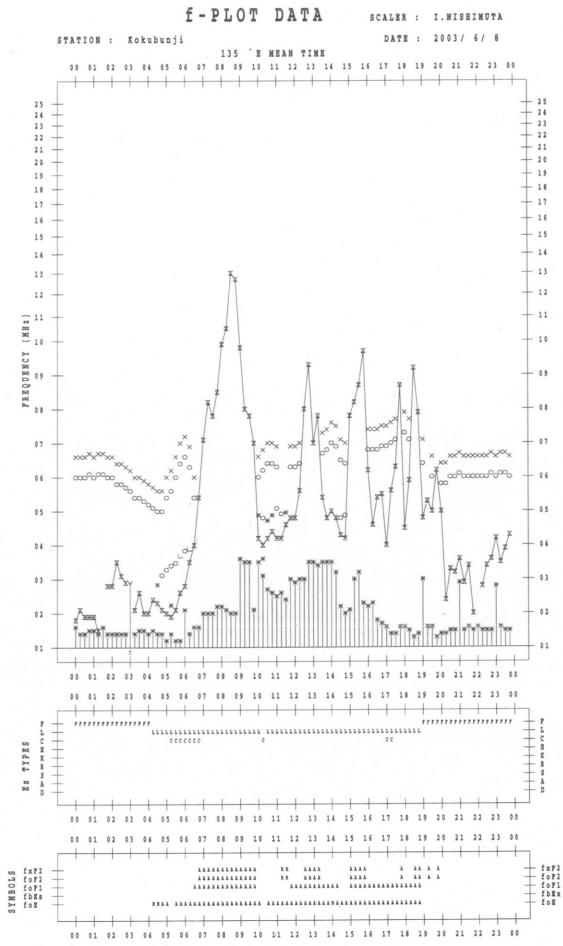

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

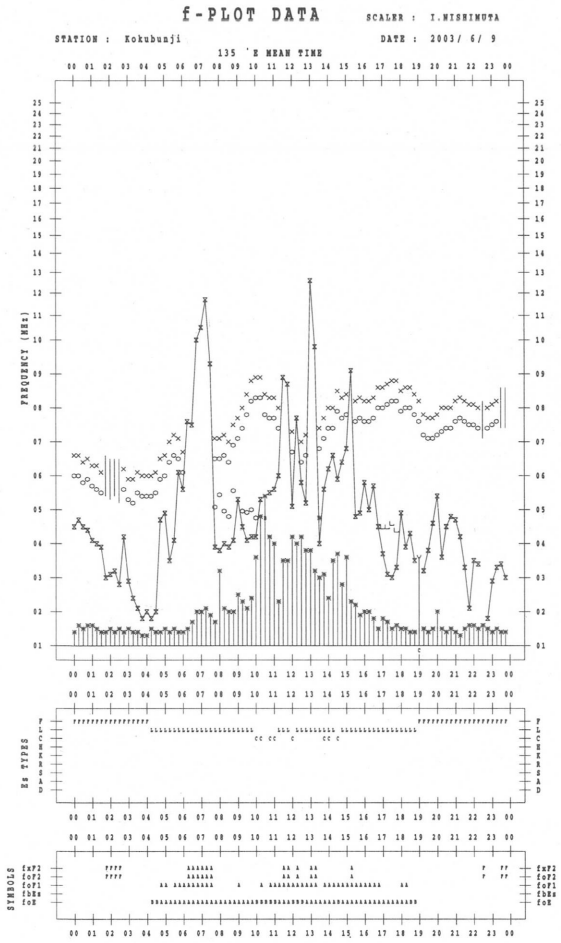

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

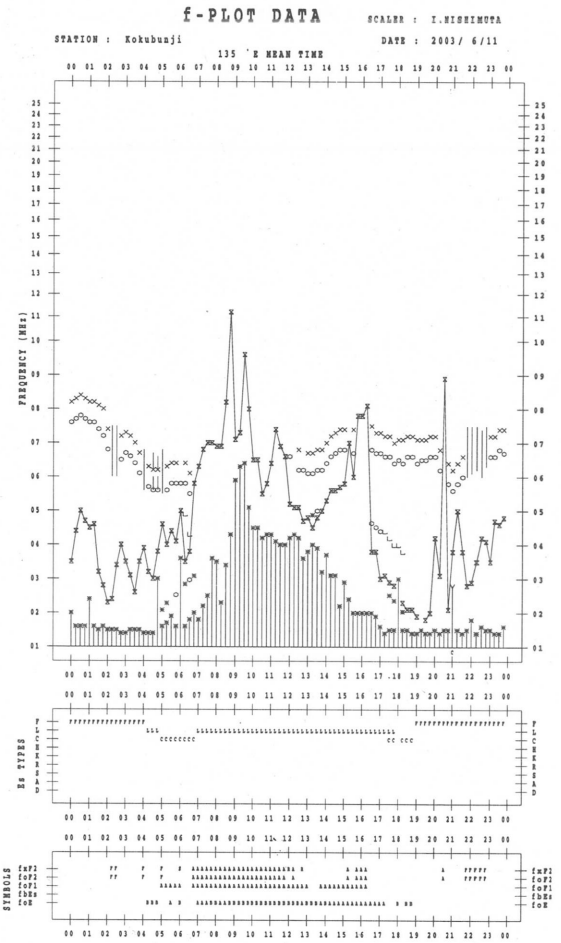

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

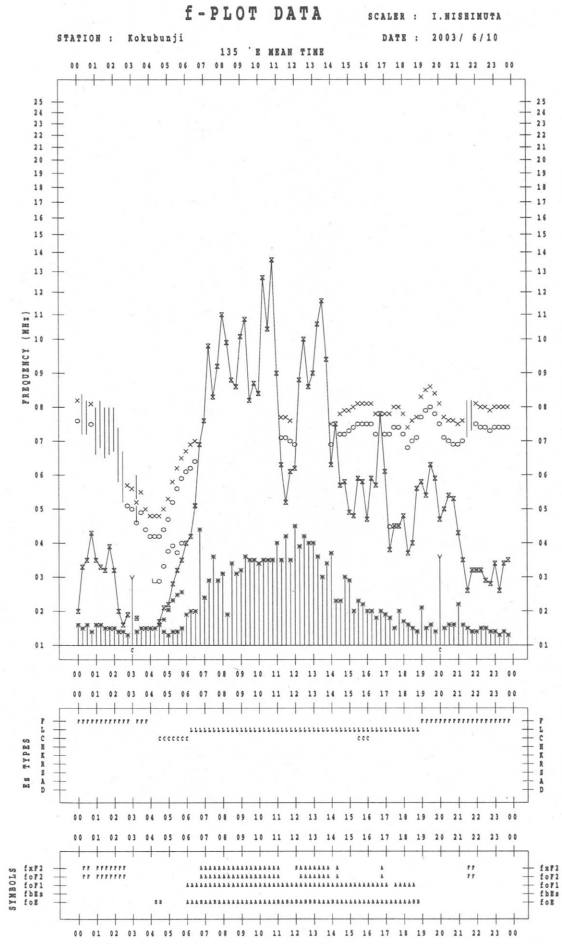

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

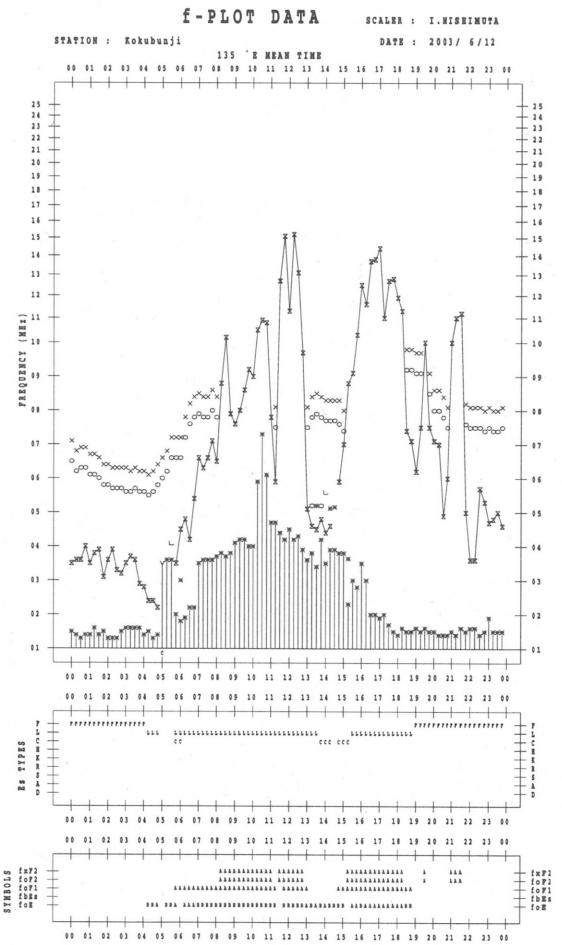

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

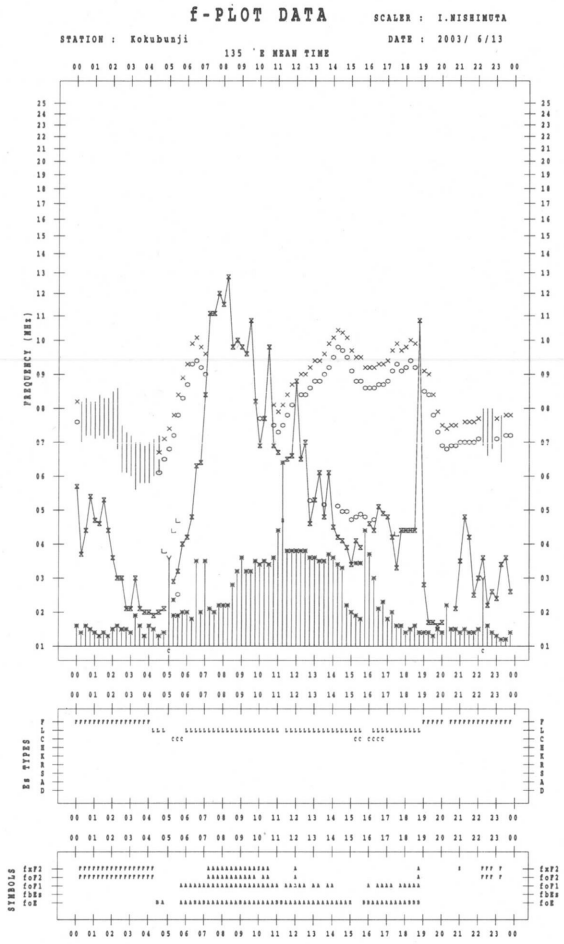

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

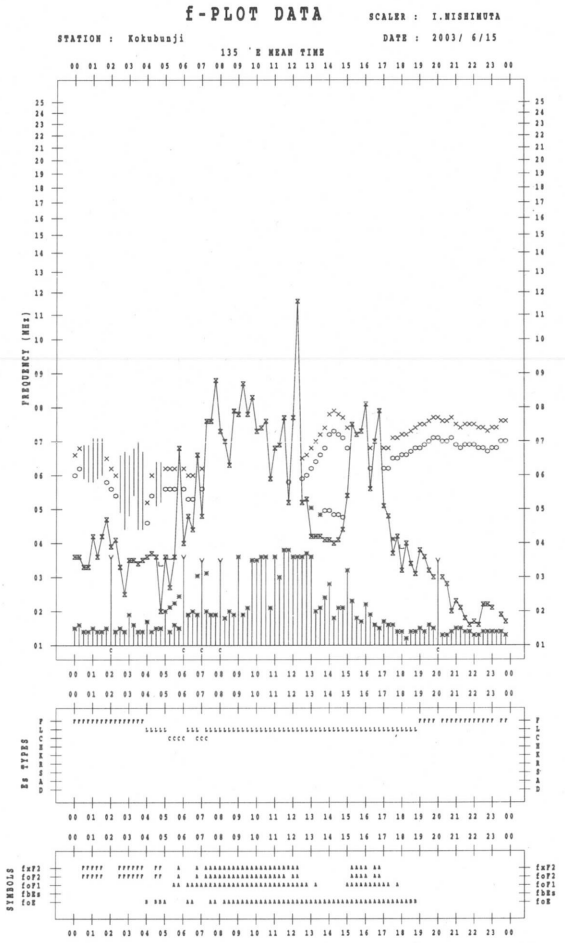

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

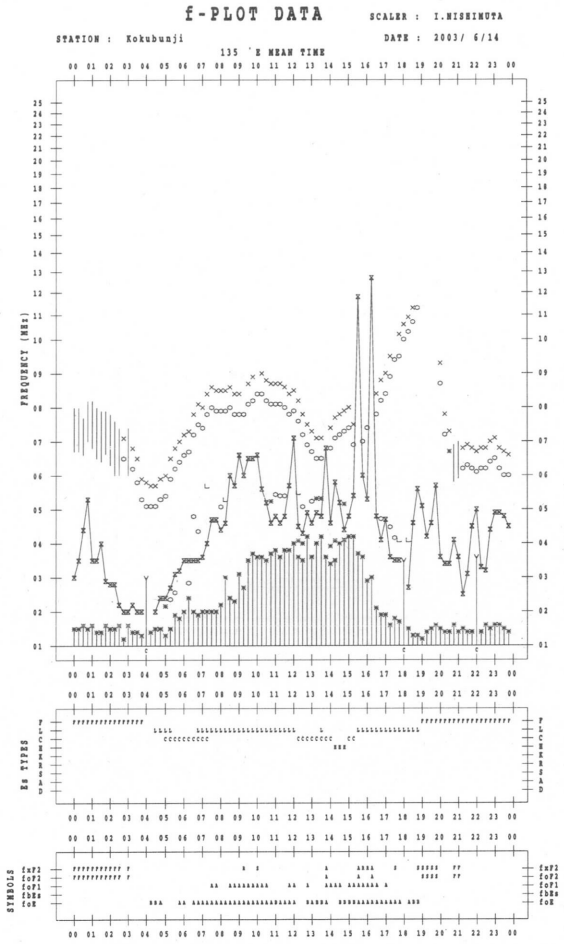

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

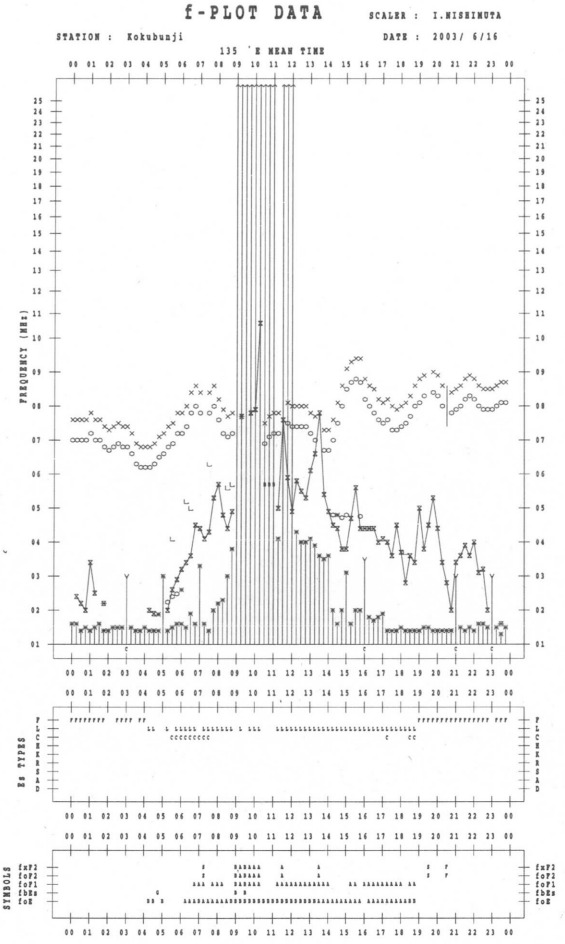

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

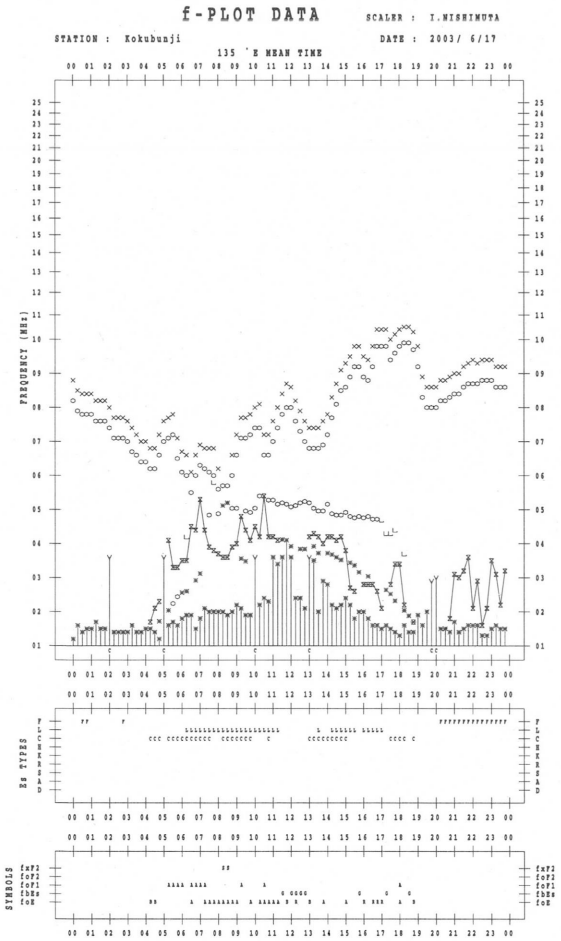

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

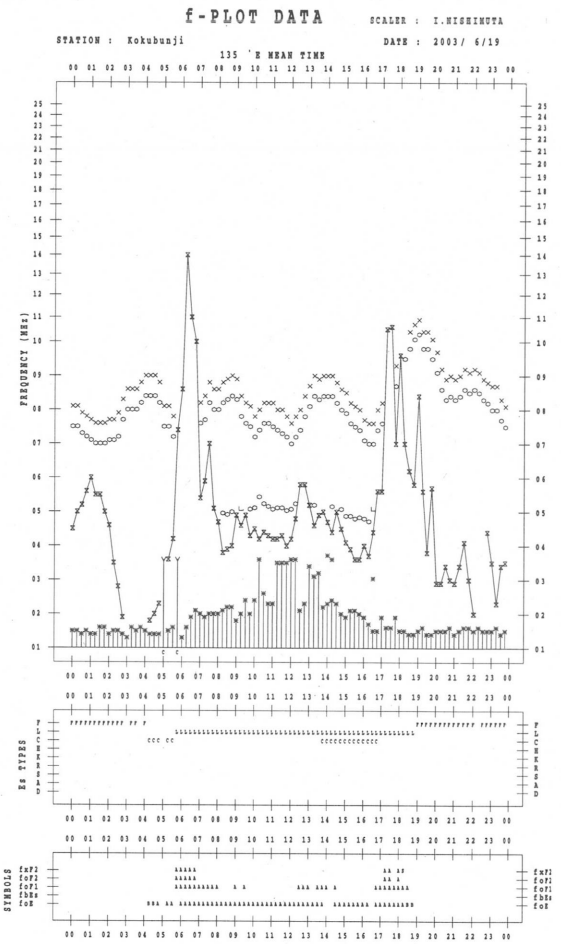

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
fbEs
foE
fxF2

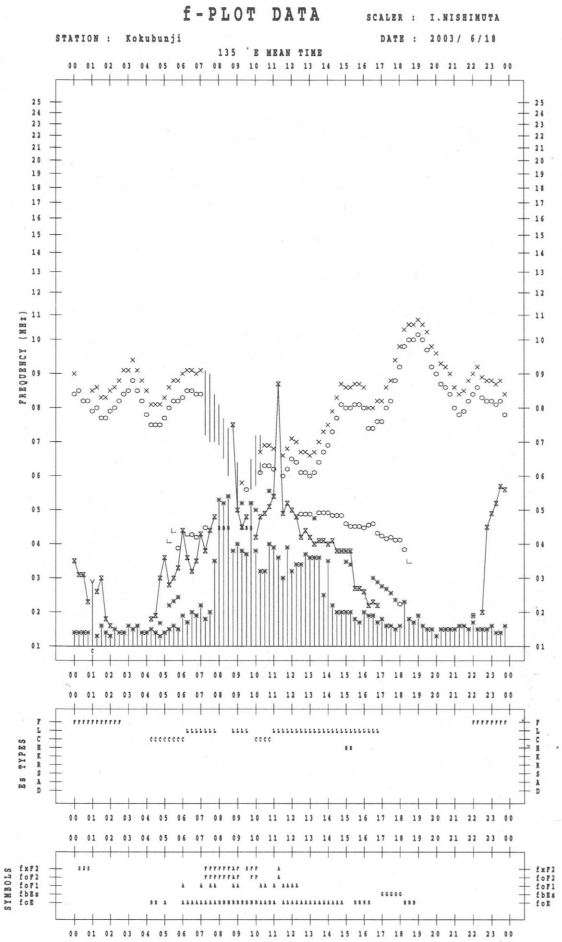

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
fbEs
foE
fxF2

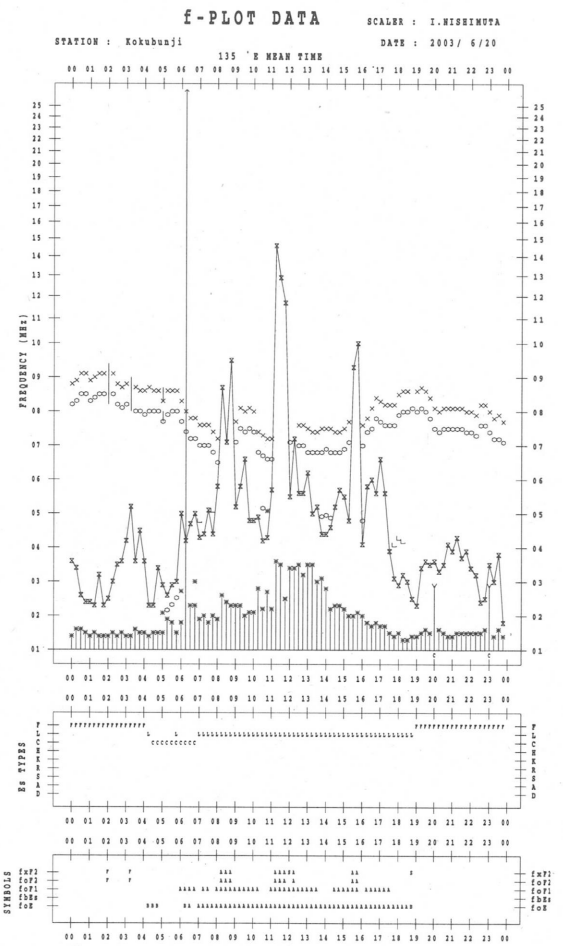

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
fbEs
foE
fxF2

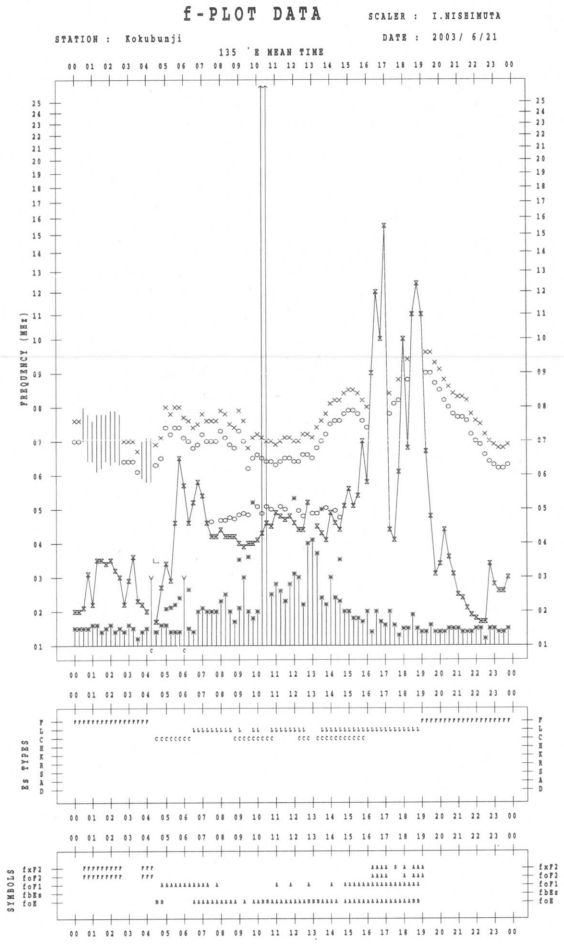

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
fbEs
foE
fxF2

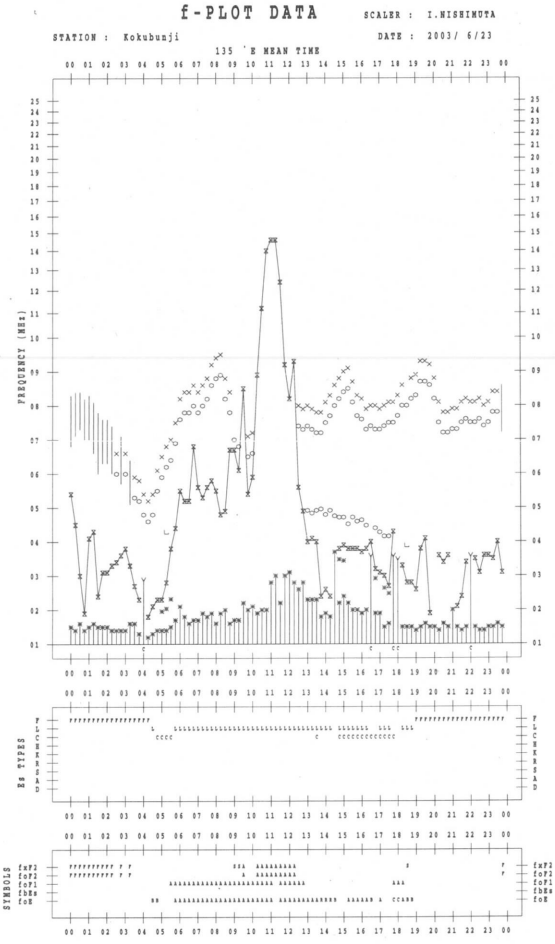

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

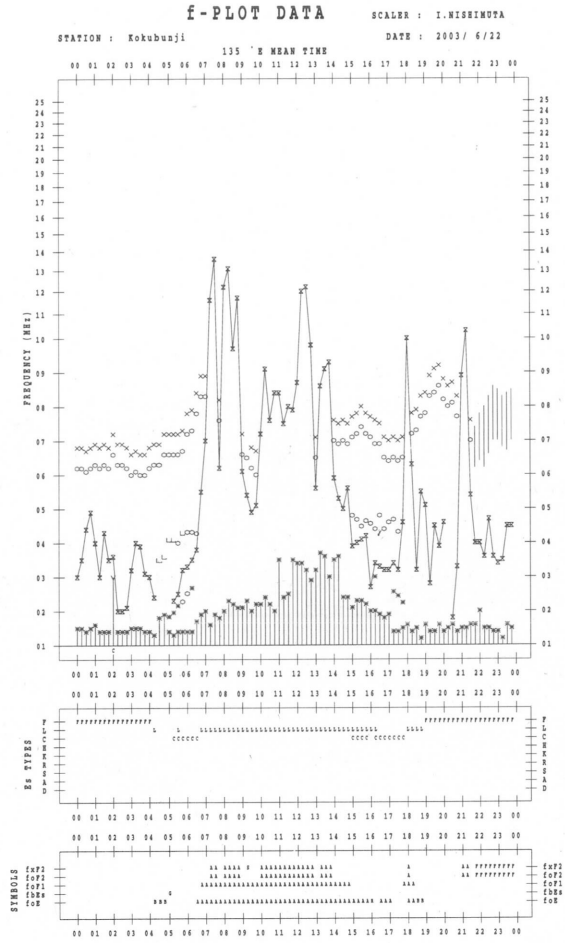

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

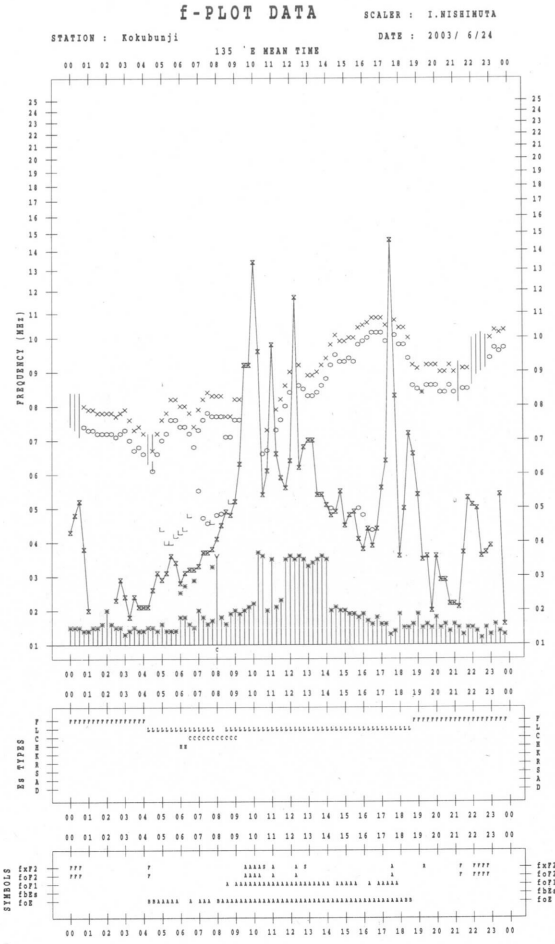

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

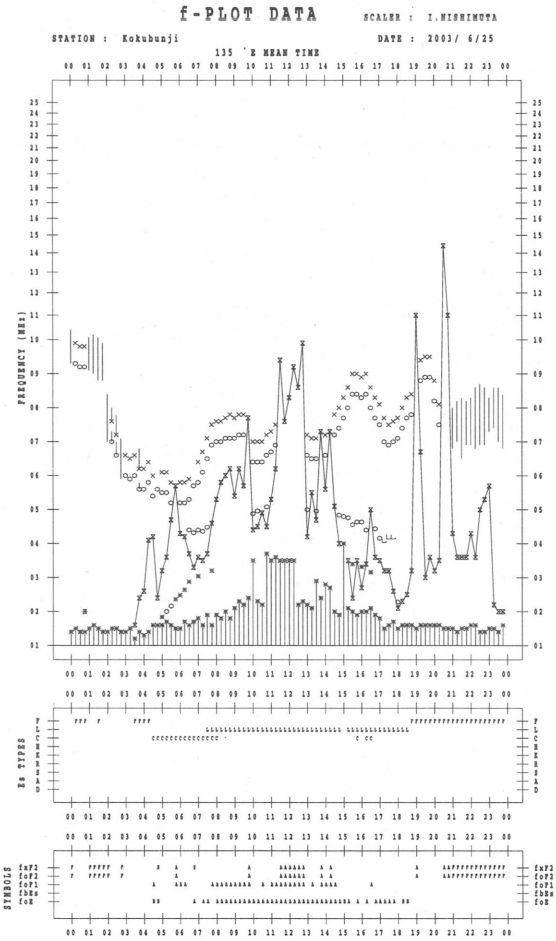

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

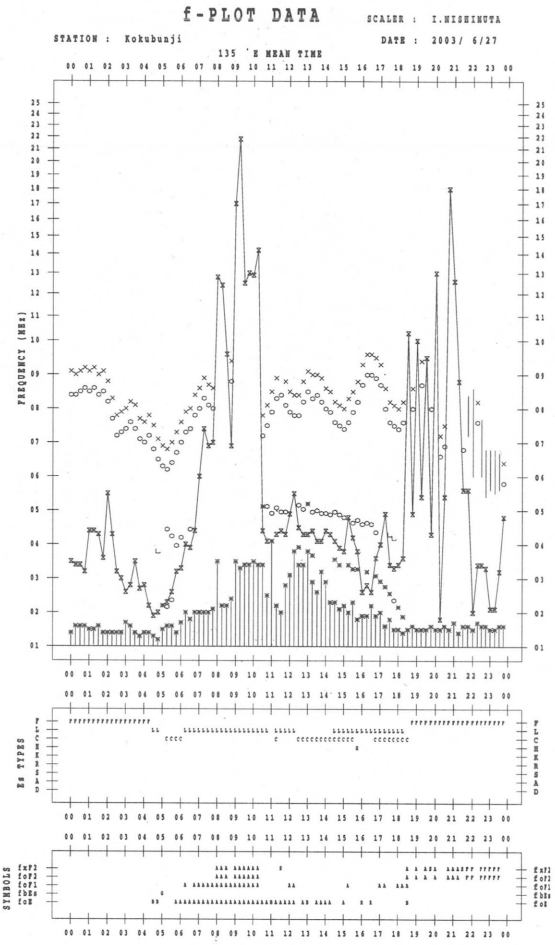

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

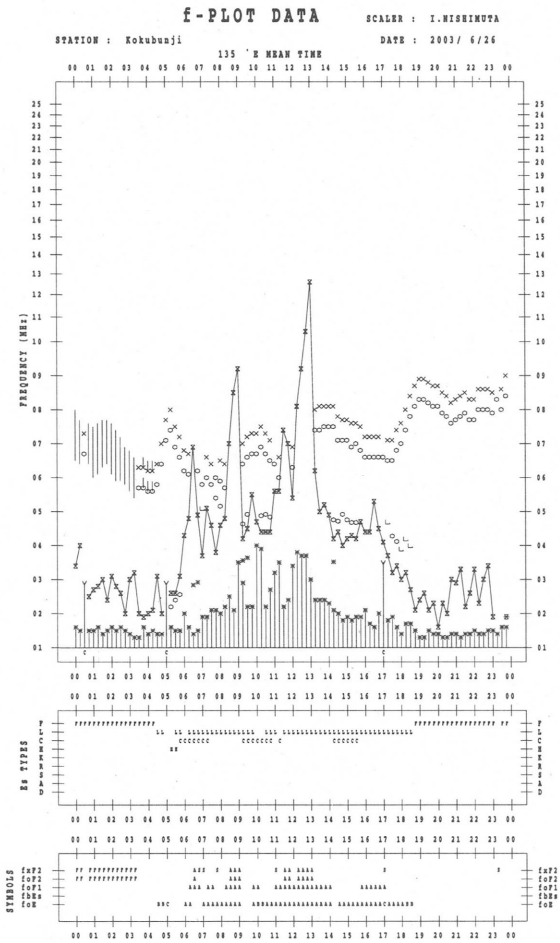

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

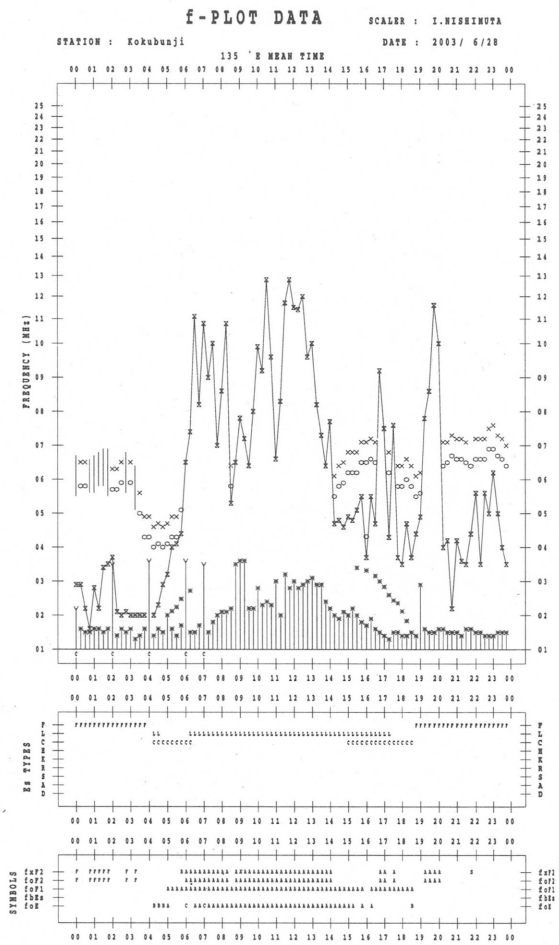

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

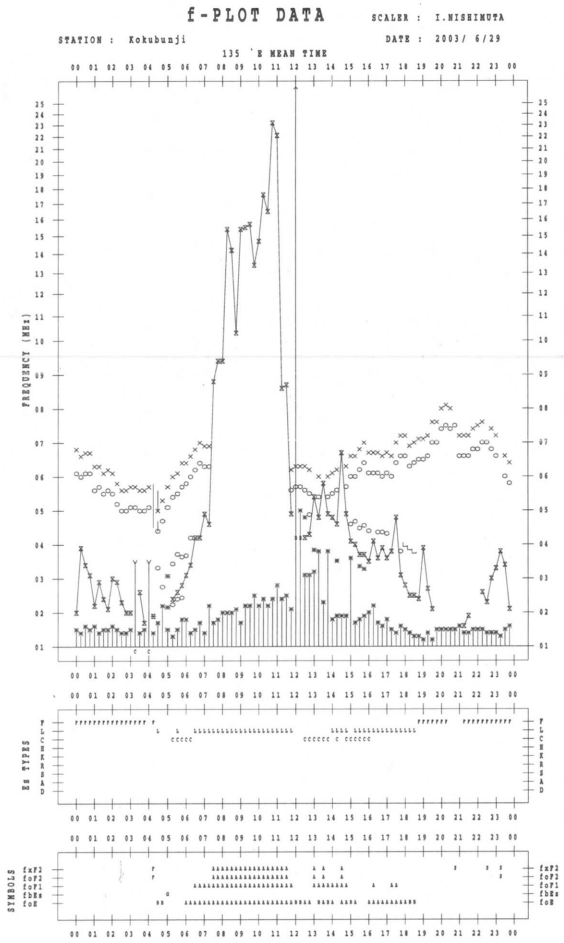

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

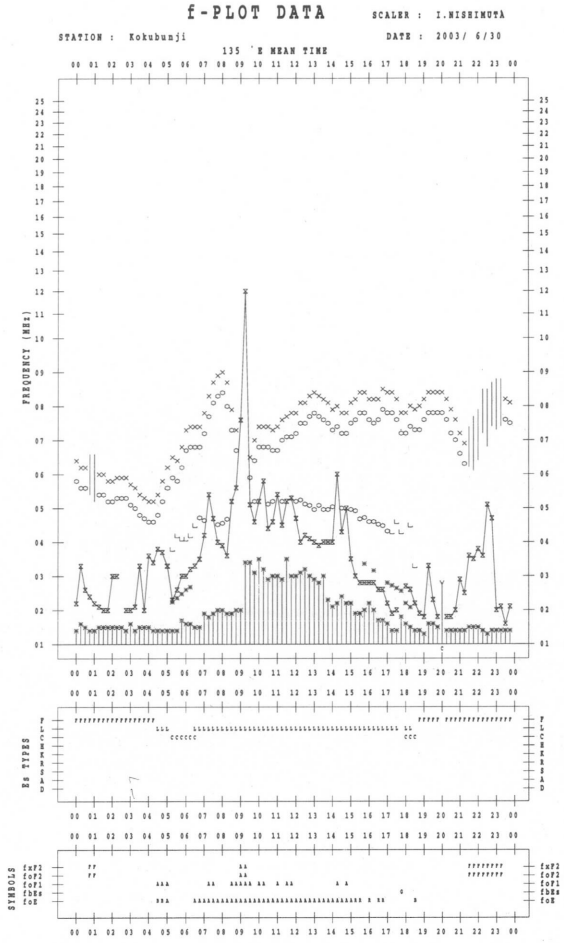

f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : I.NISHIMUTA
STATION : Kokubunji
DATE : 2003/ 6/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

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

Hiraiso June 2003

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} W m^{-2} Hz^{-1}					
Date \ UT	00-03	03-06	06-09	21-24	Day
1	–	–	–	–	–
2	29	28	29	31	29
3	30	28	28	29	29
4	28	27	27	28	28
5	26	26	27	30	27
6	31	29	28	29	29
7	29	29	29	31	30
8	31	29	29	33	31
9	31	30	30	–	30
10	35	32	32	36	34
11	35	35	33	36	35
12	36	33	33	34	34
13	35	32	30	30	32
14	28	27	28	29	28
15	28	27	27	30	28
16	29	28	29	28	29
17	27	26	25	30	27
18	28	27	28	28	28
19	25	24	24	28	25
20	27	25	24	29	26
21	31	29	28	30	30
22	29	28	29	30	29
23	30	30	29	27	29
24	34	30	29	28	30
25	28	26	27	30	27
26	28	27	28	29	28
27	27	27	27	28	27
28	29	28	28	30	29
29	29	28	28	34	30
30	61	33	28	–	42
31					

Note: No data is available during the following periods.
1st 0000 – 2nd 0100 9th 2000 – 10th 0045 28th 2100 – 30th 0200
30th 0815 – 30th 2400
A superscript * stands for being superposed on a burst.

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso June 2003

Single-frequency observations

Normal observing period: 1915 - 1000 U.T. (sunrise to sunset)

JUN. 2003	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
2	500	8 S	0524.0	0524.0	1.0	20	-	0
2	2800	7 C	0828.0	0842.0	20.0	190	-	0
2	500	7 C	0830.0	0842.0	20.0	100	-	0
4	500	8 S	0011.0	0011.0	1.0	10	-	0
5	500	8 S	2316.0	2317.0	1.0	10	-	WL
6	2800	3 S	2333.0	2336.0	6.0	115	-	ML
6	500	7 C	2333.0	2337.0	6.0	45	-	0
7	500	8 S	0125.0	0125.0	1.0	20	-	0
7	500	8 S	0521.0	0521.0	1.0	15	-	0
7	2800	1 S	0529.0	0531.0	4.0	20	-	0
7	500	8 S	0609.0	0609.0	1.0	50	-	0
7	500	8 S	2030.0	2030.0	1.0	35	-	0
9	500	8 S	0324.0	0324.0	1.0	15	-	0
9	500	8 S	0735.0	0735.0	1.0	10	-	0
10	500	42 SER	0126.0	0126.0	82.0	215	-	WL
10	2800	1 S	0251.0	0253.0	4.0	25	-	0
10	500	7 C	0801.0	0802.0	3.0	50	-	0
10	500	7 C	0834.0	0836.0	7.0	130	-	0
10	2800	8 S	0836.0	0836.0	4.0	120	-	0
10	500	8 S	2118.0	2119.0	2.0	30	-	WL
10	500	8 S	2151.0	2151.0	1.0	170	-	0
10	500	8 S	2221.0	2221.0	1.0	25	-	0
10	2800	3 S	2359.0	2359.0	8.0	55	-	0
11	2800	1 S	2146.0	2149.0	6.0	20	-	0
11	500	8 S	2215.0	2215.0	1.0	20	-	0
12	2800	7 C	0137.0	0139.0	9.0	30	-	0
12	500	3 S	0137.0	0139.0	4.0	25	-	0
12	500	42 SER	0631.0	0704.0	46.0	70	-	
12	500	47 GB	0807.0	0813.0	10.0	590	-	
12	500	8 S	0904.0	0905.0	1.0	50	-	
12	2800	4 S/F	2124.0	2125.0	6.0	120	-	
12	500	47 GB	2124.0	2124.0	3.0	560	-	
12	500	7 C	2340.0	2340.0	1.0	15	-	
13	2800	1 S	0008.0	0008.0	2.0	40	-	
13	500	1 S	0008.0	0008.0	2.0	10	-	
13	2800	8 S	0434.0	0435.0	3.0	120	-	
13	500	8 S	0434.0	0434.0	1.0	15	-	
13	500	7 C	0444.0	0447.0	7.0	130	-	
13	500	7 C	0646.0	0647.0	3.0	10	-	
14	2800	4 S/F	0021.0	0023.0	4.0	45	-	0
14	2800	7 C	0243.0	0252.0	11.0	70	-	0
14	500	7 C	0243.0	0250.0	10.0	120	-	0
14	2800	3 S	0531.0	0538.0	20.0	60	-	0
15	2800	47 GB	2339.0	2345.0	31.0	940	-	0
15	500	4 S/F	2341.0	2345.0	27.0	95	-	0
16	500	8 S	0247.0	0247.0	1.0	15	-	0
16	500	8 S	2250.0	2250.0	1.0	55	-	0

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso June 2003

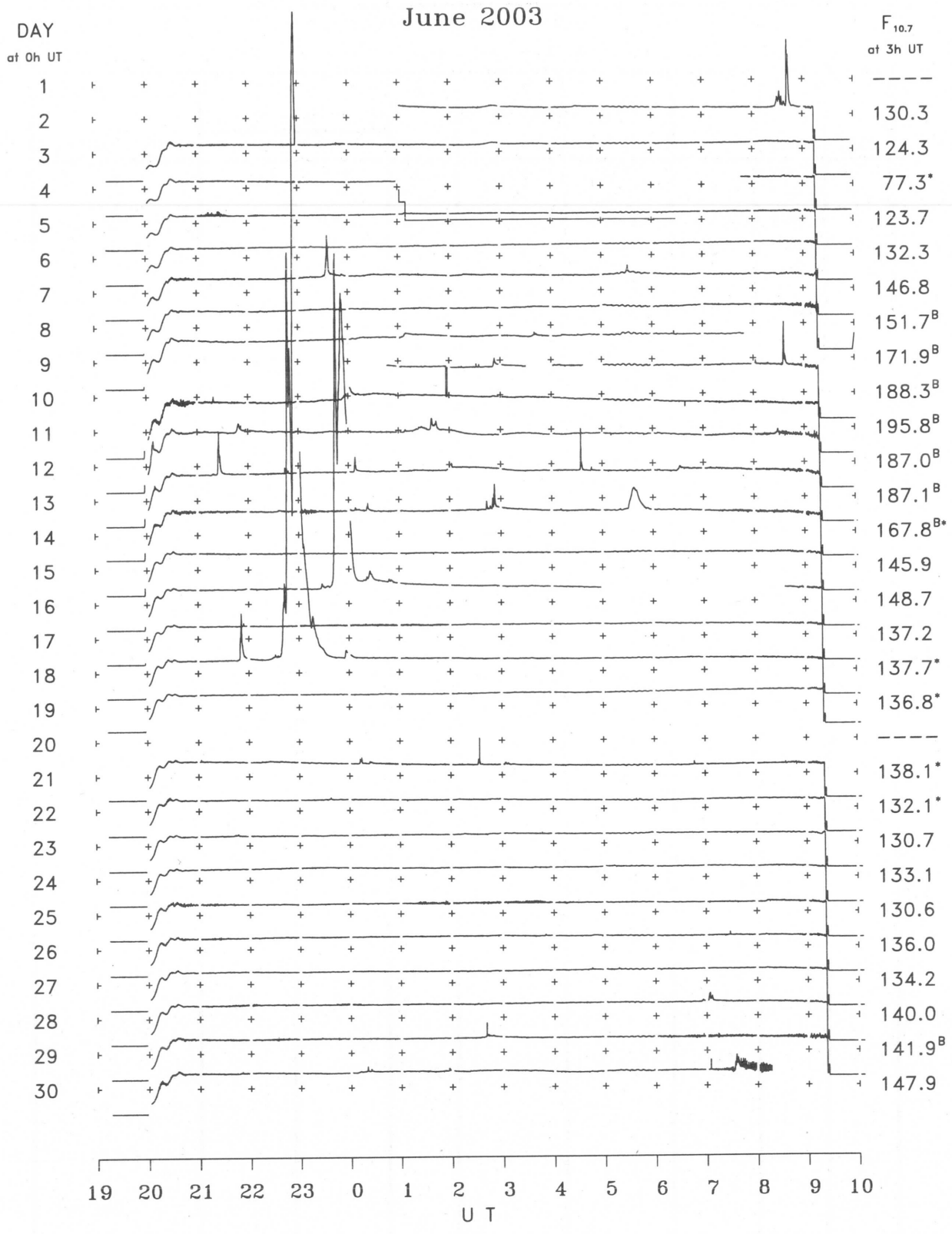
Single-frequency observations

Normal observing period: 1915 – 1000 U.T. (sunrise to sunset)

JUN. 2003	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} W m^{-2} Hz^{-1}) MEAN	POLARIZATION REMARKS
17	2800	3 S	2150.0	2151.0	5.0	135	–	0
17	2800	47 GB	2238.0	2255.0	54.0	1785	–	0
20	500	8 S	0642.0	0643.0	1.0	120	–	0
20	500	8 S	0851.0	0851.0	1.0	55	–	0
21	500	7 C	0013.0	0015.0	2.0	100	–	WR
21	500	7 C	0023.0	0024.0	6.0	400	–	SR
21	2800	4 S/F	0232.0	0234.0	3.0	75	–	0
21	500	8 S	0232.0	0232.0	1.0	10	–	WL
21	500	8 S	0307.0	0308.0	3.0	15	–	WR
21	500	8 S	0648.0	0648.0	1.0	10	–	0
21	500	8 S	0836.0	0836.0	1.0	10	–	0
22	500	47 GB	0253.0	0255.0	2.0	585	–	0
22	500	8 S	0413.0	0413.0	1.0	25	–	0
22	500	42 SER	0535.0	0543.0	11.0	75	–	0
22	500	47 GB	0902.0	0922.0	6.0	740	–	0
22	500	7 C	2143.0	2149.0	10.0	25	–	WR
28	2800	7 C	0655.0	0704.0	13.0	25	–	WL
28	500	7 C	0655.0	0703.0	13.0	45	–	0
29	500	7 C	0233.0	0242.0	17.0	60	–	0
29	2800	8 S	0241.0	0241.0	1.0	40	–	0
30	2800	1 S	0733.0	0735.0	///	40	–	0
30	500	7 C	0733.0	0734.0	///	405	–	0

B. Solar Radio Emission

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



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

IONOSPHERIC DATA IN JAPAN FOR JUNE 2003
F-654 Vol.55 No.6 (Not for Sale)

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☎ (042) (327) ７４７８(直通)

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