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IONOSPHERIC DATA IN JAPAN

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CONTENTS

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INTRODUCTION

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

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

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer,for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

K Presence of particle *E* layer.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

P Man-made perturbations of the observed parameter; or spur type spread *F* present.

Q Range spread present.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.

l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the particle *E* layer minimum virtual height.

c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)

h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normnal *E* trace. (Usually a daytime type.)

q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.

r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.

a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.

s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.

d A weak diffuse trace at heights below 95 km associated with high absorption and large *fmin*.

n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.

k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of two parabolic antennas, one with 10-meter diameter for 200 MHz measurements and one with 2-meter diameter for 500 and 2800 MHz measurements, 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 separately for 200 and 500 MHz measurements. The intensities are expressed by the flux density in $10^{-22} Wm^{-2} Hz^{-1}$ unit.

The table for 200 MHz measurements also presents the variability indices defined by the number of impulsive radio bursts within the three-hour intervals as follows:

0 quiet or no burst,
1 a few bursts,
2 many bursts,
3 very many bursts.

The daily variability index is defined as the daily mean of three-hourly indices.

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

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

Field strength observation of 15 MHz standard waves transmitted from WWV and WWVH stations which are located respectively at Fort Collins, Colorado and Kauai, Hawaii, is carried out at Hiraiso. In order to avoid interference among the same frequency waves, the upper sideband of WWV or WWVH with the audio tone 600 Hz is picked up by the use of a narrow band-pass filter with 80 Hz bandwidth.Particulars of the transmitters and the receiver are summarized in the following table.

The tabulated *field strength* expressed in dB above one microvolt per meter is the average of quasi-peak values of the incident upper sideband field intensity for 45 seconds after the universal time indicated on the table. Abbreviated symbols are as follows:

CNT	number of observed values,
MED	median,
UD	value of the uppermost decile when they are ranked according to magnitude,
LD	value of the lowest decile when they are ranked according to magnitude,
U	uncertain,
E	less than,
C	innuenced by, or impossible because of, any artificial accident,
S	influenced by, or impossible because of, interferences or atmospherics.

C2. Radio Propagation Quality Figures at Hiraiso

The tabulated six-hourly quality figures are calculated for standard waves WWV transmitted from Fort Collins and WWVH transmitted from Kauai.

Quality figures expressing radio propagation conditions range over five grades as follows:

1	very poor(very disturbed),
2	poor(disturbed),
3	rather poor(unstable),
4	normal,
5	good.

Whole day quality figure ranged in grades of 1o, 1+, 2-, 2o, 2+, 3-, 3o, 3+, 4-, 4o, 4+, 5-, 5o stands for an average of six-hourly quality figures of the two circuits. Abbreviated symbols are as follows:

C	artificial accident,
S	propagational accident,
U	inaccurate.

Characteristics	Transmitter		Receiver
Station Call	WWV	WWVH	
Location	Fort Collins, Colorado	Kauai, Hawaii	Hiraiso, Ibaraki
latitude	40°41′N	22°00′N	36°22′N
longitude	105°02′W	159°46′W	140°38′E
Distance	9150 km	5910 km	--
Carrier Power	10 kW	10 kW	--
Power in each sideband	625 W	625 W	--
Modulation	50 %	50 %	--
Antenna	λ / 2 vertical	λ / 2 vertical	4.5 m vertical rod
Bandwidth	--	--	80 Hz for upper sideband
Calibration	--	--	Every hour

The column of conditions presents a record of the forecast of *radio propagation conditions* which is applicable to forthcoming 12 hours and broadcast six times par hour from JJY (Japan Standard Wave) staion. The conditions are denoted as follows:

N normal,
U unstable,
W disturbed.

Data on *geomagnetic storms* which are often correlated with radio propagation disturbances are tabulated based on reports from observation at Kakioka Magnetic Observatory, Japan Meteorological Agency. *Time* (U.T.) is expressed in hours and minutes (or tenths of an hour), and *range* in nanotesla. When they are uncertain quantitatively, / 's are used to replace the numerical values. Continuation of a geomagnetic storm is denoted by ---.

C3. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C4. Sudden Ionospheric Disturbances

a. Short Wave Fade-out (SWF) at Hiraiso

The table of short wave fade-out (SWF) is prepared from the record of field intensities measured at Hiraiso.

Drop-out intensities of the 10 MHz, the 20 MHz. and the 25 MHz waves are respectively distinguished by marks ′, ″, and ‴ from those of the 15 MHz wave for WWV and WWVH. Values of *start, duration, type,* and *importance* are obtained from data of the circuit whose drop-out intensity in dB is underlined as xx. When these quantities could not be determined accurately, they are accompanied by one of the following symbols.

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

Types of fade-out are as follows:

S sudden drop-out and gradual recovery,
SL slow drop-out taking 5 to 15 minutes and gradual recovery,
G gradual and irregular in both drop-out and recovery.

Importance of fade-out is scaled according to its amplitude into nine ascending grades as 1-, 1, 1+, 2-, 2, 2+, 3-, 3, 3+.

Correspondence of solar optical and X-ray flares, and solar radio burst to SWF is marked by X, being determined with data from interchange messages of IUWDS and observations at Hiraiso.

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	56	58	36	35	46	64	63	67	64	60	68	66	72	69	67	65	60	61	68	70	71	70		
2	58	58	35	36	32	A	A	A	A	A	A	A	A	A	A	A	A	52	60	40	57	59	48	
3	49		38			A	A	A	A	A	A	A	A	A	58	66	68	A	A	A	A	A	48	A
4	40	31	30	37	A	A	A	A	A	A	A	A	A	A		A	A	A	A	A	A	40	30	69
5				40		A	A	A	A	A	A	A	A	A	56	A	54	A	57	69	58	69	23	35
6	38	38	35	32	59	A	A	A	A	A	A	A	A	A	70	A	67	59	61	63	68	57	58	50
7	47	58	43	40		31	A	A	A	A	A	A	A	A	55	A	58	60	58	67	67	52	49	A
8	A	35	35	A	A	A	A	A	A	A	A	A	A	A	A	54	A	A	56	61	68	57	58	A
9	A	38	40	A	32	A	A	A	A	A	A	A	A	A	A	60	57	A	A	57		36	A	A
10	A	A	A		A	N	A	A	A	A	A	A	A	A	A	63	60	67	58	66	A	58	58	A
11	35	26	24	29	35	A	A	A	A	A	A	A	A	A	A	A	62	59	57	62	A			69
12	32	58	89	35	30	A	A	A	A	A	A	A	A	A	A	A	A	53	56	60	57	62	59	56
13	37	41	41	40	32	59	35	A	60	66	68	64	60	62	A	58	62	62	62	68	71	57	57	60
14	57	57	50	47	46	35	A	60	A	62	A	A	A	64	N	65	75	82	70	70	61	57	57	60
15	37		46	35	36		A	A	A	A	A	A	A	A	A	A	A	A	61	68	59	68	59	58
16	58	36	38	29	A	A	A	A	A	A	A	A	A	A	A	A	A	54	A	N		A	33	A
17	38	49	A	38	38	A	A	A	A	A	A	A	A	A	A	A	54	A	55	61	A	59	35	57
18	58	35	50	37	41	31	A	A	61	A	A	A	A	64	67	64	64	A	60	34	68	63	61	A
19	A	A	56	28	A	A	A	A	A	A	A	A	A	A	54	A	A	56	A	58	58	A	58	58
20		57	35	28	A		A	A	A	A	A	A	A	A	A	A	A	A	A	59	56	57	57	56
21	56	60	A	A	A	49	A	A	A	A	A	A		A	A	A	A	63	68	A	62	A	A	A
22	51	A	A	A	A	A	A	A	64	A	A	A	A		A	58	49	63	92	71	A	A	60	57
23	A	A	51	43	35	A	A	A	A	A	A	A	A	A	A	59	A	A	A	57	57	58	68	58
24	52	50	35	46	36	61	A	A	56	A	A	A	A	A	A	A	56	A	61	A	58	57	56	41
25	49	57	40	38	32	A	A	A	A	A	A	A				A	A	A	57	57	59	35	60	29
26	35	30	40	40	38	A	A	A	A	A	A	A	A	A	A	A	56	A	A	A	A	58	40	40
27	40	38	38	38	29	37	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	58	
28	28	28	37	38	32	54	A	A	56	A	60	A	A	A	A	A	A	A	A	A	69	68	58	57
29	57	40	32	34	28	A	A	A	A	A	A	A	A	A	A	57	A	49	53	57	53		55	55
30	57	58	59	32	38	59	A	A	A	A	A	A	A	A	A	50	61	60	69	60	A	56	57	35
31	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A	61	57	61	58	49	19
	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	25	24	19	10										12	16	15	21	23	20	23	27	20
MED	49	41	38	37	35	52										60	60	60	60	61	60	58	57	56
U Q	57	58	48	40	38	59										64	63	63	65	68	68	62	58	58
L Q	37	35	35	33	32	35										57	56	54	57	57	57	57	48	40

HOURLY VALUES OF fEs AT WAKKANAI

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	26	G	30	32	35	37	36	35	38	35	43	32	29	31	62	27	G	G	G	G
2	G	G	G	65	35	55	69	76	60	99	60	91	40	56	69	90	70	34	G	31	79	62	34	
3	G		25	32		42	57	35	59	57	54	76	38	35	37	40	29	47	52	61	58	45	58	61
4	42	G	26	G	30	32	29	36	59	54	36	30	30	28	31	29	70	53	47	45	33	38	35	G
5	32	G	G	G		33	28	32	33	38	42	38	36	39	34	36	31	40	33	24	G	G	28	G
6	G	G	G	G	27	38	55	36	58	61	35	35	59	34	35	65	30	22	G	G	39	60	28	G
7	24	22	G	G		23	30	44	53	54	55	32	33	33	52	41	46	33	32	28	G	G	G	41
8	36	G	33	30	38	36	35	39	46	59	57	52	59	66	35	28	26	29	33	G	36	28	77	88
9	63	54	63	45	34	34	61	60	56	59	62	78	88	46	53	37	35	62	65	38		26	31	47
10	37	29	29	G	24	G	28	36	33	52	37	39	36	38	37	30	35	34	56	40	45	33	27	32
11	37	31	34	G	G	34	39	35	50	53	40	60	40	96	66	33	27	39	41	45	42			G
12	G	G	G	G	26	33	33	43	53	52	40	36	36	35	32	28	32	33	33	30	40	42	57	33
13	27	36	33	26	26	32	32	41	48	40	40	34	32	31	29	30	24	28	32	27	G	G	G	G
14	G	38	30	G	G	33	30	26	38	25	37	35	35	35	36	28	25	31	31	G	26	G	28	G
15	24	G	G	26	G	G	34	57	53	74	43	46	38	39	44	37	76	25	27	32	24	25	G	G
16	G	31	34	58	51	38	41	38	53	75	59	54	78	71	36	34	46	27	59	37		77	G	60
17	29	32	40	28	11	48	52	36	60	75	46	75	76	60	62	62	32	66	58	40	38	42	36	G
18	G	G	G	G	G	28	26	26	55	64	55	65	40	38	51	43	53	63	45	38	32	34	64	48
19	56	36	37	31	35	36	32	58	33	35	42	56	36	36	32	42	64	46	70	55	46	76	46	43
20		38	32	32	53		36	73	134	134	83	64	40	38	59	65	93	94	72	72	34	33	60	55
21	28	35	37	32	32	28	36	56	60	64	36	36	G	38	95	41	80	46	46	97	54	61	39	50
22	52	52	60	58	61	64	61	66	70	143	138	56	73	41	42	45	56	42	59	59	95	84	57	57
23	56	38	30	27	G	36	37	36	66	48	37	42	37	30	33	30	44	64	47	39	G	G	33	26
24	26	G	29	22	G	G	32	36	68	65	41	64	35	31	30	40	36	42	36	43	30	34	33	G
25	G	28	G	24	G	34	34	34	60	56	62	42				40	44	46	56	32	32	25	G	G
26	G	32	28	G	G	35	40	54	92	74	94	41	42	39	37	57	45	85	150	121	89	56	33	G
27	G	G	G	26	G	28	29	38	56	55	36	41	58	39	42	63	38	49	75	73	62	63	69	45
28	60	34	34	31	G	34	38	33	29	32	38	34	38	30	55	43	47	68	59	64	44	62	58	40
29	33	28	G	G	28	43	39	35	44	64	37	39	59	37	33	32	30	38	32	G	G		26	27
30	G	G	G	G	G	24	30	54	65	51	41	38	37	35	29	30	34	34	25	29	44	52	27	40
31	45	38	65	136	36	49	55	74	67	82	52	42	54	41	76	34	27	29	G	34	30	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	31	28	30	31	31	31	31	31	31	30	30	30	31	31	31	31	31	29	29	30	30
MED	26	28	29	26	26	34	35	38	56	57	42	42	38	38	37	37	36	40	46	38	36	34	33	30
U Q	37	36	34	32	34	38	41	56	60	74	57	60	58	41	53	43	53	53	59	55	45	60	57	47
L Q	G	G	G	G	G	28	30	35	46	51	37	36	36	35	33	30	30	31	32	28	25	13	26	G

HOURLY VALUES OF fmin AT WAKKANAI

MAY 1994

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

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	45	45		89	69		70	70	71	72	A	77	81	70	72	77	72		77	80	99	58	51
2	60	A	59	47	40	40	A	A	A	A	A	A	A	A	A	53	54	58	69	84	56	58	A	A
3	31	A	A	A	A		57	A	59	A	69	A	75	A	91	90	81	68	99	A	A	A	A	56
4	A	46	35	A	A	37	50	A	A	A	A	A	A	A		A	48	60	70	94	23	A	A	A
5	43	A	38	38	32	47	48	68	A	A	A	A	A	A	A	68	62	60	61	60	A	A	42	44
6	40	38	38	42	38	43	54	50	A	A	66	A	A	73	84	85	85	78	68		68	56	A	A
7	A	56	57	43	42	74	A	A	A	A	A	A	A	A			57	67	74	81	68	57	A	A
8	58	A	A	46	A	A	A	A	A	A	A		A	A	83	84	81	60	68	69	57	A	A	57
9	A	48	46	40	38	A	74	A	A	A	A		49	79	74	82	82	81	94	54	57	A		66
10	46	48	36	35	34	89	71	54	A	52	A	A	A	84	86	87	87	81	82	93	70	A	A	A
11	A	A	A	A	A	46	47	A	A	A	A	A	A	72	78	74	68	75	82	70	50	49	A	56
12	57	46	48	42	A	A	A	56	A	A		A	A	B		62	61	60	70	69	62	A	51	A
13	50	A	A	A	A	A	59	A	A	A	70	A	A	A	A	A	66	92	92	94	71	54	56	58
14	57	46	48	47	44	57	62	70	64	49	C	C	C	C	C	C	C	92		82	48	A	46	32
15	41	44	30	38		59	A	A	A	A	A	A	A	49	A	70	62	A	A		62	49	59	A
16	57	57	57	40	28	A	A	A	A			A	A	59	A	A	A	56	54	59	48	A	58	A
17	A	A	57	32	28	38	68	60	A	A		61	73	82	78	76	70	N	61	70	71	61	A	A
18	56	56	61	43	38	47	53	67	A	58	A	A	77	75	A	84	A	A	94	94	A	58	57	46
19	57	A	A	A	43	75	57	69	A	A	A	A	68	A		A	70	A	93		A	63	58	A
20	48	A	A	A	50	69	71	A	A	A	A	A	A	A	A	A	N	A	A		A	A	57	A
21	50	48	46	46	42	52	74	95	64	A	A	A	49	49	67	72	A	82	93	A	A	A	A	50
22	46	46		A	A	48	A	59	61	64	62			A	68	78	71	81	73	58	72		70	56
23	51	50	57	44	41	70	46	A	A	65	A	A	A	A	A	68	A	53	A		71	A	57	A
24	47	35	48	29	26	41	58	72	76	A	A	A	A	A	A	61	52	A	A	60	A	A	A	56
25	46	A	28	25	28	A	A	A	60	A	A	A	A	A	A	A	A	A	A	70	57	53	58	47
26	A	A	28	A	35	59	56	53	A	A	A	A	A	A	A	71	64	A	55	70	73	28	A	A
27	A	A	37	57	A	32	A	51	A	A	A	A	A	A	42	A	A	78	61	81	57	A	46	46
28	46	A	35	A		A	A	A	A	A	60	A	A	A	A	A	53	A	82	70	68	58	57	56
29	57	A	A	32	34	42	A	A	A	A	A	A	A	A	A	76	77	67	A	57	57	35	69	57
30	52	46	50	59	35	59	46	A	A	A	A	A	A	A	A	61	A	72	73	44	57	45	44	39
31	A	A	51	A	A	46	A	58	A	119	A	A	A	A	A	56	60	58	72	64	71	60	A	A
	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	16	23	20	20	23	18	15						10	11	21	22	22	23	24	24	16	17	17
MED	50	46	46	42	38	48	57	60						74	78	72	67	70	73	70	62	56	57	56
U Q	57	49	57	46	42	69	68	70						81	84	83	77	81	92	81	71	59	58	56
L Q	46	45	36	36	33	42	50	54						59	68	65	60	60	68	60	57	49	48	46

HOURLY VALUES OF fEs AT KOKUBUNJI

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	55	40	38		32	G		27	58	41	40	50	48	38	34	36	40	47		76	74	58	51	G
2	G	25	G	G	G	40	38	73	77	84	80	59	59	56	54	50	46	29	G	25	26	28	44	52
3	33	48	45	30	36		34	54	50	30	38	51	46	46	47	48	45	48	93	152	99	61	87	73
4	86	38	34	48	31	34	44	44	44	54	60	67	59	46		29	31	37	G	G	34	41	51	35
5	39	56	29	26	G	25	44	41	48	59	52	40	55	68	58	48	31	34	29	26	72	47	26	24
6	G	23	26	G	G	30	28	34	48	62	54	50	57	51	39	31	28	34	30		G	35	38	32
7	62	31	34	35	34	30	47	59	72	77	46	73	122	179			28	31	G	85	59	62	72	62
8	53	70	60	31	70	66	62	69	64	64	52		48	112	G	G	24	23	30	G	62	55	37	30
9	54	41	33	36	34	38	38	67	50	72	70		40	33	G	28	48	48	55	69	48	51	53	31
10	32	28	G	28	G	G	34	39	43	G	65	90	47	41	40	32	46	50	84	89	34	36	38	78
11	76	63	54	37	36	32	36	64	67	97	52	60	58	39	47	66	38	44	39	40	32	28	32	54
12	G	G	29	G	38	38	45	55	65	58		58	62	B	G	G	34	30	51	31	30	35	56	51
13	35	44	35	28	31	37	41	74	73	61	56	52	60	73	73	61	29	48	65	34	33	28	27	32
14	G	G	G	G	G	G	32	33	37	40	C	C	C	C	C	C	C	54		67	57	35	G	G
15	28	G	G	G	26	29	22	44	54	52	60	74	69	50	49	63	59	77	71		36	72	80	78
16	40	46	58	35	26	33	91	60	28			101	45	56	74	64	59	41	32	36	34	43	24	28
17	26	40	28	24	G	29	32	48	69	40		G	G	36	38	34	33	29	38	39	40	38	83	90
18	87	29	29	31	G	G	29	28	53	47	70	64	G	47	79	102	85	80	86	107	60	32	G	G
19	30	106	98	51	37	34	34	100	120	107	104	118	69	59	G	50	57	80	92		115	62	52	90
20	51	61	55	53	57	40	40	60	68	75	55	93	159	62	78	90	88	79	129		143	57	120	94
21	54	52	40	32	30	G	40	41	37	58	90	90	G	G	54	58	92	104	100	92	82	52	58	40
22	29	52		40	37	54	61	40	44	50	56	G	G	37	30	32	51	63	83	106	74		45	36
23	33	34	32	30	31	29	37	60	60	65	54	37	42	48	103	40	116	57	97		72	71	58	48
24	G	32	38	27	24	G	30	52	66	60	58	90	46	68	56	50	46	160	90	34	43	50	56	34
25	30	30	26	33	G	40	61	46	53	55	62	52	105	94	54	77	61	68	180	98	56	67	67	48
26	58	50	45	34	G	36	32	50	60	72	40	52	57	75	85	27	31	36	36	29	97	54	65	55
27	51	52	30	32	30	26	36	46	80	153	164	134	95	62	38	96	70	72	37	G	G	49	33	29
28	32	34	37	26	G	33	60	71	81	71	57	36	37	38	49	91	53	101	117	104	94	98	41	36
29	32	58	50	G	G	29	48	57	59	49	51	51	68	41	38	47	45	61	58	34	24	G	G	G
30	28	23	G	G	G	G	35	65	64	71	86	90	87	152	68	54	40	40	65	54	31	56	30	52
31	60	55	60	71	70	39	61	59	70	132	111	58	29	41	41	G	46	52	44	67	29	32	66	66
	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	31	31	30	30	31	30	30	31	31	30	27	28	30	29	28	29	30	31	29	26	31	30	31	31
MED	33	40	34	30	30	31	38	54	60	60	57	58	56	50	48	48	46	48	58	47	48	50	51	40
U Q	54	52	45	35	36	38	47	64	69	72	70	90	68	68	63	63	59	72	91	89	74	58	65	62
L Q	28	29	28	24	G	25	34	41	48	50	52	50	42	40	38	31	33	36	34	31	32	35	32	30

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

MAY 1994

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

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

HOURLY VALUES OF foF2 AT YAMAGAWA

MAY 1994

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

D\H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	99	89	99	89	89		89	95	95	A	98	83	80	93	93	93	97	92	72	99	99	A	A	A
2	89	A		49	49	49	89	A	A	A	A	A		62	72	54	A	67	95	70	A	A	A	A
3	59	49	89	49	49		89	89	A	A	68	81	84	115	116	124	131	98	94	89	89	A	109	A
4	A		89				99	89	A	A	A	95	82	93	93	92	95	98	115	99	A	59	59	99
5	89	59	49	89		49	89	89	A	A	A	68	86	115	93	A	A	A	70	89		A	99	A
6	69	89	A			59	89	A	66	99	A	A	A	A	120	125	116	84	90	115	A	99	A	A
7	99	99	60	89		70	89	A	68	A	A	94	93	120	94	86	71	93	115	99		A	A	A
8	A	A	A	A	99	50	A	A	A	149	A	A	86	93	101	125	125	115	67		79	99	A	99
9	A				A	45	99	69	A	A	A			92	92	80	92	96	95			A	99	A
10	89	A	89	58	A	49	89	89	94	59	72	95	92	115	113	124	151	150	125	120	A	A	A	89
11		A	37	89	49		99	61	68	A	A	A	A	82	A	116	92	93	88	96	A	A	99	A
12	89	A	A	59		49	A	59	A	A	A	A	68	93	93	98	93	95	95	96	A	A	A	A
13	99	59	A	59	50		A	99	98	95	A	A	68	80	93	A	94	A	A	A		A	A	99
14		59		49	A		99	99	94	A			100	115	98	100	106	115	121	A	A	99	A	99
15	A	89	99			49	A	A	A	A	A	68	A	92	92	98	119	79	95	A		A	A	A
16	A	99	99	44	A	A	A	A	A	A	A	A	A	82	93	67	81	67	95		A	A	A	A
17	A	A	99	57	70	49	99	A	66	A	94	A	94	93	94	A	92	95	69	89	99	89	A	A
18	89			99		59	89	69	69	A	68	81	A	85	92	97	92	A	A	A	A	A	A	A
19	99	A	89	99	A	99	99	99	95	68	62	75	86	82	69	93	93	100	95	A	A	99	A	99
20	109	A				89	99	69	A	A	C	C	C	C	C	82	C	115	C	C	A	A	A	A
21	A	89	A	A	A	49	89	99	A	A	A	A	A		70	96	85	97	106	115	A	A	A	99
22	109	60	99	69	A	49	99	99	95	95	68			68	73	93	90	97	95	95		99	A	A
23	A	A	89			55	A	74	A	A	A	A	A	A	A	72	A	A	A	A	A	A	A	99
24		A	89			49	99	89	95	61	A	A	83	A	84	96	84	92	95	89	A	A	A	99
25	99	49		49	A	A	A	A	A	A	A	C	A		A		A	61	A	59	A	A	A	A
26	89	A		A	A	44	A	A	A	A	A	A	A		76	82	74	A	A	65	A			A
27	A	34		N	37	24	A	A	A	A	A	A	A	A	72	76	78	82	78	67	A	A	89	109
28	A	89	89	59	37	69	59	A	A	A	115	A	A	A	A	A	A	A	66	A	68		A	A
29	59	34	A	25	A	46	A	A	A	A	A	A	A		67	73	97	60	A	58	A	49	A	53
30	44	49	47	59	42	57	38	A	A	89	79	A	A	A	A	77	74	78	76	A	A	A	A	A
31	A	A	A	A	A	A	A	A	A	A	A	A	A	A			67	73	80	80	A	44	A	38
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	16	16	19	10	22	20	17	12				13	20	24	25	25	25	24	18				12
MED	89	60	89	59	49	49	89	89	94				86	92	93	93	93	93	95	89				99
U Q	99	89	99	89	70	59	99	99	95				92	104	95	99	101	99	95	99				99
L Q	79	49	74	49	42	49	89	69	68				81	82	80	78	82	78	77	70				94

HOURLY VALUES OF fEs AT YAMAGAWA

MAY 1994

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

D\H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	53	G	45	51	50		50	34	51	76	71	G	G	G	57	30	29	42	32	G	42	97	52	52
2	48	52		48	G	43	50	61	54	33	36	32	G	41	31	32	34	26	G	49	56	50	50	52
3	49	42	38	47	G		49	45	98	56	40	G	60	58	57	G	30	42	49	G	48	99	48	100
4	63		57				48	40	51	51	52	G	G	53	30	60	56	70	41	49	49	48	48	48
5	48	47	G	48		G	48	41	35	49	33	G	G	49	81	85	75	80	30	44		58	75	52
6	48	48	49			48	48	70	52	59	84	96	108	105	88	85	32	86	128	119	49	120	50	48
7	50	46	40	43		43	52	62	46	65	41	G	G	G	60	31	31	38	31	34		99	98	59
8	52	52	72	50	38	28	97	74	72	95	55	115	67	60	60	G	30	26	41		98	98	51	48
9	51				50	50	49	50	69	32	32	G	G	40	G	31	28	24	G			59	50	50
10	52	72	33	42	38	G	52	50	53	61	65	57	G	G	52	57	60	92	60	99	59	52	52	48
11		43	46	48	45		48	50	39	63	80	119	164	64	92	G	29	27	22	44	51	50	50	48
12	50	52	59	50		39	50	48	78	80	73	30	43	136	G	31	29	44	37	49	52	58	59	52
13	52	50	33	47	41		52	41	61	76	80	86	G	G	41	84	72	88	128	98		52	59	48
14		45		44	40		50	60	53	70	127	151	G	60	G	55	34	60	98	100	119	120	71	48
15	48	G	38			G	42	62	53	63	86	65	72	70	63	62	64	60	58	58		50	50	52
16	121	52	44	46	52	41	76	62	134	61	90	105	107	G	G	32	31	41	26		49	50	49	64
17	49	50	47	48	46	G	41	42	45	71	67	108	58	G	32	95	35	32	33	27	43	48	50	52
18	48			38		48	42	33	35	32	31	63	83	G	60	34	56	87	84	98	99	98	52	50
19	48	52	100	50	55	48	48	40	52	32	33	G	G	56	G	32	56	50	54	64	153	99	98	100
20	50	59				48	48	41	48	72	C	C	C	C	C	52	C	52	C	C	98	99	74	100
21	97	50	98	98	50	45	42	50	97	59	63	77	95	G	35	32	30	53	73	136	97	98	52	50
22	51	G	42	61	44	53	43	32	32	33	36			G	G	32	30	29	31	40		52	57	50
23	48	50	33			40	50	34	62	95	60	63	77	94	66	G	74	81	59	86	98	49	97	52
24		72	47			G	41	38	29	28	57	100	54	89	33	61	51	59	50	52	99	74	50	52
25	49	G		48	52	43	74	63	72	48	69	C	164		31		70	62	72	59	38	37	49	56
26	40	54	31	34	49	32	53	84	111	148	180	74	54		G	30	47	110	55	37	32	29	29	32
27	41	36	38	33	28	G	38	40	34	82	69	57	57	61	33	33	61	32	58	126	83	34	32	32
28	33	G	G	G	G	G	25	60	71	132	128	94	60	73	119	82	114	78	48	60	41		32	33
29	38	79	32	34	34	G	35	50	89	58	57	65	58	G	G	33	44	32	50	40	30	30	29	34
30	30	G	30	27	28	G	29	40	50	80	80	140	116	63	159	79	60	32	32	84	93	72	70	41
31	39	36	57	60	33	40	49	30	51	30	41	57	52	45	G		G	27	G	33	38	29	30	32
	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	25	24	21	25	31	31	31	31	30	28	29	28	30	29	30	31	30	27	25	30	31	31
MED	49	49	42	48	41	40	48	48	53	61	64	64	57	51	34	33	40	50	48	52	52	55	50	50
U Q	51	52	53	50	50	46	50	61	72	76	80	98	80	63	60	61	60	78	59	98	98	98	59	52
L Q	48	36	33	40	30	G	42	40	46	48	41	15	G	G	G	31	30	32	31	40	42	49	49	48

HOURLY VALUES OF fmin AT YAMAGAWA

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	14	14	14		14	14	15	16	20	49	49	64	21	18	18	15	14	14	14	14	14	14
2	14	14		14	14	14	14	14	14	15	16	22	47	52	21	16	14	14	14	14	14	14	14	14
3	14	14	14	14	14		14	14	15	16	21	48	35	42	37	48	14	14	14	14	14	14	14	14
4	14		14				14	14	15	17	18	48	52	49	48	17	16	14	14	14	14	14	14	14
5	14	14	14	14		14	14	14	14	16	17		50	23	17	17	21	14	14	14		14	14	14
6	14	14	14			14	14	14	14	15	17	21	22	23	24	16	14	14	14	14	14	14	14	14
7	14	14	14	14		14	14	14	14	15	20		50	49	33	20	15	14	14	14		14	14	14
8	14	14	14	14	14	14	14	14	14	16	17	21	39	42	42	35	21	28	14		14	14	14	14
9	14				14	14	14	14	14	18	23			48	48	22	46	15	14			14	14	14
10	14	14	14	14	14	14	14	14	17	18	23	39	49	52	26	23	16	16	14	14	14	14	14	14
11		14	14	14	14		14	14	14	18	36	44	43	44	22	34	46	16	14	14	14	14	14	14
12	14	14	14	14		14	14	14	14	16	21	21	22	54	48	59	15	14	14	14	14	14	14	14
13	14	14	14	14	14		14	14	14	20	39	40	52	51	51	20	33	15	14	14		14	14	14
14		14		14	14		14	14	16	18	44	44	55	33	53	46	17	14	14	14	14	14	14	14
15	14	14	14			14	14	14	14	20	18	39	44	40	42	35	15	15	14	14		14	14	14
16	14	14	14	14	14	14	14	14	15	16	23	45	40	53	50	20	15	14	14		14	14	14	14
17	14	14	14	14	14	14	14	14	15	16	36	40	44	53	50	22	16	14	14	14	14	14	14	14
18	14			14		14	14	14	14	16	26	34	42	52	50	23	17	15	14	14	14	14	14	14
19	14	14	14	14	14	14	14	14	14	16	24	53	52	45	51	21	21	15	14	14	14	14	14	14
20	14	14				14	14	14	15	17	C	C	C	C	C	49	C	16	C	C	14	14	14	14
21	14	14	14	14	14	14	14	14	14	22	23	26	36	53	22	22	18	15	14	14	14	14	14	14
22	14	14	14	14	14	14	14	14	14	16	16			57	54	23	15	16	16	14		14	14	14
23	14	14	14			14	14	14	14	16	24	22	35	23	23	48	20	15	14	14	14	14	14	14
24		14	14			14	14	14	14	17	24	42	35	42	24	20	36	14	14	14	14	14	14	14
25	14	14		14	14	14	14	14	15	17	23	C	44		66		16	15	15	15	15	14	14	15
26	14	14	14	15	14	14	15	14	15	18	44	38	41		49	18	18	15	15	14	15	15	15	14
27	15	15	15	14	14	15	15	15	16	16	44	43	24	35	24	24	20	15	15	15	15	15	15	15
28	14	14	15	14	15	15	16	15	16	18	41	40	42	40	42	35	18	16	16	16	15		15	14
29	15	15	14	15	14	14	14	14	16	18	20	41	38	71	50	26	16	15	15	15	15	14	15	15
30	15	15	15	15	15	14	14	15	15	18	42	21	45	43	45	23	15	15	14	16	14	15	15	15
31	15	15	14	15	15	14	15	15	16	16	22	38					45	16	23	15	14	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	25	24	21	25	31	31	31	31	30	25	27	27	29	29	30	31	30	27	25	30	31	31
MED	14	14	14	14	14	14	14	14	14	16	23	40	43	48	42	23	17	15	14	14	14	14	14	14
U Q	14	14	14	14	14	14	14	14	15	18	36	44	49	53	50	35	21	15	14	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	14	16	20	24	36	40	24	20	15	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT OKINAWA

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	66	66	68	59		A		69	69	68	70	78	88	93	107	135	94		93	92	94	94	A	A
2	52	54	70	60	58	A	A	A	A	67	56	68	71	75	92	81	66	92	89	94	38	A	A	A
3	A	A	46	59	A	A	119	52	A	63	A	A	90	103	115	125	143	127	92	94	68	A	A	43
4	56	A	52	A	36	A	A	57	58	63			95	106	114	112	111	132	133	92	64	A	60	A
5	59	68	49	69	51	26	44	52	A	67	61		92	112	123	110	87	81	92	81	92	59	A	A
6	A	A	52	56		41	A	54	68	81	78	85	88	92	117	116	113	131	114	93	82	A	A	
7	56	58	59	46	89	46	A	49	A	74	72	80	92	123	123	A	85	87	65	95	92	A	A	60
8	68	70	68		55	69	A	75	A	71	61	A	96	117	122	133	150	133	116	94	94	82	68	71
9	66	A	A	47	42	32	48	56	50	A	67	71	82	92		82	104	117	81	69	A	A	A	A
10	56	57	46	A	A	A	A	63	94	68	72	91	107	146	152	146	163	162	152	150	94	81	73	A
11	49	54	51	55	40	37	60	72	64	62	65	A	83	121	112	153	N	124	123	116	94	60	69	A
12	56		60	45	38	38	A	61	A	56	A	A	82	105	117	124	123	114	95	92	A	A	66	A
13	A	45	43	41	A	35	A	86	70	61	A	A	A	104	111	117	A	A	A	A		60	A	57
14	A	A	60	35	39	38	58	82	66	67	A	94	103	114	112	122	126	134	108	115	A	A	A	A
15	48	A	58	A	A	109	44	60	63	A	A	77	A	A	121	133	133	127	92	94	A	A	A	84
16	95	94	68	35	A	A	76	72	A	A	66	65	77	90	89	83	84	92	94	61	59	A	A	A
17	A	A	59	40	42	36	A	58	68	70	A	A	90	104	A	112	113	94	81	83	95	55	A	A
18		A	55	44	89		47	61	64	66	68	81	88	93	107	106	94	96	96	84	60	A	A	A
19	A	42	58	55	A	46	A	69	68	61	A	70	85	87	86	92	102	97	93	94	62	A	A	
20	60	A	58	41	48	A	A	A	48	68	A	129	80	83	82	92	95	90	80	A	69	A	A	A
21	A	A	A	A	A	A	51	58	81	A	A	69	70	77	88	92	105	112		94	68	52	57	54
22	55	57	46	36	38	A	A	58	68	80	61	A	A	80	86	92	92	95	94	105	69	44		45
23	41	41	42	42	48	38	A	62	80	A	A	A	A	A	80	81	82	98	A	A	A	37	A	A
24	A	43	46	38	A		A	82	64	60	59	76	A	92	88	92	97	95	94	85	49	A	A	A
25	A	A	A	A	A	A	A	A	A	A	A	A	A	N	68	66	71	81	A	A	A	A	A	44
26	A	A	A	A	35	36	A	52	42	A	61	A	68	82		92	96	111	79	92	32	43	A	59
27	A	A	A	A	A	A	46	55	67	A	A	A	A	68	A	81	88	A	92	A	A	A	46	
28	48	52	57	52	A	A	29	81	A	54	A	A	A		61	64	A	A	81		60	A	A	A
29	54	A	A	38	A	A	34	A	A	A	A	A	A	82	73	A	96	81	A	A	A	A	A	A
30		50		29	44	48	42	56	A	A	A	A	A	A	A	84	74	83	94	74	A	65	A	A
31	A	A	45	45	A	A		58	68	52	A	54	58	A	A	62	71	80	82	92	A	A	39	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	15	24	23	16	15	13	27	20	21	14	15	21	25	25	29	28	27	26	24	20	12		
MED	56	54	56	45	43	38	47	60	68	67	66	77	88	93	107	92	96	97	93	92	68	60		
U Q	63	66	59	55	53	46	59	72	68	69	70	85	92	109	117	123	113	127	96	94	93	73		
L Q	50	45	46	38	38	36	43	56	63	61	61	69	78	82	86	82	86	90	82	84	60	48		

HOURLY VALUES OF fEs AT OKINAWA

MAY 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	34	38	G		24		37	49	58	62	51	68	G	G	G	30		G	G	G	46	36	33
2	48	39	60	N	25	35	67	58	60	51	43	42	54	56	47	38	41	47	46	44	38	67	85	67
3	39	33	38	31	30	39	48	43	45	49	67	97	73	53	82	61	61	60	38	57	39	45	43	44
4	59	64	24	73	37	43	42	72	34	35			G	43	98	54	58	48	51	49	48	44	34	27
5	G	40	G	G	G	32	G	85	36	38	38		42	44	36	36	34	37	G	27	G	G	44	42
6	59	41	29	22		24	25	35	43	52	52	57	55	32	69	60	44	44	36	28	33	42	33	28
7	74	60	42	33	34	41	48	35	68	54	50	58	66	41	G	100	48	67	72	50	65	94	93	86
8	60	42	75		42	G	59	44	86	67	61	108	92	96	76	50	28	27	25	G	26	24	22	G
9	41	73	49	37	25	G	47	32	36	52	48	G	56	45		G	30	33	26	29	30	67	66	60
10	69	79	57	53	39	33	30	40	68	53	65	73	59	83	52	40	44	36	G	G	21	20	34	134
11	54	38	41	43	29	26	48	40	46	51	51	60	53	80	53	G	25	25	G	25	31	46	G	42
12	48		27	G	G	34	44	43	54	48	51	55	49	45	55	47	52	70	43	43	108	86	70	68
13	96	54	G	42	44	G	119	69	95	86	125	148	78	66	75	57	126	179	180	116		88	178	88
14	93	68	36	32	32	G	43	47	45	48	90	41	52	G	G	48	25	42	43	44	90	87	92	78
15	121	48	34	38	39	24	G	36	50	55	55	63	118	122	36	48	63	52	47	44	69	43	88	68
16	30	G	58	28	48	43	86	79	131	179	46	G	G	G	G	58	47	27	G	28	G	71	50	59
17	62	99	46	42	39	42	72	40	34	30	97	98	83	89	165	57	52	47	41	41	36	28	41	43
18	34	37	G	26	G	G	29	28	35	48	35	58	49	84	97	43	35	34	52	48	33	46	66	82
19	71	67	57	58	46	44	56	42	47	57	70	42	56	46	52	48	54	42	46	34	30	62	151	
20	73	69	G	35	48	38	42	60	45	59	99	138	59	70	64	73	66	47	86	99	45	81	66	88
21	98	98	96	88	65	69	43	38	46	78	50	55	47	42	48	40	31	50		57	73	83	72	39
22	G	27	G	G	G	34	78	45	52	51	37	55	44	G	46	48	48	58	56	24	28	24		24
23	28	33	G	G	G	G	33	38	50	72	121	89	100	87	57	45	48	62	82	81	44	75	96	45
24	67	153	24	24	31		42	45	47	48	54	58	99	88	53	48	50	47	30	26	25	41	42	64
25	58	81	90	59	60	70	83	106	140	92	120	125	42	35	42	G	61	56	80	75	99	68	54	42
26	78	66	68	78	41	58	40	59	34	40	59	38	64	47		50	28	43	38	31	30	25	43	G
27	43	60	60	65	33	33	26	50	50	52	61	64	185	117	85	67	60	132	151	114	67	66	38	
28	40	28	42	46	37	31	28	45	75	50	85	59	56	G	42	51	66	136	90		70	71	60	51
29	69	75	60	30	37	34	48	59	70	86	79	81	68	66	66	71	56	53	52	115	72	72	46	29
30	41	28	G	G	G	G	44	38	72	62	85	86	146	130	93	101	29	47	39	34	77	60	70	58
31	60	40	34	45	71	34		36	42	35	42	52	41	33	42	49	59	69	55	60	60	60	38	36
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	29	29	30	29	31	31	31	30	29	31	31	29	31	31	30	30	30	30	31	30	29
MED	59	51	38	35	37	34	44	43	49	52	60	58	56	47	53	48	48	47	44	44	38	60	52	45
U Q	71	69	58	49	43	41	57	59	68	62	85	87	78	84	75	58	59	60	56	57	69	72	72	68
L Q	40	37	24	23	25	24	31	38	43	48	50	51	49	35	42	40	31	42	30	28	30	42	38	34

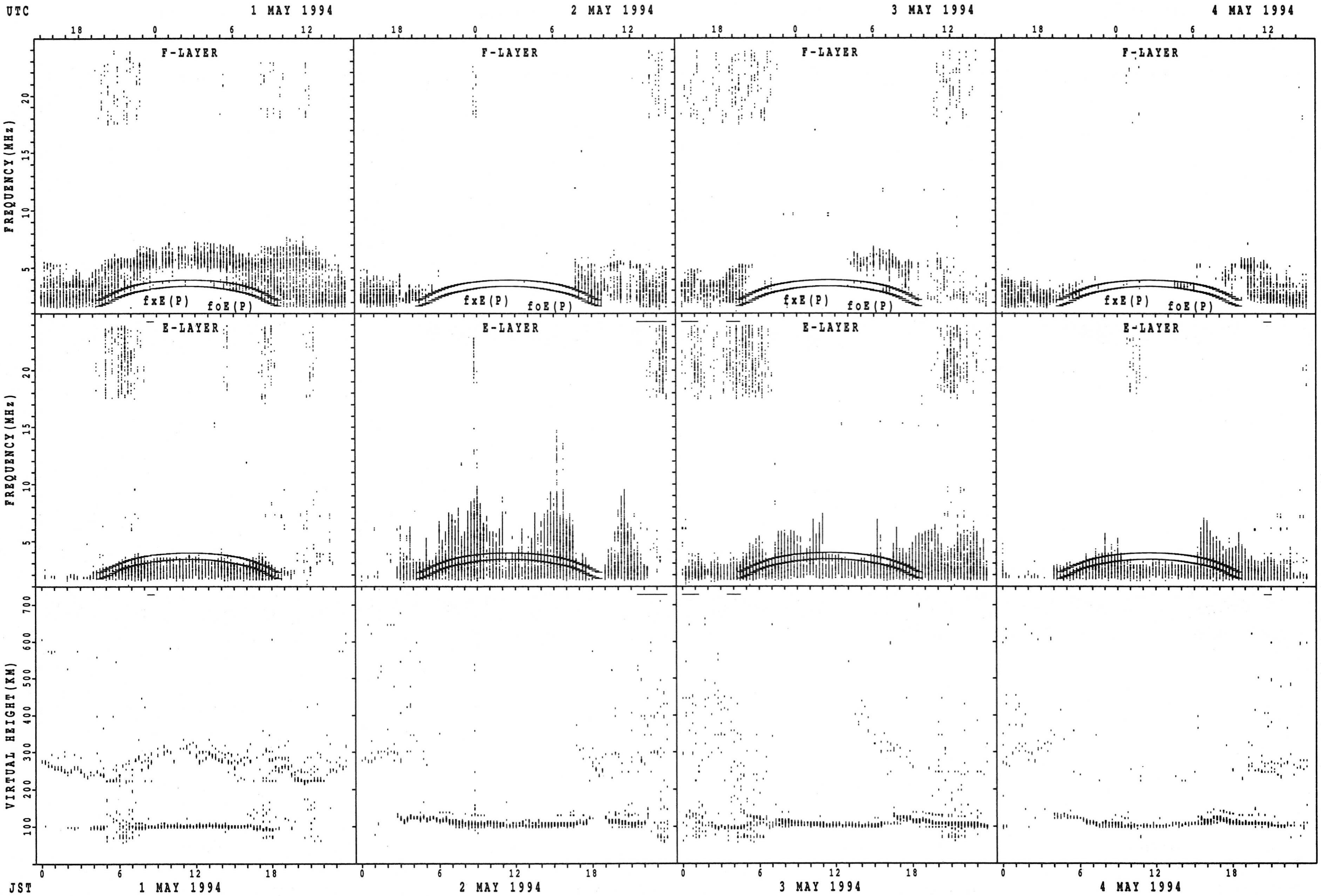
HOURLY VALUES OF fmin AT OKINAWA

MAY 1994

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

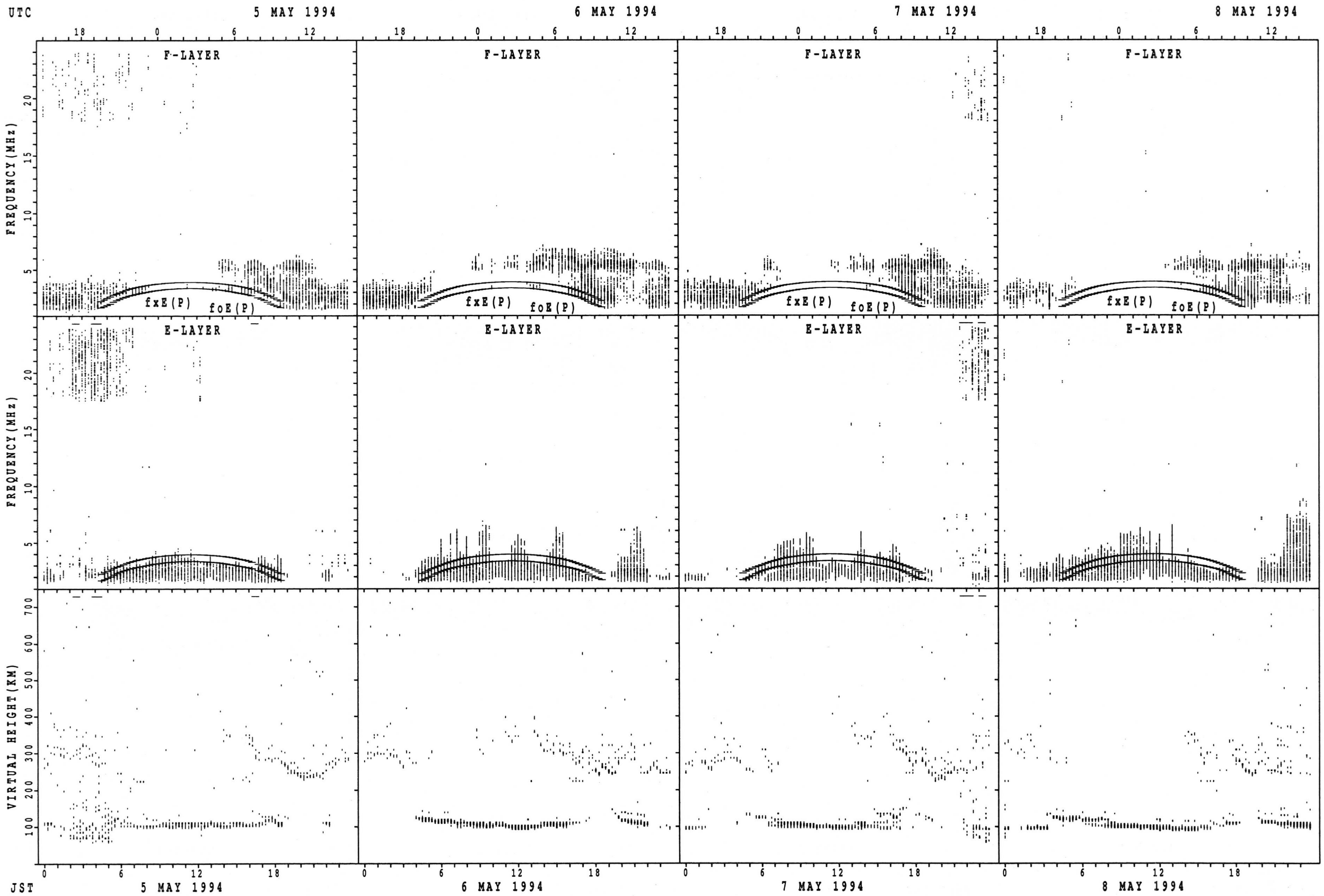
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	14	15	14		14		14	15	17	21	27	36	53	50	48	16		29	16	14	14	15	14
2	15	15	15	14	14	14	14	14	15	17	33	48	36	35	26	18	16	24	15	14	14	14	14	14
3	14	14	14	14	14	14	14	14	15	15	28	29	30	34	32	32	30	18	20	15	14	14	14	14
4	14	14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

SUMMARY PLOTS AT WAKKANAI



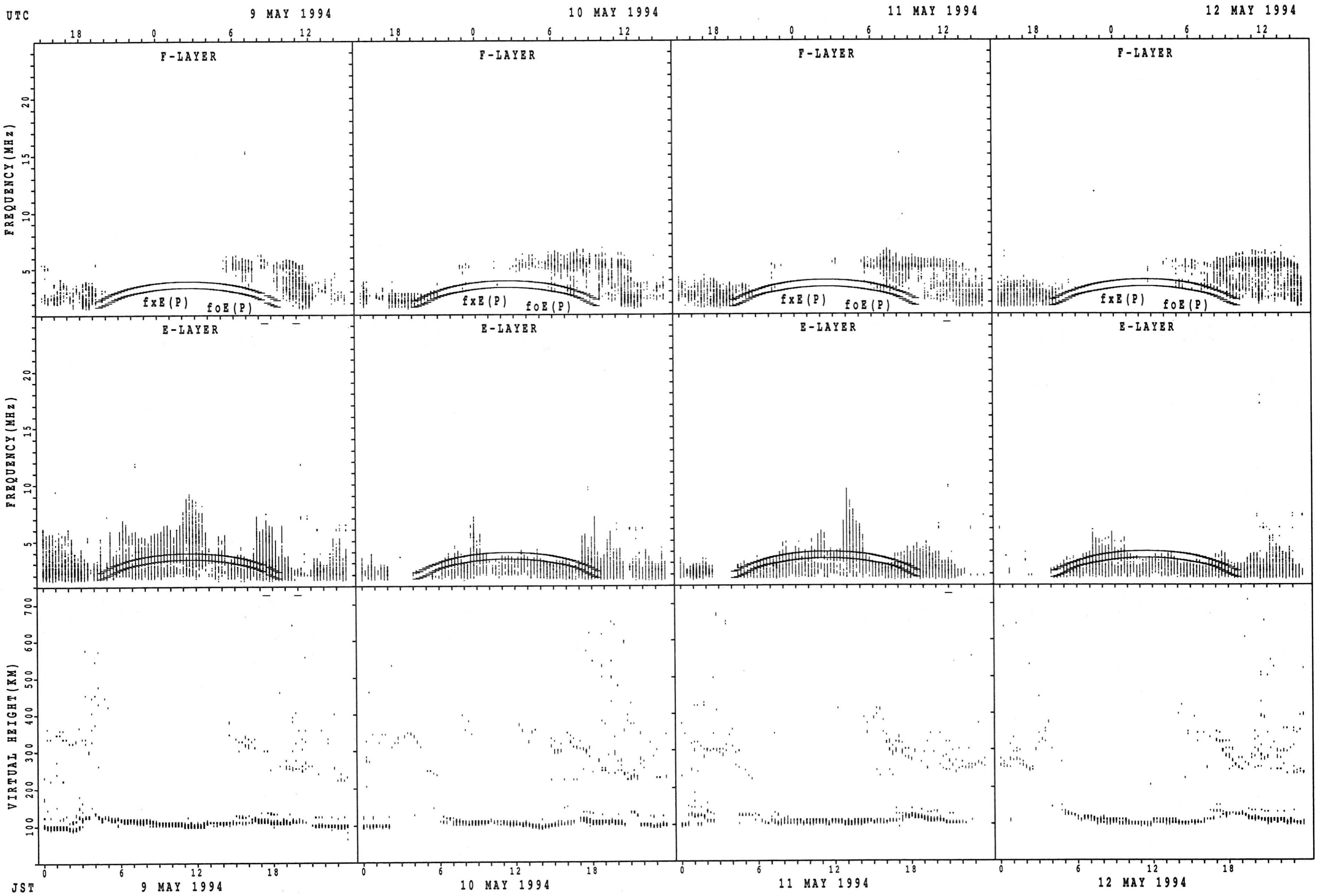
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



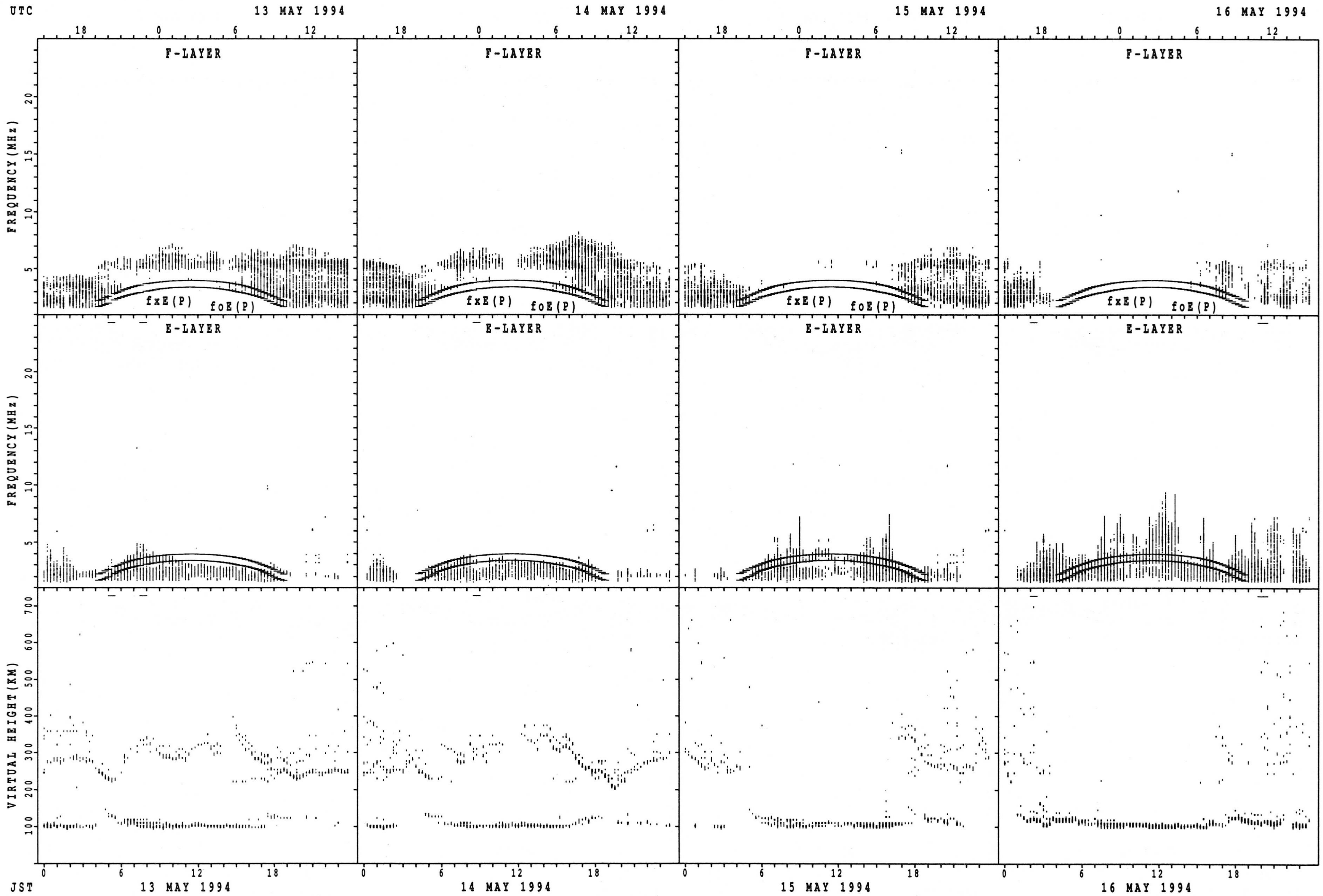
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



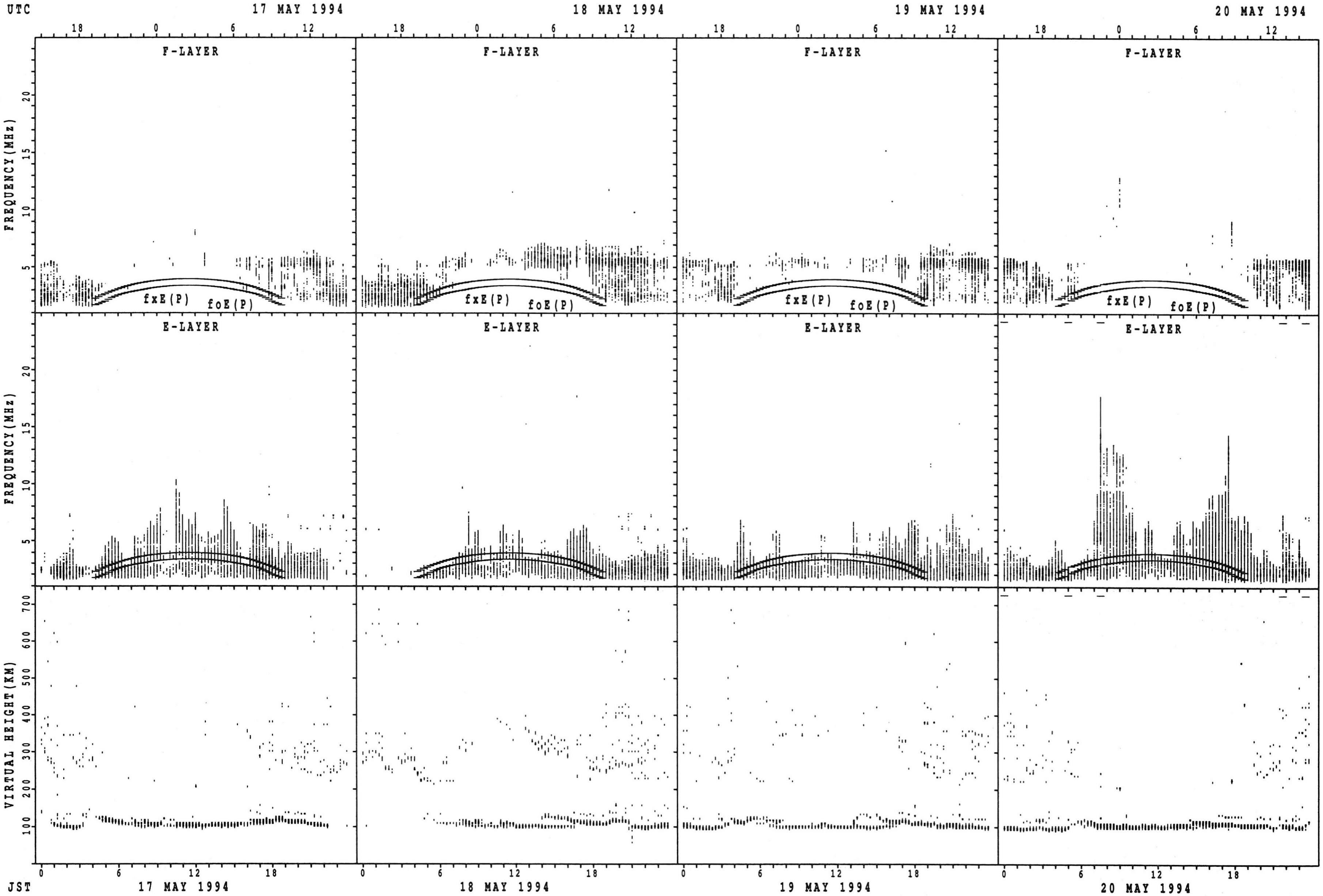
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



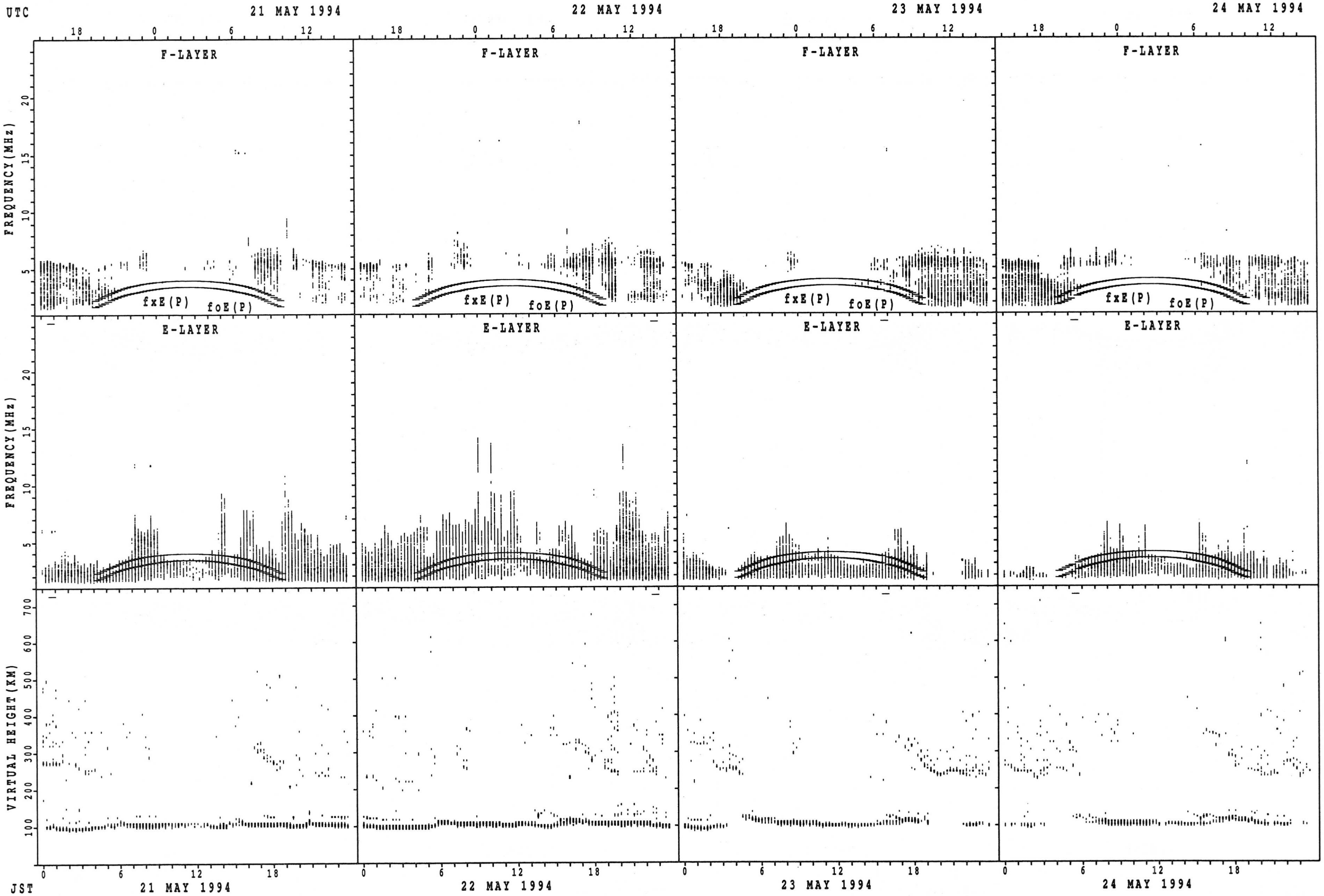
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



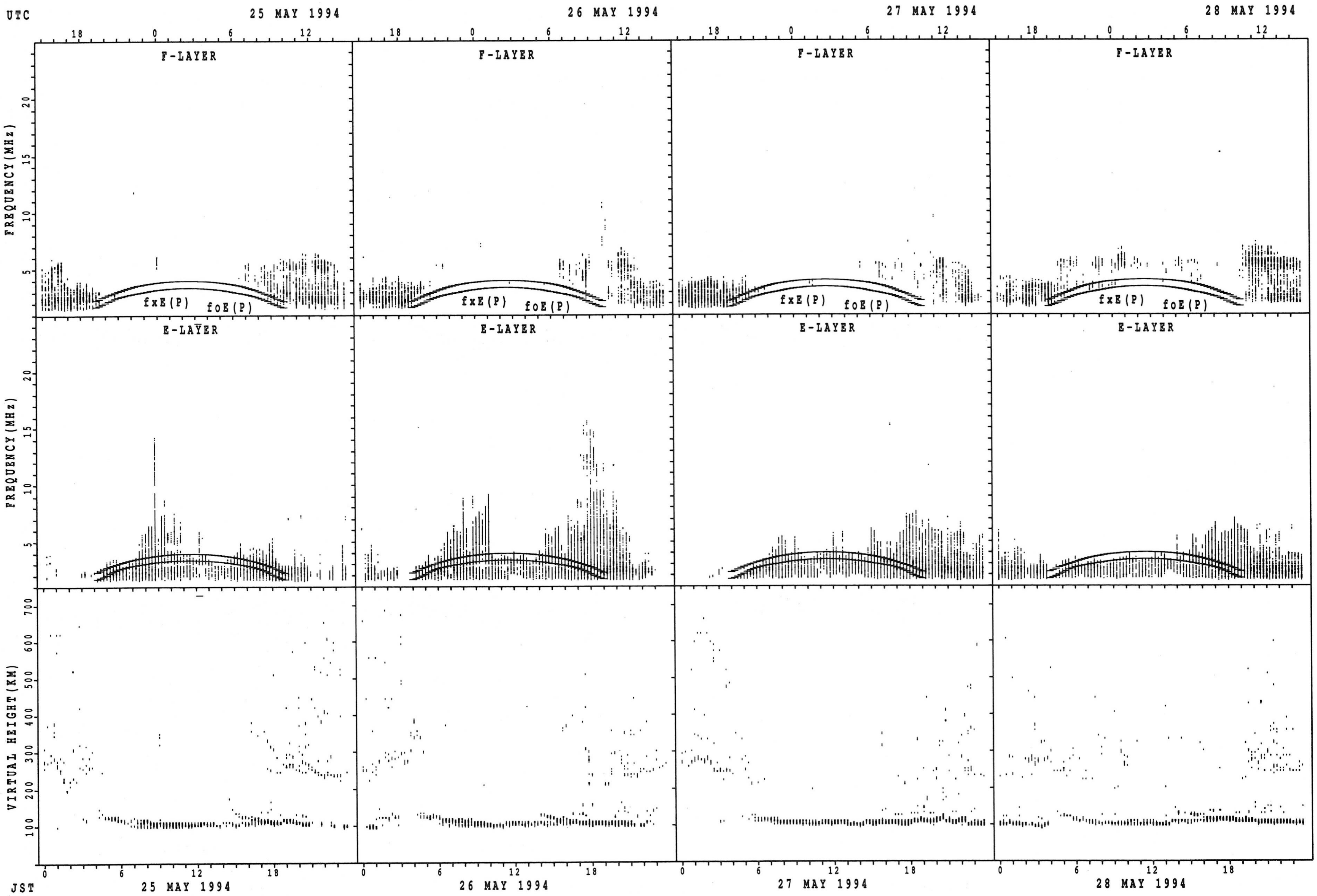
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



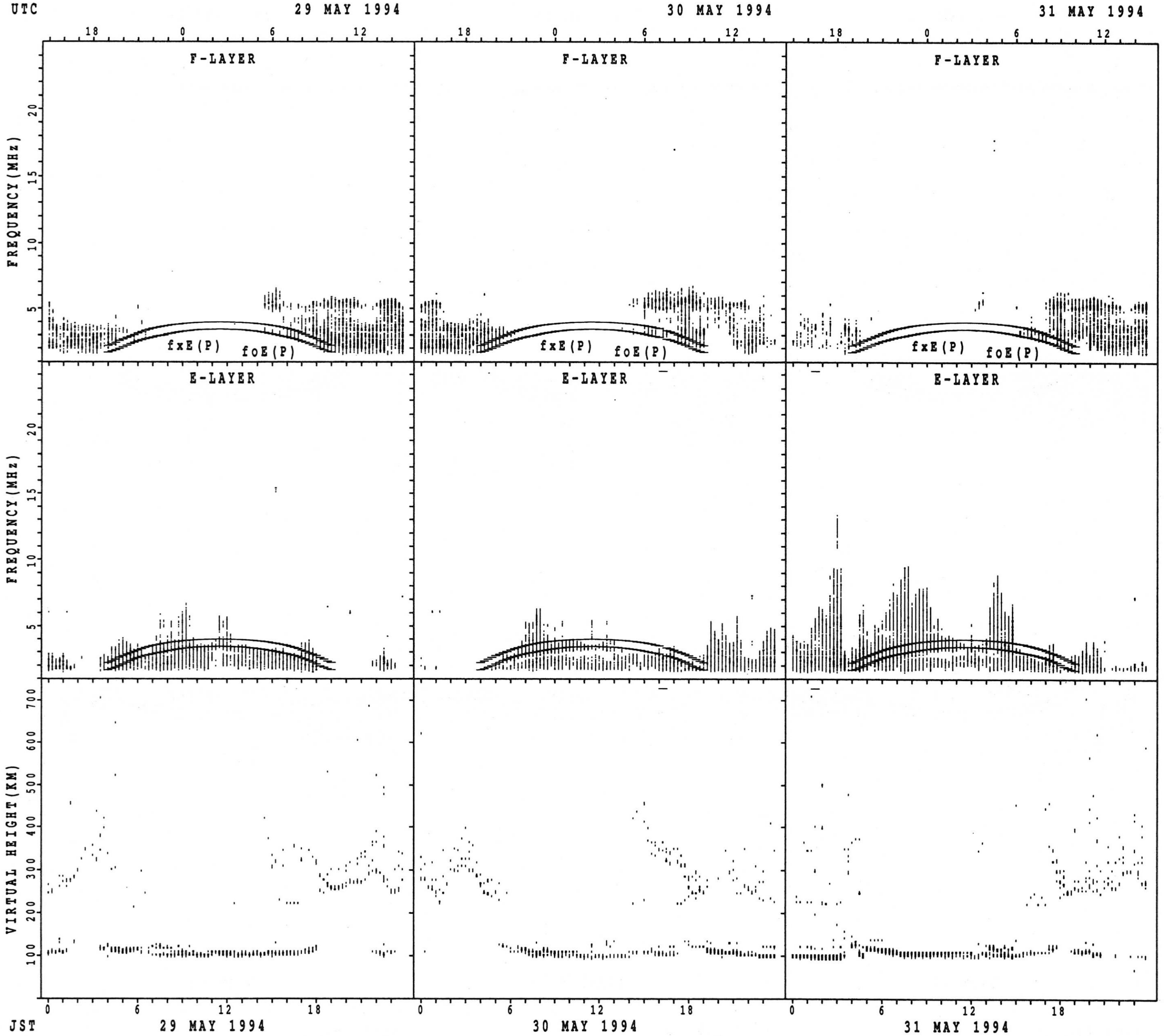
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



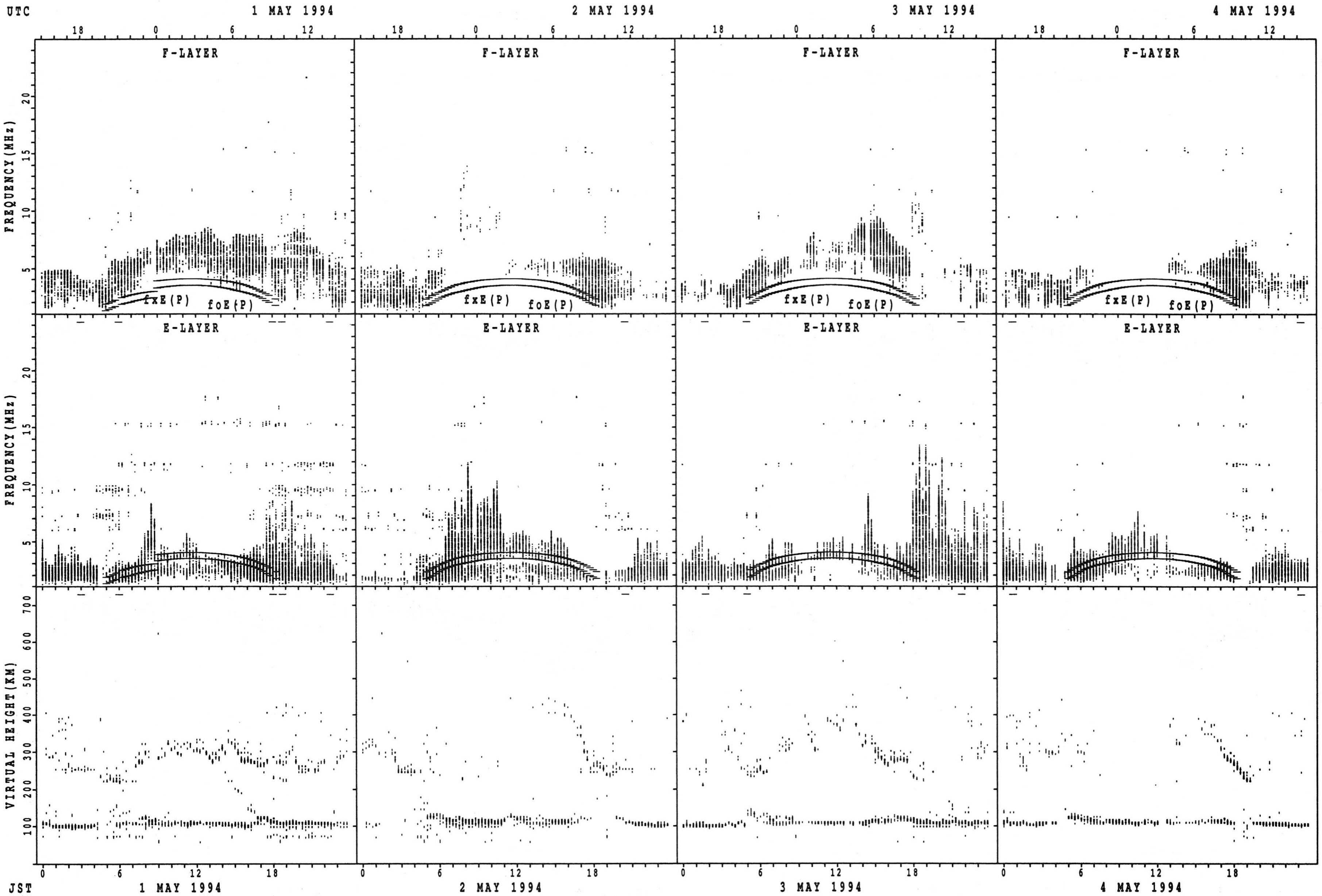
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



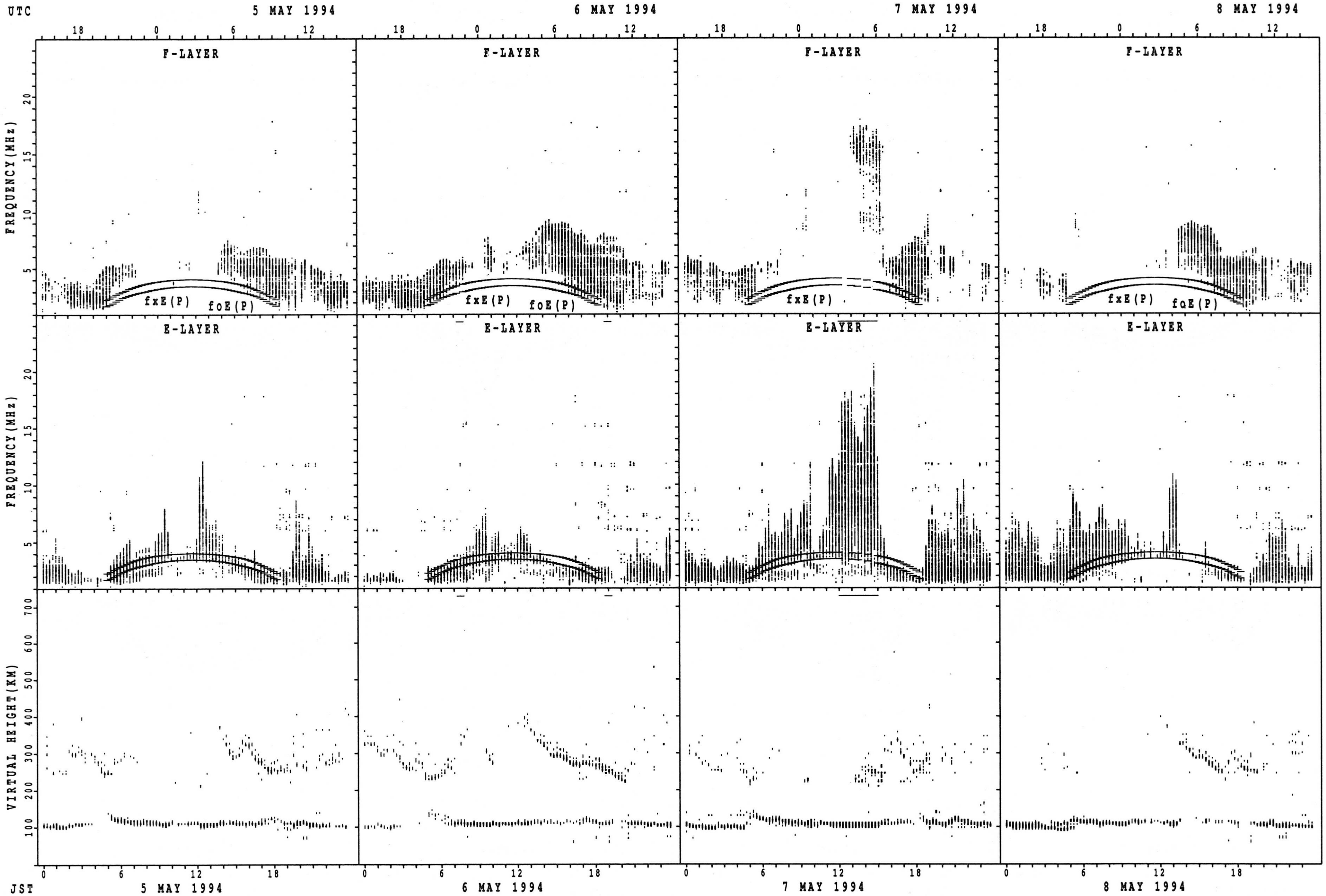
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



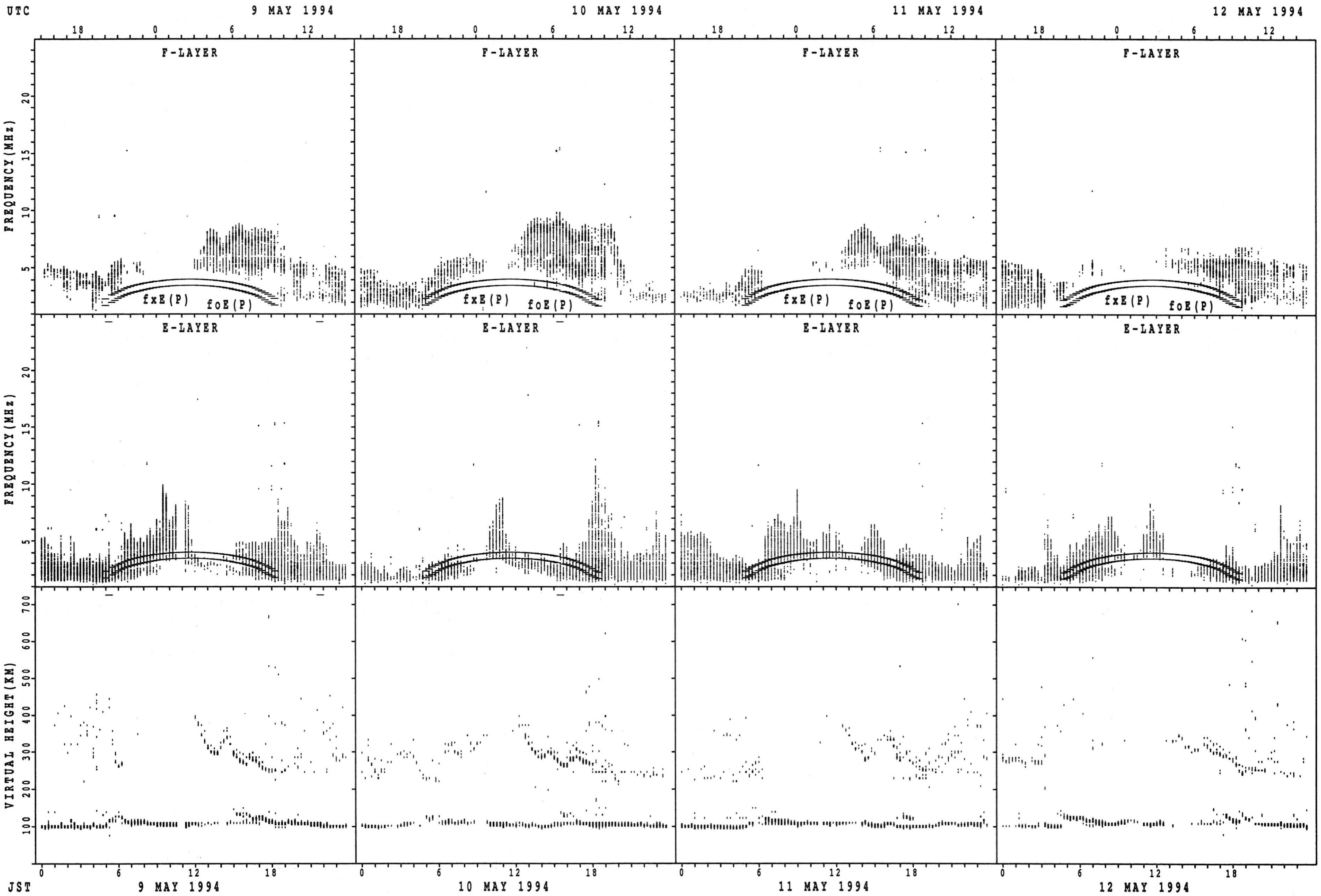
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



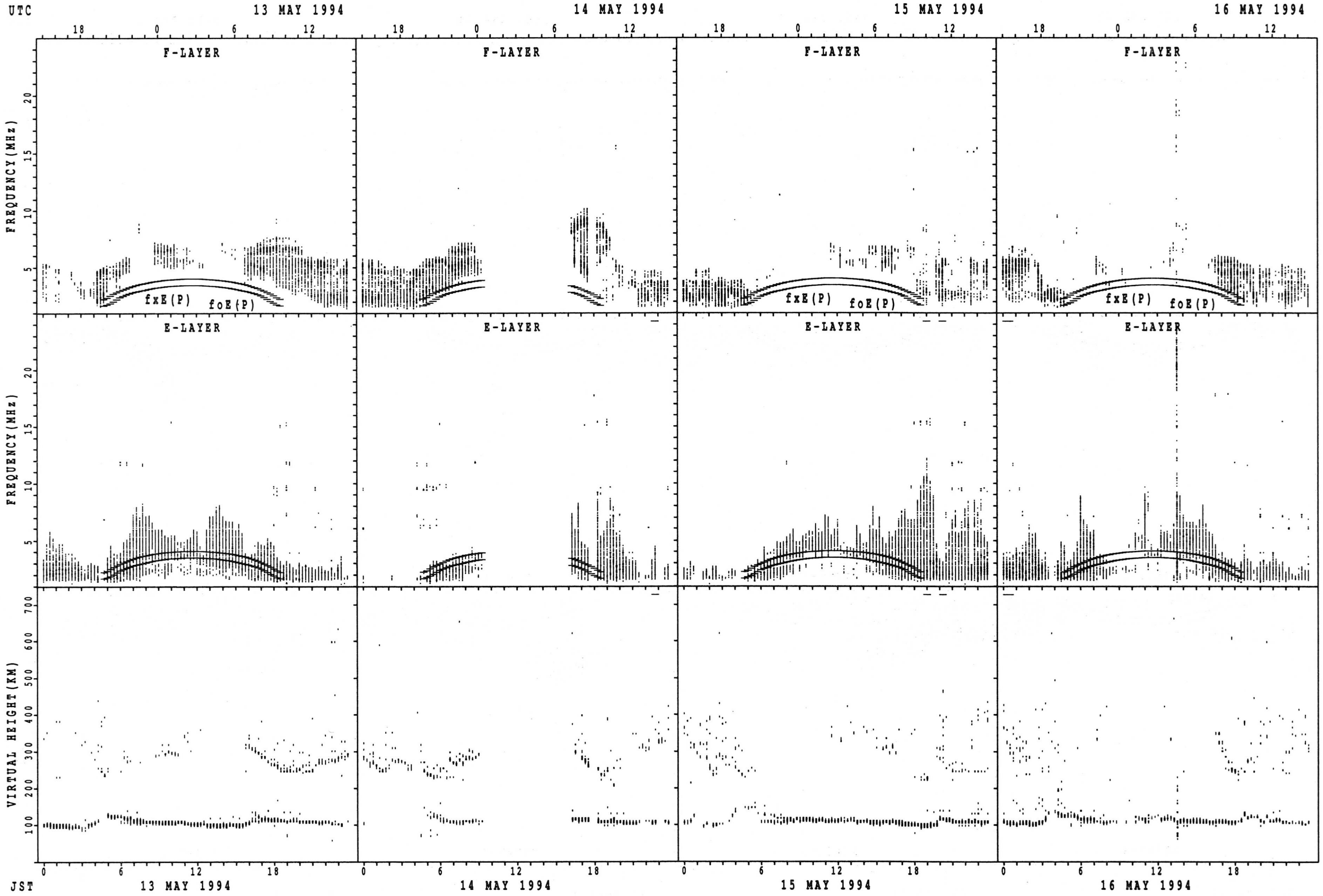
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



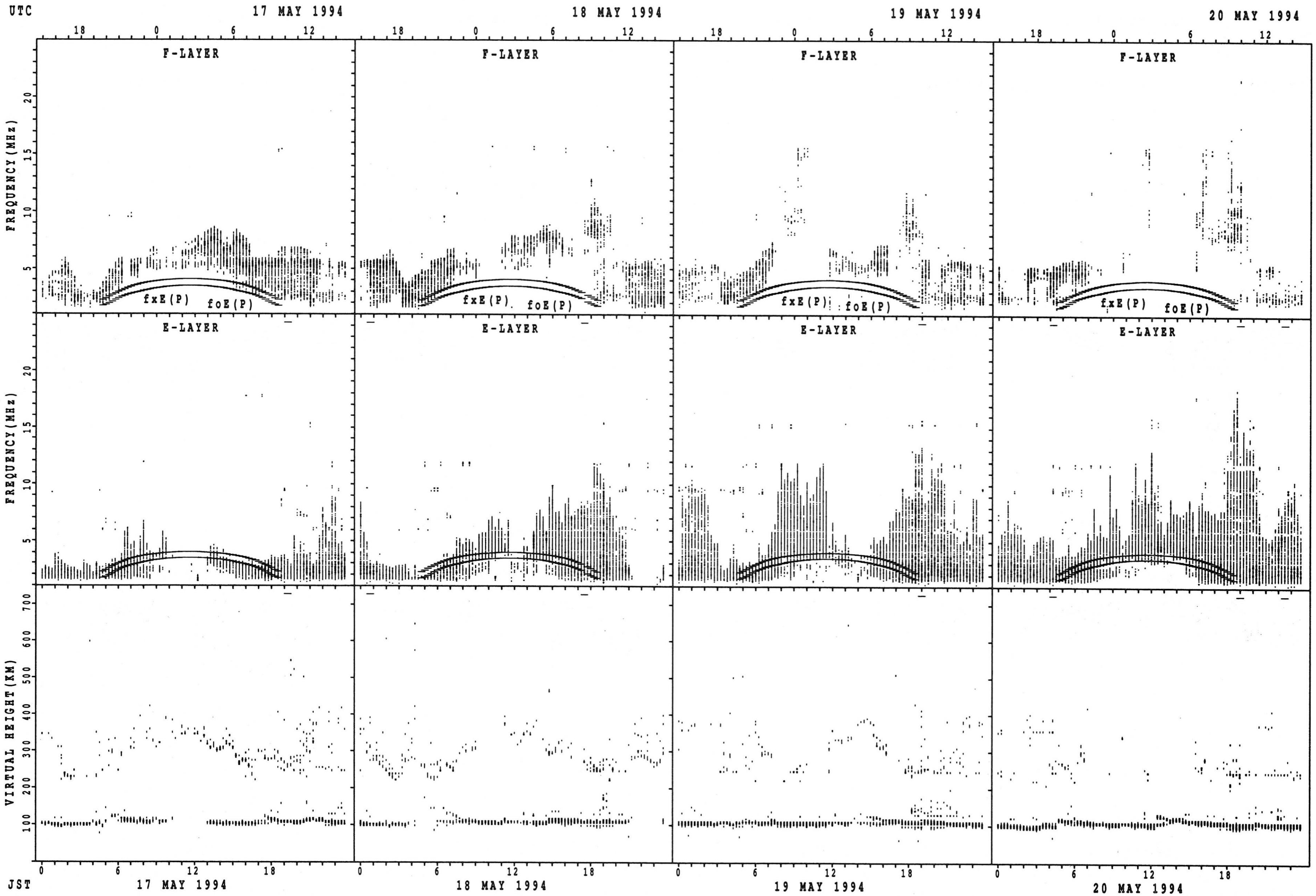
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



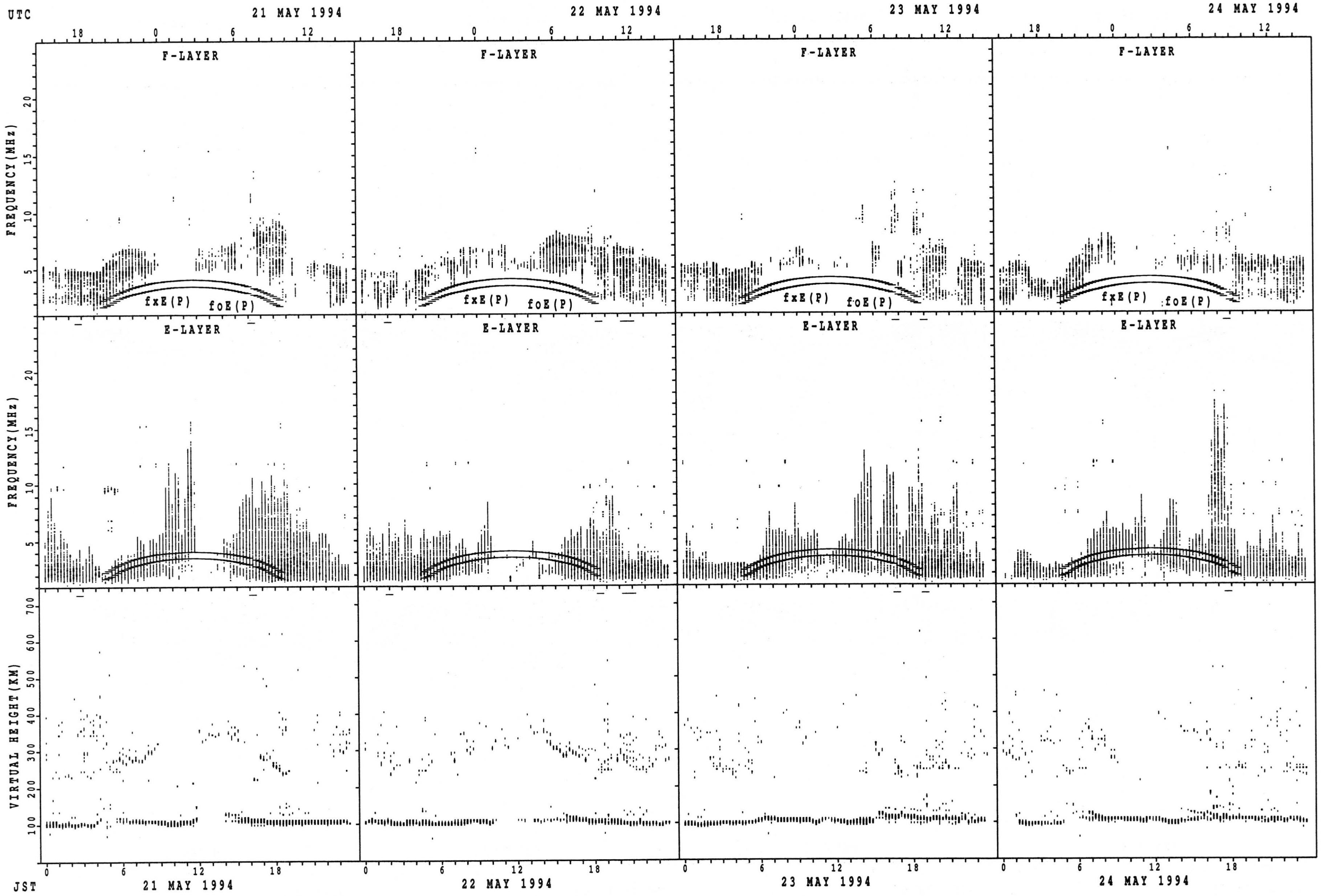
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



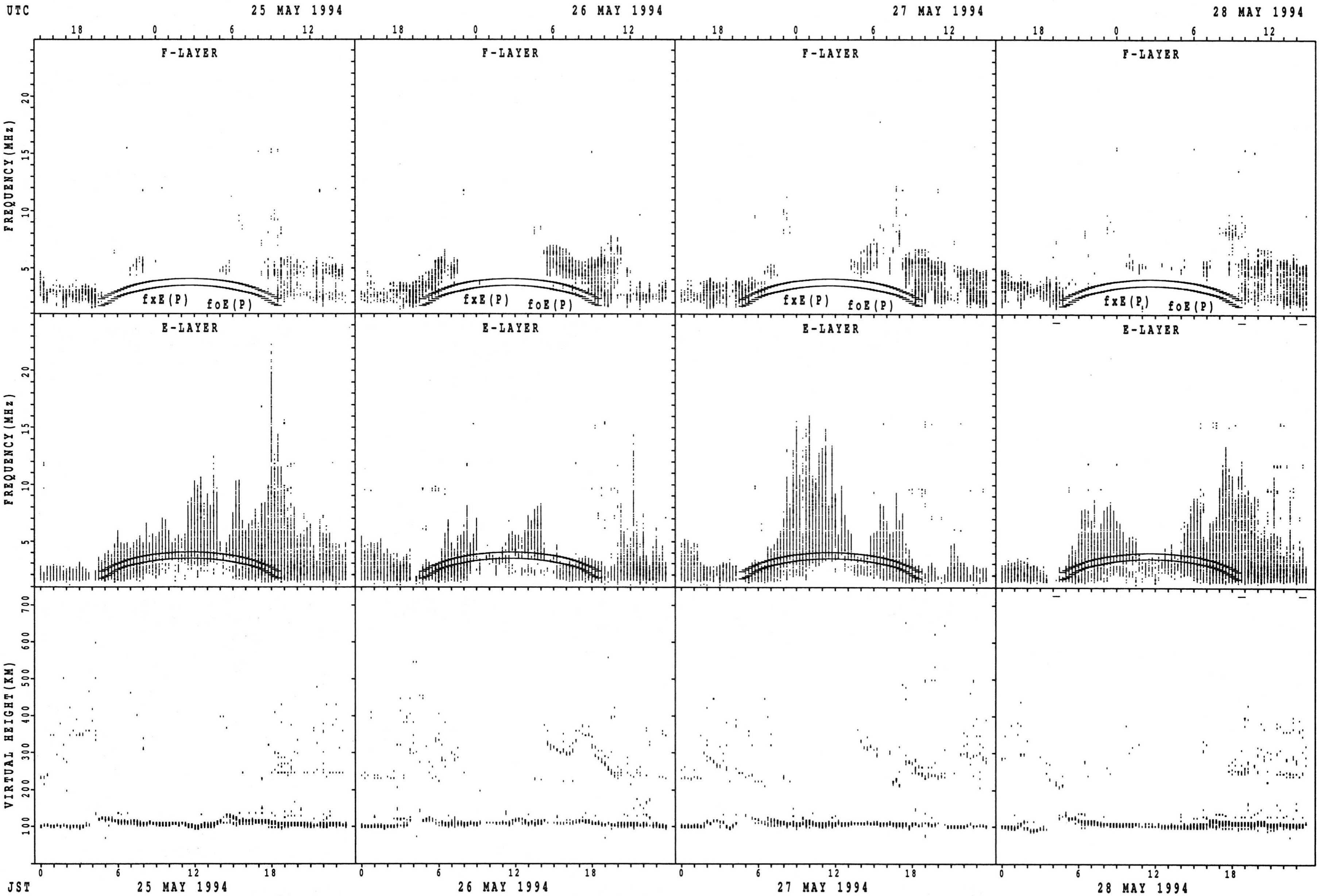
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



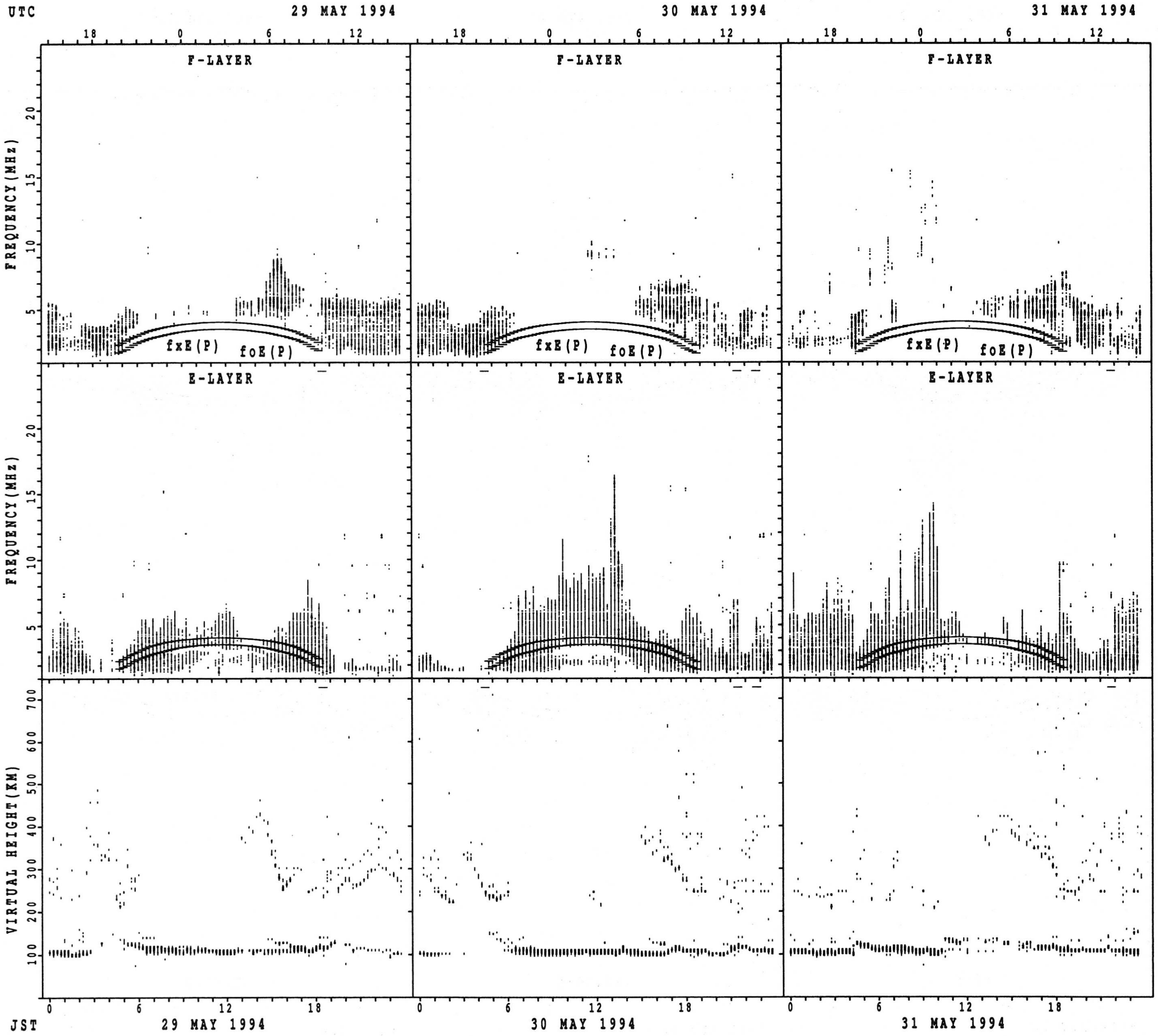
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



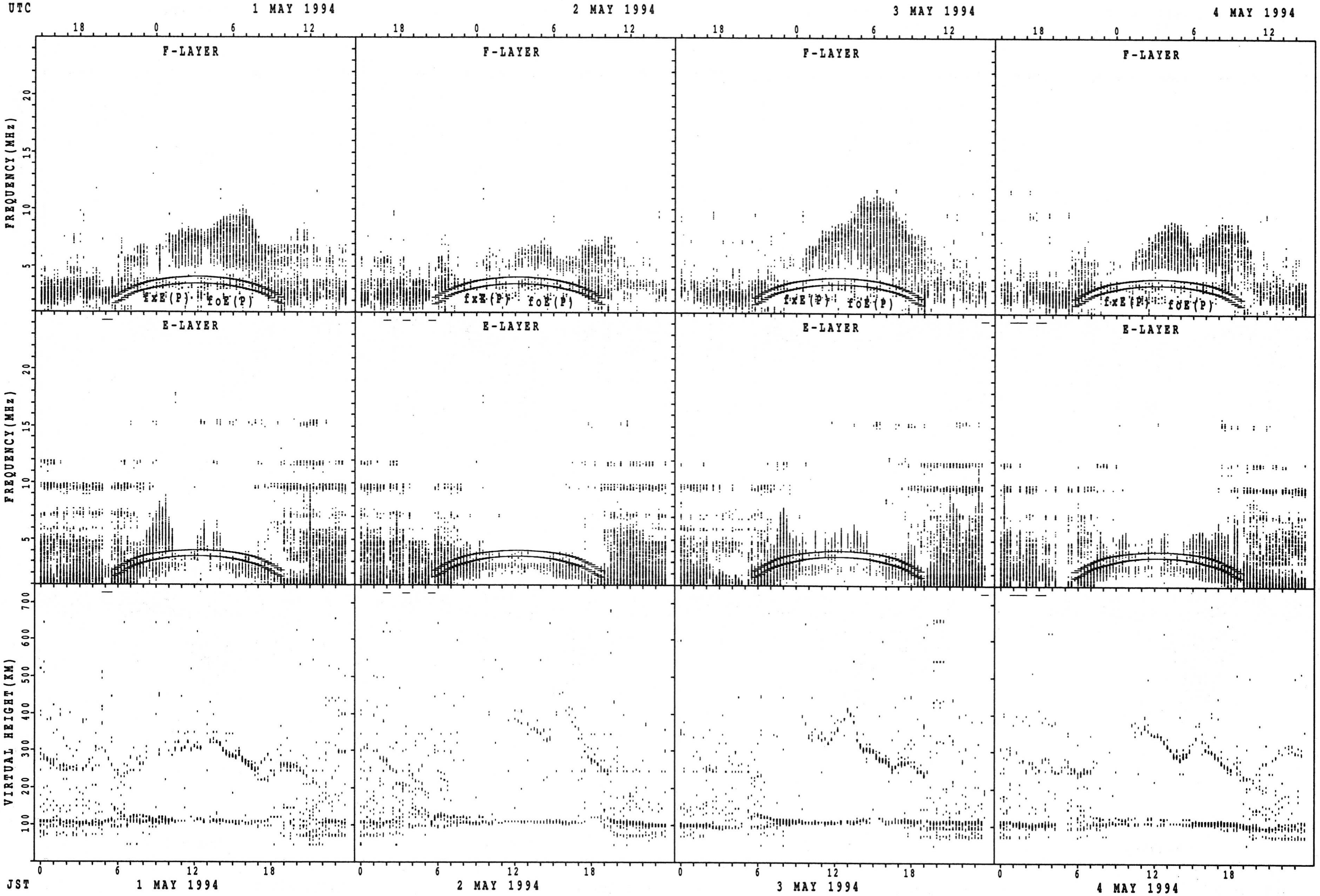
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



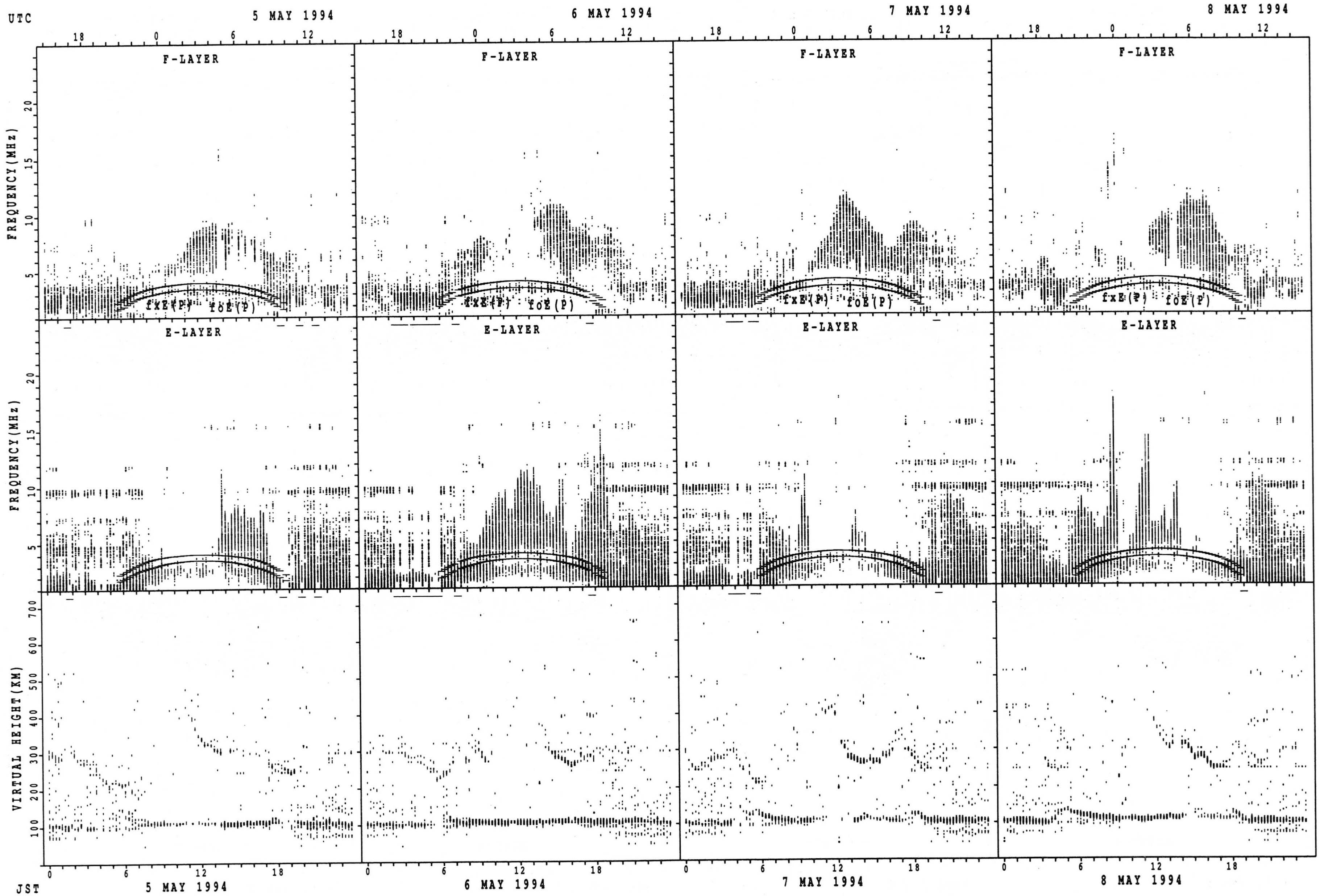
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



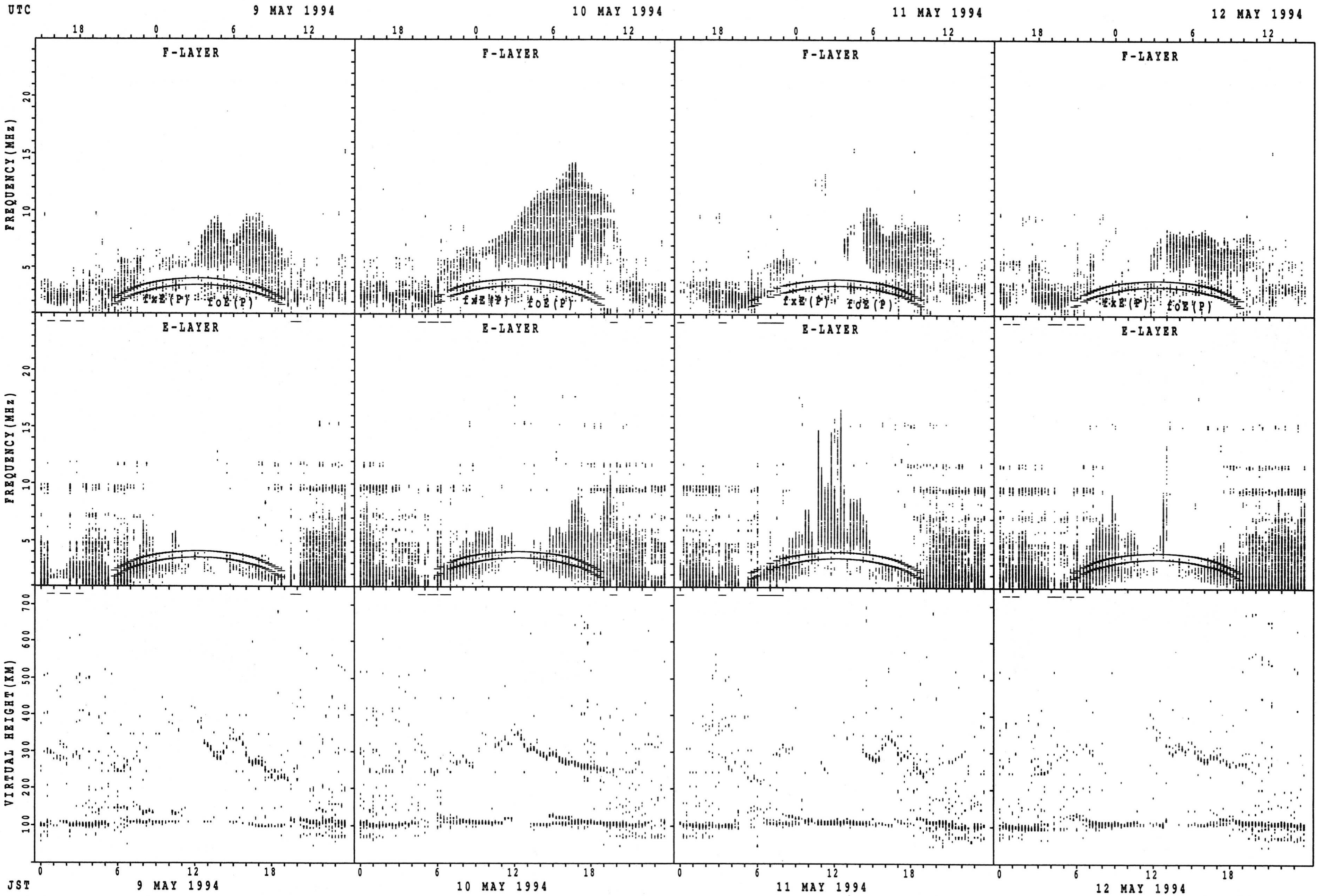
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



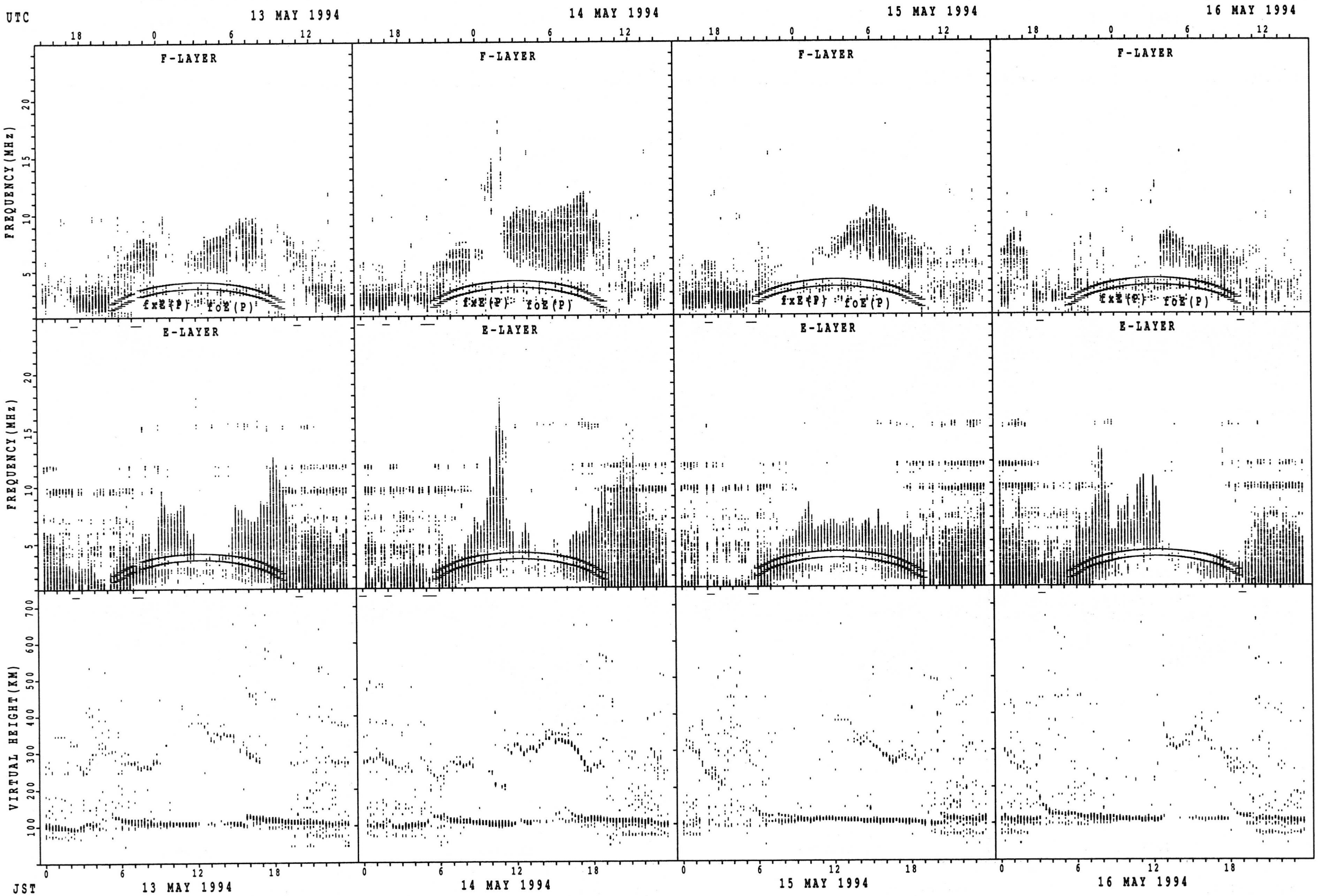
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



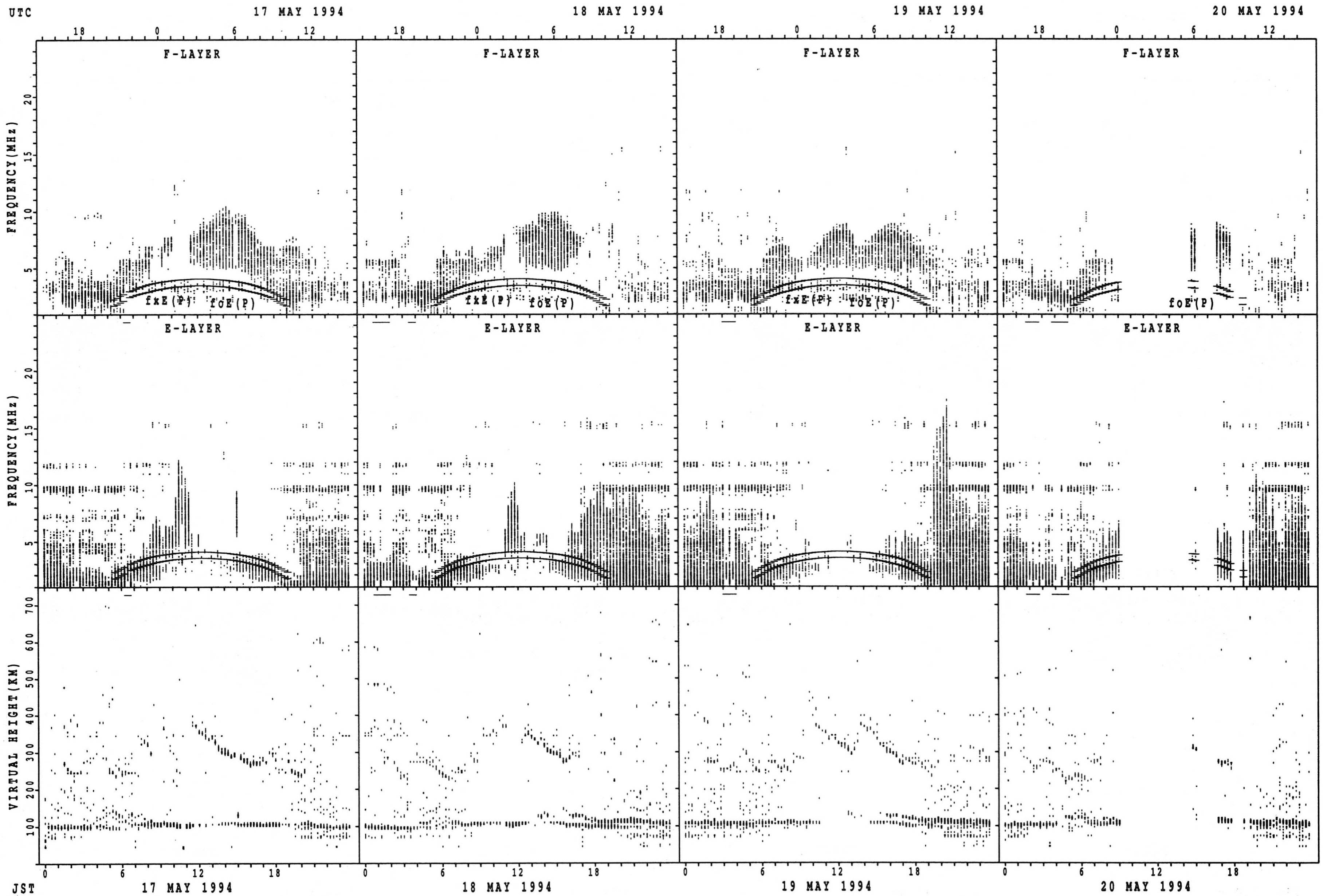
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



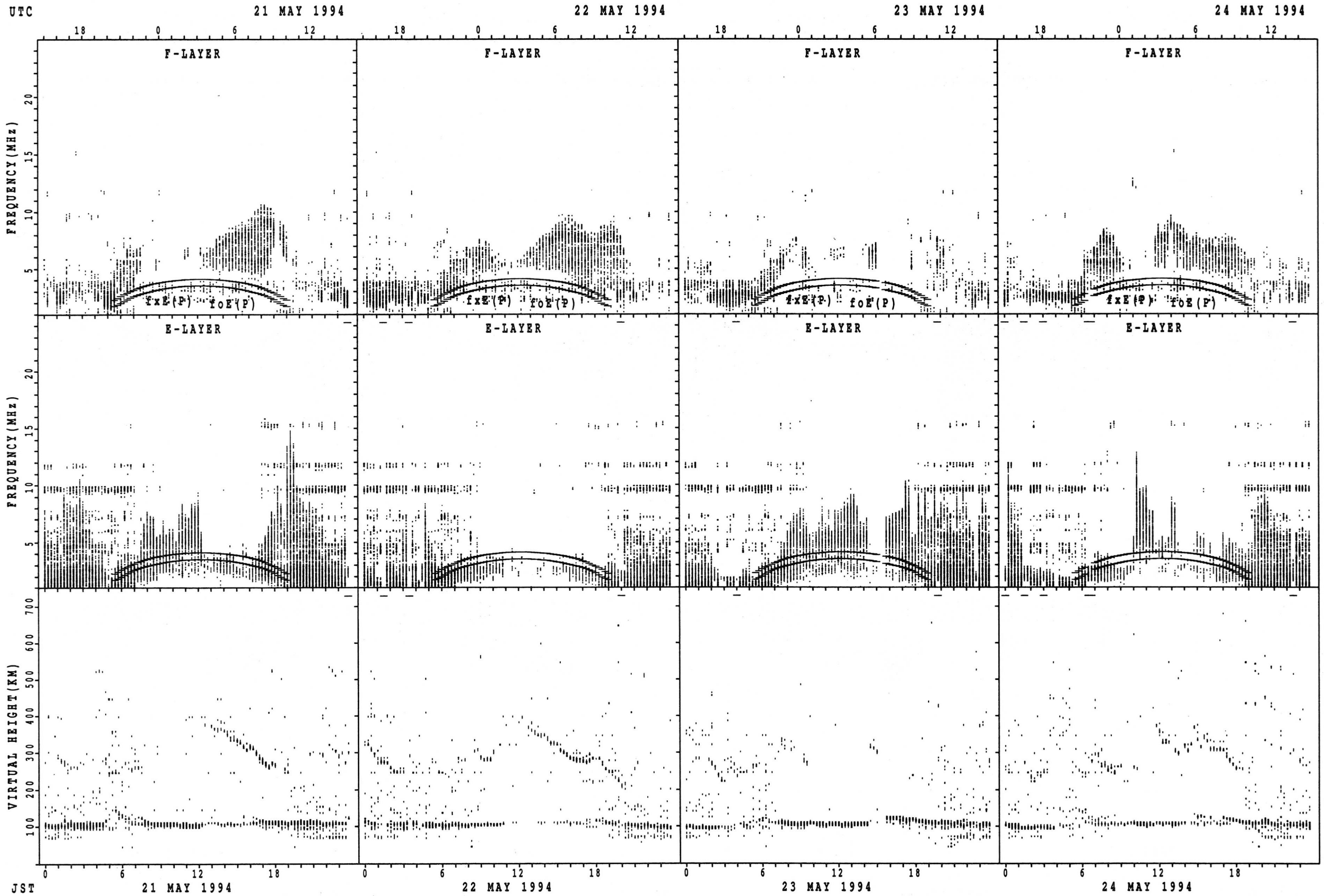
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



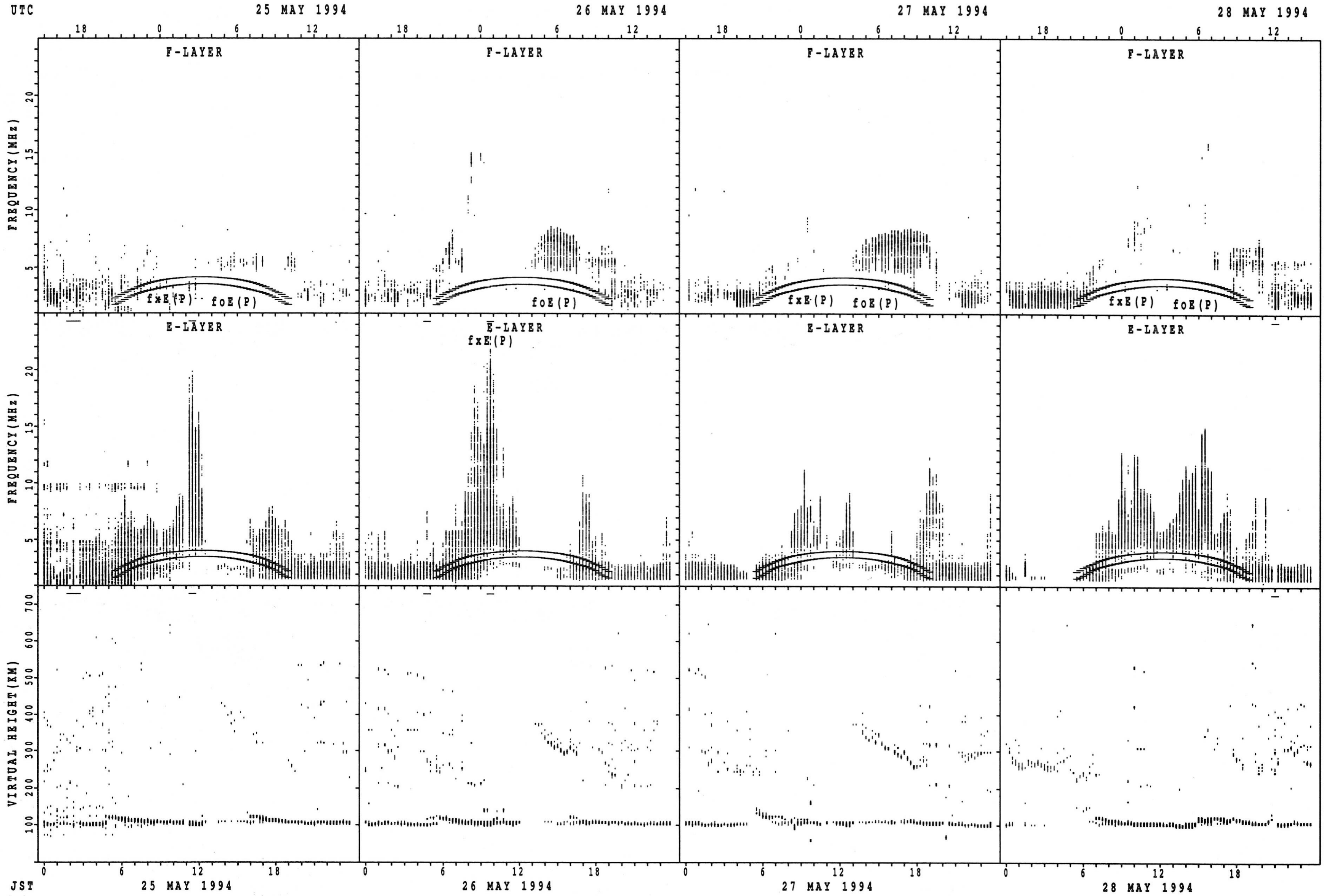
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



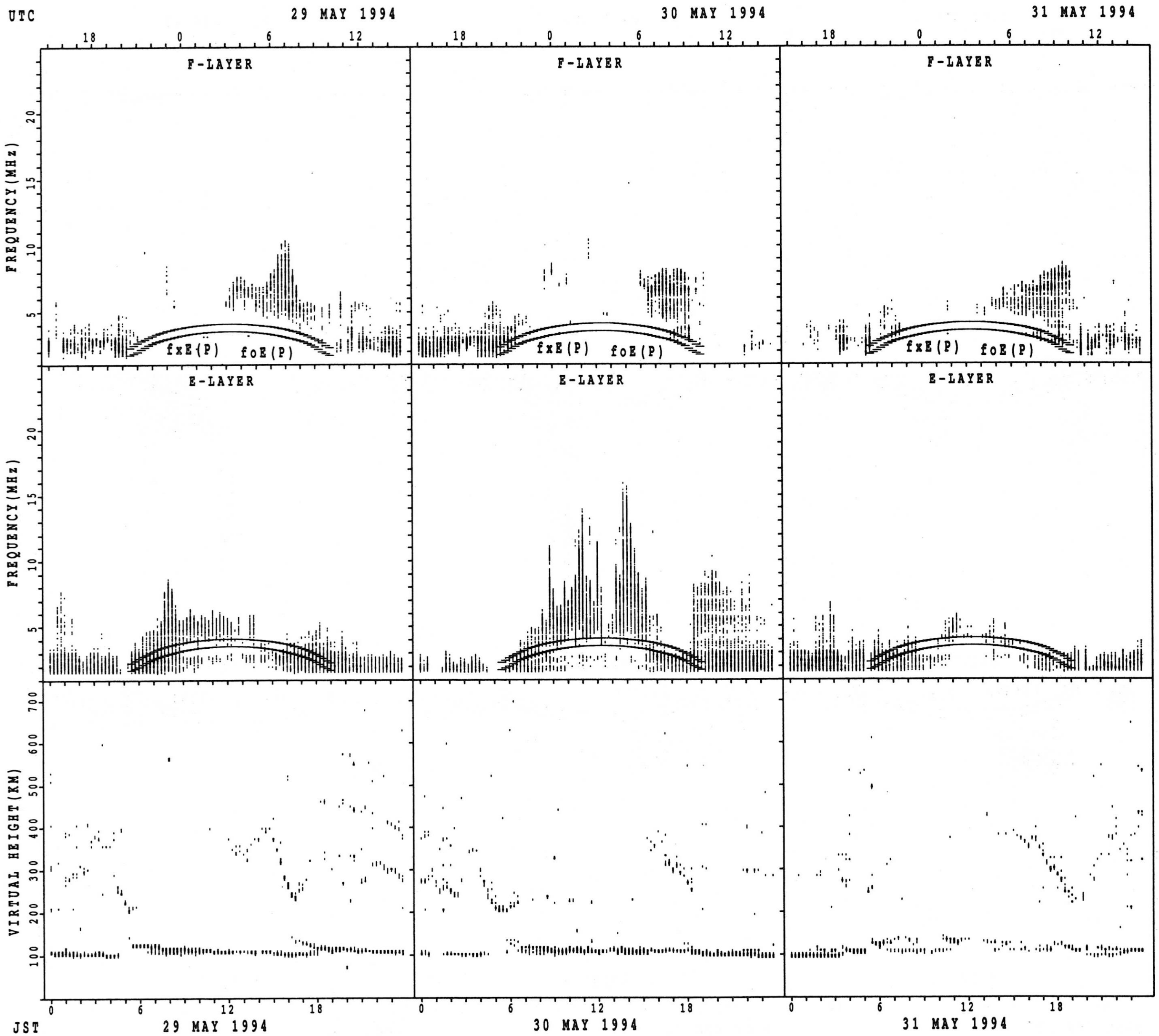
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



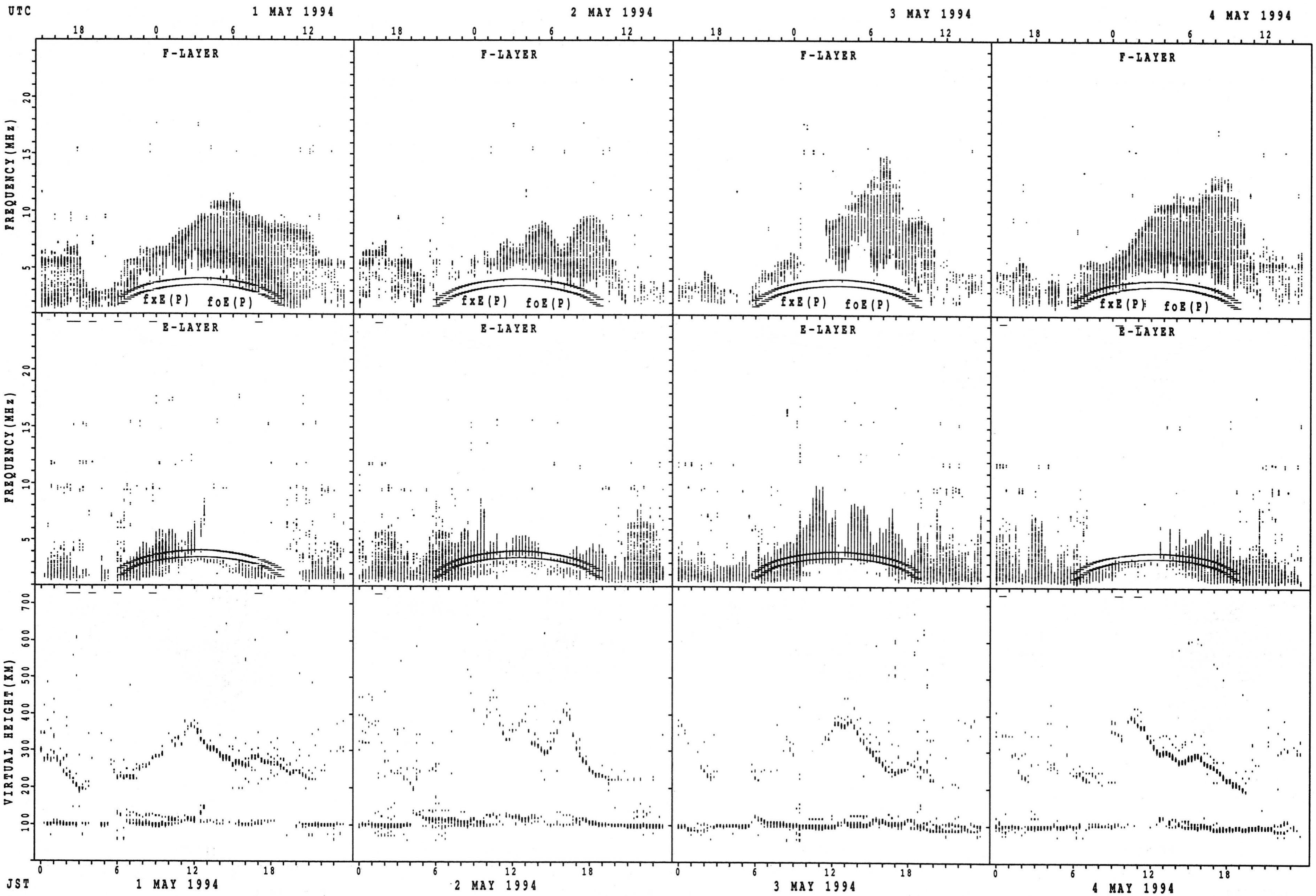
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



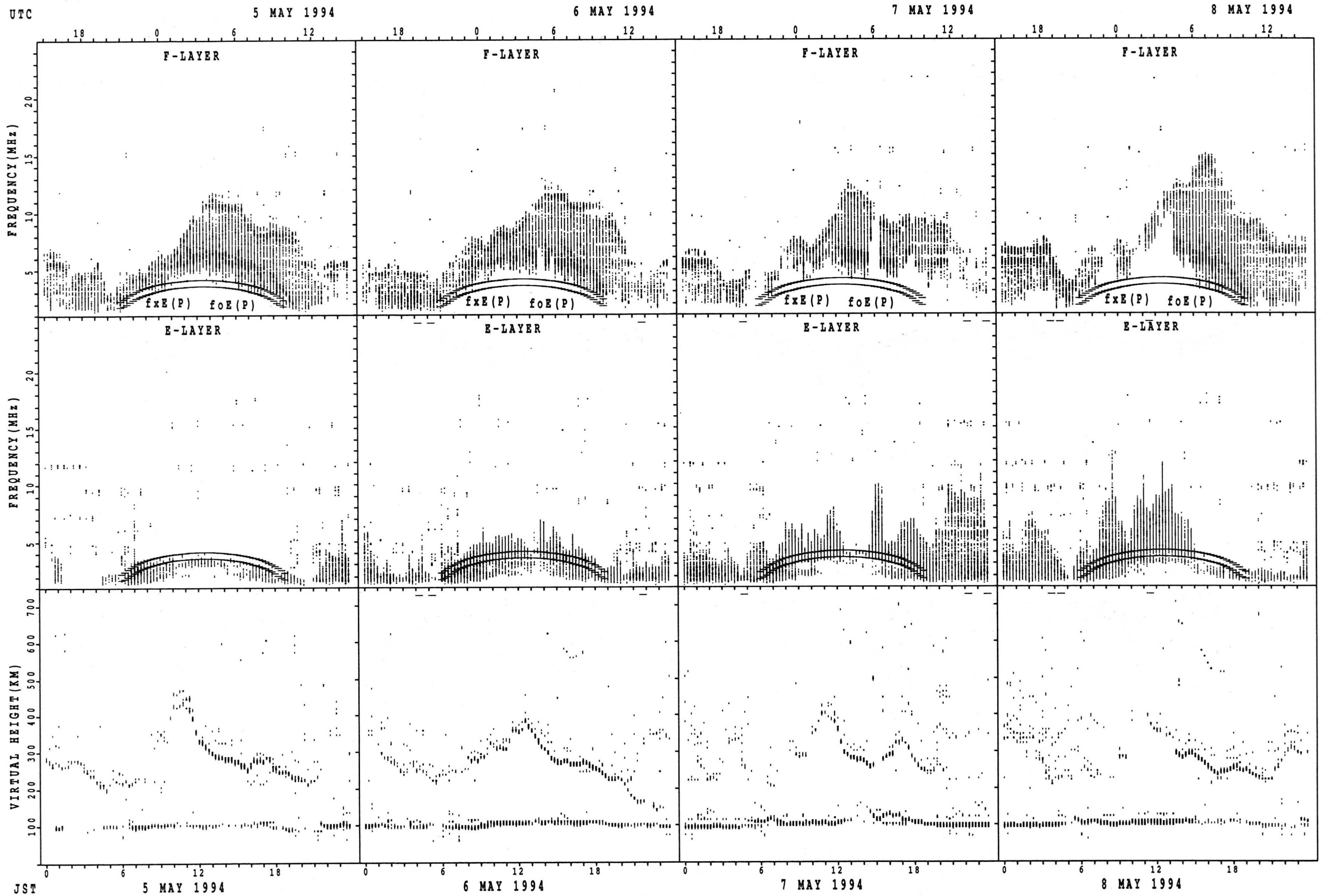
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



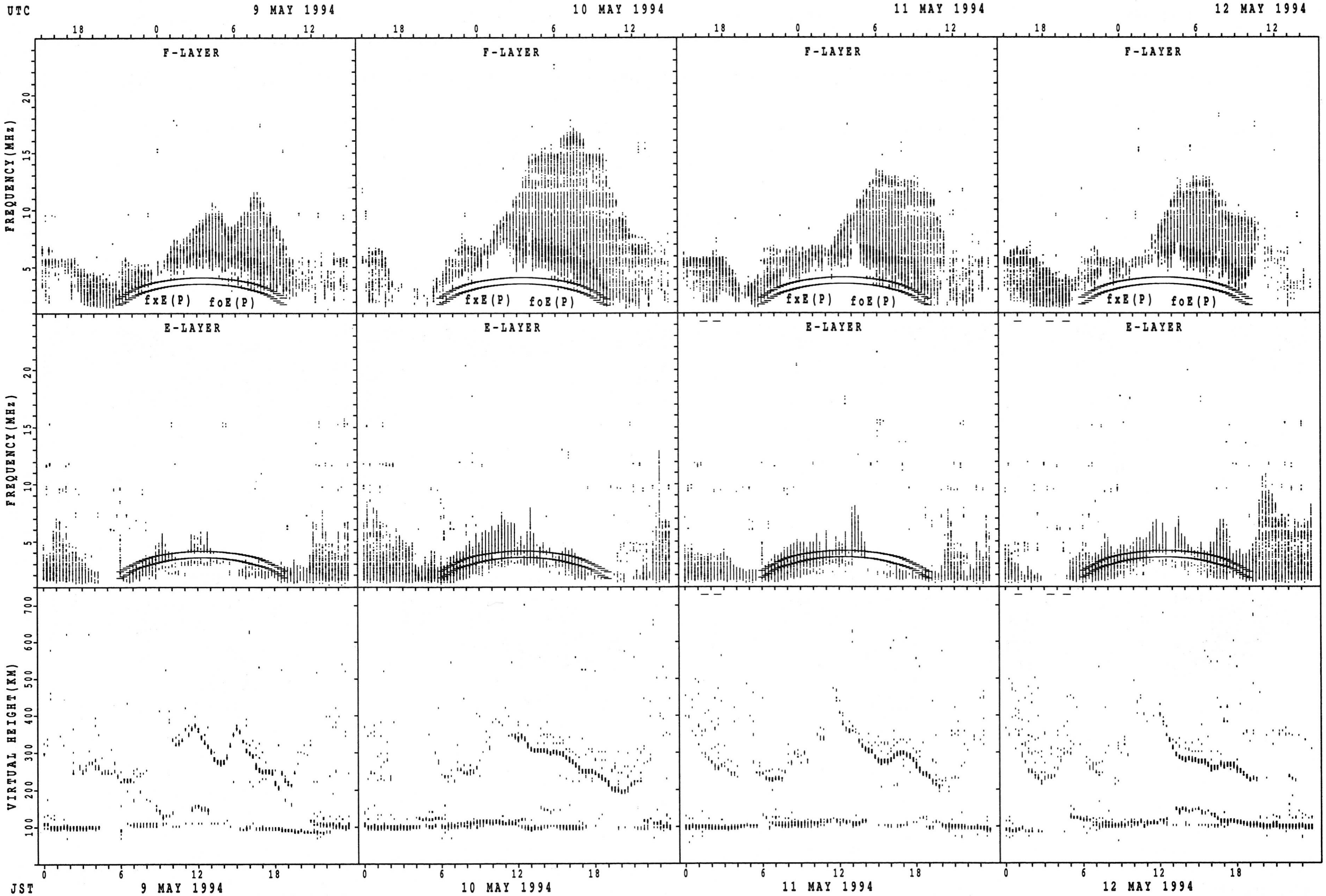
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



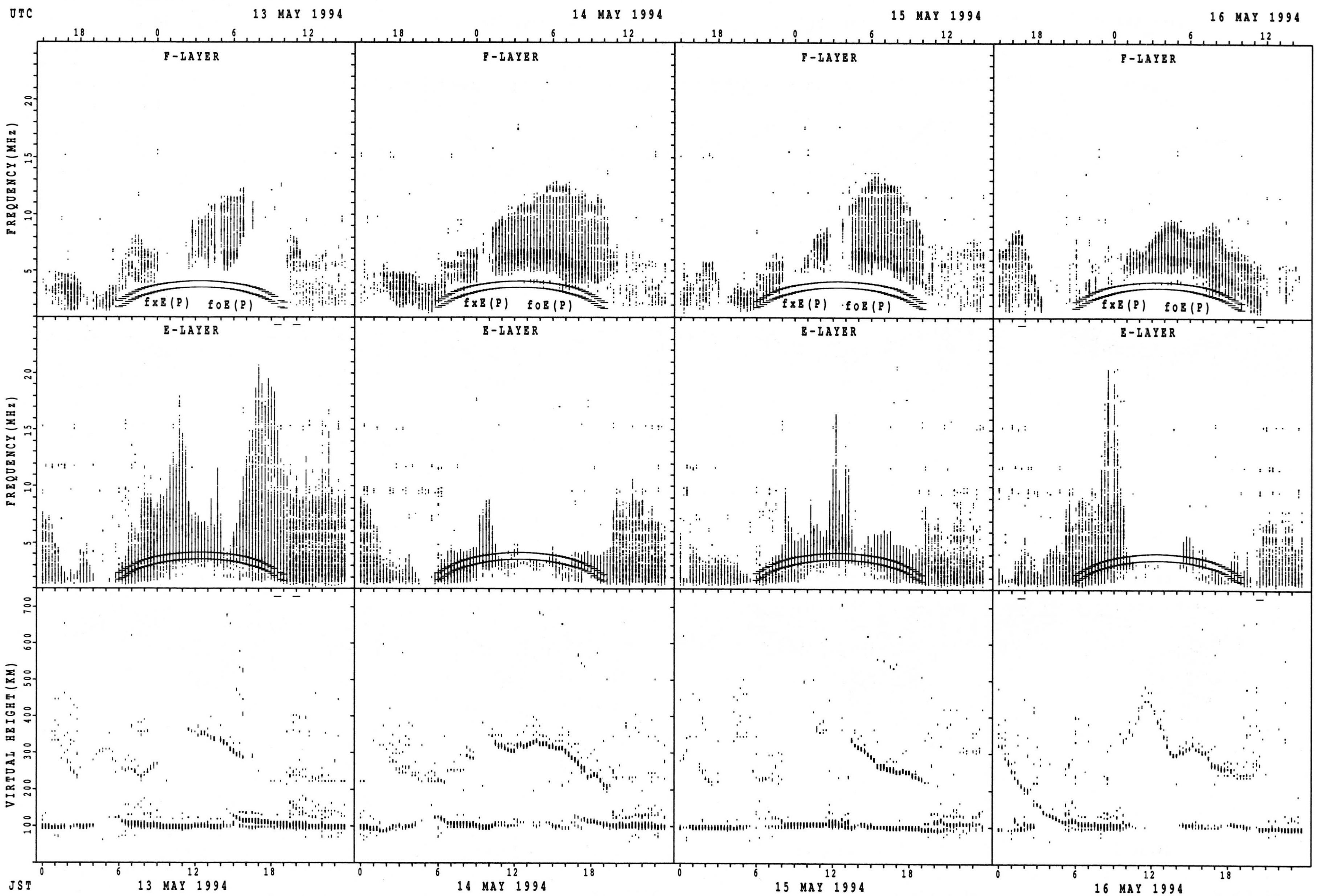
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



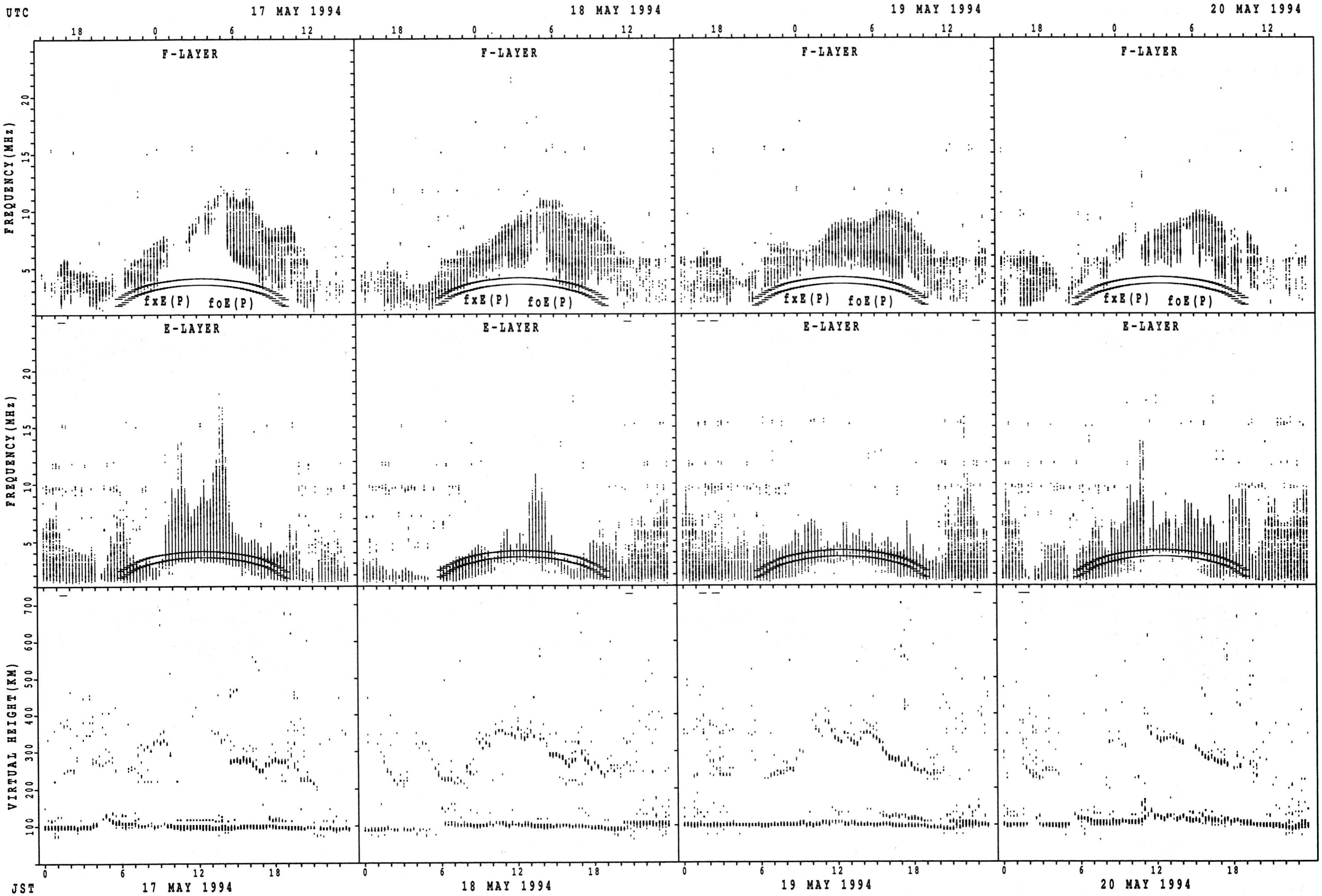
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



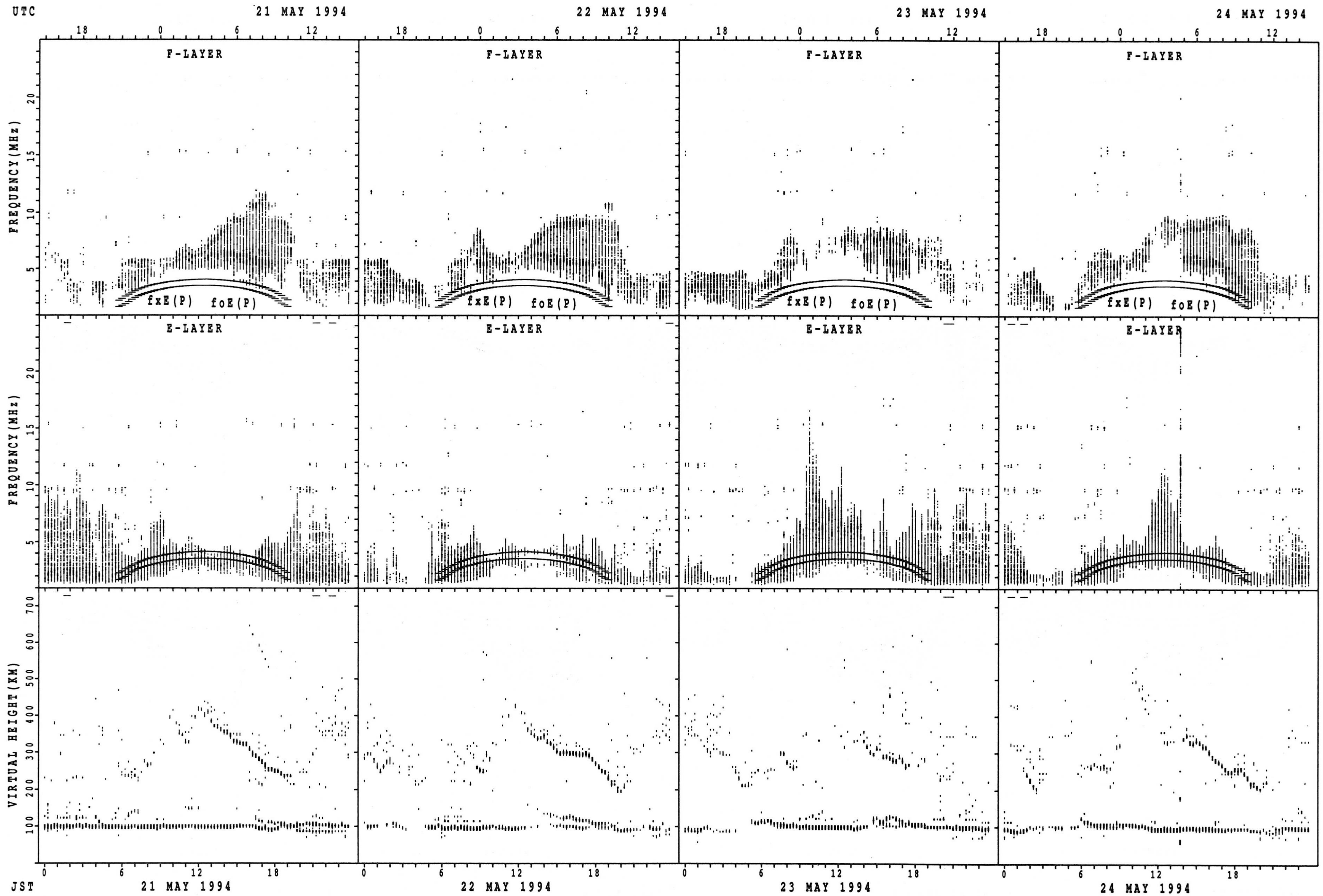
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



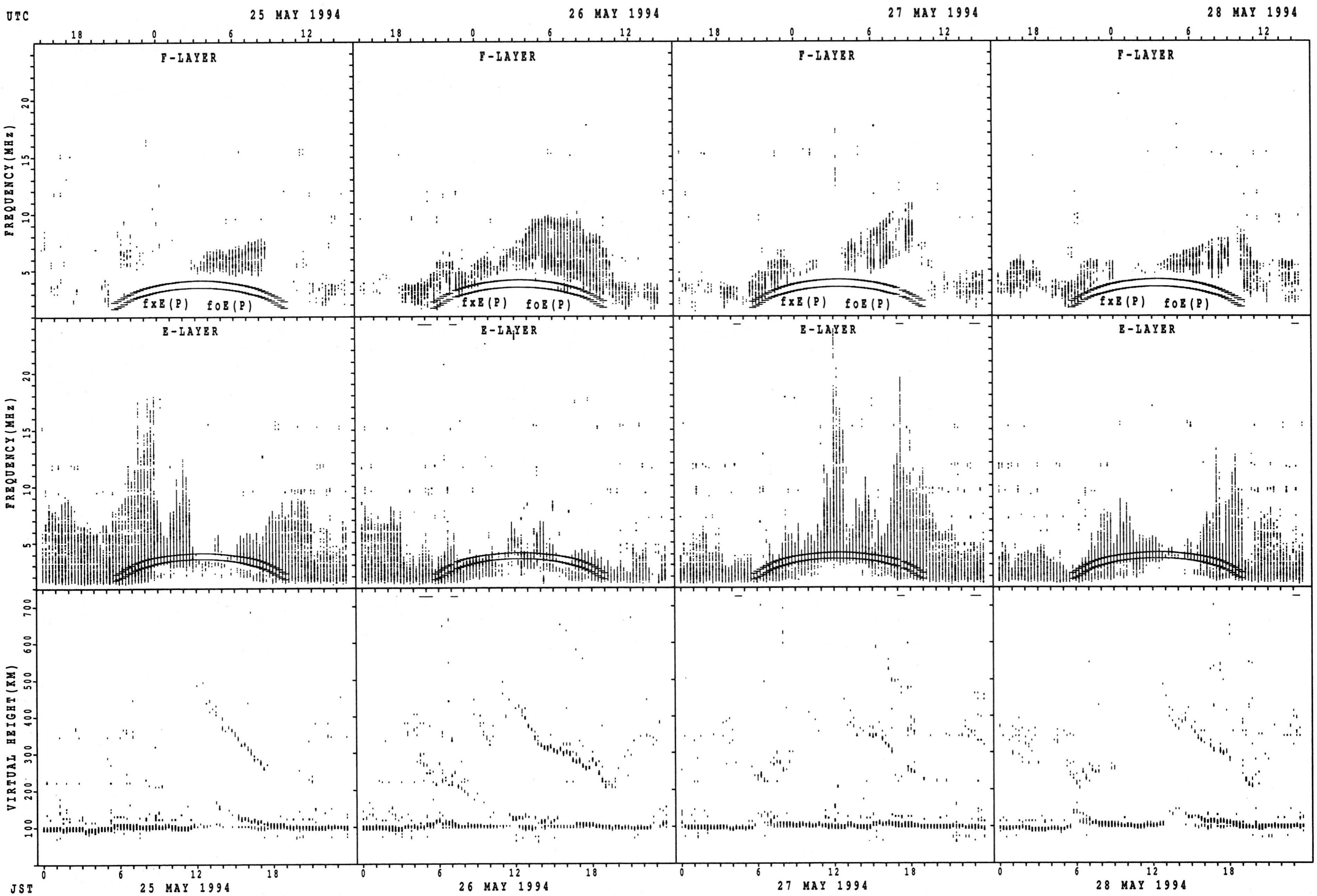
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



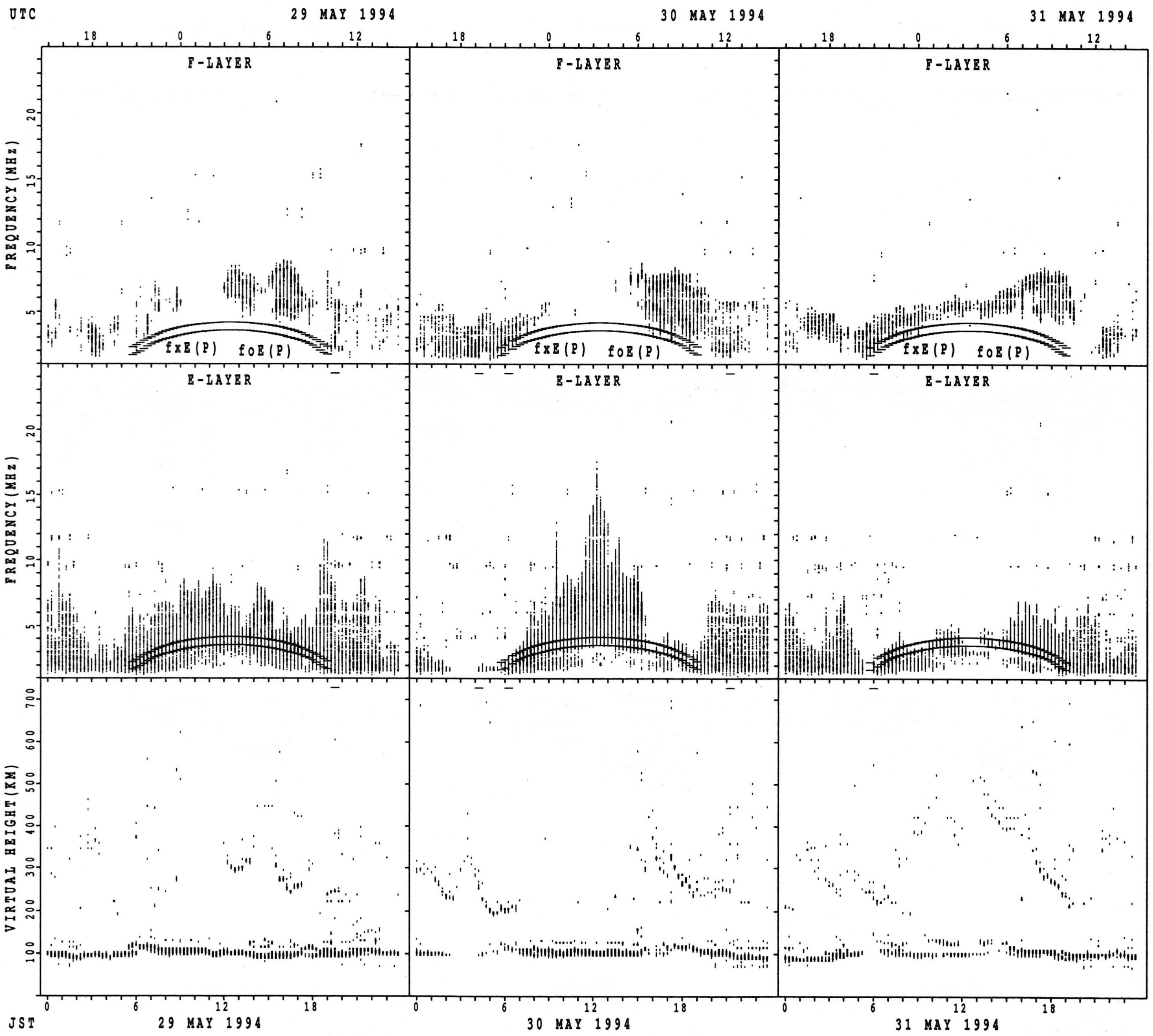
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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

SUMMARY PLOTS AT OKINAWA



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

MONTHLY MEDIANS OF h′F AND h′Es

MAY 1994   135E MEAN TIME(UTC+9H)   AUTOMATIC SCALING

STATION WAKKANAI LAT. 45.4N LON. 141.7E

h′F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

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	18	18	19	18	16	26	31	31	31	31	31	31	29	30	30	31	29	31	28	27	23	22	23	17
MED	105	103	103	103	123	123	115	111	113	109	105	105	105	107	107	111	115	115	114	113	113	113	107	105
U Q	111	105	107	111	129	127	119	117	115	113	111	107	107	107	113	117	119	119	121	121	117	115	113	107
L Q	101	101	97	101	105	119	113	109	107	107	105	103	103	103	103	105	109	109	111	111	111	107	105	101

STATION KOKUBUNJI LAT. 35.7N LON. 139.5E

h′F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																15	11	13	13	12				
MED																304	272	300	264	271				
U Q																320	280	303	305	282				
L Q																296	266	277	251	246				

h′Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	28	25	23	19	23	30	31	31	29	27	26	26	28	24	26	29	31	26	23	29	29	28	27
MED	107	105	103	105	105	121	119	115	113	109	109	111	111	111	110	116	115	117	113	113	111	111	110	107
U Q	107	109	105	105	111	127	121	119	115	113	113	113	113	116	118	119	120	119	115	121	115	113	114	111
L Q	103	103	101	101	103	115	115	113	111	107	107	107	107	106	107	105	111	113	111	111	107	107	107	105

STATION YAMAGAWA LAT. 31.2N LON. 130.6E

h′F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11		12			11	17	16	12				10	14	19	22	22	22	24	16				
MED	214		303			368	226	307	280				342	316	316	312	287	280	283	278				
U Q	306		369			418	337	340	310				350	336	340	336	314	308	298	302				
L Q	206		266			332	195	265	254				320	304	300	294	270	268	269	251				

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	22	23	23	18	16	31	31	31	31	30	21	19	18	21	25	29	31	27	25	25	30	31	31
MED	101	97	101	101	105	113	121	115	115	111	111	109	109	115	111	111	113	113	115	109	105	102	101	97
U Q	106	103	105	105	107	120	131	121	119	115	115	111	111	117	115	119	122	119	119	113	110	107	107	101
L Q	95	95	95	97	103	106	115	113	111	107	109	105	107	107	109	109	110	111	113	105	101	99	95	95

MONTHLY MEDIANS OF h'F AND h'Es

MAY 1994 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

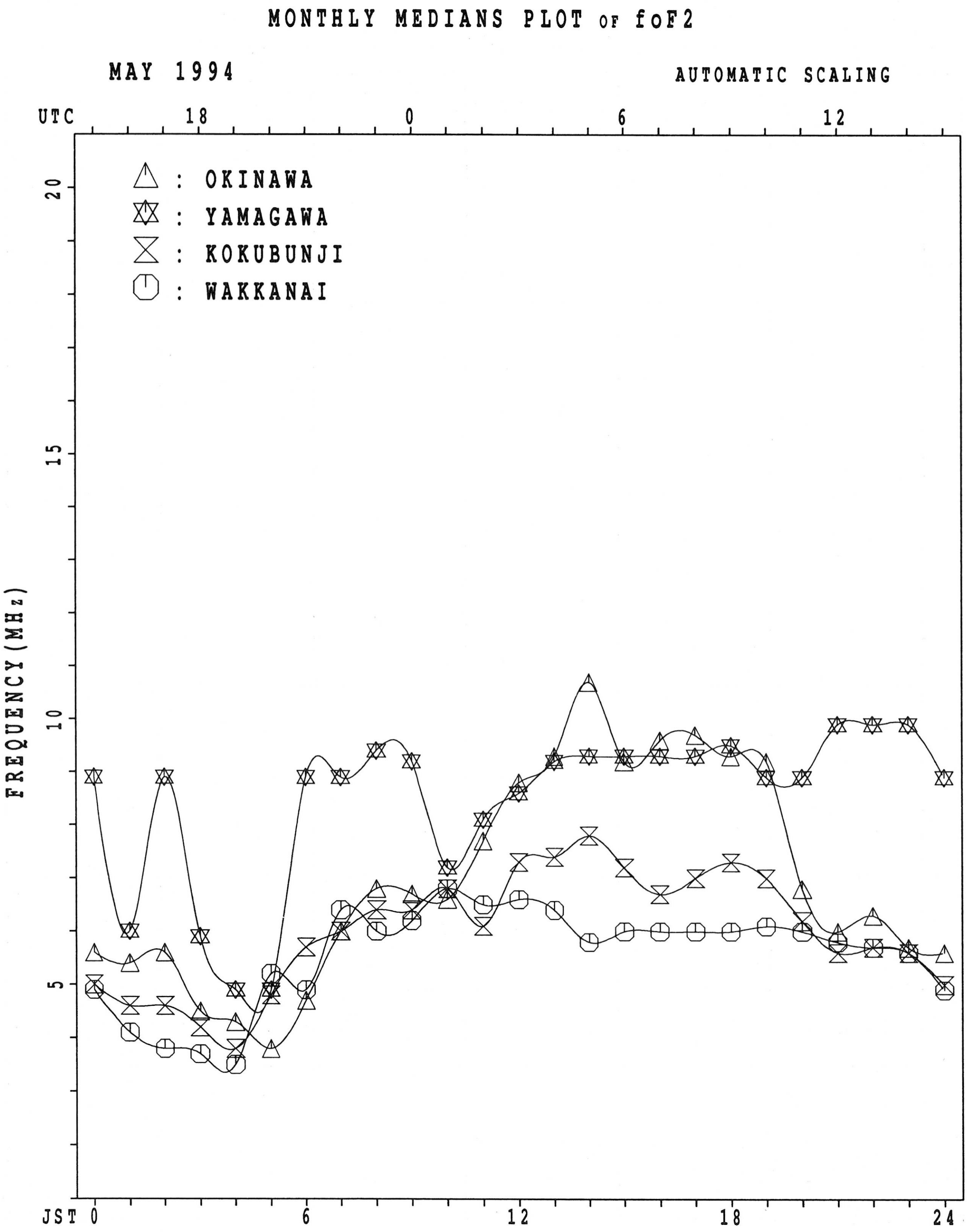
STATION OKINAWA LAT. 26.3N LON. 127.8E

h'F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									10					19	23	25	27	25	25	23				
MED									275					312	314	302	278	270	262	254				
U Q									300					350	340	319	302	280	284	276				
L Q									258					302	284	282	262	255	253	236				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	24	23	23	23	27	31	31	31	30	26	29	26	24	27	31	30	25	27	26	30	29	27
MED	103	103	100	99	101	103	119	111	107	105	106	105	113	111	107	113	109	111	109	103	99	102	103	103
U Q	106	105	102	103	105	107	135	115	113	113	113	111	121	127	127	123	115	115	111	105	105	107	108	115
L Q	98	96	94	99	97	99	111	107	103	103	103	103	104	103	101	105	103	103	105	97	95	97	99	95


MONTHLY MEDIANS PLOT OF foF2
MAY 1994
AUTOMATIC SCALING
UTC
18
0
6
12
: OKINAWA
: YAMAGAWA
: KOKUBUNJI
: WAKKANAI
20
15
10
5
FREQUENCY(MHz)
JST 0
6
12
18
24

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FXI (Ø.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

LAT.35°42.4'N LON.139°29.3'E SWEEP 1.ØMHZ TO 25.ØMHZ IN 24.ØSEC IN MANUAL SCALING

D \ H	ØØ	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	1Ø	11	12	13	14	15	16	17	18	19	2Ø	21	22	23
1	51	49	51	43	4Ø															S	X 84	X 78	X 62	X 5Ø
2	X 5Ø	X 53	X 49	X 52	X 46															X 61	X 55	X 5Ø	A	X 41
3	4Ø	A	X 43	4Ø	39															A	A	X 55	X 55	55
4	A	55	5Ø	46	X 43															X 76	X 5Ø	48	X 43	X 44
5	X 46	A	X 44	42	X 41															X 61	A	X 54	X 48	48
6	X 43	X 46	X 43	X 45	X 42															X 83	X 79	X 6Ø	X 56	X 55
7	X 61	X 56	X 56	X 46	X 46															X 74	X 71	X 6Ø	O X 57	X 54
8	X 52	A	A	X 5Ø	X 43															X 68	X 63	X 62	X 56	X 55
9	X 54	X 54	X 5Ø	X 45	46															X 79	X 56	54	53	X 54
1Ø	X 49	X 51	X 39	X 4Ø	X 41															X 94	X 72	X 44	O X 45	A
11	A	S	X 42	X 4Ø	X 37															X 74	X 66	X 6Ø	O X 63	X 62
12	X 59	X 57	X 53	X 46	43															X 72	X 7Ø	X 64	X 57	X 57
13	X 55	X 52	X 49	47	X 44	54														X 78	X 74	X 64	X 63	X 6Ø
14	61	X 59	X 54	X 52	X 5Ø															X 89	X 55	X 49	X 5Ø	49
15	47	X 49	X 52	44	X 4Ø															O X 66	X 64	A	A	X 61
16	64	66	X 67	X 44	34															X 56	X 54	X 53	X 56	X 52
17	X 49	X 51	X 57	X 38	X 35															X 74	X 76	X 67	A	A
18	65	64	67	5Ø	45															X 74	O X 69	X 6Ø	X 59	X 61
19	X 55	56	A	X 55	X 45															A	A	68	X 62	A
2Ø	56	A	X 55	55	55															A	A	58	X 56	A
21	55	55	52	52	5Ø															X 86	A	X 58	X 59	57
22	51	52	5Ø	A	X 44															X 81	X 76	X 72	X 69	63
23	X 55	X 53	X 55	X 52	48															X 71	X 8Ø	A	62	57
24	X 56	53	X 56	X 39	38															X 62	X 59	X 57	X 62	X 57
25	X 49	X 36	X 39	37	35															A	X 61	A	X 56	55
26	A	A	A	41	39																X 78	46	39	A
27	O X 39	A	42	X 4Ø	R																X 61	X 51	52	X 51
28	5Ø	48	45	X 45	X 44																X 7Ø	73	71	61
29	58	48	X 47	4Ø	38	46															X 63	X 61	X 57	X 61
3Ø	X 57	X 57	X 55	X 39	43																X 56	A	52	51
31	A	X 49	A	A	X 44																X 57	54	X 54	A
	ØØ	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	1Ø	11	12	13	14	15	16	17	18	19	2Ø	21	22	23
CNT	27	24	27	29	3Ø	2														2Ø	26	27	28	25
MED	X 54	X 53	X 5Ø	X 45	X 43	5Ø														X 74	X 65	X 58	X 56	X 55
U Q	57	X 56	X 55	X 5Ø	45															X 8Ø	X 74	X 64	X 62	X 6Ø
L Q	X 49	X 49	44	X 4Ø	39															X 67	X 57	X 53	52	X 51

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FOF2 (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 41	F 40	J F 43	F 36	F 32	U S 37	J R 54	56	62	69	70	73	75	82	70	S 71	75	S 73	J S 67	I S 72	78	J S 72	56	J S 44
2	J S 44	47	J S 43	46	J S 40	U S 41	43	I A 48	A	A	A	A	54	53	55	53	54	56	51	55	50	S 44	I A 33	35
3	F 32	I A 36	S 37	F 29	F 30	42	J S 55	49	57	U R 52	73	66	73	72	92	90	79	68	A	A	A	49	49	F 48
4	A	F 41	F 41	F 40	37	35	47	44	A	A	A	A	A	56	56	50	52	57	62	J S 70	44	F 40	37	38
5	S 40	I A 38	S 38	F 36	S 35	46	47	J R 51	U R 46	I A 48	I A 50	55	R 62	I A 64	64	68	61	66	55	55	I A 54	48	42	S 40
6	S 37	40	37	39	36	J S 40	53	49	55	60	67	57	J R 63	72	83	85	84	76	69	U S 77	J S 73	J R 54	J R 50	J S 49
7	55	50	50	40	41	44	48	51	A	A	46	A	A	A	A	A	58	65	S 72	J S 68	65	54	51	J R 48
8	46	I A 47	I A 46	44	38	A	A	A	A	A	51	56	R 59	I A 78	81	84	79	60	57	62	57	56	J R 50	49
9	S 48	48	44	39	F 38	F 31	54	I A 52	52	I A 60	I A 66	I C 60	59	78	73	81	80	79	S 77	72	50	48	F 44	48
10	43	45	33	34	35	J S 37	49	56	53	58	I A 60	I A 62	67	84	92	91	87	81	80	U S 89	66	S 38	S 39	A
11	A	S	36	34	31	46	45	A	A	I A 60	56	55	54	69	83	73	66	74	69	68	60	54	U S 57	56
12	53	51	47	40	F 36	S 36	50	56	I A 59	A	R 47	A	62	66	63	63	61	60	61	66	64	S 59	51	51
13	49	46	43	F 39	38	F 44	51	I A 61	68	67	69	R 64	57	I A 63	69	64	63	67	J S 69	71	68	58	57	54
14	F 53	R 53	48	46	43	54	60	66	68	63	C	C	C	C	C	C	C	94	I S 98	83	50	43	44	F 42
15	F 40	43	R 46	F 38	34	33	36	46	A	A	A	I A 63	I A 67	61	63	68	64	I A 62	65	U A 60	58	I A 56	I A 57	F 55
16	F 55	F 57	F 62	38	F 27	29	I A 40	I A 54	R 48	E G 42	Y	I A 54	I A 55	67	A	S 62	60	55	55	50	48	47	50	46
17	43	45	51	32	29	40	55	59	I A 59	J R 64	U R 68	68	72	81	78	77	S 73	58	57	68	J S 70	S 61	I A 60	A
18	F 45	F 55	F 59	F 41	F 36	45	59	65	59	56	I A 57	J R 65	76	75	81	U S 85	73	I A 67	U S 73	U S 68	63	54	53	55
19	49	F 47	I A 48	49	39	44	54	65	A	A	A	A	68	66	56	61	69	I A 70	A	A	I A 61	F 57	56	I A 53
20	F 49	I A 47	49	F 46	F 48	J S 54	J R 53	54	53	A	64	A	A	A	A	A	A	A	A	A	A	F 50	50	I A 49
21	F 48	F 47	F 44	F 40	F 40	S 49	J S 63	67	64	59	57	I A 55	63	65	66	71	79	88	S 90	J S 80	I A 58	52	53	F 47
22	F 42	F 42	F 42	A	38	48	52	58	66	62	66	67	60	62	68	77	76	75	S 76	75	J S 70	66	63	F 52
23	49	47	49	46	F 42	46	46	53	56	J R 64	57	49	R 55	R 53	A	67	A	51	51	65	U S 74	A	F 51	F 48
24	50	F 48	50	33	F 29	38	56	J S 74	74	66	A	A	54	61	62	61	58	I A 60	58	56	53	J S 51	F 54	51
25	43	30	33	F 28	F 27	A	A	46	60	50	A	A	A	A	R 47	A	A	I A 52	51	A	Z 55	I A 50	50	F 47
26	I A 43	A	A	F 32	F 32	41	52	55	49	A	A	47	I A 49	I A 53	A	67	63	51	56	64	72	F 35	F 32	I A 32
27	33	I A 33	F 34	34	I R 33	34	E G 36	50	A	E G 44	A	A	A	A	63	68	I A 64	I A 61	60	63	55	J R 45	F 44	45
28	F 42	F 40	F 36	F 37	38	U S 36	A	A	A	A	60	R 52	I Y 49	Y	54	A	56	A	I A 56	U S 65	64	F 65	F 60	F 53
29	F 48	F 42	41	F 29	F 28	F 38	45	A	66	E G 44	A	51	I A 52	57	57	76	76	63	I A 54	60	56	55	51	55
30	51	51	49	33	F 34	47	J R 45	A	A	A	A	A	A	A	56	63	66	70	U S 73	59	50	I A 47	F 46	F 42
31	I A 41	43	A	A	38	43	A	56	A	A	A	63	56	57	55	57	60	63	70	74	51	F 46	J R 48	I A 45
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	31	29	27	26	20	19	18	20	24	24	25	26	27	29	28	27	29	30	31	29
MED	45	46	44	38	36	41	51	54	59	60	60	58	60	66	64	68	66	65	64	68	58	52	50	48
U Q	49	48	49	40	38	46	54	59	65	64	67	64	67	74	80	77	76	74	S 72	S 72	67	56	56	52
L Q	42	40	38	34	F 32	36	45	50	53	E G 50	56	54	54	59	56	63	60	59	56	60	52	47	44	44

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FOF1 (0.01MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	A 420	445		U A 455	430	L 445	445	L	L						
2																		360	L 230					
3							L		U A 405	420	455	445	445	U A 470	445	U A 420	U A 410	L						
4						L		U A 370						430	430	410	385	355	U L 280					
5															445	420	395	355	L					
6							L	L	U A 410		U A 445	445		U A 455	435	U R 445	410	L 380						
7																	L 420	U L 345	L					
8											U A 415		U A 440		440	430	405	L	L					
9							U L 335						U A 470	U Y 460	435	410	U A 390							
10							L	U L 415	L 420	L 455			U A 455	445	430	430	405	U L 380						
11						L							R 470	445	455		430	U A 330	L					
12														E B 480	445	435	420	L 380	L					
13											U A 445	L 480					405	U A 365						
14							L	L 420	430	L 445	C	C	C	C	C	C	C	C						
15								395																
16									415	U R 420								370						
17							L			445	U R 470	480	U Y 460	U R 460	470	430	430	U L 395						
18							L	U L 410		U L 430			445	U R 480										
19							415								455		L							
20							L		U A 430		U A 445													
21							L 375	405	430				E B 455	445		U A 440								
22							L	365	440	L 470	U A 455	U Y 480		U Y 465	445	430	U A 430							
23						L	345				U A 445		U A 430			420		U L 385						
24							L	U A 415					440			U A 415	415							
25									U A 430	U A 420														
26							365	U A 355								395	385	365	L 320					
27							355	U A 370		435					430				L					
28												U R 440			430		U A 395							
29										440				430	420	U A 395	395							
30																430		330						
31								U A 355						U R 420	U A 395	415	U A 370		L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	11	9	11	9	6	11	14	17	18	18	14	3					
MED							360	U 395	430	435	U A 445	462	U 455	448	440	425	405	365	L 280					
U Q							375	U L 415	U A 430	L 445	U 455	480	U 460	U 465	445	430	420	U L 380	L 320					
L Q							345	U A 365	U A 412	A 420	U A 445	445	U A 440	430	430	415	395	355	L 230					

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FOE (0.01MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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						S	A	A	290	A 330	A 340	A	A	A	A	A	A	U A 230	A					
2						S	A	A	U A 305	U A 330	A	A 335	A	A	A	305	265	230	B					
3						A	205	255	290	R 320	A	A	A	A	A	A 305	270	230	B					
4						A	A 205	U A 270	A	U A 330	A	A	A	A	U R 330	315	280	A	A					
5						A	U A 215	A 255	295	A 320	A	A	A	A	A	A	A	A	A					
6						A	A	A	A	A	A	A	A	A	R 340	A	280	230	A					
7						A	205	265	295	A	A	A	A	A	A	A	275	A	B					
8						A	A 215	240	A 275	A	A	B	A	A	B	A	280	225	A					
9						A	220	A	A 305	A	A	C	A	R	345	305	295	245	A					
10						B	225	275	A	A	A	A	A	A	A	330	280	A	A					
11						A	215	265	A 315	A	A	A	A	A	A	A	A	A	A					
12						A	230	A 285	A	A	A	A	A	B	B	315	290	245	A					
13						U A 150	215	A 280	315	A	A	A	A	A	A	A	275	U A 215	U A 140					
14						A	215	280	A 305	A 340	C	C	C	C	C	C	C	250	S					
15						150	S 225	275	315	A	A	A	A	A	A	A	A	A	A					
16						A	215	265	300	330	355	A	A	A 355	A	315	280	A	A					
17						S	230	270	315	A	R	R	A	A	A	A	A	240	A					
18						B	240	280	315	U A 340	A	B	S 345	A	A	A	290	240	S					
19						S	A	A	U A 330	A	A	A	A	A	A	320	280	230	A					
20						A	A 225	270	A 305	U A 340	A	A	A	A	330	315	300	U A 250	A					
21						A	A	275	A	A	A	A	B	B	R 330	330	280	A	A					
22						A	A	A	A	A	A	A	A	A	330	325	290	A 250	A					
23						A	A	U A 275	A	A	A	R 345	A	A	A	340	295	230	A					
24						B	225	265	305	A 325	A	A	A	A	A 340	A	290	A	A					
25						A	A 230	265	A	U A 330	A	A	A	A	A	305	275	A 225	A					
26						A	A	A	A	A	A	A	A	A	A	305	270	245	A	B				
27						A	225	A	U A 295	A	A	A	A	A	A	300	A	A	A	B				
28						A 190	A	265	295	A	A	A	A	A	A	A	A	A	A	B				
29						A	A	A	A	320	A	A	A	A	330	305	280	U A 250	A	B				
30						S 155	205	250	U A 275	A	A	A	A	A	A	A	A	A	A	B				
31						A	A 225	A	A	A	A	355	345	340	315	305	265	A 230	U A 150	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	21	21	20	12	2	3	2	2	9	17	22	19	2					
MED						152	220	270	305	A 330	348	345	345	348	330	315	280	230	U A 145					
U Q						172	225	275	315	U A 335		355			340	322	290	A 245						
L Q						150	215	265	295	322		A 335			330	305	275	230						

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FOES (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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 49	J A 37	J A 36	J A 32	J A 30	E S 13	28	25	J A 54	43	46	50	50	41	38	34	41	J A 41	J A 58	52	27	J A 53	J A 46	22
2	20	22	18	J A 17	19	29	37	75	76	85	85	58	58	53	J A 46	J A 45	J A 41	28	E B 15	J A 21	J A 20	J A 21	46	J A 47
3	35	46	J A 39	29	37	J A 28	27	J A 46	43	G	38	J A 45	J A 44	48	41	J A 44	46	J A 40	98	J A 154	100	J A 47	J A 81	J A 67
4	J A 97	J A 34	33	J A 41	28	J A 31	44	37	44	53	64	J A 60	57	55	G	G	31	J A 31	20	E B 12	32	J A 41	J A 45	36
5	J A 36	J A 49	27	26	20	J A 18	J A 39	J A 39	41	59	53	41	57	69	J A 59	41	31	J A 29	J A 22	24	J A 75	J A 44	25	25
6	23	J A 33	25	18	E B 12	23	J A 23	33	46	63	J A 55	J A 45	J A 53	54	G	37	G	J A 28	J A 25	J A 22	E B 12	J A 30	J A 35	J A 31
7	J A 44	J A 26	J A 27	J A 32	J A 27	J A 24	46	60	J A 67	77	50	J A 69	123	J A 183	163	130	33	J A 25	E B 15	75	J A 54	51	71	J A 70
8	J A 45	J A 63	J A 58	J A 48	J A 69	66	J A 57	68	64	63	J A 45	E B 46	46	112	E B 42	37	32	G	23	23	J A 48	54	J A 31	J A 39
9	55	J A 38	32	J A 33	J A 26	J A 30	33	68	J A 44	72	J A 67	C	50	37	41	G	43	J A 42	J A 47	J A 81	J A 43	53	J A 47	31
10	31	29	24	28	18	27	28	33	47	38	66	91	49	42	40	G	J A 40	J A 44	J A 81	J A 81	31	37	38	J A 76
11	J A 74	J A 57	J A 57	36	J A 31	J A 27	28	J A 59	J A 62	J A 92	52	J A 55	J A 52	38	40	J A 61	J A 37	J A 37	J A 38	J A 31	J A 28	28	33	J A 49
12	J A 22	22	J A 25	22	J A 33	J A 34	46	J A 49	67	60	44	58	J A 56	E B 48	E B 40	G	33	32	J A 45	J A 27	28	S 37	J A 50	J A 49
13	J A 36	J A 40	J A 34	J A 28	J A 32	J A 31	33	75	J A 68	J A 56	J A 49	47	62	74	J A 68	60	37	J A 40	44	J A 29	29	26	25	J A 27
14	18	E B 12	19	18	J A 15	J A 19	28	G	38	44	C	C	C	C	C	C	C	53	S	67	J A 54	J A 31	21	J A 22
15	26	E B 13	20	20	J A 18	23	31	37	J A 49	47	J A 54	74	70	50	47	J A 57	J A 52	76	J A 66	J A 117	J A 30	74	J A 75	J A 73
16	J A 32	J A 43	J A 50	J A 33	J A 17	J A 27	90	60	35	G	44	J A 103	54	54	J A 68	64	59	J A 35	J A 25	37	32	J A 40	24	26
17	25	41	J A 22	23	23	J A 28	29	J A 42	69	42	G 25	G	45	46	45	37	37	28	37	J A 33	40	J A 36	84	91
18	J A 80	30	28	J A 26	23	E B 15	G	35	53	45	J A 66	65	40	47	80	J A 97	J A 80	80	J A 90	J A 100	J A 71	33	E B 13	E B 11
19	J A 48	J A 102	99	J A 47	34	J A 26	33	J A 44	S 117	J A 103	J A 99	119	J A 67	J A 56	44	42	J A 51	80	98	J A 132	J A 114	J A 69	J A 48	J A 87
20	J A 46	60	J A 53	J A 49	J A 51	J A 38	J A 40	J A 55	J A 62	76	J A 49	J A 98	J A 155	61	76	91	89	78	J A 124	J A 128	J A 146	56	J A 79	99
21	J A 84	J A 48	38	28	31	25	40	34	37	58	J A 91	J A 98	E B 46	E B 38	46	J A 53	J A 88	J A 99	J A 99	J A 94	81	51	J A 52	J A 33
22	27	J A 50	J A 61	J A 68	38	55	62	38	45	53	55	40	38	37	G	38	J A 46	65	J A 91	J A 100	J A 54	36	J A 42	37
23	32	36	J A 30	28	32	27	32	J A 54	61	J A 59	J A 48	G 35	43	50	104	40	J A 110	J A 55	J A 92	60	J A 82	73	J A 49	J A 47
24	21	J A 26	37	26	J A 29	18	29	J A 46	J A 64	59	58	89	45	J A 67	56	J A 45	39	150	59	32	44	J A 63	55	J A 49
25	35	31	27	32	18	39	J A 56	46	J A 48	J A 50	J A 63	54	105	J A 89	J A 46	J A 70	62	69	J A 231	80	J A 50	J A 64	J A 89	47
26	J A 60	50	49	J A 31	25	J A 34	32	J A 44	J A 56	72	46	J A 48	55	J A 68	86	37	32	29	J A 30	28	J A 79	J A 50	J A 70	J A 51
27	J A 44	J A 45	J A 26	J A 26	32	20	31	J A 41	100	J A 159	J A 161	135	95	J A 64	40	J A 54	J A 69	71	36	23	20	49	37	29
28	J A 24	33	J A 31	29	E B 14	J A 27	J A 63	71	J A 75	70	56	37	40	39	J A 79	J A 88	J A 49	J A 96	J A 116	J A 99	J A 105	J A 58	38	36
29	J A 25	J A 52	J A 44	J A 17	E B 10	J A 22	J A 42	J A 50	59	41	50	53	J A 68	41	38	41	40	J A 55	56	33	23	18	19	J A 26
30	27	21	18	E B 10	E B 11	23	29	67	85	70	J A 87	89	85	J A 153	70	J A 46	41	J A 40	J A 68	53	30	55	28	J A 49
31	J A 60	J A 49	61	J A 69	J A 64	J A 34	65	J A 54	74	133	112	56	40	42	40	G	J A 42	J A 45	J A 38	J A 46	33	32	J A 59	74
	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	31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	31	30	31	31	31	31	31
MED	J A 35	J A 38	32	J A 28	27	J A 27	33	46	59	59	54	56	54	52	46	43	41	J A 42	J A 52	J A 52	J A 43	47	J A 46	J A 47
U Q	J A 49	J A 49	J A 49	J A 33	J A 32	J A 31	46	60	68	72	J A 66	89	67	J A 67	68	60	J A 52	71	J A 91	J A 94	J A 75	55	J A 59	J A 67
L Q	25	29	25	23	18	23	29	37	45	45	48	46	45	42	40	G 37	37	31	30	28	29	33	31	29

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FBES (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	18	E B 13	13	14	14	E S 13	24	22	37	38	39	45	46	37	34	33	37	32	27	17	18	21	21	E S 13
2	16	14	14	E B 11	E B 13	15	19	A A 75	A A 76	A A 85	A A 85	A A 58	48	45	39	40	37	G	E B 15	E B 13	17	15	A A 46	18
3	18	A A 46	23	18	13	18	26	43	41	G	37	40	41	47	41	42	41	35	A A 98	A A 154	A A 100	26	22	14
4	A A 97	18	14	27	18	15	34	37	A A 44	A A 53	A A 64	A A 60	A A 57	41	G	G	31	23	18	E B 12	22	23	26	20
5	23	A A 49	18	16	13	18	32	37	U Y 41	A A 59	A A 53	U Y 41	56	A A 69	40	36	30	23	16	14	A A 75	18	16	E B 13
6	14	14	E B 10	E B 11	E B 12	19	22	27	41	51	45	41	48	46	G	U Y 37	G	26	18	E B 13	E B 12	19	25	25
7	22	17	18	14	18	16	41	42	A A 67	A A 77	42	A A 69	A A 123	A A 183	A A 163	A A 130	G	23	E B 15	35	37	23	49	26
8	21	A A 63	A A 58	20	22	A A 66	A A 57	A A 68	A A 64	A A 63	42	E B 46	44	A A 112	E B 42	33	31	G	18	E S 14	17	43	29	15
9	31	27	21	17	13	23	29	A A 68	42	A A 72	A A 67	C	47	U Y 37	39	G	39	39	40	24	16	41	E B 13	16
10	15	14	E S 14	E B 11	13	E B 14	25	33	38	38	A A 66	A A 91	46	40	34	G	34	33	15	37	21	18	18	A A 76
11	A A 74	19	22	18	21	14	25	A A 59	A A 62	A A 92	48	51	40	U Y 37	35	51	34	33	17	16	20	19	24	41
12	14	E B 12	15	14	26	27	42	43	A A 67	A A 60	41	A A 58	52	E B 48	E B 40	G	33	28	20	14	19	21	18	28
13	20	23	28	21	21	26	31	A A 75	60	50	45	46	52	A A 74	63	52	33	37	38	25	E B 12	13	E B 11	13
14	E B 12	E B 12	E B 12	E B 12	E B 12	E B 13	26	G	33	39	C	C	C	C	C	C	C	45	S	51	23	27	E B 13	E B 12
15	E B 13	E B 13	E B 11	E B 14	E B 12	18	24	35	A A 49	A A 47	A A 54	A A 74	A A 70	49	U Y 47	50	45	A A 76	55	U A 44	E B 12	A A 74	A A 75	18
16	14	19	21	15	E B 13	23	A A 90	A A 60	34	G	U Y 43	A A 103	A A 54	47	A A 68	57	49	31	18	18	23	24	E B 12	E B 13
17	13	21	E B 12	13	16	E S 18	26	40	A A 69	41	G 25	G	U Y 44	45	35	34	30	27	24	18	23	13	A A 84	A A 91
18	14	15	14	13	E B 12	E B 15	G	32	48	37	A A 66	56	39	39	64	61	67	A A 80	59	44	50	18	E B 13	E B 11
19	E B 11	30	A A 99	38	22	18	26	42	A A 117	A A 103	A A 99	A A 119	51	50	44	40	45	A A 80	A A 98	A A 132	A A 114	16	14	A A 87
20	21	A A 60	25	21	18	21	26	40	43	A A 76	45	A A 98	A A 155	A A 61	A A 76	A A 91	A A 89	A A 78	A A 124	A A 128	A A 146	30	38	A A 99
21	17	14	19	16	E B 13	18	32	34	36	48	53	A A 98	E B 46	E B 38	U Y 45	44	73	49	42	23	A A 81	27	29	17
22	18	20	13	A A 68	17	21	33	27	41	42	46	U Y 40	U Y 38	U Y 36	G	38	43	55	49	14	28	16	14	20
23	14	18	19	16	16	16	23	50	45	48	45	G 32	43	46	A A 104	38	A A 110	27	45	18	15	A A 73	E B 13	23
24	E B 12	13	24	14	14	14	26	42	55	50	A A 58	A A 89	37	55	46	42	37	A A 150	51	24	27	15	42	E B 13
25	17	20	13	13	E B 11	A A 39	A A 56	40	43	42	A A 63	A A 54	A A 105	A A 89	41	A A 70	A A 62	A A 69	42	A A 80	23	A A 64	E B 12	23
26	A A 60	A A 50	A A 49	13	E B 12	18	25	36	45	A A 72	A A 46	41	A A 55	A A 68	A A 86	33	31	G 19	24	16	24	19	19	A A 51
27	22	A A 45	E B 10	13	18	17	26	37	A A 100	38	A A 161	A A 135	A A 95	A A 64	38	49	A A 69	A A 71	18	E B 13	E B 12	33	17	17
28	13	19	13	18	E B 14	25	A A 63	A A 71	A A 75	A A 70	51	U Y 36	U Y 40	U Y 39	41	A A 88	40	A A 96	A A 116	20	14	15	16	18
29	13	19	21	E B 11	E B 10	17	23	A A 50	57	36	A A 50	42	A A 68	37	37	40	37	49	A A 56	14	13	E B 12	E B 12	E B 13
30	E B 11	13	13	E B 10	E B 11	18	25	A A 67	A A 85	A A 70	A A 87	A A 89	A A 85	A A 153	51	36	39	29	28	19	16	A A 55	16	20
31	A A 60	19	A A 61	A A 69	23	22	A A 65	36	A A 74	A A 133	A A 112	51	U Y 39	38	40	G	37	41	22	36	18	20	17	A A 74
	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	31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	31	30	31	31	31	31	31
MED	17	19	18	14	14	18	26	40	48	50	50	54	48	46	40	40	37	35	28	19	21	21	18	18
U Q	22	A A 27	23	18	18	22	A A 34	A A 59	A A 67	A A 72	A A 66	A A 89	A A 57	A A 64	A A 51	51	45	A A 69	A A 51	A 37	A A 28	30	29	A A 28
L Q	E B 13	14	E B 13	E B 13	E B 12	15	25	35	41	39	45	41	43	39	37	G 33	33	27	18	E 14	16	16	E B 13	E B 13

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 FMIN (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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	13	13	12	11	11	ES 13	12	13	13	ES 18	16	18	17	18	14	14	12	13	11	12	14	13	13	ES 13
2	ES 13	11	13	11	13	ES 13	13	13	15	13	ES 18	18	16	14	13	13	14	13	15	13	ES 14	13	ES 14	12
3	12	14	13	12	12	12	12	13	13	13	18	19	22	18	13	21	14	13	13	ES 14	13	12	12	11
4	12	12	12	11	13	12	13	13	15	13	17	22	18	18	18	17	13	13	11	12	13	12	12	13
5	12	12	12	12	11	13	13	15	14	19	18	18	23	23	18	21	15	13	11	12	10	11	11	13
6	12	12	10	11	12	13	12	12	13	16	16	18	20	21	19	16	14	13	13	13	12	12	11	ES 14
7	12	13	11	11	ES 14	10	13	13	13	16	13	13	18	15	17	15	15	12	15	12	ES 13	ES 15	13	ES 15
8	ES 13	ES 14	12	12	12	11	13	16	13	15	20	46	31	20	42	23	18	11	12	ES 14	13	12	11	11
9	13	11	13	12	10	11	14	13	18	19	22	C	18	18	18	17	18	14	11	12	13	13	13	13
10	13	12	ES 14	11	13	14	14	14	15	23	22	28	18	18	17	16	13	12	11	12	10	11	13	13
11	13	12	ES 14	12	12	12	13	13	12	17	18	20	21	18	18	20	13	13	11	11	13	13	14	13
12	13	12	13	13	13	13	13	13	13	18	21	18	18	48	40	17	16	13	12	11	12	12	13	14
13	13	14	12	ES 14	11	11	13	13	14	14	13	18	18	17	16	13	12	14	11	13	12	11	11	11
14	12	12	12	12	12	13	14	14	17	14	C	C	C	C	C	C	C	15	S	12	13	14	13	12
15	13	13	11	14	12	11	13	17	15	21	23	33	20	18	17	16	14	13	13	12	12	13	12	12
16	12	12	12	12	13	13	13	13	15	22	18	18	17	16	33	14	15	13	ES 13	12	ES 14	13	12	13
17	12	12	12	12	11	ES 18	13	12	13	17	18	23	20	19	15	18	14	12	12	12	13	11	12	11
18	12	12	12	10	12	15	14	13	14	17	18	41	18	18	17	15	13	13	ES 16	ES 14	12	13	13	11
19	11	12	12	11	12	ES 13	12	13	17	13	13	18	18	15	ES 19	18	13	12	13	12	12	12	11	10
20	ES 14	12	13	13	12	ES 15	13	13	17	19	15	22	21	22	18	19	14	14	13	ES 15	13	13	12	12
21	12	11	12	11	13	13	13	15	14	17	17	19	46	38	18	18	14	11	12	ES 13	11	11	12	11
22	12	10	10	13	13	13	14	13	14	18	19	16	18	22	15	16	14	12	13	10	11	11	12	11
23	12	11	12	13	13	13	13	12	15	13	18	23	16	17	14	20	ES 18	14	13	13	11	12	13	13
24	12	11	12	11	13	13	12	12	12	14	28	23	22	18	ES 17	15	14	13	13	13	11	12	14	13
25	13	12	10	10	11	12	ES 18	11	13	15	20	20	25	18	15	14	14	12	12	13	13	12	12	11
26	12	12	11	12	12	12	12	13	13	18	19	22	20	17	15	18	13	12	13	12	11	10	11	12
27	11	11	10	11	12	12	13	13	13	18	14	21	21	18	17	16	14	13	12	13	12	12	ES 13	12
28	12	13	12	12	14	12	ES 15	12	13	13	15	20	17	14	ES 16	17	15	13	12	13	11	11	11	11
29	12	10	12	11	10	11	ES 18	13	16	13	19	20	18	19	16	14	13	13	13	12	12	12	12	13
30	11	12	10	10	11	13	13	13	13	13	14	18	18	19	19	13	14	11	12	11	13	12	11	10
31	12	11	12	12	11	13	13	13	14	13	16	21	17	18	19	18	13	11	12	10	13	13	ES 15	12
	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	31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	31	30	31	31	31	31	31
MED	12	12	12	12	12	13	13	13	14	16	18	20	18	18	17	16	14	13	12	12	12	12	12	12
U Q	13	12	12	12	13	13	14	13	15	18	19	22	21	19	18	18	15	13	13	13	13	13	13	13
L Q	12	11	11	11	11	12	13	13	13	13	16	18	18	17	15	15	13	12	12	12	11	11	11	11

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 240	F 285	J F 300	F 325	F 315	U S 315	J R 360	345	330	340	315	300	305	320	305	S 315	325	S 320	J S 320	S	310	J S 335	325	J S 305
2	J S 295	295	J S 290	325	J S 315	U S 305	295	A	A	A	A	A	280	290	295	280	280	295	310	330	315	S 330	A	270
3	F 270	A	S 330	F 305	F 280	340	J S 350	335	330	U R 275	300	270	270	245	290	290	320	320	A	A	A	295	285	F 295
4	A	F 285	F 285	F 295	305	290	345	340	A	A	A	A	A	305	325	300	305	320	320	J S 330	340	F 285	275	300
5	S 300	A	S 295	F 280	S 320	350	345	J R 335	U R 300	A	A	285	R 285	A	310	325	315	330	330	310	A	295	310	S 275
6	S 285	285	300	330	300	J S 340	345	340	315	315	340	305	J R 290	280	295	310	325	325	310	U S 330	J S 330	J R 275	J R 290	J S 270
7	300	305	315	315	300	355	365	320	A	A	295	A	A	A	A	A	325	305	S 310	J S 300	315	310	A 320	J R 290
8	275	A	A	320	295	A	A	A	A	A	300	330	R 285	A	300	315	345	315	305	310	305	295	J R 295	285
9	S 285	275	280	290	F 265	F 300	350	A	330	A	A	C	290	310	305	315	325	330	S 340	345	305	280	F 275	300
10	295	345	330	320	320	J S 340	310	315	350	320	A	A	285	305	315	320	325	310	310	U S 340	355	S 335	S 315	A
11	A	S	290	290	315	340	360	A	A	A	325	275	295	300	315	320	305	315	315	325	310	290	U S 305	290
12	300	295	300	325	F 275	S 295	275	320	A	A	R 295	A	275	300	320	320	315	320	315	320	320	S 310	295	285
13	305	300	310	F 310	335	F 350	340	A	315	330	330	R 315	A 300	A	A 315	310	315	325	J S 325	335	325	310	295	300
14	F 295	R 310	305	310	310	350	335	340	330	330	C	C	C	C	C	C	C	315	S	340	350	285	295	F 270
15	F 275	295	R 330	F 290	335	350	345	285	A	A	A	A	A	295	295	310	325	A	315	A	280	A	A	F 275
16	F 275	F 300	F 330	335	F 315	295	A	A	R 295	G	Y	A	A	305	A	S 285	315	325	345	310	275	270	275	275
17	275	300	355	325	275	300	315	320	A	J R 310	U R 295	300	300	285	305	320	S 330	320	315	315	J S 300	S 290	A	A
18	F 290	F 295	F 320	F 335	F 310	330	330	350	330	330	A	J R 290	300	290	305	U S 330	A	A	U S 335	U S 305	325	290	290	305
19	280	F 310	A	325	320	315	290	325	A	A	A	A	310	310	310	295	315	A	A	A	A	F 290	300	A
20	F 275	A	305	F 315	F 330	J S 340	J R 315	290	305	A	325	A	A	A	A	A	A	A	A	A	A	F 290	300	A
21	F 295	F 285	F 305	F 300	F 305	S 325	J S 345	330	320	305	335	A	305	305	290	295	A	320	S 330	J S 365	A	280	275	F 295
22	F 285	F 320	F 300	A	325	330	325	345	320	300	325	320	330	305	295	310	315	325	S 320	315	J S 300	300	295	F 295
23	290	280	320	325	F 295	345	315	A 300	295	J R 300	335	290	R 320	R 315	A	325	A	320	310	315	U S 305	A	F 290	F 295
24	305	F 295	335	295	F 315	325	290	J S 295	315	345	A	A	285	305	305	305	310	A	315	310	285	J S 320	F 305	330
25	345	330	300	F 295	F 275	A	A	285	320	330	A	A	A	A	R 280	A	A	A	A	A	Z 310	A	310	F 320
26	A	A	A	F 285	F 270	315	310	345	A	A	A	270	A	A	A	320	330	295	290	315	360	F 335	F 270	A
27	320	A	F 315	335	R	325	G	330	A	G	A	A	A	A	315	310	A	A	320	340	310	J R 320	F 280	300
28	F 300	F 290	F 310	F 325	355	U S 345	A	A	A	A	345	R 320	Y	Y	315	A	310	A	A	U S 310	295	F 290	F 315	F 305
29	F 325	F 290	310	F 290	F 300	F 335	355	A	305	G	A	305	A	300	270	280	330	330	A	300	300	305	285	295
30	305	325	350	290	F 310	370	J R 360	A	A	A	A	A	A	A	A 285	285	280	300	U S 330	320	310	A	F 275	F 290
31	A	310	A	A	295	290	A	320	A	A	A	A 265	285	280	290	285	280	295	315	370	295	F 280	J R 290	A
	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	24	27	29	30	29	26	22	17	16	14	15	19	20	25	26	24	23	24	25	26	27	28	25
MED	295	295	310	315	310	330	338	328	320	312	325	300	290	302	305	310	315	320	315	320	310	295	295	295
U Q	300	310	330	325	320	345	350	340	330	330	335	315	305	305	315	320	325	325	S 328	338	325	S 310	305	300
L Q	F 275	F 288	300	292	F 295	310	310	315	305	G 288	300	275	285	290	292	295	310	310	310	310	300	285	282	280

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								L	L	A 395	375	A	A	410	L 390	375	L	L						
2								A	A	A	A	A	A	A	A	A	A	340	L 390					
3							L	A	A	410	395	A 340	A 310	A	A 325	A	A	L	A					
4						L	A	A	A	A	A	A	A	A	Y	380	365	350	U L 340					
5								A	A	A	A	Y	A	A	A 345	365	345	370	L					
6							L	L	A	A	A	A 325	A	A	380	R	350	L 375						
7							A	A	A	A	A	A	A	A	A	A	L 355	U L 380	L					
8						A	A	A	A	A	A	B	A	A	B	360	365	L	L					
9						A	U L 380	A	A	A	A	C	A	Y	385	370	A	A						
10							L	U L 370	L 370	L 365	A	A	A	390	395	360	370	U L 365						
11						L		A	A	A	A	A	R 355	Y	375	A	385	A	L					
12						A	A	A	A	A	A	A	A	B	B 345	395	355	L 370	L					
13								A	A	A	A	A	A	A	A	A	375	A						
14							L	L 365	390	L 360	C	C	C	C	C	C	C	A	S					
15								A 360	A	A	A	A	A	A	A	A	A	A	A					
16						A	A	A	370	U R 425	Y	A	A	A	A	A	A	360						
17							L	A	A	A	U R 355	365	A	A	360	390	365	U L 365						
18							L	U L 390	A	U L 390	A	A	365	U R 365	A	A	A	A	A					
19							345	A	A	A	A	A	A	A	A	R	L	A	A					
20							L	A	A	A	A	A	A	A	A	A	A	A	A					
21							L 365	370	375	A	A	A	B	390	Y	A	A	A	A					
22							L	405	A	L 345	A	Y	Y	Y	Y	395	A	A	A					
23						L	375	A	A	A	A	Y	A	A	A	A 350	A	U L 350	A					
24							L	A	A	A	A	A	360	A	A	A	A	A	A					
25						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
26							375	A	A	A	A	A	A	A	A	395	375	345	L 345					
27							385	A	A	375	A	A	A	A	A 345	A	A	A	L					
28						A	A	A	A	A	A	R	Y	Y	A	A	A	A	A					
29								A	A	400	A	A	A	385	Y	A	A	A	A					
30								A	A	A	A	A	A	A	A	A 305	A	A 355						
31							A	A	A	A	A	A	Y	U R 320	A	355	A	A	L					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							6	6	4	9	3	3	4	6	10	13	11	12	3					
MED							375	370	372	390	375	A 340	358	388	368	370	365	362	L 345					
U Q							380	390	382	405	395	365	362	390	385	392	375	L 370	L 390					
L Q							365	365	370	L 362	U R 355	A 325	332	U R 365	A 345	358	355	350	U L 340					

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 H'F2 (KM) 135°E MEAN TIME (G.M.T. + 9H)

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								270	300	280	305	305	305	285	310	310	280	255						
2								A	A	A	A	A	A 400	A 400	380	395	365	345	265					
3							260	A 315	310	415	330	370	370	445	315	300	265	285	A					
4						L	285	355	A	A	A	A	A	370	335	385	350	310	270					
5								285	E A 370	A	A	Y 430	A	A	340	295	315	280	255					
6							260	270	340	A 335	270	360	370	365	320	290	270	270						
7							A 265	A 325	A	A	A	A	A	A	A	A	310	290	260					
8						A	A	A	A	A		350	390	A	310	290	265	265	285					
9						A 315	260	A	295	A	A	C	390	305	315	290	270	260						
10							275	320	270	325	A	A	355	320	285	285	260	285						
11						245		A	A	A	335	E A 465	425	345	300	290	335	280	270					
12						A 355	A	315	A	A	A	A	A	335	335	305	315	300	280					
13								A	E A 335	290	290	335	A	A	E A 340	A 335	315	285						
14							250	270	275	290	C	C	C	C	C	C	C	275	S					
15								455	A	A	A	A	A	375	Y 360	315	295	A	A					
16						A	A	A	395	G	Y	A	A	330	A	A	305	300						
17							310	310	A	310	360	345	340	315	300	310	270	300						
18							270	260	310	310	A	A 380	330	350	A 330	290	A	A	A					
19							350	290	A	A	A	A	340	325	365	375	310	A	A					
20							255	A 280	380	A	320	A	A	A	A	A	A	A	A					
21							270	275	290	E A 320	E A 320	A	360	340	360	330	A	280	255					
22							300	275	295	370	305	315	335	360	350	300	300	E A 280	E A 270					
23						270	320	A	380	340	330	Y 410	355	380	A	290	A	320	A					
24							335	330	310	260	A	A	440	E A 375	360	350	340	A	A					
25						A	A	E A 405	305	355	A	A	A	A	A	A	A	A	A					
26							335	295	A	A	A	E A 460	A	A	A	315	300	360	320					
27							G	320	A	G	A	A	A	A	335	305	A	A	270					
28						A	A	A	A	A	300	330	Y	Y	350	A	330	A	A					
29								A	390	G	A	E A 380	A	370	420	335	260	E A 285	A					
30								A	A	A	A	A	A	A	A	375	335	310						
31							A	305	A	A	A	E A 395	Y 390	395	385	385	360	330	280					
	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						4	17	21	17	16	11	15	16	20	23	25	24	23	12					
MED						292	275	300	308	330	320	U 352	365	352	335	310	308	285	270					
U Q						A 335	328	322	375	G 392	330	410	390	375	360	342	332	310	280					
L Q						258	260	275	295	300	300	335	340	328	315	290	270	280	262					

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 H'F (KM) 135°E MEAN TIME (G.M.T. + 9H)

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	340	325	245	230	230	225	215	215	A 270	A 255	230	A	A	205	225	200	A	A	260	270	245	240	250	265
2	300	300	285	245	235	265	260	A	A	A	A	A	A	A	A	A	A	245	240	240	240	240	A	345
3	340	A	255	310	300	250	250	A	A	210	215	A	A	A	A	A	A	A 280	A	A	A	330	A 285	280
4	A	315	270	A 340	295	270	A	A	A	A	A	A	A	A	Y	210	230	230	240	225	240	A 340	E A 375	A 330
5	A 330	A	315	300	280	245	E A 270	A	A	A	A	Y	A	A	A	A 235	225	225	240	245	A	250	265	275
6	305	310	280	265	250	225	230	225	A	A	A	A	A	A	210	Y	230	225	250	245	225	245	A 310	A 330
7	300	280	250	285	285	215	A	A	A	A	A	A	A	A	A	A	225	215	230	A 295	270	270	A	340
8	A 325	A	A	255	295	A	A	A	A	A	A	B	A	A	B	210	245	235	250	250	250	E A 330	A 320	305
9	A 345	310	305	310	290	A	A 260	A	A	A	A	C	A	Y	235	250	A	A	240	235	255	A	335	280
10	300	240	245	270	255	225	210	210	235	240	A	A	A	Y 255	205	215	240	A 255	255	A 245	200	230	255	A
11	A	245	A 325	320	330	235	230	A	A	A	A	A	265	Y	190	A	230	A	245	245	245	290	280	A 335
12	275	275	255	270	335	A	A	A	A	A	A	A	A	B	B	200	230	245	260	240	245	260	265	A 355
13	280	315	A 335	305	280	230	255	A	A	A	A	A	A	A	A	A	230	A	A 260	230	235	235	260	275
14	280	255	245	265	255	235	225	220	215	A	C	C	C	C	C	C	C	A	S	230	225	A 325	305	315
15	320	290	245	270	255	245	260	A	A	A	A	A	A	A	A	A	A	A	A	A	275	A	A	340
16	315	275	260	230	275	A	A	A	230	200	Y	A	A	A	A	A	A	240	240	265	315	A 360	290	330
17	330	320	225	255	325	240	245	A	A	A	235	240	A	A	215	205	215	225	260	250	270	290	A	A
18	290	270	240	205	270	255	230	225	A	220	A	A	250	235	A	A	A	A	A	E A 270	E A 280	280	280	255
19	310	A 335	A	E A 300	A 285	255	215	A	A	A	A	A	A	A	A	A	A	A	A	A	A	270	260	A
20	330	A	310	315	250	255	210	A	A	A	A	A	A	A	A	A	A	A	A	A	A	315	A	A
21	275	305	260	280	315	255	240	A 240	215	A	A	A	B	220	Y	A	A	A	A	220	A	A 330	335	305
22	305	A 290	270	A	245	240	A 240	220	A	A	A	Y	Y	Y	Y	A 250	A	A	A	245	265	245	235	270
23	290	320	275	230	230	235	220	A	A	A	A	Y	A	A	A	A	A	220	A	260	245	A	250	A 345
24	285	260	255	290	285	245	240	A	A	A	A	A	245	A	A	A	A	A	A	235	A 320	320	A 330	255
25	220	305	255	325	330	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	285	A	245	300
26	A	A	A	315	285	230	220	A	A	A	A	A	A	A	A	220	225	235	240	270	220	260	A 350	A
27	A 340	A	275	255	220	235	220	A	A	A 260	A	A	A	A	A	A	A	A	230	230	220	A	295	290
28	275	305	290	285	215	A	A	A	A	A	A	200	Y	Y	350	A	A	A	A	235	255	285	250	265
29	270	305	290	350	290	210	235	A	A	230	A	A	A	220	Y	A	A	A	A	245	260	255	285	300
30	245	250	215	310	285	235	245	A	A	A	A	A	A	A	A	A	A	A	255	235	255	A	335	A 365
31	A	300	A	A	A 360	A 315	A	A	A	A	A	A	Y	A	A	A 260	A	A	245	235	275	315	320	A
	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	27	29	31	25	23	7	5	7	3	2	3	5	7	11	11	13	18	26	26	25	26	25
MED	300	300	260	282	285	240	232	220	230	230	230	220	250	220	215	215	230	235	245	244	250	275	284	305
U Q	330	312	290	310	295	255	250	225	252	A 255	235		265	245	235	A 250	230	245	255	250	270	A 322	A 320	A 338
L Q	280	272	245	255	250	230	220	215	215	210	215		245	212	205	205	225	225	240	235	240	248	260	275

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 H'E (KM) 135°E MEAN TIME (G.M.T. + 9H)

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						S	A	A	105	105	105	105	A	105	A	A	A	110	A					
2						S	A	A	105	105	A	105	105	110	110	110	110	110	B					
3						A	115	110	105	105	A	A	A	A	A	110	110	115	B					
4						115	120	110	110	110	110	A	A	100	110	110	110	A	A					
5						A	120	115	110	110	A	A	A	A	A	A	A	A	A					
6						A	A	A	110	A	A	A	A	A	105	105	110	110	A					
7						A	115	110	105	105	A	A	A	A	105	105	105	A	B					
8						A	110	110	105	105	105	B	A	A	B	115	115	110	A					
9						A	110	105	105	105	105	C	A	A	115	110	110	110	A					
10						B	110	110	105	A	A	A	A	A	A	100	A 130	A	A					
11						A	A 125	105	105	105	105	105	A	110	A	A	A	A	A					
12						A	110	110	105	A	A	105	105	B	B	105	110	A 125	A					
13						120	110	110	105	105	A 105	A	A	A	A	A	A 130	110	120					
14						A	115	110	105	105	C	C	C	C	C	C	C	110	S					
15						115	130	100	105	105	110	A	110	A	A	A	A	A	A					
16						A	115	110	110	110	110	110	A	110	A	105	105	A	A					
17						S	110	110	110	A	A	110	A	A	A	105	A	125	A					
18						B	105	105	105	105	105	B	105	105	A	A	105	105	S					
19						S	A	A	105	A	A	A	A	A	A	110	110	110	A					
20						A	125	105	105	105	105	105	A	A	110	110	110	110	A					
21						A	110	105	A	105	A	A	B	B	110	105	105	A	A					
22						A	A	A	A	A	A	A	A	A	110	110	110	110	A					
23						A	A	110	110	A	A	E A 130	A	A	A	110	110	110	A					
24						A	115	110	110	110	A	A	A	A	A	A	A 125	A	A					
25						A	S 115	110	105	100	A	A	A	A	A	110	110	110	A					
26						A	110	A	A	110	110	A	110	110	110	110	110	A 125	A	B				
27						A	115	105	105	A	A	A	A	A	110	110	A	A	A	B				
28						130	A	105	105	100	A	A	A	A	A	A	A	A	A	B				
29						A	A	105	105	105	105	105	A	A	110	A 125	110	110	A	B				
30						130	110	100	100	105	100	A	A	A	A	A	A	A	A	B				
31						A	110	110	A	110	A	110	110	110	A 125	110	105	110	115	B				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						5	23	25	27	23	13	10	6	8	12	21	22	19	2					
MED						120	115	110	105	105	105	105	108	110	110	110	110	110	118					
U Q						130	115	110	110	110	110	110	110	110	110	110	110	110						
L Q						115	110	105	105	105	105	105	105	105	110	105	110	110						

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 H'ES (KM) 135°E MEAN TIME (G.M.T. + 9H)

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	110	100	100	100	105	S	100	100	120	115	115	110	110	105	105	100	150	115	110	110	105	105	100	110
2	110	105	105	120	140	115	125	115	110	110	110	115	115	115	115	110	110	150	B	150	120	110	100	100
3	100	100	100	95	95	135	135	115	120	G	110	105	110	110	100	115	115	120	115	110	100	110	105	110
4	105	105	100	105	105	125	115	115	115	115	110	110	110	115	G	G	135	110	110	B	105	105	100	100
5	105	100	105	105	115	135	120	115	115	100	110	110	110	110	110	110	110	110	110	110	110	105	100	100
6	105	100	100	100	B	125	125	110	110	100	105	105	110	110	G	125	G	120	115	105	B	110	105	105
7	105	100	100	100	95	125	120	115	110	110	115	110	100	100	100	105	130	125	B	115	105	120	115	105
8	105	100	100	115	110	115	110	110	105	105	110	B	110	105	B	125	125	G	110	115	105	105	100	105
9	100	100	100	100	105	105	130	110	115	110	105	C	105	105	145	G	125	120	110	110	110	100	100	100
10	100	95	95	100	110	125	120	115	110	115	105	100	100	100	100	G	125	110	100	100	105	100	100	105
11	100	100	95	100	95	95	145	115	110	105	110	110	105	105	110	100	100	100	115	100	100	110	105	105
12	105	100	105	100	100	125	120	115	105	110	115	105	110	B	B	G	180	145	115	120	110	110	110	100
13	100	100	95	100	100	125	120	110	105	105	105	105	100	100	95	95	130	115	115	110	110	110	110	100
14	105	B	100	125	155	125	145	G	115	110	C	C	C	C	C	C	C	110	S	110	105	105	110	140
15	110	B	110	105	135	140	130	120	115	115	110	110	110	115	110	105	105	100	100	100	115	110	110	110
16	110	100	100	105	135	125	115	115	120	G	170	110	115	115	110	110	110	110	110	120	110	110	110	105
17	100	95	95	100	110	105	125	110	110	110	100	G	105	140	105	100	100	145	110	110	110	110	110	105
18	105	95	100	95	105	B	G	130	110	110	100	105	145	105	100	115	115	110	110	110	110	110	B	B
19	115	110	105	105	105	105	110	110	105	105	100	105	105	105	135	120	115	110	110	115	110	105	105	100
20	105	100	100	105	100	115	120	110	110	105	110	105	100	125	115	115	110	110	105	100	100	105	125	100
21	115	110	100	100	105	125	130	115	110	105	100	105	B	B	125	115	110	110	105	105	105	110	105	105
22	100	115	100	110	105	100	100	105	100	105	100	110	110	110	G	135	115	110	100	115	100	100	100	95
23	100	95	100	95	100	100	100	105	110	105	100	105	105	100	100	135	115	115	110	105	105	110	110	105
24	110	115	95	95	115	145	125	115	110	110	105	100	105	100	100	125	120	110	110	110	105	110	100	110
25	100	95	100	100	115	120	115	115	110	110	105	105	100	105	110	125	115	115	110	105	115	100	110	105
26	100	130	100	120	140	115	130	110	110	105	110	110	115	110	110	135	130	115	110	110	115	100	105	100
27	100	95	110	110	100	125	125	115	110	105	110	100	105	110	110	110	105	105	105	110	110	100	105	100
28	100	100	110	95	B	130	115	115	110	100	105	110	110	100	110	100	125	115	110	110	110	105	105	105
29	105	105	100	115	B	115	120	115	115	110	110	110	105	110	140	135	130	115	115	120	120	115	110	110
30	100	100	100	B	B	140	130	110	110	110	105	105	105	105	105	95	115	125	110	105	100	110	115	110
31	105	105	100	100	100	115	110	115	110	100	100	130	130	135	125	G	120	115	110	110	125	110	105	105
	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	31	29	31	30	27	29	30	30	31	29	30	27	29	28	25	25	29	30	28	30	30	31	30	30
MED	105	100	100	100	105	125	120	115	110	110	108	105	110	108	110	115	115	115	110	110	110	110	105	105
U Q	105	105	100	105	115	125	130	115	115	110	110	110	110	112	115	125	128	120	110	115	110	110	110	105
L Q	100	100	100	100	100	115	115	110	110	105	105	105	105	105	100	102	110	110	110	105	105	105	100	100

IONOSPHERIC DATA STATION KOKUBUNJI

MAY 1994 TYPES OF ES 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 3	F 3	F 3	F 4	F 2		L 1	L 1	C 2	C 2	C 1	C 1	C 1	C 1	L 1	L 2	HL 12	C 2	C 4	F 3	F 3	F 4	F 3	F 2
2	F 2	F 2	F 1	F 1	FF 11	L 1	C 1	C 3	C 2	C 2	C 3	C 2	C 2	C 1	C 1	C 2	C 3	H 1		F 1	F 1	F 2	F 4	F 4
3	F 3	F 4	F 4	F 4	F 3	CL 21	C 2	C 3	C 2		C 1	L 1	L 2	C 1	L 1	C 2	C 1	C 2	C 5	F 4	F 4	F 5	F 3	F 3
4	F 3	F 3	F 3	F 4	F 2	C 3	C 2	C 2	C 1	C 1	C 1	C 2	C 2	C 1			H 1	C 1	C 2		F 3	F 3	F 5	F 3
5	F 4	F 4	F 4	F 2	F 1	C 2	C 3	C 2	C 1	C 2	C 2	C 1	C 1	L 2	L 2	C 2	C 1	L 2	L 3	F 2	F 4	F 3	F 2	F 2
6	F 2	F 2	F 2	F 1		C 1	LC 11	C 1	C 3	L 2	C 1	L 1	L 1	L 1		C 1		C 1	C 2	F 2		F 5	F 4	F 4
7	F 3	F 2	F 2	F 3	F 3	L 2	C 4	C 3	C 2	C 3	CL 11	C 2	L 4	L 3	L 4	L 3	C 1	C 1		F 5	F 4	F 4	F 5	F 3
8	F 5	F 3	F 3	FF 12	FF 22	CL 41	C 3	C 3	C 2	C 2	C 1		C 1	L 2		C 1	C 1		L 1	F 1	F 4	F 4	F 4	F 4
9	F 4	F 3	F 3	F 5	F 3	L 3	C 2	C 2	C 2	C 2	C 2		L 1	L 1	H 1		C 1	C 2	C 3	F 5	FF 31	F 4	F 3	F 3
10	F 3	F 2	FF 21	FF 12	F 1	L 1	C 1	C 2	C 1	C 1	C 1	L 2	L 1	L 1	L 2		CL 11	C 3	L 2	F 5	F 4	F 5	F 4	F 4
11	F 5	F 3	F 4	F 5	F 4	LC 31	HL 11	C 3	C 3	C 3	C 2	C 2	L 1	C 1	L 1	L 3	L 2	L 2	CL 33	F 5	F 3	F 2	F 5	F 5
12	F 2	F 1	F 2	F 2	F 3	C 3	C 2	C 3	C 2	C 2	C 1	C 2	L 2				H 1	HL 11	CH 21	F 3	F 3	F 5	FF 42	FF 53
13	F 3	F 3	F 2	F 2	F 2	C 4	C 2	C 2	C 3	C 2	C 2	L 1	L 3	L 2	L 2	L 3	CL 11	C 3	C 3	F 3	F 5	F 2	F 2	F 3
14	F 2		F 1	F 1	F 1	C 1	HC 11		C 1	C 2								C 2		F 4	F 2	F 3	F 2	F 1
15	F 2		F 2	F 2	F 1	C 1	CL 11	C 2	C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 2	L 2	L 3	L 4	F 4	F 3	F 5	F 5	F 4
16	F 2	FF 21	FF 31	FF 32	F 1	C 3	C 2	C 2	C 1		H 1	C 2	C 1	C 1	C 1	C 2	C 2	C 3	L 3	F 2	F 2	F 5	F 2	F 1
17	F 2	F 4	F 2	F 2	F 1	L 1	C 1	C 2	C 2	C 1	L 1		L 1	HL 11	L 2	L 1	L 2	HL 12	CH 31	F 5	F 3	F 3	F 4	F 4
18	FF 22	FF 22	F 2	F 1	F 2			H 2	C 2	C 1	C 2	L 2	H 1	C 1	L 2	CL 21	C 3	C 3	C 4	F 4	F 6	F 2		
19	FF 22	FF 13	F 6	F 3	F 3	L 3	L 2	L 2	C 3	C 3	L 3	L 3	L 2	L 1	CL 11	C 1	C 1	C 2	C 4	FF 23	F 3	F 3	F 3	F 4
20	F 3	F 4	FF 42	FFF 22	F 4	LC 31	CHL 21	C 3	C 1	C 2	C 1	C 2	LC 22	CL 21	C 2	C 2	C 3	C 3	L 4	F 4	F 3	F 6	FF 25	F 5
21	FF 25	FF 23	FF 42	FF 42	FF 42	C 1	C 1	C 1	C 1	C 2	L 2	L 1			C 1	C 3	C 2	C 3	LC 21	F 3	F 3	F 6	F 3	F 4
22	F 2	FF 24	F 3	FF 12	F 3	L 3	L 3	LC 21	L 2	L 1	L 2	L 1	L 1	L 1		H 1	C 2	C 3	L 4	FF 24	F 3	FF 32	FFF 22	FF 21
23	F 2	FF 22	F 2	F 1	F 2	L 2	LC 21	C 3	C 2	C 2	L 1	L 1	L 1	L 2	CL 31	C 1	C 4	C 2	C 3	F 4	FF 41	F 4	FF 21	FF 23
24	F 1	F 1	F 3	F 2	FF 11	C 1	C 1	C 2	C 2	C 2	C 2	L 2	L 1	L 2	LH 21	CL 11	CL 21	C 3	C 5	F 5	F 3	FF 31	F 4	F 4
25	F 3	F 4	F 2	F 3	F 1	C 3	C 3	C 2	C 2	C 1	C 2	C 1	L 3	L 2	C 1	C 2	C 3	C 3	C 3	F 4	FF 25	F 4	FF 23	FF 52
26	F 6	FF 35	F 5	FF 22	F 1	C 2	CL 11	LC 21	C 2	C 2	C 1	C 1	C 1	C 2	C 2	H 1	H 1	L 1	C 3	L 3	FF 24	F 4	F 3	F 4
27	F 5	F 6	F 1	FF 21	F 2	C 1	C 2	C 2	C 3	C 3	L 2	L 2	L 3	C 2	C 1	C 2	C 3	L 4	L 3	L 2	F 1	F 5	FF 25	F 4
28	F 3	FF 22	FF 22	F 1		C 3	C 2	C 3	C 3	C 3	L 2	CL 11	CL 11	L 2	LC 11	L 3	CL 21	CL 32	C 3	C 4	F 3	F 3	F 3	F 5
29	F 3	F 3	F 4	F 2		C 1	C 2	C 2	C 3	C 2	C 1	C 1	C 1	C 1	HC 11	HL 11	C 2	C 3	C 4	C 2	F 1	F 1	F 1	F 2
30	F 2	F 2	F 1			C 1	C 2	C 3	C 3	C 2	C 3	C 2	L 2	L 2	C 2	L 2	CL 12	CL 22	C 4	C 4	F 4	F 5	F 5	F 4
31	FF 32	F 4	F 4	F 6	F 5	C 3	C 2	C 2	C 2	C 3	L 3	C 1	C 1	H 1	CL 11		C 2	C 2	C 3	C 5	FF 13	F 3	F 4	F 4
CNT																								
MED																								
U Q																								
L Q																								

f-PLOTS OF IONOSPHERIC DATA

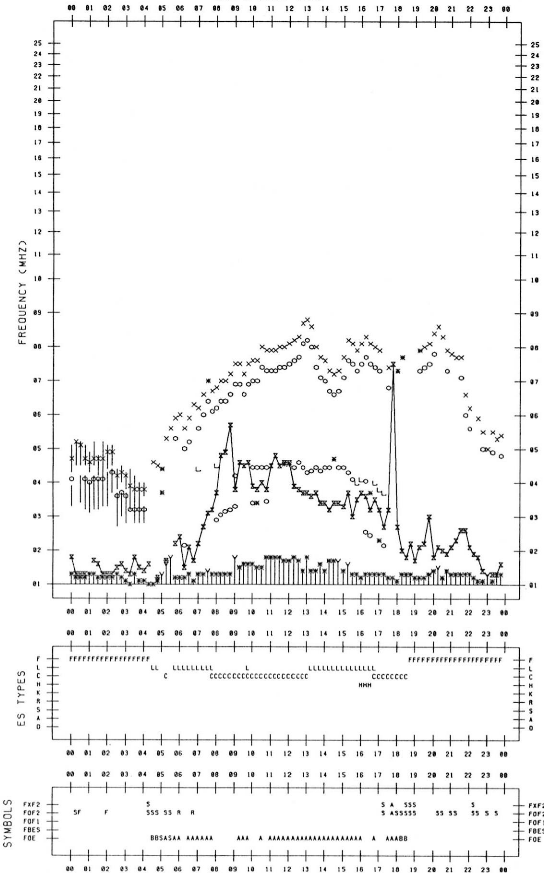
KEY OF F-PLOT	
|	SPREAD
⬡	FØF2, FØF1, FØE
×	FXF2
✳	DOUBTFUL FØF2, FØF1, FØE
⊠	FBES
L	ESTIMATED FØF1
↑, Y	FMIN
Λ	GREATER THAN
V	LESS THAN

F-PLOT DATA

SCALER : T.KOIZUMI

STATION : KOKUBUNJI　DATE : 1994/ 5/ 1

135°E MEAN TIME

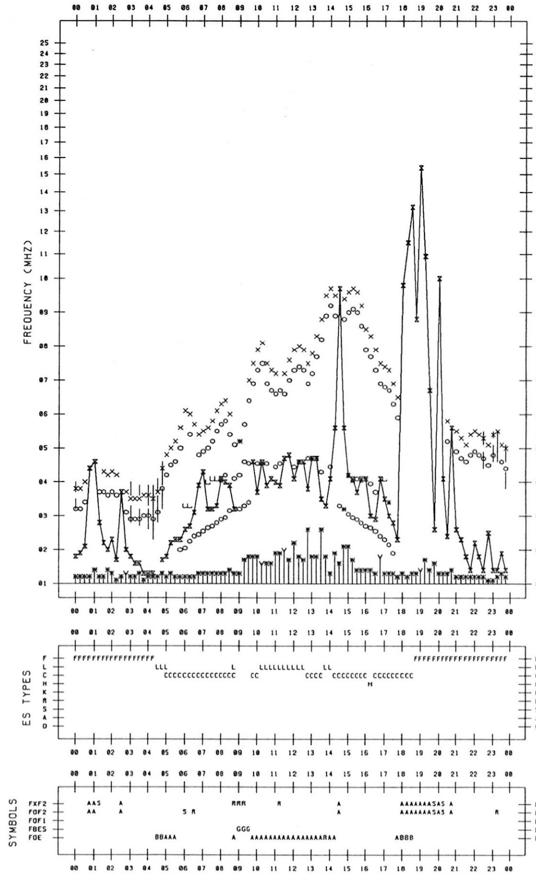


F-PLOT DATA

SCALER : T.KOIZUMI

STATION : KOKUBUNJI　DATE : 1994/ 5/ 3

135°E MEAN TIME

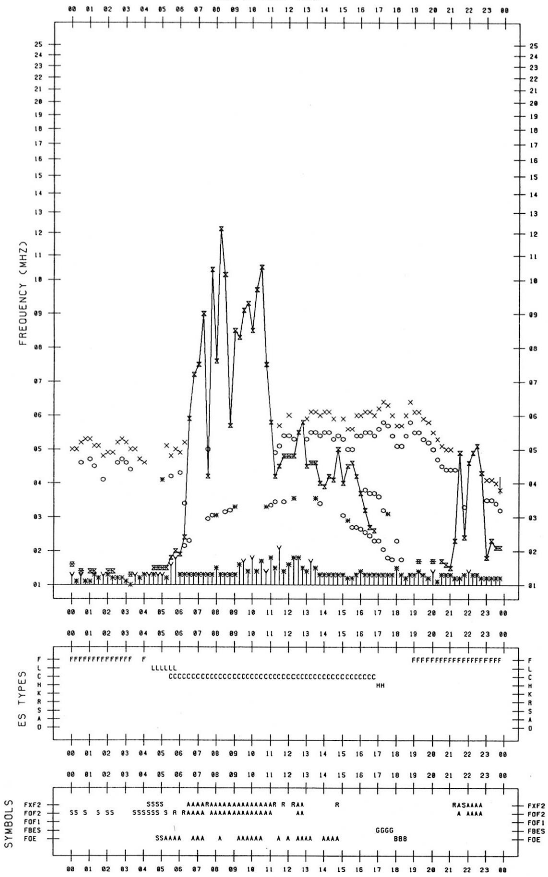


F-PLOT DATA

SCALER : T.KOIZUMI

STATION : KOKUBUNJI　DATE : 1994/ 5/ 2

135°E MEAN TIME

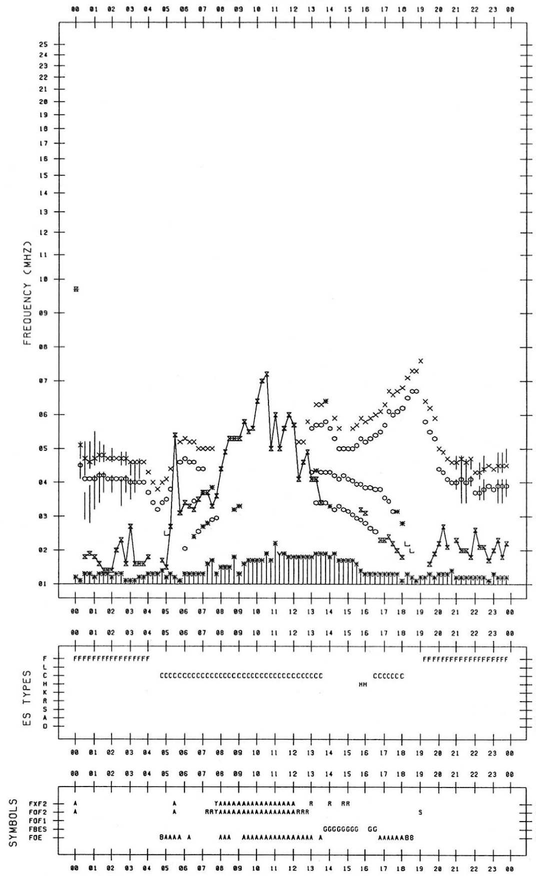


F-PLOT DATA

SCALER : T.KOIZUMI

STATION : KOKUBUNJI　DATE : 1994/ 5/ 4

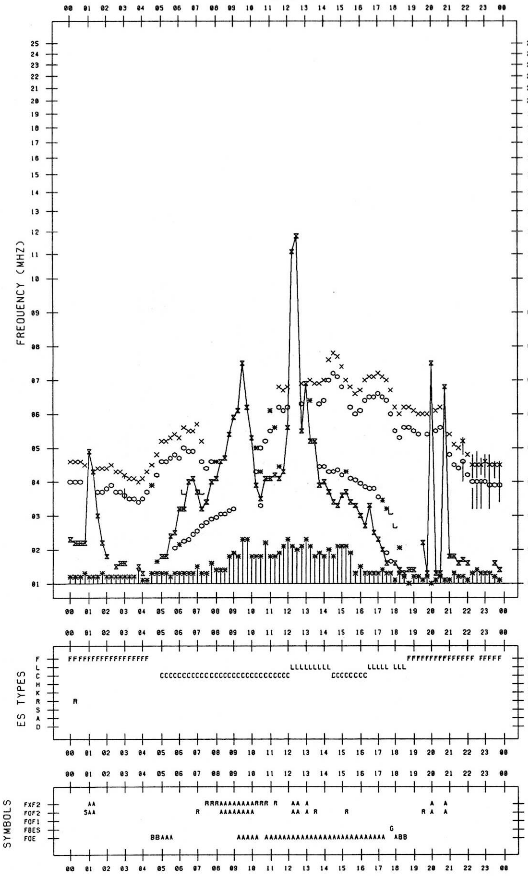
135°E MEAN TIME



F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/ 5

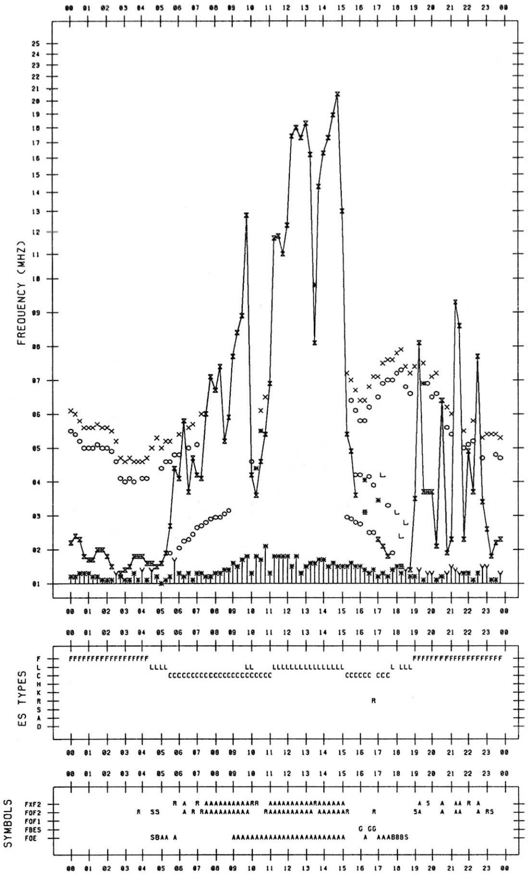
135°E MEAN TIME



F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/ 7

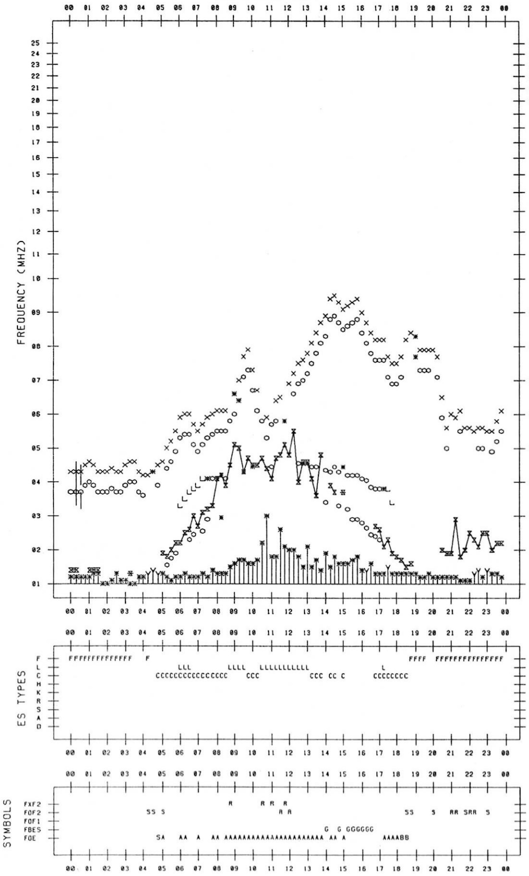
135°E MEAN TIME



F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/ 6

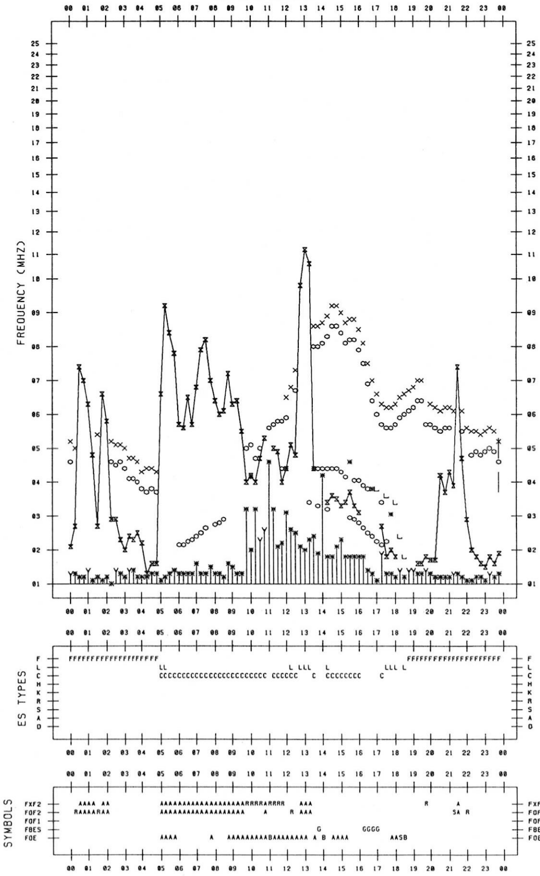
135°E MEAN TIME



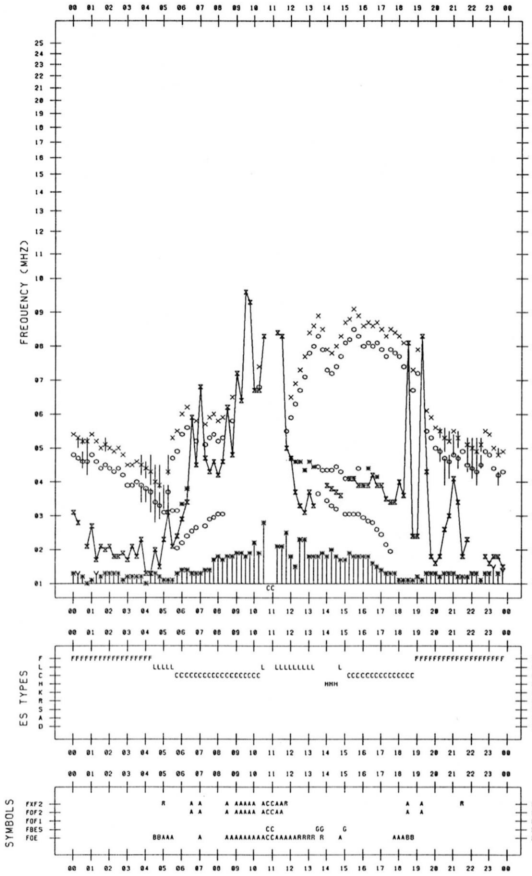
F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/ 8

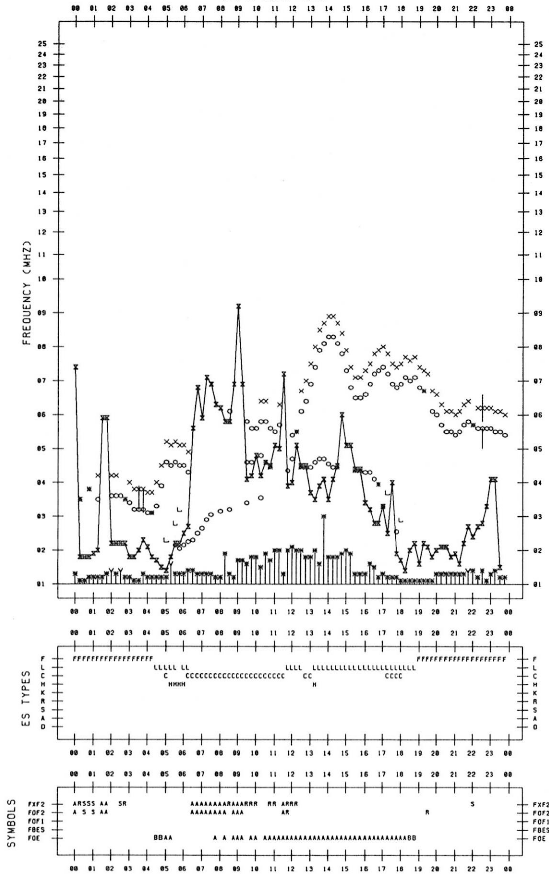
135°E MEAN TIME



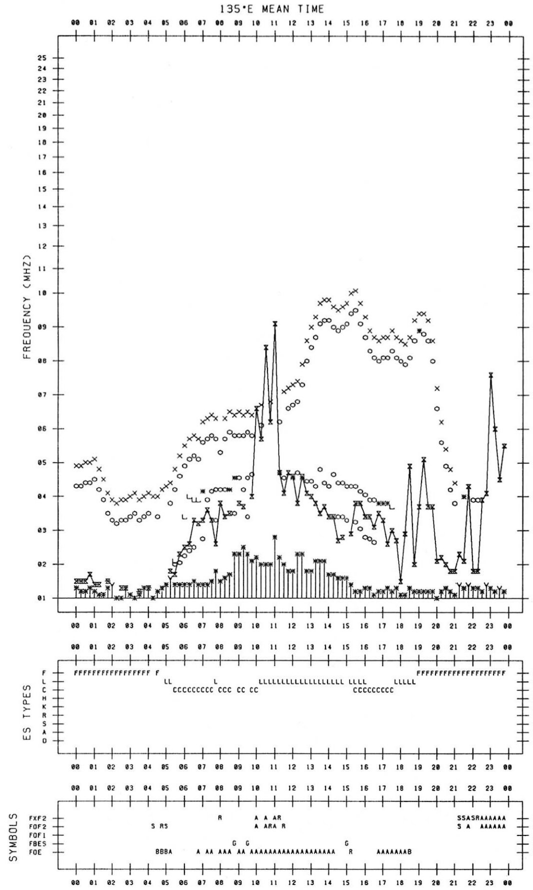
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/ 9
135°E MEAN TIME



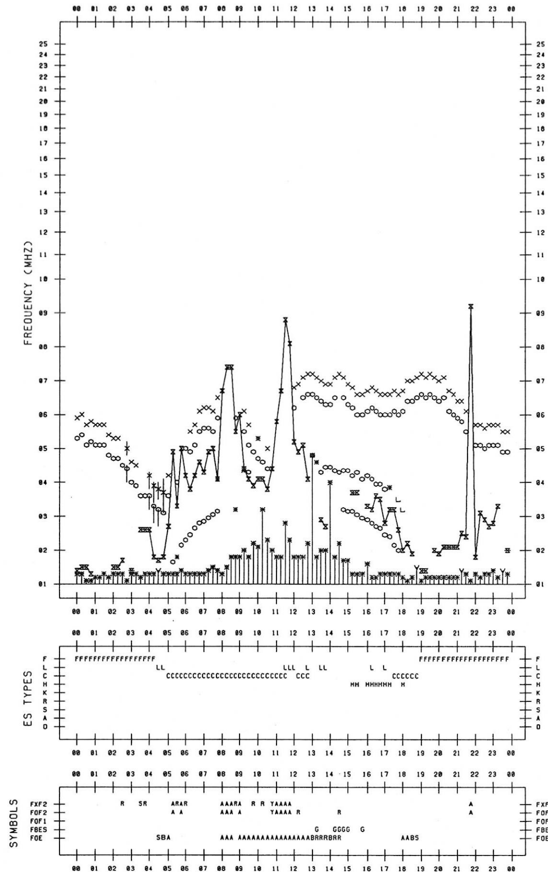
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/11
135°E MEAN TIME



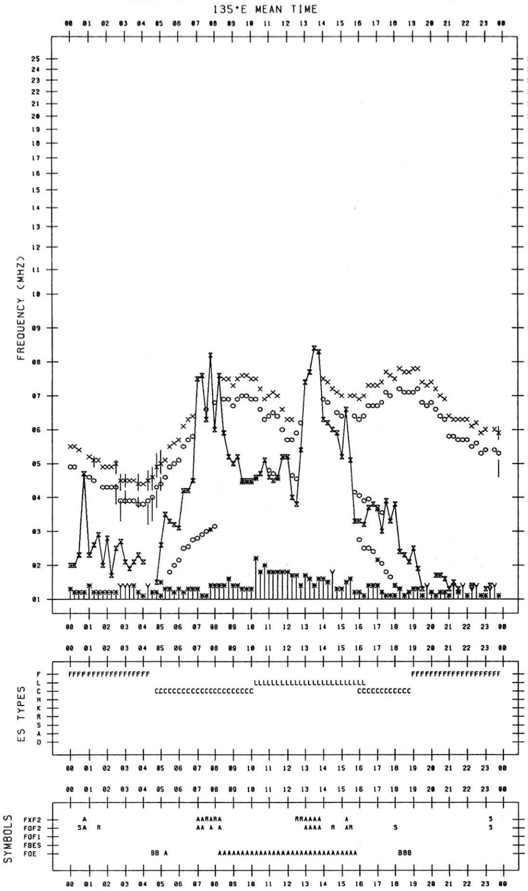
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/10
135°E MEAN TIME



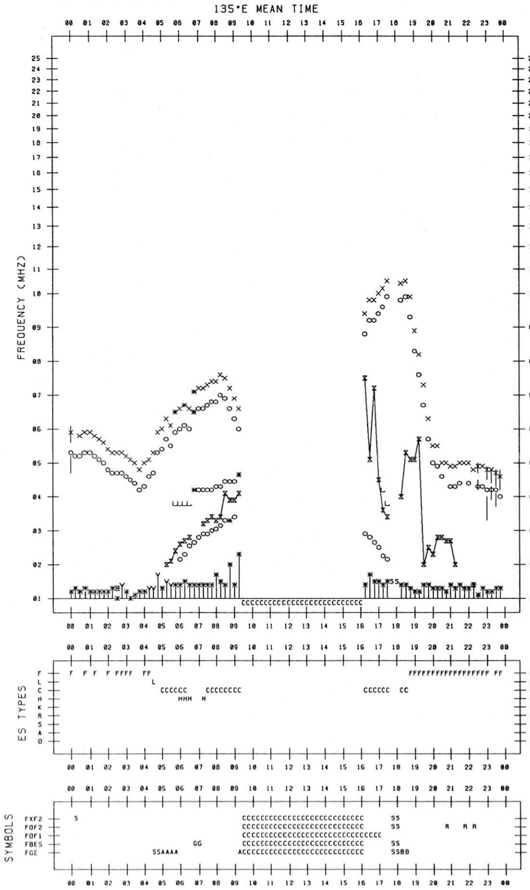
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/12
135°E MEAN TIME



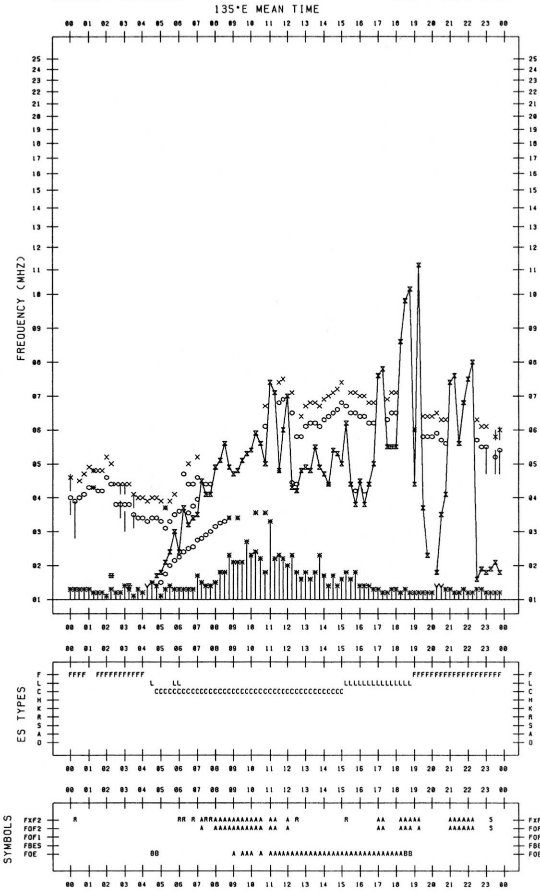
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/13



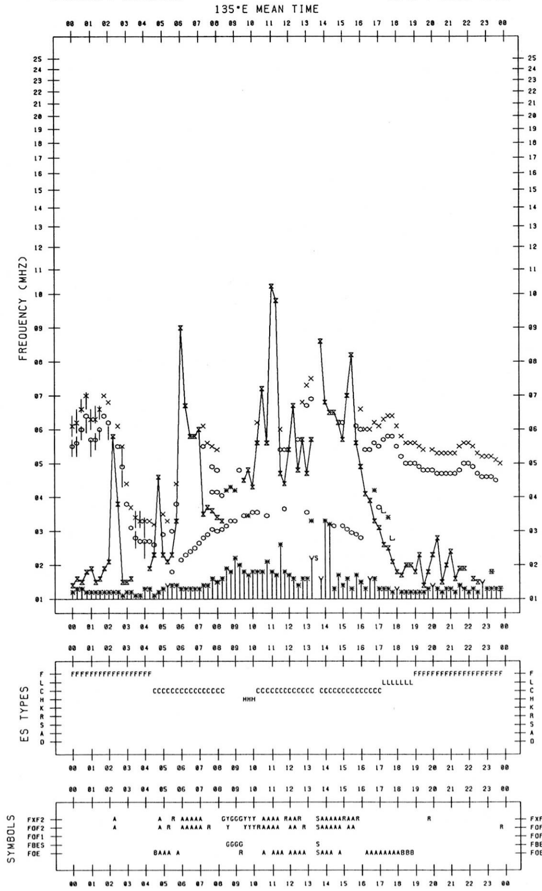
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/14



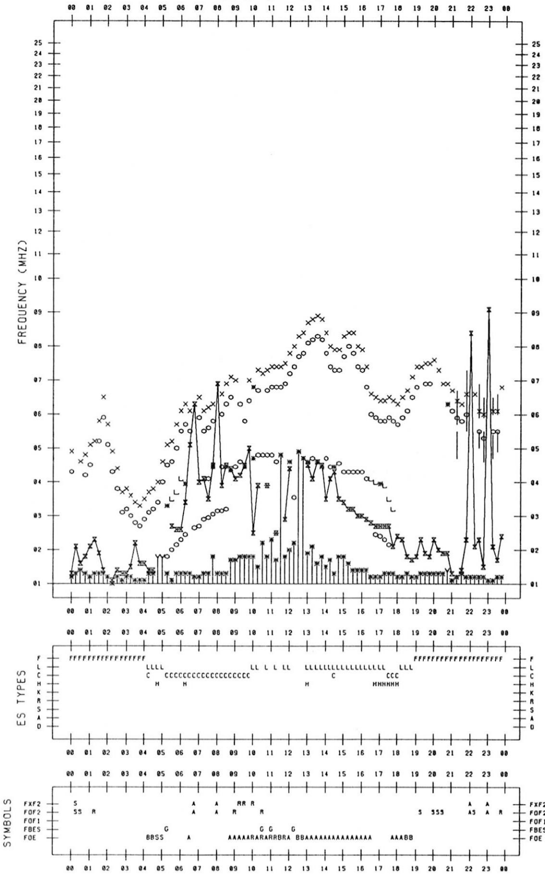
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/15



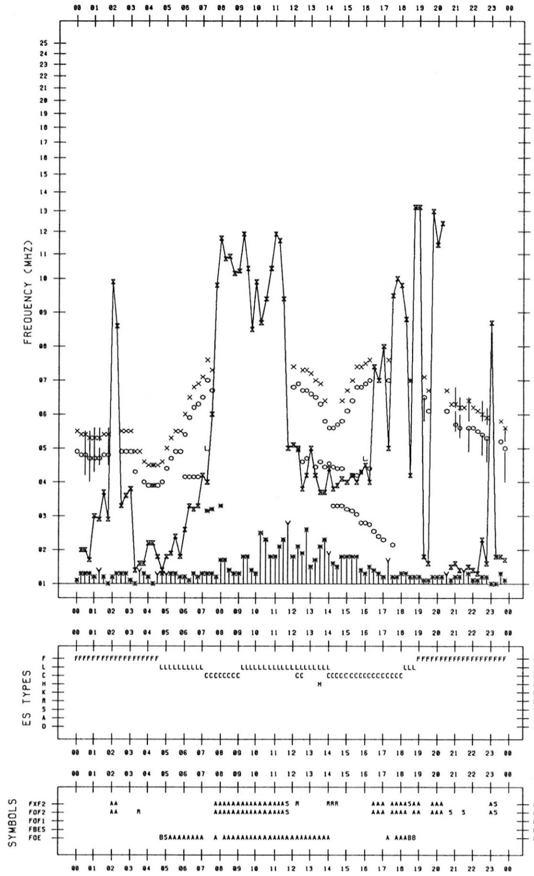
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/16



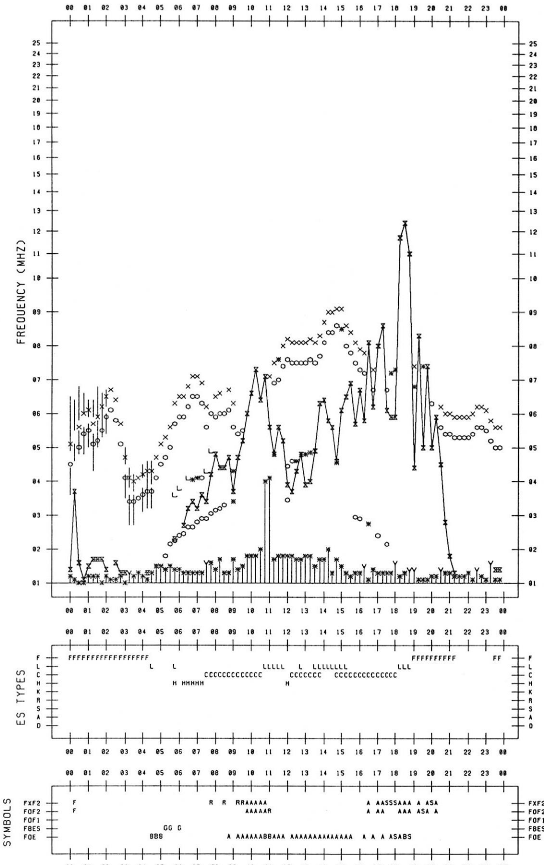
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/17
135°E MEAN TIME



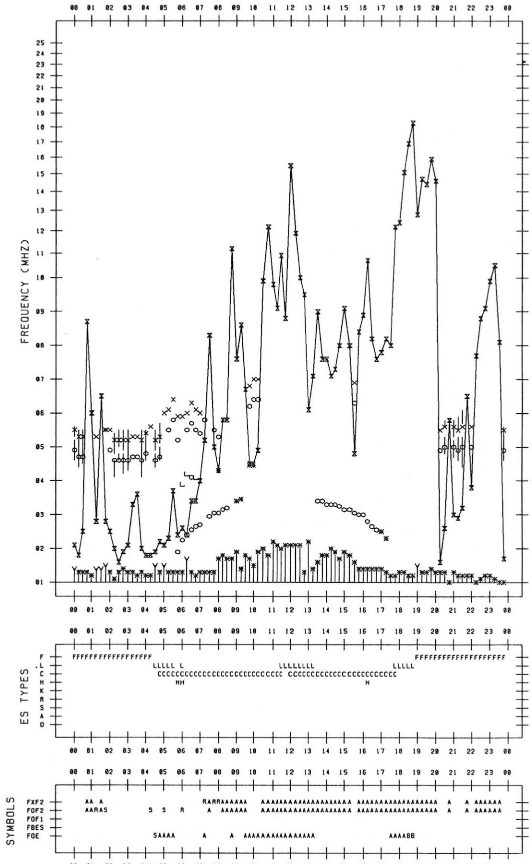
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/19
135°E MEAN TIME



F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/18
135°E MEAN TIME



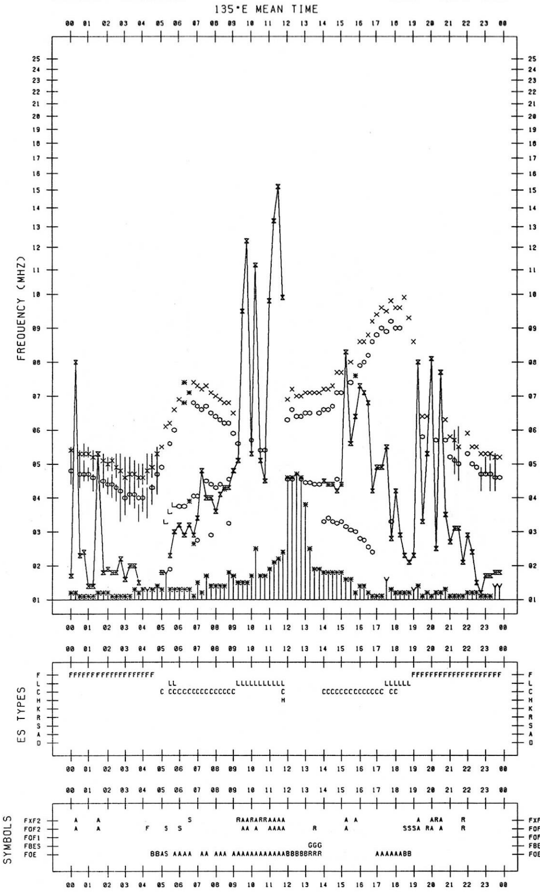
F-PLOT DATA SCALER : T.KOIZUMI
STATION : KOKUBUNJI DATE : 1994/ 5/20
135°E MEAN TIME



F-PLOT DATA

SCALER : T.KOIZUMI

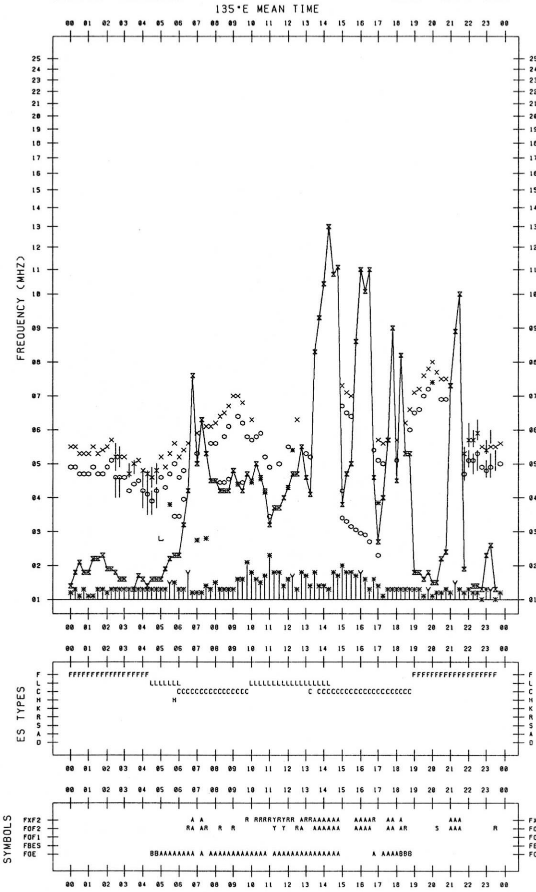
STATION : KOKUBUNJI DATE : 1994/ 5/21



F-PLOT DATA

SCALER : T.KOIZUMI

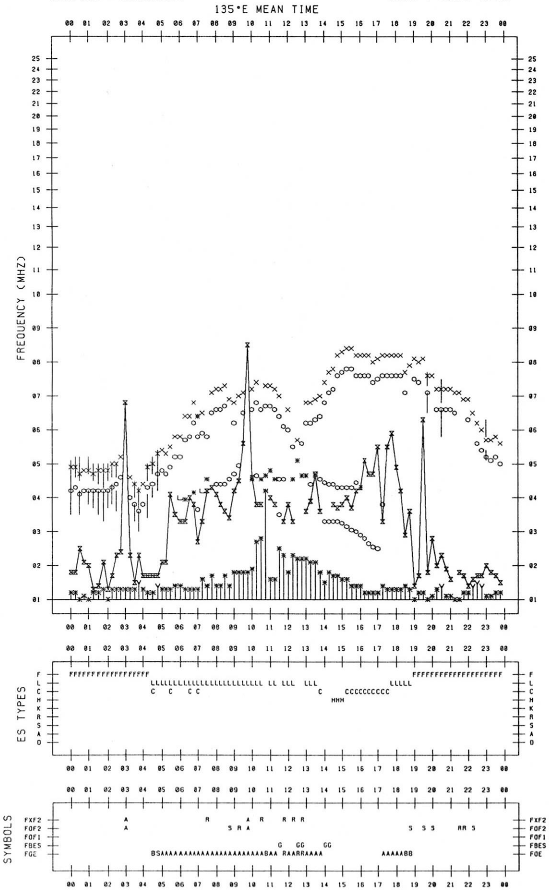
STATION : KOKUBUNJI DATE : 1994/ 5/23



F-PLOT DATA

SCALER : T.KOIZUMI

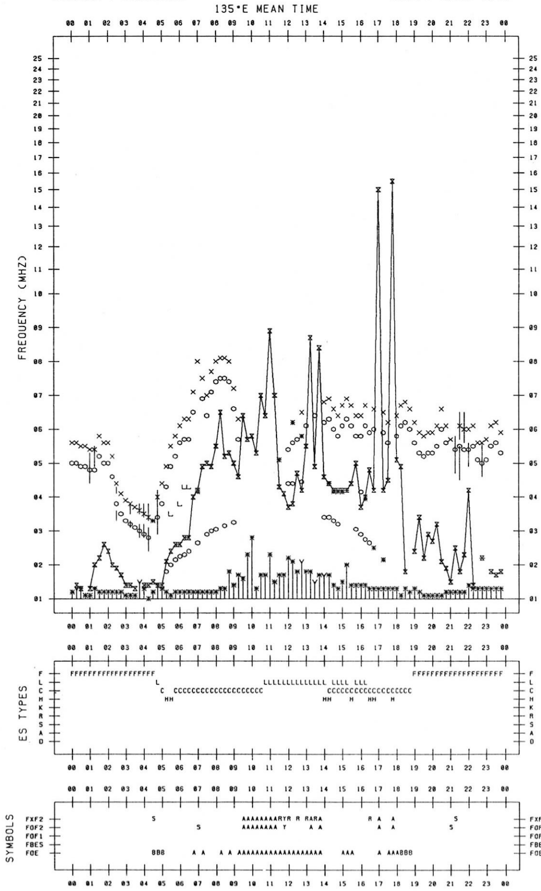
STATION : KOKUBUNJI DATE : 1994/ 5/22



F-PLOT DATA

SCALER : T.KOIZUMI

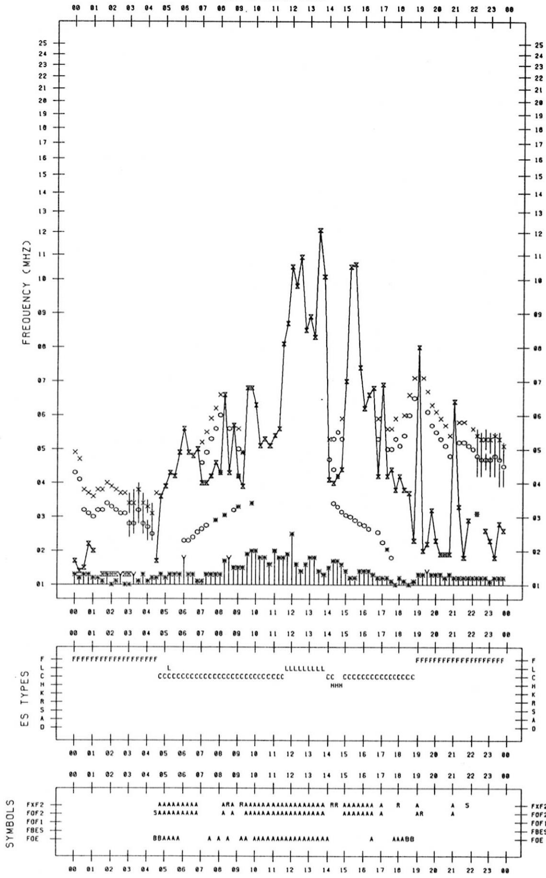
STATION : KOKUBUNJI DATE : 1994/ 5/24



F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/25

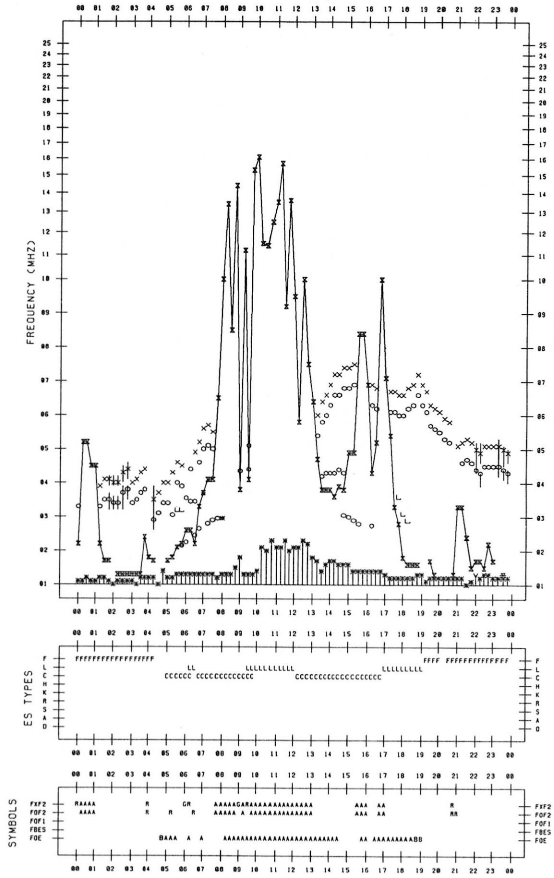
135°E MEAN TIME



F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/27

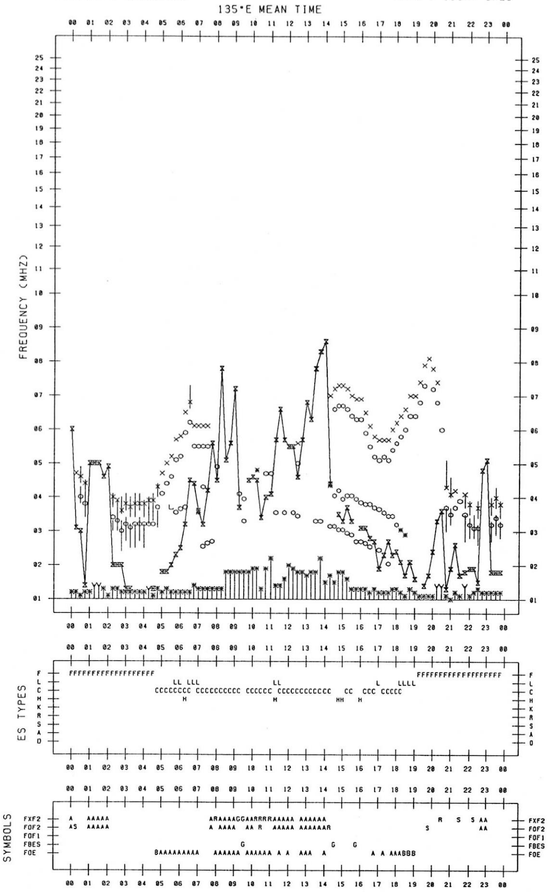
135°E MEAN TIME



F-PLOT DATA SCALER : T.KOIZUMI

STATION : KOKUBUNJI DATE : 1994/ 5/26

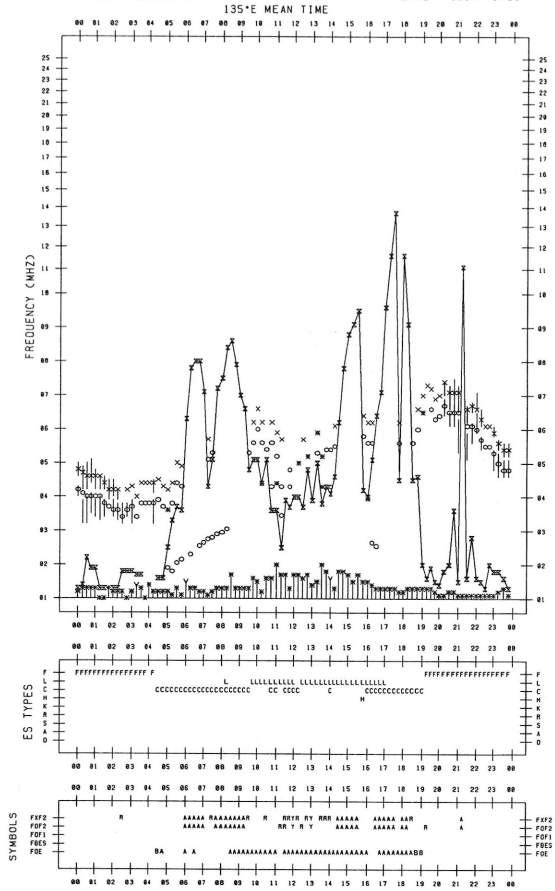
135°E MEAN TIME

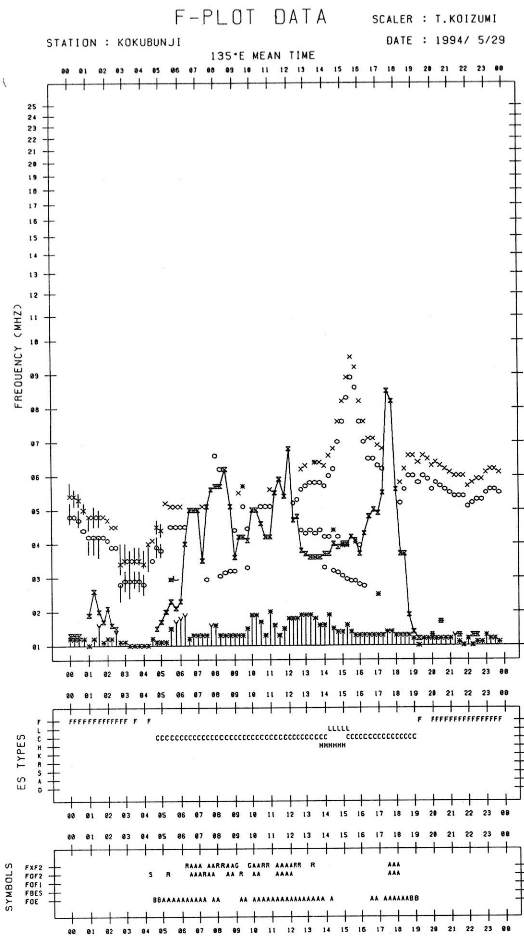


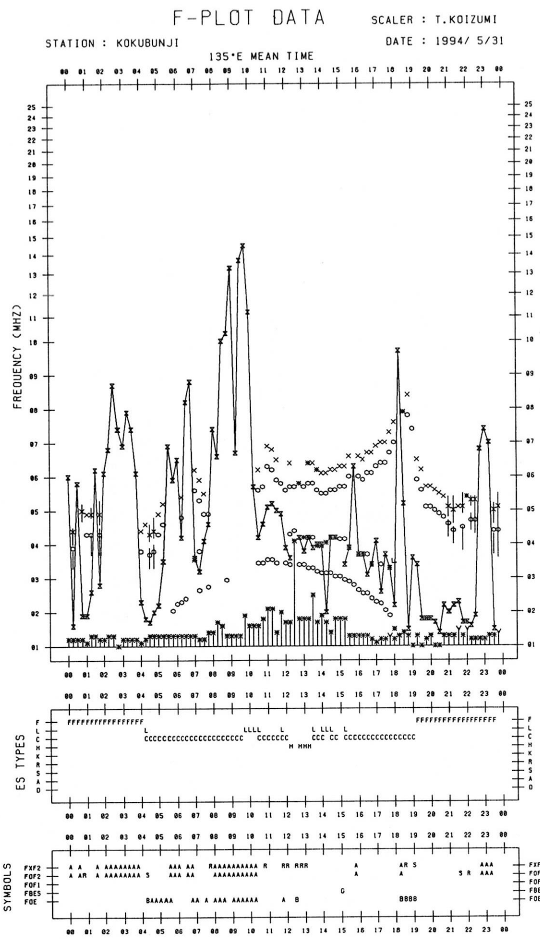
F-PLOT DATA SCALER : T.KOIZUMI

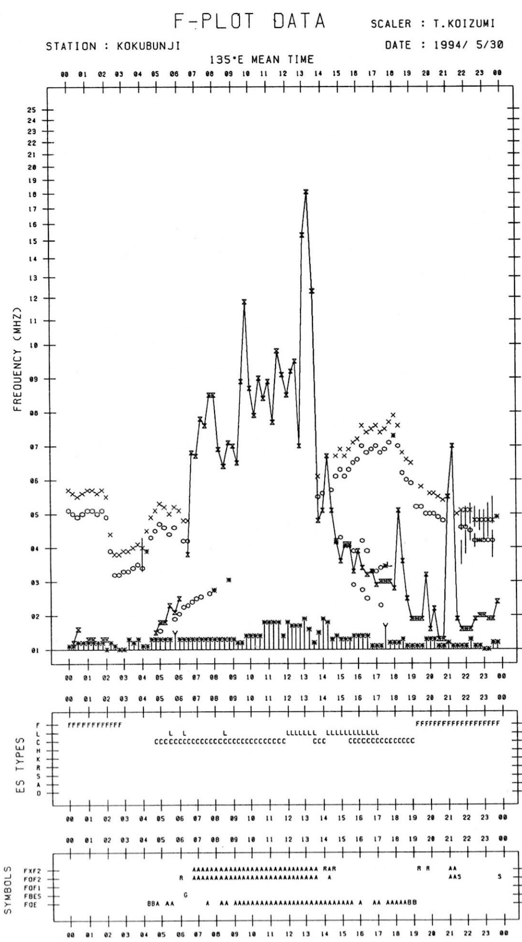
STATION : KOKUBUNJI DATE : 1994/ 5/28

135°E MEAN TIME




F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 5/29
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 5/31
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 5/30
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso May 1994

Single-frequency total flux observations at 500 MHz

Flux density: $10^{-22}Wm^{-2}Hz^{-1}$

UT Date	00-03	03-06	06-09	21-24	Day
1	28	28	28	28	28
2	28	28	28	(28)	28
3	-	-	-	-	(28)
4	-	-	-	(27)	-
5	27	27	27	28	27
6	28	28	27	28	28
7	28	27	27	28	28
8	27	27	26	28	27
9	29	28	28	29	28
10	28	28	28	29	28
11	28	29	29	29	29
12	30	30	30	31	30
13	31	30	30	33	31
14	33	32	32	32	32
15	30	30	30	31	30
16	31	31	32	32	31
17	32	33	34	34	33
18	34	33	34	33	34
19	33	33	32	32	33
20	32	32	32	-	32
21	-	-	-	(31)	-
22	31	(31)	-	(31)	31
23	30	30	30	30	30
24	30	29	29	29	30
25	28	28	28	28	28
26	27	26	26	-	27
27	27	27	26	26	27
28	26	26	26	26	26
29	26	26	26	26	26
30	26	26	26	26	26
31	26	26	26	26	26

Note: No observations during the following period.

2nd 2220 - 4th 2255 20th 2015 - 21st 2255
22nd 0400 - 22nd 2255 26th 2020 - 27th 0028

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso May 1994

Single-frequency observations

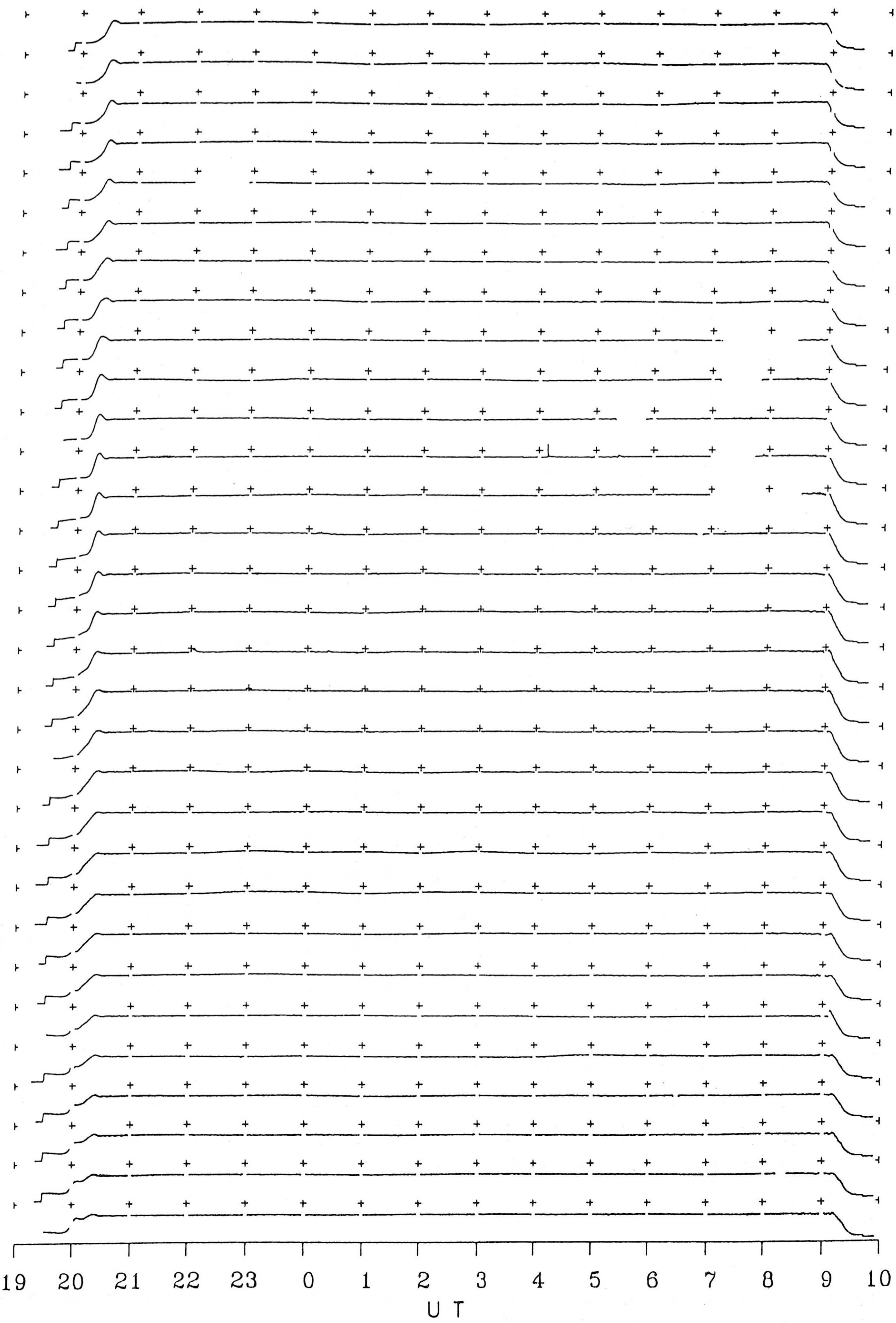
Normal observing period: 1940 - 0940 U.T. (sunrise to sunset)

MAY 1994	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY ($10^{-22}Wm^{-2}Hz^{-1}$) PEAK	MEAN	POLARIZATION REMARKS
12	500	46 C	0408.0	0408.1	2.0	22	7	0
	2800	3 S	0408.3	0408.5	1.0	31	19	WL
	500	42 SER	0517.8	0522.8	6.0	250	-	0
	2800	45 C	0522.6	0522.7	3.0	7	4	0
	2800	1 S	0630.3	0630.6	1.0	4	2	0
	500	42 SER	0751.5	0753.2	2.0	12	-	0
	2800	1 S	0753.3	0753.6	1.0	5	3	0
13	500	42 SER	0616.0	0616.1	2.5	5	-	0
	500	42 SER	2144.1	2149.0	5.5	30	-	0
	500	43 NS	2203	2245	110	10	4	WR
14	500	42 SER	0011.1	0016.0	6.0	21	-	0
16	2800	3 S	2200.5	2203.0	5.0	15	11	0
	2800	45 C	2358.5	2359.3	3.0	8	4	0
	500	46 C	2358.6	0000.4	3.0	220	40	WL
17	500	22 GRF	0008.9	0044.6	40	9	5	WR
	2800	1 S	0020.0	0021.4	3.0	7	5	0

B. Solar Radio Emission

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

May 1994



DAY at 0h UT	$F_{10.7}$ at 3h UT
1	74.7
2	77.3
3	73.9
4	76.4
5	74.1
6	73.9
7	78.5
8	76.0
9	78.0
10	80.6
11	79.3
12	84.2
13	87.1
14	90.8
15	89.0
16	95.4
17	92.9
18	93.8
19	93.6
20	90.6
21	86.2
22	88.6
23	83.0
24	81.9
25	77.9
26	75.7
27	69.8
28	72.6
29	74.1
30	74.4
31	72.9

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

C. RADIO PROPAGATION

C1. H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWV)

MAY 1994 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT / DAY	00H 17M	01H 17M	02H 17M	03H 17M	04H 17M	05H 17M	06H 17M	07H 17M	08H 17M	09H 17M	10H 17M	11H 17M	12H 17M	13H 17M	14H 17M	15H 17M	16H 17M	17H 17M	18H 17M	19H 17M	20H 17M	21H 17M	22H 17M	23H 17M
1	-11	-7	-7	-2	2	-1	-7	-3	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-15	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
2	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-15	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
3	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
4	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
5	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
6	ES -28	ES -28	-11	-11	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-19	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
7	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -12	ES -27
8	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -3	ES -27	ES -27	S	-18	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-16	ES -27
9	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-8	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27
10	ES -27	ES -27	ES -27	ES -27	ES -27	ES -26	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27
11	ES -26	-7	ES -26	ES -26	ES -26	ES -26	ES -26	ES -25	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26
12	ES -26	ES -26	ES -26	ES -26	ES -26	-6	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	-17	ES -26	ES -26	ES -26	ES -26	ES -26
13	ES -27	ES -27	ES -27	ES -27	-12	-9	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-18	ES -27	ES -27	ES -27	-5	-12	-14	ES -12	ES -27
14	-14	ES -27	-14	-3	-2	ES -27	ES -27	ES -27	-21	ES -6	ES -27	-18	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27
15	ES -28	ES -28	ES -28	ES -28	-8	-4	-13	-13	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-9	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
16	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
17	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-13	ES -28	ES -28	ES -28	ES -28
18	ES -28	ES -28	ES -28	ES -28	-19	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -19	ES -19	ES -28	-13	-13	ES -28	-7	-2	-15	-7	ES -7	-13
19	ES -28	ES -28	-19	-4	ES -28	-4	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
20	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-19	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-10	-15	-4	-9	-13
21	ES -28	-13	-19	-19	-4	-4	3	3	ES -28	ES -7	ES -28	ES -28	ES -28	ES -28	-15	ES -28	-15	-15	-6	-10	-7	-7	-3	ES -28
22	ES -28	ES -28	-24	-19	-9	-4	2	1	1	-4	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-19	ES -28	-15	-4	ES -28	-19	-7	ES -28
23	ES -28	-19	-19	ES -28	-19	-7	-5	-7	3	3	-4	ES -28	ES -28	ES -28	ES -28	ES -28	-4	-7	ES -28	-7	-19	-15	ES -7	-9
24	-15	-15	-24	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -2	ES -28	ES -27	ES -28	ES -28	ES -28	ES -28	-4	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
25	ES -28	ES -28	-19	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-15	ES -28	-15	ES -28
26	ES -28	ES -28	ES -28	ES -28	-19	-19	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -13	ES -28
27	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-19	ES -13	ES -28	ES -28	ES -28	ES -28	ES -28	-19	ES -28	-15	ES -28	-13	ES -28
28	ES -28	ES -28	ES -28	-15	-13	-10	-10	-5	-1	3	-15	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-13	ES -28
29	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -27	ES -27	ES -27	-21	-23	ES -27	ES -27	ES -27	ES -27	ES -27	ES -6	ES -27
30	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	S	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28
31	ES -28	-22	ES -28	ES -28	ES -28	ES -28	ES -28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
CNT	31	31	31	31	31	31	31	30	30	29	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	ES -28	ES -28	ES -27	ES -28	ES -27	ES -27	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -26	ES -28
UD	-15	-13	-14	-4	-4	-4	-5	-3	-1	ES -2	ES -26	-19	ES -26	ES -26	-19	-18	-13	ES -26	-15	-5	-15	-7	ES -7	-13
LD	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28

C. RADIO PROPAGATION

C1. H.F. FIELD STRENGTH (UPPER SIDE-BAND OF WWVH)

MAY 1994 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

UT DAY	00H 46M	01H 46M	02H 46M	03H 46M	04H 46M	05H 46M	06H 46M	07H 46M	08H 46M	09H 46M	10H 46M	11H 46M	12H 46M	13H 46M	14H 46M	15H 46M	16H 46M	17H 46M	18H 46M	19H 46M	20H 46M	21H 46M	22H 46M	23H 46M
1	-2	0	5	8	8	16	13	13	12	12	8	8	13	6	-19	ES -28	ES -28	2	ES -28	ES -28	-10	ES -28	-13	-7
2	-13	-13	-7	-7	2	8	9	15	5	-5	-7	-19	ES -28	ES -28	ES -28	ES -28	ES -28	-13	-22	-8	-1	-7	-8	-10
3	6	6	6	-1	10	13	13	6	ES -28	-19	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-8	ES -28	2	-19	-19	-19
4	-19	-13	-13	9	8	6	13	11	13	1	-9	-7	-13	-19	-19	ES -28	ES -28	ES -28	ES -28	1	1	-4	-8	-13
5	1	3	-4	-13	8	13	15	16	11	8	-4	-5	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	4	0	-2	3
6	1	0	3	3	11	18	18	9	3	7	4	-2	ES -28	ES -28	-7	ES -28	ES -28	ES -28	ES -28	1	-4	-19	-9	-13
7	-10	-6	0	-12	8	9	12	9	6	4	7	-3	12	-18	ES -27	-14	ES -27	3	-3	-4	-7	-12	-3	-3
8	-3	-3	-1	7	9	17	15	11	5	8	2	5	-3	-1	4	ES -27	ES -27	ES -27	-15	-2	-2	-2	-1	-8
9	-13	-5	3	10	7	18	11	10	-5	8	-7	-5	ES -27	ES -27	ES -27	-4	ES -27	ES -27	ES -27	2	-6	-2	6	-10
10	ES -27	-5	-1	5	12	17	14	14	18	11	11	8	-3	-14	-18	ES -27	ES -27	ES -27	-12	ES -27	-3	-8	-5	-4
11	-4	0	0	5	10	12	18	18	12	14	12	-2	-11	ES -26	ES -26	ES -26	-2	-4	ES -26	ES -26	-3	-1	-4	0
12	-5	-2	-2	2	5	11	11	5	11	11	15	10	10	3	-7	3	0	5	5	3	2	-11	-2	-2
13	-1	5	-2	7	17	7	15	16	17	17	13	12	7	3	10	-23	11	ES -27	-1	-2	0	2	-2	-12
14	1	-6	7	6	13	16	15	15	16	21	5	-6	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	ES -27	-1	-2	-12	-9	-9
15	-13	-2	0	-2	5	13	12	10	15	14	10	6	9	0	8	11	13	10	-7	-4	-4	-4	-13	-22
16	-19	-19	-2	3	6	13	16	13	6	-10	-2	2	2	-4	-7	-19	-2	-1	-4	1	-9	-13	-4	-10
17	3	3	3	8	8	8	13	16	7	10	8	7	6	-10	-13	-7	-19	15	-1	4	13	3	-2	-5
18	-3	-2	5	8	8	13	18	18	11	10	-4	-4	ES -19	3	-2	0	-19	-7	3	-4	-1	3	-2	-7
19	1	-2	3	6	8	11	13	9	10	8	6	4	ES -28	ES -28	ES -28	ES -28	ES -28	-1	-19	-4	-19	-2	-19	-19
20	-19	-7	3	-4	6	8	13	10	10	9	3	3	5	-2	-2	-7	ES -28	-19	-24	1	8	3	-2	-9
21	-5	-4	-2	0	9	10	10	19	19	16	6	9	3	-22	ES -28	ES -28	-9	-1	10	6	0	-1	3	-4
22	2	-2	1	3	5	11	15	21	17	8	15	15	16	7	-5	ES -28	ES -28	-4	-24	6	-1	-4	-7	-5
23	-7	-7	-8	-1	3	7	8	13	13	15	15	11	5	3	-7	-13	-15	ES -28	-15	-5	8	-2	-4	1
24	-5	-2	-4	1	5	9	8	16	15	13	6	6	-4	-2	-9	-15	-5	-2	1	-2	-2	-9	-1	3
25	-4	-10	-16	-8	-7	2	10	13	13	11	6	4	-7	-13	ES -28	ES -28	ES -28	-1	-15	-6	-7	-13	-15	-19
26	-19	-9	-19	-5	6	13	16	17	5	13	13	9	3	-4	ES -28	ES -28	ES -28	ES -28	ES -28	-5	-10	-6	-6	-4
27	-4	-2	-7	-2	6	13	11	6	8	11	3	-13	-19	ES -28	ES -28	ES -28	-19	-2	-13	3	-4	-4	-4	-13
28	-4	-4	-2	3	8	6	13	13	11	3	8	6	6	8	-2	-2	ES -28	ES -28	ES -28	ES -28	-4	-10	-4	-10
29	-5	-13	-4	8	10	16	16	15	14	8	-1	2	-21	ES -27	0	9	-1	1	-6	-4	-6	-6	ES -27	ES -27
30	-15	-15	-24	-13	-9	-2	1	5	1	4	-3	-6	-2	ES -28	-19	ES -28	ES -28	-19	-13	-19	-13	-19	-22	-22
31	-10	ES -28	-19	-6	-13	-4	-4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
CNT	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	-5	-4	-2	3	8	11	13	13	11	10	6	4	-3	-14	-18	US -27	ES -27	-10	-15	-4	-2	-5	-4	-9
UD	2	3	5	8	12	17	18	18	17	16	15	11	12	6	4	3	0	5	3	4	8	3	-1	1
LD	-19	-15	-19	-12	-7	2	8	6	1	-5	-7	-13	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	ES -28	-10	-19	-19	-22

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

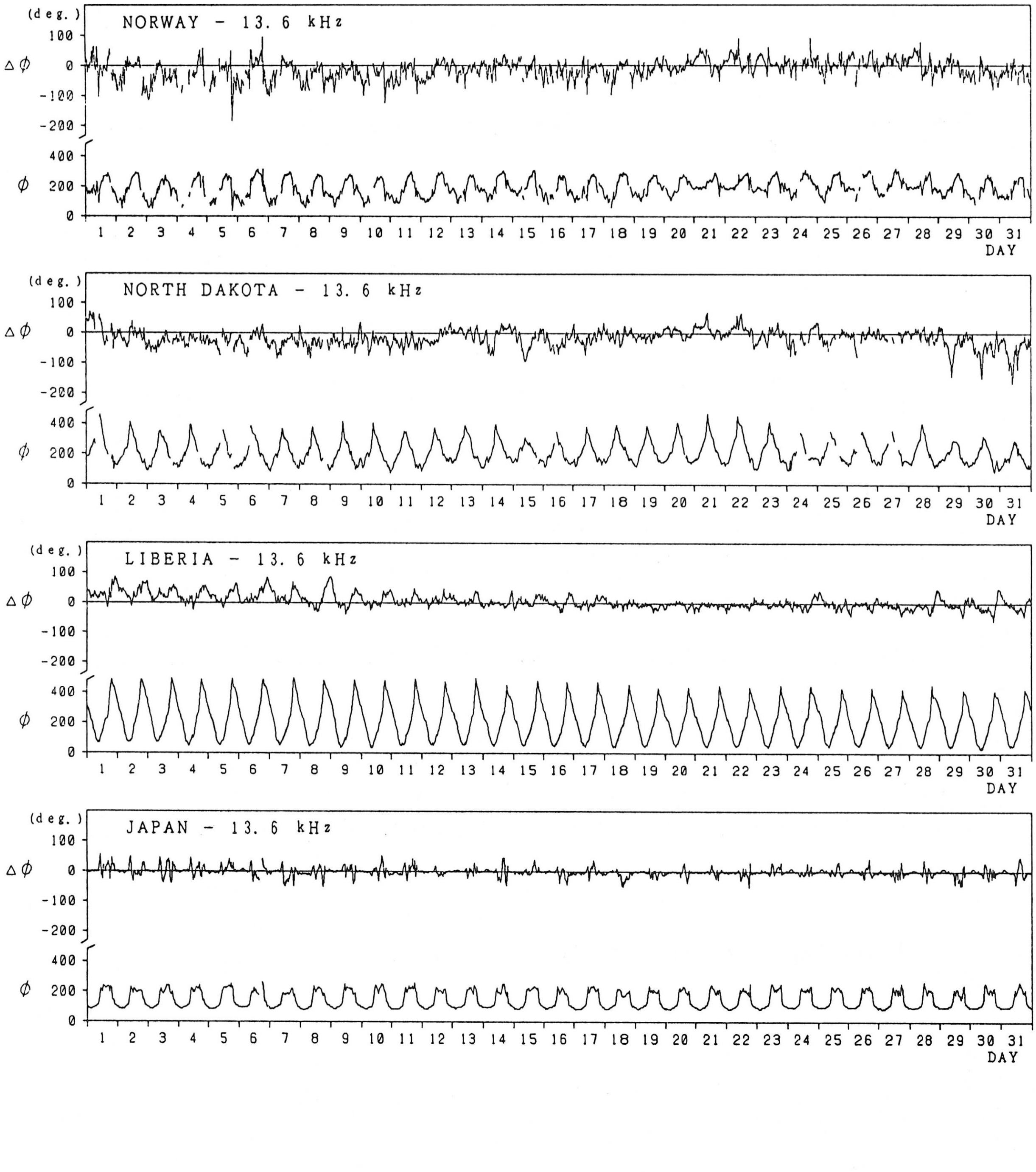
Hiraiso Time in U.T.

MAY 1994	Whole Day Figure	W W V 00-06	W W V 06-12	W W V 12-18	W W V 18-24	W W V H 00-06	W W V H 06-12	W W V H 12-18	W W V H 18-24	Condition 00-06	Condition 06-12	Condition 12-18	Condition 18-24	Principal Geomagnetic Storms Start h m	End h	RaPge nT
1	4+ U	5U	5U	-	-	4	4	4U	3	N	N	N	N	NONE		
2	3+ U	-	-	-	-	4	3	3U	4	N	N	N	N			
3	3o U	-	-	-	-	4	2	3U	3	U	U	U	U			
4	3+ U	-	-	-	-	4	3	3U	4	U	U	U	U			
5	3+ U	-	-	-	-	4	3	3U	4	U	U	U	U			
6	4- U	5U	-	-	-	4	3	3U	3	U	U	U	U			
7	4+	-	-	-	-	4	4	5	4	U	U	U	U			
8	4o	-	-	-	-	4	4	4	4	U	U	U	U			
9	3+ U	-	-	-	-	4	3	3U	4	U	U	U	U			
10	4o	-	-	-	-	4	4	4	4	U	U	U	U			
11	4o U	-	-	-	-	4	4	4U	4	U	U	U	U			
12	4+	-	-	-	-	4	4	5	4	U	U	U	U			
13	4+	5U	-	-	5U	4	5	5	4	U	U	U	U			
14	4o U	5U	5U	-	-	4	4	3U	3	N	N	N	N			
15	4+	5U	5U	-	-	4	4	5	4	N	N	N	N			
16	4o	-	-	-	-	4	3	5	4	N	N	N	N			
17	4+	-	-	-	-	4	4	5	5	N	N	N	N			
18	4+	-	-	5U	5U	4	3	5	4	N	N	N	N			
19	4-	5U	-	-	-	4	4	3	3	N	N	N	N			
20	4+	-	-	-	5U	4	4	4	4	N	N	N	N			
21	5-	5U	5U	5U	5U	4	5	4	5	N	N	N	N			
22	5-	5U	5U	5U	5U	4	5	4	4	N	N	N	N			
23	4+	5U	5U	5U	5U	4	4	4	4	N	N	N	N			
24	4+	5U	-	-	-	4	4	5	4	N	N	N	N			
25	4-	-	-	-	5U	3	4	4	3	N	N	N	N			
26	4o U	5U	-	-	-	3	4	4U	4	N	N	N	N			
27	4o U	-	-	-	5U	4	3	4U	4	N	N	N	N			
28	4+	5U	5U	-	-	4	4	4	3	N	N	N	N			
29	4+	-	-	5U	-	4	4	4	4	N	N	N	N			
30	3o	-	-	-	-	3	3	3	3	N	N	N	N			
31	C	-	C	C	C	2	C	C	C	N	N	N	N			

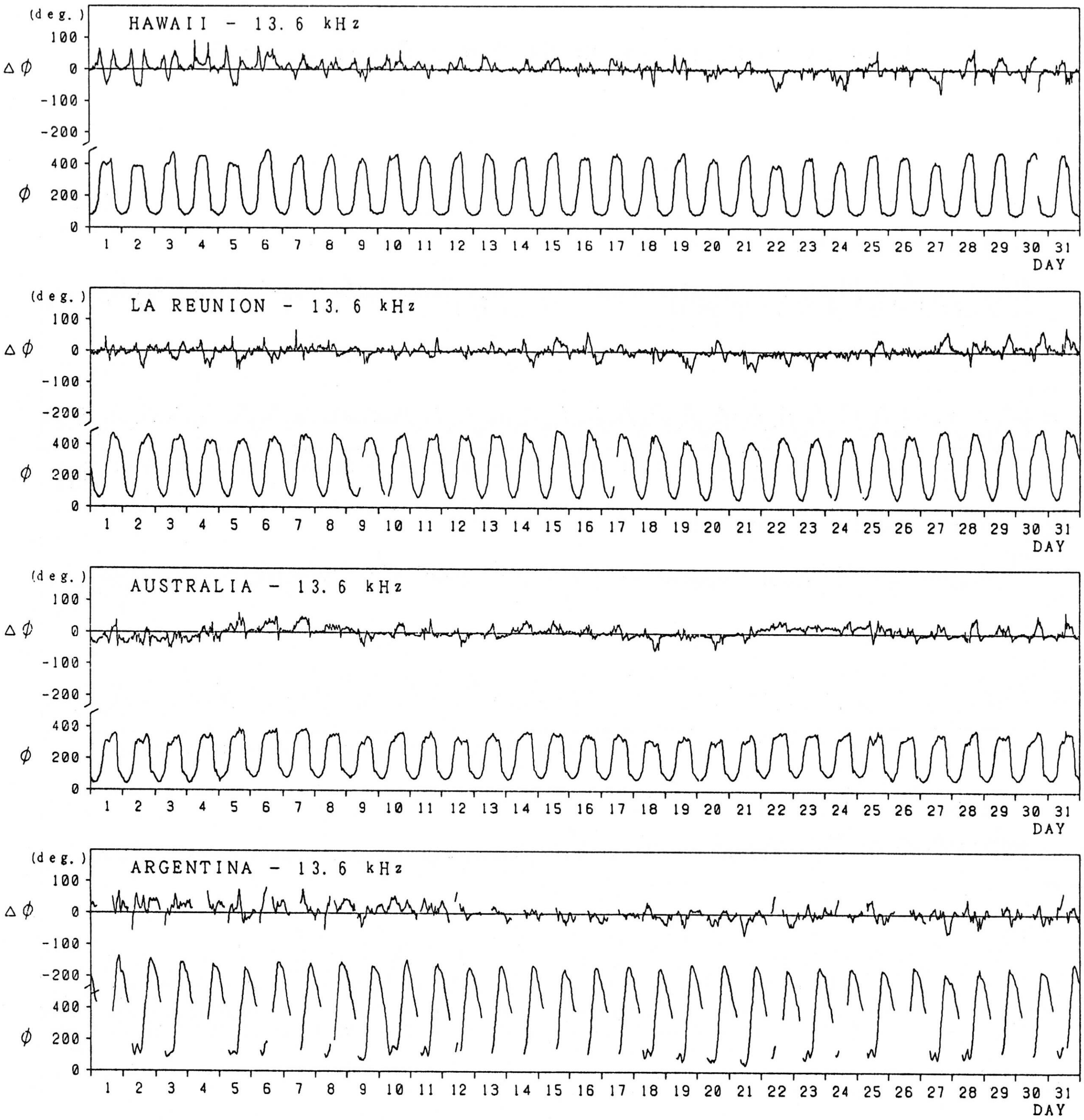
C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo

Inubo May 1994



Inubo　　　　May 1994



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

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

(a) Short Wave Fade-out (SWF) at Hiraiso

Hiraiso | Time in U.T.

MAY 1994	SWF: Drop-out Intensities(dB)									Correspondence	
	CO	HA	AUS	MOS	BBC	Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
None											

NOTE CO:Colorade(WWV) HA:Hawaii(WWVH) AUS:Australia MOS:Moscow BBC:London
* Optical and X-ray Flares

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

May 1994	SPA: Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
12			7				0520	0534	0530
14				11	11		0012	0034	0018

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