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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of 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

JUN. 1995

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	35	35	35	35	35	38	A	A	A	A	A	A	A	A	A	53	A	A	A		57	55	57	29
2	A	35	35	A	30	A	A	A	A	A	A	A	A	A	A	A	A	A	A		58	56		
3	29	40	35	34	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	49	A	A	57	
4	47	41	34		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	60	57	70	38
5	29	A	43		52	59	A	A	A	57	A	A	A	A	A	A	58	A	A	62	60	68	60	60
6	56	58	57	56	48		59	56	56	A	A	A	A	A	A	A	A	A	A	69	68	A		57
7	56	48		29		51	50	A	60	64	A	61	A	A	A	A	36	55	58	61	A	68	57	57
8	41	30	58	57	52	58	60	73	68	60	A	A	A	A	A	A	A	A	66	70	70	68	68	A
9	A	50	48	39	A	A	59	58	A	A	A	A	A	A	A	A	A	A	A	56		72	60	58
10	54		35	41	44	70	A	A	A	59	A	A	A	A	A	A	A	A	A	57	71		68	56
11	49	51	58	48	42	57	A	109	A	A	139	A	A	A	A	A	A	A	A			66	69	60
12	57	58	59	38	48	57	70	63	56	A	A	A	A	A	A	A	A	A	A	57	68	68	57	
13	50	50	58	58	57	64	58	A	66	A	A	A	A	A	56	A	49	A	52	60	69	71	70	68
14		34	43	37		57	67	55	60	N	A	A	A	A	A	A	54	50	58	72	70	73	68	69
15	57	56	56	55	48	55	68	68	60	A		A	A	A	A	A	A	A	A	A	72	67	69	
16		A	38	A	50	48	A	A	A	A	A	A	A	A	A	A	A	A	A		A	67		57
17	56	57	52	36	44	A	A	A	A	70	A	A	A	A	A	A	61	62	58		57	66	68	68
18	57	57	56	50	39	36	A	A	A	A	A	A	A	A	A	A		A	A	80		71	60	
19	51	28		32	38	A	A	A	A	A	A	A	A	A	A	A	A	A	63	66	A	57	56	A
20	57	35	26	28	A	A	A	A	A	A	A	A	A	A	A	A	A	A	58	44	49	A	A	A
21	46	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		A	56	A
22	A	A	A	A	69	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	58			58
23	36	38	32	38	28	A	A	A	A	A	A	A	A	A	A	A	A	A	56	68	A	68		37
24	35	35	36	38	A	39	49	A	56	A	A	A	A	A	A	A	A	A	51	A	57	68		29
25	35	35	35	38		50	A	A	A	A	A	A	A	A	A	A	A	A	A	59	A	68	57	A
26	26	A	A	A	A	44	84	A	A	A	A	A	A	A	A	A	A	A	A	71	A	A	49	A
27	A	32		55		58	56	A	A	57	A	A	A	A	A	A	49	A	58		A	59	A	58
28		57	28	35	47		A	A	A	A	A	A	A	A	A	A	A	A	59	58	A	63	A	A
29	38	A	46	47	A	41	A	A	A	A	A	A	B	A	A	A	A	A	28	59	60	57	57	58
30	57	48	35	38	35	A	A	58	A	A	A	A	A	A	A	A	A	A	A	A	A	A	57	58
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	23	24	23	18	17	11												12	18	16	22	20	18
MED	49	41	40	38	46	55	59												58	60	60	68	60	58
U Q	56	56	56	50	50	58	68												58	69	69	68	68	60
L Q	35	35	35	35	38	42	56												54	57	57	59	57	56

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT WAKKANAI

JUN. 1995

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	33	38	45	66	73	74	43	64	65	39	54	28	40	64		50	48	33	28
2	34	25	25	30	55	50	66	53	63	40	44	41	40	55	61	32	61	50	57	41	34	26	37	33
3	25	G	26	26	28	37	32		77	72	38	44	56		66	29		55	66	45	37	37	29	28
4	G	G	G	G	37	58	49	52	57	56	68	45	40	65	30	42	48		65	72	64	45	38	30
5	28	33	G	G	55	24	40	70	53	51	40	46	53	39	35	34	29	34	35	37	38	41	33	38
6	30	23	G	G	G	24	34	54	48	31	34	44	31	44	37	56	90	78	76	63	40	39	43	34
7	33	39	27	26	28	44	31	49	50	59	69	31	70	44	36	36	29	39	63	55	40	G	42	29
8	33	26	G	25	32	42	43	50	41	37	33	36	53	73	73	83	73	78	65	39	36	38	55	
9	45	42		63	71	59	40	65	54	66	36	36	39	65	59	66	94	55	56	36	40	36	G	G
10	G	G	G	G	G	30	43	42	61	38	39	43	59	57	105	75	96	39	62	43		56	44	30
11	36	26	G	32	G	31	58		55	72		62	68	66		94	45	61	65			45		29
12	26	G	G	G	27	32	29	32	38	41	42	36	41	35	34	31	65	66	42	55	36	35	26	
13	30	35	41	37	54	34	58	78	40	54	42	54	36	48	34	32	40	61	40	46	38	32	26	G
14		25	G	G	28	38	46	62	56	43	56	45	63	44	39	34	32		51	32	36	33	28	28
15	27	36	29	32	40	56	46	37	44	42		58	58	56	56	34	74	106	109	88	76	76	39	34
16	37	38	24		34	34	58	69	68	73	53	57	37	64	96	44	49	77	62		70	55		39
17	G	23	G	G	33	53	64		96	77	55	42		36	34	36	39	42	55	80	36	66	56	G
18	25	30	41	34	32	36	52		70	76	57		46	63		160		84		64		58	40	
19	G	G	23	24	33	31	39	41	43	64	56	59	38	37	67	33		58	39	66	73	39	59	55
20	46	32	41	42	37	48	57		68	59	55	41	61	38	42	30	30	39	37	35	28	44	60	56
21	39	58	65	45	40	46	49	65	46	39	37	28	36	34	38		44	35	54	67		56	39	
22	56	51		40		35	60	69	58	62	57	37	37	62		51	75	71	46	60	34		28	G
23	28	26	28	25	62	33	34	61	74	60	40	46	31	41	40	41	42	32	39	54	54	42	36	33
24	28	26	29	27	41	41	30	35	42	54	57	35	34	32	37	44	69	60	38	64	38	34	31	28
25	29	24	G	24	G	32	34	73	43	55	56	40	56	133	90	52	92	107	72	73	71	72	61	61
26	32		76	36	44	29	41	71	36	87	54	42	44	56	66	160	92	73	70		98	48		57
27	44	40	G	G	G	34	30	32	64	53	43	35	27	30	37	43	34	49	41	50	50	60	66	33
28	35	38	25	27	25	34	34	46	38	70	66	29	33	31	32	30	33	43	40	60	74	48	48	40
29	38	36	G	28	32	28	47	61	60	66	60	37		33	32	32	35	57	39	34	36	26	23	35
30	23	G	G	G	G	31	34	40	42	58	87	41	71	59	56	27	86	62	47	65	61	65	58	44
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	28	29	29	30	30	25	30	30	27	29	28	28	26	28	23	27	29	26	25	29	27	26
MED	30	26	12	26	32	34	42	53	54	58	54	42	42	46	39	38	44	57	55	55	40	44	39	33
U Q	36	37	28	33	40	44	52	67	64	70	57	45	58	62	61	53	69	71	65	65	62	56	55	39
L Q	25	12	G	G	25	31	34	41	43	43	40	36	36	36	35	32	33	40	40	41	36	35	29	28

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

JUN. 1995

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT KOKUBUNJI

JUN. 1995

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	50	47	45	35	41	A	A	A	A	A	A	A	A	69	64	58	58	61	66	63		A	53
2	34	41	A	A	A	35	A	A	A	A	A	B	A	A	A	A	A	58	64	62	70		A	A
3	46	44	41	A	A	A	A	44	A	A	A	A	A	A		50	52	48	59	60	61	56	57	44
4	44	43	40	40	35	A	48	A	A	A	A	A	A	A	A	A	A			81	A		A	51
5	59	40	42		A	41	48		A	A	A	A	A	A	A	A	61	61	66			57	54	57
6	48	46			48		54	70		A	A	A	A	A	A	63	59	A		67	69	57	57	57
7	56	50	51	42	37	31	57	54	64	62	62	54	49	A	A	A	57	60	64	67	70	72	68	69
8		56	46	29	48		69	70			A	A	A			A	A				A	A		A
9	A	56	57	56	47	57		A	A	A	A	A	A	54	A	A	A	A	60		68		68	59
10	A	64	68	45		47		A	66	A	A	159	A	A	A	A	66	A	71	71	69	72	68	A
11	48	A	57		42	51	56	A	A	A	A	A			A	A	56	A	A	68	58	A	64	56
12	56	56	57	50	47	51		A		A	A	A	A	A	A	A		A	A	87	57		A	A
13	A	46	42	42	A	62	58	A	68		A	A	A	A	A	A	A		A	68		94	81	A
14	37	41	38	40	A	46	60	74	81	A	A	A	A	A	A	A	A	69	66		71	73	58	A
15	59	46	A	A	44	44	60	63		A	A	A	A	A	A		A		169	94	A	A	69	
16		44			40	A	A	A	A	A	124	A	A	A	67	A	66	62	61	54	68	57	57	60
17	A	A	47		A	47	A	A	76	A	A	A	99	A	A					146	60	64		A
18	A	A	50	A	33		A	A			A		A	A	A	A	55	60	71	82	81	57	52	57
19	56		47	38	A	A	A	A	A	A	A	A	A	A	A	A	58	A	82		A	A	54	54
20		A	A	37			A	A	60	A	A	A	A	A	A	A	A	38		52		59	56	54
21		46	44	37		37	A	54	52	A	95	A	A	58	A	A	A	52	53	58	56	46	42	46
22	A	37	38	35	35	37	A	A	A	A	A	A	A	A	A	A	A	A	A	129	52		A	42
23	36	34	34	34		46	46	48	A	A	A	49	A	A	A	62	66	68	77	81	71	A	A	A
24		31	A	A	38	A	A	60	A	55	A	A	A	A	A	A				151	72	58	57	46
25		26	A	35	A	45	54	A		A	A	A	A	A	A	51	55	A	50	60	68	A	47	A
26	A	45	36	37	34			A	A	A	A	A	A	A	A	A	A	A	A	62		A	57	48
27	A		44	A	36	40	44	68	52	A	A	54	A	A	A	A	A		93	68	58	59	60	54
28		A	A	40	A	47		51	52	A	A	A	A	A	A	A		A	95	91		A	69	69
29		A	A	38	A	59	A	A	A	A	A	A	A	A	A	A	52	54	54	60	68	67		A
30	47	48	42	39	A	A	A	63	A		A	A	115	A	A	A	68	66	60	152	A	68	58	67
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	13	22	21	19	15	19	12	12									14	13	19	25	20	16	21	19
MED	48	46	44	39	38	46	55	62									58	60	64	68	68	59	57	54
U Q	56	50	50	42	47	51	59	69									66	64	77	89	70	70	68	59
L Q	40	41	40	37	35	40	48	52									55	53	60	61	59	57	55	48

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

JUN. 1995

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	73	58	32	28	59	56	44	45	56	62	48	71	53	53	47	69	41	46	56	62	69			70
2	60	36	41	40	42	33	44	49	54	68	74		32	39	41	41	40	34	59	72	80	59	69	60
3	32	34	29	69	54	40	56	56	54	85	108	61	41	40	G	86	27	27	41	82	57	44		28
4	30	G	G	G	G	62	43	57	71	72	73	72		105	104	71	108		158	82	90		72	
5	57	51	34	30	46	30	44		75	75	84	53	77	74	57	84		44	46		42	40	52	49
6	G	54	67	51	30	34	37	41	51	51	96	81	69	58	144	34	58	79		40	57	53	44	52
7	39	48	30	29	34	32	40	51	44	39		31	39	68	53	61	43	46	46	35	39	49	74	56
8		49	61		133		58	60	86		134	116	94			64					148	90		110
9	75	39	24	G	G	36	48	73	136	84	58	66	68	31	44	54	66	60	55		44		62	74
10	74	29	G	25		32	43	61	62	70	98	105	73	56	66	61	52	102	64		50	54	60	44
11	51	70	34	40	G	24	41	96	66	61	41	52	G	B	52	36	45	67	66	104	62		60	51
12	49	40	44	28	28	30		130		48	55	62	69	83	74	61		88	108	78	51		98	73
13	72	35	36	28	31	29	40	59	68	61	85	48	46	79	88	110	70			104		104	54	69
14	29	29	29	26	39	28	44	54	69	78	59	58	62	76	70	90	69	44	58		54	72	82	74
15	84	71	78	59	66	50	54	58		112		109	72		95					160	128	145	59	
16		81	91	42	31	53	58	77		114	132	62	126	55	40	76	72	37	38	60	62	59	62	73
17	106	96	50		86	50	57			70	126	140	82		131	95		116		131	58	61	73	83
18	85	78	58	92	72	91	69	62	147	131	170	79	60	39	34	69	29	43	53		23	60	60	48
19	39	58	38	32	40	30	40	59	70	54	67	59	55	56	72	70	52	75	59	73	88	92	44	89
20		57		41	40		37	48	61	69	34	59	52		58	38	74	46		60	G	38	34	29
21		29	52	30	47	26	36	30	50	129	90	50	38	G	42	48	28	31	40	51	40	29	29	32
22	38	52	30	30	31	G	38	44	85	77	82	50	46	44	70	32	48	57	84	129	92	78	47	44
23	59	38	42	25	G	40	28	45	51	92	57	40	74	59	55	56	49	45	31	34	44	62	86	60
24	44	57	56	34	37	49	53	42	70	58	57	48	74	30	59	68		163				58	52	51
25	53	51	46	28	31	33	38	47		135	90	97	55	50	61	40	32	70	57	53	62		43	53
26	69	28	28	51		113	94	70	51	59	133	32	58	60		78	66	56		41		52	63	40
27	41		38	36	34	28	35	40	42	48	67	56	49	51	57	63		127	106	56	73	77	58	59
28	60	58	52	32	32	28	46	31	46	46	46	50	40	76	52	40		74		129	58	40	41	80
29	40	54	62	40	44	33	60	66	96	70	60	54	69	34	31	37	34	44	40	34	29	39		54
30	41	34	32	33	38	33	49	55	74	83	166	145	127	32	48	38	30	35	34	135	70	107	73	63
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	29	28	28	28	29	28	25	29	28	29	29	25	28	29	22	26	21	23	27	24	26	28
MED	52	51	38	32	38	33	44	56	66	70	78	59	60	55	57	61	48	51	56	72	58	59	60	58
U Q	72	58	54	40	46	49	55	61	74	84	103	80	73	71	71	73	66	75	65	104	73	77	72	73
L Q	39	34	30	28	31	29	39	45	51	58	57	50	46	39	45	40	34	44	40	51	44	46	47	48

HOURLY VALUES OF fmin AT KOKUBUNJI

JUN. 1995

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	15	14	14	14	15	15	16	14	16	21	21	28	33	17	18	15	15	15	14	14		15	14
2	15	14	14	15	15	14	15	14	14	17	18	B	17	21	33	18	17	14	15	15	14	15	15	14
3	14	15	14	14	14	15	14	15	15	20	28	30		71	81	16	17	15	15	15	14	14	15	14
4	15	15	15	15	14	15	14	14	16	15	21	34	34	34	33	16	17		14	14	14		14	14
5	15	14	14	14	15	15	16		14	17	14	34	33	34	15	20	17	16	15		15	15	14	15
6	15	14	14	15	15	15	14	14	15	18	29	28	30	24	24	18	15	15		15	14	15	14	15
7	15	14	15	14	15	15	15	14	18	28	23	48	48	33	16	18	15	15	15	14	15	14	15	15
8		15	14	14	15		16	15	15		23	29	30		36	17	17				14	15		15
9	15	15	15	15	15	16	14	15	16	15	26	24	23	22	22	17	18	15	15		15		14	14
10	15	14	15	14		15	15	15	16	16	34	26	35	35	20	17	17	15	15	14	15	14	14	14
11	15	14	14	15	15	14	15	15	18	17		33			20	17	15	14	15	14	14	15	14	14
12	14	14	15	14	14	14	15	14		15	21	28	29	27	23	18		14	14	16	14		15	15
13	15	14	14	14	15	15	15	14	17	20	30	34	21	21	15	21	15		15	15		15	15	14
14	15	14	14	14	15	15	14	14	14	22	21	22	20	30	33	17	15	14	15		15	14	14	14
15	14	14	15	15	15	14	14	15		16	18	21	23	17	17		20		14	15	15	14	14	
16		15	15	15	14	15	15	14	14	15	20	22	32	20	20	15	18	15	15	15	14	15	15	15
17	15	14	14		15	15	16	14	15	28	17	20	21	32	15	15		15		15	15	15	14	15
18	14	14	14	14	14	14	15	15	16	16	21	22	23	21	21	15	14	15	14	14	15	14	15	14
19	14	15	14	15	14	15	15	14	14	18	18	26	33	20	33	17	28	17	14	15	17	15	15	15
20		14	15	15	15		14	15	15	16	15	18	18	29	17	16	15	14		14	15	14	15	14
21		15	15	15	14	16	15	14	16	18	26	20		46	22	20	15	14	15	15	15	14	14	15
22	14	15	14	15	14	18	15	15	15	17	18	17	24	35	33	24	14	15	15	14	15	15	14	14
23	15	14	15	14	14	15	15	15	16	32	33	47	34	33	20	18	17	14	15	15	14	15	15	15
24	15	15	14	14	15	15	14	14	15	15	20	18	30	18	17	17	15	14		14	14	15	14	15
25	14	15	14	14	14	15	14	16		16	20	35	36	18	20	15	17	16	14	15	15	14	15	14
26	15	14	14	15	15	15	15	14	15	16	16	15	27	39	18	15	15	15	15	15		14	15	14
27	15		15	15	15	15	15	15	15	17	17	16	36	14	16	33	15	16	15	14	14	15	15	15
28	14	14	14	15	14	16	16	15	15	16	32	30		38	22	18		15	15	15	15	14	15	14
29	15	14	14	15	15	15	15	15	15	24	20	32	30	18		20	17	15	15	15	14	14		14
30	14	14	14	15	15	14	15	15	16	18	20	34	27	24	20	17	15	15	14	14	14	15	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	29	30	29	29	28	30	29	27	29	29	29	26	28	29	29	27	26	25	26	28	26	28	29
MED	15	14	14	15	15	15	15	15	15	17	21	26	30	28	20	17	15	15	15	15	14	15	15	14
U Q	15	15	15	15	15	15	15	15	16	19	26	33	33	34	28	18	17	15	15	15	15	15	15	15
L Q	14	14	14	14	14	15	14	14	15	16	18	20	23	20	17	16	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT YAMAGAWA

JUN. 1995

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	49	54	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	66	A	A	67	A	79	A
2	A	A	A	A	30	28	A	A	A	A	A	A	A	A	A	A	A	A	A	66	A	A	A	69
3		23	31	26	A	30		A	A	A	A	A	A	A	A	63	60	A	61	66	68	A	A	A
4	A	A	A	A	29	28	A	A	A	A	A	A	A	A	A	A	A	66	66	A		A	68	A
5	59	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	94	A	A	A	89	A
6	26	A	31	A	A	32	57	A	54	A	A	A			74	75	73	76	81	81	71	79		62
7	55	A	58	59	49	32	57	57	67	A	A	62		69	A	A	66	70	72	84	82	70		65
8	64	60	N	53			59	67	A	A	A	A	68	A	B	A	A	74	68	A	A	A	A	A
9	59	28	A	A	32	32	A	A	A	63		A	A	61	A	A	60	A	A	A	59	A	A	58
10	68	59	58		29		A	72	68	A	A		B	A	A	A	A	76	A	A	72	71	68	70
11	56	62	69	A	59		39	A	A	A	A	A	A	A	A	A	A	A		A	70	A	66	A
12	30		25	30	31			A	A	A	A	A	A	B	A	49	A	A		A	68	A	31	A
13	29	A	A	31	31	32		A	63	A	A	A	A	79	A	66	66	60	60	A	A	79	A	A
14	A	A	A	A	A	A	A	A	78	A	A	A	A	A	A	76	A	73	67		68	60	A	
15	59		23	24	23	A	A	A	70	67	A	58	A	A	68	70	70	68	A	A	76	A	A	A
16	A	28	28	A	A	29	A	67	64	A	A	A	A	A	A	74	81	75	63	60	60	59		A
17	60	A	A	A	A	A	A	A	A	A	A	A	A	A	A	67	A	76	82	83	74	74	66	68
18	A		57	A	A	A	A	66	A	A	A		A	A	49	A	62	66	75	84	83	A	A	A
19	A	A	A	A	A	24	A	A	57	A	A	A	A	A	61	A	A	70	82	84	82	A	32	A
20	A	68	A	A	A	A	A	A	72	A	A	A	A	A	A	A	65	67	71		54	52		
21	59	49	45	26	25	24	59	A	A	A	A	A				A	A	A	62					30
22	31	A	32	32	26		32	A	49	A	A	69	A	A	A			56		A	A		A	A
23	A	29	A	32		23	32	A	A	79	A	A	A	A	A	66	72	80	A	75		A	A	A
24	32		A		18		A	A	A	66	A	A	A	A	69	A	A	A	A	A		A	A	A
25	A	A	A	A	30		A	A	A	49	A	A	A	A	95			70	72	60	68	A	A	A
26	A	A	A	A	A	31	A	A	A	A	A	A	A	A	A	75	72	A	69	A	A	A	A	79
27	A	A	52		24		A	A	A	A	A	A	A	A	A	62	A	67	62	A	68	69	A	A
28	A	A	28	25	A		59	A	A	A	A	A	A	B	A	A	A	A	61	A	72	72	A	A
29	A	A	A	A	A	28	A	A	A	A	A	A	A			A	64	62	A	58	A	A	A	89
30	A	32	29	A	A	26	59	A	A	A	A	A	A	A	A	68	72	75	70	A	A	70	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	15	11	14	10	14	14			10							12	13	20	19	11	18	11		
MED	56	49	32	30	30	28			66							68	66	70	69	75	69	70		
U Q	59	60	57	32	31	32			70							74	72	75	75	84	74	74		
L Q	31	28	28	26	25	26			57							64	63	66	62	60	68	60		

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

JUN. 1995

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	72	34	50	49	52	36	34	52	62	80	77	85	63	85	60	63	34	34	73	78	58	34	58	
2	91	53	44	51	36	32	39	49	62	104	64	86		102	71	74	83	98	107	72	40	38	84	78
3	78	28	26	73	38	G	33	49	58	78	95	66	62	85	61	30	29	51	60	24	25	92	84	54
4	33	40	39	37	32	29	54	38	51	79	81	59	71	90	96	60	50	60	61	108		49	32	81
5	85	49	38	38	60	32	29	67	61	92	152	104		96	115	124	94	116	102	61	54	92	39	40
6	32	39	40	58	40	34	29	32	31	34	63	73			G	31	39	61	47	56	56	30		50
7	32	33	26	30	25	G	30	35	57	82	91	57	B	G	31	29	34	29	56	30	24	G		33
8	34	34	34	40	36	28	28	34	83	112	66	62	29	66	B	62	78	93	50	57	93	115	92	72
9	68	53	37	84	50	28	40	91	82	58	104	164	126	G	32	31	30	28	40	72	71	66	57	39
10	32	34	27	G	G	G	36	76	60		31	G	B	31	71	79	127	62	110	106	32	34	33	36
11	33	34	60	53	32		30	78	97	160	127	86	91	91	76	114	92	38	32	80	92	58	90	92
12	32	28	29	27	26	30	39	96	36	61	62	92	62		37	52	27	80		60	131	55	33	39
13	84	40	34	32	G	G		32	56	62	77	88	91	73	81	50	31	30	47	145	139	58	60	56
14	52	94	93	127	100	82	39	112	71	78	81	64	61	119	88	71	92	53	54	54	34	47	38	28
15	31	33	33	36	59	92	59	57	32	64	151	55	97	60	G	61	54	62	73	85	94	91	70	52
16		34	53	70	34	G	34	38	62	91	100	110	160	152	74	38	32	31	29	29	31	38	38	65
17	37	60	59	59	39	38	78	70	152	88	58	84	74	80	82	50	80	55	74	70	43	38	39	38
18	59		38	30	34	77	59	68	115	65	102		159	90	58	31	31	56	54	45	38	80	40	36
19	35	40	39	34	39	32	50	38	56	80	166	38	93	64	30	56	86	80	49	38	50	34	69	40
20	39	68	78	92	73	82	39	36	38	68	61	92	108	76	31	38	32	30	38	34	29	30	G	G
21	G	28	G	G	G	24	29	79	31	31	29	33				30	27	30	25	26	26	24	G	G
22	32	34	26	29	25	26	33	38	39	62	90	154	93	59	28	B	B	32	79	94	144	33	34	39
23	58	33	39	34	30	28	23	38	33	100	76	60	60	163	63	30	G	32	38	37	32	89	60	32
24	36		58	60	25	24	59	60	59	60	93	77	111	149	88	84	78	80		118		110	83	88
25	68	85	80	34	31	28	36	94	152	54	83	78	141	139	103			53	48	40	50	39	38	33
26	33	36	29	58	54	33	79	72	65	30	32	62	32	119	33	69	71	80	78	110	89	94	78	68
27	59	38	G	32	33	27	33	32	29	32	70	53	116	133	78	54	59	61	50	85	33	36		58
28	69	80	59		59	28	39	32	66	93	130	107	63		31	30	111	152	60	34	56	37	58	82
29	33	59	38	33	36	32	35	51	95	100	105	96	70			34	33	27	58	39	50	83	37	37
30	50	33	30	32	56	32	39	125	115	119	152	96	70	71	36	36	38	48	31	67	39	58	104	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	30	29	30	29	29	30	30	29	30	29	24	25	27	28	28	30	28	30	28	30	27	29
MED	37	37	38	37	36	29	36	52	60	78	82	78	82	85	61	51	44	54	54	60	50	48	57	40
U Q	68	53	53	58	52	33	45	76	82	92	104	94	109	119	81	66	81	80	73	85	80	83	78	66
L Q	32	33	29	32	30	25	31	38	39	60	64	59	62	65	31	31	31	32	43	38	32	34	37	34

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

JUN. 1995

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	14	16	17	20	43	44	45	46	20	21	15	15	14	15	14	14	14
2	15	14	14	14	14	14	15	15	15	17	20	44	44	43	44	22	17	15	15	14	14	15	14	14
3	14	14	14	14	14	15	15	14	16	21	21	44	44	45	44	21	17	15	14	16	14	14	14	14
4	14	14	14	14	14	14	15	15	15	15	44	46	46	44	43	22	16	16	15	14		14	15	14
5	15	15	14	15	14	14	15	15	18	46	22	51		43	43	20	44	16	14	14	14	15	14	14
6	14	14	14	14	14	15	15	15	16	21	21	21			53	21	20	16	15	14	14	14		14
7	14	14	15	15	14	14	14	15	16	18	22	44		50	22		17	15	14	14	15	14		14
8	15	14	14	14	14	14	14	15	15	20	22	44	51	46	B	22	20	15	14	14	14	15	14	15
9	14	14	15	14	15	14	14	14	16	16	21	42	45	50	66	66	21	15	14	14	15	14	14	14
10	15	14	14	15	15	15	14	15	15	17	22			23	44	20	17	15	14	14	14	14	14	15
11	14	14	15	14	15		14	15	17	21	46	43	44	44	44	21	17	17	14	14	14	14	14	14
12	14	14	14	14	15	15	14	14	15	18	22	42	44		22	20	17	14		14	14	14	14	14
13	15	14	14	14	14	14		15	16	18	20	24	45	44	22	21	17	16	15	14	14	14	14	14
14	14	14	14	14	14	14	14	14	17	22	45	45	46	45	23	21	16	16	14	14	14	15	14	14
15	14	15	14	14	14	14	15	14	15	20	21	42	45	45	49	21	20	16	14	14	14	14	14	15
16	15	14	14	14	14	14	15	14	16	22	20	45	45	45	21	22	20	15	14	14	14	14	14	15
17	15	14	14	16	14	14	14	15	14	17	21	20	45	21	44	21	17	15	14	14	14	14	15	14
18	15		14	15	14	14	14	14	15	16	20		23	22	45	21	15	15	14	14	15	14	15	14
19	14	14	14	14	14	14	15	14	16	15	20	22	22	24	48	18	16	15	14	14	14	14	14	14
20	15	14	14	14	15	14	14	14	15	17	16	21	22	50	23	18	16	15	14	14	14	15	14	14
21	14	15	14	15	15	15	14	14	15	20		18				23	18	14	15	15	14	14	15	14
22	14	15	14	15	15	14	14	14	15	15	45	45	45	50	66			16	14	14	16	14	14	14
23	14	14	14	14	14	14	16	14	15	21	42	22	42	48	46	22		14	14	14	14	14	14	14
24	14	14	14	14	14	15	14	14	15	18	20	24	22	45	23	21	16	14	14	14		14	15	14
25	14	14	14	14	14	14	15	15	15	46	45	44	46	45	23			14	14	14	14	15	14	14
26	15	14	14	14	14	14	14	14	15	17	21	22	66	24	22	21	18	15	16	14	14	14	15	15
27	15	14	15	14	14	14	14	14	15	18	22	22	47	44	22	46	45	16	14	14	14	14	14	14
28	15	14	15	14	15	14	14	14	15	18	22	23	44		22	23	17		14	15	14	14	14	14
29	14	15	14	14	14	14	14	15	15	16	20	21	44			26	18	15	14	14	14	14	14	14
30	14	15	15	15	14	14	14	15	17	21	24	41	45	45	23	21	20	16	15	14	14	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	29	29	30	30	30	29	28	25	25	27	27	27	29	29	30	28	30	28	30
MED	14	14	14	14	14	14	14	14	15	18	21	42	45	45	43	21	17	15	14	14	14	14	14	14
U Q	15	14	14	15	15	14	15	15	16	21	23	44	45	45	46	22	20	16	15	14	14	14	14	14
L Q	14	14	14	14	14	14	14	14	15	17	20	22	44	43	22	21	17	15	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT OKINAWA

JUN. 1995

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	57	64	A	42	46	A	46	A	A	A	A	A	A	62	A	70	81	74	A	A	A	A	43	A
2	A	34	A	A	A	A	A	A	A	A		A	A	65	72	70	72	82	81	A	71	A		
3	A	57	54	A	29	38	A	58	67	A	A	A	A	A	82	76	75	71	72	A	A	A	A	A
4	A	41	42	38	40	38	34	41	A	A	58	A	A	57	70	73	73	83	86	69	A	A	A	A
5	54	60		A	A	34	47	53	50	A	A	A	B	B	70	78	80	83	70	84	82	A	A	A
6	64	52	48	44	38		A	52	A	57	A	62	A	A	72	A	A	84		65	A	A	A	70
7	68	61	59	54	42	38		64	63	67	A	68	A	68	58	68	76	96	86	86	76	67	A	68
8	54	57	56	54	50	A	A	45	58	58	68	64	76	75	66	A	A	A	A	60	A	A	A	58
9	64	61	54	42		41		A	A	A	A	72	70	A	A	A	A	57	61	69	67	A		A
10	A		A	44	32	30	58	A	A		123	A	67	A	A	A	A	A	A	A	A	A	A	68
11			58	55	58		44	55	60	A	A	A	64	70	82	76	72	64	62	64	58	62	A	A
12			44	39	38	32	A	54	A	57	58	54	67	62	60	60	A	67	A	A	95	A	A	A
13	A	50	47	44	43	36	46	57	58	50	A	A	A	A	70	72	71	68	A	A	A	A	A	A
14	A	A	A	A	89	A		A	67	A	A	A	A	71	A	A	92	85	79	68	64	A	A	48
15	43	47	45	41	40		48	57	A	66	A	A	A	61	77	80	82	78	76	72	76	A	69	A
16	A	56	A	35	35	A	49	69	82	A	A	A	A	A	75	86	92	80	63	60	58	70	60	51
17	55	52	A	34	A	A	A	A	A	A	189	A	A	81	79	78	87	86	92	87	82	95	67	70
18	65	70	68	60	50	36	48	66	67	A	A	A	A	71	68	68	76	81	87	94	76	38	42	37
19	A		A	A	A	B	A	65	A	68	A	A	A	A	61	61	A	A	80	83	67	A	A	A
20	A	69	A	40	A	A	A	44		A	A	A	A	A	A		A	A	A	68	A	68	57	A
21	56	55	69	44	46	40		45	A	A	A	A	67	57	A	A	68	70	67	65	48		38	37
22	46	35	A	38	A	A	44	52	A	A	A	A	A	A	A	A	A	75	77	57	A	A	42	43
23	44	46	A	A	A	A	44	48	68	60	A	A	A	A	A	68	82	77	76	A	A	56	61	55
24	57	44		39	37	A	A	A	68	A	A	A	A	A	70	A	A	A	A	A	62	A	50	A
25	A	A	44	38	35	38	A	57	57	A	A	109	A	61	68	74	78	94	90	A	A	A	A	A
26	50	47	40	37	42	59	A	68	62	48	A	58	A	A	65	91	80	53	61	60	67	69	A	56
27	A	A	A	38	38	29	46	49	60	57	A	A	A	62	70	A	78	A	A	A	A	93	A	A
28	37	A	48		36	A	A	A	62	A	A	49	64	74	80	A	A	76	A		80	A	A	A
29	A	A	A	A	A	A	46	A	A	A		A	A	A	A	66	81	79	A	72	94	60	A	54
30	56	58	57	A	35	38	A	A	A	A	A	A	A	A	73	76	86	78	78	70	52	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	21	16	21	21	14	13	20	15	10				15	21	19	20	24	19	19	18	10	10	13
MED	56	55	51	41	40	38	46	54	62	58				65	70	73	79	78	77	69	69	68	54	55
U Q	60	60	57	44	46	38	48	61	67	66				71	76	78	82	83	86	83	80	70	61	68
L Q	48	46	44	38	35	34	44	48	58	57				61	67	68	74	70	67	64	62	60	42	45

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

JUN. 1995

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	35	38	94	24	31	45	49	58		67	92	85	98	61	41	39	37	43	152	150	113	91	70	42
2	69	82	74	68	47	69	75	58	64	64		178	171	52	53	55	64	70	48	69	56	66		
3	98	58	39	38	G	G	34	42	51	82	91	68	75	113	155	32	38	46	96	95		92	66	39
4	44	39	34	24	G	G	33	36	51	54	50	63	56	59	G	44	56	62	52	70	47		119	89
5	62	50		38	48	25	51	69	49	79	46	108	B	B	56	53	48	61	86	50	65		57	84
6	68	40	44	33	28		52	68	59	50	59	58	71	112	52	88	88	70		175	97	124	88	58
7	58	34	28	32	26	41		35	42	58	119	66	88	68	52	50	42	40	44	34	34	24	33	33
8	43	49	41	29	42	38	41	33	33	32	60	G	52	45	64	118	110	137	98	94	78	89	88	39
9	38	75	50	70		58		90	92	115	110	45	44		180	50	46	42	54	43	84	68		69
10	89		114	56	25	G	41	61	88		165	148	50	77	123	91	94	100	98	151	95	96	61	43
11			48	G	G	G	48	39	49	83	71	83	97	39	34	39	40	40	34	40	42	86	79	68
12			34	27	G	26	54	76	82	70	89	53	42	45	40	50	70	55	59	66	37	70	72	80
13	39	35	29	42	G	G	25	38	54	58	51	42	55	70	63	40	52	46	74	90	95	70	98	90
14	59	59	45	40	45	40		68	67	102	132	100	75	100	137	127	79	64	78	95	95	85	67	39
15	43	41	28	26	36	34	33	50	94	67	80	107	42	36	G	43	37	43	41	34	32	53	50	67
16	48	45	62	42	70	44	44	50	58	93	134	87	92	80	58	72	41	46	43	28	70	G	47	64
17	70	63	78	44	40	44	49	114	131	180	152	180	148	58	53	60	43	88	59	69	39	50	58	41
18	24	40	37	24	30	25	58	45	56	91	106	82	91	64	41	38	58	46	37	30	35	26	28	42
19	50	56	59	77	50	B	39	38	71	38	38	47	84	48	61	41	93	78	53	33	46	43	43	44
20	78	44	40	42	43	29	40	61		72	133	107	91	109	86		179	88	72	50	68	45	26	34
21	29	26	G	G	G	G	G	37	51	39	38	36	37	50	58	66	38	41	G	G	26	G	G	G
22	G	33	38	35	48	38	34	39	52	62	80	70	61	178	68	179	94	68	61	32	96	88	62	G
23	38	43	61	62	32	33	49	39	58	74	67	68	66	76	52	51	82	98	56	107	67	39	31	44
24	56	40		38	28	31	41	46	46	85	92	130	58	86	45	88	110	85	72	73	59	57	48	68
25	65	46	33	25	G	G	33	88	70	148	84	98	85	51	53	85	42	43	44	55	90	69	50	73
26	39	24	46	26	30	25	35	39	61	41	42	46	64	96	59	50	56	61	66	42	50	82	65	43
27	66	59	68	48	30	G	33	38	48	54	69	65	65	52	41	69	G	90	99	78	98	67	74	68
28	79	53	86		61	65	73	47	62	76	71	67	37	40	69	101	96	96	74		91	80	97	71
29		95	66	57	41	42	35		110	110		178	98	100	97	46	44	65	84	76	54	59	82	54
30	39	34	28	59	33	28	69	92	70	137	129	169	109	66	64	70	50	35	36	32	55	66	94	78
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	27	28	29	29	28	27	29	28	29	28	30	29	28	30	29	30	30	29	29	29	28	28	29
MED	50	44	44	38	31	30	41	47	58	72	82	76	71	65	57	53	54	62	59	66	65	68	64	54
U Q	68	58	64	52	44	41	51	68	70	92	114	107	91	91	68	86	88	85	81	92	93	85	80	70
L Q	39	38	34	26	13	G	34	38	51	56	59	58	53	50	45	43	42	43	44	34	44	47	47	40

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT OKINAWA

JUN. 1995

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

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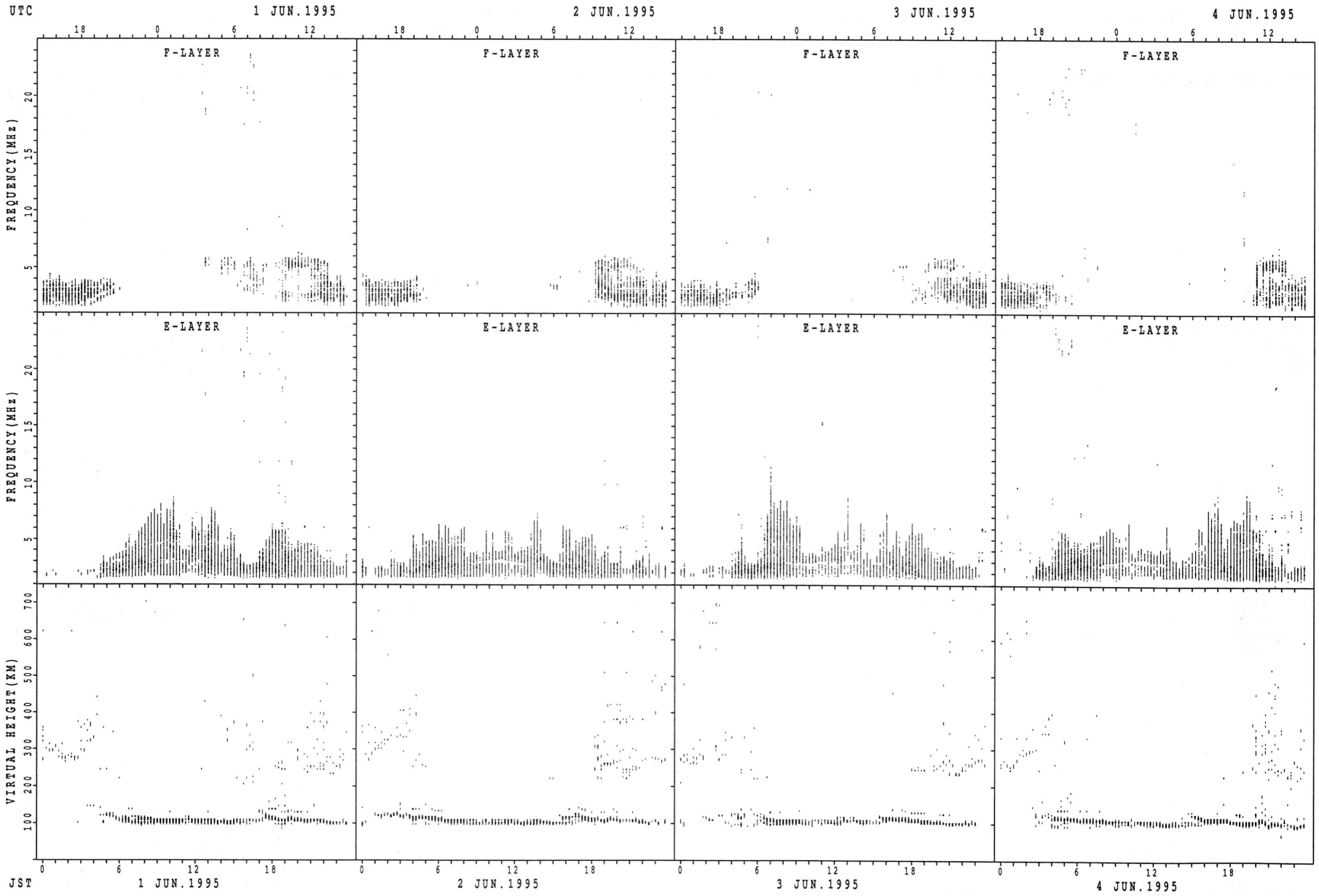
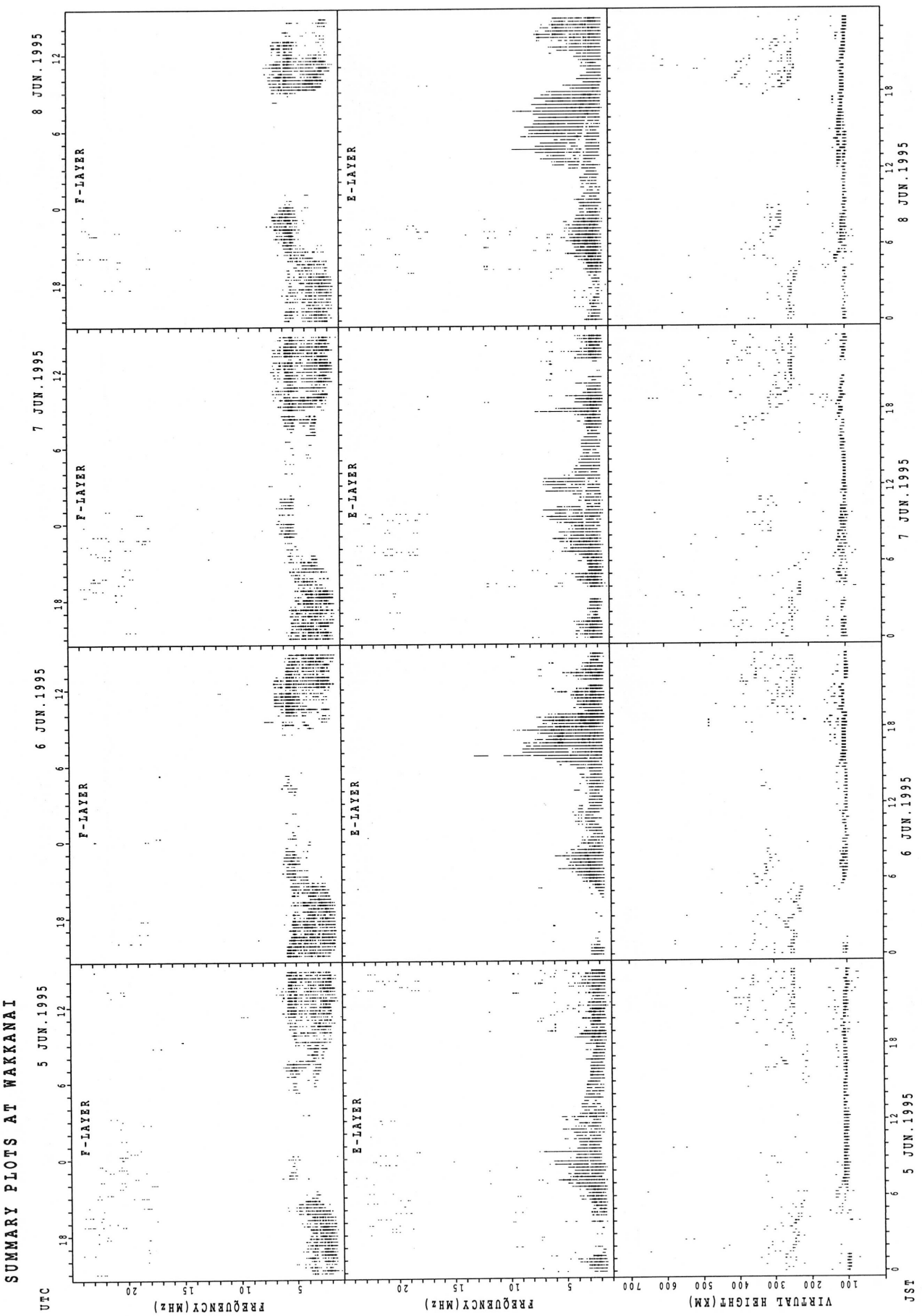
28	14	14	14		15	15	14	15	16	17	23	28	28	48	38	24	23	17	16		14	14	14	15
29	14	14	14	14	14	14	14	14	15	16		23	29	28	24	26	16	15	15	16	14	14	14	15
30	15	14	14	14	14	14	14	15	17	16	28	27	29	27	28	23	18	15	15	15	14	15	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17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

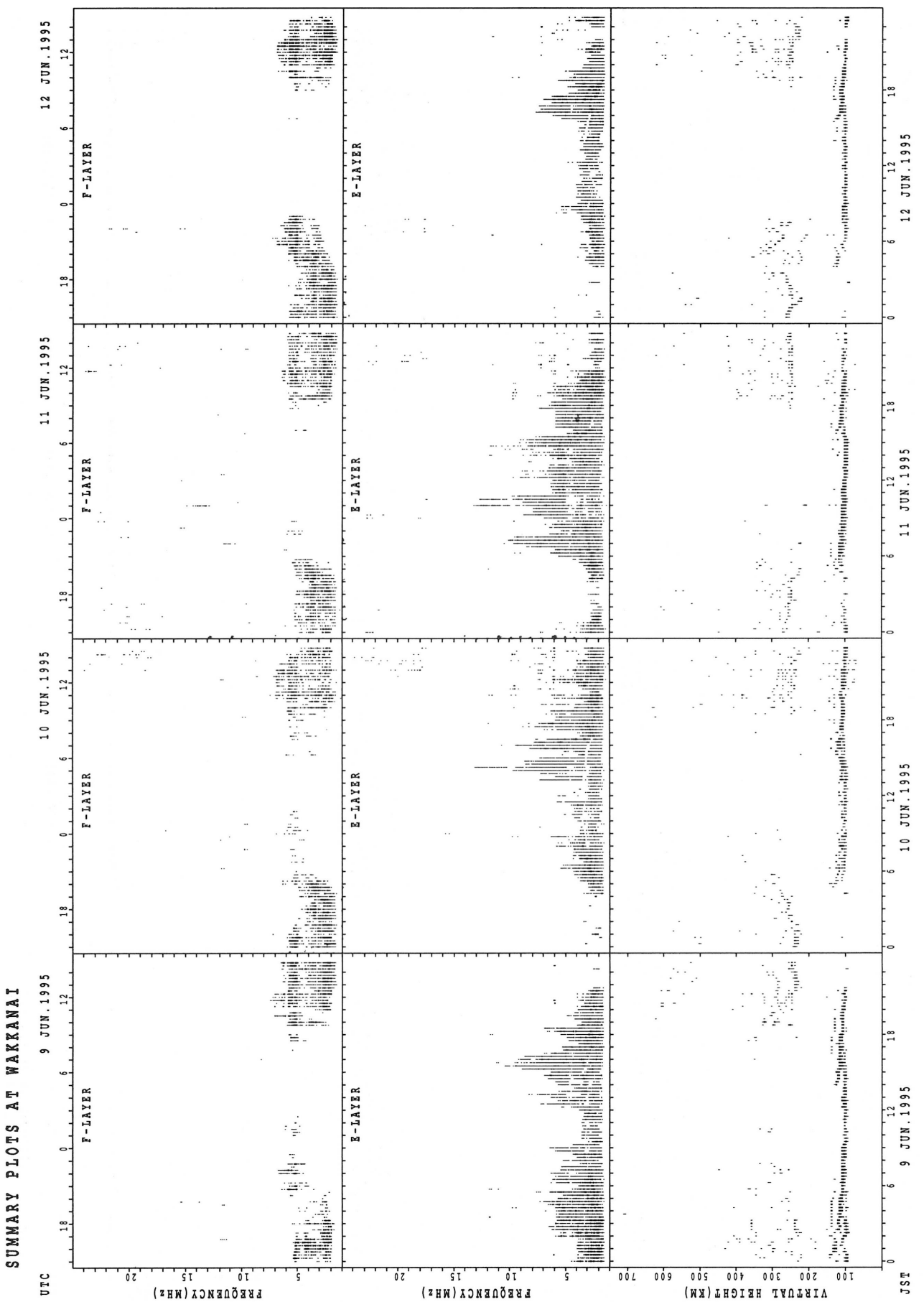
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

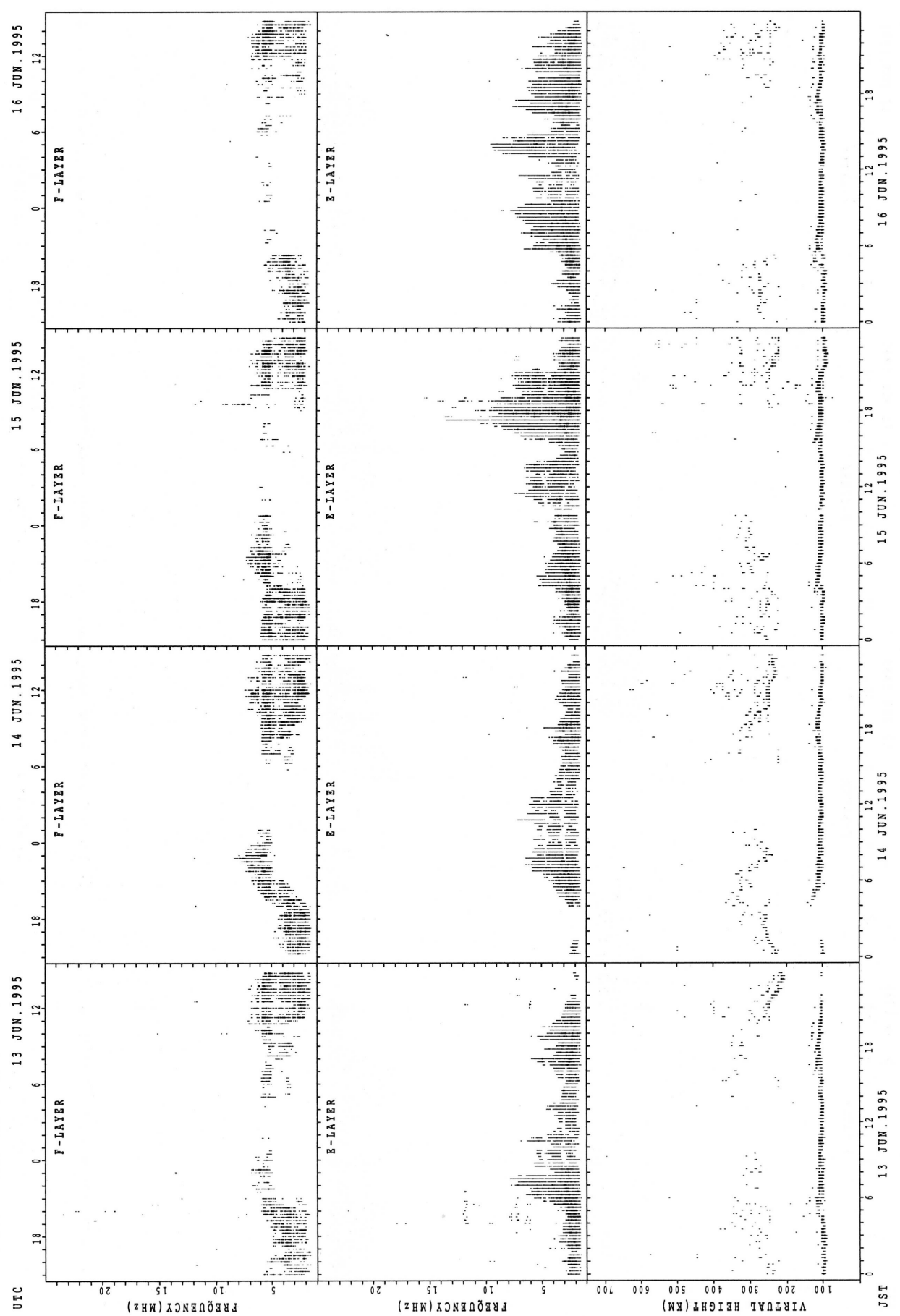
SUMMARY PLOTS AT WAKKANAI



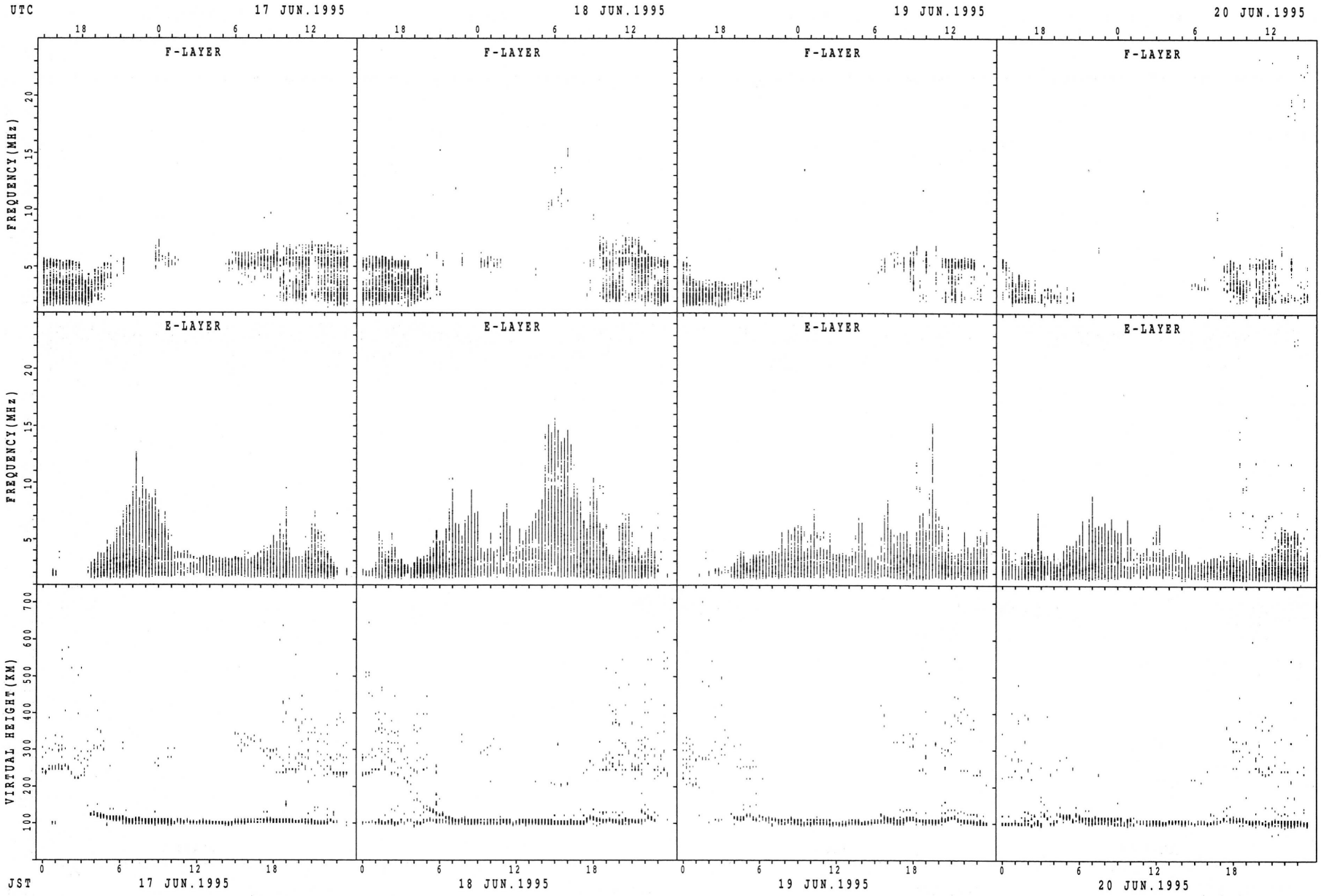
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
5 JUN.1995
6 JUN.1995
7 JUN.1995
8 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

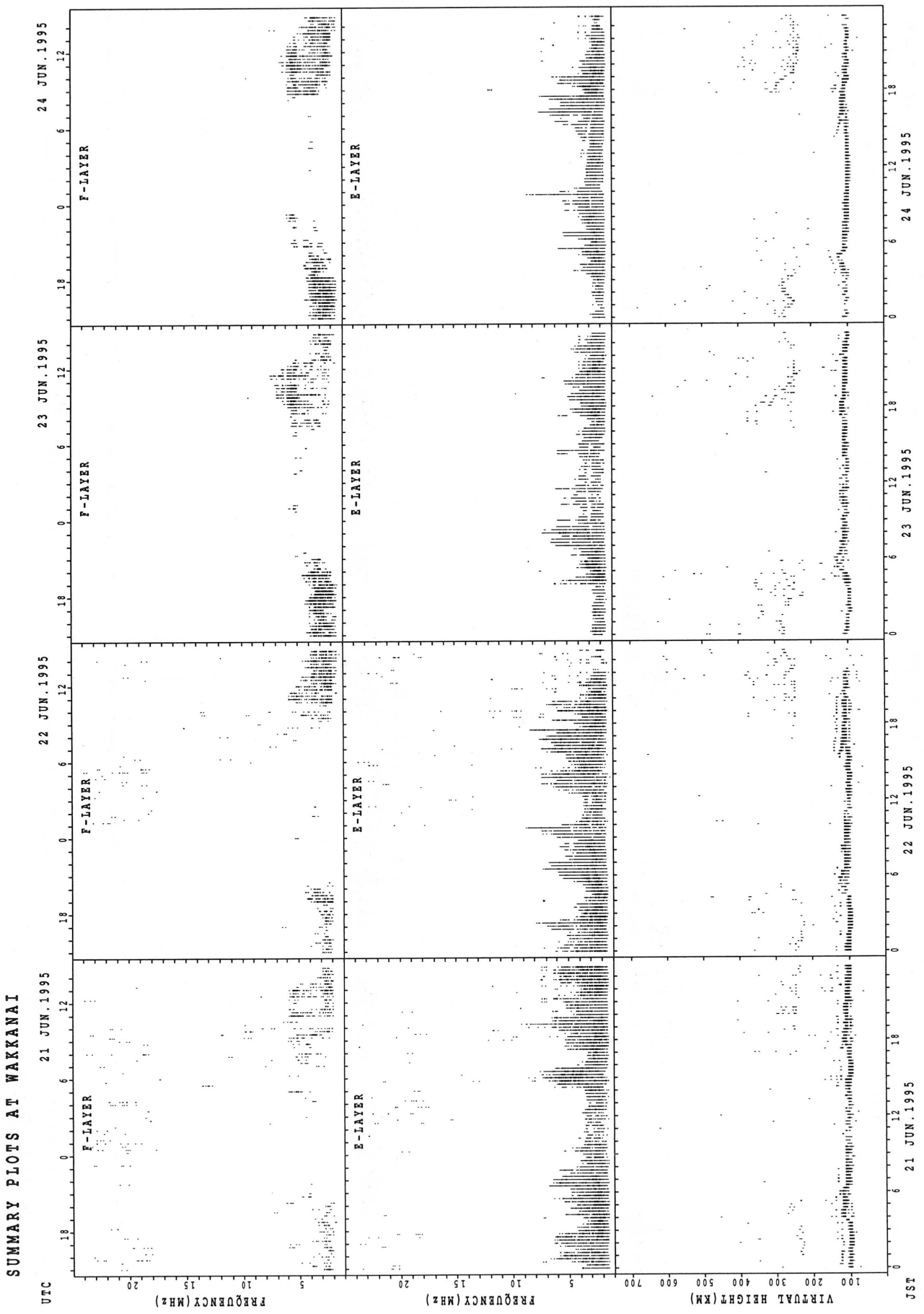

SUMMARY PLOTS AT WAKKANAI
UTC
JST
9 JUN.1995
10 JUN.1995
11 JUN.1995
12 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
13 JUN.1995
14 JUN.1995
15 JUN.1995
16 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

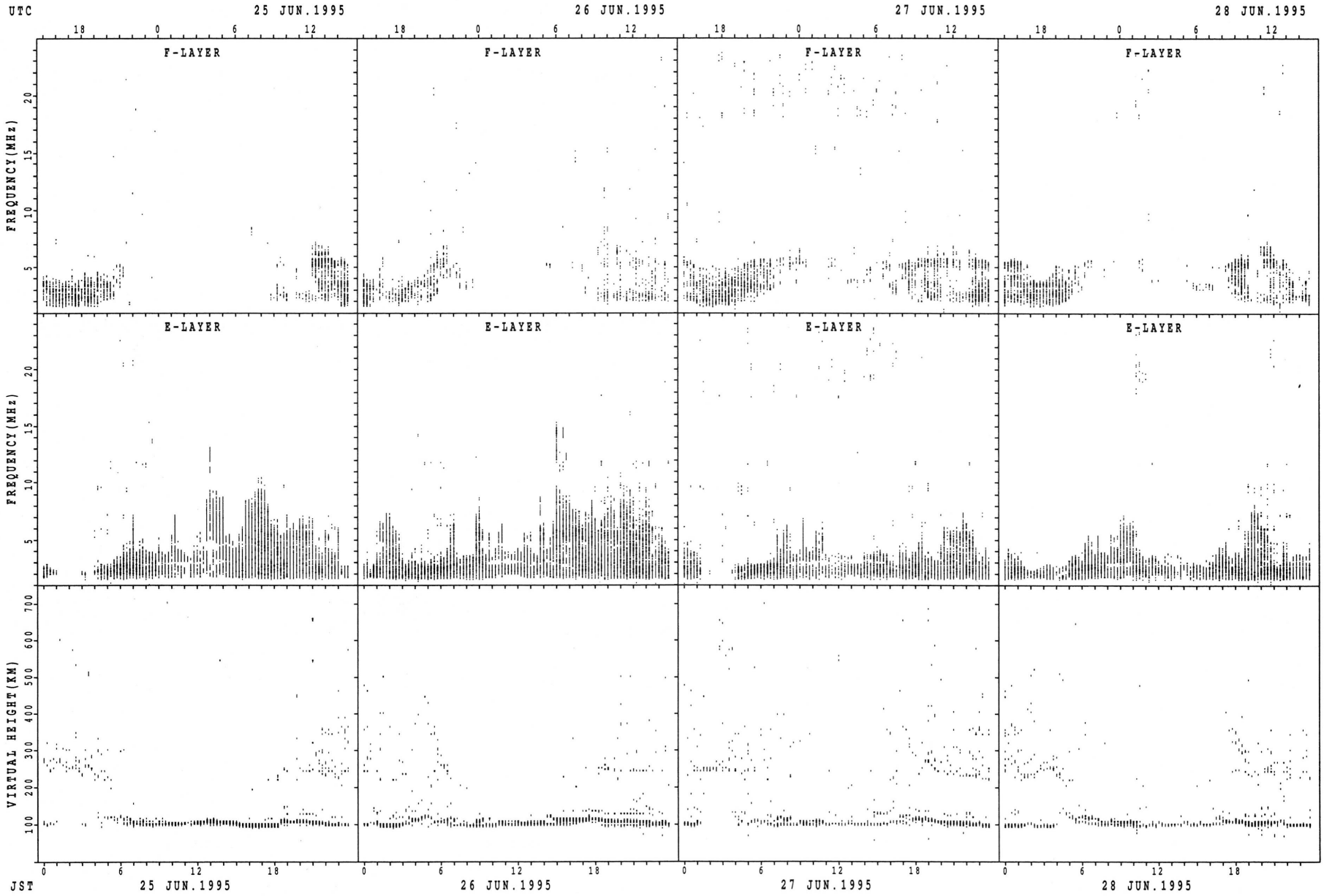
SUMMARY PLOTS AT WAKKANAI



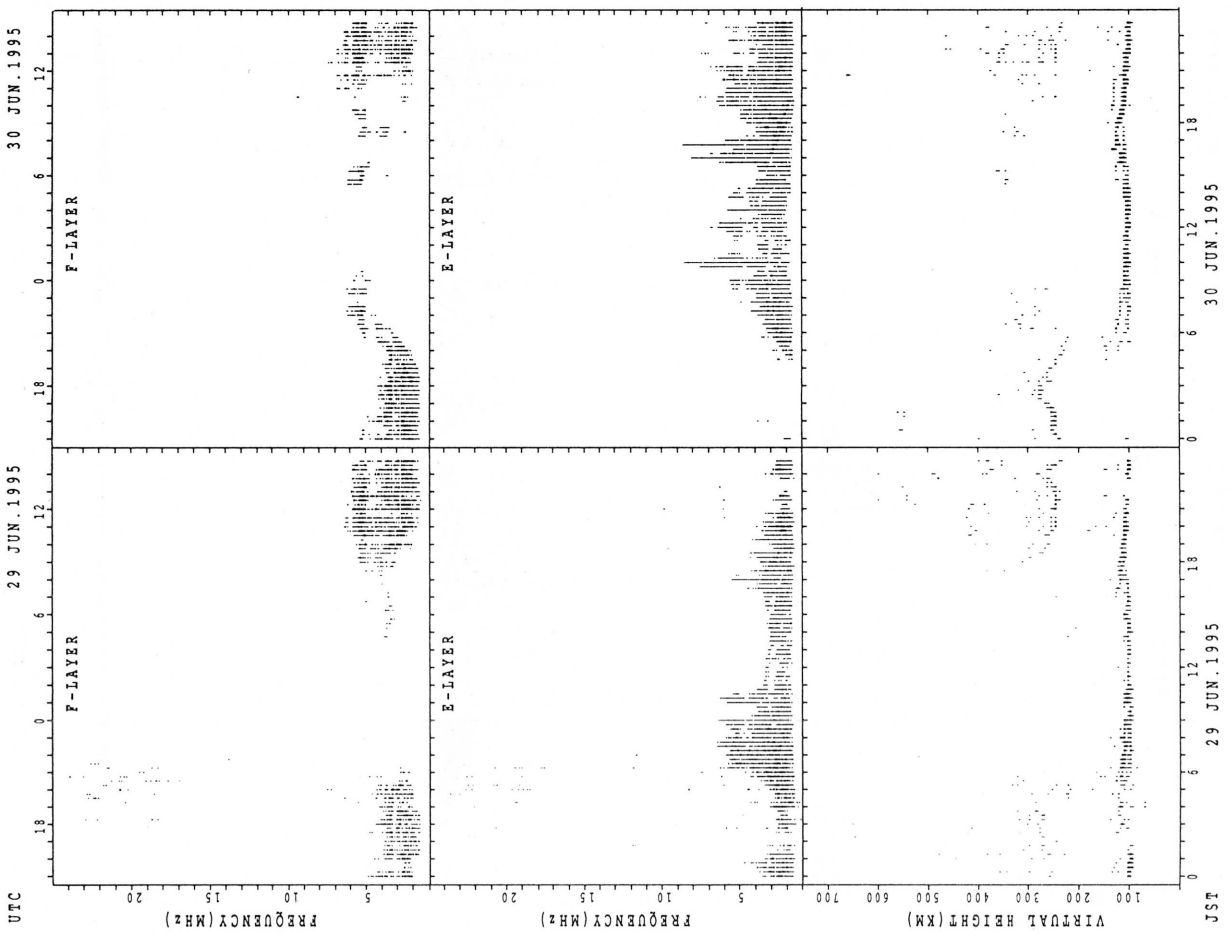
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
21 JUN.1995
22 JUN.1995
23 JUN.1995
24 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
UTC
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

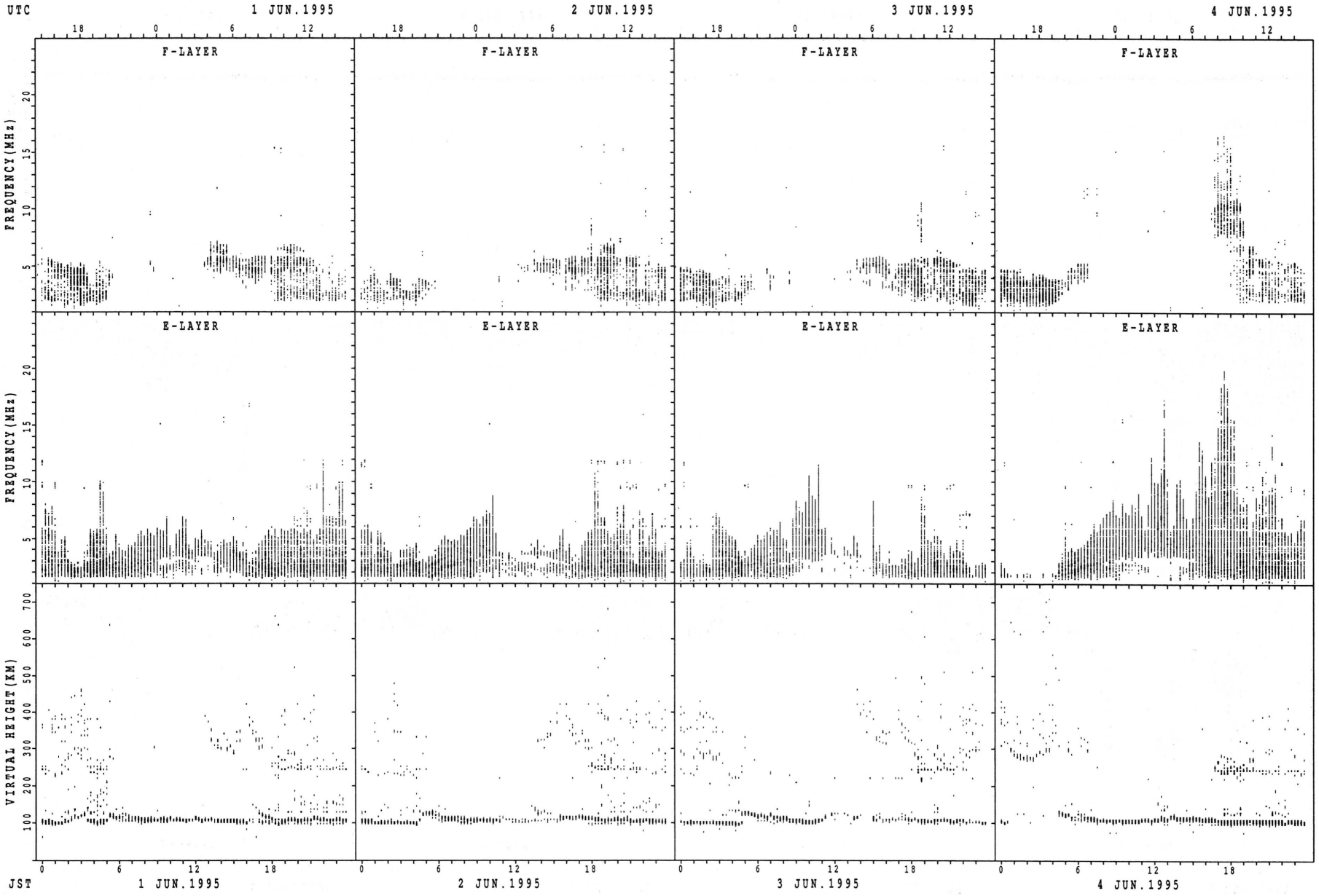
SUMMARY PLOTS AT WAKKANAI



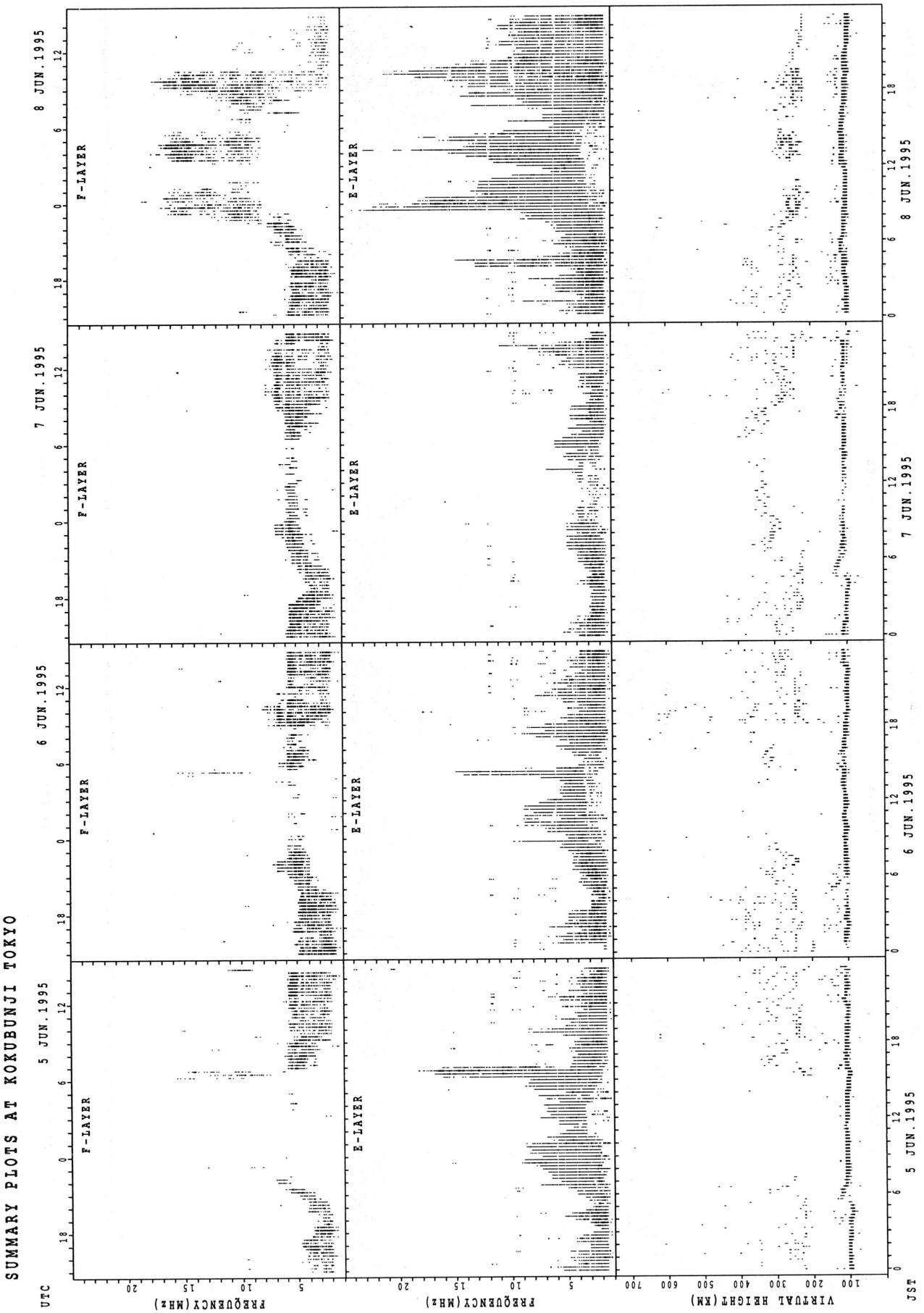
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
29 JUN.1995
30 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

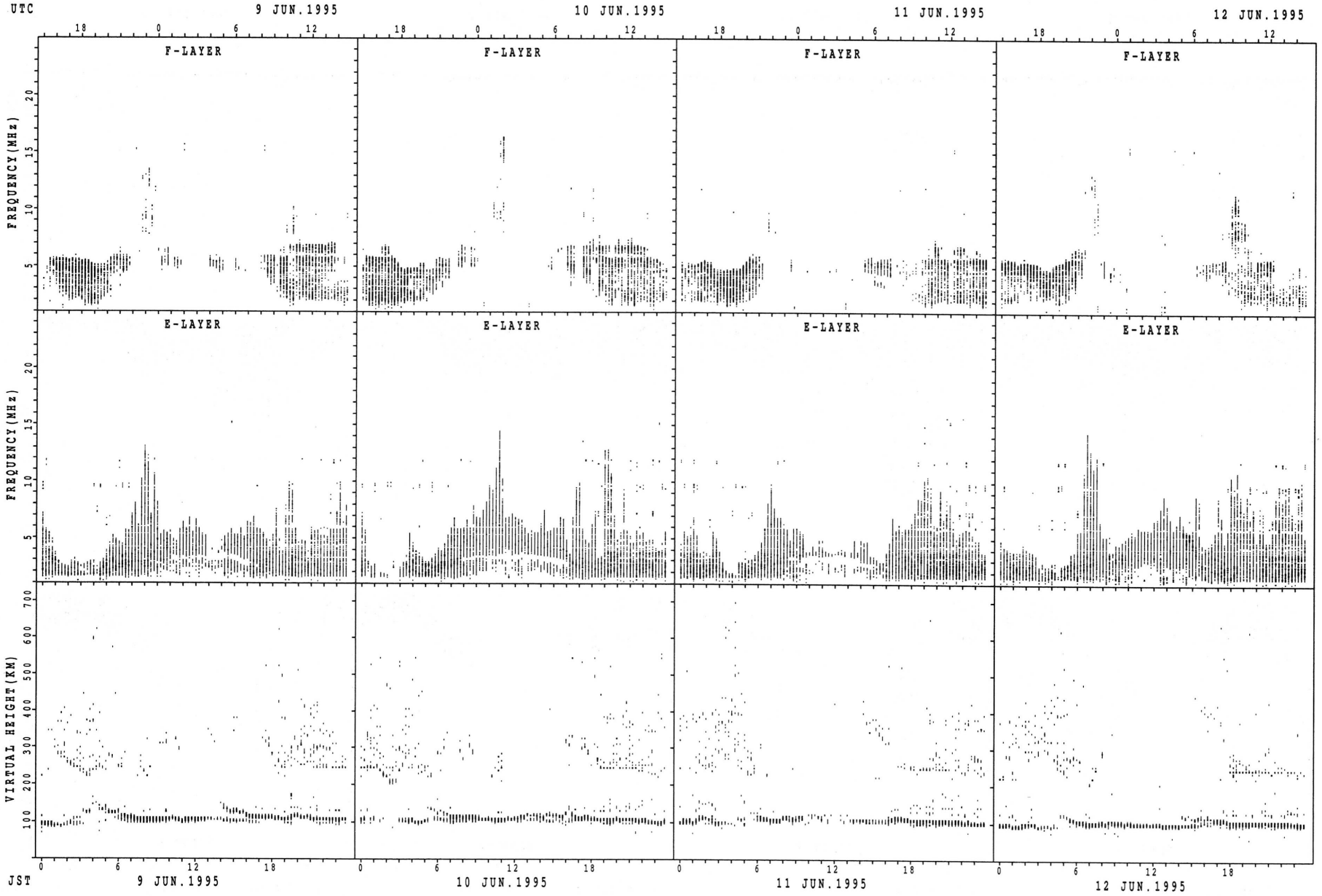
SUMMARY PLOTS AT KOKUBUNJI TOKYO



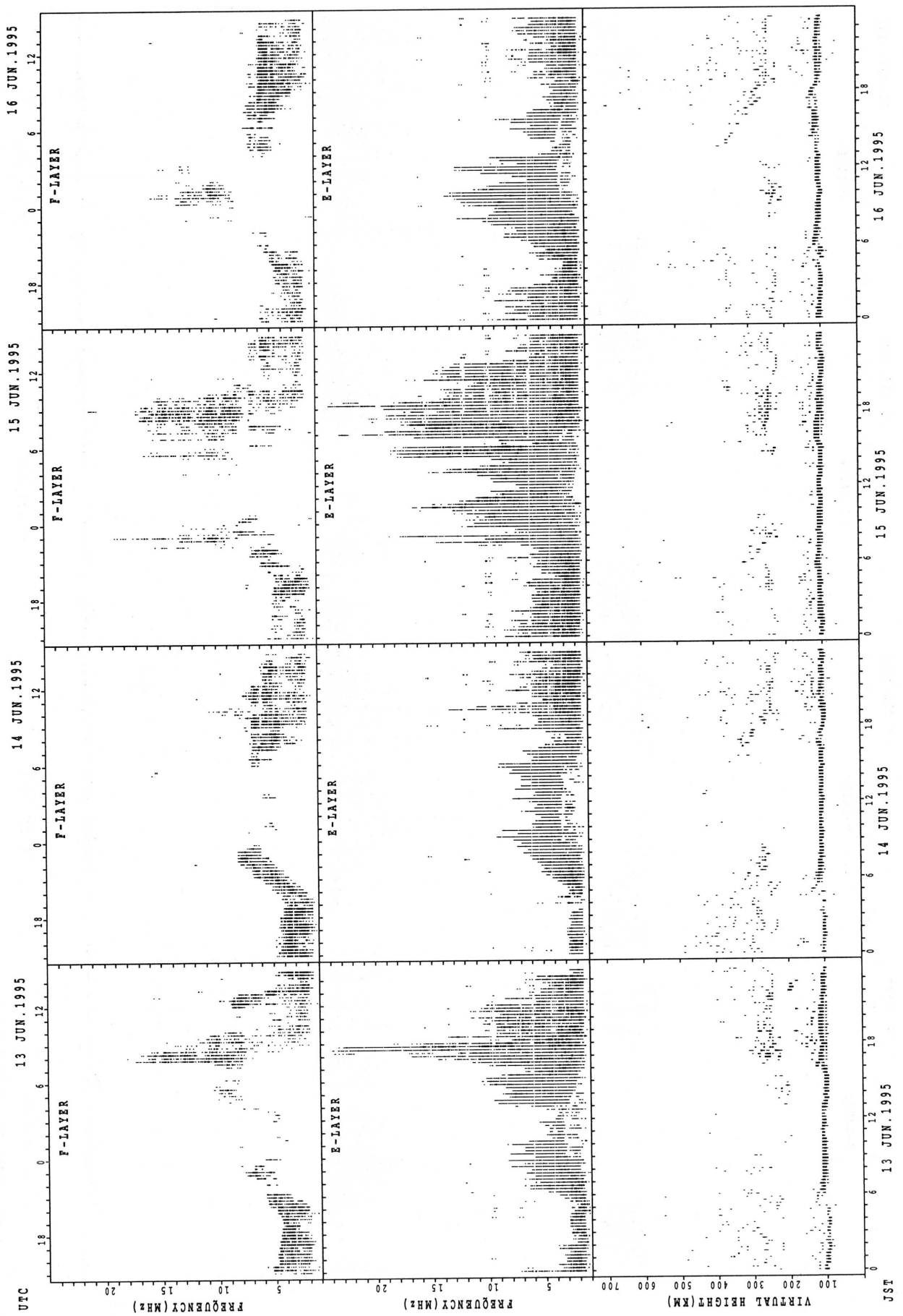
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 JUN.1995
6 JUN.1995
7 JUN.1995
8 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

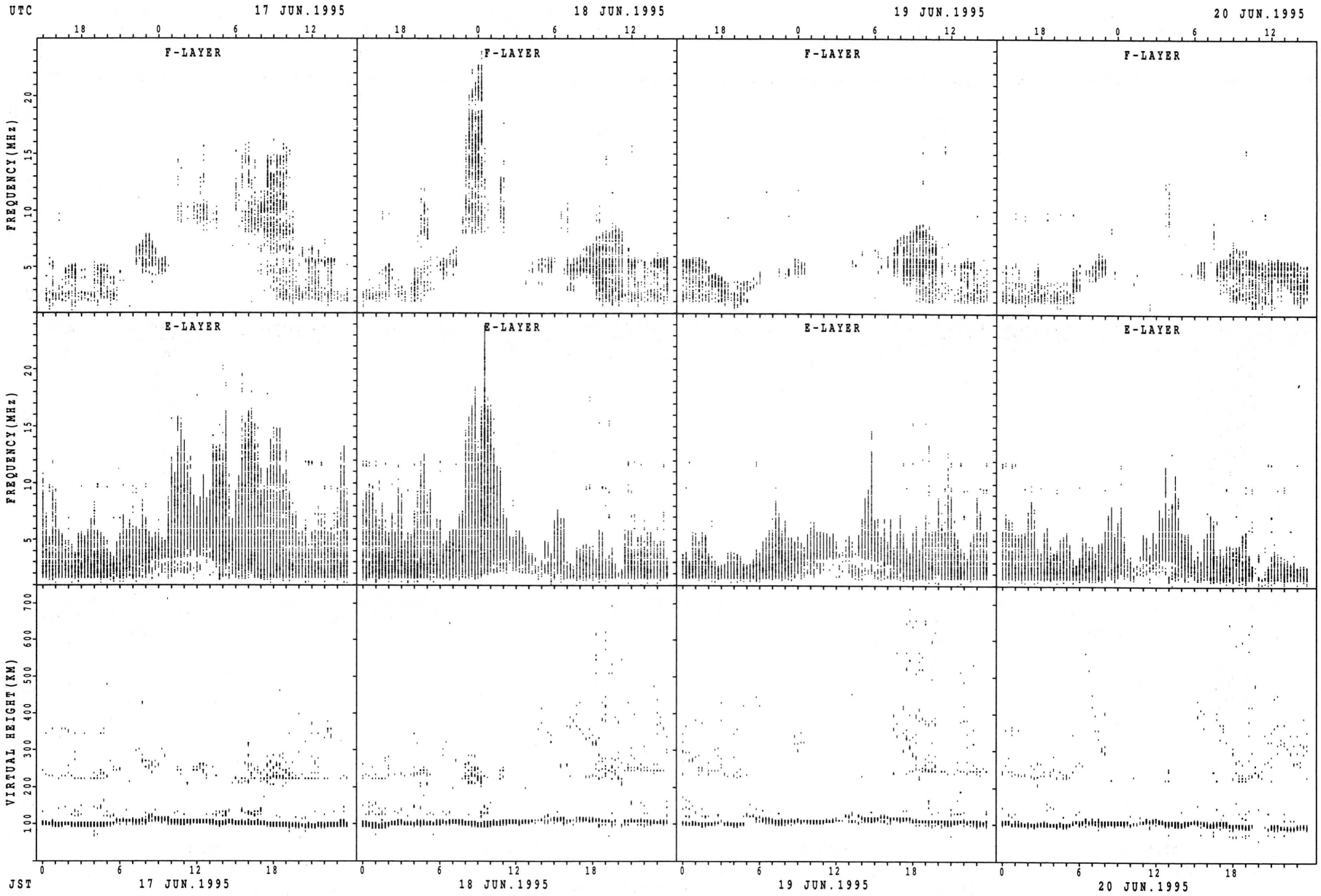
SUMMARY PLOTS AT KOKUBUNJI TOKYO



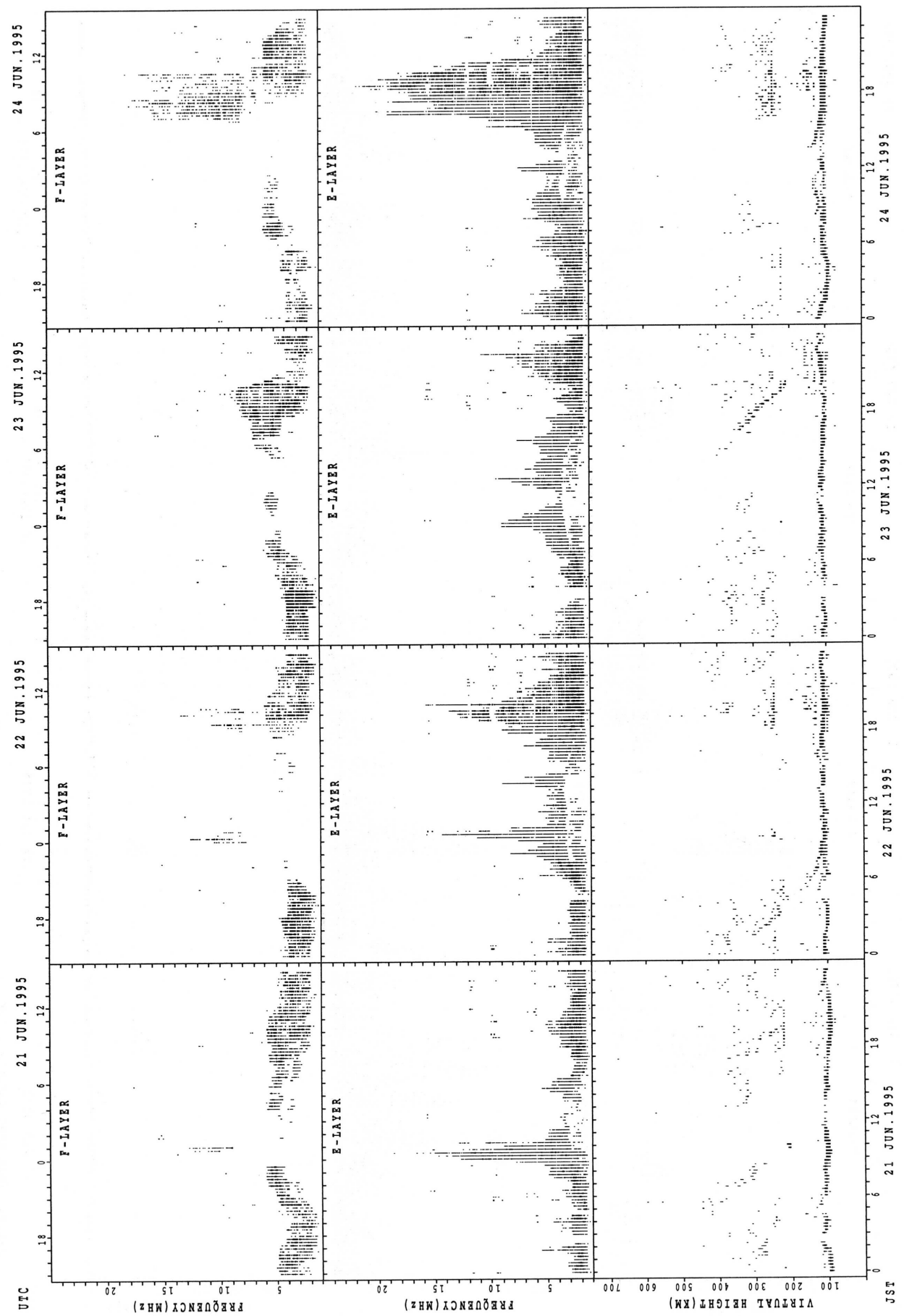
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
13 JUN.1995
14 JUN.1995
15 JUN.1995
16 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
UTC
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

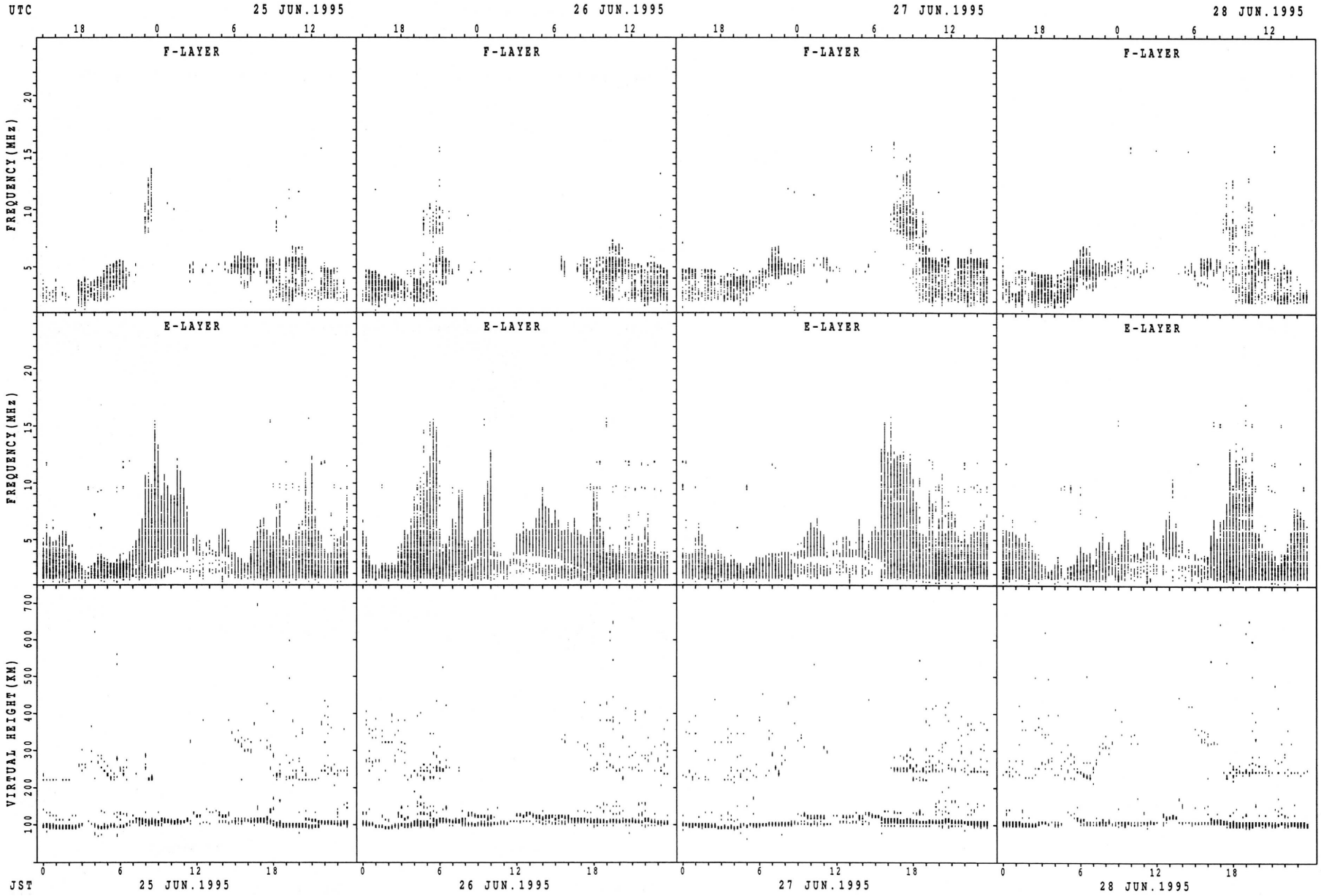
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

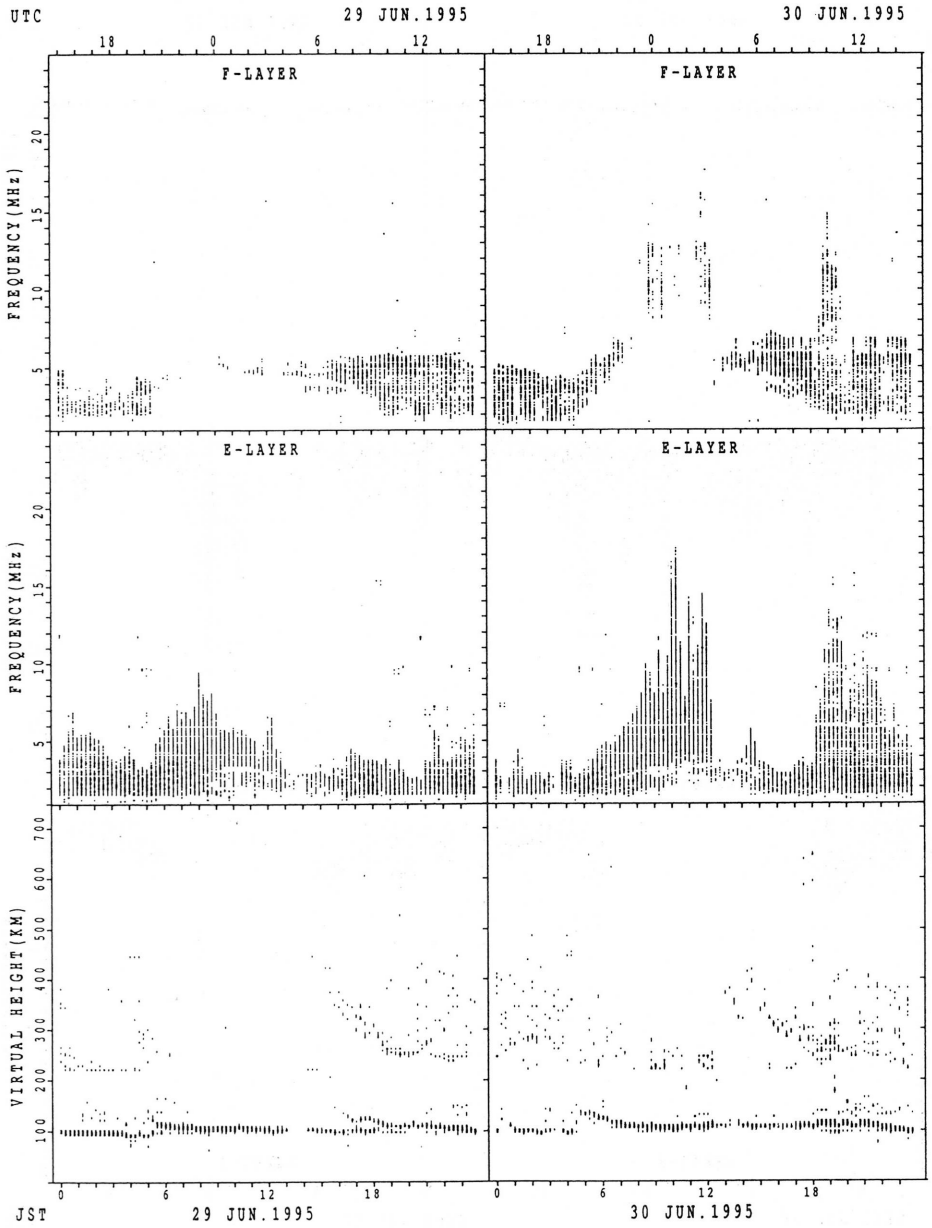

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
21 JUN.1995
22 JUN.1995
23 JUN.1995
24 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



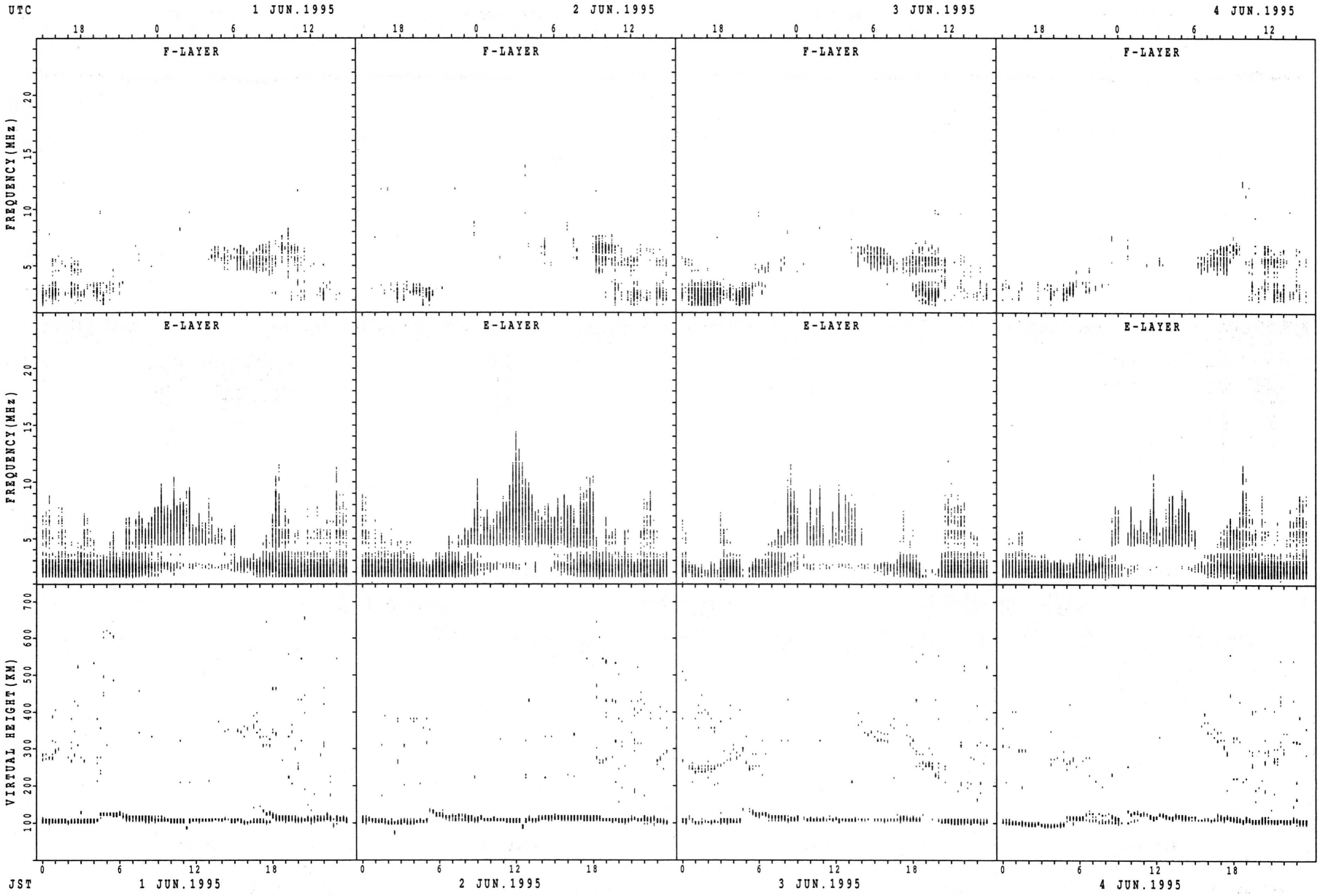
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

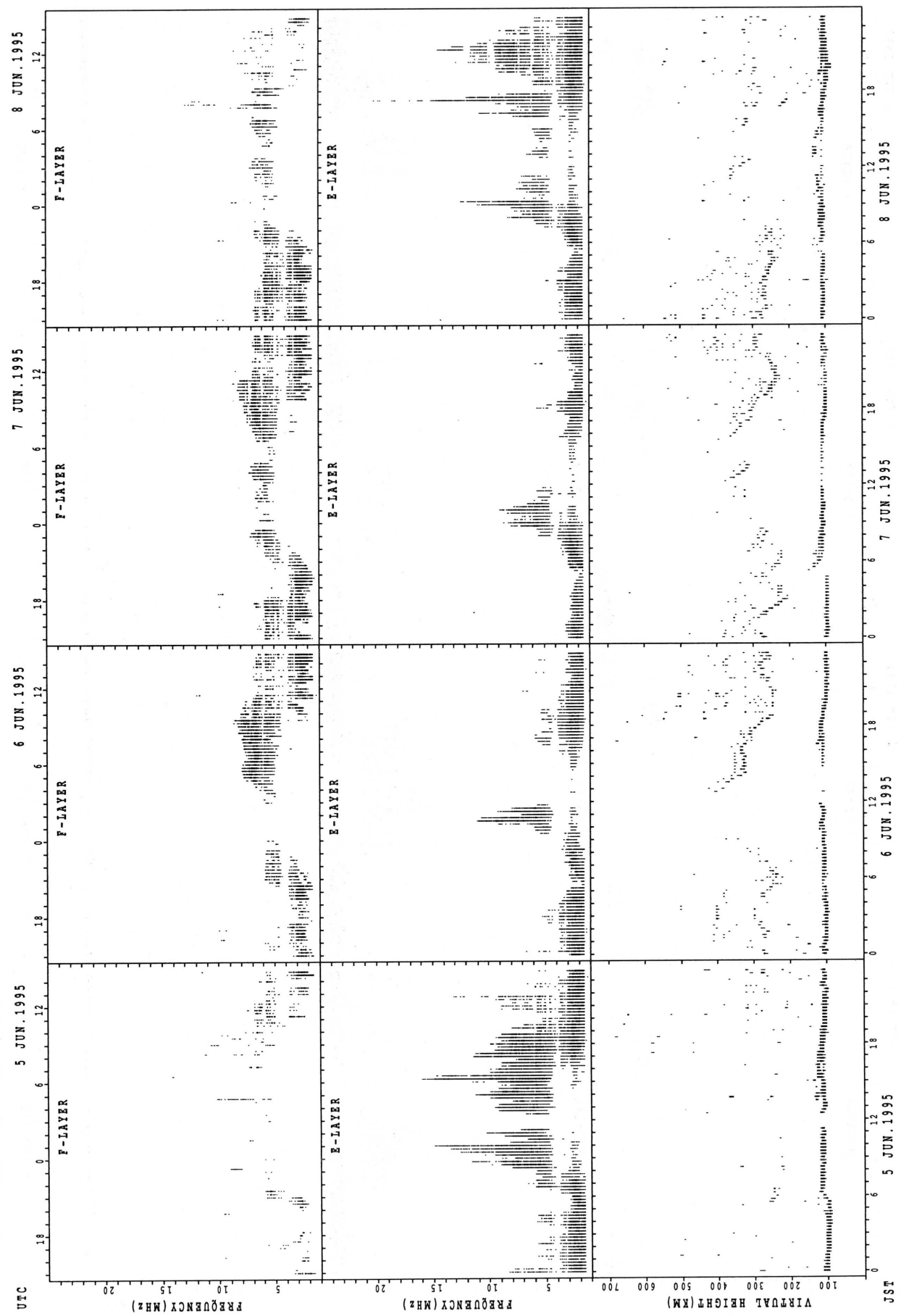


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

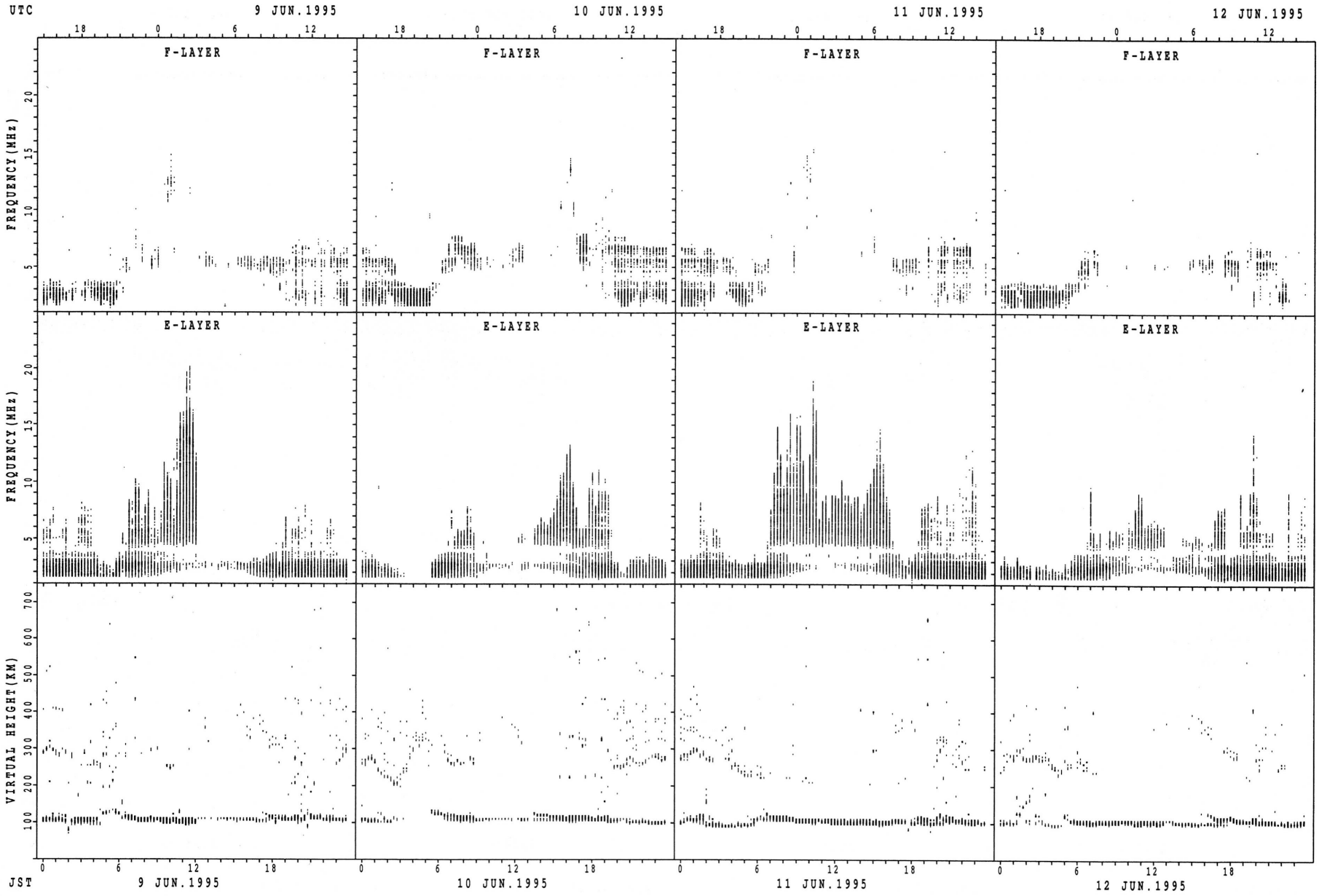
SUMMARY PLOTS AT YAMAGAWA



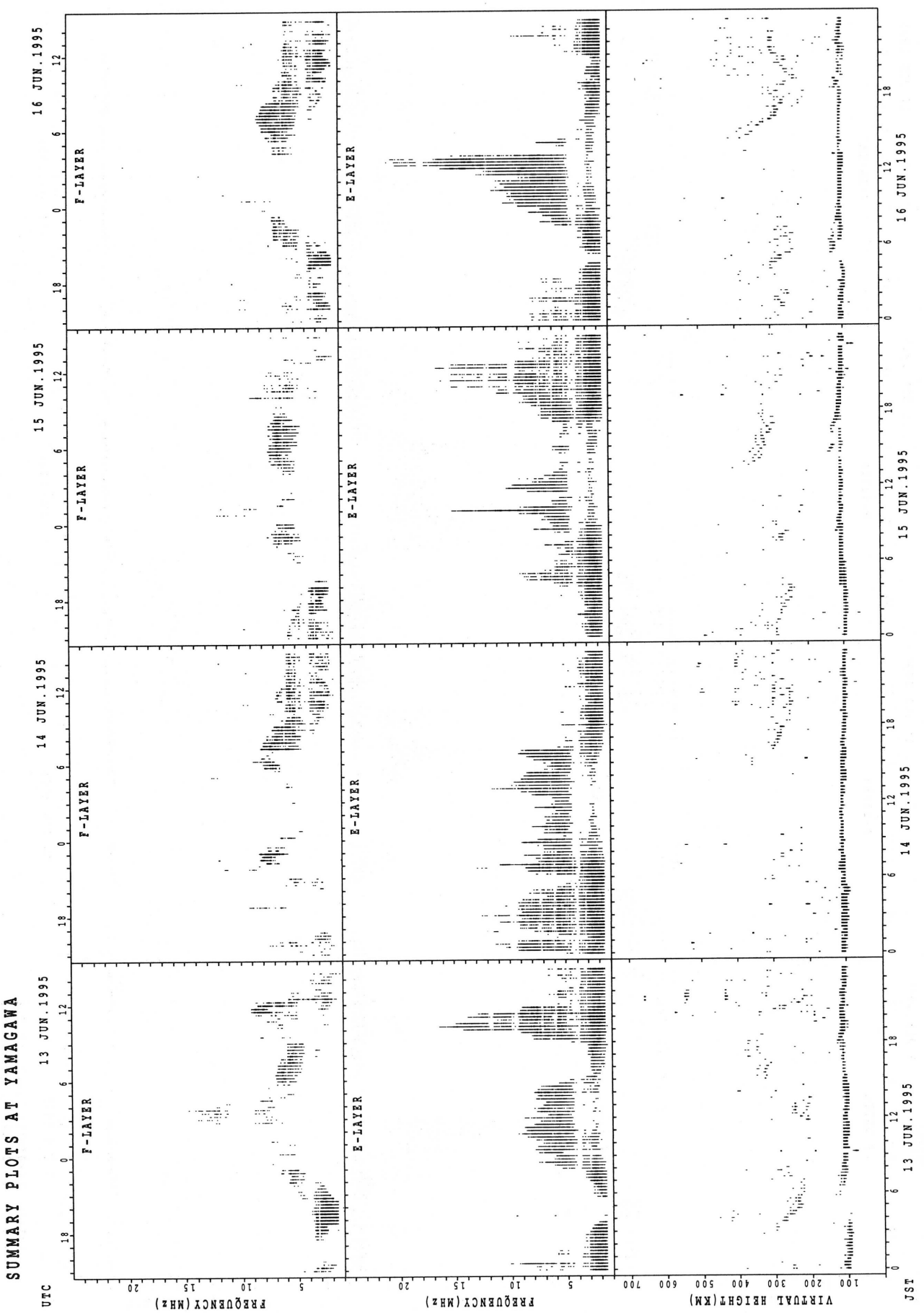
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 JUN.1995
6 JUN.1995
7 JUN.1995
8 JUN.1995
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

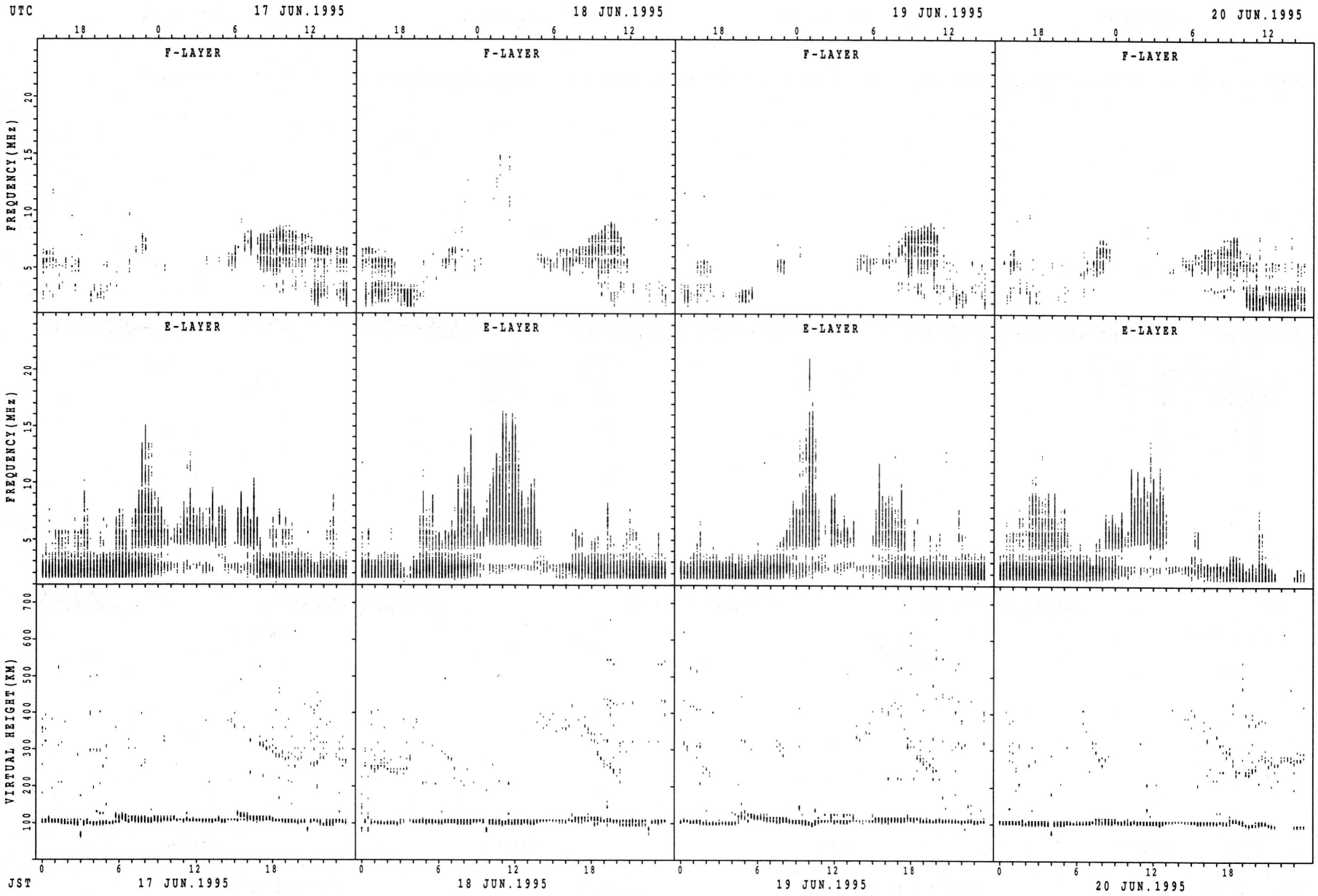
SUMMARY PLOTS AT YAMAGAWA



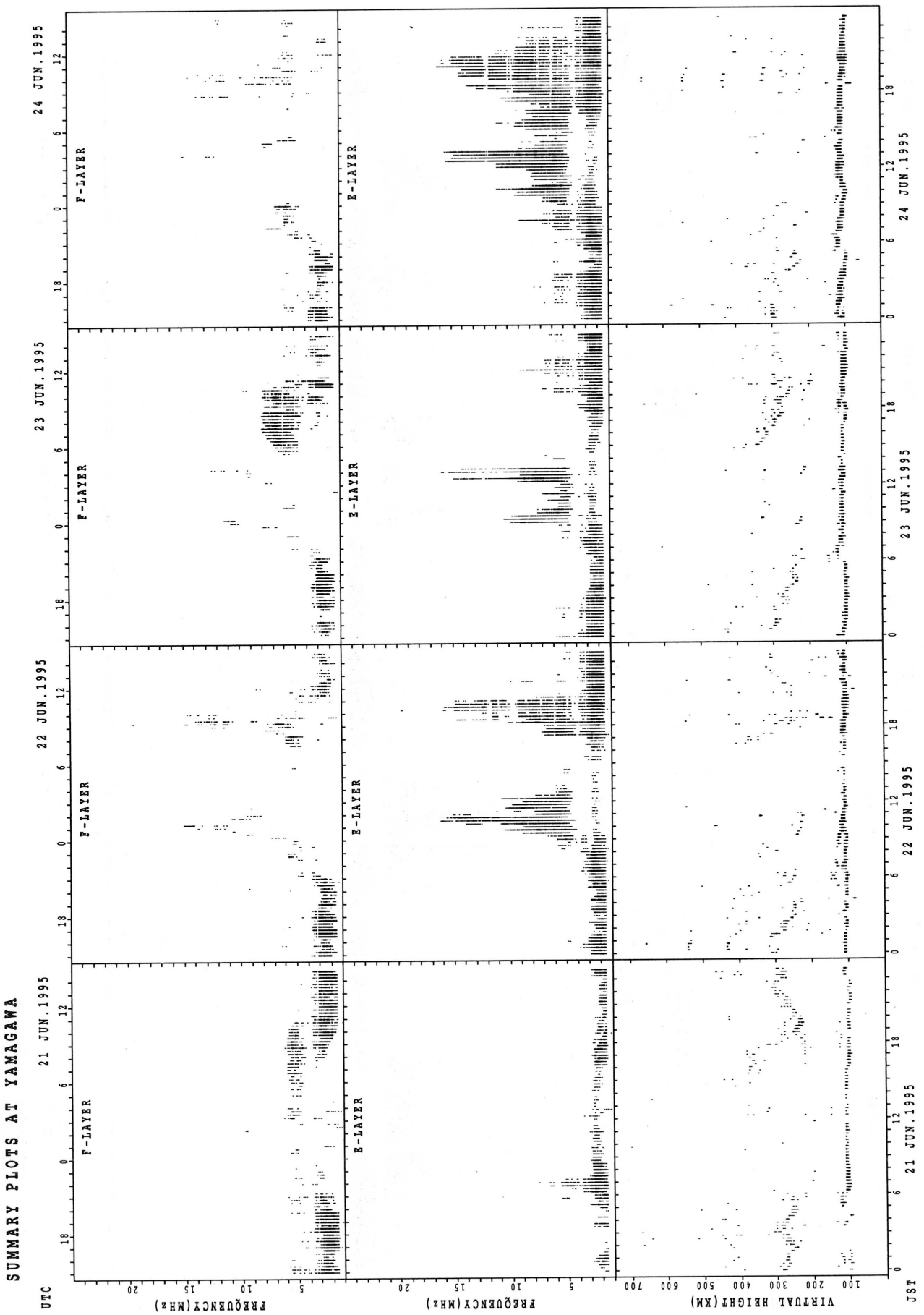
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
13 JUN.1995
14 JUN.1995
15 JUN.1995
16 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

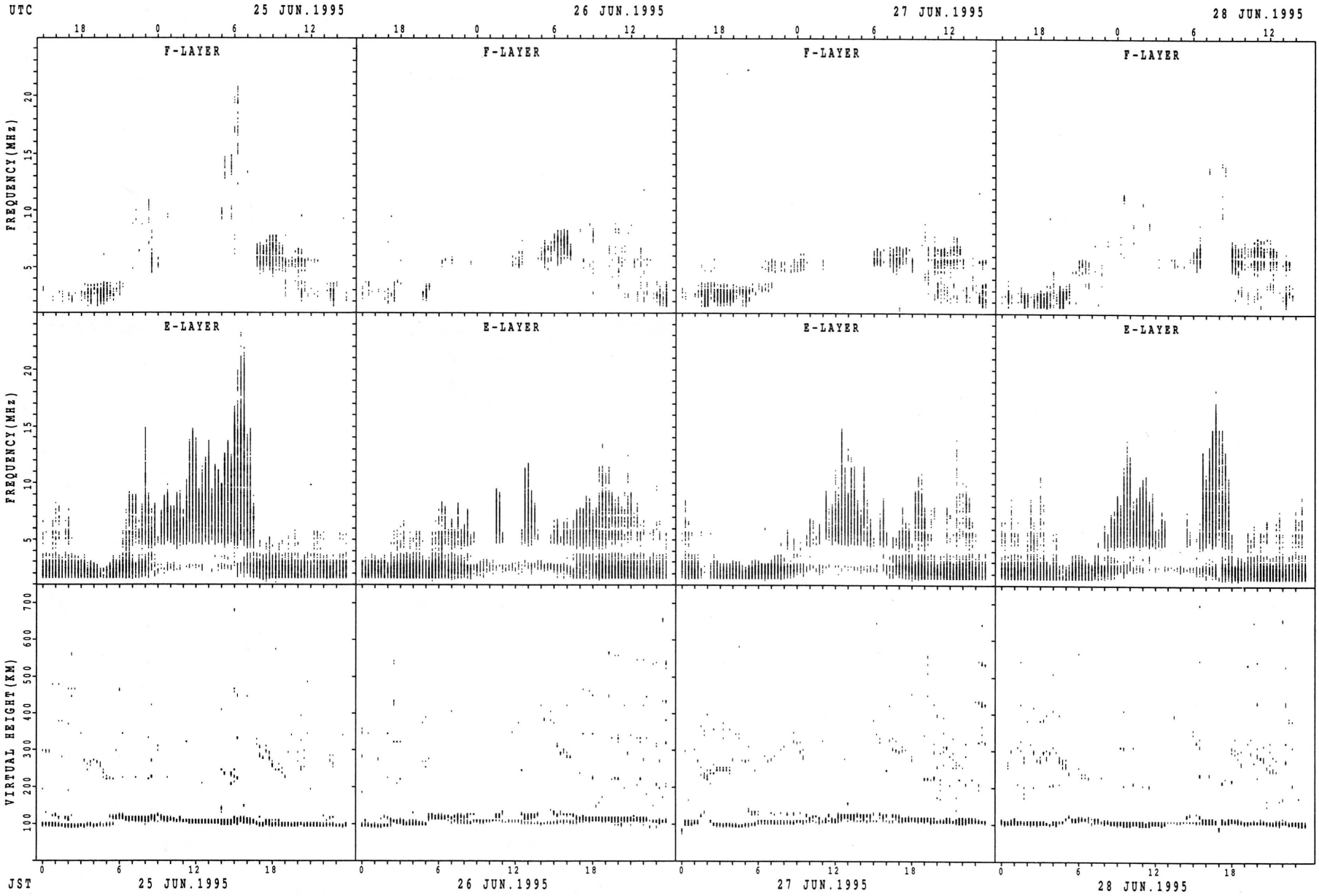
SUMMARY PLOTS AT YAMAGAWA



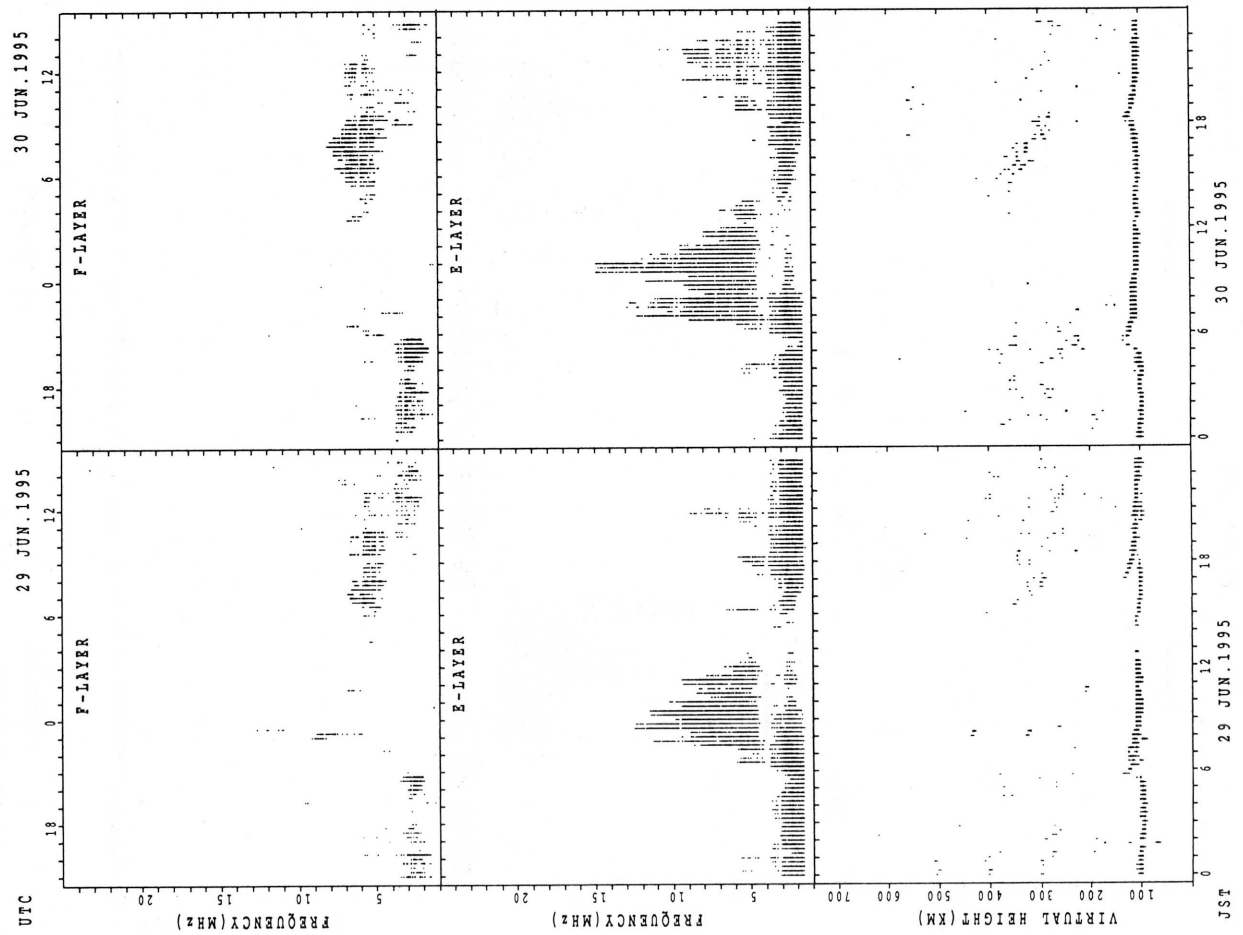
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
21 JUN.1995
22 JUN.1995
23 JUN.1995
24 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

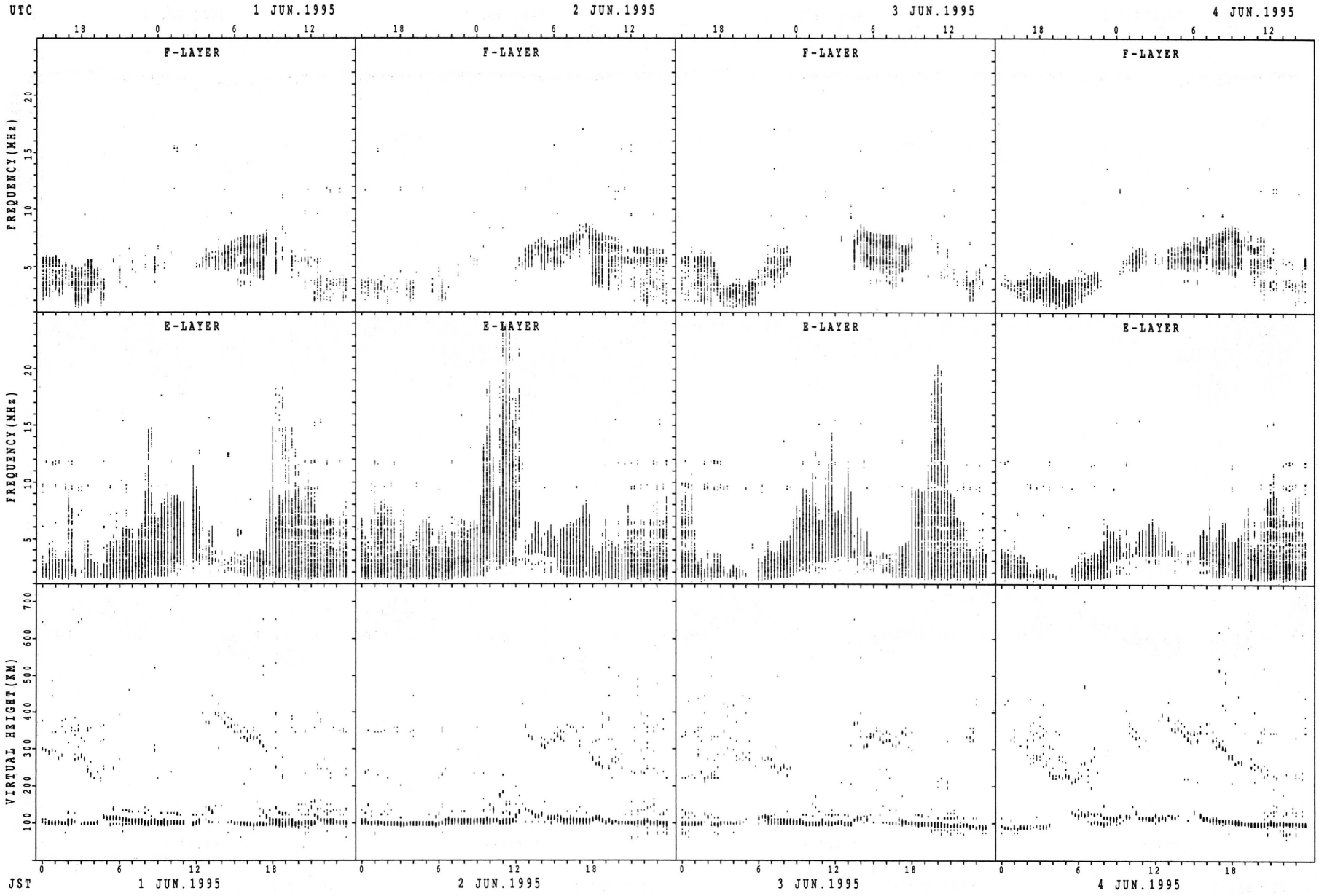
SUMMARY PLOTS AT YAMAGAWA



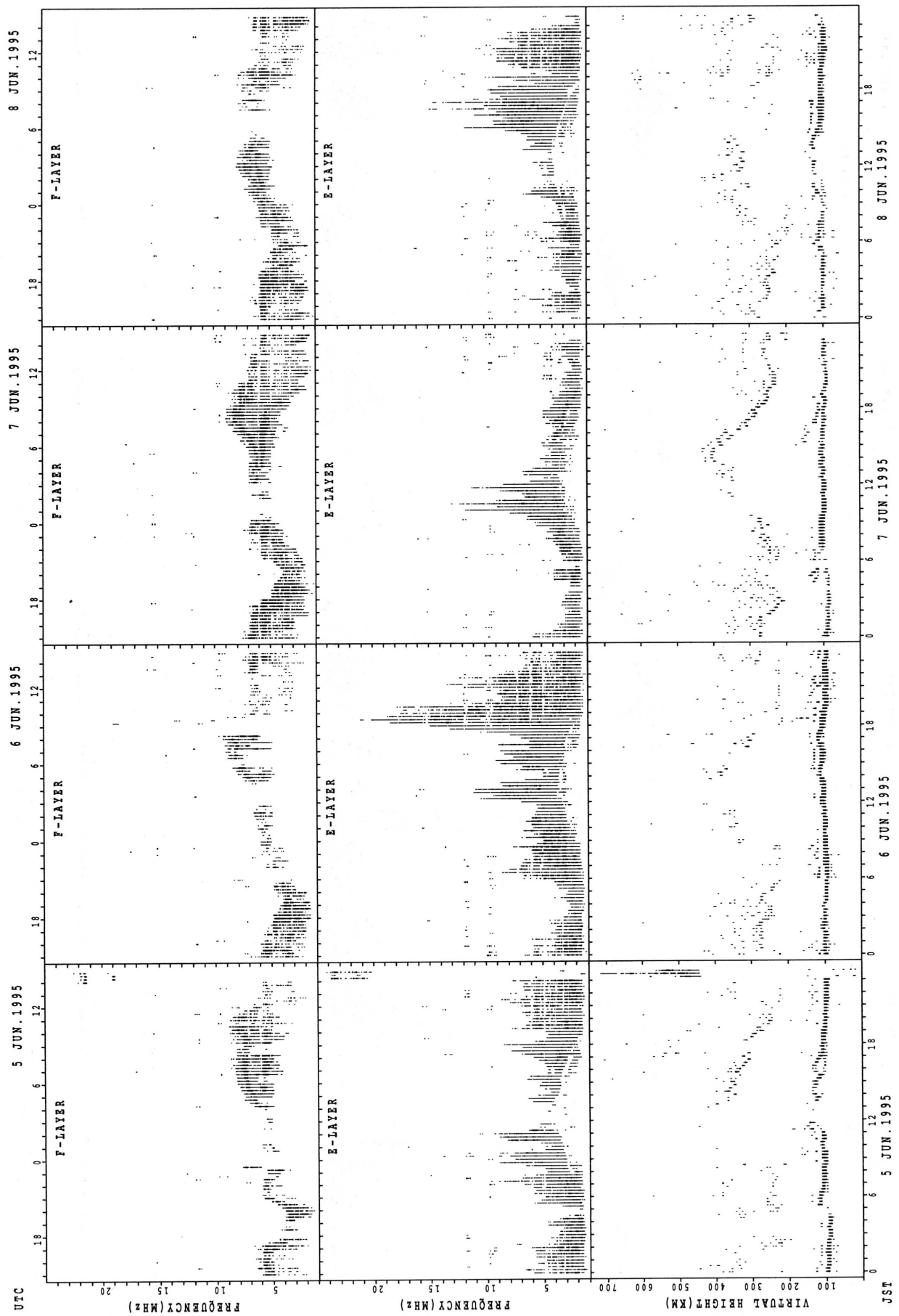
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
29 JUN.1995
30 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

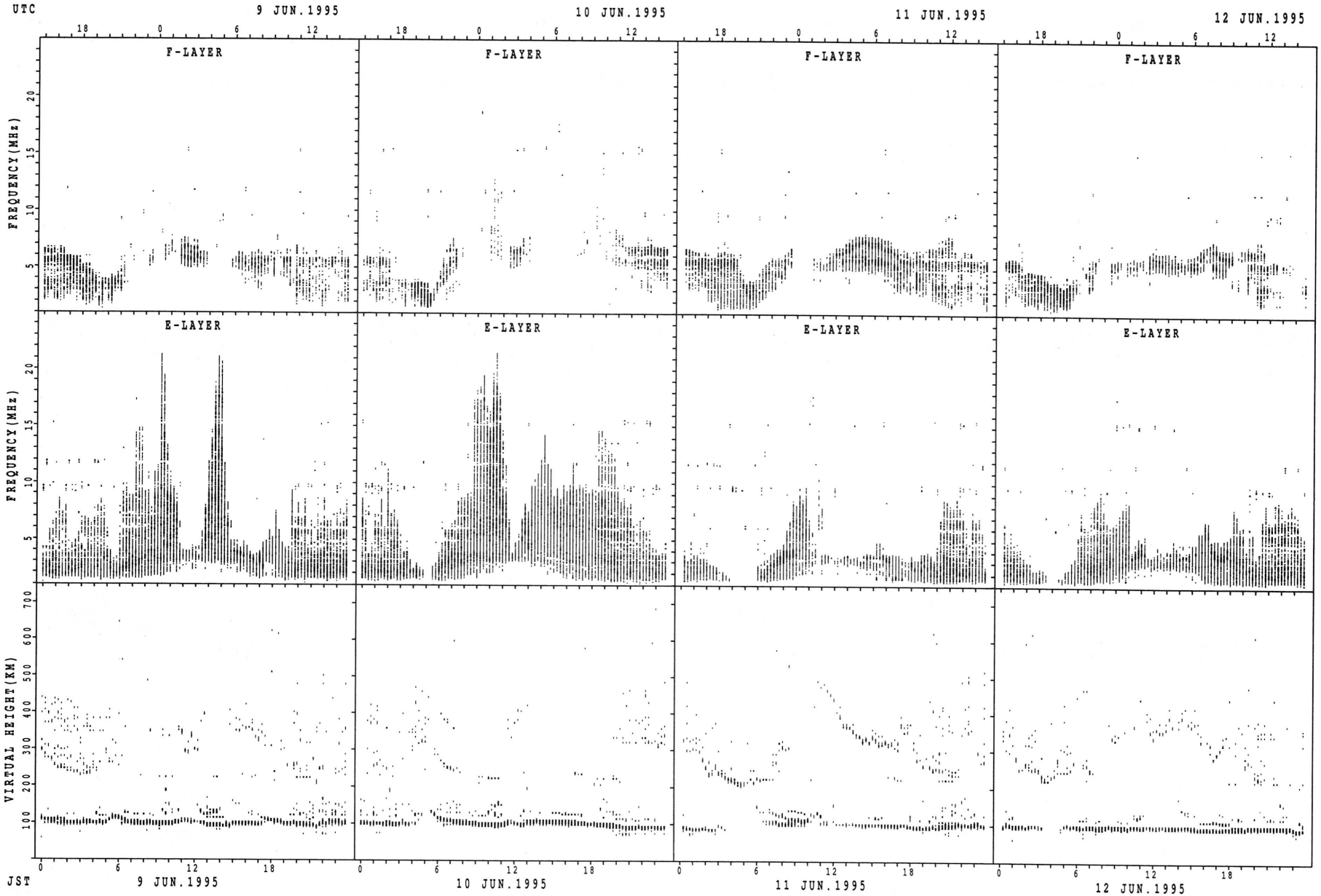
SUMMARY PLOTS AT OKINAWA



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

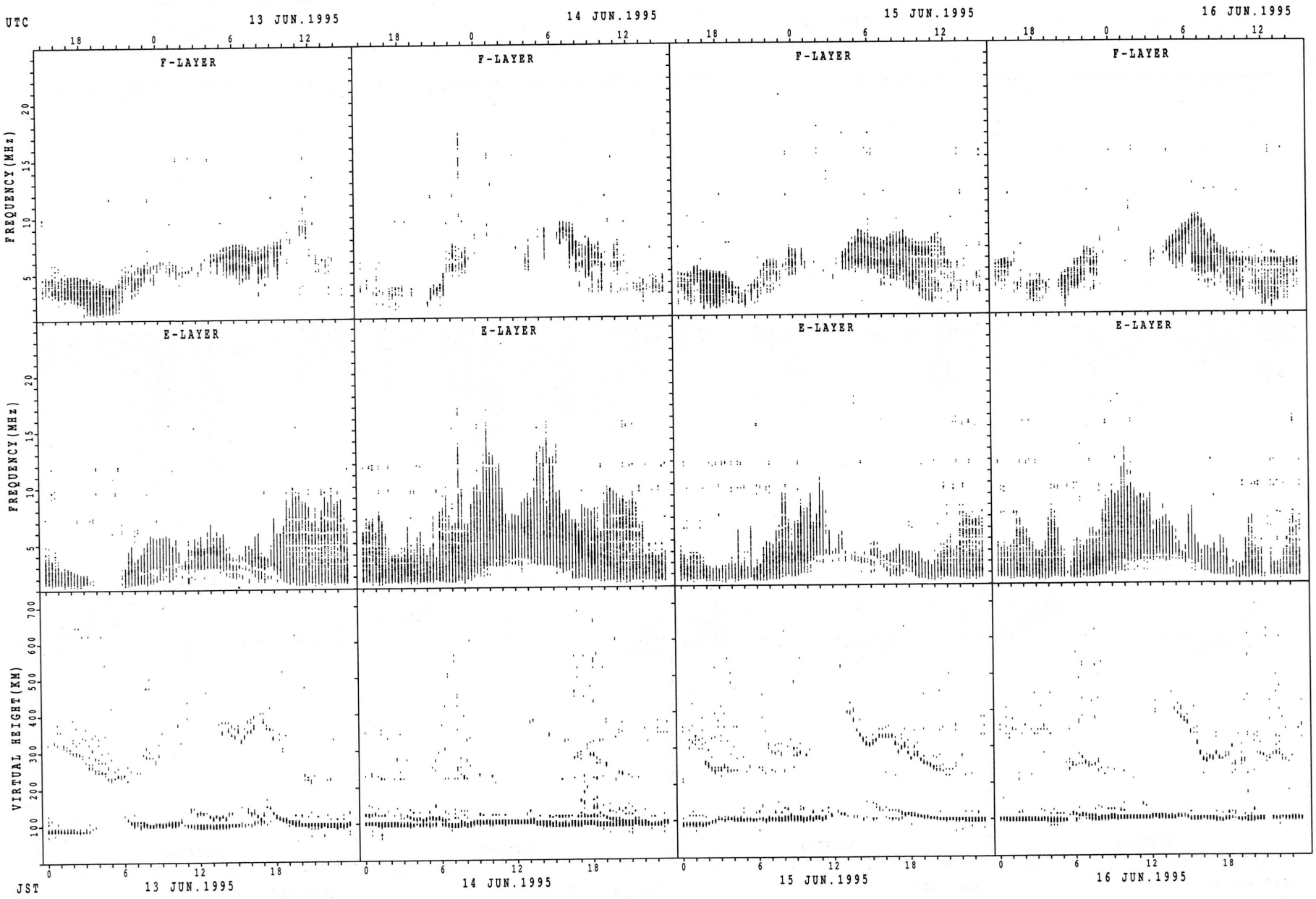

SUMMARY PLOTS AT OKINAWA
UTC
JST
5 JUN.1995
6 JUN.1995
7 JUN.1995
8 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



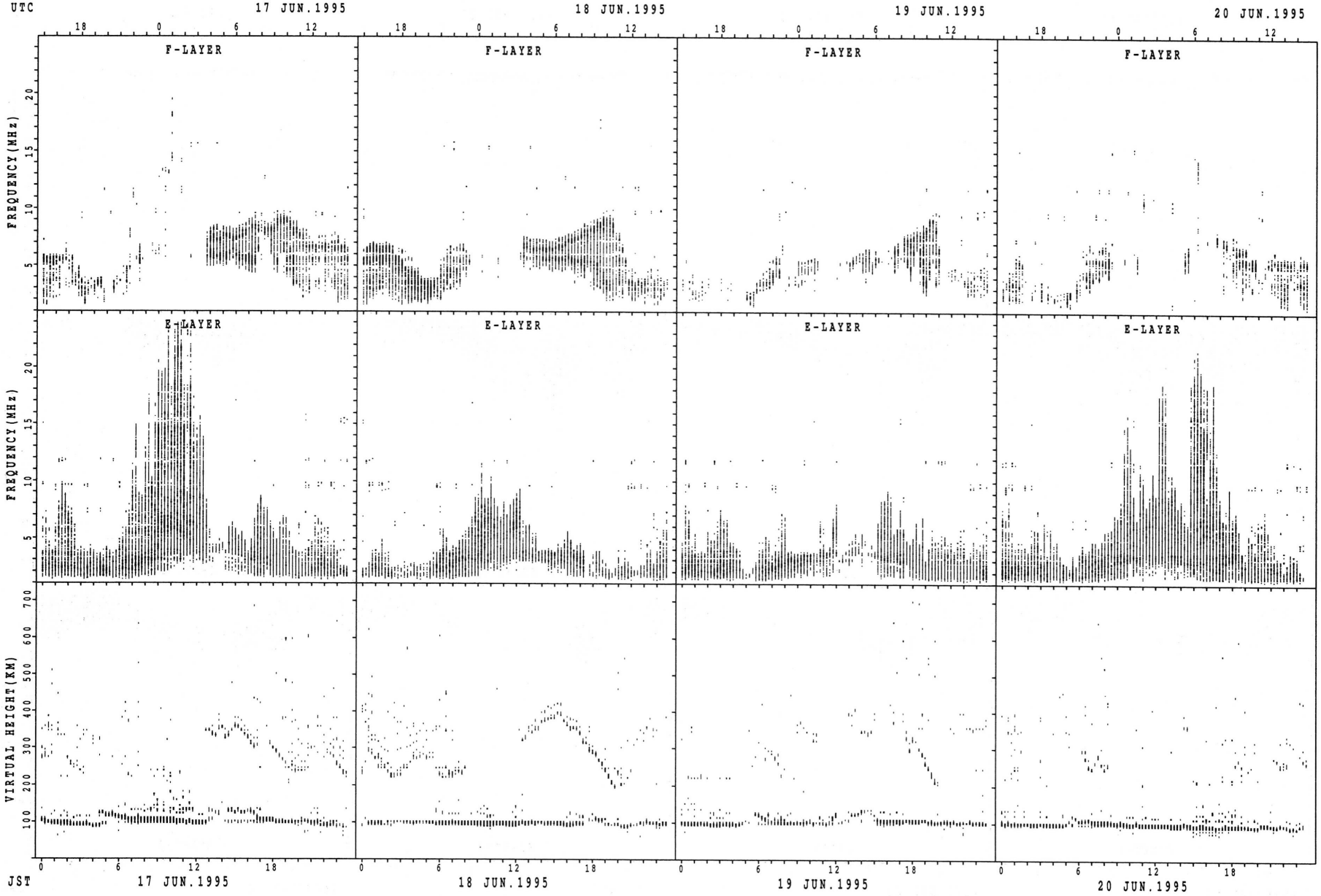
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

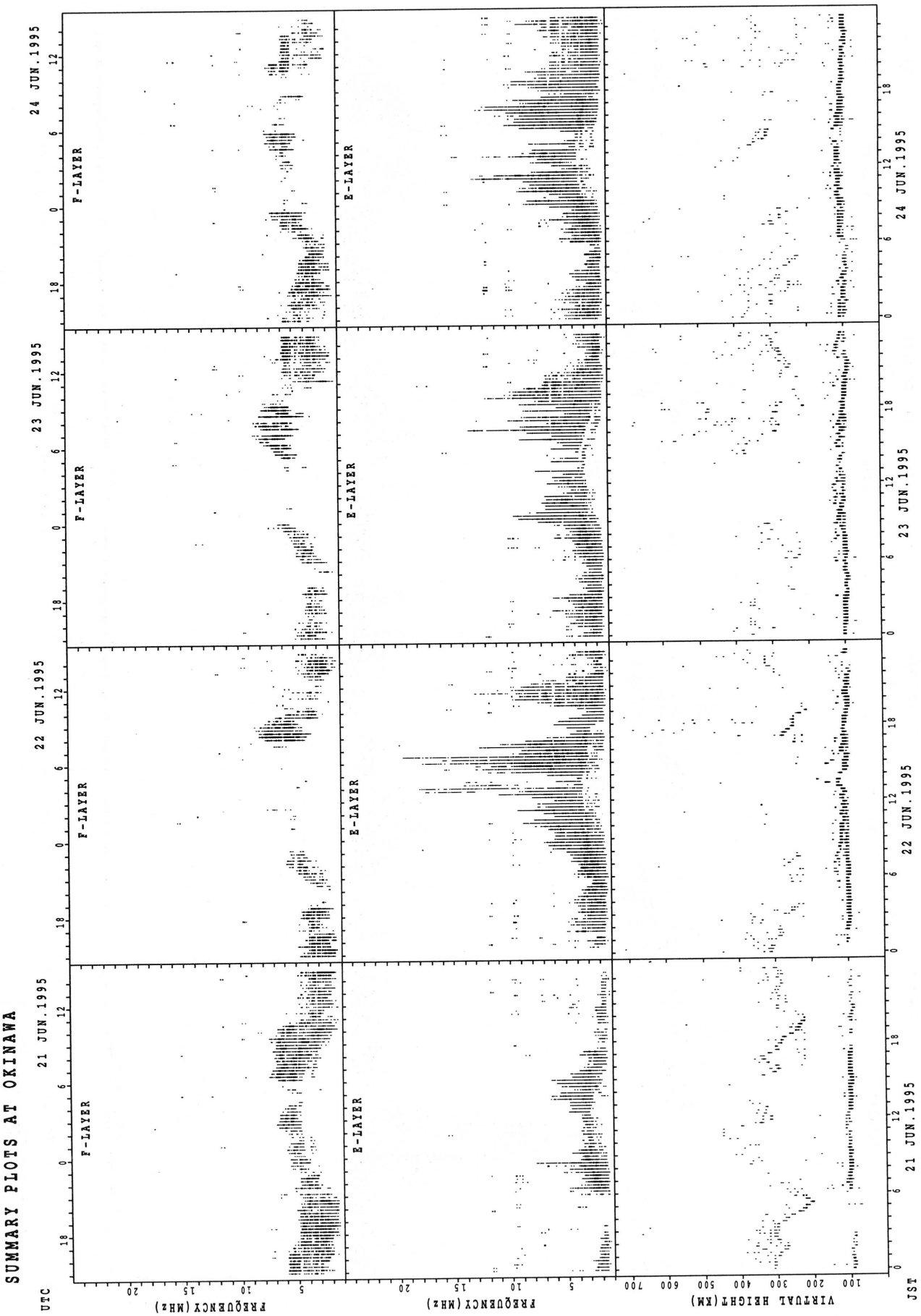


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

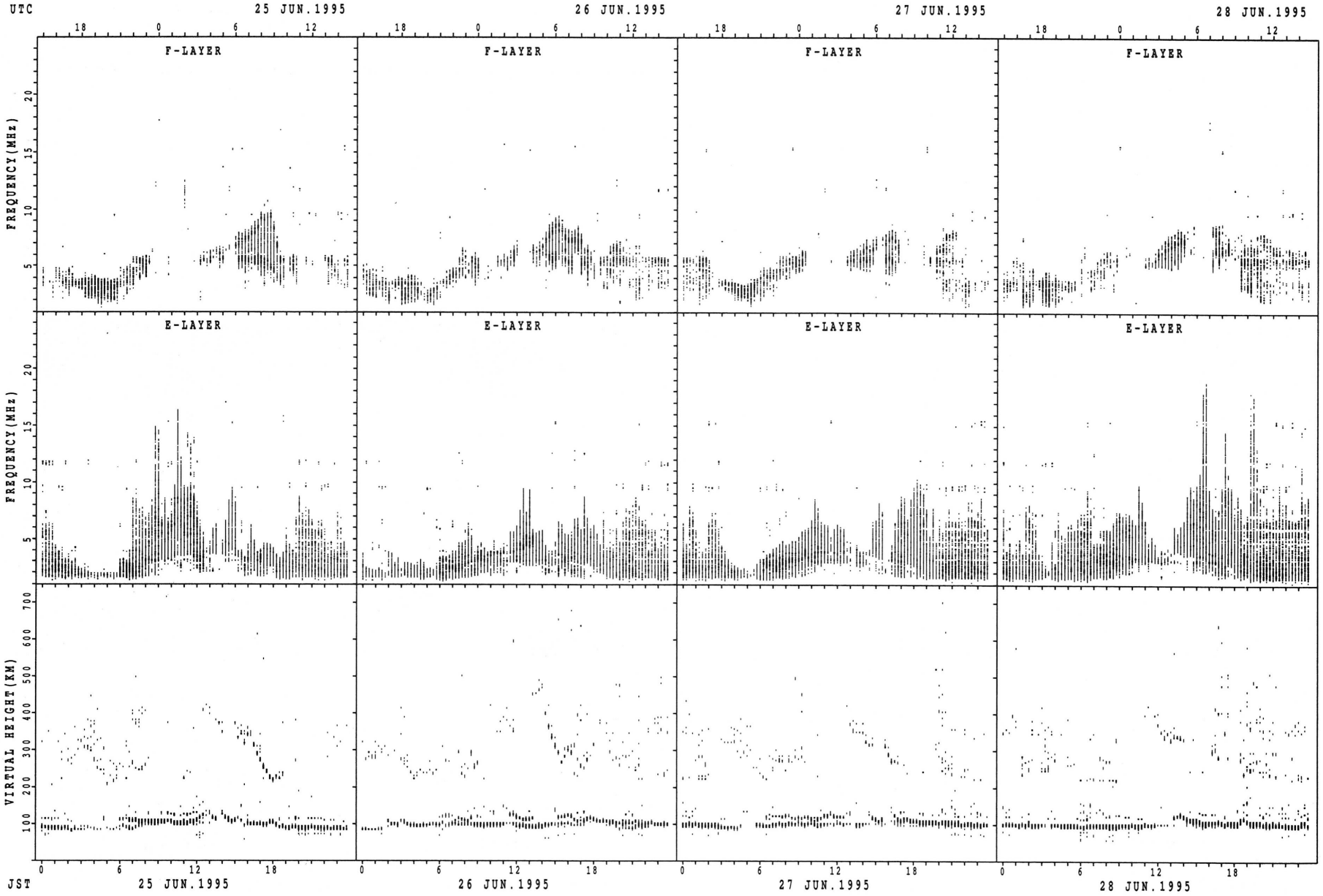
SUMMARY PLOTS AT OKINAWA



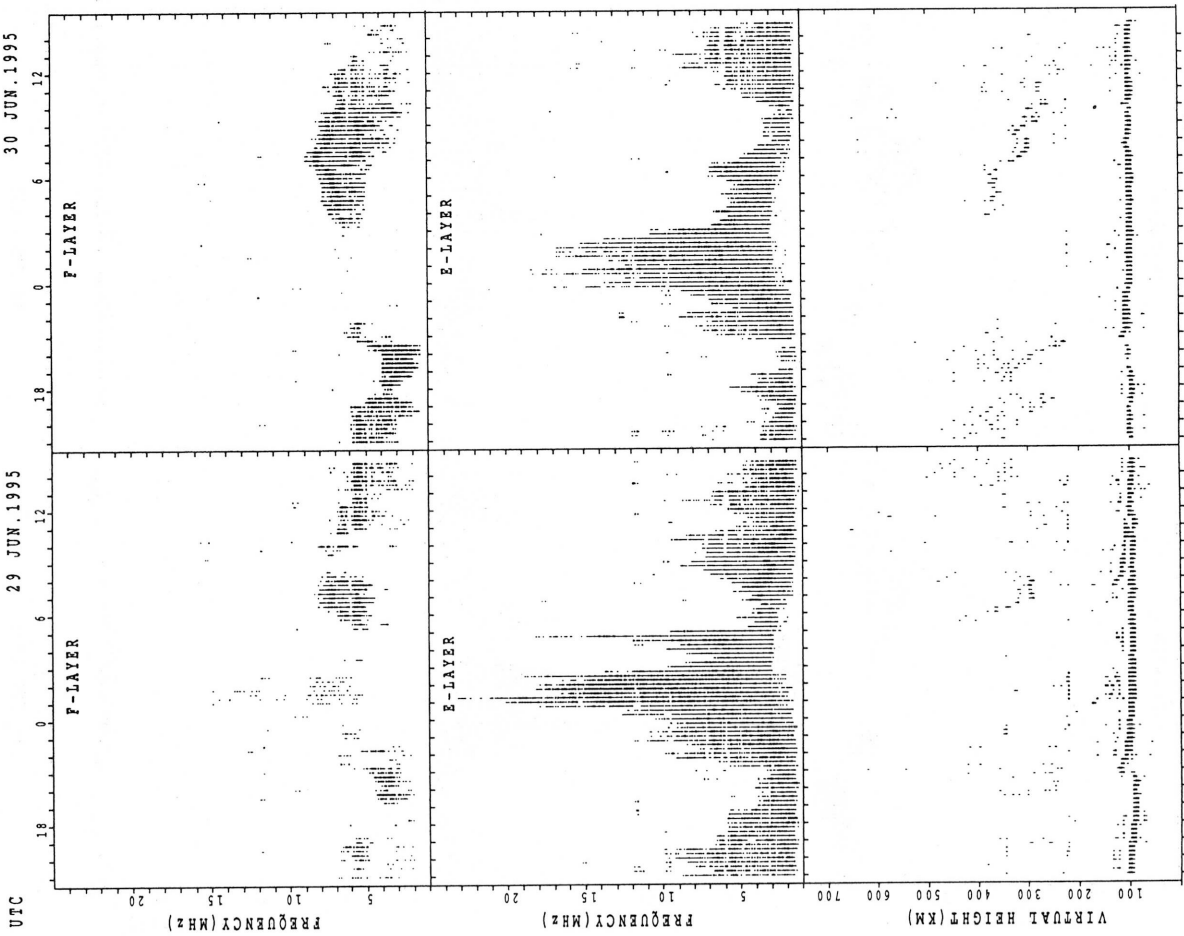
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
JST
21 JUN.1995
22 JUN.1995
23 JUN.1995
24 JUN.1995
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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


SUMMARY PLOTS AT OKINAWA
UTC
29 JUN.1995
30 JUN.1995
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

MONTHLY MEDIANS OF h'F AND h'Es

JUN. 1995 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION WAKKANAI LAT. 45.4N LON. 141.7E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																							12	
MED																							298	
U Q																							321	
L Q																							279	

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	24	22	14	19	23	30	30	25	30	30	27	29	28	28	24	28	23	27	29	26	25	28	26	22
MED	103	103	104	105	113	121	117	111	112	111	107	107	105	105	107	107	115	117	113	111	109	109	105	103
U Q	105	107	107	113	119	127	119	113	113	113	111	110	108	110	111	113	119	119	115	111	112	112	107	105
L Q	100	99	99	101	105	117	113	108	107	107	105	103	103	103	104	105	107	113	111	107	106	106	103	103

h'F STATION KOKUBUNJI LAT. 35.7N LON. 139.5E

	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																				19				
MED																				254				
U Q																				282				
L Q																				244				

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	25	28	27	26	24	27	29	28	25	29	28	29	28	24	27	29	22	26	21	23	26	24	26	28
MED	105	105	103	105	101	119	119	113	111	111	111	111	110	113	111	115	115	115	111	109	112	111	110	109
U Q	108	107	107	111	105	131	122	117	113	115	113	112	115	124	121	119	121	117	115	115	117	113	113	113
L Q	103	99	103	99	95	105	115	112	107	107	106	105	107	107	107	107	109	113	110	105	105	105	107	105

h'F STATION YAMAGAWA LAT. 31.2N LON. 130.6E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																		11	14					
MED																		306	294					
U Q																		346	326					
L Q																		292	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	28	28	27	27	24	29	30	30	29	30	28	24	23	25	28	27	30	28	30	28	29	25	27
MED	107	107	103	107	103	107	119	113	113	111	111	111	111	111	113	113	113	116	115	112	111	111	111	107
U Q	112	108	110	113	107	117	125	119	115	113	117	113	113	119	118	121	119	119	118	115	114	115	114	111
L Q	105	103	100	101	99	103	112	111	111	109	105	107	106	107	107	110	109	113	110	111	106	104	107	103

MONTHLY MEDIANS OF h'F AND h'Es

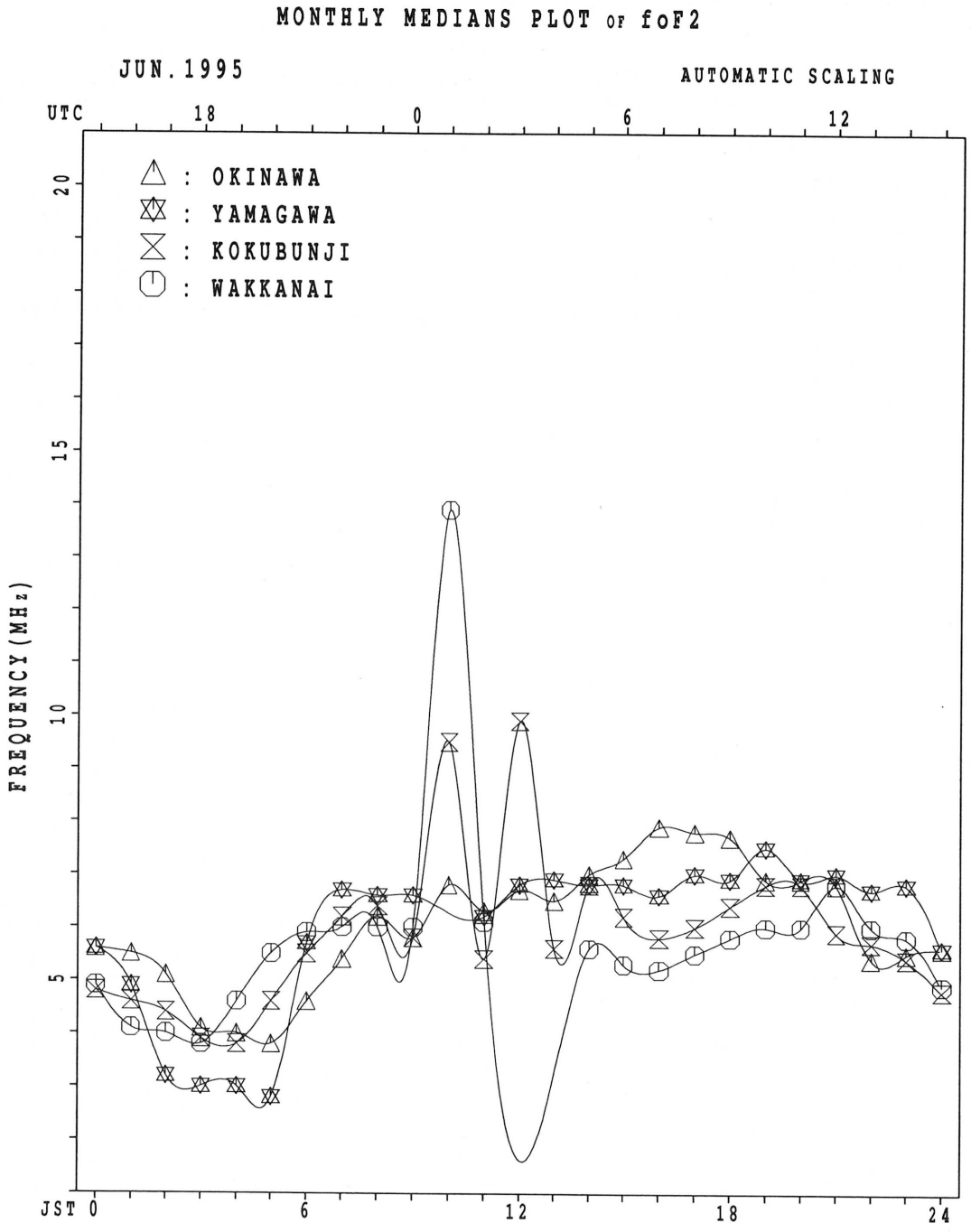
JUN. 1995 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT															13		16	17	12	10	12			
MED															352		322	304	282	275	272			
U Q															353		339	335	297	288	311			
L Q															334		301	276	262	246	260			

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	27	22	20	26	29	28	29	28	29	29	28	28	29	29	30	28	28	29	26	27	27
MED	104	99	103	97	99	102	113	107	110	105	107	111	109	112	117	113	109	107	107	105	105	104	99	103
U Q	109	103	107	103	103	106	117	112	113	113	115	119	121	124	130	128	120	113	112	109	107	109	105	105
L Q	99	95	95	93	95	99	101	103	104	103	103	103	103	103	103	100	99	103	104	103	97	97	97	95


MONTHLY MEDIANS PLOT OF foF2
JUN. 1995
AUTOMATIC SCALING
UTC
18
0
6
12
△ : OKINAWA
⊠ : YAMAGAWA
⧖ : KOKUBUNJI
⊖ : WAKKANAI
FREQUENCY (MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	70	56	52	54	X 38																X 74	59	A	A
2	A	47	47	40	39																69	65	A	54
3	51	48	47	42	A								Y								X 67	X 58	53	49
4	49	50	X 45	44	41																X 72	63	57	56
5	A	46	48	40	37																X 62	64	64	60
6	54	54	56	52	51																X 69	X 66	X 62	64
7	63	58	57	X 48	X 42																X 78	X 78	76	72
8	C	57	55	X 55	54																A	A	A	A
9	A	60	57	58	X 52																75	75	75	X 74
10	A	62	69	X 51	X 50																X 76	78	70	X 57
11	X 57	55	56	50	50																72	63	71	66
12	59	58	57	54	54																X 67	62	X 54	A
13	56	51	50	48	46																65	98	87	A
14	47	44	43	46	42																74	77	65	58
15	56	56	52	50	50																86	71	72	72
16	61	56	A	46	46																X 67	61	64	68
17	A	A	53	51	A																X 72	70	63	X 62
18	A	A	55	A	A																X 88	X 63	X 57	60
19	61	62	X 52	45	41																A	A	56	A
20	A	X 54	A	X 42	X 36																X 62	X 59	X 58	X 58
21	X 56	X 51	X 48	X 42	X 41																X 58	X 52	X 47	47
22	46	44	44	49	40																X 61	X 50	50	47
23	43	41	41	41	43																X 75	A	43	47
24	44	42	39	40	44																X 75	67	61	52
25	A	A	X 40	X 40	X 40																X 68	A	54	51
26	A	49	44	45	43							Y									X 72	X 56	54	55
27	52	52	50	X 46	45																66	A	65	65
28	55	49	48	45	46																X 69	X 52	X 52	A
29	52	50	A	45	40																X 66	X 61	61	57
30	52	54	50	46	44														70		X 71	75	63	73
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	27	27	29	27														1		28	25	27	24
MED	54	52	50	46	43														70		X 70	63	61	58
U Q	58	56	55	50	50																X 74	73	65	66
L Q	50	48	45	42	40																X 66	X 59	54	53

JUN. 1995 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JUN. 1995 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	U R 420	A	A	452	U A 412	400	400	U A 356	A					
2							A	A	A	A	A	428	436	440	428	412	400	Y 352						
3						L	A	380	396		A	A	A	Y	U Y 420	424	412	392	372	U L 352					
4						A	L 360	A	A	A	A	A	A	A	A	A	A	A	A	A				
5							L 384	A	A	A	A	A	A	A	A	A	A	U L 424	380	U L 336				
6						U L 328	L 400	400	432	460		U A 440	A	A	A	U R 444	L 416	A	A					
7							L	412	440	L	444	456	460	A	A	A	424	A	A					
8						L	U A 380	A	A	A	A	A	A	A	A	A	A	A	A	A				
9						L	L	A	A	A	A	A	A	448	U A 436	A	A	A	A					
10							U L 400	A	A	A	A	A	A	U A 480	A	A	U A 448	A	A					
11							L	A	A	A	440	A	444	I R 450	A	436	408	A	A					
12						L	A	A	440	424	432	A	A	A	A	U A 440	412	A	A	A				
13						L	L 380	A	A	440	A	448	U A 460	A	A	A	A	A	A	A				
14						U L 320	372	A	A	A	A	U A 448	A	A	A	A	A	380	A					
15						L	U A 384	A	A	A	A	A	A	A	A	A	A	A	A	A				
16							A	A	A	A	A	A	A	R 448	R 456	A	J R 412	380	328					
17							A	A	U A 436	420		A	A	A	A	A	A	A	A					
18						A	A	A	A	A	A	A	A	R 436	436	A	H 412	U A 360	U A 328					
19							348	A	400	424		A	A	A	U A 432	A	A	U A 400	A	A					
20						A		U A 388	A	A	420	A	A	A	A	U R 416	A	U A 352	320					
21						L 320	336	380	U A 408	A	A	A	428	R 436	R 416	408	U L 400	380	L 332					
22								A	A	A	A	420	432	U A 424	U A 432	412	U A 400	A	A					
23						L	L 380	L	A	A	A	444		A	A	A	A	U A 420	U A 360	320				
24						A	U L 356	U A 360	U A 424	A	A	436	A	420	A	A	A	A	A					
25							L 340	L	A	A	A	A	A	A	A	420	396	A	L 340					
26						A		U A 436	424		A	A	Y	A	A	A	A	A	A					
27						L	L 364	388	408	432	A	U A 480	460	452	A	A	A	A	A					
28						U L 320	A	L 400	420	432	436	U A 460	440	A	A	420	404	U A 440	A	A				
29							A	A	A	A	A	U A 440	A	440	424	428	404	380	L 348					
30							A	A	A	A	A	A	A	R 452	U A 436	440	412	400	U L 352	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	14	9	11	7	6	11	8	15	10	13	19	13	10					
MED						U L 320	L 376	388	424	432	434	444	442	440	430	420	408	380	L 334					
U Q						U L 324	L 384	406	436	440	440	U A 456	460	452	U A 436	438	U 416	380	U L 348					
L Q						L 320	356	380	408	424	420	436	434	U 432	424	412	400	U A 358	328					

JUN. 1995 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	216	276	A 316	A	U A 348	A	A	A	A	A	A	256	196	B				
2						176	236	276	312	A	A	A	A	344	340	312	284	A 248	192	B				
3						156	240	280	304	A	A	A	360	348	336	316	288	240	A 176	B				
4						A 184	252	288	U A 308	A 332	A	R 344	A	A	344	328	296	A 244	A	B				
5						A	244	288	A	A	A	A	A	A	A	A	A 260	A	A	B				
6						188	240	A	A	A	A	A	A	A	344	A	296	A	A	B				
7						200	264	A	A 316	A 340	A	A	A	A	A	A	A	A 256	A 204	B				
8						A	A 252	A 284	A 304	A 312	A	A	A	352	340	324	296	260	A	B				
9						188	260	A 300	A	A	A	A	A	R 364	348	320	296	252	U A 200	B				
10						188	244	300	328	A 352	A 356	A	A 364	356	348	336	296	A 260	A 212	B				
11						204	256	A 296	328	348	356	A	A 356	A	A	A	296	264	A	B				
12						A	A 236	A	A	A	A	A	A	A	A	A	292	256	A	B				
13						A	240	A 284	A 312	U A 332	A	A	A	A	A	A	316	264	A	B				
14						184	A 260	280	316	A 352	A 356	A	A	A	A	A	A	R 292	A	B				
15						A	A	A	U A 328	A 352	A	A	A	A	A	A	316	256	A	B				
16						A	252	A 304	A	A	A	A	A	A	348	324	292	252	200	B				
17						A	A 220	268	A 296	A 336	A 352	A	A	A	A	A	A	A	A	B				
18						A	A	A	A	A	A	A	A	A	A	320	284	264	A	B				
19						A	248	A 284	328	A	A 352	A	A	A 352	336	316	288	260	U A 200	B				
20						A	224	A 276	A 312	U A 324	A	A	U A 352	A	A	A	A	A	A	B				
21						180	A 224	A 280	A	A	A	A	A	348	A	A	280	256	A	B				
22						180	228	276	308	328	A 340	A	A	A	A	A	284	248	184	B				
23						A	228	272	300	A 320	A 340	A	A	A 344	A	A	A 288	A	A	B				
24						A	A	A	A	340	352	356	A	360	344	316	292	A 244	A	B				
25						A	248	284	296	320	A 340	352	364	348	U R 348	A	316	A	A	B				
26						A	248	A 268	A 312	340	348	352	360	348	336	312	288	252	180	B				
27						A	A	A	A	332	348	352	356	A 348	336	328	292	248	192	B				
28						168	A 236	272	300	312	A	A 356	A	348	352	332	300	260	184	B				
29						A	U A 224	A	U A 320	A 332	A	A	A	356	R 328	A	292	248	204	B				
30						168	248	276	308	336	A	A	A	R 356	A	320	316	A	A 172	B				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	26	22	21	19	12	6	7	15	15	14	25	23	14					
MED						184	242	280	312	A 332	A 350	352	360	348	344	320	292	256	194					
U Q						188	252	288	318	A 340	A 354	356	364	356	348	328	296	260	A 200					
L Q						172	228	276	304	A 324	A 344	352	356	348	336	316	288	248	184					

JUN. 1995 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	59	J A 52	32	26	J A 54	55	J A 37	38	55	J A 56	46	J A 66	J A 46	J A 48	J A 42	J A 48	35	38	J A 50	58	J A 63	J A 56	J A 116	J A 63
2	59	36	J A 37	J A 34	J A 40	25	J A 37	J A 42	J A 49	J A 62	73	39	36	39	41	40	39	34	54	69	J A 73	J A 53	70	J A 56
3	32	35	26	J A 64	J A 49	J A 34	J A 50	J A 53	J A 47	85	J A 101	61	41	40	38	J A 80	G	27	J A 37	J A 75	J A 50	J A 40	J A 44	J A 22
4	J A 25	18	20	E B 12	19	J A 49	J A 36	J A 50	J A 67	J A 67	J A 68	71	J A 99	J A 99	J A 98	J A 65	J A 102	152	J A 153	80	J A 85	94	J A 68	J A 45
5	56	J A 46	34	J A 24	J A 39	30	38	J A 52	74	75	82	J A 46	J A 70	68	J A 51	84	J A 156	J A 39	45	J A 86	42	J A 32	46	44
6	E B 14	J A 48	J A 63	J A 44	23	28	31	J A 40	J A 44	J A 50	J A 94	80	J A 64	57	J A 138	35	J A 50	J A 72	J A 65	38	J A 51	55	J A 38	J A 42
7	J A 37	43	J A 23	J A 24	J A 29	J A 25	33	J A 44	38	41	40	38	39	J A 62	J A 48	61	37	40	J A 39	J A 32	J A 33	J A 42	J A 54	56
8	C	J A 45	J A 55	84	J A 128	J A 53	59	J A 52	J A 80	185	133	116	93	153	J A 162	64	J A 70	89	98	185	J A 141	88	J A 89	J A 104
9	J A J A 70	36	24	21	20	29	J A 41	J A 67	J A 128	J A 76	J A 52	J A 59	67	44	44	48	65	J A 54	J A 49	J A 65	J A 44	J A 55	54	72
10	J A J A 75	25	18	25	J A 44	32	J A 37	61	J A 57	J A 65	J A 91	J A 98	J A 69	50	J A 61	J A 56	J A 46	J A 95	J A 59	J A 128	J A 44	J A 50	J A 53	J A 38
11	J A J A 47	J A 62	J A J A 31	34	20	J A 26	34	96	64	J A 55	41	46	40	38	44	36	39	67	64	J A 98	J A 51	J A 77	J A 52	J A 47
12	J A J A 44	J A 35	J A 36	26	25	J A 24	58	J A 128	J A 48	J A 41	J A 49	J A 56	69	82	74	J A 55	J A J A 40	J A 83	J A 102	77	48	J A 47	J A 81	J A 63
13	J A J A 78	J A 29	J A J A 30	J A 21	J A 26	23	32	56	J A 64	J A 54	84	41	47	78	86	99	J A 63	J A 165	J A 182	J A 97	J A 115	J A 98	J A 48	J A 64
14	J A 22	23	28	24	J A 50	24	J A 38	54	J A 62	76	J A 54	57	J A 57	J A 70	70	J A 83	J A 62	43	J A 52	J A 80	J A 51	J A 64	J A 75	J A 62
15	J A 76	J A 65	J A J A 73	J A 52	J A 60	J A 45	J A J A 48	J A 53	J A 180	J A 105	J A 128	J A 102	71	J A 150	94	173	J A 228	201	190	J A 157	J A 118	J A J A 138	J A 53	J A 62
16	J A 86	81	J A J A 94	J A 40	J A 28	J A J A 47	J A 52	73	122	115	118	J A 59	126	J A 50	40	76	J A 65	36	J A 31	J A 52	52	J A 53	J A 37	68
17	J A 103	J A 82	J A J A 44	J A 53	J A 81	J A 44	56	J A 75	J A 95	60	J A 120	J A 132	81	J A 90	J A 126	95	J A 158	115	156	J A 127	J A 51	J A J A 53	J A 67	J A 77
18	85	J A 72	J A 52	91	J A 64	J A 88	J A J A 62	J A 56	J A 138	J A 127	J A 164	78	J A 55	40	35	J A 62	31	J A 38	42	33	20	J A 54	J A J A 40	J A 41
19	J A 36	J A 52	J A J A 33	J A 26	40	J A 25	34	J A 50	J A J A 62	J A 48	J A J A 62	J A 54	J A 50	J A J A 49	J A 66	69	J A 46	J A 70	J A J A 53	J A 70	87	89	J A 36	88
20	61	56	J A 73	40	J A J A 34	J A 54	J A J A 31	J A 41	J A 56	68	38	53	J A 45	85	J A 53	38	60	J A 41	36	J A 53	E B 12	J A J A 32	J A 29	J A J A 22
21	J A 23	28	J A 47	29	J A 40	G	28	33	J A J A 42	124	90	50	37	G	37	J A 42	G 24	31	39	J A 44	39	28	J A 22	31
22	32	J A 45	30	30	29	J A 20	32	40	J A 78	J A 72	82	J A 47	J A 44	43	J A 64	32	41	J A J A 50	78	129	92	J A 75	J A J A 39	J A 39
23	J A 51	J A 33	J A 36	J A J A 20	J A 19	J A J A 34	28	38	J A J A 44	88	51	39	J A 68	J A 52	54	J A 51	J A J A 43	38	24	J A 30	J A 36	J A J A 56	J A 79	J A 53
24	J A 40	J A 51	J A 50	J A 27	J A 31	J A 43	J A 46	J A 36	J A 66	J A 53	J A 51	42	J A 68	G	J A 52	J A 61	J A 119	150	J A 172	J A 194	J A 156	J A 52	45	46
25	J A 49	51	J A 45	J A J A 25	J A 23	J A 26	32	J A 40	108	J A 128	90	96	J A 49	45	J A 55	40	G 30	J A 62	J A 51	51	J A 52	J A 128	42	J A 46
26	J A 64	28	25	J A 46	J A 100	111	98	J A 64	J A 47	58	J A 128	42	53	J A 53	J A 86	78	J A 60	J A 50	J A 111	33	46	J A 49	57	37
27	J A 34	J A 47	J A 32	J A 33	J A 28	26	J A 29	J A 33	J A 36	41	J A 60	50	43	44	J A 50	J A 58	J A 124	J A 121	106	55	J A 70	J A 72	50	53
28	J A 62	J A 56	J A 45	30	J A 31	20	J A 40	34	40	39	J A 42	46	40	J A 76	47	41	39	J A 68	95	127	J A 53	44	37	J A 73
29	38	J A 48	54	J A 34	J A 43	32	58	66	96	J A 63	59	J A 47	J A 64	39	G 31	37	34	40	34	33	J A J A 22	J A 33	J A 34	J A 48
30	J A J A 36	J A 36	J A 26	J A J A 28	J A 33	26	J A 42	J A 50	73	84	154	J A 142	125	G	47	38	G	31	29	J A 130	J A 64	J A 106	J A 74	J A 48
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	J A 49	J A 46	J A 35	J A J A 30	J A 34	J A J A 30	38	J A 51	J A 63	J A 66	78	55	56	50	52	57	J A 46	52	J A 54	J A 72	J A 51	J A 54	J A 51	J A 50
U Q	J A 67	J A 52	J A 50	J A J A 40	J A 49	J A 45	50	61	J A 80	J A 85	J A 101	78	69	76	J A 74	76	J A 65	89	J A 102	J A 127	J A 73	77	68	63
L Q	J A 35	35	28	25	26	25	32	40	J A 47	J A 54	51	46	44	40	44	40	37	38	39	51	44	J A 47	J A 39	J A 42

JUN. 1995 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	48	20	17	E B 13	20	A A 55	35	A A 38	A A 55	A A 56	39	A A 66	44	44	41	38	31	36	43	44	34	30	A A 116	A A 63
2	A A 59	24	23	21	23	21	A A 37	40	A A 49	A A 62	A A 73	38	U Y 36	38	39	38	31	U Y 34	46	31	20	20	A A 70	21
3	19	22	16	17	A A 49	23	38	29	36	A A 85	A A 101	A A 61	U Y 41	U Y 40	37	36	G 26	22	44	47	18	16	16	
4	17	E B E B 14	E B 12	E B 12	E B 13	33	32	43	A A A 67	A A 67	A A A 68	A A 71	A A A 99	A A A 99	A A A 98	A A A 65	A A A 102	A A A 152	A A A 153	54	56	22	37	21
5	A A 56	30	22	18	19	22	34	50	A A A 74	A A A 75	A A A 82	44	A A A 70	A A 68	51	A A 84	37	32	24	47	28	23	22	18
6	E B 14	24	24	17	17	23	29	34	40	37	A A 94	44	54	52	A A 138	33	38	51	43	19	43	20	22	18
7	17	20	16	E B 12	23	G 16	29	34	36	40	39	U Y 37	U Y 39	A A 62	46	A A 61	35	40	35	25	24	24	23	33
8	C	20	16	23	22	17	38	47	57	A A A 185	A A A 133	A A A 116	A A A 93	A A A 153	A A A 162	A A A 64	63	69	64	A A 185	A A A 141	A A A 88	A A A 89	A A A 104
9	A A 70	21	18	18	E B 12	26	31	A A 67	A A A 128	47	49	55	A A 67	42	44	46	A A 65	47	34	21	28	21	37	59
10	A A A 75	E B 14	E B 13	E B 14	E B 14	G 15	32	A A 61	53	47	A A 91	A A A 98	A A A 69	48	A A 61	54	45	A A 95	54	24	21	20	22	38
11	20	25	17	17	14	G	32	A A 96	A A A 64	A A A 55	40	A A 46	U Y U Y 39	U Y U Y 38	U Y 44	35	34	52	47	41	24	45	23	21
12	23	23	27	17	17	20	50	A A 128	37	38	36	A A A 56	A A A 69	A A A 82	A A A 74	44	35	46	A A A 102	A A A 77	47	37	28	A A 63
13	43	17	17	17	18	22	30	48	52	41	A A 84	41	46	A A A 78	A A A 86	A A A 99	59	A A A 165	44	A A A 97	19	78	25	A A 64
14	17	17	17	16	E B 13	21	34	46	59	A A 76	45	45	A A A 57	A A A 70	A A A 70	58	54	33	43	22	20	34	30	23
15	36	29	26	26	20	25	38	44	A A A 180	66	A A A 128	A A A 102	A A A 71	A A A 150	A A A 94	A A A 173	A A A 228	A A A 201	56	57	56	49	31	24
16	27	18	A A 94	21	E B 13	24	44	52	A A A 122	A A A 115	A A A 118	A A A 59	A A A 126	41	38	64	37	32	26	20	22	34	24	48
17	A A A 103	A A 82	32	34	A A 81	33	A A 56	56	44	37	A A A 120	A A A 132	A A A 81	A A A 90	A A A 126	A A A 95	A A A 158	A A A 115	A A A 156	58	45	36	47	34
18	A A A 85	A A 72	26	A A 91	A A A 64	A A A 88	42	54	A A A 138	A A A 127	A A A 164	A A A 78	A A A 55	39	34	53	31	36	33	21	16	32	32	36
19	20	21	21	15	23	19	30	46	G 24	37	43	A A A 54	A A A 50	43	56	58	40	66	46	50	A A A 87	A A A 89	23	A A 88
20	A A 61	45	A A 73	22	20	36	G 19	39	46	A A 68	38	A A A 53	A A A 45	A A A 85	45	33	55	35	24	36	E B 12	19	23	19
21	20	17	17	18	28	G	24	31	41	A A A 124	A A A 90	A A A 50	36	G	35	36	G 22	29	22	19	24	18	E B 14	22
22	25	20	17	18	19	E B 14	30	40	A A A 78	A A A 72	A A A 82	40	39	42	43	32	40	A A 50	48	18	46	35	20	17
23	25	19	20	E B 13	E B 16	21	27	35	44	A A 88	50	39	A A A 68	A A A 52	54	46	42	36	22	16	28	A A 56	19	18
24	18	17	19	24	22	A A 43	30	36	42	48	A A 51	39	A A 68	G	52	A A 61	A A A 119	A A A 150	A A A 172	21	33	20	20	22
25	A A A 49	A A 51	23	E B 12	17	20	27	35	A A A 108	A A A 128	A A A 90	A A A 96	47	A A 45	A A A 55	36	G 29	42	25	42	23	A A 128	29	35
26	A A 64	16	17	23	18	27	36	44	35	A A 58	A A A 128	A A U Y 42	A A 53	51	A A A 86	A A A 78	53	46	42	20	36	23	20	18
27	30	32	23	26	18	19	26	31	35	40	A A 60	48	41	44	A A A 50	A A A 58	A A A 124	A A A 121	A A A 106	36	26	A A 72	23	24
28	19	E B 15	23	E B 15	E B 13	20	39	30	36	38	38	46	39	A A 76	47	40	34	44	56	64	49	28	20	A A 73
29	25	29	A A 54	22	24	20	A A 58	A A A 66	A A A 96	A A A 63	A A A 59	44	45	38	G 28	34	32	35	28	18	19	17	23	29
30	16	16	17	16	E B 16	23	38	45	A A A 73	A A A 84	A A A 154	A A A 142	A A A 125	G	44	36	G	28	28	A A 130	56	16	20	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	25	20	20	18	18	22	33	44	52	A A 62	A A A 78	A A A 52	A A A 54	46	50	50	39	45	43	36	28	29	23	26
U Q	A A 58	29	24	22	23	26	38	A A A 52	A A A 74	A A A 84	A A A 101	A A A 71	A A A 69	A A A 76	A A A 74	A A A 64	A A A 59	A A A 69	A A A 56	54	47	A A 45	31	A A 48
L Q	19	17	17	E B 15	E B 16	19	30	35	40	41	45	44	41	40	43	36	32	35	28	21	22	20	20	21

JUN. 1995 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

JUN. 1995 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 296	F 295	F 304	F 338	340	A	A 352	A	A	A	U R 253	A	A 244	288	R 311	R 332	290	316	308	317	327	F 283	A	A
2	A	F 297	F 281	F 287	F 303	350	A	305	A	A	A	260	G	288	318	308	283	302	314	317	F 314	F 326	A	F 296
3	F 310	F 304	F 309	F 310	A	337	292	311	239	A	A	A	Y	263	291	302	318	289	308	A 298	305	314	F 306	F 290
4	F 301	F 307	304	F 317	F 292	322	V 299	328	A	A	A	A	A	A	A	A	A	A	A	A	322	F 295	F 329	F 298
5	A	F 310	F 323	F 345	F 321	359	318	364	A	A	A	248	A	A	305	A	313	327	329	302	308	F 298	F 309	F 294
6	F 318	F 297	F 343	F 301	F 312	F 321	315	357	332	307	A	307	A 301	289	A	316	311	302	306	318	309	295	V 317	F 308
7	F 304	F 300	F 330	336	319	335	331	311	318	335	318	313	318	A	301	A	299	285	295	312	299	309	F 300	F 331
8	I C 300	F 312	F 310	F 324	J S 326	295	321	324	336	A	A	A	A	A	A	A	A 316	A 330	A 311	A	A	A	A	A
9	A	F 296	F 310	F 339	S 333	327	345	A	A	309	R 340	323	A	314	299	310	A	307	317	S 305	F 302	F 305	F 305	322
10	A	F 322	F 330	324	S 297	347	328	A	343	381	A	A	A	306	A	A 294	301	A	306	316	315	F 310	F 319	302
11	F 288	F 298	F 333	F 297	F 300	F 318	330	A	A	A	271	A	292	235	288	284	315	A 313	J R 311	299	F 300	F 320	F 311	F 312
12	F 322	F 317	F 303	F 297	F 314	F 315	340	A	345	G	286	A	A	A	A	287	280	296	A	A	F 349	F 313	314	A
13	F 317	F 323	F 304	F 309	F 301	320	324	317	V 348	343	A	282	295	A	A	A	A 317	A	318	A	R 318	F 334	F 399	A
14	F 287	F 310	F 317	F 312	F 305	318	318	317	331	A	288	U R 298	A	A	A	310	312	310	322	311	F 305	F 340	F 324	F 309
15	F 305	F 306	F 282	F 308	F 329	F 304	320	311	A	320	A	A	A	A	A	A	A	A	A 303	A 299	F 320	F 310	F 315	F 320
16	F 305	F 318	A	F 308	J R 292	328	295	330	A	A	A	A	A	288	294	A	308	329	325	J R 306	292	F 314	F 291	F 327
17	A	A	F 303	F 326	A	A 356	A	A 314	346	359	A	A	A	A	A	A	A	A	A	306	314	F 303	F 317	R 334
18	A	A	F 347	A	A	A	311	337	A	A	A	A	A	281	295	A 304	292	289	284	308	342	331	302	F 302
19	F 303	F 318	339	F 338	294	328	278	313	286	R 332	A 287	A	A	276	300	A 301	276	289	299	339	A	A	F 275	A
20	A	A	A	308	300	303	291	278	333	A	U R 274	A	A	A	279	R 284	286	298	315	323	307	292	290	301
21	292	298	309	294	290	269	F 284	V 303	327	A	A	A	243	306	317	317	304	311	311	310	319	337	289	F 294
22	F 310	F 279	F 314	F 347	F 390	367	369	287	A	A	A	G	G	283	306	G	276	A	A 317	320	J R 300	R 337	F 326	F 326
23	F 307	F 311	F 294	F 318	S 330	350	294	328	313	A	324	327	A	A	A 279	J R 314	306	300	299	322	360	A	F 314	F 300
24	F 322	F 319	F 320	F 320	F 372	A	274	321	317	335	A	280	A	J R 233	A	A	A	A	A	317	327	F 309	F 331	F 298
25	A	A	J R 242	318	329	349	351	J R 284	A	A	A	A	A 287	A	A	314	324	313	322	320	330	A	F 301	F 306
26	A	F 301	F 300	F 338	F 345	304	365	343	G	A	A	Y	A	290	A	A	A	322	291	299	330	V 313	F 298	F 309
27	F 306	F 311	F 321	328	F 339	314	297	333	329	319	A	331	317	310	A	A	A	A	A	328	F 304	A	F 339	F 339
28	F 330	F 304	F 315	F 325	F 324	309	357	363	323	321	336	306	G	A	A 298	310	311	316	A 290	311	341	S 360	294	A
29	F 307	F 306	A	F 315	F 322	F 340	A	A	A	A	A	302	R 291	277	R 292	281	306	325	310	313	315	294	F 311	F 336
30	F 314	F 285	F 309	F 306	F 307	332	340	353	A	A	A	A	A	295	326	294	319	R 292	312	A	304	F 294	F 338	F 308
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	26	27	29	27	27	27	24	17	12	10	13	12	17	17	19	23	22	25	25	28	25	27	24
MED	F 306	F 306	F 310	F 318	F 319	327	320	319	329	326	288	302	289	288	299	304	306	308	311	312	314	F 310	F 311	F 308
U Q	F 316	F 312	F 323	F 332	F 330	347	340	335	340	339	324	318	298	300	308	314	315	316	317	319	327	328	F 324	F 324
L Q	F 300	F 298	F 303	F 308	300	314	295	311	315	314	U R 274	270	G	276	292	287	290	296	301	306	304	F 296	F 300	F 299

JUN. 1995 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	A	A	A	A	U R 383	A	A	A	A	A 367	348	A	A					
2							A	A	A	A	A	419	398	364	A 363	371	H 371	A						
3						L	A	374	401		A	A	A	Y	Y	367	363	360	346	U L 329					
4						A	L 371	A	A	A	A	A	A	A	A	A	A	A	A	A				
5							A 353	A	A	A	A	A	A	A	A	A	A	A 343	357	U L 366					
6						U L 354	L 349	382	A 351	377		A	A	A	A	A	U R 374	A 352	A	A				
7							L	386	384	L	376	391	Y	A	A	A	364		A	A				
8						L	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
9						L	L	A	A	A	A	A	A	A	A	A	A	A	A	A				
10							U L 351	A	A	A	A	A	A	A	A	A	A	A	A	A				
11							L	A	A	A	407	A	Y	R	A	360	366		A	A				
12						L	A	A	392	437	428	A	A	A	A	A	387		A	A	A			
13						L	L 356	A	A	A	A	423	A	A	A	A	A	A	A	A	A			
14						U L 348	A 352	A	A	A	A	A	A	A	A	A	A	378		A				
15						L	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
16							A	A	A	A	A	A	A	A	R 363	A	R	356	357					
17							A	A	A	399		A	A	A	A	A	A	A	A					
18						A	A	A	A	A	A	A	A	A	A 382	A	H 356	A	A					
19							339	A	390	393		A	A	A	A	A	A	A	A					
20						A		A	A	A	375	A	A	A	A	U R 377	A	A	337					
21						L 305	361	394		A	A	A	A	406	R 392	R 375	374	U L 362	342	L 335				
22								A	A	A	A	399	395	A	A	396	A	A	A					
23						L	L 360	L	A	A	A	410	A	A	A	A	A	A	342					
24						A	U L 300	A	A	A	A	410	A	413	A	A	A	A	A					
25							L 387	L	A	A	A	A	A	A	A	373	377	A	L 345					
26						A		A	383		A	A	Y	A	A	A	A	A	A					
27						L	L 356	378	397		A	A	A	374	A	A	A	A	A					
28						U L 338	A	L 391	386	391	403	A	410	A	A	A	379	A	A	A				
29							A	A	A	A	A	A	A	387	394	369	378	A	L 352					
30							A	A	A	A	A	A	A	Y	A	365	371	374	A 364	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						4	12	6	8	5	6	6	5	4	6	11	14	6	9					
MED						U L 343	L 354	384	388	393	393	410	398	390	371	371	365	356	L 345					
U Q						U L 351	L 360	391	394	418	407	419	408	402	382	U R 374	377	374	360					
L Q						L 322	L 350	378	384	384	376	399	384	376	363	365	356	346	L 336					

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IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	E A 288	A	A	A	534	A	A	374	304	292	394	308	E A 302					
2							A	368	A	A	A	506	G	406	330	344	394	324						
3						308	A 410	366	594	A	A	A	Y	500	394	354	322	388	332					
4						A 318	366	A 308	A	A	A	A	A	A	A	A	A	A	A					
5							330	248	A	A	A	A	A	A	A 350	A	306	288	270					
6						322	320	242	298	342	A	352	A	A	A	316	316	E A	A 278					
7							286	334	306	296	328	334	334	A	A 370	A	358	A 338	298					
8						L	280	282	A 274	A	A	A	A	A	A	A	E A 344	A	A	A				
9						L 278	254	A	A	330	326	A 318	A	360	382	342	A	A 340	286					
10							294	A	A 274	302	A	A	A	374	A	E A 390	320	A	A 300					
11							250	A	A	A	488	A	424	E Y 612	Y 414	386	320	A	E A 348					
12						286	E A 276	A	294	G	420	A	A	A	A	400	412	E A 376	A	A				
13						290	296	A 322	260	288	A	452	390	A	A	A	E A 346	A	E A 332	A				
14						310	288	284	268	A	E A 402	416	A	A	A	A 340	A 306	302	266					
15						334	290	296	A	A 320	A	A	A	A	A	A	A	A	E A 348	A				
16							360	A 296	A	A	A	A	A	384	364	A	308	278	282					
17							A	A	256	262	A	A	A	A	A	A	A	A	A					
18						A	E A 336	A 304	A	A	A	A	A	450	378	A	374	364	320					
19							422	A 346	418	306	A	A	A	472	E A 374	E A 370	372	A 356	290					
20						A		418	292	A	468	A	A	A	400	Y 420	A	340	292					
21						448	392	336	306	A	A	A	558	356	320	328	356	328	326					
22								A	A	A	A	G	G	444	372	G	442	A	A					
23						264	362	290	E A 328	A	A 322	306	A	A	A	360	316	314	286					
24						A	438	316	332	304	A	450	A	526	E A 426	A	A	A	A					
25							254	L	A	A	A	A	A	A	A	330	306	328	288					
26						324		310	G	A	A	Y	A	A 394	A	A	A	A 330	A					
27						L 312	384	292	282	330	A	312	346	388	A	A	A	A	A					
28						326	244	252	318	334	318	394	G	A	E A 406	368	322	332	A					
29							A	A	A	A	A	382	396	460	390	428	350	304	310					
30							A 252	250	A	A	A	A	A	372	326	342	302	328	284	A				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	24	21	17	12	9	12	9	16	17	18	22	19	20					
MED						312	294	304	296	313	402	388	424	396	372	350	327	328	290					
U Q						325	364	335	330	332	478	451	G	466	397	390	372	A 340	323					
L Q						288	278	283	274	299	324	326	368	374	340	340	316	308	285					

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	E A 318	308	280	248	276	A	A	A	A	A	240	A	A	A	A	A	A 250	A	A	E A 290	258	A 330	A	A
2	A	A 340	348	A 338	A 332	248	A	A	A	A	A	200	208	242	A	E A 270	H 210	A	A	266	262	252	A	A 304
3	294	284	282	278	A	A	A	212	232	A	A	A	Y	Y	254	A 260	228	224	244	A	E A 298	260	266	296
4	310	286	270	284	294	A	242	A	A	A	A	A	A	A	A	A	A	A	A	A	E A 296	A 288	A 288	288
5	A	A 322	284	240	318	226	A	A	A	A	A	A	A	A	A	A	A	A 266	234	A	276	300	282	292
6	206	A 330	234	278	252	252	234	A 242	A	192	A	A	A	A	A	216	A	A	A	244	A	264	280	284
7	264	292	240	228	A 264	224	224	220	210	A	228	Y 246	Y	A	A	A	230	A	A	260	268	268	278	242
8	I C 245	286	256	A 268	A 258	H 208	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
9	A	294	268	240	236	244	A 238	A	A	A	A	A	A	A	A	A	A	A	A	268	288	290	A 304	A
10	A	246	224	228	268	224	A 248	A	A	A	A	A	A	A	A	A	A	A	A	254	240	270	258	A
11	296	312	234	284	284	244	232	A	A	A	220	A	A	A	A	228	244	A	A	E A 296	256	E A 336	266	272
12	264	290	302	282	274	246	A	A	A 208	208	180	A	A	A	A	A	218	A	A	A	A 260	E A 308	A 282	A
13	A	264	272	288	278	242	234	A	A	A	A	198	A	A	A	A	A	A	A	A	276	A	198	A
14	278	288	276	276	290	240	A	A	A	A	A	A	A	A	A	A	A	A 240	A	254	278	254	268	284
15	A 328	A 324	A 344	A 296	266	246	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A 280	A 292	A 302	262
16	A 296	262	A	A 286	304	A 250	A	A	A	A	A	A	A	A	232	A	A	A 256	A 260	252	254	A 274	318	A
17	A	A	A 338	A 294	A	A 218	A	A	A	214	A	A	A	A	A	A	A	A	A	A	A 288	286	E A 338	272
18	A	A	246	A	A	A	A	A	A	A	A	A	A	A	202	A	H 214	A	A	264	228	278	A 296	A 332
19	304	262	232	242	E A 344	240	A 294	A	228	218	A	A	A	A	A	A	A	A	A	248	A	A	A 348	A
20	A	A	A	A 278	A 336	A	242	A	A	A	A 250	A	A	A	A	230	A	A	254	A 248	234	270	308	266
21	290	290	280	314	E A 348	H 242	234	230	A	A	A	A	202	188	206	A 248	232	A 234	242	248	260	238	298	A 314
22	A 318	A 350	288	240	246	232	A 236	A	A	A	A	A 242	224	A	A	218	A	A	A	252	A 282	A 282	A 328	288
23	A 356	A 340	A 344	272	250	234	218	A 246	A	A	A	196	A	A	A	A	A	A	248	234	214	A	A 320	332
24	300	284	294	A 334	A 248	A	A	A	A	A	A	198	A	220	A	A	A	A	A	A 284	244	256	256	A 308
25	A	A	A 352	246	266	240	206	226	A	A	A	A	A	A	A	A 238	232	A	A 256	A	234	A	A	A
26	A	280	316	A 292	268	A	246	A	216	A	A	Y	A	A	A	A	A	A	A	270	240	268	280	276
27	A 314	A 336	280	276	224	226	228	222	210	A	A	A	A 250	A	A	A	A	A	A	A 264	A 272	A	284	242
28	234	280	A 298	260	266	248	A	A 218	222	226	208	A	A 220	A	A	A	234	A	A	A	E A 264	248	294	A
29	A 318	A 338	A	310	A 320	246	A	A	A	A	A	A	A	220	206	220	238	A	E A 254	260	244	278	300	A 282
30	248	276	288	286	302	238	A	A	A	A	A	A	A	Y	A	226	228	236	A 262	A	A	260	260	A 290
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	26	27	29	27	23	15	8	7	5	6	6	5	4	5	10	12	6	9	19	26	24	26	20
MED	296	290	280	278	271	240	234	224	216	214	224	199	220	220	206	228	231	A 238	254	257	259	270	284	286
U Q	A 316	A 324	A 302	A 290	A 304	246	242	A 236	228	222	240	242	237	231	243	248	236	A 256	A 258	A 268	278	A 289	A 304	A 300
L Q	264	280	256	247	258	226	228	219	210	200	208	198	205	204	204	220	223	234	243	248	244	260	268	272

JUN. 1995 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN.1995 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						A	114	114	108	110	110	112	A	114	A	A	A	124	A 124	B				
2						130	122	112	108	108	110	112	110	112	112	112	118	118	118	B				
3						B 138	112	112	A 128	112	A	112	112	124	112	110	114	118	118	B				
4						B 130	116	112	110	112	112	110	116	A	116	112	116	116	A	B				
5						A	120	110	A	A	A	114	112	A	A	112	108	A	A	B				
6						142	E A 138	A	A	A	A	110	112	114	116	114	112	112	A	B				
7						E A 158	118	A	112	112	112	A	108	112	106	112	108	A	124	B				
8						A	112	110	108	108	110	110	110	112	114	116	114	112	A	B				
9						134	110	110	106	112	112	110	108	110	118	A 124	126	A 116	122	B				
10						A 132	A 122	108	A 126	108	112	112	110	112	112	110	110	112	120	B				
11						132	118	110	110	112	110	108	110	A	A	108	112	112	A	B				
12						A	116	A	A	A	A	112	A	A	A	A	114	116	A	B				
13						A	114	110	110	112	106	A	A	A	108	A	A	114	A	B				
14						130	112	110	110	110	112	112	112	A	A	110	110	A 138	A	B				
15						A	A	A	110	110	108	A	108	A	A	A	114	116	A	B				
16						A	110	108	106	106	A	112	A	A	114	112	112	112	122	B				
17						A	114	108	106	116	110	110	110	110	A	110	110	A	A	B				
18						A	A	110	A	A	A	110	A	A	A	110	110	114	A	B				
19						A	114	106	130	110	110	110	110	114	108	110	114	118	118	B				
20						A	120	112	108	114	106	110	116	112	110	A	110	A	A	B				
21						132	A	112	114	110	114	114	A	114	A	A	116	A 128	A	B				
22						E B 166	112	A 138	108	110	112	108	114	118	A	116	112	114	114	B				
23						A	114	112	110	110	116	110	118	112	114	112	114	A	A	B				
24						A	A	A	A	126	116	112	110	114	112	114	112	110	A	B				
25						A	126	A	A 130	108	120	R 126	112	114	114	A	A 132	A	A	B				
26						A	116	110	110	108	A 122	112	114	114	108	110	110	110	118	B				
27						A	A	A	A	110	110	110	112	118	112	108	110	120	126	B				
28						134	A 126	108	110	110	A	A	110	114	116	112	112	112	116	B				
29						A	112	112	110	110	108	112	A	126	A 120	A	A 124	116	A 128	B				
30						138	114	112	112	112	112	114	114	114	114	112	118	112	116	B				
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT						13	25	23	24	26	23	26	23	21	20	22	28	24	14					
MED						133	114	110	110	110	112	112	112	114	113	112	112	115	119					
U Q						140	120	112	112	112	112	112	114	114	115	112	115	118	124					
L Q						131	112	110	108	110	110	110	110	112	111	110	110	112	118					

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	110	102	110	128	106	112	118	120	118	112	116	110	118	116	108	108	104	130	116	110	112	116	112	112
2	110	104	106	104	104	128	126	118	118	114	112	124	124	174	132	130	122	120	114	110	116	112	108	108
3	106	104	104	102	102	132	122	122	118	110	104	112	132	126	122	118	G	130	110	110	114	112	124	110
4	108	138	114	B	166	126	130	116	112	110	110	112	112	150	118	120	114	112	108	106	110	108	108	108
5	100	110	104	102	100	98	122	116	110	110	108	110	108	108	108	104	122	114	110	112	106	112	110	110
6	B	108	102	112	110	142	128	126	114	116	106	114	110	116	112	120	116	110	110	108	106	106	102	116
7	118	110	104	104	96	136	120	114	116	118	114	122	120	106	112	108	116	126	118	122	116	116	110	114
8	C	104	102	104	112	118	120	112	106	104	104	104	118	114	114	120	116	110	106	108	112	106	102	98
9	98	106	96	100	108	136	128	114	108	108	114	106	108	170	156	132	122	114	116	124	118	114	112	112
10	112	112	114	110	108	108	128	118	118	116	110	126	114	120	118	124	126	112	112	112	112	112	108	104
11	118	104	118	110	104	114	126	112	114	116	122	116	128	122	110	114	124	118	114	110	108	110	106	108
12	98	98	106	96	96	126	110	104	110	108	112	104	104	102	102	122	124	120	110	108	112	110	108	108
13	102	102	98	100	96	124	122	114	110	112	108	114	116	112	102	102	126	116	126	130	118	110	106	110
14	106	108	104	106	104	136	120	118	112	112	114	112	106	108	110	110	108	154	104	112	108	110	110	106
15	106	118	108	118	108	108	116	114	108	108	106	108	112	104	106	104	116	122	108	124	120	106	104	110
16	108	104	102	102	108	106	118	114	108	106	102	108	108	110	140	120	118	148	120	108	114	112	114	110
17	106	104	104	100	100	104	114	112	114	116	110	106	110	108	106	106	120	140	124	118	98	96	98	102
18	104	98	102	110	106	108	104	116	104	102	104	106	112	110	118	116	128	120	114	112	106	114	112	108
19	106	104	104	122	102	130	122	116	114	118	114	110	122	122	122	118	122	118	114	114	110	108	114	110
20	112	106	106	106	104	102	108	118	114	110	126	114	116	110	106	114	106	110	102	100	B	100	102	100
21	98	100	120	118	110	G	120	122	114	106	106	112	118	G	114	110	104	138	102	98	100	98	126	114
22	112	110	108	106	110	120	150	130	118	112	114	114	116	124	114	118	126	118	114	110	110	112	112	118
23	112	108	110	112	118	106	126	120	116	112	116	120	114	116	112	108	112	104	110	110	112	112	118	120
24	122	122	112	98	94	110	112	108	114	124	128	130	108	G	128	120	112	108	110	112	108	110	104	104
25	100	98	96	106	102	100	134	124	114	112	112	112	128	134	128	120	116	118	118	102	100	116	110	108
26	106	100	98	128	114	116	126	114	120	130	122	158	130	134	122	122	124	118	130	112	114	118	118	122
27	106	102	102	98	94	100	104	108	106	136	122	124	128	126	124	126	116	116	114	112	110	116	114	108
28	110	106	104	112	118	136	120	134	116	118	114	140	124	128	160	158	138	116	116	132	110	108	110	106
29	106	102	100	102	96	96	116	114	110	108	110	108	106	162	108	108	140	122	120	114	116	116	110	108
30	106	108	106	144	98	134	126	118	112	112	104	110	112	G	118	122	G	120	112	120	120	120	110	106
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	30	30	29	30	29	30	30	30	30	30	30	30	27	30	30	28	30	30	30	29	30	30	30
MED	106	104	104	106	104	116	121	116	114	112	112	112	115	116	114	118	119	118	114	112	112	112	110	108
U Q	111	108	108	112	110	131	126	120	116	116	114	120	122	128	122	122	124	122	116	114	115	114	112	112
L Q	105	102	102	102	100	106	116	114	110	108	106	108	110	110	108	108	115	114	110	108	108	108	106	106

JUN. 1995 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

JUN. 1995 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

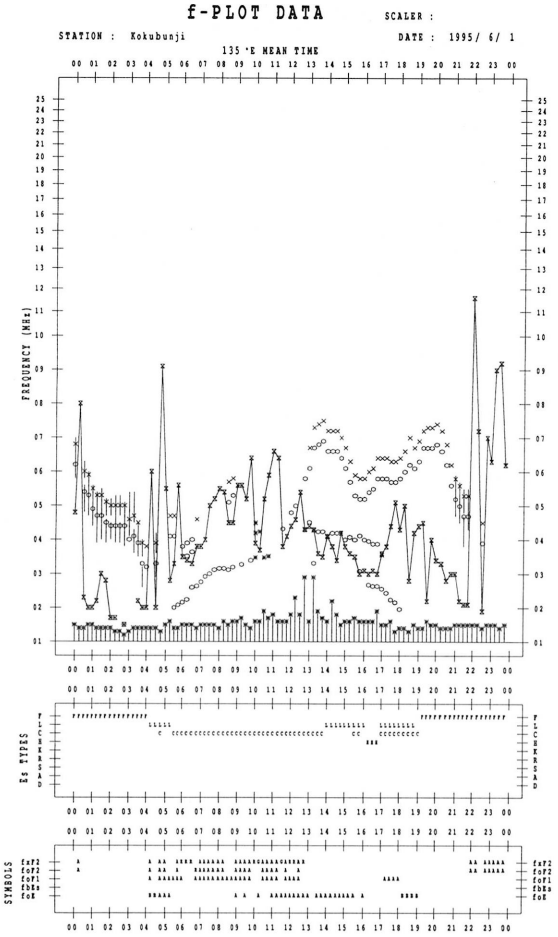
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

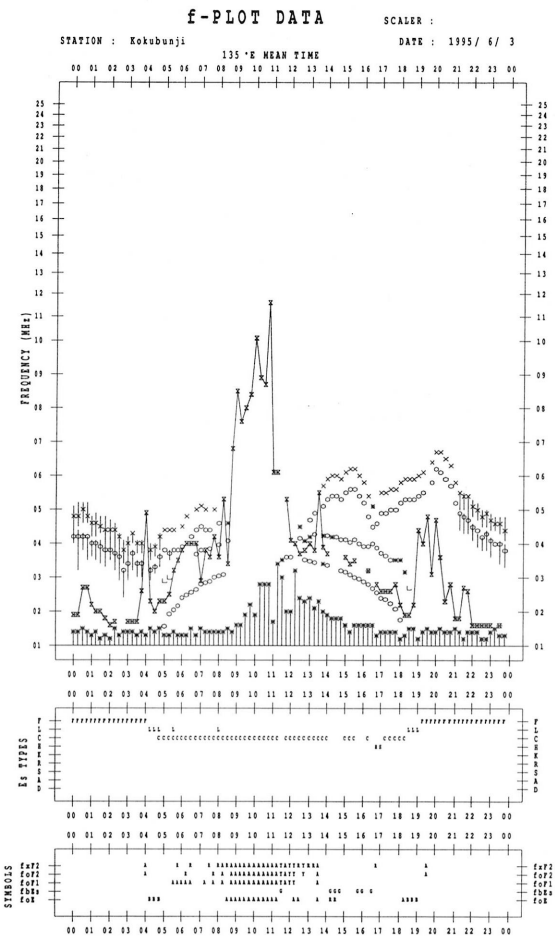
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 3	F 2	F 3	FF 11	FF 32	L 3	C 3	C 2	C 3	C 3	C 1	C 1	C 1	C 1	L 1	L 2	L 2	CL 22	CL 42	C 5	F 4	F 3	F 5	F 5
2	F 5	F 6	F 2	F 4	F 3	C 1	CL 31	C 2	C 2	C 2	C 2	C 1	C 1	H 1	H 1	H 1	C 1	C 1	C 5	L 3	F 4	F 3	F 3	F 3
3	F 4	F 4	F 3	F 3	F 4	C 3	C 2	C 2	CL 11	C 3	C 2	C 1	C 1	C 1	C 1	C 2		H 1	C 3	L 5	F 5	F 6	FF 23	F 2
4	F 2	F 1	F 1		F 1	C 3	C 2	C 3	C 3	C 2	C 2	C 2	C 2	HC 22	C 2	C 2	C 2	C 3	C 4	L 5	F 4	F 3	F 3	F 4
5	F 5	FF 15	F 6	F 3	F 4	L 2	C 2	C 2	C 2	L 2	L 1	C 1	C 2	C 2	CH 21	C 2	HC 12	C 3	L 3	L 4	F 6	F 4	F 4	F 5
6		F 3	F 4	F 3	F 2	CL 11	CL 22	CL 12	L 2	C 1	C 2	C 1	C 2	C 1	C 3	C 1	C 2	C 2	C 4	L 5	F 4	F 4	F 4	F 5
7	FF 31	F 3	F 1	F 1	F 4	L 1	C 2	C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 2	C 2	HL 21	C 3	C 4	F 3	F 6	F 5	F 5
8		F 3	F 2	F 3	F 3	L 2	C 2	C 3	C 3	C 3	C 3	C 2	LC 22	C 3	C 3	C 2	C 2	C 3	C 4	L 4	F 5	F 5	F 5	F 4
9	F 3	FF 12	F 1	F 1	F 1	CL 41	C 3	C 3	C 3	C 2	C 2	C 2	C 2	H 1	H 1	HL 21	CL 31	CL 31	C 3	CL 23	F 5	F 5	F 4	F 4
10	F 4	F 2	F 1	F 1	F 3	LH 21	CL 21	C 3	CL 21	C 2	C 2	CC 22	C 2	C 1	C 2	C 2	C 2	C 2	C 3	C 3	F 2	F 4	F 4	F 3
11	FF 13	F 3	FF 21	FF 21	F 1	LCL 11	C 2	C 3	C 2	C 2	C 1	C 1	C 1	C 1	C 1	C 1	C 1	C 3	C 4	L 3	F 3	F 3	F 4	F 3
12	F 3	F 3	FF 21	F 2	F 2	C 1	C 3	C 3	C 2	L 1	L 1	L 2	L 2	L 2	L 2	CL 12	C 2	C 2	C 5	C 4	F 4	F 5	F 4	F 5
13	F 4	F 2	F 2	F 2	F 2	CL 21	C 2	C 3	C 3	C 2	C 3	C 1	C 1	C 2	C 3	L 3	CL 22	C 4	CL 23	CL 15	F 3	F 5	F 4	F 4
14	F 2	F 2	F 3	F 2	F 1	C 1	C 2	C 2	C 3	C 2	C 1	C 2	C 2	C 2	C 3	C 2	C 3	HL 11	L 3	CL 23	F 3	F 3	F 3	F 3
15	F 3	FF 13	F 2	FF 13	F 3	LH 32	L 2	L 2	C 3	C 3	C 2	C 2	C 2	C 3	C 2	C 2	C 2	C 3	C 4	CL 24	FF 24	F 3	F 3	F 4
16	F 3	F 3	F 2	F 2	F 2	L 3	C 3	C 4	C 3	C 3	C 3	C 2	C 2	C 1	C 1	C 2	C 2	HC 21	C 3	C 4	FF 41	FF 42	F 2	F 5
17	F 4	F 4	F 5	F 4	F 3	L 3	C 3	C 3	C 1	C 1	C 2	C 2	C 2	C 2	C 2	L 2	CL 23	CL 24	CL 24	LL 25	F 5	F 4	F 4	F 4
18	F 4	F 3	F 4	F 3	F 4	L 4	L 3	CL 33	L 3	L 3	L 3	L 2	C 1	C 1	C 1	C 2	H 1	C 2	C 3	L 3	FF 21	F 7	F 5	F 6
19	F 3	F 4	F 3	FF 11	F 5	L 2	C 3	C 4	L 2	C 1	C 2	C 1	CL 11	C 1	C 2	C 2	C 2	C 2	C 3	L 4	F 2	F 3	F 3	F 6
20	F 6	F 5	F 5	F 5	F 6	L 4	LC 21	C 2	C 2	C 2	C 1	C 2	C 1	C 2	C 2	L 1	C 3	C 2	C 3	L 4		F 4	F 2	F 2
21	F 2	F 2	FF 21	F 2	F 3		CL 12	C 1	C 2	C 2	C 2	C 2	C 1		L 1	L 2	L 1	HL 11	L 2	L 5	F 3	F 3	FF 11	F 3
22	F 6	F 4	F 2	F 2	F 2	L 1	HC 21	HC 21	C 3	C 2	C 2	C 1	C 1	C 1	C 2	C 1	C 2	C 4	C 4	C 3	F 3	F 3	F 2	F 3
23	F 5	F 3	F 3	F 2	F 1	LC 21	C 1	C 2	C 2	C 2	C 1	C 1	C 2	C 1	C 2	C 2	C 2	C 2	C 2	C 2	F 5	F 4	F 3	F 4
24	F 4	FF 22	FF 12	F 2	F 3	CL 41	C 3	L 2	CL 21	CL 21	C 1	C 1	C 2		H 2	C 2	C 3	C 4	C 4	C 4	F 3	F 3	F 3	F 3
25	F 3	F 3	F 3	F 1	F 2	L 1	CL 21	CL 11	CL 21	C 2	CL 21	CL 31	C 1	H 1	C 2	C 1	L 1	C 3	CL 32	L 3	F 3	FF 23	F 6	F 5
26	F 4	F 2	F 3	FF 22	FF 25	CL 44	CC 23	C 3	C 1	H 2	CL 11	H 1	H 1	C 2	C 3	C 4	C 3	C 3	CC 13	L 3	F 4	F 3	F 3	FF 23
27	F 3	F 5	F 4	F 3	F 2	L 3	L 2	L 2	L 2	H 1	C 2	C 1	H 1	C 1	CL 11	C 2	C 3	C 3	C 4	L 5	F 4	F 4	F 4	F 4
28	F 4	F 2	F 6	F 2	FF 22	C 2	CL 21	C 1	C 1	C 2	C 1	CL 11	C 1	C 2	H 1	H 1	H 1	C 3	C 4	CL 25	F 4	F 3	F 4	F 5
29	F 4	F 4	F 3	F 3	F 4	L 2	C 4	C 3	C 3	C 2	C 2	C 1	C 2	HL 11	L 1	L 2	HL 12	C 3	CL 32	CL 41	F 4	F 2	F 4	F 4
30	F 4	F 2	F 2	FF 11	F 2	C 2	C 3	C 2	C 3	C 2	C 3	C 2	C 3		C 1	C 1		C 1	C 2	C 5	F 5	F 3	F 4	F 5
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

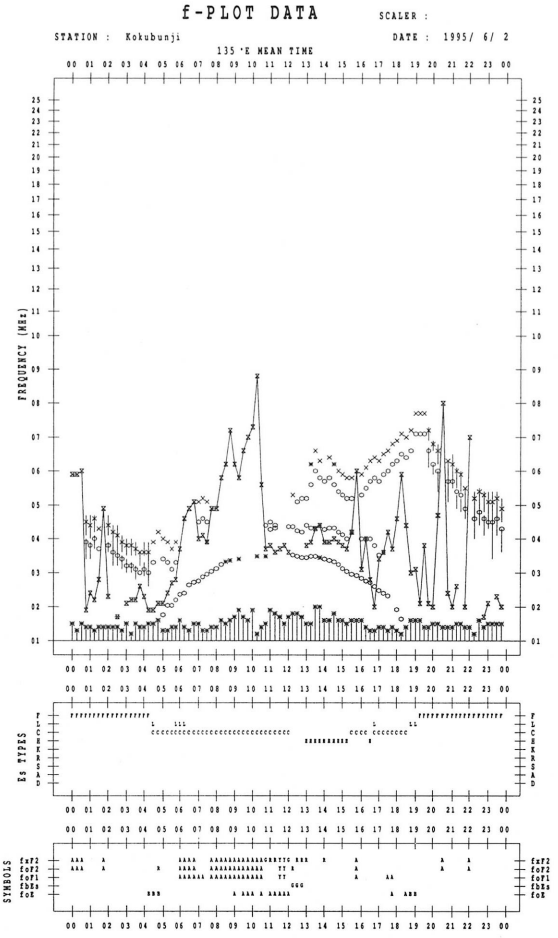
JUN. 1995 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

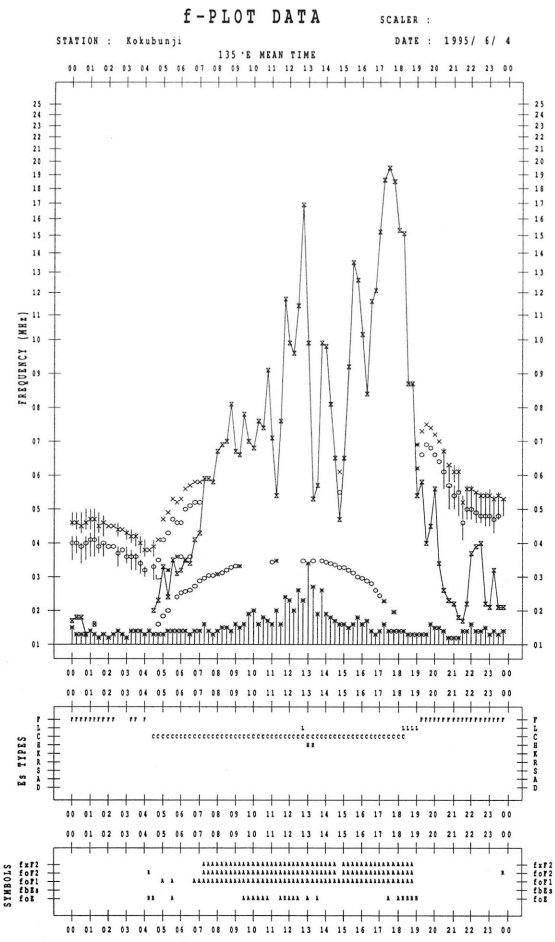
f-PLOTS OF IONOSPHERIC DATA

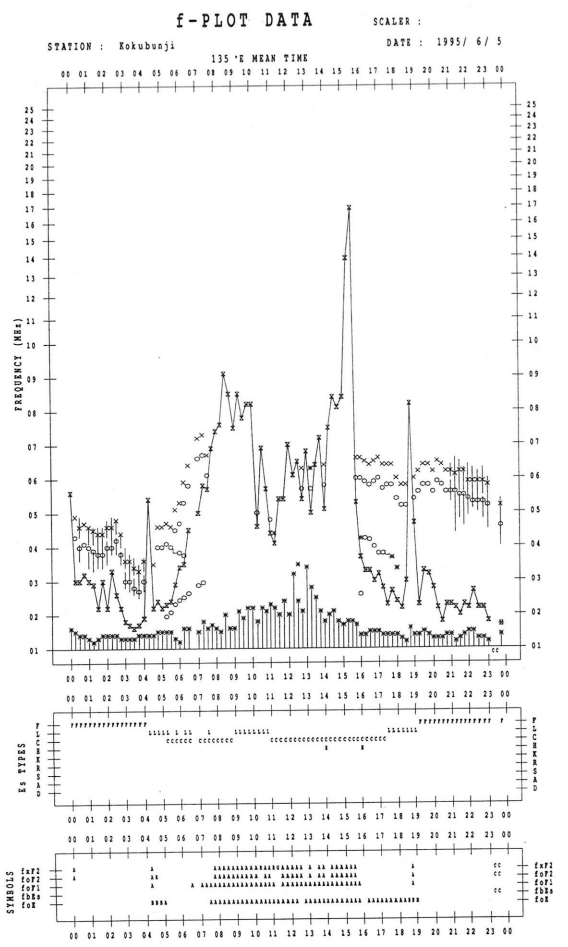
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

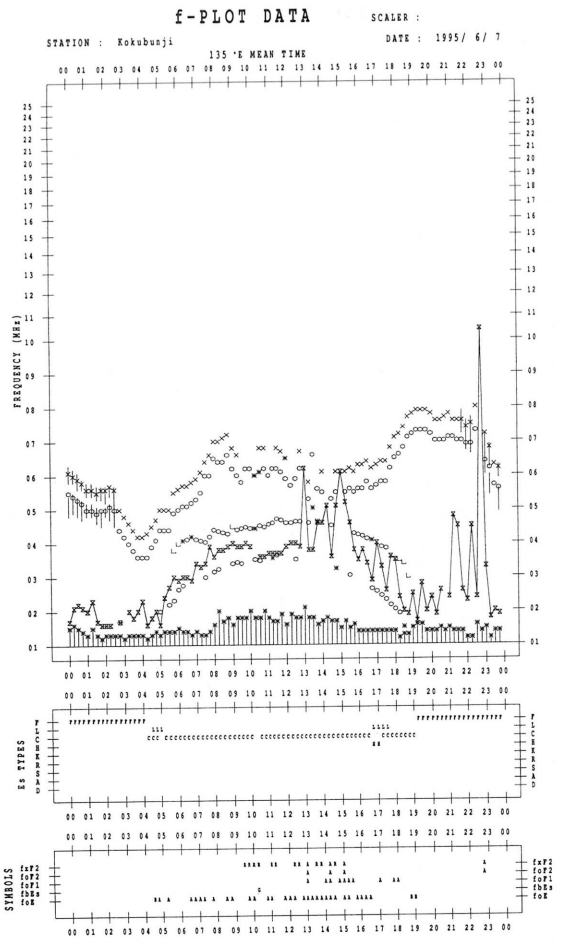

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

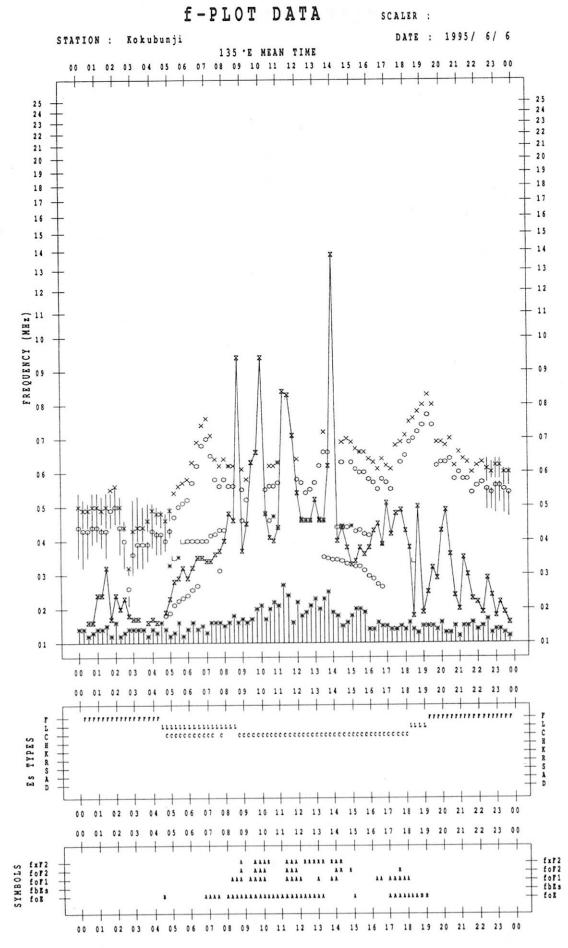

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

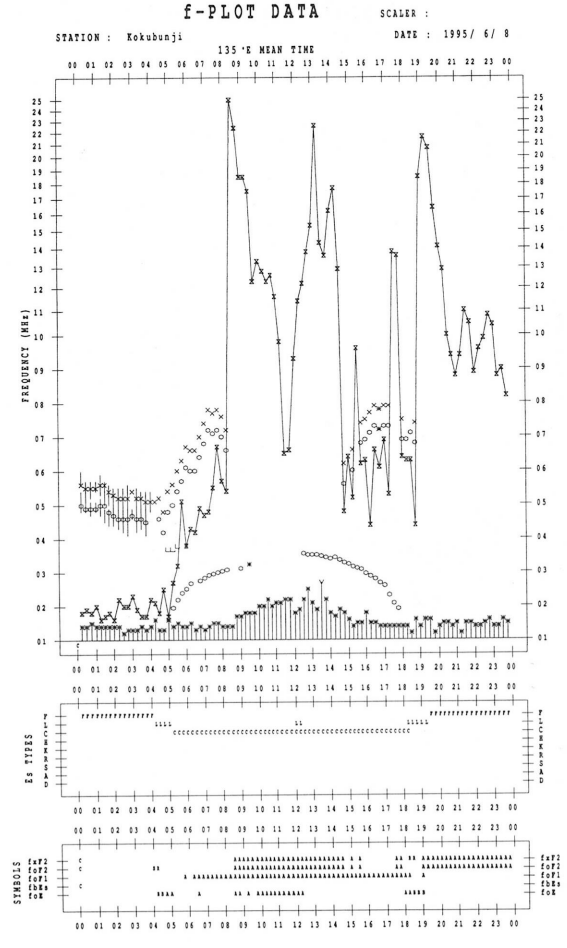

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

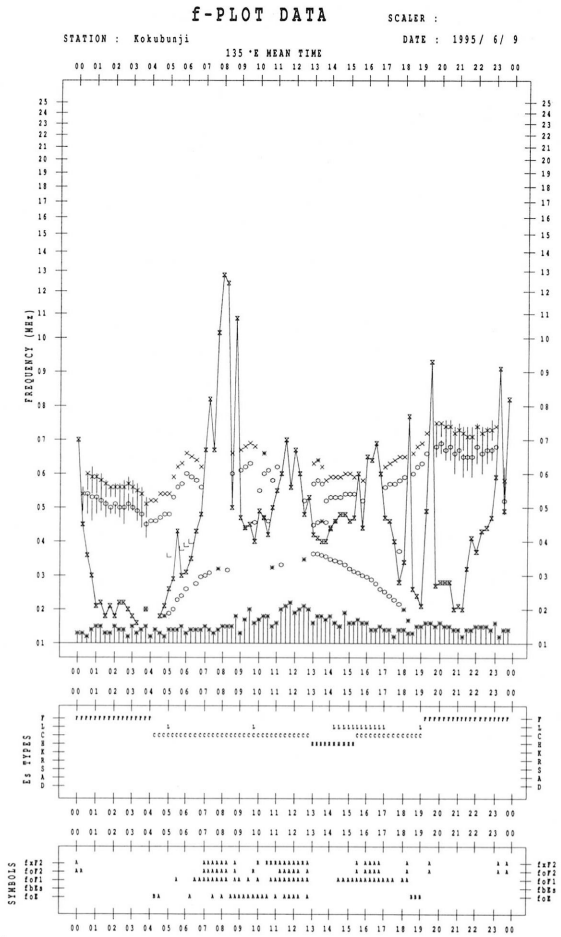

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

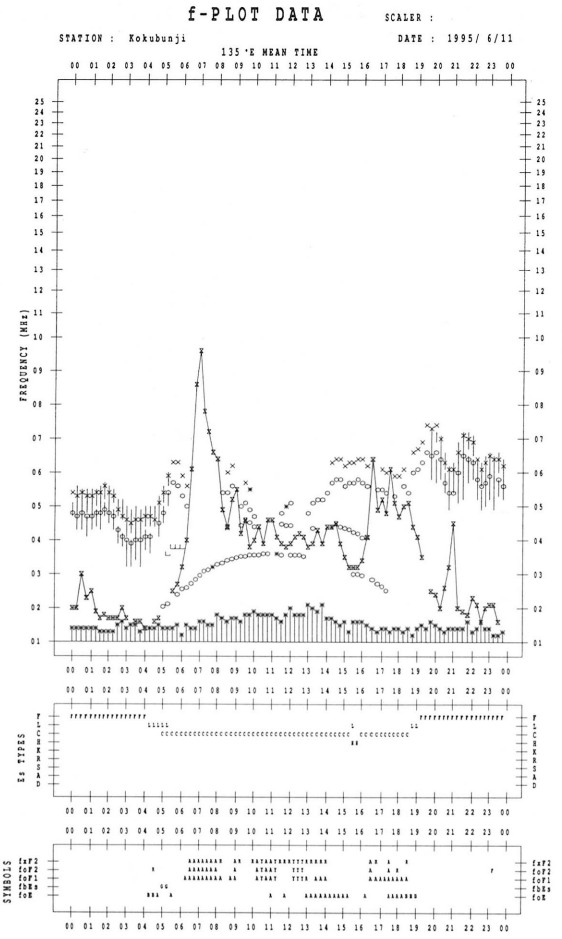

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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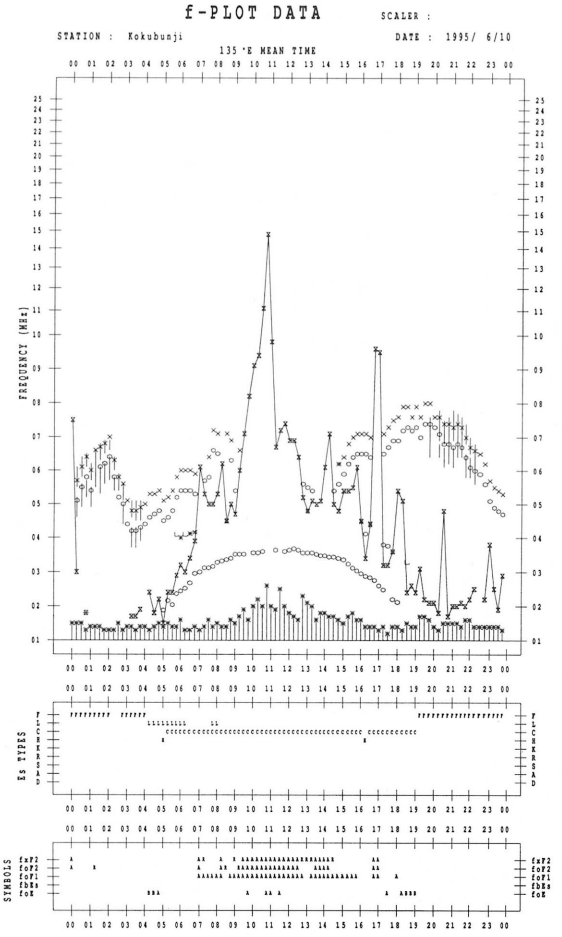
STATION : Kokubunji
DATE : 1995/ 6/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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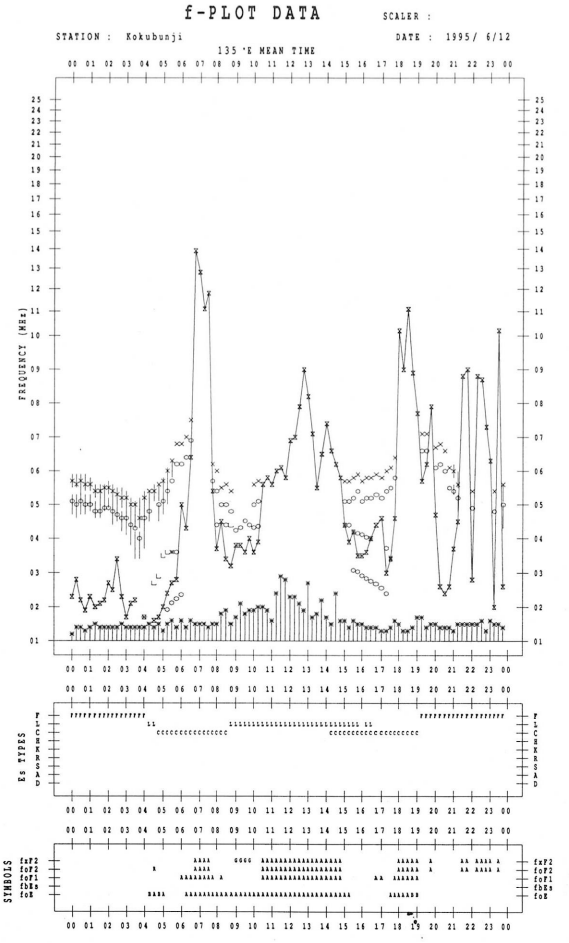
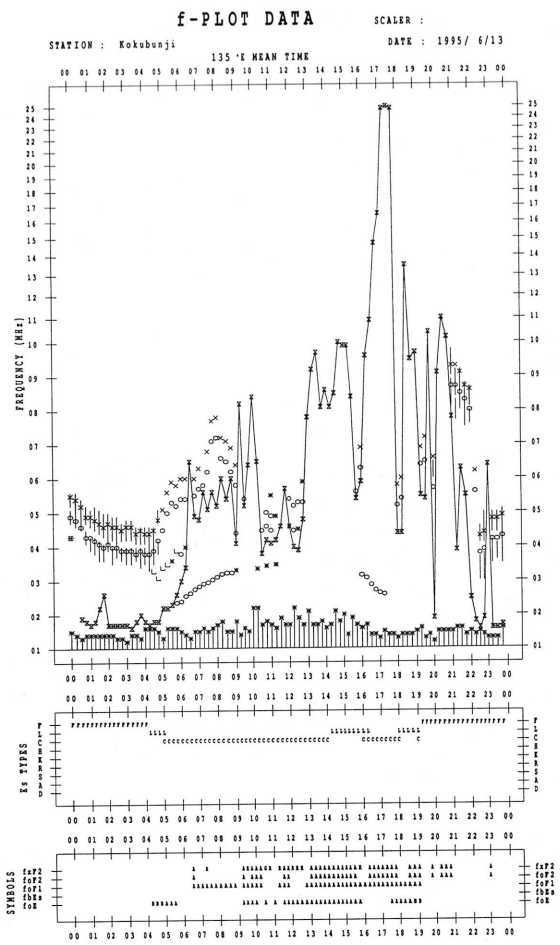
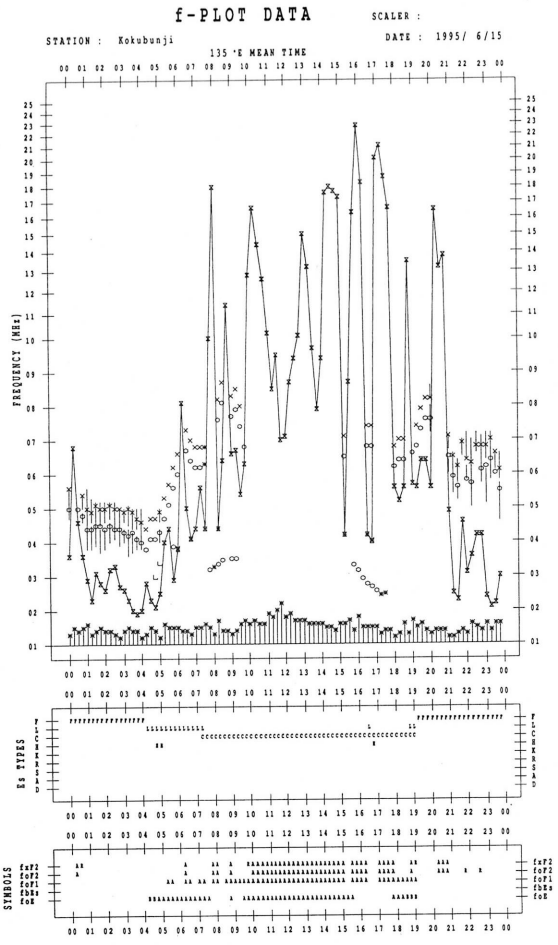
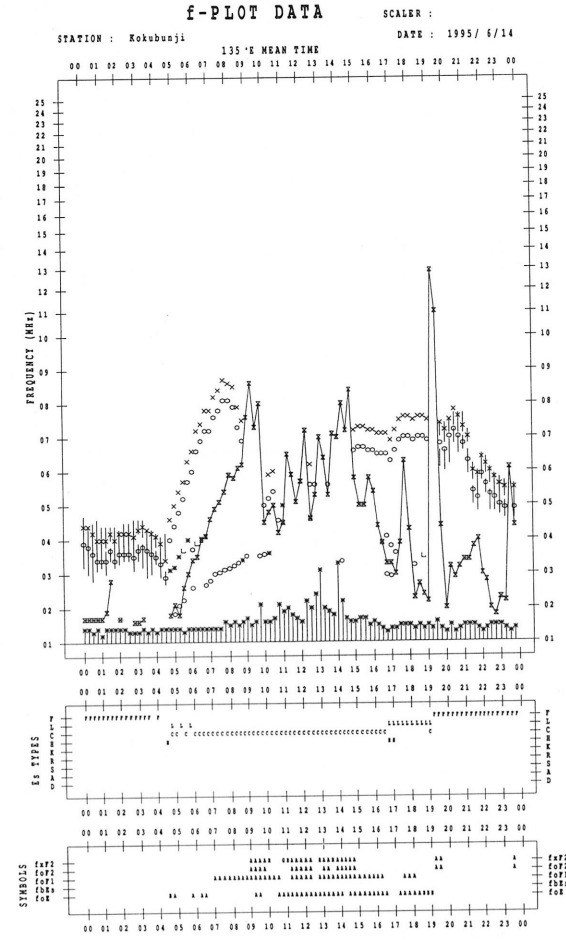
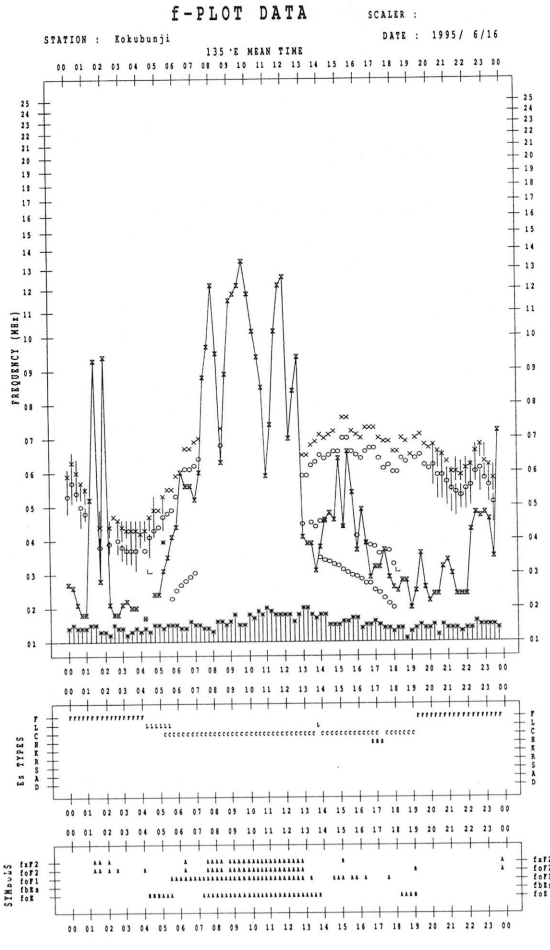
STATION : Kokubunji
DATE : 1995/ 6/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

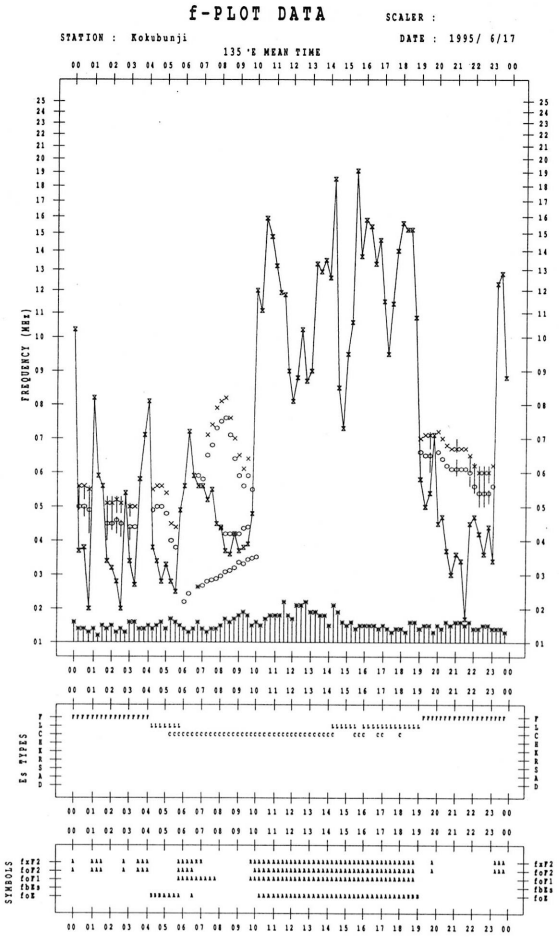

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

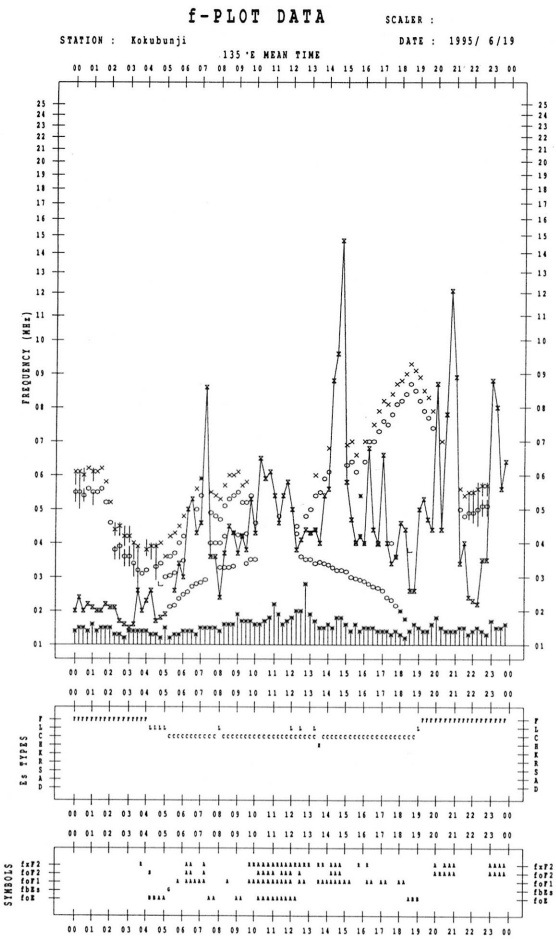

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/13
135 'E MEAN TIME
FREQUENCY [MHz]
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

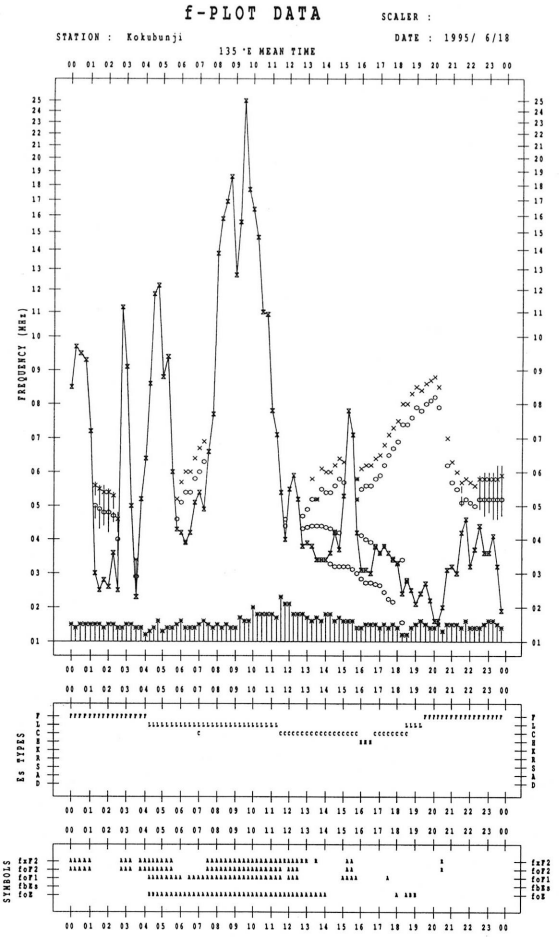

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/15
135 'E MEAN TIME
FREQUENCY [MHz]
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

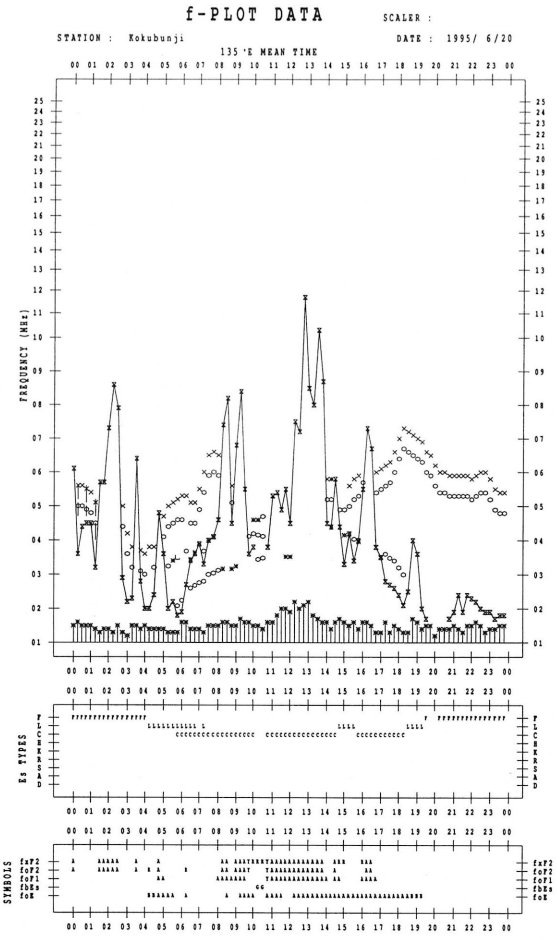

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/14
135 'E MEAN TIME
FREQUENCY [MHz]
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

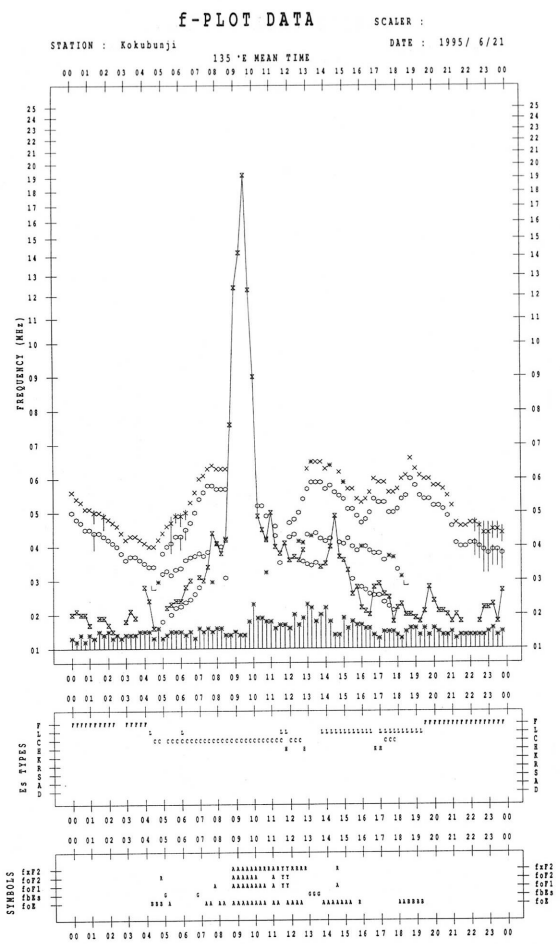

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/16
135 'E MEAN TIME
FREQUENCY [MHz]
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

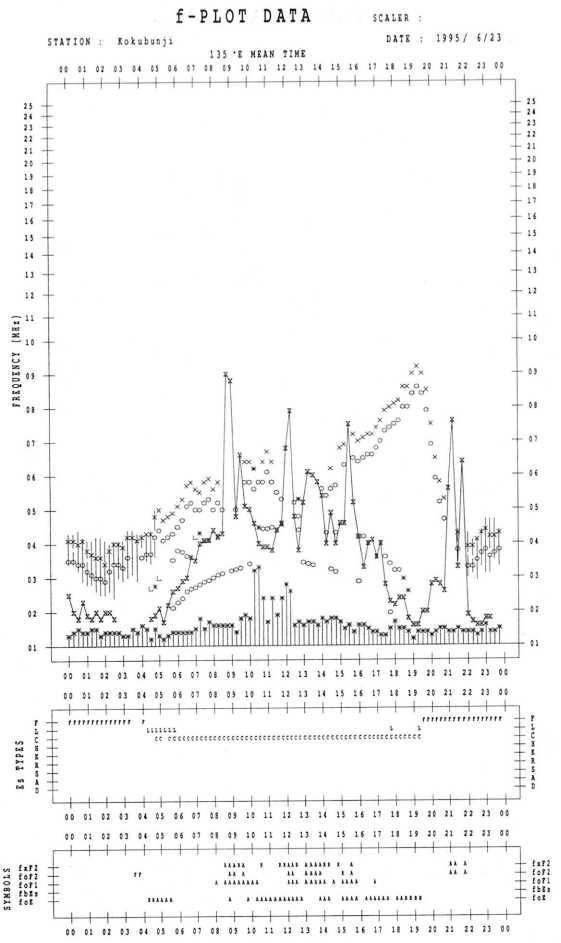

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

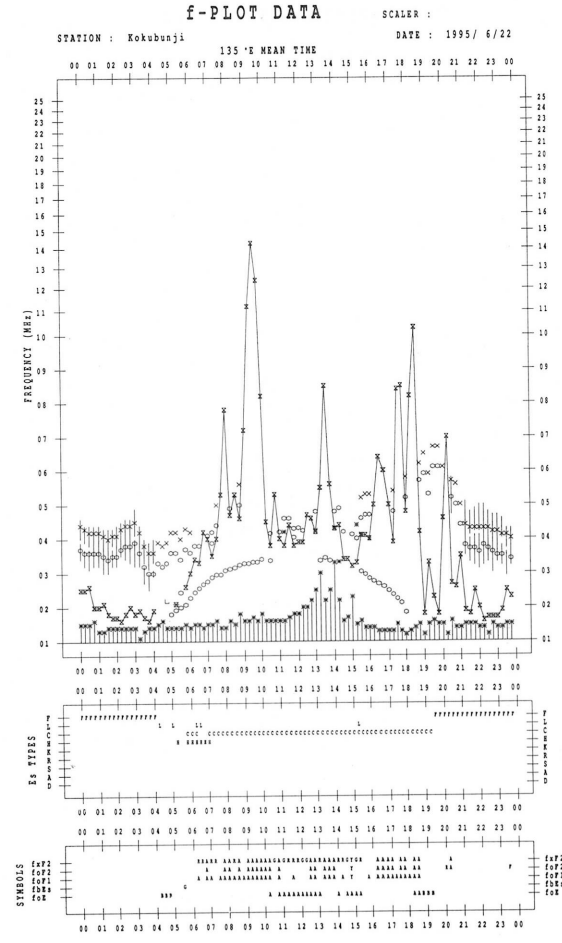

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

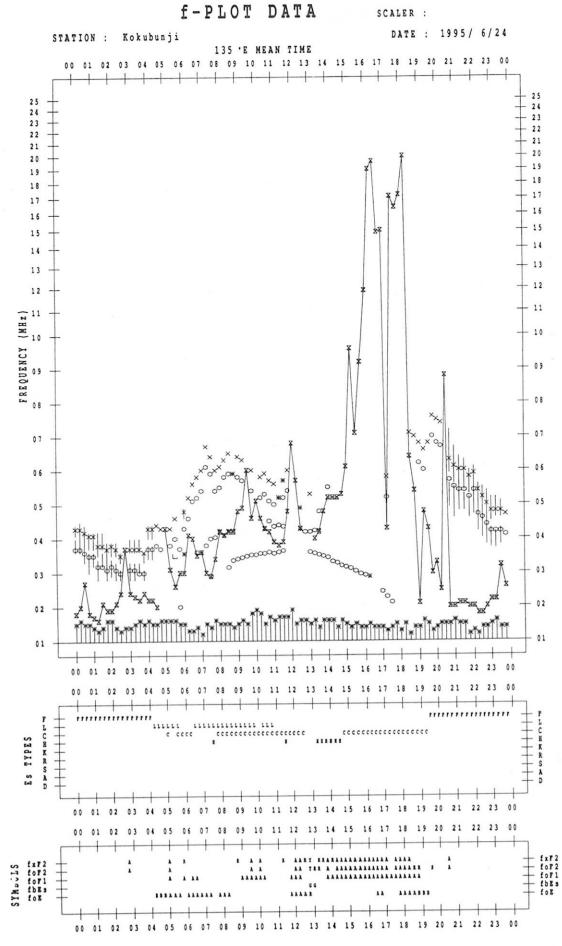

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

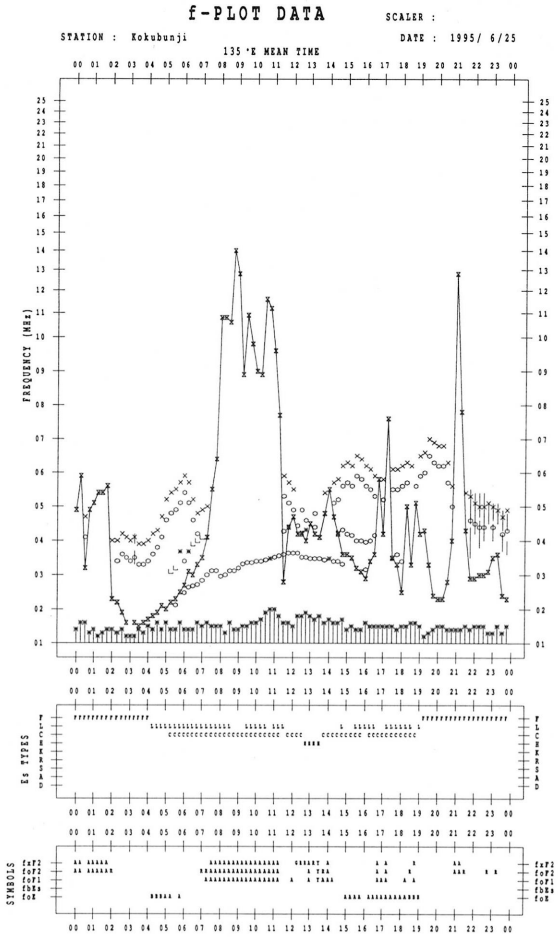

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF1
foE

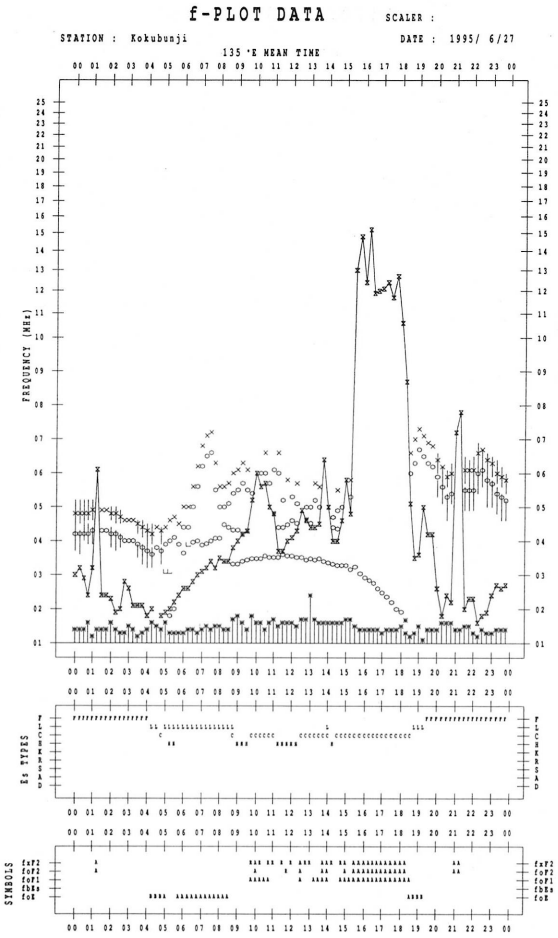

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

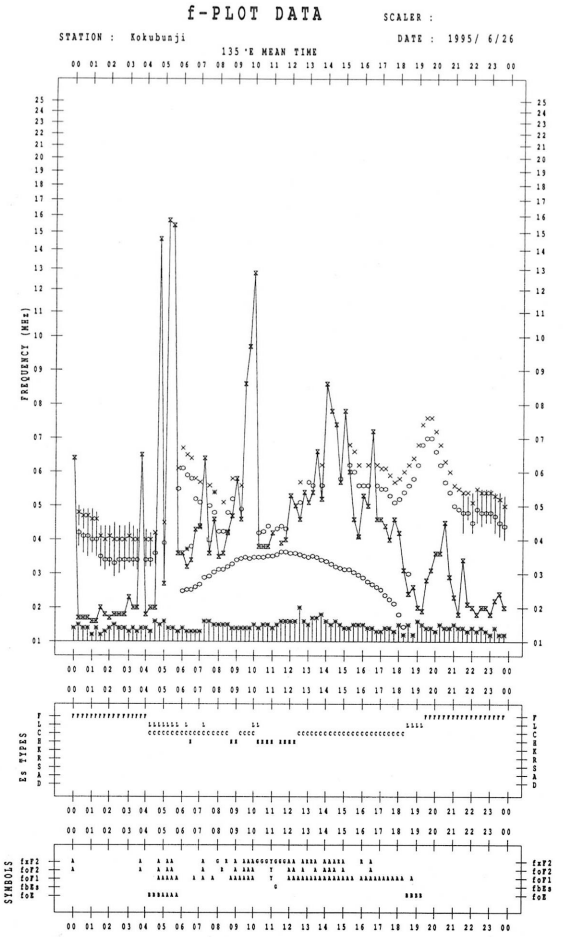

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

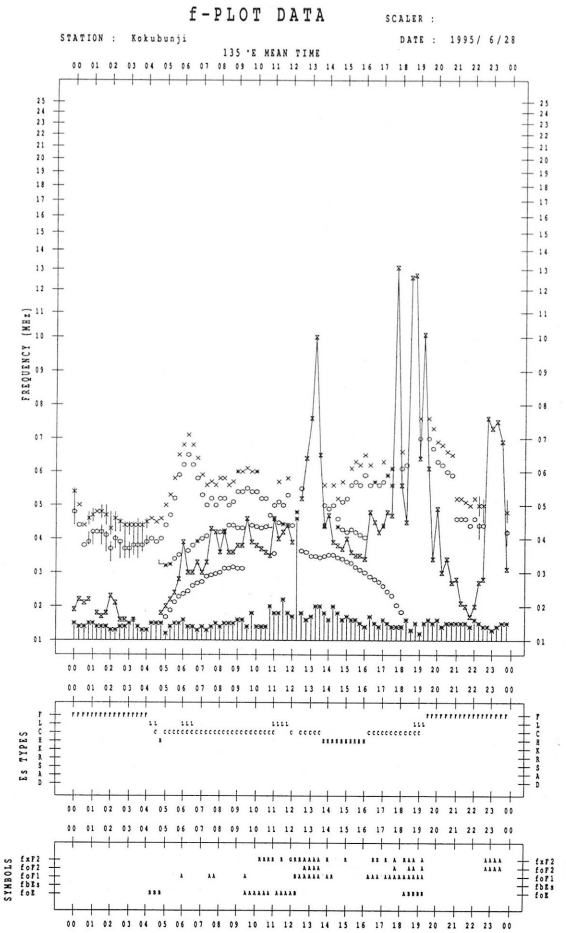

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

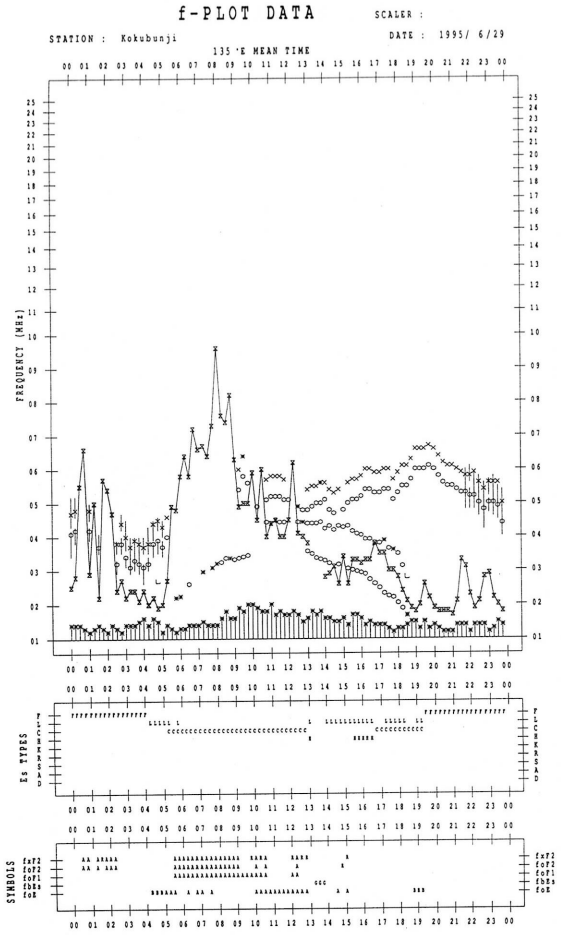

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
fxF2
foF2
foF1
fbEs
foE

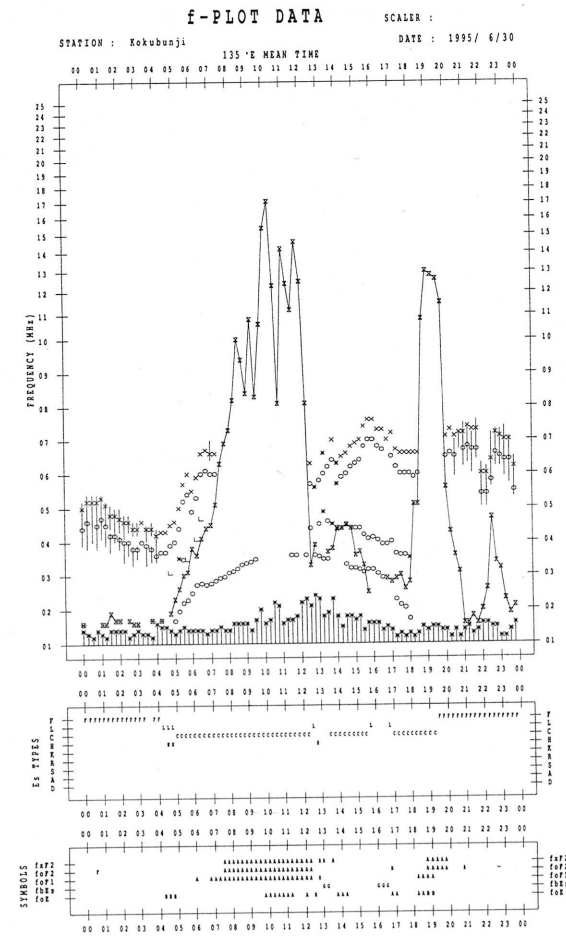

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1995/ 6/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso June 1995

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso June 1995

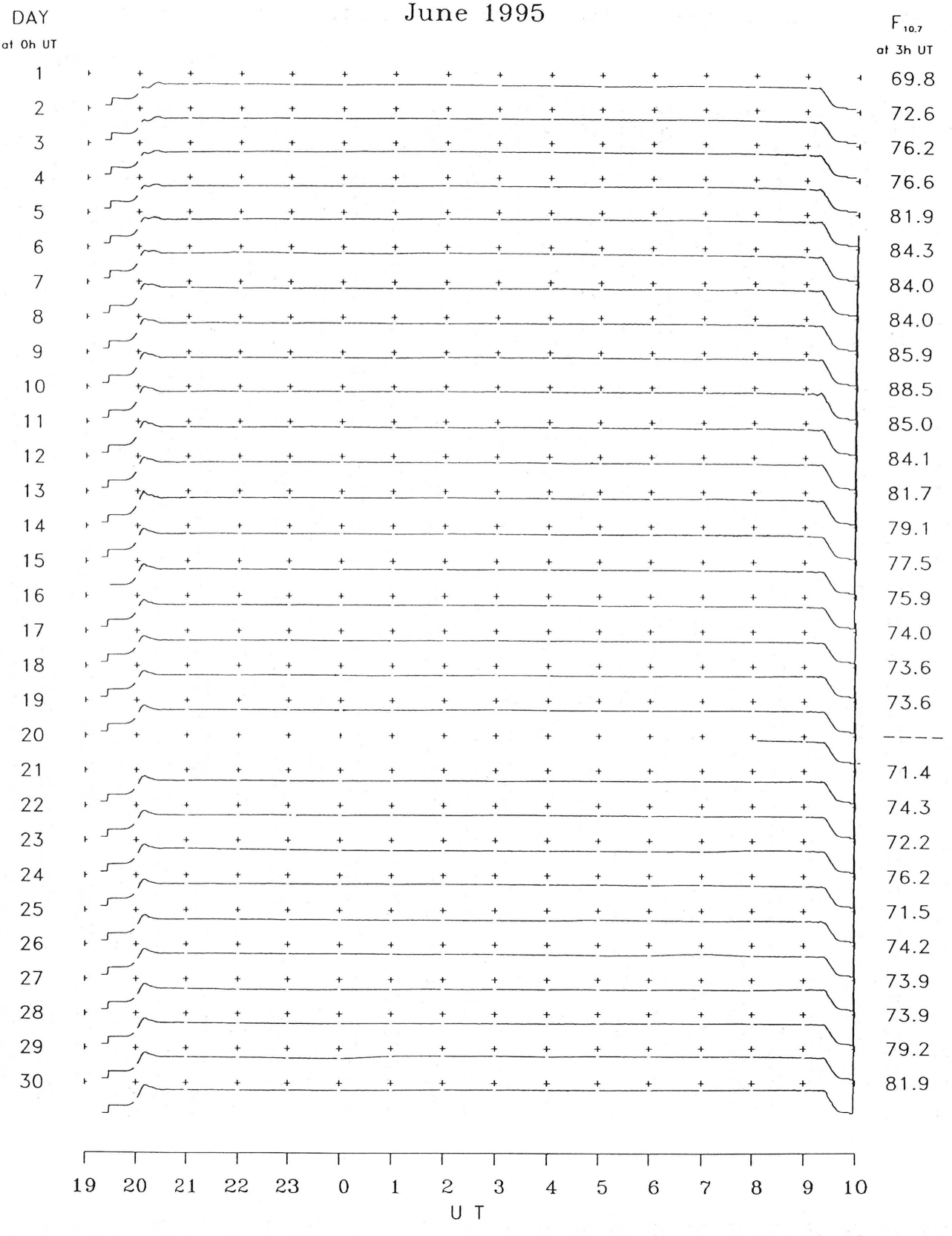
Single-frequency observations

Normal observing period: 1930 - 1000 U.T. (sunrise to sunset)

JUN. 1995	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
6	200	8 S	0442.7	0443.0	0.5	32	-	O
	500	42 SER	0448.5	0450.7	3.0	3	-	O
	200	43 NS	2305	2340.9	640D	23	7	WR
7	200	44 NS	2000E	2117.1	300D	32	4	WR
10	500	1 S	0457.3	0458.4	3.0	4	2	WR
12	2800	8 S	0450.5	0450.6	0.1	5	-	WL
13	200	46 C	2227.6	2228.5	1.6	19	7	O
22	200	42 SER	0605.9	0606.2	3.5	6	-	O
23	200	8 S	0024.8	0025.1	0.6	23	-	WR
24	200	6 S	2056.8	2057.9	2.0	24	14	WR
	200	46 C	2122.0	2122.9	2.0	53	22	WR
	500	8 S	2122.6	2122.9	0.5	3	-	O
	200	42 SER	2204.0	2207.5	4.0	9	-	WR
25	200	42 SER	0436.6	0438.5	2.5	4	-	WR
	200	6 S	0721.5	0722.0	1.0	4	2	O
	200	46 C	0726.9	0728.0	3.0	19	10	O

B. Solar Radio Emission

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



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

C. RADIO PROPAGATION

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

JUN 1995 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

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

CNT	29	29	29	29	29	29	29	30	30	30	30	30	28	29	29	29	29	29	29	29	29	29	30	30
	ES	ES	ES	ES	ES	US	US	US	US	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
MED	-26	-26	-26	-26	-26	-26	-25	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26	-26
			ES	ES											ES								ES	
UD	-16	-10	-26	-10	-12	-4	-1	0	2	3	1	-5	-16	0	0	-10	-10	-10	-10	-9	-5	-16	-5	-5
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
LD	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27

C. RADIO PROPAGATION

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

JUN 1995 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	-9	-9	-2	1	7	3	3	10	15	9	4	3	0	-11	ES -27	ES -27	ES -27	-3	-8	-6	-11	-11	-11	-11
2	-3	-9	-3	-2	11	17	17	12	17	-3	-13	1	-3	-6	-17	ES -27	ES -27	-6	-6	-6	ES -27	ES -27	ES -27	-17
3	-11	-6	-6	1	-1	11	11	7	11	6	11	4	4	ES -27	ES -27	ES -27	ES -27	-17	-17	-17	-8	-11	-11	-17
4	-11	-8	-8	-6	2	4	4	5	10	9	4	-8 S	-1	-3	2	-6	-11	-11	-1	-1	4	-6	-6	-17
5	-11	-11	-8	-11	4	9	11	14	11	-9	4		11	1	-1	24	-9	-11	-11	1	-6	4	-6	-6
6	-9	-3	-17	3	6	11	14	12	11	17	12	7	7	2	0	-9	6	-9	-11	-6	-6	-6	-11	-1
7	-9	ES -27	-9	1	6	11	11	8	9	14	11	14	9	4	6	-3	4	-1	7	1	4	2	-1	-4
8	-6	-27	-4	-4	4	6	16	17	8	12	11	11	1	1	5	0	0	2	7	7	4	0	-5	-8
9	-5	-10	2	3	6	12	12	17	15	12	10	8	7	-2	-10	-10	-3	-5	-8	10	-3	0	-4	-10
10	-20 ES	-3	-3	-5	7	12	18	17	18	12	5	7	5 ES	10	4	ES -26	ES -26	-8	-8	-1	-5	-8	-5	-8
11	-26 ES	2 ES	-5	-7	-5	5	13	18	15	13	10	-1	-26	-8	-8 ES	-7 ES	-7	-5	5	10	5	-8	-8	-8
12	-26	-26	-8	0	0	2	9	14	20	12	10	5	0	-5	-26 ES	-26 ES	-12	-3 ES	-1	-1	0	2	-2	-1
13	-10	-3	4	2	2	8	12	18	15	17	17	12	13	4 ES	-26	-26	2	-26	-8	7	7	-2	0	-8
14	-5	-5	-5	2	5	13	18	18	13	15	10	8	-8	-26	-16 ES	-8 ES	-10	7	-3	2	7	2	4	2
15	-3	-3	-5	-5	4	10	17	14	17	15	13	10	8	2 ES	-26 ES	-26 ES	-3	4	2	0	2	0	-5	0
16	-8	2	0	4	14	17	18	12	10	7	10	6	4	-26	-26	-26	2 ES	5 ES	4	1	1	-5	-3 ES	-2
17	-5	-10	-5	2	5	7	15	16	16	5	8	7	10	5	0	-3	-26	-26	-3	2	0	2	-26	-3
18	-2	-7	0	-7	5	8	17	20	16	26	18	18	16	13	17 ES	12 ES	0 ES	0	-3	-8	-2	-5	-8	-2
19	-5 ES	0 ES	-5	4 ES	7	10	15	11	15	8	11	5	4	0	-26 ES	-26 ES	-26 ES	-8	-16 ES	-16	-16	-1	-8	-5
20	-26	-26	-5	-26	-5	-8	7	3	20	6	0	7	-8	-8	-26 ES	-26 ES	-26 ES	-16 ES	-26 ES	-3	2	4	-5	5
21	-3	-10	1	1	6	16	10	6	9	11	5	7	3 C	-9 C	-27 C	-27 C	-27 C	-27 C	-27 C	-11 C	-5 C	-9 C	-17	-8
22	-4	-8	-16	-6	0	2	2	7	10	8	11	3											0	-8
23	-5	1	0	-1	3	5	11	19	16	8	11	0	-4 ES	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	1	-1	0	-8	-7
24	-4 ES	-6	-1	-1	1	3	3	13	10	10	0	0	-26	ES -26	ES -26	ES -26	ES -26	ES -26	-5	0	7	-3	-3	-8
25	-26	-8 ES	-8	1	10	11	10	8	7	1	10	0	5	ES -26	ES -26	ES -26	ES -26	-8	2	-2	1	-5	-10	-16
26	-16 ES	-26	-16	-16	8	8	18	13	13	8	11	4	1	0	0	0	ES -26	2	0	-5	0	-5	6	-8
27	-26 ES	0	-4	-3	10	0	10	13	17	18	17	18	10	11	-5	-5 ES	ES -26	-5	0	0	-1	2	-3	3
28	-26	0	0	4	-2	2	20	16	14	14	18	5	-3	0	-5	-26 ES	-26 ES	-5 ES	0 ES	-8	1	0	-5	-8
29	-8 C	1 C	1 C	0 C	4 C	6 C	9 C	12	14	18	10	5	6	0	-16	-26	-26	-26	-26	-3	7	0	-2	-8
30								14	18	15	14	10	11	11	0	8	-8	-8	-8	3	0	2	5	0
CNT	29	29	29	29	29	29	29	30	30	30	30	29	29	29	29	29 US	29 US	29	29	29	29	29	30	30
MED	-9	-7	-5	0	5	8	12	13	14	12	10	6	4	0	-16	-26	-26	-8	-5	-1	0	-1	-5	-8
UD	-3 ES	1 ES	1	4	10	16	18	18	18	18	17	14	11	11 ES	5 ES	8 ES	2 ES	4 ES	5 ES	7	7	2	4	2
LD	-26	-26	-16	-11	-2	2	3	6	9	1	0	0	-8	-26	-27	-27	-27	-26	-26	-11	-11	-11	-17	-17

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

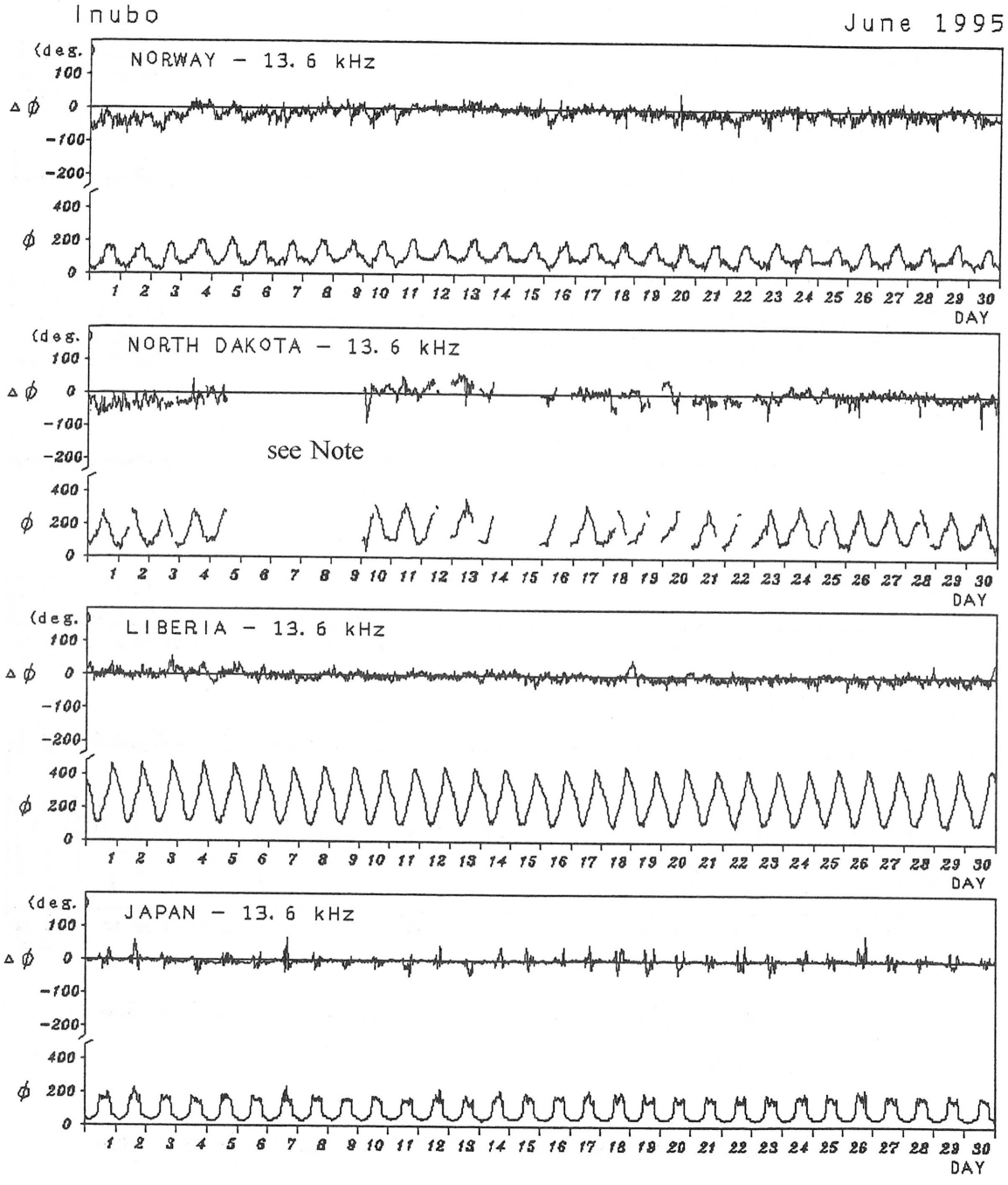
Hiraiso

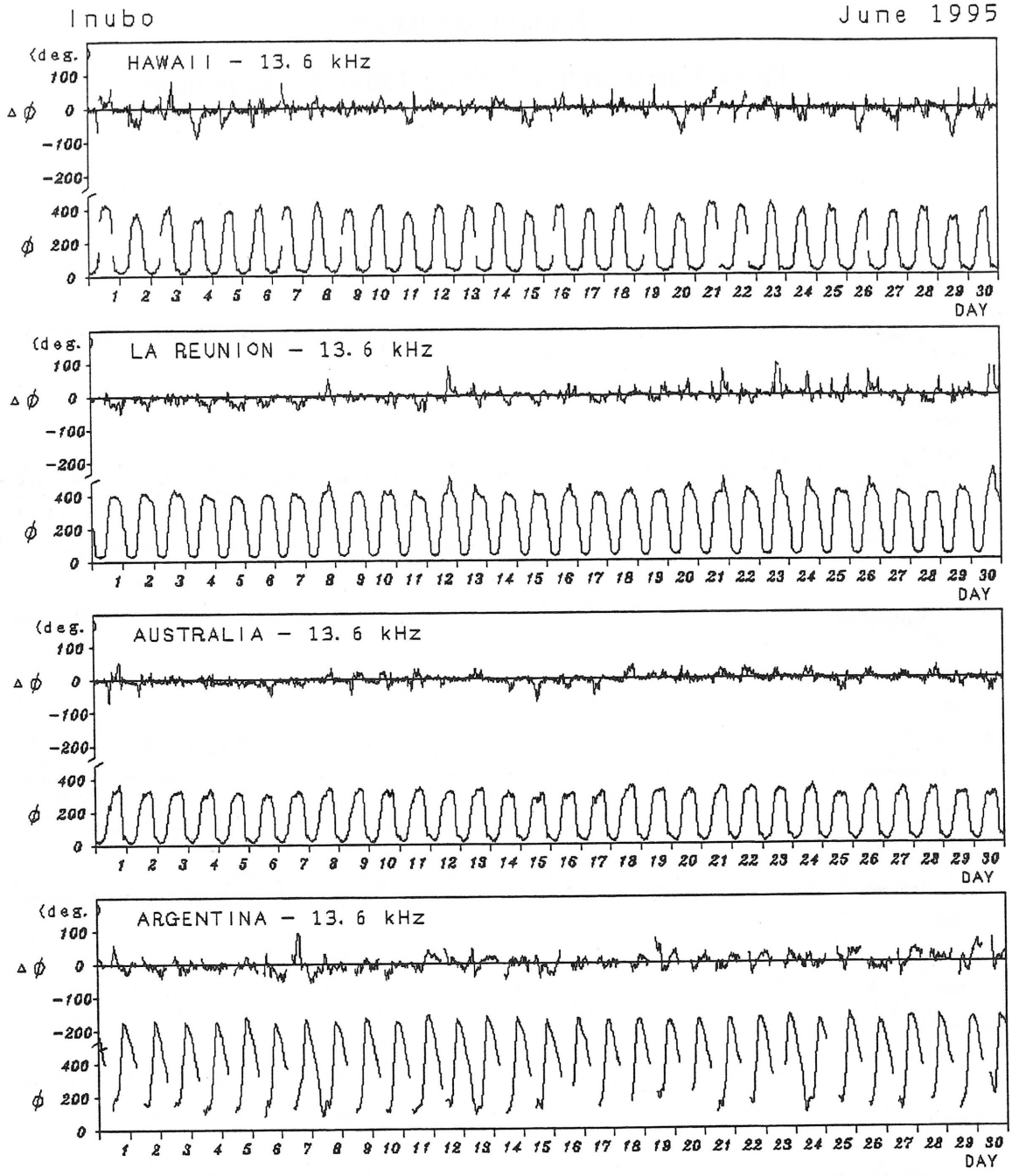
Time in U.T.

JUNE 1995	Whole Day Figure	WWV 00 06 12 18 / 06 12 18 24	WWVH 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m / End h / Range nT
1	4o	- 4U - -	4 4 4 4	U U U U	None
2	4- U	- 4U - -	4 3 4U 3	U U U U	
3	4- U	- 4U - -	4 4 3U 3	U U U U	
4	4-	- 4U - -	4 3 4 4	U U U U	
5	4+	- 4U - 5U	4 4 5 4	U N N N	
6	4+	5U 5U 5U 5U	4 4 4 4	N N N N	
7	5-	5U 5U 5U 5U	4 4 5 4	N N N N	
8	4+	4U 5U 5U 5U	4 4 5 4	N N N N	
9	4+	- 5U - 5U	4 4 4 4	N N N N	
10	4o	5U 5U - -	3 4 4 4	N N N N	
11	4o	5U 4U - 5U	3 4 4 4	N N N N	
12	4+	- 5U 5U 5U	3 4 4 4	N N N N	
13	4+	5U 5U 5U 5U	4 4 4 4	N N N N	
14	5-	5U 5U 5U 5U	4 4 4 5	N N N N	
15	4+	5U 5U 5U 5U	4 4 4 4	N N N N	
16	5-	5U 5U 5U 5U	5 4 4 4	N N N N	
17	4+	5U 4U 5U -	4 4 4 4	N N N N	
18	4+	- 4U - -	4 5 5 4	N N N N	
19	4-	4U 4U - -	4 4 4 3	N N N N	
20	3+	- 4U - -	2 3 3 4	N U U U	
21	4- U	- 4U - -	4 4 3U 3	U U U U	
22	4- UC	- 4U C C	3 4 C 4	U U U U	
23	4- U	- 4U - -	4 4 3U 4	U U U U	
24	4- U	- 5U - -	4 3 3U 4	U N N N	
25	4o U	- 5U - -	4 3 4U 4	N N N N	
26	4o	4U 4U - 5U	3 4 4 4	N N N N	
27	5-	- 5U 5U -	4 5 5 4	N N N N	
28	4o	- 4U - -	4 4 4 4	N N N N	
29	4o U	- 5U - -	4 4 3U 4	N N N N	
30	5- U	C 5U 5U -	C 4 5 4	N N N N	

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for NORTH DAKOTA-13.6kHz, Gaps in the record are due to transmitter maintenance.

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.

JUNE 1995	S W F						Correspondence	
	Drop-out Intensities(dB)				Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC							
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

Jun. 1995	S P A								
	Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
5			5	7			0336	0407	0349
5				14	19	–	2145	2226	2155

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