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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

SEP. 1994

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

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

HOURLY VALUES OF fEs AT WAKKANAI

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	32	28	38	38	38	41	34	52	58	88	94	71	52	36	41	55	73	74	89	66	70	74	62	84
2	60	36	38	29	35	64	76	66	60	44	56	45	36	36	47	32	45	61	83	76	44	34	34	37
3	36	33	34	31	29	28	43	65	97	57	59	65	33	30	35	35	32	32	30	44	41	39	39	36
4	33	G	G	26	G	30	29	28	38	32	32	42	32	33	32	30	33	36	37	41	30	32	37	34
5	27	28	G	G	G	23	G	26		30	30	39	33	32	31	28	30	33	35	31	38	35	34	30
6	32	35	G	G	G	G	30	37	37	36	29	30	33	33		31	25	33	34	30	G	28	G	G
7	G	G	27	G	26	G	38	41	38	32	44	55	34	31	43	27	26	36	40	36	G	23	27	G
8	23	G	24	24		28	37	33	34	53	38	35	35	76	30	30	42	37	32	38	25	34	G	G
9	G	G	32	31	26	36	36	33	36	56	34	31	33	31	28	27	26	34	38	34	38	34	60	59
10	38	34	29		36	33	38	86	66	35	56	37	31	34	35	44	37	34	60		42	45	44	G
11	23	24	24	26	G		35	34	32	32	32	28	30	39		30	27	33	G	73	65	32	35	30
12	24	G	G	G	G	G	28	25	28	29	32	36	30	36	67	38	65	31	37	27	32	40	40	26
13	G	G	G	G	G	G	28	36	29	39	70	52	56	39	31	38	42	35	57	44	60	39	35	35
14	40	61	57	45	45	38	36	55	42	61	63	37	35	29	33	31	36	29	39	34	43	44	29	34
15	43	52		27	38	28	24	31		59	38	43	42	30	36	35	37	70	28	58	56	38	41	35
16	25	40	33	31	33	25	G	33	31	31	36	37	35	37	23	29	27	33	76	73	36	45	33	30
17	23	33	31	41	29	30	42	54	53	42	31	29	31	36	33	31	34	31	48	45	31	32	32	25
18	G	G	G	G	27	25	39	42	38	44	44	30	30	30	35	31	28	34	G	34	34	32	29	27
19	27	28	G	G	G	G	27	27	28	30	30	30	35	35	25	34	28	38	G	G	G	G	G	G
20	G	G	G	G	G	G	29	34	37	31	31	28	38	38	N	32		48	82	27	28	29	23	29
21	24	G	G	G	G	G	32	28	32	35	34	30	30	34	30	34	31	30	42	G	25	23		G
22	G	G	G	30	24	22	G	28	34	33	32	30	30	28	29	26	24	22	35	G	G	26	32	26
23	G	27	G	G	G	G	G	26	37	34	37	39	26		36	27	G	32	34		33	25	24	G
24	G	G	G	G	G	G	G		35	31	29	36	30	29	32	29	30	G	G	G	G	G		G
25	G	G	G	G	G	G	G	30	28		32	34	32	31	29	30	28	27	G	G	G	G	30	
26	G	G	G	30	G	G	G	28	31	34	43	33	31	30	35	39	36	34	32	24	G	G	G	G
27	G	23	G	G	G	G	24	25	41	41	30	41	38	38	34	27	35	G	27	26	33	28	38	
28	32	56	33	26	34	G	30	37	42	44	64	50	33	44	130	27	65	41	41	56	66	58	62	57
29	41	30	36	44	36	32	G	33	34	30	34	40	38	35	43	38	37	32	G	50	54	35	G	26
30	G	G	G	34	35	41	35	32	N	28	30	30	27	31	30	29	28	30	38	51	34	28	24	24
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	29	29	29	30	29	27	29	30	30	30	29	27	30	29	30	30	28	30	30	28	28
MED	24	24	G	26	24	23	30	33	37	35	34	36	33	34	33	31	32	33	36	35	34	32	32	26
U Q	32	33	32	31	34	31	36	41	42	44	44	42	35	36	36	35	37	36	42	50	43	39	38	34
L Q	G	G	G	G	G	G	G	28	32	31	31	30	30	30	30	29	27	31	28	26	25	26	24	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

SEP. 1994

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

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

SEP. 1994

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

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

HOURLY VALUES OF fEs AT KOKUBUNJI

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	34		41	34	26	28	54	43	57	125	73	60	70	32	56	119	44	59	85	96	62	61	54	72
2	52	40	32	G	29	29	55	67	112	128	72	60	41	33	40	47	49	105	58		96	69	49	34
3	33	G	29	32	29	33	34	42	48	45	33	24		52	37	44	32	31	29	32	43	25	G	30
4	33	G	G		39	27	35	29	27	52	45	53	54	41	57	79	44	49	44	40	51	48	38	35
5	28	24	G	G	G	G	27		34	33	47	40	34	G	32	31	31	46	70	42	30	25	33	26
6	G	28	G	G	G	G	31	31	29	39	G	23	22	G	48	48	40	39	29	41	34	29	28	26
7	24	G	G	G	G	G	31	40	46	74	58	G	48	53	55	34	41	49	41	34	25	35	41	53
8	40	26	G	25	29	29	38	42	33	46	37	38	44	39	50	35	94	36	34	38	29	50	26	G
9	G	G	G	G		G	32	52	47	62	55	34	38	56	59	106	34	41	59	C	56	88	55	32
10	33	34	27	G	G	30	53	108	33	32	53	38	35	33	30	30	34	34	39	56	55	33	52	32
11	41	25	29	G	G	G	30	37	35	48	52	31	30	24	G	G	42	38	28	G	32	42	60	36
12	33	26	G	G	G	32	38	56	44	34	56	64	52	76	55	51	27	40	33	31	54	31	G	29
13	G	G	29	26	G	G	33	45	42	53	52	43	51	48	42	54	43		31	34	33	41	G	
14	G	G	45	37	28		38	81	58	36	76	46	63	57	31	31	150	72	95	106	56	48	34	
15	34	32	33	33	G	32	G	36	44	56	49	39	37	47	44	62	56	65	56	60	60	33	29	
16	G	G	G	G	G	G	30	34	37	44	32	31	28	27	31	34	34	32	25	G	26	28	28	G
17	29	G	G	G	G	38	64	43	42	39	30	33	38	30	30	32	25	31	30	G	26	34	G	G
18	G	G	G	G	G	G	35	32	32	30	G	31	32	29	28	33	40	34	28	G	G	27	G	32
19	26	23	G	G	G	G	29	38	40	34	35	31	50	55	32	28	47	68	33	29	G	G	G	G
20	24	G	G	G	G	30	28	32	28	30	G	27	27	G	31	26	35	40	40	33	G	30	26	G
21	G	G	G	G	G	G	31	38	44	34	30	26	G	29	30	30	24	34	G	G	G	G	27	
22		G	G	G	G	G		30	33	34	33	34	34	32	28	49	27	32	30	43	50	32		27
23	G	G	G	G	G	G	28	32	29	31	30	31	G	30	31	29	31	26	24	G	G	G	G	G
24	G	G	G	G	G	G	G	34	37	33	31	31	38	32	30	29	30	G	G	G	G	G	G	G
25	G	G	G	G	26	G		30	34	40	34	30	30	27	32	26	27	G	G	G	G	G	G	G
26	24	G	G	G	G	24	31	37	32	38	44	36	G	57	37	32	28	G	G	G	G	G	G	G
27	38	G	G	G		G	30	44	43	40	35	36	29	25	31	27	24	27	G	G	55	41	54	52
28	26	25	G	24	23	G	29	70	41	49	46	46	G	38	G	26	82	82	52	38	41	29	24	34
29	57	52	30	G		G	G	24	35	43	51	39	42	30	22	26	24	11	50	53	28	26	G	34
30	G	G	32	G	40	34	52	95	54	35	28	29	G	G	30	27	24	21	28	G	30	G	31	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	30	29	27	29	28	29	30	30	30	30	29	30	30	30	30	29	30	28	30	30	29	26
MED	26	G	G	G	G	G	31	38	38	40	40	34	35	32	32	32	34	36	32	32	31	30	27	28
U Q	33	25	29	12	26	29	38	48	44	49	52	40	46	48	44	48	44	49	50	41	54	41	39	34
L Q	G	G	G	G	G	G	29	32	33	34	31	31	27	27	30	28	27	29	28	G	G	25	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15		14	14	15	14	14	15	16	17	20	16	21	18	14	15	15	16	16	15	14	14	14	14
2	15	15	14	14	14	15	14	15	15	16	22	30	30	24	29	17	18	15	15		14	15	14	15
3	15	15	15	15	15	15	15	15	15	14	14	14		14	15	18	14	15	15	15	14	14	17	14
4	14	15	17		14	15	15	15	14	18		40	41	45	20	18	15	15	15	15	14	15	15	14
5	15	15	15	15	15	15	16		16	16	20	27	17	46	23	20	14	14	14	15	14	15	15	14
6	15	14	14	15	15	15	15	15	15	16	45	14	50	45	35	16	20	16	15	15	15	14	15	15
7	15	14	15	14	15	16	15	15	14	17	21		32	28	21	17	15	16	15	15	14	14	14	15
8	15	14	17	15	14	15	16	16	24	16	20	28	22	17	18	14	14	14	15	15	15	14	16	14
9	16	15	15	15		16	14	15	15	18	22	26	24	20	20	15	15	16	15	C	14	15	14	15
10	14	15	14	16	16	15	14	14	20	17	20	30	28	26	17	16	15	16	15	15	15	14	15	14
11	15	15	15	14	14	15	15	15	15	15	17		16	17	44	43	18	15	15	17	14	15	14	15
12	14	14	16	15	14	15	14	14	14	16	15	18		18	22	16	18	14	15	14	15	14	15	15
13	15	15	14	14	15	15	14	15	15	15	18	18	21	16	17	15	15		14	14	15	14	14	
14	15	15	14	14	14		15	15	15	18	17	21	18	18	15	16	15	15	14	14	15	15	15	
15	14	14	15	15	15	15	16	15	15	18	18	47	24	21	24	18	14	14	14	15	14	15	14	
16	15	14	14	16	15	16	14	15	16	16	17	45	16	17	16	14	15	15	15	14	14	14	14	15
17	14	17	14	15	14	14	15	15	16	16	18	28	20	17	14	15	14	15	14	15	15	15	14	15
18	15	14	15	15	16	15	15	15	14	23	44	42	43	20	41	15	15	16	16	15	15	15	15	15
19	14	14	15	14	16	16	14	14	15	16	18	18	16	22	17	18	15	15	15	15	15	21	16	15
20	15	15	15	17	17	15	16	15	15	17	42	17	44	44	41	17	15	15	15	15	15	14	14	15
21	15	15	15	15	16	15	14	15	15	18	17	17	46	16	39	14	15	14	16	16	15	15	14	
22		15	15	14	15	16		15	17	15	16	27	16	43	18	22	15	14	15	15	15	15		15
23	15	14	15	15	15	16	18	15	15	20	41	21	44	21	20	20	14	16	15	17	15	14	15	20
24	15	15	15	15	14	15	18	15	14	14	16	44	23	23	17	14	15	20	15	14	15	14	16	15
25	15	15	15	14	18	18		15	15	15	17	17	20	46	15	17	15	15	16	14	15	14	14	14
26	15	16	15	15	14	18	15	15	15	14	20	18	47	23	15	16	15	17	15	15	16	15	14	15
27	15	14	14	15		15	14	15	15	16	15	18	16	15	14	15	24	17	15	15	15	15	15	15
28	15	14	14	15	15	15	15	15	14	16	32	32	45	21	40	15	14	15	16	14	14	15	15	16
29	15	15	14	14		15	17	15	16	16	18	47	27	22	41	15	16	17	15	15	15	15	15	14
30	16	16	14	16	14	15	15	15	15	15	16	15	47	41	18	15	18	18	15	15	15	16	15	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	30	29	27	29	28	29	30	30	29	28	28	30	30	30	30	29	30	28	30	30	29	26
MED	15	15	15	15	15	15	15	15	15	16	18	24	24	21	19	16	15	15	15	15	15	15	15	15
U Q	15	15	15	15	15	16	15	15	16	17	21	31	43	28	29	18	15	16	15	15	15	15	15	15
L Q	15	14	14	14	14	15	14	15	15	15	17	17	19	17	16	15	15	15	15	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		A	28	31	32	59	A	A	A	A	A	A	73	75	78	80	78		76	90	A	A	49	31
2	29	60		26		31	32	68	80		65	A	61	A	A	A	71	84	93	92	73	50	69	A
3	26	38	A	23	A	69	23	62	94	A	58	A	A	70	73	72	67	67	73	76	68	29	30	69
4	31	26	20	34	26	59	69	69	68	A	A		70	67	67	67	67	77	85	83	A	A	32	
5	A	49			59	31	58	68	61	55	57	70	75	86	74	67	72	80	78	71	73	A	A	
6	31	30	30	31	89	26	59	72	64	66			72	77	73	71	81	96	89	72	A	A	26	59
7					69	31		60	57	A	A	63	70	64	74	77	74	70	A	A	59	A	A	A
8	26	59	26	24	N	A	A	A	A	A	A		A			62	67	A	A	A	A	24	A	A
9	58		56		N	N	A	56	60	68	64	67	86	87	84	74	74	78	69	A	A	A	A	A
10	A	A	30	59	31	A	33	A	69	78	62	A	A	66	70	65	58	56	63	74	A	A	A	A
11	55		59		31	59	49	A	A	67	60	A	67	72		64	70	67	70	A	34	A	A	28
12		28		31	30	26	25	62	68	A	A	A	67	72	63	61	65	65	A	76	80	29	69	31
13	A		49		26	30	20	57	56	A	63	72	71	67	62	74	67	82	78	73	59	69	69	22
14				A	A	A		A	A	61	60	65	61	74	66	58	61	74	87	82	67	68		60
15	A	A		69	A	A	49	58	68	67	66	67	80	75	72	68	66	67	66		A	A		
16	24		30		25	28	58	N	62	59	58	A	67	62	64	62	70	74	75	60	59	A	49	59
17	28	N	25	26	30	29	69	A	52	56	61	67	A	A	57	57	66	65	80	63	A	26	26	18
18	69		29	25		31	23	68	95	60	62	A		61	61	58	66	66	76	76	49	31	38	30
19	A	49	N	31	N	29	59	70	71	67	A	61	A	A	61	66	70	76	84	68	49	59		24
20	A	A	A	A	89	24	49	49	67	66	61	61	63	A	62	65	74	78	76	A	61	109	A	35
21	49	49	24	25	24	22	31	68	68		67	73	77	91	87	65	68	78	85	68	N	59	49	29
22	26	29	26			26	59	68	61	68	66	66	71	73	66	70	70	73	62	62	70	A	59	A
23	58			30	49	N	59	69	68	61	62	64	77	82	90	93	81	73	72	65	59	49	31	30
24	59	49	31		31		25	61	61	68	60	67	77	74	75	67	71	82	68	69	31	30	69	49
25	31		49		31	30	34	61	69	68	59	A	64	68	68	66	75	74	78	49	A	49	58	59
26	60		31		N	N	59	68	78	68	61	62	75	81	81	78	92	84	81	78	48		69	32
27	55		58	69		58	61	67	71	93		78	87	81	87	87	93	90	87	81	56	A		59
28	A		56	26	34		32	A	60	67	58	73	77	68	73	76	78	81	76	69	A	A	A	59
29	58		26		N	23	31	60	57	71	76	85	98	90	86	95	81	67	66	49	34		32	
30	49	49		25	25	26	37	A	A	68	A	71	78	62	66	66	66	71	67	68	64		31	59
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	19	12	19	17	18	21	25	21	25	21	21	18	24	25	27	29	30	28	27	24	19	14	18	20
MED	49	49	30	30	31	30	49	67	68	67	61	67	72	73	72	67	70	74	76	72	59	49	49	34
U Q	58	49	49	32	49	44	59	68	70	68	64	72	77	81	78	75	75	80	84	77	68	59	69	59
L Q	28	29	26	25	26	26	31	60	60	61	59	64	67	67	64	64	67	67	69	66	49	29	31	29

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	32	34	28	29	G	27	39	59	94	143	85	70	29	30	31	78	38		92	38	93	33	34	30
2	33	25	32	32	G	G	27	50	40		109	80	97	152	86	85	60	61	62	113	33	G	29	29
3	25	25	31	30	32	G	G	33	54	60	24	29	32	G	29	26	29	26	36	36	G	37	34	G
4	G	G	G	G	G	G	G	27	26	71	29		G	G	G	102	62	59	37	55	93	38	30	33
5	29	26	G	G	G	G	G	30	30	30	26	G	29	31	31	32	55	72	94	29	25	34	33	G
6	G	G	G	G	G	G	28	36	30	30	G	G	G	G	G	G	29	38	35	38	37	33	45	G
7	24	28	25	G	G	G	24	33	36	47	33	58	30	32	31	31	29	30	36	33	34	39	38	37
8	26	24	G	G	23	32	39	38	39	39	29		38	G		57	55	80	131	58	33	22	32	33
9	G	G	G	G	G	G	29	28	30	35	36	34	G	32	31	38	28	32	30	71	39	83	36	59
10	56	33	28	G	24	34	33	36	71	29	30	28	30	35	33	30	29	37	37	36	33	32	40	39
11	26	28	G	G	G	G	28	32	32	32	29	26	G	28		G	29	32	33	32	28	37	34	33
12	G	G	25	G	G	G	G	27	31	68	71	32	32	30	28	52	114	69	38	33	34	34	30	29
13	34		G		G	G	G	31	27	38	34	31	28	30	32	34	32	34	32	36	32	28	G	G
14	33	29	28	36	30	37	38	68	62	36	29	50	30	G	61	31	27	30	38	27	34	37	36	37
15	34	49	33	33	31	32	29	30	32	38	33	30	32	36	31	34	30	36	28		32	33		34
16	28	30	G	G	G	G	G	32	35	36	33	33	30	30	27	29	28	29	27	G	G	29	G	G
17	G	24	G	G	G	G	G	36	30	31	33	30	29	27	29	30	32	30	G	30	32	28	33	33
18	27	G	G	G	G	G	G	27	26	29	28	30		G	30	30	31	36	30	26	33	28	26	29
19	30	24	G	G	G	G	G	31	32	37	30	G	30	32	29	34	29	36	52	35	32	91	28	G
20	65	58	33	34	30	27	G	29	38	32	33	31	32	32	32	32	28	36	34	34	34	32	38	33
21	32	25	28	30	G	G	G	33	31		28	23	25	30	32	29	28	29	G	26	24	24	G	G
22	25	G	G	G	G	G	G	32	33	36	30	G	29	30	G	33	31	28	G	30	27	36	33	28
23	G	G	G	G	G	G	G	29	28	32	36	34	30	30	32	30	28	29	G	G	G	G	G	G
24	G	G	G	G	G	G	G	30	34	31	31	31	G	28	31	30	28	22	G	G	G	G	G	G
25	G	G	G	G	G	G	G	32	32	30	32	31	30	G	30	30	28	29	83	G	34	G	G	G
26	G	G	G	G	G	G	24	31	36	39	29	37	32	32	32	38	32	30	30	28	G	G	G	G
27	G	G	G	G	G	G	G	32	33	34		30	29	G	31	50	29	27	27	29	32	30	G	G
28	36	30	25	28	32		G	35	33	29	29	28	G	28	26	28	31	57	33	45	68	88	32	G
29	29	32	G		G	G	G	33	37	30	33	37	32	36	33	37	38	36	38	29	G	39	G	32
30	30	G	G	G	G	G	G	38	39	38	32	30	30	G	G	30	32	34	32	28	30	G	G	27
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	28	30	29	30	30	30	28	29	28	29	30	28	30	30	29	30	29	30	30	29	30
MED	26	24	G	G	G	G	G	32	33	36	31	30	30	30	31	32	30	34	34	32	32	32	30	28
U Q	32	29	28	28	G	G	28	36	38	38	33	34	32	32	32	38	32	37	38	37	34	37	34	33
L Q	G	G	G	G	G	G	G	30	30	30	29	28	26	G	28	30	28	29	28	27	25	24	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	14	15	15	14	14	14	14	14	15	15	44	45	50	22	21	16	15		14	15	15	14	14	14
2	14	14	15	14	14	14	15	14	15		20	21	50	44	18	45	16	15	14	15	15	15	15	15
3	15	15	14	14	15	15	14	15	16	21	54	20			16	14		15	15	14	14	14	14	14
4	14	14	14	14	15	14	15	15	17	18	48		53	53	48	21	15	15	14	14	15	14	14	14
5	15	16	14	15	15	14	15	15	14	16	49	49	21	23	21	22	15	14	14	15	15	14	15	15
6	15	14	14	14	14	15	14	14	15	16			53	53	49	48	16	14	14	14	14	14	14	15
7	15	15	15	15	14	15	15	14	15	15	21	22	22	22		23	18	15	15	15	14	15	14	14
8	15	14	14	15	15	14	14	14	15	20	21					15	16	15	15	14	14	14	14	14
9	14	14	14	15	14	17	14	14	15	16	18			23	23	17	17	15	15	15	14	14	14	15
10	14	14	14	14	15	14	14	14	15	49	48	22		21	18	18	15	14	16	14	14	15	14	14
11	14	15	15	15	14	15	14	14	14	16	18	17		17			20	15	15	14	14	14	15	14
12	15	15	17	14	14	15	15	14	14	17	20	24	22	22	17	26	14	15	14	14	14	14	15	15
13	15		17		15	15	15	17	18	22	21	21		22	22	18	16	15	14	14	14	15	15	15
14	14	14	14	14	14	15	14	16	16	15	21	20	22	48	20	16	15	15	14	14	14	14	15	14
15	14	14	14	14	14	14	14	14	16	16	16	48	21	17	20	20	15	14	14		14	14		14
16	15	15	15	14	14	14	14	14	14	15	23	20	20	23	20	48	18	15	14	15	14	14	18	16
17	15	15	15	14	14	14	15	15	15	16	16	20	17	16		17	15	14	16	14	15	14	14	15
18	15	15	15	15	14	14	15	14	14	16	15			49	48	18	16	14	15	14	14	14	14	15
19	14	15	15	15	15	15	15	14	15	17	20	47		20	18	15	14	14	14	14	14	14	14	14
20	15	14	14	14	15	15	15	14	15	15	18	22	48	48	21	18	15	15	14	15	14	14	14	14
21	15	14	14	14	14	14	14	14	14		20	47	48	22	23	17	14	14	16	15	15	14	14	14
22	14	14	14	15	15	14	14	14	15	14	45	48	47	48	49	20	15	15	16	14	14	14	14	15
23	14	14	14	14	15	14	14	14	15	16	17	21	50	22	23	16	14	16	16	14	15	15	14	14
24	14	16	14	14	15	15	14	15	15	16	17	18	48	16	22	17	15	15	15	14	14	14	15	14
25	14	14	14	14	14	15	14	16	15	15	16	18	20	49	52	16	17	15	14	14	14	15	14	15
26	14	14	14	14	14	15	14	14	14	15	18	20	24	21	16	17	15	14	14	14	14	14	14	14
27	15	14	15	14	14	14	14	14	15	15		21	22	46	20	20	18	14	16	15	14	14	15	15
28	15	14	15	15	14		14	15	15	18	21	48	49	46	51	17	15	15	15	14	15	14	15	15
29	15	15	16		17	15	15	17	15	17	21	24	48	23	21	18	14	15	14	15	14	14	15	15
30	14	15	15	15	15	15	14	14	14	14	15	14	18	49	48	17	15	14	14	14	15	14	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	30	29	30	28	30	29	30	30	30	28	28	25	22	28	26	29	29	29	30	29	30	30	29	30
MED	14	14	14	14	14	15	14	14	15	16	20	21	36	23	21	18	15	15	14	14	14	14	14	14
U Q	15	15	15	15	15	15	15	15	15	17	22	46	49	48	48	20	16	15	15	15	15	14	15	15
L Q	14	14	14	14	14	14	14	14	14	15	17	20	21	21	20	16	15	14	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT OKINAWA

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	36	43	38	43	60	76	66	61	68	85	92	102	105	92	102	93	89	75	A	A	A
2	A	44	42	44		42		A	86	N	57	A	62	84	81	94	96		A	87	A	A	A	A
3		42	56	42			46	63	94	63	64	73	86	92		98	97	92	115	93	44	37	A	43
4		44	44				35		68	60	62	67	77	92	92	92	100	101	112	82		34	A	A
5	39	42	44	44	38				53	58	71	89	92	99	105	92	103	103	96		54	A		58
6		60	60	56			48	61	66	60	73	76	85	90	94	91	102	127	124	94	A	A	60	A
7	48	A	47	35	69	38		60	73	63	78	104	94	114	109	95	91	84	80	60	A	58	A	A
8		40	38	38	A	A	A	A	51	58	92	A	A	62	A	A	88	82	95	52	A	A	A	A
9	44	38	44		26	A	79	51	57	63	68	81	91	115	124	120	118	126	108	92	81	A	A	A
10	A	59	60	60	56	41	A	37	85	96	71	71	76	90	92	89	68	66	82	95	63	41	44	48
11	A	43	43		34	35	69	A	64	67	58	A	76	88	80	75	85	72	67	68	57	A	A	44
12	A	43	55	69				56	67	68		63	A	A	A	81	82	93	94	82	72	46	A	37
13	A	43	35	35	36	31		44	58	62	68	72	82	84	76	66	83	90	94	94	59	44	48	109
14	44	37	49	N	30		59		71	62	57	A	A	84	74	66	68	86	93	A	A	62		A
15	60	A		44	A	A	A	52	69	67	67	72	92	113	92	93	87	96	87	84	55	A	A	48
16	46	38		59	59	69	A	44	50	63	70	69	83	81	76	78	91	86	84	49			A	109
17	59	59	49			38		52	36	63	56	64	72	68	75	75	71	82	92	68			A	109
18		37			28	35		52	68	74	67	64	68	66	74	80		104	82	94	43	59		44
19	69	A	28	69	26	36	28	59	67	91	49	67	82	66	70	81	87	106	82	A	A	A	A	A
20		37			A			62	68	A	83	80	90	92	92	89	85	103	80	39	A			
21	42	49	32		A	59	A	A	77	62	A	77	115	125	122	103	110		114	91	55	54	A	A
22	A	48	56	50	43	59			81	66	66	73	90	106	110	112	129	123	92	104	83	A	A	37
23	42	48		43			49	70	70	84	57	81	112	118	124	126	120	127	122	83	51	48	32	59
24	35	43	28	43				39		91	59	74	87	92	95	124	104	124	92	66	59	59	32	43
25	59			47	69		N	55	55	55	57	57	70	83	77	78	91	124	71	A	A	31	48	46
26	59	46		69				49	83	63	53	A	76	91	95	N	103	92	90		A	A	47	42
27	48	48	32	31	37	36	43	A	64		85	87	90	92	90	113		126	101	94		A	A	A
28	63	48	44	43		N		45	65	68	74	91	93	92	93	91	101	92	89	94	69	36	A	46
29	37	A	A	A	36		69	44	59	70	94	99	124	113	118	136		126	93	80	60	42	35	48
30	A	37	44				41	55	67	68	80	88	80	81	81	82	91	93	85	65	52	35	69	59
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	24	21	20	15	13	12	21	29	27	28	25	27	29	27	28	27	28	29	25	17	15		18
MED	47	43	44	44	37	38	47	52	67	63	67	73	85	92	92	92	91	98	92	84	59	44		47
U Q	59	48	52	57	56	50	64	60	74	68	73	84	92	102	105	104	103	123	98	94	70	58		59
L Q	42	39	36	40	30	35	42	44	58	62	57	67	76	83	77	80	85	88	83	67	53	36		43

HOURLY VALUES OF fEs AT OKINAWA

SEP. 1994

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	40	44	39	37	23	G	38	60	81	73	82	56	44	44	66	38	48	82	30	60	48	79	44	46
2	44	44	26	G	G	G	G	44	60	60	47	59	51	39	68	G	55	35	111	50	59	37	36	48
3		G	G	G			48	32	37	44	48	53	48	40	40	37	27	35	38	38	39	56	28	35
4	G	G	G	G	G	G	39		38	39	39	36	62	77	73	59	64	38	25	86		26	35	48
5	27	G	G	G	G	G	G		37	44	40	44	51	56	52	56	47	48	37		58	53		28
6		G	G	G	G	G	G	30	38	31	G	34	G	42	G	51	62	116	38	46	41	51	60	59
7	41	33	25	G	G	G		34	66	46	60	51	37	38	41	60	36	39	41	44	49	57	93	45
8		34	27	24	26	24	32	47	47	46	40	62	63	37	88	119	35	43	40	52	81	150	71	59
9	G	G	G	G	28	26	32	32	46	53	41	45	42	38	G	52	34	37	G	38	132	67	118	60
10	51	100	39	30	G	38	42	50	44	43	31	G	G	G	31	44	67	40	43	25	29	G	48	36
11	45	25	G	G	G	G	G	38	67	36	42	31	28	G	G	G	48	40	45	60	G	28	24	42
12	38	26	27	G	G		G	29	38	36		G	76	131	81	60	67	118	40	60	44	28	47	45
13	44	35	42	G	G	G	G	30	38	42	46	40	49	47	50	49	44	38	33	37	34	49	32	24
14	G	G	G	G	G	25	26		38	86	87	64	74	50	48	50	42	61	51	168	155	G		38
15	42	60	39	34	34	32	35	31	36	48	49	54	38	38	G	28	35	36	34	36	38	54	49	38
16	48	42	33	G	25	G	28	30	38	44	46	45	39	G	G	35	24	38	32	G	G	30	26	25
17	G	G	G	G	G	G	G	29	37	45	36	38	G	G	38	24	28	35	28	27	G	G	43	G
18	G	G	G		G	G		30	38	39	38	26	36	G	42	42		41	40	44	26	G	G	G
19	G	26	G	G	G	G	G	30	38	44	44	44	43	35	54	46	35	45	58	54	59	67	81	37
20	26	26	28	G	30	24		28	43	79	46	55	35	45	37	42	45	44	49	36	29	G	G	G
21	42	77	47	26	29	30	33	43	44	47	60	39	37	G	25	26	26	30	39	29	23	G	33	42
22	41	48	44	G	G	G	G		38	50	44	36	G	38	48	37	40	32	27	27	28	46	43	41
23	36	G	G	G			G	44	34	39	41	43	42	G	G	25	29	32	G	24	46	77	38	26
24	G	G	G	G			G	33		41	40	G	39	40	G	32	35	34	G	G	G	G	G	G
25	G	G	G	G	G		G	23	31	34	30	36	39	41	32	48	47	78	72	67	38	40	34	45
26	G	G	G	G	G	G		34	46	45	73	66	46	40	52	37	37	40	39		74	51	G	G
27	G	G	G	G	G	G	33	33	68	61	34	35	40	32	66	51		56	48	79		49	38	36
28	G	G	G	G		G		33	38	43	46	37	38	35	41	39	50	62	36	26	45	28	71	46
29	38	39	35	32	G		G	38	38	42	34	42	40	34	62	62	34	37	G	G	G	G	80	G
30	29	G	G		G		32	26	27	29	36	67	41	48	40	38	35	41	33	22	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	30	28	26	23	25	26	29	30	29	30	30	30	30	30	28	30	30	28	28	30	28	30
MED	29	13	G	G	G	G	G	32	38	44	42	42	40	38	41	42	38	40	38	38	38	38	38	38
U Q	42	39	33	G	23	24	33	38	46	48	47	54	48	44	54	51	48	48	43	57	53	54	54	45
L Q	G	G	G	G	G	G	G	30	37	39	37	36	37	32	25	35	34	36	30	26	24	G	27	24

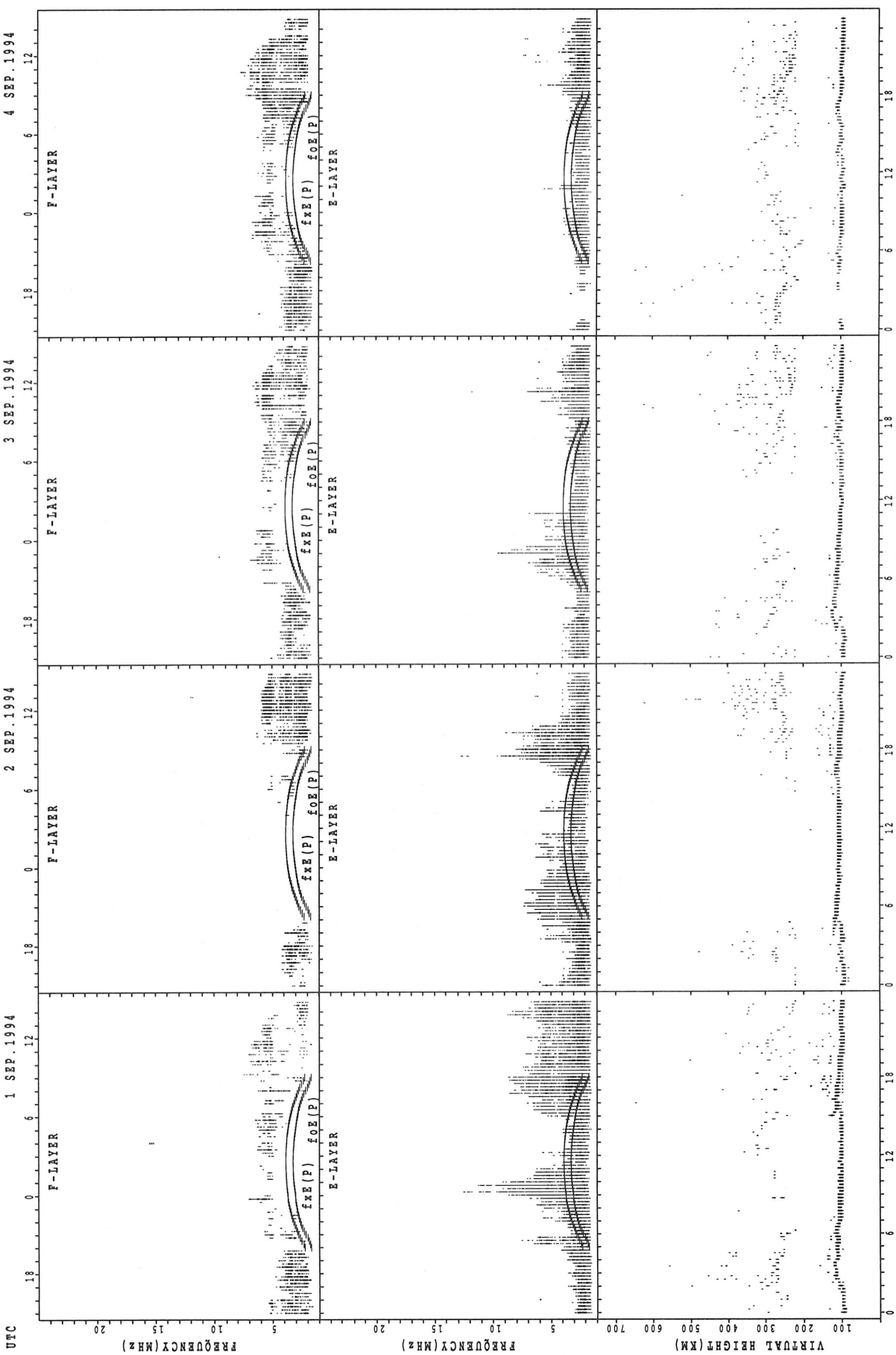
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

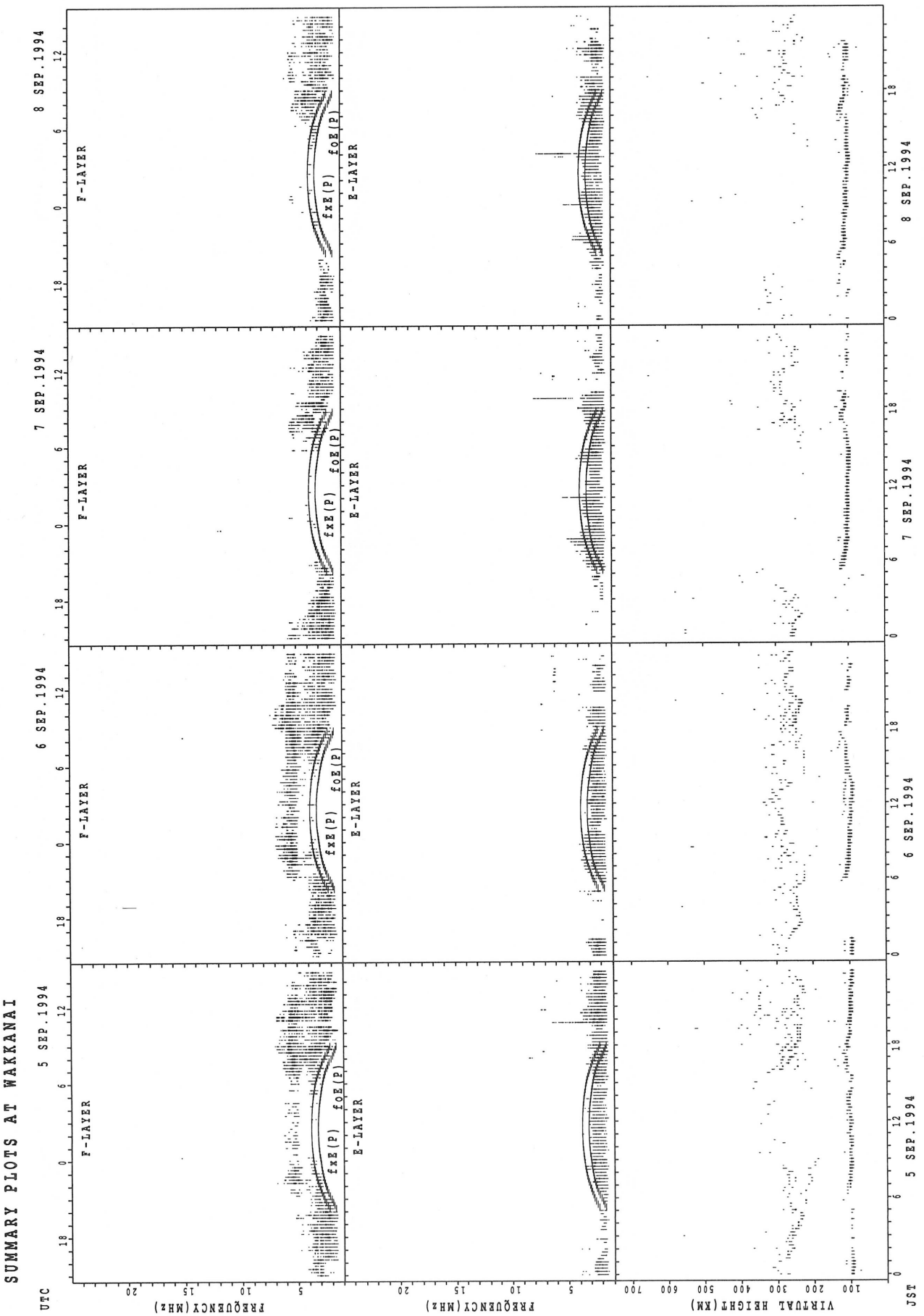
HOURLY VALUES OF fmin AT OKINAWA

SEP. 1994

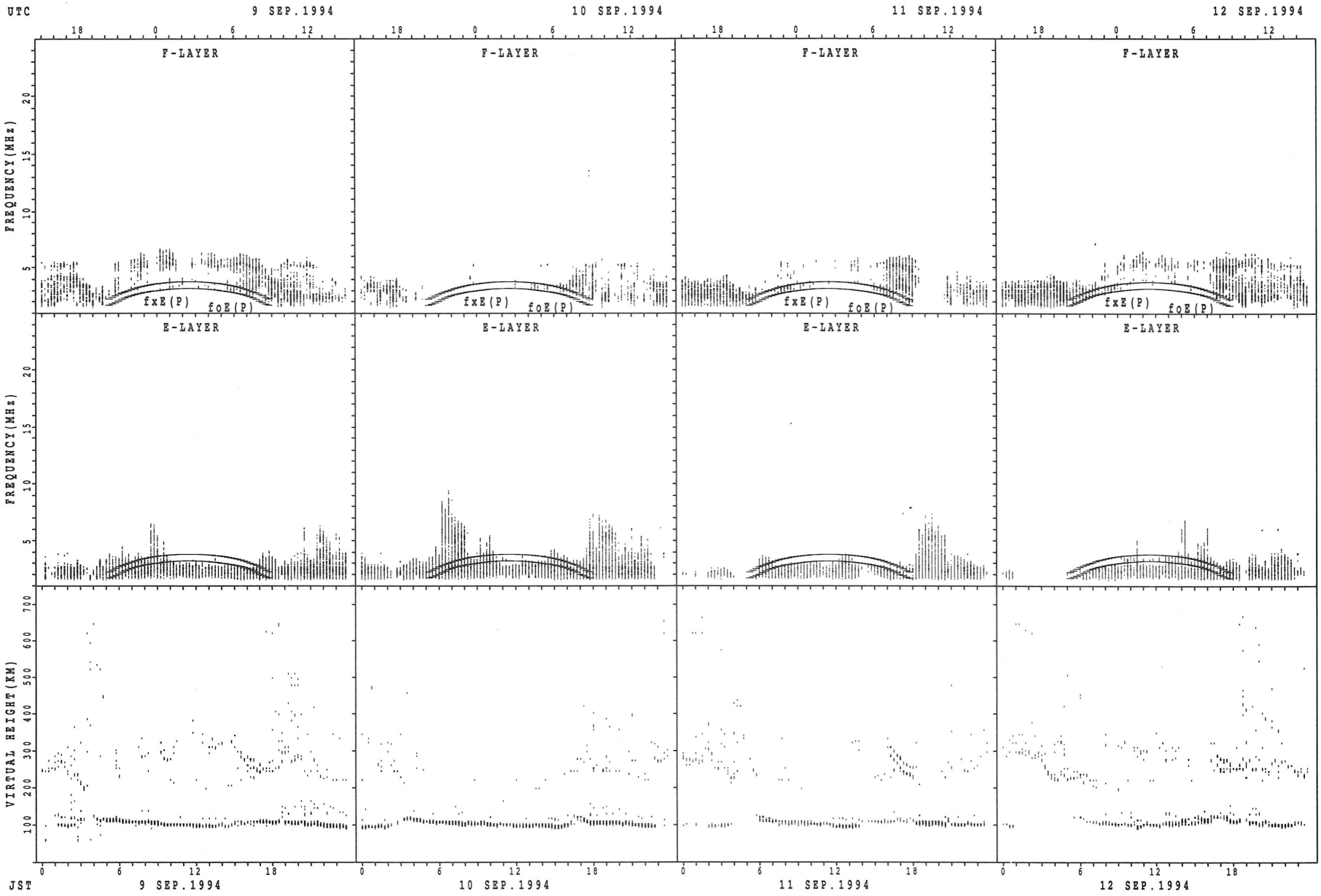
LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

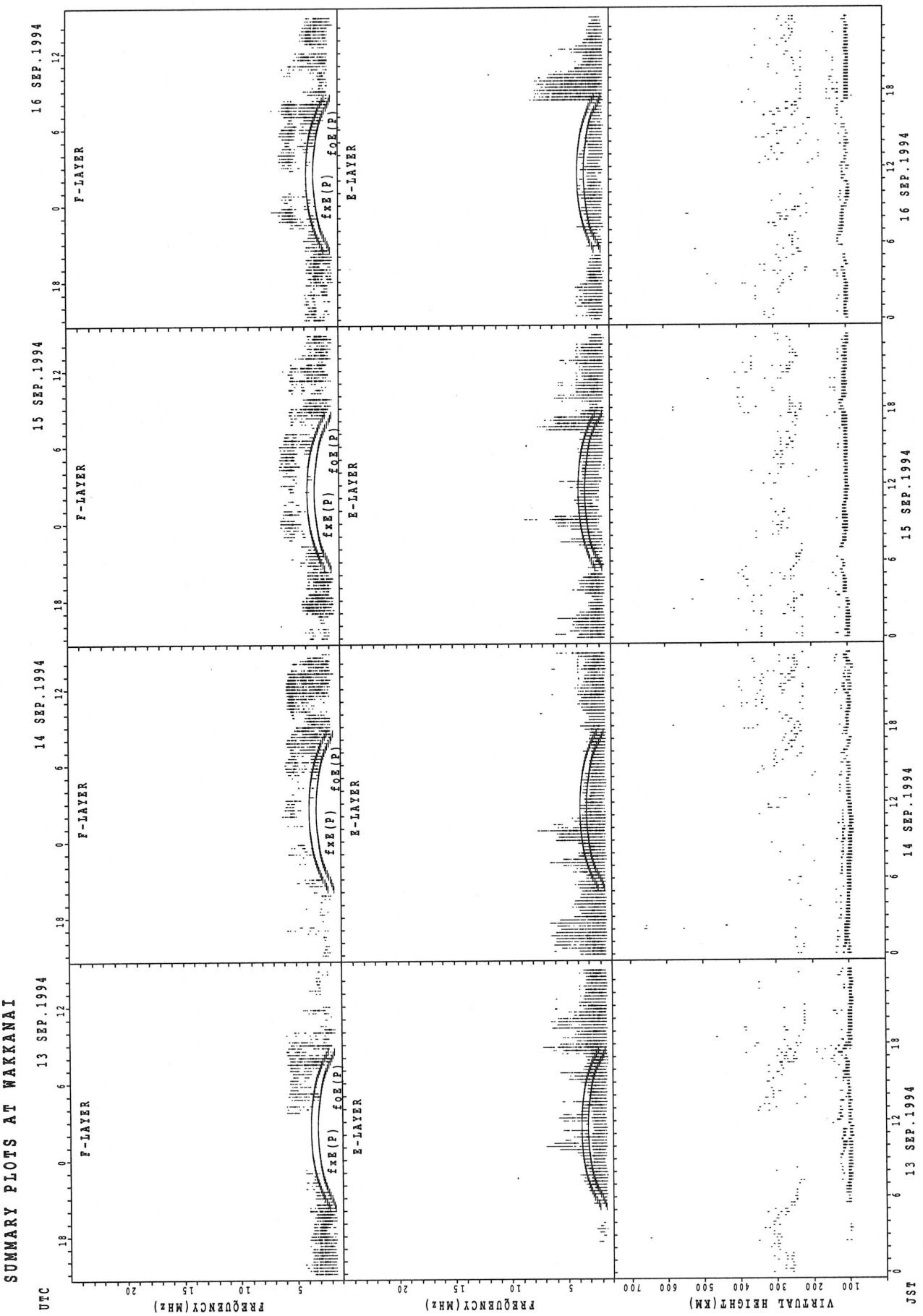

SUMMARY PLOTS AT WAKKANAI
UTC
JST
1 SEP.1994
2 SEP.1994
3 SEP.1994
4 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
5 SEP.1994
6 SEP.1994
7 SEP.1994
8 SEP.1994
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

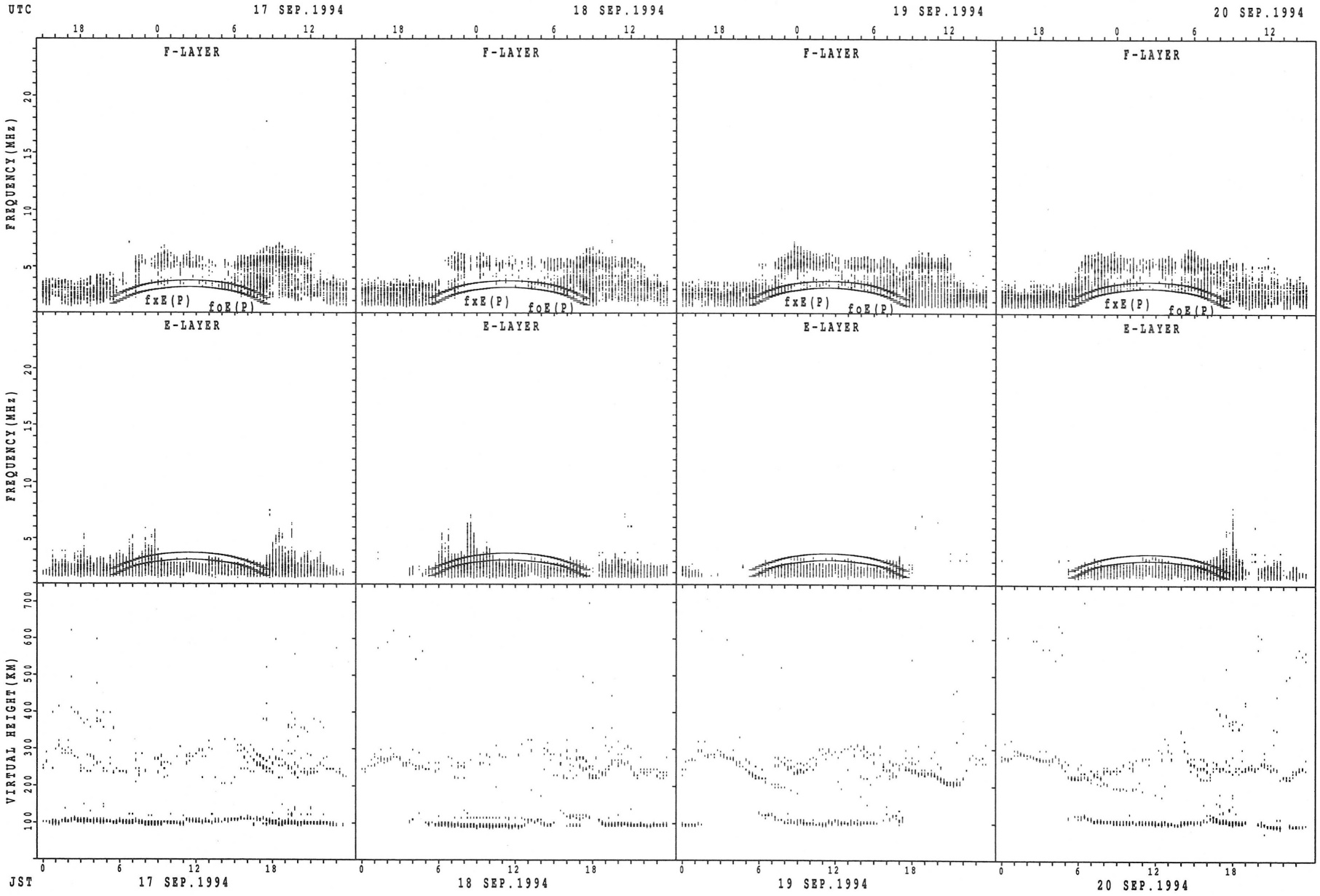
SUMMARY PLOTS AT WAKKANAI



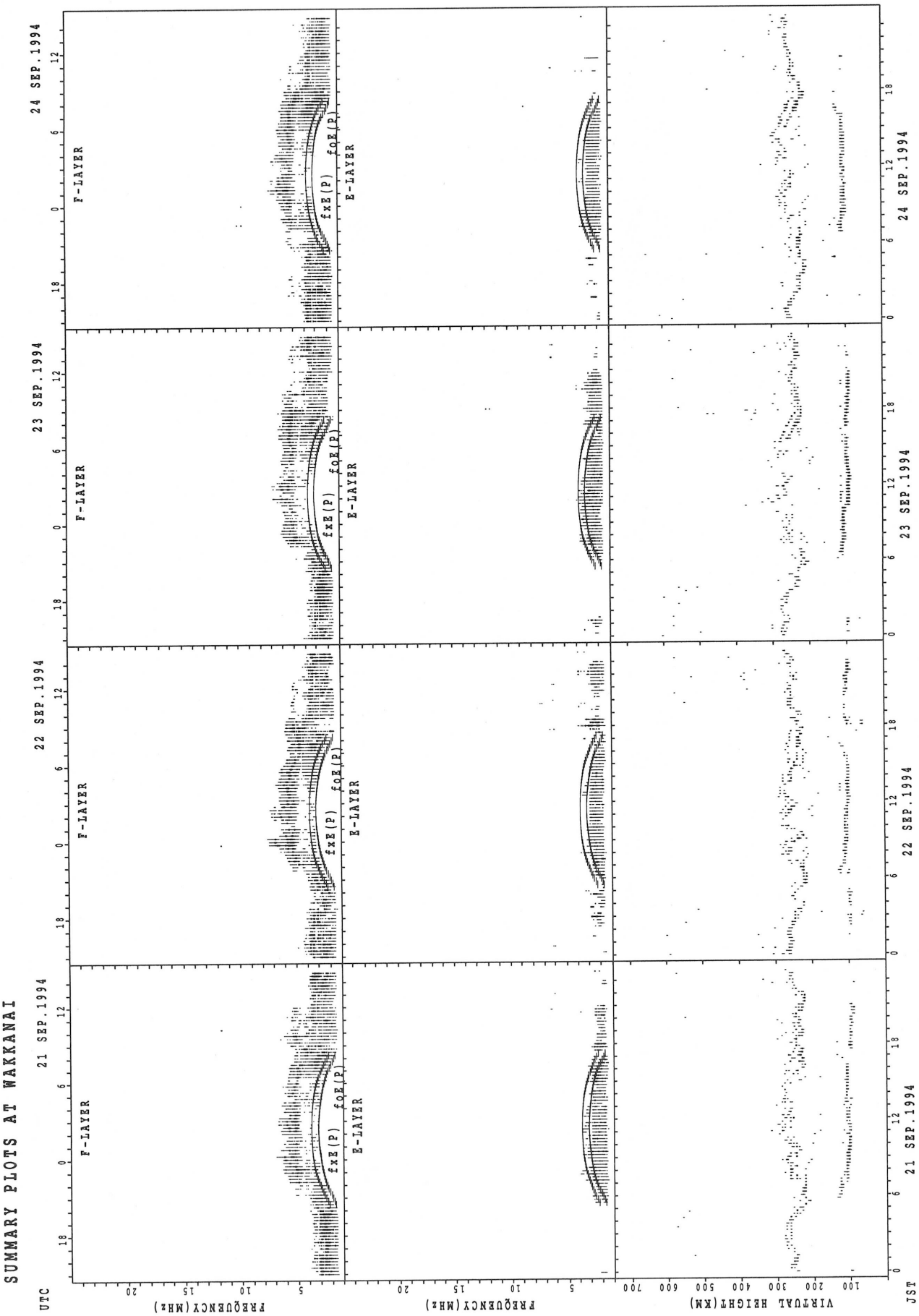
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

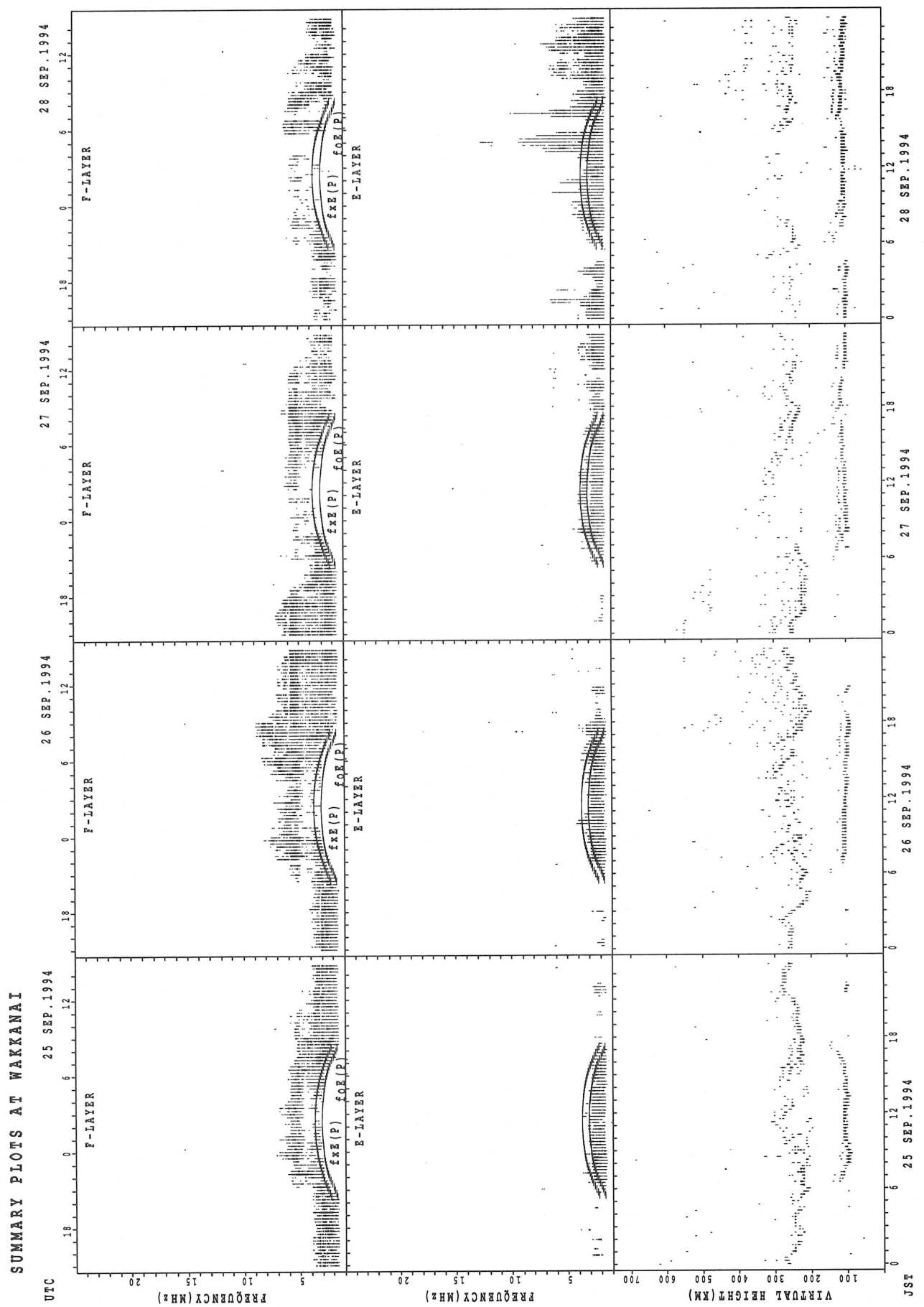

SUMMARY PLOTS AT WAKKANAI
UTC
JST
13 SEP.1994
14 SEP.1994
15 SEP.1994
16 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

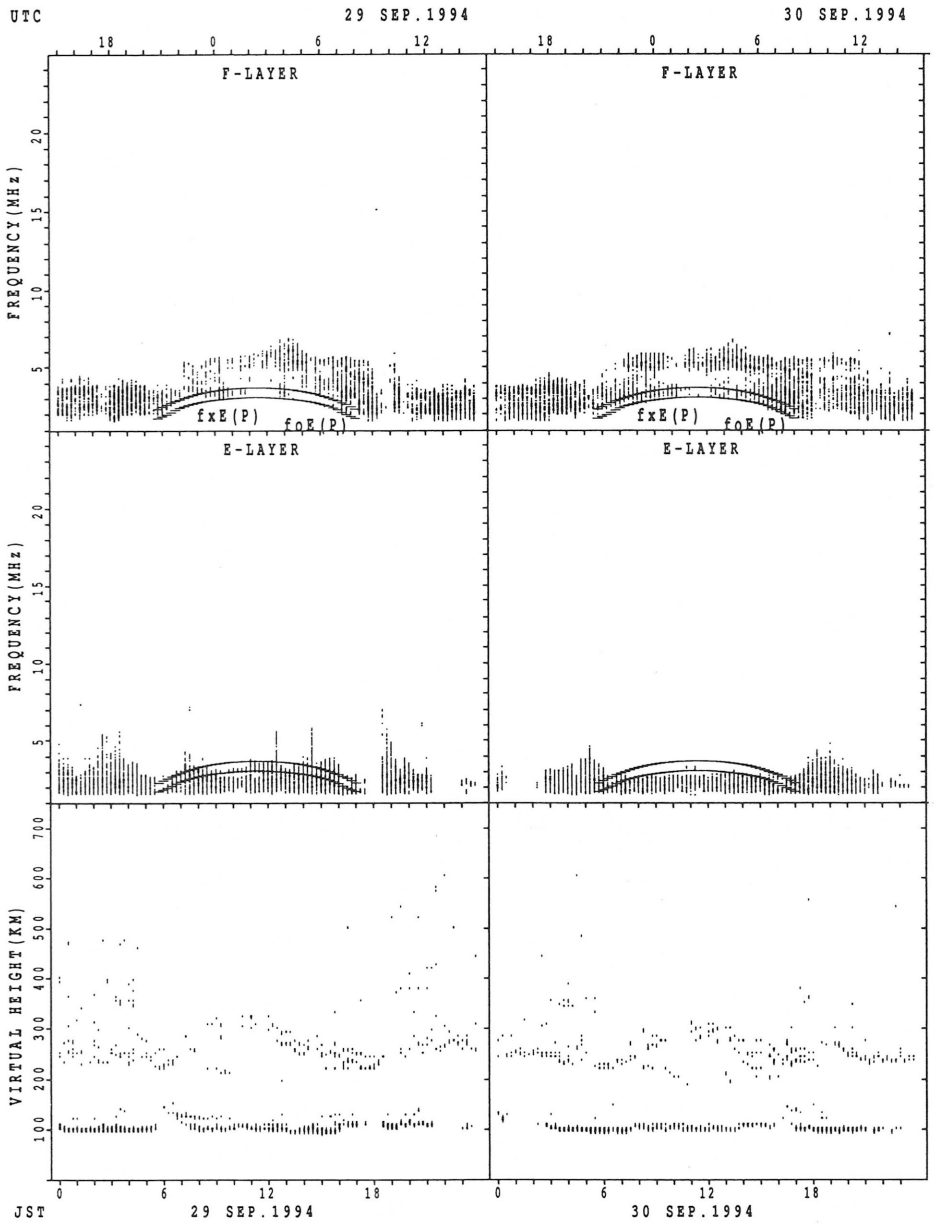


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
21 SEP.1994
22 SEP.1994
23 SEP.1994
24 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
UTC
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

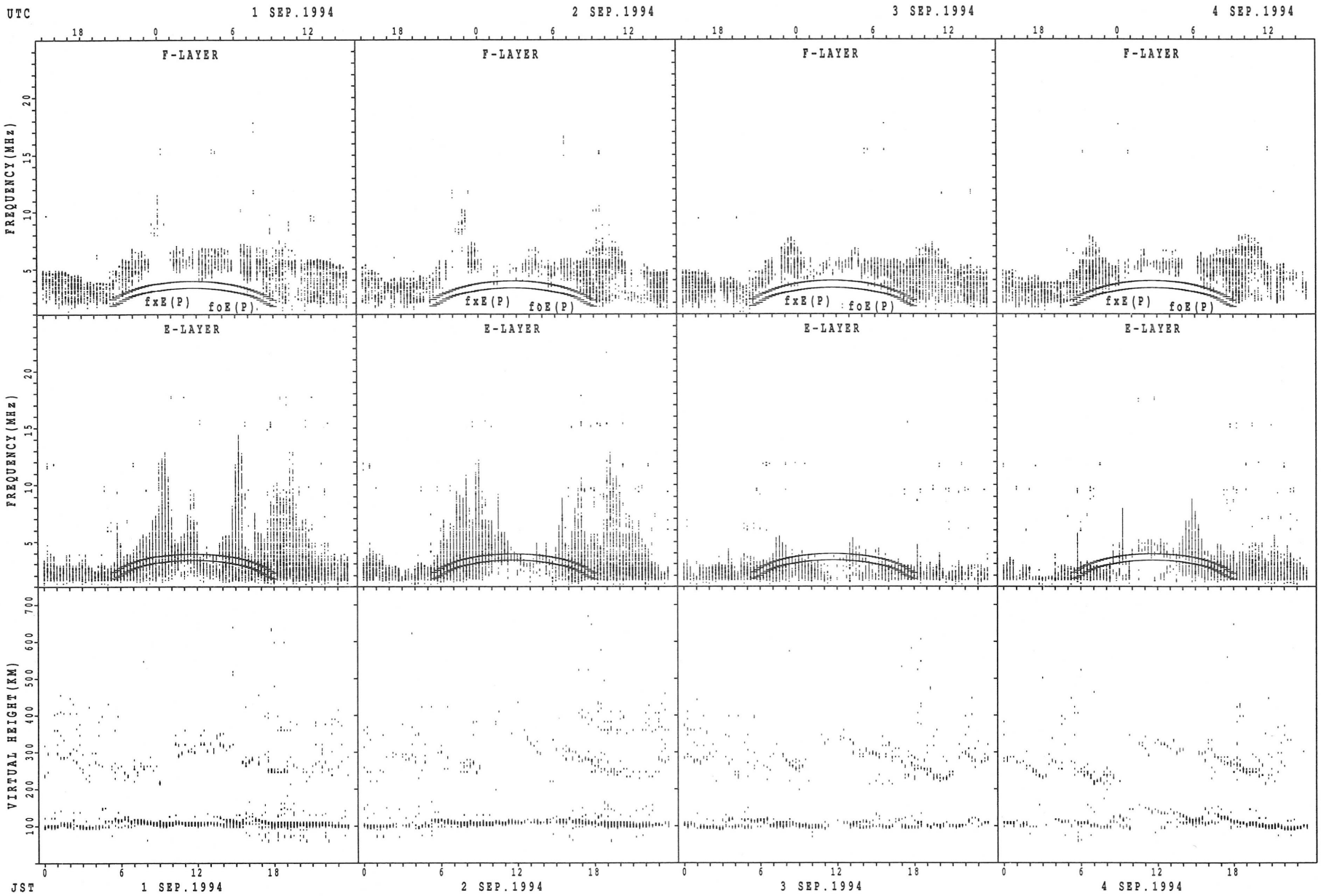

SUMMARY PLOTS AT WAKKANAI
UTC
JST
25 SEP.1994
26 SEP.1994
27 SEP.1994
28 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

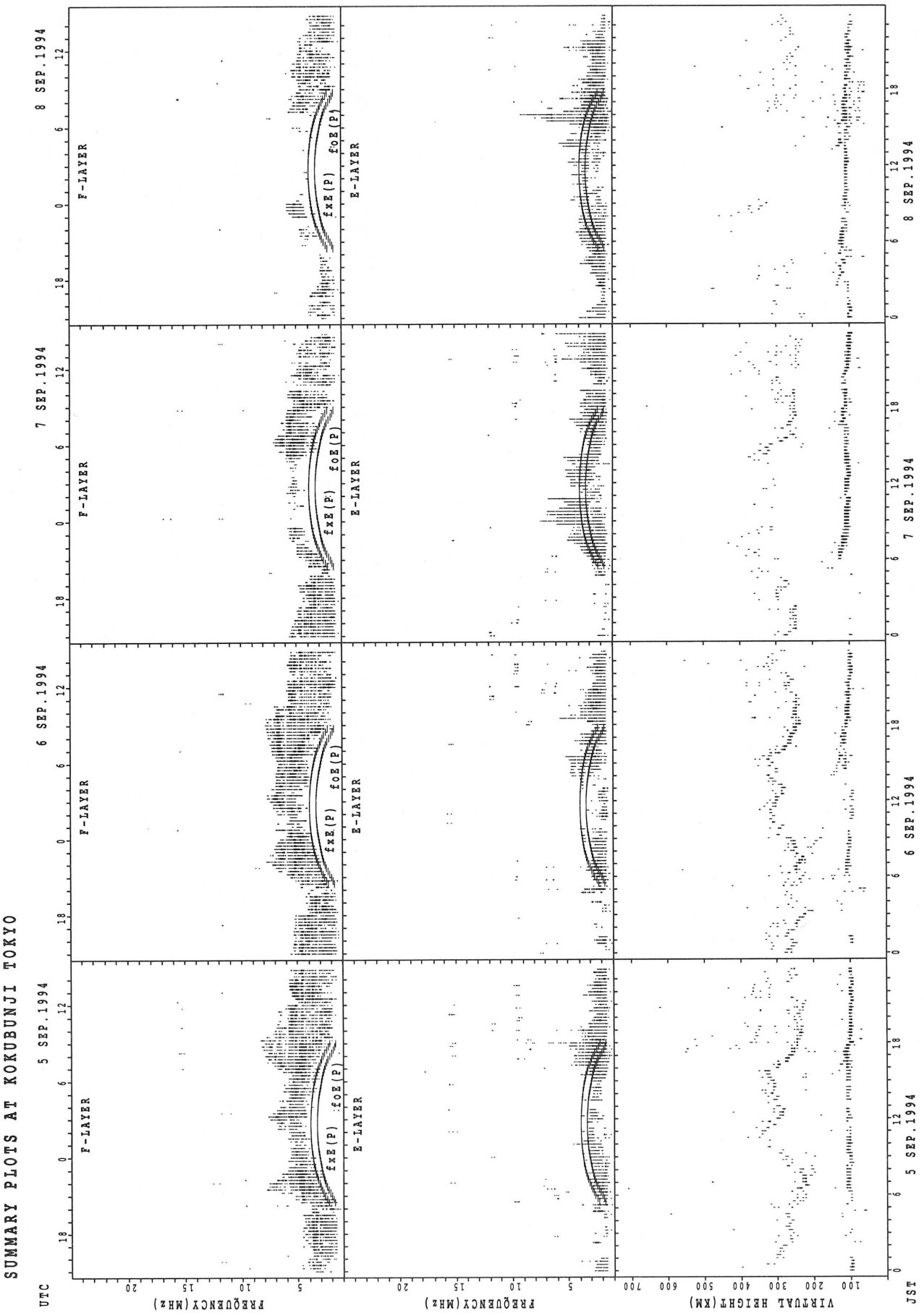


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

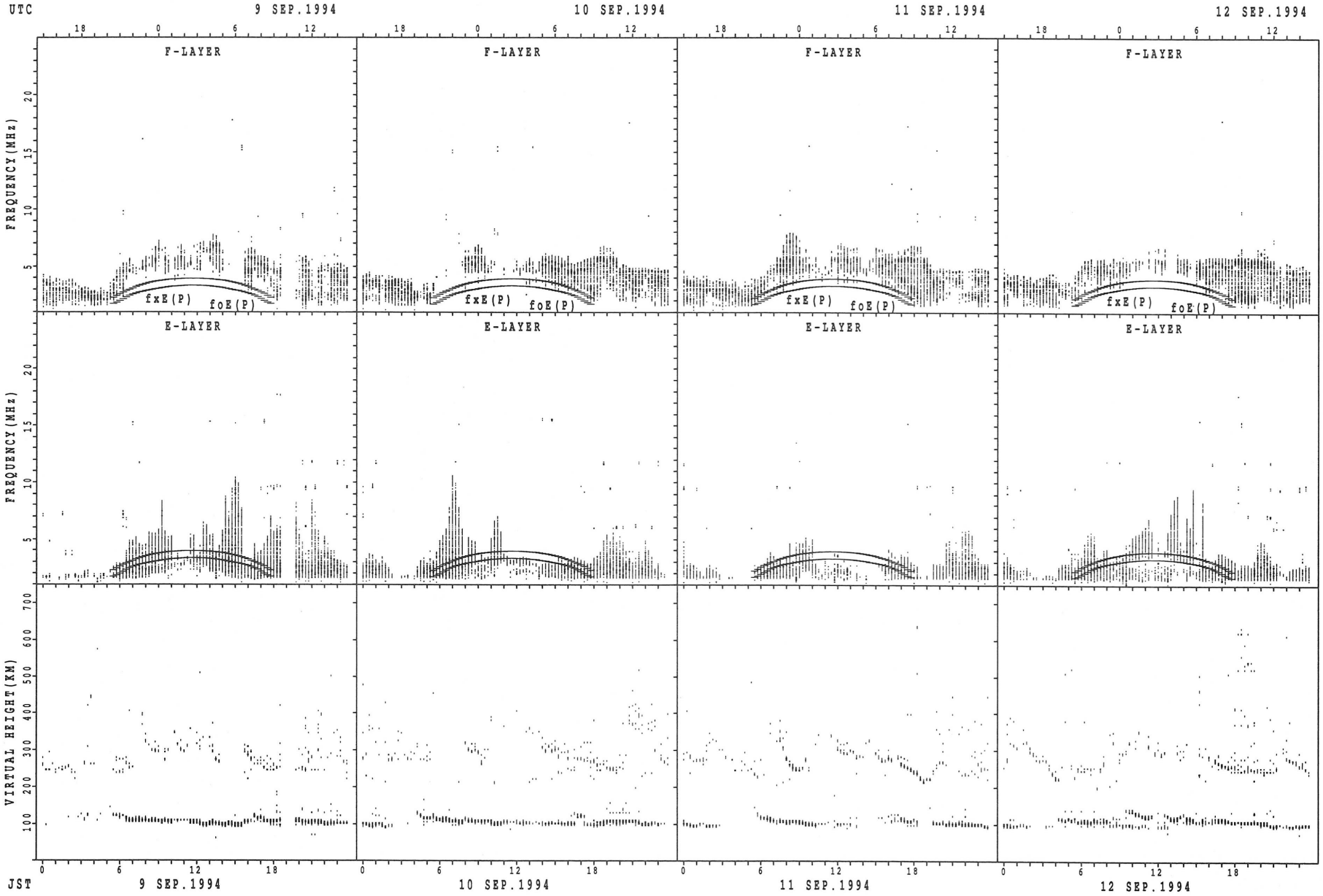
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

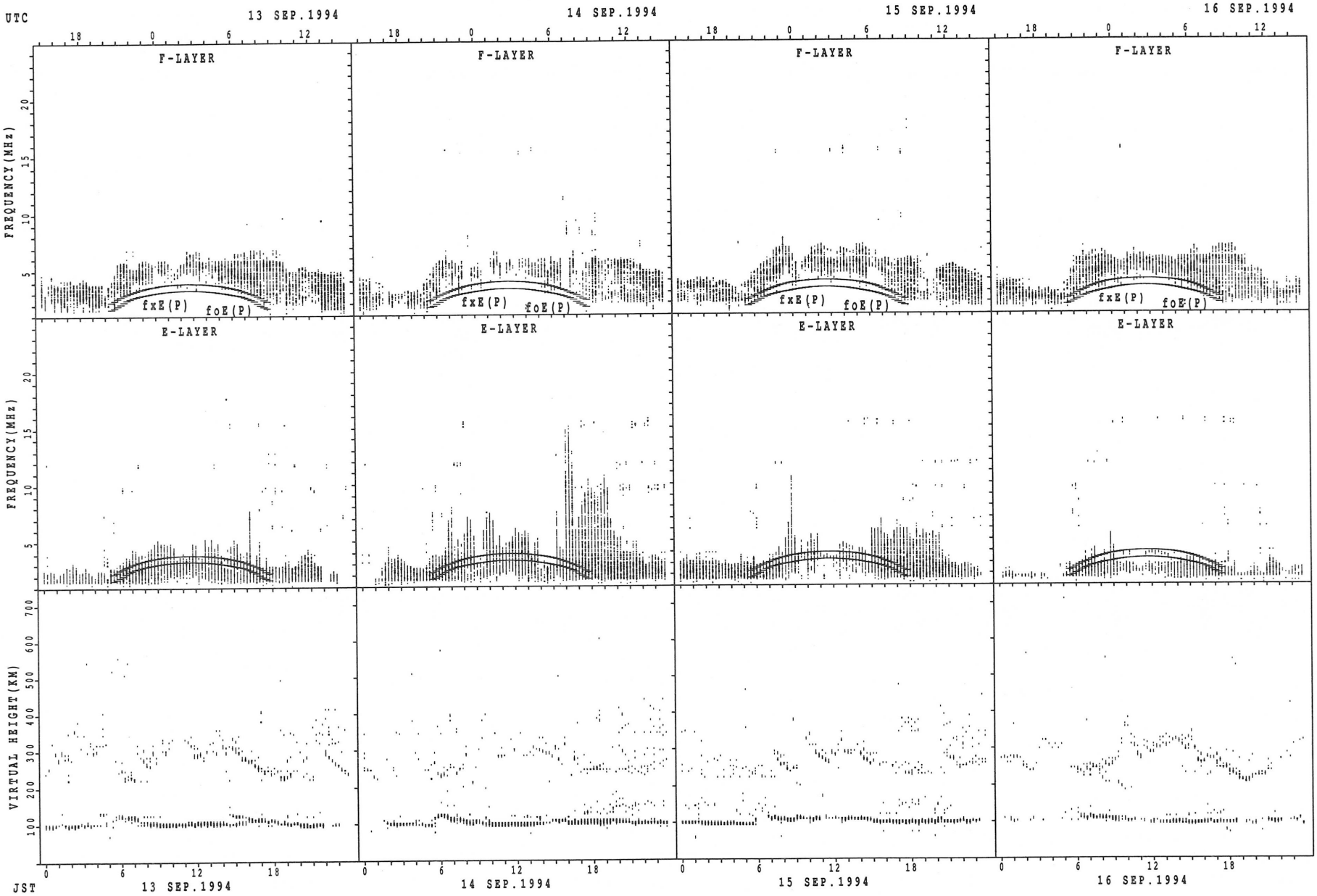

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 SEP.1994
6 SEP.1994
7 SEP.1994
8 SEP.1994
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



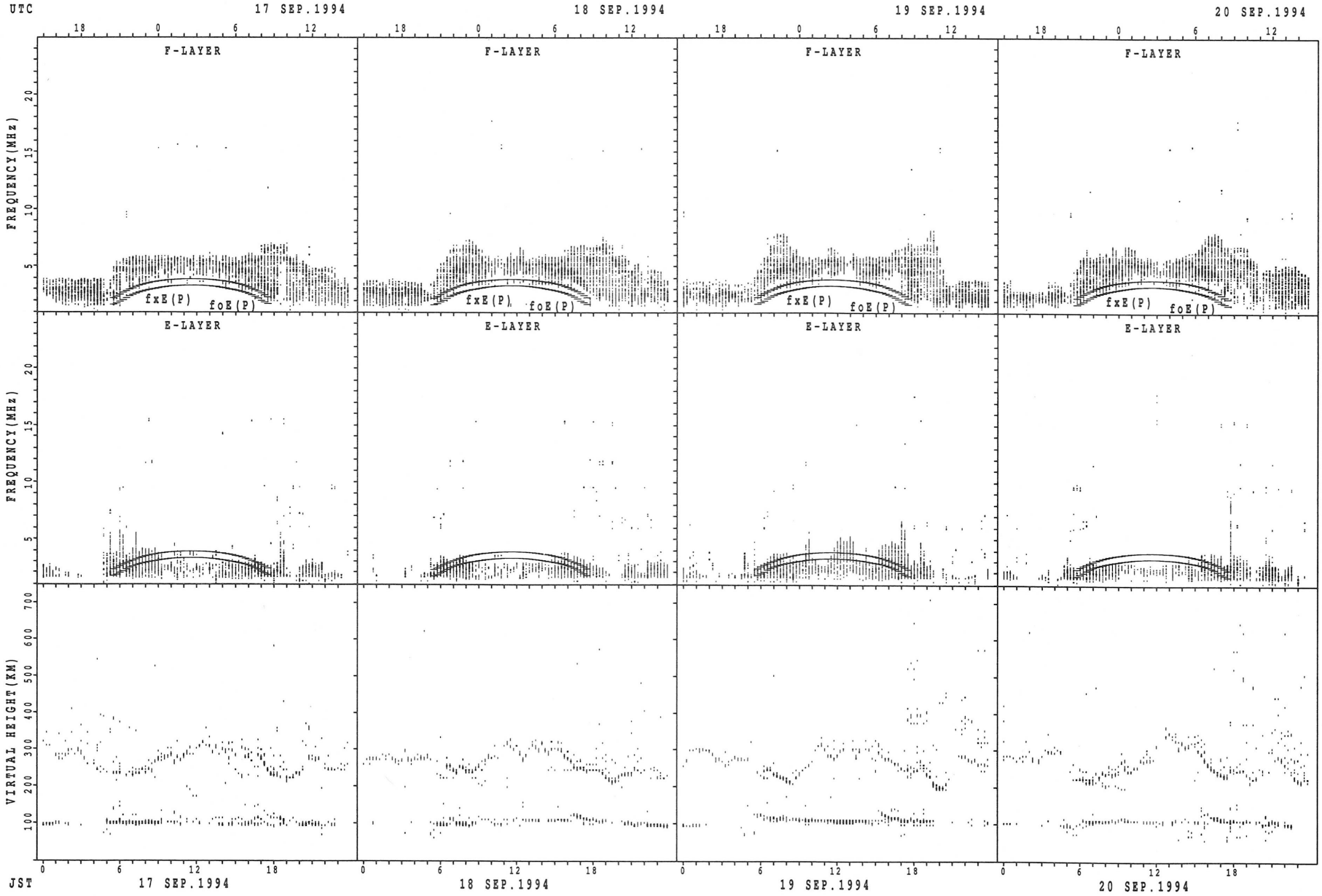
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

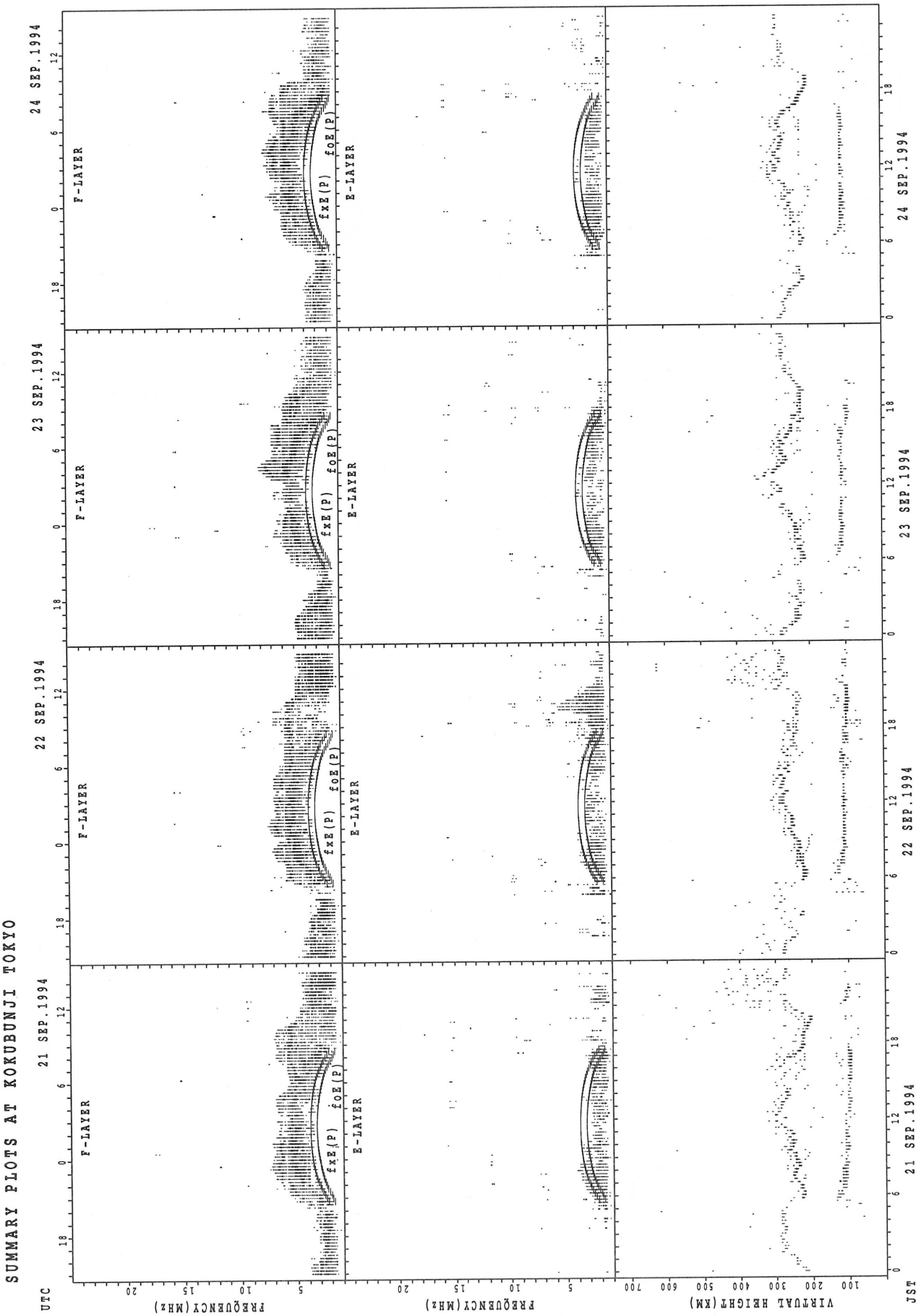


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

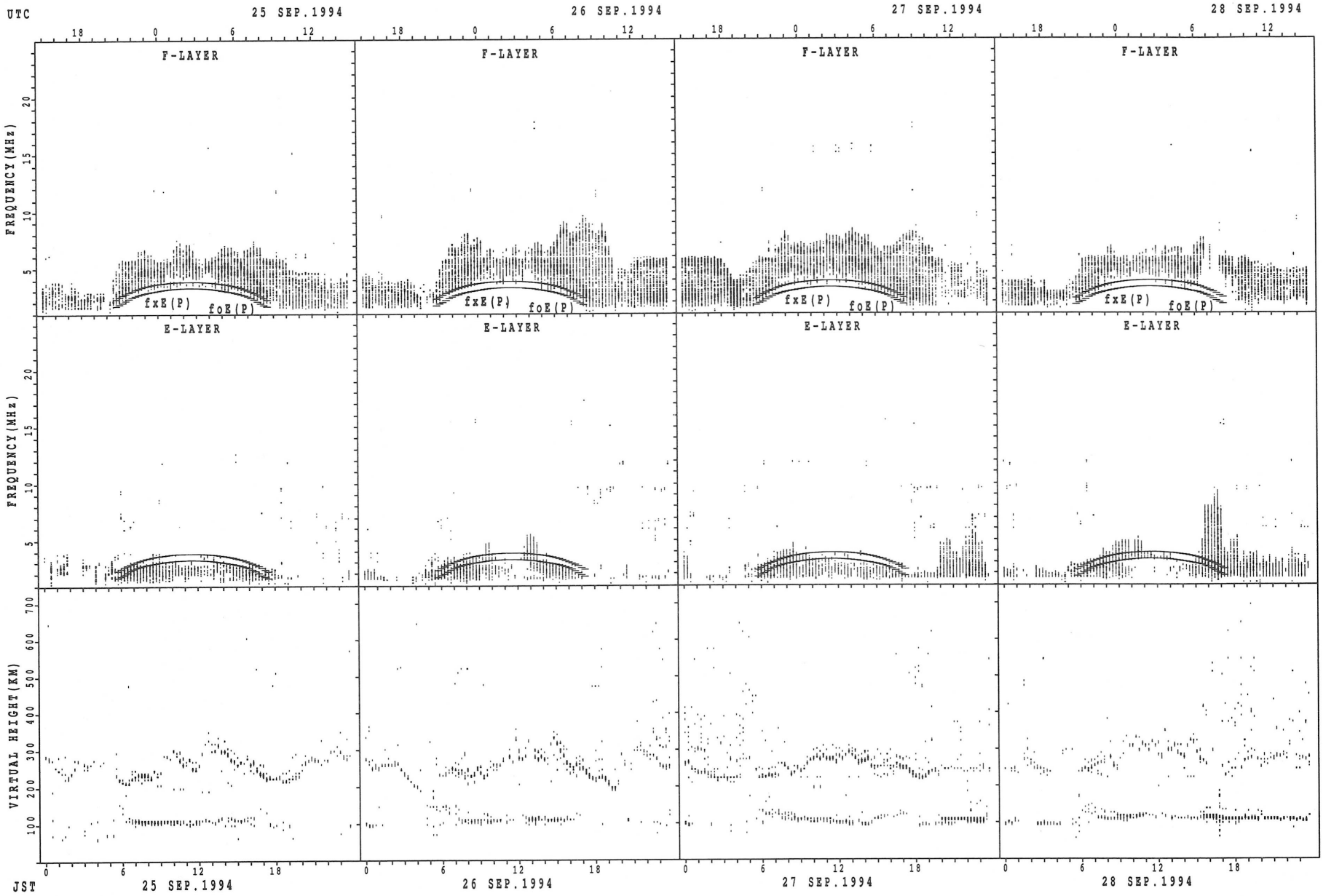
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

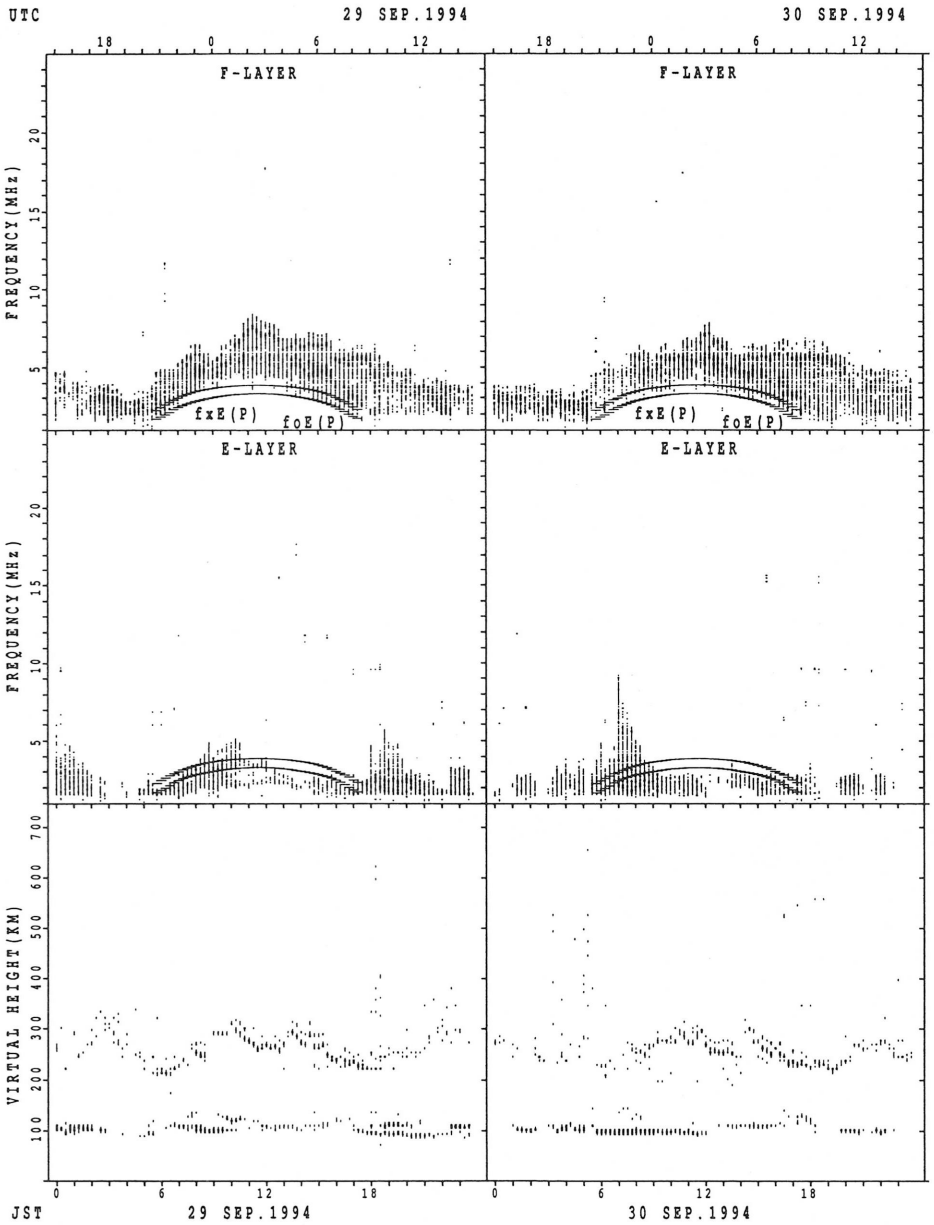

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
21 SEP.1994
22 SEP.1994
23 SEP.1994
24 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



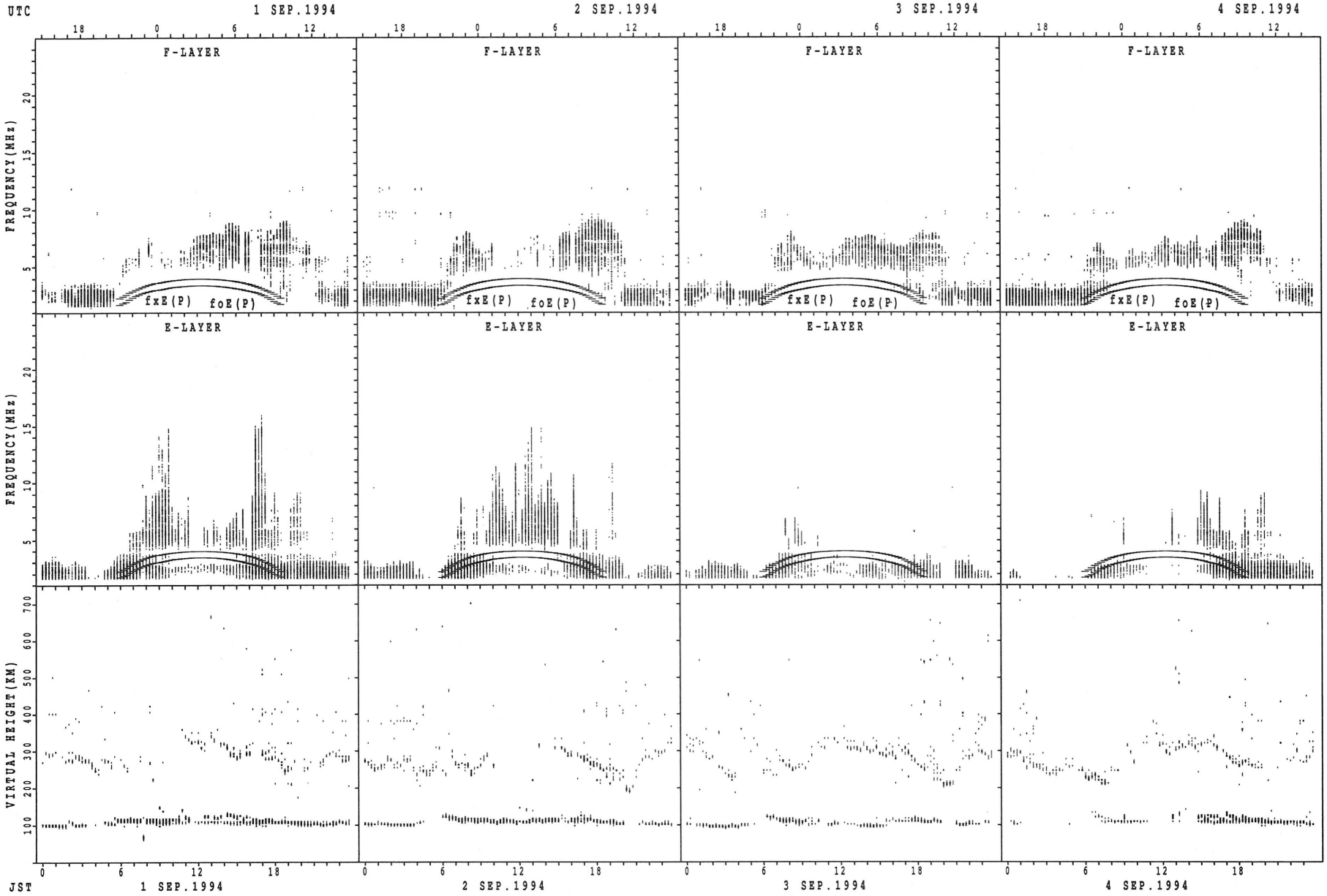
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

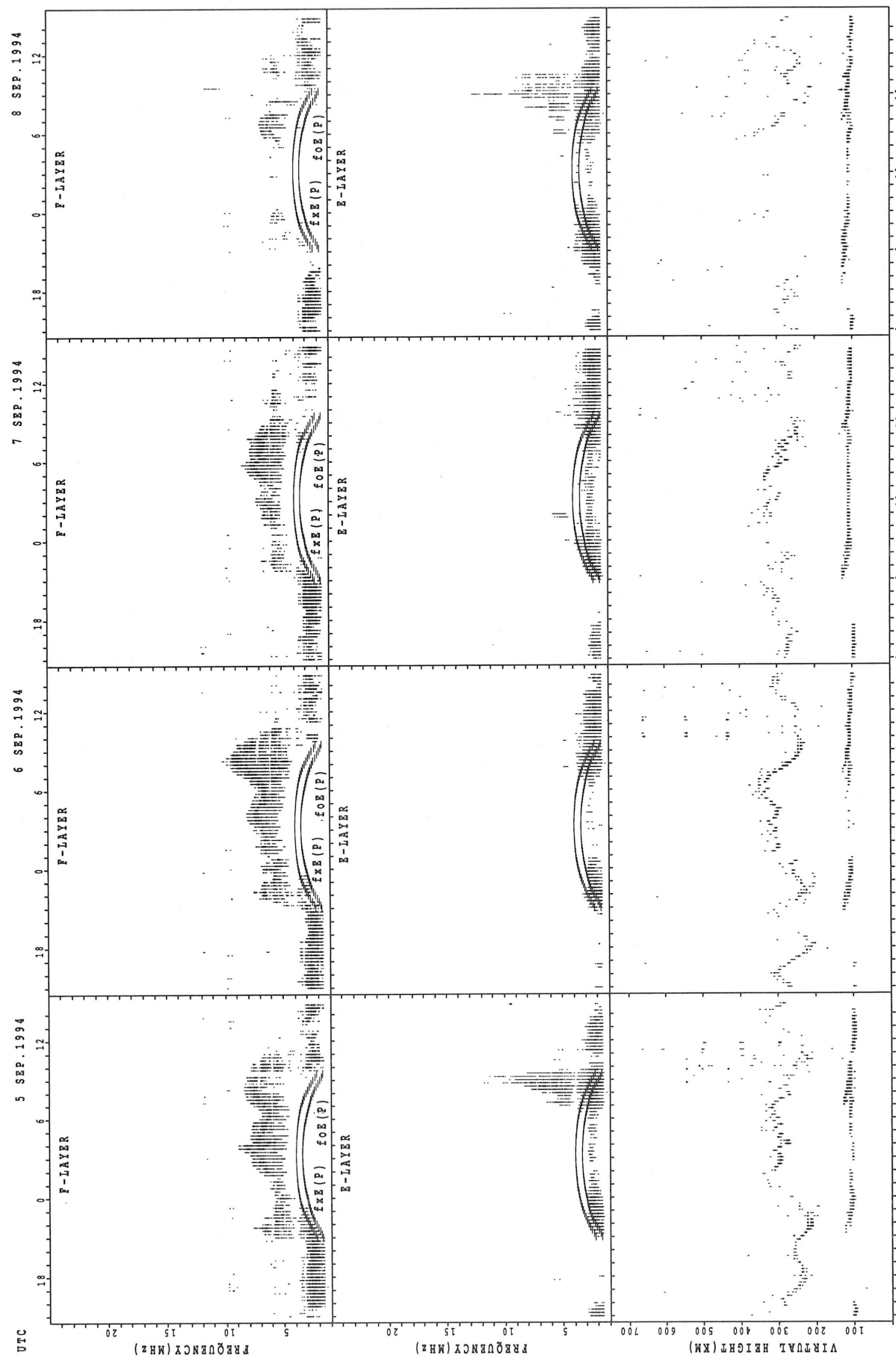


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

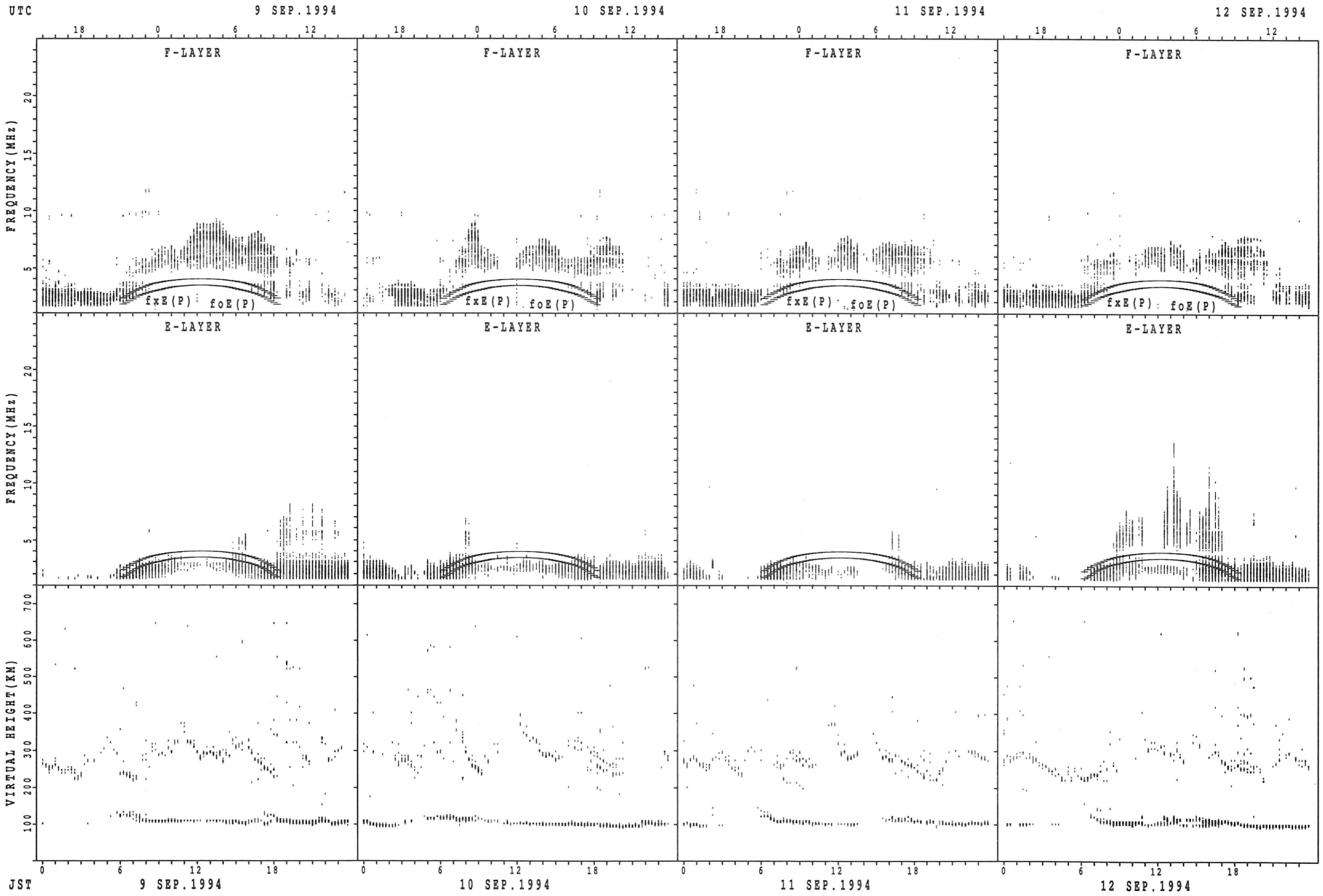
SUMMARY PLOTS AT YAMAGAWA



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

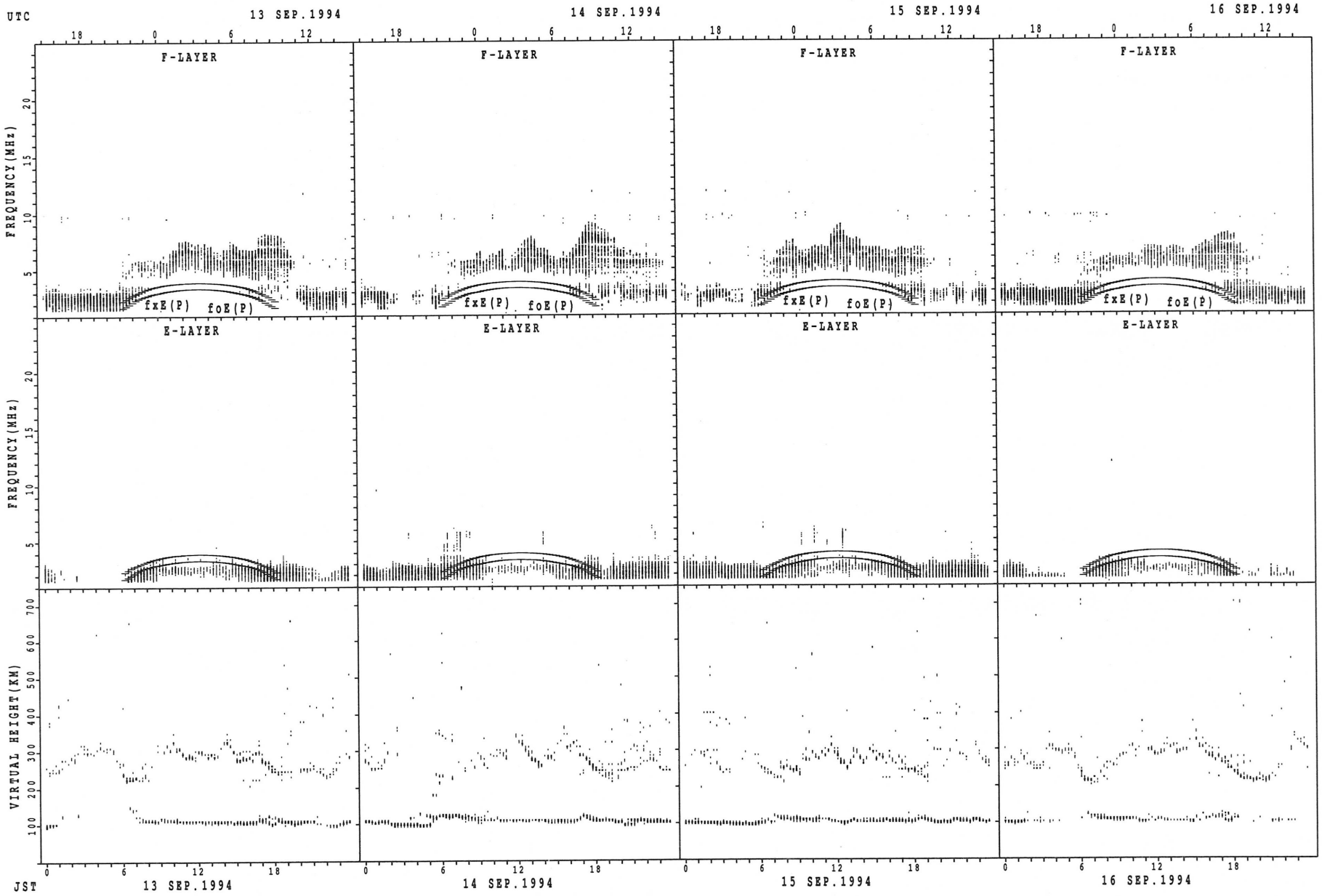

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 SEP.1994
6 SEP.1994
7 SEP.1994
8 SEP.1994
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



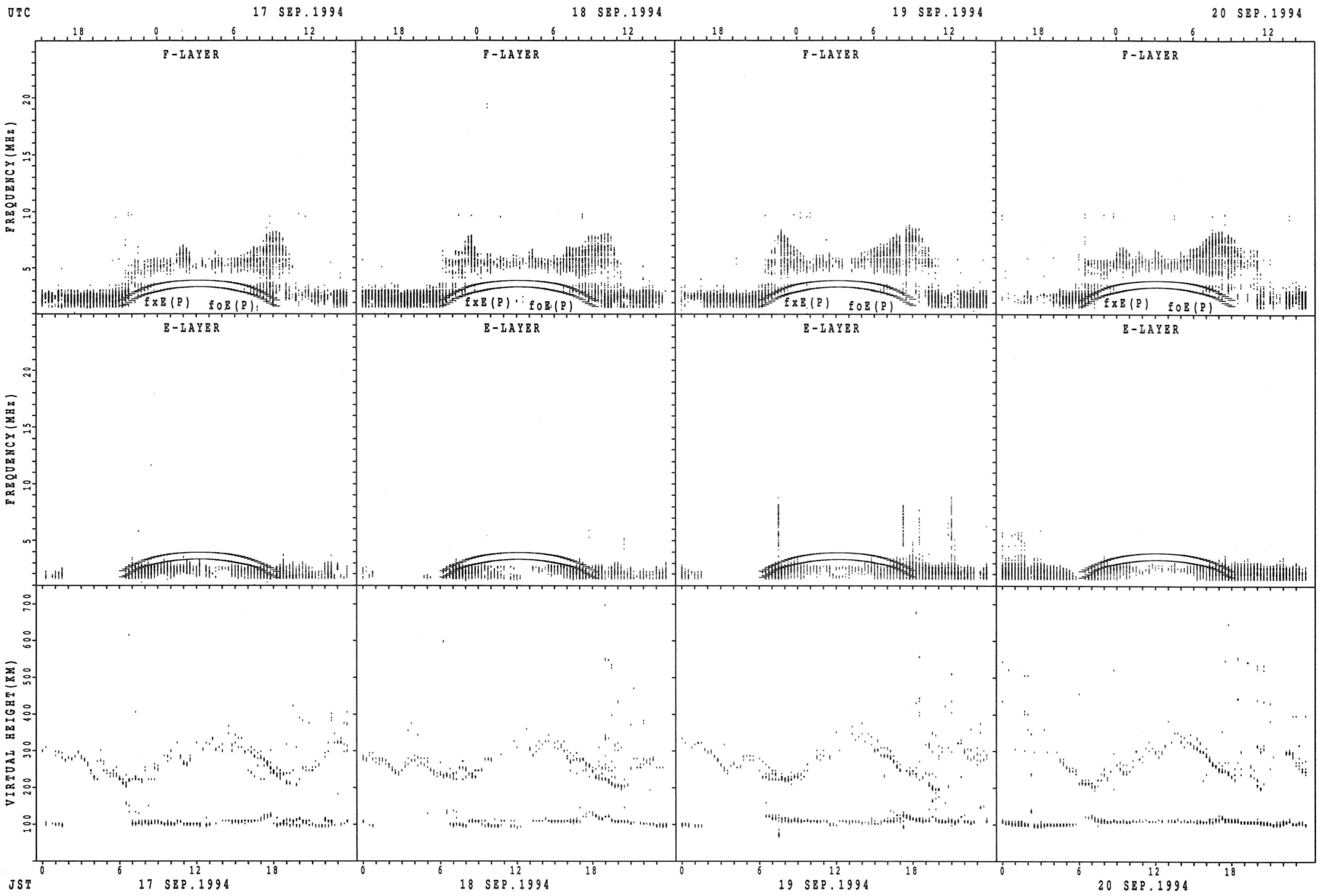
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

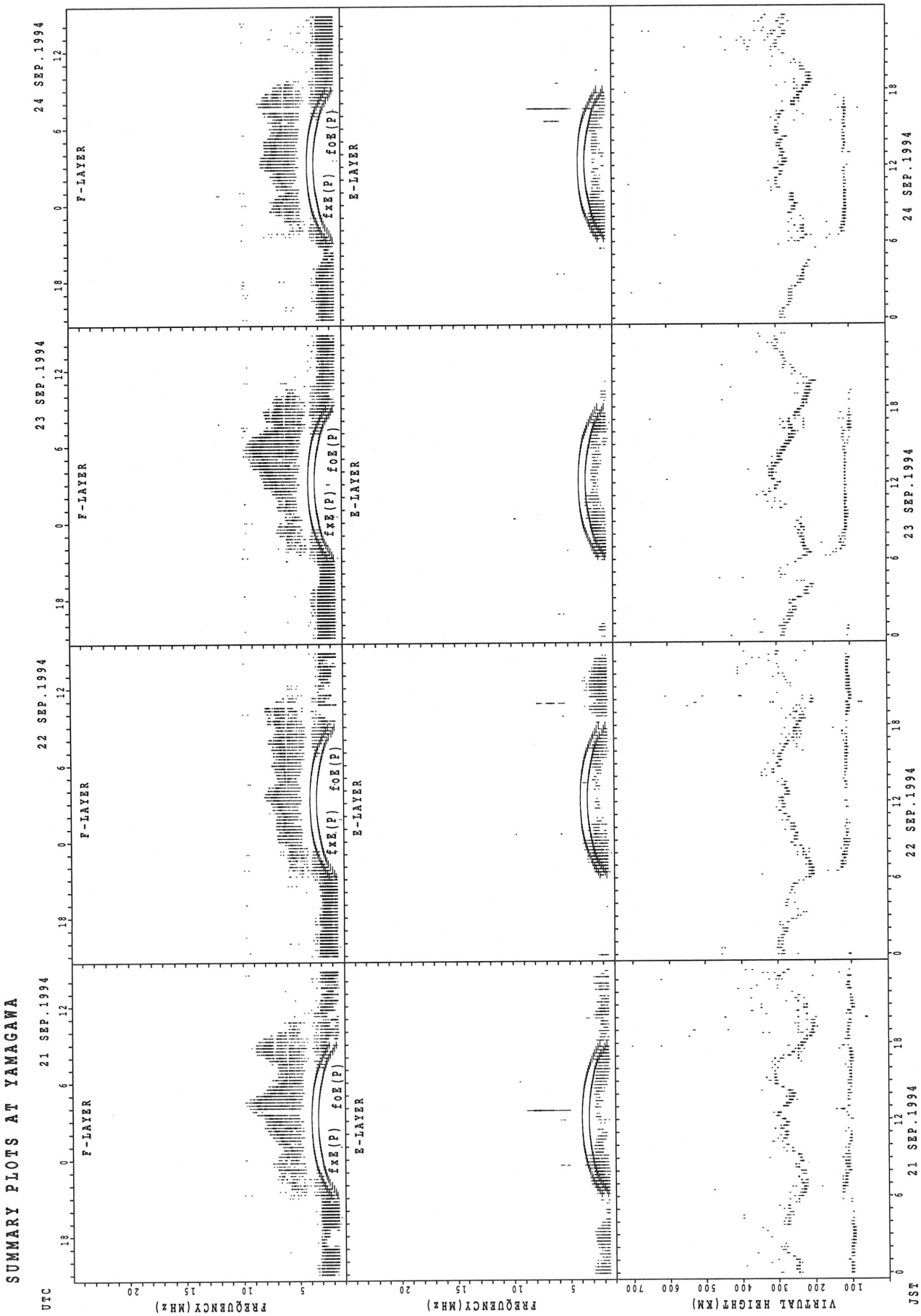


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

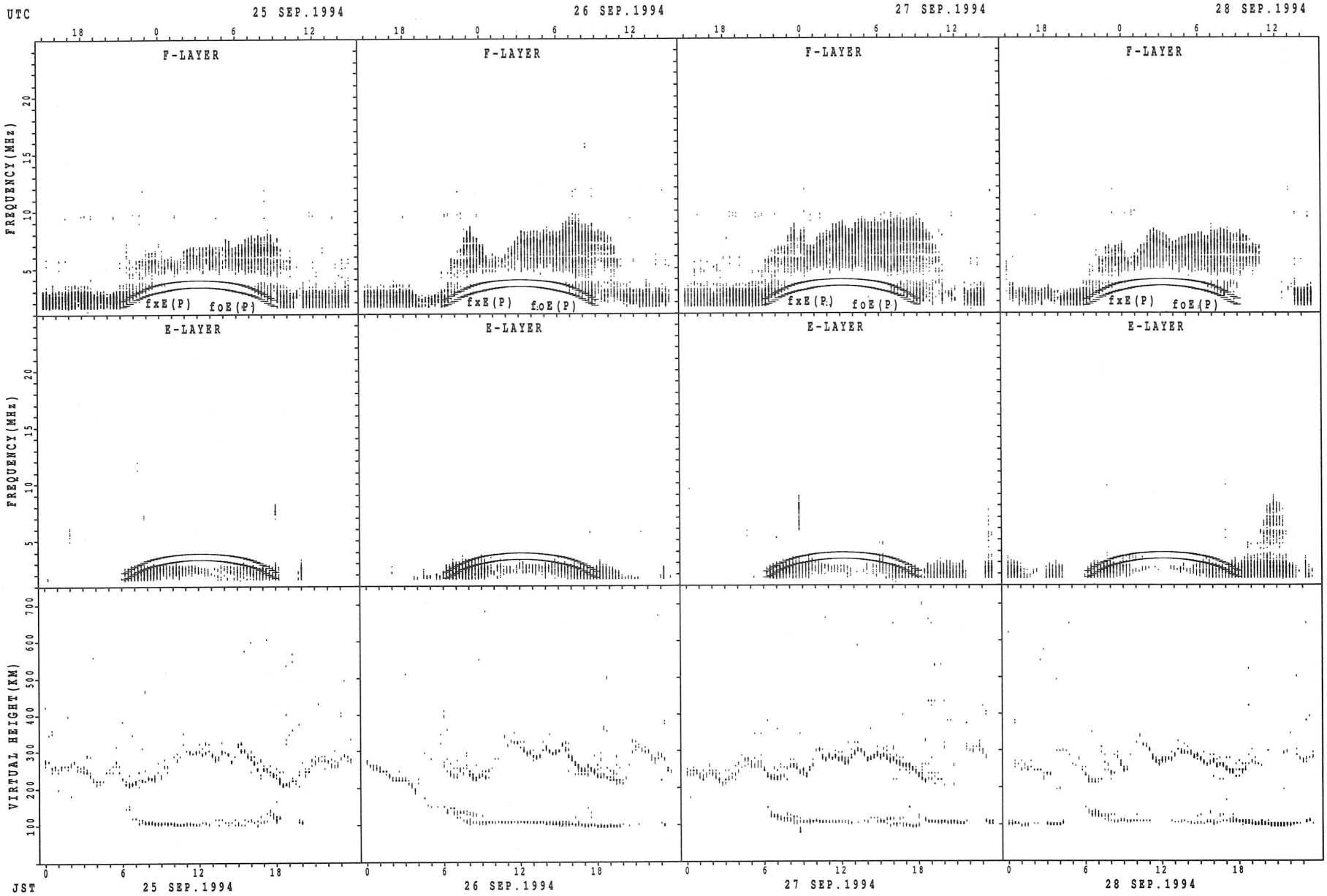
SUMMARY PLOTS AT YAMAGAWA



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

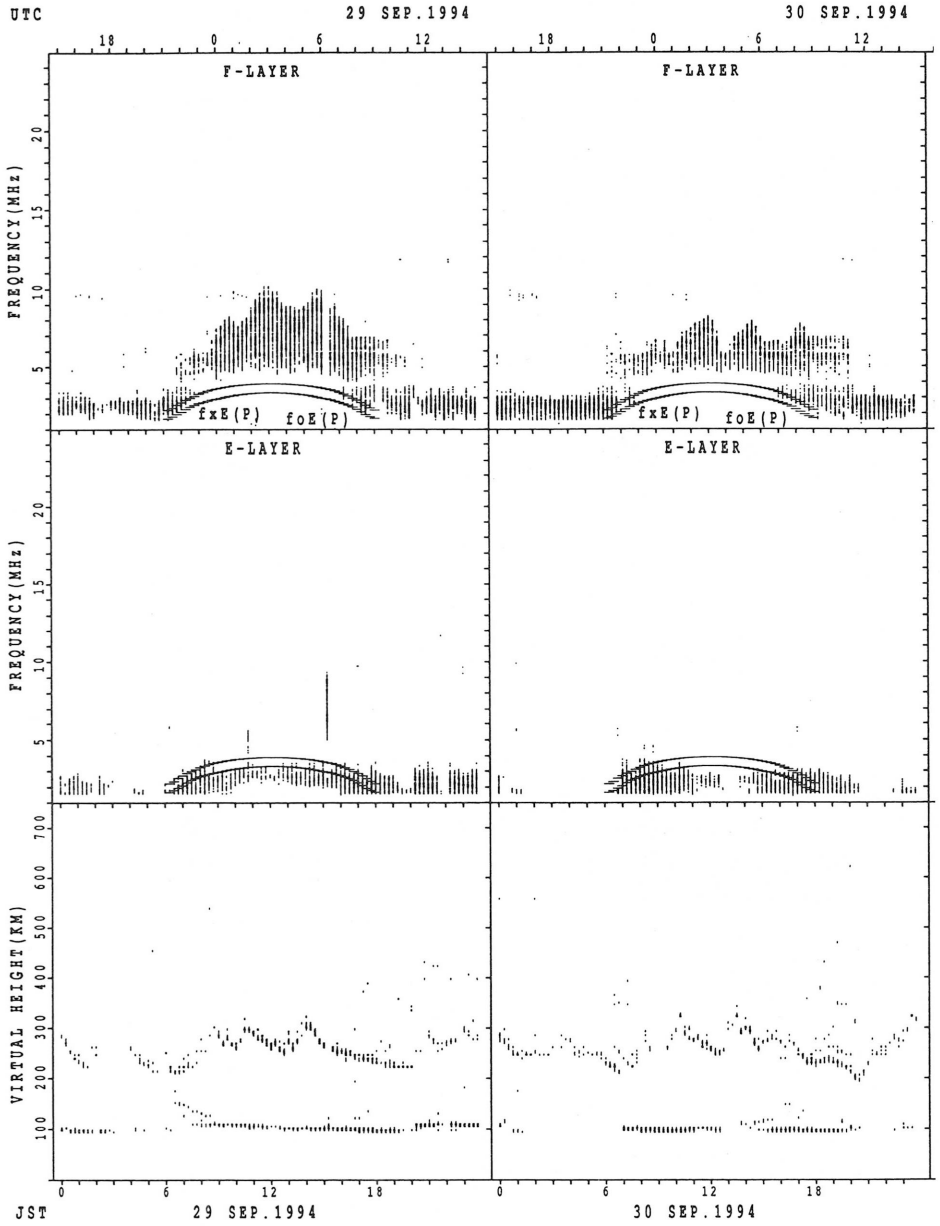

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
21 SEP.1994
22 SEP.1994
23 SEP.1994
24 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



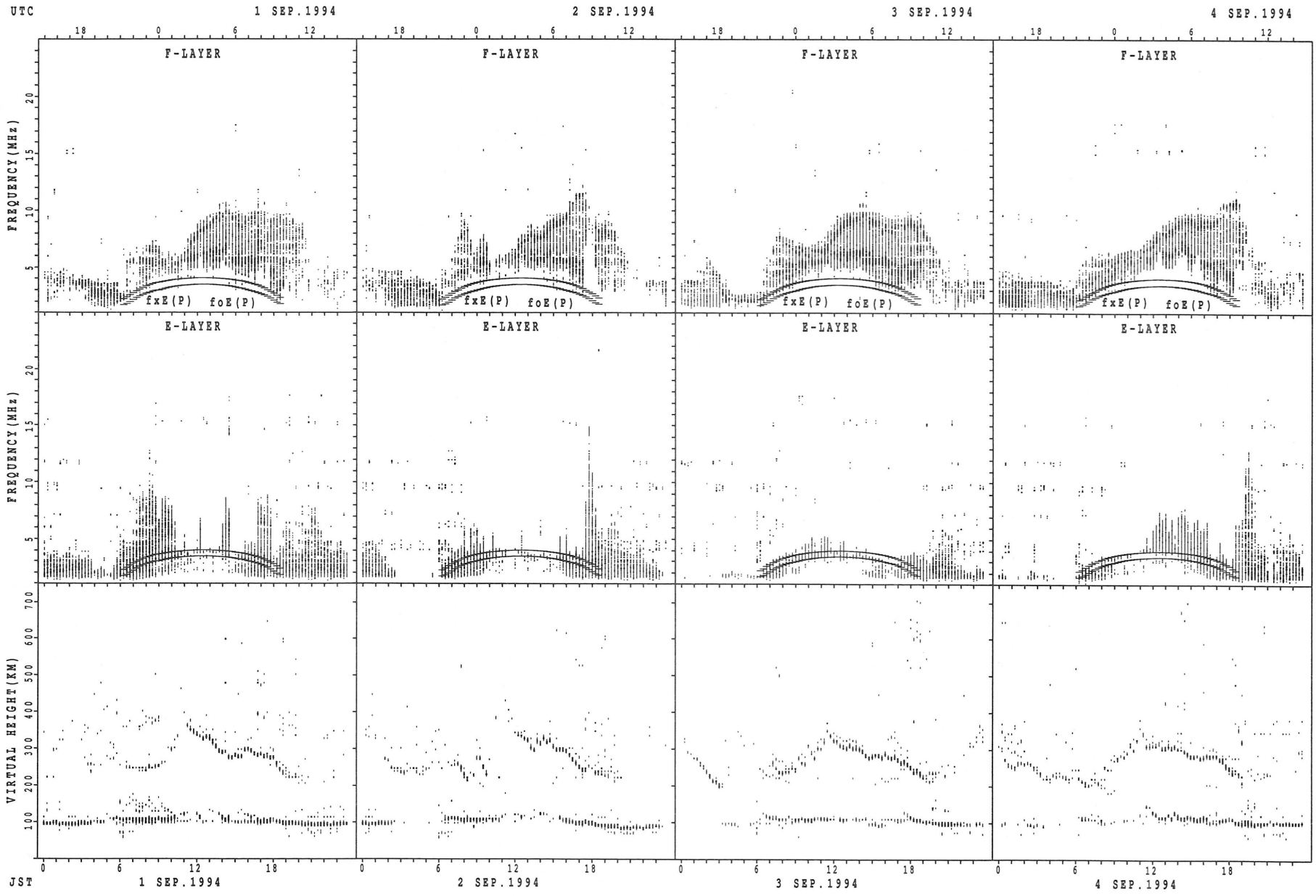
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

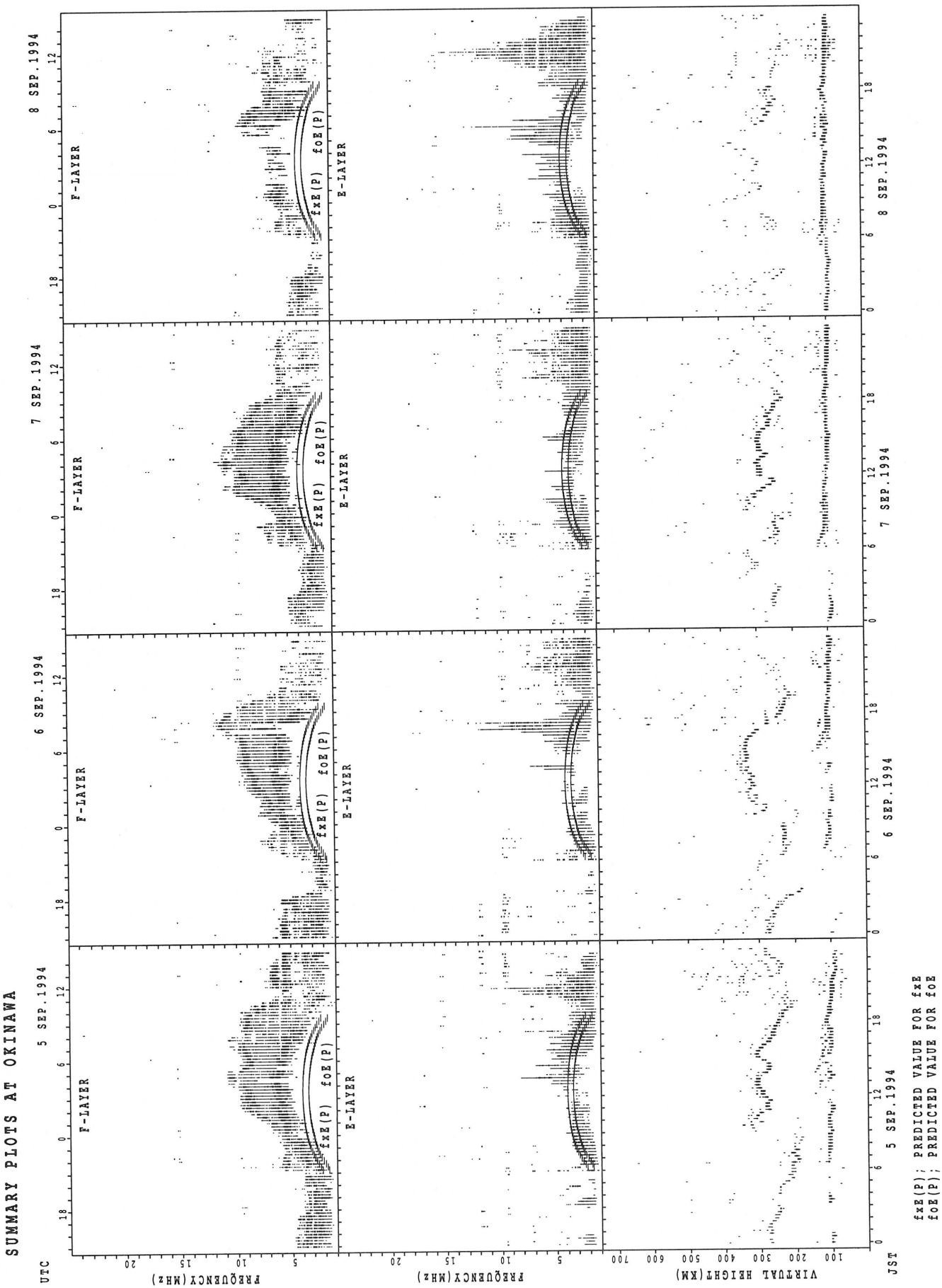


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

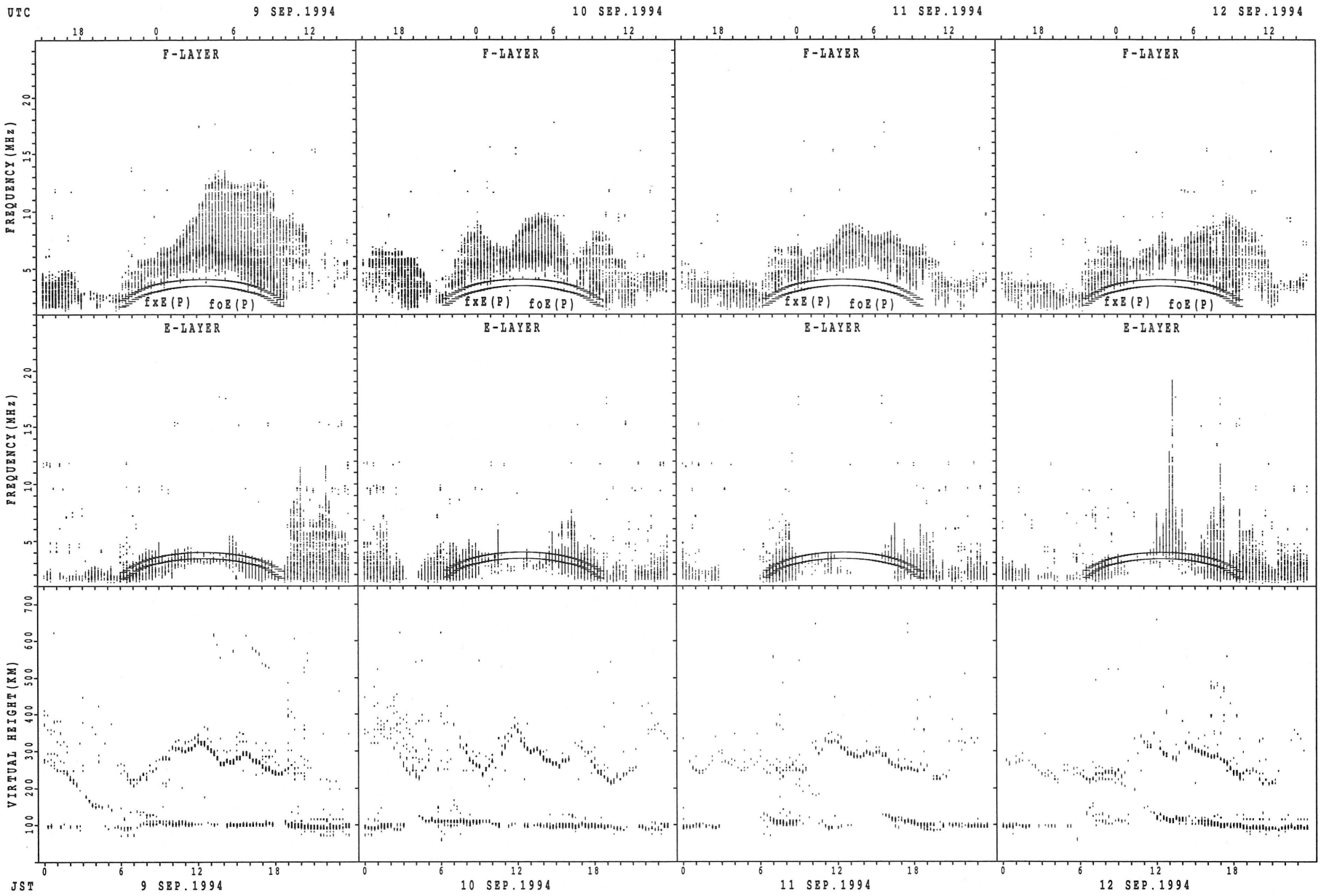
SUMMARY PLOTS AT OKINAWA



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

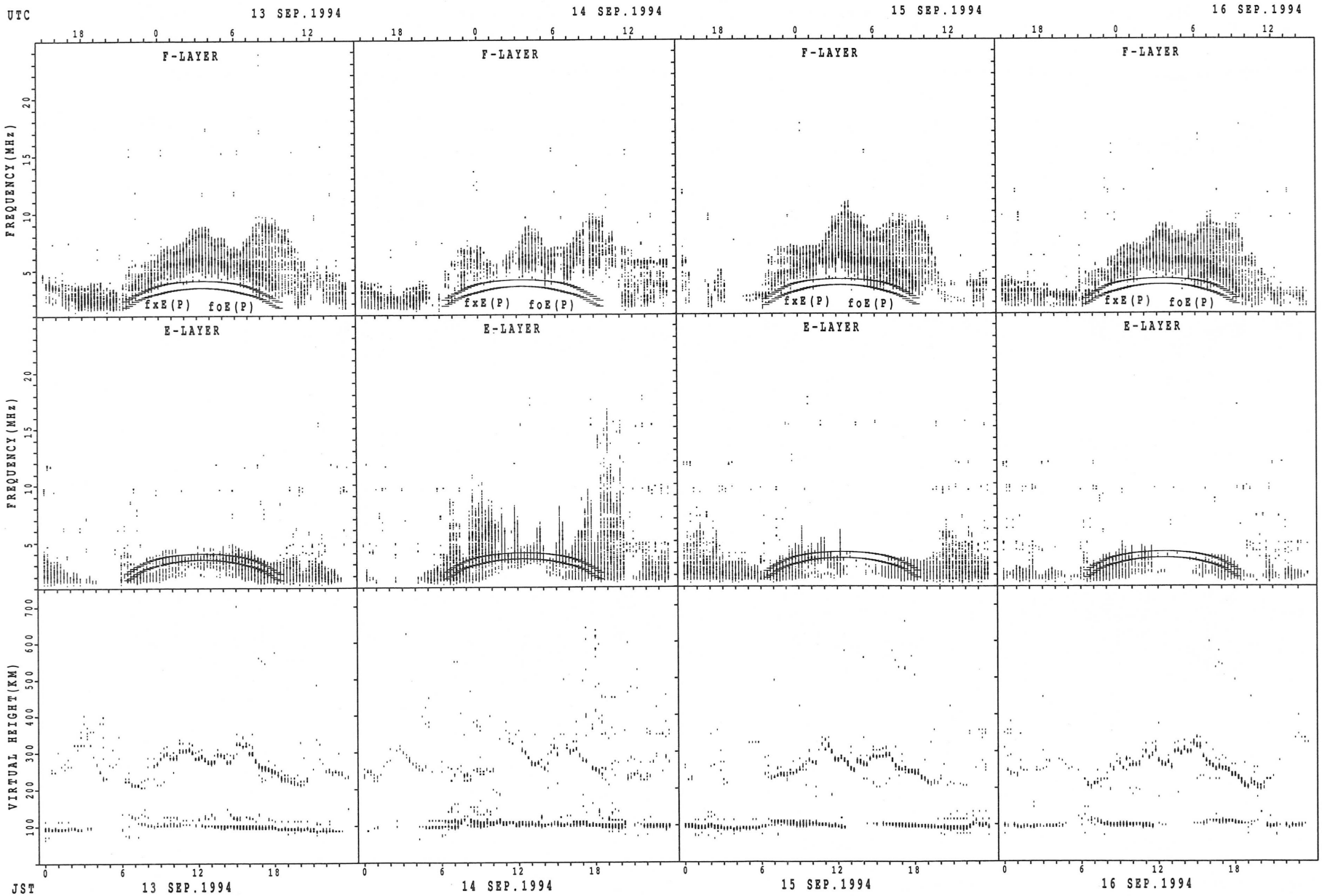

SUMMARY PLOTS AT OKINAWA
UTC
JST
5 SEP.1994
6 SEP.1994
7 SEP.1994
8 SEP.1994
F-LAYER
E-LAYER
fxE(P) foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



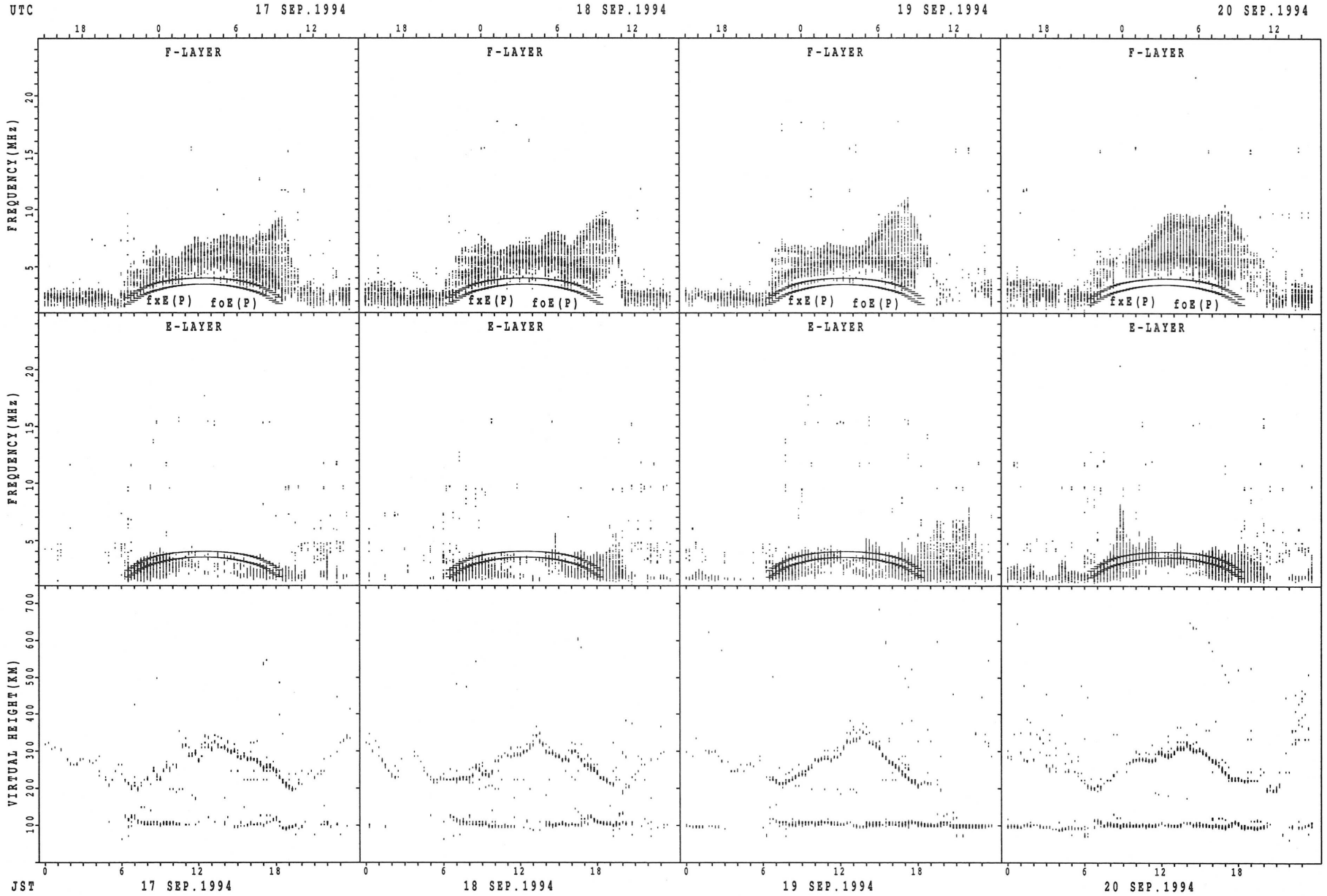
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

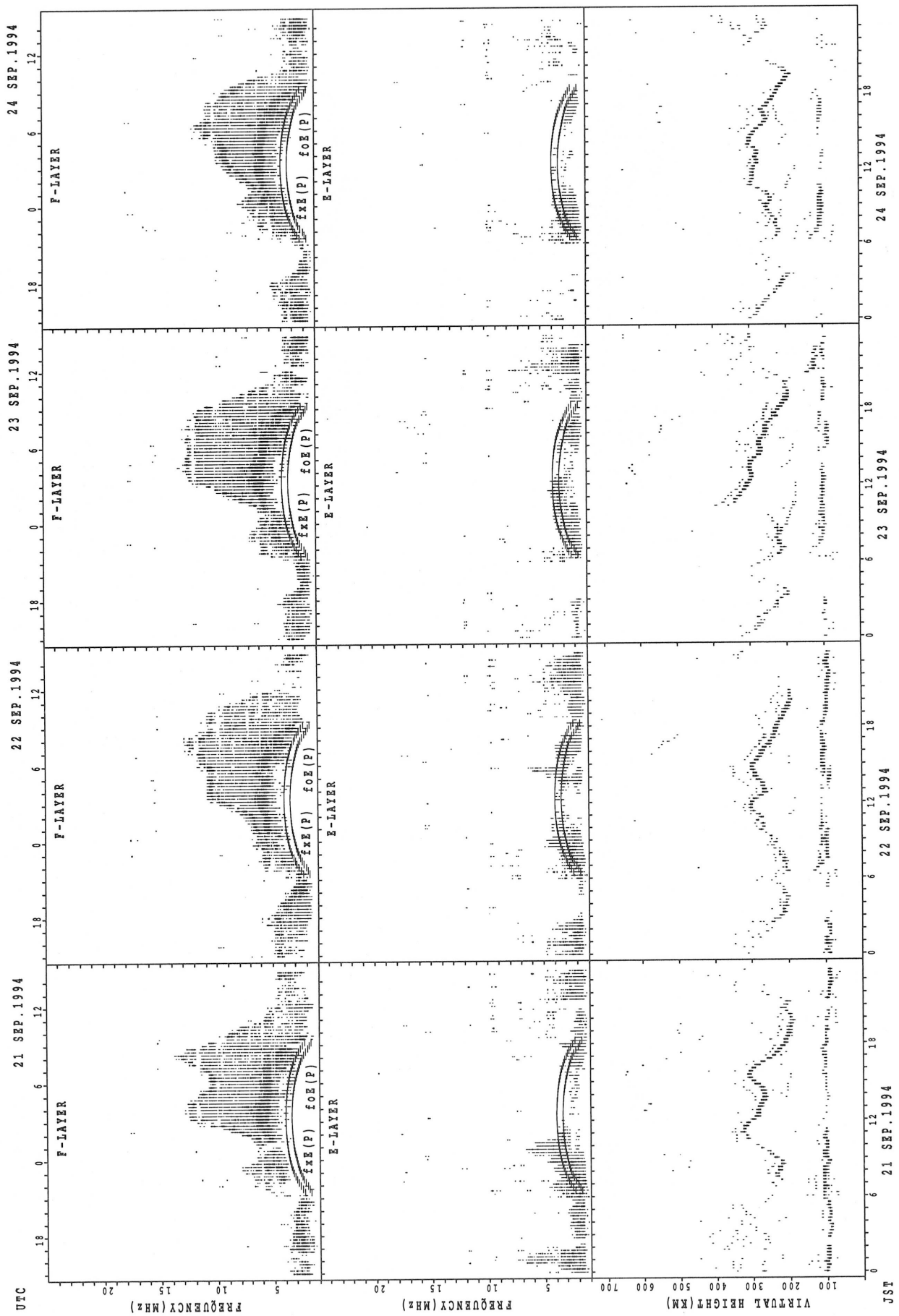


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

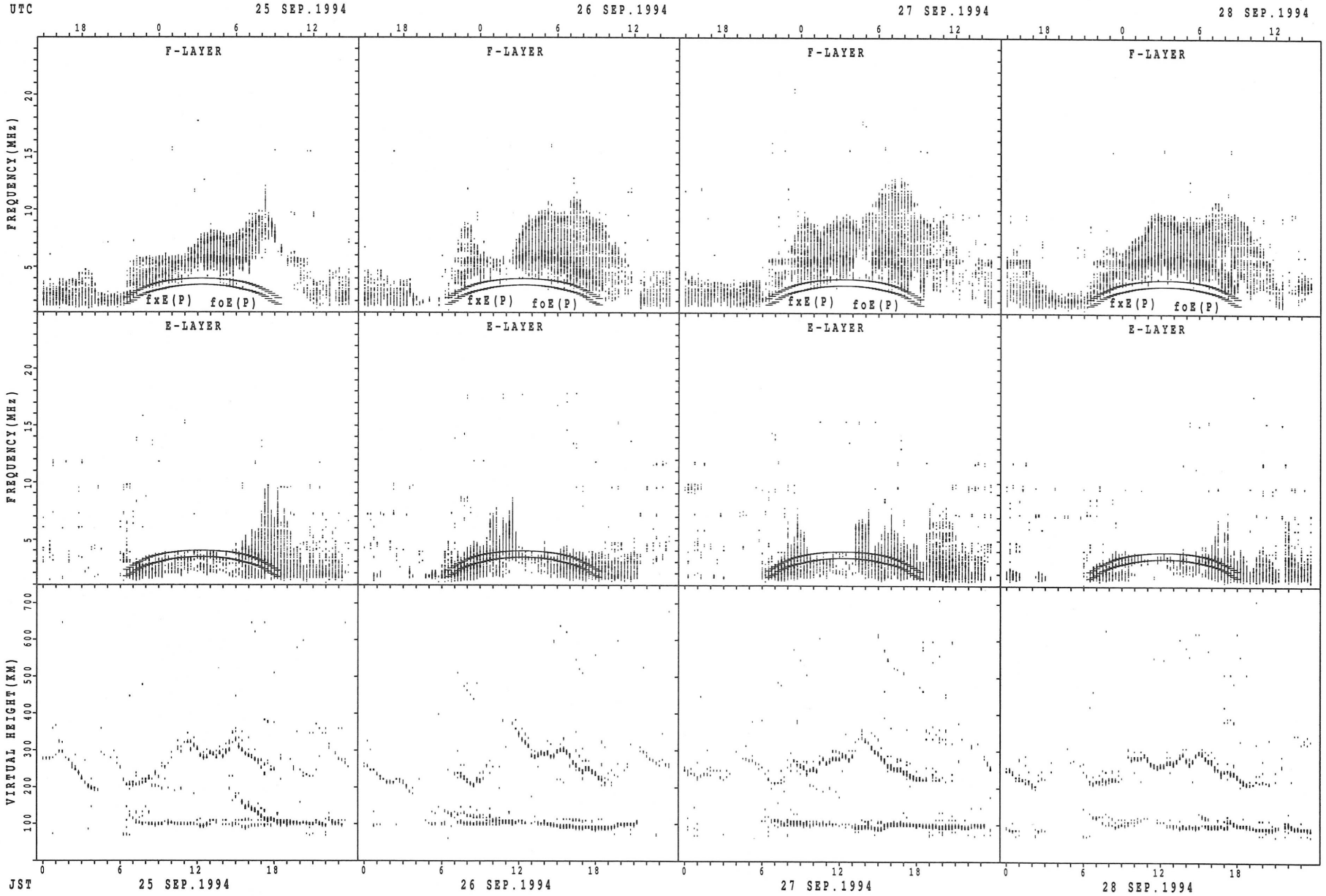
SUMMARY PLOTS AT OKINAWA



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

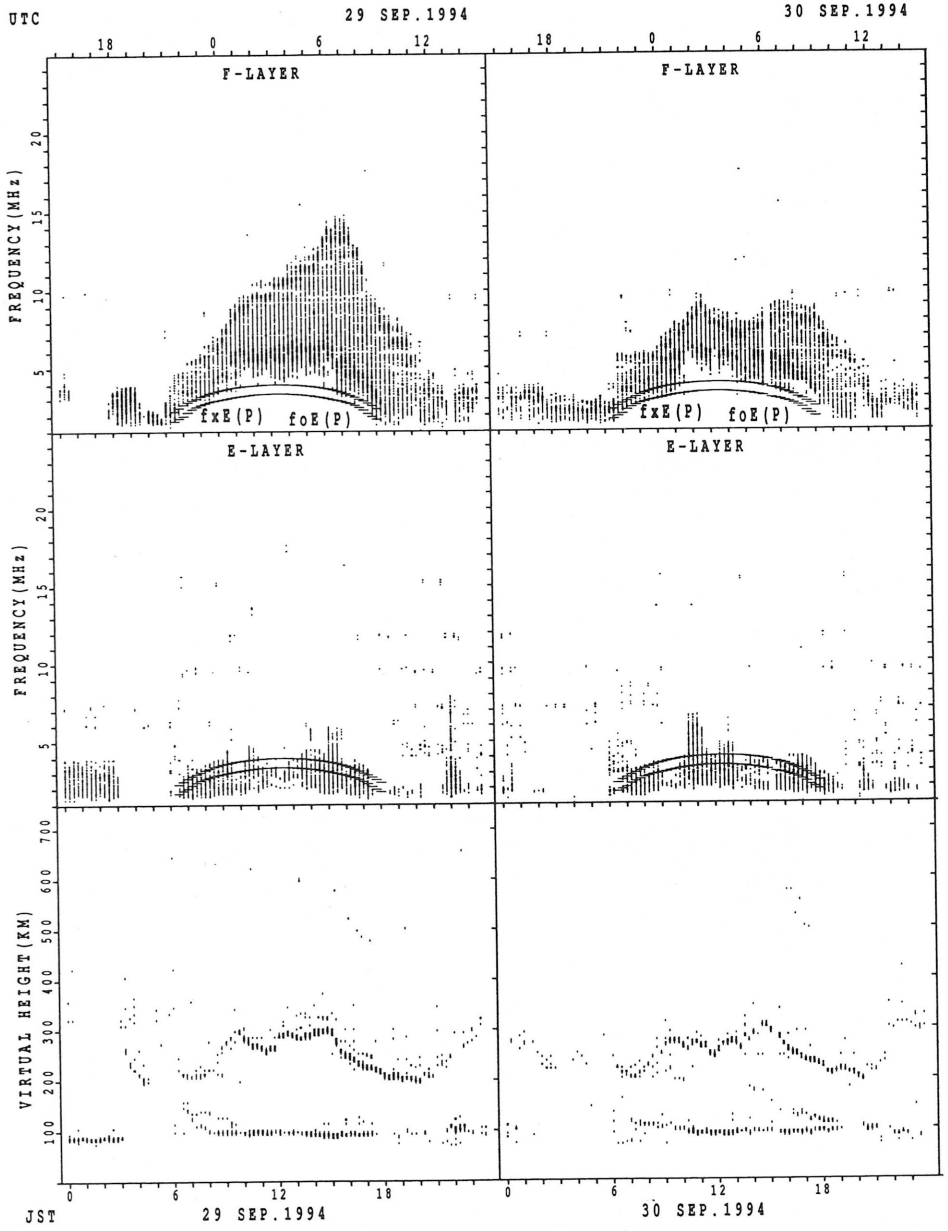

SUMMARY PLOTS AT OKINAWA
UTC
JST
21 SEP.1994
22 SEP.1994
23 SEP.1994
24 SEP.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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

SUMMARY PLOTS AT OKINAWA



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

MONTHLY MEDIANS OF h'F AND h'Es

SEP.1994 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																								
MED																								
U Q																								
L Q																								

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	16	13	16	15	16	22	29	27	29	30	30	29	29	26	28	27	28	24	23	23	26	23	19
MED	100	101	101	105	107	106	113	111	107	105	107	106	105	107	107	110	113	113	107	107	103	103	103	99
U Q	105	103	106	113	117	115	119	117	111	107	109	113	112	113	117	113	123	117	113	111	109	105	105	105
L Q	97	96	99	103	103	104	109	105	103	103	105	103	100	101	103	106	109	109	102	101	99	99	99	97

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									20	13			13		12		12	10		11				
MED									256	260			306		307		292	273		268				
U Q									276	286			318		325		302	288		278				
L Q									248	255			286		290		281	264		256				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	18	11	10			12	25	29	30	30	27	29	24	25	28	27	30	25	25	17	22	23	18	16
MED	103	99	101			107	119	113	112	109	107	109	108	107	111	113	119	115	111	107	106	105	105	104
U Q	105	105	103			118	127	119	115	113	111	113	113	113	115	123	125	123	111	111	111	107	105	107
L Q	99	97	97			102	112	108	107	105	105	106	105	105	104	107	113	109	101	103	101	101	103	100

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									13	13	17	16	20	19	22	20	27	27	25	19				
MED									250	250	300	295	292	290	304	300	296	272	258	262				
U Q									263	263	310	310	311	302	322	328	314	286	266	276				
L Q									244	244	270	284	283	276	290	278	286	264	246	254				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	17	11				11	30	30	28	28	24	23	21	24	28	30	28	25	25	24	24	19	17
MED	105	103	103				125	119	113	111	113	110	111	109	110	111	116	115	113	111	107	106	105	107
U Q	107	107	105				127	143	115	113	113	114	113	113	113	113	125	120	116	113	111	110	107	111
L Q	104	101	99				119	117	111	109	107	107	105	106	107	107	109	110	107	105	105	102	103	105

MONTHLY MEDIANS OF h'F AND h'Es

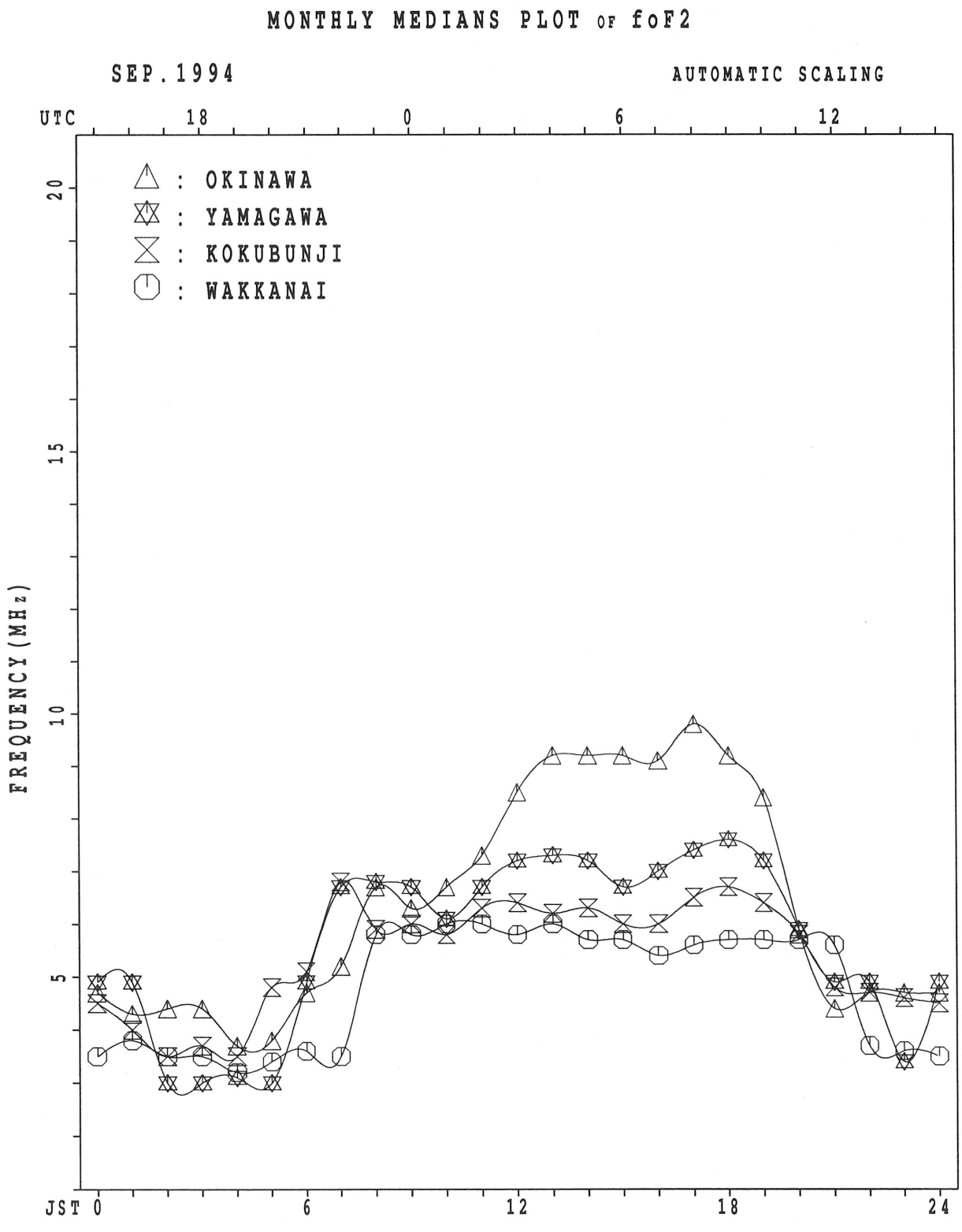
SEP. 1994 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									16	16	19	21	27	26	28	29	27	28	29	18				
MED									238	258	288	300	298	291	290	294	284	254	246	231				
U Q									254	297	298	317	320	302	304	304	294	263	249	246				
L Q									232	249	270	279	284	270	281	282	266	241	229	218				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	15	13				12	26	29	30	28	26	26	23	23	28	28	30	26	25	22	21	23	23
MED	96	97	95				107	116	109	110	109	106	112	105	109	106	107	107	106	99	99	97	99	97
U Q	99	101	100				113	121	113	111	113	113	147	131	119	124	115	113	111	105	105	103	105	101
L Q	93	95	90				84	109	107	105	104	103	103	101	103	100	105	101	101	96	95	93	91	91


MONTHLY MEDIANS PLOT OF foF2
SEP. 1994
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

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

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

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

SEP. 1994 FXI (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								U L 390			445	455	L 445	445	445		L 405							
2							L			U A 420			445	440	L 460	430	U L 420	U L 315	L					
3								L	L 420	420	445	440	455	445	L 440	L 430	420	U L 340						
4							L	U L 370	U L 430	415	495	460	U A 455	440			L 405	L						
5							L	U L 395	420	L 440	L	465	U R 465	445	L 445	440	415	U L 365						
6							L	L	L 420	430	L 445	470	470	440	470	L 440	415	L						
7								365	420				455	455	U A 445	430	L 390							
8									U A 370	U A 405	420	440				430		L						
9							L		420			440	445	U A 455	U R 460		L 390							
10									380	430		415	420	420	420	L 420	U L 405	L						
11								U L 390	395	430	L 415	455	440	420	405	R 405	U L 380	L						
12									L	430	455				420		U L 420	L						
13							L		390		430	440	440		430	415	390	L						
14									L 405	L 420		445		440	405	L 420								
15								L	405	405	420	440	445	440	420									
16								U L 345	L 395	420	420	420	430	430	420	I C 410	U L 370	L						
17								L	U L 395	L 415	430	430	430	415	415	U L 405	U L 390	L						
18								U L 370	U L 415	420	440	L 430	420	L 430	430	U L 420	L	L						
19								U L 380	U L 415	420	U L 430	440	L 440	445	U L 430	L 420	U L 355							
20								L	U L 415	430	420	440	440	440	420	395	U L 380							
21								L	L 395	420	430	440	445	440	415	U L 410	L 390	L						
22								L	U L 405	L 420	430	440	440	440	L 430	U L 415	L							
23									L 395	405	430	430	430	430	430	L 395	U L 380							
24								L	L	415	430	440	430	440	430	U L 415	L 380							
25									U L 390	L 415	430	430	440	R 440	420	L 380	U L 390							
26								L	U L 430	L	U L 415	L	455		L 420	L 420	405	L						
27								L	U L 420	L 420	L 445	L 455	L 455	L 455	L 440	L	L	L						
28								L	U L 430		U L 430	L 440	440	L 430	430	395								
29							L	L 305	L 415	U L 420	U A 420	440	440	U L 430	430	U L 420	L							
30									L	L	430	440	445	L 430	L	L	L							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								9	25	23	24	26	27	26	27	23	21	3						
MED								U L 370	L 415	420	430	440	440	440	430	L 420	L 390	U L 340						
U Q								U L 390	U L 420	430	442	445	455	445	440	430	410	U L 365						
L Q								L 355	395	415	420	440	440	430	420	405	U L 380	U L 315						

SEP. 1994 FOF1 (0.01MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A 305	A	A	A	A	340	330	305	A	A	A					
2							A	A	A	A	A	A	A	R	A 320		A	A	A					
3							A	A	A	A	A	R 340	A	A	A	A	265	A	A					
4							A	255	295	A	345	365	365	345	340	315	275	225	B					
5							A	A	A	A	A	A	340	B	R 315	315	A	A	B					
6							A	A	295	315	R	350	345	345	330	295	265	A 225	B					
7							A	A 240	A	A	A	R	A	A	A	305	265	190	B					
8							A	A	275	315	A	A	A	A	330	295	A	A	B					
9							A	A	280	A	A	R 340	A	A	A	A	A	215	B					
10							A	A	A	R 320	A	A	R	A	305	A	A	205	B					
11							A	A	A	A	A	340	340	320	295	295	275	A	B					
12							A	A	A	A	320	340	340	330	305	280	255	A	E					
13							A	240	A 290	A	A	A	A	A	305	A 265	240	A	B					
14							155	225	A	A	A	A	A	A	A	A	A	A	B					
15							B	A	A	A	A	A	A	A	A	A	A	A	A					
16							A	A	A	A	A	330	330	I R 320	295	C	A	A	B					
17							A	A	A	A	U R 320	340	R	320	295	280	230	A	B					
18							A	A	A	315	330	330	330	U R 315	305	275	250	U A 180						
19							A	A	A	A	A	340	A	A	A	250	240	A						
20							A	A	290	315	330	R	330	320	315	250	230	A						
21							A	A 230	265	300	330	340	U R	320	305	270	240	A						
22							200	250	A	A	A	A	A	330	305	A	255	A						
23							165	A	A 295	320	340		R	330	315	275	A	A						
24							A	A	A	A	330	340	345	320	305	280	240	A						
25							A	A	A	265	A	340	340	R 325	315	280	A	A						
26							A	A	290	315	315	325	A	A 320	A	A	230	B						
27							A	A	275	305	330	A	R	315	A	265	230	A						
28							A	A	275	305	A	A	A	A	A	265	A	A						
29							A	A	265	A	315	A	A	320	295	255	A	A						
30							A	A	A	A	315	320	R	R	305	275	240	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							3	6	12	11	12	16	10	17	20	22	17	6	1					
MED							165	240	285	315	325	340	340	320	305	280	240	210	E					
U Q							200	250	292	315	330	340	345	330	315	295	265	225						
L Q							155	230	275	300	318	335	330	320	305	265	235	190						

SEP. 1994 FOE (0.01MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 46	35	J A 39	J A 36	26	J A 39	J A 54	J A 40	J A 50	124	J A 80	J A 56	J A 67	40	J A 53	J A 117	J A 39	59	93	J A 105	68	51	J A 50	42
2	J A 31	J A 45	J A 30	E B 12	J A 31	42	J A 55	67	J A 107	J A 125	J A 69	J A 57	47	G	45	41	J A 45	J A 103	J A 102	J A 110	J A 110	J A 69	J A 44	32
3	34	J A 38	28	J A 33	28	37	34	J A 36	47	38	38	G 24	36	J A 45	37	44	32	31	27	30	J A 43	27	25	32
4	J A 31	23	J A 31	28	S 27	J A 31	39	G 23	32	J A 47	45	47	47	43	50	78	36	46	42	J A 36	J A 47	J A 45	J A 40	38
5	27	26	E B 11	19	E B 12	S 27	37	32	29	33	46	35	38	E B 34	G	G	34	45	J A 92	J A 46	29	29	34	28
6	E B 12	J A 28	E B 11	E B 13	E B 11	E B 12	J A 24	31	G 26	G 26	26	G 25	G 23	G	42	43	32	31	J A 23	J A 45	37	28	27	26
7	26	E B 10	E B 12	E B 10	20	E S 15	30	J A 33	J A 45	J A 69	J A 50	G 34	48	51	55	33	J A 38	J A 43	J A 39	J A 60	E B 11	38	42	J A 48
8	39	J A 31	19	26	28	28	40	J A 39	39	41	38	44	39	44	51	39	J A 87	J A 36	32	J A 31	27	J A 43	27	42
9	E B 12	E B 12	21	19	20	E S 14	J A 25	J A 45	39	J A 56	55	G	38	J A 53	57	110	35	J A 40	60	61	J A 56	J A 87	J A 50	37
10	J A 35	30	J A 31	18	E B 12	31	J A 47	J A 103	33	G	54	38	G 35	34	G 28	29	J A 28	33	J A 33	J A 50	J A 49	J A 27	J A 48	30
11	J A 37	25	J A 24	20	E B 10	23	28	31	37	J A 42	51	G 27	37	G 24	G 23	G	36	J A 34	J A 22	21	J A 36	J A 41	J A 60	J A 39
12	J A 30	25	26	E B 11	E B 11	39	J A 36	J A 50	J A 40	36	47	64	46	75	J A 53	J A 50	G	J A 33	34	29	J A 50	32	21	28
13	26	20	28	26	21	S 25	J A 29	J A 40	37	52	J A 45	J A 40	J A 49	48	42	J A 48	J A 40	J A 78	J A 27	34	33	J A 45	J A 31	23
14	18	16	J A 40	35	28	52	J A 36	J A 75	J A 53	38	76	45	62	57	38	30	J A 161	73	J A 97	112	J A 52	J A 44	30	46
15	36	34	J A 39	J A 36	30	J A 38	E B 16	J A 32	44	57	J A 44	39	37	46	43	61	56	J A 61	J A 54	J A 54	J A 54	28	29	28
16	17	23	18	S 18	E B 11	E S 15	28	38	31	44	37	G 25	G 28	G 29	G 30	C	32	30	23	23	30	28	28	24
17	28	25	22	19	21	J A 40	J A 59	42	42	J A 39	40	G 22	G 27	G 28	G 23	32	31	J A 31	J A 27	19	23	J A 29	19	24
18	E B 11	25	20	E B 12	E B 12	19	36	32	34	G	G 27	G	G	G	G	35	32	29	26	20	20	28	19	32
19	25	22	E B 10	E B 12	E B 13	E B 13	28	J A 35	33	33	36	G	J A 44	55	34	G 21	J A 40	70	33	J A 26	E B 10	27	E B 12	18
20	23	18	19	J A 35	18	J A 42	J A 26	37	G	G	G	G 27	G	G	G	29	33	J A 33	J A 35	34	S 18	28	J A 45	E B 10
21	J A 34	E B 10	18	E B 10	E B 12	30	J A 25	31	J A 38	35	G 28	G 29	G	G	G	G 23	29	32	26	E B 10	J A 19	S 28	28	J A 42
22	J A 38	J A 45	18	E B 10	E B 11	26	28	36	33	34	33	37	34	G 31	G 26	J A 36	G	32	32	44	J A 49	J A 44	J A 44	28
23	18	20	E B 10	E B 10	E B 11	E B 13	23	J A 24	28	G	G	G 21	G 25	G 31	G	G	31	28	25	S 20	20	J A 26	E B 10	23
24	E B 11	E B 10	20	E B 12	J A 32	E S 15	23	32	37	33	G	G	G	G	G	G	G	21	E B 12	E B 10	E B 11	E B 11	E B 11	E B 11
25	17	J A 40	E B 12	36	E S 14	J A 49	39	29	J A 30	J A 34	34	G 30	G 23	G 28	33	G 19	26	22	27	E B 10	18	19	E B 12	E B 11
26	24	20	J A 37	18	J A 26	E S 14	J A 35	35	38	44	39	37	37	J A 51	J A 34	J A 30	29	E B 17	E B 12	26	J A 35	E B 12	18	E B 10
27	J A 36	E B 10	E B 10	18	E B 10	25	31	29	J A 36	38	G	38	G 28	G 25	29	G	G 20	20	21	23	55	47	55	51
28	26	25	E B 11	23	23	E S 13	23	30	37	J A 44	J A 41	42	36	38	31	32	82	J A 79	51	J A 35	J A 37	30	24	J A 36
29	J A 50	J A 48	J A 31	28	18	26	21	23	33	J A 38	J A 45	38	38	G 20	G	31	23	J A 22	55	J A 47	31	31	23	J A 33
30	18	E B 11	31	J A 19	J A 37	33	53	99	J A 49	36	G 24	G 27	G 28	42	G	G	28	J A 23	J A 23	25	28	24	33	E B 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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30
MED	26	25	20	19	19	26	30	35	37	38	40	G	36	34	32	32	32	33	32	32	34	29	28	29
U O	J A 35	J A 31	J A 31	28	27	J A 38	39	J A 40	J A 42	J A 44	47	40	44	46	43	44	J A 39	46	51	J A 47	J A 49	J A 44	J A 44	38
L O	18	E B 18	E B 12	E B 12	E B 12	E S 15	25	31	33	G 33	G	G 27	G 34	G 31	G	G	28	29	25	23	20	27	21	E B 23

SEP. 1994 FOES (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	19	E B 11	13	18	E B 11	14	18	28	46	A A 124	43	42	39	40	37	A A 117	31	43	A A 93	A A 105	26	15	15	13
2	18	13	13	E B 12	E S 13	E B 13	26	47	A A 107	42	A A 69	48	37	G	35	38	34	26	13	28	17	21	19	E B 10
3	E B 12	E B 10	E B 10	16	14	15	22	25	37	37	37	G 21	36	41	U Y 37	32	29	22	16	13	E S 14	E B 11	13	E B 13
4	14	E B 12	E B 13	14	E B 13	17	18	G 20	31	36	37	43	46	40	46	A A 78	34	34	21	16	20	19	19	23
5	20	17	E B 11	E B 10	E B 12	14	22	26	29	32	41	34	38	E B 34	G	G	31	28	25	19	15	15	16	E B 11
6	E B 12	12	E B 11	E B 13	E B 11	E B 12	21	27	G 22	G 20	E B 21	G 23	G 21	G	39	39	30	27	15	18	18	14	14	E B 10
7	13	E B 10	E B 12	E B 10	E B 10	E S 15	16	27	35	A A 69	49	G 34	41	42	45	32	G 21	35	19	13	E B 11	15	18	17
8	17	13	13	E B 13	A A 28	15	A A 40	35	37	41	35	38	38	A A 44	A A 51	37	A A 87	22	16	18	E S 16	E B 10	E B 11	E B 10
9	E B 12	E B 12	E B 10	E B 10	14	E S 14	E B 11	35	35	51	51	G	38	46	40	A A 110	28	27	34	A A 61	21	13	22	13
10	E B 11	16	13	E B 10	E B 12	E B 11	A A 47	A A 103	29	G	46	U Y 38	G 35	34	G 26	29	28	25	20	21	17	13	23	13
11	14	E B 10	15	E B 10	E B 10	14	23	28	30	33	37	G 25	37	G 23	G 22	G	31	25	14	16	23	15	28	13
12	14	E B 11	E B 12	E B 11	E B 11	E S 13	18	24	33	35	44	58	44	A A 75	36	37	G	18	12	14	20	15	15	16
13	14	E B 10	13	13	E B 10	E B 10	18	27	32	41	37	39	35	U Y 46	G 23	37	32	23	E B 13	18	13	23	15	E B 10
14	E B 11	12	A A 40	15	13	A A 52	25	29	33	36	A A 76	39	52	40	33	28	A A 161	A A 73	A A 97	18	20	13	16	14
15	14	E B 10	14	14	13	15	E B 16	23	32	34	37	37	37	38	34	50	37	18	18	17	23	17	13	E B 11
16	13	E B 10	12	13	E B 11	E S 15	E B 10	25	28	36	35	G 24	G 25	G 28	G 21	C	23	18	14	E B 11	E B 10	E B 10	E B 10	E B 10
17	18	E B 10	E B 10	13	E B 10	13	14	26	31	33	38	G 22	G 24	G 23	G 20	32	28	21	13	13	13	15	15	E B 10
18	E B 11	E B 13	E B 10	E B 12	E B 12	E B 10	E B 12	23	28	G	G 21	G	G	G	G	33	29	22	14	E B 12	E B 11	E B 10	E B 13	E B 12
19	13	E B 11	E B 10	E B 12	E B 13	E B 13	20	25	31	32	36	G	40	42	32	G 17	32	56	24	E B 12	E B 10	E B 11	E B 12	14
20	13	E B 13	13	15	13	E B 12	16	27	G	G	G	G 26	G	G	G	29	28	19	E B 11	13	13	E B 10	15	E B 10
21	13	E B 10	12	E B 10	E B 12	E B 13	18	28	33	33	G 25	G 26	G	G	G	G 20	G 19	19	E B 11	E B 10	E B 10	E B 12	13	E B 11
22	E B 12	E B 11	E B 10	E B 10	E B 11	13	22	28	30	32	33	37	U Y 34	G 28	G 24	28	G	21	18	20	15	15	E B 11	E B 10
23	E B 11	E B 11	E B 10	E B 10	E B 11	E B 13	18	23	28	G	G	G 20	G 23	G 29	G	G	26	15	E B 13	13	15	E B 10	E B 10	E B 10
24	E B 11	E B 10	E B 11	E B 12	E B 11	E S 15	18	26	32	32	G	G	G	G	G	G	G	18	E B 12	E B 10	E B 11	E B 11	E B 11	E B 11
25	13	E B 11	E B 12	E B 10	E S 14	15	19	27	28	G 18	33	G 26	G 23	G 24	G	G 18	25	16	14	E B 10	14	E B 10	E B 12	E B 11
26	14	13	E B 10	E B 11	E B 10	E S 14	20	28	33	39	38	36	34	47	31	28	28	E B 17	E B 12	E B 10	E B 12	E B 12	E B 10	E B 10
27	E B 10	E B 10	E B 10	13	E B 10	16	18	27	33	35	G	36	G 27	G 23	28	G	G 15	16	14	E B 12	25	25	28	A A 51
28	E B 12	E B 12	E B 11	E B 10	E B 11	E S 13	20	26	32	38	38	37	36	37	31	32	A A 82	44	30	15	E B 11	E B 11	E B 10	18
29	13	20	17	E B 11	E B 12	13	E B 11	23	32	37	42	36	37	G 19	G	28	23	14	36	16	15	13	E B 10	19
30	11	E B 11	19	E B 10	13	12	U A 27	A A 99	28	33	G 21	G 27	G 27	32	G	G	28	18	13	E B 12	16	E B 10	13	E B 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	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30
MED	13	E B 11	E B 12	E B 12	E B 12	E 14	18	27	32	34	37	G	36	E G 33	G	29	28	22	14	14	15	13	14	E B 12
U Q	14	13	13	13	13	15	22	28	33	38	42	38	38	41	36	37	32	27	21	18	20	15	16	14
L Q	E B 12	E B 10	E B 10	E B 10	E B 11	E B 13	E B 16	25	29	G 32	G	G 26	G 34	G 29	G	G	G 23	18	E B 13	E B 12	E B 12	E B 11	E B 11	E B 10

SEP. 1994 FBES (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

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

SEP. 1994 FMIN (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D/H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 310	J F 275	F 300	F 360	F 315	S 310	J S 330	J R 355	360	A	330	315	310	305	320	A	345	325	A	A	S	300	S 325	310
2	320	325	F 310	305	F 330	J S 290	315	320	A	375	A	330	280	315	325	320	330	330	330	340	345	S 320	305	F 305
3	F 295	F 315	F 315	F 310	325	S 335	325	320	335	370	U R 345	320	315	320	345	330	335	340	305	335	J S 340	315	F 290	F 310
4	310	310	S 345	F 330	S 325	J S 340	J R 350	385	375	V 355	G	325	320	320	R 330	A	325	340	320	325	J S 330	S 330	315	315
5	305	295	315	320	320	S 330	325	J S 380	380	345	335	300	335	335	320	325	315	J R 330	S 340	330	310	335	F 285	305
6	300	305	315	355	325	J S 345	330	J S 375	350	350	R 350	315	325	340	315	310	325	325	J R 345	320	S 315	300	300	280
7	F 310	320	320	285	300	U S 275	300	295	300	A	345	355	310	325	305	320	325	345	325	340	280	S 280	305	345
8	305	305	335	310	A	S 355	A	J R 275	290	325	G	G	R 270	A	A	S 280	A	325	310	290	315	265	300	295
9	320	340	340	320	305	300	345	385	315	345	325	330	310	320	310	A	335	335	J R 325	A	J R 330	F 295	F 310	F 315
10	300	F 295	F 300	305	F 295	J S 310	A	A	305	R 335	305	315	300	325	325	325	355	320	315	335	315	F 275	F 295	F 290
11	F 300	320	300	320	345	S 365	S 330	310	J R 350	355	320	275	330	325	R 360	350	330	325	350	335	310	285	325	310
12	310	295	305	320	350	S	J R 365	365	360	355	340	J R 300	R 335	A	330	320	335	350	325	320	325	315	315	325
13	335	305	310	F 280	F 295	U S 300	J R 360	390	340	330	J R 330	315	340	330	325	340	340	340	S 340	350	305	F 290	F 275	F 335
14	F 350	340	A	325	345	A	380	355	J R 335	350	A	355	320	330	335	320	A	A	A	340	F 305	335	F 315	F 290
15	F 330	F 320	F 320	335	325	J S 310	325	345	345	375	325	345	340	340	325	355	350	330	345	325	F 295	F 290	F 305	F 295
16	F 310	325	345	295	300	325	355	365	365	355	300	350	345	330	335	I C 335	335	345	345	355	355	S 365	315	300
17	305	325	300	325	320	S 330	S 370	360	380	355	345	350	R 345	325	335	325	345	330	S 335	355	335	295	320	320
18	S 330	330	S 310	300	330	S 360	J S 360	360	370	355	345	325	335	320	330	330	340	335	330	350	325	325	J R 335	345
19	315	S 330	325	325	330	U S 335	365	J S 380	400	385	345	340	350	320	320	310	345	340	335	335	385	S 295	J S 300	F 300
20	F 300	F 320	320	315	315	320	J R 385	385	385	365	370	345	330	310	315	315	330	360	345	335	330	J S 290	J F 295	F 330
21	F 335	340	325	310	330	S 350	J R 365	360	365	360	360	345	355	335	345	340	325	345	350	355	350	J F 300	F 295	F 290
22	F 305	F 310	F 325	345	F 330	S 285	J R 350	395	370	365	355	355	350	335	335	355	355	345	350	345	345	F 280	J F 290	F 315
23	F 310	F 325	355	360	355	U S 360	380	J R 380	S 370	370	340	340	325	325	335	335	360	330	345	335	320	320	345	305
24	330	330	345	365	370	I S 375	385	360	385	365	J R 365	315	330	325	345	340	340	355	370	365	S 345	J S 295	315	300
25	300	S	S 340	S 350	S	S 325	370	365	375	370	325	355	370	330	320	335	335	370	345	345	310	J R 305	300	S 305
26	305	310	S 325	330	385	J S 280	350	S 345	355	375	350	310	345	310	340	300	340	335	J S 330	365	S 290	S 295	300	J S 315
27	F 320	F 350	F 335	F 325	F 310	S 315	345	360	J R 350	340	325	330	330	320	325	340	340	330	J S 340	340	345	U F 320	F 310	A
28	325	305	325	350	315	J S 310	J R 355	345	325	335	330	J R 315	350	330	340	330	A	350	335	F 280	305	325	300	F 310
29	315	335	315	F 290	330	S 355	380	340	340	350	315	325	335	330	340	350	360	355	330	320	330	315	F 305	320
30	305	330	325	310	355	J S 315	A	A	370	350	330	355	350	350	325	335	345	345	345	345	350	310	300	335
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	29	30	28	28	27	28	29	28	28	30	30	28	29	27	27	29	28	28	29	30	30	29
MED	310	320	320	320	325	S 325	355	360	360	355	332	328	332	325	330	330	340	340	338	338	325	300	305	310
U Q	320	330	335	335	338	S 348	370	380	372	368	345	345	345	330	338	340	345	345	345	348	345	320	315	320
L Q	305	305	310	310	315	S 310	330	345	338	348	325	315	320	320	320	320	330	330	328	328	310	290	F 300	300

SEP. 1994 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								UL 370	A	A	A 355	A 355	L 365	395	385	A	L 350	A	A					
2							L	A	A	A	A	A	420	355	L 365	365	UL 360	UL 370	L					
3								L	L 375	405	385	395	385	390	L 365	L 365	375	UL 360						
4							L	UL 395	UL 405	420	375	A	A	A 355	A	A	L 370	L						
5							L	UL 380	405	L 410	L	395	UR 395	400	L 370	375	355	UL 370						
6							L	L	L 405	430	L 385	390	380	405	355	L 355	335	L						
7								355	365	A	A	R	A 375	340	A	375	L 385	A						
8							A	A	A	A	415	365	A	A	A	330	A	L						
9							L		370	A	A	420	390	A	UR 380	A	L 370							
10							A	A	390	390	A	Y	405	400	375	L 355	UL 370	L						
11								UL 345	370	390	A	390	405	395	410	R 375	UL 370	L						
12									L	390	A	A	A	A	395	A	UL 355	L						
13							L		390	A	390	405	380	A	380	A	370	L						
14									L 395	L 395	A	A	A	A	385	L 355	A	A	A					
15								L	385	420	355	395	390	390	415	A	A							
16								UL 410	L 415	395	405	415	435	390	370	IC 375	UL 380	L						
17								L	UL 415	L 410	390	435	405	375	375	UL 375	UL 350	L						
18								UL 370	UL 375	425	395	L 390	415	L 390	370	UL 350	L	L						
19								UL 365	L	415	UL 415	390	A	A	UL 360	L 370	A	A						
20								L	UL 385	405	415	395	395	380	350	375	UL 365							
21								L	L 395	395	405	395	375	405	385	UL 360	L 350	L						
22								L	UL 390	L 405	395	415	405	395	L 385	UL 350	L							
23									L 400	430	405	425	405	375	355	L 355	UL 370							
24								L	L	390	395	395	405	370	375	UL 370	L 350							
25									UL 395	L 410	395	395	410	Y	365	L 405	L							
26								L	UL 375	L	UL 410	L	385	A	L 385	L 345	355	L						
27								L	UL 365	L 395	L 395	L 405	L 385	L 355	L 325	L	L	L						
28								L	UL 375	A	UL 380	L 380	390	L 360	365	365	A							
29							L	L 395	L 355	UL 400	A	395	390	UL 380	365	UL 345	L							
30							A	A	L	L	405	380	375	L 380	L	L	L							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								9	23	21	21	23	25	22	26	22	19	3						
MED								UL 370	L 390	405	395	395	390	385	372	L 365	L 365	UL 370						
U Q								UL 395	L 400	418	405	405	405	395	385	375	UL 370	UL 370						
L Q								UL 360	375	395	385	390	382	370	365	L 355	L 350	UL 360						

SEP. 1994 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								255	265	A	330	325	320	325	315	A	270	280	A					
2							305	A 310	A	255	A	340	430	325	310	305	310	280	270					
3								L 285	275	255	290	325	350	330	285	290	325	265						
4							255	215	240	275	G	310	330	310	310	A	310	250						
5							L 285	220	235	275	315	330	300	300	315	315	300	260						
6							270	235	250	265	285	310	300	285	320	315	280	255						
7								375	350	A	A 305	E Y 290	340	360	370	310	275	250						
8							A	A 465	420	325	G	G	445	A	A	420	A	280						
9							240		320	300	360	300	320	310	365	A	290							
10							A	A	315	290	A 380	365	405	335	305	305	275	L 295						
11								335	275	245	320	465	305	300	285	285	275	265						
12									255	270	290	380	300	A	285	270	280	260						
13							255		260	300	305	335	290	305	315	305	270	245						
14									285	305	A	285	A 340	290	295	305	A	A	A					
15								255	255	230	310	280	285	290	285	265	255							
16								235	245	270	355	270	285	300	325	I C 305	270	255						
17								225	240	275	285	280	285	305	300	290	280	275						
18								240	240	250	280	310	310	305	315	310	280	250						
19								230	210	235	270	300	285	325	305	330	275	A						
20								215	240	240	245	280	310	350	315	315	265							
21								240	245	250	255	265	275	280	270	L 270	290	245						
22								220	230	240	250	265	280	280	285	275	265							
23									235	245	270	295	300	295	265	270	250							
24								235	235	255	240	310	285	285	265	280	265							
25									230	240	300	270	255	300	305	265	260							
26								240	240	230	265	L 280	280	A 285	275	320	260	255						
27								235	245	245	275	270	280	285	265	250	255	255						
28								255	295	270	310	310	285	295	280	295	A							
29							215	230	255	290	310	275	265	265	270	260	240							
30							A	A	255	275	275	270	270	255	L 305	275	265							
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							7	22	29	28	28	30	30	28	29	27	27	18	1					
MED							255	238	250	260	295	300	300	300	305	295	275	258	270					
U Q							285	255	275	275	318	325	320	318	315	310	280	275						
L Q							240	230	240	245	272	280	285	285	282	270	265	250						

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	310	295	290	230	250	255	255	215	A	A	A	A	E A 265	230	215	A	A 245	A	A	A	230	255	265	255
2	255	255	280	280	270	295	A 265	A	A	A	A	A	210	Y	210	230	A 245	A 245	240	225	220	265	300	265
3	280	265	270	275	240	265	225	225	A 250	210	245	Y	215	A 250	235	215	225	230	255	240	220	225	295	265
4	270	270	250	230	255	255	225	225	200	195	215	A	A	A	A	A	240	250	270	240	240	230	255	270
5	285	290	280	260	255	260	215	210	195	195	A	H 180	210	200	215	235	225	A 255	235	235	235	225	310	250
6	H 250	250	255	220	240	235	225	220	205	180	200	220	190	215	240	E A 270	245	A 240	235	235	230	270	270	300
7	265	245	245	285	260	305	255	250	230	A	A	Y	A 240	A	A	220	235	A	245	235	300	350	290	270
8	290	280	270	315	A	300	A	A	A	A	215	240	A	A	A	260	A	235	245	275	260	280	270	260
9	255	240	235	235	E A 290	275	220	215	235	A	A	195	215	A	255	A	215	250	E A 270	A	270	270	305	285
10	270	285	270	275	270	260	A	A	205	200	A	Y	205	205	210	215	245	235	270	235	245	350	A 320	305
11	275	265	285	275	220	250	245	245	215	210	A	205	185	215	205	E Y 240	A 245	A 245	235	215	265	310	A	260
12	245	285	285	270	220	260	230	225	205	200	A	A	A	A	A 240	A	205	220	245	245	245	245	275	260
13	225	260	275	305	300	310	235	220	215	A	A 255	205	220	A	240	A	A 235	A 225	230	220	250	295	305	245
14	230	205	A	300	260	A	230	230	220	220	A	A	A	A	225	205	A	A	A	250	300	230	255	265
15	245	285	275	230	240	240	210	200	225	210	A 245	205	215	225	200	A	A	240	230	245	A 330	270	245	260
16	260	265	240	240	295	300	225	210	215	215	185	200	185	205	185	I C 220	230	235	225	210	210	220	245	275
17	300	270	270	280	255	230	225	225	220	210	A 235	185	205	255	220	235	230	260	230	215	230	275	250	240
18	260	255	270	265	260	265	230	220	200	200	200	200	195	205	220	230	250	235	240	215	215	230	240	235
19	235	285	285	265	265	265	235	205	210	200	200	195	A	A	215	235	A	A	230	215	195	300	280	265
20	265	265	280	270	285	270	225	200	200	205	185	H 185	H 200	200	210	220	240	235	225	225	230	285	260	210
21	210	230	265	270	280	265	225	225	A 240	205	200	200	225	200	195	195	225	225	225	210	200	255	300	275
22	260	255	260	225	255	270	215	220	210	205	190	210	210	185	200	235	230	250	235	225	230	275	260	275
23	270	240	225	225	215	270	215	215	195	200	205	185	185	210	H 200	210	220	215	225	215	230	250	265	260
24	270	250	240	215	220	275	210	210	225	205	195	185	215	215	220	215	225	225	205	195	265	265	280	280
25	280	255	225	265	255	265	210	220	210	200	195	H 195	200	Y	H 180	220	240	230	215	210	250	265	265	280
26	275	240	250	235	195	305	225	225	210	230	210	215	210	A	215	240	235	245	215	205	280	280	270	250
27	255	230	220	210	215	280	220	220	225	220	195	H 185	210	180	195	220	240	240	225	225	245	255	A	A
28	240	230	255	230	255	285	230	235	220	A	E A 245	235	215	A 240	H 210	230	A	A 245	245	270	250	265	275	260
29	255	265	260	290	245	225	205	180	215	230	A	200	210	225	200	220	235	230	A 245	250	245	265	280	A 295
30	275	250	A 245	230	240	280	A	A	225	210	210	195	200	200	210	230	235	235	230	225	230	255	265	245
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	29	30	29	29	27	26	27	23	20	22	25	19	27	24	25	26	28	28	30	30	28	29
MED	262	258	265	265	255	265	225	220	215	205	201	200	210	210	210	222	235	235	234	225	242	265	270	265
U Q	275	270	278	275	268	282	230	225	225	210	A 225	205	215	225	220	235	242	245	245	240	260	280	292	275
L Q	250	245	245	230	240	258	215	210	205	200	195	185	200	200	200	218	225	230	225	215	230	250	260	252

SEP. 1994 H'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A			A	A	A				A	A	A					
									110	105				105	100	100								
2							A		A	A	A	A	A		A		A	A	A					
								110						110		110								
3							A	A	A	A	A			A	A	A		A	A					
												105				115	115							
4							A	A	A	A									B					
								115	115		125	120	115	110	105	110	115	115						
5							A	A	A	A	A	A		B			A	A	B					
													105		110	110								
6							A	A	A								S		B					
									115	110	125	115	115	110	110	110	120	115						
7							A		A	A	A	A	A	A	A				B					
								115								110	115	110						
8							A	A			A	A	A	A			A	A	B					
									110	110					105	105								
9							A						A	A	A	A	A		B					
								110	110	110	110	110						115						
10							A	A	A		A	A	A	A	A	A	A		B					
										110					115			115						
11							A	A	A	A	A							A	B					
												120	115	115	125	125	115							
12							A	A	A	A								A	E					
											115	110	110	110	110	110	115							
13							A			A	A	A	A	A	A	A		A	B					
								115	110						130		110							
14							B		A	A	A	A	A	A	A	A	A	A	B					
							130	110																
15							B		A	A	A	A	A	A	A	A	A	A	A					
								110																
16							A	A	A	A	A			A	A	C	A	A	B					
												115	115		115									
17							A	A	A	A				A			A	A	B					
											110	115	115	110	115	110	130							
18							A	A	A								A							
										110	110	110	115	110	110	110	125	115						
19							A	A		A			A	A				A						
									100		105	105			105	115	110							
20							A	A								A		A						
									110	110	115	120	110	110	110	125	120							
21							A					A				A		A						
								110	110	110	125	130	110	110	110	115	125							
22									A	A	A	A	A		A	A		A						
							125	115						125	115		135							
23								A	A					A			A	A						
							120			110	110	110	110	125	110	110								
24							A	A	A	A								A						
											105	105	105	105	105	110	115							
25							A	A	A	A	A	A					A	A						
										130		130	115	115	115	115								
26							A					A	A		A	A		B						
								125	110	125	110	115		110			125							
27							A	A				A			A			A						
									110	105	105		110	110		110	115							
28							A	A						A	A	A	A	A						
									110	105	110	115	110			125								
29							A	A	A	A		A	A				A	A							
									130		115			110	110	100								
30							A	A	A	A			A					A						
											115	110		110	110	110	115							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	10	13	13	16	18	15	18	21	22	17	6						
MED							125	112	110	110	110	115	110	110	110	110	115	115						
U Q							B 130	115	A 112	110	115	120	115	110	A 115	115	125	115						
L Q							120	110	110	108	110	110	110	110	108	110	115	115						

SEP. 1994 H'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	120	100	105	110	100	110	115	120	110	105	100	110	100	125	115	110	115	115	105	105	105	100	100	100
2	100	95	95	B	100	100	115	110	110	110	105	105	110	G	110	125	115	125	125	100	100	100	100	100
3	105	115	95	95	100	115	115	110	110	100	165	95	110	100	110	135	120	120	115	100	100	100	100	115
4	110	110	100	140	115	110	100	100	155	130	140	150	140	135	130	115	140	125	110	110	115	100	90	95
5	95	95	B	105	B	105	115	105	105	95	100	100	140	B	G	G	135	115	95	100	95	95	95	100
6	B	100	B	B	B	B	140	110	100	100	110	95	95	G	140	130	125	115	110	105	100	100	95	100
7	95	B	B	B	110	S	110	125	115	110	105	105	100	100	100	155	115	115	110	115	B	105	105	100
8	100	100	100	115	120	125	115	115	115	115	110	110	110	110	120	115	110	110	110	110	105	105	105	120
9	B	B	120	120	115	S	115	110	110	105	105	G	110	100	100	95	105	115	105	110	110	110	100	100
10	100	95	100	100	B	110	110	105	115	G	100	105	105	105	100	100	100	125	105	105	105	105	100	95
11	100	100	95	100	B	95	120	110	110	110	100	105	125	95	100	G	120	115	110	110	105	100	100	100
12	95	95	100	B	B	115	110	115	110	115	135	120	130	115	125	130	G	115	110	110	110	95	100	100
13	100	100	100	95	100	125	125	125	120	100	100	100	100	100	100	120	120	110	110	100	100	100	100	100
14	95	110	100	100	105	100	125	110	110	110	95	95	100	95	125	105	110	105	105	105	105	100	100	100
15	95	100	100	100	100	95	B	110	110	110	110	170	110	110	105	100	100	95	95	100	110	95	100	100
16	100	100	110	110	B	S	120	115	110	105	110	100	100	95	95	C	95	125	100	115	95	100	100	100
17	95	95	100	95	115	105	100	100	95	100	E G 190	95	100	100	95	160	140	105	125	100	100	100	100	105
18	B	100	135	B	B	110	95	110	100	G	95	G	G	G	G	150	125	115	105	110	105	100	100	95
19	95	100	B	B	B	B	125	115	115	110	120	G	105	105	125	100	125	110	110	110	B	105	B	115
20	100	120	105	110	100	110	110	135	G	G	G	110	G	G	G	130	135	115	110	110	115	105	100	B
21	110	B	95	B	B	110	115	120	115	115	105	105	G	G	G	95	100	95	110	B	110	115	105	110
22	95	155	100	B	B	100	140	125	110	120	110	110	110	110	110	115	G	100	100	100	100	105	105	110
23	100	95	B	B	B	B	125	115	110	G	G	100	100	110	G	G	110	95	105	100	95	100	B	100
24	B	B	120	B	150	S	125	110	110	110	G	G	G	G	G	G	G	140	B	B	B	B	B	B
25	110	115	B	95	S	105	110	110	105	110	110	105	100	100	115	100	115	135	115	B	95	95	B	B
26	95	95	110	110	100	S	140	150	130	125	115	115	125	110	115	110	165	B	B	110	100	B	110	B
27	100	B	B	95	B	105	135	135	125	120	G	110	95	95	125	G	95	115	125	95	110	110	105	105
28	95	105	B	95	95	S	140	135	125	115	115	115	125	110	110	125	115	110	105	110	115	110	110	100
29	100	105	105	105	95	90	105	110	130	100	115	115	110	95	G	135	125	110	105	110	110	90	110	110
30	110	B	100	110	105	110	100	100	110	100	100	100	100	125	G	G	140	115	115	115	100	100	95	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	26	24	22	20	17	21	29	30	29	26	26	26	26	23	22	23	27	29	28	27	27	28	26	25
MED	100	100	100	102	100	110	115	110	110	110	109	105	108	105	110	115	115	115	110	110	105	100	100	100
U Q	100	108	105	110	115	110	125	120	115	115	115	110	110	110	125	130	125	118	110	110	110	105	105	108
L Q	95	95	100	95	100	100	110	110	110	100	100	100	100	100	100	100	110	110	105	100	100	100	100	100

SEP. 1994 H'ES (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

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

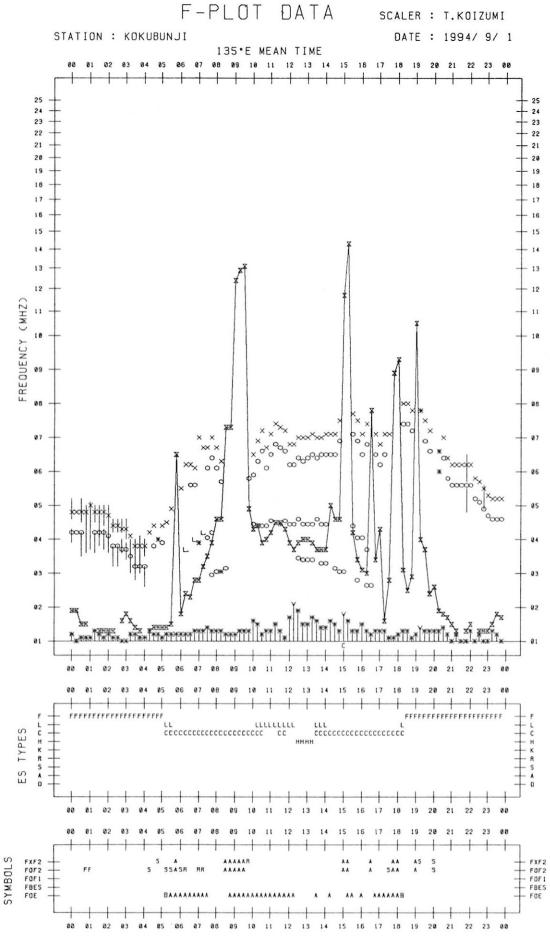
LAT. 35° 42.4'N LON. 139° 29.3'E SWEEP 1.0MHZ TO 25.0MHZ IN 24.0SEC IN MANUAL SCALING

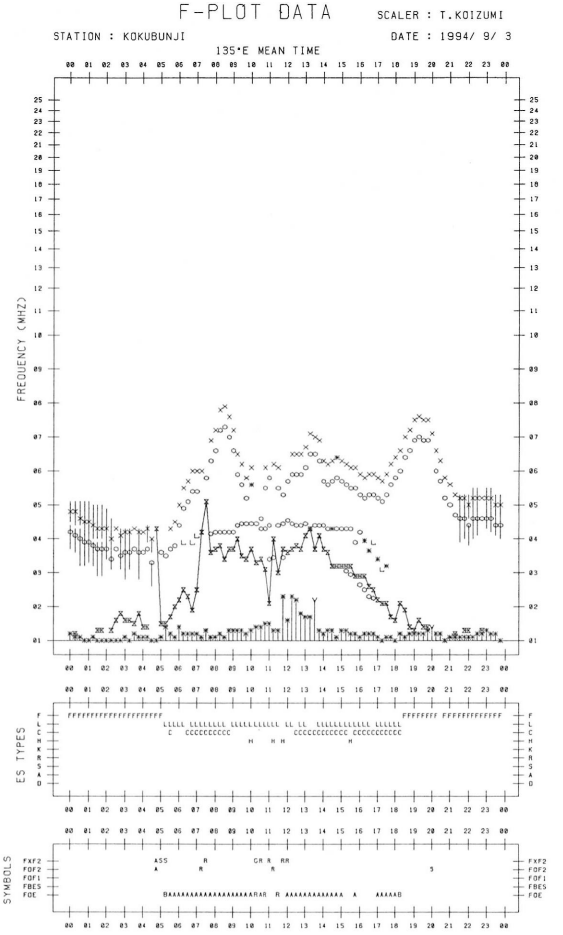
H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 13	FF 31	FF 21	FF 13	F 2	FF 21	C 3	C 2	C 3	C 3	CC 21	L 2	L 2	H 1	CL 11	C 2	C 2	C 2	C 4	FF 41	F 4	F 3	FF 21	F 2
2	FF 21	FF 41	F 2		F 2	F 2	C 3	C 3	C 3	C 2	CH 21	C 2	C 1		C 1	C 1	C 2	CL 12	C 4	FF 23	FF 42	FF 42	FF 32	F 2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

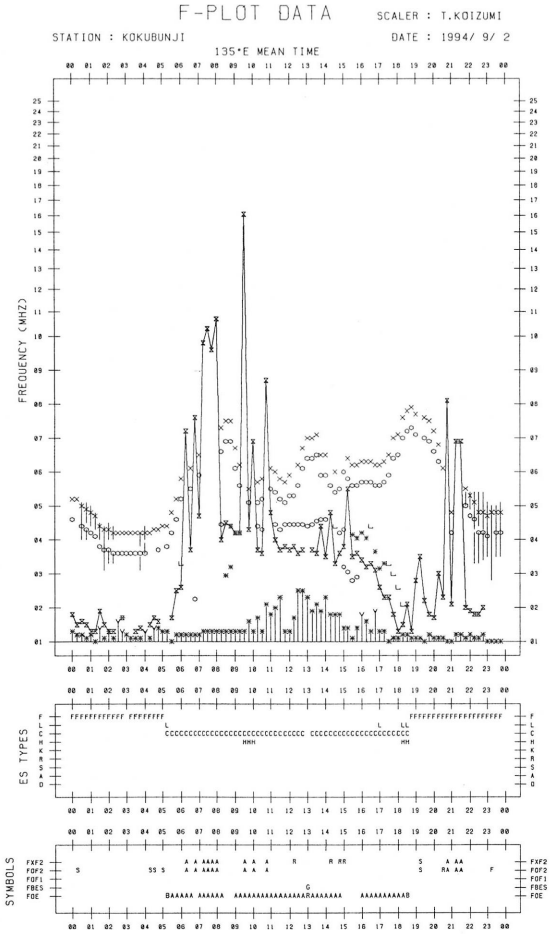
SEP. 1994 TYPES OF ES COMMUNICATIONS RESEARCH LABORATORY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

KEY OF F-PLOT	
I	SPREAD
○	FOF2, FOF1, FOE
×	FXF2
✳	DOUBTFUL FOF2, FOF1, FOE
⧖	FBES
⌊	ESTIMATED FOF1
⫯, Y	FMIN
∧	GREATER THAN
∨	LESS THAN


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 1
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 3
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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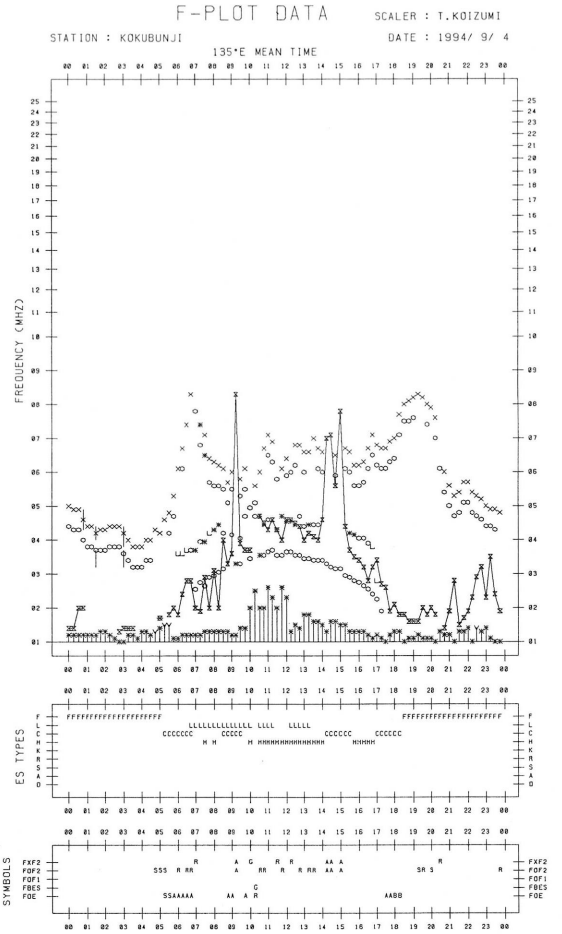
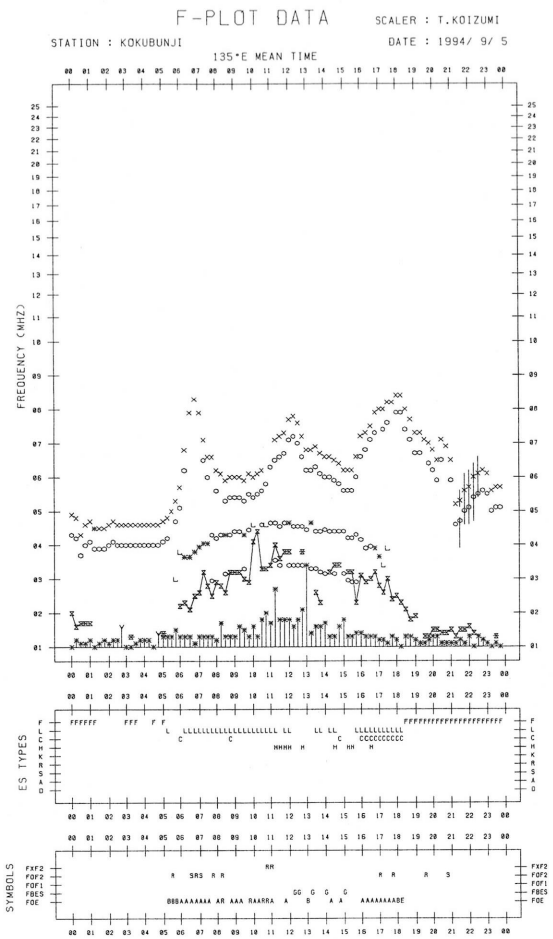
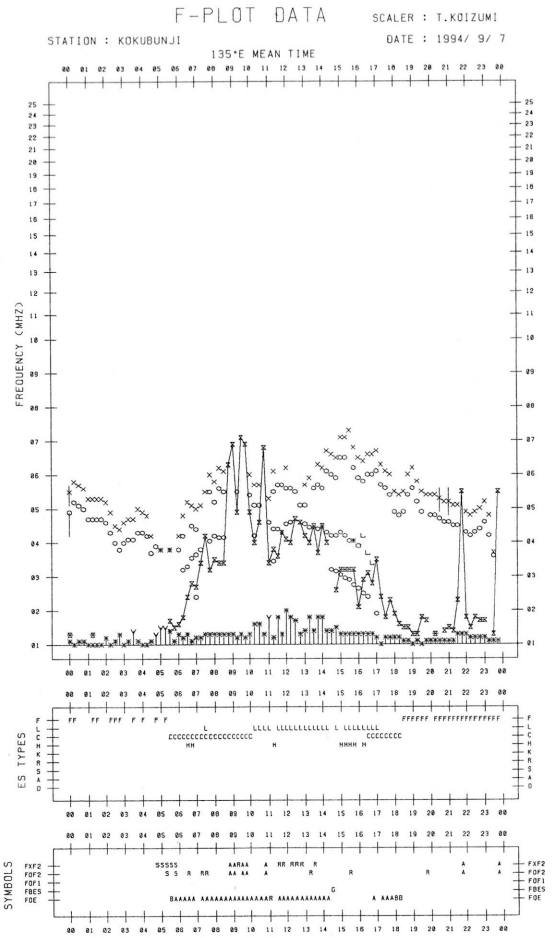
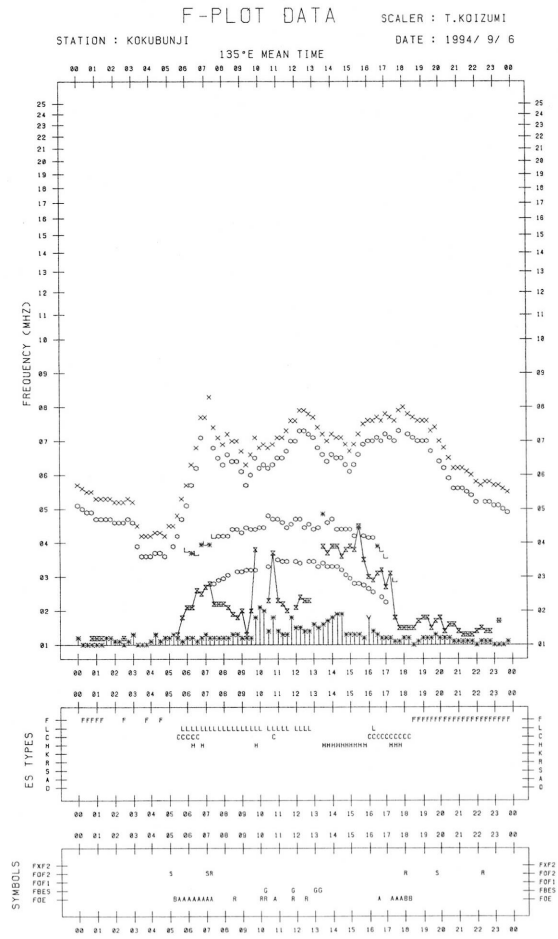
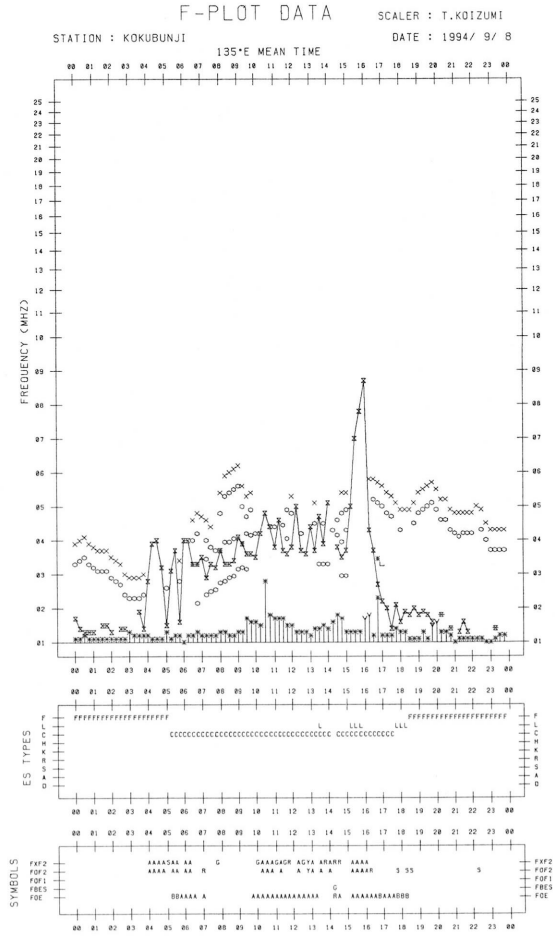
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 2
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

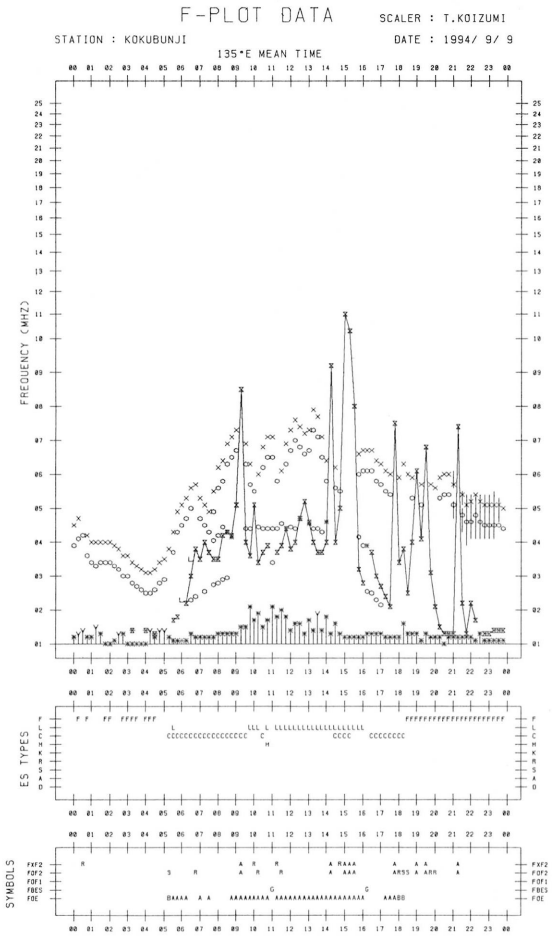

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 4
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

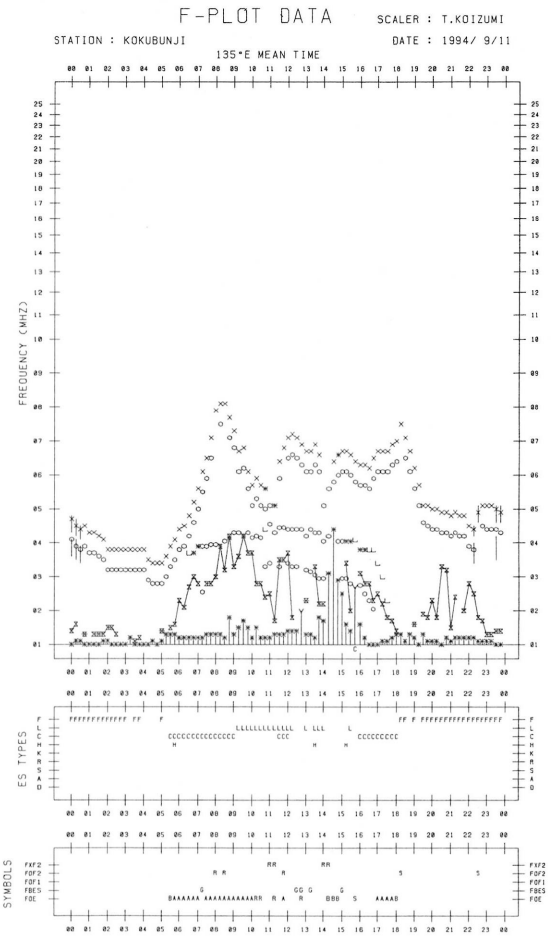

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 5
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

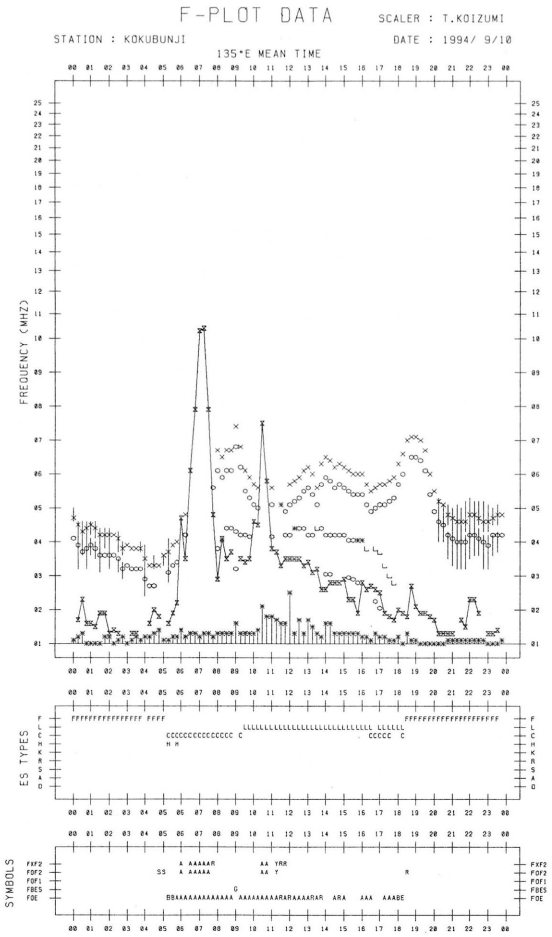

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 7
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

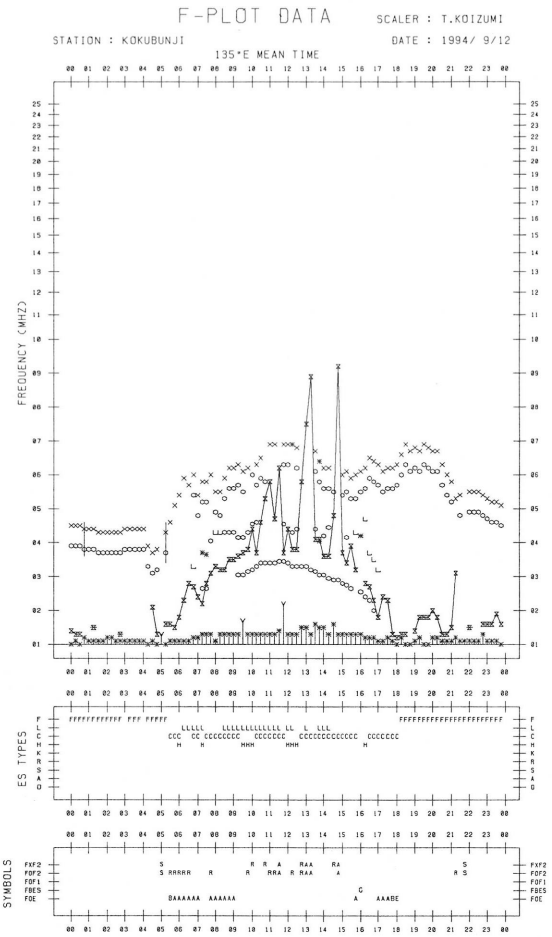

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 6
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

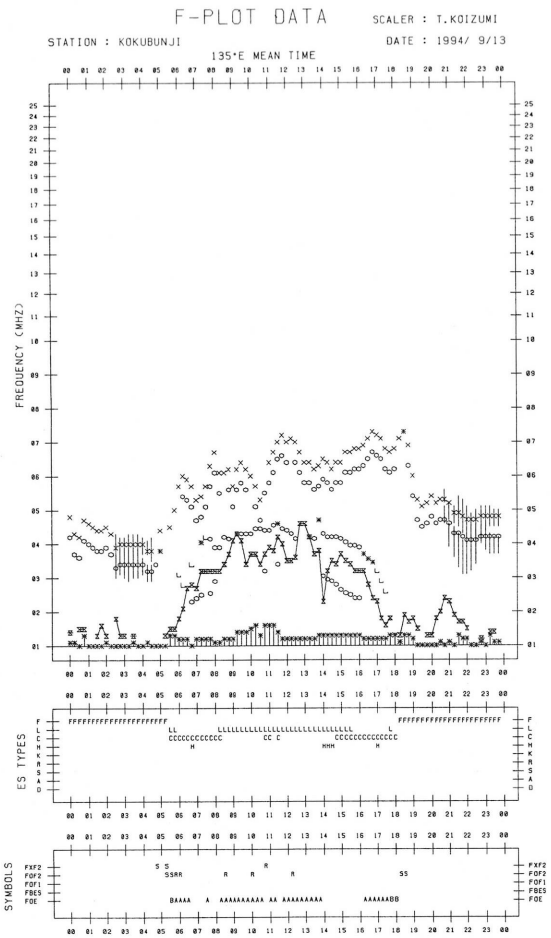

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 8
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

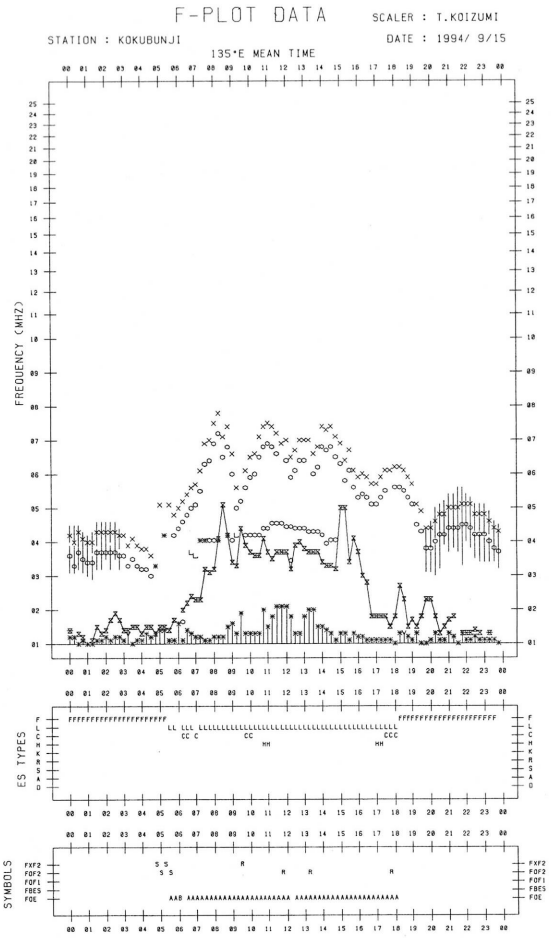

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/ 9
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/11
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/10
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/12
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FDF2
FDF1
FBES
FDE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/13
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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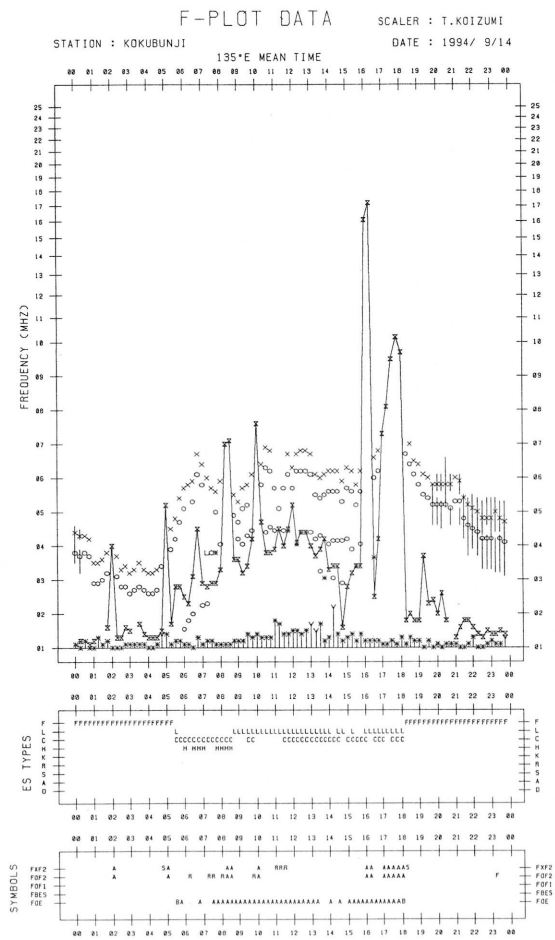
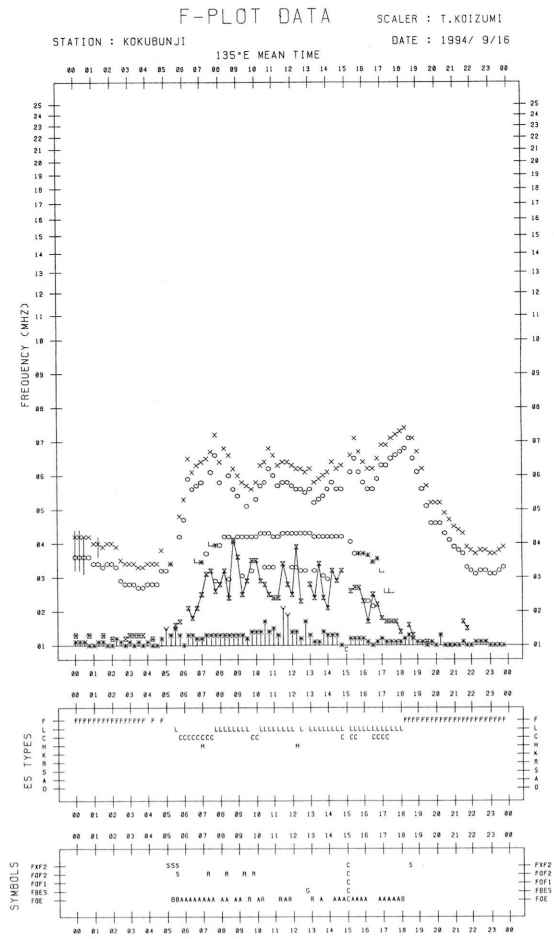
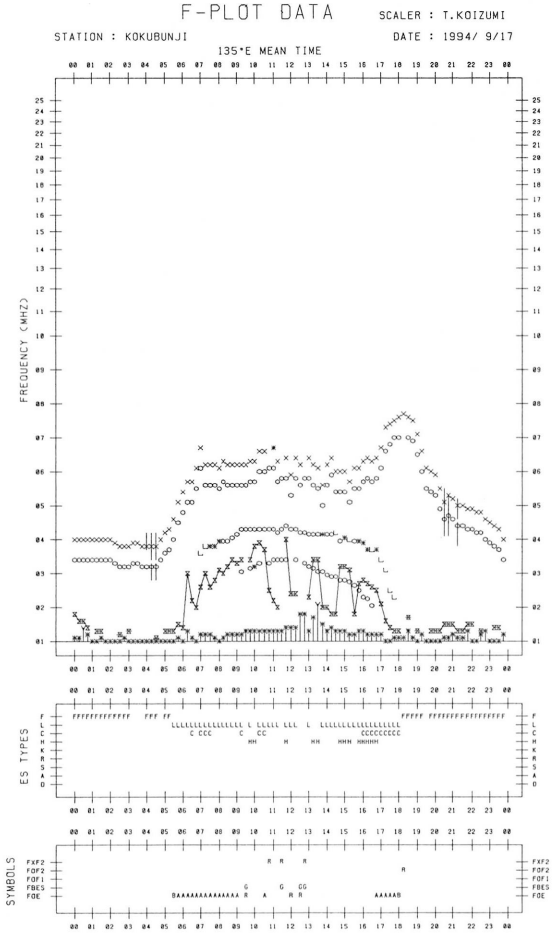
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/15
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/14
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/16
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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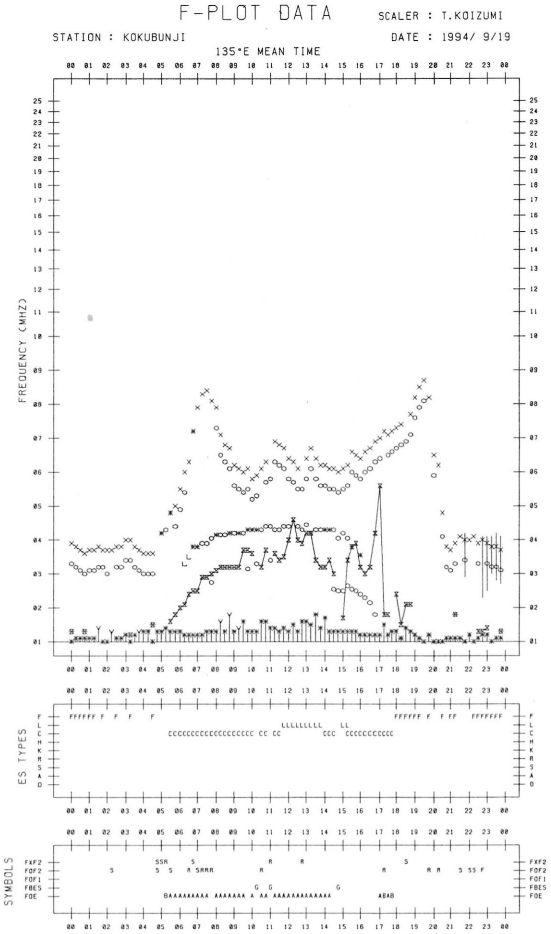
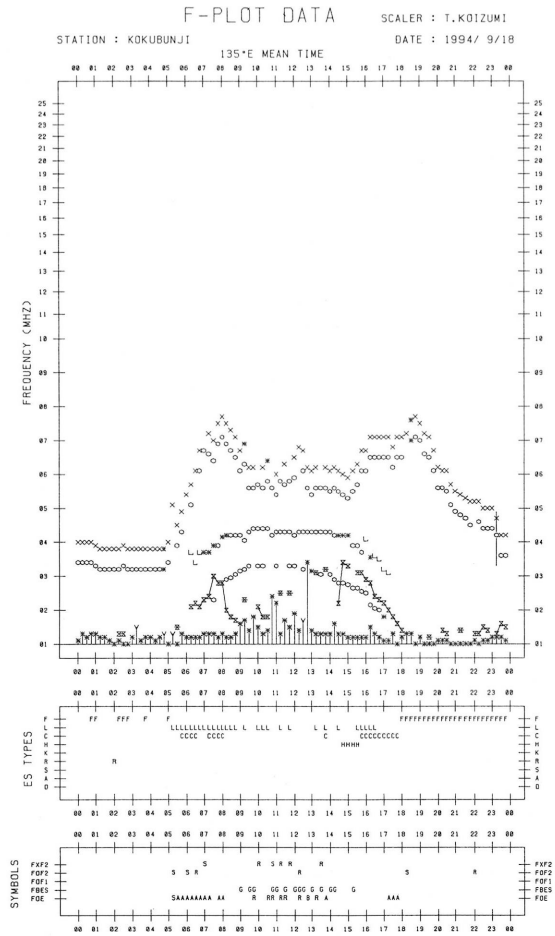
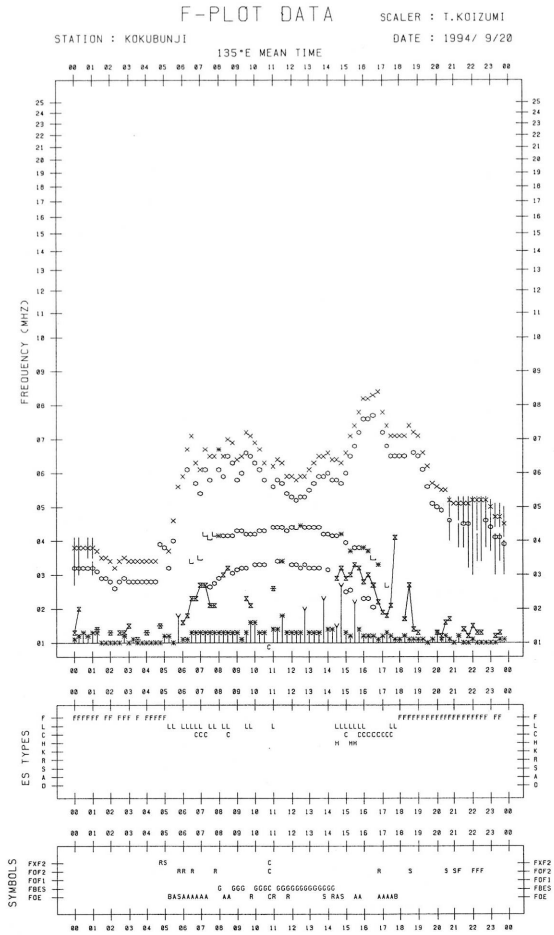
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/17
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/19
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/18
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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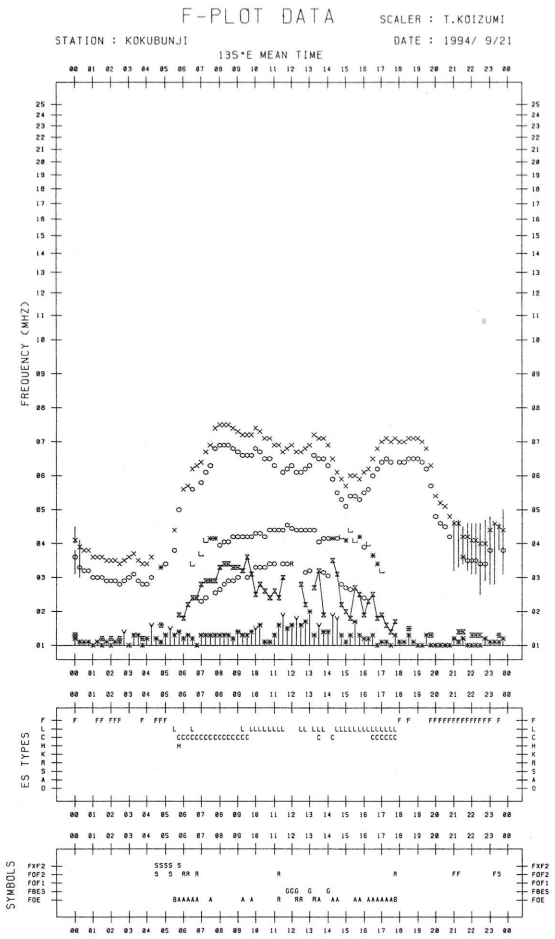
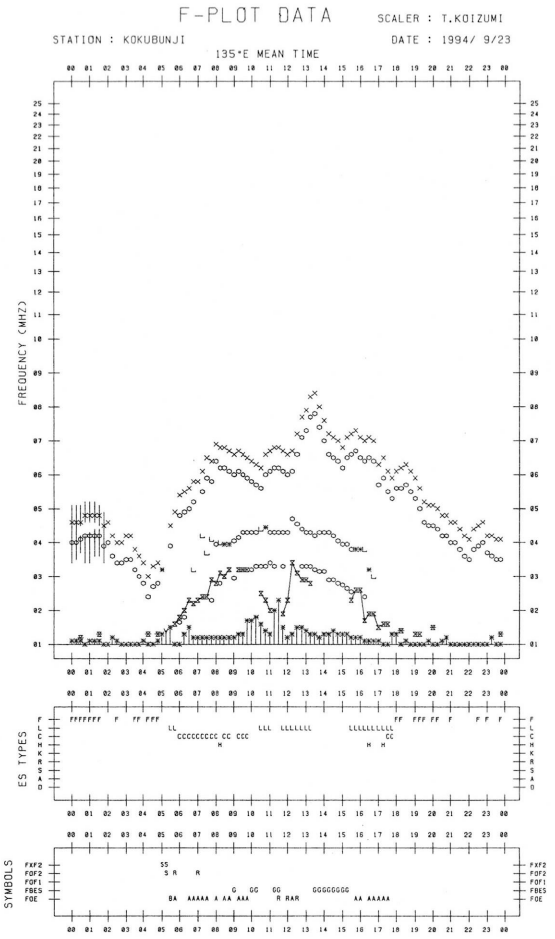
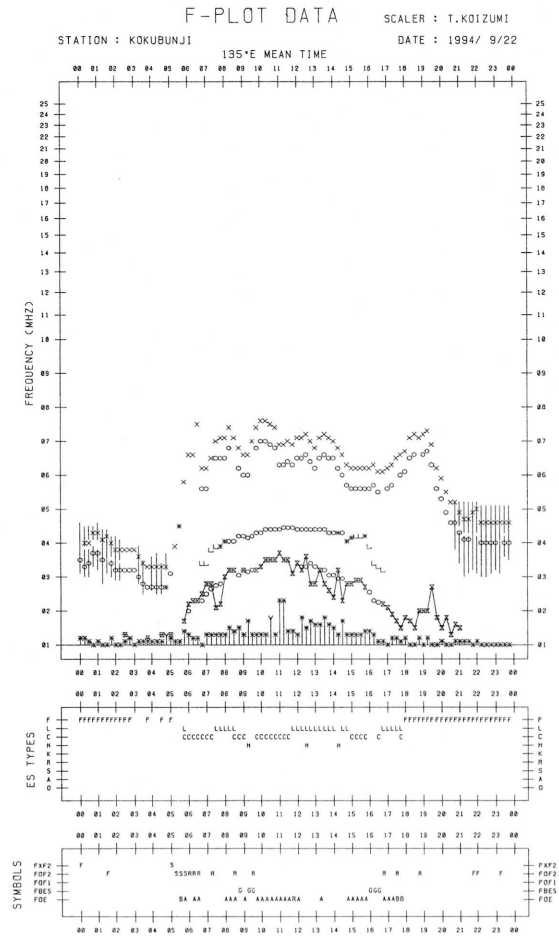
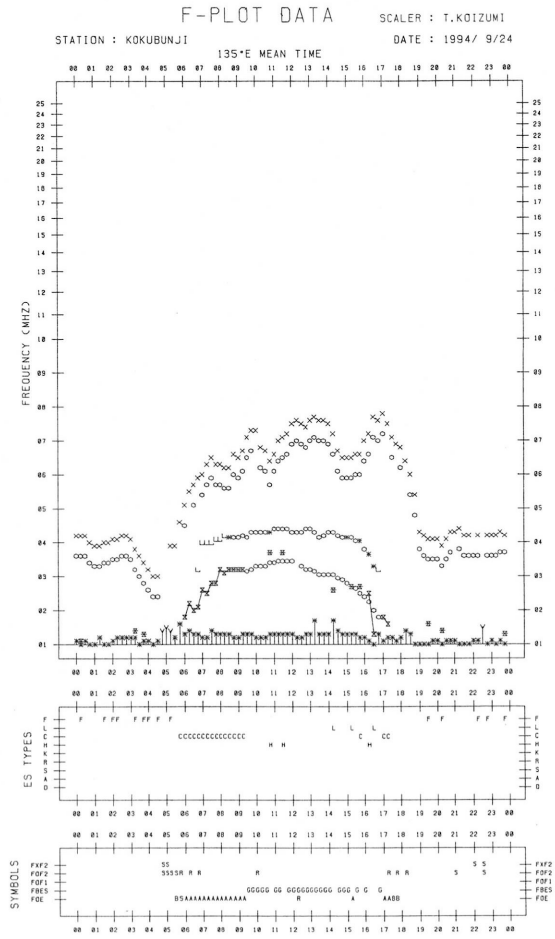
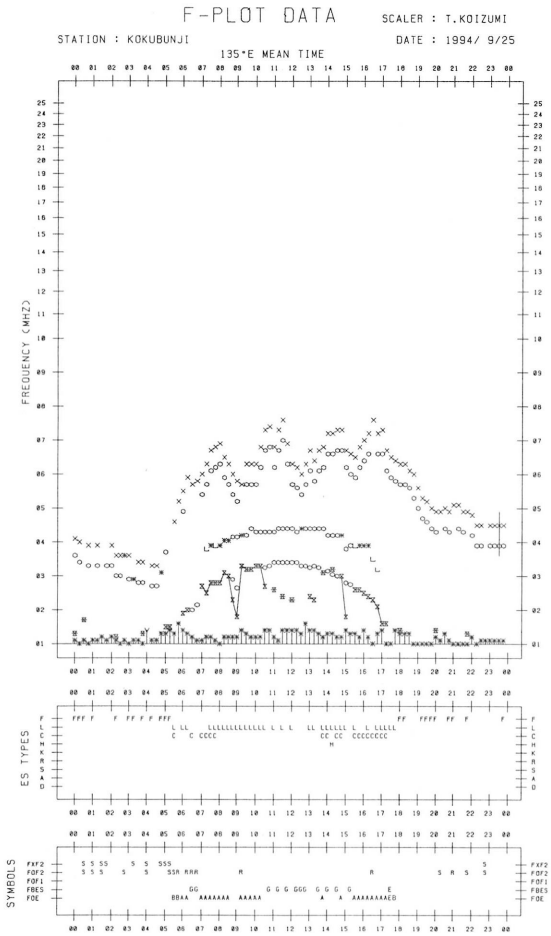
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/20
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

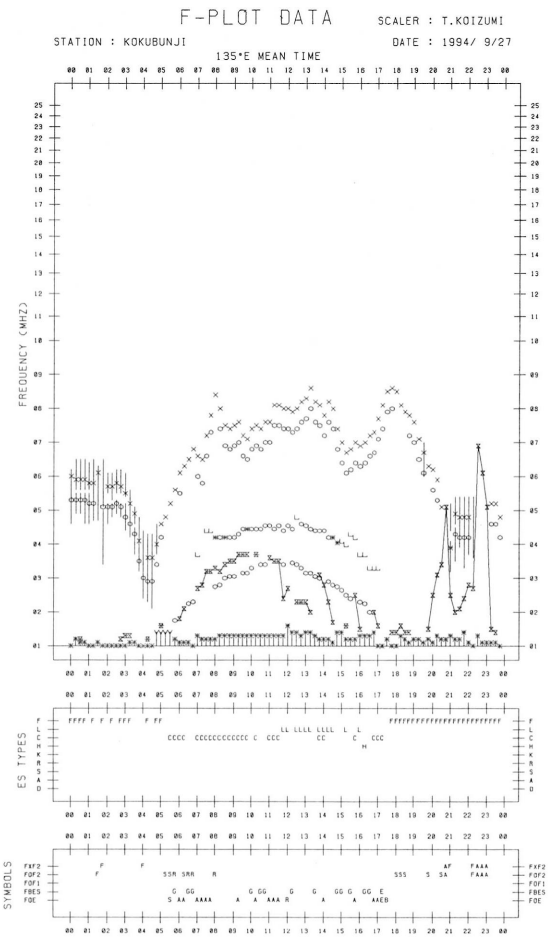

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/25
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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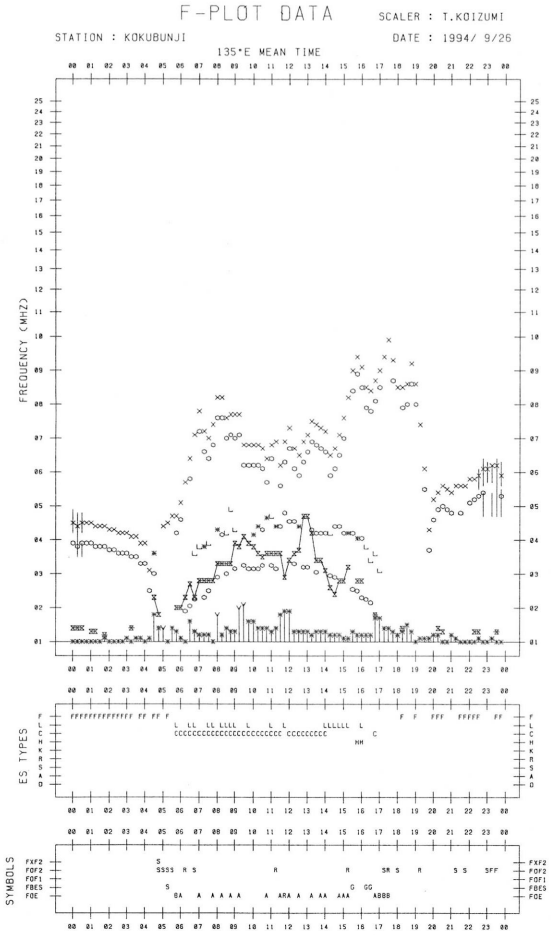
STATION : KOKUBUNJI
DATE : 1994/ 9/27
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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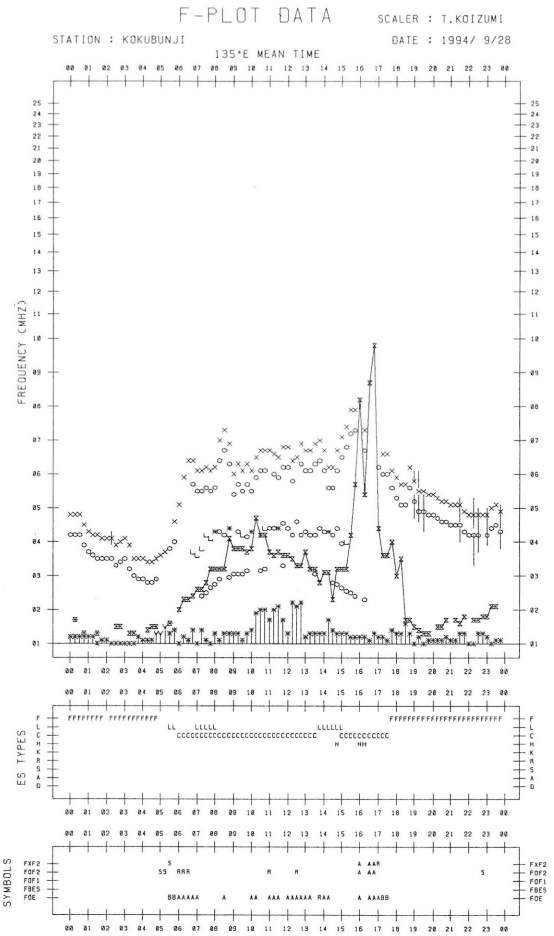
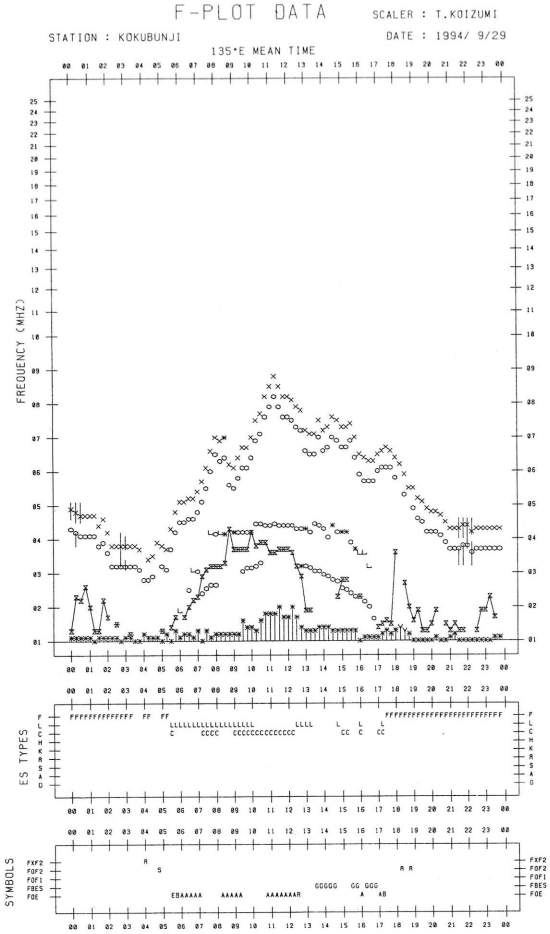
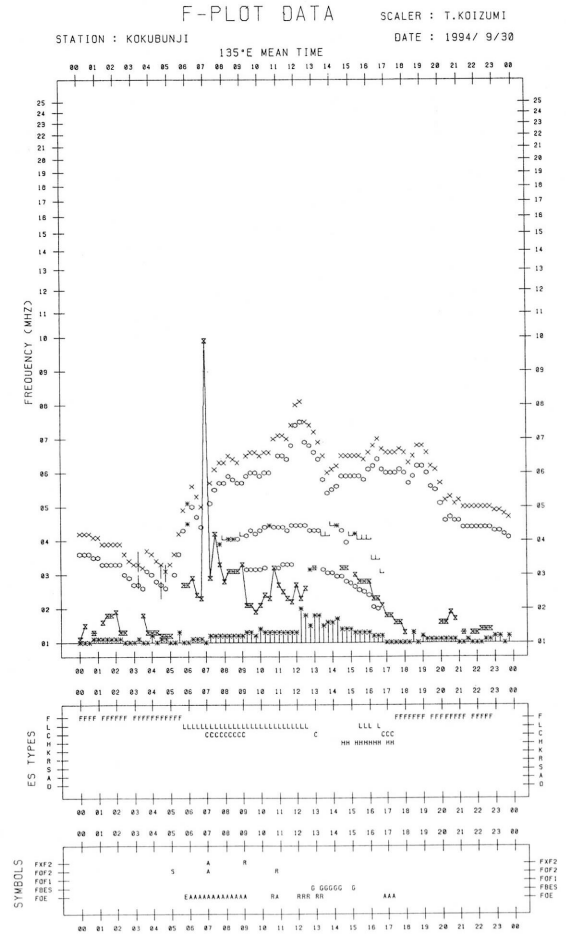
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/26
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/28
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/29
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 9/30
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 September 1994

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

Note: No observations during the following periods.

13th 0045 - 0540

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 1994

Single-frequency observations

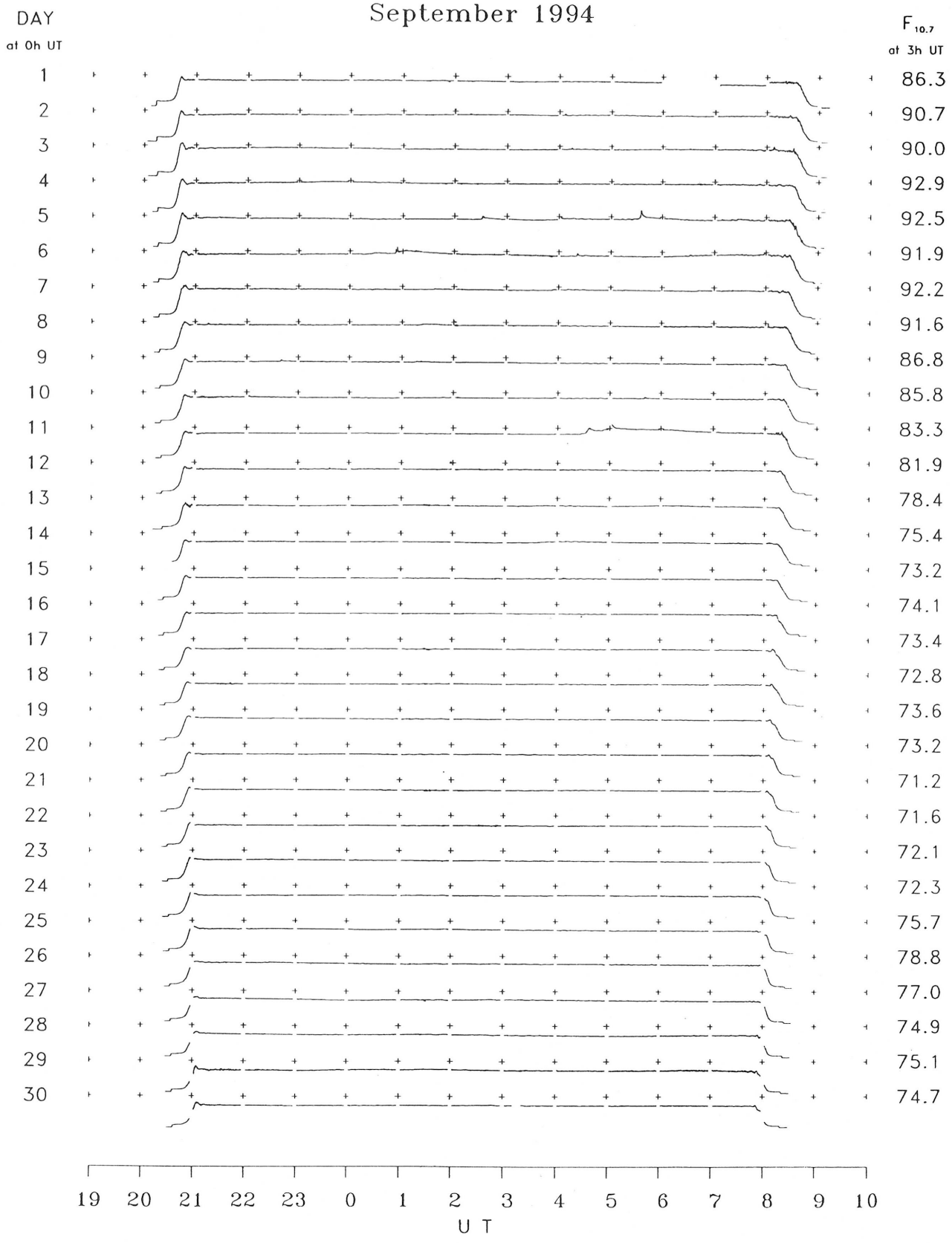
Normal observing period: 2050 - 0840 U.T. (sunrise to sunset)

SEP.	FREQ.	TYPE	START TIME	TIME OF MAXIMUM	DUR.	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1})		POLARIZATION
1994	(MHz)		(U.T.)	(U.T.)	(MIN.)	PEAK	MEAN	REMARKS
2	2800	1 S	0405.8	0406.0	1.5	7	4	0
	500	42 SER	2228.0	2228.3	2.5	12	-	0
	500	21 GRF	2330	0017.4	56	4	2	0
3	2800	1 S	0413.0	0413.5	2.0	4	2	0
	500	46 C	2354.3	2354.6	3.0	13	5	WL
5	2800	1 S	0010.5	0010.8	1.5	4	3	0
	2800	21 GRF	0231.3	0231.8	22	10	3	0
	2800	20 GRF	0359.2	0402.3	39	7	3	0
	2800	45 C	0533.4	0534.2	8.0	30	19	0
	500	1 S	0533.4	0534.2	1.0	8	5	0
	500	42 SER	2354.6	2354.9	3.0	31	-	WL
6	500	42 SER	0032.4	0033.8	2.0	37	-	0
	2800	45 C	0051.9	0054.5	3.5	22	10	0
	500	42 SER	0052.2	0055.0	3.5	8	-	0
	500	46 C	0420.3	0421.2	3.0	17	10	WL
	2800	1 S	0421.2	0421.8	3.0	10	5	0
	2800	45 C	0631.8	0632.4	2.0	8	5	0
	500	8 S	0652.5	0652.5	0.1	7	-	WL
7	2800	1 S	0352.0	0354.0	5.0	4	2	0
	500	42 SER	0354.3	0356.9	4.0	3	-	0
	500	42 SER	0408.0	0411.8	5.0	20	-	0
	2800	1 S	0408.9	0410.0	5.0	3	1	0
	500	42 SER	0637.5	0641.5	4.0	27	-	0
	2800	1 S	0720.7	0721.2	1.0	3	2	0
	500	8 S	0721.0	0721.3	0.5	5	-	0
	2800	1 S	2114.6	2115.7	1.5	6	3	0
	500	42 SER	2115.7	2116.6	1.5	4	-	0
8	2800	20 GRF	0121.0	0134.6	25	5	2	0
	500	42 SER	2239.0	2241.0	3.0	4	-	0
	2800	1 S	2239.9	2241.1	2.5	7	4	0
9	500	46 C	2143.8	2144.0	1.5	4	3	0
	2800	1 S	2201.8	2202.1	1.0	7	3	0
	500	46 C	2202.0	2202.1	1.5	15	9	0
10	2800	1 S	0354.3	0356.3	3.0	4	2	0
	2800	1 S	0540.2	0540.8	3.0	6	3	0
11	2800	20 GRF	0432.4	0437.5	18	20	10	WL
	500	46 C	0435.6	0438.7	9.0	40	15	0
	500	22 GRF	0452.7	0503.0	27	8	3	0
	2800	20 GRF	0459.6	0501.9	24	17	9	WL
	2800	1 S	2336.5	2336.9	1.0	5	3	0

B. Solar Radio Emission

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

September 1994



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)

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

MEASURED AT HIRAISO

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

C. RADIO PROPAGATION

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

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

MEASURED AT HIRAISO

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

C. Radio Propagation

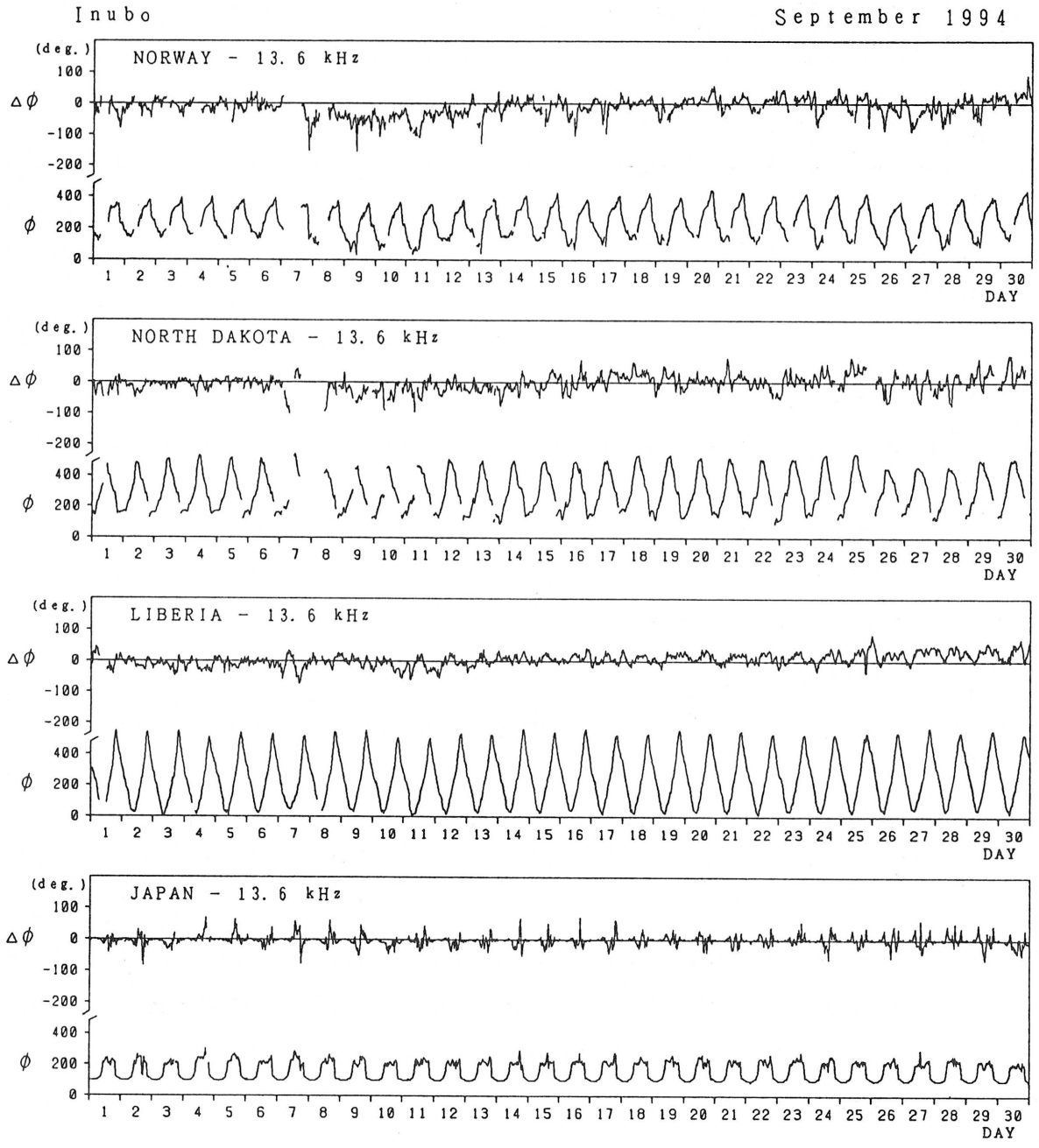
C2. Radio Propagation Quality Figures at Hiraiso

Hiraiso — Time in U.T.

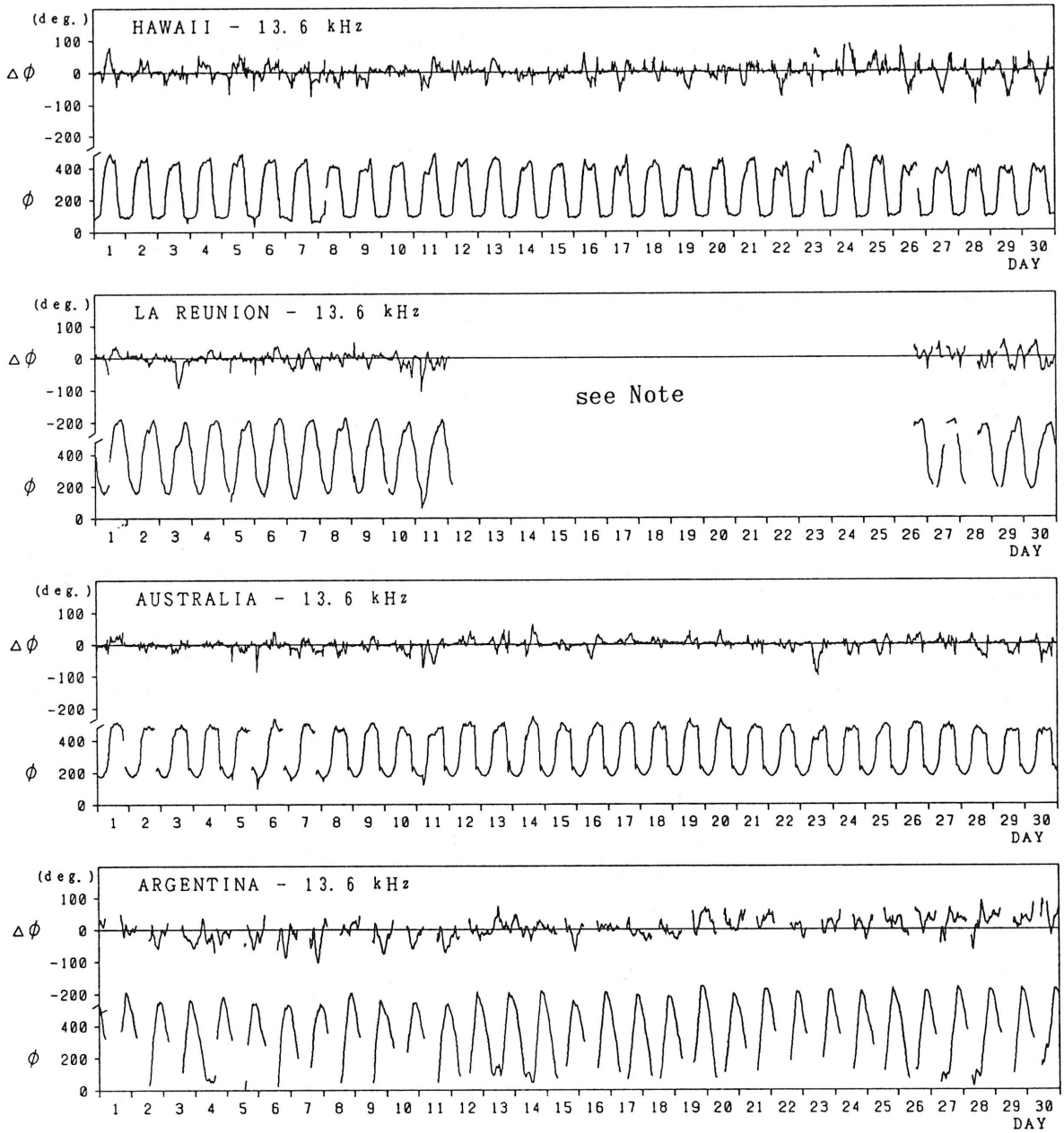
SEP. 1994	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m / End h / RaPge nT
1	4+	5U - - 3U	4 5 5U 4	N N N N	None
2	3+	2U - - 3U	4 4 - 4	N N N N	
3	3+	2U - - 4U	4 4 - 3	N N N N	
4	4o	3U - - 4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

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo September 1994



Note : As for LA REUNION-13.6kHz, no record during 12 September 0404 UT - 26 September 1345 UT, 27 September 0500 UT - 0700 UT, 28 September 0430 UT - 1345 UT and 30 September 0445 UT - 0700 UT, due to the maintenance of transmitter.

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.

SEP. 1994	S W F							Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
5			12			0532	21	2	1	x	C
6			20			0047	38	2	2-	x	C
11			21			0437	54	3	2-	x	C

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

Sep. 1994	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
3			18	11			0413	0442	0422
3		20					1252	1328	1300
3		34					1552	1630	1604
5			14	14	7		0232	0256	0242
5		34	101	72			0534	0720	0542
6	29	34	47	86	61	44	0052	0158	0104
6			25				0632	0712	0642
8				18	29	–	0128	0138	0134
10			7				0542	0558	0550
11			104	76	40	29	0426	0820D	0500

IONOSPHERIC DATA IN JAPAN FOR SEPTEMBER 1994
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