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IONOSPHERIC DATA IN JAPAN

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CONTENTS

COMMUNICATIONS RESEARCH LABORATORY
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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

AUG. 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	57	A	A	35	25	A	A	A	A	A	A	A	A	A	A	A		57	57	62	30	A	A	A
2	A	35	44	40	36	41		A	A	A	A	A	A	A	A	A	A	52	54	57	57	A		A
3	A	40	41	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	32	60	57	A
4	35	A	31	36	32	28	A	A	49	A	A	A	A	A	A	A	A	A	57	55	68	57	67	67
5	57	57	56	38	35	31	55	A	A	A	A	A	A	A	A	A	A	A	57	A	A	A	A	A
6	35		A	55	38	40	A	A		A	A	A	A	A	A	A	A	A	A	68	56	55	35	34
7	35		A	35	37	30	A	A	A	A		A	A	A	A	A	A	A	A	A	68	57	40	31
8	A	31	37	37	32	A	A	A	A	A	A	A	A	A	A	A	54	A	A	A	A	A	60	58
9	46	23	A	37	37	38	A	A	61	54	A	A	A	A	A	A	57	69	A	64	58	32	57	A
10	51	39	36	32	31	32	A	A	59	56	A	A	A	A	58	65	58	56	42	A	59		58	A
11	58	40	32	A	29	A	A	A	A	A	A	A	A	A	A	A	A	A	A	38	56	38	57	35
12	59	69	35	30	26	A	A	A	A	A	A	A	A	A	A	A	A	A	50	N	49	57	39	41
13	38	38	35	32	30		A	A	A	A	A	A	A	A	A	A	A	A	A	57	68	30	39	31
14	59	A	36	36	35	A	A	A	A	A	A	A	A	A	A	A	A	A	47	A	A	56	47	A
15	36	A	36	28	31	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	59	58	56	A
16	A	40	32	A	26	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	55	50	38
17	41	36	35	31	A		A	A	A	A	A	A	A	A	A	A	A	60	A	A	A	40	A	A
18	A	A	59	31	23	32	A	A	59	59	A	A	A	A	A	A	A	56	69	68	56	A	57	54
19	A	47	47	35	A	A	A	A	A	A	A	A	A	A	A	A	A	A	47	52	56		56	39
20	35	28	31	A	34	38	40	A	54	A	A	A	A	A	A	A	A	A	58	89	A	62	29	
21	A	A	32	35	35	18	39	A	A	A	A	A	A	A	A	A	52	49	A	59	57	56	56	57
22	35	41	36	29	34	38	A	59	A	A	A	A	A	A	A	A	A	50	59	64	58	58	57	55
23	40	36	40	38	38		A	A	A	A	A	A	N	A	A	49	55	52	60	58	68	60	56	29
24	36	A	34	36	31		59	A	A	A	A	A	A	A	55	A	A	29	62	62	61	A	55	41
25	44	69	37	35	31	35		A	A	A	A	67	61	A	54	A	60	57	59	A	58	57	57	57
26	40	39	A	A		37	A	A	A	A	A	A	A	A	59	A	49	A	A	A	A	57	A	42
27	A	69	A	35	40	28	A	A	A	A	A	A	A	A	55	A	57	60		57		33	57	57
28	38	35	38	36	41	29	A	A	A	A	A	A	A	A	A	A	56	A	58	68	62	A	A	29
29	36	40	35	32	35	N	37	A	61	56	A	A	A	A	57	A	A	58	57	57	63	A	A	30
30	A	A	A	35	35	36	36	A	A	A	A	A	A	A	55	53	A	51	62		35	35	49	
31	38	35	36	35	38	19	49	56	A		A	A	A	A	A	49	A	57	68	60	59	29	56	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	21	24	26	27	17												15	18	18	23	21	24	19
MED	39	39	36	35	34	32												56	58	60	58	56	56	41
U Q	51	44	39	36	37	38												58	60	64	62	57	57	57
L Q	36	35	34	32	31	28												51	54	57	56	36	48	31

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT WAKKANAI

AUG. 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	64	39	40	34	30	25	25	34	68	78	74	77	94	61	44	45		54	44	34	40	76	72	66
2	57	33	62	36	28	29		34	50	47	55	53	60	105	58	62	52	34	34	27	40	63		62
3	45	34	40	70	43	38	36	95	79	88	39	59	63	36	31	63	96	99	91	89	64	38	40	83
4	34	65	30	31	G	38	28	35	47	38	32	57	41	42	40	38	53	37	34	31	34	40	28	40
5	30	38	37	31	G	28	38	45	47	40	44	57	40	44	35	43	84	45	36	45	66	71	74	41
6	35		43	63	32	30	36	35	33	40	65	59	64	59	62	82	85	37	106	44	55	38	33	33
7	60		41	32	34	G	39	57	95	92		96	108	58	58	62	95	65	107	57	61	38	55	39
8	35	38	24	26	34	36	36	43	46	36	36	74	60	33	31	30	34	40	84	74	94	61	44	56
9	32	33	44	38	G	33	41	63	66	38	60	74	35	35	31	31	28	25	58	G	G	34	59	64
10	33	34	37	30	31	20	28	35	38	61	59	36	39	36	33	38	37	40	34	44	43		29	36
11	34	24	23	27	28	32	46	40	67	83	41	51	43	32	32	28	34	26	32	28	27	35	42	42
12	38	G	G	G	G	28	35	34	40	38	34	35	30	36	34	34	36	36	32	24	25	32	28	32
13	24	29	25	G	24	28	35	35	45	53	52	66	45	37	35	61	37	55	62	34	G	32	24	30
14	27	39	30	36	26	33	66	42	88	136	44	40	60	34	31	29	31	39	35	37	39	G	34	46
15	27	38	37	29	G	30	38	36	38	42	46	55	30	35	57	34	42	53	77	52	27	35	38	41
16	37	26	28	46	28	29	34	34	47	41	43	43	36	41	33	34	44	62	58	49	80	33	38	32
17	26	30	30	23	34	G	41	89	67	54	138	59	35	68	56	49	33	50	84	128	71	80	73	37
18	46	36	G	29	28	29	29	40	47	42	65	69	47	41	54	61	52	35	41	61	62	41	33	38
19	43	33	28	32	37	39	40	66	81	41	67	64	88	89	64	78	45	34	38	73	37		52	34
20	44	25	35	40	28	29	28	34	37	64	85	95	38	37	80	93	75	72	40	55	60	38	44	
21	37	54	36	30	27	27	30	40	71	42	36	39	52	38	42	64	57	74	64	84	58	71	67	65
22	42	31	35	35	26	29	37	33	45	81	41	34	31	30	38	38	44	34	84	43	34	41	32	55
23	38	33	33	G	G		38	40	40	63	35	33	31	32	29	29	34	41	34	G	31	34	34	32
24	28	26	29	25	G		G	30	34	42	34	37	39	57	30	28	26	38	32	33	38	36	28	24
25	29	27	26	28	24	G		45	48	52	41	39	44	55	43	30	30	40	65	66	32	27	30	43
26	43	32	56	56		31	52	77	74	40	58	51	59	42	39	51	46	44	54	44	59	38	61	37
27	65	44	55	39	32	29	35	34	48	48	37	35	55	63	37	36	44	35		36		38	G	28
28	24	28	29	27	G	36	37	40	39	69	63	34	30	41	32	28	30	91	37	27	40	41	32	29
29	28	G	G	G	26	G	35	39	41	32	36	34	40	28	29	65	59	42	52	40	32	50	60	31
30	45	45	35	34	33	35	22	62	55	77	60	38	41	59	42	36	34	29	31	38	36	54	26	
31	29	28	G	G	24	26	28	36	59		32	32	36	34	32	28	38	52	33	G	27	43	45	41
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	29	31	31	30	29	29	31	31	30	30	31	31	31	31	31	30	31	30	31	30	29	30	29
MED	35	33	33	31	28	29	36	40	47	48	44	51	41	41	37	38	43	40	42	43	40	38	38	39
U Q	44	38	40	36	32	33	38	45	67	69	60	64	60	58	54	62	53	54	65	57	60	52	55	50
L Q	29	27	26	26	G	26	28	34	40	40	36	36	36	35	32	30	34	35	34	31	32	34	30	32

HOURLY VALUES OF fmin AT WAKKANAI

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

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

HOURLY VALUES OF fEs AT KOKUBUNJI

AUG. 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	43	25	29	G	31	34	44	42	50	38	62	56		G	34	28	34	27	30	30	29	29	55	88
2	54		43	37	30	G		34	49	67	67	79	54	51	47	46	61	108	72	90	38	29	28	G
3	26	38	40	31	61	50	40	40	43	59	39	54	48	34	58	56	34	33	49	33	43	57	30	G
4	G	G	24	24	30	34	99	40	51	44	58	50	51	49	57	52	47	39	40	52	38	G	G	30
5	26	30	59	31	32	37	35	58	52	49	48	49	44	57	41	32	45	35	58		76	92	73	59
6	52	54	52	48	43	39	44	54	136	135	66	62	53	58	54	66	119	83	50	41	51	48	52	40
7	70	29	24	33	30	67	69	56	42	32	60	41	52	66	49	35	44	44	37	49	32	38	62	50
8	48	30	26	31	30	57	44	55	180	140	59	38	32	35	32	31	88			102	100	61	40	55
9	28	28	51	27	28	24	33	46	39	44	32		34	39	46	29	42	35	28	30	34	34	61	37
10	35	29	G	26	G	29	30	43	32	50		61	69	51	55	43	44	57	51	50	25	23	G	29
11	G	G	41	38	34	32	37	46	57	71	77	105	63	68	46	53	47	50	64	39	52	89	32	58
12	51	40	51	33	G	25	40	48	50	59	54	78	50	38	46	44	38	58	68	71	40	34	33	60
13	62		60	56	54	41	52	82	107		106	149	147		123	56	130	60	G	32	34	29	30	31
14	24	30	G	26	30	29	34	39	54	40	60	92	66	39	67	48	56	47	67	152	60		57	52
15	58	46	44	26	38	55	71	111	72	82	88	113	91	50	G	C	C	C	G	29	31	30	48	44
16	34	33	25	24	46	50	33	32	34	39	37	39	37	37	64	65	54	68	39	32	30	G	G	
17	G	29	49	G	28		34	56	34	38	83	G	57	60	37	57	49	108	126	86	90	54	40	54
18	40	48	46	41	31	38	44	39	44	55	77	112	69	70	56	53	49	55		128	82	58	40	32
19	33	G	29	38	G	31	38	60	73	90	55	40		32	31	34	46	43	50	39	34	32		
20		29	41	36	36	48	42	82	46	51	33	49	40	G	38	32	42	44	85	40	54	53	36	26
21		25	29	25	26	G	42	42	42	32	35	40	30	56	64	89	48	32	40	56	64	91	58	48
22	46	33	30	G	G	G	41	57	68	89	67	111	58	73	89	42	83	84	57	105	58		48	
23	37	30	29	23	51	38	56		81	42	86	43	60	34	49	44	43	30	32	G	51	57		40
24	37	33	25	24	27	27	38	30	30	37	35	36	36	34	50	48	38	31	40	27	29	24	28	38
25	28	33	30	32	G	G	34	38	39	31	38	50	48	31	37	34	33	35	37	31	33	G	51	60
26	53	26	34	31	G	28	34	30	61	84	86	71	60	34	43	48	29	43	134		58	G	G	38
27	56	41	48	G	32	44	G	33	33	36	38	59	62	56	46	39	46	37	27	29	23	G	G	G
28	G	G	G	G	G	G	31	31	29	36	57	48	51	38	30	28		37	37	32	56	36	30	30
29	31	G	G	G	25	G	30	37	33	37	56	50	37	G	31	31	44	104	36	96	G	28	24	G
30	G	30	G	57	25	33	32	43	46	52	54	40	46	93	48	47	33	30	52	43	52	105	74	34
31	34	26	32	G	G	25	29	31	36	35	31	55	38	42	40	43	38	36	62	90	81	62	34	34
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	31	31	30	30	30	31	30	30	30	29	30	31	30	29	29	29	29	31	29	29	28
MED	35	30	30	27	30	32	38	42	46	46	58	52	51	40	46	44	45	43	49	41	43	34	36	38
U Q	51	33	46	36	34	41	44	56	61	67	67	78	61	57	56	53	51	59	63	88	58	57	53	53
L Q	26	25	25	23	G	25	33	37	36	37	38	41	39	34	37	34	38	35	36	31	32	26	28	30

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

AUG. 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	15	15	14	14	15	15	15	14	17	20	28			17	16	16	18	14	14	14	15	15	15
2	15		14	15	15	15		15	15	16	18	30	27	24	28	15	16	15	14	14	14	15	15	15
3	15	14	15	14	14	15	15	15	15	21	28	20	24	22	22	20	15	14	15	15	15	14	15	14
4	15	15	15	14	14	16	15	14	15	18	15	18	18	16	14	14	15	14	14	14	15	15	15	14
5	14	14	14	15	15	14	15	14	15	15	20	34	22	14	16	18	15	15	15		14	14	15	14
6	14	15	15	14	14	15	14	15	14	15	21	18	32	22	16	16	14	15	14	15	14	14	15	14
7	14	14	14	15	14	15	15	14	16	17	26	30	30	26	20	17	15	15	15	14	15	14	14	14
8	15	14	15	14	14	15	14	15	15	15	21	20	17	17	16	16	15			14	14	15	14	15
9	14	14	14	14	14	14	14	14	15	18	17		17	18	14	46	14	14	15	14	15	14	15	14
10	14	14	15	14	14	14	15	14	14	20		16	18	17	17	15	15	15	14	14	14	14	15	15
11	17	15	14	14	15	15	14	15	15	18	18	23	30	24	18	15	15	15	14	14	14	14	15	15
12	15	15	14	15	14	15	14	14	15	17	18	20	24	22	20	17	14	15	14	15	14	15	15	15
13	15		15	14	15	15	15	15	16		18	16	26		33	17	15	16	23	14	14	14	15	15
14	14	14	14	14	14	15	15	14	16	30	26	28	23	27	26	20	15	16	15	14	15		14	15
15	14	14	14	15	14	15	16	14	17	16	22	21	16	20	46	C	C	C	17	14	14	14	14	15
16	14	15	14	14	15	15	15	14	15	17	30	27		23	34	18	14	14	15	15	15	15	14	
17	15	15	15	17	14		15	14	16	20	34		20	32	45	18	15	15	15	15	14	14	15	14
18	15	14	15	14	14	15	15	15	14	14	17	18	18	18	16	15	14	15		15	14	14	14	15
19	14	14	15	14	14	15	17	15	16	15	16	26		15	21	17	14	14	14	15	15	15		
20		14	14	15	15	15	16	15	14	20	21	20	23	22	20	17	15	14	14	15	14	14	15	14
21		14	15	15	14	15	14	15	15	15	16	16	17	17	16	14	14	15	14	15	14	15	14	15
22	14	15	14	15	16	15	15	14	14	14	17	22	20	26	16	16	15	15	15	15	14		14	
23	15	14	14	15	15	15	15		15	16	16	21	16	20	17	15	15	15	15	15	14	15		15
24	14	15	14	15	14	15	15	16	14	28	18	15	14	15	27	17	14	16	14	14	14	14	14	15
25	14	14	15	14	14	15	17	14	15	16	16	15	14	14	20	16	16	15	14	15	14	14	15	14
26	15	15	14	14	14	14	17	16	15	16	16	16	16	15	16	14	16	15	15		14	16	16	14
27	15	14	14	15	14	15	14	15	16	21	15	16	15	17	17	14	14	15	14	15	15	15	15	15
28	15	14	14	15	15	15	16	14	15	17	17	18	17	16	17	15		15	15	14	14	14	14	15
29	14	15	14	14	14	15	16	14	15	15	32	34			18	16	15	14	15	14	14	15	16	15
30	14	15	16	15	15	16	17	14	20	23	23	23	24	29	20	20	15	15	15	15	14	15	15	14
31	14	15	15	16	15	16	14	15	15	17	20	18	16	17	17	15	14	14	15	14	14	14	14	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	31	31	31	30	30	30	31	30	30	29	27	28	31	30	29	29	29	29	31	29	29	28
MED	14	14	14	14	14	15	15	14	15	17	18	20	18	19	18	16	15	15	15	14	14	14	15	15
U Q	15	15	15	15	15	15	16	15	16	20	22	26	24	23	22	17	15	15	15	15	15	15	15	15
L Q	14	14	14	14	14	15	14	14	15	15	17	17	16	16	16	15	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

AUG. 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	N	A	59		59	29	A	64	66	A	A	A	A	A	A	A		66	A	66	49		35	36
2	69	31	30	25	26	25	N	A	68	A	A	A	A	A	A	A	A	A	A	83	72	A	A	A
3	26	57	24	28	A	59	A	A	63	A	A				A	A	66	66	A	70	59	69	49	
4	35	49	49	53		A	A	A	A	64	A	A	A	A	A	A	62	67	A	A	73	69	A	59
5	69		49	32		59	35	A	A	A	A		A		66	74	71	80	83	A	A	26		31
6	A	A		30		26	A	A	66	A	A	A	A	A	71	74	74	70	71	82	A	49	A	31
7	34	35	26		28	28	59	A	A	65	A	A		A		A	74	85	86	A	A	A	A	24
8	A	A	A		26	N	89	A	A	A		A	A	A	A	A	A	A	66	A	A	A	69	
9	A	A			30	29	89	A	59	A	A	A	A	A	A	68	67	A	A	73	A	A	49	29
10	A	28	A	26	22	N	58	A	A	63	A	A	A	A		A	70	66	A	A	68	79	A	A
11	34		A	A		59	35	A	A	A	A		A	A	A	A	A	A	49	A	68	29	59	29
12	A	A	A	A	A	28	A	A	A	A	A	A	A	A		A	A	A	A	A	A	N	59	35
13	29	A	A	A	A	A	25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A	A	A
14		28		A		A	A	A	A	A	A	A		A	A	A	A	A	58	49	A	89	A	A
15	N	28	N	28	A	A	A	A	A	A	A	A	A	64	67	A	62	60	49	49	A	N		
16		22	28	A			A	A	62	A	A	A	A			A	55	A	A	A	A	A	A	A
17	59	28	59	69	29	28	59	26	59	A	A	68			A	A	64	68	78	76	68	60	58	49
18	A		A	A	26		59	62	69	59	A				A	70	A	81	80	75	73	A	51	
19	26	28	26	20	59	N	A	A	A	67	62	A		A	A	73	82	74	49	60	63		58	
20	29	A	29	A	43	A	36	A	A	A	A	A	A	59	63	64	64	67	72	82	74	A	A	35
21	A	37	A	30	32	24	60	56	57	A	56	A	A	A	64	63	70	67	A	67	79	A	A	37
22	A	A	38	A	A	36		53	68	61	56	A	67	A	A	A	A	A	A	A	A	A	A	A
23	A	38		A	A	N	A	A	60	52	60	76	A	59	A	64	78	85	82	82	81	84		A
24	A	A		A	32	38	47	58	57	A	51	61	A	63	A	A	64	A	A	58	79	60	A	A
25	44	48		N		59	56	68	57		57	70	A	A	64	83	96	96	107	68		80	60	60
26	47		A	A	30			61	55	89	62	68	54	A	A	57	67	74	78	85	68	60	49	
27	56	48	46	69	56		62	A	62	68	A		A	A	C	C	C	C	C	58	89	89	49	A
28		25		22		49	60	62	49	A	67	A	A	A	A	66	72	81	82	78	A	A		22
29	A	59	29	C	C	C	C	C	C	C	C	C		A	67		A	80	C	93	60	A	59	34
30		A	39	23	26	25	23	62		60	A	A	A		A	54	64	78	84	87	68	68	A	A
31	24	25		31		24	31		59	68	A	A	A	A	70	73	A	66	81	80	A	A		25
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	17	14	14	15	17	17	10	17	11						13	19	20	17	21	17	14	13	15
MED	34	31	34	29	30	29	58	62	60	64						68	67	72	78	75	68	68	58	34
U Q	56	48	49	32	43	54	60	62	66	68						73	74	80	82	82	76	80	59	37
L Q	29	28	28	25	26	25	35	56	57	60						63	64	66	62	63	65	60	49	29

HOURLY VALUES OF fEs AT YAMAGAWA

AUG. 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	89	34	26	G	G	26	50	41	40	33	80	34	33	32	33	30		26	30	38	30		G	G
2	G	G	G	G	G	G	30	30	37	64	81	83	66	84	61	72	64	112	90	33	40	33	29	31
3	G	32	32	32	33	34	32	58	34	34	30				30	32	32	29	36	32	26	32	G	32
4	G	G	G	32	G	30	50	33	33	33	27	26	27	38	27	32	40	35	35	41	33	34	32	32
5	G	G	24	32	29	G	30	33	32	30	33		32		30	30	30	39	37	34	41	33	31	34
6	33	39	33	28	27	32	36	40	125	82	110	160	89	89	70	60	31	40	34	30	32	34	33	33
7	31	G	G	G	G	29	34	38	66	84	34	33		80		32	31	40	80	72	60	39	32	34
8	33	32	27	27	24	G	G	53	83	39		93	84	150	78	32	99	106	40	34	55	40	38	40
9	39	38	34	34	G	34	29	32	32	72	40	40	32	32	33	34	26	61	61	92	95	34	34	32
10	33	32	33	33	28	26	33	40	28	31	54	85	61	27	G	94	60	51	78	70	58	33	33	84
11	33		38	33		G	28	32	58	71	38		63	107	71	85	61	39	32	40	28	23	26	22
12	85	69	70	36	33	26	32	41	35	37	80	73	80	72		59	60	38	72	67	37	32	26	G
13	50	38	41	41	70	33	36	C	C	C	C	C	C	C	C	C	C	C	C	C	C	33	32	29
14	30	33	29	32	30	31	33	58	78	81	58	79	G	80	149	91	71	61	34	30	37	24	36	59
15	33	33	33	G	34	33	32	33	34	30	77	57	33	32	G	26	29	26	G	G	34	33	30	34
16		29	G	27			34	58	38	55	66	58	30			31	35	84	33	34	78	33	56	33
17	30	G	G	28	25	G	G	26	33	35	30	G			28	71	31	32	38	30	30	G	G	G
18	33	28	29	26	26	G	26	33	40	62	72			G	68	61	69	33	33	34	33	34	33	26
19	G	G	G	G	G	27	32	27	28	34	31	29		32	33	50	35	31	G	33	G	G	31	58
20	33	71	30	34	32	32	33	38	45	68	78	97	88	51	52	68	39	30	33	41	38	49	40	33
21	33	33	32	32	32	27	25	40	41	44	30	50	33	28	32	32	31	66	60	93	91	108	58	57
22	35	76	44	37	41	40	32	45	42	49	36	44	54	98	113	46	82	90	81	116	109	93	90	84
23	134	36	40	58	37	38	32	48	54	30	39	30	29	44	32	29	34	30	28	G	32	G	G	41
24	55	48	41	29	30	26	48	35	33	68	55	50	30	29	54	64	43	66	62	34	31	29	49	46
25	26	26	G	G		G	31	28	34		G	G	34	43	G	30	G	26	53	29	40	30	80	30
26	28	G	34	34	24	G	32	26	26	58	58	85	53	64	40	23	38	26	38	34	27	28	25	24
27	G	G	32	59	29	G	G	29	28	41	93		104	109	C	C	C	C	C	32	33	32	G	36
28	G	30	33	31	G	33	34	30	31	80	61	50	33	31	32	30	72	75	32	40	82	35	G	29
29	34	24	28	C	C	C	C	C	C	C	C	C		63	151	152	84	68	C	36	32	36	26	27
30	28	34	31	28	25	G	G	32	G	30	37	69	83	G	58	32	32	37	34	27	34	30	36	36
31	28	30	28	25	24	G	28		64	54	35	31	31	32	28	100	146	61	71	54	33	80		40
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	27	29	30	28	29	28	28	24	24	26	26	29	28	29	28	30	30	30	30	31
MED	33	32	31	32	27	26	32	34	35	46	47	50	34	44	33	34	38	39	36	34	34	33	32	33
U Q	34	36	34	34	32	32	34	41	49	68	74	81	73	80	68	69	66	66	61	41	55	35	36	40
L Q	26	G	24	26	G	G	28	31	32	33	33	32	31	32	30	30	31	30	33	32	32	30	26	29

HOURLY VALUES OF fmin AT YAMAGAWA

AUG. 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	15	14	15	14	14	15	15	15	15	17	23		23	24	26	23		15	15	14	14		15	15
2	15	15	15	15	15	15	15	15		17	51	47	48	50	50	27	22	16	14	15	15	15	15	16
3	15	15	15	15	15	15	14	15	15	18						21	16	14	15	14	14	15	15	15
4	15	15	15	15	15	15	15	14	15	16	66	17	20	15	17	15	14	16	18	15	14	14	15	15
5	15	15	14	15	15	20	15	15	15	20	21		48		22	18	16	15	15	15	14	14	15	14
6	15	15	15	14	14	14	14	15	15	16	18	48	47	48	18	18	16	15	15	14	14	14	14	15
7	14	15	14	14	14	14	14	15	15	16	21	24		49		24	21	16	17	16	14	14	14	15
8	15	15	15	14	15	14	15	14	15	16		46	22	48	23	16	15	15	15	14	15	14	15	15
9	15	15	15	15	14	15	15	15	16	21	20	23	23	23	18	16	16	15	16	15	15	14	14	14
10	15	15	15	15	15	15	14	14	15	16	20	47	49			22	16	15	14	15	15	15	15	15
11	14		15	14		14	14	14	14	16	17		48	50	46	20	15	15	14	14	15	15	15	15
12	14	14	15	14	15	15	14	14	15	17	18	46	21	49		26	18	15	15	14	15	14	15	15
13	15	14	14	14	14	15	14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	14	15	15
14	15	14	14	14	14	14	15	14	15	45	45	48		48	46	46	17	15	15	15	15	15	15	15
15	15	15	14	15	14	15	14	14	15	18	22	23	23	20	52	17	48	16	21	15	15	14	14	14
16		14	15	15			15	15	15	20	20	48	66			23	16	15	15	15	15	14	15	14
17	15	14	15	14	15	15	15	14	15	17	20	54				18	17	16	14	15	14	14	15	14
18	15	15	14	15	15	15	15	14	15	16	45				44	20	16	15	14	14	14	15	15	15
19	17	18	15	15	15	14	15	14	16	22	50	21			21	16	15	15	16	15	14	15	15	15
20	15	15	14	14	14	14	14	15	16	16	18	23	23	21	20	17	15	15	15	15	14	14	14	15
21	14	15	14	15	15	15	14	14	15	16	17	17	16	15	20	16	16	16	14	14	15	15	14	15
22	15	15	15	14	15	15	15	14	14	15	18	22	47	34	22	20	16	14	14	15	14	14	15	15
23	14	14	14	15	14	14	14	14	15	15	21	16	20	17	17	16	15	14	14	15	15	14	14	14
24	14	15	14	14	14	15	14	15	15	15	17	33		16	20	15	15	15	15	16	16	16	15	15
25	16	16	15	17		17	17	18	18		50	47	44	24	48	52	46	16	16	16	15	14	15	16
26	16	16	15	15	16	16	16	15	16	30	36	30	48	33		48	24	44	15	15	15	15	15	15
27	15	16	15	16	16	15	16	15	18	33	18		39	44	C	C	C	C	C	14	15	15	16	15
28	15	15	14	15	15	15	14	15	14	15	16	20	22	21	21	16	15	14	15	15	14	14	14	15
29	14	15	15	C	C	C	C	C	C	C	C	C		42	21	21	16	15	C	15	15	14	15	14
30	15	15	15	14	15	15	15	14	46	21		45	46	49	46	23	23	15	14	14	15	15	15	14
31	14	14	14	14	14	14	15		15	16	22	23	21	17	15	16	16	15	15	15	14	14		15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	31	30	27	29	30	28	28	28	26	23	22	23	22	29	28	29	28	30	30	30	30	31
MED	15	15	15	15	15	15	15	14	15	16	20	30	31	33	22	20	16	15	15	15	15	14	15	15
U Q	15	15	15	15	15	15	15	15	15	20	36	47	48	48	46	23	17	16	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	15	16	18	22	22	20	20	16	15	15	14	14	14	14	14	14

HOURLY VALUES OF foF2 AT OKINAWA

AUG. 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	36		33			A			A		A	A	67	75	71	81		81	82	60	A	44	49
2			60	43	61	56	46	60	68	49	A	A	72	68	A	A	77	93	91	86	93	60	62	68
3	65	70	68					A	57		62	A	A	A	63	68	72	80	93	80	82	95	58	
4	67	70	70	58	46		54	33	87	85	54	A	A	A	74	82	77	82	82	73	82	46	41	54
5	A	49		46	38	89	38	50	63	63	A	A	A	A	92	A	81	83	91	A	A	52	54	
6	43	34	A	A	A	A	A	A	A	63	80	A	A	A	82	A	88	A		A	A	A	A	54
7	61	70	68	71	43	26	44	54	66	58	A	A	A	A	59	63	84		94	74	66	56	43	A
8	A	A		A	A	N	A	55	63	A	A	A	A	A	A	A	A	88	A	93		39	69	
9	A	A	38	38		30		50	58	58	A	A	A	53	74	82	92	81	87	83	A	63	A	A
10	44	35	A	A	89	A	35	64	66	68	56	63	A	A	A	A	A	80	81	92	92	88	A	A
11	52	55	55	40	34	37	62	A	60	A	55	A	A	A	91	A	86	83	A	A	74	A	47	59
12	47	46	31	35	36	31	A	A	A	A	A	A	A	A	A	A	A	52	61		56	A	A	A
13	A	A	A	36	A	A		68	60	A	A	A	58	A	70	84	92	87	92	93	74	A	A	48
14	54	48	42	38		32	A	50	A	A	A	A	A	A	A	68	80		74	60	A	60	A	A
15	52	A		A	A	A	A	50	59	A	A	64	82	87	92				92	92	68	58	44	47
16	A	38	37		29	69	A	A	A	A	64	56	A	A	59	65	74	74	82	93	83	A	47	A
17	44	45	43	41	69	41	A	57	57	68	75	57	58	56	A	A	A	A	A	85	68	A	46	89
18	46	A	37	46	A	A	44	51	57	A	51	A	61	A	88	80	95	A	91	94	94	48	A	68
19	70	69	61		69	37	36	57	64	63	58	58		A	67	81	92	92	85	67	70	58	43	46
20		A	A			A	A	A	51	56	A	58	68	72	77	A	81	90	96	89	82	A	A	
21		31		A	A	59	A	59	57	A	A	58	A	A	62	A	73	70	81	93	94	73	A	38
22	30	35	A	A	A	A	A	44	69	A	55	A	A	86	82	74	73	86	A	82	82	71	44	A
23	38	44	A	38	A	A	A	52	62		A	74	58	A	67	82	98	108	93	95	92	55	49	
24	40	38	44	A	A	A	36	60	59	56		A	66	A	A	62	74	82	71	93	82	94	A	A
25		A	41	41	38	35	44	56	28	80	62	58	A	67	81	91	104	124	123	136	152	82	A	A
26	48	44	59	41	30	29	46	45	58	63	67	67	61	60	A	A	82	86	85	82	81	89	41	37
27	37	46	43	35	38	A	A	A	65	63	52	49			59	81	82	86	93	65	57	A	43	A
28	A	48	68			41	A	A	58	68	58	A	54	68	67	71	87	104	114	89	58	A	A	A
29	43	32	A	A	A	A	A	56	62	A	A	54	60	66	68	A	81	83	93	95	82	A	A	A
30	A	48	29	44		26	A	N	63	58	62	58		59	C	C	75	92	92	93	82		A	A
31	A	46	38	38			A	A	58	A	A	A	62	A	72	74	81	82	90	A		A	A	A
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	23	19	18	13	15	11	20	26	16	15	13	12	12	22	17	26	24	26	26	25	18	16	12
MED	46	46	43	40	38	37	44	54	60	63	58	58	61	67	73	74	81	84	91	89	82	60	45	52
U Q	54	49	61	44	65	56	46	58	64	68	64	63	67	70	82	82	88	91	93	93	87	82	51	63
L Q	40	36	38	38	35	30	36	50	58	58	55	56	58	59	67	68	77	81	82	82	68	55	43	46

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

AUG. 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	39	26	128	G	151	152	150	169		157		47	132	64	48	42	57	175	22	29	34	50	34	G
2	G	22	G	11	G	G	G	31	32	36	49	118	60	52	148	96	62	61	58	58	80	60	28	G
3	G	G	25					46	64		42	53	53	62	44	42	38	38	34	48	39	139	25	G
4	G	45	G	G	G		34	44	42	66	48	43	56	37	53	58	60	58	42	40	58	50	38	37
5	62	46		24	G	44	33	35	32	47	54	63	68	129	69	90	72	59	50	96	70	40	50	
6	G	33	58	56	48	40	39	50	94	45	55	43	68	126	116	109	57	106		98	52	68	74	50
7	36	40	66	40	25	G	35	26	42	35	42	40	40	35	33	47	44	68	98	81	50	35	24	61
8	54	50	35	35	28	G	40	36	39	145	60	82	76	86	95	142	109	67	94	44		52	44	
9	36	33	G	G		G	G	34	37	36	52	64	45	46	50	60	65	75	78	60	92	72	67	51
10	63	48	32	38	G	32	36	33	46	52	48	40	66	154	68	66	73	57	60	43	59	47	48	45
11	39	36	34	27	G	G	32	39	46	68	68	56	86	59	64	95	68	40	86	118	40	50	G	G
12	28	G	G	36	35	29	44	39	51	92	64	118	91	148	96	118	82	69	33		G	48	99	56
13	44	43	44	33	66	81		42	59	86	78	44	52	67	69	34	54	68	52	40	39	47	44	42
14	27	G	G	G	G	G	29	40	44	38	68	65	111	44	63	43	54		45	42	34	37	52	48
15	73	98	66	74	56	37	34	44	35	40	39	42	48	36	34	26	34		24	G	23	32	28	44
16	81	33	34		G	G	44	42	50	73	46	53	52	49	50	50	51	91	69	81	70	59	38	66
17	33	32	G	28	26	24	44	27	41	42	48	49	54	52	74	82	86	135	97	88	94	56	G	24
18	G	25	G	G	27	33	22	42	41	43	44	72	73	126	58	88	91	112	90	98	59	48	49	38
19	44	77	60	25	30	29	37	33	38	41	40	42		40	36	36	36	31	25	G	G	G	G	G
20	G	43	43		30	49	38	49	43	40	68	41	49	54	63	76	53	43	46	44	59	34	34	
21		27	33	24	33	39	38	29	40	73	68	49	42	43	53	72	69	32	G	62	43	45	47	48
22	37	38	41	32	37	33	36	44	58	61	50	74	160	49	59	43	56	58	98	77	65	30	27	80
23	33	23	78	44	98	59	75	64	60		82	68	39	53	41	36	39	38	25	26	33	25	40	G
24	G	26	30	48	40	32	34	34	41	44		62	57	65	91	58	62	62	41	32	33	48	49	57
25		39	44	27	G	G	96	28	38	35	39	34	44	43	37	39	38	38	37	32	30	60	59	37
26	28	40	34	36	28	G	G	34	54	42	33	42	54	48	37	64	32	38	30	28	38	32	G	48
27	29	25	42	30	36	28	34	38	44	51	39	59	G		52	54	48	94	67	71	44	44	26	51
28	48	38	32	G		G	42	47	59	68	38	74	44	39	41	40	48	41	69	72	52	84	68	36
29	39	28	38	47	35	34	38	G	35	50	40	G	G	58	65	87	79	64	69	129	84	98	78	58
30	60	44	34	25	G	G	50	31	28	31	34	G		G	C	C	52	40	G	37	G	28	40	42
31	43	44	47	38		G	45	59	58	71	76	69	39	124	66	33	61	68	93	148		82	66	54
	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	31	30	28	27	29	29	31	30	29	29	31	29	30	30	30	31	29	30	30	29	31	31	28
MED	36	36	34	29	28	29	37	39	42	47	48	53	54	52	58	58	57	61	51	53	44	48	40	44
U Q	46	44	44	38	37	38	44	44	54	69	66	68	70	67	69	87	69	72	78	81	62	60	52	52
L Q	14	26	25	17	G	G	33	33	38	40	40	42	44	43	44	42	48	40	33	37	33	35	27	30

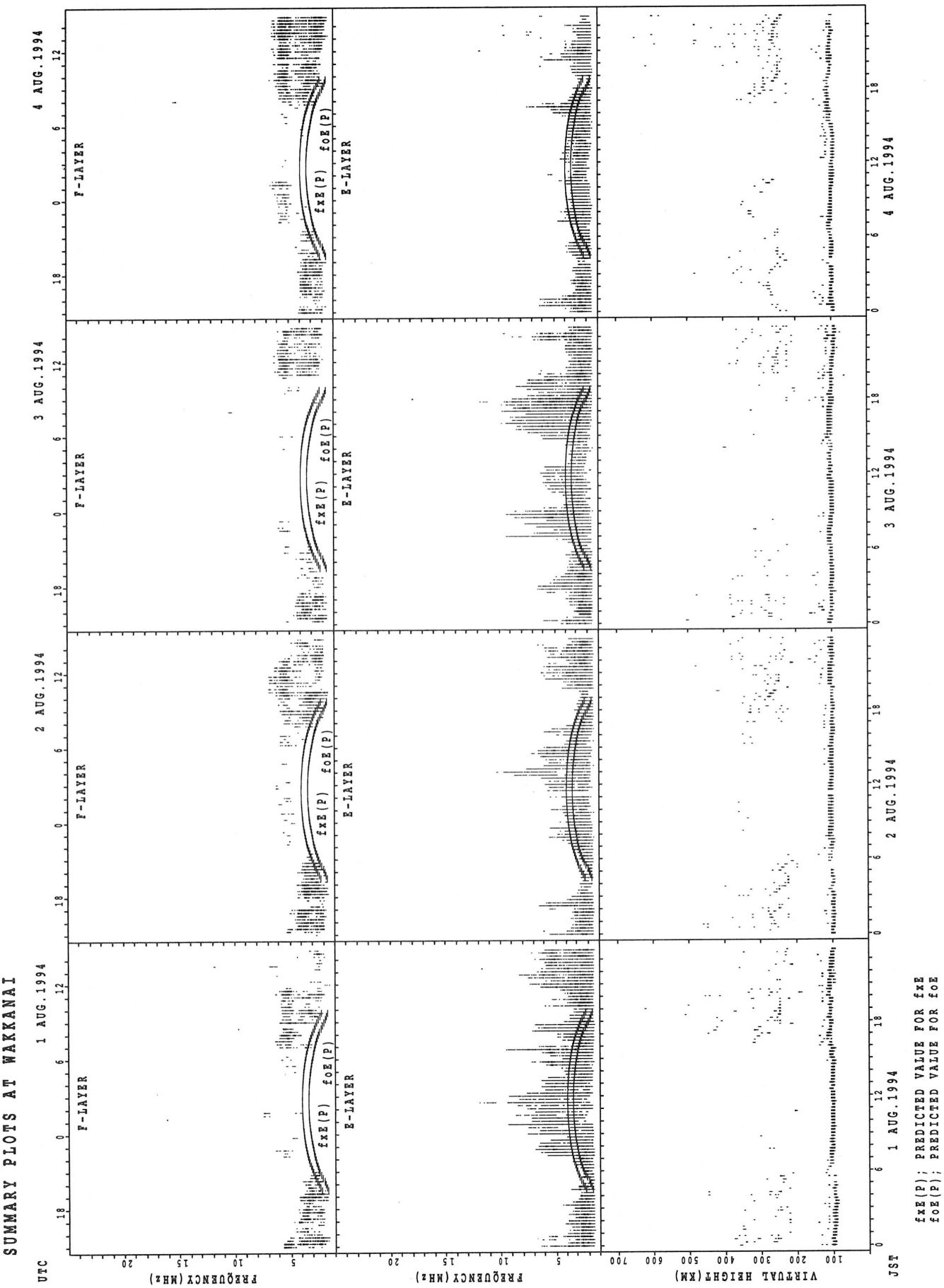
COMMUNICATIONS RESEARCH LABORATORY, JAPAN

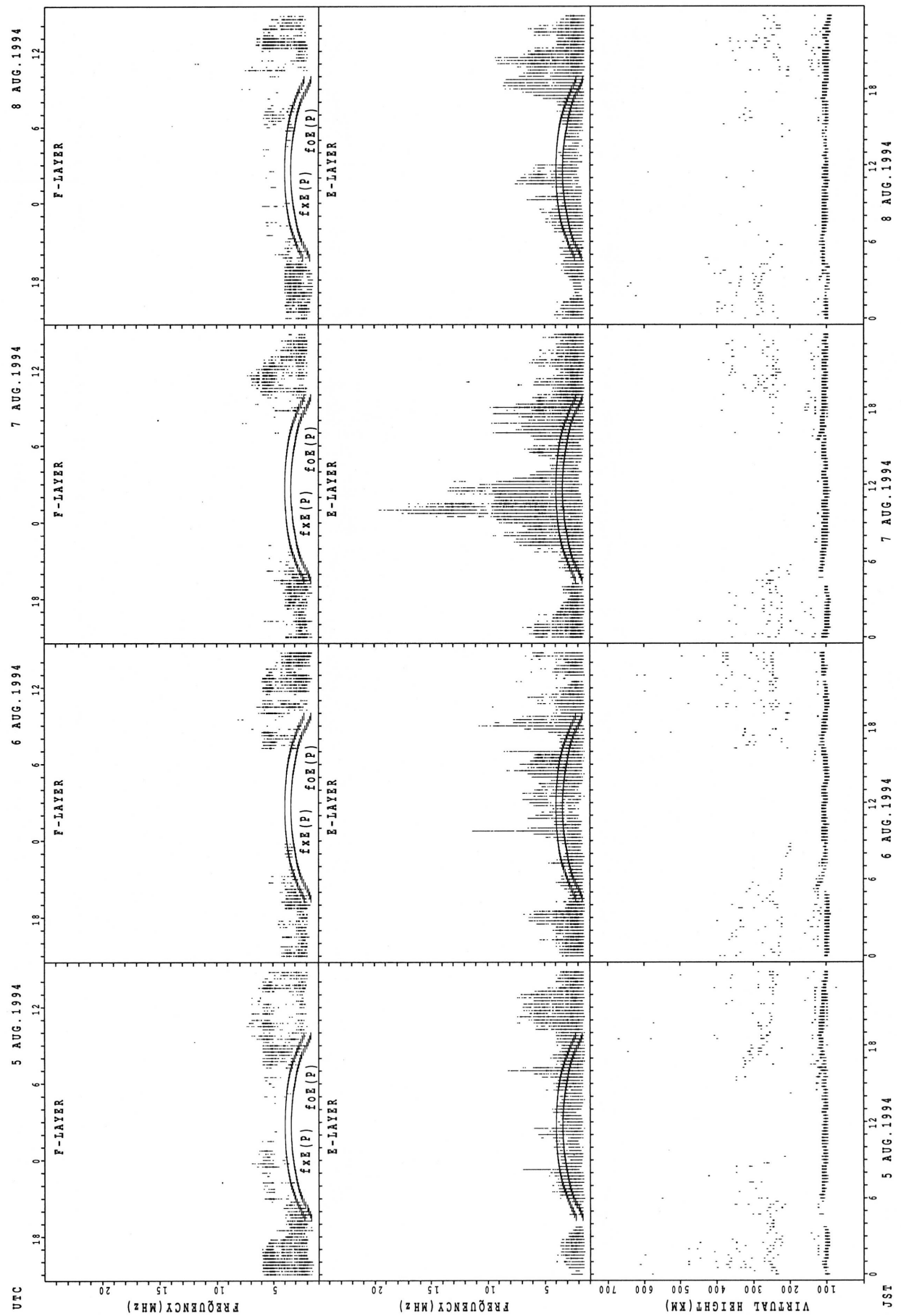
HOURLY VALUES OF fmin AT OKINAWA

AUG. 1994

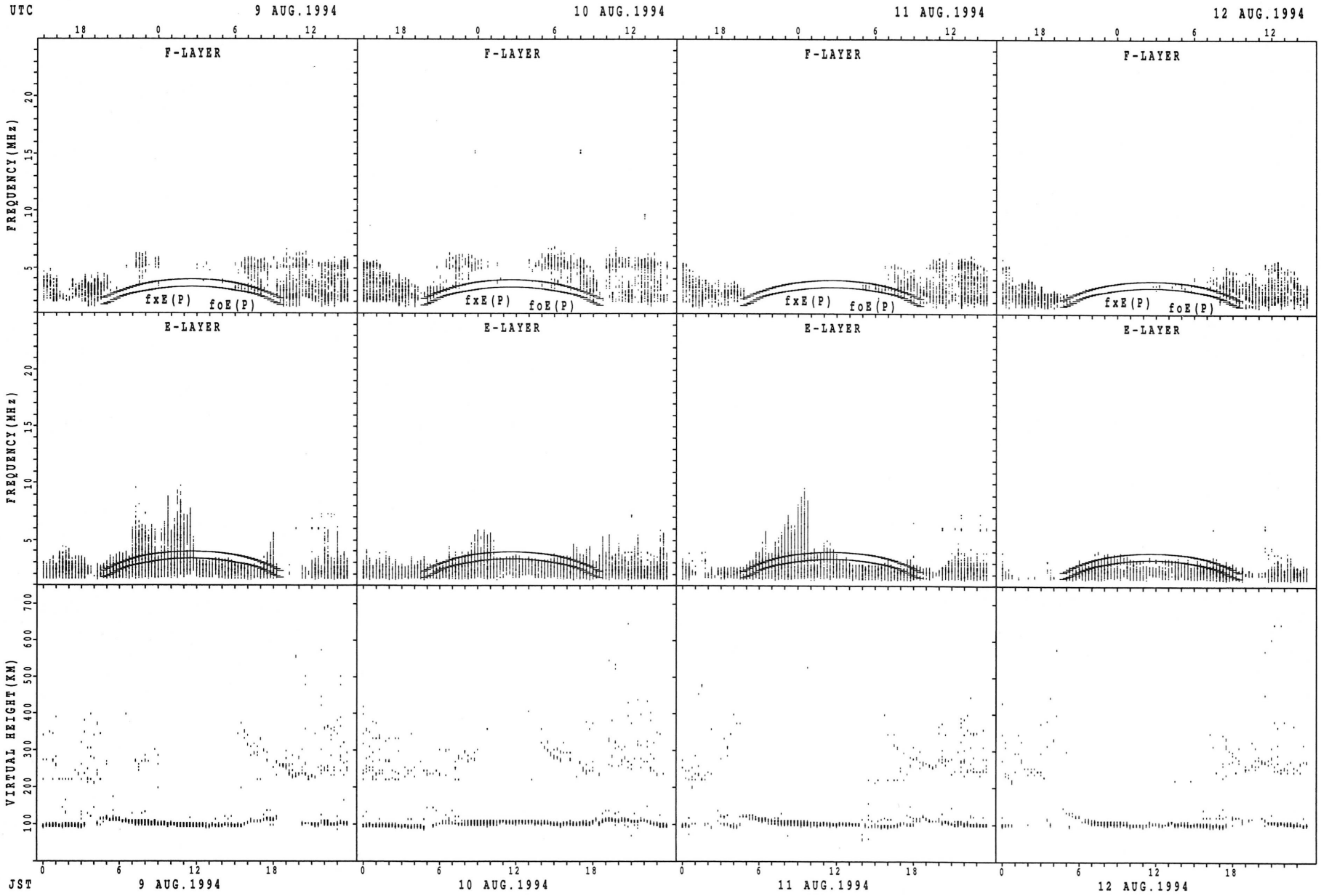
LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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	28	14	16	14	24	14		33		26	38	28	26	18	16	16	24	14	14	14	14	15
2	14	15	14	15	15	14	15	15	15	17	23	28	29	32	28	18	18	14	15	14	15	14	14	15
3	15	15	16					14	16		24	27	29	30	29	22	18	14	15	14	14	15	15	14
4	14	15	14	14	15		14	14	14	14	16		27	29	15	15	15	14	15	15	15	14	15	14
5	15	14		14	15	14	15	14	15	17	22	21	27	23	23	17	16	14	16	14	14	14	14	
6	15	15	14	14	14	15	14	14	14	16	16	22	26	21	16	18	16	14		15	14	15	14	14
7	14	14	14	15	15	15	14	14	15	16	22	26			23	20	17	15	16	14	14	14	14	14
8	15	15	15	15	15	18	14	14	15	17	17	18	20	17	18	18	16	15	15	14		14	15	
9	14	14	14	15		15	14	14	15	17	18	20	18	17	17	16	15	15	17	15	14	15	14	14
10	14	14	14	14	14	14	14	14	16	15	20	18	16	20	28	27	16	15	16	17	14	15	15	14
11	14	14	14	15	15	15	14	14	14	15	16	16	29	29	29	17	15	15	15	14	14	14	14	15
12	14	14	15	14	14	14	15	14	14	16	22	29	23	32	30	18	16	14	14		15	15	14	14
13	14	14	14	15	14	14		14	14	23	27	18	49	38	35	48	18	16	15	14	14	15	15	14
14	14	15	14	14	27	15	15	14	14	17	18	30	29	30	27	29	17		14	14	15	14	14	15
15	14	14	15	14	15	14	14	14	15	16	18	26	23	20	18	16	16		18	15	15	14	14	15
16	14	15	15		15	15	14	16	27	29	30	34	33	29	30	21	16	15	15	14	14	14	14	14
17	14	14	16	14	14	15	14	14	15	17	18	32	29	29	33	26	17	16	15	14	14	14	15	14
18	14	15	16	14	15	14	15	14	14	15	17	28	29	29	29	22	17	14	15	15	14	15	14	14
19	14	15	14	15	14	14	14	14	14	15	18	22		27	28	17	16	14	16	14	15	15	15	15
20		14	15		15	14	14	14	15	17	20	48	36	24	20	18	16	14	14	14	14	14	14	
21		14	14	16	14	14	14	14	14	16	16	17	16	16	29	32	17	16	33	14	14	15	14	14
22	14	14	14	14	14	15	14	14	14	17	30	27	22	28	28	24	16	15	15	14	14	14	15	15
23	15	15	14	14	14	14	14	14	14		16	28	18	15	16	16	14	14	14	14	14	15	14	15
24	15	15	14	15	15	14	14	14	15	14		24	36	30	34	30	16	15	17	14	14	14	14	14
25		14	14	15	14	15	15	14	18	15	17	16	28	28	23	16	16	15	14	14	14	15	14	15
26	15	14	15	15	14	15	14	18	14	18	17	20	17	17		20	15	14	15	14	15	15	14	14
27	14	14	15	14	15	15	14	14	15	16	20	37			36	35	18	14	14	14	14	14	15	14
28	15	14	14			15	14	14	15	18	27	33	26	24	20	16	16	14	14	14	15	14	14	15
29	15	14	14	14	14	14	14	14	15	16	48	45	48	33	35	29	16	16	14	14	14	14	14	14
30	14	15	15	15	15	15	16	14	20	23	28	49		48	C	C	17	15	29	16	14	14	15	14
31	14	14	14	14		14	14	14	16	16	32	32	49	29	23	16	18	15	14	14		14	15	14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	31	30	27	27	29	29	31	30	29	29	30	27	29	29	30	31	29	30	30	29	31	31	28
MED	14	14	14	14	15	14	14	14	15	16	20	26	28	28	28	18	16	15	15	14	14	14	14	14
U Q	15	15	15	15	15	15	15	14	15	17	25	32	33	30	29	26	17	15	16	14	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	17	20	22	20	20	17	16	14	14	14	14	14	14	14

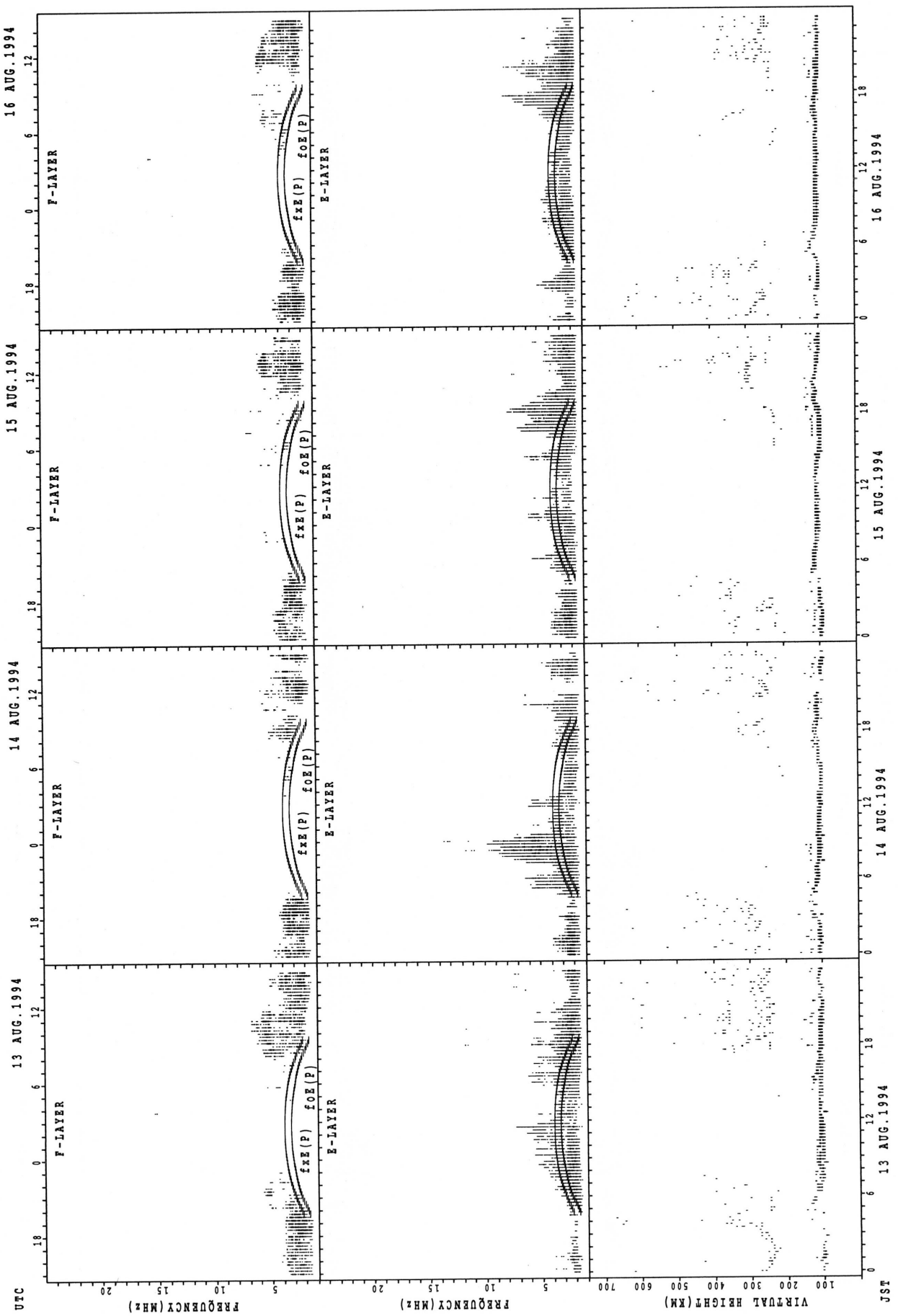

SUMMARY PLOTS AT WAKKANAI
UTC
JST
1 AUG.1994
2 AUG.1994
3 AUG.1994
4 AUG.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
5 AUG.1994
6 AUG.1994
7 AUG.1994
8 AUG.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

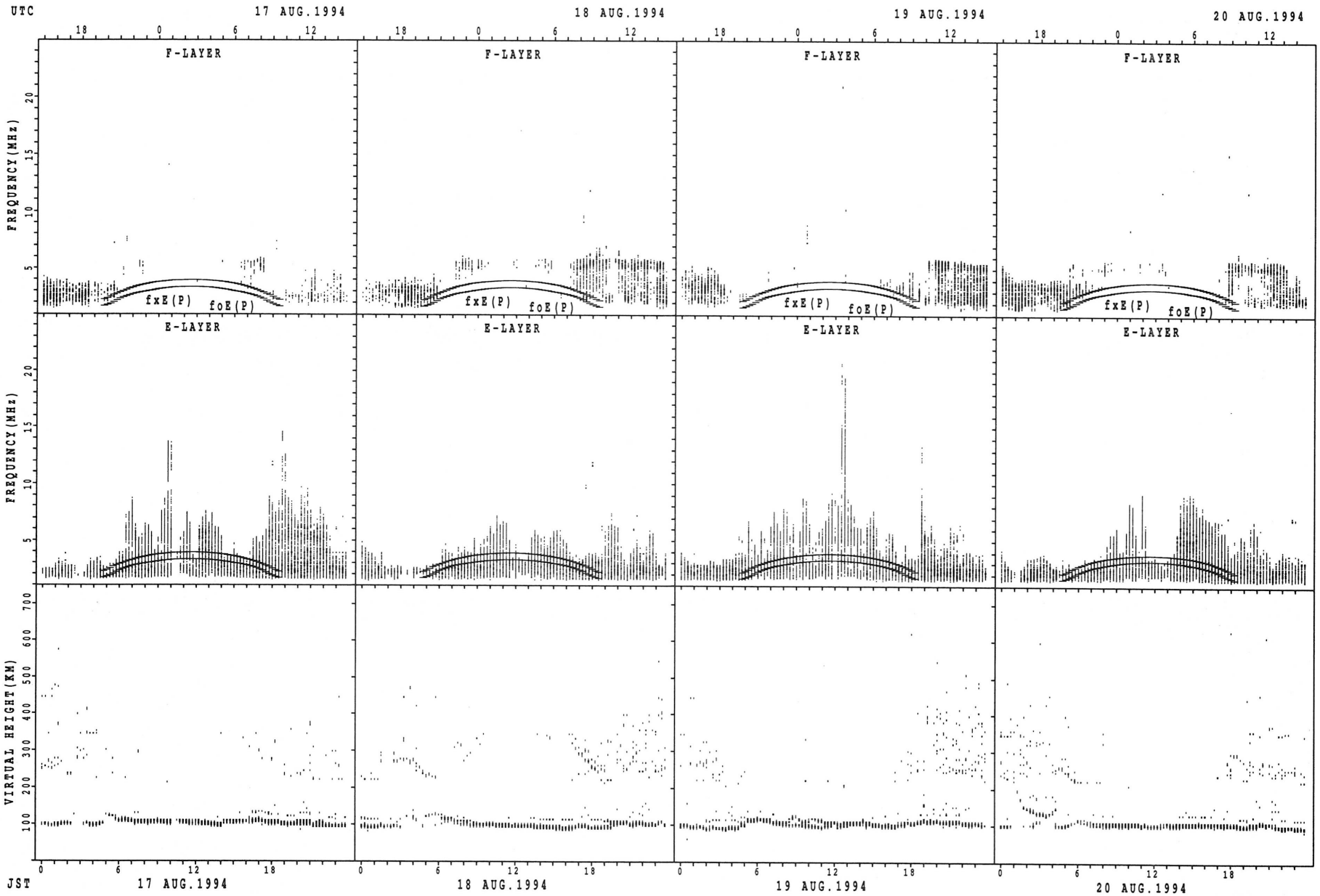
SUMMARY PLOTS AT WAKKANAI



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

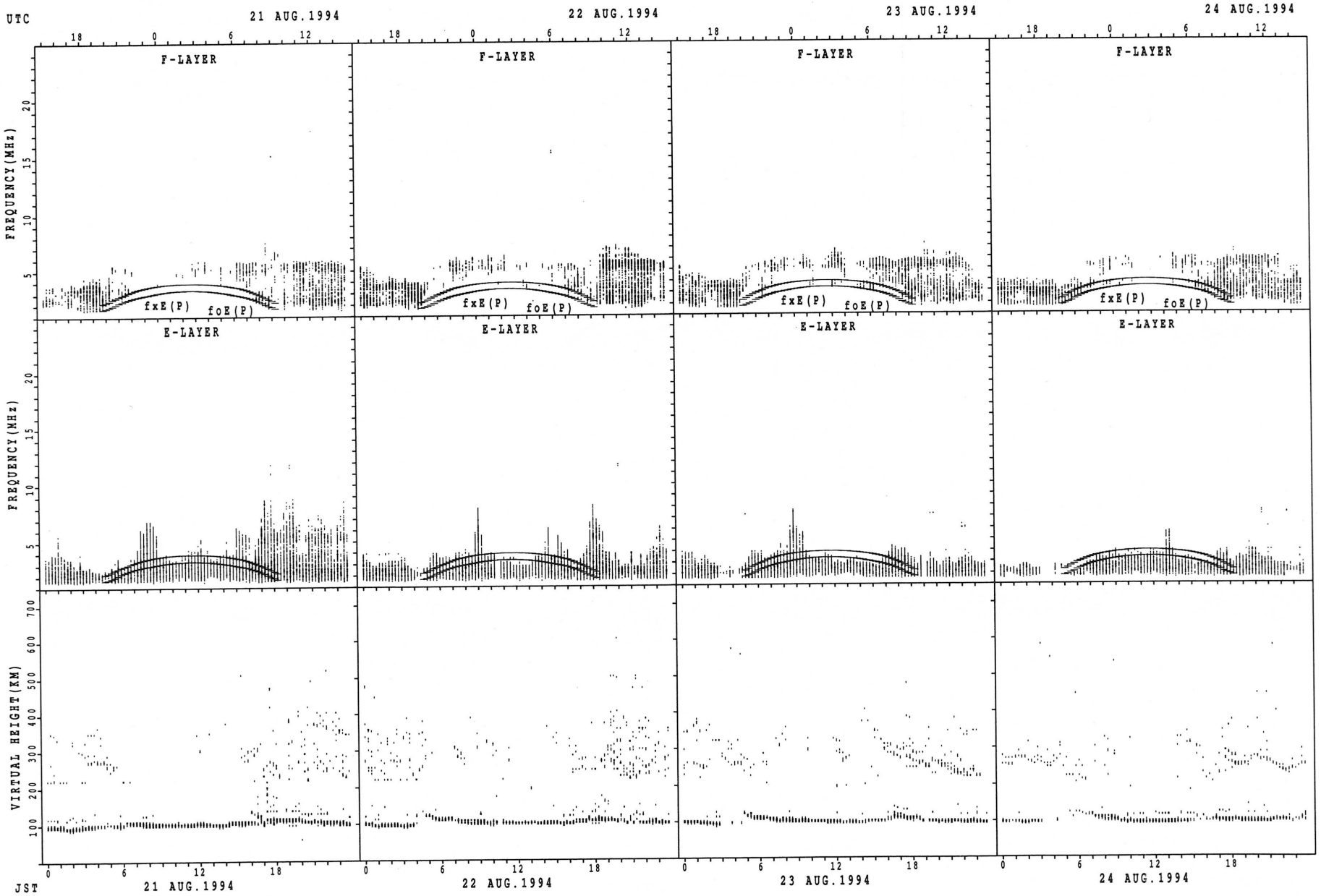

SUMMARY PLOTS AT WAKKANAI
13 AUG.1994
14 AUG.1994
15 AUG.1994
16 AUG.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
UT
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

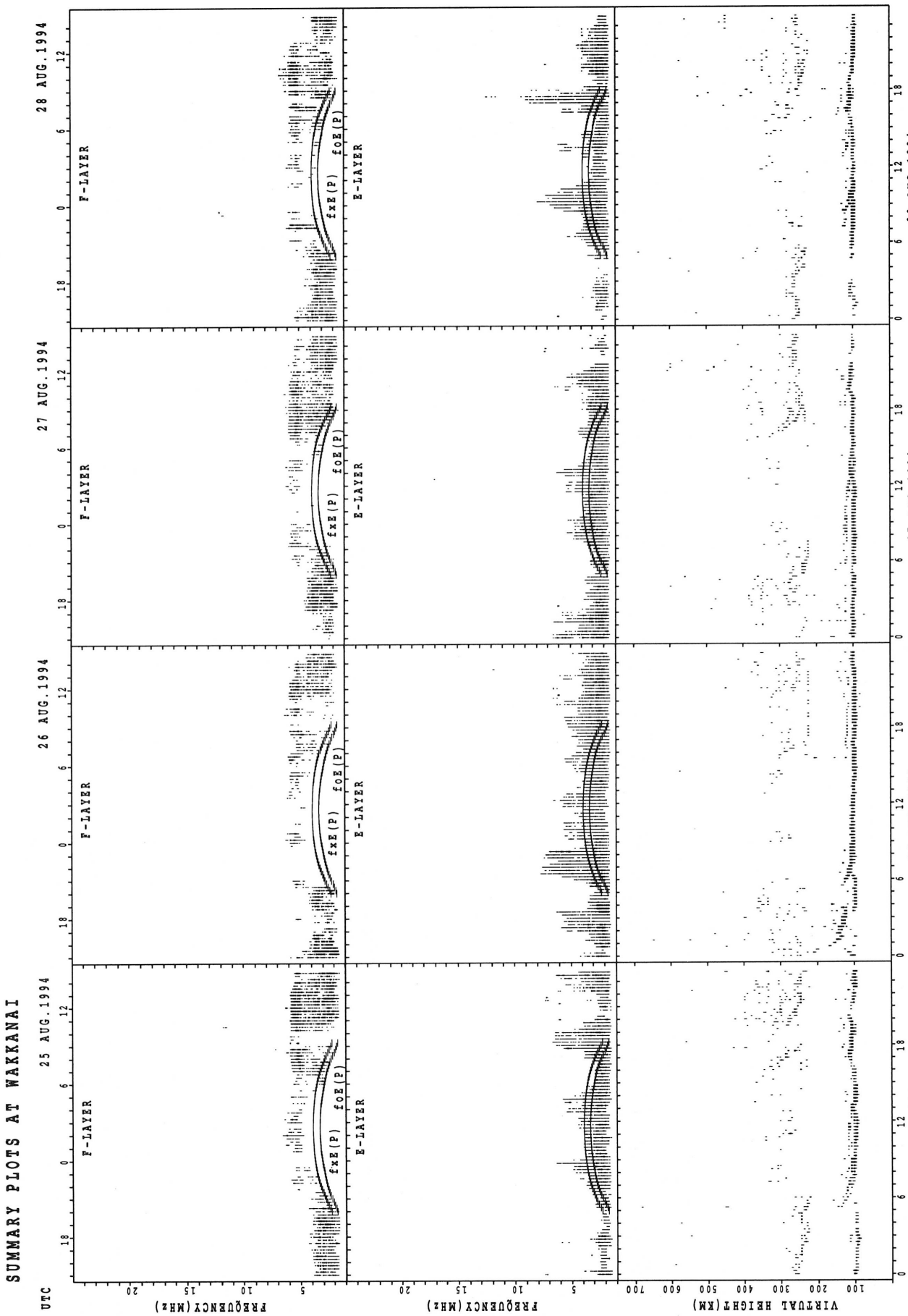


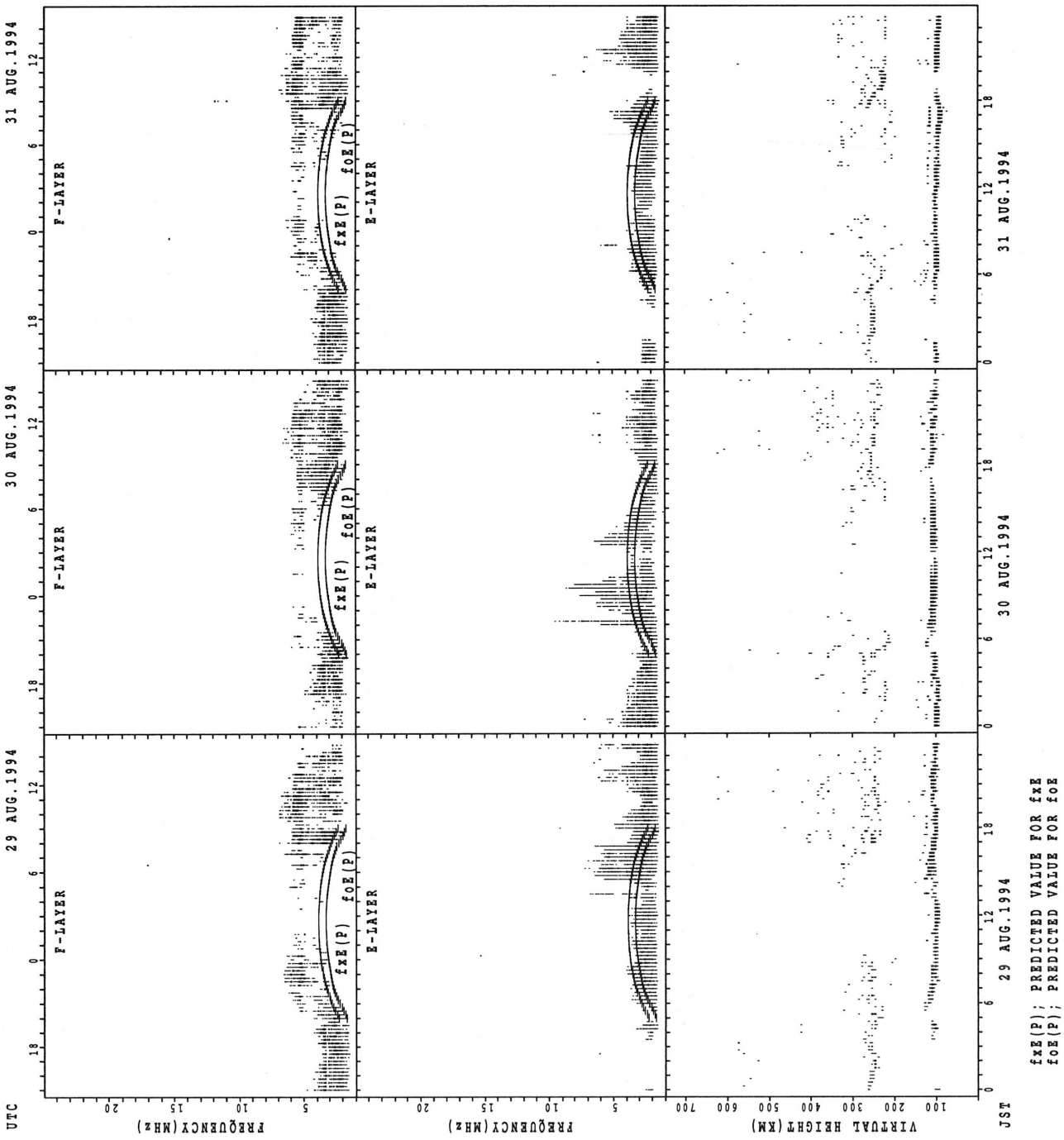
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

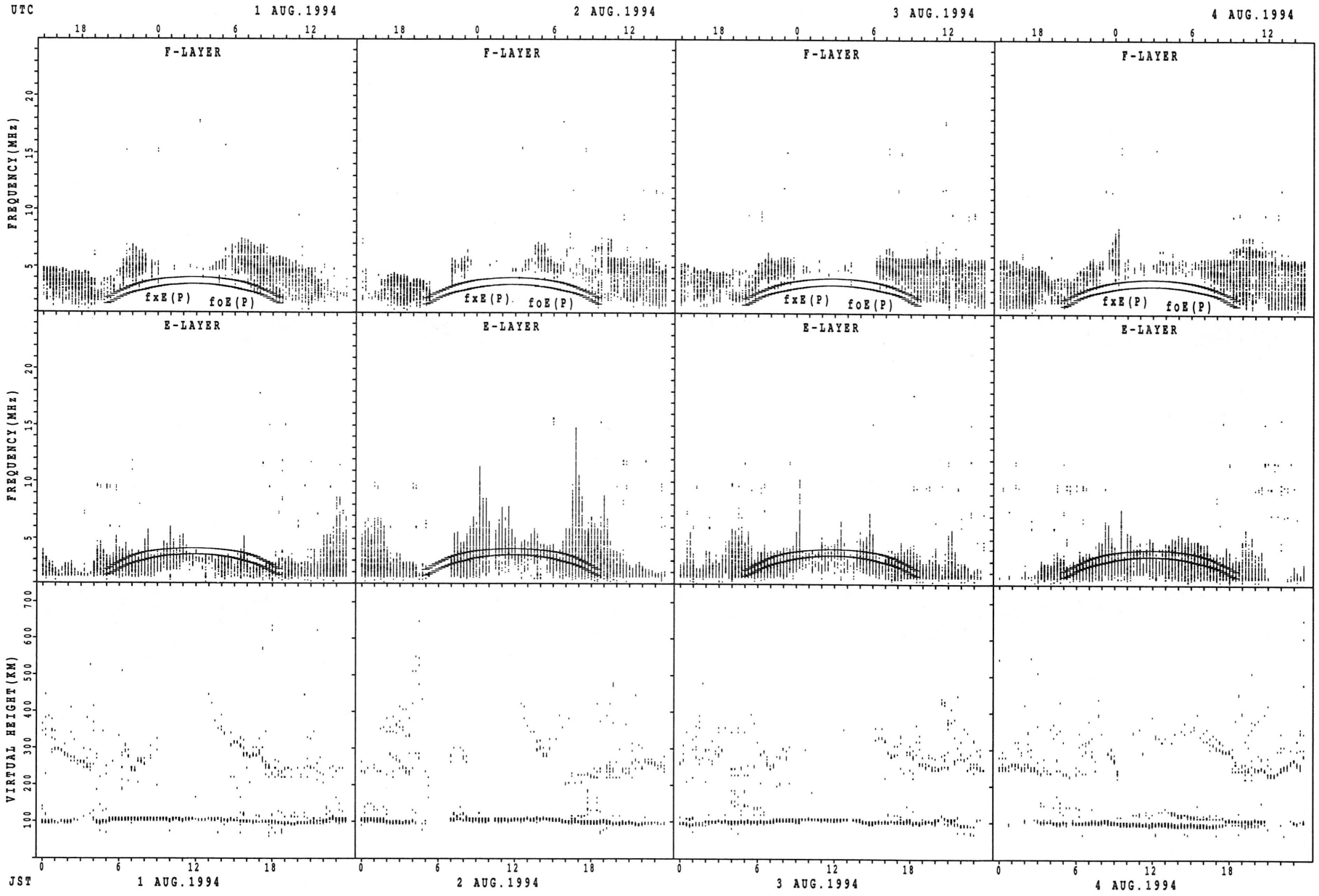


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

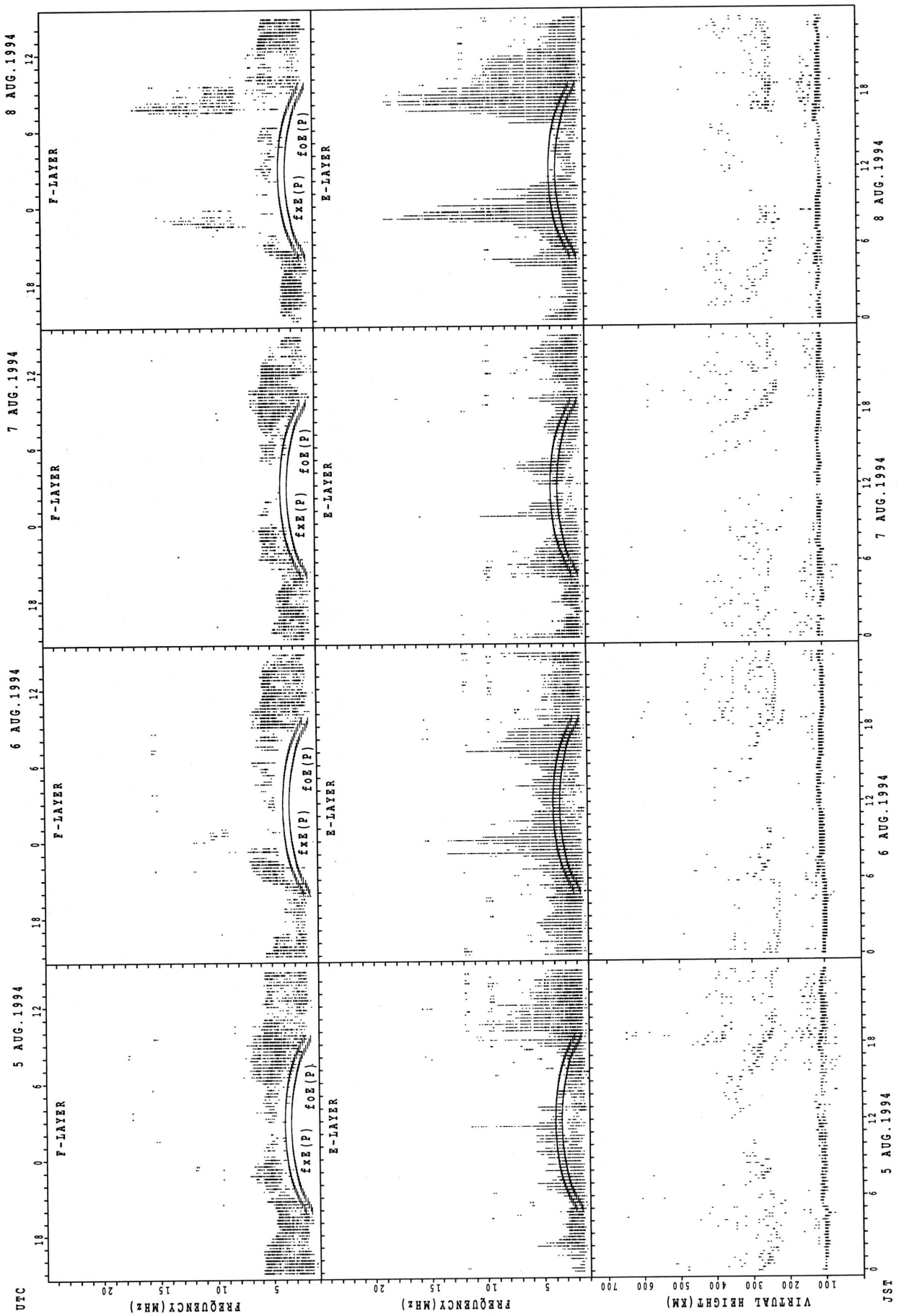

SUMMARY PLOTS AT WAKKANAI
UTC
JST
25 AUG.1994
26 AUG.1994
27 AUG.1994
28 AUG.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
29 AUG.1994
30 AUG.1994
31 AUG.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

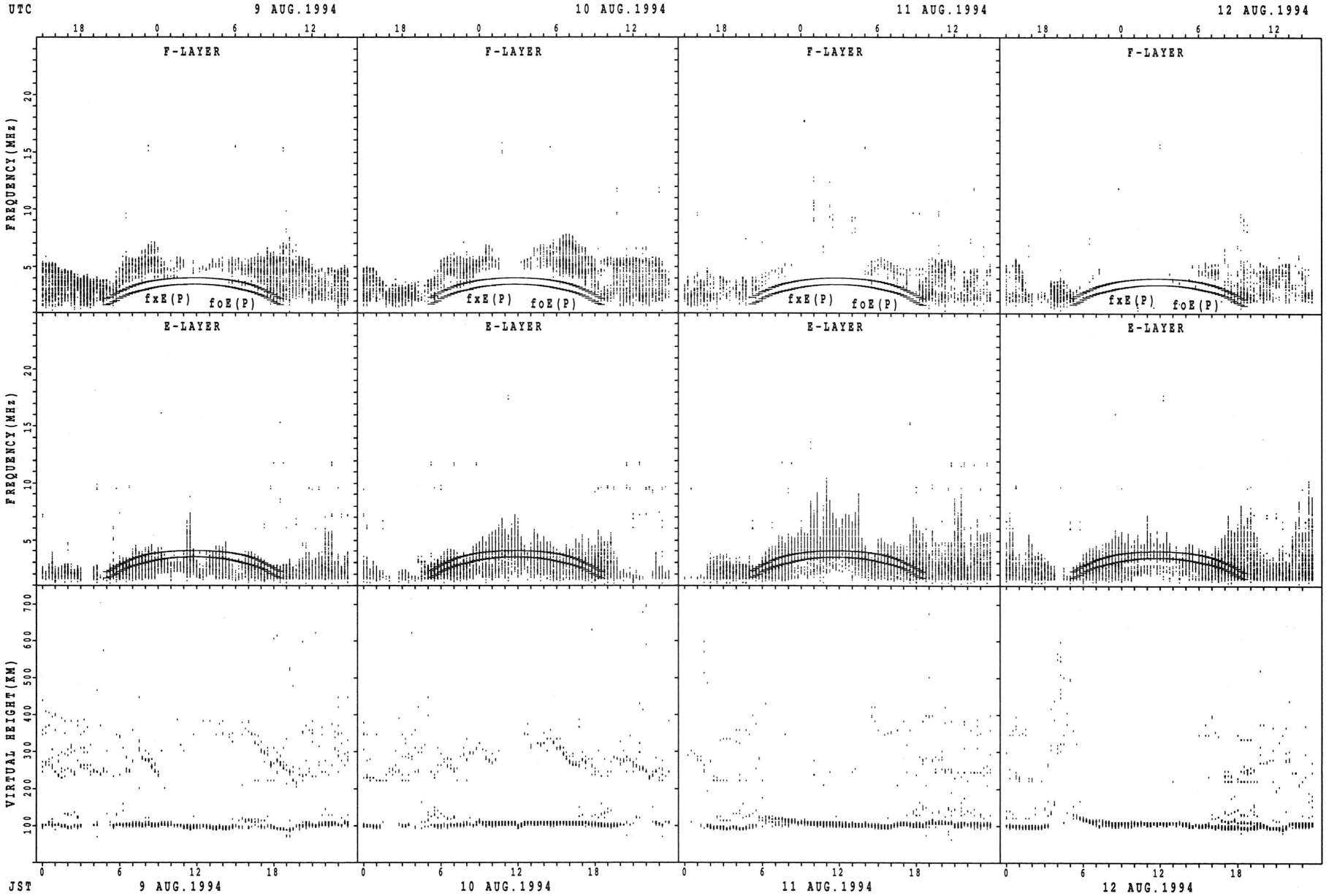
SUMMARY PLOTS AT KOKUBUNJI TOKYO



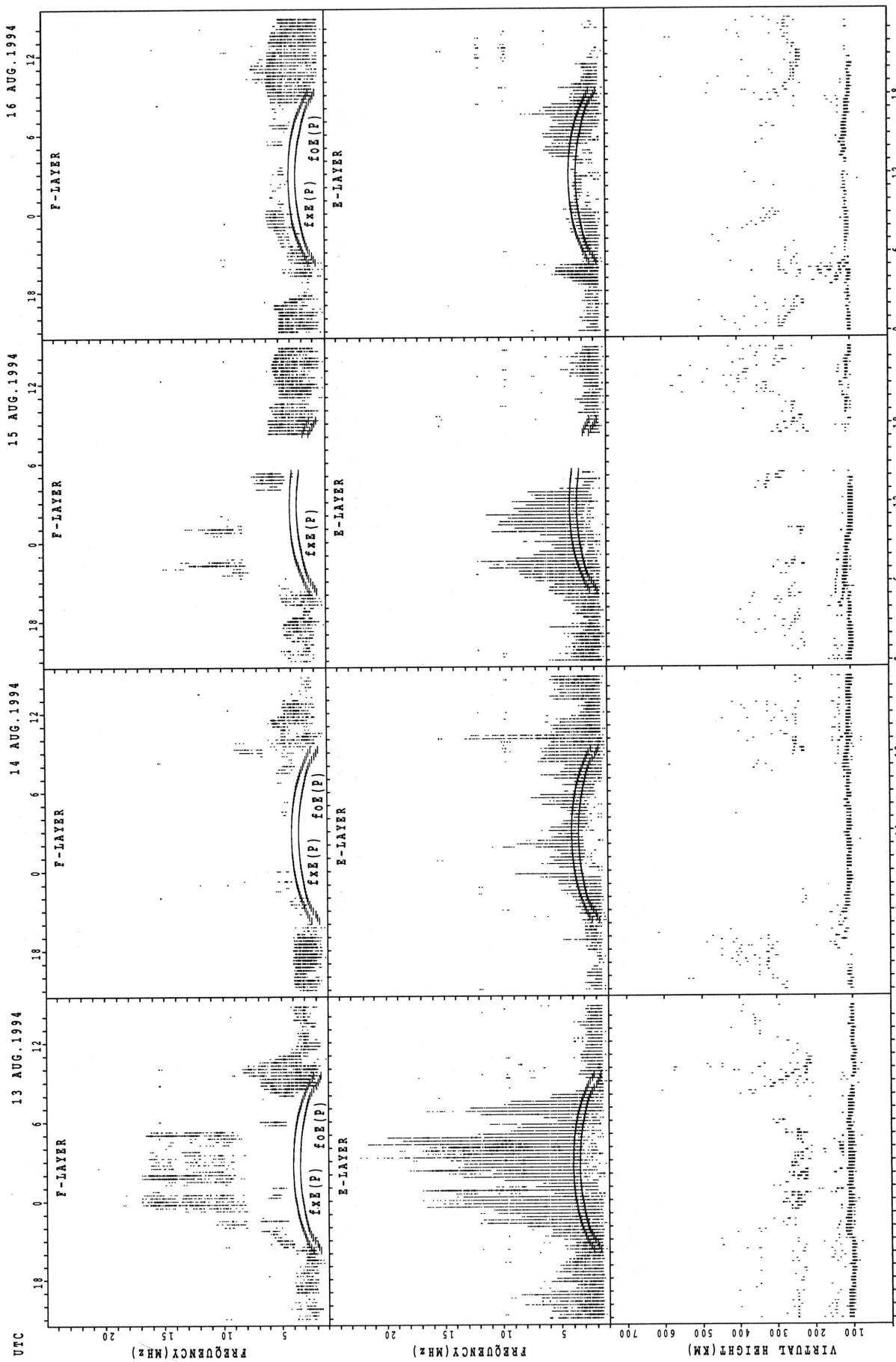
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 AUG.1994
6 AUG.1994
7 AUG.1994
8 AUG.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

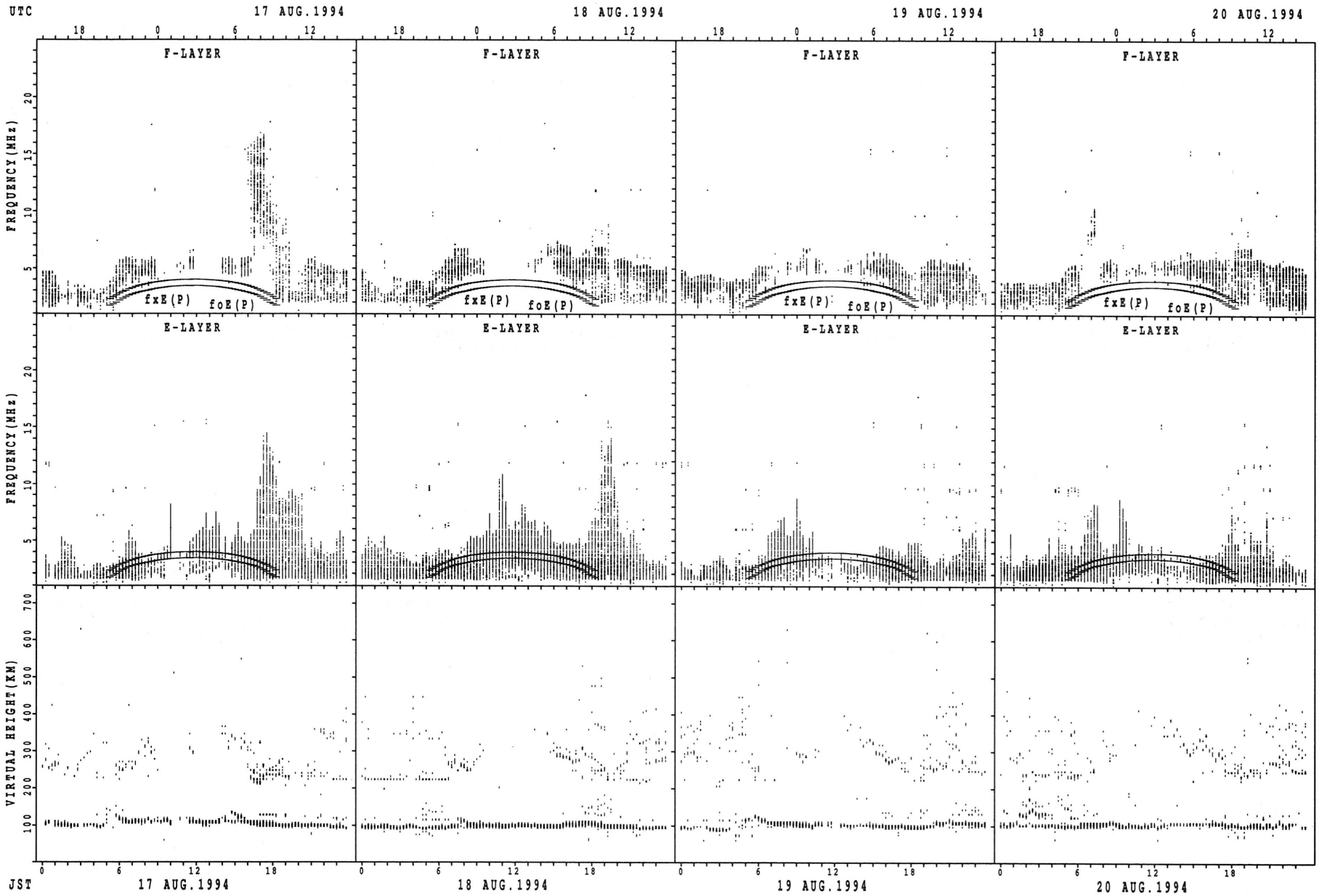
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

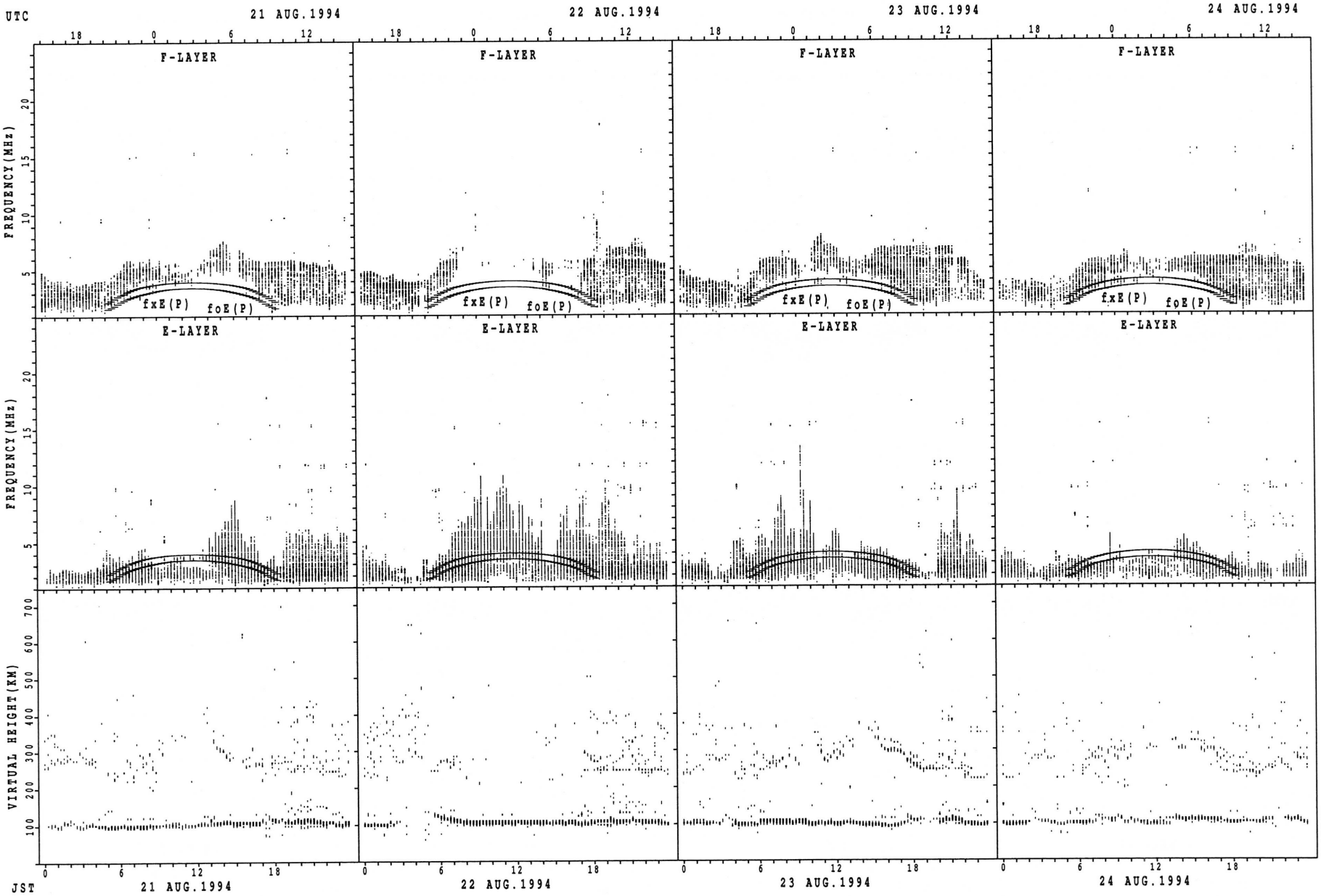

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
13 AUG.1994
14 AUG.1994
15 AUG.1994
16 AUG.1994
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



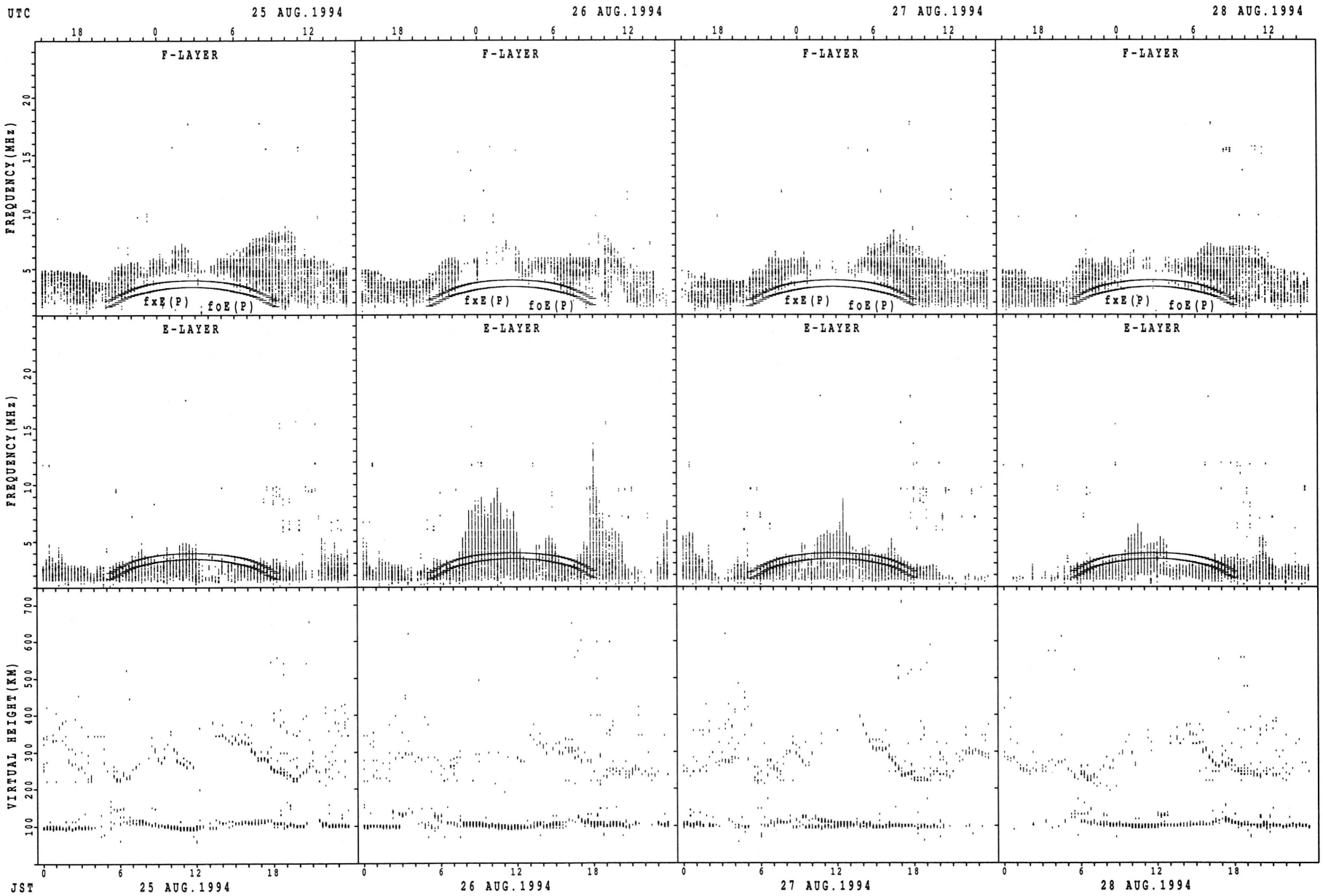
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



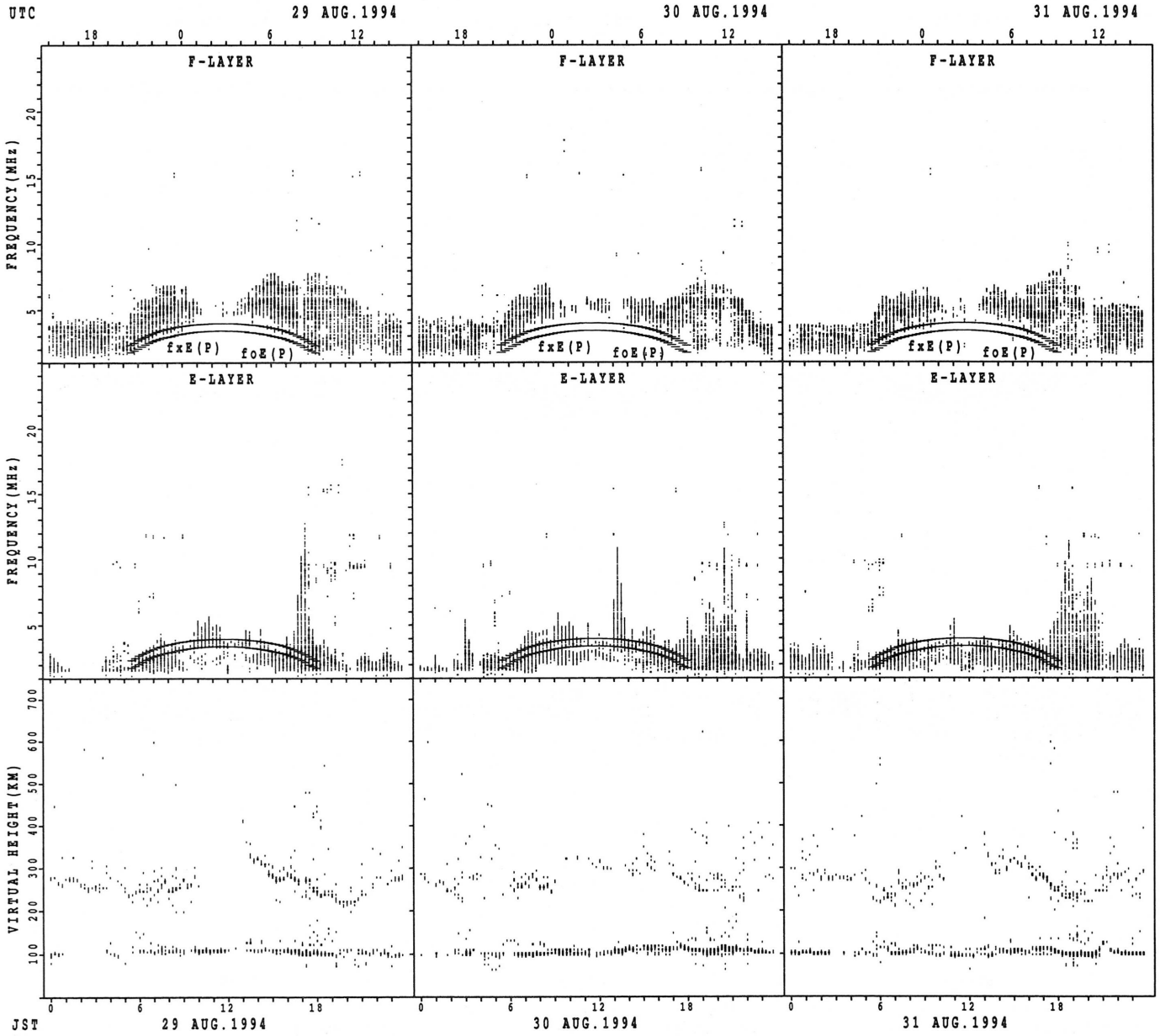
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



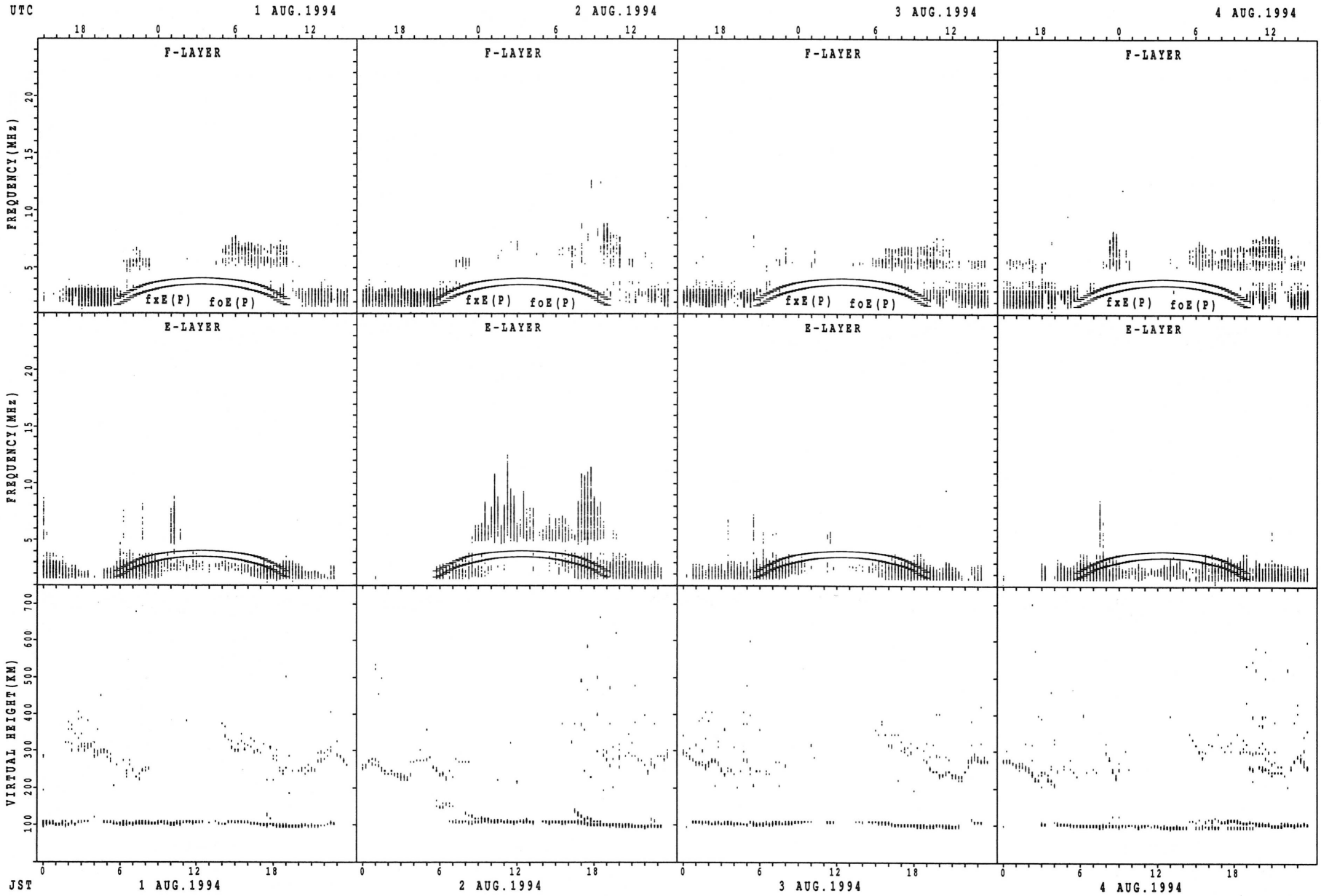
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

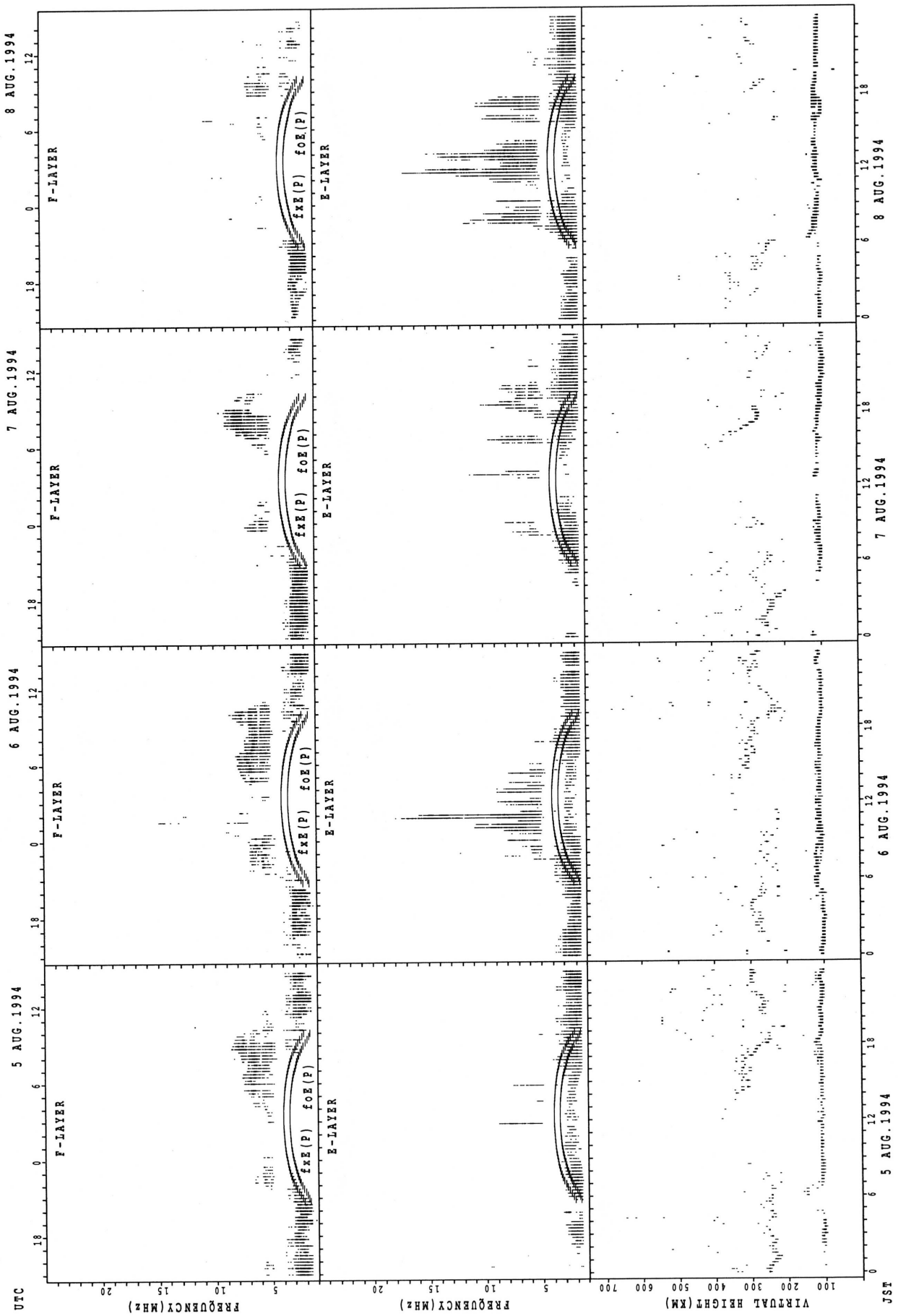


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

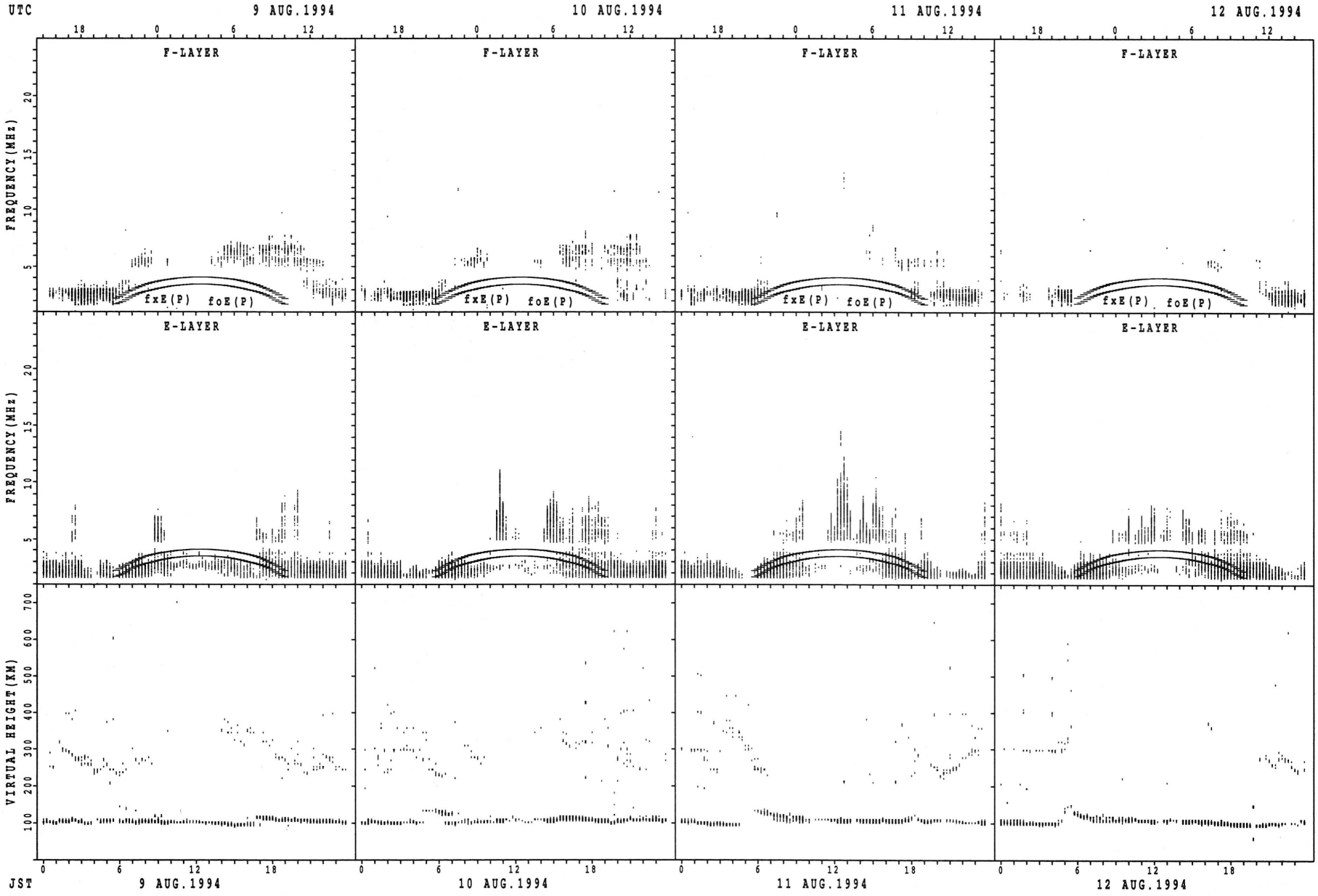
SUMMARY PLOTS AT YAMAGAWA



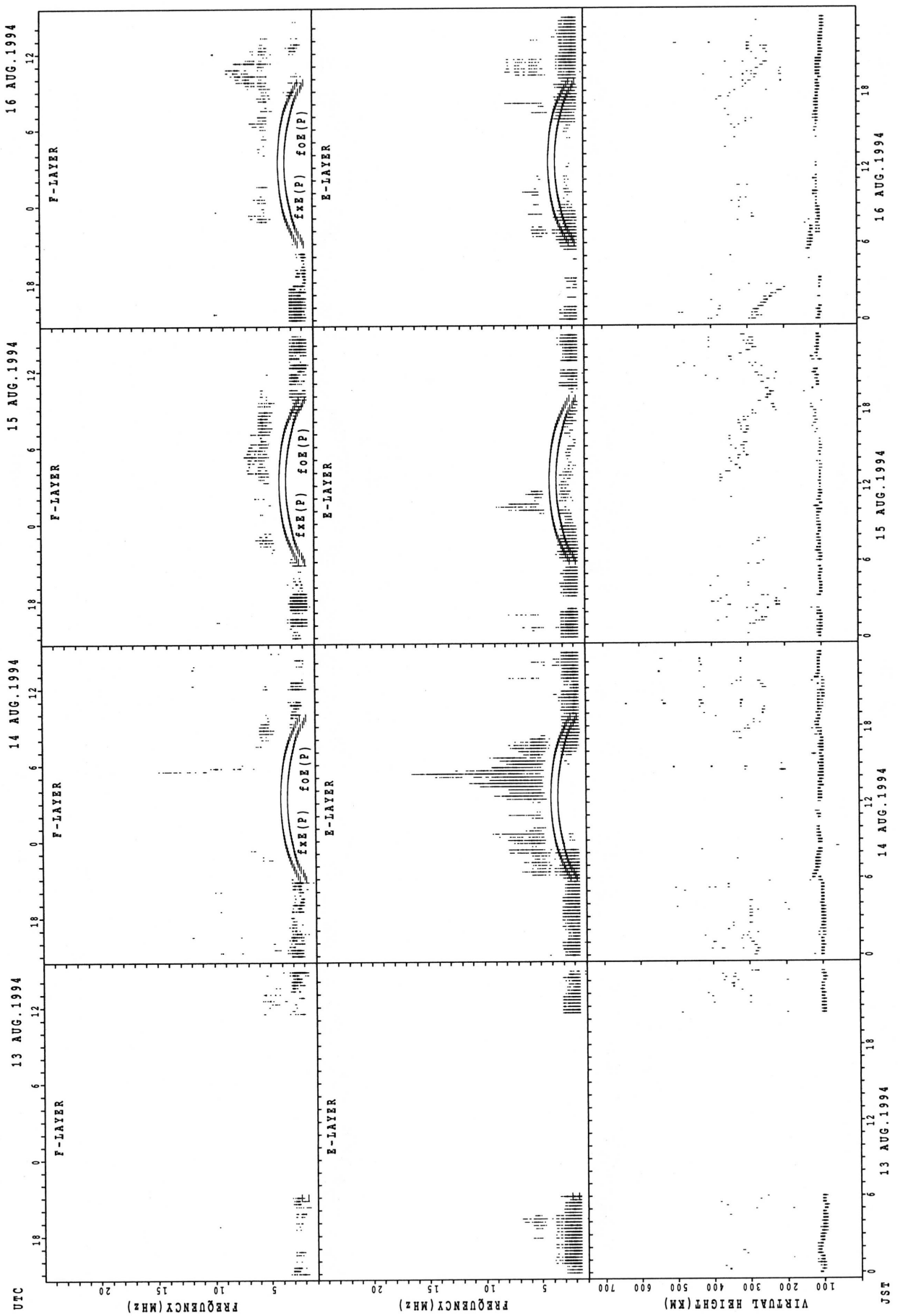
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 AUG.1994
6 AUG.1994
7 AUG.1994
8 AUG.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

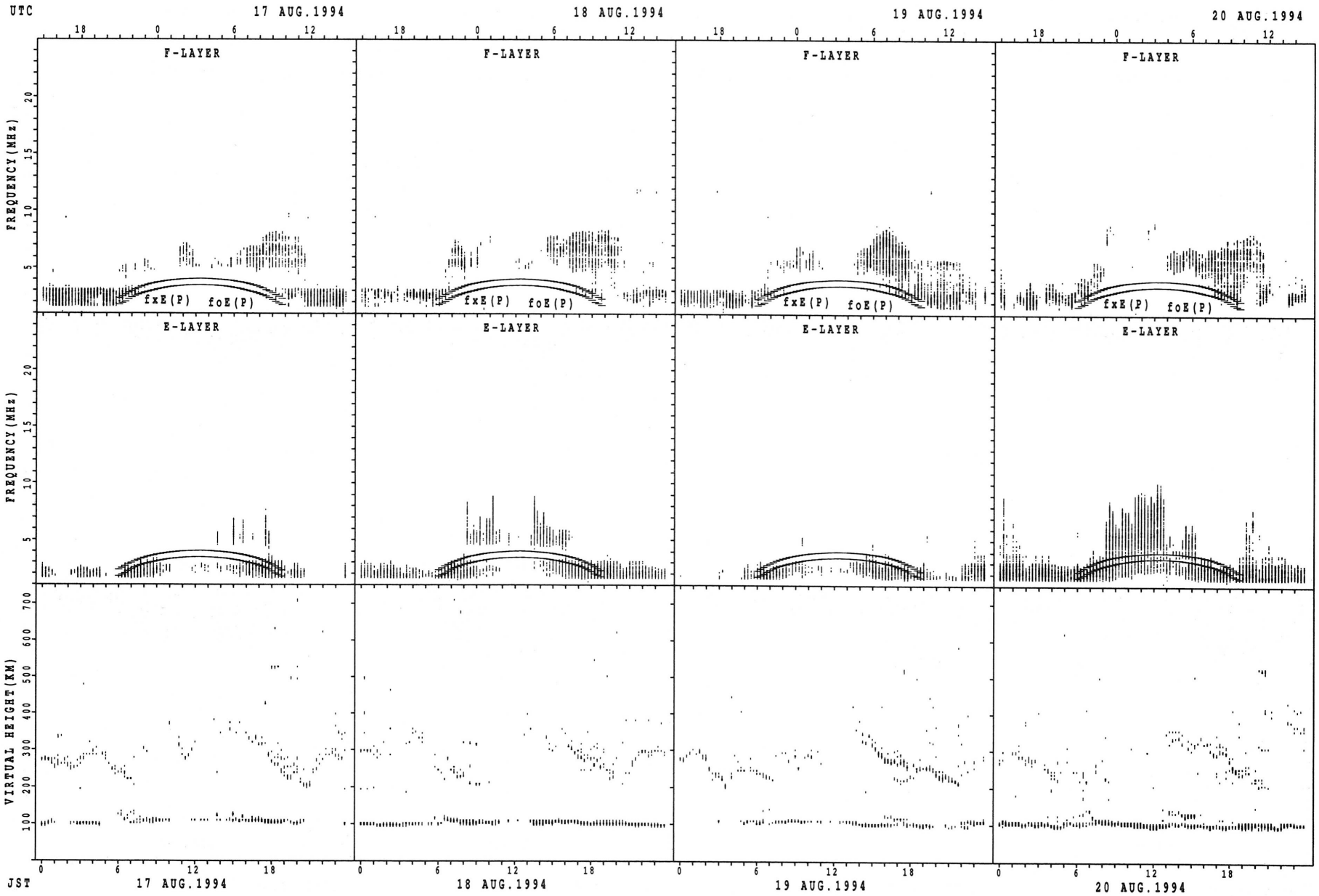
SUMMARY PLOTS AT YAMAGAWA



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

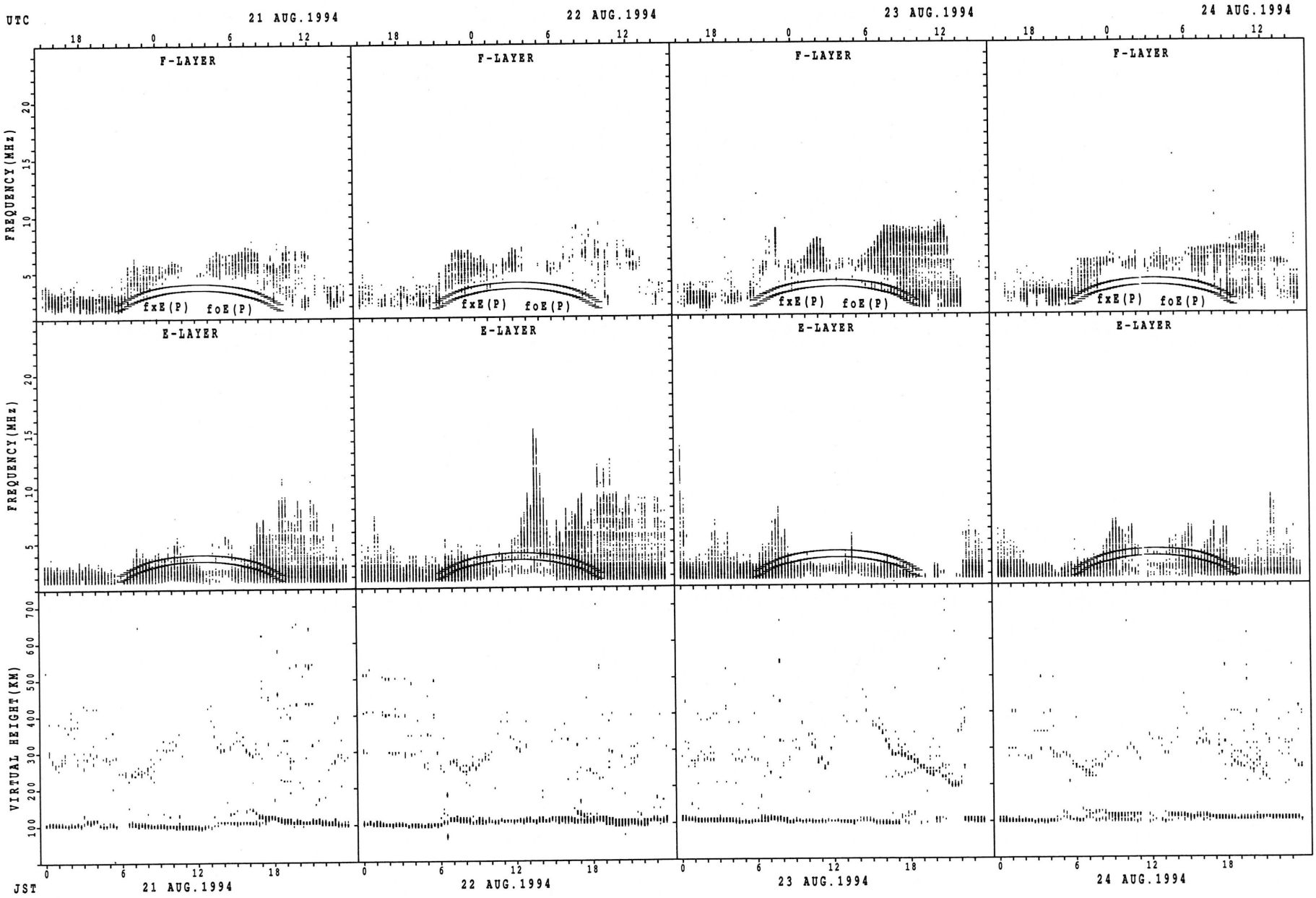

SUMMARY PLOTS AT YAMAGAWA
UTC
13 AUG.1994
14 AUG.1994
15 AUG.1994
16 AUG.1994
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



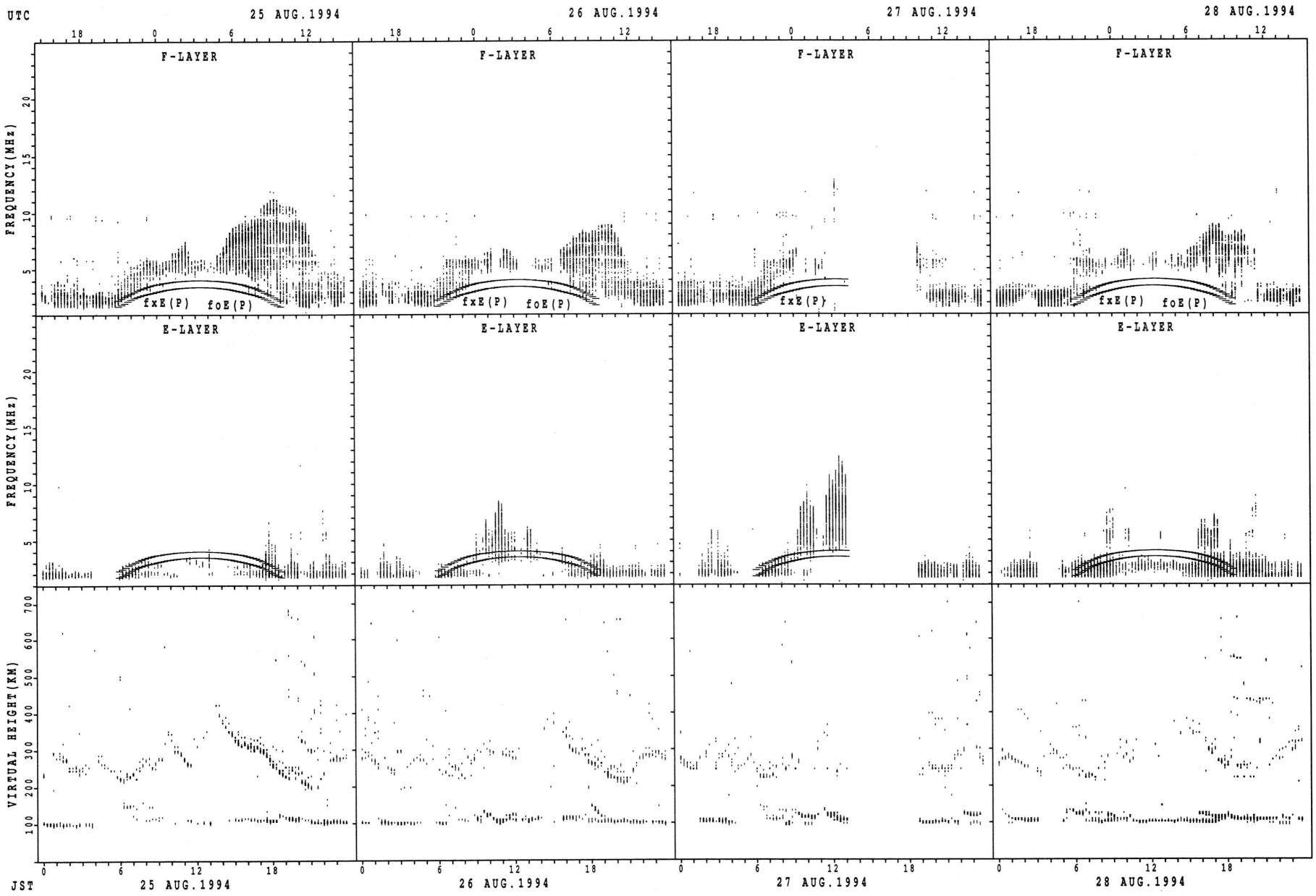
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



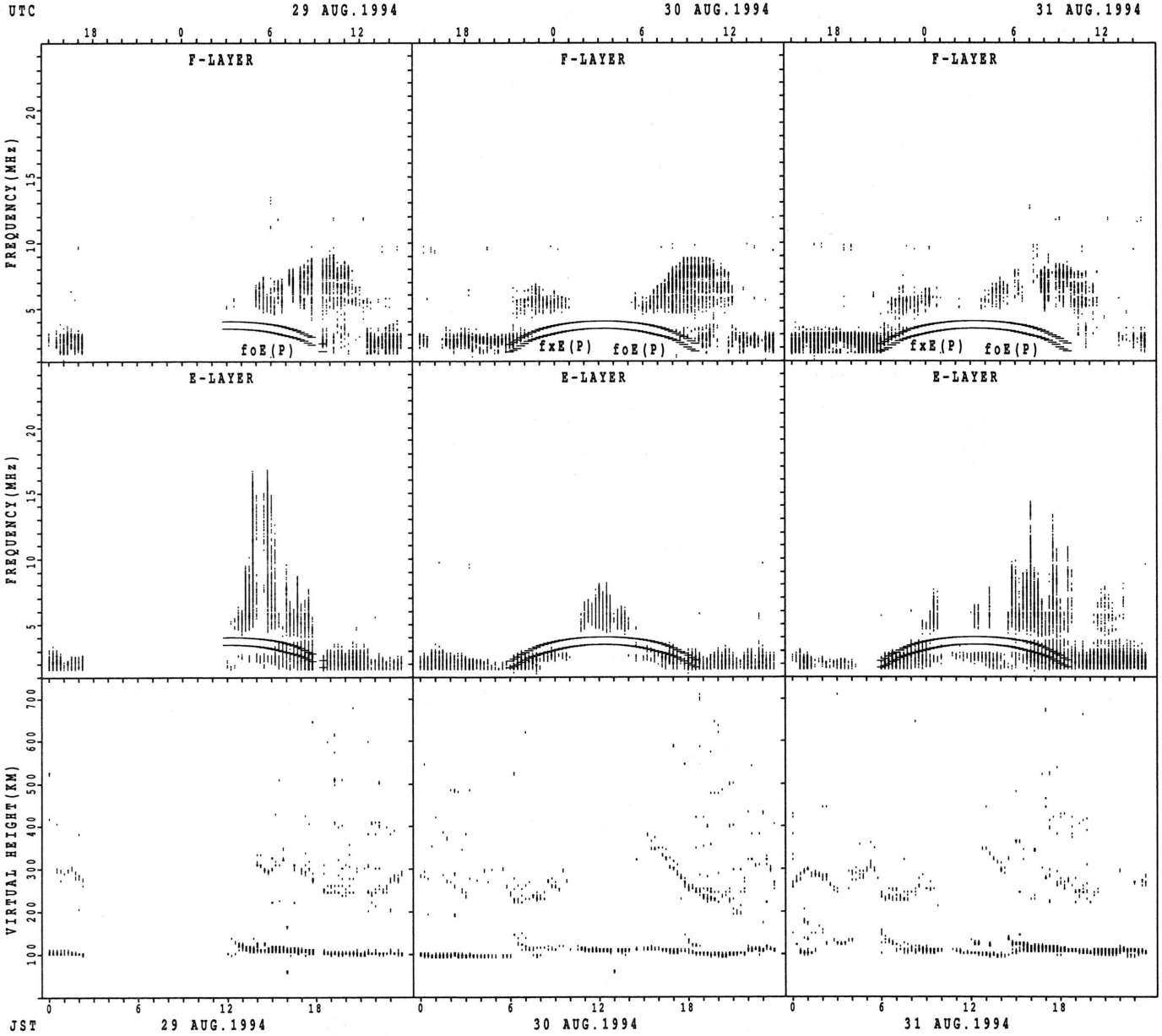
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



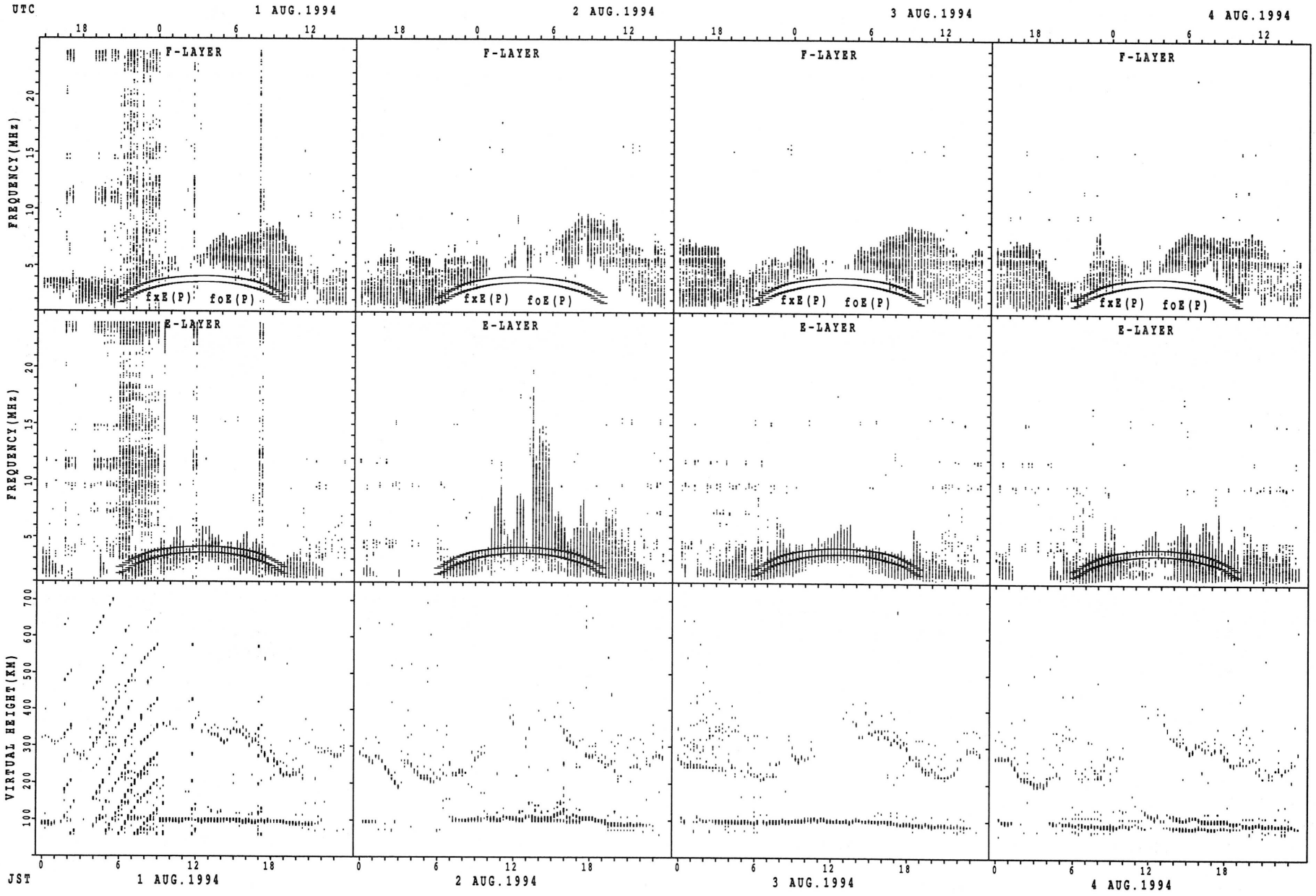
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

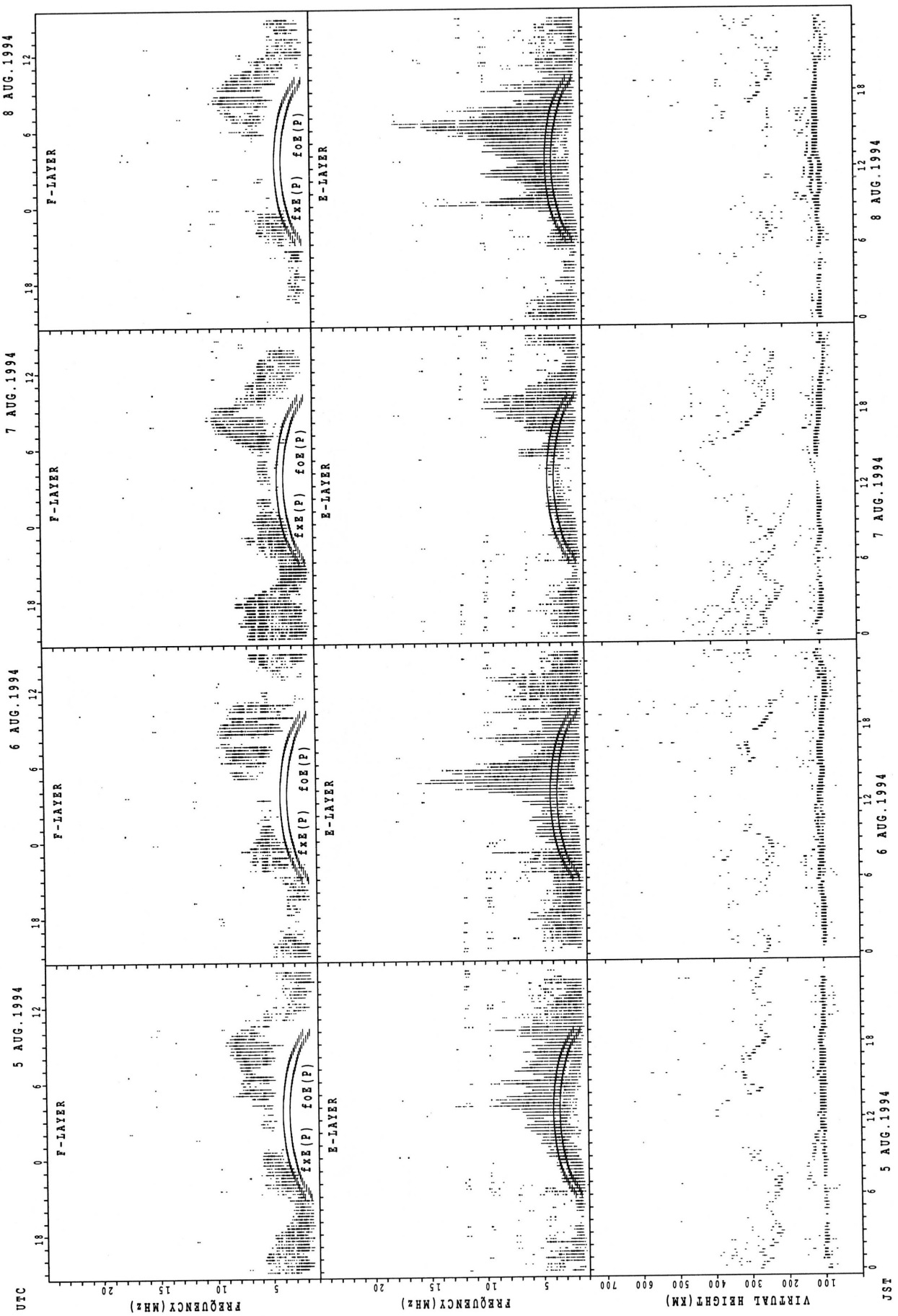


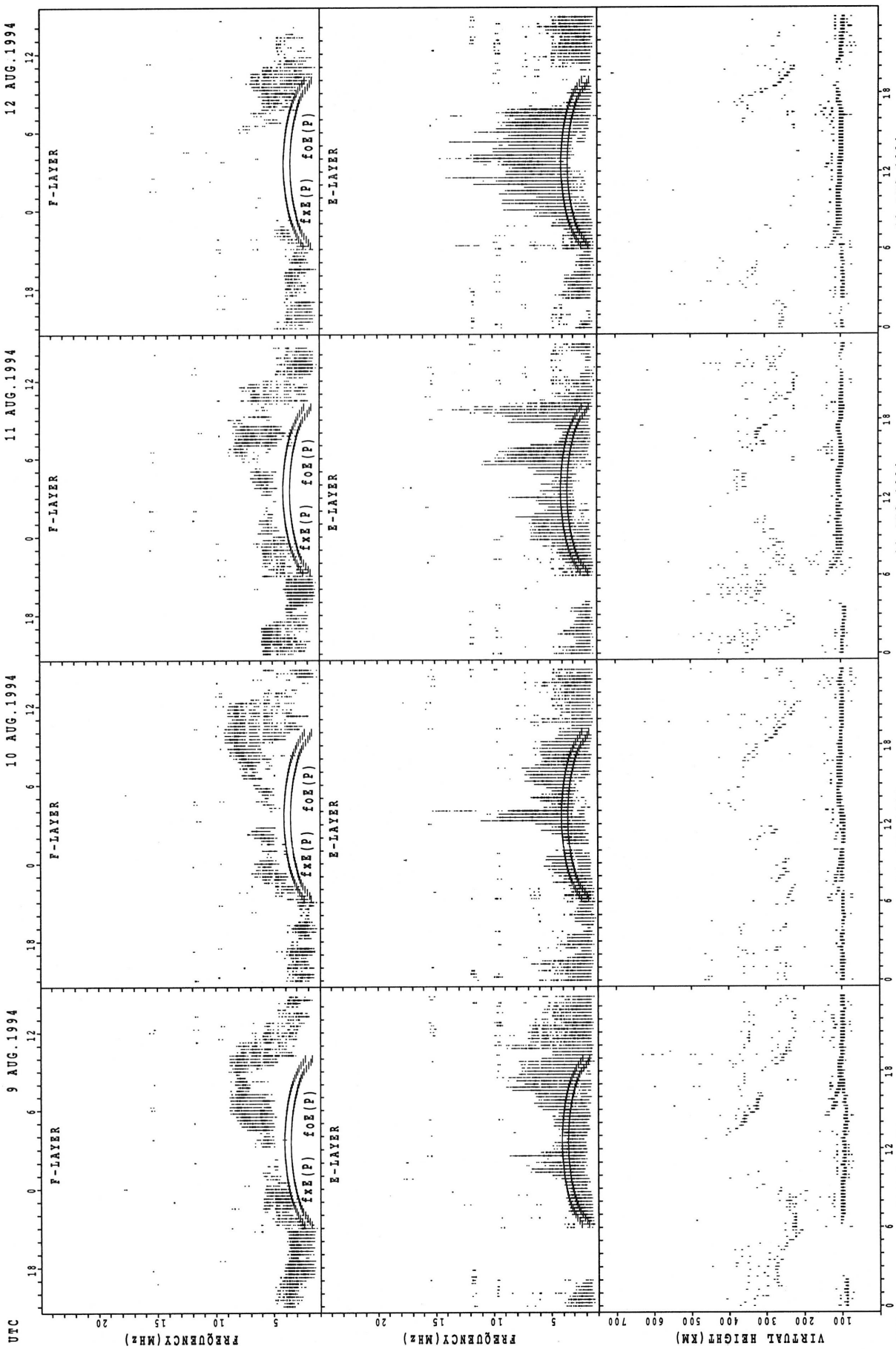
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

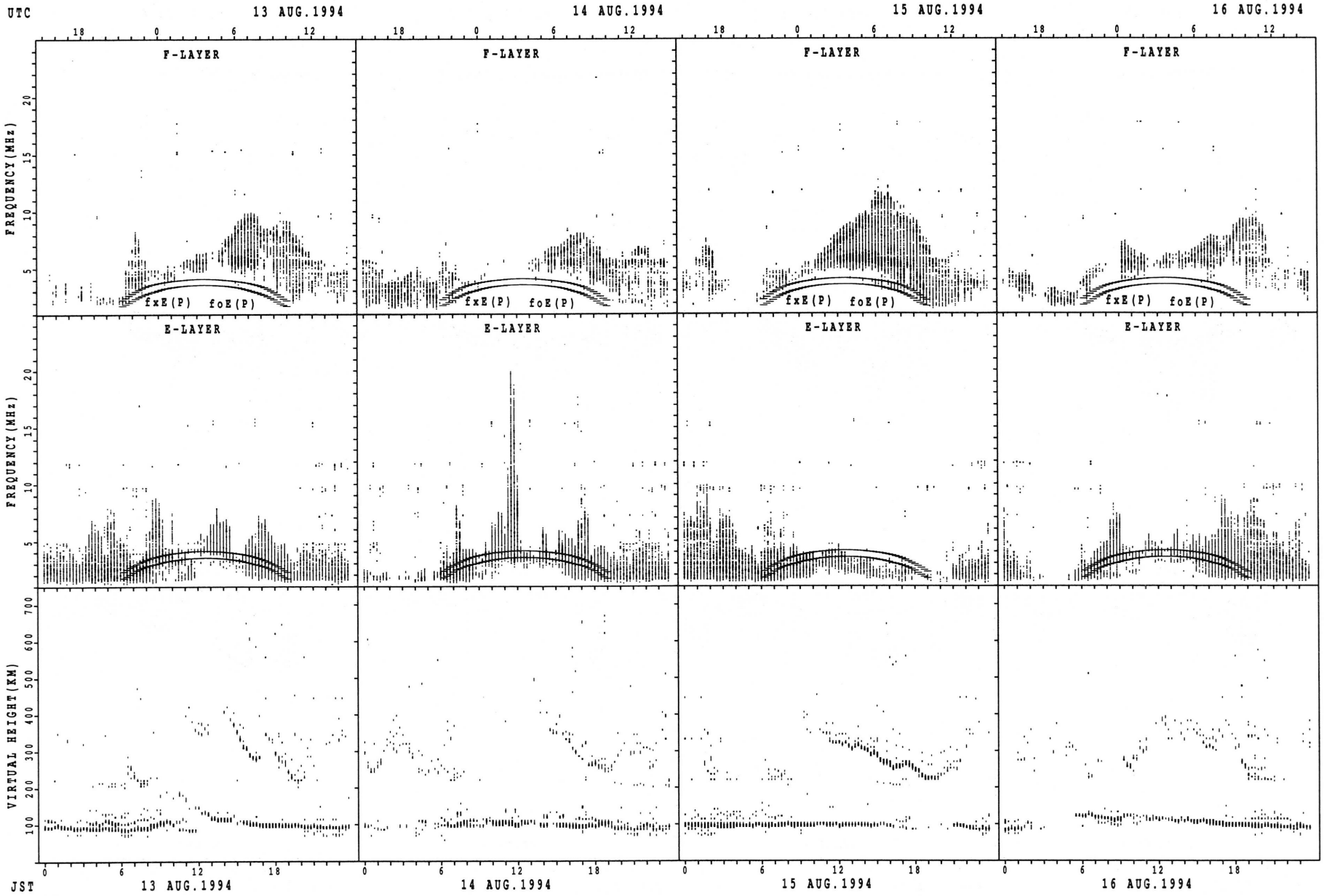


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
JST
5 AUG.1994
6 AUG.1994
7 AUG.1994
8 AUG.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

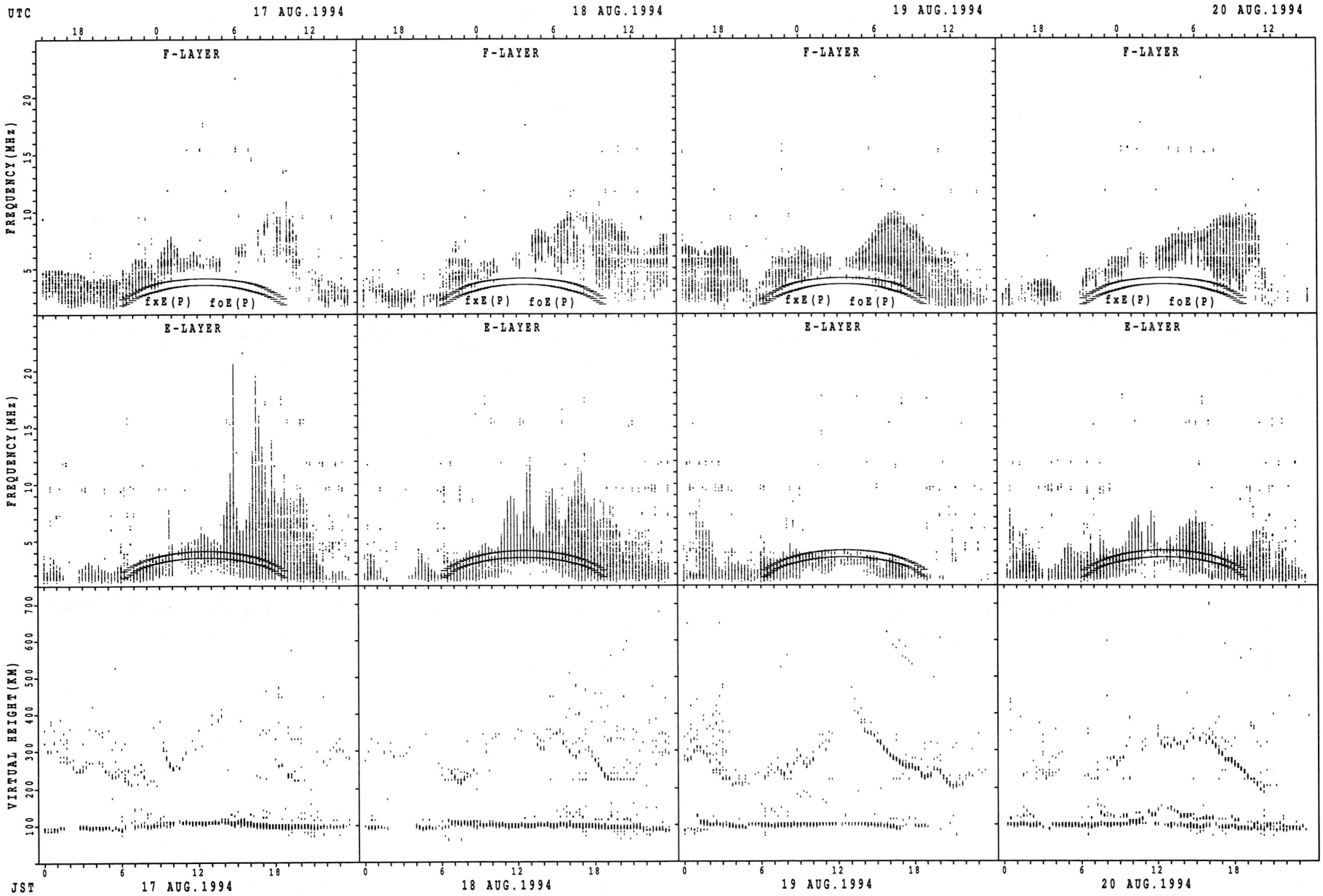

SUMMARY PLOTS AT OKINAWA
UTC
JST
9 AUG.1994
10 AUG.1994
11 AUG.1994
12 AUG.1994
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) foE(P)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

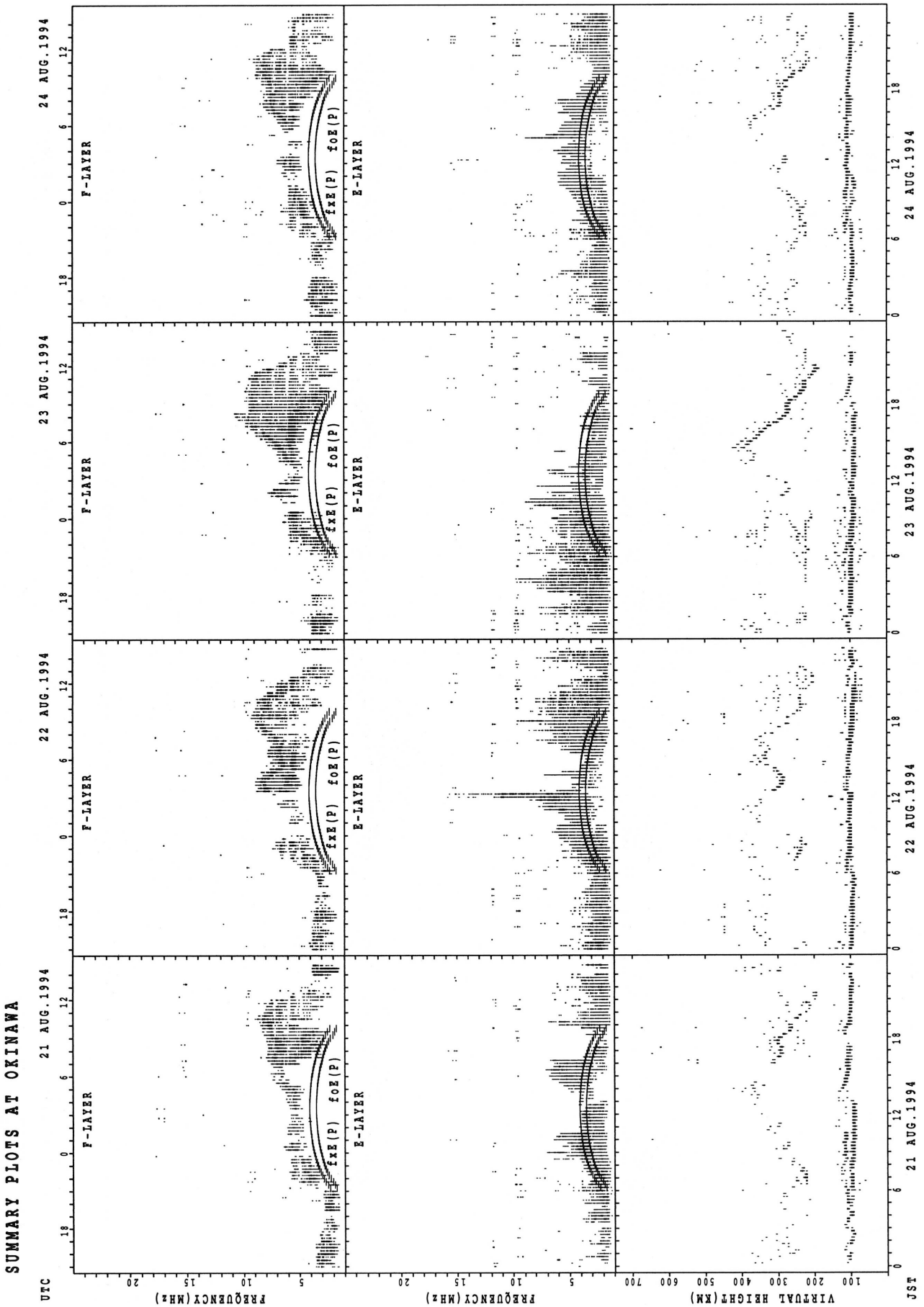


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

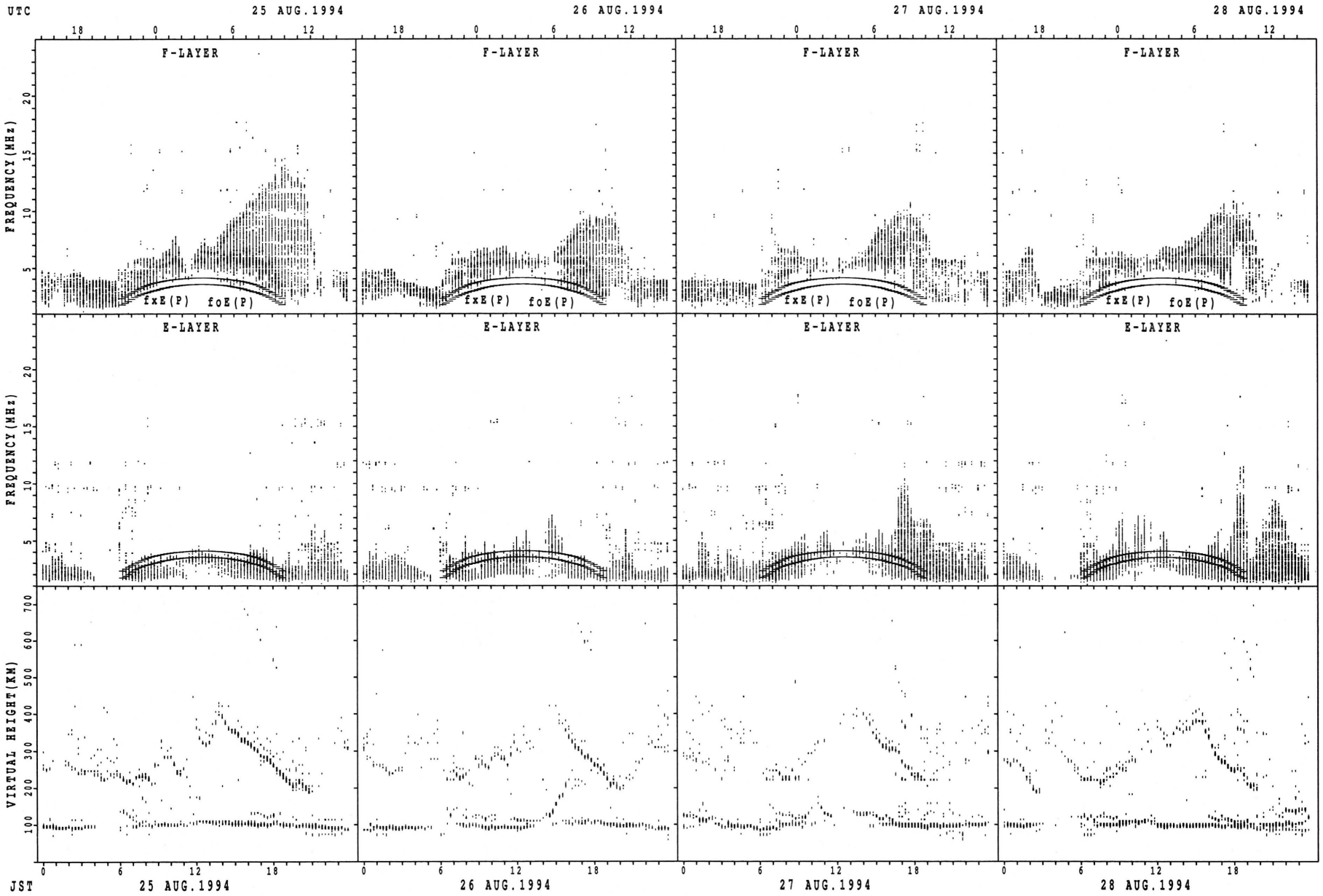
SUMMARY PLOTS AT OKINAWA



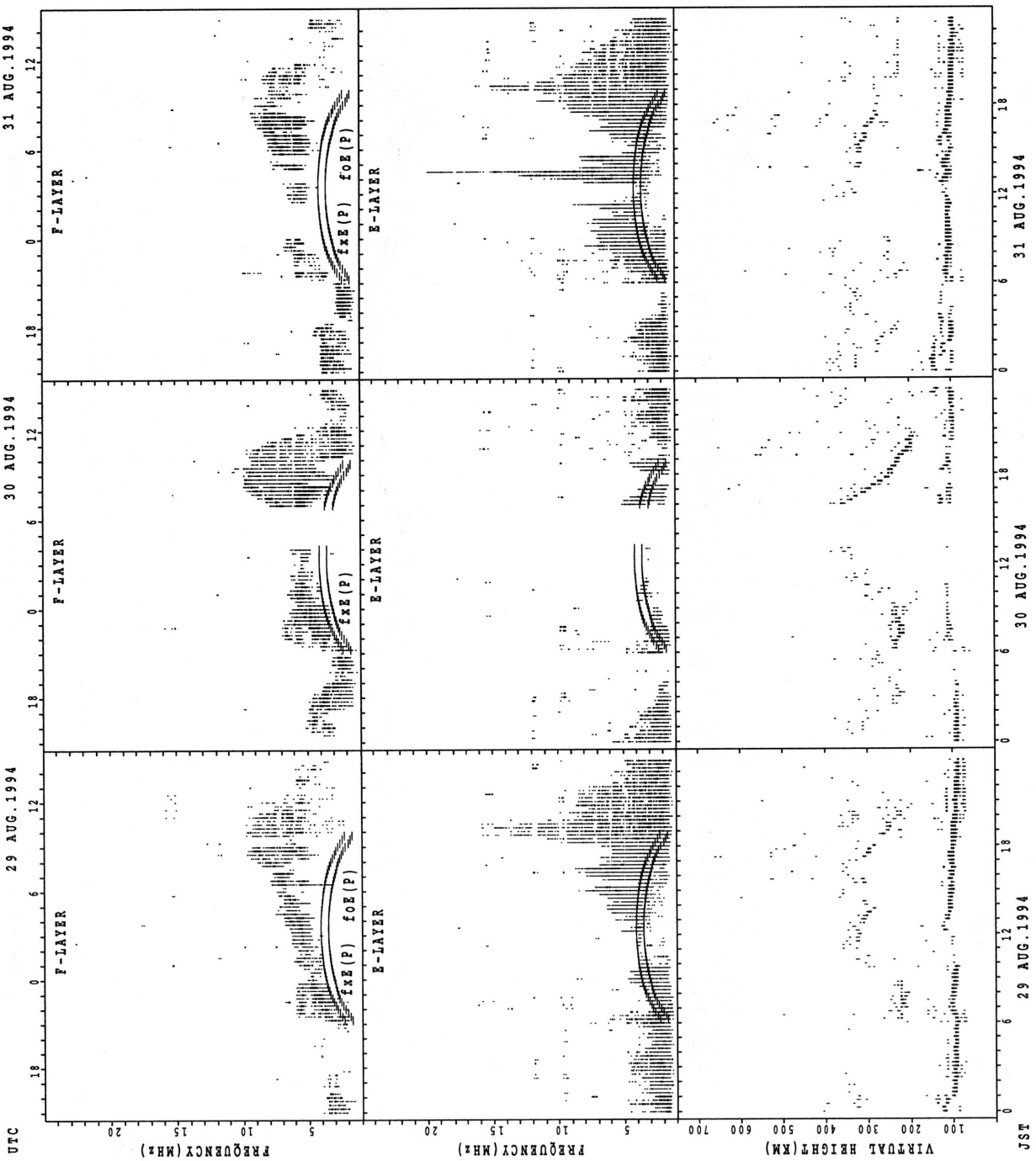
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
JST
21 AUG.1994
22 AUG.1994
23 AUG.1994
24 AUG.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
UTC
JST
29 AUG.1994
30 AUG.1994
31 AUG.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

MONTHLY MEDIANS OF h'F AND h'Es

AUG. 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	31	27	27	26	22	25	28	31	31	30	30	31	31	31	31	31	30	31	30	28	28	28	29	29
MED	103	101	103	100	103	111	116	109	107	106	107	105	105	105	105	107	107	113	108	107	111	106	105	105
U Q	105	105	107	105	107	124	122	113	111	109	109	107	107	109	111	113	113	113	113	113	113	111	109	106
L Q	99	99	97	95	97	103	112	107	103	105	103	103	101	103	101	103	103	103	107	104	105	101	103	103

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																			10	11				
MED																			267	272				
U Q																			292	298				
L Q																			254	264				

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	24	24	26	24	23	24	29	30	31	30	30	29	29	27	29	30	29	29	27	28	30	24	24	24
MED	104	103	103	104	105	106	117	112	111	108	105	107	107	109	109	107	107	109	107	105	105	107	107	105
U Q	107	105	107	107	113	119	120	117	113	111	111	113	111	111	114	111	111	118	113	113	111	113	113	109
L Q	99	99	99	99	101	100	107	107	107	107	103	101	101	103	106	105	103	105	103	101	101	103	102	105

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																	11	16	13	16	10			
MED																	322	304	286	266	278			
U Q																	344	324	292	285	288			
L Q																	304	294	265	255	262			

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	23	22	24	24	20	18	26	28	27	28	27	22	23	24	23	29	27	29	26	28	29	27	24	28
MED	105	105	105	103	104	105	108	119	113	111	113	111	111	107	113	111	115	113	112	107	107	105	107	107
U Q	109	109	107	107	106	109	131	131	119	115	119	111	113	113	119	116	119	118	121	111	111	111	110	113
L Q	105	103	103	101	103	103	103	111	109	109	107	105	105	105	105	105	109	108	105	104	103	101	104	105

MONTHLY MEDIANS OF h'F AND h'Es

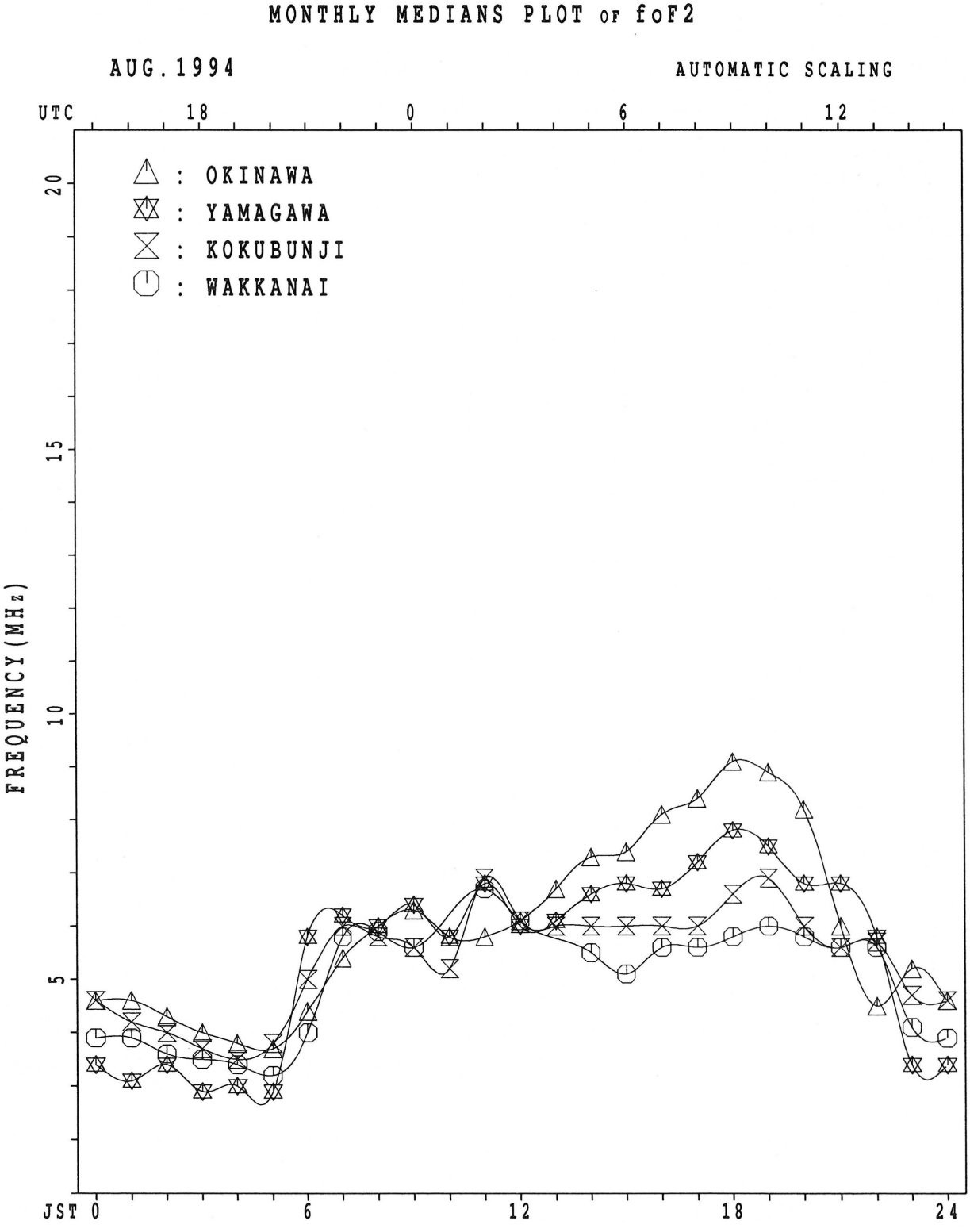
AUG. 1994 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									12						10	14	23	24	23	24	18			
MED									248						310	346	316	294	274	252	240			
U Q									264						320	354	338	329	300	273	264			
L Q									237						304	322	302	281	260	233	228			

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	21	28	23	22	18	17	26	30	30	29	29	29	27	29	30	30	31	29	28	28	26	30	27	22
MED	97	98	99	97	95	99	97	113	108	113	111	109	111	111	108	109	107	107	101	103	97	96	97	92
U Q	105	107	105	99	101	104	107	119	119	117	121	140	121	120	115	113	115	113	107	105	105	99	103	99
L Q	93	94	95	95	95	95	89	97	105	105	105	103	101	105	105	103	103	102	98	97	93	89	91	89


MONTHLY MEDIANS PLOT OF foF2
AUG. 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

AUG. 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	50	49	X 44	X 48	41														X 59	X 57	X 51	X 44	A
2	X 46	A	47	45	40	40														A	X 63	X 59	O X 62	X 59
3	X 56	51	51	48	A															X 68	X 73	X 66	65	X 61
4	X 62	X 60	X 55	55	X 44			61												X 79	X 77	X 75	X 67	X 65
5	63	X 62	X 59	X 51	48															O X 72	X 65	61	57	57
6	X 57	X 48	A	A	41															X 71	X 63	X 58	62	X 55
7	X 56	48	43	45	42															X 68	X 60	61	A	45
8	A	40	40	39	37															O X 75	X 73	X 70	X 60	61
9	59	53	47	44	42															X 79	X 70	X 55	X 50	51
10	52	48	37	36	39	41														X 60	X 65	X 67	X 70	X 60
11	X 44	X 46	X 46	X 42	42	39														O X 57	X 58	57	X 50	A
12	55	58	42	37	40															A	X 54	X 52	54	55
13	48	A	44	A	41	43														X 87	X 53	X 39	X 40	X 41
14	41	39	43	41	39															X 54	58	X 51	51	A
15	A	50	46	46	X 36															X 56	X 53	54	54	54
16	51	51	X 51	Y	A															X 68	X 72	X 62	X 57	X 51
17	51	X 46	X 43	X 37	X 35															A	A	X 60	52	51
18	51	46	A	44	40	39														X 95	X 72	60	56	51
19	49	45	46	43	40															X 57	X 57	56	64	52
20	43	42	40	39	41															X 76	X 66	X 56	56	55
21	51	46	X 43	X 40	X 39															X 62	53	57	54	53
22	50	51	46	42	43															X 72	X 72	74	X 81	61
23	51	43	43	39	A															X 72	X 76	X 73	65	51
24	44	40	39	38	X 37															X 75	X 70	X 60	X 59	X 53
25	53	51	50	49	42	X 43														X 87	X 73	X 64	X 60	55
26	53	51	44	42	41	X 42														X 77	X 70	X 54	X 53	O X 45
27	A	44	44	42	42	X 46														X 64	X 60	X 49	X 50	X 48
28	X 48	X 48	X 46	X 43	42	X 44														X 73	X 67	X 54	X 51	X 48
29	X 45	X 45	X 44	X 43	45	X 45														X 77	X 70	X 58	O X 51	X 49
30	X 46	X 45	X 47	X 43	43	X 43														X 75	79	A	X 58	42
31	X 40	X 40	41	X 38	X 38	X 42														X 83	X 62	X 55	X 54	53
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	28	28	13		1												28	30	30	30	28
MED	51	48	44	42	41	X 42		61												X 72	X 66	X 58	X 56	53
U Q	54	51	47	44	42	X 44														X 77	X 72	X 62	62	X 56
L Q	X 46	44	43	39	X 39	40														X 63	X 58	X 54	X 51	X 50

IONOSPHERIC DATA STATION KOKUBUNJI

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

AUG. 1994 FOF2 (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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							375	365	L 440	L 395			U Y 440		430	415	U L 430	380	L					
2								U L 405	405				445	445	430	440								
3							L	L 405	415					430	440	440	L 405	L	L					
4								370	420	455	L	455	455	440		U A 405	U A 395	370	L 320					
5							L		415	430	445	445	455	445	440	420	L 420	355	L					
6							L 350	390				440	U A 440	445	440	U A 430			L					
7								390	415	420		445			420	415		355	L 300					
8											430	445	445	445	430	435								
9							345	L 395	405	430	445	435	R 445	455	435	420	395	370	L					
10							L	L	420	U A 415				U A 440	435	U A 420	405							
11															415	405		L 390						
12								U A 365						405		U A 415	405							
13											430					U A 420		U A 340	L 295					
14								355		420	440													
15														U A 460	430	420	395	L 365	L					
16								365	405	420	420	U R 440	430	440					L					
17							L		L 405	455	440	440			420									
18								L 380	405						U A 430	U A 420	390							
19										420	U A 430	430		440	440	420	390	U L 390						
20									U A 395	430	430	440	R 445	430	440	405	395	365						
21							U L 345	370	L 395	420	430	430	440	U A 455			U L 415	U L 345						
22							L					U A 445			U A 395	430			L					
23								L	405	420		445		415	430	405	405	L 380	L					
24							L	L 390	380	420	440	445	U L 430	440	U A 405	U L 420	405	L						
25								L		430	420	420	440	430	430	420	395	L 390						
26								L		420			440	430	440	440	390							
27								U L 380	L 415	440	440				430	405	390	330						
28							L	L	405	U L 430	U A 420		440	440	U L 440	415	380	U L 365						
29							L	L 405	405	420		460	U A 430	430	430	405	390							
30								U L 380	405	U A 415		440	U A 445		420	430	L	L						
31								L	L 405	L 470	445	U A 420	L 420	440	420	430	420	U L 370						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	16	20	21	15	18	17	21	25	27	20	16	3					
MED							348	380	405	420	430	440	440	440	430	420	395	368	L 300					
U Q							362	L 392	415	430	440	445	445	445	440	430	L 405	L 380	L 320					
L Q							345	368	405	420	430	435	435	430	420	415	390	355	L 295					

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

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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						B	A	255	A	A	A	A	A	A	R	R	A	A	A					
2						B	C	A	305	A 325	A	A	A	A	A	A	A	A	A					
3						B	A	A	A	A	A	A	A	355	A	A	295	A	A					
4						A	A	A	A	A	A	A	A	345	340	320	A	295	A					
5						B	A	A	A	315	U A 330	A	A	340	330	A	295	265	A					
6						A	A	A	A 300	A	A	A	A	A	330	A 325	A	A	B					
7						A	A	A	A 290	A	A	A	A	A	A	A	A	A	A					
8						A	A	A	A	A	A	A	345	A	340	320	A	A	A					
9						B	A	A	A	A	A	A	R	A	A	305	A	A	A					
10						B	A	275	A	A	A	A	A	A	A	A	A	A	A					
11						B	A	265	A 280	320	A	A	A	A	A	A	A	A	A					
12						A	A	A	A	A	A	A	A	A	A	A	A	A	A					
13						B	A	A	A	A	U A 340	A	A	A	A	A	A	A	B					
14						B	A	A 240	275	295	A	A	A	A	A	A	A	A	A					
15						B	200	265	A	A	A	A	A	A	R	315	275	205	A					
16						B	A	A	290	330	A	A	A	A	A	A	A	A	A					
17						B	A	A	A	320	A	A	A	A	A 320	320	A	A	A					
18						S	A	A	280	A	A	A	A	A	A	A	A	A	A					
19						B	200	A	A	A	A	A	B	R	R	A	230	A	A					
20						B	A	A	A	A	A	A	A	R	330	305	A	A	B					
21						B	A	A	A	320	A	340	R	330	A	A	A	A	A					
22						B	A	A 250	A	A	A	A	A	A	A	A	A	A	B					
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						B	A	265	A	A	A	A	345	A	A	A	A	A	A					
25							A	A	A	R	A	A	A	330	320	A 315	A	A	B					
26							180	A	A	A	A	A	A	A	A	A	275	A	A					
27							S	255	295	330	A	A 345	A	A	A	A	A	A	B					
28							A	255	290	R	A	A	330	330	A	280	250	230	A					
29							A	A	A	295	A	A	355	340	320	290	A	A	B					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							A	A	A	A	A	A	A	A	330	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	9	9	9	2	2	4	7	9	10	6	4						
MED							200	255	290	320	U A 335	342	345	340	330	315	275	248						
U Q							200	265	298	328			350	345	335	320	295	280						
L Q							180	A 252	280	305			338	330	320	305	250	218						

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

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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	JA 44	JA 29	31	19	JA 27	38	43	JA 36	JA 44	39	61	57	37	36	G 33	G 26	37	31	28	30	28	JA 26	JA 50	JA 84
2	48	JA 66	JA 42	JA 32	30	28	C	32	JA 44	66	65	JA 73	56	50	47	JA 40	61	JA 103	72	90	40	32	26	JA 50
3	28	JA 32	39	32	60	JA 50	37	39	42	59	46	54	48	G	JA 50	JA 59	33	41	JA 46	32	JA 41	JA 59	33	26
4	EB 12	EB 12	24	23	30	JA 29	30	38	JA 46	46	60	45	JA 44	46	50	JA 45	JA 41	37	JA 35	JA 48	JA 39	23	EB 11	29
5	24	33	JA 55	JA 31	JA 26	37	35	57	JA 48	42	50	48	47	JA 51	41	34	G	33	57	88	JA 71	JA 86	JA 61	57
6	JA 50	JA 47	52	47	42	38	JA 37	JA 47	JA 130	JA 133	66	JA 56	47	JA 54	JA 46	JA 60	120	88	51	JA 47	JA 46	JA 44	JA 47	38
7	JA 70	28	23	33	29	JA 68	JA 56	JA 51	37	37	59	42	51	68	48	34	42	42	35	JA 46	28	JA 38	55	JA 46
8	47	31	28	JA 27	28	JA 51	JA 39	54	JA 186	JA 134	JA 54	38	40	38	G 32	39	89	JA 183	JA 137	JA 95	JA 95	JA 54	JA 36	JA 51
9	27	27	JA 47	26	27	EB 10	JA 29	JA 45	JA 40	44	37	40	G 34	40	46	34	35	29	28	JA 45	JA 43	32	57	38
10	JA 36	28	JA 27	25	28	JA 31	38	37	35	43	JA 52	JA 55	JA 65	JA 48	JA 49	42	JA 38	JA 53	JA 45	JA 45	25	19	18	29
11	EB 13	21	JA 41	39	JA 36	30	37	JA 40	56	JA 68	78	JA 102	61	67	JA 45	JA 49	JA 45	44	JA 59	44	JA 49	JA 87	33	59
12	JA 50	40	JA 45	32	18	25	JA 35	JA 43	51	61	53	JA 72	50	38	46	46	40	56	71	JA 74	JA 38	JA 40	32	JA 69
13	JA 53	JA 87	JA 55	56	JA 50	JA 40	JA 47	80	JA 105	JA 163	110	162	JA 213	JA 179	122	JA 50	130	JA 54	28	32	32	JA 27	29	JA 34
14	24	30	20	25	JA 30	JA 33	33	39	53	42	JA 60	JA 85	JA 62	46	66	47	JA 50	46	66	JA 142	JA 55	JA 31	JA 52	53
15	59	JA 44	46	JA 32	37	55	75	109	71	JA 77	87	112	JA 92	50	G	G	JA 49	28	JA 22	JA 24	32	JA 22	JA 43	JA 39
16	34	JA 31	JA 30	25	44	50	26	34	36	39	37	39	37	38	JA 59	JA 61	JA 49	JA 64	JA 36	26	JA 27	21	23	27
17	EB 10	JA 28	JA 44	JA 28	JA 26	23	JA 31	JA 52	33	G	82	39	56	60	37	JA 52	JA 45	109	JA 127	89	JA 92	JA 48	JA 39	44
18	JA 39	JA 42	46	JA 34	JA 31	JA 36	45	JA 36	44	JA 50	JA 70	112	JA 66	JA 63	JA 54	JA 50	JA 44	JA 50	JA 71	JA 132	JA 78	JA 55	39	33
19	31	23	27	JA 34	26	31	JA 31	60	73	JA 86	JA 49	38	EB 43	G 32	G	38	JA 44	43	JA 47	JA 49	33	JA 32	JA 55	JA 50
20	JA 41	28	41	JA 34	JA 28	JA 44	42	81	41	JA 49	JA 48	49	41	G	40	G 31	35	JA 40	JA 87	37	JA 49	JA 58	JA 36	29
21	18	JA 29	JA 22	23	27	JA 40	41	42	40	G 27	35	G 23	G 29	JA 50	JA 61	89	JA 45	31	42	55	JA 63	JA 86	JA 54	JA 47
22	48	JA 38	37	S 30	EB 11	25	JA 38	JA 51	69	88	JA 70	JA 104	57	72	JA 101	42	JA 80	86	JA 50	JA 100	JA 94	36	48	JA 45
23	JA 31	JA 36	JA 38	23	52	JA 38	55	50	JA 75	45	90	42	JA 59	34	50	43	45	32	32	24	JA 50	60	JA 36	38
24	JA 39	34	24	JA 26	JA 26	32	JA 44	28	34	37	36	41	38	37	42	JA 48	32	JA 25	42	JA 36	28	25	JA 27	JA 39
25	32	JA 32	28	32	24	23	29	39	37	G 32	39	JA 44	JA 43	41	37	36	34	37	JA 34	JA 30	JA 27	28	JA 46	JA 39
26	JA 50	27	36	32	24	JA 26	28	31	61	JA 88	JA 81	71	JA 56	37	JA 46	47	G	JA 37	JA 131	59	58	JA 24	24	JA 41
27	56	42	JA 45	JA 28	JA 39	JA 36	S 37	JA 27	G	G 21	38	59	JA 59	55	46	JA 36	JA 40	37	28	29	23	20	25	18
28	JA 24	23	20	23	19	EB 13	JA 24	32	33	G 29	57	46	44	G 28	32	G 25	G	JA 33	36	28	JA 51	36	28	27
29	29	EB 10	JA 26	S 18	JA 43	EB 12	25	32	33	38	55	JA 47	43	40	40	35	JA 37	104	38	28	23	28	25	29
30	21	30	18	JA 51	25	JA 42	33	42	42	JA 46	JA 49	41	46	JA 91	41	42	33	32	47	JA 44	JA 50	JA 104	JA 68	32
31	34	28	32	EB 11	JA 38	31	29	33	36	37	37	56	38	38	38	JA 41	JA 33	JA 30	54	JA 94	JA 77	JA 48	JA 42	35
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	34	30	36	30	28	33	37	40	44	45	55	49	47	46	46	42	41	41	46	JA 45	JA 43	JA 36	JA 36	39
U Q	JA 48	JA 38	JA 45	33	38	JA 40	42	51	61	JA 68	70	JA 72	JA 59	55	JA 50	JA 49	49	56	JA 66	JA 88	JA 58	JA 55	JA 50	JA 50
L Q	24	28	26	25	26	26	30	34	36	G 37	46	41	41	37	38	35	34	32	35	30	28	26	27	29

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

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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

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	18	E B 10	13	E B 11	13	14	24	G 18	41	36	A A 61	A A 57	U Y 37	35	U G 33	U G 26	34	29	21	14	14	E B 11	25	A A 84
2	23	A A 66	E B 11	13	E B 10	E B 13	C	29	36	A A 66	48	A A 73	39	37	40	35	55	A A 103	58	A A 90	18	E B 11	E B 13	17
3	13	17	24	16	A A 60	19	22	35	35	51	43	A A 54	A A 48	G	36	38	32	25	24	17	24	13	15	E B 11
4	E B 12	E B 12	E B 12	E B 11	17	21	23	33	36	39	37	38	37	41	48	41	40	G 30	23	17	16	12	E B 11	E B 10
5	13	E B 10	18	15	E B 11	15	25	44	37	37	42	40	40	42	37	34	G	31	22	31	23	20	21	22
6	18	19	A A 52	A A 47	23	18	25	31	A A 130	A A 133	47	42	44	40	42	43	A A 120	44	19	26	14	16	23	16
7	17	15	E B 11	E B 10	14	18	31	33	35	35	U A 45	40	51	A A 68	36	33	36	31	19	22	12	14	A A 55	18
8	A A 47	E B 10	13	15	18	17	18	A A 54	A A 186	A A 134	39	37	38	38	G 29	38	A A 89	A A 183	A A 137	26	27	17	18	15
9	14	11	16	12	E B 10	E B 10	18	32	33	34	37	U Y 40	G 34	39	41	34	32	25	18	15	14	15	14	17
10	17	16	13	E B 12	13	15	S 24	33	34	42	47	A A 55	A A 65	44	41	42	31	35	18	23	E B 12	E B 12	13	21
11	E B 13	13	14	18	14	15	26	37	43	A A 68	A A 78	A A 102	A A 61	A A 67	35	32	38	28	32	16	14	23	18	A A 59
12	21	17	23	17	13	E B 10	22	37	A A 51	A A 61	41	A A 72	46	36	42	42	33	44	A A 71	A A 74	16	16	18	33
13	23	A A 87	17	A A 56	18	15	32	A A 80	A A 105	A A 163	41	A A 162	A A 213	A A 179	A A 122	42	A A 130	34	19	12	18	13	18	14
14	13	13	E B 13	12	13	14	28	28	A A 53	38	39	A A 85	A A 62	42	A A 66	44	45	38	A A 66	21	37	23	17	A A 53
15	A A 59	19	18	13	23	A A 55	A A 75	A A 109	A A 71	A A 77	A A 87	A A 112	A A 92	46	G	G	G 19	26	18	17	18	13	17	14
16	23	17	13	24	A A 44	A A 50	23	28	34	35	37	37	U Y 37	38	A A 59	51	41	42	16	13	15	E B 10	E B 11	12
17	E B 10	E B 11	13	13	15	15	21	35	30	G	38	39	50	49	36	41	41	A A 109	A A 127	A A 89	A A 92	21	24	20
18	29	28	A A 46	20	16	19	31	30	37	44	A A 70	A A 112	50	51	43	42	34	39	25	31	24	20	19	22
19	18	13	15	16	E B 10	18	21	42	A A 73	40	43	37	E B 43	G 32	G	34	36	28	33	15	14	13	E B 10	14
20	13	E B 10	18	13	14	20	32	A A 81	40	39	36	41	37	G	38	G 24	32	28	A A 87	18	18	13	13	13
21	E B 11	E B 12	14	E B 10	E B 10	13	23	28	35	G 24	34	G 21	G 29	46	46	A A 89	32	23	24	23	14	16	18	17
22	26	14	13	E B 11	E B 11	E B 10	21	37	61	A A 88	49	45	48	A A 72	40	33	45	44	14	21	15	17	14	14
23	14	12	12	E B 12	A A 52	17	37	31	30	33	A A 90	34	49	33	37	37	33	25	18	E B 12	13	15	16	18
24	21	E B 12	15	13	13	18	21	G 17	30	36	U Y 35	37	37	36	41	34	30	19	19	13	13	E B 11	12	15
25	15	17	16	13	11	13	23	29	35	G 25	37	37	37	38	36	34	28	28	15	18	15	E B 10	17	17
26	13	13	13	E B 10	13	E B 11	23	28	51	35	50	63	41	36	37	34	G	32	A A 131	15	33	E B 11	E B 10	17
27	A A 56	14	11	14	E B 11	15	S 23	G 21	G	G 18	37	48	A A 59	46	37	30	29	24	18	15	E B 14	13	11	14
28	E B 12	13	E B 11	E B 11	13	E B 13	23	28	33	G 29	42	45	41	G 25	32	G 22	G	27	22	23	16	16	14	13
29	14	E B 10	E B 10	E B 12	E B 13	E B 12	23	28	32	36	43	42	43	37	38	32	32	A A 104	16	15	E B 12	E B 11	17	14
30	E B 13	E B 11	E B 10	14	E B 10	15	19	22	37	42	41	40	45	A A 91	38	39	32	27	23	30	25	A A 104	20	17
31	15	13	E B 10	E B 11	13	E B 12	22	27	32	33	37	42	38	37	37	37	30	28	21	18	43	11	13	13
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	13	13	13	13	15	23	31	36	38	42	42	43	39	38	35	33	30	22	18	16	13	17	17
U Q	23	17	17	16	17	18	26	37	A A 51	A A 61	A A 48	A A 63	A A 50	A A 46	42	42	41	42	A A 33	26	24	17	18	20
L Q	E B 13	E B 11	E B 12	E B 11	E B 11	E B 13	22	28	33	G 34	37	38	37	36	36	33	30	27	18	15	14	E B 11	E B 13	14

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

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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

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	11	10	12	11	10	13	12	11	14	17	14	16	17	14	E S 21	13	12	14	12	10	12	11	12	10
2	11	11	11	11	10	13	C	11	13	12	13	17	16	17	17	14	13	12	11	13	12	11	13	13
3	13	11	13	12	11	14	13	12	13	13	18	17	18	15	18	15	15	11	12	12	12	12	11	11
4	12	12	12	11	13	13	12	13	13	17	13	13	16	17	13	13	13	14	10	12	E S 14	11	11	10
5	12	10	12	11	11	13	12	13	12	11	13	17	13	18	13	E S 18	12	12	12	14	E S 13	11	10	13
6	12	12	11	11	11	10	14	12	12	13	14	13	16	17	14	13	12	12	15	14	11	10	11	10
7	11	11	11	10	11	13	12	12	12	16	14	14	16	19	15	13	13	12	11	11	10	11	10	11
8	12	10	11	11	11	10	13	13	13	14	13	15	16	13	14	13	13	12	13	10	11	11	11	12
9	12	10	10	10	10	10	11	11	13	13	12	18	17	12	13	13	11	14	13	12	11	11	12	10
10	12	12	12	12	12	14	12	12	13	14	12	14	11	16	13	15	13	12	12	10	12	12	11	12
11	13	11	12	10	10	13	13	13	12	13	15	15	17	13	13	13	13	14	12	11	11	12	12	11
12	10	11	11	12	10	10	12	12	13	12	13	13	16	15	18	13	13	12	15	13	11	11	11	11
13	11	11	13	12	10	13	12	13	12	13	13	18	17	13	18	17	13	13	14	10	12	10	12	12
14	10	11	13	10	10	13	12	12	12	14	16	16	18	18	13	13	13	13	12	13	11	11	12	10
15	11	11	10	10	11	13	13	12	13	13	15	13	13	12	23	18	12	13	11	11	11	10	11	11
16	10	11	10	12	10	11	12	12	12	13	18	17	21	18	15	12	13	12	10	10	12	10	11	11
17	10	11	12	10	13	12	13	12	13	16	17	21	16	15	14	16	13	12	11	11	12	11	11	11
18	12	10	11	11	11	E S 14	11	13	12	12	11	14	18	13	13	12	13	13	13	12	13	12	12	12
19	12	10	12	10	10	12	11	13	12	13	15	E S 21	43	17	18	12	13	12	12	10	10	11	10	10
20	10	10	10	10	11	11	12	12	12	16	13	18	21	15	15	13	14	13	13	10	12	12	10	11
21	11	12	13	10	10	11	11	11	13	14	13	12	13	13	13	12	13	12	10	12	10	10	13	10
22	10	12	12	11	11	10	12	12	13	13	14	15	E S 21	18	14	16	13	14	13	11	10	12	10	12
23	11	10	11	12	12	14	14	11	11	13	12	17	13	13	13	13	14	13	12	12	12	10	12	12
24	11	12	13	12	12	13	12	13	13	17	13	13	13	13	14	13	13	11	13	11	11	11	10	10
25	10	10	10	10	10	10	E S 14	12	13	13	12	16	12	13	18	13	13	12	14	10	11	10	13	11
26	11	10	10	10	10	11	10	12	12	12	12	15	16	14	14	13	14	E S 16	12	13	10	11	10	12
27	10	11	10	11	11	13	E S 19	13	13	13	15	17	13	12	13	14	13	13	12	12	14	11	10	10
28	12	11	11	11	12	13	12	13	13	14	13	16	E S 16	14	13	13	13	12	12	13	10	12	12	11
29	10	10	10	12	13	12	13	13	12	12	13	15	14	16	13	14	13	11	14	E S 14	12	11	13	11
30	13	11	10	12	10	10	12	12	15	17	15	17	15	16	16	18	13	13	10	13	11	12	12	10
31	11	11	10	11	10	12	13	13	13	13	16	16	E S 23	13	13	13	13	12	11	13	12	10	12	12
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	11	11	11	11	11	12	12	12	13	13	13	16	16	15	14	13	13	12	12	12	11	11	11	11
U Q	12	11	12	12	11	13	13	13	13	14	15	17	18	17	17	15	13	13	13	13	12	12	12	12
L Q	10	10	10	10	10	11	12	12	12	13	13	14	13	13	13	13	13	12	11	10	11	10	10	10

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

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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

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	F 300	F 310	F 315	325	F 345	F 335	320	370	370	R 350	A	A	U R 310	285	305	J R 310	325	325	320	320	315	330	S 315	A
2	310	A	F 295	F 295	J F 300	F 315	C	355	350	A	315	A	R 300	310	325	305	300	A	U S 325	A	J R 340	315	310	305
3	315	F 295	F 310	F 295	A	S 345	325	370	320	345	340	A	A	R 320	310	325	315	325	320	310	S 325	320	F 315	320
4	320	325	300	F 340	345	335	340	F 325	315	340	300	320	305	310	335	315	325	315	310	325	320	J S 330	325	315
5	F 315	315	350	330	F 315	S 325	350	320	J R 340	325	350	295	315	350	320	310	330	330	325	U S 345	S 335	295	F 300	J F 325
6	320	330	A	A	F 345	315	330	360	A	A	J R 345	R 295	305	310	290	320	A	335	330	J S 335	335	305	F 290	S 315
7	F 320	F 315	F 310	F 315	F 325	J S 300	325	U R 355	345	375	A	335	A	A	300	325	285	320	335	345	335	F 305	A	F 300
8	A	F 300	F 310	F 310	F 320	350	J R 355	A	A	A	345	280	320	325	325	300	A	A	A	U S 335	S 310	S 320	315	F 305
9	F 295	F 320	F 330	F 335	F 325	320	335	350	345	385	310	335	U R 315	305	310	330	300	315	305	J S 330	325	330	330	F 325
10	J F 320	F 355	340	F 330	F 315	F 330	345	365	U S 350	315	360	A	A	320	325	325	330	330	320	300	S 310	315	325	320
11	305	315	315	305	F 295	J S 295	U S 335	285	305	A	A	A	A	A	275	310	320	305	315	340	310	F 300	S 285	A
12	F 295	F 345	F 270	F 305	F 295	S 250	325	290	A	A	265	A	320	Y	U R 250	325	300	320	A	A	310	S 295	F 295	J S 320
13	F 290	A	J F 310	A	F 355	F 285	285	A	A	A	340	A	A	A	A	340	A	290	315	360	335	320	290	300
14	F 320	F 310	F 290	F 275	F 290	J S 260	S	S 265	A	320	G	A	A	275	A	250	315	305	A	U S 285	F 295	285	275	A
15	A	F 330	F 320	F 315	320	A	A	A	A	A	A	A	A	305	335	320	325	335	335	340	295	F 260	F 265	F 275
16	F 295	F 305	375	Y	A	A	310	300	330	340	325	U R 350	315	J R 320	A	345	325	J R 300	310	S 320	330	325	300	310
17	F 325	310	330	315	300	295	J R 360	350	330	G	G	325	325	R 330	315	325	330	A	A	A	A	F 305	F 330	F 315
18	F 280	F 310	A	F 325	F 305	U S 265	315	355	360	J R 335	A	A	300	310	305	320	325	315	330	J S 300	320	F 295	F 310	F 300
19	F 300	F 290	F 315	F 305	F 285	J S 320	380	295	A	330	365	310	R	305	315	330	350	J R 345	355	295	J R 340	F 290	F 320	U F 310
20	305	F 305	F 310	J F 290	F 330	S 340	320	A	335	350	270	320	315	320	335	320	325	320	A	340	J S 350	310	J F 325	J F 310
21	F 330	325	305	330	330	325	340	S 385	340	315	335	310	U R 315	290	320	A	345	335	335	320	F 320	F 330	F 290	F 320
22	F 320	F 310	F 310	J F 255	J F 300	S 340	S 340	345	335	A	335	R 335	315	A	315	305	315	J R 310	315	J S 335	S 305	F 305	F 330	F 315
23	F 330	F 330	F 300	F 305	A	U S 325	305	345	365	R 360	A	340	340	340	295	300	320	320	330	J S 320	315	320	F 360	F 310
24	F 300	F 295	F 330	F 320	330	U S 310	345	345	355	355	350	325	R 335	315	335	325	335	330	320	J S 330	J S 345	305	320	J S 315
25	F 310	F 300	F 305	F 325	F 305	S 335	370	345	325	345	310	345	345	280	315	305	295	310	325	340	335	300	310	F 280
26	F 275	F 320	F 320	F 320	F 315	305	340	350	A 310	345	320	345	345	315	325	325	320	340	A	335	335	335	320	U R 285
27	A	F 330	F 305	F 310	F 285	S 325	350	360	340	360	360	A 315	A	300	295	305	325	350	350	320	330	310	305	305
28	295	315	335	335	F 315	U S 330	J R 365	375	330	340	335	330	340	330	305	320	330	335	S 335	S 340	340	325	310	305
29	325	295	305	325	F 330	S 335	J R 355	340	360	350	365	275	330	300	315	330	335	A	340	J S 340	S 345	330	U S 315	320
30	305	330	335	315	F 330	315	335	330	350	350	315	325	320	A	335	305	330	325	340	J S 340	F 305	A	U S 325	F 300
31	320	325	F 310	330	310	S 315	355	345	365	J R 340	355	340	305	300	335	320	335	325	J R 345	S 360	330	315	295	F 295
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	28	28	29	28	27	24	23	25	21	22	25	28	30	28	27	25	28	30	30	30	28
MED	F 310	F 315	F 310	F 315	F 315	S 320	340	345	340	345	335	325	315	310	315	320	325	325	325	335	328	312	312	F 310
U Q	F 320	F 328	330	328	F 330	S 335	352	360	352	350	350	338	330	320	325	325	330	335	335	S 340	335	325	325	318
L Q	F 298	F 305	F 305	F 305	F 300	S 302	325	325	330	330	310	310	310	300	305	305	315	315	318	320	310	300	295	F 300

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							375	410	A	L 445	A	A	Y	Y	385	380	U L 375	370	L					
2							C	U L 380	410	A	A	A	420	420	385	380	A	A	A					
3							L	L 390	440	A	A	A	A	405	395	350	L 390	L	L					
4								405	395	385	L	365	385	A	A	A	A	365	L 340					
5							L	A	A 390	385	415	A	415	A	380	395	L 365	390	L					
6							L 330	365	A	A	A	A	A	A 340	A 355	A	A	A	L					
7							A	365	395	430	A	365	A	A	415	395	A	A 370	L 365					
8								A	A	A	405	410	365	400	370	400	A	A	A					
9							350	L 405	395	370	440	435	Y	390	A	380	385	350	L					
10							L	L	365	A	A	A	A	A	395	A	380	A						
11								A	A	A	A	A	A	A	400	380	A	L 345	A					
12								A	A	A	A	A	A	405	A	A	365	A	A					
13							A	A	A	A	410	A	A	A	A	A	A	A	L 340					
14								395	A	390	410	A	A	A	A	A	A	A	A					
15						A	A	A	A	A	A	A	A	A	400	375	385	L 375	L					
16						A		375	390	380	415	U R 410	400	390	A	A	A	A	L					
17							L		L 390	385	385	365	A	A	380	A	A	A	A					
18							A	L 375	410	A	A	A	A	A	A	A	A 390	A	A					
19								A	A	A	A	355	B	390	Y	370	A	U L 340						
20								A	A	A 385	440	A 350	R 415	340	370	370	390	375	A					
21							U L 355	395	L 405	415	415	415	420	A	A	A	U L 365	U L 390						
22							L		A	A	A	A	A	A	A	375	A	A	L					
23							A	L	370	380	A	405	A	Y	380	A	345	L 325	L					
24							L	L 355	420	415	410	410	U L 395	405	A	U L 365	365	L						
25								L		395	425	380	405	415	405	355	355	L 340						
26								L	A	390	A	A	380	420	380	355	380	A	A					
27								U L 390	L 400	405	405	A	A	A	355	375	360	395						
28							L	L	410	U L 380	A	A	A 360	390	U L 370	365	375	U L 360						
29							L	L 370	390	415	A	380	A	385	380	380	365	A						
30								U L 375	410	A	A	380	A	A	A 355	A 340	L	L						
31								L	L 420	L 370	425	A	L 375	445	A 375	370	385	U L 355						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	15	18	18	13	14	12	15	20	20	18	15	3					
MED							352	L 380	398	388	415	380	398	400	380	375	375	L 365	L 340					
U Q							365	395	410	415	425	410	415	415	395	380	385	375	L 365					
L Q							340	370	390	380	408	365	378	390	370	365	365	L 345	L 340					

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IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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

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							330	235	255	285	A	A	385	445	360	310	285	285	L 275					
2							C	280	270	A	365	A	410	360	300	320	A	A	A 315					
3							L 295	260	290	315	A 285	A	A	365	385	330	315	285	290					
4								320	340	265	L 350	365	385	340	330	355	330	310	295					
5							255	310	255	285	295	420	365	310	350	340	285	275	270					
6							285	260	A	A	300	425	395	365	370	325	A	280	270					
7							A 280	280	280	275	A	330	A	A	380	325	370	310	255					
8								A	A	A	290	430	360	330	345	390	A	A	A					
9							315	270	280	240	395	305	405	385	355	315	360	300	305					
10							265	255	280	320	270	A	A	310	325	310	265	275						
11								415	E A 370	A	A	A	A	A	465	355	340	360	300					
12								415	A	A	A	A	A 375	Y	A	345	365	A 330	A					
13							380	A	A	A	295	A	A	A	A	285	A	365	285					
14								400	A	355	G	A	A	A	A	A	E A 370	345	A					
15						A	A	A	A	A	A	A	A	315	290	320	315	280	255					
16						A		410	345	295	340	Y	380	375	A	A 320	315	E A 355	300					
17							250		285	G	G	355	E A 330	A 335	340	335	305	A	A					
18							310	255	260	275	A	A	A	A 345	340	305	280	275	A 260					
19								E A 375	A	290	270	350	315	360	335	320	275	280						
20								A	335	290	390	365	350	345	315	305	320	290	A					
21							270	235	245	315	340	340	365	365	305	A	265	265						
22							275		A	A	E A 285	315	A 355	A	350	340	A 315	A 320	270					
23							A	265	255	255	A	270	270	315	415	330	295	295	255					
24							280	285	265	275	270	335	310	370	300	320	300	270						
25								270		285	355	265	295	430	350	335	325	280						
26								265	A	275	A 315	A 295	285	340	315	325	310	270	A					
27								255	300	285	290	E A 340	A	375	365	310	285	235						
28							240	225	280	285	295	A 315	325	320	345	315	285	270						
29							255	270	240	265	255	475	340	375	320	280	285	A						
30								265	255	270	330	340	315	A	295	350	300	285						
31								240	255	280	280	325	345	360	285	325	300	280						
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							15	25	21	23	24	20	22	24	27	29	27	27	15					
MED							280	268	275	285	298	340	352	360	340	325	302	282	275					
U Q							310	315	295	295	352	365	380	372	360	338	325	310	300					
L Q							255	255	255	275	285	315	315	332	315	312	285	275	260					

AUG. 1994 H'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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

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	290	285	270	255	255	235	240	210	A	200	A	A	Y	Y	220	205	230	225	225	225	240	250	A	A
2	A 345	A	285	265	270	225	C	225	A 240	A	A	A	200	200	E A 265	235	A	A	A	A	230	225	250	265
3	255	280	295	280	A	230	215	A 235	195	A	A	A	A	235	210	A 260	220	235	A 240	255	240	255	270	250
4	240	255	255	240	215	230	230	A 245	225	A 235	265	250	215	A	A	A	A	260	245	250	235	230	245	265
5	280	250	230	230	280	230	225	A	A	E A 245	220	A	190	A	200	200	230	215	A 260	230	235	285	330	300
6	255	A 270	A	A	265	A 295	A 255	235	A	A	A	A	A	A	A	A	A	A	265	240	230	250	275	250
7	270	265	225	270	230	285	A	A 250	220	190	A	A 265	A	A	195	205	A	A	230	230	215	250	A	260
8	A	295	280	280	300	245	230	A	A	A	215	200	215	225	230	225	A	A	A	A 270	255	245	250	255
9	255	245	240	255	235	240	240	215	220	215	190	225	Y	215	A	240	220	230	215	235	230	235	265	285
10	245	220	235	265	280	245	225	245	210	A	A	A	A	A	225	A	230	A	255	A 295	270	270	240	215
11	270	275	265	295	315	310	265	A	A	A	A	A	A	A	220	210	A	230	A	265	250	320	330	A
12	295	225	A 355	315	305	325	290	A	A	A	A	A	A	215	A	A	240	A	A	A	260	280	280	A 340
13	A 360	A	230	A	250	295	A	A	A	A	230	A	A	A	A	A	A	A	250	220	210	270	A 335	310
14	265	305	305	310	310	385	A 275	215	A	A 255	205	A	A	A	A	A	A	A	A	295	A 350	275	310	A
15	A	A 270	285	240	E A 360	A	A	A	A	A	A	A	A	A	210	215	240	225	235	245	280	330	340	300
16	A 310	275	215	Y	A	A	230	240	A 250	200	205	225	E Y 255	235	A	A	A	A	265	250	235	225	250	260
17	255	255	245	255	310	310	220	250	225	225	235	E Y 270	A	A	215	A	A	A	A	A	A	245	275	A 305
18	E A 330	E A 340	A	A 285	315	A 330	A	230	225	A	A	A	A	A	A	A	E A 255	A	A	240	240	275	290	265
19	275	290	270	285	275	245	235	A	A	A	A	230	B	245	Y	225	A	230	A 255	255	240	280	270	260
20	265	260	A 300	335	260	220	A 250	A	A	A	190	A	190	Y 255	225	210	250	235	A	230	230	255	250	225
21	250	260	270	270	270	265	230	200	A 225	205	190	185	200	A	A	A	E A 245	215	245	260	255	270	270	255
22	A 275	255	310	275	290	245	235	260	A	A	A	A	A	A	A	220	A	A	235	255	240	285	210	235
23	210	250	275	270	A	255	A	A 255	225	200	A	215	A	200	225	A	A 255	220	240	240	245	255	225	280
24	325	290	265	280	260	255	230	225	210	200	Y 230	190	230	230	A	250	230	225	250	240	225	235	250	270
25	265	295	270	255	225	240	225	225	240	210	205	230	210	210	200	215	210	240	245	225	225	255	250	320
26	270	230	265	265	275	255	240	230	A	245	A	A	250	200	215	225	215	A	A	225	225	230	235	235
27	A	255	250	265	280	280	225	230	205	225	200	A	A	A	240	225	230	230	225	220	245	240	285	295
28	285	270	240	250	255	255	235	205	205	195	A	A	A	205	210	185	195	225	260	225	230	235	265	250
29	270	260	255	250	245	240	240	215	225	205	A	245	A	240	E A 255	240	A 240	A	240	225	210	215	265	265
30	270	250	230	265	275	260	255	230	225	A	A	260	A	A	A	A	225	240	250	235	265	A	230	280
31	290	275	265	275	265	270	215	210	215	210	200	A	A	190	A	240	225	230	240	230	A	240	280	265
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	29	28	28	29	25	23	18	17	14	13	10	15	17	19	19	17	22	28	29	30	29	28
MED	270	262	265	268	271	255	235	230	225	208	205	228	208	215	218	225	230	230	245	240	240	252	265	265
U Q	290	282	282	280	295	290	245	245	A 225	A 230	230	255	230	235	228	240	A 240	235	255	255	252	275	282	290
L Q	255	252	240	255	255	240	225	215	210	200	200	208	200	200	210	210	220	225	235	228	230	235	250	252

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A	A 125	A	A	A	A	A	A	A	A	A	A	A					
2						B	C	A 110	105	105	105		A	A	105	A	A	A	A					
3						B	A	A	A	A	A	A	A	105	A	A	A 130	A	A					
4						A	A	A	A	A	A	A	A	A 125	115	A 120	A	A 135	110					
5						B	A	A	A	105	105	A	105	105	105	A	105	A 135	A					
6						A	A	A 105		A	A	A	105	A	105	110	A	110	B					
7						A	A	A 110	110		A	A	110	A	A	A	A	A	A					
8						A	A	A	A	A	A	A	110	A	A 125	105	A	A	A					
9						B	A	A	A	A	A	A	A	A	A	110	A	A	A					
10						B	A	A 115	A	105	100	A	A	A	A	A	A	A	A					
11						B	110	105	105	105	105	A	A	A	A	A	A	105	A					
12						A	A	A	A	A	105	A	A	A	A	A	A	A	A					
13						B	A	A	A	A	105	A	A	A	A	A	A	A	B					
14						B	A	105	105	100	A	A	A	A	A	A	A	A	A					
15						B	115	110	110	A	A	A	A	A	130	125	A 120	A 125	A					
16						B	A	A 110	110		A	A	A	A	110	110	A	A	A					
17						B	A	105	A	110	A	A	110	110	110	110	110	A	A					
18						S	A	A 110		A	A	A	A	A	A	A	A	A	A					
19						B	110	A	A	A	A	A	B	A	110	A	A 115	A	A					
20						B	A	A	A	A	A	A	A	110	110	125	A	A	B					
21						B	A	A	A	A 115	A	115	A	100	A	A	A	A	100					
22						B	A	110	100	A	A	A	A	A	A	A	A	A	B					
23						B	A	A	A	A	A	A	A	A	A	A	A	A	A					
24						B	A	A 120	110	A	A	A	A	A	A	A	A	A	A					
25							A	115	A	A 130	A	A	A	115	115	115	A	A	B					
26							115	A	A	A	A	A	A	A	A	A	110	A	A					
27							S	E A 145	125	110	A	110	A	A	A	A	A	A	B					
28							A	110	125	A	A	A	A 130	115	A	A 115	115	125	A					
29							A	A	A	105	A	105	105	110	110	110	A	A	B					
30							A	A	A	A	A	A	A	A	A	A	A	A	A					
31							A	A	A	A	A	A	A	A	105	A	A	A	A					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							4	11	12	12	6	4	7	9	13	11	7	6	2					
MED							112	110	110	108	105	108	110	110	110	110	115	125	105					
U Q							115	A 120	110	110	105	112	110	115	115	120	A 120	A 135						
L Q							110	105	105	105	105	105	105	105	105	110	110	110						

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

IONOSPHERIC DATA STATION KOKUBUNJI

AUG. 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

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	100	100	95	110	105	95	105	105	105	105	100	100	110	105	100	105	100	110	115	90	95	105	105	110
2	105	105	100	100	100	95	C	110	115	110	105	105	105	105	110	110	100	110	115	105	95	95	95	135
3	95	110	100	105	95	95	95	95	105	105	110	110	105	G	105	110	125	125	105	110	105	110	90	90
4	B	B	105	105	105	100	95	100	100	115	95	125	95	135	125	120	115	125	110	105	105	105	B	100
5	105	95	95	95	100	105	110	110	110	110	115	115	115	120	120	110	G	150	115	110	100	100	110	105
6	100	95	95	95	95	95	105	110	110	105	100	105	110	115	115	110	105	105	105	100	100	100	100	110
7	110	110	125	100	100	100	100	100	115	125	100	110	105	110	115	110	110	105	95	95	100	100	105	105
8	100	100	115	110	105	110	110	105	115	100	100	100	165	100	105	135	110	105	105	100	100	105	100	110
9	100	105	130	100	105	B	100	100	100	100	100	100	95	100	95	180	110	110	100	120	125	100	100	105
10	100	100	115	100	100	110	125	125	125	110	110	110	95	105	105	105	105	105	100	100	100	105	115	110
11	B	105	100	95	95	100	135	115	115	110	105	105	100	100	100	100	100	100	100	105	110	100	105	105
12	115	100	95	100	160	130	115	115	110	110	110	110	105	110	100	100	95	115	115	110	100	95	105	100
13	100	100	100	100	100	95	120	110	105	105	110	140	110	130	105	110	105	100	110	95	95	95	95	100
14	100	105	100	135	135	125	115	120	105	115	105	100	100	105	105	110	115	115	110	120	105	105	105	105
15	100	100	95	135	120	110	110	110	110	100	100	100	100	95	G	G	100	135	115	110	115	125	110	100
16	100	100	110	100	135	125	135	110	115	115	110	110	110	110	110	110	105	105	100	100	105	105	110	110
17	B	105	100	135	100	115	110	110	110	G	105	115	110	110	125	130	105	105	105	100	100	100	100	95
18	95	95	95	95	100	95	95	115	110	105	100	100	100	100	100	100	100	105	105	105	100	95	95	95
19	95	100	95	90	110	110	115	105	105	105	100	105	B	100	G	100	100	100	95	95	105	110	110	105
20	110	110	130	125	105	105	100	105	115	110	110	100	115	G	150	105	115	105	105	100	100	105	105	110
21	125	110	105	110	105	100	100	95	95	100	105	100	105	115	105	105	105	110	110	115	110	110	110	105
22	100	110	135	110	B	130	115	110	110	105	105	105	105	105	105	105	100	100	110	120	120	105	110	110
23	105	110	95	110	105	120	110	105	100	105	95	100	100	100	100	95	95	95	110	100	125	110	95	95
24	140	100	100	105	95	95	135	105	125	115	110	100	170	110	110	110	110	105	100	110	100	105	110	110
25	100	95	95	110	100	105	130	135	110	100	100	95	95	185	175	110	110	140	110	105	100	110	105	105
26	100	95	95	125	140	100	120	115	110	105	100	100	105	110	105	105	G	115	105	100	100	115	110	110
27	100	100	95	115	105	100	100	110	G	95	120	110	105	105	105	105	105	100	115	95	105	110	110	100
28	110	95	95	110	100	B	115	135	130	100	100	95	130	105	110	100	G	125	110	100	125	100	95	100
29	100	B	120	115	120	B	110	125	120	115	100	110	140	140	135	135	115	100	110	100	105	105	110	115
30	105	95	115	100	100	105	135	100	115	115	110	105	110	110	110	110	115	120	110	105	115	110	105	100
31	105	100	100	B	125	105	110	125	115	115	110	95	125	110	150	110	110	115	105	100	100	120	100	100
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	29	31	30	30	28	30	31	30	30	31	31	30	29	29	30	28	31	31	31	31	31	30	31
MED	100	100	100	105	105	105	110	110	110	105	105	105	105	110	105	110	105	105	110	100	100	105	105	105
U Q	105	105	115	110	110	110	120	115	115	115	110	110	110	112	118	110	110	115	110	110	110	110	110	110
L Q	100	98	95	100	100	98	100	105	105	105	100	100	100	102	105	105	100	105	105	100	100	100	100	100

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

IONOSPHERIC DATA STATION KOKUBUNJI

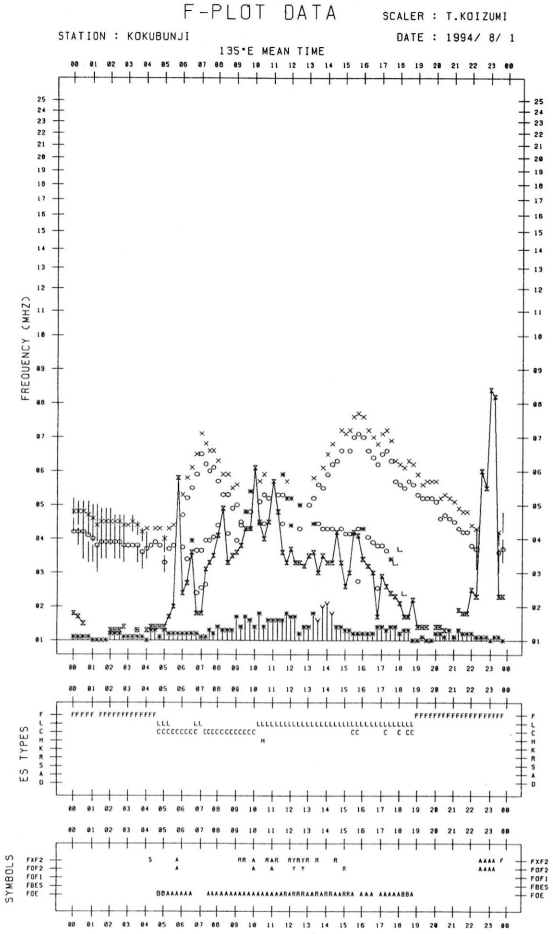
AUG. 1994 TYPES OF ES 135°E MEAN TIME (G.M.T. + 9H)

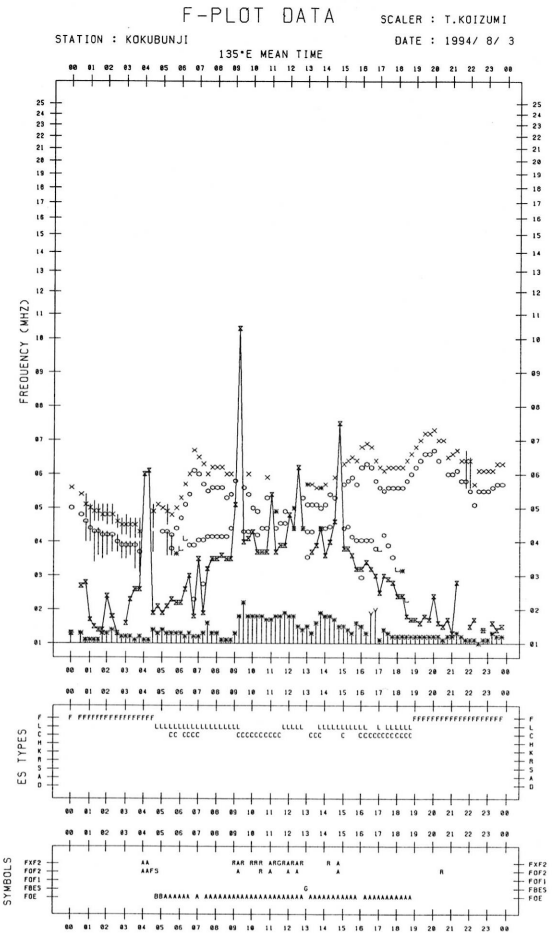
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHZ TO 25.0MHZ IN 24.0SEC IN MANUAL SCALING

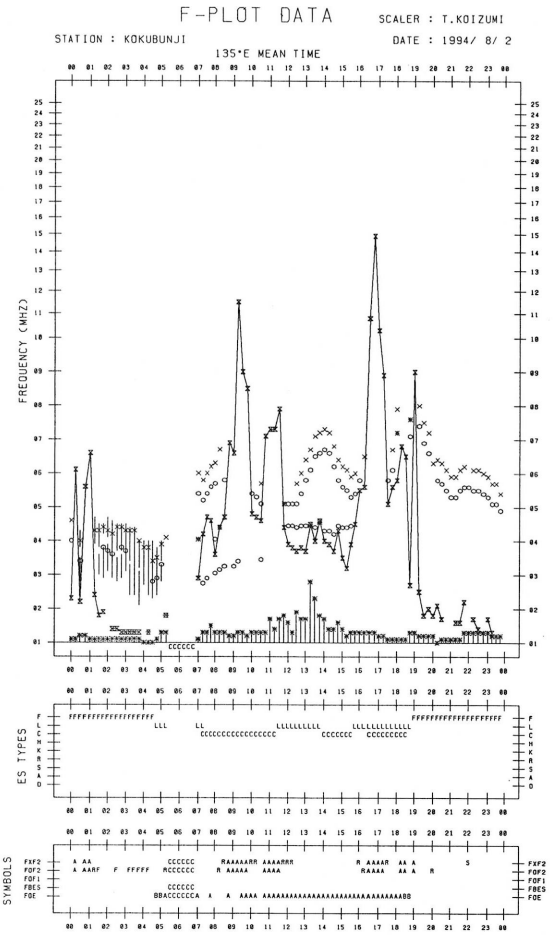
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 42	FF 21	F 2	F 1	F 2	LC 21	C 3	L 2	C 2	C 1	C 2	L 1	L 1	L 1	L 1	L 1	L 2	L 2	CL 11	F 2	FF 21	F 2	F 5	F 4
2	FF 42	F 4	FF 22	FF 22	F 2	L 2		L 2	C 2	C 4	C 2	C 2	L 1	L 1	C 1	C 2	L 3	CL 23	CL 24	FF 33	F 4	F 2	F 2	FF 11
3	F 2	FF 24	F 4	F 3	F 5	L 3	L 2	LC 21	L 2	L 2	C 1	C 1	L 1		L 1	CL 12	CL 12	CL 11	CL 22	F 2	F 3	F 2	F 2	F 1
4			F 2	F 2	FF 21	L 1	LC 21	LC 31	L 2	CL 21	L 2	CL 12	LC 21	CL 11	CL 22	CL 22	CL 23	CL 12	C 4	F 4	F 2	F 1		F 2
5	F 2	F 3	F 4	F 3	FF 21	L 1	L 2	L 3	L 2	C 1	C 1	CL 11	C 1	C 2	C 1	C 1		CL 12	C 3	F 3	F 4	F 4	FF 32	FF 52
6	FF 31	F 5	FF 62	FF 53	F 4	LC 31	LC 22	C 2	C 2	C 3	L 2	LC 21	L 1	L 1	C 1	C 2	L 3	L 3	L 4	F 3	F 4	F 3	F 4	F 3
7	FF 31	FF 21	FF 11	FF 21	FF 21	LC 31	LC 22	L 3	C 1	C 1	L 2	L 1	L 1	L 1	L 1	L 1	C 2	L 3	LC 31	FF 41	F 2	FF 32	F 4	FF 42
8	FF 42	FF 21	FF 21	F 4	FF 22	LC 32	LC 32	L 3	CC 22	C 3	L 2	L 1	HL 11	L 1	L 1	C 1	C 2	C 3	L 4	F 4	F 4	F 4	F 5	F 4
9	F 2	F 2	FF 12	FF 22	F 2		L 2	L 2	LC 21	L 2	L 1	L 2	L 1	L 2	L 2	HL 11	CL 11	C 1	L 2	FF 11	FF 12	FF 31	FF 42	FF 31
10	F 2	F 3	F 1	F 2	FF 22	LC 21	CL 22	CL 21	CL 11	C 2	C 2	C 2	L 2	L 1	L 1	L 2	L 2	L 3	LC 41	FF 42	F 2	F 1	F 1	F 2
11		F 1	F 3	FF 42	FF 22	LC 11	C 1	C 3	C 2	C 2	C 2	C 2	L 2	L 2	LC 11	L 2	LC 31	L 3	LC 42	FF 42	FF 32	FF 52	FF 32	F 5
12	FF 23	F 4	FF 41	FF 22	F 1	CL 11	CH 21	CH 21	C 2	C 2	C 2	C 2	C 1	L 1	L 1	L 2	LC 21	CLH 32	CLH 52	FF 43	F 2	F 4	FF 21	FF 42
13	FF 42	FF 42	FF 42	FF 42	FF 32	LC 22	CL 22	CH 32	C 3	C 3	CH 22	HL 22	LH 31	HL 23	L 3	L 2	L 3	L 3	LH 11	FF 31	F 4	F 2	F 2	F 1
14	F 1	F 3	F 1	FF 11	FF 21	CL 21	C 3	C 2	C 2	C 1	LC 11	L 2	L 1	L 2	L 2	L 2	C 2	CL 32	C 4	FF 23	F 5	F 4	FF 32	FF 42
15	FF 32	FF 31	FFF 22	FF 12	FFF 42	CL 53	C 4	C 4	C 3	C 2	L 3	L 3	L 2	L 2			L 2	HL 11	L 1	F 2	F 4	FF 21	F 4	F 2
16	F 3	F 2	FF 12	F 1	FF 24	FFF 43	CL 12	C 1	C 1	C 1	C 1	C 1	C 1	L 1	C 2	C 2	C 3	C 3	LC 31	FF 31	FF 21	F 1	F 1	FF 21
17		F 2	F 3	FF 22	F 3	L 2	LC 11	C 2	C 1		C 2	C 1	C 2	C 2	C 1	H 1	C 3	L 4	L 5	F 5	F 4	F 4	FF 42	FF 52
18	F 5	FF 42	F 4	FF 22	F 2	L 2	LH 21	CL 22	CL 21	CL 21	L 2	L 3	LC 21	L 2	L 2	L 2	L 3	LC 21	LC 42	F 4	F 2	F 4	FF 33	F 2
19	F 3	F 2	FF 22	FF 32	FF 11	L 2	C 1	C 3	C 4	C 2	L 2	L 1		L 1		LC 21	LC 21	LC 22	LC 31	FF 32	F 2	F 2	FF 32	FF 42
20	FF 22	F 2	FF 42	FF 22	FF 22	LCH 11	LC 31	LC 42	CL 22	L 2	L 1	L 1	CL 11		H 1	L 1	CL 11	LC 31	L 4	F 3	F 3	FF 31	FF 31	F 1
21	FF 11	FF 21	F 2	F 1	FF 21	LC 42	L 2	L 3	L 2	L 1	L 1	L 1	L 2	C 2	C 2	CH 21	L 2	C 1	C 4	F 5	FF 32	FF 32	FF 24	FF 52
22	FF 62	FF 41	FF 24	F 1		CL 11	C 2	CH 31	C 4	C 3	C 2	L 2	L 2	L 2	L 2	L 2	L 3	LC 31	L 3	FF 24	FF 13	FF 21	F 2	FF 31
23	FF 11	FF 21	FF 21	F 2	FF 51	CL 11	C 4	LC 42	L 2	L 2	L 3	L 2	L 3	L 1	L 2	L 2	LC 32	L 1	LC 31	FF 11	FF 22	FF 51	FF 51	FF 51
24	RF 13	FF 42	F 2	FF 21	F 2	LC 21	CL 14	L 1	C 1	C 1	L 1	L 1	HL 11	LL 21	C 2	C 2	C 2	C 2	LC 42	FF 22	F 3	F 2	F 2	F 2
25	FF 22	FF 22	F 2	FF 22	FF 22	F 1	CL 11	C 1	C 2	L 1	L 1	L 2	L 2	HL 11	H 1	C 1	C 1	CL 22	C 3	F 2	F 3	F 1	F 3	FF 41
26	FF 42	FF 31	FF 51	FF 24	FF 12	FF 11	CL 21	C 1	C 2	C 2	L 2	L 3	LL 22	CL 12	CL 21	LC 21		C 3	C 4	F 5	F 2	F 2	F 2	FF 21
27	F 4	F 3	FF 22	F 2	F 2	F 2	L 1	L 1		L 1	CL 11	CL 21	CL 21	CL 21	CL 21	L 2	L 3	LC 21	CL 12	F 2	F 1	F 1	FF 11	F 2
28	F 1	F 2	F 1	F 1	F 2		C 1	H 1	CL 11	L 1	L 2	L 3	CL 11	L 1	L 1	L 1		HL 11	CH 31	F 3	FF 13	FF 31	F 3	F 2
29	FF 31		F 1	F 1	FF 11		CL 11	CL 12	C 1	C 1	C 2	C 2	C 1	H 1	H 1	H 1	C 2	L 3	LH 21	F 2	F 1	F 2	F 2	F 1
30	F 2	F 2	FF 11	FF 21	F 2	FF 11	CL 11	L 3	CL 12	CL 21	CL 22	CL 11	CL 11	CL 21	C 2	C 2	C 1	C 2	C 4	F 4	FF 31	F 3	F 3	FF 41
31	FF 31	F 2	F 2		FF 21	F 2	LC 11	CL 12	CL 12	C 1	CL 11	L 2	CL 11	CL 11	HL 11	CL 11	L 2	CL 21	L 6	F 5	F 4	F 2	F 2	F 4
	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																								

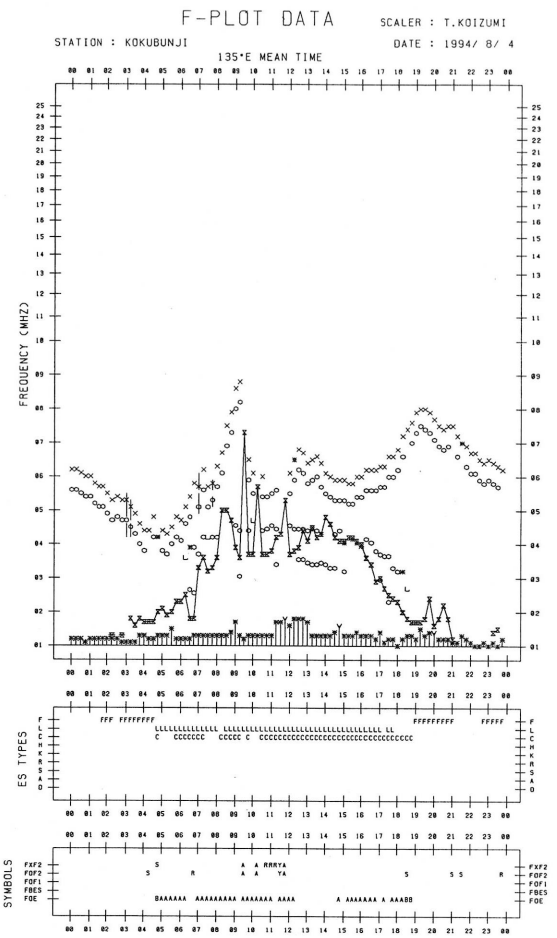
f-PLOTS OF IONOSPHERIC DATA

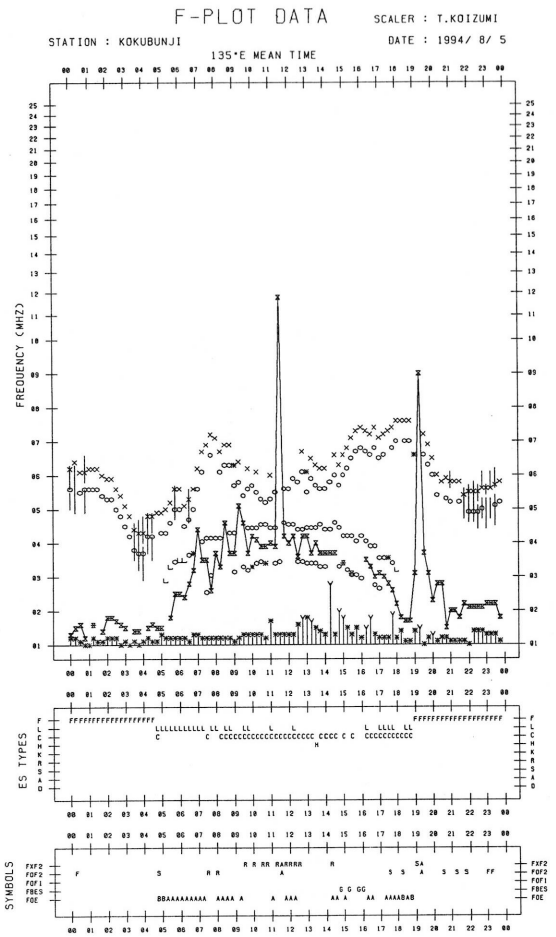
KEY OF F-PLOT	
I	SPREAD
⬡	FOF2, FOF1, FOE
×	FXF2
✳	DOUBTFUL FOF2, FOF1, FOE
⧖	FBES
⌊	ESTIMATED FOF1
*, Y	FMIN
∧	GREATER THAN
∨	LESS THAN

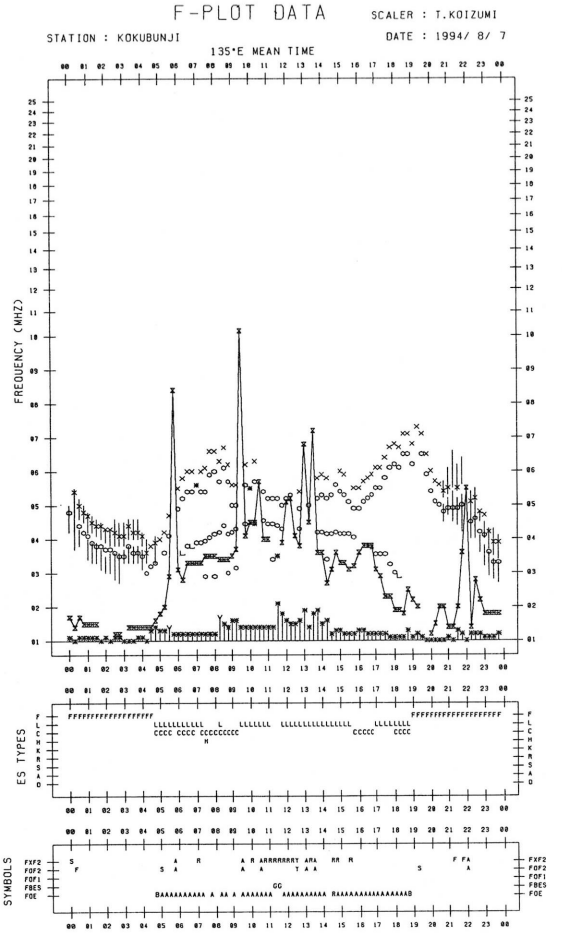

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/ 1
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

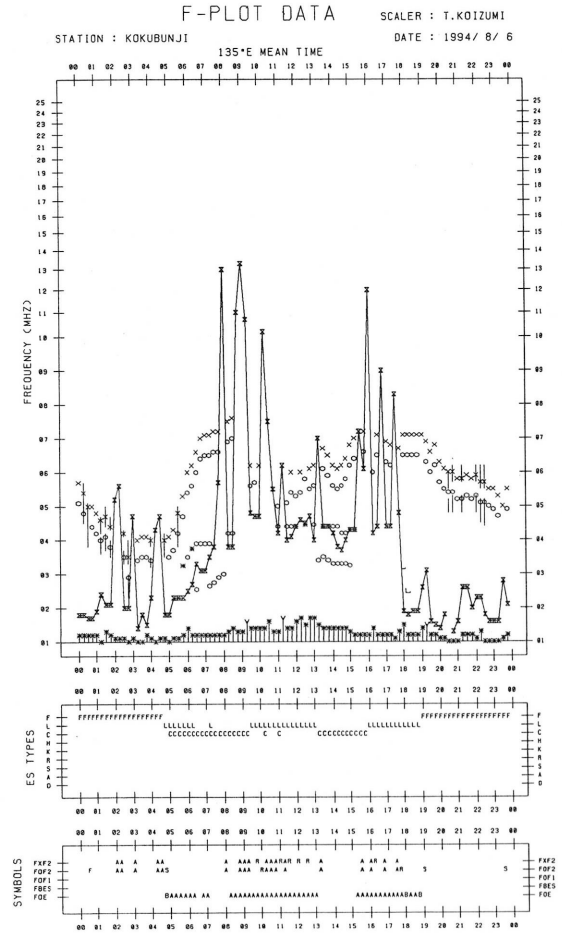

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/ 3
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

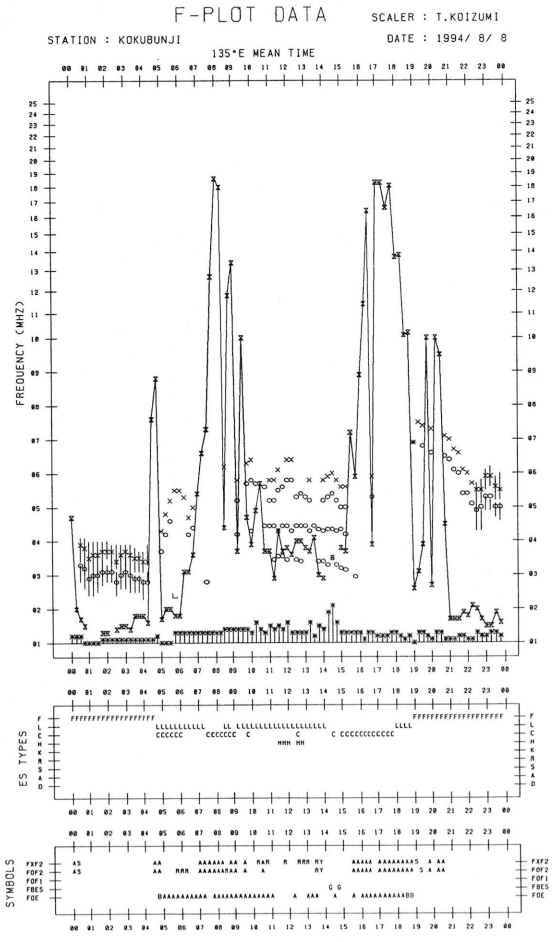

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/ 2
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/ 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/ 8/ 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/ 8/ 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/ 8/ 6
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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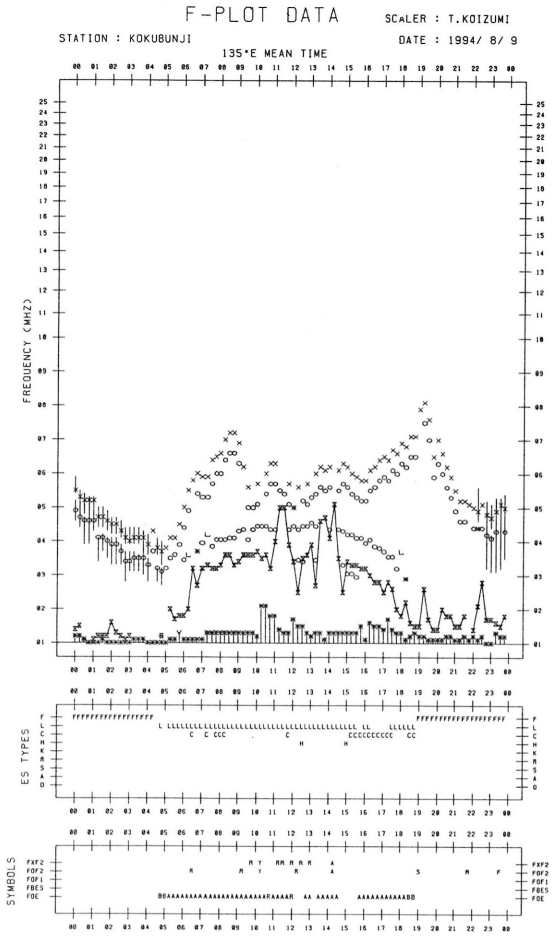
STATION : KOKUBUNJI
DATE : 1994/ 8/ 8
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
DATE : 1994/ 8/ 9
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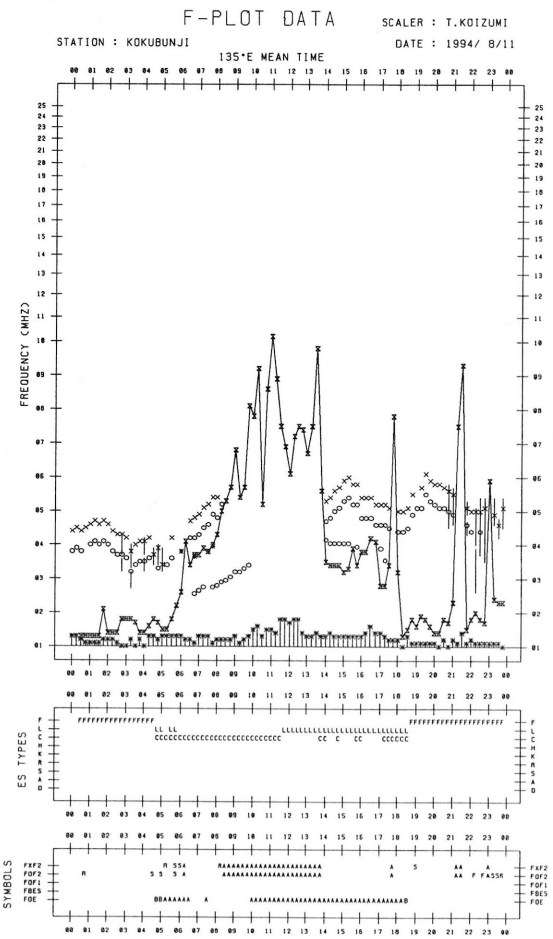
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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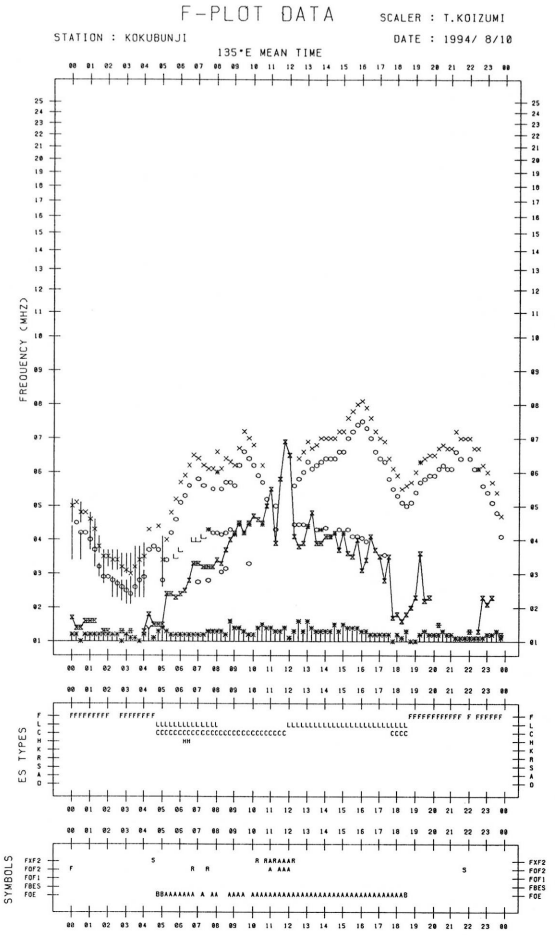
STATION : KOKUBUNJI
DATE : 1994/ 8/11
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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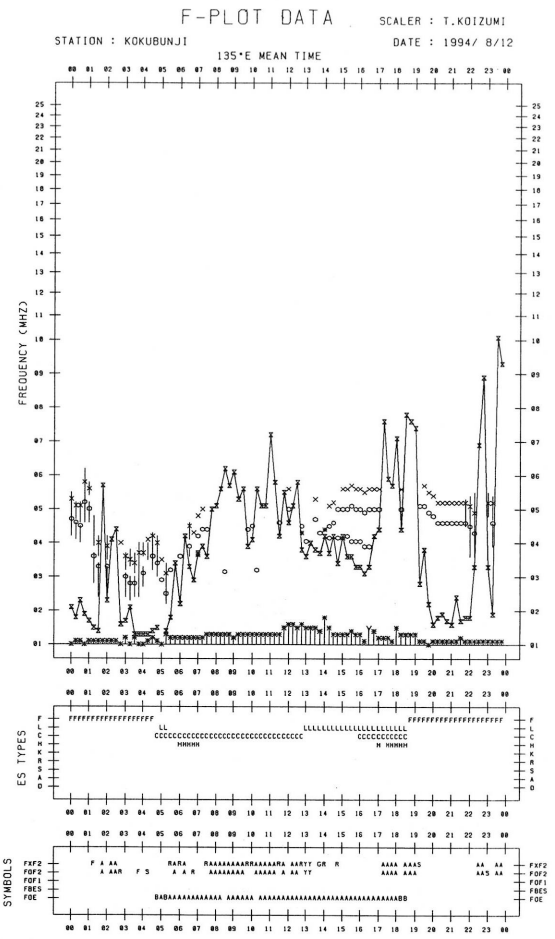
STATION : KOKUBUNJI
DATE : 1994/ 8/10
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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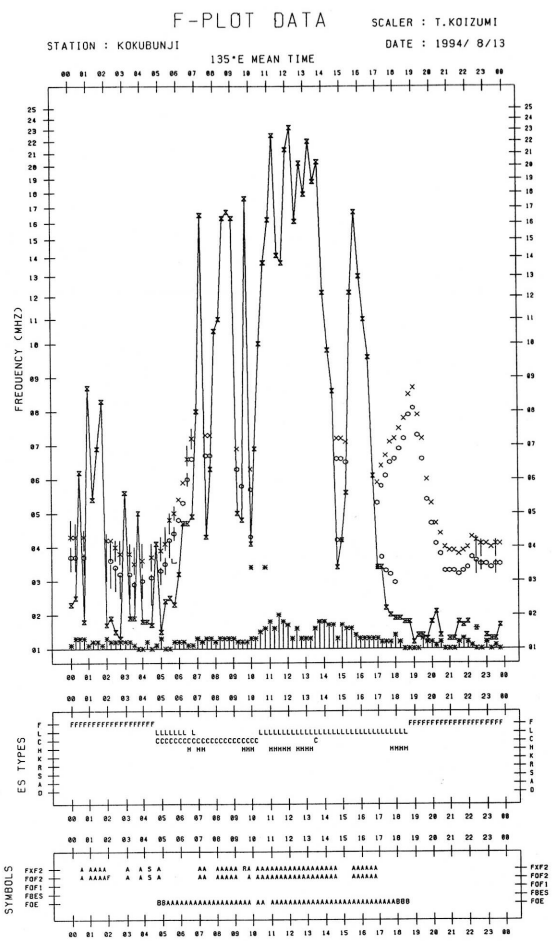
DATE : 1994/ 8/12
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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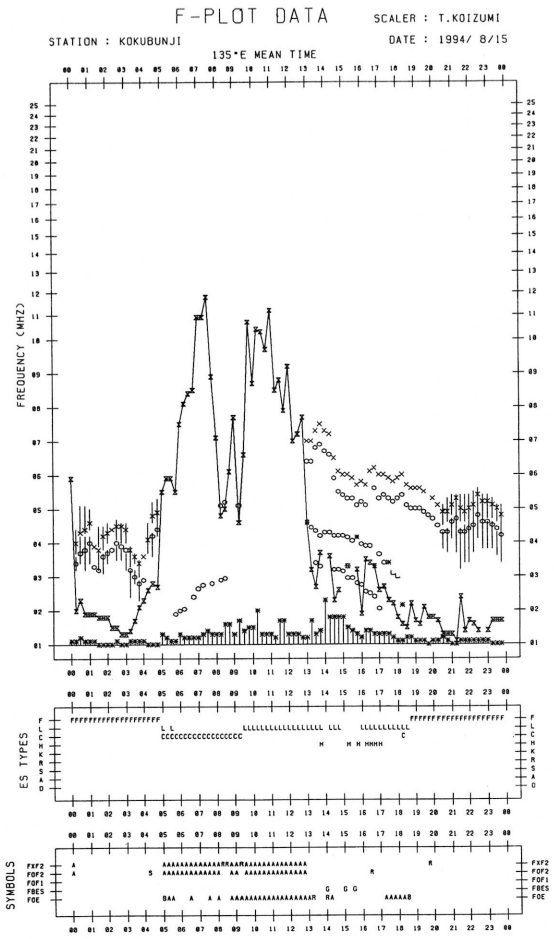
STATION : KOKUBUNJI
DATE : 1994/ 8/13
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
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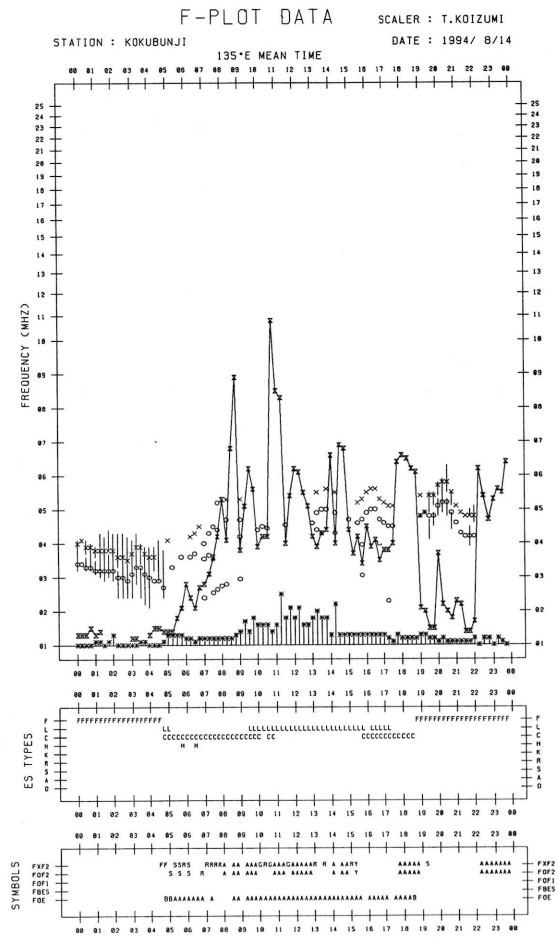
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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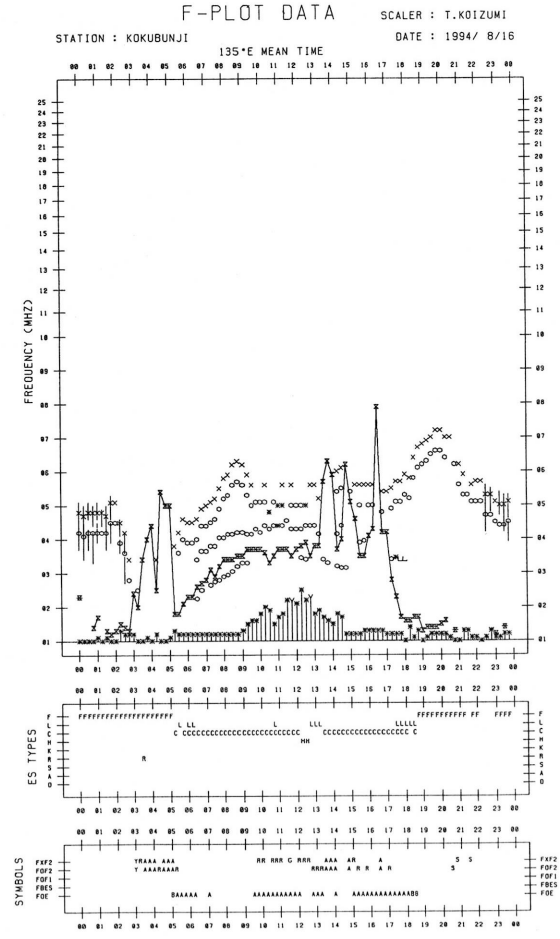
STATION : KOKUBUNJI
DATE : 1994/ 8/14
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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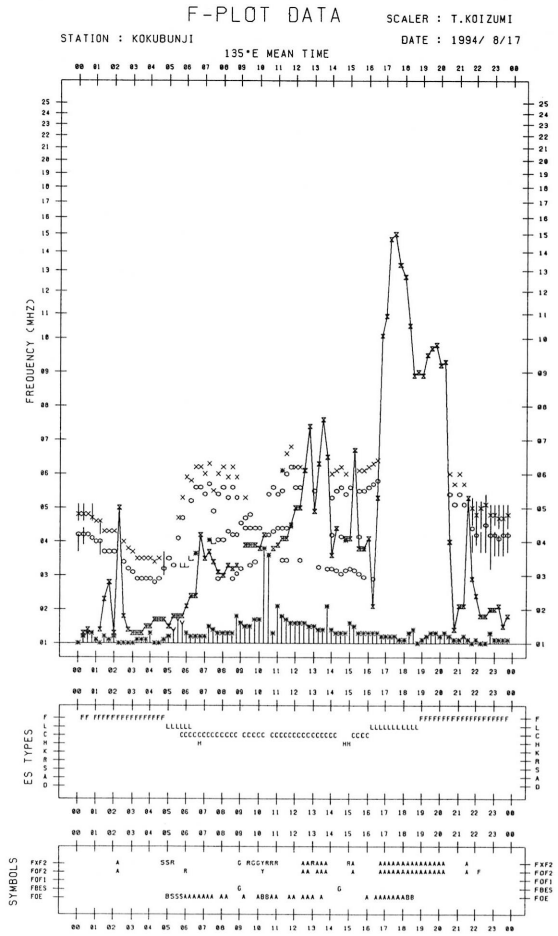
STATION : KOKUBUNJI
DATE : 1994/ 8/16
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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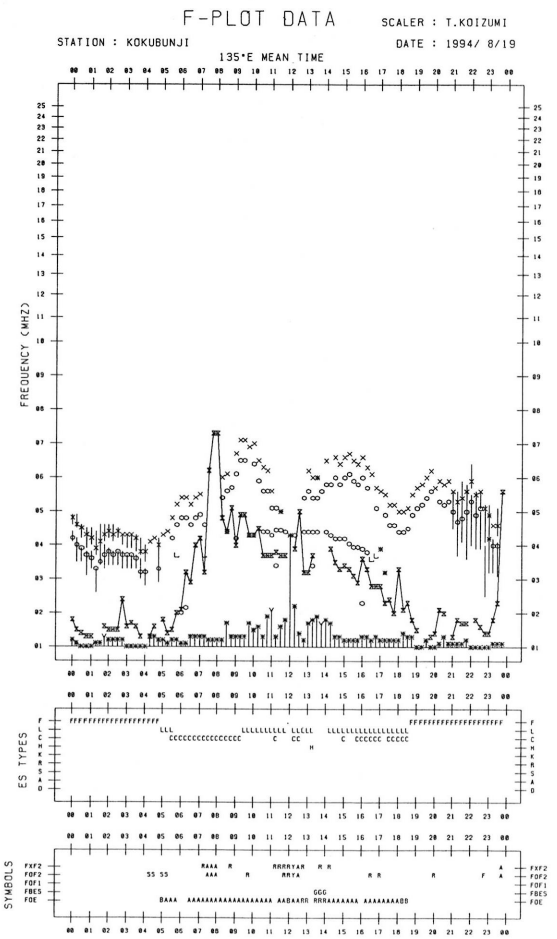
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/17
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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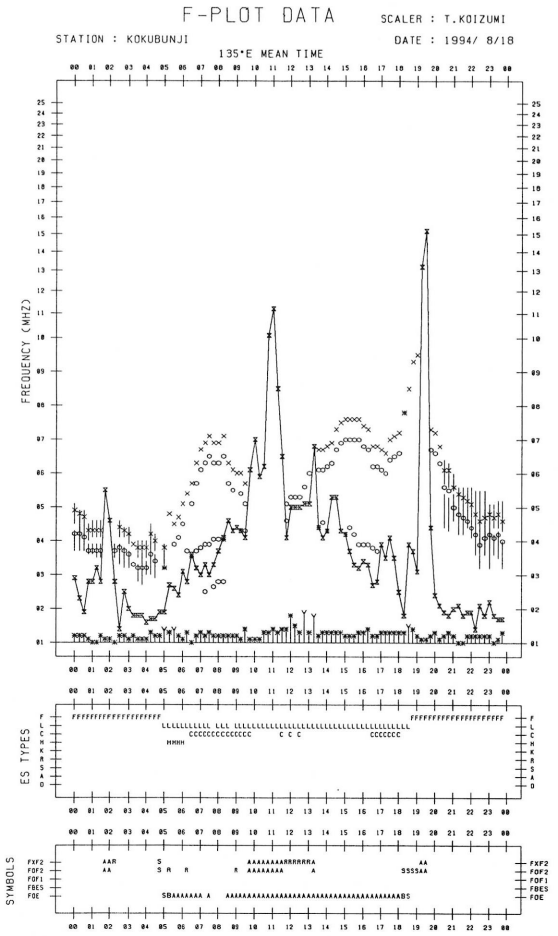
STATION : KOKUBUNJI
DATE : 1994/ 8/19
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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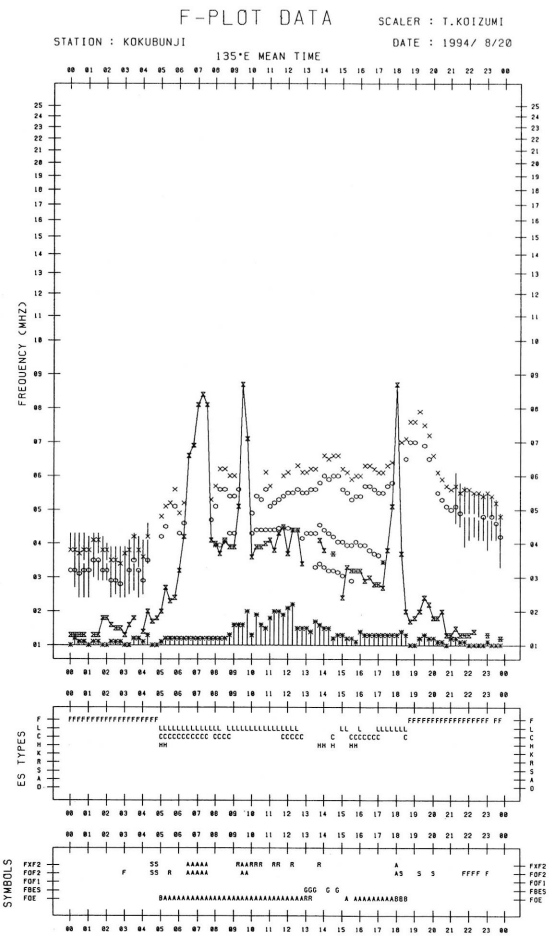
STATION : KOKUBUNJI
DATE : 1994/ 8/18
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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STATION : KOKUBUNJI
DATE : 1994/ 8/20
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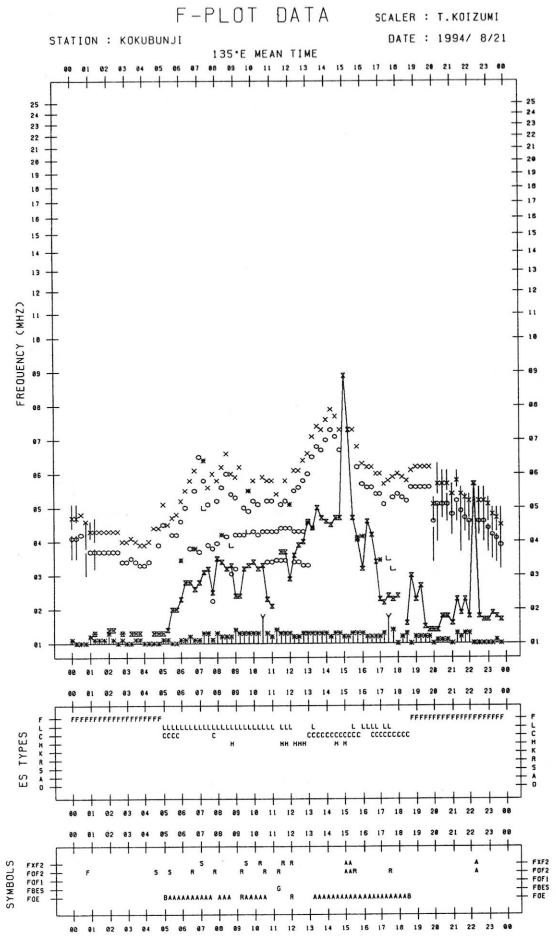
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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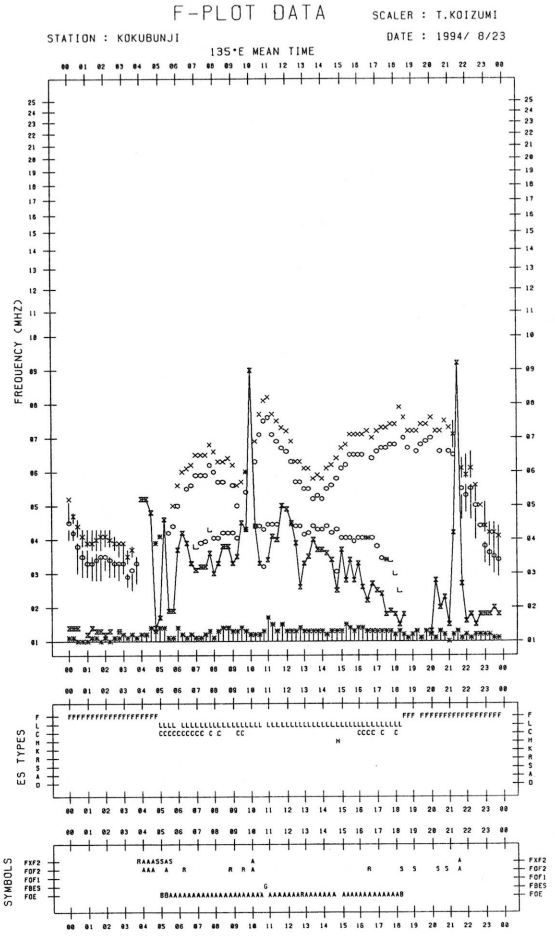
STATION : KOKUBUNJI
DATE : 1994/ 8/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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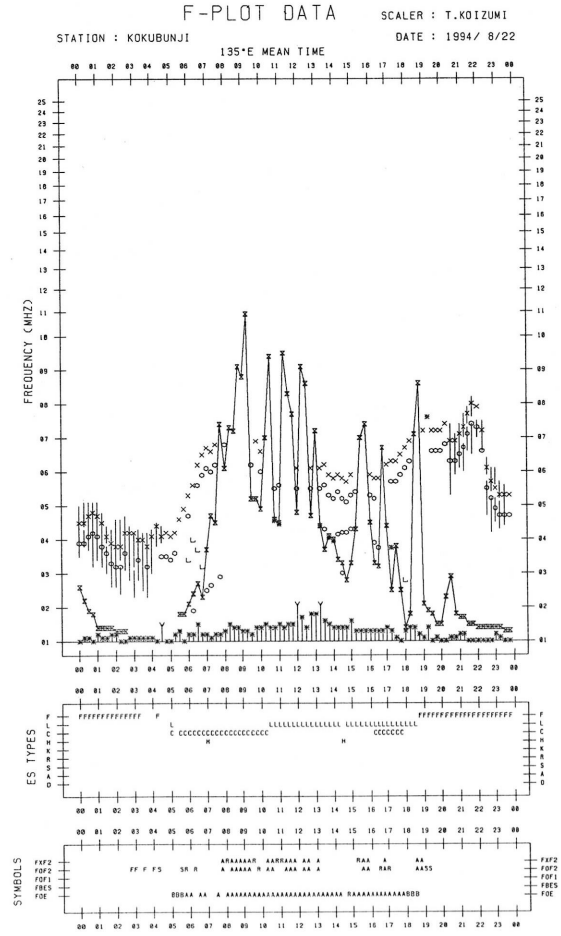
STATION : KOKUBUNJI
DATE : 1994/ 8/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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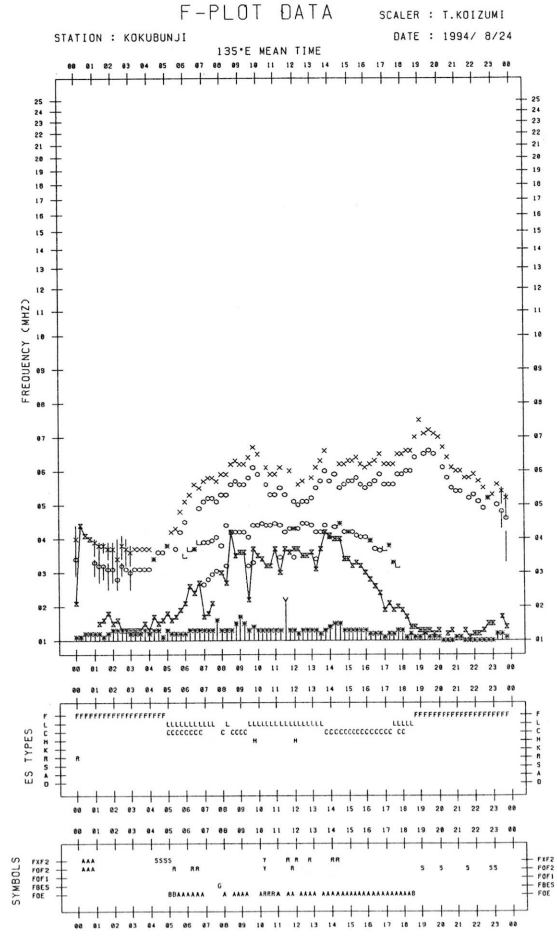
STATION : KOKUBUNJI
DATE : 1994/ 8/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE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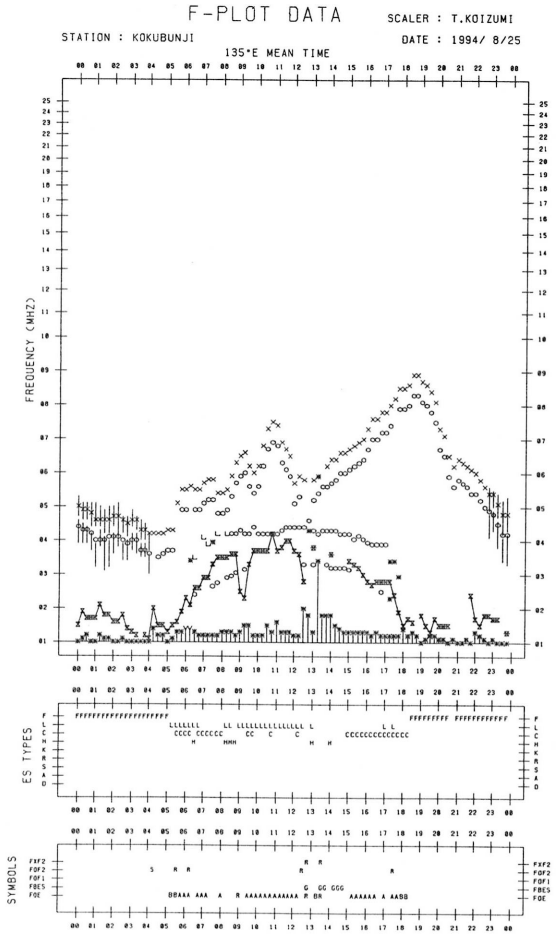
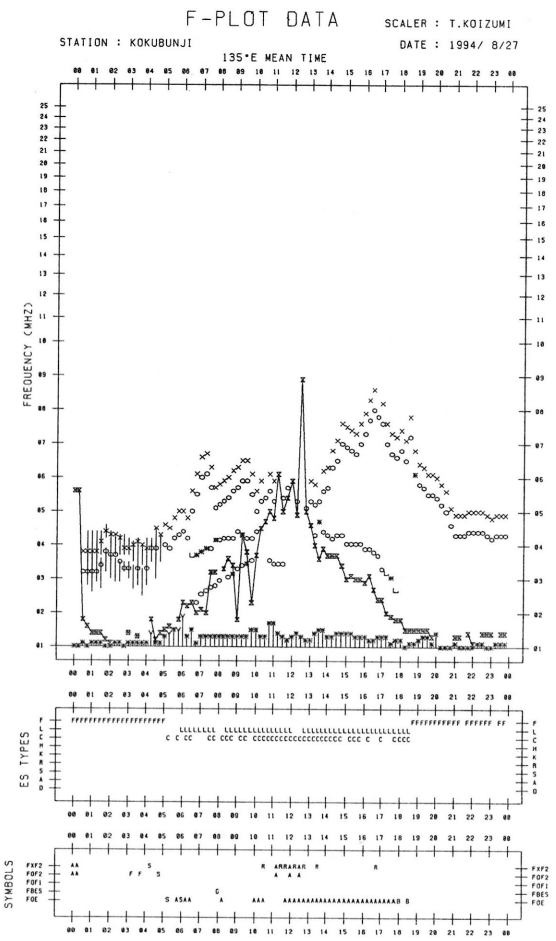
STATION : KOKUBUNJI
DATE : 1994/ 8/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/25
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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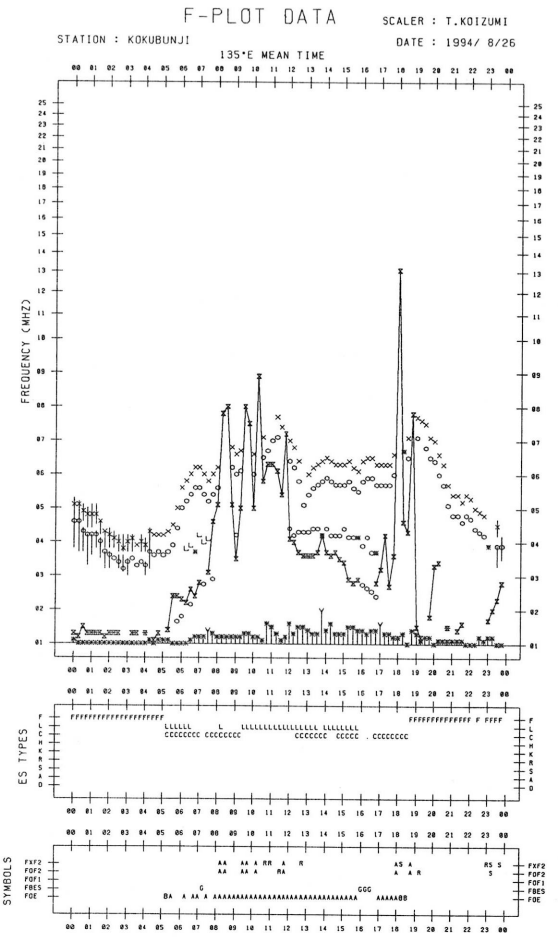
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/27
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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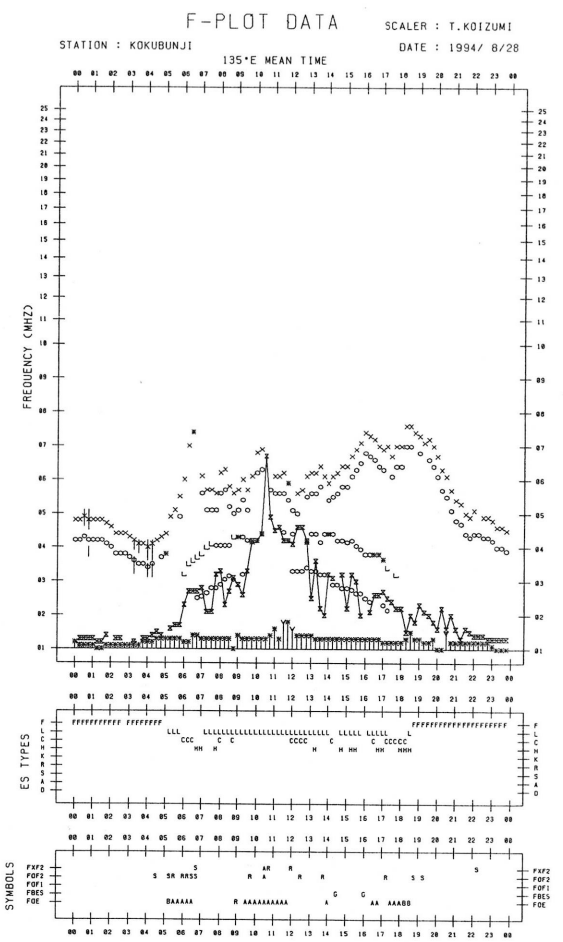
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/26
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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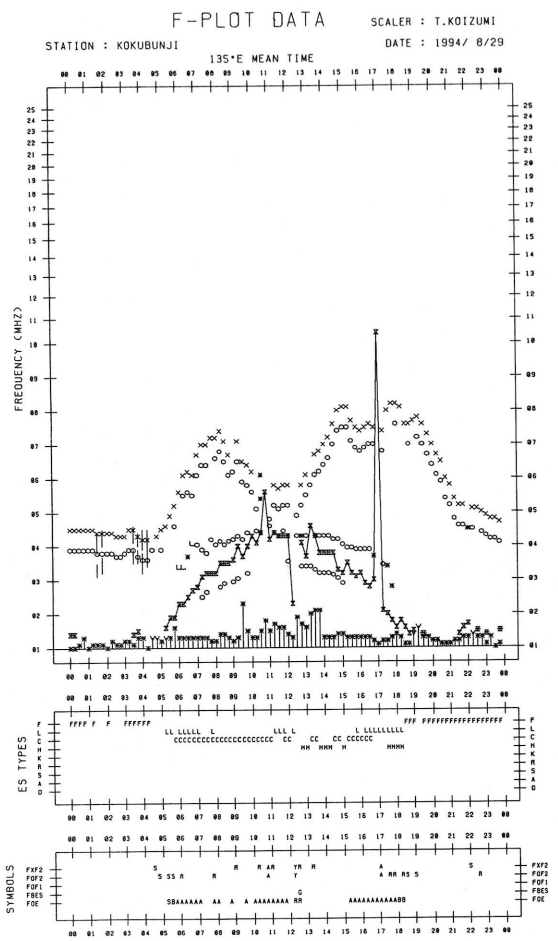
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/28
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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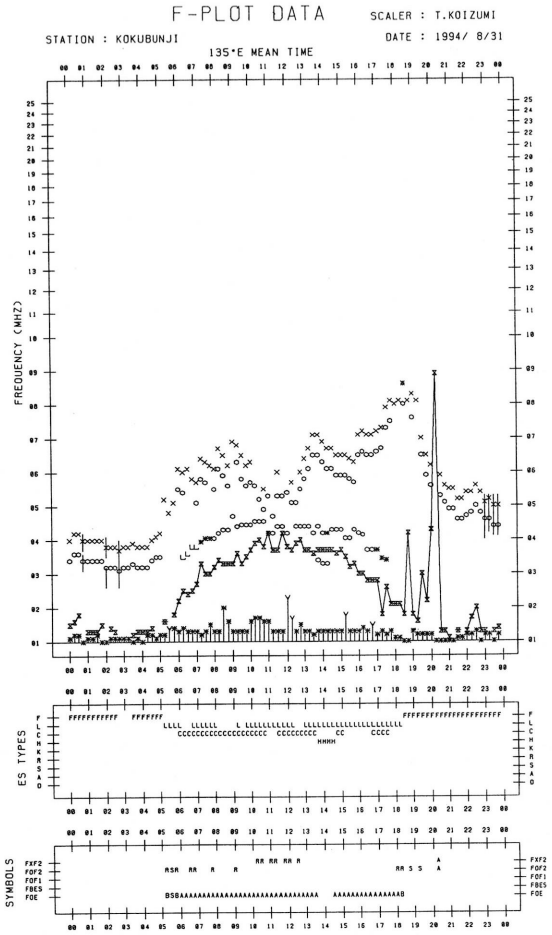
STATION : KOKUBUNJI
DATE : 1994/ 8/29
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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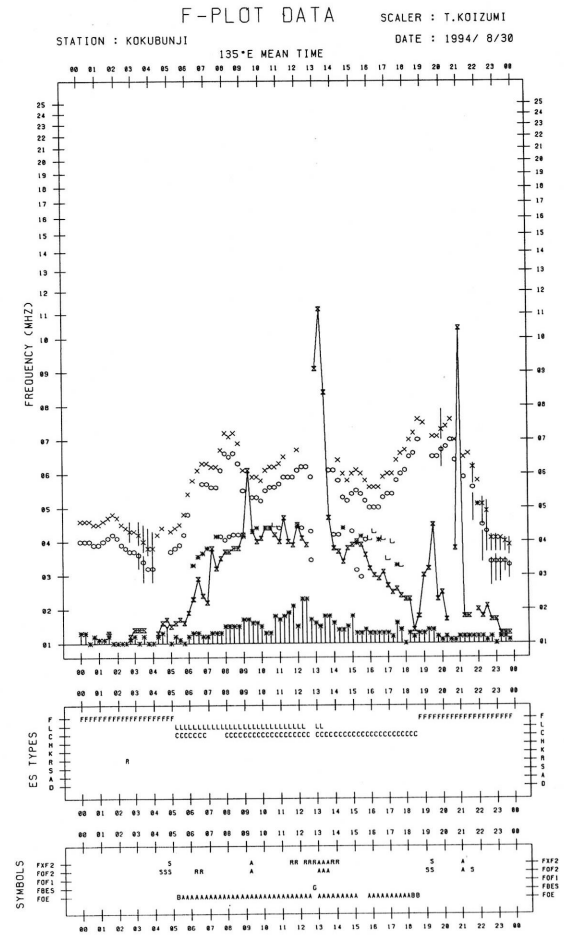
STATION : KOKUBUNJI
DATE : 1994/ 8/31
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS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SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1994/ 8/30
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso August 1994

Single-frequency observations

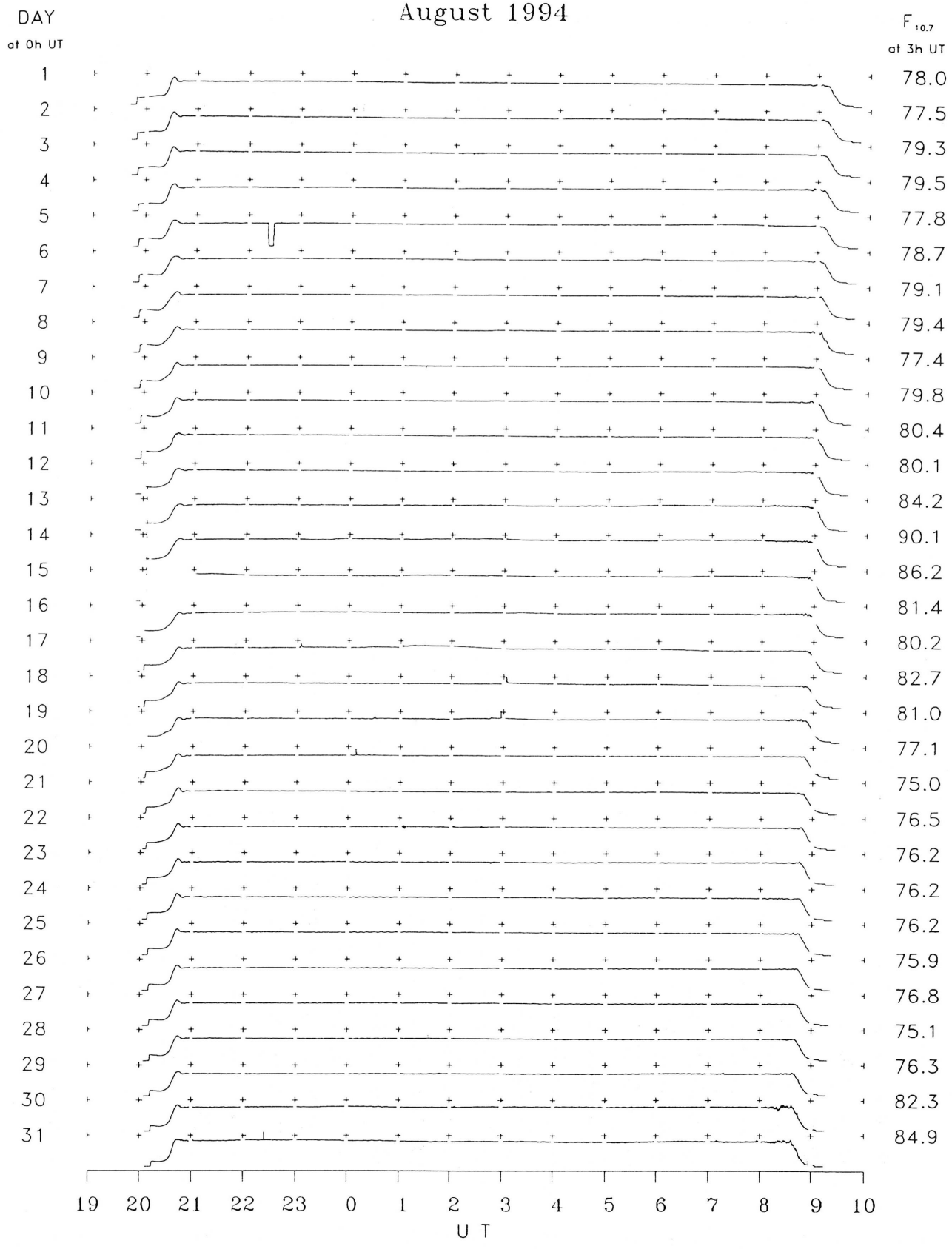
Normal observing period: 2040 - 0920 U.T. (sunrise to sunset)

AUG. 1994	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
13	2800	20 GRF	2339.1	2356.9	60	4	2	0
14	2800	20 GRF	0558.5	0616.5	53	3	1	0
15	500	8 S	0040.5	0040.5	0.1	4	-	0
16	2800	3 S	2303.4	2303.9	2.0	14	6	0
17	2800	21 GRF	0102	0128.0	120	8	4	0
18	2800	45 C	0302.7	0303.0	2.5	18	10	0
19	2800	1 S	0030.1	0030.7	1.0	9	6	0
	2800	1 S	0246.1	0246.7	2.0	5	2	WR
	2800	8 S	0257.0	0257.6	0.7	22	-	WR
20	2800	8 S	0008.6	0008.7	0.7	20	-	0
29	2800	1 S	0715.3	0717.6	3.0	5	2	0
30	500	21 GRF	2134.0	2205.5	83	22	6	WL
31	2800	1 S	0708.7	0709.5	3.0	6	2	0
	500	8 S	0709.0	0709.3	0.3	14	-	0

B. Solar Radio Emission

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

August 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)

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

C. RADIO PROPAGATION

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

AUG 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	-6	-2	0	6	3	14	3	0	0	0	-11	ES -26	ES -26	ES -26	ES -26	ES -26	2	-3	0	2	-4	ES -26
17	-17	ES -26	-1	5	11	7	2	5	2	7	5	-6	-11	-17	-5	-5	ES -26	-5	ES -26	0	-4	2	0	0
18	0	-3	-5	2	3	14	17	13	-2	5	7	7	ES -26	ES -26	ES -26	ES -26	ES -26	-2	-1	4	-6	0	-17	0
19	10	ES -5	-5	-5	0	7	0	-3	-4	-22	ES -26	ES -5	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	-17	0	-5	0	-5	0
20	2	-8	0	3	12	10	12	13	5	0	-5	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	5	-2	4	-2	3	5
21	-2	-17	-3	5	10	15	12	12	-3	12	-1	-1	-11	ES -26	ES -26	ES -26	ES -26	-3	3	-1	2	-11	0	-2
22	1	4	0	18	11	15	9	5	5	5	-8	-5	1	0	ES -26	ES -26	ES -26	ES -26	ES -26	0	0	5	2	5
23	11	5	8	8	11	11	17	20	2	5	3	3	5	ES -26	-26	ES -26	ES -26	ES -26	ES -26	-1	3	4	-5	0
24	2	2	5	8	7	23	15	15	10	-17	-8	ES -1	ES -26	4	-17	ES -26	ES -26	ES -26	ES -26	5	0	0	5	3
25	7	3	5	5	15	7	20	17	4	4	7	-11	-6	-5	ES -26	ES -26	ES -26	ES -26	2	-3	-3	-1	4	5
26	0	4	10	6	10	12	16	0	ES 0	-8	-8	ES -26	ES -26	5	ES -26	ES -26	ES -26	-6	-17	5	6	0	-1	-2
27	-8	0	6	5	10	19	10	22	11	ES -26	-2	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	-4	-3	2	-3	-3
28	-8	0	6	16	10	18	11	5	3	-11	5	-8	ES -26	ES -26	ES -26	ES -26	ES -26	-2	ES -26	-3	-2	-5	5	2
29	0	-17	1	5	10	15	10	9	10	5	3	5	-8	ES -26	ES -26	ES -26	ES -26	0	8	-5	2	2	-1	2
30	-5	0	ES -26	3	11	6	15	12	0	ES -26	5	-5	-5	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	-1	-8	-1	-3	0
31	-8	-11	-8	3	19	11	10	4	9	-2	-7	-11	ES -26	ES -26	ES -26	ES -26	-5	0	9	5	0	5	2	2
CNT	15	15	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
MED	C	C	0	5	10	12	12	12	3	0	0	ES -5	US -18	ES -26	ES -26	ES -26	ES -26	US -26	-17	-1	0	0	0	0
UD	C	C	8	16	15	19	17	20	10	7	7	5	1	4	-17	ES -26	ES -26	0	8	5	4	5	5	5
LD	C	C	-8	-2	0	6	2	0	ES -3	ES -26	-8	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	ES -26	-4	-6	-5	-5	-3

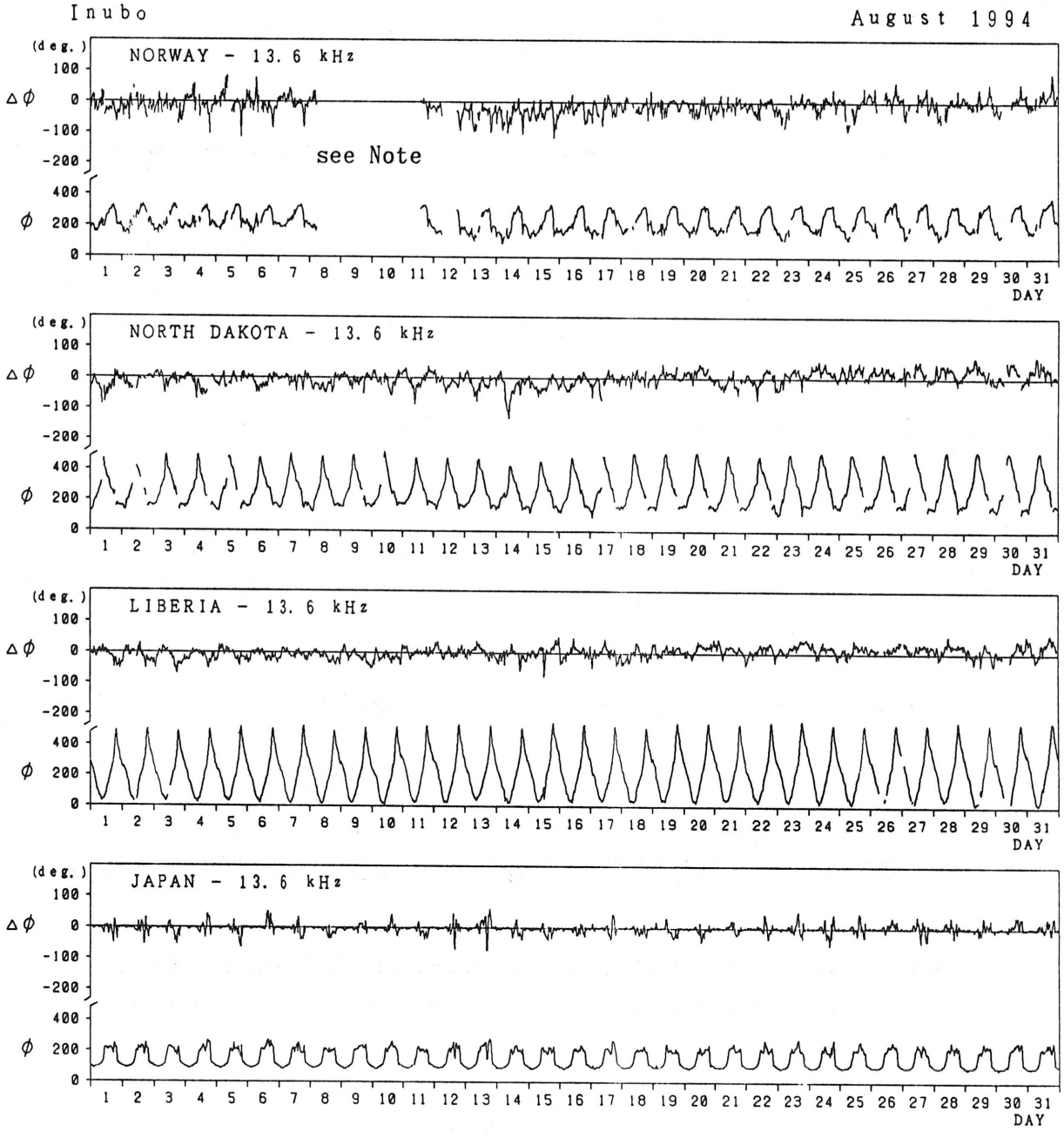
C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

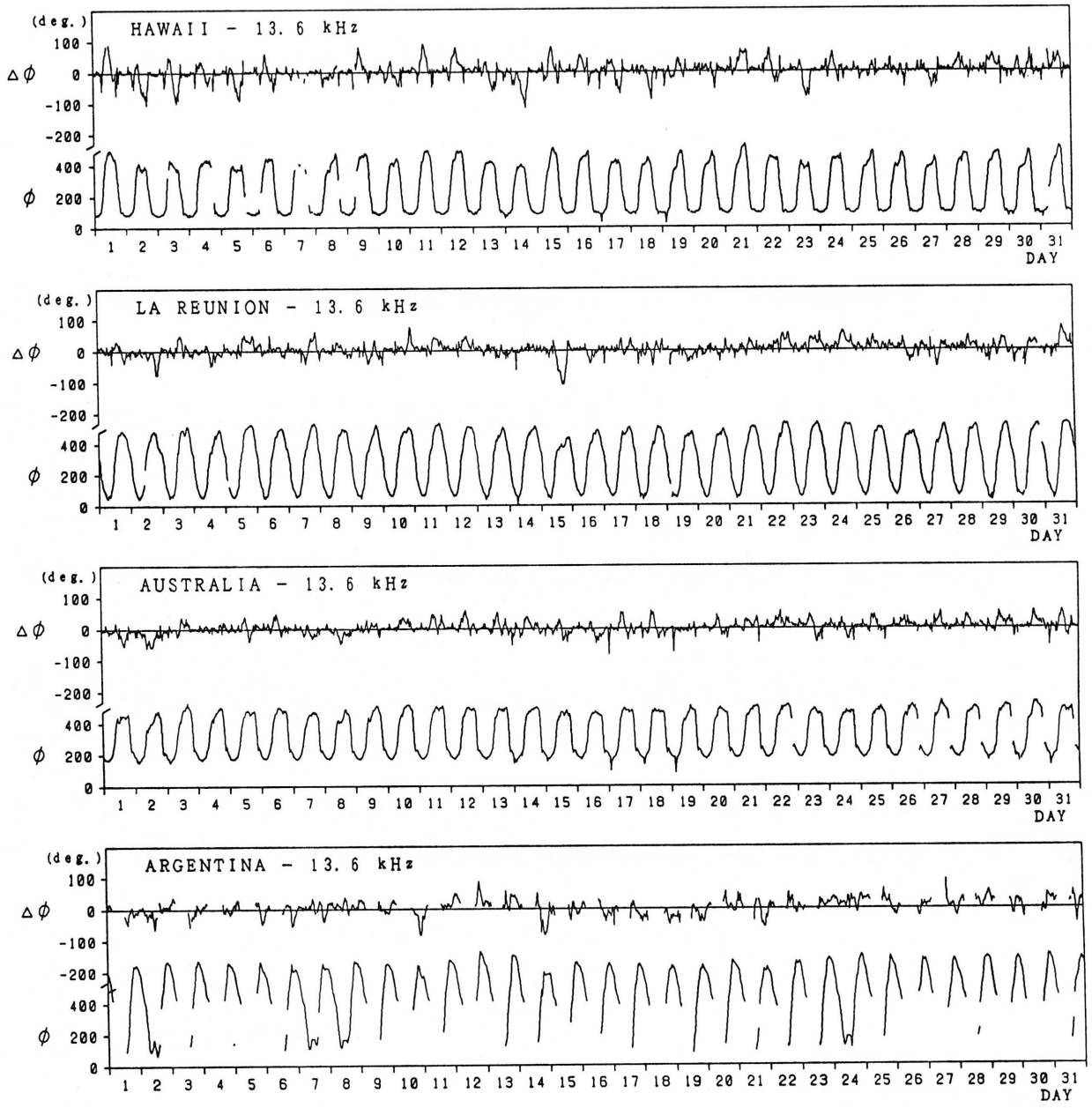
No observations due to system replacement.

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo August 1994



Note : As for NORWAY-13.6kHz, no record during 8 August 0600 UT - 12 August 1635 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.

AUG. 1994	S W F								Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
14			10			0556	49	S	1-	x	C
17			39	x		0100	38	SL	3	x	C
18		x	23			0303	12	S	2-	x	C
19			20			0253	15	SL	2-	x	C
30					22	0820	26	SL	1+	x	C
30					10	1033	7	S	1-	x	C
30			20	15		0105	37	G	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

Aug. 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
13					11		2216	2240	2222
13			25	50	32		2340	0042D	2354
14				7	7		0042E	0100D	0049
14				7	7		0100E	0117D	0106
14				14	7		0117E	0136	0122
14				14	7		0157	0228	0204
14		54	76	32			0556	0716	0612
15				18	14		0108	0138	0121
15			22				0656	0741	0704
15		103					1244	1358	1304
16			11	11			0318	0350	0330
17	76	49	94	83	86	49	0103	0148	0120
17					11		2000	2021	2005
18	58	29	112	72	40	34	0302	0410	0312
18		34					1508	1546	1516
18					22		2045	2116	2050
19	115	44	130	104	68	24	0244	0340	0301
20	32						1632	1726	1658
21			25	11			0510	0534	0515
29				22	14		0136	0220	0146
29			14	11			0414	0436D	0420
29			36	18	11		0436E	0514	0446
29			32	11			0532	0630	0544
29			58				0714	0850	0731
29		44					1240	1340	1258
29				7	7		2234	2248D	2244
29				36	36		2248E	2358	2320
30				11	7		0150	0214	0201
30			58	36	22		0220	0335	0245
30		—	32				0541	0620	0550
30		—	32				0634	0708	0646
30		—	119				0820	0940	0834
30		—	72				1036	1126	1042
30					7		2122	2140	2130
30				14	18		2241	2340	2305
31	40	15	22*	54*	36*		0058	0253	0134
31			54	25			0614	0650	0628
31			36				0710	0745D	0722
31			18				0745E	0828	0802
31		54					1233	1340	1247

Inubo

Aug. 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
31				18	22		2348	1020	2356

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