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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

Solar radio observations at 200, 500 and 2800 MHz are carried out at Hiraiso. The observation equipment consists of two parabolic antennas, one with 10-meter diameter for 200 MHz measurements and one with 2-meter diameter for 500 and 2800 MHz measurements, Observations are continuously carried out almost from sunrise to sunset.

B1. Daily Data at Hiraiso

The three-hourly mean and daily mean values of the solar radio emission intensities are tabulated separately for 200 and 500 MHz measurements. The intensities are expressed by the flux density in 10^{-22} Wm^{-2} Hz^{-1} unit.

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

0 quiet or no burst,

1 a few bursts,

2 many bursts,

3 very many bursts.

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

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

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

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

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

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

C2. Radio Propagation Quality Figures at Hiraiso

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

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

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

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

C	artificial accident,
S	propagational accident,
U	inaccurate.

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

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

N normal,
U unstable,
W disturbed.

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

C3. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C4. Sudden Ionospheric Disturbances

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

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

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

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

Types of fade-out are as follows:

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

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

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

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

AUG. 1996

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT WAKKANAI

AUG. 1996

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	27	G		34	44	34	29	36	40	59	42	82	34	32	64	45	43	48	61	32	42	30
2	34	34	35	34	G	30	45	69	74	95	62	36	29	N	32	29	36	33	32		40	41	42	27
3	G	26	27	27	G	28	35	34	34	41	36	38	33	B	34	31	40	32	26	32	24	24	24	G
4		27	33	35	G	29	28	36	38	72	72	74		40		31	B	31	32	47	40	28	35	54
5	29			29	28	29	42	45	77	76	63	42	39	31	31	30	29	30	G	28	28	34	34	38
6	35	39	33	28	G	27	34	45	35	55	32	36	30	33	30	29	27	28	34	28	23	29	29	41
7		26		G	G	26	32	35		35	37	36	35	31	31	30	32	61	73	38			27	32
8	26	G	39	26	33	30	28	44		42	64	55	56	41	57	60	55	80	85		37	56		44
9	40	40	45	42	35	33		96	166	81	86	78	90	95	65	67	50	55	72	56	58		53	71
10		34	34	32	31	33	47	62	66	93	84	57		59	72	72	54	64	30	32		57		41
11	73	39	32	37	40	40	45	62		70	70	77	60	35	39		42	148	94	95	59	64	64	64
12	40	34	33	G	36		37	61	73	134	77	76	62	62	34	30	33	38	35	31	G	34	41	56
13	35	27	33	38	23	28	35	34	62		89	67	68	62	54	74	38	26	27	25	26	32		34
14	54	33	32	29	28	30	56		59	130	55	60	75	60		34	29	32	32	38	38	36	30	25
15	33	47	35	30	38	34		43	37	36	35	82	84	35	31	40	38	32	59	61	46	41	38	G
16	G	33	25	G	G		41	43		58	36	77	45	40	34	B	N	25	28	G	60	39	37	40
17	41	25	32	36	25	30	48	62	46	62	76	71	61	83	78	77	37	44	43	41	40	60	63	58
18	27	34	34	26	28	30	36	47	30		36	40	72		34	29	28	46	35	25	35	30	33	43
19	34	28	38	37	44	31		28	36	54	59	40	42	36	40	35	37	38	41		28	30	44	
20	76	60		34	28	28	43	65		55		34	41	34	32	28	29	35	34	40	31		61	27
21	29	32	30	33	28	32	39	41	44	38		67	36	36	41	62	54	30	38	29	39	34		47
22	34	30	37			34	27	44	47	68	67	59	54		72	66	62	96	50	G	G	36	35	
23	59	61	60	58	37	40	40	61	47	43	35	70	29	31	32	36	27	33	32	32	27	33	28	G
24	G	29	G	G	G	24	33	45	35	40	39	37	34	34	30	29	32	38	28	24	G	G	76	34
25	35	25	26	G	24	24	28	26	30	31	54	36	34	30	42	42	30	56	30	29	39	30		37
26	G	G	G	G	23	29	38	43	44	36	39		69	43		40	65	61		52	56	60	28	26
27	39	34	G	G	30	26	35	41	35	32	33	32	29	29	30	27	25	24	G	G	42	32	G	36
28	29	32	24	G	G	26	38	35		39	28	30	31	38	29	30	30	34	27	27	40	58	82	26
29	39	47	30	29	30	29	34	42	43	34	32	40	32	31	30	27	23	38	28	31	29	G	29	24
30	24	27	G	G	G	25	33	46	57		38	37		43		30	26	30	36	46	39	39	45	41
31	33	35	40	32	29	26	28	30		45	59	35	36	46	42	85	66		42	33	33	43	35	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	28	30	28	30	29	29	28	30	24	28	29	30	28	27	27	29	29	30	30	28	29	28	26	29
MED	34	32	32	29	28	29	36	44	44	50	54	48	42	38	34	32	36	36	34	32	38	34	36	36
U Q	39	35	35	34	32	32	42	61	60	71	68	70	61	59	42	61	52	55	43	43	41	42	45	43
L Q	26	27	26	G	G	26	33	35	35	37	36	36	33	33	31	29	29	31	28	27	27	30	29	26

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

AUG. 1996

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

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

AUG. 1996

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	35	26	A	A	A	A	55	A	A	A	A	A	A	A	A	A	A	45	62	68	58	57	49
2	46	40	35	A	31	31	A	A	A	A	A	49	A	A	A	A	A		46	A	56	A	46	
3	A	49	A	40		40	A	A	A	A	A	A	A	A	A	58	52	56		A			46	A
4	A	A	36		29			A	A	A	A	A	A	A	A		A	A	A	59	A	A	A	46
5	37	36		25	34	36	48	A	A	A		A	A	A	68	58	A	A	A	A	57	48	47	48
6	47	45	A	40	32	37		55	A	A	A	A	A	A	A	54	52	57			57		48	46
7	48	38	35	A	A		A	A	64	A	A	A	A	A	A	57	59	A	45	61	57	48		A
8	43	46	A	A	35	38		A	A	A	A	A	A	A	A	A	66	63	56		50	46	46	45
9	48		37	35	35	38	A	56	A	A	A	A	119	A	A	A	52	A	56		56	57	57	
10	46	40	38	35		34	A	A	52	A	A	A	A	A	A	55	A	A	54		57	A	A	57
11		49	32	A	34	44	A	A			A	A	127		A	A	55		47	A	A	A	56	57
12	46	47	37		32		A	56	64	A		A	A	A	A	A	A	54	60		56			A
13	46	46	36	35	34	A	45	45	N	A	A	A	A	A	67	A	58	55	56	60	58	57	66	58
14	59	A	38		34	41			A	A	A	A	A	A	52	A	A	A	52		57	57	66	
15	40	A		A	N	A	A	A	71		68		A	A	A	56	52		A	44	40	A	A	30
16	A	58		26	28		A	A	A	A	58	72		A	A	A	51	55	A	30	A	A	37	A
17	39	28	39		A	B	A	A	A	52	53	A	A	A	A	A	56	A	A		48	A		A
18	A	35	30	28	28	38	48	48	50	A	A	67	56	A	A	A	49	50	48	54		A	35	26
19			A	49	34	38		A	A	50	A	A	A	A	A	A	A	55	53		56		47	
20	36		A	30	34	31	47	48	A	A	A	A	A	A	52	53	A	50	A	68	58	57	A	A
21	A	A	35	23	A	32	56		40	51	A	A	A	A	A	A	52	47		A		56	A	57
22		40		A	31	A	38			62	A	A	A	A	A	A	60	57	56	61	68	70	68	B
23	35		A		A	32	43	56	57	50		40	A	58	58	A	A	48	58		78	70	A	A
24	A	A	A	35	29	A	58	68	56	49	A	A	A	A	64	64	55	57		69	63	A	46	A
25	33	A	36	A	35	38	50	58	A	A	58	A	58		A	A	A	A		81		69	A	52
26	44	45	41	A	A		A	57	68		A	49	A	A	48	62	60	A		69	A	69	46	
27	59	58	34	35	30	37		56	56	63	55	A	A	A	66	63	55	54			58	68		49
28	58		38	N	B		48	59	52	A	62	A	A	A	A	57		61	69	78	80			47
29	45		32	34	37	36	42		64	A	A	A	A	A	75	66	62	60			68	A	A	A
30	A	A	A	A	A	A	58	66	56	A	A	A	A	A	64	58		68	64	67	58	57	58	A
31	A		A	A	23	38	48		A	57	A	A	109	67	A	63	52	68	69		70	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	17	18	14	20	18	13	14	13						10	14	18	18	17	14	23	15	17	14
MED	46	45	36	35	33	38	48	56	56						64	58	55	56	56	62	57	57	47	48
U Q	48	48	38	35	34	38	53	58	64						67	63	59	60	59	69	68	69	57	57
L Q	39	37	34	28	29	34	44	55	52						52	56	52	54	47	59	56	56	46	46

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

AUG. 1996

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	81	28	38	53	29	28	55	54		54	70	55	54	61	95	32	55	76	62		28	30		40
2		30	37	34	G	G	46	56	66		81	58	70	80	54	60			33	71			62	
3			59			28	58	61	53	57	52	38		37	42	48	52	33	34	35	28	G	41	58
4	60	28	31	28	G	39	31	31	65	57	72	89	73	56	64		90	140	67	86	56	58	70	40
5	30	G	33	G	G	25	34	44	52	71		172	88	59	62	48	52	58	36	44	31	56	57	40
6	25	39	37	G	G	G	30	44	55	66	48	59	40	34	43	28		34	31	56	34	G	G	G
7	29	60	59	61		G	40		59	90	94	138	109	59	51		55	61	32	41	37	34		61
8		48	46	52	30	48		53	59		86	40	41		56	62		44	32	34	34	27	28	24
9	29	G	32	35	G	29	44	48	74	91	78	58	94	25	50	48	53	68	88	95		73	41	37
10	28	G	G	53	47	34	45	119	46	89	85	51	56	88	69	62		100			35	71	56	86
11		70	30	41	49	40	100	134	96	120	180	180	118	158	180	112	58	55	40	49	60	58	39	37
12	34	34	31	33	42	37	56	44	42	36		54	69	50	55	37	30	29	G	29	G	33	34	55
13	34	23	26	27	27	26	28	40	45	59	71	91	89	48		62	55	30	G	33	38	29	35	58
14	57	59	54	38	30	34	33	53	60	58			59	32		78	64	89	71	62	43	48	44	29
15	G	28	26	29	28	28	34	60		61		53	35	55		49	35	36	40	49	30	69		60
16	53	40	33	49	26	27	40	71	57	58	37	56	G	54	34	34	27	34		62	37	24	32	51
17	52	40	51	26	25	B	50	62	85		51	76	39	60	54	48	57	91	57		54	91		60
18		40	G	G	26	25	36	48	56	53	49	74	51	36	33	34	42	32	28	G		60	33	G
19	33	56		55	40	28	29	39	51	47	48	54	48	48	54		89	70	70		51		33	G
20	G	G	26	G	G	25	29	34	73	83	72	34	40	40	47	58	55	46	61	60		G	73	34
21		57	52	50	31	31	30	32		50	59	66	89	122		91	33	52	134	106		48		29
22	G	G	37	71	26	33	27	35	50	56	60	56	74	69	69	69	51	46	52	62	27	G	40	B
23	33	33	32	34	34	27	33	45	45	48	G	G	33	38	51	75	48	50	32	40	G	G	34	58
24		39	34	G	G	35	38	55	43	42	40	38	33	32	50	45	54	53		111	70	88	36	53
25	45	41	32	33	30	28	36	52	92		42	57	53	G	78	144		140		151		76	50	54
26		42	51	55	53	33	35	38	28		48	38	58	30	29	33	34	60		30	104	62	53	33
27	G	G	27	25	24	G	29	39	40	35	34	39	28	30	30	38	44	48	33		55	47		G
28	G	G	26	G	B	G	32	23	27	31	48	40	32	25	27	29		40	34	39	G	G	29	34
29	30	G	G	G	24	G	30		36	66	78	51	62	29	29	28	33	40	37	72	46		43	30
30	33	30	48	30	32	40	29	36	34	36	49	52	36	34	31	34		46	54	60	55	33	64	52
31	88	48	48	35	30	28	30		34	34	39	50	46	53	54	45	43	47	39	32	48	49	33	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	23	30	30	30	28	30	30	28	28	26	27	30	30	30	27	28	24	30	26	26	25	28	25	29
MED	33	34	33	34	28	28	34	46	52	57	52	54	54	48	51	48	52	49	38	52	37	48	40	40
U Q	52	42	48	50	31	34	44	55	62	66	78	66	73	59	62	62	55	68	61	71	54	61	54	56
L Q	25	G	27	25	12	25	30	38	42	47	48	40	39	32	34	34	38	40	32	35	29	25	33	29

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

AUG. 1996

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

AUG. 1996

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A	A	A	59	60	55	A	A	60		A	A	60	A	55	55	52		A	27	34
2	34	A	59	47	A	53	A	A	A	A	A	67	A	A	A	A	A	A	62	53	52	42	A	A
3	A	A	34	38		A	A	A	A	A	A	A	A	A	66	70	84	66		58	52	42		
4				40	A	A	A	A	81	A	A	A	A	A		84	A	A	A	A	A	66		A
5	43			A	55		62	A	59	60	A	A	A	66	70	72	A	62	66	72			43	
6	32	A	109		89		60	52	66	59	A	A	A	A	A	59	58	51	A	A	A	A	A	A
7	A	A	89	30		89	89	59	A	A	68	A	A	A	A	78	A	90			52	A		A
8	A	A	A	59	59			A	A	A	A	A	55	B	66		73	70			A	79	A	42
9	B	49			79			A	59	A	69	A		B	95		A	73		52	A	A	A	
10		A	109				A	48		57		B	A	A	52	A			A	A	52		A	A
11	37		89				69	A	57			69	A	57		A	72	A			B	43		
12			109	31		A		A	43	A		A	A	60	A		B	55		84				
13		A		69		A	53				B	A	A		74	A		52	53		A	79		A
14																								
15								32		59			A	A	A	67				A	A	A		A
16	A	A	A			A	A	67	A			A		A	A		66					A	A	A
17			A		A	69		A	62		81	A	A	A		60		A	A	A	A	A	A	A
18	A	A	A	A	A	A	A	60	74	A	A	74	A	A	66	67	60	69	A	54		A		
19	A	A	A	A	A		A	A	A	A	61	A	A	58	A	A	A	A	89	A	A	A		
20	69			69		A	A	A	A	A	60	59	A	A	A	55	60	A	A	A	43	A	A	A
21	A	A	A	A		A	38	38	62	58	70	73	A	A	A		A	A	74	A	A			A
22	A	34	A	A	A	A	A	A	74	73	A	A	60	A	84	67	58			52	47	A	A	A
23	59	A	A		A	79	A	54	60	63	A	A	A	A	56	58		A	53					30
24		69	A	A	A	A	A	48	59	A	A		66	72	76		62		A	A	A	A	A	A
25	A				79		79	66	67	68	60	A	56	A	61	71	66	77		84	A	A	A	A
26	A	A	A	A	89	A	A	54	65	A	60	58	66	68	66		84	84		A		A	A	
27	A	51				A	59		61	61	58	62	60	69	73		73	A	53	A	A	A	A	A
28					B			67	57	60	67	61	A	58	62	70	70		A	A	A	B		
29	A	A	109	A	79		59	52				A	A	A	77	75	73	74	84	87				A
30	A	A		A	A	A	79	69	A	79	A	A	A	A	79		57	62	74		A	A	A	49
31	A	A	A				38	54		66	67	66	82	86	83	83	86	92	96	88	A	A	49	26
	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	16	17	12	11	10			17	16	16	15	11	11				
MED							60	54	61	60	67	64			70	68	68	69	66	58				
U Q							74	63	66	67	69	69			78	73	73	77	84	84				
L Q							56	50	58	59	60	60			64	60	60	55	53	52				

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

AUG. 1996

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	58	92	57	59	32	30	28	46	47	58	52	62	148	98	140	33	31	49	54	33	30	40	56	
2	58	59		34	31	G	44	57	46	91		65	48	32	139	79	150	68	30	26	25	33		47
3	59	53	40	34	50	54	60	70	67	127	91	94	78	60		51	38	40	39	45	32	46		G
4	56	59	51	59	58	65	35	49	60	60	60	93	91	55	112	75	88	96	93	91	69	57	33	
5	49	39	32	50	31	G	29		57	49	56	59	92	56	G	46	54	31	29	G	30	29	48	58
6	31			24	G	G	G	29	50	60	90	59	54	49	38	64	54	34	89	90	95		86	79
7	53		33			22	32	32	36			30	75	73	82	62	103	78	92	58	68	80	48	36
8		33	70	48		32	34	38	92	78	80	76		B	50		56	53		G	33	24	40	G
9	B	24	34	30	24		G	36			53	76		B	96		90	41		56		84	33	G
10		40	31	G	25		38	39	40	68		B	81	42	53	141	G	G	84		32		32	40
11	41	38	69		G		25	40	39	G	G	92	96	67		78		74		G	B	27	33	33
12			G	31	G		G	51		42	G	32	31	42	38	G	B	30	31	G	40	G	G	29
13	G	22	25	31		32	30	38	49		B	43	55		68	95		69	60		32	G		33
14	G																							
15								40	60			G	92	91	70			G		32		11	G	58
16	92	93	66	G	G	41	33	69	64	G	G			40	38	G	38	45		26		32	33	33
17	G	G	40	G		39	G	58	59	G	57		82	74		39	40	60		70		47		48
18			53	37	37		34	37	39	61	62	56	62	62	53	44	44	38	50	34	G	31	G	G
19	84	92	68	49	40	G	49		70		56		38	37		91	61	89					G	G
20	40	21	G	22	30	33	37	40	50	49	41	38	56	59	70	61	38	76	59	69		39	41	32
21	33	59	59	33	G	33	31	41	56	62	61	81	119	106	71		61	82	39	33	29	G	G	33
22	43	22		55	87		34	38	40	70	104	62		38	37	35	51	60	39	37	20		46	
23	30	34	32	32	31	21	26	35	38	60	66	71	59	38	32	31	30	31	33	43	G	G	G	28
24	G	33	37	33	32	35		37	39	38	38	39	38	56	55		62	98	106		82	90	58	30
25	32	G	G	G	28	G	G	32	36	39		31	31	60		40	38		36	32	32	58	48	
26	60		48	31	32	39	34	48	39	60	41	39	76	32	31	32	32	40	37	33	G	32	32	
27	33	32	33	24	G	32	G	34		59	57	38			38		49	61	79	70				93
28	G	G	G	G	B	G	G	48	32	44	37	50	35	32	37	38	40	39	71	58	34	B	G	G
29	28		G	33	30	24	G	36	32	30			101	82	91	52	39	30	34	57	32	G	G	134
30	34		G	32	37	22	35		94	78		64	72	82	91	62	34	54	54	58			69	
31	33	60	83				44	35	39	40	38	37	38	42	37	30	30		34	29	50	41	28	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	22	26	26	23	22	28	27	27	25	21	24	25	26	25	24	26	28	23	26	21	23	25	23
MED	34	36	36	32	31	31	32	39	47	59	56	59	72	56	53	48	42	51	50	36	32	32	33	33
U Q	57	59	57	37	37	35	35	48	60	65	64	73	91	73	86	69	61	71	79	58	45	47	48	48
L Q	29	22	25	24	G	G	G	36	39	39	38	38	43	40	37	34	38	36	34	29	27	11	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

AUG. 1996

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	15	15	15	15	15	17	18	15	22	23		23		23	22	21	16	15	15	14	15	15	15
2	15	15	15	15	15	15	15	16	18		34	34		24	20	18	18	18	15	16	15	15	15	14
3	15	15	14	15	15	14	14	15	17	17	18	22	21		46	21	17	16	16	15	15	15	15	15
4	14	14	15	15	15	14	15	15	16	17	20	20		39	22	18	18	17	15	15	16	15	15	15
5	15	15	14	14	15	14	15	15	16	20	21	22	21	21		20	20	20	16	16	16	15	16	15
6	16	15	16	16	17	16	18	17	18	18	18	18	18		21	18	15	14	17	15	14	15	14	15
7	15	15	15	15	14	14	14	16	18	18	17	18	22	21	18	18	15	15	14	14	14	15	15	15
8	15	14	15	15	14	14	14	14	16	16	16	18	18	B	18	17	16	15		18	14	14	14	14
9	B	14	15	14	14		66	17	14	14	16	18		B	20		17	15		14	14	15	15	16
10		15	15	15	14		17	14	16	15		B	18	18	18	17	14	50	15	14	14		16	14
11	14	14	14		16	14	16	14	16			17	20	21			15	14		14	B	14	14	14
12			16	16	16	14	18	14	16	15		16	17	18	14		B	15	14	15	15	14	14	18
13	14	14	14	14		15	15	14	14		B	21	18		17	17		14	14		14	14		14
14																								
15								14	14	15			18	17	17	16				14	14	14		16
16	15	14	15	14	16	14	14	14	14	14	18	17		17	18	14	14	14		15	14	16	15	15
17		14		17		15	18	14	14		18	14	18	20		18	17	16	14	15	14	14	14	
18	15	14	15	14	14	14	14	14	15	16	16	18	17	18	18	16	16	14	15	14	18	14		
19	40		15	14	16	18	14	14	15	15	16	17	17	21	18	16	16	14	14	14	14	14	16	18
20	14	14	14		14	14	14	14	14	15	16	18	20	21	17	15	15	14	14	14	15	14	14	14
21	15	14	14		29	14	15	14	14	15	16	18	18	20	17		16	14	14	14	15	14	14	14
22	15	15	16	15	14	14	14	14	14	16	17	18	18	18	20	17	14	16	15	15	14	14	14	14
23	14	14	15	14	14	14	15	14	15	15	17	18	21	17	17	18	14	15	14	14	16			14
24	15	15	14	14	14	15	14	15	14	16	16	20	17	16	18	17	16	15	14	14	15	15	15	15
25	14	15	15	15	15	15	15	15	15	14	17	18	18	17	17	17	16	14	14	14	15	14	15	14
26	14	15	15	15	15	15	15	15	16	15	18	18	18	20	18	18	16	16	14	14	14	14	14	14
27	14	15	14	15	15	16	14	14	14	16	17	18	20	17	17		15	14	14	15	15		14	
28	17	14	15		B		15	15	15	16	16	20	22	16	18	18	16	14	14	14	14	B	15	14
29	14	22	14	14	14	15	15	15	16	15		18	17	20	18	16	15	15	15	14	14		15	15
30			15	16	15	14	14	15	14	15	16		18	18	18	17	15	14	14	15	15	14	14	14
31	15	14	14	14			14	14	14	15	17	21	20	18	18	15	16	14	14	14	15	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	24	26	28	25	25	25	29	30	30	26	24	26	25	24	27	25	27	29	25	29	29	25	26	27
MED	15	14	15	15	15	14	15	14	15	15	17	18	18	18	18	17	16	15	14	14	14	14	15	14
U Q	15	15	15	15	15	15	15	15	16	16	18	20	20	21	20	18	17	16	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	16	18	18	17	17	16	15	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT OKINAWA

AUG. 1996

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A	A	A	A		89	38	A	84	A	68	A	73	82	95		86	93		A	81	A	47	54
2		A	A	A	A	A	35	A	A	A		64	68	68	68	81	86	68	54			47		
3	59	59	A	A	30		A	A	A	A	A	A	A	78	78	94	98	84	A	A	95	59		A
4	A	A	A	A	A	A	A	A	56	56	A	A	58	66	78	86	98	114		139		66	37	43
5	A	69		38	A		34		58	58	A	A	A	70	A	92	98				92			38
6	A	A		A	A	59	A	60	54	56	A	A	A	A	63			67	59	A	A	A	A	
7	A	A	43	38	28	A			84			A	53	66	81	83	86	A	101	A	A			A
8	A	A	30	26	A	A	A	A	A	56	58	A	A	A	76		82			A	66			A
9	46	42	33	A	B	B		52	45	56	A	A	A	A	A	76	82		A	A	A	A	A	A
10	A	38	41	A	35	B		26	70	A	A	A	56	57	A	A	A	84	114	A	A	A	A	A
11	32		29		49	A	A	44	A	49	A	A	A	A	92	87	68		A	A	60	A	A	A
12	43		A		35	A		57		56	A	A	A	70	64	67		64		69	65		43	
13	69		43			A	36		28	A	A	A	57	68		A	59	A	A	A	69	A	A	
14	89	A	A	A	A	A	69	A	A	65	A	A	A	A		68	A	A	A	A	56	A	A	A
15	A	48	38			B		A	A	85	A	A	70	A	A	A	62		72	A	42	43	A	A
16		A	N	B	A	A	A		A	A	60	57	A	A	A	62	81	63	59	A	A	36	A	A
17	A	A	A	A	A	A	A	A	83				A	70	A	60	64	65	74	A	A	A	A	A
18	A	A	A		A	A	A	44	A	62	A	56	67	A	81	93								
19											48		A		58	64	A		82	A	84	A	A	A
20	A	A	A	N	A	A	A		60	A	57	A	A	56	A	A		67	A	A	76	A	A	A
21	A	A	A		A	A	36	A	A	66	A	A	A	A	68	81	82	71	A		91	83		A
22	A	49		A	A	A	A	A	A	A	A	A	A	62	71	A	71	70		A	A	59	A	A
23	A	A	A			A	A	A	58	64	A	A	A	58	60	73	63	60	59		68			A
24	A			N	79	37			57	57	A	58	66	81	80	A	A		84	A	92	A	A	A
25	A	A	B	37				70	72	59	56	58	60	62	60	81	83			A	58	60	50	A
26	59	A	A	30		A	A	A		56	54	57	82	82	86	93	100	87		A	74	A	A	A
27	A	A	58	41	34		32	61	71	81	57	62	76	92	96	96	95	102	79	A	58	A	A	A
28		32		32	N	N		A	59	66	68			72	81	93	89	A	A	A	92	A		A
29		A	59	69		N	38	32		58	65	67	73	93	87	89	84	87		A	60			44
30	44	48		A	44	44		49	57	64	56		67	A	90	84	58	A	A	A	70	A	A	36
31		46	38	41	37	A	A	A	57	63	57	65			112	113	115		119		83	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			10					10	17	20	12		14	19	22	22	23	16	12		21			
MED			40					50	58	58	57		67	70	79	84	83	70	76		70			
U Q			43					60	71	64	62		73	81	87	93	95	87	92		87			
L Q			33					44	56	56	56		58	62	68	73	68	66	59		60			

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

AUG. 1996

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	60	58	59	37		G	24	155	42		64		G	34		39	37	42	66	66	45	86	44	45
2			34	33	35	41	G		46		58	37	36	40	39	69	41	46	38		44	26	G	G
3	G	G	37	44		G	34	68	94		138			85	63	65	51	58		45	24	G	26	81
4	77	71	60	63	62	34		41		66	96	65	57	39	43	73	49	50	40	39	44	G	G	G
5	93	59	41	G			25	34	48		60	64	86	64	100	54	50			70	25	G	G	25
6	60		34	39	34	G	29	36		59			64	56	47	35	46	38	48		88	49	44	
7	68		38	32		46	25		38	40	41	48	G	49	39	68	40	116	79		73	G	23	39
8	39	70	39	G	51	41	42	39		48	72	99	84	84	54	42	56	39	55	45	G	G	G	39
9	G	G	34	36	B	B	G		37	38	39	42	65	99	85	65	66	71	159			95	41	59
10	44		31	32	G	B	G		36	61	51	42	46	62	78	84	70	47				60		60
11	44	28	G	G	27	28	26	38	41	48	51		43	65	58	66	63	54	60		87	90	38	28
12	32		29	G			G	33		35			70	39	38	33	39	49	54	39	31	40	G	G
13	40	50	G	G	G	23	G		39	36		50	51	60	46	123	78	70	68	67	59	38	43	32
14	60	58	45	38	61	43	46	35		55	71	78	76	73		51	70	95	125		42	48	36	45
15	49	26	24	G	G	B	46	49	49	51	85	121	151	136			86	36	60	71	72	45	72	60
16	66	37	31	B	32	59	29		75	152	58	38	65	63	32	56	42	36	64	37		45	48	
17	64	67	53	34	29	32	30	82					146	35	36	47	36	36	71		68	84	89	58
18	44	94	37	24	36	40	43	39	46		73	51	64	66	54	57								
19											41		66		56	39	98		65	103	80		76	61
20	41	34	31	25	32	25	53		57		50	96	61	65	61	53		74	64		43	39	40	70
21	41	46	45	34	29	28	25	50	54	69	82	63	67	63	63	65	45	38	81	G	42	40	39	50
22	44	32	26	28	74	89	59		130	168	50	57	43	53	36	85	60	64		56	72	38	74	34
23	75	38	39	30	21	37	41		38	40	40	62	82	48	48	42	36	32	43	G	26	G	G	44
24		G	G	G	G	27	G		34	51	61	40		59	96	89	77	67	59		83	65	60	73
25	40	27	B	G	G	G	G		39	43	39	37	G	49	47	47	66	56			37	35	60	72
26	G	41	25	G	G	40	38	38		79	46	43	43	63	65		47	51		56	43	49	41	43
27	34	34	34	G	G	G	G		35	46	41	52	50	52		42	40	61	58	48		68	58	
28		39	26	G	G	G	G		39		49	47	39	35	30	39	58	67	74			65	33	
29	G	36	34	G		G	28	34	45	36	42	40	42	30	42	34	36	36		82		G	G	G
30	30	G	42	41	36	30	34	35	43	46	56	49	54	69	41	50	42	57		40	45	48	42	45
31	G	G	42	39		30	63	92	83	45	43	45	38		44	73	34	48			27		40	39
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	25	29	29	22	25	29	17	23	22	27	24	29	29	27	29	29	28	21	17	24	28	29	26
MED	44	37	34	28	29	30	28	39	43	48	51	50	57	60	47	54	49	50	64	48	44	42	40	44
U Q	60	58	41	36	36	40	41	59	54	61	71	63	68	65	63	68	66	65	72	68	72	62	53	60
L Q	32	26	27	G	G	G	G	35	38	40	42	42	42	44	39	42	40	38	54	39	34	13	12	32

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

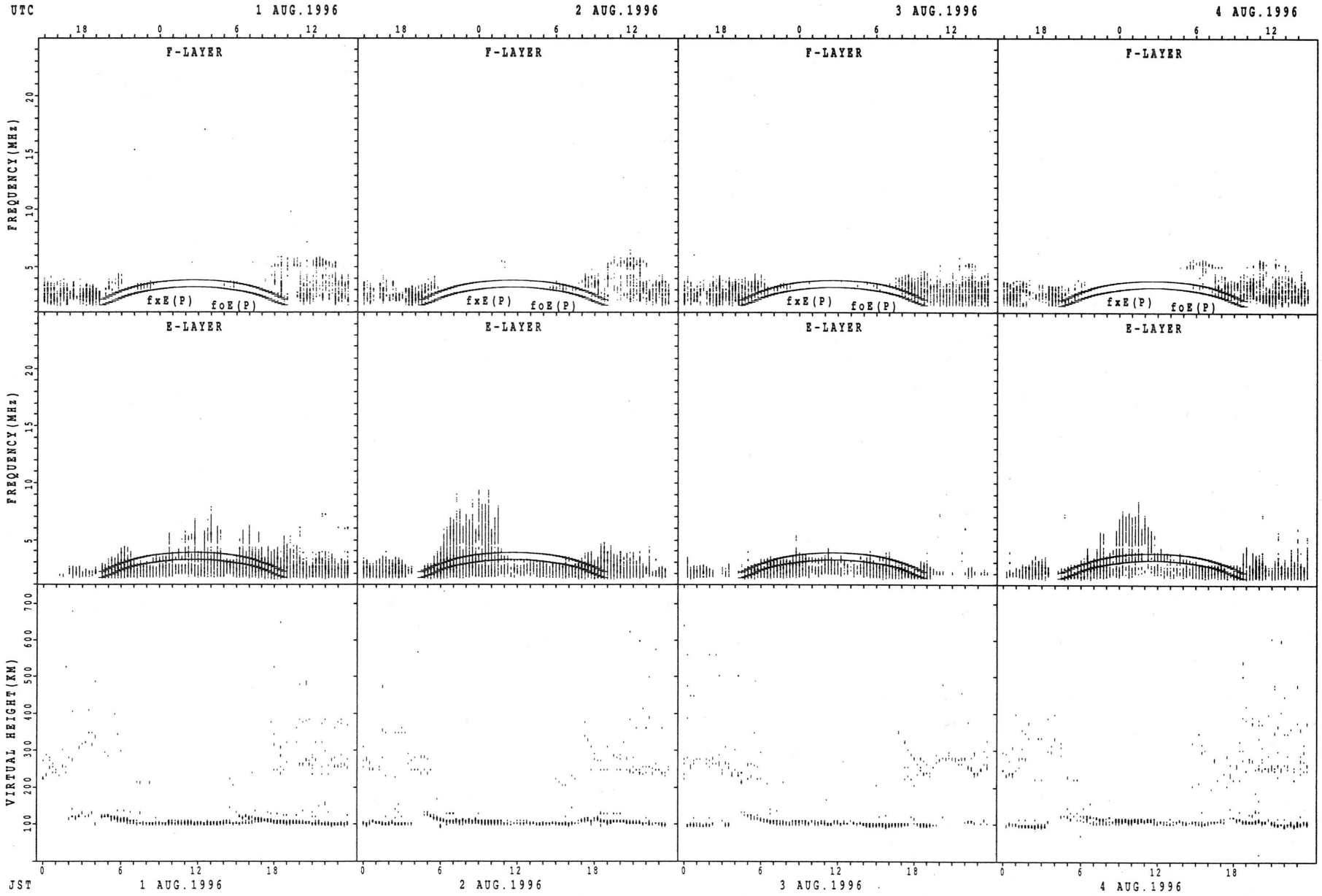
HOURLY VALUES OF fmin AT OKINAWA

AUG. 1996

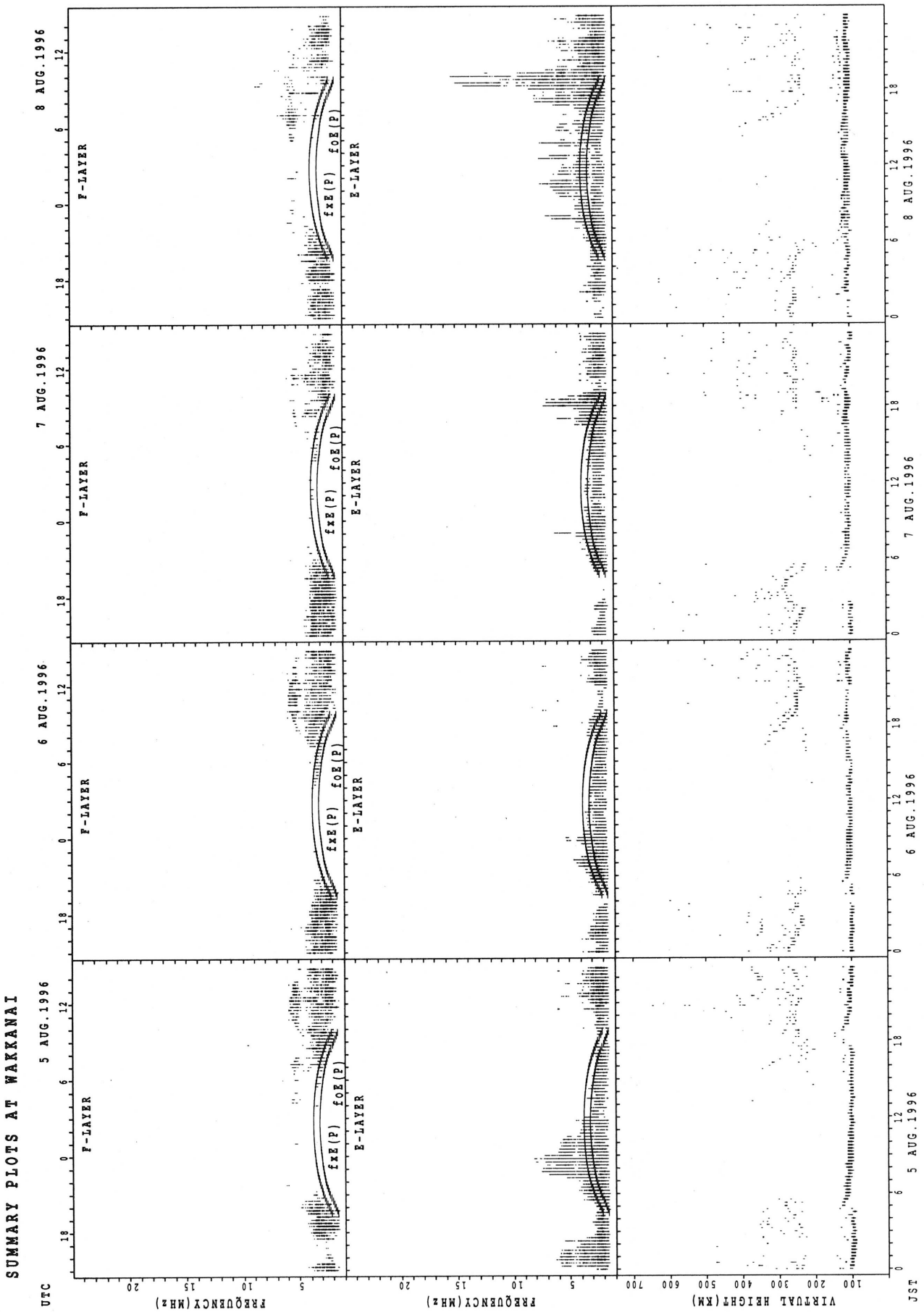
LAT. 26.3N LON. 127.8E SWEEP 1MHz TO 25MHz AUTOMATIC SCALING

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

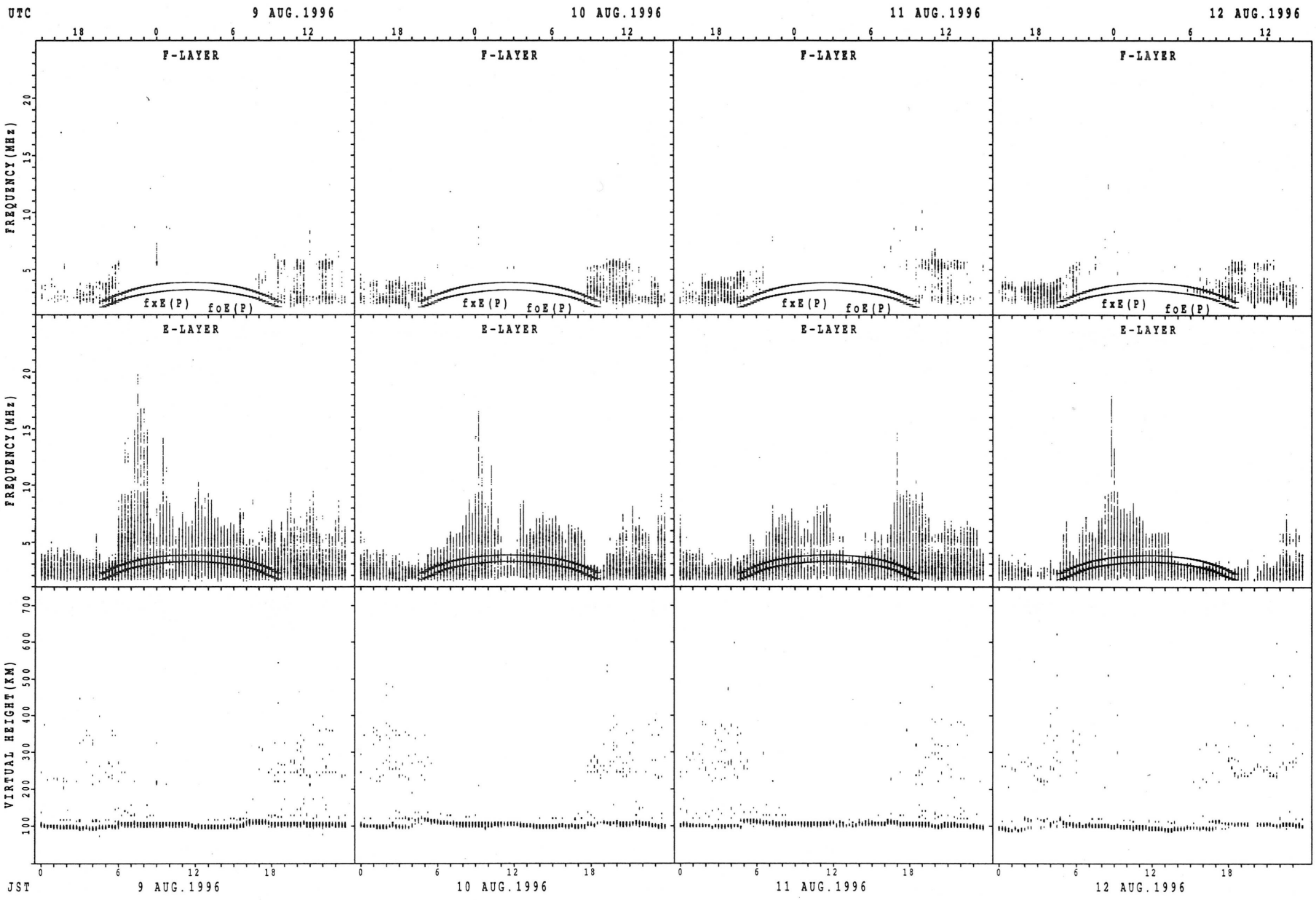
SUMMARY PLOTS AT WAKKANAI



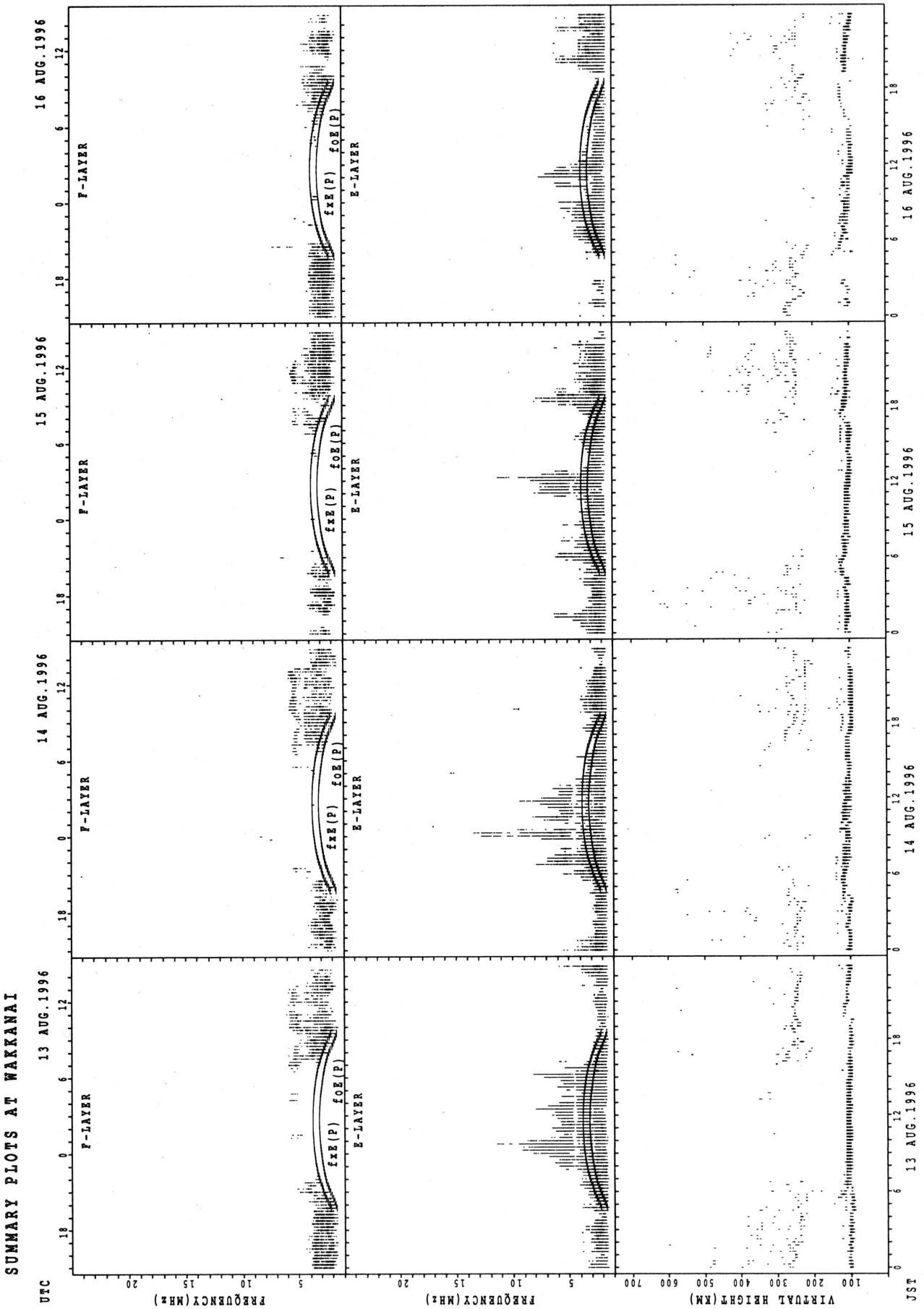
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
5 AUG.1996
6 AUG.1996
7 AUG.1996
8 AUG.1996
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

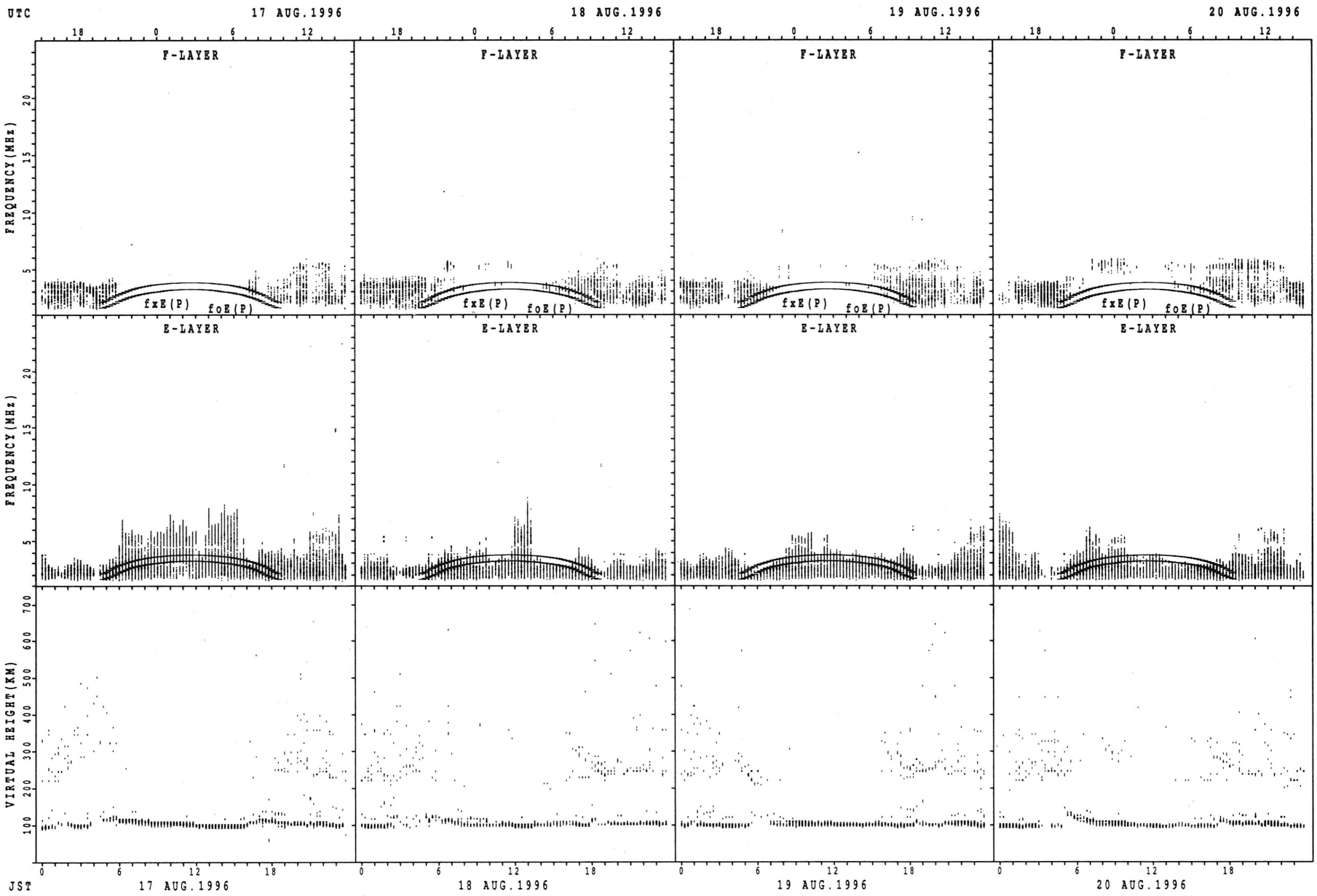
SUMMARY PLOTS AT WAKKANAI



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

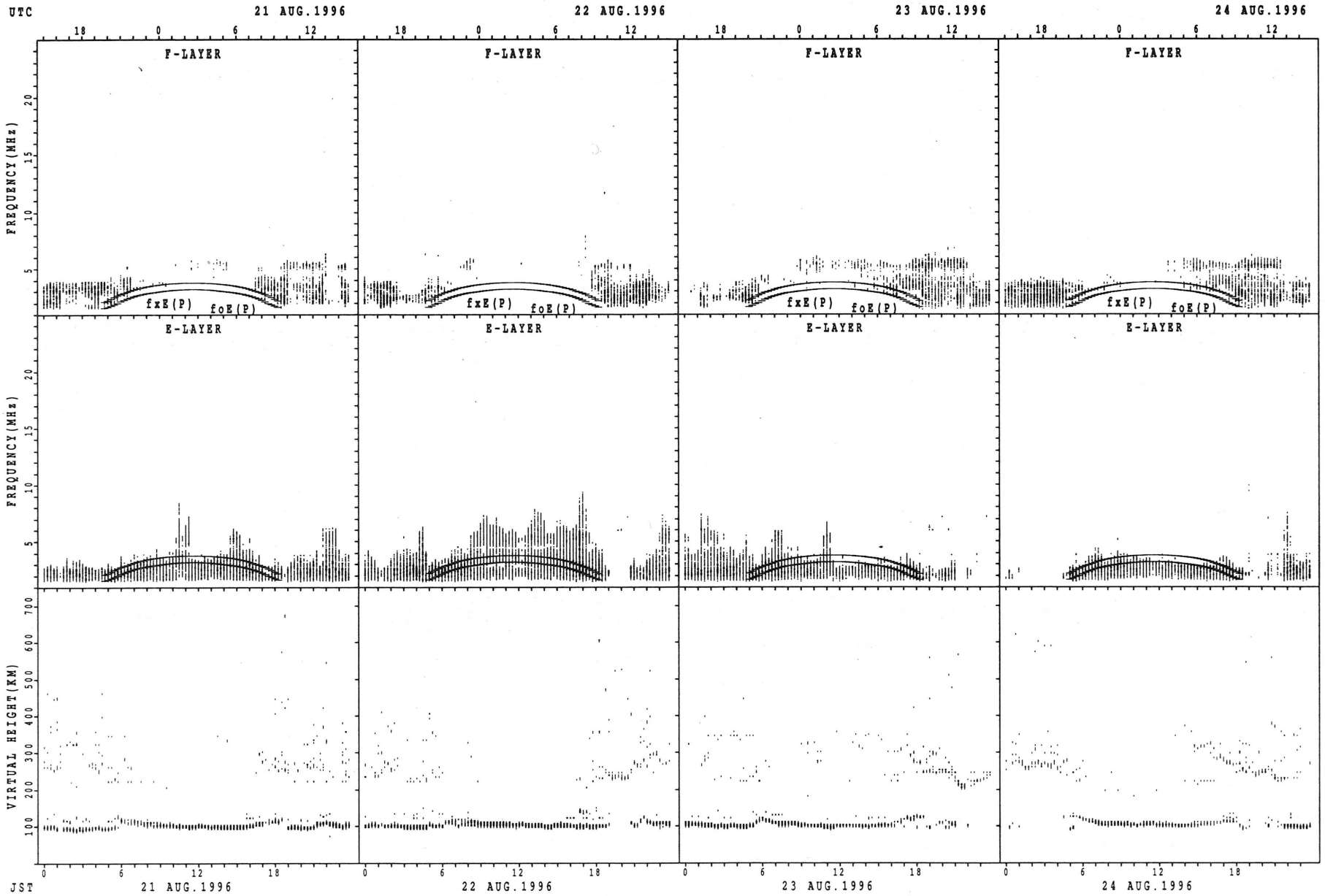

SUMMARY PLOTS AT WAKKANAI
UTC
JST
13 AUG.1996
14 AUG.1996
15 AUG.1996
16 AUG.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



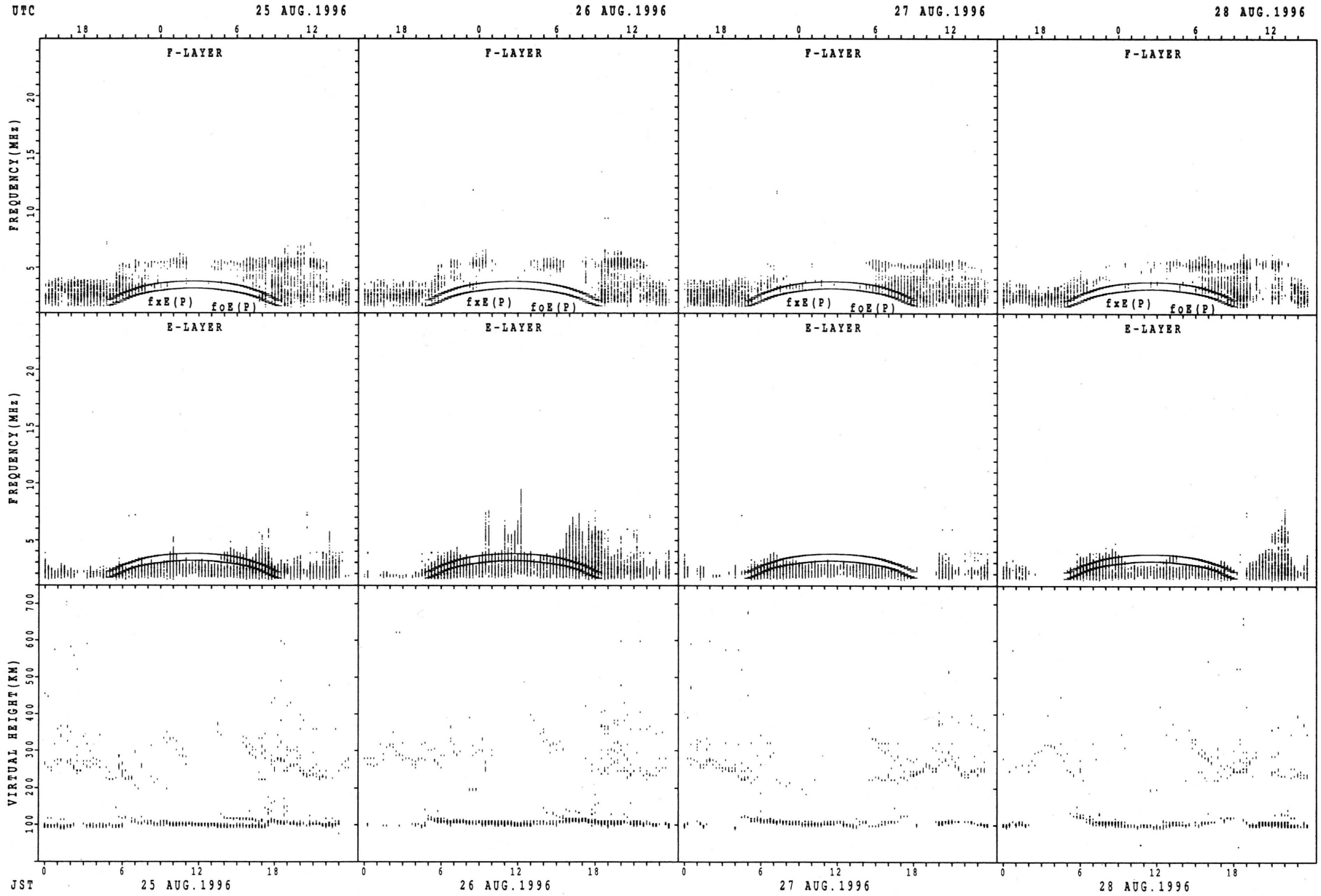
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



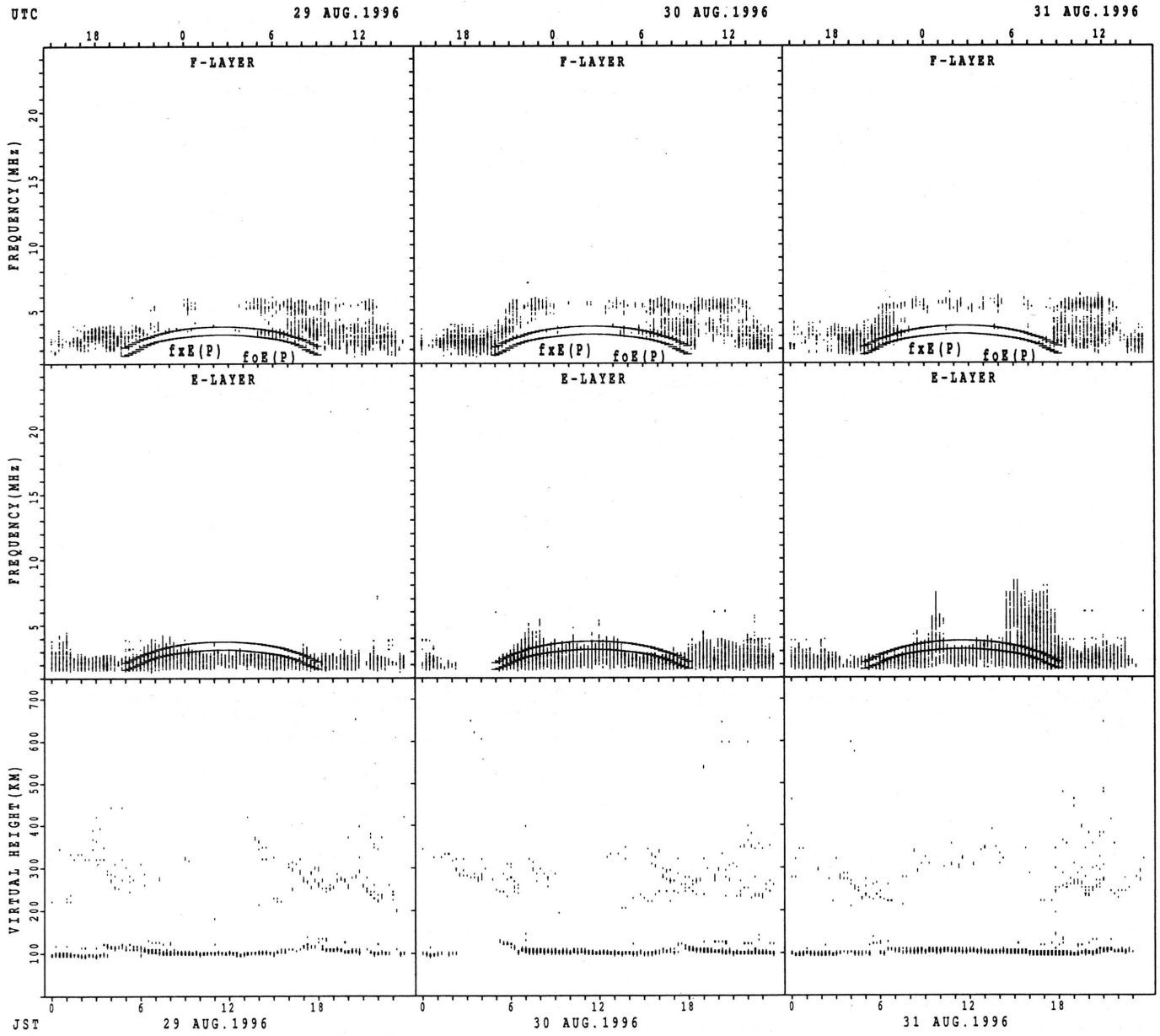
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



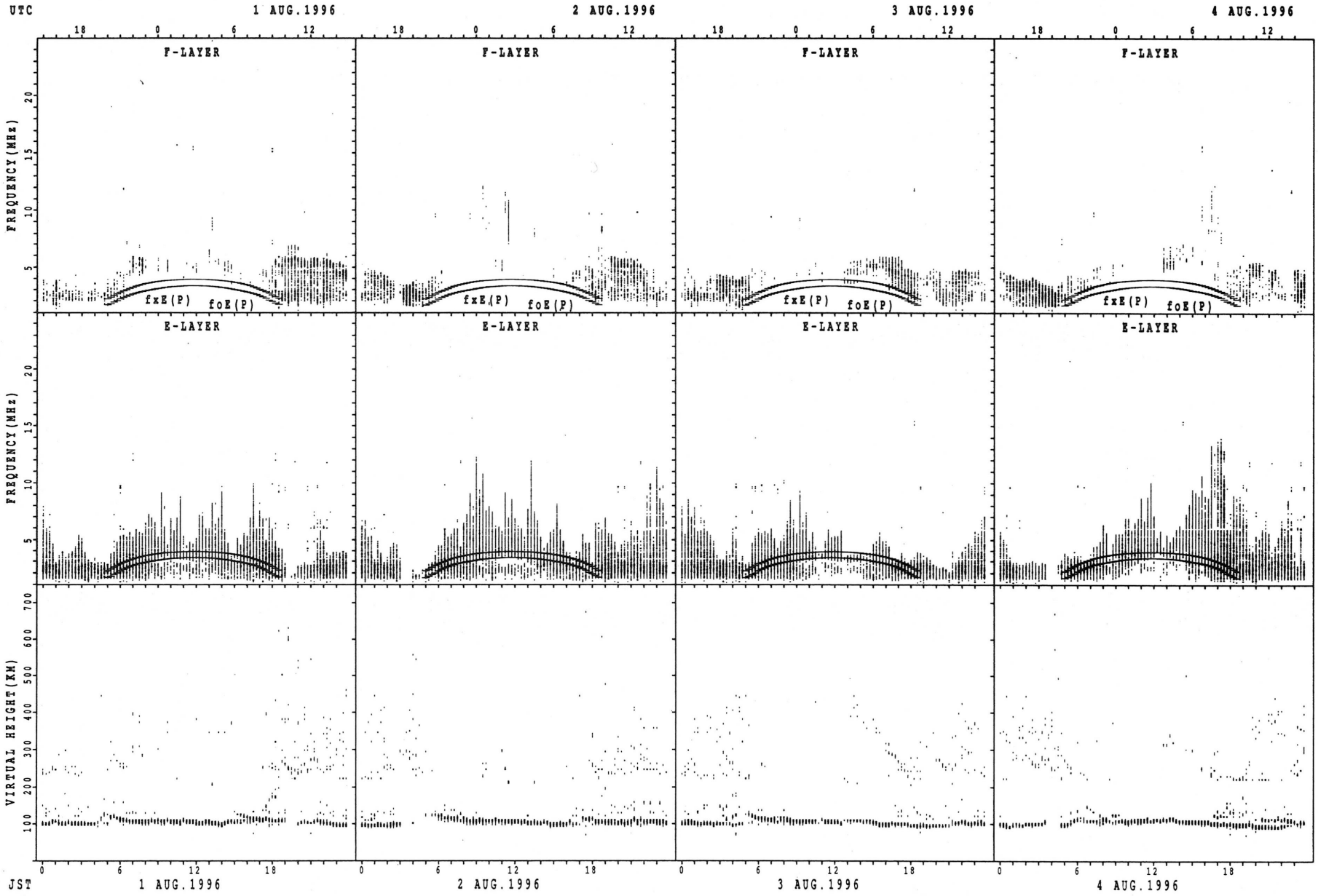
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

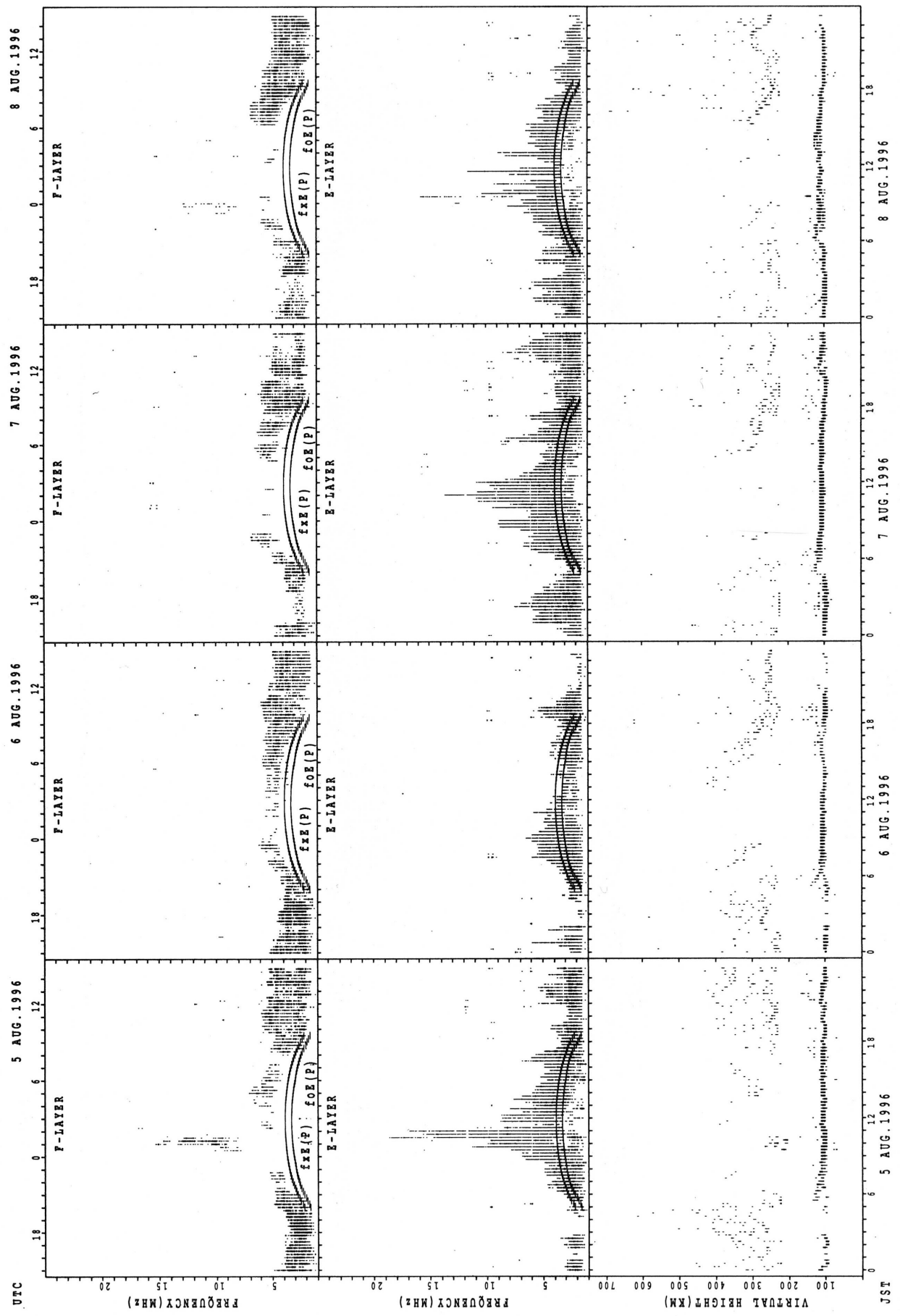


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

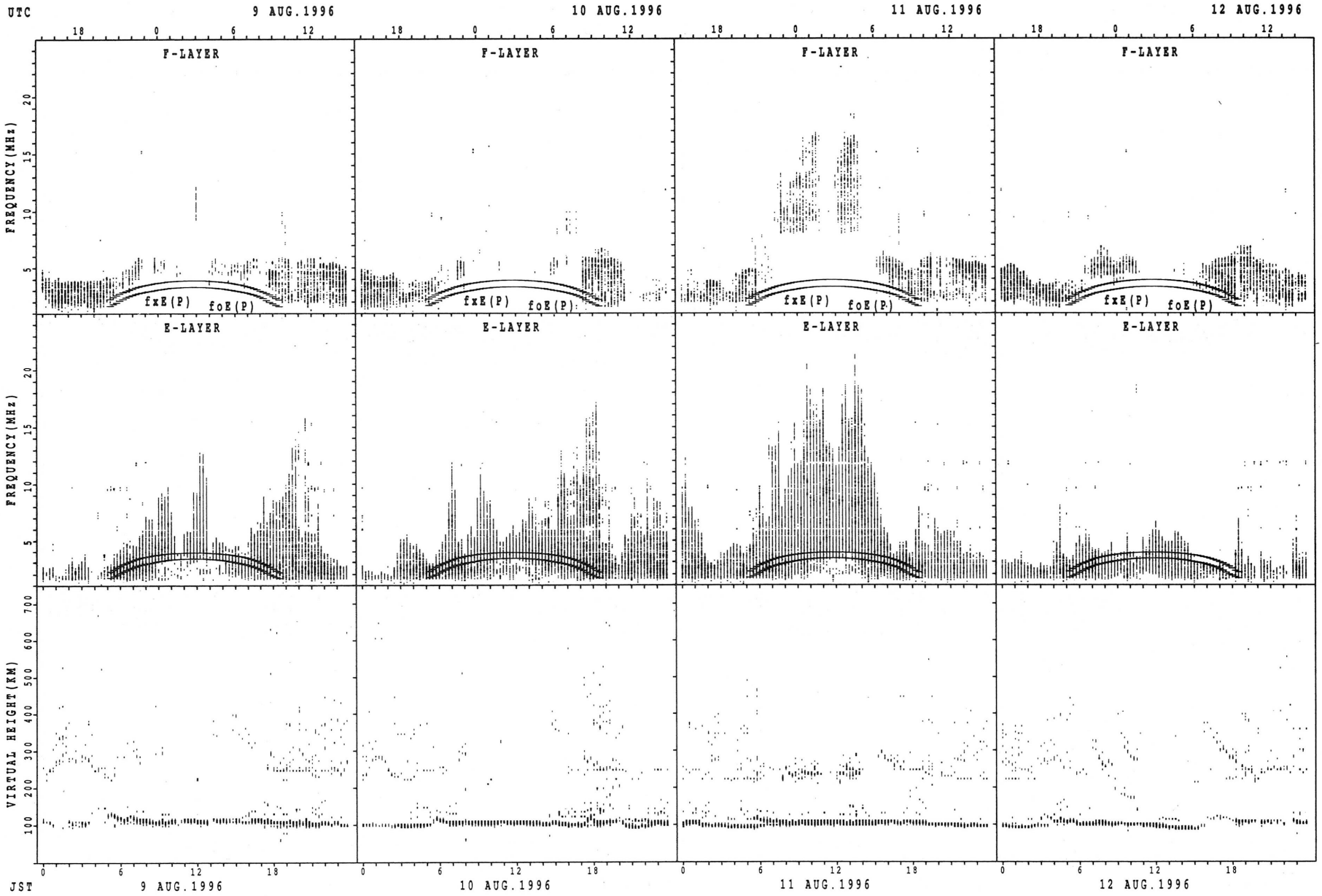
SUMMARY PLOTS AT KOKUBUNJI TOKYO



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

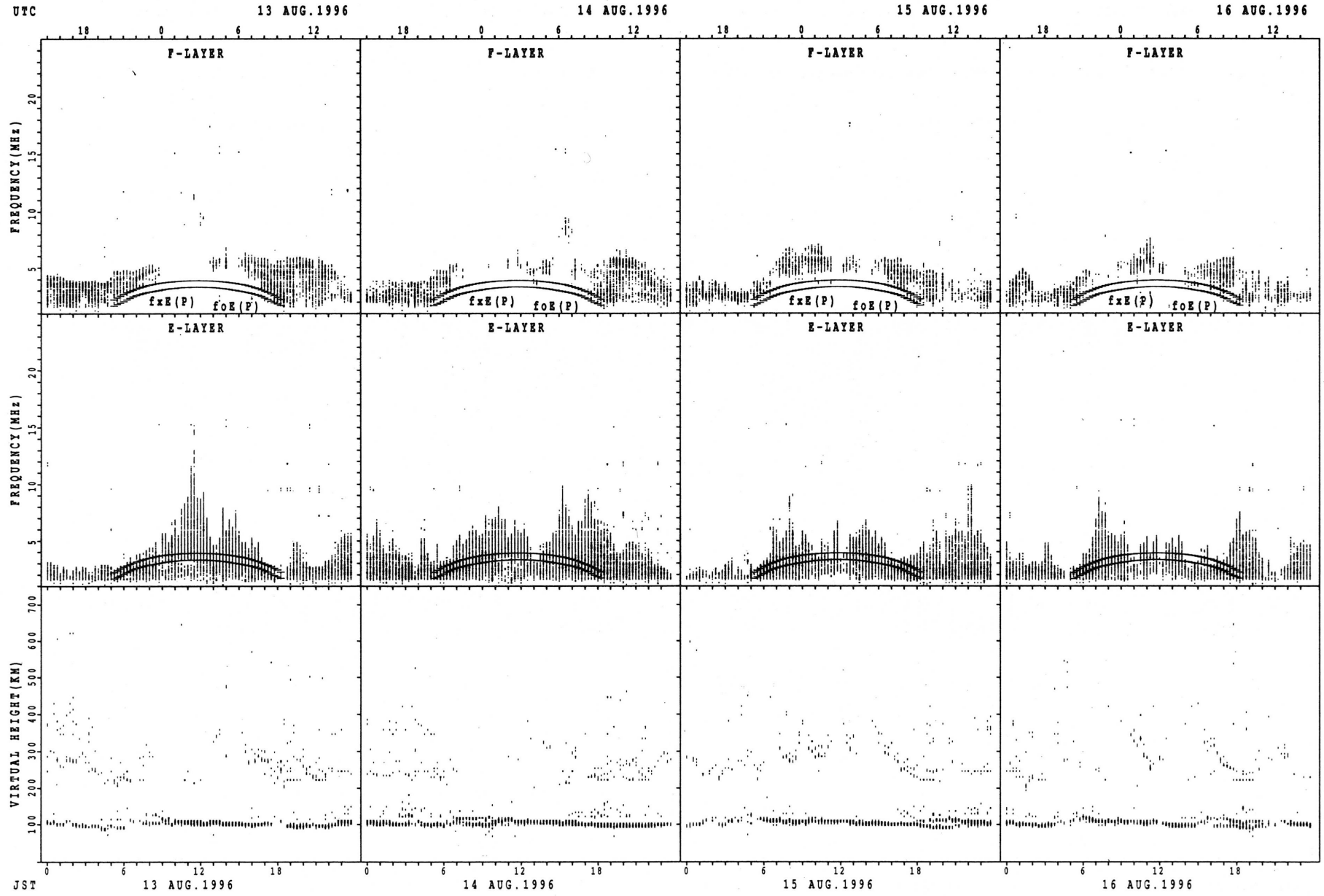

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 AUG.1996
6 AUG.1996
7 AUG.1996
8 AUG.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



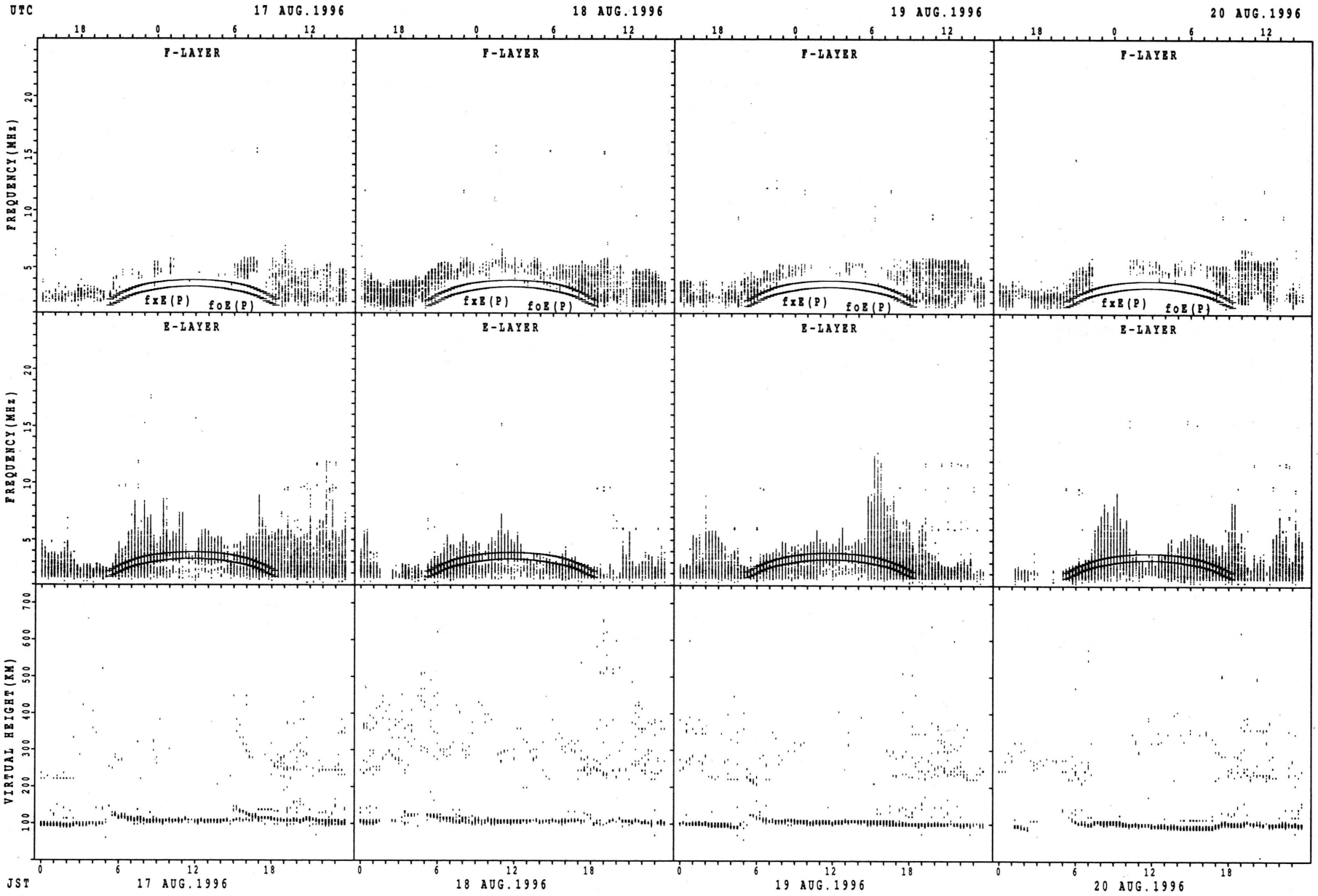
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



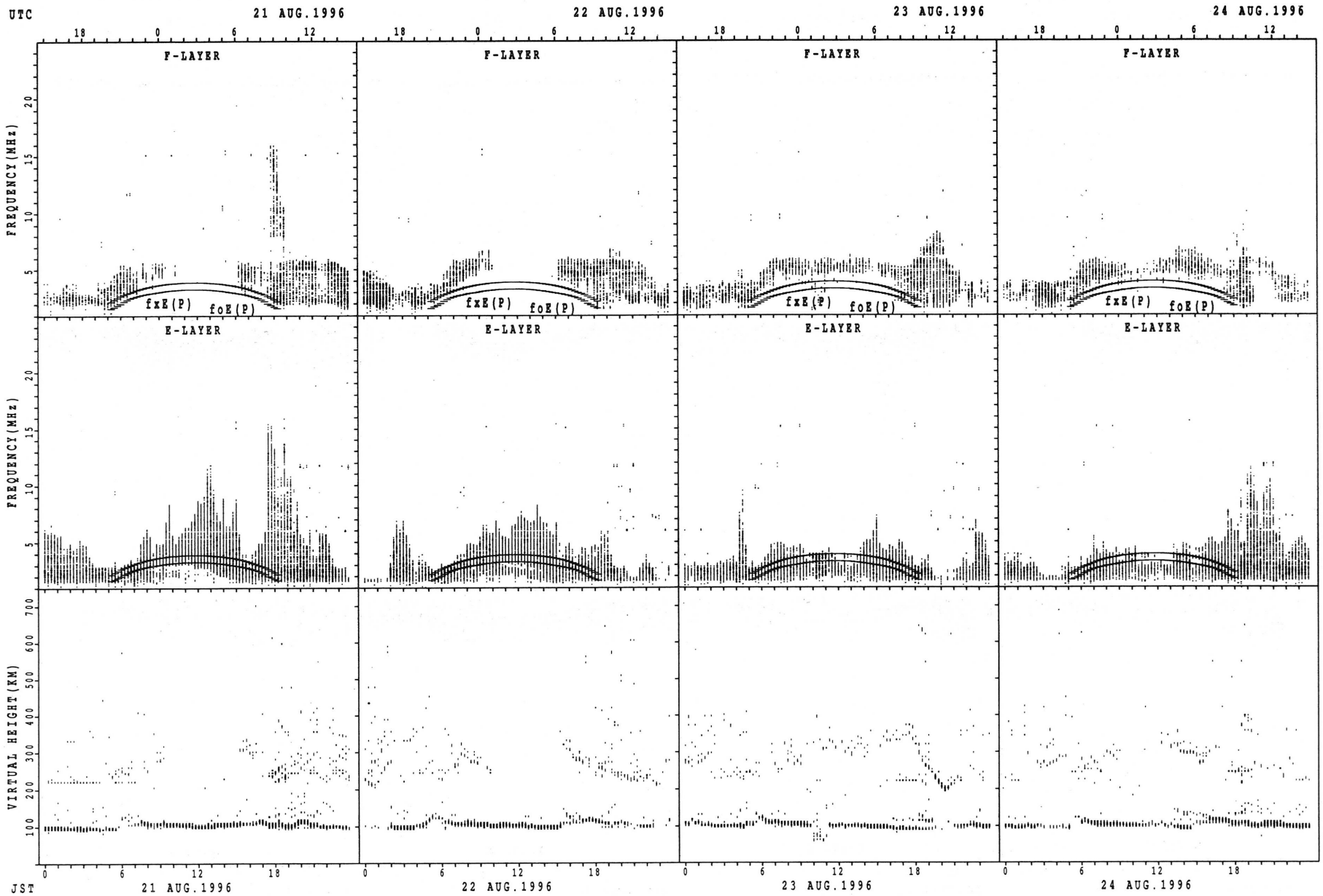
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



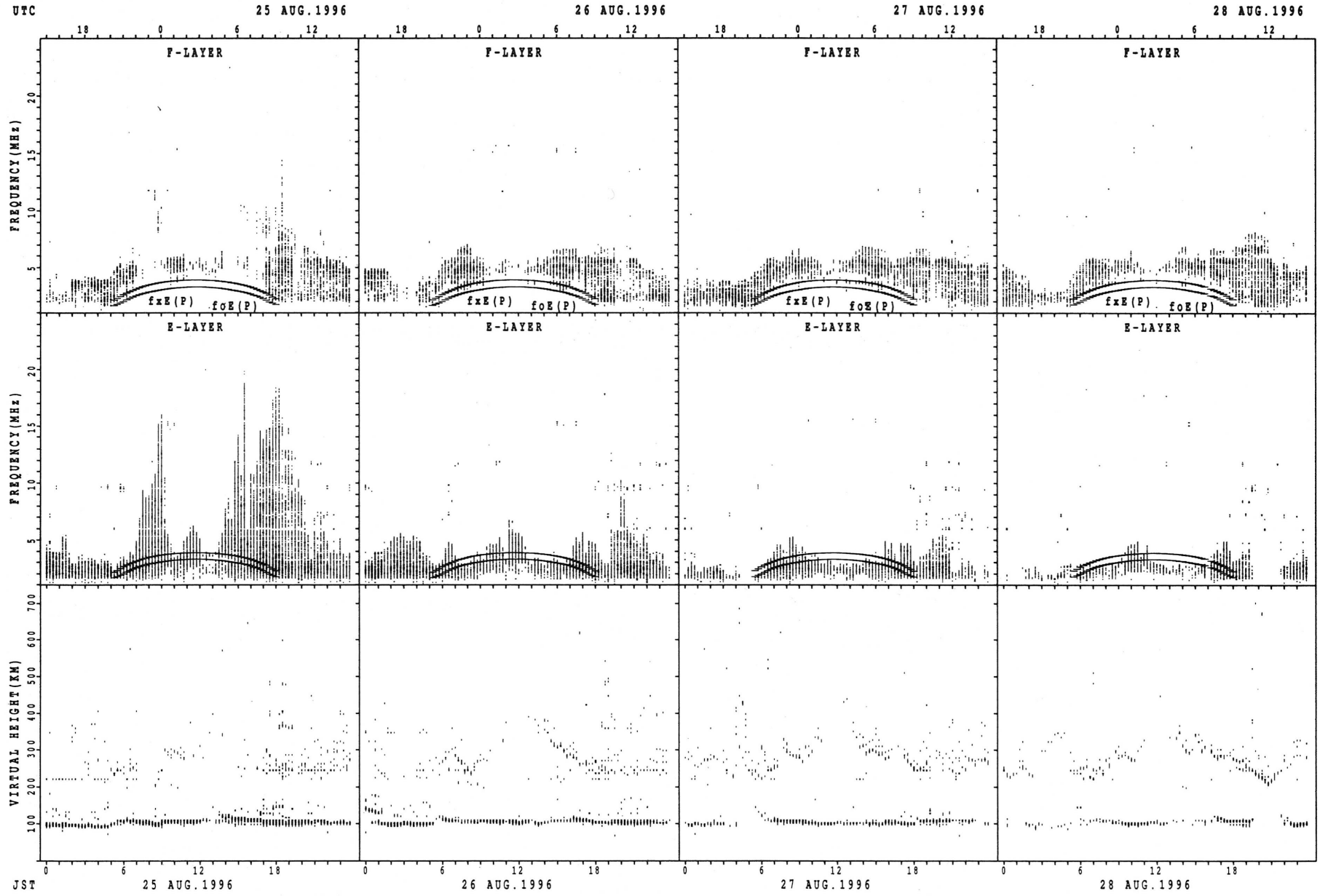
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



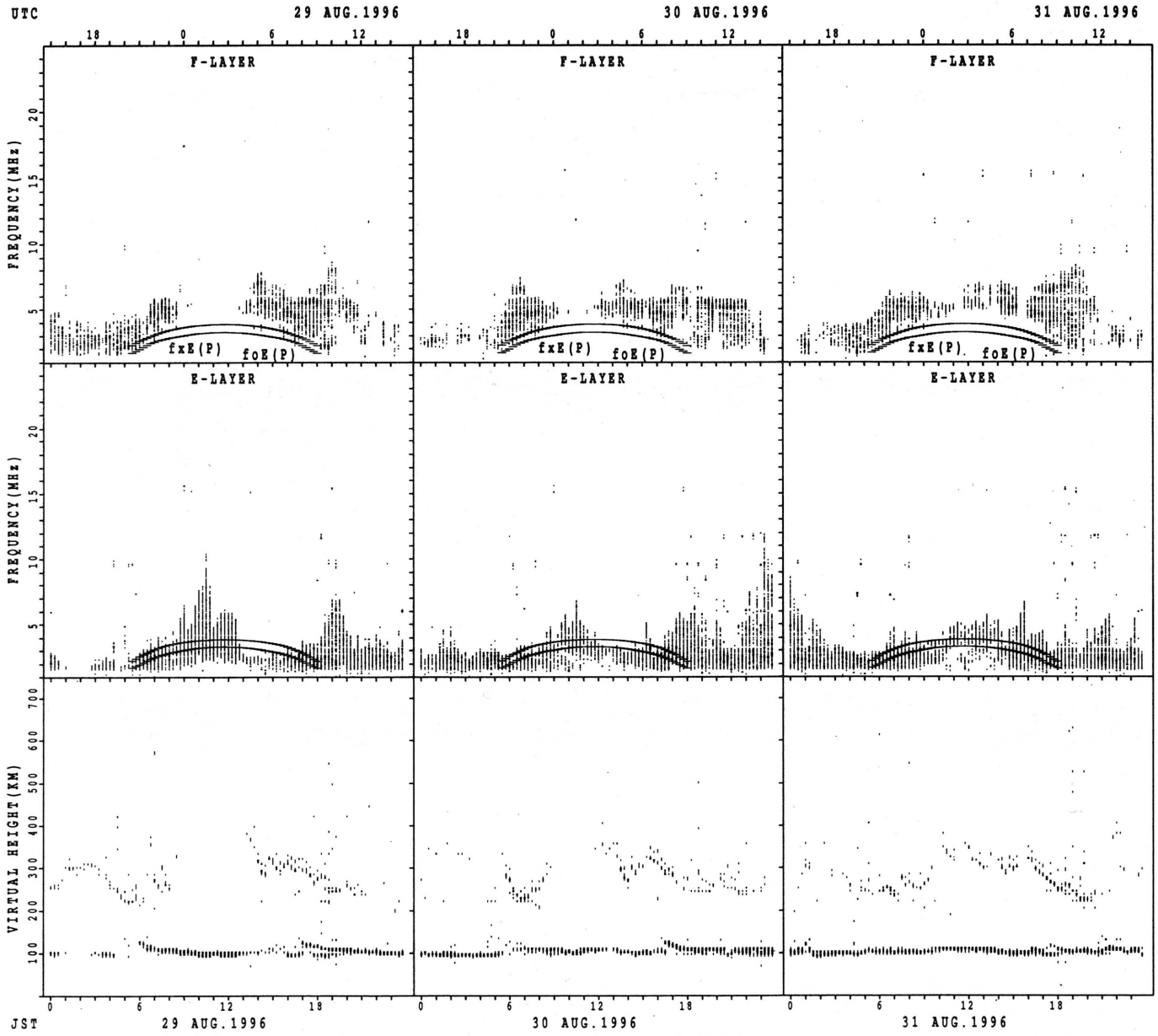
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



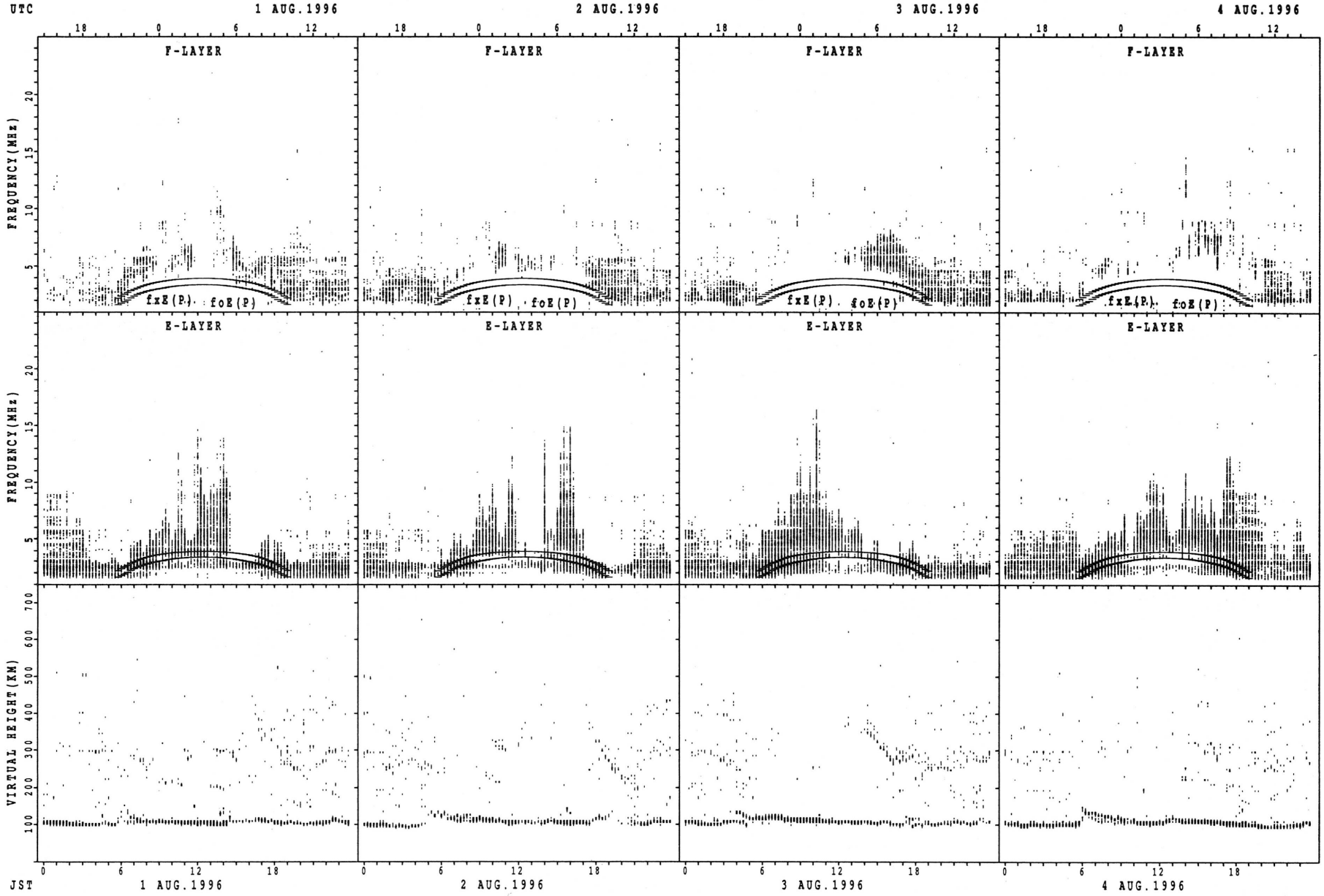
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

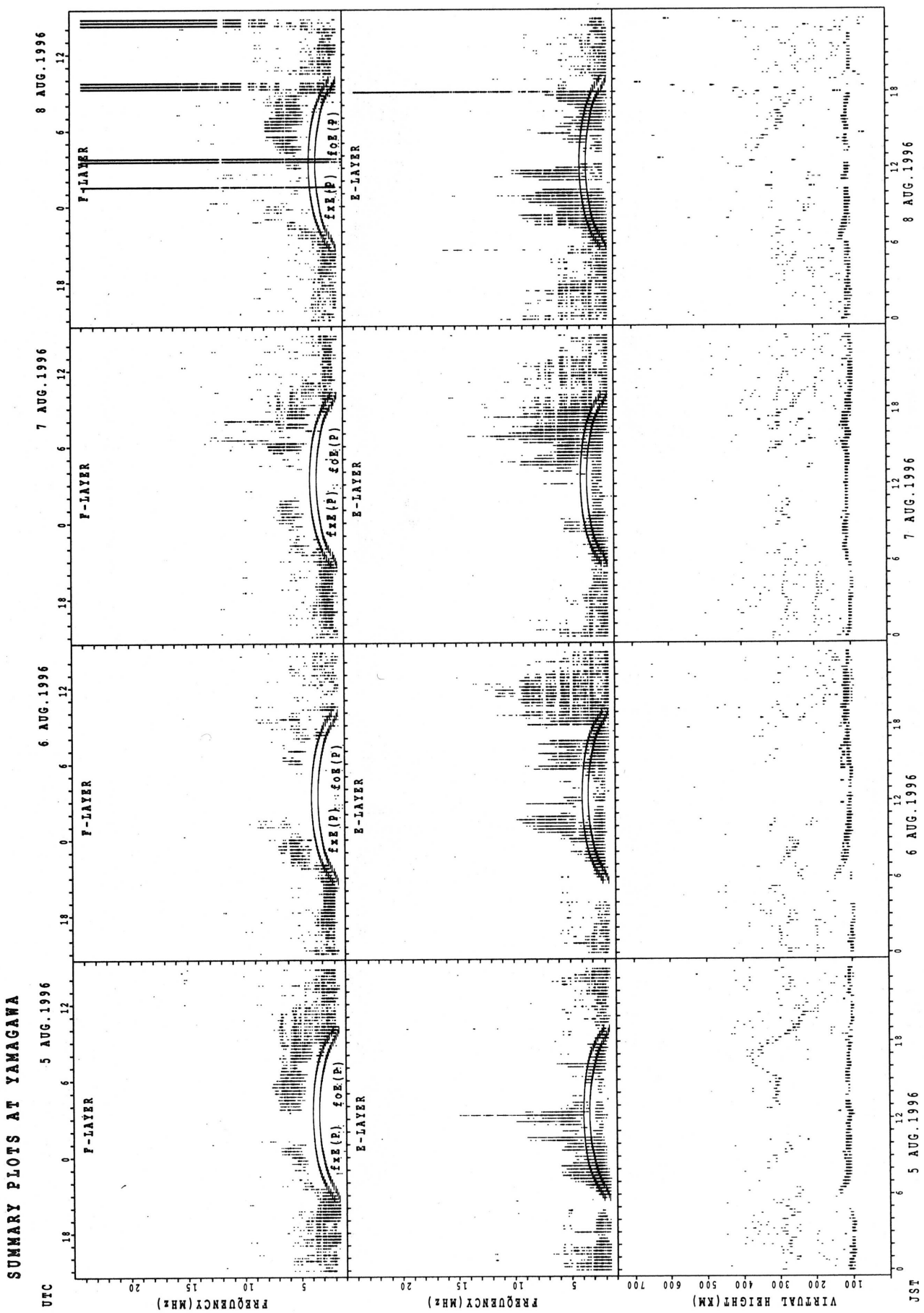


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

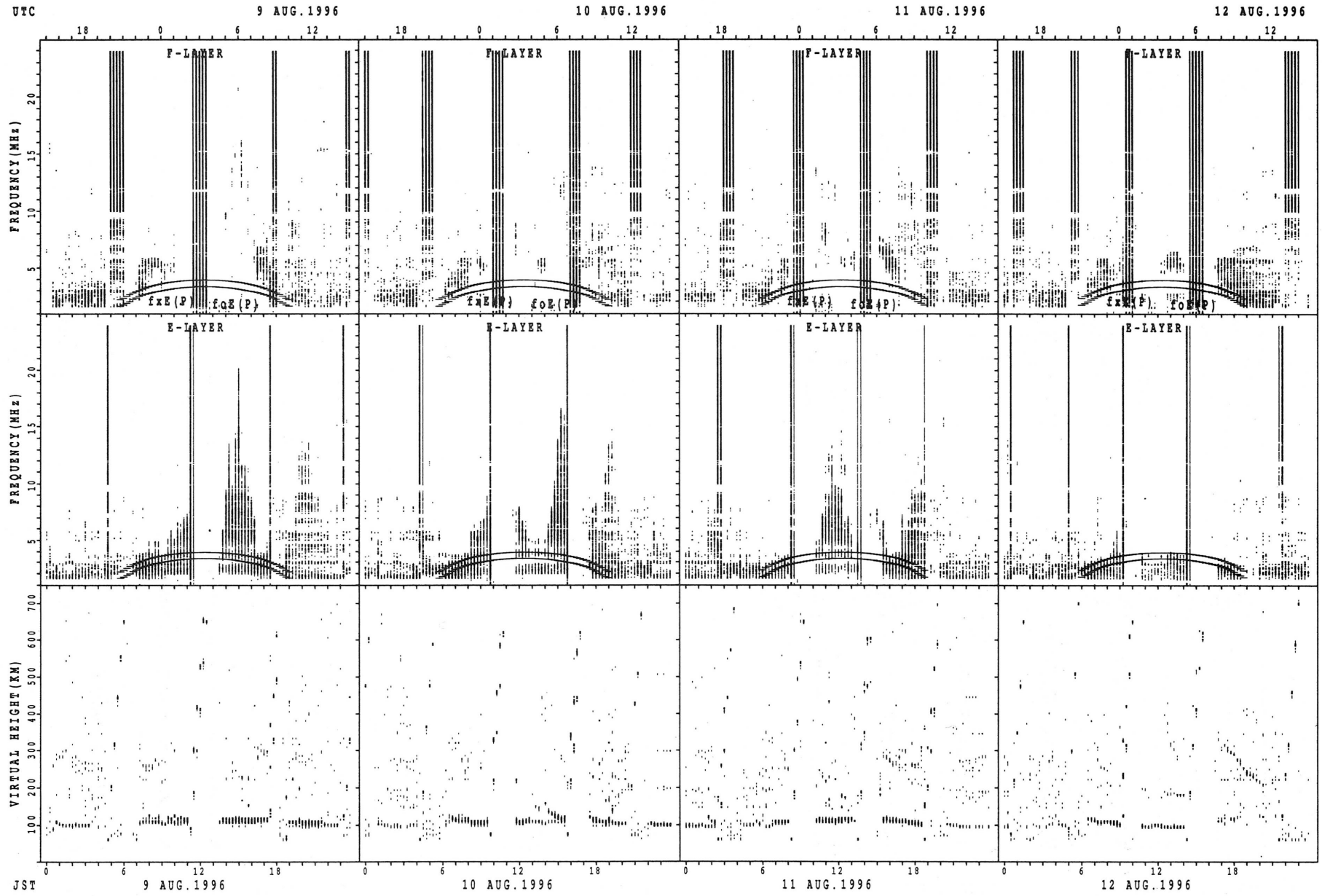
SUMMARY PLOTS AT YAMAGAWA



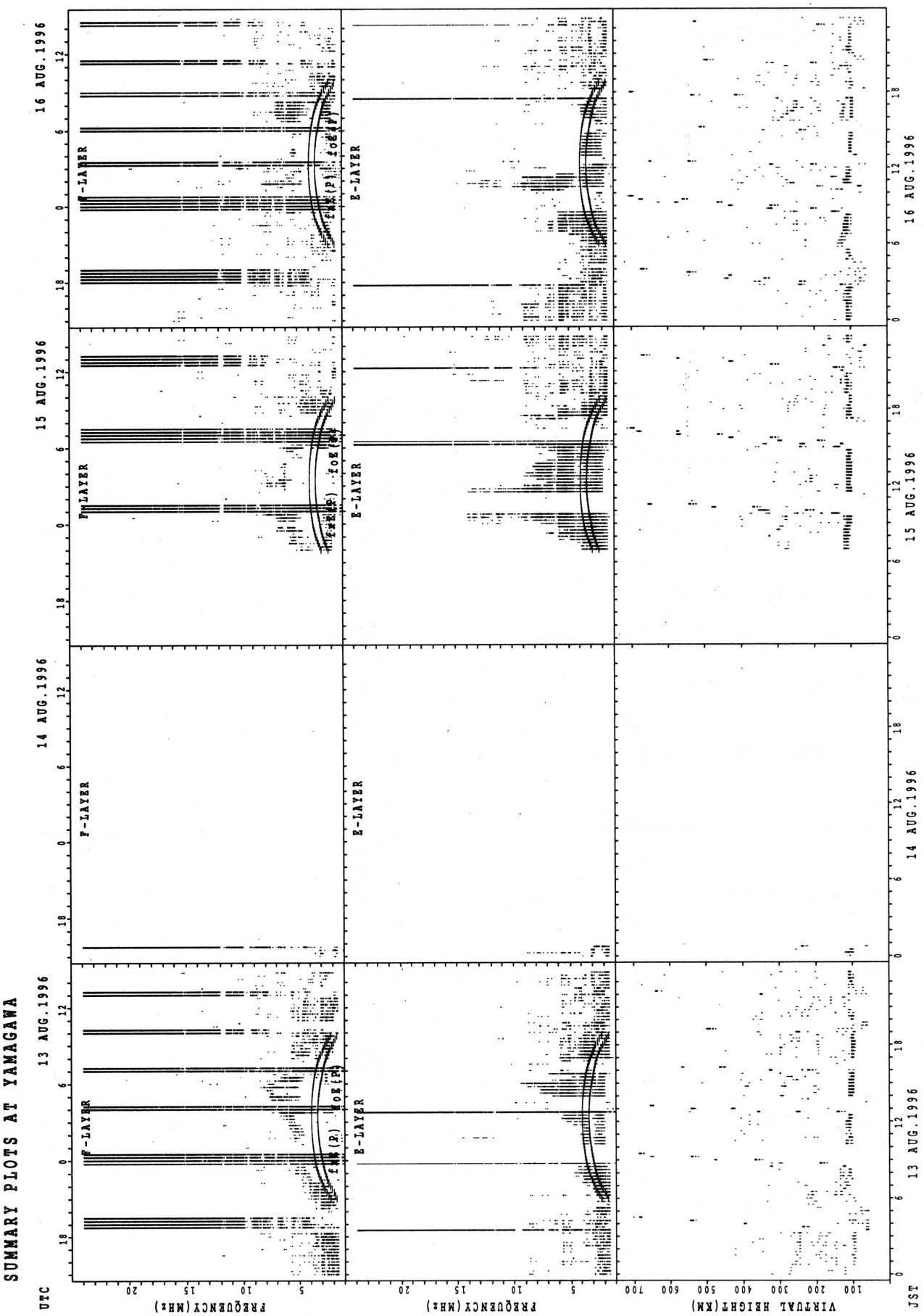
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 AUG.1996
6 AUG.1996
7 AUG.1996
8 AUG.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

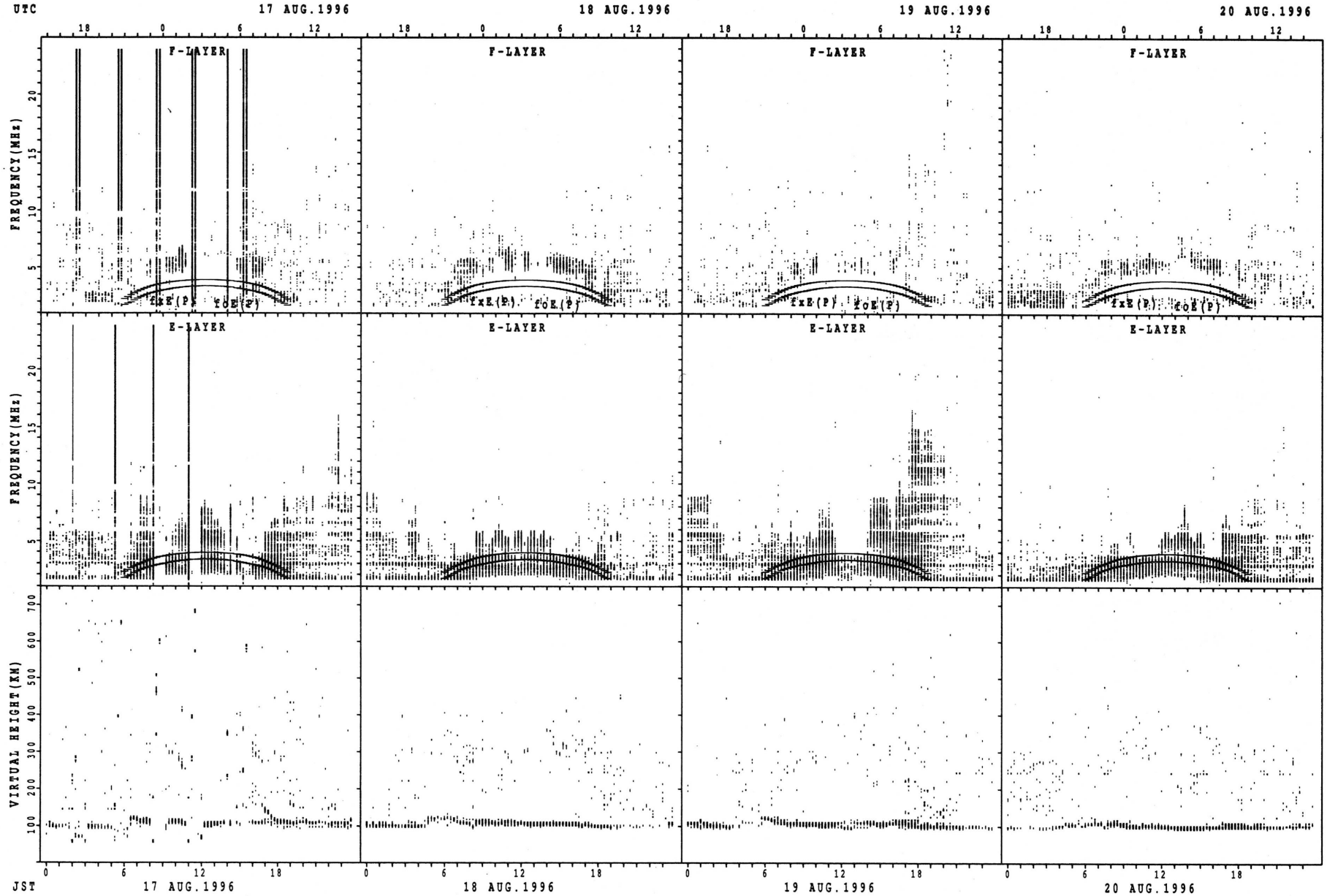
SUMMARY PLOTS AT YAMAGAWA



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

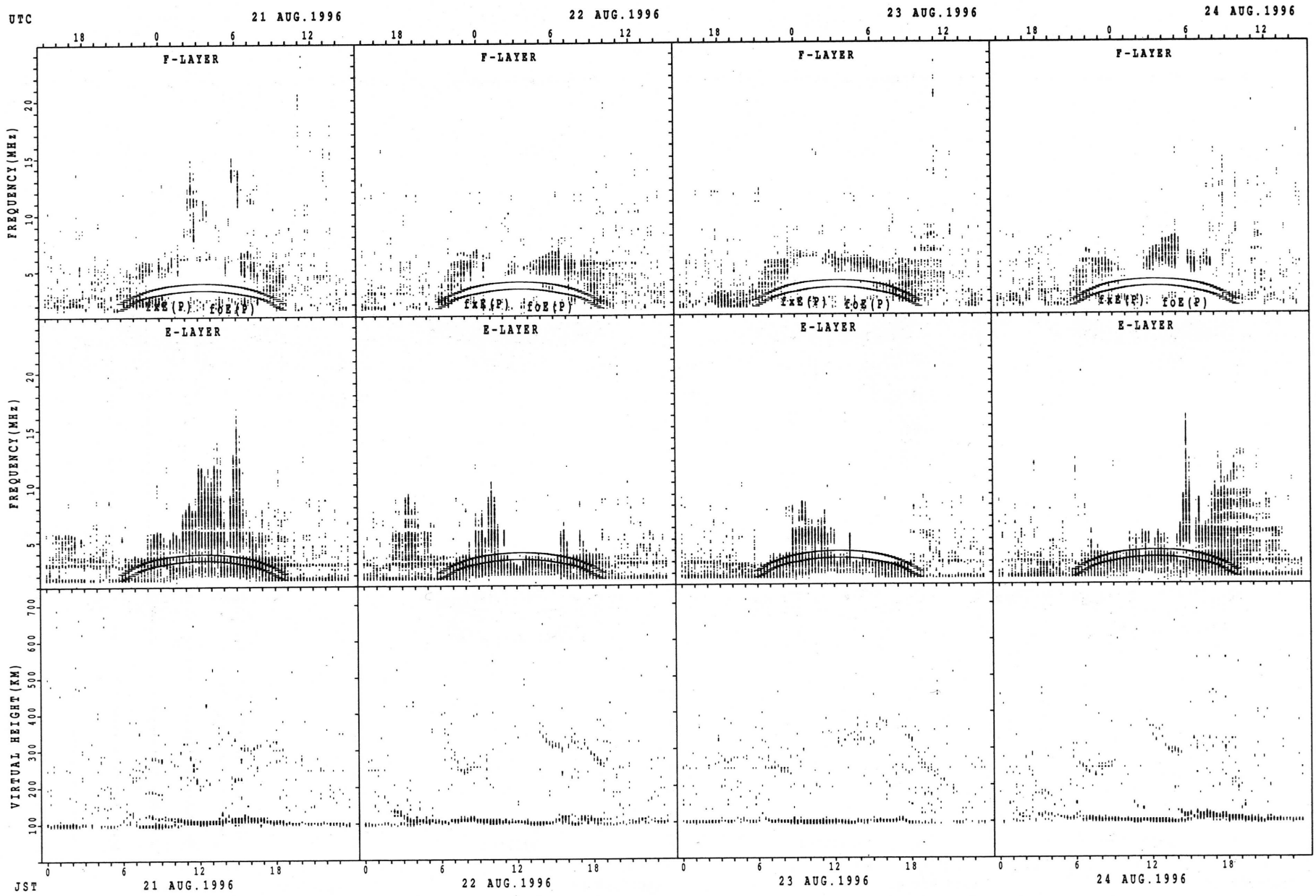

SUMMARY PLOTS AT YAMAGAWA
UTC
JST
13 AUG.1996
14 AUG.1996
15 AUG.1996
16 AUG.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



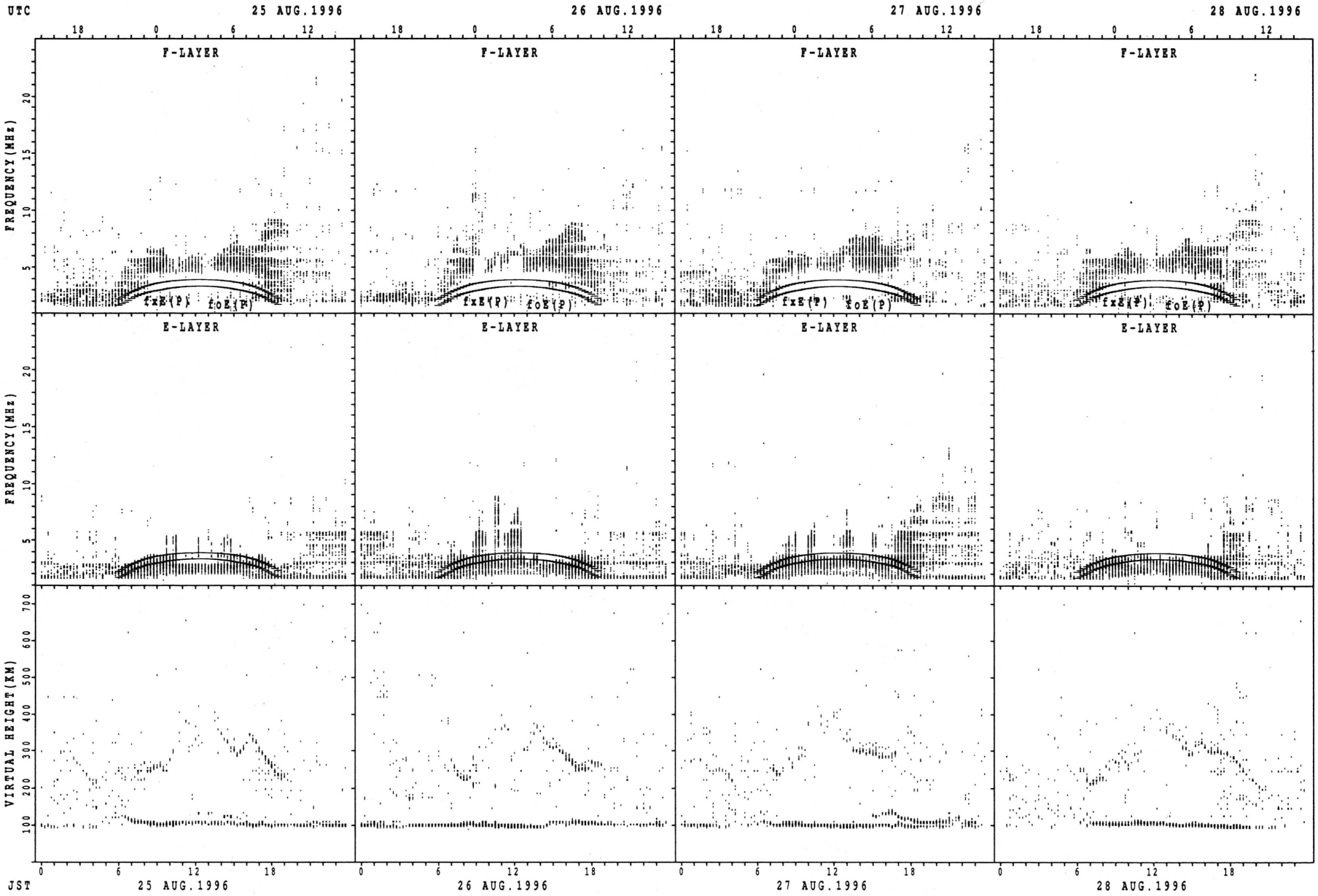
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



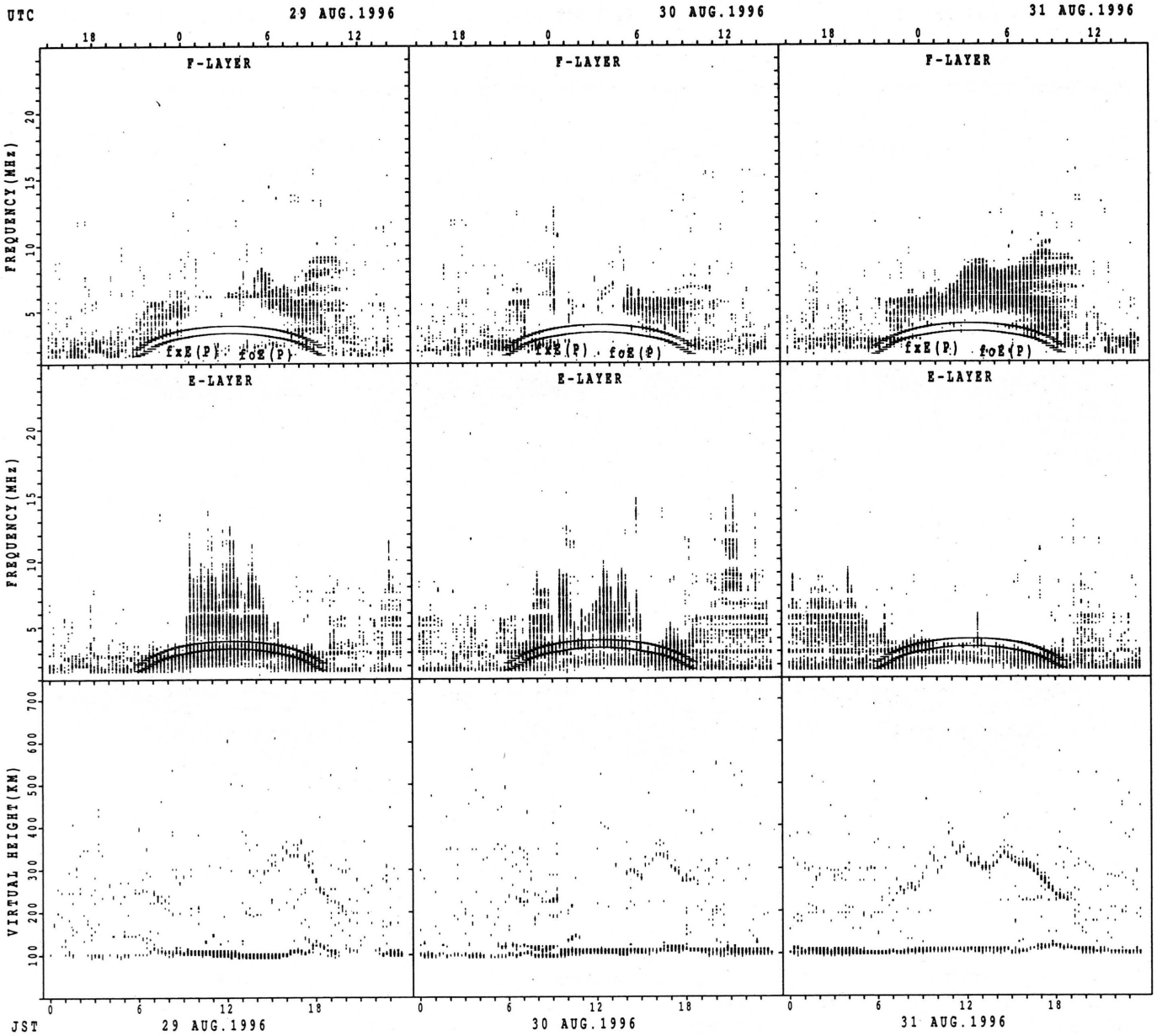
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



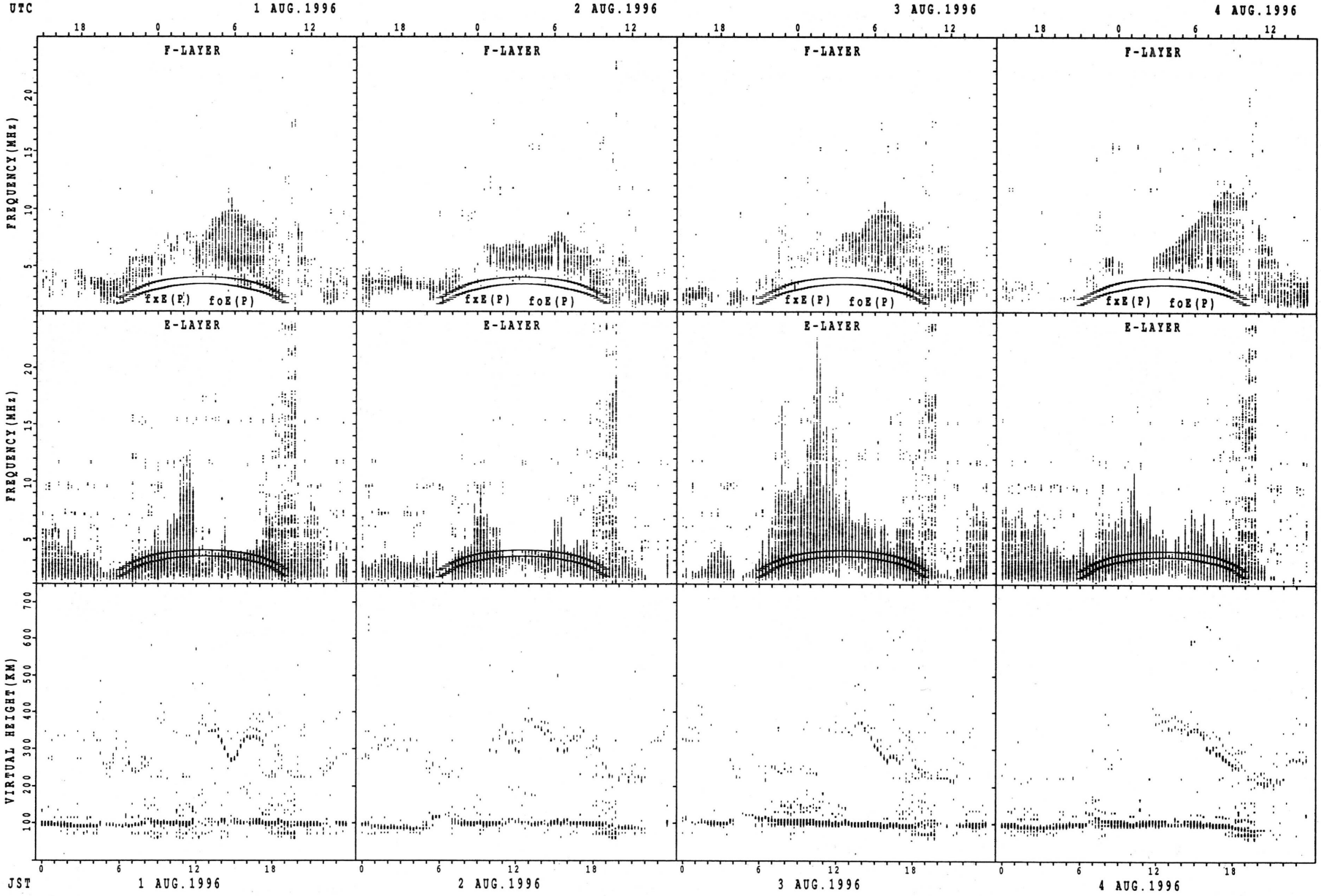
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

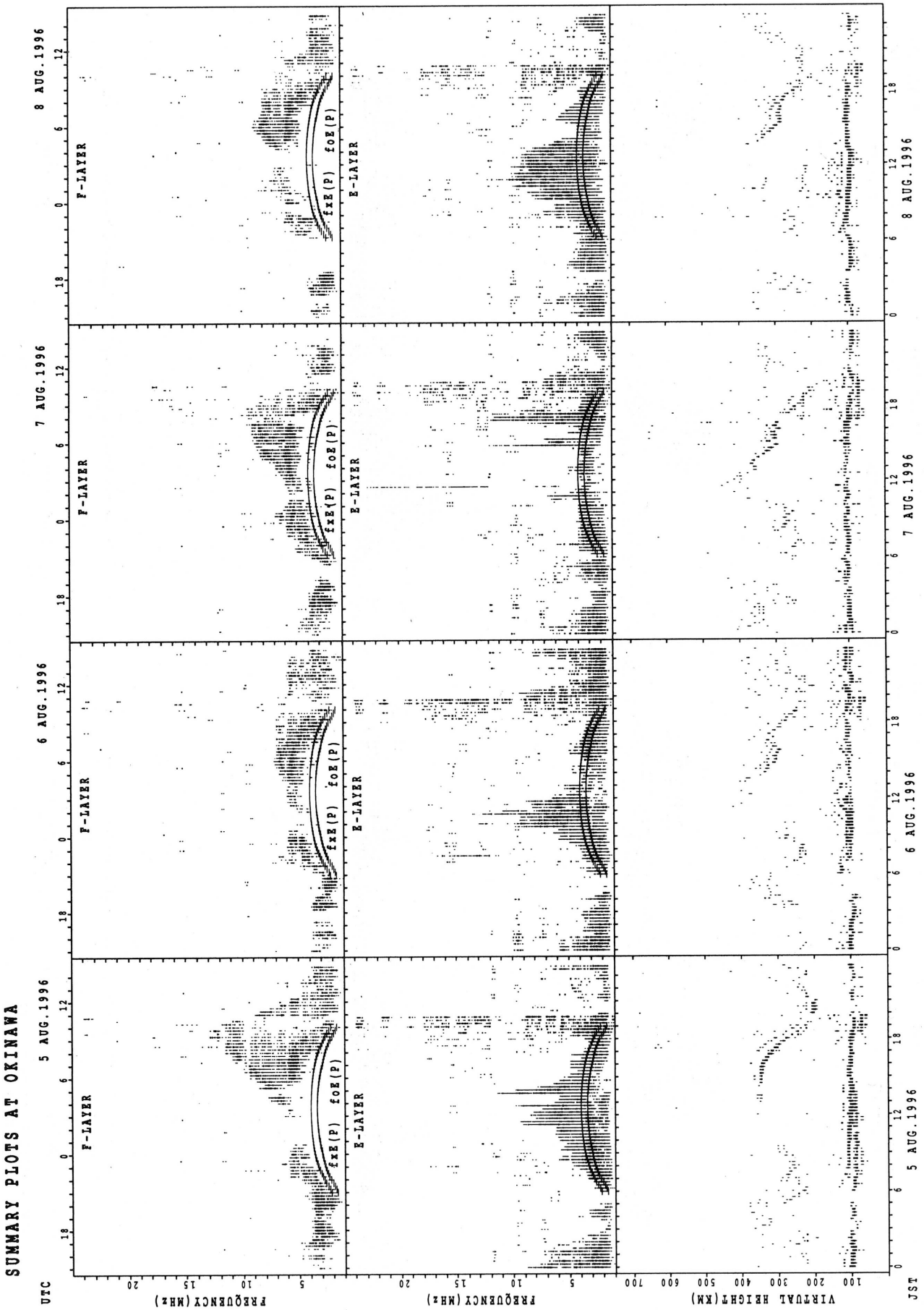


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

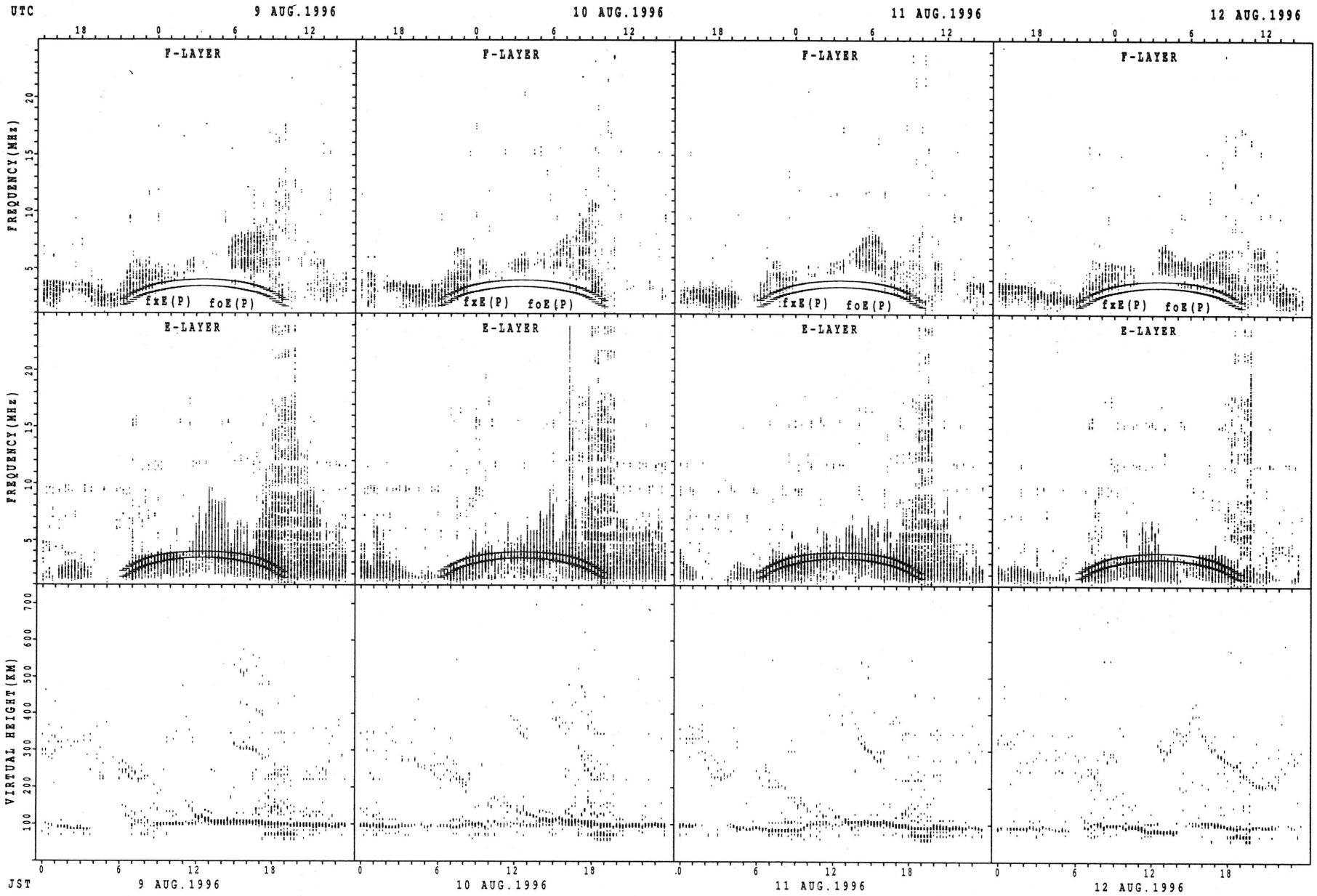
SUMMARY PLOTS AT OKINAWA



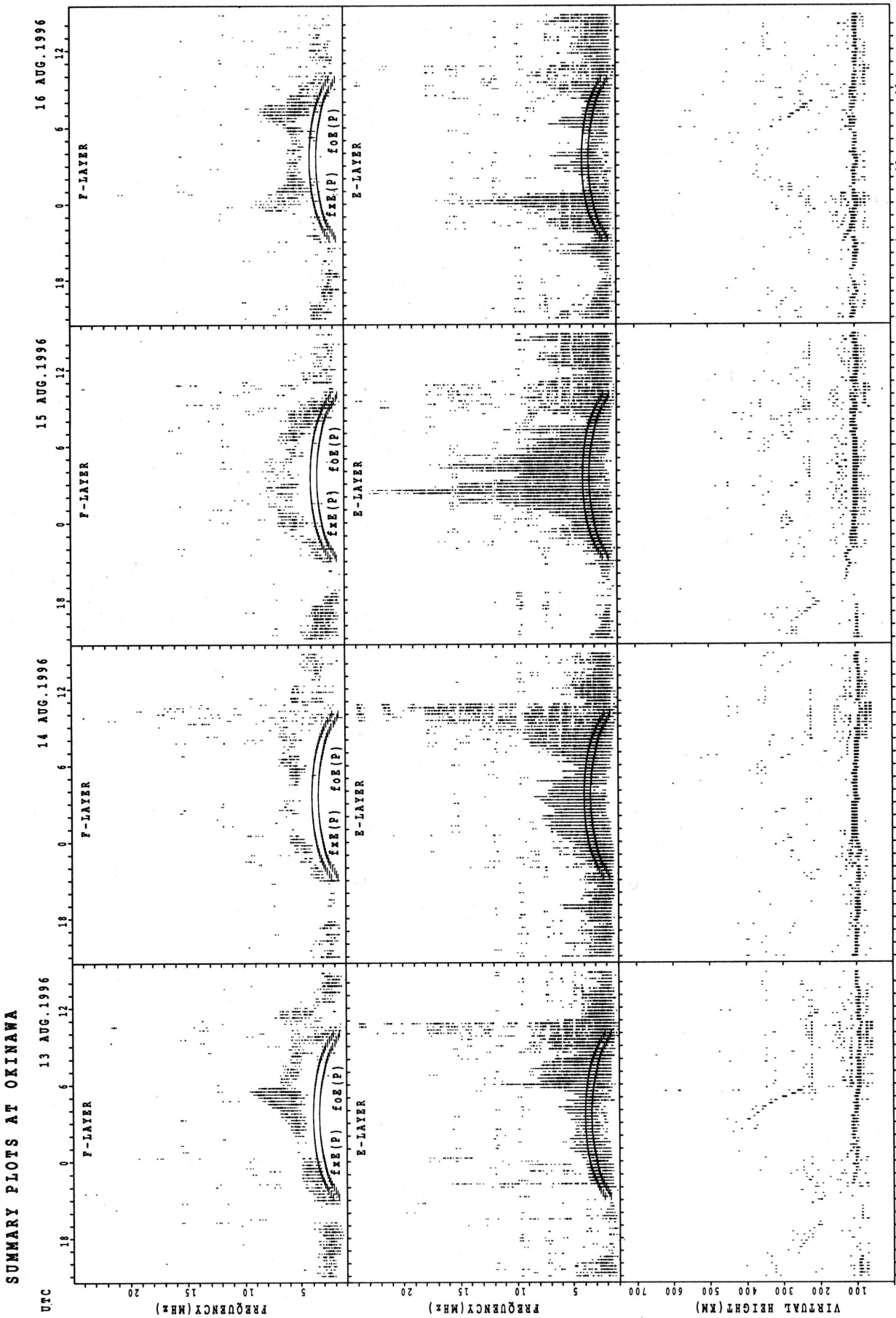
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
UTC
JST
5 AUG.1996
6 AUG.1996
7 AUG.1996
8 AUG.1996
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

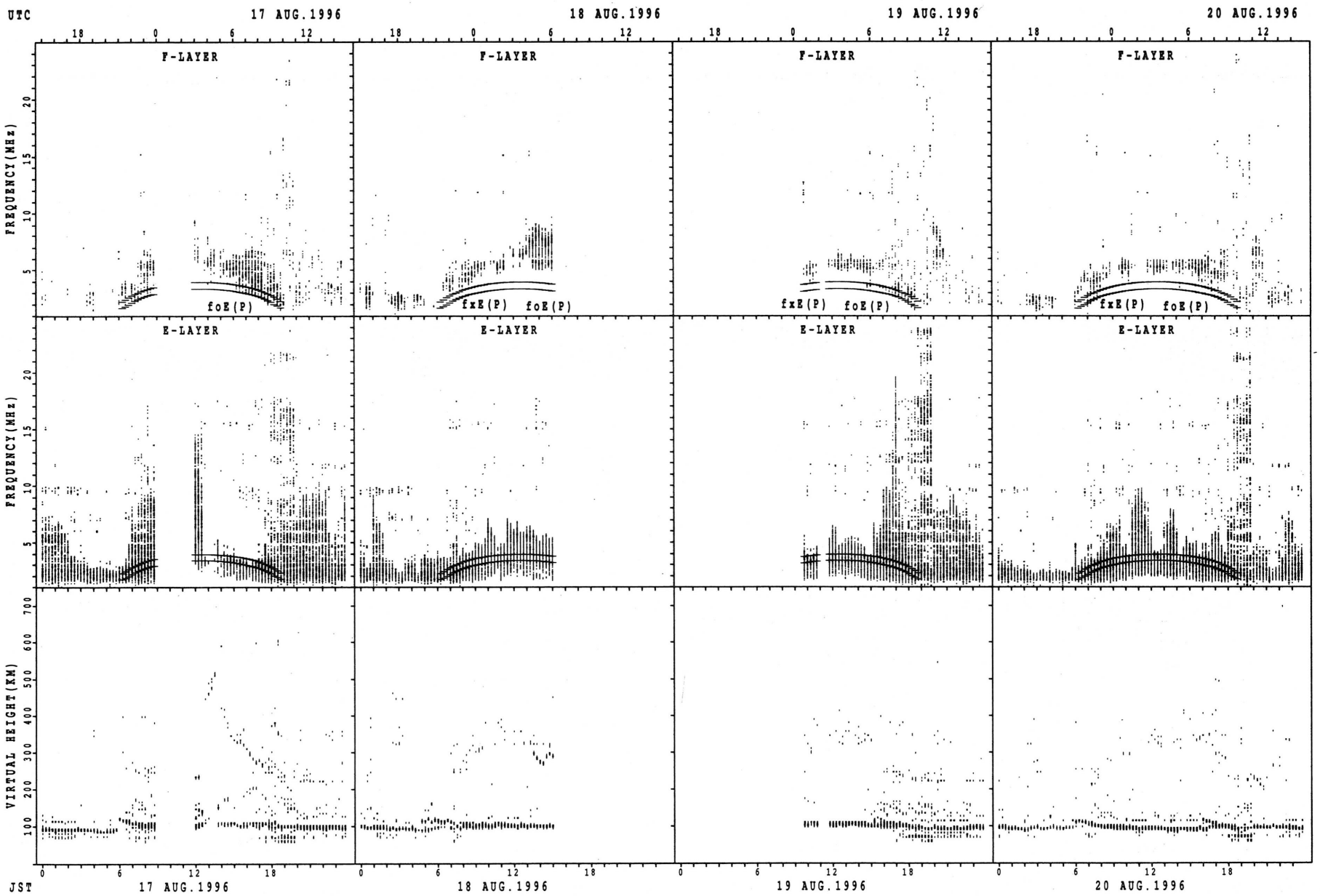
SUMMARY PLOTS AT OKINAWA



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

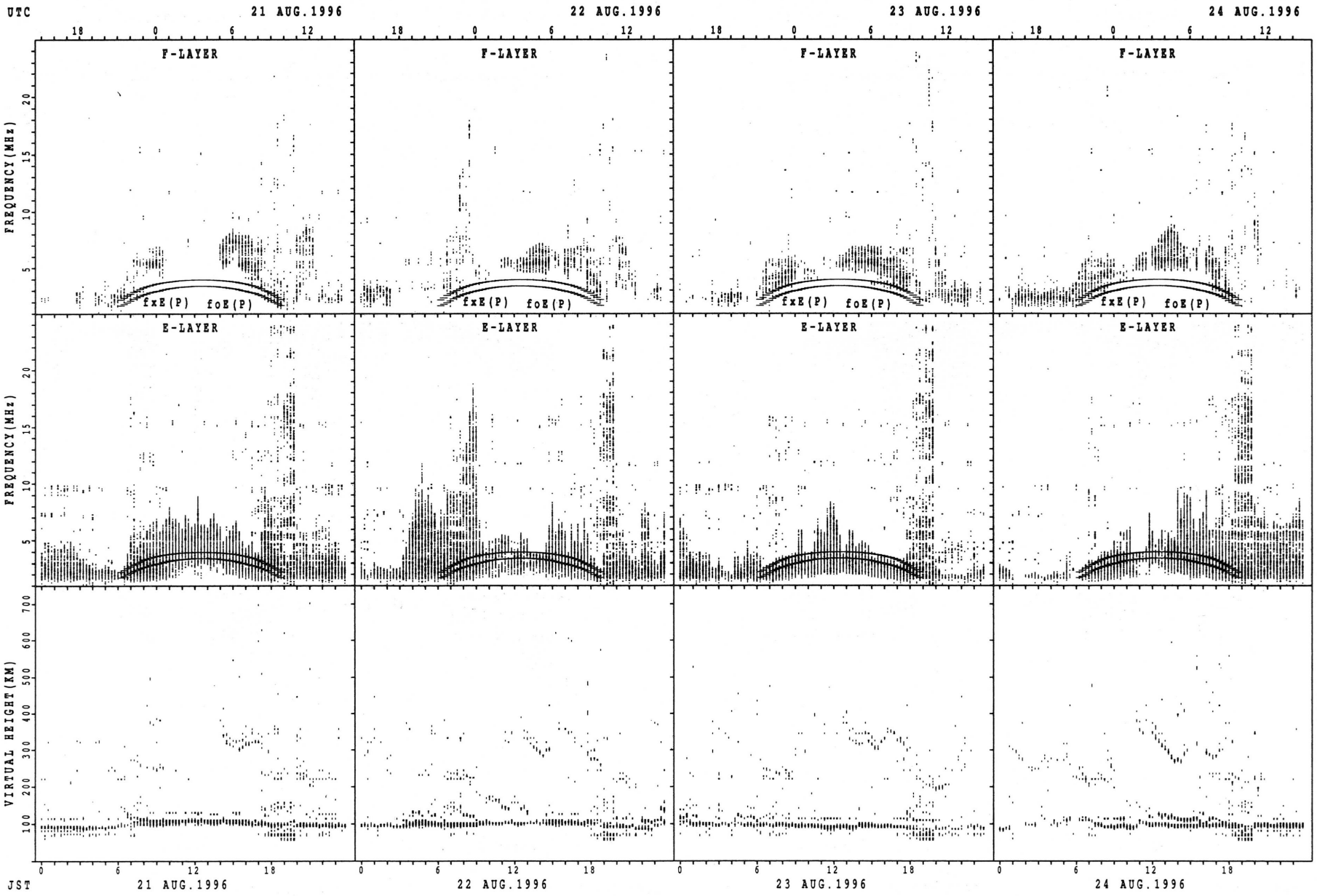

SUMMARY PLOTS AT OKINAWA
UTC
JST
13 AUG.1996
14 AUG.1996
15 AUG.1996
16 AUG.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



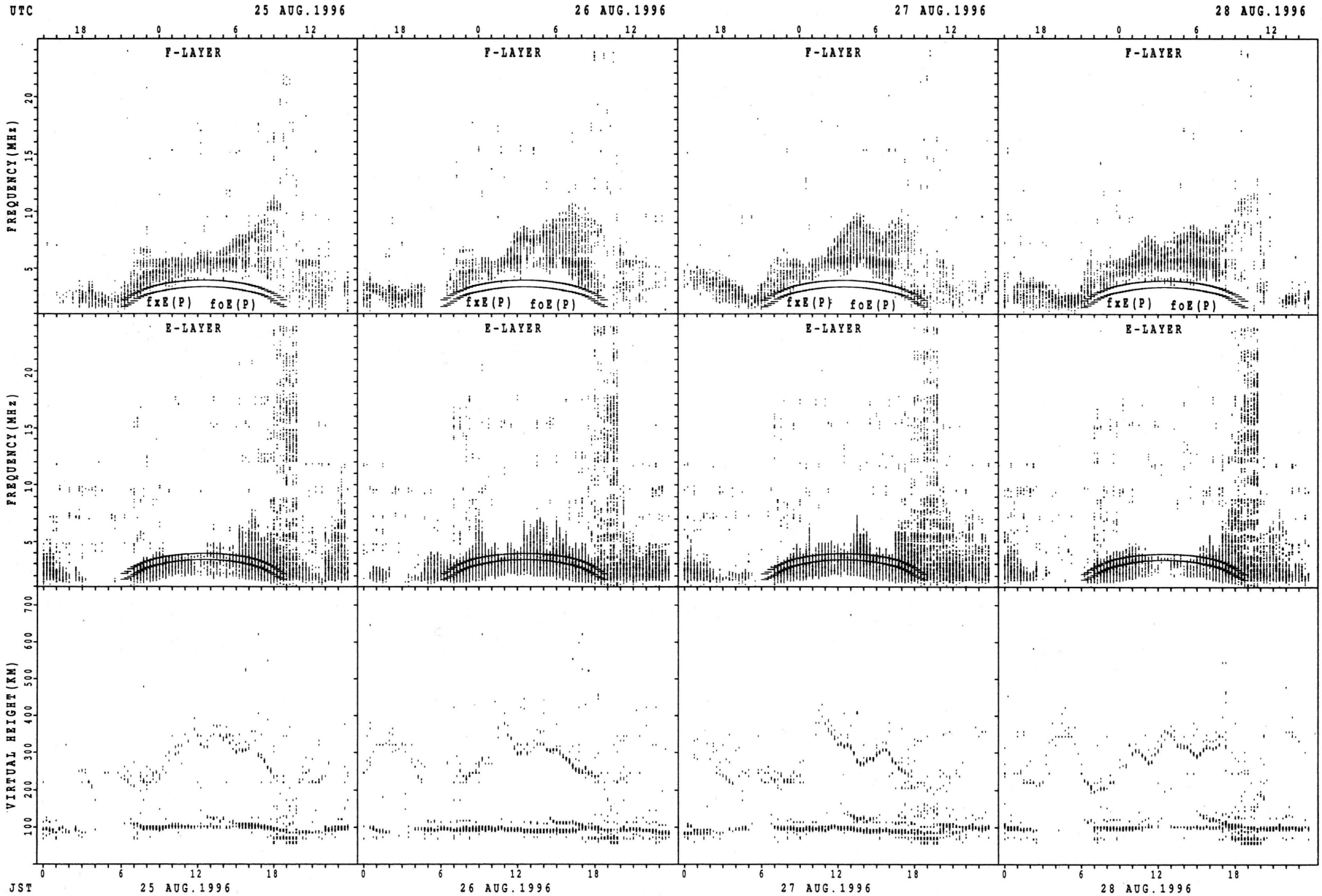
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

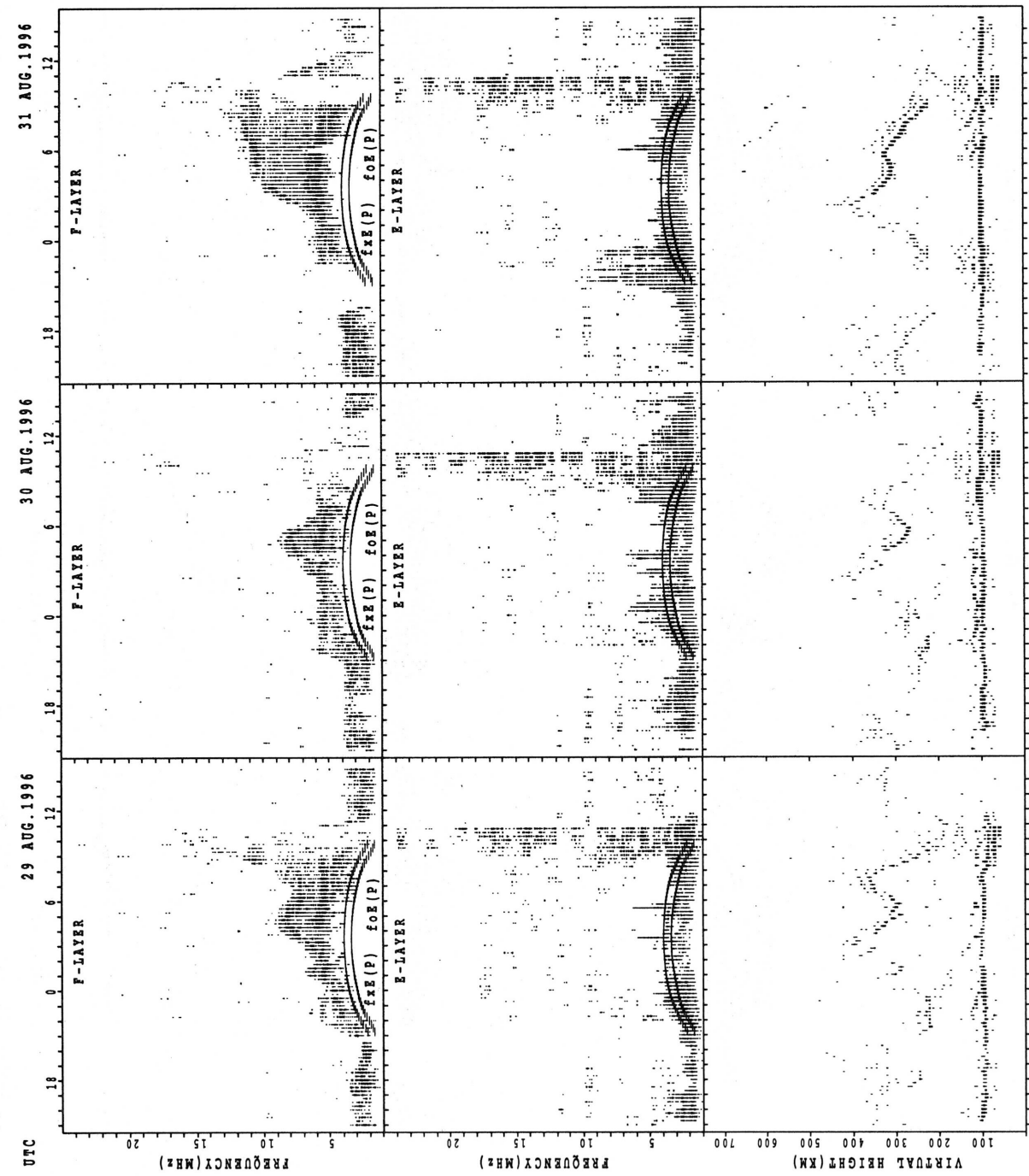


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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


SUMMARY PLOTS AT OKINAWA
UTC
29 AUG.1996
30 AUG.1996
31 AUG.1996
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
JST

MONTHLY MEDIANS OF h'F AND h'Es

AUG.1996 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	24	28	26	21	22	31	30	31	31	31	31	31	31	29	31	30	28	31	29	27	28	28	28	28
MED	103	103	102	101	101	119	115	113	111	109	107	105	105	103	103	105	107	113	111	107	107	107	105	105
U Q	105	104	105	104	105	125	125	117	113	111	107	107	107	106	107	107	113	119	115	111	114	111	110	107
L Q	100	100	97	97	99	105	113	111	105	105	103	103	103	100	103	103	103	103	106	105	105	105	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																								
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	25	23	28	24	22	24	30	29	31	31	28	29	30	30	31	29	29	30	26	26	25	24	27	26
MED	105	103	99	101	103	105	119	113	113	109	108	111	107	107	105	107	111	110	107	107	103	108	105	105
U Q	109	107	104	103	107	117	123	119	115	113	113	113	111	111	109	114	119	117	113	111	108	115	109	109
L Q	101	99	97	99	99	98	113	111	107	107	107	105	105	105	103	105	103	103	101	101	99	103	103	103

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															10	14								
MED															323	306								
U Q															336	318								
L Q															294	294								

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	22	25	23	23	20	20	21	29	30	26	23	28	28	27	27	25	26	28	25	25	26	22	21	24
MED	107	105	105	103	105	105	115	117	113	112	111	109	107	105	107	109	113	113	111	107	107	106	107	107
U Q	113	109	111	107	106	106	134	121	117	115	113	113	112	113	113	117	119	117	119	116	115	111	111	113
L Q	105	102	103	99	100	99	107	109	109	107	103	106	105	105	103	105	107	107	107	105	105	103	103	105

MONTHLY MEDIANS OF h'F AND h'Es

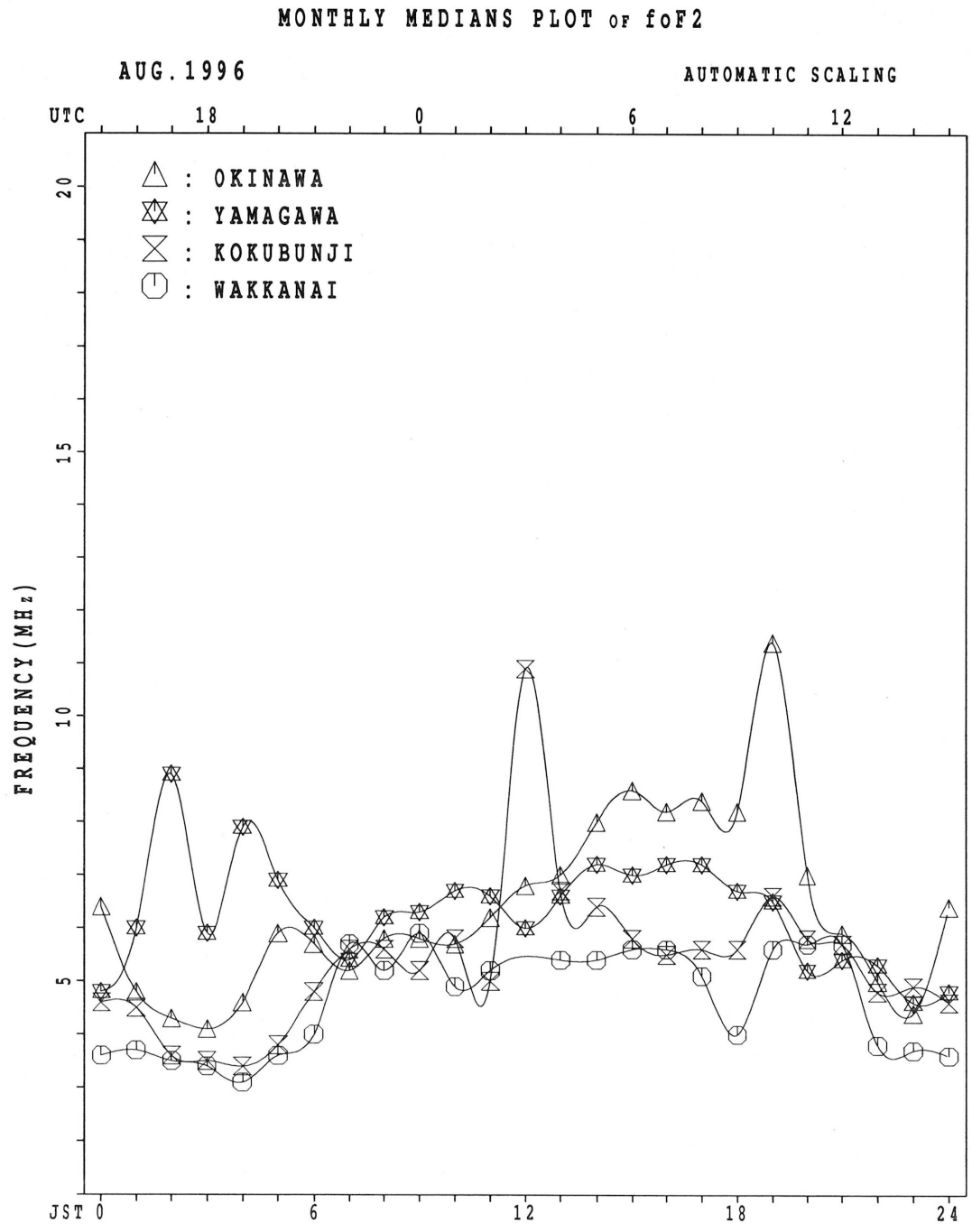
AUG. 1996 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									11				10	13	19	21	19	18	14		13			
MED									264				319	342	320	308	314	295	242		244			
U Q									284				352	354	338	327	342	332	292		317			
L Q									236				300	309	292	292	290	266	216		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	24	24	26	17	20	19	21	25	29	29	30	29	28	30	30	31	29	30	28	27	29	23	23	25
MED	98	97	95	95	97	95	99	103	105	105	105	107	106	107	107	107	107	105	100	91	97	97	97	97
U Q	107	102	97	97	105	101	113	117	113	111	119	120	113	113	113	115	113	107	111	105	105	101	101	104
L Q	93	95	91	93	91	91	96	95	101	97	101	98	101	103	101	105	104	99	96	87	95	91	91	91


MONTHLY MEDIANS PLOT OF foF2
AUG. 1996
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. 1996 fxI (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 foF2 (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

AUG. 1996 foF2 (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 foF1 (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	432	440	A	A	416	A	A	A					
2							A	A	A	A	A	UA 460	A	A	A	A	396	364	UL 352					
3							A	A	408	A	424	R 420	A	440	424	412	UA 388	368	L					
4							328	388	A	A	A	A	A	A	A	A	A	UL 376	A					
5								L 408	A	A	A	A	AU 448	A	A 416		A	400	L					
6								380	A	A	424	R 428	440	424	428	396	400	UL 372	L					
7							L	A	A	A	A	A	A	A	UA 440	412	UA 396	A	UL 300					
8							L	372	A	A	440	A	432	A	A	A	UA 392	L 372	L					
9							A	UL 388	A	A	A	A	A	432	UA 428	416	392	A	A					
10							A	A	400	A	A	A	A	A	A	400	A	A	L 304					
11							A	A	A	A	A	A	A	A	A	A	A	L 368	UL 336					
12						L	A	380	412	440	432	A	AU 432	UA 420	UA	416	392	360	L 316					
13								L 408	A	A	A	A	A	432	452	UA 420	UA 380	L 364	L					
14								A	A	A	A	A	A	432	UA 416	A	A	A						
15							L	UA 396	UA 384	416	428	440	UR 436	R 440	A	412	396	L 352						
16								A	400	408	Y 420	A	440	UA 440	428	408	388	L 348	A					
17							A	A	A	420	UA 420	A	R 420	A	A	404	UA 380	A						
18							L 336	UA 360	UA 400	UA 416	424	UA 448	432	440	420	408	384	UL 372						
19							276		L 404	412	424	A	UR 428	Y 424	UA 416	A	A	340						
20							L	L 388	A	A	A	440	440	424	432	A	A	348	A					
21							L		L 400	UA 408	A	A	A	A	A	A	396	A						
22								380	UA 396	A	A	A	A	A	A	A	UA 388	A	A					
23							UL 344	380	412	420	432	444	440	436	428	A	A	A	L 324					
24							L 340	UA 344	400	428	440	440	452	436	R 456	420	A	A	A					
25								L	A	UA 428	440	432	440	R 436	A	A	A	A						
26							L	L 392	408	428	A	448	A	452	428	420	404	A						
27							L	L 392	412	432	444	448	UL 452	436	432	420	L 404	UL 368						
28							L	L 368	408	416	428	UA 440	R 424	R 448	448	L 428	C	L						
29								384	404	A	A	A	UA 440	UY 452	444	420	404	L 388						
30							UL 336	L 376	L 408	L	436	440	440	440	432	L 424	396	A						
31							L	A	416	424	L 436	448	460	UA 444	UA 468	428	L 408	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							6	16	19	14	16	15	17	21	19	20	19	16	6					
MED							L 336	380	408	420	430	440	440	436	428	416	396	L 368	L 320					
U Q							L 340	L 388	408	428	438	448	440	U 442	444	420	400	UL 372	UL 336					
L Q							328	374	400	416	424	432	R 432	432	UA 424	410	UA 388	356	L 304					

AUG. 1996 foF1 (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 foE (0.01MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1						B	A 212	A	A	316	A 336	A	A	A	A	A	300	A	U A 184					
2						B	A	A 284	A 304	A 328	A	A	A	A	A	A	A	240	A					
3						B	220	U A 252	U A 300	A 320	A	A	A	A	A	A	A	A	A					
4						B	A	A 276	304	320	A	A	U A 352	336	A 328	U A 312	A	A	A					
5						B	228	280	308	A	A	A	A	A	A	A	A	A	A					
6						B	236	280	A 300	U A 332	A	A	A	A	A	320	284	248	A					
7						B	A 216	A 288	A 312	A	A	A	A	A	A	A	A	A	A					
8						B	212	264	292	316	336	A 336	340	A	332	316	280	A	A					
9						B	A 220	272	308	320	332	A 348	A 348	340	324	312	288	260	A					
10						B	204	A 252	292	308	A 332	A	A	A	A	A	A	A	A					
11						B	A	A 272	288	A	A	A	A	A	A	A	A	A	A					
12						B	A	A	312	R 332	U R	A	A	A	A	A 308	276	A	A					
13						B	208	264	304	320	332	A	A	A	A	A	A	A	172					
14						B	A	260	288	A 324	A 344	352	352	340	324	A 308	U A 272	A	A					
15						B	A	A	A	A	A 344	A	A	A	A	A	268	A	A					
16						B	212	U A 256	296	A 324	A	A	A	A	A	300	276	236	A					
17						B	A	U A 260	284	A	A	U A 332	A	A	A	320	272	236	A					
18						B	A	264	288	312	A 324	A 332	A	A	A	A	A	A	A					
19						B	212	260	A 276	296	A	A	A	U A 332	U A 316	A	A	A	A					
20						B	A	A	U A 288	A 304	A	A	A	A	A	A	A	A	A					
21						B	204	272	284	A 304	A	A	A	A	A	A	288	228	A					
22						B	220	268	A	A	A	A	A	A	A	A	280	236	160					
23						B	U A 200	248	A 280	A	S	S	356	340	A	A	A	A	A					
24						B	A	268	A	A	A	R 336	356	U R 344	A 336	308	276	224	A					
25						B	A	A	A	A	A	A	A	348	324	304	268	A	A					
26							A	A	280	A	A	A	A	U R 340	U R 328	316	284	U A 236	B					
27							A	A 256	300	A	A	348	R 348	R 340	320	A	A	A	A					
28						B	196	252	R 296	R	A	A	R	R	R	312	C	224	B					
29						B	A	A 248	A	A	A	A	A	R	R 320	300	272	220	B					
30						B	204	236	284	A	A	A	A	A	R 332	A	276	240	B					
31							A	A	A	A 308	A	A	A	A	A	A	A	A	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							16	24	24	17	8	7	7	9	11	13	16	12	3					
MED							212	264	294	320	A 334	A 336	352	340	324	312	276	236	172					
U Q							220	A 272	304	A 324	A 340	348	356	U R 342	332	316	284	240	U A 184					
L Q							204	A 254	286	A 308	332	A 332	348	338	320	306	272	226	160					

AUG. 1996 foE (0.01MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 foEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 74	J A 24	38	J A 47	J A 22	28	J A 49	J A 48	J A 63	J A 47	J A 64	J A 48	J A 48	J A 56	J A 92	37	54	J A 70	J A 56	25	27	J A 26	J A 49	J A 34
2	J A 61	31	J A 31	J A 27	J A 24	23	J A 41	J A 50	J A 59	J A 128	J A 74	J A 52	69	J A 74	J A 46	J A 53	J A 36	33	J A 26	J A 64	J A 44	J A 63	J A 54	J A 116
3	J A 76	J A 76	J A 52	33	J A 52	22	J A 52	J A 53	J A 47	J A 51	J A 44	38	J A 50	37	39	J A 42	J A 46	J A 28	32	J A 28	J A 22	22	J A 36	J A 52
4	J A 55	J A 24	J A 25	J A 21	E B 14	J A 35	J A 30	33	J A 59	J A 50	J A 67	88	72	J A 50	J A 57	J A 89	J A 84	J A 138	61	J A 84	J A 50	J A 52	J A 64	J A 35
5	J A 26	E B 13	J A 27	E B 14	E B 14	J A 19	J A 28	J A 37	J A 46	J A 64	98	J A 167	J A 82	J A 52	J A 56	J A 41	J A 46	J A 52	J A 29	J A 39	J A 24	J A 50	J A 52	J A 34
6	24	J A 30	J A 31	19	22	26	27	J A 37	J A 48	J A 60	J A 44	J A 52	J A 39	34	J A 37	37	37	33	J A 30	J A 48	J A 28	J A 21	20	21
7	28	J A 53	J A 54	J A 56	J A 40	J A 25	J A 33	J A 62	J A 53	84	J A 90	J A 132	J A 102	J A 53	J A 47	37	J A 49	J A 55	29	J A 33	38	J A 27	J A 50	59
8	J A 39	J A 42	J A 40	53	J A 24	J A 41	27	J A 47	58	68	J A 79	40	40	J A 85	56	60	J A 44	J A 37	30	33	J A 26	26	J A 23	23
9	J A 24	20	J A 26	J A 33	E B 14	J A 23	J A 38	J A 42	J A 68	J A 86	J A 75	J A 52	93	J A 40	J A 44	40	J A 47	J A 62	J A 83	J A 88	J A 142	J A 56	J A 35	J A 31
10	27	22	20	J A 47	J A 41	J A 28	J A 40	J A 114	40	J A 82	83	50	56	J A 83	J A 64	J A 54	J A 93	99	J A 160	J A 45	J A 23	J A 64	J A 50	79
11	J A 94	J A 63	28	J A 34	J A 42	J A 36	J A 93	J A 127	J A 91	117	J A 179	J A 180	117	158	J A 178	J A 107	J A 52	J A 50	J A 34	49	J A 53	J A 54	J A 32	J A 33
12	34	J A 27	J A 25	J A 27	J A 37	J A 31	J A 49	J A 40	J A 37	G 32	G 32	53	J A 65	49	55	34	31	29	20	28	E B 14	J A 30	28	J A 49
13	J A 29	22	25	J A 22	25	J A 27	25	32	39	J A 52	J A 65	J A 85	88	J A 41	J A 61	J A 54	J A 49	J A 23	G	30	J A 34	28	J A 28	J A 51
14	J A 52	J A 52	J A 48	38	J A 23	J A 28	32	J A 46	J A 54	J A 54	J A 73	J A 50	J A 53	G	J A 44	J A 73	J A 59	J A 83	J A 64	J A 54	J A 38	J A 43	J A 37	22
15	21	27	J A 20	J A 24	26	29	J A 27	J A 53	J A 100	J A 54	41	J A 48	36	J A 52	J A 67	J A 43	J A 34	31	J A 33	J A 44	J A 28	J A 64	J A 100	J A 53
16	J A 46	J A 34	33	J A 44	J A 23	27	J A 34	J A 65	J A 50	J A 52	38	J A 49	37	53	34	34	31	J A 28	70	J A 54	36	24	J A 27	45
17	J A 48	J A 37	50	26	24	24	J A 44	62	J A 79	J A 48	J A 44	J A 69	39	J A 53	J A 47	40	J A 50	J A 84	J A 52	54	46	J A 85	J A 62	55
18	J A 40	J A 33	E B 14	20	J A 20	24	J A 30	J A 41	J A 50	J A 46	J A 43	J A 68	J A 47	35	33	34	J A 36	28	22	20	18	J A 53	J A 26	24
19	32	J A 49	J A 84	J A 48	J A 34	J A 22	26	33	J A 44	40	J A 44	J A 46	J A 42	41	J A 47	J A 89	J A 82	J A 63	J A 64	J A 53	J A 32	J A 23	J A 27	18
20	E B 14	E B 14	J A 21	23	E B 14	J A 19	29	33	J A 67	J A 78	J A 66	33	38	38	J A 40	J A 52	J A 48	J A 42	J A 56	J A 53	J A 34	24	73	34
21	J A 62	J A 50	J A 45	J A 44	J A 24	J A 24	25	30	J A 58	J A 44	J A 52	J A 60	J A 81	J A 120	J A 90	J A 89	33	50	133	J A 100	J A 53	J A 42	J A 66	J A 22
22	19	19	J A 30	J A 66	J A 22	J A 26	J A 26	J A 28	J A 44	J A 50	J A 54	56	J A 68	68	68	67	J A 44	J A 40	J A 45	J A 49	J A 22	J A 22	J A 36	J A 15
23	J A 28	J A 26	J A 26	J A 30	J A 27	27	27	J A 38	J A 40	J A 42	E S 40	E S 42	40	G 29	J A 44	J A 69	46	J A 44	30	39	21	J A 20	34	J A 53
24	J A 39	J A 34	J A 30	J A 18	19	J A 27	J A 32	J A 49	J A 38	J A 36	38	G 26	39	G	43	39	J A 47	52	60	J A 121	J A 64	J A 84	J A 32	47
25	J A 41	J A 34	J A 27	J A 30	J A 25	J A 22	J A 30	J A 46	J A 87	J A 166	37	J A 52	J A 52	40	J A 77	J A 136	J A 104	J A 135	J A 200	J A 146	J A 89	J A 65	51	J A 47
26	J A 27	J A 35	J A 44	J A 48	J A 47	J A 26	J A 28	J A 31	31	J A 42	J A 43	J A 40	J A 52	G	G	G	34	J A 54	48	28	J A 104	J A 53	J A 48	J A 29
27	20	24	J A 22	24	J A 18	E B 15	J A 23	J A 33	34	36	34	37	G 28	G	G 28	34	J A 37	J A 42	J A 27	J A 32	J A 49	23	J A 22	E B 16
28	E B 15	E B 15	J A 20	22	E B 14	20	24	27	G	G 31	J A 43	44	G 31	G	G	G	C	J A 34	33	J A 32	E B 12	E B 16	J A 26	J A 30
29	J A 24	22	E B 14	22	23	20	J A 24	J A 29	34	J A 60	J A 72	J A 48	J A 55	28	G 30	G 21	32	J A 34	J A 30	J A 64	47	33	J A 38	J A 24
30	J A 28	J A 24	J A 43	J A 24	J A 28	J A 25	J A 22	29	33	37	48	J A 46	38	34	36	35	32	J A 40	J A 48	J A 55	J A 47	J A 28	J A 55	J A 49
31	J A 82	J A 44	J A 41	J A 28	J A 25	25	29	J A 42	35	35	38	J A 43	J A 42	J A 46	53	J A 44	42	47	J A 33	32	J A 43	J A 48	J A 26	J A 32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31
MED	J A 32	J A 30	J A 30	J A 28	J A 24	J A 25	J A 29	J A 41	J A 48	J A 51	J A 48	J A 50	50	41	J A 47	42	J A 46	J A 44	J A 34	J A 48	J A 36	J A 33	J A 36	J A 34
U Q	J A 52	J A 42	J A 43	J A 44	J A 28	J A 28	J A 38	J A 50	J A 59	J A 68	J A 73	J A 60	69	J A 53	J A 61	J A 67	J A 50	J A 62	J A 61	J A 55	J A 49	J A 54	J A 52	J A 51
L Q	24	22	25	22	E B 20	22	26	33	38	42	41	43	39	G 34	37	35	36	33	30	32	24	24	J A 27	24

AUG. 1996 foEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.1996 fbEs (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	E B 14	A A 38	A A 47	17	17	41	42	48	47	A A 64	39	40	48	A A 92	36	A A 54	A A 70	U A 42	18	15	E B 15	18	21
2	34	23	17	19	E B 13	E B 17	30	A A 50	A A 59	A A 128	A A 74	46	A A 69	A A 74	46	40	32	31	25	26	20	22	20	20
3	A A 76	18	20	18	18	18	A A 52	A A 53	34	43	36	36	44	35	36	36	39	25	21	25	18	17	17	28
4	27	17	E B 15	16	E B 14	18	25	31	44	A A 50	A A 67	A A 88	A A 72	46	56	58	A A 84	34	28	43	33	28	23	18
5	18	E B 13	17	E B 14	E B 14	16	G 18	G 21	35	A A 64	A A 98	A A 167	A A 82	45	48	40	42	30	22	20	23	18	19	19
6	E B 15	18	17	16	16	18	25	G 22	42	50	37	39	36	U Y 34	34	35	34	28	25	22	18	18	18	E B 14
7	17	E B 14	A A 54	A A 56	17	E B 15	26	50	49	A A 84	A A 90	A A 132	A A 102	50	44	34	40	37	22	22	25	15	A A 50	A A 59
8	20	18	20	A A 53	18	21	25	32	48	A A 68	42	U Y 40	40	A A 85	48	56	39	35	27	27	22	18	16	16
9	E B 13	E B 14	E B 14	E B 15	E B 14	20	34	29	A A 68	49	A A 75	A A 52	A A 93	36	43	40	34	45	34	35	19	19	19	16
10	18	17	16	19	17	22	39	A A 114	32	A A 82	A A 83	46	A A 56	A A 83	A A 64	34	47	A A 99	21	33	17	34	A A 50	A A 79
11	23	18	18	22	25	18	A A 93	A A 127	A A 91	A A 117	A A 179	A A 180	A A 117	A A 158	A A 178	A A 107	46	29	25	40	40	40	22	25
12	22	20	20	16	16	18	A A 49	34	G 29	G 30	U G 32	A A 53	A A 65	43	42	33	30	27	19	19	E B 14	17	20	25
13	E B 15	17	E B 15	17	16	18	24	31	37	A A 52	A A 65	A A 85	A A 88	39	44	42	38	23	G	20	24	E B 15	25	22
14	19	23	19	18	E B 15	18	28	G 23	A A 54	48	A A 73	47	49	G	42	A A 73	44	36	25	19	28	32	19	17
15	17	21	17	17	18	18	20	40	38	36	38	37	35	37	44	39	G 20	27	26	21	20	18	22	24
16	20	18	21	19	17	18	28	A A 65	38	36	U Y 37	48	U Y 36	44	33	33	30	26	U A 38	A A 54	31	22	18	26
17	22	19	A A 50	E B 14	E B 14	E B 15	35	40	42	35	42	A A 69	38	48	45	37	38	A A 84	42	U A 48	22	30	A A 62	A A 55
18	30	17	E B 14	16	17	18	27	36	40	42	38	45	41	34	32	31	31	26	19	E B 14	E B 14	22	16	E B 15
19	19	17	17	A A 48	18	18	23	30	36	38	41	A A 46	40	U Y 40	42	A A 89	43	32	23	51	17	18	20	16
20	E B 14	E B 14	17	E B 14	E B 14	E B 14	24	29	A A 67	51	46	U Y 33	38	34	35	45	42	25	42	18	28	18	A A 73	17
21	A A 62	A A 50	20	A A 44	21	18	25	28	34	41	50	A A 60	A A 81	A A 120	A A 90	51	33	35	19	23	26	17	26	18
22	17	16	E B 15	18	E B 13	E B 16	24	G 22	40	48	48	47	A A 68	A A 68	A A 68	A A 67	39	40	33	44	18	17	27	14
23	18	17	18	17	21	16	26	36	37	35	E S 40	E S 42	U Y 40	G 28	38	A A 69	41	39	24	21	E B 13	18	25	A A 53
24	19	23	19	E B 14	E B 13	E B 15	24	34	32	34	34	G 26	38	G	42	36	44	39	41	E B 15	33	38	20	21
25	25	28	20	19	19	18	22	27	A A 87	43	36	36	42	38	A A 77	52	49	51	24	26	23	25	34	38
26	E B 14	21	20	A A 48	24	20	20	30	30	35	41	38	50	G	G	G	31	51	24	20	30	30	23	20
27	18	E B 13	E B 13	17	16	E B 15	22	29	34	27	33	37	G 27	G	G 26	33	35	26	20	29	24	E B 16	E B 15	E B 16
28	E B 15	E B 15	16	17	E B 14	E B 14	23	U Y 27	G	U G 31	38	44	U G 31	G	G	G	C	34	28	20	E B 12	E B 16	18	20
29	18	19	E B 14	E B 14	18	E B 15	20	28	33	55	A A 72	A A 48	44	U G 28	G 26	G 19	G 22	30	25	26	40	19	25	19
30	21	20	18	19	20	18	G 18	28	31	34	42	41	37	U Y 34	35	34	30	34	44	32	40	18	19	20
31	A A 82	17	28	22	18	17	21	39	33	34	38	42	40	44	47	36	34	39	24	23	33	27	21	24
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31
MED	19	18	18	18	17	18	25	31	38	43	42	46	42	39	43	37	38	34	25	23	23	18	20	20
U Q	25	20	20	A A 22	18	18	30	A A 40	A A 48	A A 52	A A 72	A A 53	A A 69	A A 48	A A 48	A A 52	43	39	33	33	30	27	25	25
L Q	E B 17	E B 16	E B 16	E B 16	E B 14	E B 16	22	28	33	35	38	39	38	G 34	35	34	32	27	22	20	18	17	18	17

AUG.1996 fbEs (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG.1996 fmin (0.1MHz) 135°E MEAN TIME (G.M.T. + 9 H)

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

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

AUG.1996 fmin (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	341	F 318	A	A	315	331	323	328	340	333		A	G	288	318	A	J R 295	A	A	A	313	316	313	294	F 315	F
2	F 320	F 320	F 322	F 293	F 315	326	348	A	A	A	A	334		A	A	321	273	252	276	293	302	296	F 318	327	J R 305	
3	A	F 295	F 286	F 325	S 328	346	A	A	249	294	301	281	281	286	283	300	323	344	343	310	300	325	F 307	F 295		
4	F 311	F 285	F 316	F 303	F 356	329	289	G	327	A	A	A	A	J R 303	295	345	A	326	327	324	V 299	F 288	273	F 341		
5	F 344	306	F 300	F 339	F 304	F 338	338	300	J R 251	A	A	A	A	302	328	334	313	319	293	303	335	F 300	F 318	F 291		
6	F 313	F 318	F 319	F 306	F 307	F 340	326	311	322	344	311	324	R 290	301	304	316	314	323	319	334	329	307	320	317		
7	323	F 305	A	A	F 295	F 304	284	307	348	A	A	A	A	278	301	336	335	325	332	333	331	F 285	A	A		
8	F 310	312	306	A	F 333	318	352	312	A	A	U R 264	J R 304	U R 317	A	308	A 313	326	331	331	322	315	310	303	312		
9	326	316	F 300	F 302	F 346	352	323	316	A	320	A	A	A	296	R 293	300	318	334	323	299	318	324	F 279	F 324		
10	F 324	F 300	F 321	F 320	F 318	F 293	A 294	A	336	A	A	333	A	A	A	299	312	A	328	340	331	315	A	A		
11	F 296	F 326	F 321	F 297	335	F 315	A	A	A	A	A	A	A	A	A	A	347	342	296	R 318	306	320	F 303	F 315		
12	F 303	F 328	F 339	F 327	F 338	F 314	A	320	337	289	R 336	A	A	295	R 290	G	305	321	309	327	330	319	316	F 286		
13	F 301	F 318	F 319	F 314	333	347	366	354	347	A	A	A	A	309	331	322	329	332	322	309	311	331	334	F 342		
14	F 325	F 314	F 332	F 322	F 336	342	362	358	A	A 306	A	339	338	301	326	A	327	323	315	310	315	329	342	306		
15	306	F 331	331	332	313	R 333	317	293	331	292	332	328	288	V 321	316	321	325	348	341	334	F 312	315	307	312		
16	F 316	346	F 356	308	F 317	322	330	A	291	312	307	334	340	275	312	297	326	347	A	A	J R 302	304	298	299		
17	F 339	F 318	A	F 310	F 287	F 296	A 335	318	A	R 354	335	A	308	331	314	289	322	A	349	A	306	296	A	A		
18	F 332	F 315	F 326	F 299	F 323	F 288	F 322	V 326	328	313	300	R 340	351	327	319	304	335	312	327	324	311	A	F 328	F 306		
19	F 332	F 316	F 319	A	F 329	F 328	362	364	359	340	322	A	J R 262	314	303	A	335	327	310	323	317	F 328	F 338	340		
20	325	325	319	330	319	333	359	352	A	292	312	332	327	316	296	308	332	323	321	313	331	335	A	F 329		
21	A	A	F 301	A	F 295	F 334	338	341	360	343	354	A	A	A	A	330	332	335	318	302	F 317	329	F 315	F 320		
22	F 343	F 335	F 295	F 295	F 323	F 331	335	350	342	333	365	R 302	A	A	A	A	312	335	325	318	337	331	345	317		
23	F 311	317	314	F 315	F 330	F 334	R 313	343	349	359	327	324	318	334	342	A	331	301	294	323	356	342	315	A		
24	F 319	302	F 324	F 317	F 295	F 301	R 333	343	350	342	324	291	306	319	R 325	324	335	325	310	F 325	341	337	310	290		
25	295	F 304	F 299	314	F 311	F 327	347	J R 330	A	352	331	326	328	290	A	328	J R 309	303	314	319	J R 269	315	F 310	F 304		
26	F 304	F 308	F 290	A	303	F 302	328	322	348	360	277	302	308	290	305	320	325	327	326	313	302	339	303	292		
27	314	313	297	314	F 311	336	R 325	357	333	344	340	282	296	303	318	325	329	318	330	315	316	315	F 297	299		
28	320	304	335	300	303	311	344	385	332	346	351	333	327	R 318	R 312	305	C	317	300	316	325	337	F 298	297		
29	308	296	299	301	319	362	353	344	351	A 316	A	A	292	271	305	316	313	311	305	343	335	331	311	306		
30	319	295	J R 271	307	297	307	335	370	356	322	330	U R 309	R 314	293	336	325	315	318	315	313	304	315	F 337	F 313		
31	A	F 286	293	301	R 308	328	326	359	342	J R 346	299	317	308	R 315	317	314	306	309	325	330	363	U R 365	F 271	F 300		
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
CNT	28	30	28	25	31	31	28	26	23	23	20	20	20	25	25	26	28	28	29	29	31	30	27	27		
MED	F 319	F 314	F 318	F 310	F 317	328	334	336	340	333	326	324	308	303	312	315	325	324	321	318	316	320	310	F 306		
U Q	F 326	F 318	F 323	F 321	F 330	336	348	354	349	346	336	333	327	318	323	325	332	333	328	326	331	331	327	F 317		
L Q	F 309	304	299	F 301	F 304	F 311	323	316	328	312	304	302	291	292	302	300	313	318	310	312	306	313	F 298	299		

AUG. 1996 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A	A	A	A	A	390	409	A	A	381	A	A	A					
2							A	A	A	A	A	A	A	A	A	A	381	364	U L 345					
3							A	A	372	A	391	R 415	A	385	384	370	A	369	L					
4							376	378	A	A	A	A	A	A	A	A	A	A 361	A					
5								L	375	A	A	A	A	A	A	A	A	334	L					
6								A 367	A	A	402	R 398	402	384	385	389	357	U L 376	L					
7							L	A	A	A	A	A	A	A	A	374	A	A	U L 383					
8							L	381	A	A	A 342	A	365	A	A	A	A	A	L					
9							A	U L 372	A	A	A	A	A	383	A	A	373	A	A					
10							A	A	390	A	A	A	A	A	A	378	A	A	L 382					
11							A	A	A	A	A	A	A	A	A	A	A	L 360	U L 352					
12						L	A	367	380	391	428	A	A	A	A	380	351	350	L 333					
13								L	375	A	A	A	A	369	A	A	A	L 352	L					
14								A	A	A	A	A	A	395	A	A	A	A						
15							L	A	A	H 371	A 348	387	U R 393	R 397	A	A	373	L 376						
16								A	A	401	Y	A	405	A	409	379	366	L 360	A					
17							A	A	A	392	A	A	R 416	A	A	368	A	A						
18							L 365	A	A	A	380	A	A	395	H 411	H 397	369	U L 345						
19							414		L 394	407	A	A	U R 404	Y	A	A	A	A						
20							L	L 360	A	A	A	397	381	394	386	A	A	372	A					
21							L		L 388	A	A	A	A	A	A	A	359	A						
22								365	A	A	A	A	A	A	A	A	A	A	A					
23							U L 358	A	382	399	A	S 350	Y	402	370	A	A	A	A 318					
24							L 353	A	392	395	408	H 403	376	Y	R 386	357	A	A	A					
25								L	A	A	383	414	A 358	R 381	A	A	A	A						
26							L	L 361	379	396	A	367	A	368	377	377	363	A						
27							L	L 375	362	H 386	H 391	386	U L 383	390	366	359	A 370	U L 358						
28							L	Y 388	377		383	A	R 404	R 390	385	L 362	C	L						
29								345	373	A	A	A	A	Y	348	362	348	A 343						
30							U L 358	L 376	L 383	L	A	A 357	393	372	362	L 356	371	A						
31							L	A	381	397	Y	A	381	A	A	364	L 356	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							6	12	15	10	10	11	14	14	12	16	13	14	6					
MED							L 362	370	380	396	387	390	393	388	384	372	366	360	L 348					
U Q							376	377	388	399	402	403	404	395	386	380	372	369	L 382					
L Q							L 358	363	375	H 391	A 380	367	381	381	368	362	356	350	333					

AUG. 1996 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 h'F2 (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							E A 336	A 294	E A 290	312		A	G	390	322	A	394		A	A	A			
2							A 274	A	A	A	A	A 302		A	A	A 336	A 442		Y 436		L 320			
3							A	A	572	410	396	Y 456	A 448	406	402	352	302	274	270					
4							L 418	G	A 330	A	A	A	A	320	A 366	A 286	A	304	274					
5								L 370	Y	A	A	A	A	344	294	292	A 330	336	L					
6								328	322	A 296	368	338	392	384	370	336	336	290	276					
7							L 362	E A 372	264	A	A	A	A	456	360	290	280	296	270					
8							260	328	A	A	486	Y	Y	A	E A 372	E A 380	286	268	272					
9							A 296	308	A	E A 344	A	A	A	388	402	368	324	E A 296	A 284					
10							A	A	296	A	A	A 322	A	A	A	358	324	A	264					
11							A	A	A	A	A	A	A	A	A	A	274	270	332					
12						L 320	A	310	260	404	290	A	A	420	426	G	366	306	286					
13								270	286	A	A	A	A	332	292	320	292	278	268					
14								264	A	A	A	290	288	388	320	A	292	304						
15							L 336	350	278	362	290	318	Y 438	326	A 354	324	308	258						
16								A 420	348	332	286	286	440	376	386	320	268		A					
17							A	A 344	A	264	308	A	370	A	E A 356	404	298	A						
18							310	296	306	340	372	274	278	324	328	370	298	L 308						
19							220		276	302	338	A	Y	352	362	A	312	284						
20							246	262	A	424	A 350	298	328	Y 358	378	356	298	302	E A 316					
21							264		260	284	A 294	A	A	A	A	A 326	304	294						
22								270	286	282	260	A	A	A	A	A	314	276	270					
23							L 332	272	284	276	332	316	338	298	292	A	A 308	A 336	330					
24							288	276	286	306	350	418	370	320	300	294	288	296	A					
25								246	A	268	298	304	316	398	A	A 300	A 366	A 314						
26							276	294	250	272	A	374	A 362	412	360	316	292	E A 288						
27							300	260	298	284	288	424	L 412	366	316	298	286	290						
28							260	222	272	286	276	330	316	342	318	346	C	288						
29								276	258	A	A	A	406	440	322	320	318	302						
30							276	234	260	L 302	312	370	360	364	272	308	318	286						
31							284	242	272	266	360	322	354	306	324	304	326	288						
	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						1	18	24	22	21	19	18	18	24	25	26	27	28	14					
MED						L 320	283	280	283	299	332	322	361	361	U 341	328	308	291	274					
U Q							L 332	328	298	346	360	374	392	402	371	370	324	304	316					
L Q							264	263	264	279	290	302	316	325	317	304	292	281	270					

AUG. 1996 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 h'F (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	A 260	256		A	A	326	252		A	A	A	A	234	222		A	A	238		A	A	A	264	240	272	276	A 282
2	A 308	280	262	302	258	268		A	A	A	A	A	A	A	A	A	H 216	A 250	A 252	A 278	278	260	258	A 350
3	A	332	A 330	272	270	226		A	A	228		A	222	222	230	A 244	A	228	236	A 282	278	252	282	A 336
4	A 314	282	286	270	246	274	234	234		A	A	A	A	A	A	A	A	A	A	A	E A 326	A 312	A 342	234
5	270	266	280	268	294	252	240	238	226		A	A	A	A	A	A	A	A 242	228	274	248	252	274	294
6	240	248	280	268	274	248	240	E A 274	A	A	222	208	198	214	H 204	A 238	E A 258	244	A 246	240	246	260	260	258
7	244	264	A	A	312	252	266	A	A	A	A	A	A	A	A	228	A	A	224	238	242	292	A	A
8	272	262	290	A	260	A 302	236	236	A	A	A	A	E A 268	A	A	A	A	A	E A 256	260	246	276	292	268
9	240	258	288	286	244	238	A	218	A	A	A	A	A	222	A	A	238	A	A	A	248	264	318	248
10	248	282	258	242	300	A 346	A	A	196	A	A	A	A	A	A	A 228	A	A	240	238	216	A 306	A	A
11	A 350	282	290	A 322	A 310	250	A	A	A	A	A	A	A	A	A	A	A	A 248	A 252	E A 296	A 290	A 288	272	282
12	272	252	250	264	270	256	A	238	216	188	178	A	A	A	A	214	224	234	226	232	220	248	254	E A 342
13	290	266	278	278	248	240	234	230	A 252	A	A	A	A	E A 254	A	A	A	232	228	252	262	230	242	246
14	A 284	A 338	284	274	240	252	224	A	A	A	A	A	A	210	A	A	A	A	A 270	256	262	258	236	278
15	282	264	242	238	260	262	A 246	A	A	A 240	A	224	212	202	A	A	228	220	242	246	254	278	A 332	350
16	A 344	238	230	330	284	252	A 252	A	A	214	Y	A	Y 234	A	196	222	242	240	A	A	A 278	296	294	A 334
17	280	278	A	298	324	282	A	A	A	206	A	A	202	A	A	E A 274	A	A	A	A	270	E A 342	A	A
18	A	238	286	274	252	312	256	A	A	A	232	A	A	200	H 178	H 174	A 242	228	244	242	232	A	258	250
19	282	274	290	A	280	248	210	222	A 232	216	A	A	230	A	A	A	A	A	254	A	262	244	244	226
20	244	268	278	262	270	248	244	230	A	A	A	210	A 240	184	208	A	A	224	A	262	234	230	A	278
21	A	A	A 328	A	A 368	258	226	222	220	A	A	A	A	A	A	A	248	A	A 254	A 280	A 292	244	A 318	260
22	230	222	274	A 318	258	254	236	230	A	A	A	A	A	A	A	A	A	A	A	E A 284	228	230	228	216
23	280	278	302	284	266	256	244	A	A 236	216	S	S	A	172	A 246	A	A	A	A	262	206	222	A 294	A
24	298	A 344	300	262	272	272	242	A	216	204	188	H 184	232	Y	E A 240	E A 262	A	A	A	252	A 260	A 262	256	A 322
25	A 296	A 316	304	268	A 270	252	226	234	A	A	230	186	A	224	A	A	A	A	260	258	260	254	E A 294	A 316
26	278	292	314	A	A 330	302	234	224	216	214	A	A 244	A	218	222	234	248	A	264	254	A 292	250	298	288
27	266	262	282	268	256	250	226	224	218	H 196	H 178	208	204	214	218	234	A 252	226	254	262	278	244	250	268
28	248	234	248	268	310	286	240	Y	232	222	210	A	208	202	210	238	C	A	A 274	262	238	218	276	290
29	266	298	294	300	270	232	224	212	222	A	A	A	A	222	242	232	236	E A 266	272	244	A 268	238	A 300	304
30	A 264	A 324	332	314	316	308	248	226	212	206	A	A	208	224	254	A 248	228	A	E A 272	A 276	A 290	258	244	266
31	A	306	A 356	288	264	252	228	A	220	210	H 192	A	214	A	A	236	A 244	A	252	252	226	244	A 352	306
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	27	30	28	25	31	31	23	16	15	12	9	9	13	15	12	16	13	13	22	26	31	30	27	27
MED	272	271	286	274	270	252	236	229	220	212	210	208	213	214	217	234	240	233	250	257	257	254	275	280
U Q	A 290	292	301	299	310	274	244	235	A 232	216	226	229	233	222	241	A 241	248	A 246	260	A 274	A 278	276	A 298	A 316
L Q	248	258	276	268	258	250	226	223	216	205	183	195	206	202	206	228	228	227	240	246	238	244	254	258

AUG. 1996 h'F (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 h'E (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B 118	A	112	112	108	108	106	108	A	A	110	114	120					
2							B 124	118	110	110	110	110	A	108	108	A	A	A	A					
3							B 120	112	114	108	110	A	112	A	A	A	A	A	A					
4							B A	A 140	110	112	A	A	118	116	116	116	112	A	A					
5							B A 130	A 130	112	110	A	110	112	108	A	A	A	A	A					
6							B 124	A 122	108	112	106	A	A	A	A	A 120	114	114	A					
7							B 116	114	110	110	108	108	108	112	112	A	A	A	A					
8							B 126	A 128	A 124	114	114	118	114	A	112	114	114	114	A					
9							B 120	116	110	110	110	116	114	114	116	116	A 122	116	A					
10							B 120	110	112	110	110	110	110	A	110	A	A	A	A					
11							B A	114	122	110	112	A	112	A	A	116	A	A	A					
12							B A	A	E A 132	E A 130	A	A	A	A	A	A	A 130	A 122	A					
13							B 130	116	116	124	A 120	112	112	A	A	A	A	A	142					
14							B A	E A 136	A 124	A	A	116	112	112	110	108	110	A	A					
15							B A	A	A	A	112	A	A	110	A	A	A 136	A	A					
16							B 118	112	110	104	A	A	A	A	A	116	120	120	A					
17							B 120	114	114	112	112	112	A	A	112	112	A E 130	A E 146	A					
18							B A	116	116	108	110	110	108	110	110	A	112	A	A					
19							B 126	120	110	A 122	108	A	A	110	110	112	A	A	A					
20							B A	A	110	108	A	A	A	A	A	A	A	A	A					
21							B 118	116	A 128	110	112	112	112	A	A	A	120	122	A					
22							B A 134	A 128	112	A	A	A	A	A	A	A	118	120	B 128					
23							B 128	A 126	A	A	S	S	A 126	A 118	A	A	A	A	A					
24							B A	124	A	A	A	112	112	112	A	112	114	116	A					
25							B A	112	112	A	A	A	A	126	116	112	112	A	A					
26							120	A	114	A	A	A	A	112	114	114	114	116	B					
27							A	114	A 122	122	A	A 118	120	108	118	108	108	A	A					
28							B 122	118	116	A	A	A	A	110	114	114	C	118	B					
29							B A	116	110	108	A	A	A	A	A 120	114	A 126	116	B					
30							B A 140	114	114	108	A	110	A	A	E A 136	A	A 124	122	B					
31							A	A	A	A	A	112	A	A	A	A	A	A	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							19	25	27	22	15	16	16	16	16	15	19	14	3					
MED							122	116	112	110	110	112	112	111	112	114	114	116	128					
U Q							A 128	A 125	A 116	112	112	114	114	113	116	116	A 124	122	142					
L Q							120	114	110	108	108	110	111	109	110	112	112	116	120					

AUG. 1996 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 h'Es (KM) 135°E MEAN TIME (G.M.T. + 9 H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	106	112	108	104	106	128	118	112	110	114	108	116	108	106	102	138	124	114	114	118	108	110	122	104
2	116	100	100	106	106	128	126	122	118	110	112	112	110	104	104	104	106	128	118	108	106	114	110	110
3	104	104	104	106	124	122	118	114	122	114	116	116	110	114	112	106	102	104	98	98	98	102	122	108
4	102	100	106	106	B	100	140	144	116	126	124	114	114	116	110	110	108	124	104	106	98	116	114	118
5	118	B	100	B	B	110	122	116	118	110	104	104	110	108	108	112	110	110	110	106	110	116	110	102
6	104	102	100	102	100	96	124	116	116	112	110	106	110	106	100	146	128	126	120	102	102	120	98	110
7	106	104	100	100	104	132	122	118	112	108	108	106	108	112	108	110	108	104	102	100	98	126	112	106
8	106	122	102	100	106	102	142	124	118	116	116	122	116	112	126	120	114	110	110	104	104	106	108	114
9	116	114	116	112	B	130	122	124	116	114	114	120	114	124	120	120	132	116	112	110	120	106	112	110
10	104	104	102	102	104	108	116	110	118	112	110	112	110	108	104	108	104	102	116	108	118	110	116	110
11	104	108	104	100	96	98	118	112	110	106	104	108	110	106	106	108	110	120	108	108	104	104	98	102
12	102	98	96	122	130	112	106	106	108	108	104	100	98	94	94	142	134	122	120	112	B	108	108	108
13	112	108	108	100	96	120	152	140	128	120	112	110	106	108	104	106	100	106	G	100	98	100	100	110
14	108	106	104	108	112	100	104	118	122	118	114	118	114	G	116	106	108	102	102	104	100	100	100	102
15	104	106	118	118	118	130	118	116	112	112	120	114	114	108	106	108	106	134	116	114	118	116	112	110
16	108	106	104	112	114	114	124	114	114	114	114	110	128	102	108	160	136	126	112	108	108	106	108	106
17	102	100	98	104	108	112	122	118	114	114	114	112	114	110	110	138	130	118	118	116	112	116	112	110
18	112	106	B	112	130	138	124	122	118	116	120	108	112	114	114	112	112	138	124	106	112	110	110	138
19	108	106	104	100	100	112	138	126	116	116	112	108	108	112	112	108	106	106	104	102	106	106	102	106
20	B	B	96	120	B	140	140	106	108	106	102	104	100	102	98	94	94	98	106	104	106	112	106	108
21	102	100	100	96	100	98	160	144	114	112	108	108	104	122	110	110	162	122	110	106	118	110	116	104
22	106	102	106	100	112	122	154	112	120	112	104	110	110	108	104	102	130	120	122	112	116	118	104	132
23	116	114	108	106	106	110	122	120	116	110	S	S	192	108	104	100	100	96	98	118	96	106	106	104
24	104	100	104	100	100	98	114	110	106	106	106	104	168	G	132	132	122	118	110	118	104	110	106	100
25	98	100	100	98	96	100	108	110	104	106	112	110	112	146	122	114	116	112	106	118	108	118	108	108
26	146	138	102	104	104	104	120	114	122	116	110	114	106	G	G	G	134	114	108	110	106	106	110	108
27	110	106	112	106	102	B	136	118	112	110	108	162	106	G	102	108	108	106	102	112	112	114	112	B
28	B	B	102	104	B	120	154	132	G	108	104	106	108	G	G	G	C	120	114	112	B	B	108	102
29	104	108	B	104	104	104	130	118	114	104	102	104	102	104	108	108	102	124	120	110	112	108	108	104
30	100	102	102	102	100	100	122	118	116	112	108	110	110	110	156	106	130	120	114	110	110	104	110	108
31	106	120	108	104	104	106	134	106	106	122	114	112	112	110	108	102	104	108	114	110	108	108	114	110
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	28	29	30	26	30	31	31	30	31	30	30	31	26	29	29	30	31	30	31	29	30	31	30
MED	106	106	104	104	104	111	122	118	116	112	110	110	110	108	108	108	110	116	111	108	108	110	110	108
U Q	111	108	107	106	112	122	138	122	118	116	114	114	114	112	113	120	130	122	116	112	112	116	112	110
L Q	104	101	100	100	100	100	118	112	112	108	106	106	108	106	104	106	106	106	106	104	103	106	106	104

AUG. 1996 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

AUG. 1996 TYPES OF Es 135°E MEAN TIME (G.M.T. + 9 H)

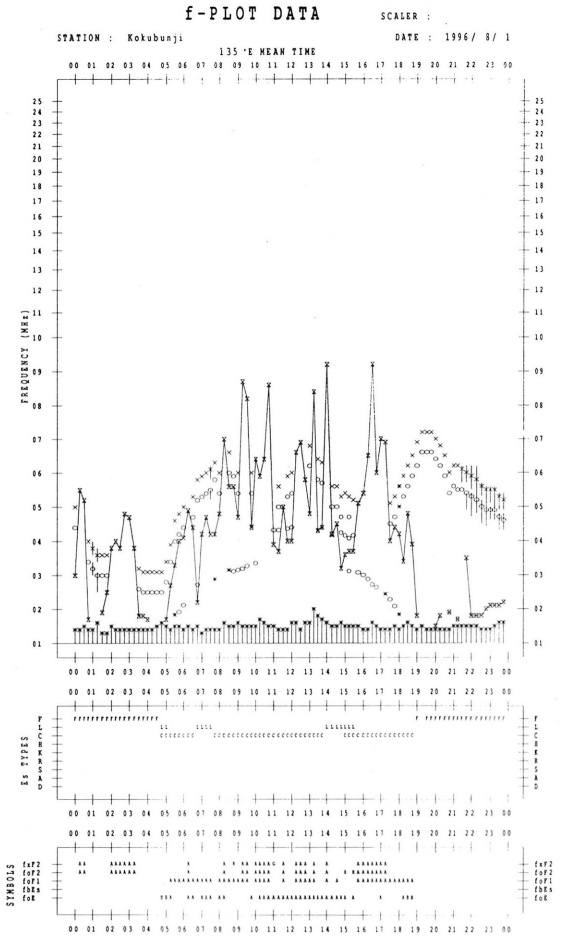
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

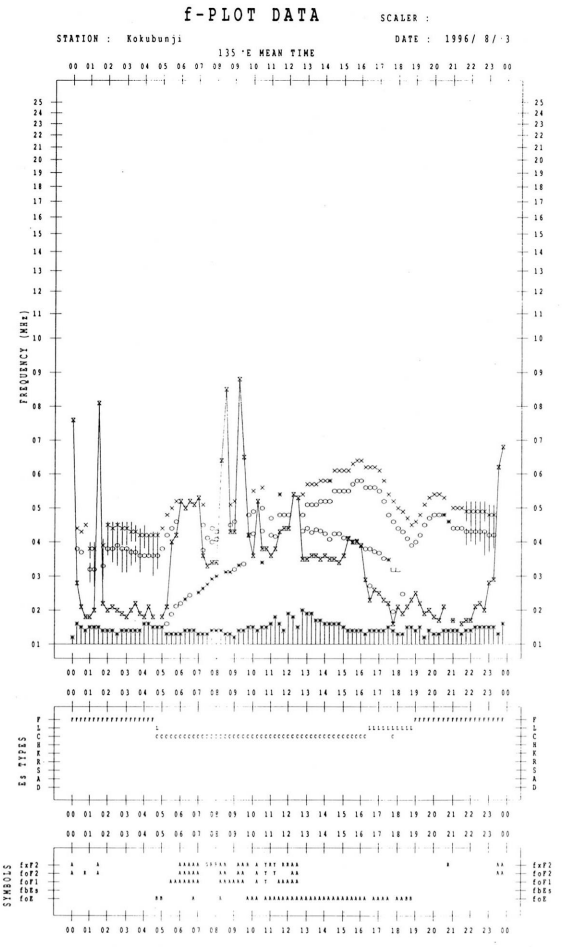
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 4	F 2	F 5	F 3	F 3	CL 11	C 3	L 3	C 3	C 2	C 2	C 1	C 2	C 2	L 2	CL 11	C 2	C 4	C 4	F 3	F 2	F 2	FF 12	F 4
2	FF 13	F 3	F 2	F 1	F 1	C 1	C 2	C 2	C 2	C 3	C 2	C 2	C 2	C 2	L 2	L 2	L 1	HL 22	C 5	F 3	F 3	F 3	F 5	F 6
3	F 4	F 3	F 3	F 2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

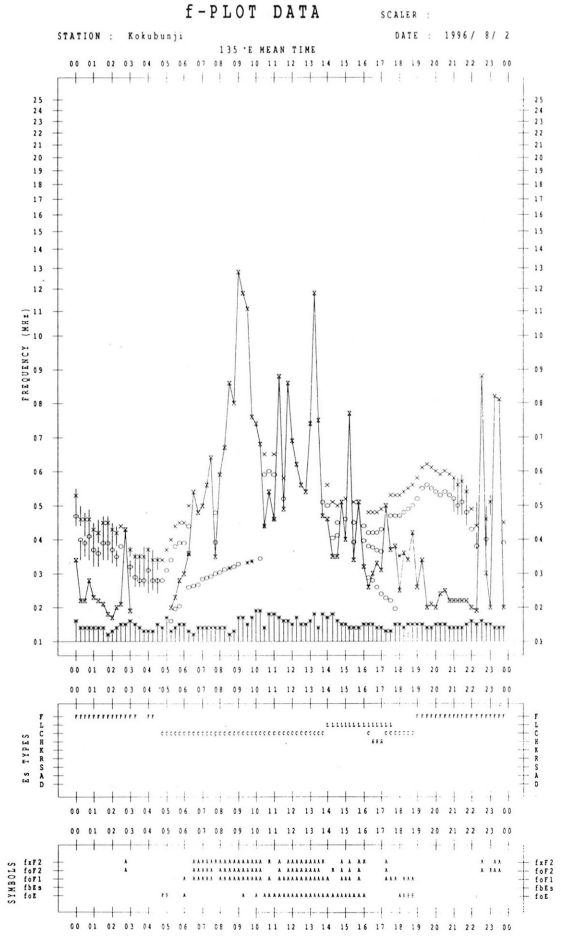
AUG. 1996 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

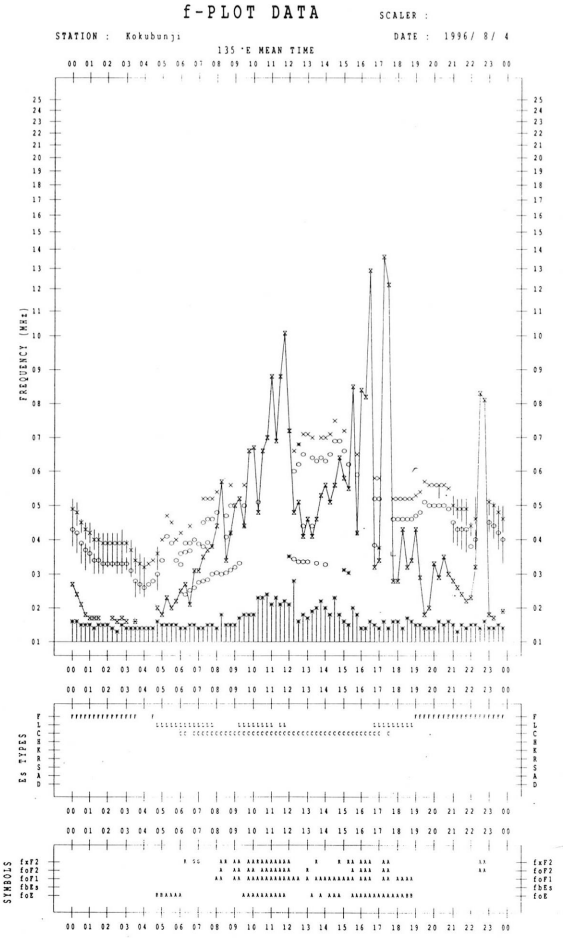
f-PLOTS OF IONOSPHERIC DATA

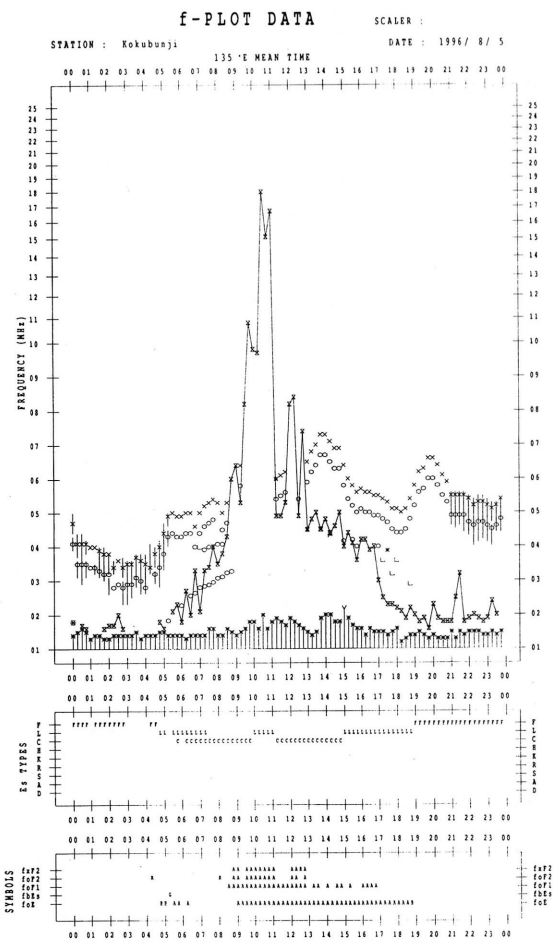
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

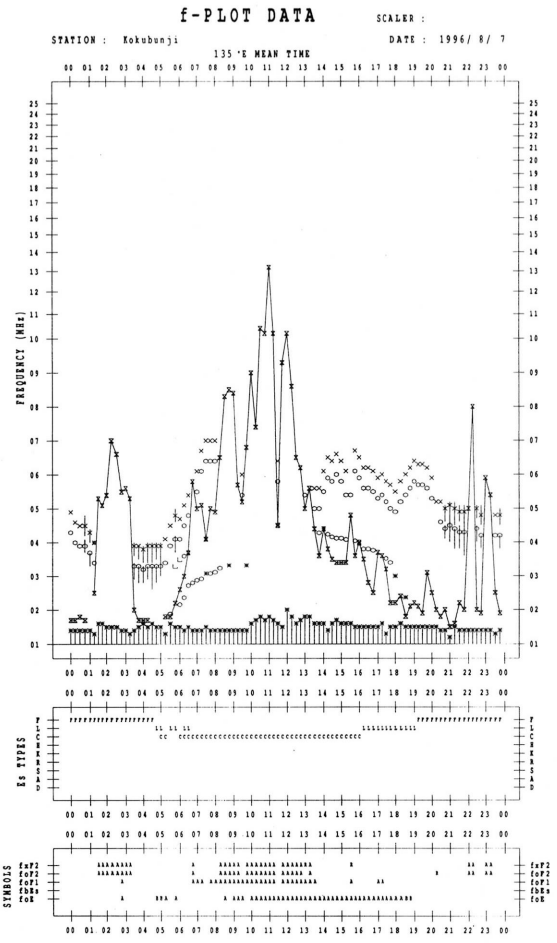

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

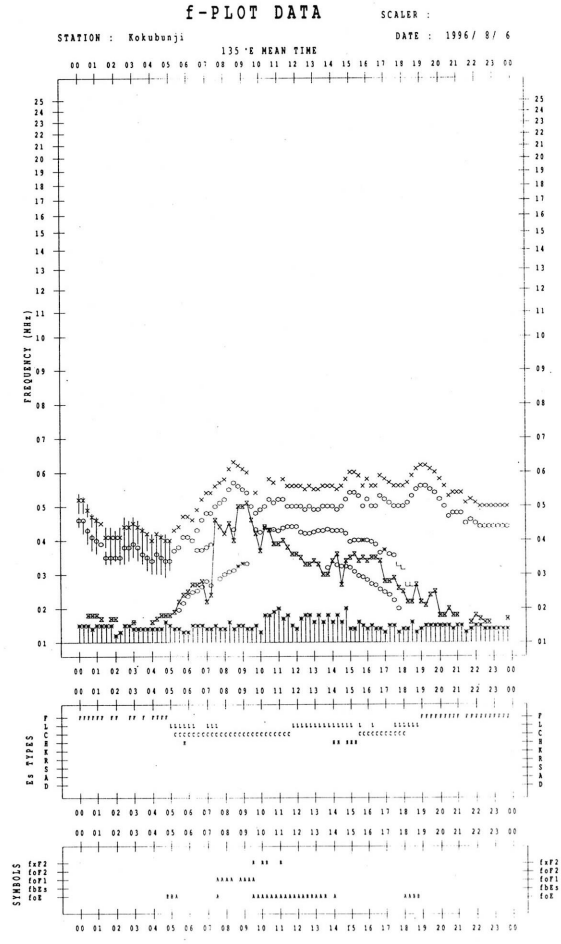

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

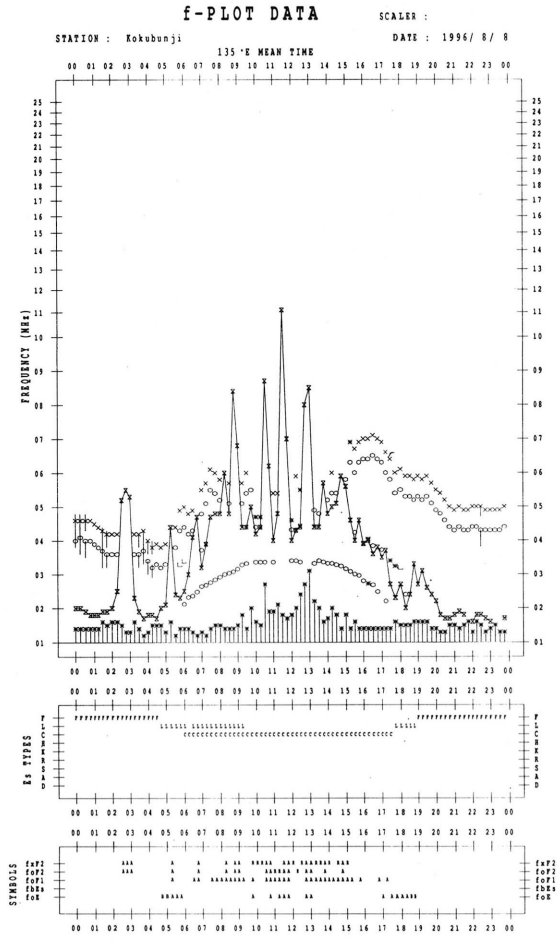

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

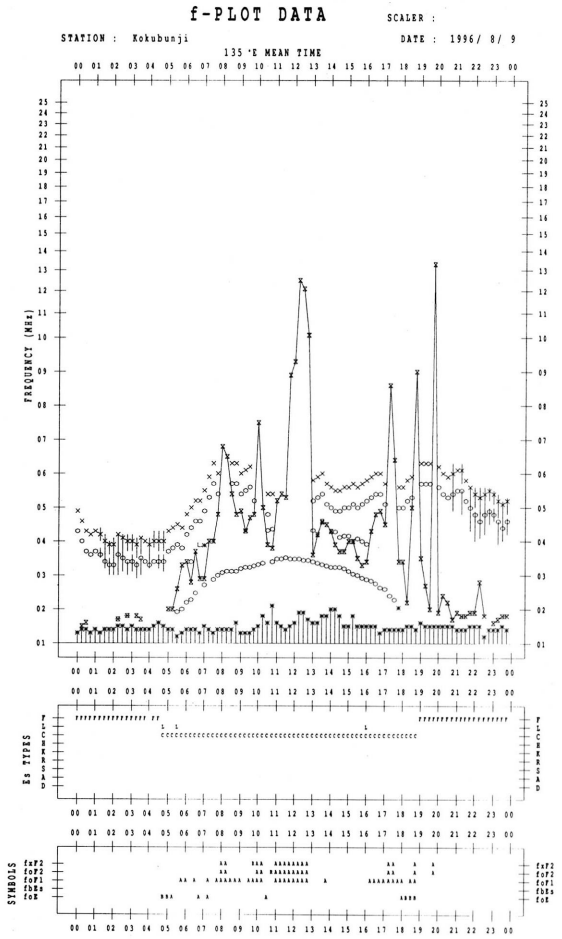

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

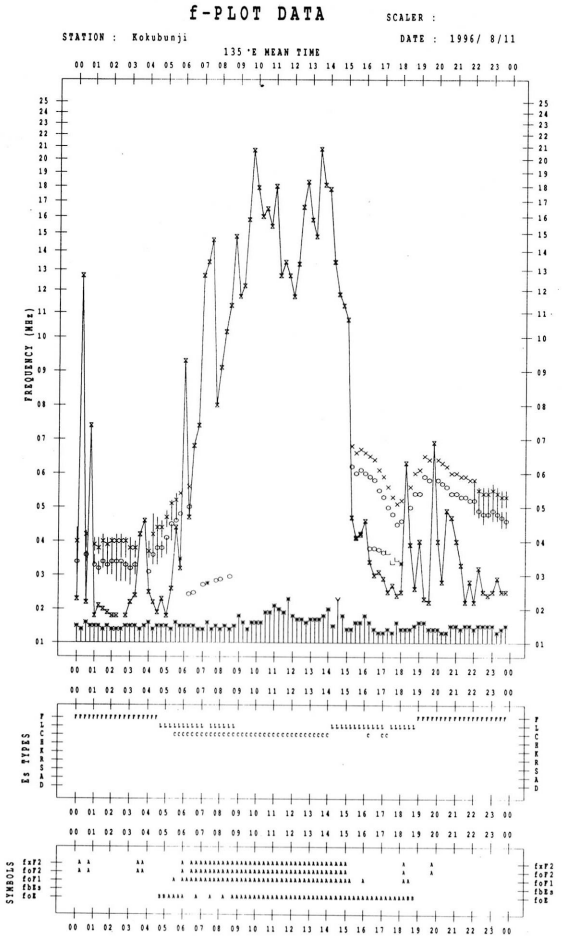

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

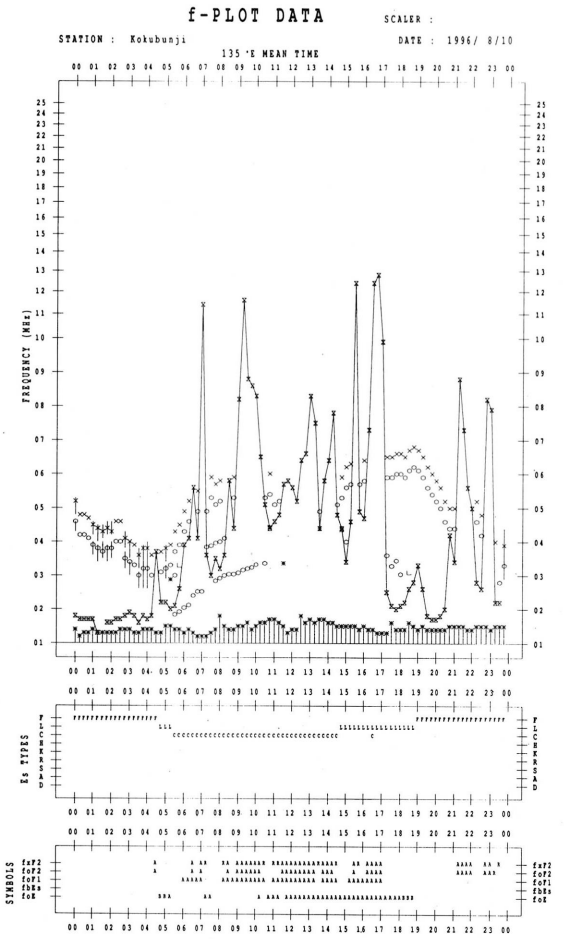

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

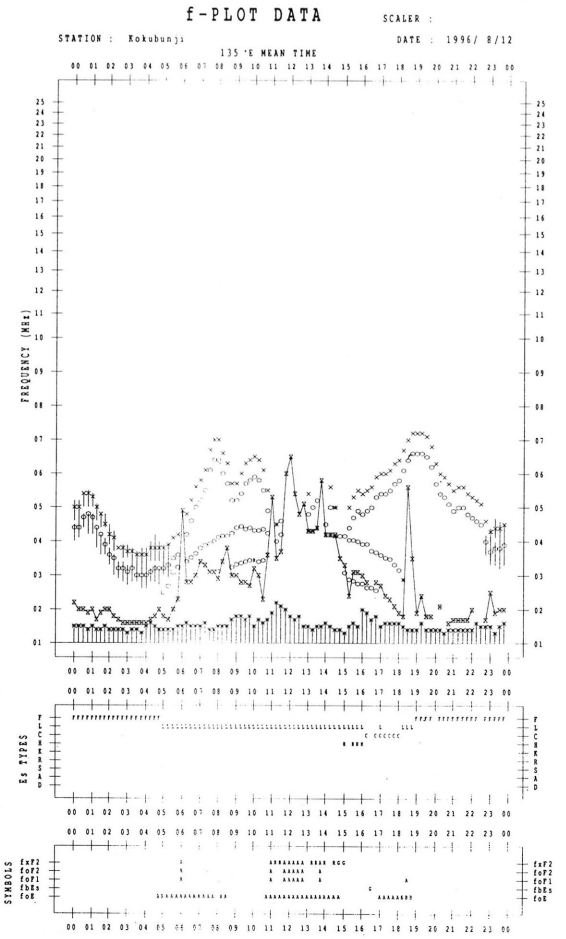

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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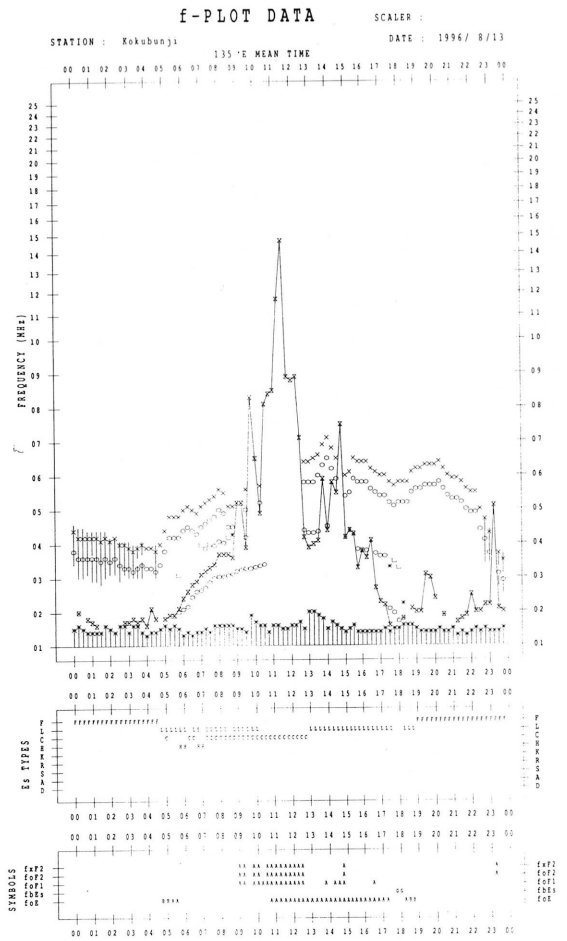
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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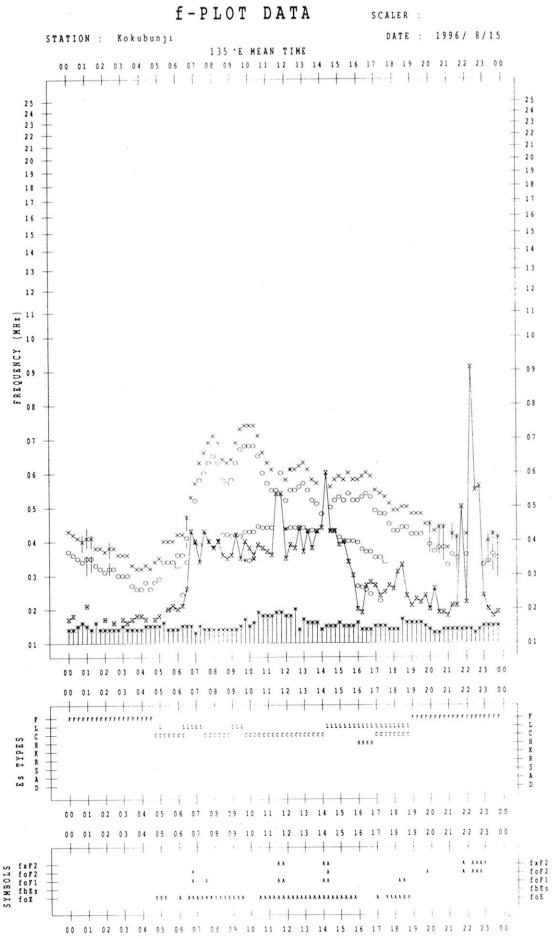
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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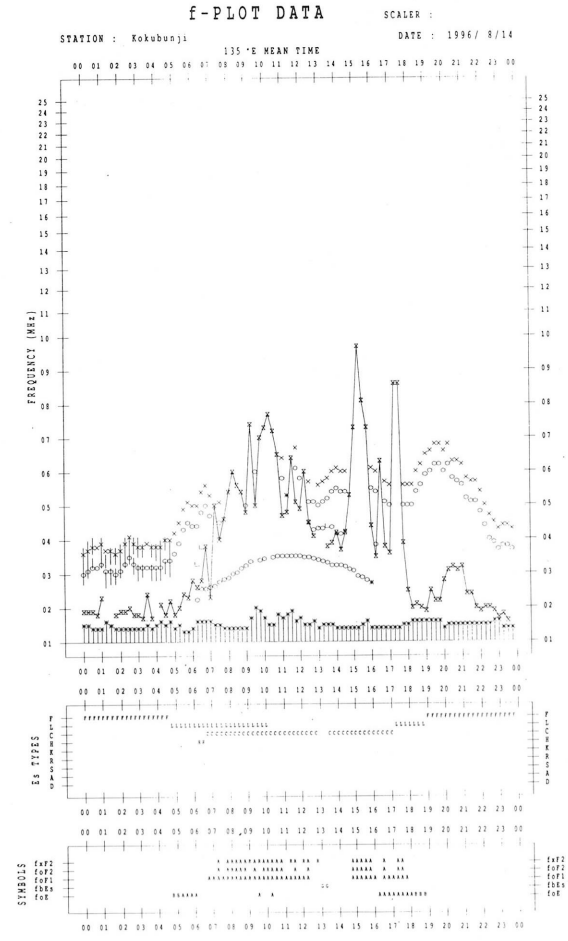
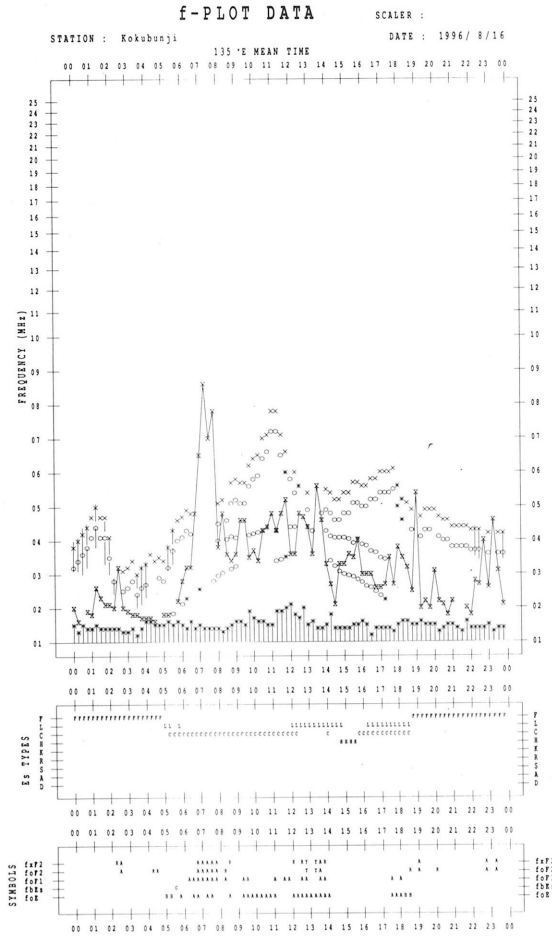
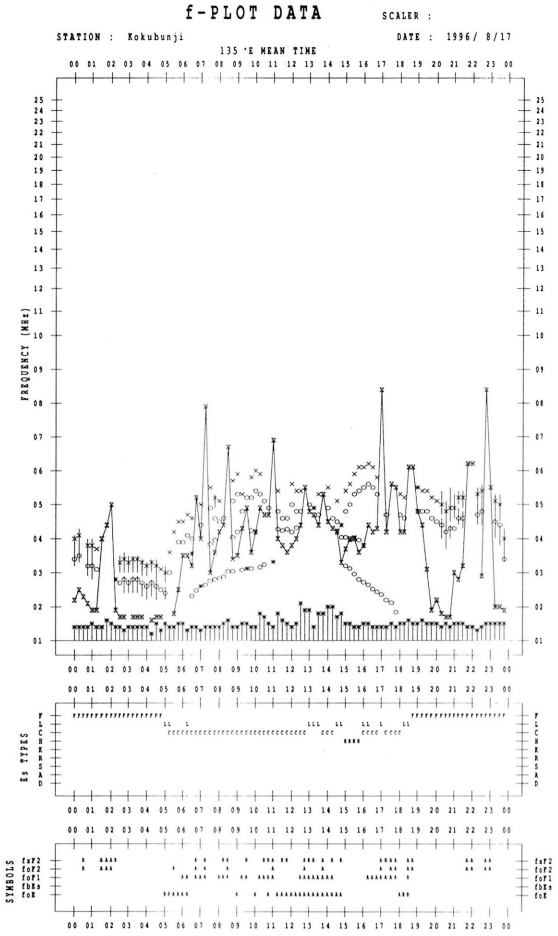
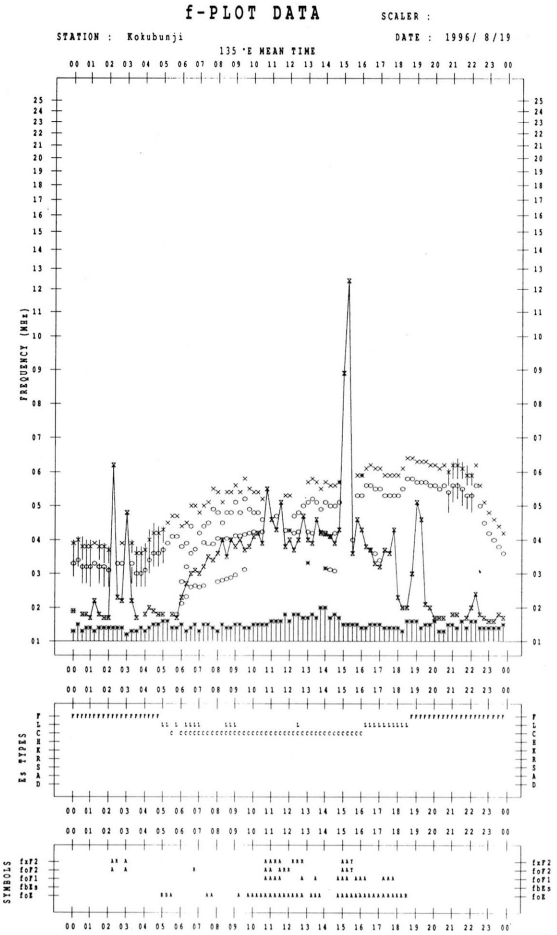
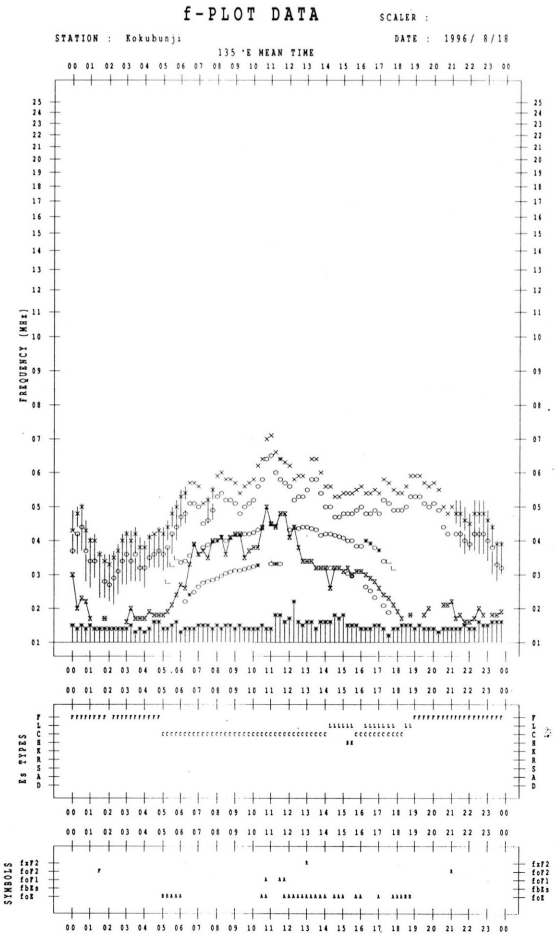
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

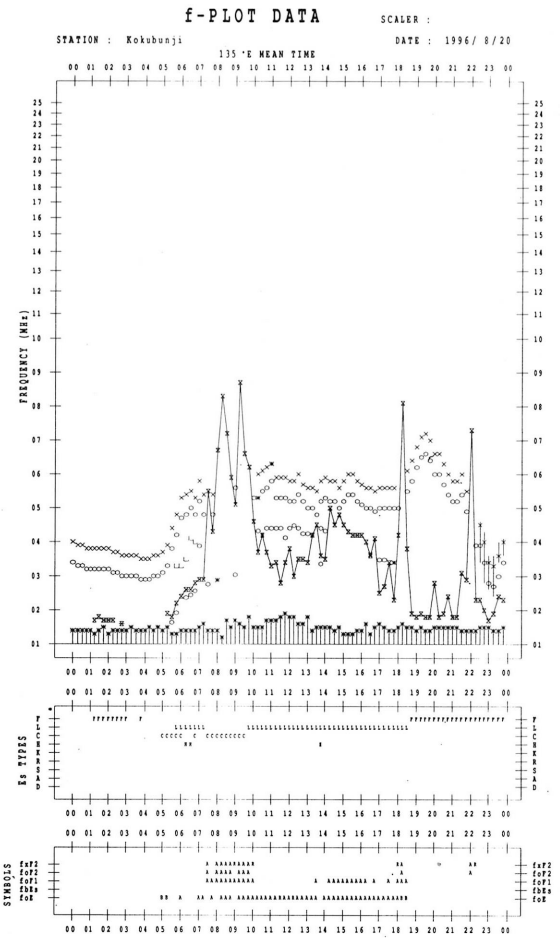

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

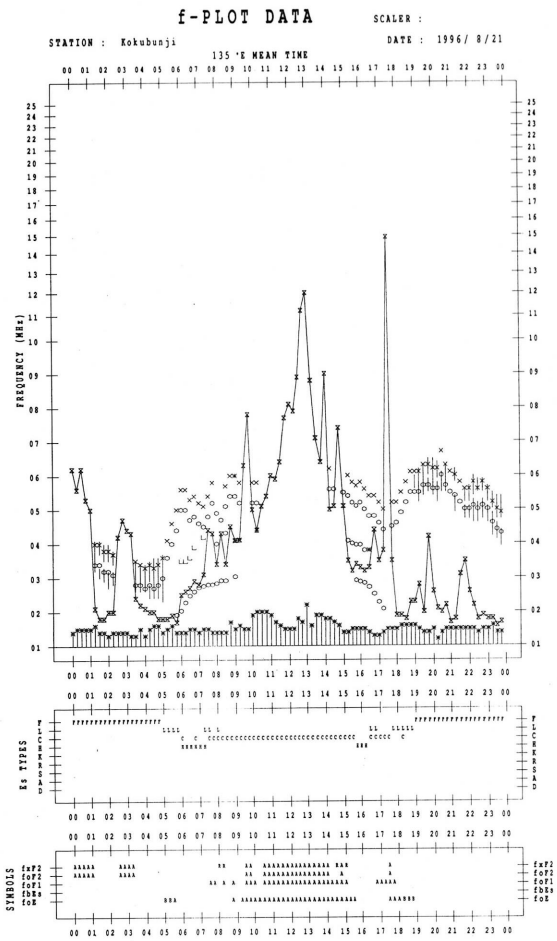

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

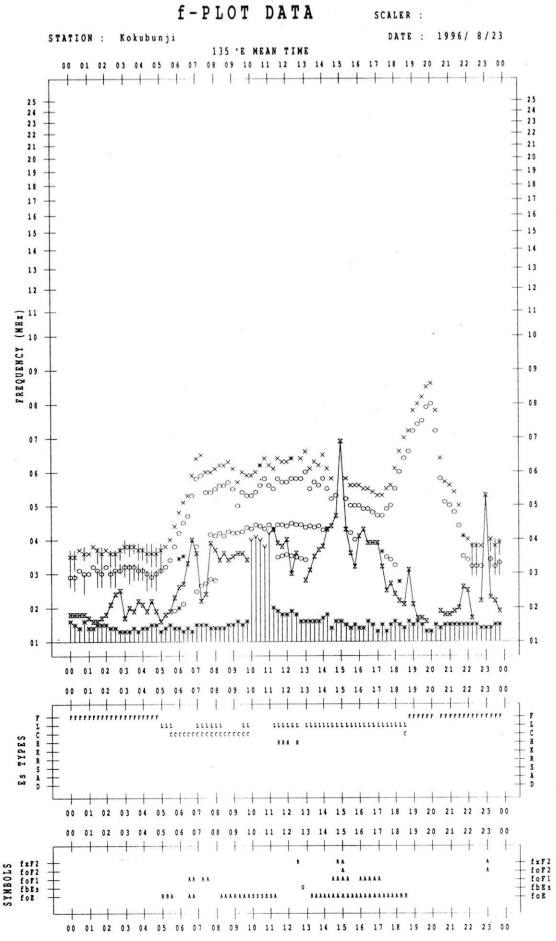

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

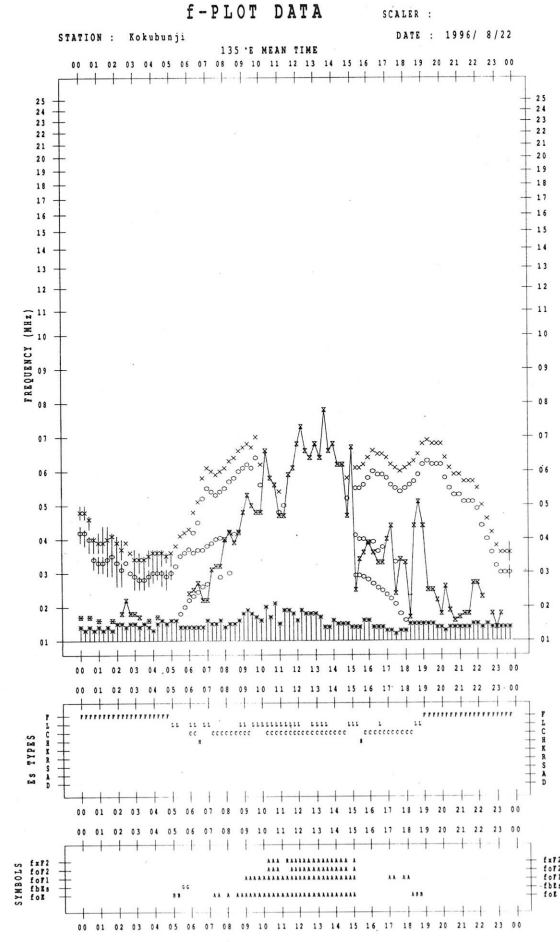

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

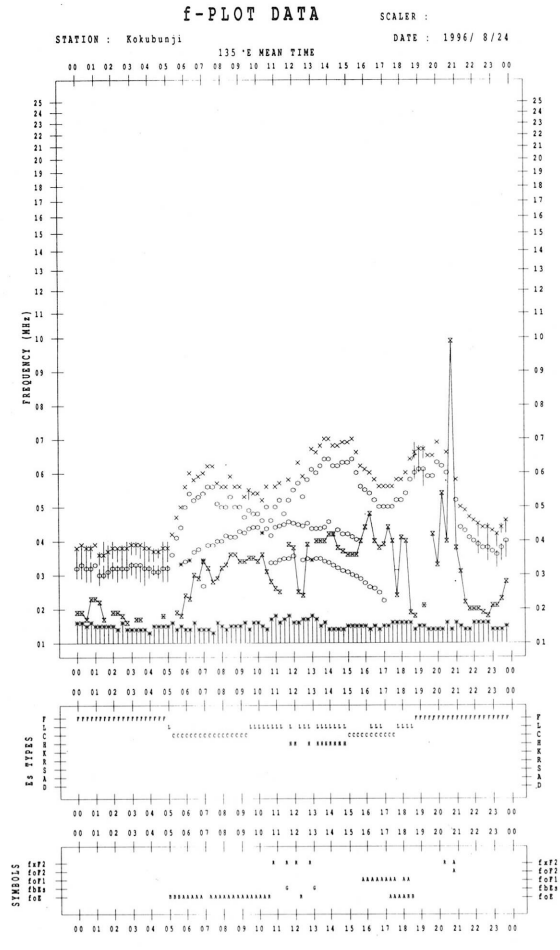

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

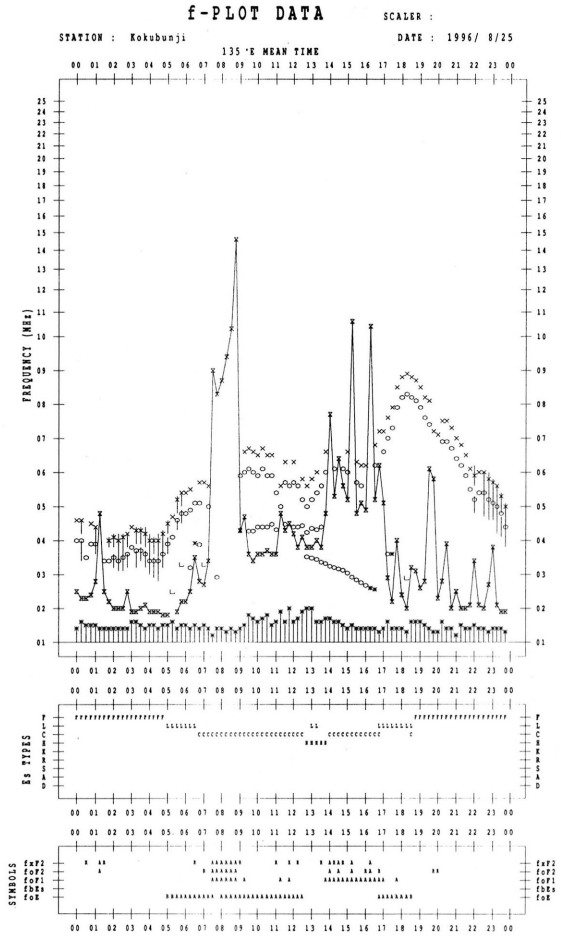

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

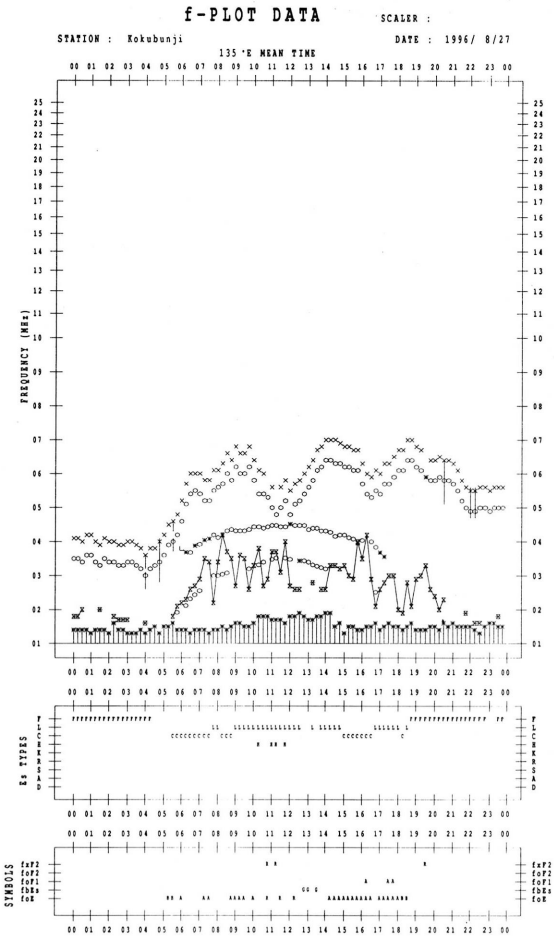

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

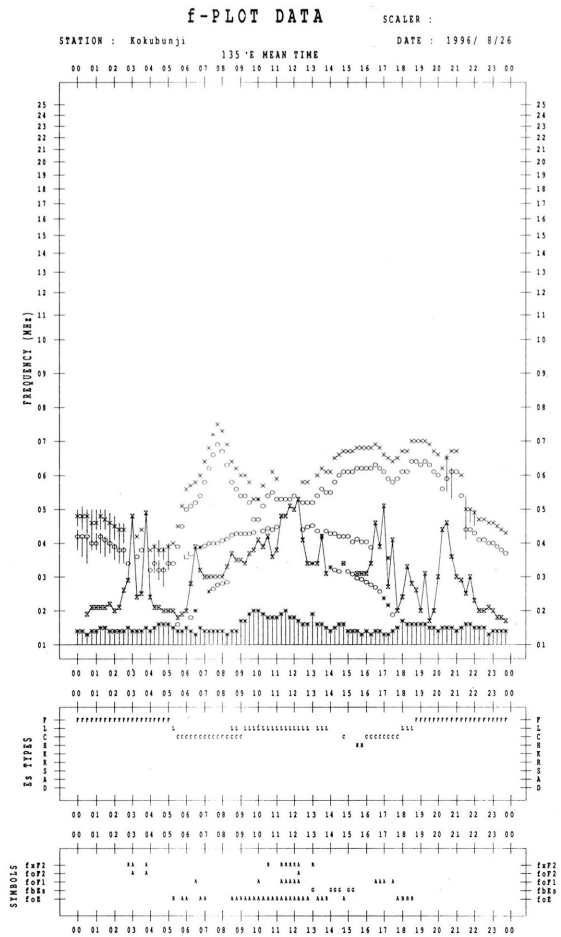

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

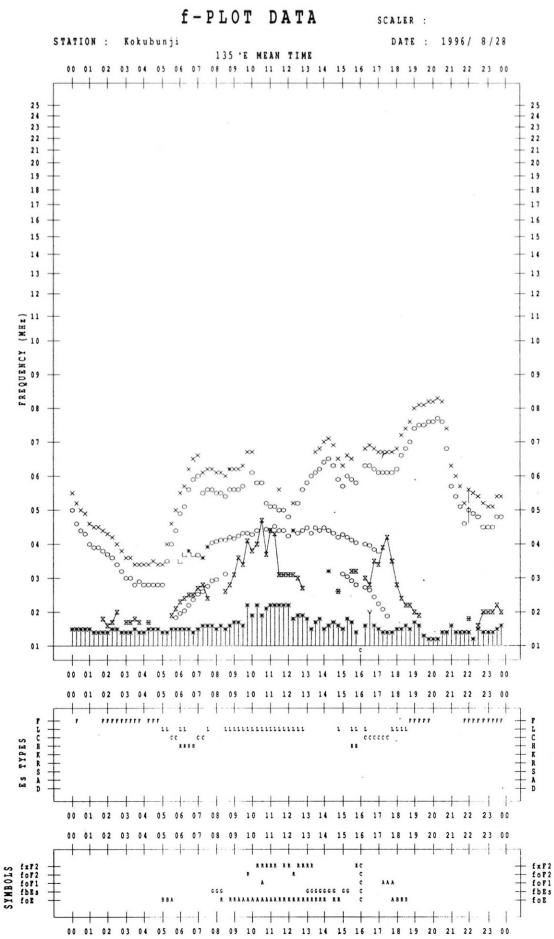

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

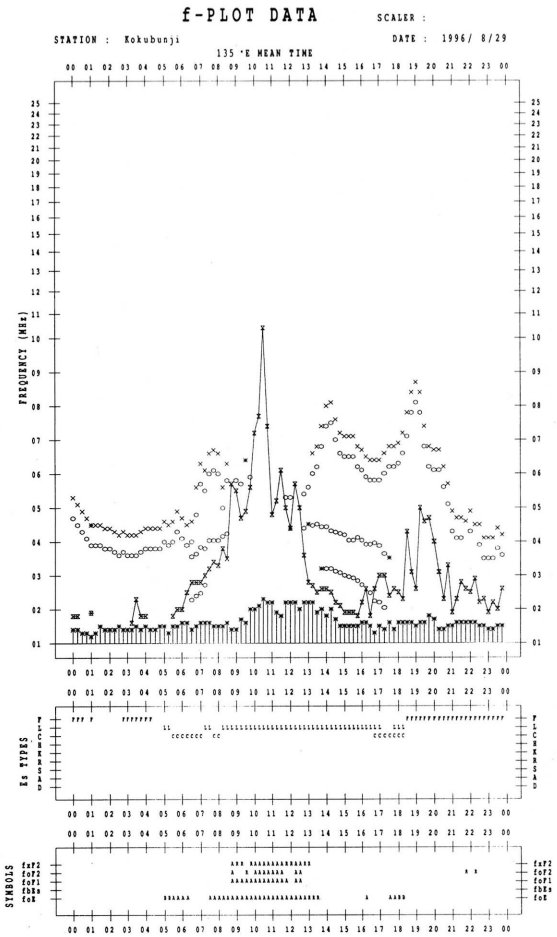

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

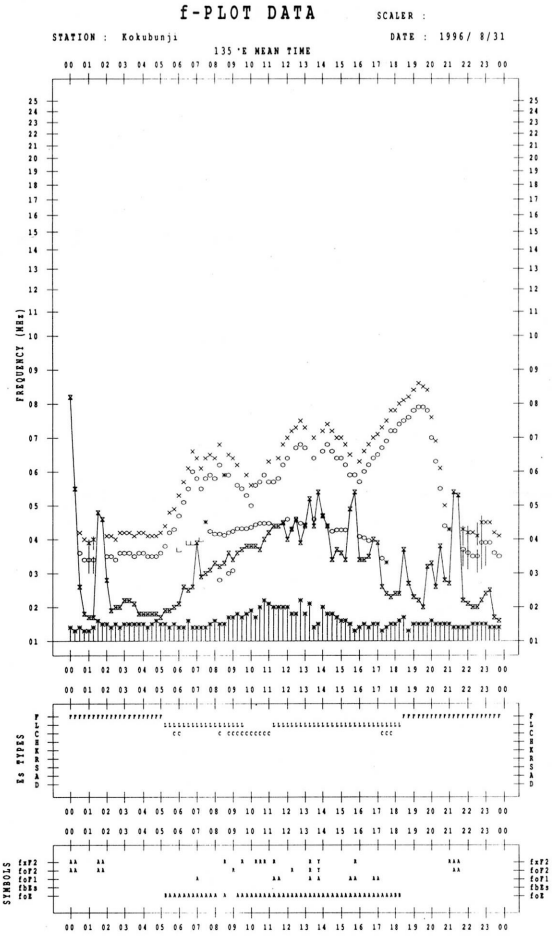

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE

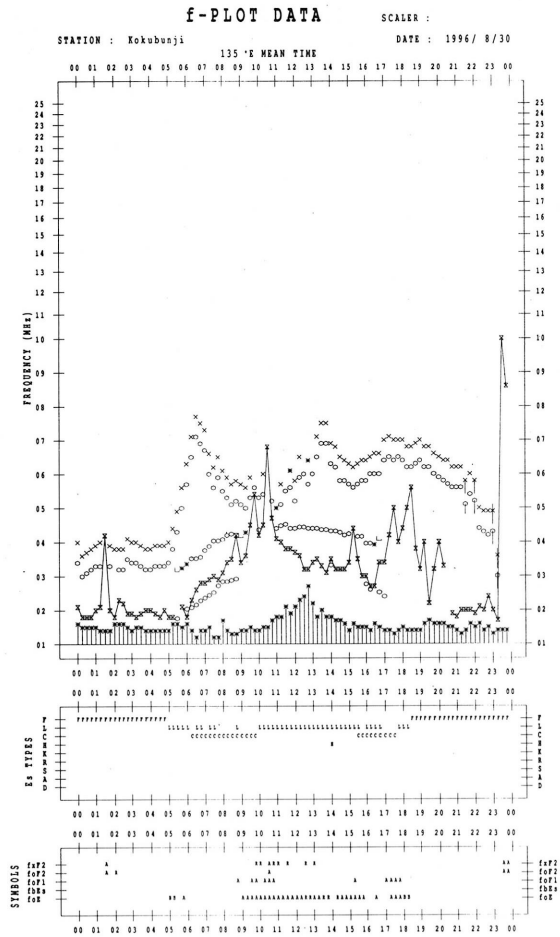

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/31
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 8/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Hiraiso August 1996

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso August 1996

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso August 1996

Single-frequency observations

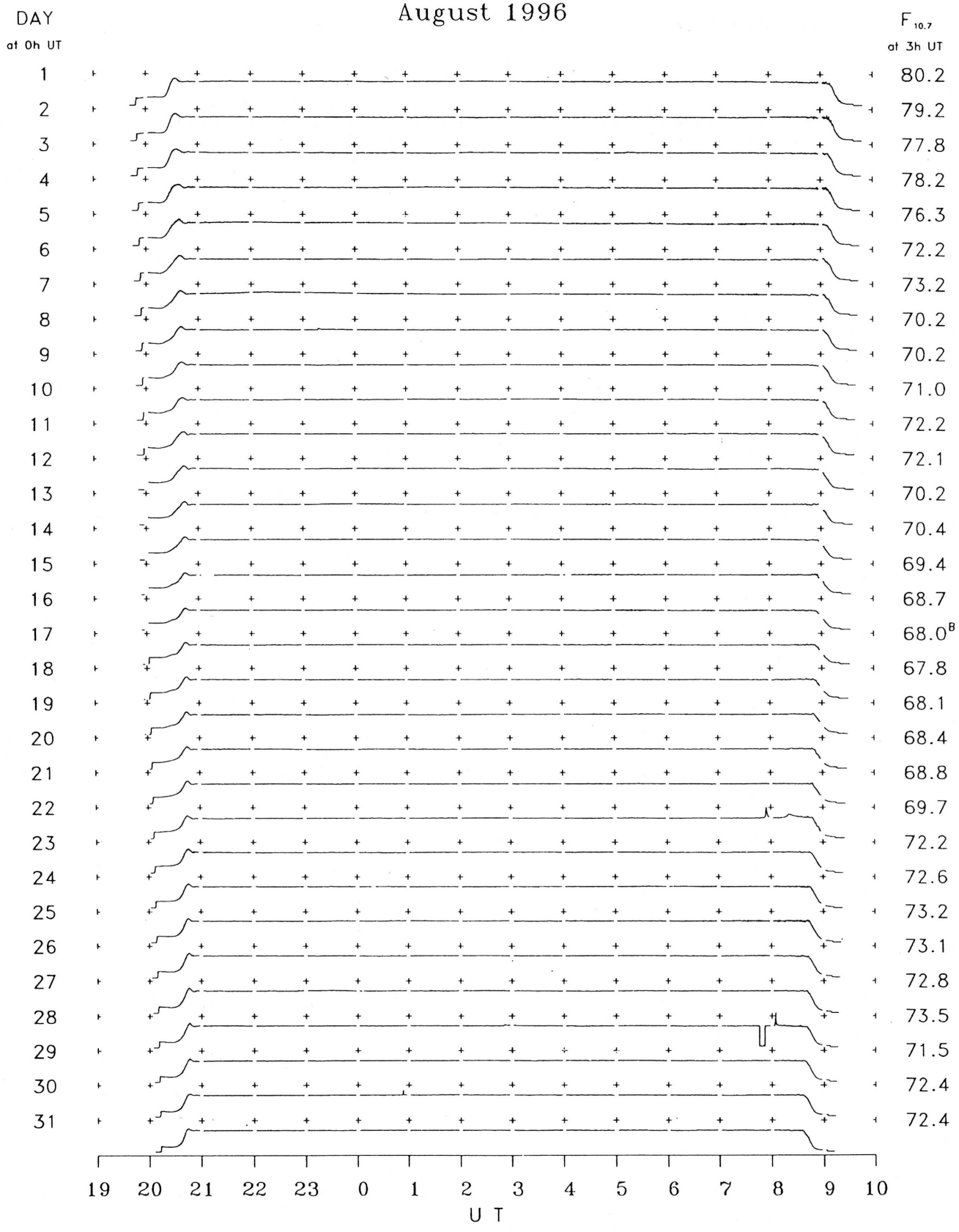
Normal observing period: 1955 - 0920 U.T. (sunrise to sunset)

AUG 1996	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
1	500	27 RF	0012.6	0202.3	184.0	10	4	0
3	500	8 S	0141.0	0141.1	0.5	7	-	WL
7	2800	20 GRF	2317.0	2317.5	2.1	4	2	0
	500	42 SER	2317.2	2317.6	0.7	12	-	0
22	2800	3 S	0753.0	0754.1	3.8	28	7	0
	500	3 S	0754.5	0755.7	1.2	2	-	0
	200	8 S	0807.5	0807.7	1.2	60	-	WR
	500	46 C	0812.5	0815.3	10.0	11	3	0
	2800	20 GRF	0812.5	0821.1	18.0	8	2	0
28	2800	1 S	0250.5	0252.0	3.5	3	-	0
	500	8 S	0251.7	0252.0	0.7	8	-	0
	500	3 S	0802.7	0803.8	3.0	13	3	0
	2800	3 S	0802.7	0804.0	3.0	34	6	WR
	200	4 S/F	0802.7	0804.3	2.3	11	2	0

B. Solar Radio Emission

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

August 1996



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 1996 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	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
23	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
24	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
25	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
26	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
27	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
28	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
29	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
31	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
CNT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MED	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
UD	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
LD	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

C. RADIO PROPAGATION

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

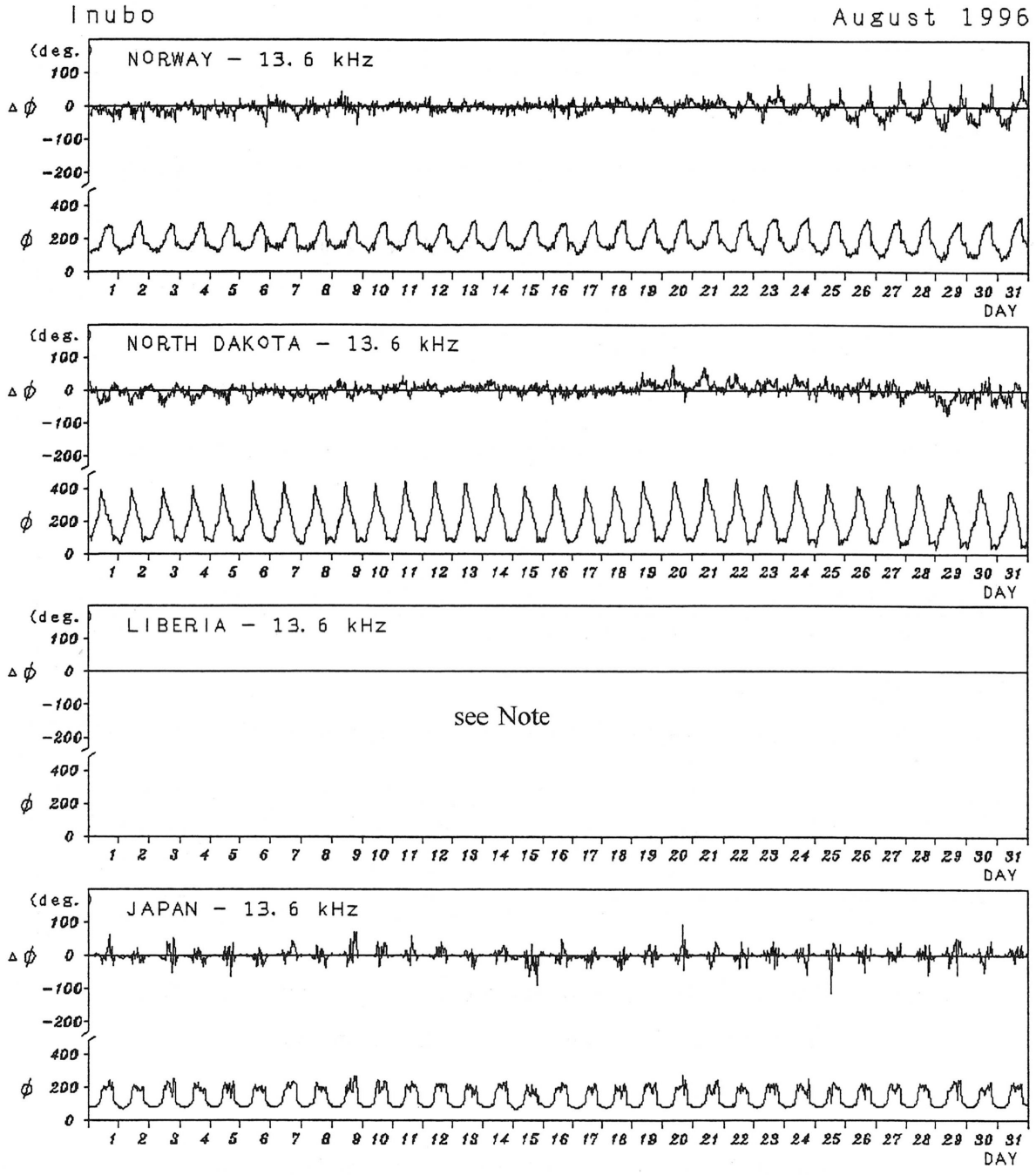
AUG 1996 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

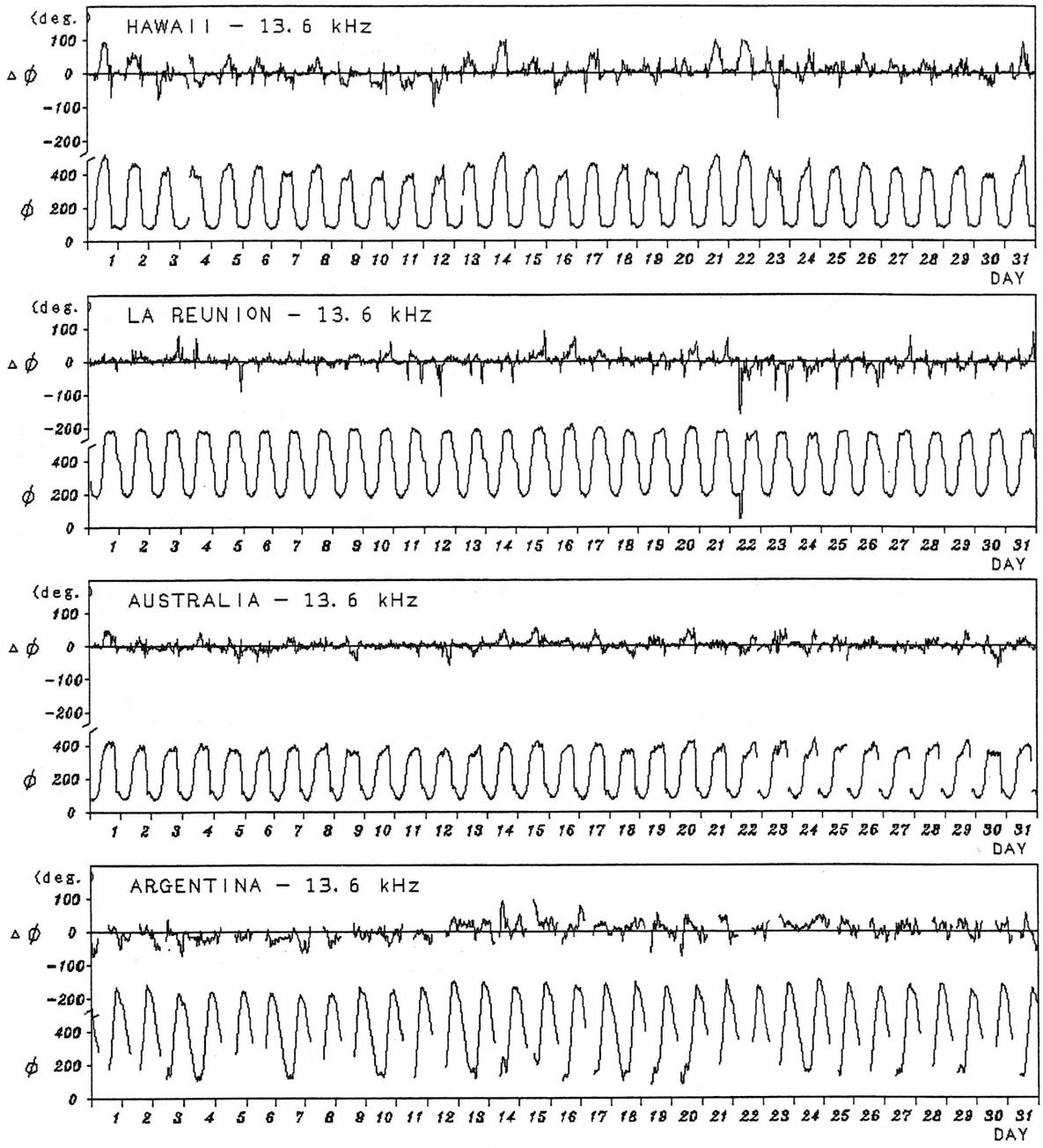
UT DAY	00H 46M	01H 46M	02H 46M	03H 46M	04H 46M	05H 46M	06H 46M	07H 46M	08H 46M	09H 46M	10H 46M	11H 46M	12H 46M	13H 46M	14H 46M	15H 46M	16H 46M	17H 46M	18H 46M	19H 46M	20H 46M	21H 46M	22H 46M	23H 46M
	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
1	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C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

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo August 1996



Note : As for LIBERIA-13.6 kHz, no record during 13 July 0733 UT to 9 September 1645 UT, due to transmitter maintenance.

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

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso Time in U.T.

AUG. 1996	S W F							Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
None											

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

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Aug. 1996	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
7		–			7		2320	2335	2323
22		–	148*				0742	1000	0756
23		–	18				0720	0744	0724
28		–	14				0803	0832	0808

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