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IONOSPHERIC DATA IN JAPAN

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INTRODUCTION

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

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

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.
B Measurement influenced by, or impossible because of, absorption in the vicinity of *fmin*.
C Measurement influenced by, or impossible because of, any non-ionospheric reason.
D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range in use.
E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range in use.
F Measurement influenced by, or impossible because of, the presence of spread echoes.
G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.
H Measurement influenced by, or impossible because of, the presence of a stratification.
K Presence of particle *E* layer.
L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.
M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.
N Conditions are such that the measurement cannot be interpreted.
O Measurement refers to the ordinary component.
P Man-made perturbations of the observed parameter; or spur type spread *F* present.
Q Range spread present.
R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.
S Measurement influenced by, or impossible because of, interference or atmospherics.
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
V Forked trace which may influence the measurement.
W Measurement influenced or impossible because the echo lies outside the height range recorded.
X Measurement refers to the extraordinary component.
Y Lacuna phenomena, severe layer tilt.
Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

A Less than. Used only when *fbEs* is deduced from *foEs* because total blanketing of higher layer is present.
D Greater than.
E Less than.
I Missing value has been replaced by an interpolated value.
J Ordinary component characteristic deduced from the extraordinary component.
M Mode interpretation uncertain.
O Extraordinary component characteristic deduced from the ordinary component. (Used for x-characteristics only.)
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U Uncertain or doubtful numerical value.
Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.
l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the particle *E* layer minimum virtual height.
c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normnal *E* trace. (Usually a daytime type.)
q An *Es* trace which is diffuse and non-blanketing over a wide frequency range.
r An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation.
a An *Es* trace having a well-defined flat or gradually rising lower edge with stratified and diffuse traces present above it.
s A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace.
d A weak diffuse trace at heights below 95 km associated with high absorption and large *fmin*.
n The designation 'n' is used to denote an *Es* trace which cannot be classified into one of the standard types.
k The designation 'k' is used to show the presence of particle *E*. When *foEs* > *foE* (particle *E*) the *Es* type precedes k.

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

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

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

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

B. SOLAR RADIO EMISSION

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

B1. Daily Data at Hiraiso

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

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

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

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

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

* Measurement impossible because of interference.
B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

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

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

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

C2. Radio Propagation Quality Figures at Hiraiso

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

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

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

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

C	artificial accident,
S	propagational accident,
U	inaccurate.

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

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

N normal,
U unstable,
W disturbed.

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

C3. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C4. Sudden Ionospheric Disturbances

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

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

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

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

Types of fade-out are as follows:

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

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

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

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

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

HOURLY VALUES OF fEs AT WAKKANAI

SEP. 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	44	34	G	30	28	27	30	32	34	30	35	43	34	31	34	24	G	G	28	25	37	G	30
2	30	32	32	28	30	40	34	40	37	34	30	29	31	39	32	38	40	34	32	34	31	40	37	40
3	G	33	28	28	33	45	35	55		68	78	64	30	36	38	28	32	46		34	24	28	28	65
4	65	66	32	G	32	28	41	41	50	35	32	30	30	38	37	39	31	45	40	73		45	57	36
5	33		G	G	G	G	32	28	36	36	34	42	41	38	30	39	38	G	35		62	27		24
6	24	G	G	G	G	28	26	54	55	34			37	42	30	27	29	32	41	39	38	46		32
7	28	33	25	30	G			36	27	32	29	36	30	30	35	28	39	34		61	44	28	28	27
8	26	G	G	G	G		28	38	34	34	30	31	30	30	28	30	31	35	85	36	44	36	28	29
9	G	24	27	G	G		35	36	46	38	28	30	30	31	29	27	29	38	34	29	27	G	G	G
10	28	G	G	G	G	25	30	32	31	34	29	30	34	35	33	30	25	31	35	G	G	G	G	G
11	G	G	G		29	30	36	33	30	29	31	28	27	34	42	37		29	37	46		34	29	34
12	37	29		34	44	43	39	40	33	28	28	29	29	27	36	45	38		35	34	32	G	38	32
13	29	G	30	26	32	56	36	44	39	38	35	30	34	30	30	45	42	43	42	38	G	45	23	34
14	29	G	25	29	G	34	27	31	29	32	29	27	35	32	32	29	22	G	G	G	41	G	30	29
15	G	G	24	G	33	36	31	63	38	33	52	42	38	35	30	26	26		26		42	28	28	24
16	G	G	G	G	G	28	29	31	36	38	30	32	34	30	32	29	36	40	38	32	36	28	G	G
17	G	G	G	G	G		28	44		29	31		28	37	27	32	24	32	27	G	27	24	G	G
18	G	G	G	G	G	G		40	30		54	34	39	29	27	31	28	30	G	G	G		G	G
19	G	24	28	33	G	26	46	56	68	42	31	29	30	31	29	27	24	29	G	32	28	33	36	35
20	33	36	29	27	29	31	32	41		40	37	32	33	28	26	27	25	G	27	G	28	38	36	G
21		29	30	28	29	G	34		64		55		35	28	27	29	22	28	32	29	32	33	38	G
22		G	G	G		30	26	31	31	33	34	29	38	33	32	27	23	G			G	G	G	G
23	G	G	G	29	28	G	G	28	25	33	29	27	35	28	32	27	26		42	G	G	G	G	G
24	G		G	G	G	G	G		30	30	28	31	29	41	33	25	G	29	31	34	G	G		28
25	29	25	G	G	29	G	G	G	28	33	35	30	N	29	26	25	22	G	24	32	G	G	G	28
26	34	26	G	G	G	33	G	34	46		36	29	27	30	27	26	29	37	35	G	28		G	31
27	G	G	G	24	28	G	32	40	36	31	41		38	29	28	30	22	38	46	42	58	41	28	30
28	24	G	28	32	32	34	30	36	34	39	34	30	30	34	28	26	29	G	28	G	G		G	G
29	G	G	G	G	29	G		33	29	28	34	36	37	32	30	25	G	28	27	G	G	G	G	G
30	G	G	G	G	24	29	G	31	33	35		31	30	29	28	30	25	G	G	G	G	G	G	24
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	28	29	29	29	26	27	28	27	27	28	26	29	30	30	30	29	27	27	27	28	27	27	30
MED	12	G	G	G	28	28	30	36	34	34	32	30	33	32	30	29	26	30	32	32	28	28	23	28
U Q	29	29	28	28	30	34	35	41	39	38	35	34	37	35	32	32	31	37	38	36	37	37	30	32
L Q	G	G	G	G	G	G	26	31	30	32	29	29	30	29	28	27	23	G	26	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

SEP. 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	16	15	15	16	15	15	17	15	15	16	16	17	15	16	16	15	16	21	16	17	15	16	15	15
2	15	16	15	15	15	15	15	15	15	15	16	20	16	17	16	17	15	15	15	15	15	15	15	15
3	16	15	16	15	16	15	15	15	16	17	16	17	17	16	18	16	16	17	15	15	16	16	16	15
4	15	15	15	15	15	15	17	15	16	16	17	18	17	17	16	15	16	16	15	16	15	15	15	16
5	15		15	15	16	16	15	15	16	16	16	16	17	17	16	16	16	15	15	15	15	15	17	16
6	15	17	15	16	15	15	17	15	16	16	17		16	16	16	16	16	16	15	15	16	16	15	15
7	15	15	16	15	15	15		15	15	17	17	17	16	16	16	15	16	16		15	15	16	15	16
8	16	16	15	15	16	15	15	15	15	16	16	16	15	16	15	16	15	15	15	15	15	15	16	15
9	16	15	16	15	16	15	15	15	16	16	16	16	16	15	15	15	15	15	15	15	16	16	15	15
10	15	17	16	15	15	15	15	15	15	16	17	16	17	16	15	16	15	15	15	15	15	15	15	15
11	16	16	15	17	15	15	17	15	16	17	15	17	16	16	15	17		16	15	15	16	15	15	15
12	15	15	15	15	15	15	15	15	16	16	16	17	16	16	17	16	16	15	15	15	15	15	15	15
13	16	16	15	15	16	15	15	16	15	16	16	16	16	16	16	16	15	15	15	15	16	15	15	16
14	17	15	16	17	16	15	17	16	16	16	16	18	18	17	16	16	15	18	15	17	16	17	16	16
15	66	15	15	15	15	15	15	15	16	15	15	16	15	14	17	18	15		17	15	15	15	16	15
16	15	15	15	16	15	15	14	15	15	15	15	15	20	16	16	15	15	16	14	14	16	15	16	16
17	15	15	15	15	14	15	15	15		15	16		15	16	16	17	24	15	15	15	15	15	16	16
18	15	16	15	16	16	15	15	15	16	16	17	17	16	16	15	16	24	20	15	17	16		16	15
19	16	16	15	15	16	15	16	16	16	16	16	16	16	16	16	15	24	16	15	15	15	16	15	16
20	16	15	15	15	16	15	15	16	16	16	16	16	16	16	16	18	17	18	16	15	15	16	15	18
21	16	15	15	15	15	15	15	18	16	16	16	16	16	16	15	18	23	16	15	16	15	16	16	15
22	16	16	15	15	15	15	18	15	15	17	17	16	16	17	16	16	15	17	16		16	15	16	16
23	15	16	15	16	15	15	17	15	15	16	17	17	16	18	17	15	17	15	15	16	15	16	17	18
24	16	15	15	16	20	18	18	16	16	16	15	15	16	17	16	16	23	15	15	16	16	17	16	17
25	15	18	16	15	16	15	16	24	16	16	16	17	17	18		16	24	17	15	16	15	16	15	15
26	16	16	16	16	15	15	17	15	16		16	16	17	16	16	15	15	15	15	16	15	15	15	15
27	18	15	16	16	15	17	16	17	17	21	17		15	17	16	18	16	15	15	15	15	15	16	15
28	15	15	16	15	16	14	16	15	15	16	16	18	16	20	17	15	15	16	16	16	15		16	16
29	15	15	15	16	15	15	15	15	16	16	17	18	17	15	16	16	23	16	15	16	15	15	15	15
30	16	15	15	16	15	15	20	15	15	17		18	20	17	16	17	24	17	15	15	15	16	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	30	30	29	30	29	29	29	27	30	30	29	30	29	29	29	29	30	28	30	30
MED	16	15	15	15	15	15	15	15	16	16	16	17	16	16	16	16	16	16	15	15	15	15	15	15
U Q	16	16	16	16	16	15	17	16	16	16	17	17	17	17	16	17	23	17	15	16	16	16	16	16
L Q	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	15	15	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT KOKUBUNJI

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

HOURLY VALUES OF fEs AT KOKUBUNJI

SEP. 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	29	G	29	26	30	G	34	33	34	37	G	42	33	48	61	56		32	31	37	G	G	G	40
2	50	60	56	51	28	35	53	58		80	54		32	33	32	62	45	45	59	30	38	42	35	G
3	G		G	24	31	26	31		92	74	79	61	G	40	30	28	31	29	28	26		56	50	71
4	55	26	40	33	44	39	44	38	44	47	57	66	46	54	28	32		54	61				38	39
5	32	38	28	G	G	26	24	31	27		46	34	53	30	G	28	26	28	29	G	26		34	41
6	38	28	28	30	43	34	34	36	29	73	54	56	40	34	40	58	55	37	41	28	G	G	25	G
7	24	23	G	32	G	G	30	30	32	32	40	37	29	29	32	30	60		40	45	37		33	40
8	38	23	G	30	23	G	31		32	33	37	33	59	32		27	30	49	29	28	33		33	29
9	29	24	G	G	G	G	G	33	29	32	35	39	31	32		39	34	41	37	36	46	47	39	G
10	27	G	G	G		G		33	35	32	32	46	33	31	34	36	28	31	30	23	G	G	G	G
11	G	G	G	G	G	35	48	57	52	50	32	33	29	57	60	57	48	41	35		G	G	27	G
12	G	G	G	G	46	36		53	40	33	37	55	G	B	36		52	44	44	25	32		30	34
13	32	28	25	G	G	G	56	56	71	25	54	27	G	49	50	71	77	77	70	61	49	38	30	
14	32	B	28	29	27		56	28	24	27	30	30	G	G	G	G	25	29	29	G	G	G	B	G
15	G	G	G	B	G	27	35	30	26	27	26	B	B	B	32	27	29	32	G	34	G	32	29	32
16	23	G	G	G	B	G	G	32	36	29	G	B	G	32	31	28	29	32	24	G	36	29	31	30
17	G	26	28	G	B	G	34	37	37	G	53	25	26	26	24	33	39	36	32	24	G	G	G	G
18	G	G		G	G	G	36	39	31	34	37	43	38	36	28	30	31	28	28	36	33	34	34	50
19	36	G			B	11	56	40	105	50	54		72	93	40	44	52	43	46	48	33	33		G
20	G	G	G	G	G		28	33	57	55	56	40	32	32	32	30	29	35	33	50	40	32	34	28
21	28	23	27	30	G	24	30	44	44	32	32	32	31	30	33	29	31	30	29	25	G	G	32	32
22	41	32	B	30	G	20	33	33	60	56	35	44	34	31	31	28	26	22	G	G	G	33	G	24
23	29	G	G	G	G	G	G	30	37	44	47		30	25	G	26	37	30	26	G	G	G	G	G
24	G	G	G	G	G	G	G		40	30		38	G	G	28	27	40	43	29	28	29	36	34	29
25	G		G	G	G	G	G	39	32	28	36	30	29	34	27	34	34	34	32	28	23	25	G	G
26	G	G	G	G	G	B	39	48	28	G	G	G	G		30	29	26	29	60	48	39	35	39	G
27	G	G	G	G	G	G	28	28	44	44	50	45	33	G	G	24	28	G	34	29	34	G	32	G
28	G	G	24	31	G	33	42	40	33	30	38	33	30	24	30	30	27	29	G	G	26	G	G	G
29	G	G	G	G	G	G		30	30	30	32	30	30	G	25	26	29	28	G	G	G	G	G	G
30	G	G	G	G	G	B	35	36	40	30	30	49	45	52		35	37	34	27	G	26		27	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	27	27	28	26	26	27	27	29	29	29	25	29	27	27	29	28	29	30	28	28	24	28	29
MED	24	G	G	G	G	G	34	36	36	32	37	38	31	32	31	30	31	32	30	28	26	27	30	G
U Q	32	26	28	30	27	27	42	40	44	48	53	45	36	40	34	37	42	42	40	36	35	34	34	33
L Q	G	G	G	G	G	G	28	31	30	29	32	31	13	26	27	27	28	29	28	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

SEP. 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	15	15	14	15	15	15	15	15	16	16					17	17	15	14	15	15	15	16	15	15
2	14	14	15	15	14	15	14	14	15	20	18	23	20	20	17	16	15	15	15	15	15	15	15	14
3	15		15	18	15	15	15	15	16	21	30	30		18	22	16	14	14	15	16	16	14	15	14
4	14	16	15	15	15	15	15	15	17	17	21	26	22	18	17	15	16	15	14	16	15	14	15	15
5	14	15	15	14	15	15	16	15	16	20	27	24	26	21		17	16	14	14	15	14	15	15	14
6	14	15	15	15	15	15	16	15	17	17	21	23	22	20	16	17	15	15	14	15	14	15	15	15
7	15	15	18	14	16	15	15	15	15			17	17	18	17	15	15	14	15	14	14	15	15	15
8	14	15	15	15	14		15	15	16	18	23	24	24	21		15	15	15	15	15	15	15	15	15
9	14	15	18	15		16	20	15	15	14	18		48	45		16	15	15	15	15	14	15	14	15
10	14	15	16	15	15	14	17	15	15	20	21	21	20	23	17	15	14	14	15	15	16	14	16	14
11	16	16	15	15	15	15	16	17	15	15	18	17	17	21	18	28	16	16	14		14	20	14	15
12	17	15	15	15	14	15	14	15	18	18	18	27		B			15	14	14	16	15	15	14	17
13	16	16	14	17	14	16	15	16	20		15	16		20	18	20	16	14	15	15	15	16	15	14
14	15	B	14	15	16	15	15	15	18		18	16		46	43	41	16	16	16	16	17	15	B	17
15	17	15	18	B	18	14	14	15	14		17	B	B	B	20	18	18	15	16	15	15	15	15	15
16		16	18	17	B	17	16	16	16	18		B		44	47	18	14	16	14	15	14	14	15	15
17	15	15	15	14	B	15	15	15	17	27	21	17		17	17	15	16	15	15	15	14	15	15	14
18	15	18		15	15	15	14	14	15	20	15	16		22	17	16	15	18	15	14	14	15	15	15
19	15	15	15	15	B	15	14	15	15	17	16	14	15	17	16	15	22	15	15	15	14	15		15
20	15	15	15	15	15	15	14	14	15	15	18	21	18	17	17	15	16	14	14	15	15	15	15	15
21	14	14	15	14	15	14	15	15	14	21	18	23	18	16	16	15	15	14	15	17	15	14	14	15
22	14	15	B	14	14	15	14	14	15	15	15	14	15	15	16	15	16	16	15	16	14	14	14	14
23	14	15		17	16	15	17	15	15	15	17	16	16		38	16	16	14	15	15	15	15	15	15
24	14	15	15	15	15	15	14		16	18	14		45	42	20	18	15	15	15	15	14	15	15	15
25	15		14	15	15	15	16	15	15	16	18	18	18	16	15	14	14	15	14	14	15	15	15	15
26	22	14	17	15	17	B	14	14	15	18		44	44	42		14	15	14	15	15	14	15	14	15
27	15	14	15	16	21	17	15	15	14		27	27	22		44	38	18	17	15	14	14	16	15	15
28	15	15	15	15	15	14	14	14	16	17	17			15	20	16	14	14	15	15	15	15	14	15
29	14	15	14	15	15	15		14	14	14	18	16	23		17	16	16	14	15	15	15	14	15	14
30	15	15	15	14	14	B	16	15	16	16	20		30	17	16	15	15	14	15	15	16	16	15	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	27	29	26	27	29	29	30	25	26	23	20	24	25	29	30	30	30	29	30	30	28	30
MED	15	15	15	15	15	15	15	15	15	17	18	21	21	20	17	16	15	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	16	15	16	20	21	24	25	22	20	17	16	15	15	15	15	15	15	15
L Q	14	15	15	15	15	15	14	14	15	15	17	16	17	17	16	15	15	14	14	15	14	15	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

SEP. 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		79		48	53	48		60			61	60		57	64	63	70	60	52		66	A	99	
2		59		36		69			70	66	59	60	70	66		82			55					
3																								
4										61	A	57	64	70	70	63	54	51	52	52		79	A	A
5	A	A	A	35	A	49			50		A	61		A	57	60	62	72	63	57	A	A		
6		A		33				24		58	56	70	74	80	83		74	72	82	77			99	26
7	34	A	69	69	A	A	A	38		A	69	A	57	67	66	62	70	73	74		88		A	79
8			26		59	59	59	51		65	67	65	66	73	82	74	73		86	86	A	A		
9	42					69	A		69	68	A	A	62		67		83	A	74	A	A	A	A	A
10	A	A		A	A	A		62		66	A	60			55		83	83	83	A	39		A	A
11	41		B	N			25		66	62		66	72	70	66	66	74	83	85		A	A		
12			A		59	N	A	53		59	66	67	66	70			70	68	73	36	A		A	79
13	A			A				54	53	50	A	71	72	A	B	61	66	A	51			49	A	
14	36	32		A	B	A		49		60	B	B	60	67	66		B	66	53			A		
15							49	51	49			60	59	66	66	A		A	54			A		A
16			B					53		84		B	A	60	67	61			72	A		B	A	
17		B	43	31			B	53	54		60	A	B	68				74	84	A	A			79
18				B	49		43	53	65		63	56	66	A	72	82	73	A	86		79	69		A
19	A	59		69		54	31	53	60	67	A	66	64	B	61		73		84	A	A		A	
20	A			A	89	A		65	58		55	58	B	82	B	72		73				A		A
21	A		28		A	A	30			67	66	78	A	83	74	B	67			42			A	59
22	A		28	32		B	23	47		65	66	A	A	58	66		83			53	42	A	A	
23		B	55			B	59			70	68	A		78	84	B	86	87	A	41				37
24		99			53				84			72	85		B	67	64		69		A	A	A	A
25		43		A		N	26			84	61		63	72	77	B	61			A	A	A	109	
26	59	A	42		A	34			60		A		67	74	B	66	66		52	65	32		109	A
27		69			A	69		68	189	57	56	75	A	85			68	84		B	38			40
28	31		79		49		43		73		62	67		65	67		83	84			B	40		109
29			42			B	34	54	52	B	70	70	A	78	60		60	62	52		N			109
30				32		B	59	53		69	62	54		85	82	85	64	71	59	A	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							12	18	15	18	17	20	16	22	21	14	23	16	22					
MED							38	53	60	66	62	66	66	70	67	66	70	72	70					
U Q							54	54	70	68	66	70	71	78	75	74	74	83	83					
L Q							28	51	53	60	59	60	62	66	65	62	64	67	53					

HOURLY VALUES OF fEs AT YAMAGAWA

SEP. 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	32	G		28	26	24	26	30	36		32	59	41	31		30	29	31	29	G	21	24	40	G
2		G	G	28	24	33	29	32	33	60	33	40	38	38		31	28							
3																								
4										56	64	48	43	30	38	31	29	30	27	26		G	28	32
5	33	41	50			26	28	33	40	41	42	44	61	62	58	41	44	47	55		34			43
6	32	26	30				36	68	42		41	56	39	32	40	40	50	28	26	22	G	G		G
7		24	29	31	25	22	26	28	36	37	33	36		38	36	40		61	33	36	N	49		33
8	29	G	G	23	G	G	G	38	49	40	38	30	31		40	32	39	44	39	69	23	32	G	G
9		25	G	G	G	G	26		38	29	30	38	34		32	44	41		45	50	32		32	34
10		32	28	35	34	44	27	33	39	49	66	48	38	32	31	39	34	28	34	32	32	32	29	24
11	24	G	B	G	G	30	30	33	30	31		37	28	30	36	39	33	35	26		40	33	G	G
12	G	G		G		26	31	32	40	50		30	30	31	31		34	29		32	32	G	26	37
13	30	G	G	37	G	G	G		47	38	39	G	31		B	30	31	29	G		G	48	46	G
14		32		30	B	27		48	38	40	B	B	31	31	30		B	33	28	26	G		G	G
15		G	G	G	G	G	45	40	32	26	G	G	30	G	31		G	31	30	26	G	38	G	45
16	G	G	B	G		G	G			38	G	B	30	30	30	31		G	58	32	G	B		G
17	G	B	G	G	G	G	B	30	38	30	36		B	33	31	28	G	49	40	38		G	G	G
18	22	G	23	B	G	G	27	31	40		G	38	39	66	56	G	38		33	33	32	31	32	28
19	33	24	G	26		23	22		32	28	66	G	49	B	31	G	36	G			43	G	32	
20	34	26	24		G		G	31	47	45	55	48	B	30	B	30	G	73	54	G		45	G	32
21	33		24	24		30	G			33	38	57	78	28	30	B	30	29	G	30	G	G	42	40
22	41	G	27	26		B	G	30		30	31		65	28	28	G	28	34	G	G	G		31	G
23	G	B	33	24	37	B	25	32	G	38	31		G	30	24	B	29	29	31	G	23	25	G	25
24	G	G	G		24	34		G	39			50		32	B	47	49		36			24	32	28
25	G		G		G	G	G	29	G	28	30	G	G	30	30	B	38	38		22	31		21	
26	29	30	38			G	G		33	31		G	30	30	B	30			37	32		G		25
27		33	24	G	28	G	27	33	G	51			84	37	31	G			58	B	44	31		G
28	G		30	29	G	G	G	38	32	G	30	31	G	31	31		31	31	25	G	B	G	G	G
29	G	G	G	G	G	B	G	32	31	B	30	37	90	29	29	G		31	21	G	G	G	G	G
30	G		G	G	G	B	G	33	G	29	61	31	38	30	30	30	29	28	28	32	28	30	38	31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	22	23	21	19	22	25	22	25	24	23	23	25	25	23	22	23	23	25	22	21	22	22	26
MED	24	G	23	24	G	12	25	32	36	38	33	37	38	31	31	30	31	31	31	28	23	24	27	24
U Q	32	26	29	28	25	27	27	33	40	43	42	48	46	32	36	39	38	38	39	32	32	32	32	32
L Q	G	G	G	G	G	G	G	30	31	29	30	30	30	30	30	28	29	29	26	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

SEP. 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	14	14	14	14	14	14	14	14	16		17	20	20	17	18	16	15	14	14	15	14	14	15	14
2	15	14	18	14	15	14	15	14	14	16	18	18	20	18	18	15	15	14	14					
3																								
4										14	17	20	18	18	17	16	15	15	14	15		15	15	14
5	14	14	14	14	14	15	16	14	15	17	18	18	20	20	18	15	14	14	14	15	15	15	15	14
6	14	14	15	15	14	15	14	14	14	15	17	18	21	18	18	17	15	14	14	14	14	18	15	14
7	14	15	14	16	14	15	15	15	14	15	18	20	20	20	17	18	16	14	14	14	14	14	14	15
8	14	15	14	15	14	14	15	14	16	16	17	20	18	18	17	16	16	14	14	15	14		15	15
9	14	14	18	14	15		14		15	15	18	18	18		18	17	15	14	14	14	14	15	14	15
10	15	15	14	14	14	14	15	14	15	17	20	18	18	17	17	17	15	14	15	15	15	14	15	15
11	14	15	B	14	14	15	14	14	15	14		20	16	18	17	17	15	14	14		14	15	14	15
12	18	15	15	15	14	15	14	14	15	16	17	18	18	20	18		14	15	14	15	15	14	15	15
13	14		16	14	17		15	14	14	15	18	49	20	14	B	15	14	23	17		21	14	14	
14	14	14		15	B	14		16	15	16	B	B	17	16	17		B	14	14	14	15	14	17	14
15		18	18	18	16		14	14	15	16		18	21		18	14			15	14	15	14		15
16		15	B				14	14		16	14	B	18	17	16	16			14	14	15	B	14	
17	14	B	15	15	15		B	14	14	16	15	14	B	14	18	17		14	14	15	14	15	15	14
18	15	15	14	B	15	20	14	14	15		28	18	20	18	18		16			14	15	14	14	14
19	14	14	17	15		14	15	14	14	16	17		20	B	21		16	14	14	14	14	14	14	
20	20	16	14	14	14	14	15	14	15	14	16	18	B	20	B	17		14	14	20	14	14	17	14
21	15		15	15	15	15	15			15	18	17	52	18	18	B	14	14		14	14		15	15
22	15	15	15	14		B	14	14		16	15	14		16	15		16	15	14	15	14	14	18	15
23	15	B	14	16	15	B	14	14	14	16	17	14		18	16	B	16	14	20	14	14	16	14	14
24	17	14	14		15	14	14		15	16		20	16	18	B	17	15		14		14	17	26	14
25	16	15	14	14	17	14	18	14		15	17	14		18	18	B	15	14		14	15	14	16	15
26	15	16	15	14	15	14	15		15	17	14	55	16		B	15	14		15	14	15	17	15	14
27		14	14	15	17	14	15	14		17	20	14	49	20	20	14	15	14	14	B	14	14		15
28	16	14	15	14	14		15	14	16		17	20		18	17		15	14	15	17	B	15		15
29	15		15	15	14	B	15	15	14	B	17	18		15	17	66	15	14	15	15	14			15
30	15		14	14	14	B	14	15	14	15	15	16	17	18	18	18	15	14	14	14	15	14	14	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	22	25	25	24	18	26	24	23	25	25	26	22	25	25	20	24	24	26	24	26	24	24	25
MED	15	15	15	14	14	14	15	14	15	16	17	18	19	18	18	16	15	14	14	14	14	14	15	15
U Q	15	15	15	15	15	15	15	14	15	16	18	20	20	18	18	17	15	14	15	15	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	16	17	18	17	17	15	15	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT OKINAWA

SEP. 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		47	46		48	46	46	49			83		56	59	64	74	83			A	48	43	48	48
2	43	A		69	A	38		56		74		67	75	70	66	57	60	66	A	A	A	A	A	A
3	A			30	B	B		A	68		56	68		95				A	87	A	82		38	32
4		38		40	B	B	28	58			82		70		75	65		69		A	A	A		A
5	A	A	41	44	B	A		49	59		A	62		72		83		89		A	A	A	A	A
6	59	A	A	A	32	A	A	A	50	55		70		88			96	90	A	A	93	46	48	
7		A	A			A	A		70	56	58	62	65		71		83	A	A	A	92	A	A	A
8	A	59			28	N		A	69			66	75			96	96			169			A	47
9	47	46			A		69	60	62	64		58	67	70	86			90		A	A	46		A
10	A	A	69	A	A		A	A	70		64	65		83	64	83	84	95	88		60		44	
11	A	N	69		38	38		A	71	64	82	91	96	92	86	84	102	119		A	A	A	A	43
12		69			B	N	41	53	57		66	83	86	91	93	92	82		75	A	53	A	59	
13	A	A	31		B		30	A	A	54	A	93	114		94	91			73	A			30	
14		37	A	69	A	A	A	A	47		84	72	90	86	92	90		74	A	A	51	44		36
15				B	59		37			68	54	67		86	85	72	71	75	68	A	55	70	A	A
16	A	46	A	B	A	A	79		70			A	57			71	83	83		A	A	43	46	48
17	46	46		N	B	30	35		57		68		B	76	82	68		82	A		A	A	A	55
18	59	69		N	30	N	49	39		98		56	67	82		90	96		112		60	54	A	A
19	42							42	65	66	57			60	61	71		80	A	A	76	A	A	
20	43	46		38	B		59	56		68		85	66		94		88	90	A	A	48	A	A	32
21	A	46			B	B		A	62	66			92	117	96	88	102		87	A	42			69
22		A	A	44		N	32	A	53			86		77	78	94		69	A	A	A	42	A	
23	44	A	36		41			A	52			62	67	82	81			94		A	A	44	48	50
24		53	48		56	47	46			71	83	81		111			84	90	A	A	A	44	A	A
25		79		89		B	49	A	69		88			91	94	96	87	94		A	58	A	47	44
26	A	41	44		A	A	B	A	69	78	93	106	110	121	120	116	107			A	A	54	A	A
27	N	53		69	B	B	B		70	63	60	83		116		86	84	92		A	A	59	A	
28	46		N	B	B	B	40	A	69	73		B	99		120			124		A	68	67		
29	46		46			B		49	57		94	76			111		72				69		35	
30	49		69		38	B		53			64		78	97	132			87	A	A	A	A	A	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	11	15	10				14	11	21	15	17	21	18	22	22	20	18	20			15	13	10	11
MED	46	46	46				44	53	65	66	68	70	75	86	86	85	84	90			60	46	46	47
U Q	49	59	69				49	56	69	73	83	84	92	95	94	91	96	93			76	56	48	50
L Q	43	46	41				35	49	57	63	59	63	67	76	75	71	83	77			51	43	38	36

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

SEP. 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	26	24	G		G	G	G		52	44	41	39	42	40	39	37	52	50	55	57	30	G	G	G
2	27	25	G	G	25	23	G	35	39	47	40	34	39	36	35	47	37	50	82		52	41	32	
3		G	G	G	B	B	G		40	60	49	44	40	60	83							33	25	G
4	G	G	G	G	B	B	G			42	34	39	46	44	44			37	45	36	40	42	G	
5	37	38	38	G	B	32	27	34	38	44	48	38	38	52	54	48	55	57				56	40	48
6	32	42		28	27	28	28	38	48		43		44	39		31	34	32	31		G	G	G	G
7	G	32		G		34	27	G	35	32	36	38	38	38	30	38		60	67		43	29	30	
8		G	G	G	G	G	G	33		43		42	61		38	36	42	39	45	G	32	37		38
9	G	G	33	G	26	G	27			42	37	39	39	39	38	62	48	26		44	47	28	G	61
10	66	64			40	24	25	28	37		57	44	66	40	37	38	33	34		G	G	G	G	G	28
11	25	28	G	G	G	G	G			34	42	39	38	46	32	34	27	39	30		36		38	45
12	G	G		23	B	G	G	33	33		60	40	37	33	36	30	28		30		45	34	25	
13	38	40	G		B	G	G		60	43	92	64		37	G	31	34	24	25		G	G	G	29
14	G	28	23	26	33	37		45	45	34	36	35	G	39	34	35	39	46	46	48	43	G	G	G
15	G	G	G	B	G	G	G		37	40	34				39	40	43		48	50		40		50
16	30	G	28	B	24	32	34	G	36	38	39	36	39	41	39	43	42	44	G	34	37	G	G	G
17	G	G	G	G	B	G	G	32		40	44	35	B	37	39	31	40	46		G	51	44	26	G
18	G	G	G	G	G	G	G			40	41	36	41	G	35		G	39	45	G	G	51	28	
19	25		G	G	G	G		33	40	44	44	G	39	G	G	68	60	51	58	68	47	50	48	G
20	42	29	28	G	B	G	G		50	54	47	72	54	42	35	31	35		94	44	35	39	31	35
21	35	25	24	G	B	B	G	34		64	43	35	34	33	G	30	28	35		44	G	G		47
22	24		27	G	G	G	G		36	36	35	38		56	52		57	69	76		92	44	40	G
23	G		G	G	G	G	G		31		36	42	41	60	44	44	44	42	45	48	47	G	42	34
24	G	G	G	G	G	G	G	G		40	42	39	G	42	38	32	45		55			45	48	44
25	38	G		G	G	B	G	48		36	32	37	36	G	28	35	34	68	68	78		41	36	G
26	48	30	35	32	31	25	B	53	39	43		62	45	51	54	55	73		G		39	36	43	44
27	G			G	B	B	B		39	41	42	G	42	40		50	58	45		32		G	28	G
28	28	G	G	B	B	B	G	36	40	40	41	B	32	39	35	35	27	30	G		G	G	G	G
29	G	G	G	G	G	B	G	37	33		30	30	35	G	G	60	44	G	G	G	G	G	G	G
30	G	G	G	G	G	B	G	40		G	G	37	31	G	G	32	39	G	34	32		41	49	29
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	26	24	24	19	22	26	18	20	24	28	27	26	28	28	26	27	24	23	18	23	29	27	25
MED	24	G	G	G	G	G	G	34	39	40	41	38	39	39	36	36	40	40	45	40	37	34	28	28
U Q	33	29	25	G	26	25	G	38	42	44	44	42	42	43	39	47	48	50	58	48	47	41	40	44
L Q	G	G	G	G	G	G	G	32	36	37	36	35	36	34	31	32	34	33	30	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT OKINAWA

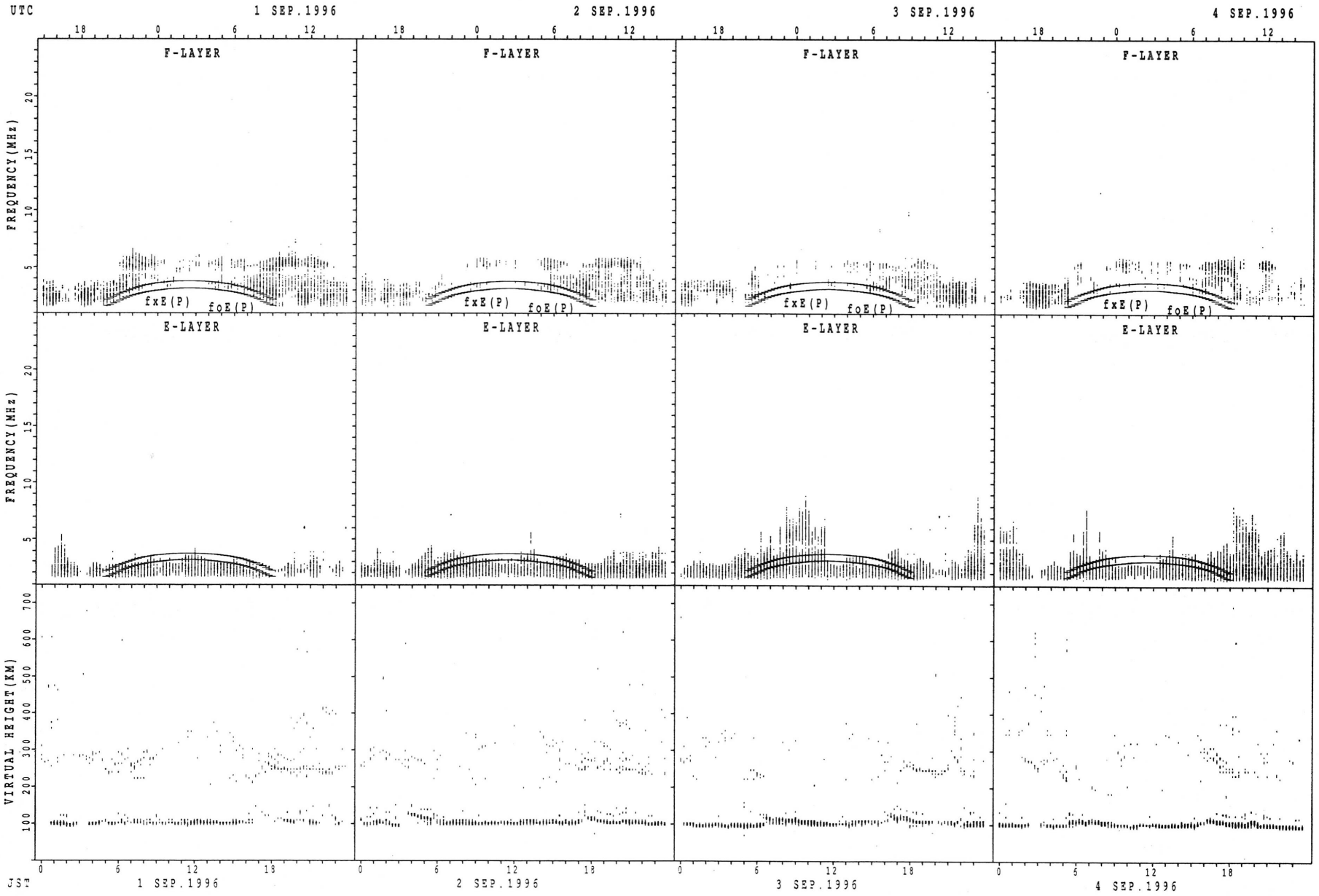
SEP. 1996

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

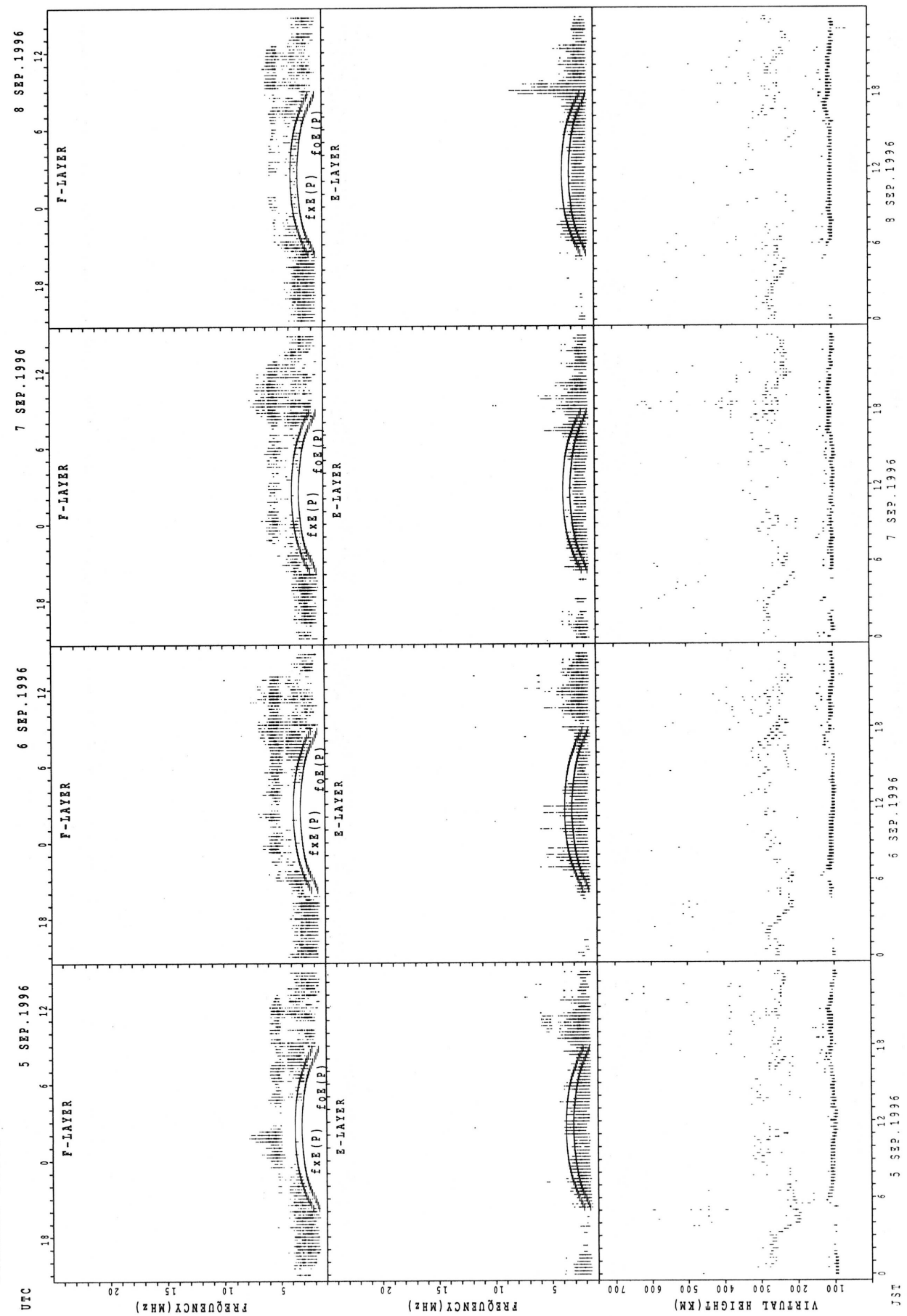
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	14	16		15	15	15	14	14	15	16	21	26	22	18	17	15	14	16	14	14	15	15	15
2	14	15	15	14	14	14	14	14	14	16	17	20	26		18	18	14	14	14	14	14	14	15	15
3	15		14	14	B	B	17	14	14	16	16	21	24	27	18	15		14	15	14	14	14	14	14
4	15	16	14	15	B	B	15	16	15	15	17	20	17	18	20	18		14	14	14	14	14		15
5	14	14	14	15	B	14	14	14	15	15	17	20	22	18	18	15	17	14	14	15	15	14	15	14
6	15	15	15	14	14	14	14	14	14	15	16	18	22	18		16	15	14	14	14	14	15	15	15
7	15	14	14	14	14	14	14	14	14	15	16	17	22	29	16	14	16	14	14	14	15	14	14	14
8	14	15	14	14	14	14	14	14	14	16		18	20	18	17	17	16	14	14	14	14	14	14	14
9	14	14	14	14	15	15	15	15	14	15	17	23	26	20	22	17	15	14		14	14	14	14	14
10	14	14	14	14	14	14	14	14	14	15	17	20	26	18	21	16	15	14	14	14	15	15	15	14
11	15	15	15	14	15	14	14	14	14	15	15	16	16	16	15	14	14	14	14	15	14	14	14	15
12	15	16	14	15	B	18	14	14	14		18	18	20		16	18	14		14	14	15	14	14	14
13	15	14	15		B		14	14	14	14	17	17		47	47	15	14	15	14	14	15	18	14	14
14	18	14	15	14	14	14	14	15	14	15	17	18		18	15	14	17	14	14	14	14	14	15	15
15	16	14	16	B	18	71	14	15	15	15		34			23	18	16	14	14	14	14	15	14	14
16	14	15	15	B	15	14	14	14	14	14	16	20	27	24	18	16	15	14	14	15	14	15	14	15
17	15	15	14	15	B	18	14	14	14	15	16		B	49	15	18	17	14	14	14	15	14	14	18
18	15	14	18	15	15	14	14	14		22	16	23	26	27	26	21	22	17	14	15	15	14	15	14
19	15	14	14	14	15	14		14	14	15	16	26	28		46	24	23	17	14	14	14	14	14	14
20	15	15	15	14	B	16	14	14	14	23	17	26	18	21	16	20	21	15	16	14	15	14	14	14
21	14	14	15	14	B	B	18	15	14	21	16	22	16		46	22	16	16	15	14	15	15		15
22	15	15	14	14	15	15	14	14	14	15	17	18		16	15	15	14	14	14	14	15	14	14	15
23	15	14	14	16	15	16	15	14	14	14		18	23	21	18	17	14	14	15	14	14	15	14	15
24	15	14	15	15	15	14	15	14		15	17	17		24	20	17	17	20	15	15	14	14	14	14
25	14	14		15		B	15	14	16	15	17	18	16		48		15	14	14	14	14	15	14	15
26	15	15	14	14	15	15	B	14	15	15	23	22	22	22	22	17	18		16	14	14	14	14	14
27	16	15	14	14	B	B	B		14	16	16			32		18	16	15		14	14	18	14	16
28	14	14	15	B	B	B	14	15	14	14	18	B	17	16	16	15	15	14	14	15	14	14	14	14
29	14	15	15	15	16	B	14	14	14		17	17	17	22	15	17	18	18	14	15	14		14	16
30	18	14	15	14	14	B	16	14		15	18	15	16	18	15	16	14	15	15	14	14	14	15	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	29	25	19	21	27	29	27	28	27	27	23	24	28	29	28	28	28	30	30	29	28	30
MED	15	14	15	14	15	14	14	14	14	15	17	20	22	21	18	17	16	14	14	14	14	14	14	14
U Q	15	15	15	15	15	15	15	14	14	15	17	22	26	25	22	18	17	15	15	14	15	15	15	15
L Q	14	14	14	14	14	14	14	14	14	15	16	18	17	18	16	15	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

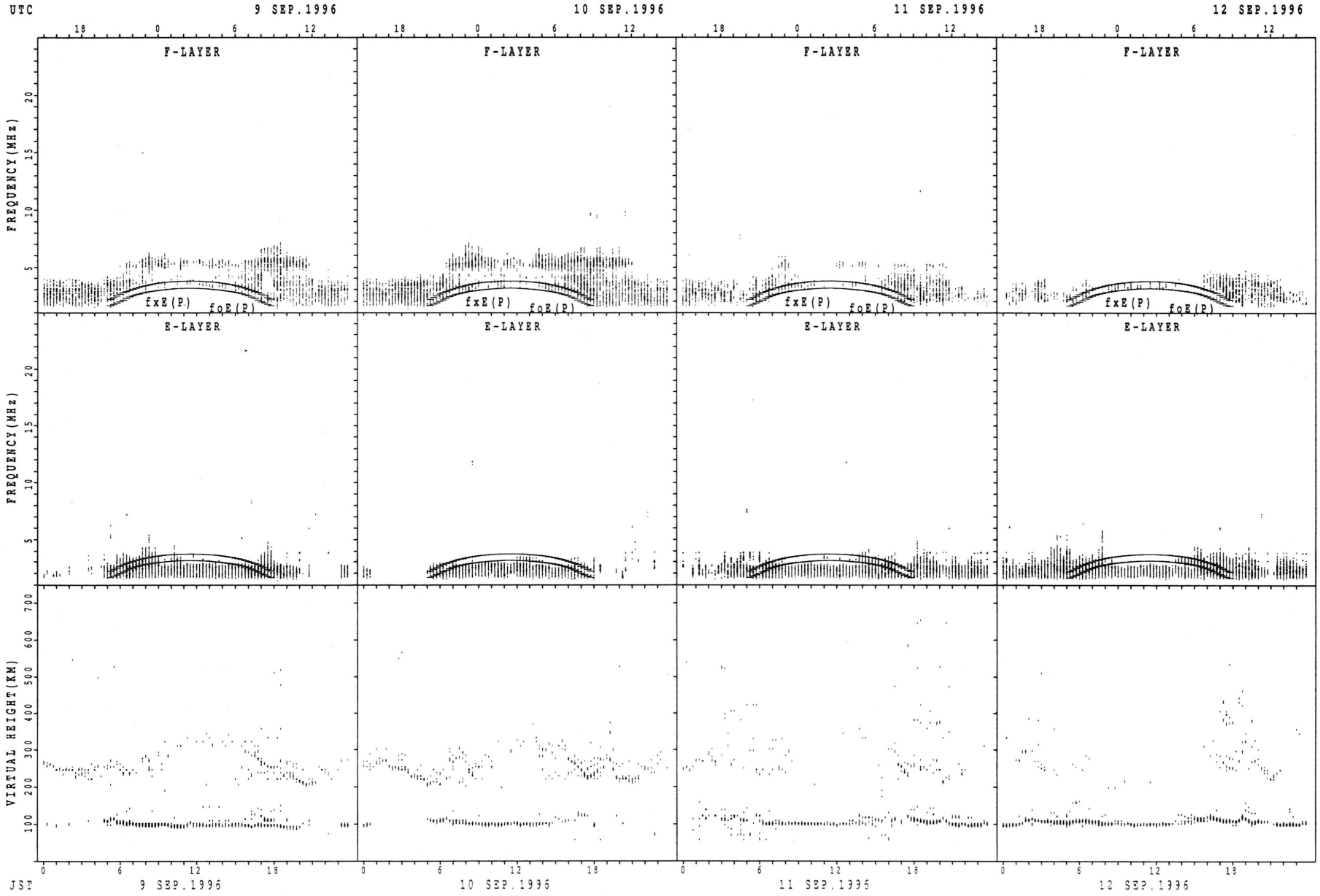
SUMMARY PLOTS AT WAKKANAI



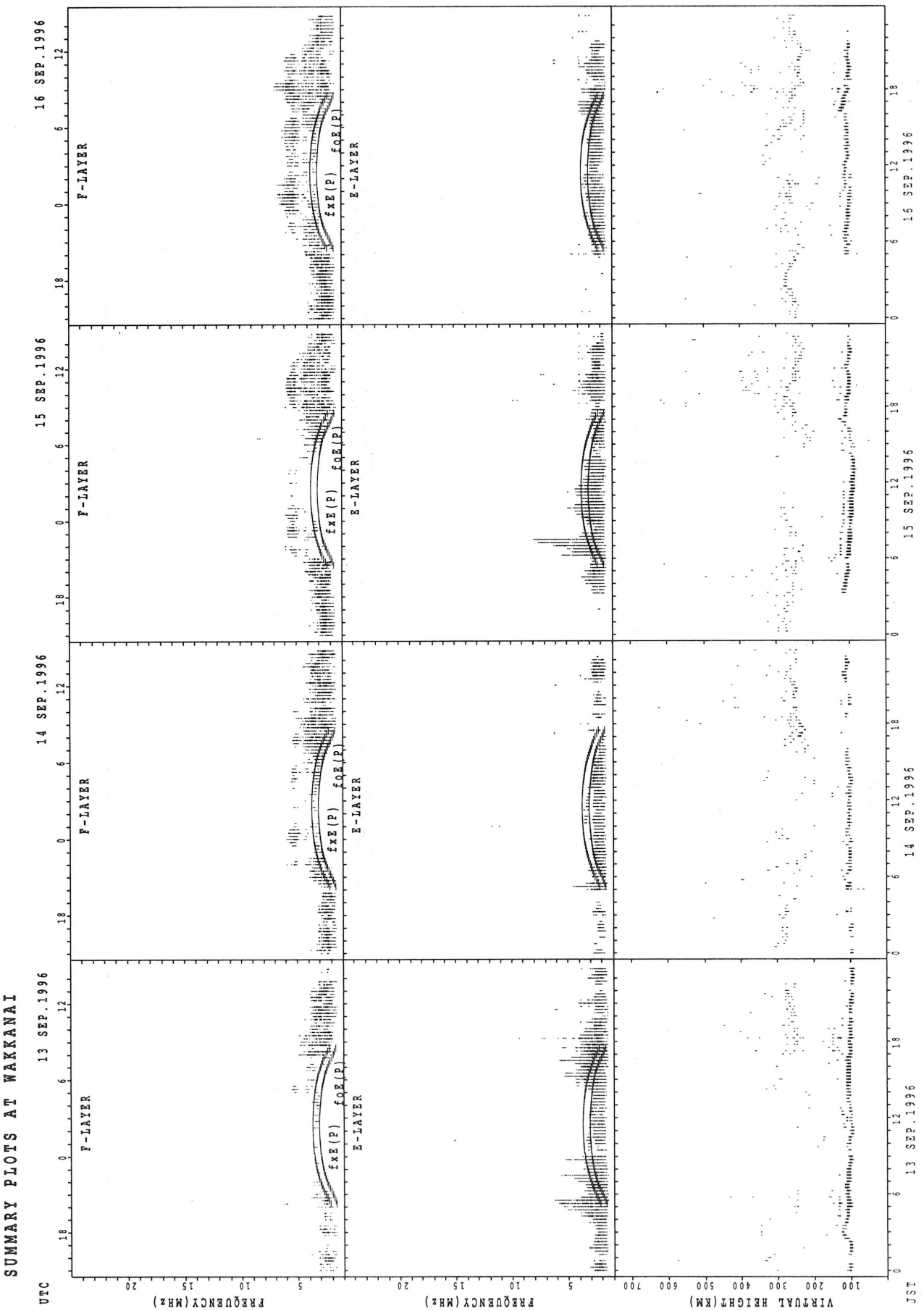
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


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

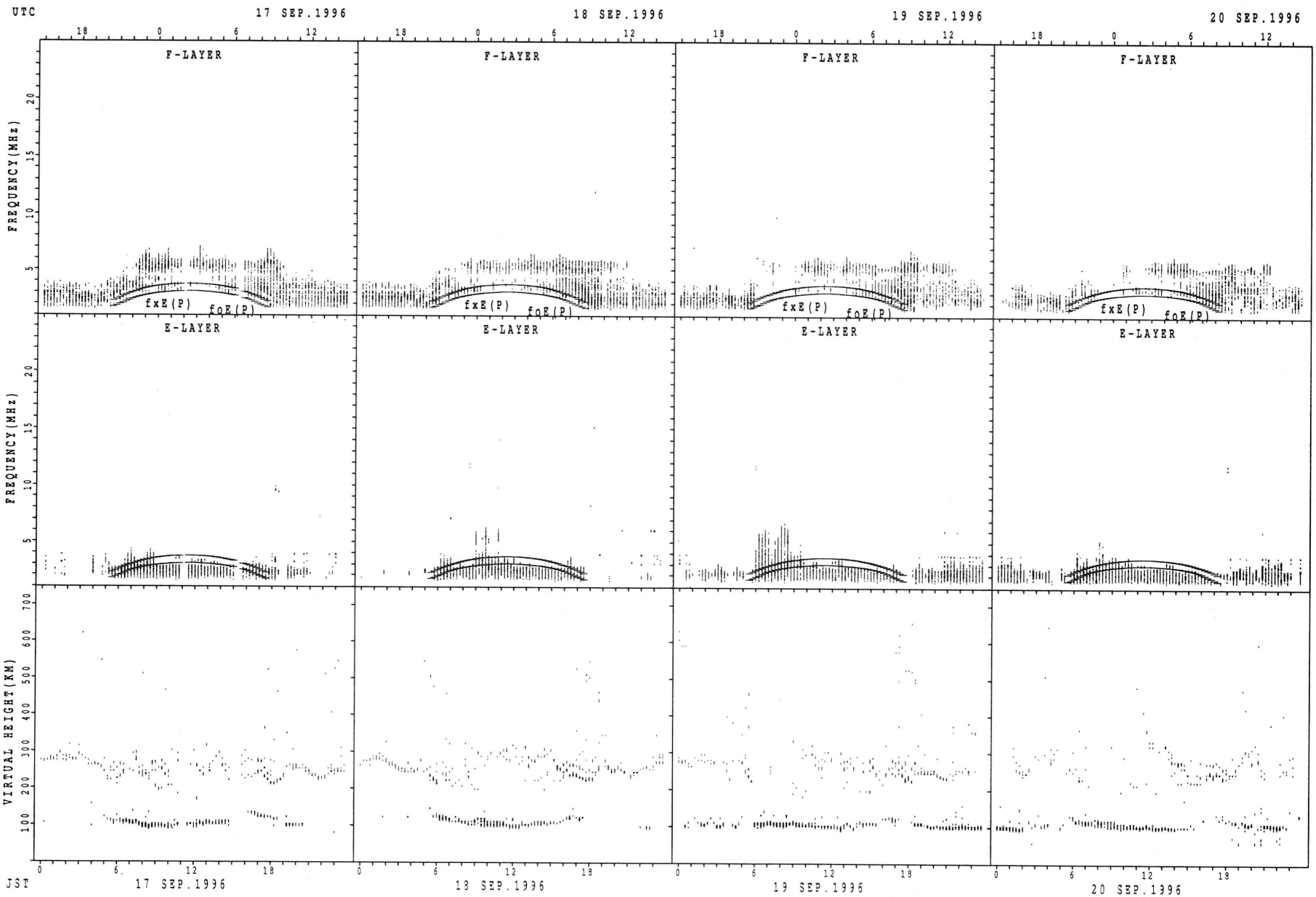
SUMMARY PLOTS AT WAKKANAI



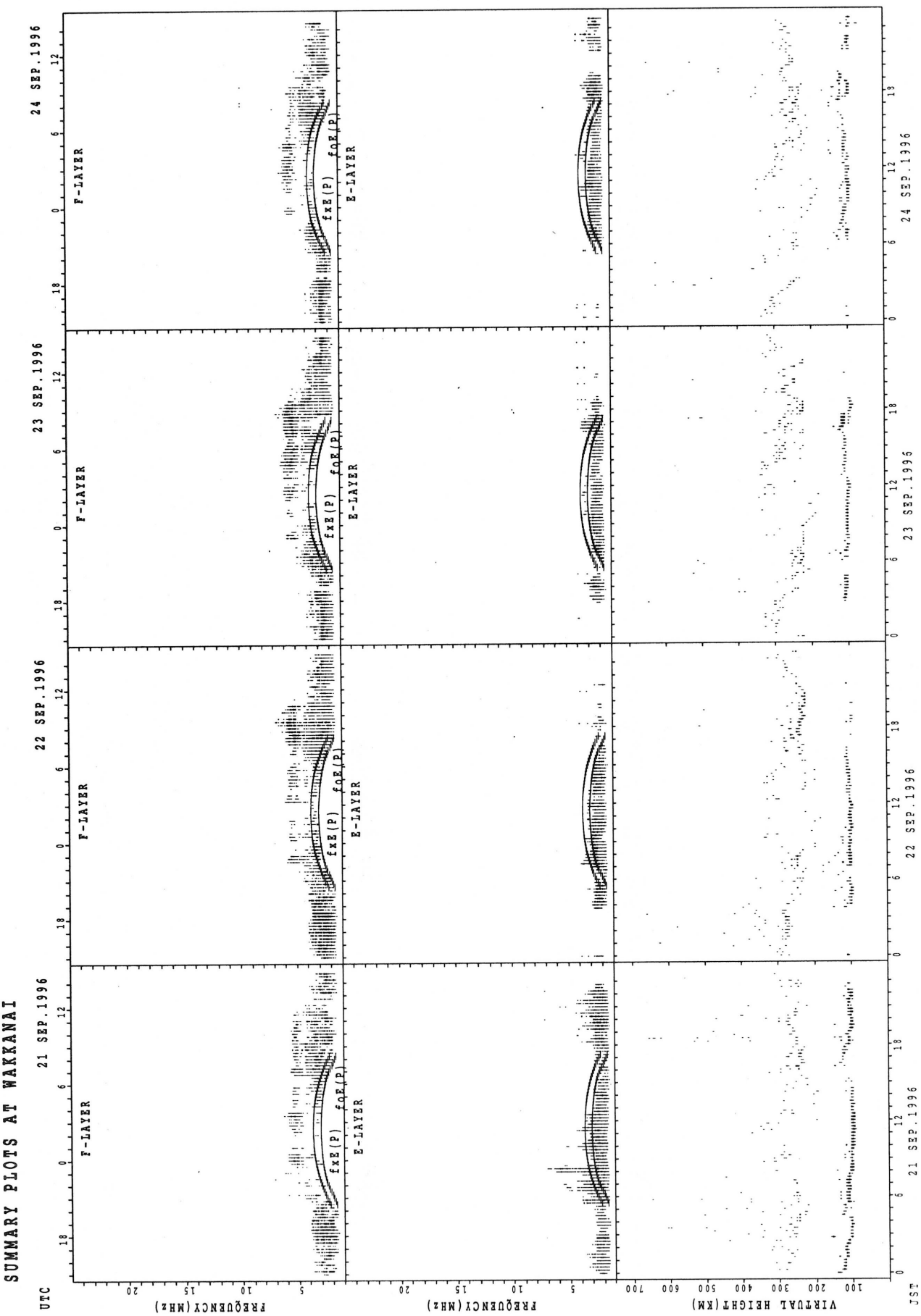
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
UTC
JST
13 SEP.1996
14 SEP.1996
15 SEP.1996
16 SEP.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

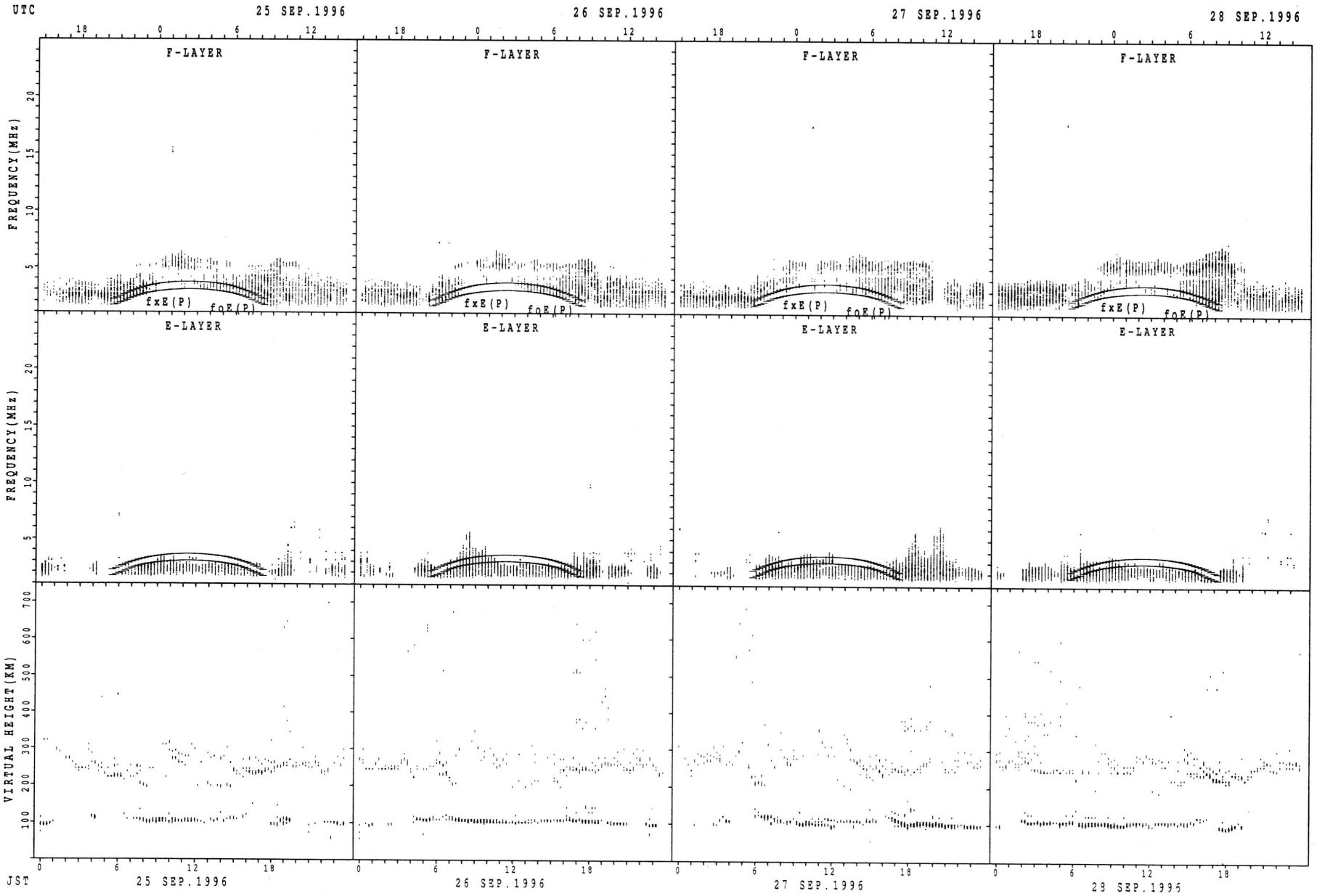
SUMMARY PLOTS AT WAKKANAI



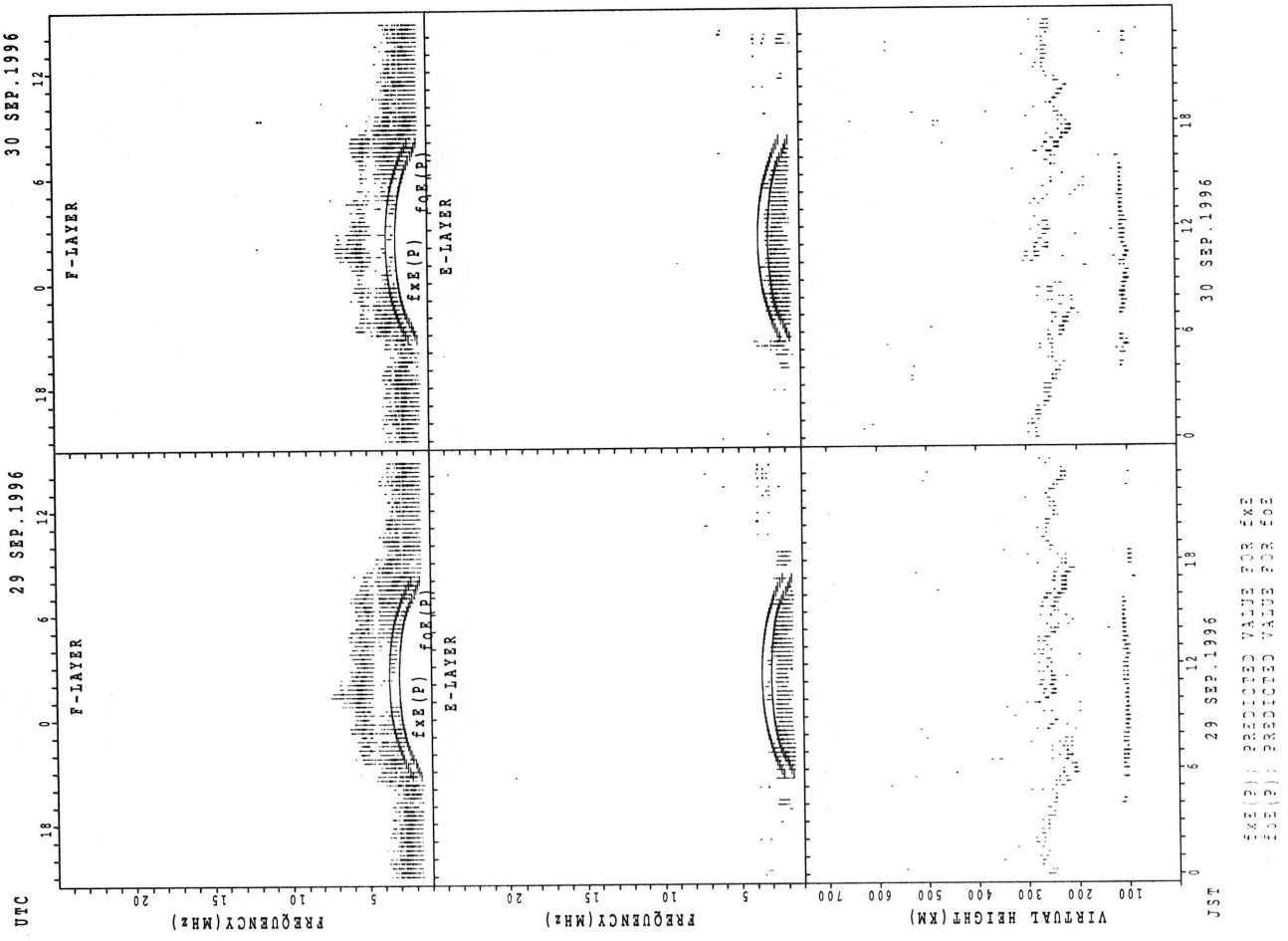
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
21 SEP.1996
22 SEP.1996
23 SEP.1996
24 SEP.1996
UTC
JST
F-LAYER
E-LAYER
fxE(P)
foF(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foF(P): PREDICTED VALUE FOR foF

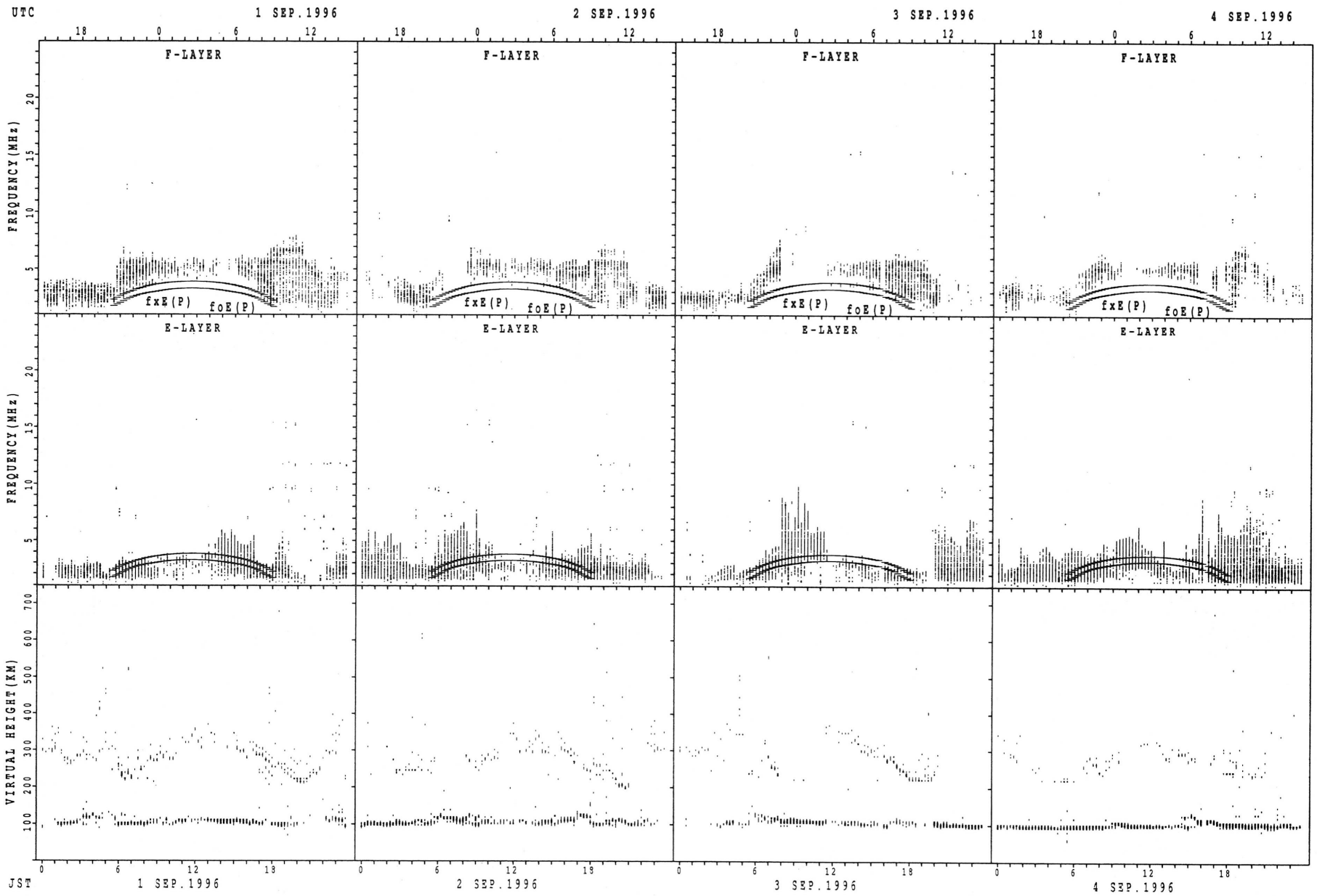
SUMMARY PLOTS AT WAKKANAI



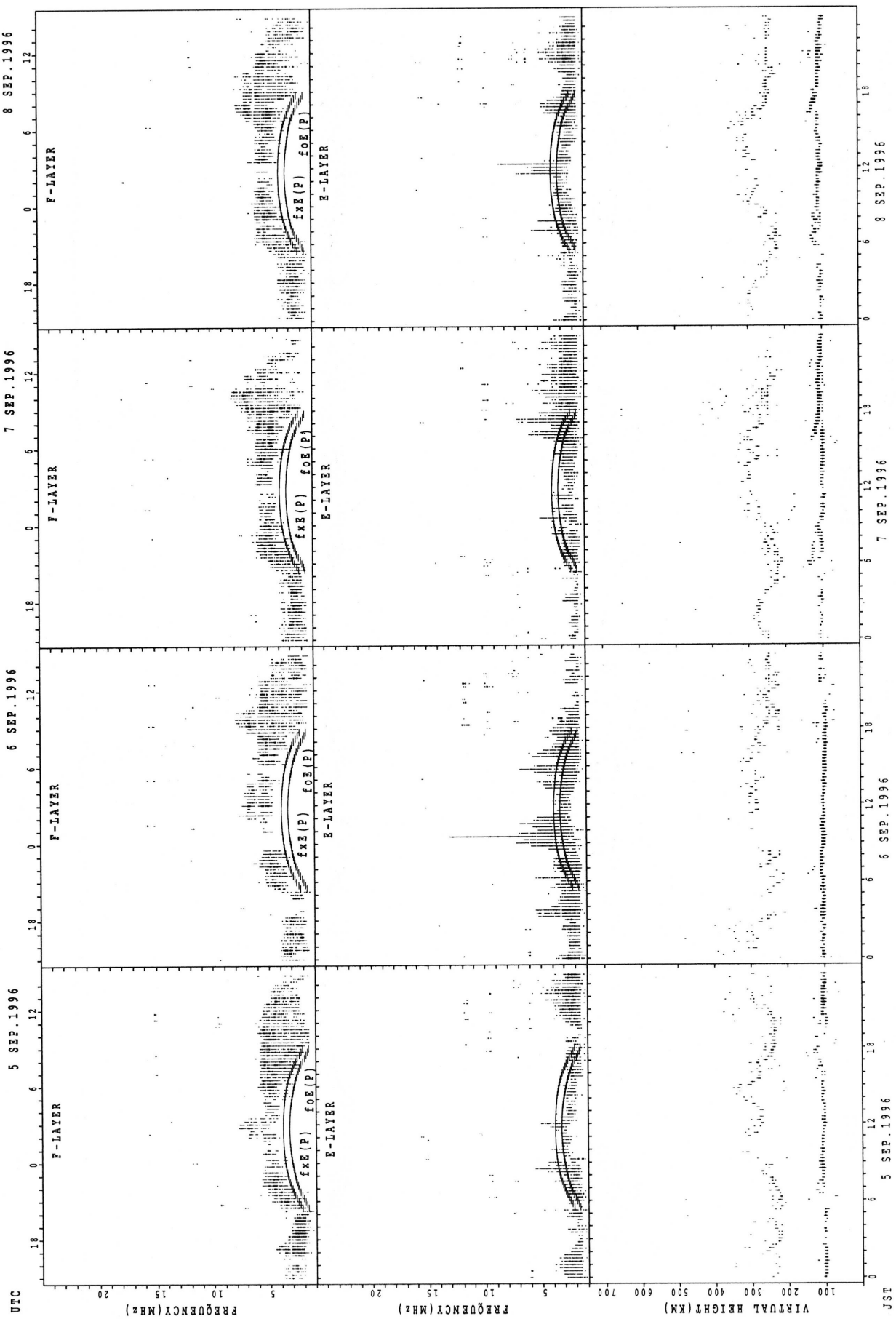
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT WAKKANAI
29 SEP.1996
30 SEP.1996
UTC
F-LAYER
E-LAYER
fxE(P)
foF(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
JST
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

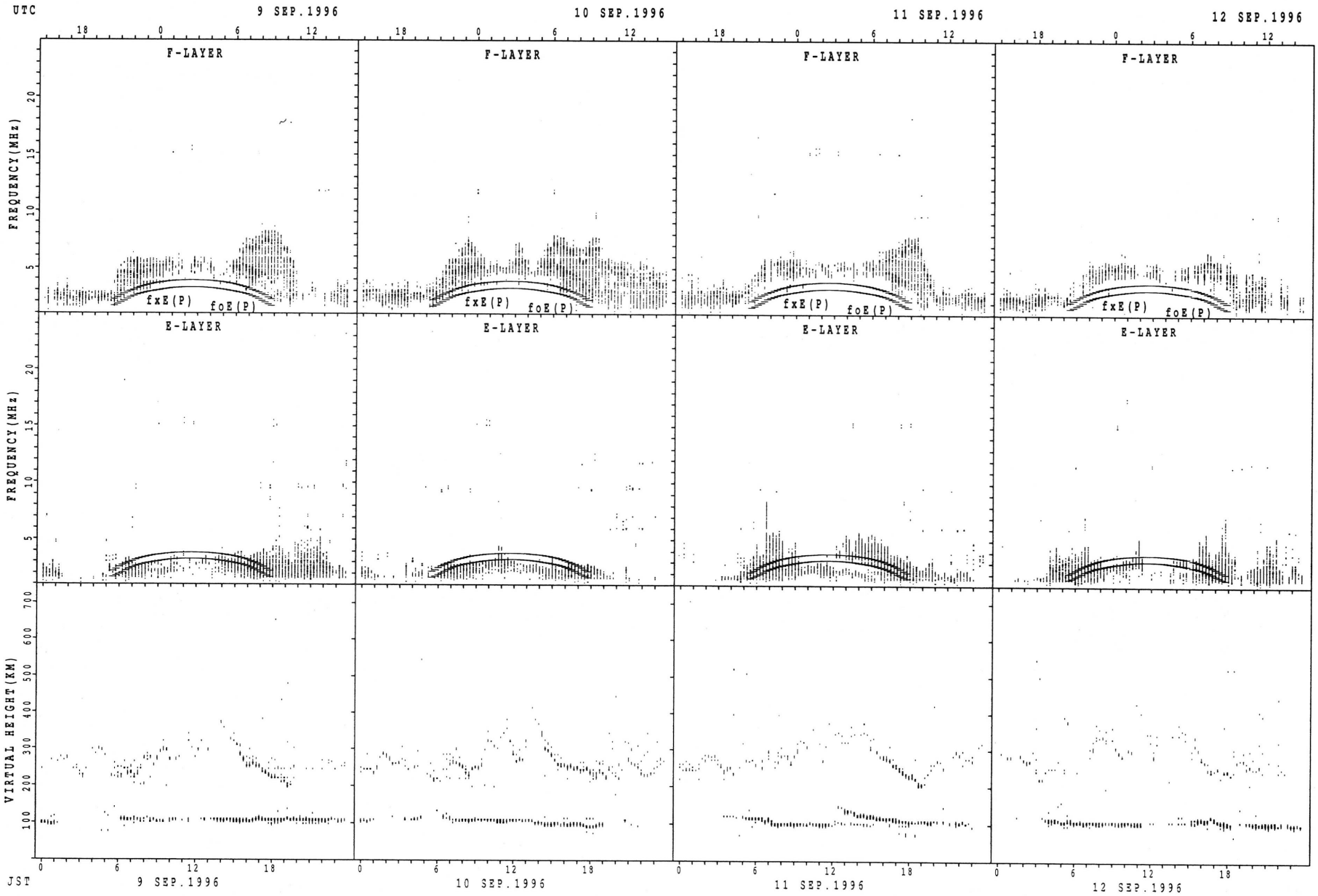
SUMMARY PLOTS AT KOKUBUNJI TOKYO



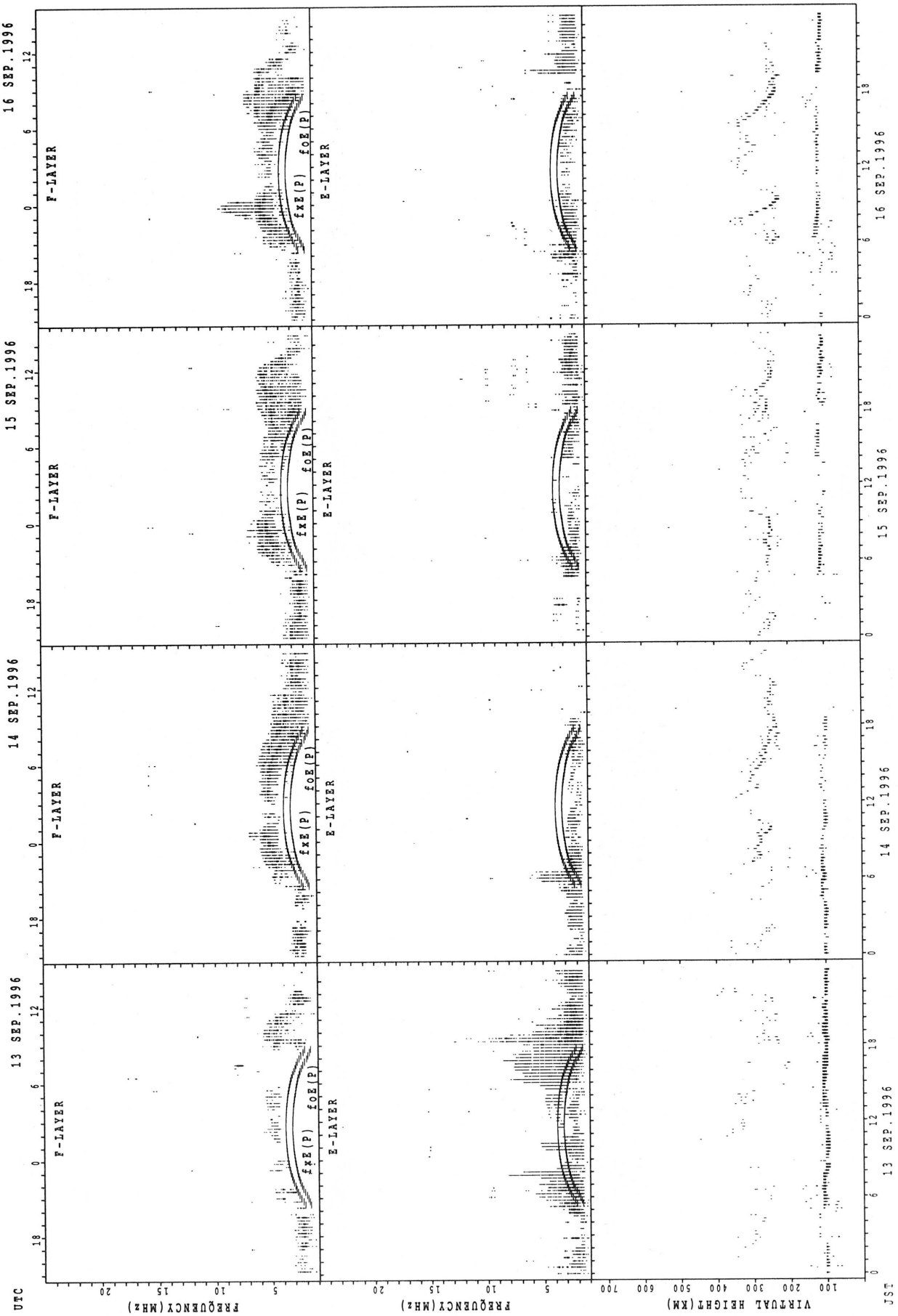
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 SEP.1996
6 SEP.1996
7 SEP.1996
8 SEP.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

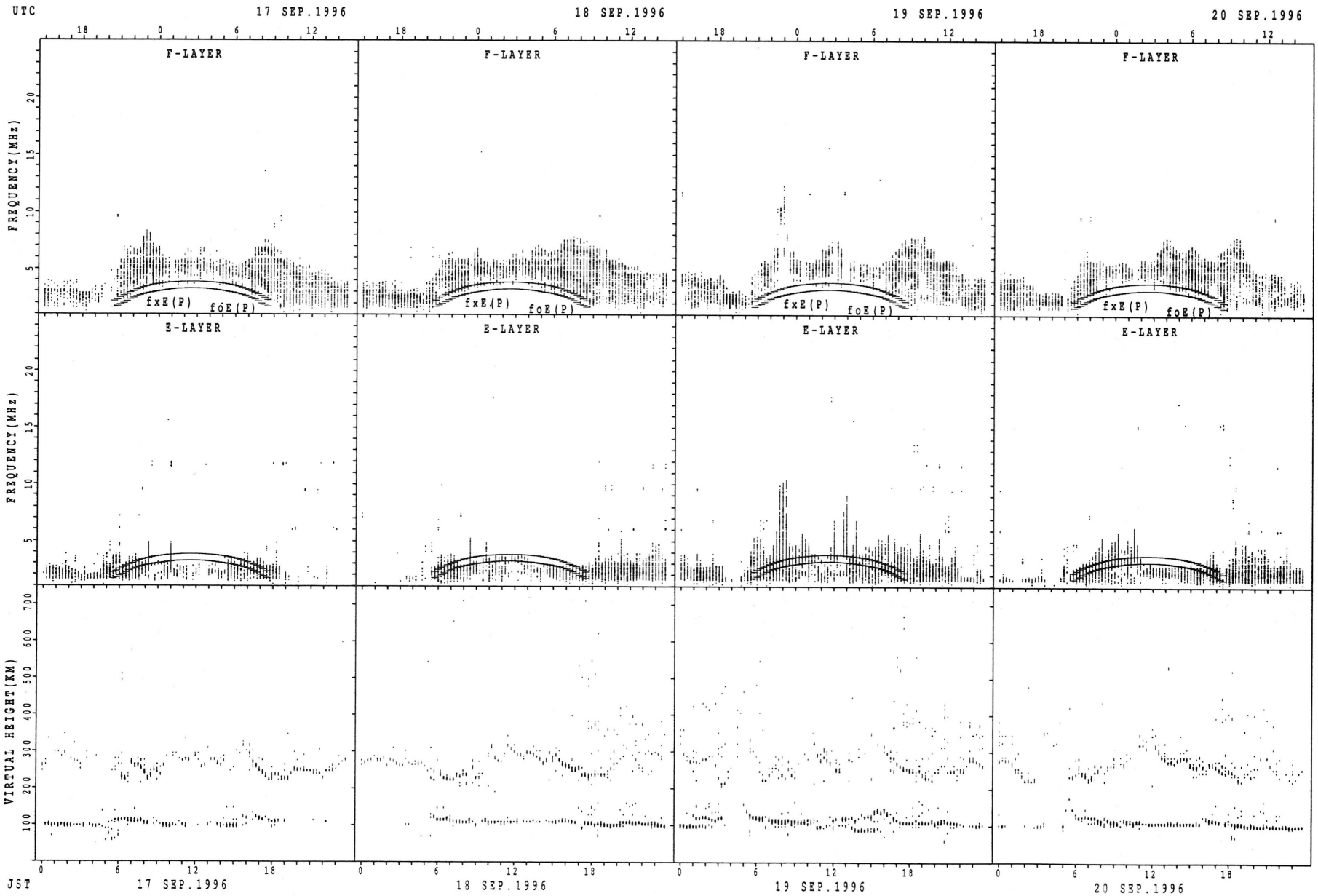
SUMMARY PLOTS AT KOKUBUNJI TOKYO



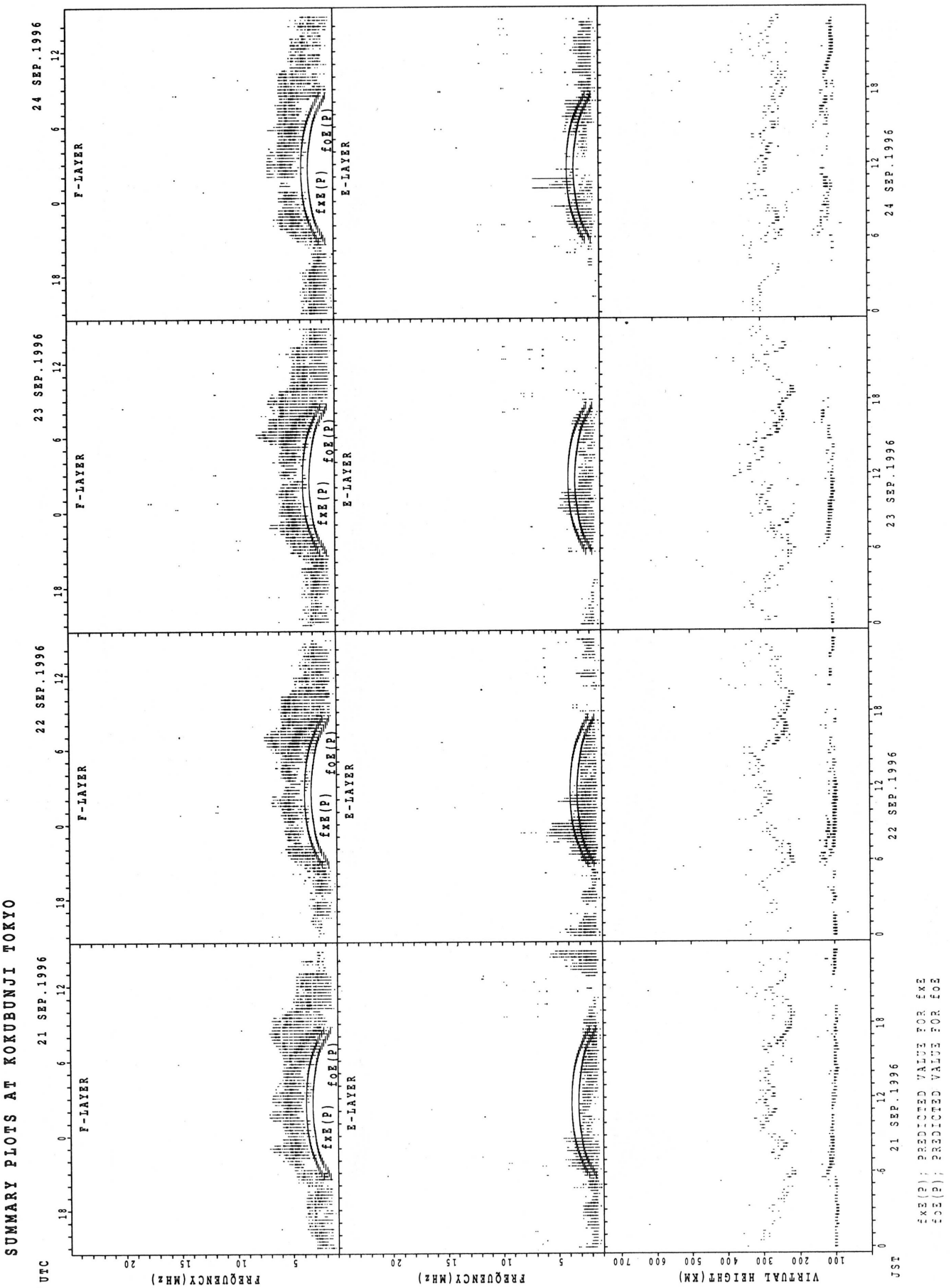
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

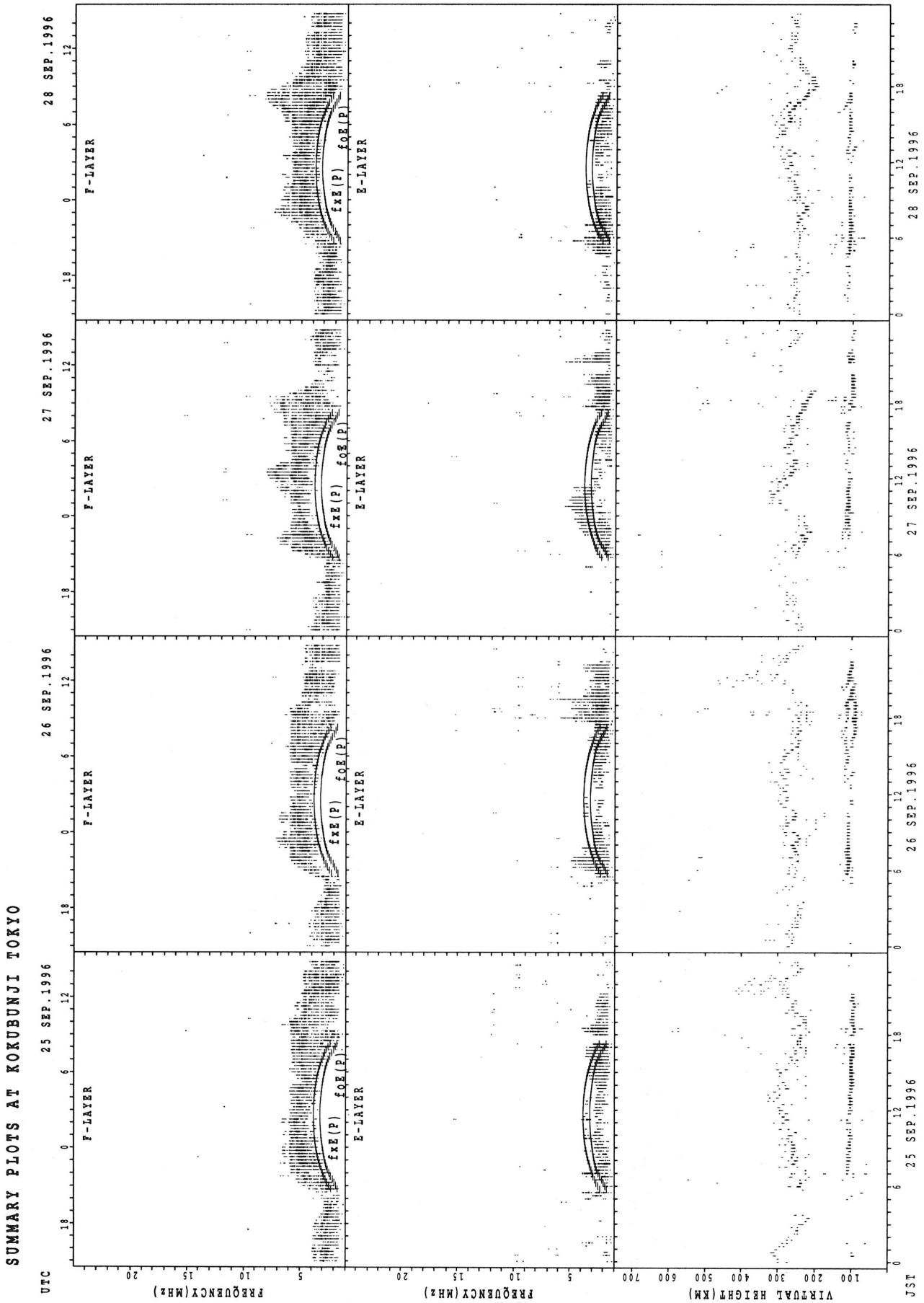

SUMMARY PLOTS AT KOKUBUNJI TOKYO
13 SEP.1996
14 SEP.1996
15 SEP.1996
16 SEP.1996
UTC
JST
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

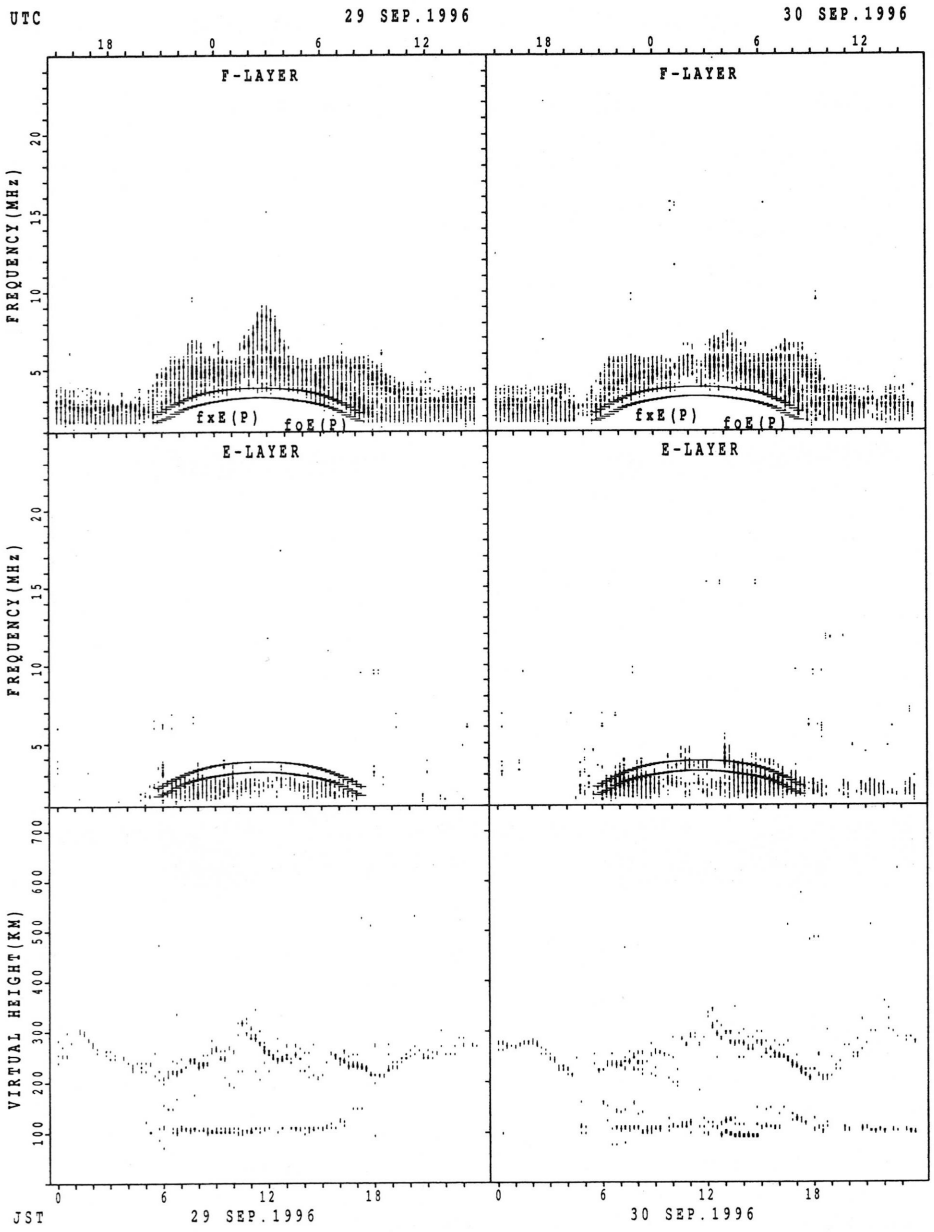


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
21 SEP.1996
22 SEP.1996
23 SEP.1996
24 SEP.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

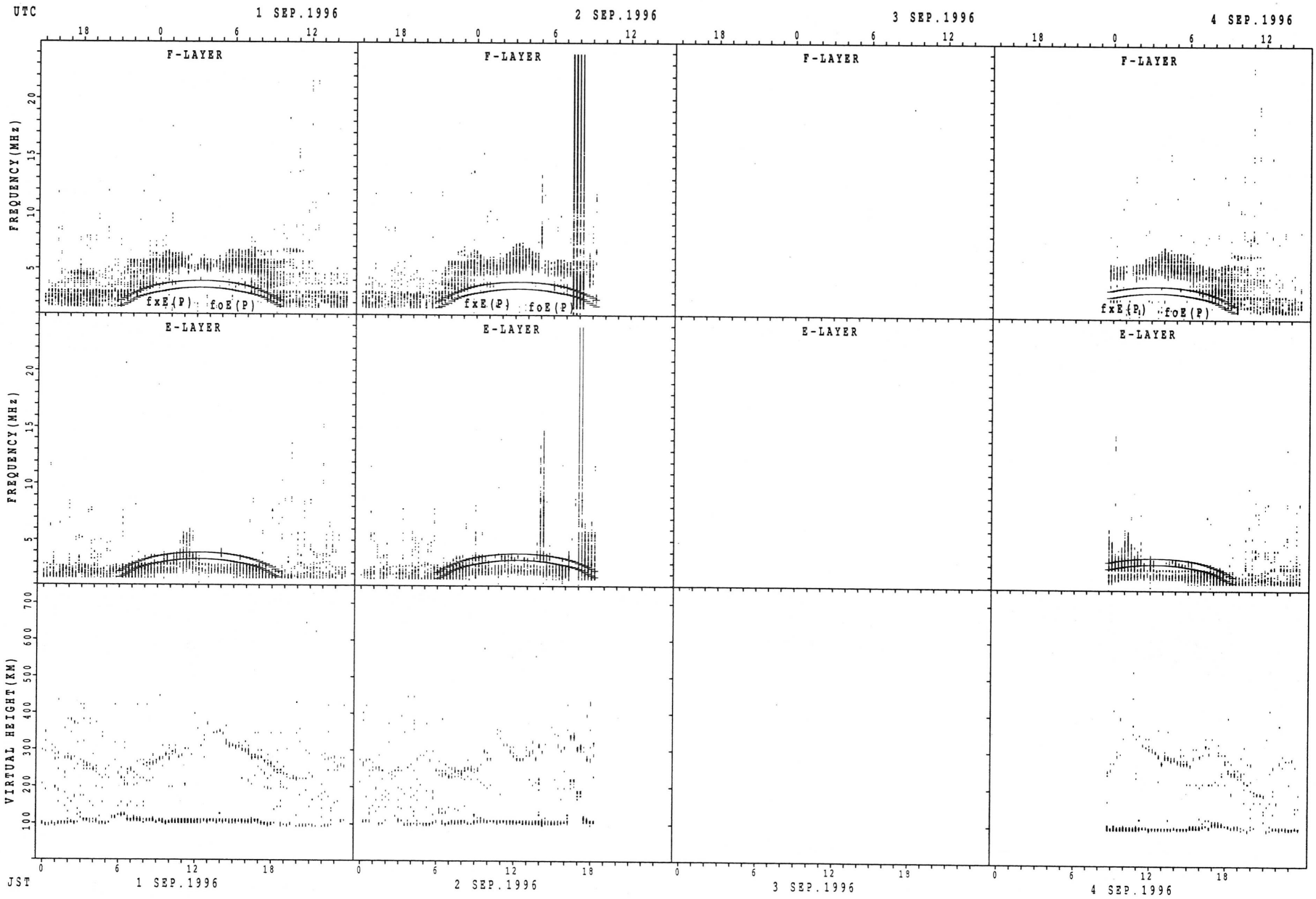

SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
25 SEP.1996
26 SEP.1996
27 SEP.1996
28 SEP.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

SUMMARY PLOTS AT KOKUBUNJI TOKYO

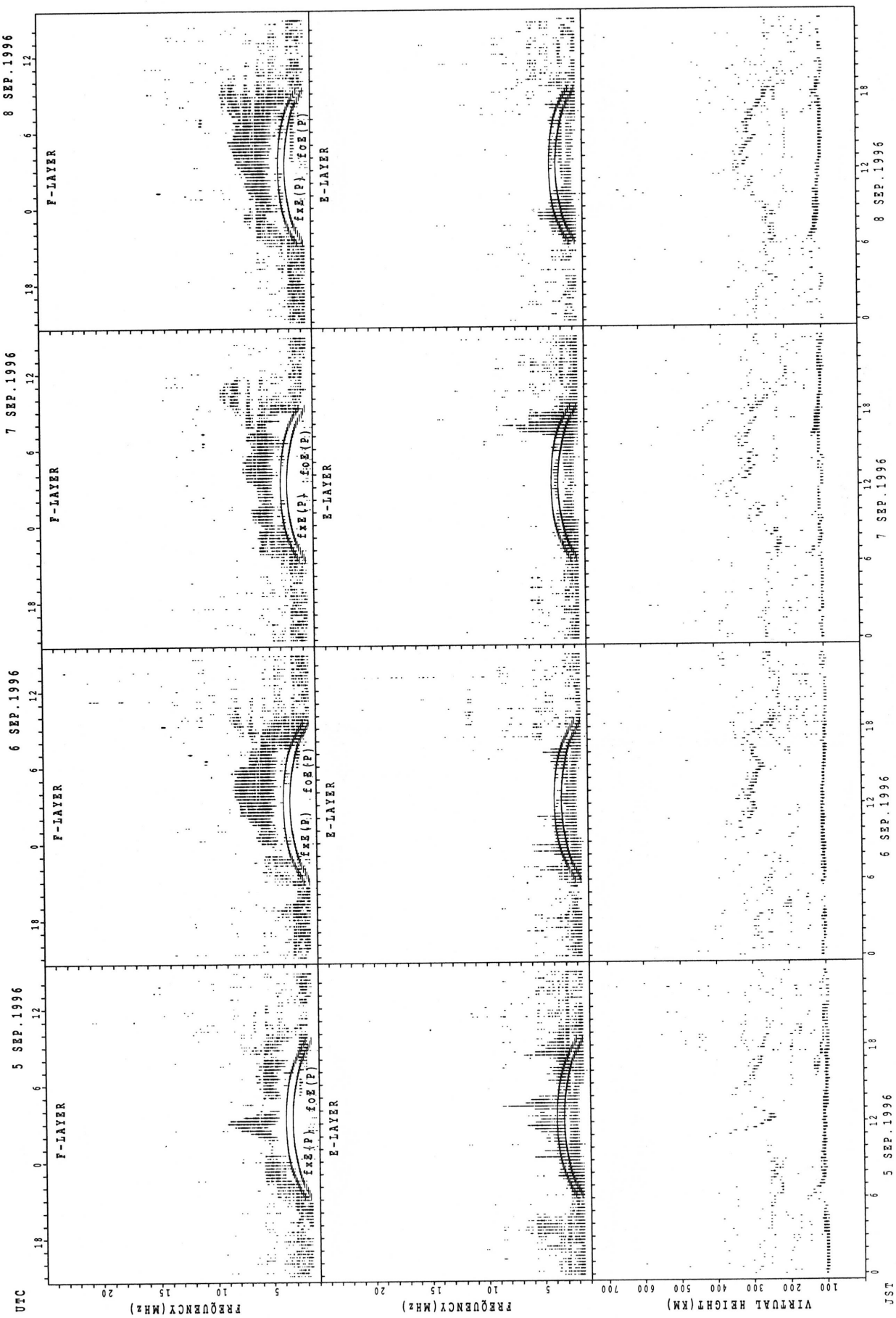


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

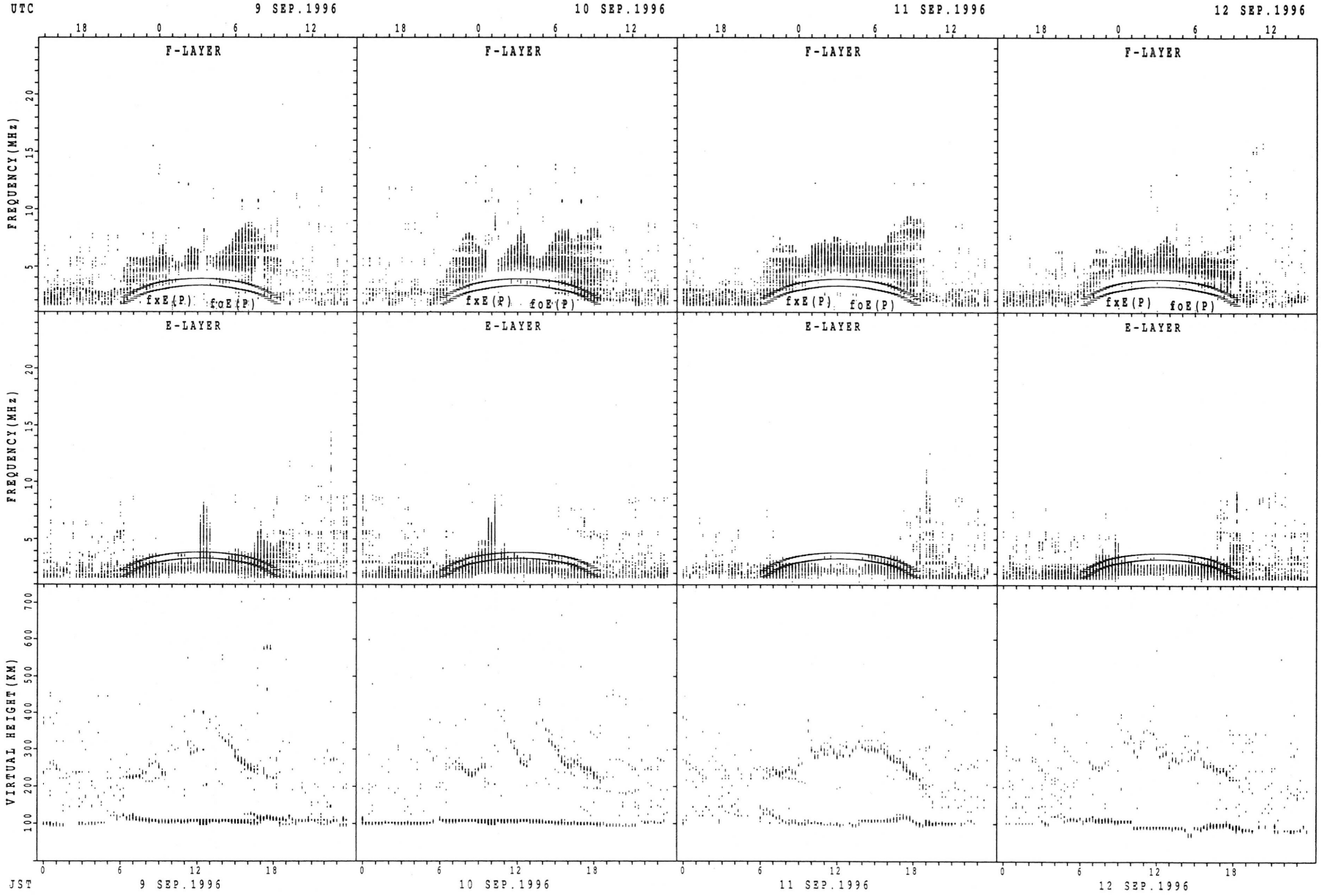
SUMMARY PLOTS AT YAMAGAWA



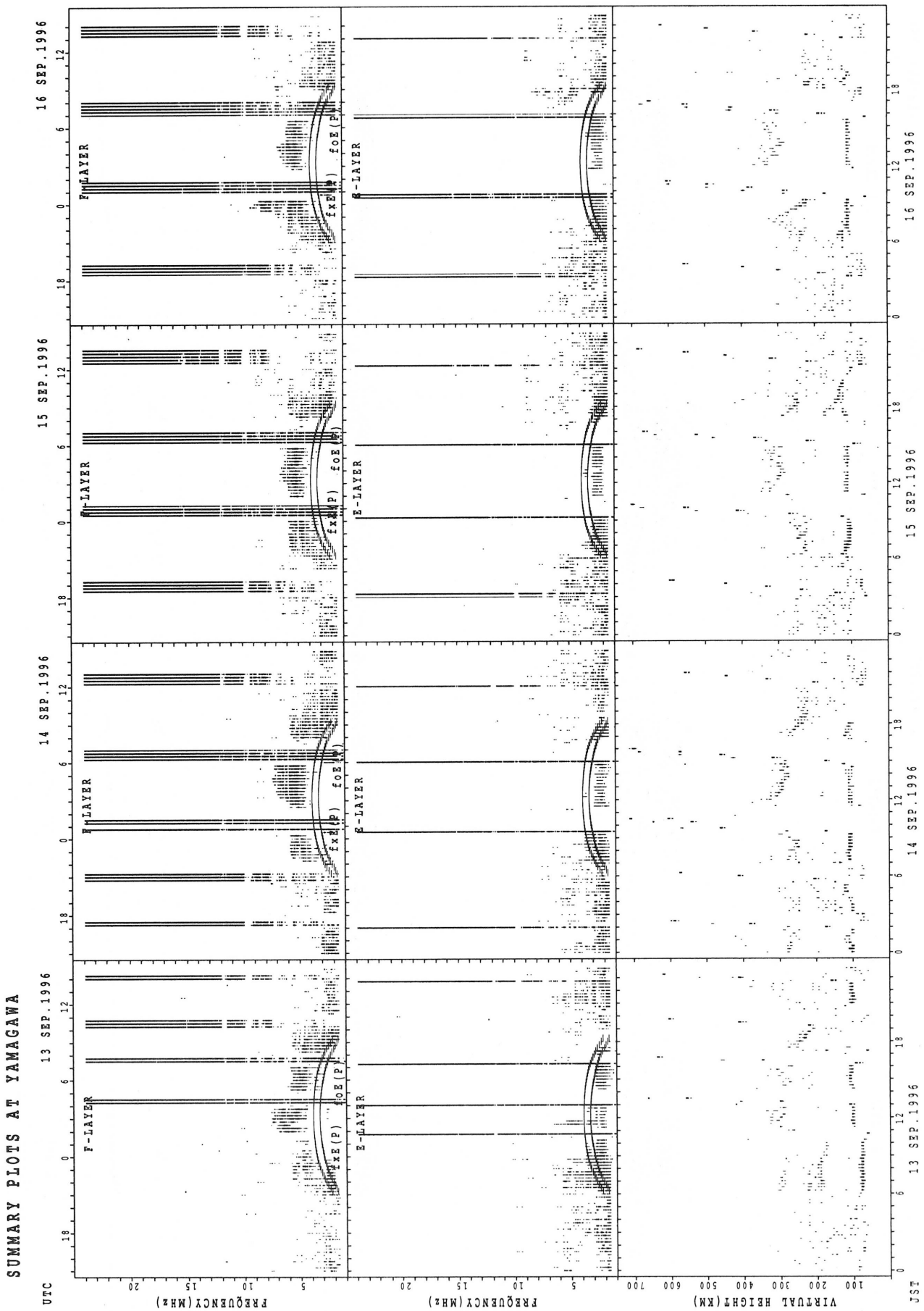
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 SEP.1996
6 SEP.1996
7 SEP.1996
8 SEP.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

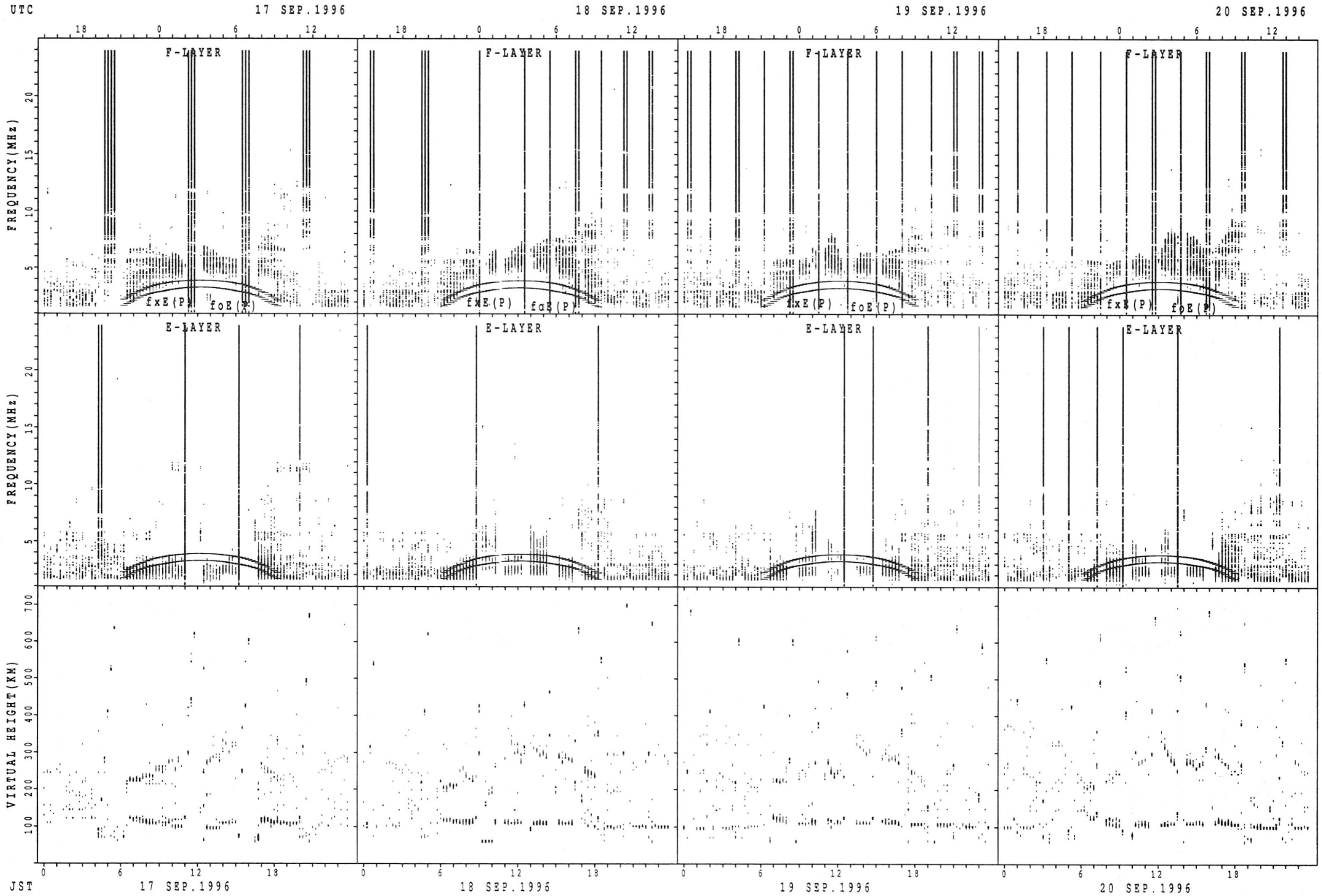
SUMMARY PLOTS AT YAMAGAWA



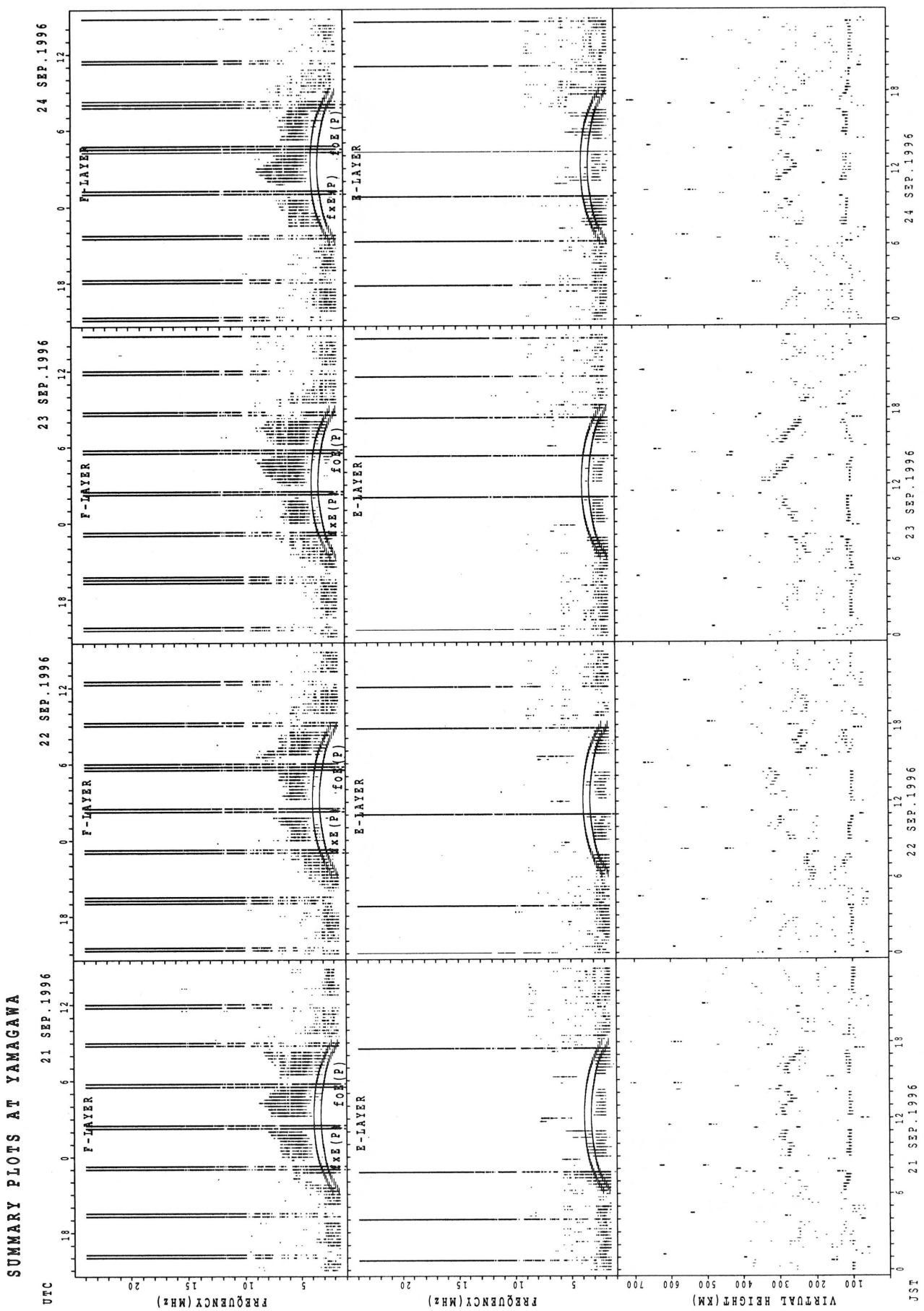
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
13 SEP.1996
14 SEP.1996
15 SEP.1996
16 SEP.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

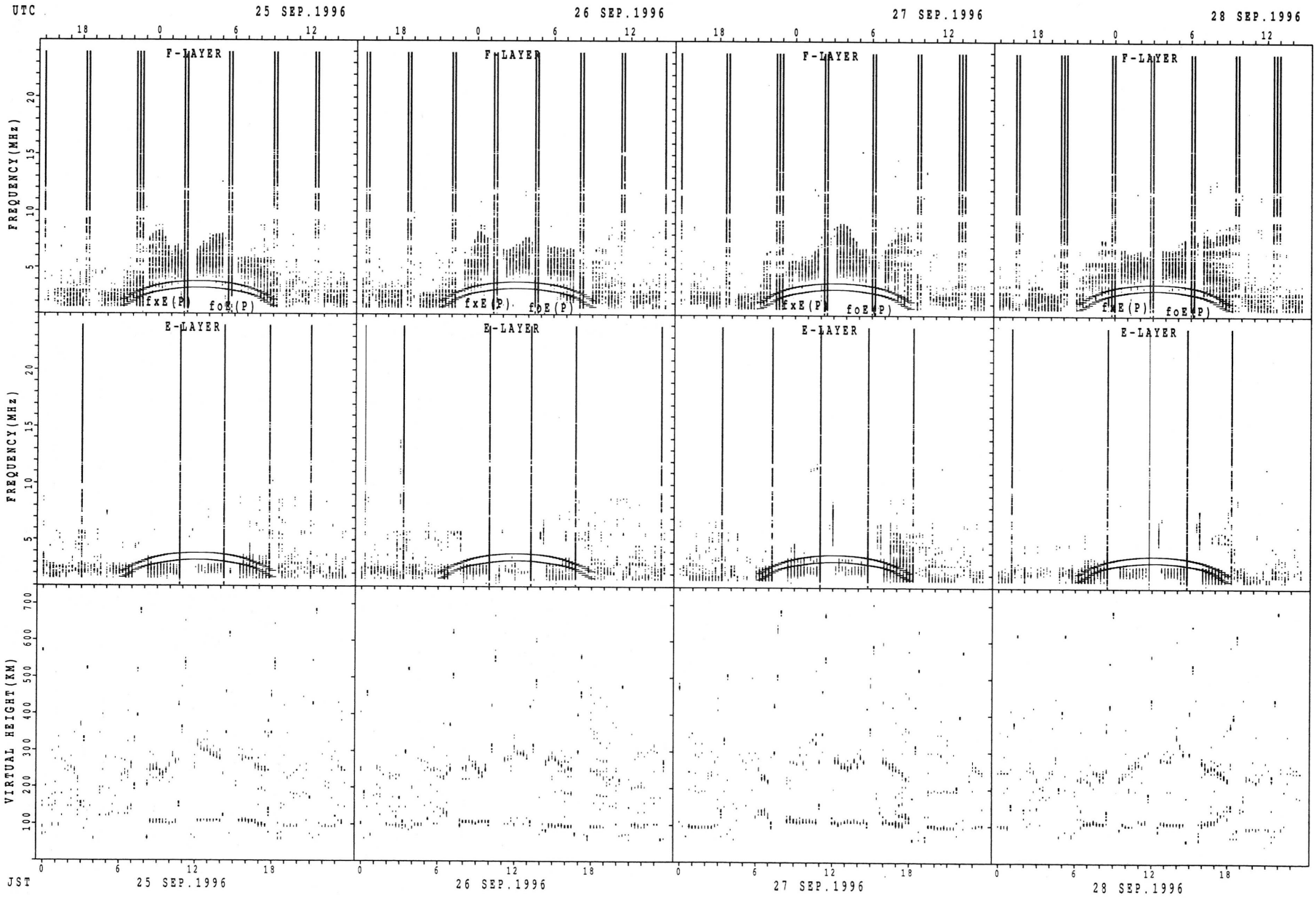
SUMMARY PLOTS AT YAMAGAWA



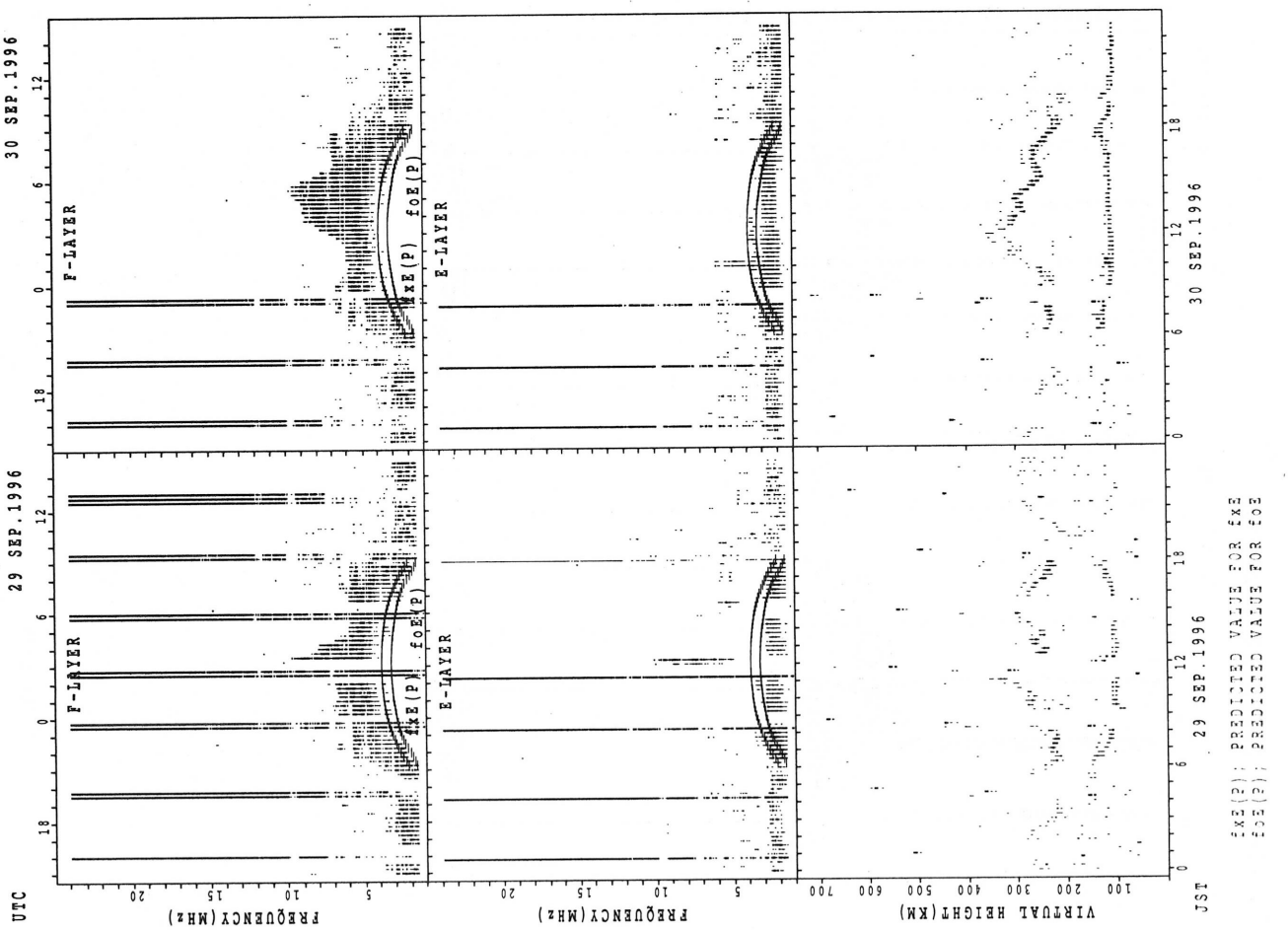
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
21 SEP.1996
22 SEP.1996
23 SEP.1996
24 SEP.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

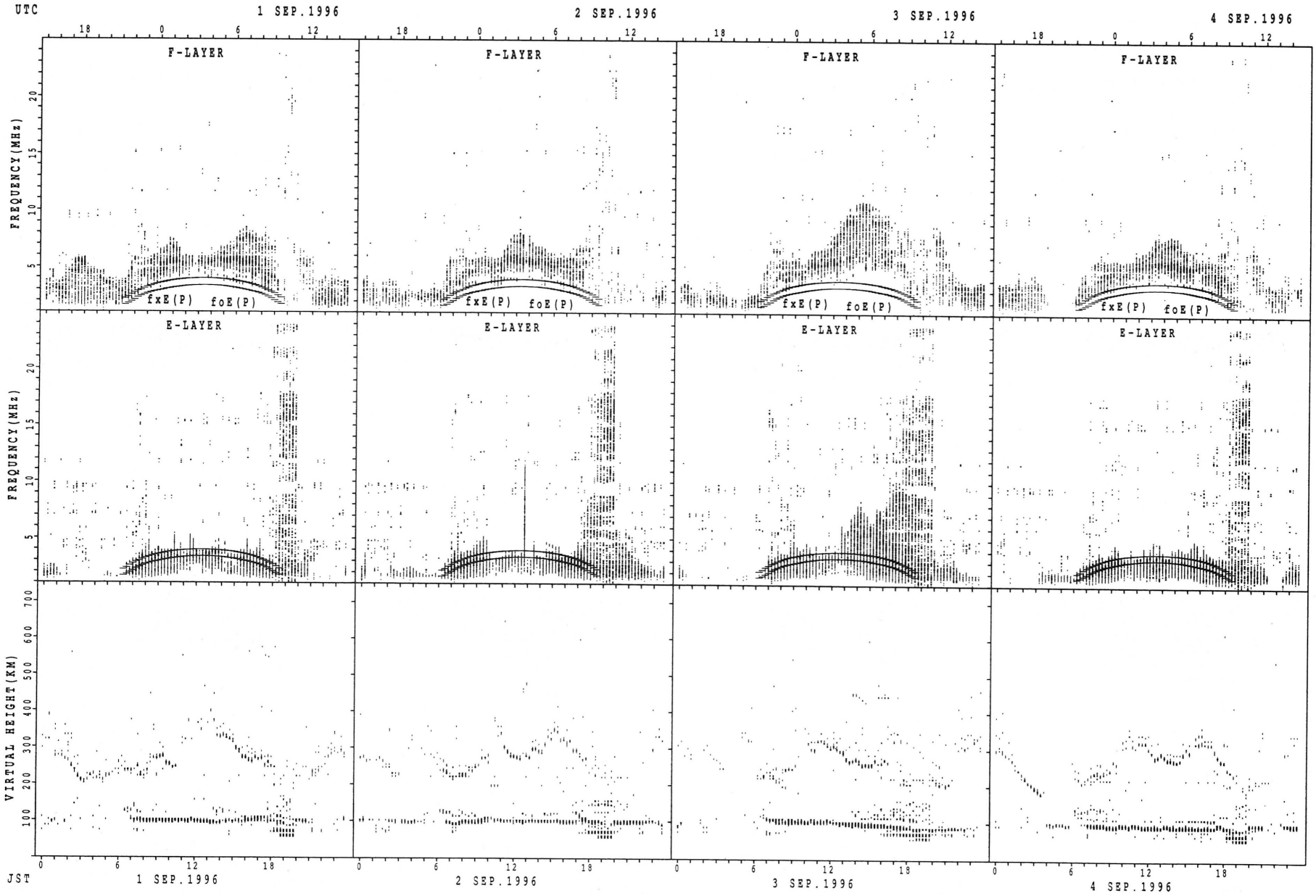
SUMMARY PLOTS AT YAMAGAWA



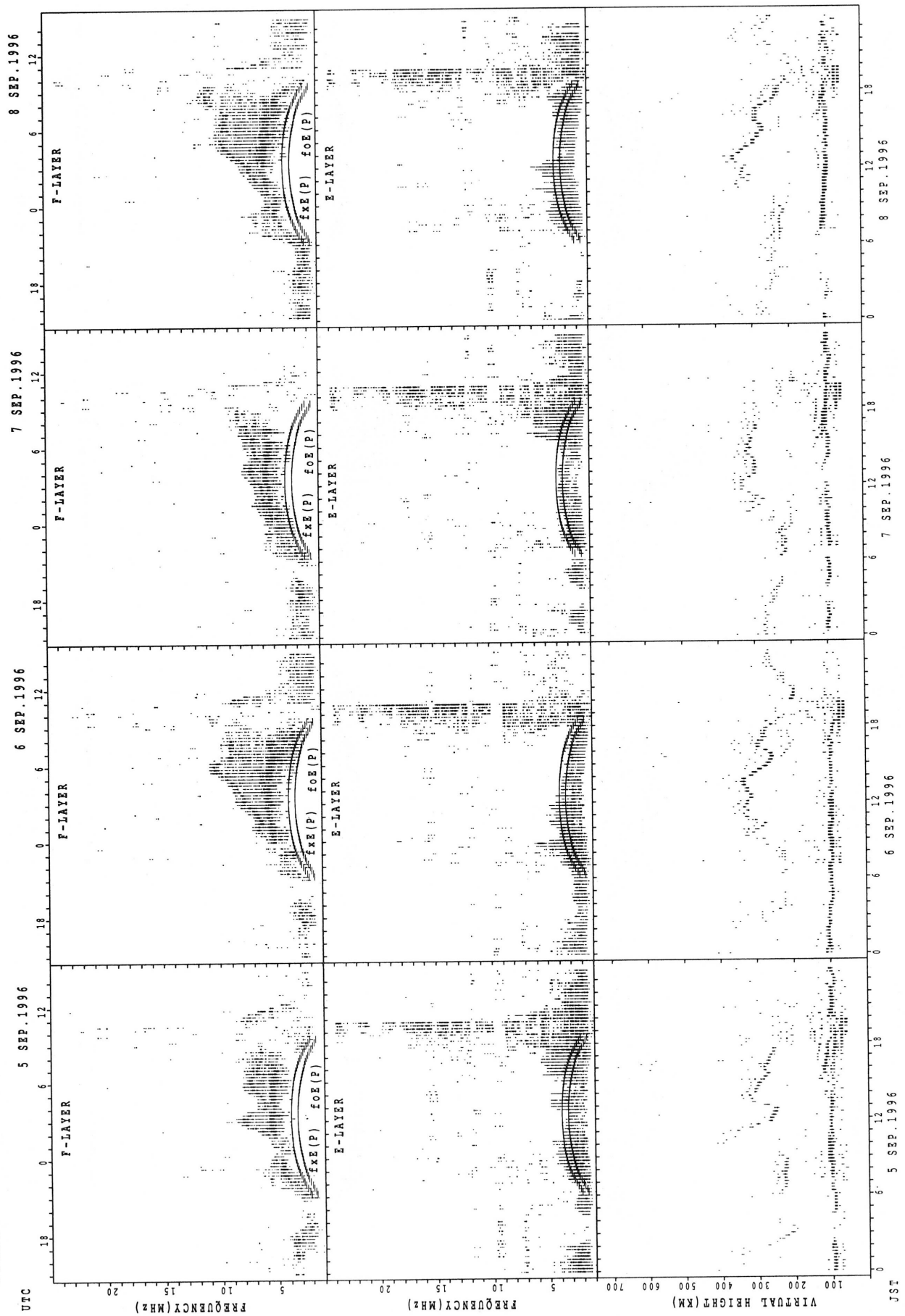
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
29 SEP.1996
30 SEP.1996
F-LAYER
E-LAYER
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P)
foE(P)
JST
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE

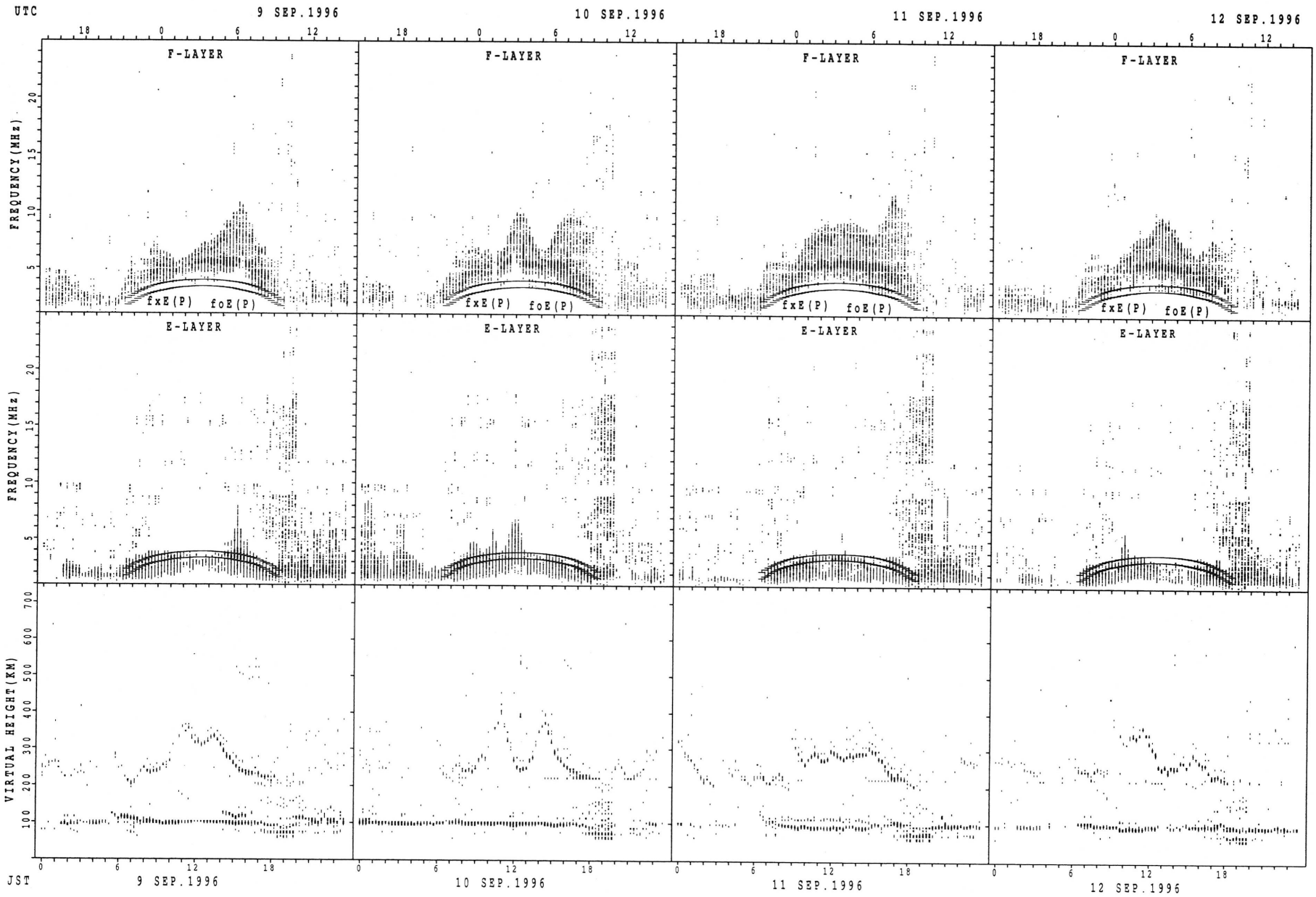
SUMMARY PLOTS AT OKINAWA



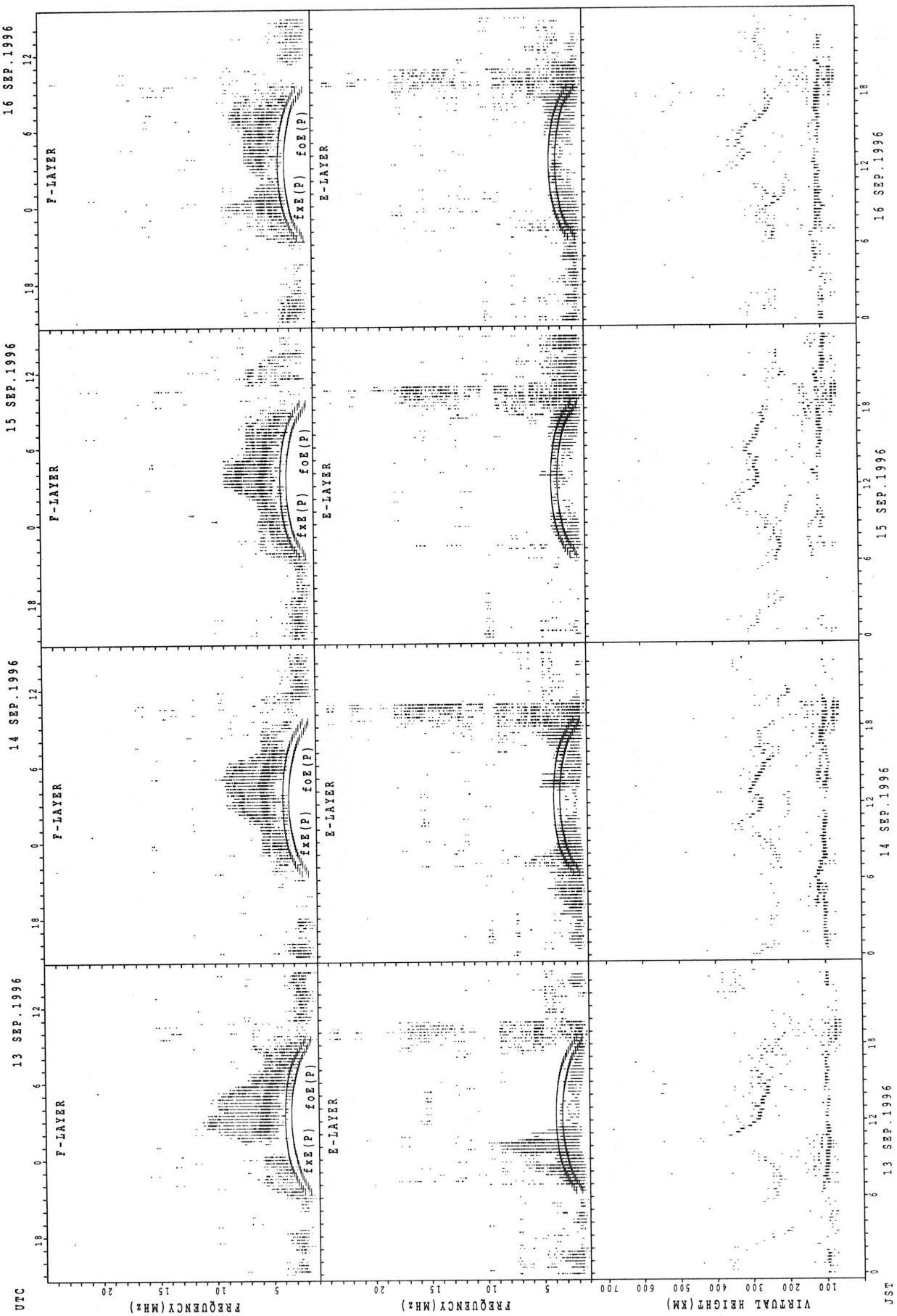
fxE(P): PREDICTED VALUE FOR fxE
foE(P): PREDICTED VALUE FOR foE


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

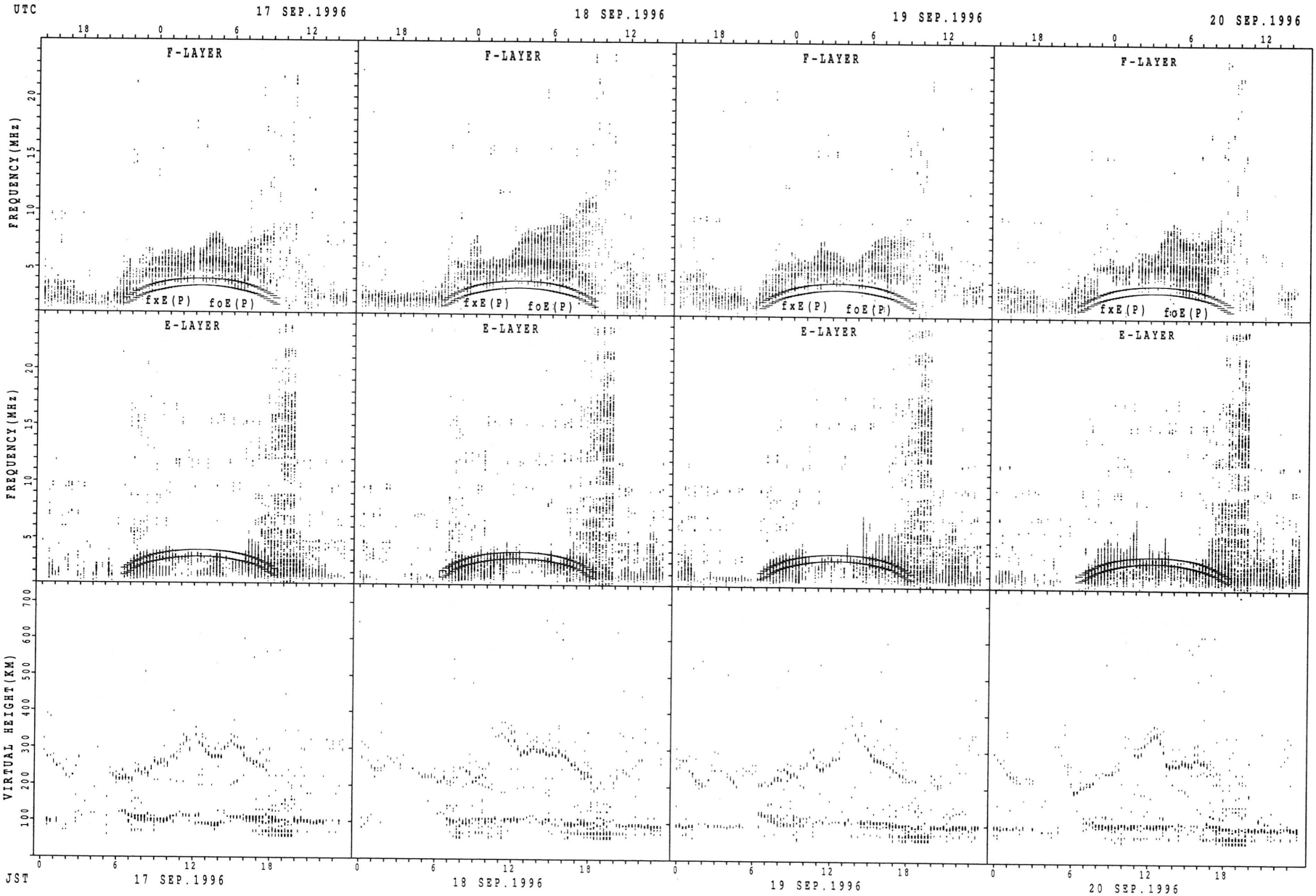
SUMMARY PLOTS AT OKINAWA



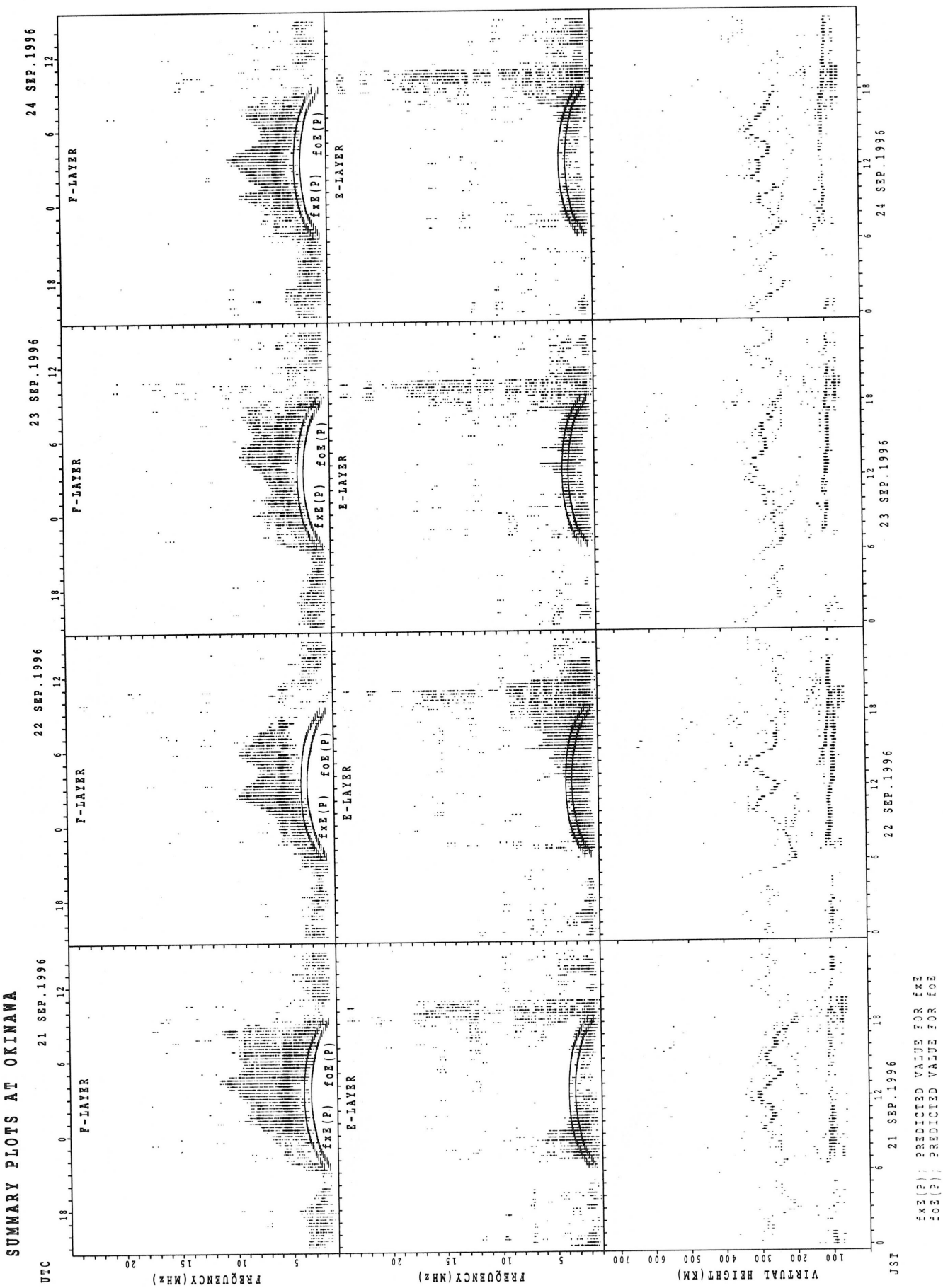
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT OKINAWA
13 SEP.1996
14 SEP.1996
15 SEP.1996
16 SEP.1996
UTC
JST
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

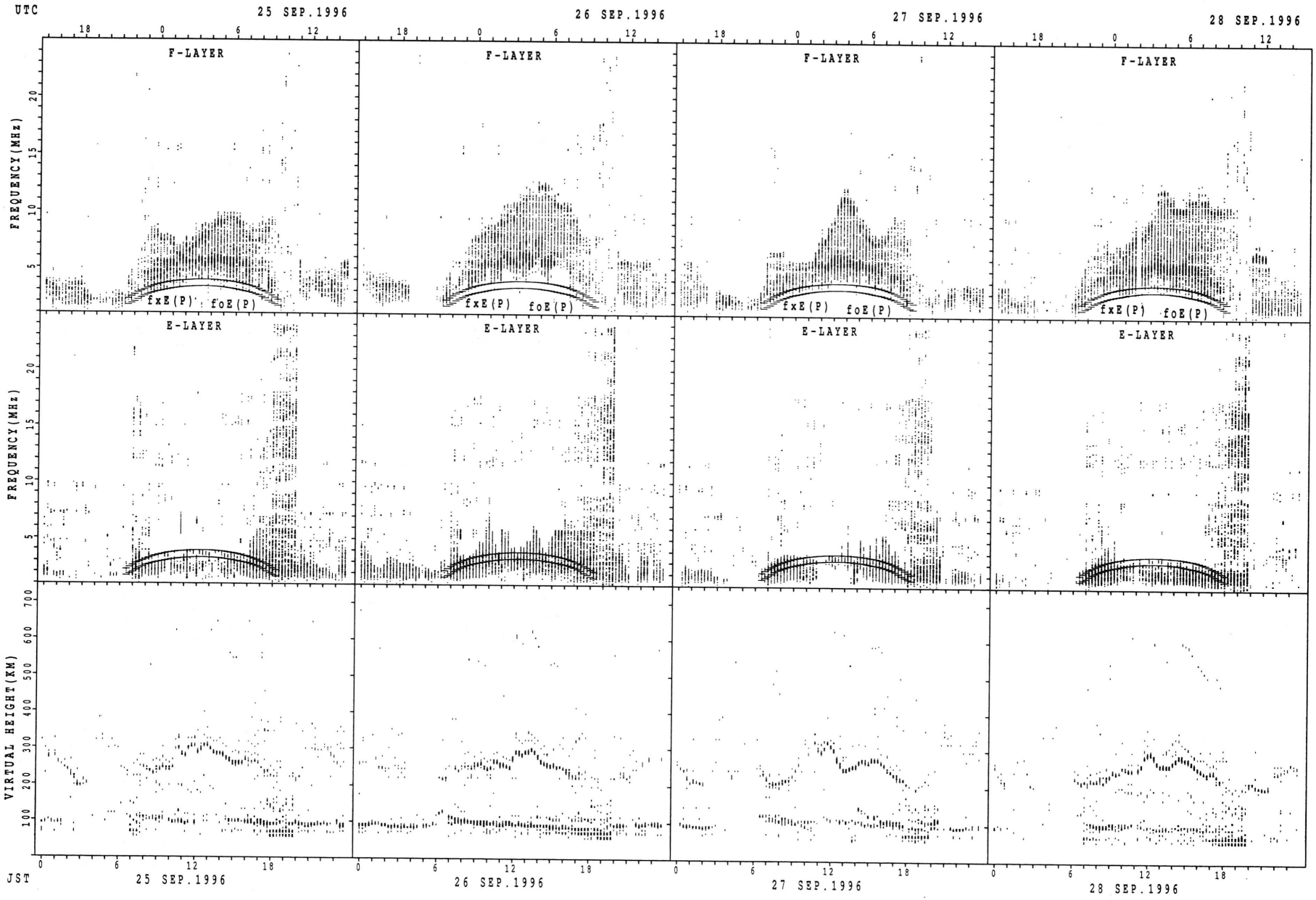
SUMMARY PLOTS AT OKINAWA



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

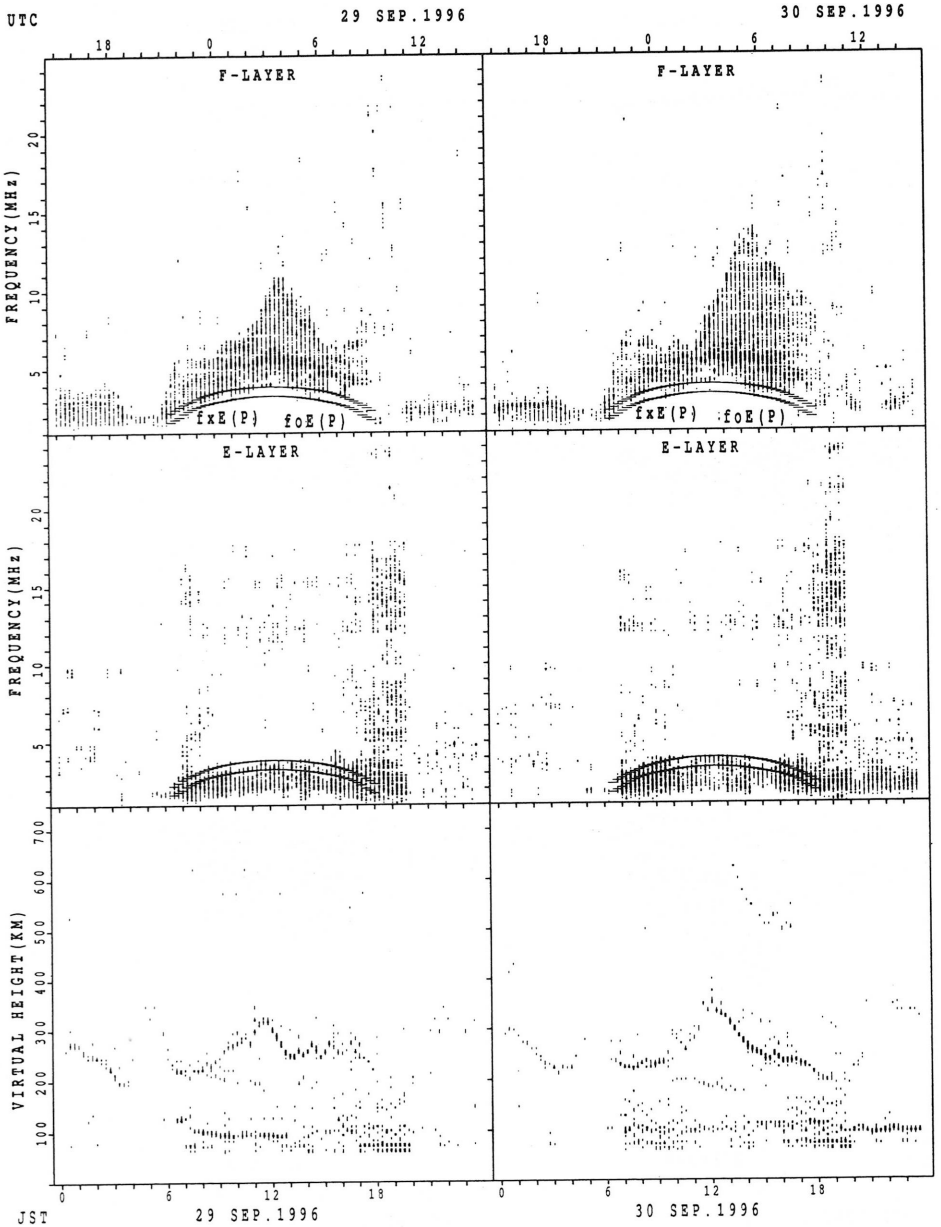

SUMMARY PLOTS AT OKINAWA
UTC
JST
21 SEP.1996
22 SEP.1996
23 SEP.1996
24 SEP.1996
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P) : PREDICTED VALUE FOR fxE
foE(P) : PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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

SUMMARY PLOTS AT OKINAWA



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

MONTHLY MEDIANS OF h'F AND h'Es

SEP.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	16	13	14	13	17	22	24	29	28	29	29	26	29	28	29	29	27	21	24	19	20	18	17	19
MED	103	103	103	111	111	108	111	107	107	107	105	106	103	107	107	119	119	113	105	107	107	107	103	103
U Q	109	105	115	119	114	113	114	113	113	113	111	107	110	119	117	151	125	124	112	113	112	107	105	107
L Q	98	100	101	102	104	99	107	103	105	104	105	103	101	104	105	107	111	107	100	103	103	103	102	97

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									12							10		14						
MED									256							294		271						
U Q									267							304		280						
L Q									245							274		264						

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	11	11	12		13	24	29	30	28	27	27	22	24	25	28	30	29	26	21	19	19	20	15
MED	103	103	103	105		103	119	113	111	112	111	107	107	107	107	111	115	115	107	103	105	107	105	105
U Q	105	105	105	112		109	127	119	113	115	115	113	111	112	113	115	125	125	113	110	107	109	107	105
L Q	99	101	99	100		98	107	110	107	107	103	103	103	104	101	105	107	109	103	99	101	105	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									14		10	10	14	20	15	12	15	14	13					
MED									249		290	293	299	289	294	299	288	269	254					
U Q									260		302	328	326	302	320	321	302	276	290					
L Q									240		278	282	282	279	278	267	272	250	243					

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	17	12	14	17	12	13	15	24	21	25	23	22	24	26	25	18	24	24	25	18	17	18	17	15
MED	105	103	105	107	106	107	127	122	113	111	111	113	109	108	111	108	113	115	113	106	103	105	107	105
U Q	110	110	105	153	116	118	143	131	119	119	113	113	113	111	113	113	116	124	122	113	111	107	109	105
L Q	103	101	103	104	103	103	113	112	111	107	107	107	106	105	107	105	107	113	106	99	97	101	97	101

MONTHLY MEDIANS OF h'F AND h'Es

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

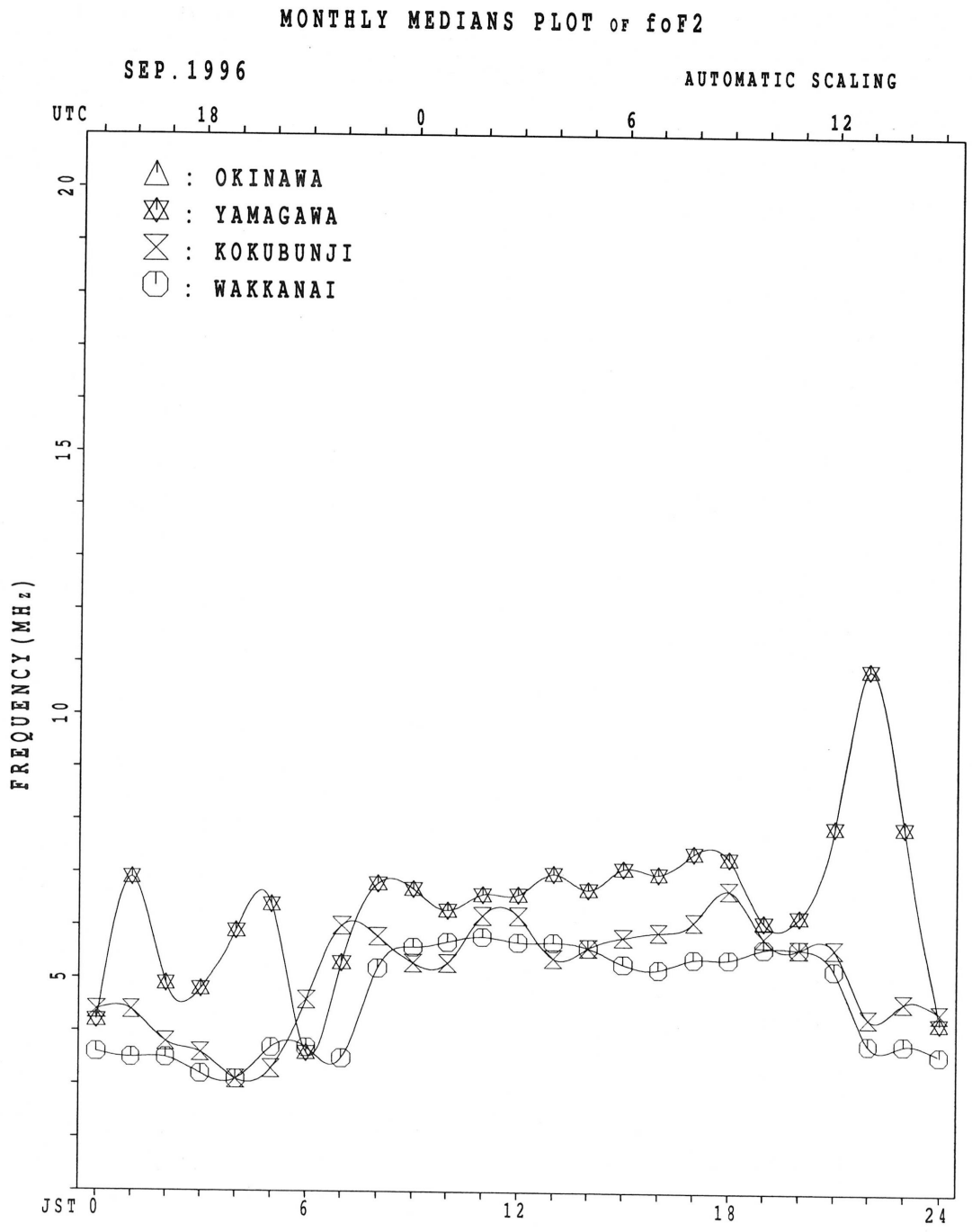
STATION OKINAWA LAT. 26.3N LON. 127.8E

h'F

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									15	20	12	21	26	28	26	28	24	24	12					
MED									242	255	263	306	303	290	278	281	272	258	261					
U Q									254	264	286	338	320	308	302	309	281	278	319					
L Q									228	241	248	285	278	276	270	262	256	239	222					

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	17	16	13					26	27	27	27	26	26	24	23	30	27	26	24	25	23	19	19	18
MED	97	97	97					113	105	105	105	104	107	103	107	110	111	107	95	87	99	97	97	95
U Q	103	102	101					125	113	113	111	113	119	119	115	119	117	113	102	134	105	99	99	101
L Q	92	95	93					109	103	101	99	99	101	97	97	97	101	99	89	83	95	91	91	93


MONTHLY MEDIANS PLOT OF foF2
SEP.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

SEP. 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	44	42	42	X 38	X 38	X 36														X 78	X 80	X 64	X 52	X 53
2	48	X 46	A	45	38	38														X 73	X 74	X 54	38	39
3	X 37	X 36	X 35	X 34	X 33	33														X 58	X 51	X 46	A	A
4	X 41	X 41	O X 37	X 39	A	A														X 73	X 67	X 50	40	42
5	39	41	46	42	35	34														X 65	X 62	X 58	54	X 49
6	42	X 41	41	41	A	X 36														X 81	X 67	X 68	X 59	X 54
7	X 48	X 42	X 40	X 39	X 38	X 36														X 84	R	X 70	X O 49	X 38
8	X 36	X 38	X 40	X 41	X 40	X 43														X 78	X 68	X 61	X 53	X 47
9	X 41	X 37	X 36	X 36	X 32	X 34														X 76	X 42	41	X 38	X 39
10	X 40	X 40	X 38	X 39	X 38	X 38														X 74	X 61	X 58	X 59	X 50
11	X 48	X 48	X 42	X 43	X 41	X 39														X 64	X 44	X 42	X 42	X 39
12	X 36	X 37	X 35	X 39	X 37	34										C			X 59	X 49	X 51	X 41	X 44	X 34
13	X 34	X 34	X 32	X 33	X 34	X 33														X 59	X 62	X 56	X 45	38	A
14	X 33	34	X 34	X 32	X 30	X 32														X 50	X 51	X 49	X 49	X 41	X 42
15	X 41	X 39	X 32	X 34	X 33	X 34														X 60	X 60	X 63	X 60	X 47	X 37
16	X 36	X 33	X 32	X 33	X 33	X 37														X 69	X 70	X 55	X 41	X 38	X 42
17	X 41	X 41	X 40	X 39	X 37	X 38														X 71	X 64	X 56	X 54	X 50	X 44
18	X 42	X 40	X 38	X 36	X 38	X 38														X 74	X 70	X 58	53	X 50	X 49
19	X 47	X 48	X 43	X 46	X 33	X 33														X 80	X 80	X 66	X 62	X 49	X 46
20	44	44	X 43	X 34	X 33	X 33														X 77	X 72	X 49	48	X 48	X 43
21	X 36	X 39	X 41	X 39	X 39	X 38														X 70	X 58	X 50	X 52	X 45	X 44
22	A	X 36	X 36	X 38	X 35	X 38														X 66	X 65	X 49	X 46	X 46	X 42
23	X 43	X 41	X 38	X 40	X 41	X 38														X 72	X 54	X 50	X 49	X 54	X 41
24	X 41	X 40	X 39	X 40	X 34	X 34														X 60	X 61	X 48	X 49	X 48	X 46
25	X 41	X 40	X 42	X 42	X 34	X 35														X 62	X 66	X 56	X 50	50	X 50
26	X 44	X 43	X 43	X 40	X 33	X 36														X 66	X 57	X 51	50	X 47	X 48
27	X 46	X 40	X 38	X 36	X 32	X 34														X 78	X 57	X 41	44	42	43
28	X 41	X 39	X 36	42	38	37														X 74	X 55	X 50	X 48	X 48	X 45
29	X 42	X 39	X 39	X 38	X 38	X 36														X 57	X 49	X 45	X 45	X 43	X 41
30	X 42	X 40	X 40	X 43	X 41	X 33														X 58	X 44	X 42	X 40	X 40	X 41
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	28	29													19	30	29	30	29	28
MED	X 41	X 40	X 39	X 39	X 36	X 36													X 66	X 64	X 51	X 50	X 47	X 43
U Q	X 44	X 41	X 42	X 41	X 38	X 38													X 74	X 73	X 62	X 58	X 50	X 48
L Q	X 38	X 38	X 36	X 36	X 33	X 34													X 59	X 57	X 49	X 45	42	X 41

SEP. 1996 fxI (0.1MHz) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

IONOSPHERIC DATA STATION Kokubunji

SEP. 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							U L 352	U L 368	U L 404	U L 432	448	448	452	R 452	A	U A 444	U A 380	L 368						
2							A	A	A	436	U A 444	448	444	432	452	A	396		A					
3								380	A	A	A	A	R 452	440	432	416	376	L 352						
4									U A 376	424	A	A	440	A	440	416	A	A	A					
5									U L 420	L	A	444	U A 444	424	420	R 428	L 396	U L 340	L					
6									U L 408	A	U A 440	A	452	444	424	A	A	U L 340	A					
7							240	U L 372	U L 396	U L 432	L 432	U L 436	U R 444	432	432	408	A	A						
8									400	420	440	432	A	436	424	424	376	L						
9							L	U L 364	L 392	416	416	444	440	436	412	416	380	U A 332						
10								L 384	404	420	L 444	440	432	432	428	412	392	U L 328						
11								L	U A 392	412	424	432	432	A	A	U A 424	A	U L 328						
12							A	364	392	Y 420	Y	A	432	U Y 396	U Y 412	C	372							
13								A	A	412	A	U Y 420	L 424	U A 424	U A 412	A	A	A						
14							A	U L 376	H 408	R 424	420	424	R 440	R 428	420	396	L 368	L						
15							L	L 364	384	412	424	U L 400	U Y 428	412	412	L		L						
16							L	L	396	408	432	416	428	432	L 420	412	L 376	L 332						
17							L	L 372	L 392	428	A	432	436	464	L 416	L	L	U L 332						
18								U L 360	400	408	440	432	444	440	420	412	L 364	U L 328						
19							A		A	420	424	428	A	A	L 440		L 396	L						
20								U L 348	L 392	L 412	L	444	452	432	L 424	L 412	U L 392							
21									400	L 416	432	444	436	436	432	U L 436	L 392	L						
22							L	L	A	U L 404	440	440	436	432	436	412	L 352							
23								L	L 400	420	428	424	L 456	432	416	L 400	U L 384	L						
24								L 372	392	424	A	440	440	432	L 424	L 400	U L 380							
25							U L 224	L 368	L 400	416	440	432	L 444	440	L 428	L 392	L							
26								L	400	424	436	440	L 460	440	L 400	L 404	U L 368							
27								L 356	L 388	L 416	L 440	448	448	440	444	U L 424	L	L						
28									400	420	424	436	L 440	L 420	440	L 412	U L 396	L						
29								L	U L 420	424	U L 476	440	444	440	L 428	L	L							
30								L	U L 392	L 416	428	440	U L 472	444	L 424	L 400	L							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							3	14	25	27	22	26	28	27	28	22	19	10						
MED							U L 240	L 368	400	420	434	438	442	432	424	412	L 380	U L 332						
U Q							U L 352	L 372	U L 402	424	440	444	450	440	432	U 424	L 392	L 340						
L Q							U L 224	L 364	392	412	424	432	436	432	418	L 404	L 372	U L 328						

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

IONOSPHERIC DATA STATION Kokubunji

SEP.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							A	A 232	A	A	A	A	A	A	A	A	A	A	B					
2							A	252	280	A 312	A	A	R	340	R	A 312	268	224	B					
3							200	252	288	308	A 332	A	R	A	R	304	260	A 220	B					
4							A	A	A	A	A	A	A	A	320	304	268	A 220	A					
5							192	264	292	A 316	A	R	A	U R 328	R	296	256	208	B					
6							A	A 264	292	A	A	A	A	R	A	A	A	A	B					
7							200	256	A 280	A	R 328	A	U R 344	R 328	R	292	A 268	A	B					
8							A	244	288	312	A	332	A	336	320	296	268	220	B					
9							A	256	R	R	A	340	U R 340	R	A	A	A	208	B					
10							192	256	A	A	A	A	R	328	A	A	240	232	B					
11							A	224	A	A	R	A	R 332	340	316	284	248	188	B					
12							A	A	A	A	A	A	R	R	312	C	248	184						
13							A	A 208	A	292	A	R	R	A	A	A	A	A						
14							A	252	R 284	R	328	U R 332	R	R	R	292	244	180						
15							A	A 228	280	U R 308	R	R	U R 336	R	320	296	260	208						
16							A	A	A	R 304	R 332	U R 344	R 340	R	316	288	252	192						
17							A	A	U A 272	A	A	R 328	U R 332	328	R 312	292	252	200						
18							A	A 256	280	308	316	U A 328	A	320	316	292	252	A						
19							A	240	A 280	304	320	A 328	A	A	A	284	268	196						
20							A	244	276	308	312	A	R	R	R 316	288	252	A						
21							A	248	A 284	A	R	R 328	332	320	A	A	A	A						
22							A	240	280	A 296	320	A	R	312	312	R 292	236	192						
23							184	A	A	A	A	A	R 320	320	296	276	240	172						
24							168	236	276	304	316	324	328	R 320	R 304	280	244	172						
25							B	240	272	R 300	A	332	R 324	308	R	A	244	A						
26							A	A	296	R	R	U R 336	R	R 320	304	284	248	172						
27							176	232	268	296	A	A	R	R 324	308	280	A	164						
28							A	A	276	R 308	324	332	R 332	320	312	284	224	A						
29							180	220	276	312	328	R 332	336	336	316	276	248	168						
30							176	212	276	300	320	328	A 332	R 324	A	284	248	168						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							9	23	21	17	12	14	13	18	16	22	24	21						
MED							184	244	280	308	322	332	R 332	324	314	290	250	192						
U Q							196	256	286	310	328	U R 332	U R 338	328	316	296	260	214						
L Q							176	232	276	300	318	328	330	320	310	284	244	172						

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

IONOSPHERIC DATA STATION Kokubunji

SEP.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	JA 24	EB 14	JA 27	JA 23	JA 25	20	JA 28	JA 27	34	36	36	42	34	41	60	JA 50	JA 41	30	30	JA 36	22	EB 14	EB 16	JA 35
2	JA 45	JA 53	JA 50	JA 47	26	JA 24	51	57	JA 98	JA 76	JA 48	40	G	G 32	G 30	JA 55	JA 41	JA 38	58	30	JA 31	27	JA 32	19
3	EB 14	EB 15	EB 14	22	JA 25	25	25	36	JA 84	73	JA 73	60	G 31	40	G 29	G	G 24	27	JA 22	JA 20	JA 48	JA 50	JA 46	JA 64
4	JA 49	JA 21	JA 38	JA 27	43	JA 32	JA 39	JA 33	42	JA 40	JA 50	65	45	JA 48	38	42	JA 86	JA 48	JA 54	JA 65	JA 64	JA 48	JA 32	32
5	JA 25	JA 31	27	19	20	26	24	30	32	JA 45	JA 44	G 33	53	G	G 30	G 27	G 20	G	JA 23	20	29	JA 37	JA 28	42
6	JA 32	26	JA 24	JA 25	JA 41	JA 26	33	36	G 28	72	JA 47	JA 52	JA 42	G 33	JA 43	59	52	37	JA 36	26	19	EB 14	24	EB 14
7	22	22	18	JA 26	20	EB 15	23	29	32	33	G 26	36	G 26	G 29	32	G 26	JA 54	JA 66	38	JA 40	JA 34	JA 37	32	JA 37
8	37	22	18	JA 23	22	22	24	JA 50	G 22	33	38	G 33	JA 54	G 31	G 31	33	32	JA 43	JA 23	JA 22	JA 29	JA 44	JA 22	JA 23
9	27	24	EB 14	EB 14	EB 16	20	JA 22	26	G 26	G 30	35	40	37	G 31	JA 38	JA 32	33	JA 37	36	JA 30	JA 46	JA 44	JA 32	24
10	27	22	18	EB 15	21	24	22	JG 26	31	32	34	JA 39	G 32	G 29	34	36	G 21	28	28	22	16	EB 13	EB 14	18
11	EB 14	EB 14	EB 15	EB 14	20	JA 25	JA 41	JA 51	JA 46	JA 44	G 30	33	GJ 27	JA 50	JA 54	JA 52	JA 41	JA 34	28	20	22	20	26	18
12	EB 15	EB 14	19	19	JA 44	JA 32	JA 44	JA 48	34	32	36	56	G	G 36	C	JA 46	JA 37	42	23	31	JA 46	29	JA 30	
13	JA 26	28	24	20	19	28	JA 50	56	JA 65	G 24	53	G 26	40	JA 42	JA 46	JA 65	76	JA 71	JA 64	JA 55	JA 45	JA 36	JA 25	JA 37
14	32	JA 23	JA 23	29	JA 22	JA 34	JA 49	G 24	G 22	25	G 27	G 29	22	G	G	G	29	24	23	EB 13	EB 14	EB 15	26	EB 15
15	16	EB 13	EB 17	18	EB 15	JA 21	JA 28	27	G 22	G	G 25	23	38	G	37	34	29	25	20	JA 28	EB 14	JA 28	JA 24	JA 28
16	22	EB 14	EB 14	EB 14	20	ES 16	21	26	30	G 28	G	G	G	G 30	33	G	G	26	JA 19	EB 15	JA 29	28	30	JA 24
17	JA 22	JA 22	27	20	21	S 27	JA 24	JA 30	33	33	52	G 25	G 24	G	G 24	33	34	JA 29	JA 25	22	18	EB 14	EB 14	EB 14
18	EB 14	16	EB 15	EB 15	18	EB 16	JA 30	JA 34	32	33	38	37	40	34	G	31	G	JA 22	28	J 30	A 28	27	28	42
19	JA 31	25	JA 26	JA 25	18	23	JA 51	33	104	JA 43	JA 49	35	JA 66	JA 87	JA 40	36	JA 45	JA 40	JA 40	JA 44	26	27	21	21
20	19	19	19	21	EB 14	JA 46	JA 22	JA 31	JA 52	JA 48	JA 49	38	G 31	G 30	G	32	29	JA 28	JA 26	JA 47	JA 34	JA 27	JA 27	JA 25
21	27	22	JA 22	JA 24	21	24	JA 23	JA 37	JA 38	32	G 30	G 29	G	G	33	30	31	JA 28	JA 22	24	EB 15	17	J 24	A 28
22	JA 36	JA 27	18	JA 24	19	19	JA 26	JA 34	JA 54	JA 51	JA 33	JA 39	G 32	G 21	G 21	G 19	26	22	J 15	A 14	EB 20	JA 26	AE 15	B 23
23	29	21	JA 20	20	EB 14	EB 16	G	JA 25	30	JA 38	JA 41	36	G 24	36	G 21	30	30	23	J 19	AE 15	BE 15	BE 15	BE 14	B 19
24	EB 15	EB 14	18	EB 13	19	EB 15	21	31	33	35	JA 66	38	37	G	G	33	33	JA 37	27	JA 21	28	J 29	A 29	JA 22
25	JA 20	EB 14	EB 14	EB 14	EB 14	21	EB 17	G 21	G 24	G 27	36	36	G 28	G 28	GJ 26	A 28	JA 28	JA 28	JA 25	26	J 21	A 20	18	EB 16
26	EB 16	EB 15	EB 13	EB 13	EB 14	EB 15	JA 33	JA 43	31	G 27	G	G	G	G 24	G	31	30	23	J 55	A 43	JA 34	JA 28	JA 35	E 15
27	EB 15	EB 14	EB 14	EB 15	EB 15	EB 16	JA 21	28	JA 38	37	JA 44	JA 40	G 32	G	G 22	30	27	21	J 32	A 23	JA 28	18	JA 27	22
28	20	20	23	22	21	JA 26	JA 36	JA 33	33	G	G	G 26	G 24	G 24	32	32	27	JA 23	21	EB 15	BJ 19	AE 15	EB 15	B 20
29	EB 14	EB 14	EB 13	EB 14	EB 14	19	JA 18	G 21	32	G	34	G	36	37	34	G	27	21	E 15	BE 15	BE 16	BE 15	BE 15	EB 16
30	EB 15	EB 14	EB 14	EB 13	EB 14	19	JA 21	31	33	34	37	J 43	A 38	52	JA 36	34	30	26	J 22	AE 14	BJ 20	AJ 21	AJ 20	A 20
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30
MED	22	20	18	20	20	22	J 24	A 31	33	33	36	36	G	G	32	32	30	J 28	A 26	23	J 27	A 27	26	22
U Q	JA 29	23	JA 24	JA 24	JA 22	JA 26	JA 36	JA 36	JA 42	JA 43	JA 48	40	38	37	JA 37	36	JA 41	JA 37	JA 36	JA 30	JA 31	JA 36	JA 29	JA 30
L Q	EB 15	EB 14	EB 14	EB 14	EB 15	EB 19	22	27	G 30	G	G	G 33	G 31	G 30	G 30	G	G 27	23	J 22	AE 20	BE 19	BE 15	BE 18	BE 18

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

IONOSPHERIC DATA STATION Kokubunji

SEP.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	17	E B 14	17	E B 14	E B 16	17	22	G 23	34	35	U Y 36	42	U Y 34	39	52	44	38	26	19	20	17	E B 14	E B 16	18
2	24	34	A A 50	20	18	E B 16	40	A A 57	A A 98	37	44	38	G	G U 31	G U 30	49	34	25	A A 58	22	19	17	22	E B 14
3	E B 14	E B 15	E B 14	E B 14	19	E B 16	22	34	A A 84	A A 73	A A 73	A A 60	U G 31	36	G 27	G	G 24	25	17	16	E B 14	20	A A 46	A A 64
4	22	17	22	22	A A 43	A A 32	35	30	38	38	48	A A 65	41	47	36	38	46	33	46	47	30	22	22	23
5	22	25	18	16	16	18	23	28	32	36	41	U G 33	44	G	G U G 30	G 26	G 19	G	17	16	18	20	20	34
6	20	E B 15	18	18	A A 41	20	26	36	G A A 26	72	44	47	36	U G 33	34	57	41	29	32	19	E B 15	E B 14	E B 15	E B 14
7	E B 15	17	E B 15	E B 16	18	E B 15	21	28	30	U Y 33	G 24	35	G 24	G 28	U Y 32	G 24	46	37	27	25	24	20	24	24
8	21	E B 14	17	E B 14	E B E B 14	E B 14	20	29	G 19	33	36	G 30	46	G 30	G 27	32	30	28	18	18	26	26	18	E B 15
9	20	17	E B 14	E B 14	E B 16	E B 15	20	G 22	U G 26	U G 30	U Y 35	39	U Y 36	U G 31	37	31	32	33	27	26	22	27	18	E B 14
10	E B 14	E B 14	E B 14	E B 15	17	E B 15	20	G 20	31	U Y 32	34	38	U G 32	G 28	34	30	G 18	G 20	20	18	16	E B 13	E B 14	E B 14
11	E B 14	E B 14	E B 15	E B 14	18	18	33	30	39	33	U G 30	U Y 33	G 24	48	A A 54	42	40	26	22	16	17	17	18	16
12	E B 15	E B 14	E B 14	17	21	20	A A 44	29	32	U Y 32	U Y 36	A A 56	G	G	35	C	34	26	31	E B 15	21	23	18	21
13	18	18	18	18	17	E B 15	31	A A 56	43	G 22	A A 53	U G 26	U Y 39	42	41	A A 65	A A 76	A A 71	43	28	24	30	18	A A 37
14	20	20	17	21	17	24	38	G 18	G 20	25	G 26	G 26	22	G	G	G	27	20	18	E B 13	E B 14	E B 15	19	E B 15
15	E B 14	E B 13	E B 17	16	E B 15	17	24	26	G 20	G	U G 24	22	U Y 38	G	36	33	29	23	E B 15	16	E B 14	18	18	20
16	E B 14	E B 14	E B 14	E B 14	17	E S 16	20	26	27	G 27	G	G	G	U G 30	G 32	G	G	24	E B 14	E B 15	23	20	23	19
17	E B 15	17	17	16	18	19	20	29	30	32	50	G 24	G 22	G	G 23	32	32	26	20	E B 15	E B 14	E B 14	E B 14	E B 14
18	E B 14	E B 13	E B 15	E B 15	E B 14	E B 16	21	28	31	33	36	36	36	34	G	30	G	20	18	18	18	20	17	22
19	19	17	17	17	E B 14	E B 15	A A 51	32	58	40	37	35	A A 66	U A 50	39	33	30	26	32	23	19	18	17	E B 14
20	E B 14	17	E B 14	17	E B 14	18	20	28	34	40	40	38	U G 31	U G 30	G	31	28	22	18	25	23	18	19	18
21	17	E B 15	17	18	E B 14	17	18	27	34	31	U G 30	G 27	G	G	33	28	26	21	18	19	E B 15	E B 14	18	18
22	A A 36	17	E B 15	19	E B 14	17	21	26	40	35	G 25	36	U G 32	G 20	G 19	G 18	26	21	E B 13	E B 14	16	18	E B 15	17
23	21	17	17	E B 14	E B 14	E B 16	G	24	28	34	34	34	G 21	36	G 21	30	28	19	E B 14	E B 15	E B 15	E B 15	E B 14	16
24	E B 15	E B 14	E B 14	E B 13	16	E B 15	20	30	32	34	A A 66	36	36	G	G	33	29	30	27	E B 15	18	25	19	16
25	18	E B 14	E B 14	E B 14	E B 14	17	E B 17	G 18	G 22	G 26	35	36	G 26	G U 25	U G 26	28	25	20	E B 14	19	17	17	16	E B 16
26	E B 16	E B 15	E B 13	E B 13	E B 14	E B 15	28	33	31	G 25	G	G	G	G 23	G	30	29	21	21	19	17	20	20	E B 15
27	E B 15	E B 14	E B 14	E B 15	E B 15	E B 16	20	26	34	35	40	36	U G 32	G	G 20	30	26	19	E B 15	17	20	17	17	17
28	E B 14	E B 14	E B 13	E B 14	E B 14	E B 16	19	24	G 20	G	G	G 25	G 24	G 23	32	31	26	21	E B 15	E B 15	17	E B 15	E B 15	E B 16
29	E B 14	E B 14	E B 13	E B 14	E B 14	16	G	G 19	30	G	34	G	36	36	33	G	27	20	E B 15	E B 15	E B 16	E B 15	E B 15	E B 16
30	E B 15	E B 14	E B 14	E B 13	E B 14	E B 14	G	30	30	33	35	40	37	43	33	34	29	25	18	E B 14	18	E B 15	17	E B 14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30
MED	E B 16	E B 15	E B 15	E B 15	E B 16	16	21	28	31	33	36	36	G	G	G	31	29	24	18	18	18	18	18	16
U Q	20	17	17	17	18	18	28	30	34	35	41	38	36	36	35	34	34	26	27	20	21	20	19	20
L Q	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	20	G 24	G 27	G	G	G 33	G 31	G 30	G 30	G	G 26	20	E B 15	E B 15	E B 16	E B 15	E B 16	E B 15

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

IONOSPHERIC DATA STATION Kokubunji

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

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

IONOSPHERIC DATA STATION Kokubunji

SEP. 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	F 310	F 310	F 319	321	306	303	346	375	324	346	348	318	317	304	327	319	333	320	314	324	340	327	297	297
2	F 297	291	A	F 328	F 336	F 308	362	A	A	355	J R 331	U R 331	R 309	318	313	338	322	320	A	328	345	J R 285	299	F 288
3	308	316	297	305	300	F 299	338	329	A	A	A	A	315	302	321	323	336	345	348	329	326	315	A	A
4	290	301	310	340	A	A	348	337	365	338	A 352	A	324	U R 334	329	346	337	328	J R 300	323	355	339	F 298	F 293
5	F 296	F 302	F 313	F 343	F 342	F 355	364	337	345	330	303	318	329	365	333	318	334	328	330	317	343	337	F 315	332
6	F 300	300	304	F 336	A	353	377	347	357	A	336	R 305	327	339	340	334	338	323	318	335	312	R 327	339	309
7	308	318	320	318	351	344	377	367	355	V 346	328	R 319	J R 307	331	R 342	342	317	324	303	320	R	362	338	334
8	319	311	310	317	327	335	343	349	355	342	R 338	345	U R 332	323	322	308	325	343	329	330	333	327	315	328
9	325	331	330	348	325	326	367	H 347	348	342	345	G	J R 340	347	300	314	340	342	347	374	R 356	F 308	333	334
10	346	335	319	319	336	345	345	344	350	358	322	310	331	329	292	325	330	334	326	J R 298	321	306	316	316
11	R 317	R 326	319	316	325	353	340	328	328	326	327	326	309	317	A	324	322	333	344	366	S 321	R 321	309	317
12	310	300	324	337	353	U F 325	A	316	305	300	327	A	317	Y	326	C	333	345	349	310	328	R 350	325	309
13	308	291	304	307	316	S 295	360	A	338	348	A	306	318	318	R 315	A	A	A	327	335	343	334	F 309	A
14	296	F 284	334	R 379	307	S 356	360	315	337	337	359	336	292	326	329	343	345	355	335	321	321	R 324	297	304
15	311	327	317	317	319	322	345	361	359	373	372	320	306	314	339	334	347	323	324	301	327	344	343	320
16	331	340	325	322	R 314	U S 291	368	327	330	378	368	316	316	339	323	315	326	340	333	340	348	326	299	297
17	333	300	315	322	300	318	353	341	361	367	344	R 353	328	324	351	320	314	342	346	339	307	318	318	316
18	314	316	319	324	315	339	339	382	370	383	352	349	329	323	324	R 331	330	336	324	336	295	F 288	304	309
19	314	317	315	358	300	326	A	353	369	386	350	340	A	A	H 332	324	327	324	334	V 352	339	329	315	315
20	F 303	F 305	351	328	287	298	333	366	383	349	346	323	302	328	322	348	345	328	329	357	321	F 296	311	322
21	290	303	309	308	338	345	359	346	368	344	330	342	342	319	332	319	327	333	340	342	307	312	319	338
22	A	292	313	311	305	335	352	358	353	R 337	320	321	327	324	317	320	358	348	333	341	314	316	316	321
23	293	287	290	330	320	341	379	354	385	343	336	349	301	323	329	341	347	340	342	317	293	280	336	303
24	294	295	299	321	309	313	328	355	357	318	A	325	327	R 325	331	348	357	336	332	322	300	309	313	312
25	R 314	298	331	332	334	324	363	349	359	354	350	341	332	319	332	325	343	340	319	V 340	307	297	F 302	R 331
26	323	313	318	333	320	327	335	346	347	348	350	347	335	328	317	336	344	349	334	339	315	F 283	293	298
27	332	323	337	306	378	302	325	371	378	371	335	320	R 326	348	344	331	333	333	346	363	318	F 288	F 286	F 322
28	326	321	325	F 349	F 317	F 329	340	348	359	345	357	R 353	333	334	312	326	328	340	352	328	316	303	317	321
29	317	307	307	320	335	349	378	364	368	349	323	319	350	358	354	330	348	356	353	335	312	318	315	314
30	315	305	312	328	R 351	333	342	368	368	355	338	332	304	322	338	345	344	349	353	324	324	294	300	294
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	30	28	29	28	28	28	28	27	27	29	28	29	28	29	29	29	30	29	30	29	28
MED	311	306	317	323	320	327	350	348	357	347	338	325	326	324	329	328	334	336	333	332	321	317	315	316
U Q	321	318	324	336	336	344	364	362	368	356	350	342	332	334	336	340	344	344	346	340	340	327	318	322
L Q	298	300	310	317	308	310	340	339	346	340	328	318	309	319	319	320	327	328	325	322	312	297	300	304

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

IONOSPHERIC DATA STATION Kokubunji

SEP. 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							L	L	U L 394	U L 383	373	A	383	R 371	A	A	A	L 349						
2							A	A	A 382	A	385	345	372	361	A	A 360		A						
3								A	A	A	A	A	R 349	371	371	366	380	L 357						
4									A 393	A	A	A	A	A	358	A 356	A	A	A					
5									U L 383	L	A	382	A	387	374	H 360	L 351	U L 380	L					
6									U L 394	A	A	A	390	Y	384	A	A	U L 339	A					
7							A 413	U L 382	U L 389	U L 403	L 412	U L 404	U R 352	Y	A 361	360	A	A						
8									375	385	383	H 393	A	380	362	357	359	L						
9							L	U L 384	L 393	397	Y	367	Y	367	375	360	A 360	A						
10								L 353	373	387	L 377	374	387	381	351	345	361	U L 371						
11								L	A	Y 396	Y 383	Y	Y	A	A	A	A	U L 371						
12							A	369	375	Y	Y	A	368	Y	Y 361	C	A							
13								A	A	A 377	A	Y	Y	A	A	A	A	A						
14							A	U L 362	H 353	R 379	403	H 403	R 379	Y	365	H 357	L 363	L						
15							L	L 377	390	401	410	Y	Y	401	380	L		L						
16							L	L	357	384	386	410	381	363	L 374	369	L 357	L						
17							L	L 363	L 364	379	A	382	389	362	H 399	L	L	U L 381						
18								U L 389	385	387	385	401	398	H 383	379	355	L 366	U L 360						
19							A		A	A 397	384		A	A	L 366		L 344	L						
20								U L 398	L 400	A	L	379	364	383	L 374	L 350	U L 359							
21									A 362	L 384	371	359	389	382	359	U L 341	L 340	L						
22							L	L	A	U L 399	355	385	385	382	350	352	L 349							
23								L	L 377	378	390	412	L 364	360	362	L 337	U L 352	L						
24								L 365	377	382	A	381	374	381	L 365	L 371	U L 363							
25							U L 391	L 373	L 364	383	383	406	L 371	373	L 363	L 375	L							
26								L	367	403	401	401	H 430	368	L 395	L 355	U L 373							
27								L 376	L 396	L 401	A	366	353	380	365	U L 365	L	L						
28									373	397	404	380	L 385	L 397	352	L 361	U L 340	L						
29								L	U L 368	385	H 356	382	373	369	L 376	L	L							
30								L	U L 376	L 398	400	A 375	U L 356	A	L 365	A 363	L							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	12	23	24	18	22	22	21	27	20	17	8					
MED								402	L 374	L 376	386	386	383	376	380	365	358	L 359	U L 366					
U Q									U L 383	L 390	L 398	401	401	387	382	375	364	L 363	U L 376					
L Q									L 364	367	382	377	379	364	368	361	354	L 350	L 353					

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

IONOSPHERIC DATA STATION Kokubunji

SEP.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							266	226	262	274	280	342	338	374	EA 350	324	282	290						
2							A 282	A	A	260	290	312	350	308	338	A 296	304		A					
3								290	A	A	A	A	352	354	322	308	292	262						
4									248	296	EA 300	A	332	304	314	280	A 312	292	EA 320					
5									264	L 262	A 280	316	276	276	306	312	282	268	250					
6									248	A	294	328	286	290	268	EA 306	278	290	270					
7							218	244	252	258	298	306	378	304	282	280	A 322	276						
8									268	278	288	280	316	304	320	352	284	256						
9							240	242	280	276	276	G	288	298	376	328	258	258						
10								270	260	256	324	336	296	308	372	292	264	258						
11								280	288	290	312	322	380	A 316	A	312	284	258						
12							A	306	344	338	314	A	328	Y	326	C	284							
13								A	A 308	296	A	364	334	352	322	A	A	A '						
14							278	326	284	278	252	310	400	290	302	278	268	240						
15							260	248	248	248	262	Y 286	360	302	300	288		282						
16							240	L 292	294	232	248	342	332	290	308	332	286	256						
17							246	272	244	246	EA 290	278	296	310	268	L 296	308	254						
18								226	242	232	290	272	302	300	284	288	264	254						
19							A		A 258	238	284	274		A	A	290		300	268					
20								224	246	266	282	326	350	288	278	268	266							
21									246	276	294	272	278	292	294	304	284	248						
22							244	244	A 260	274	316	294	312	318	314	294	244							
23								248	230	278	300	274	362	306	298	274	260	248						
24								266	260	322	A	304	294	280	298	262	266							
25							244	260	256	262	270	290	296	308	286	298	270							
26								268	266	260	266	286	298	308	290	286	250							
27								232	230	234	300	308	288	268	282	282	272	258						
28									240	264	260	260	276	282	316	296	282	242						
29								238	238	268	306	290	260	252	264	286	254							
30								236	242	262	292	292	334	300	278	280	254							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							10	21	28	28	27	27	29	28	29	27	28	20	3					
MED							245	248	257	265	290	304	316	303	299	293	280	258	260					
U Q							266	276	267	278	300	326	350	308	321	308	285	272	EA 320					
L Q							240	237	245	257	276	280	291	290	283	280	264	254	250					

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

IONOSPHERIC DATA STATION Kokubunji

SEP.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	286	298	274	282	276	294	246	226	224	214	242	A	208	224	A	A	A	238	258	248	222	230	260	288
2	318	A	A	254	254	252	A	A	A	220	A	212	Y 234	222	H 194	A	E A 260	268	A	238	220	208	A 334	304
3	304	290	302	E B 306	322	312	244	A	A	A	A	A	E Y 272	216	220	234	214	232	232	224	234	270	A	A
4	348	290	A 312	250	A	A	E A 280	242	A	A 242	A	A	A	A	218	A	A	A	A	A 274	228	242	A 362	A 348
5	A 344	A 342	268	228	226	260	228	242	230	208	A	200	A	198	Y 234	H 184	H 204	238	242	244	232	250	274	A 284
6	A 326	300	294	264	A	254	220	A 254	226	A	A	A	178	Y	222	A	A	A 240	A	232	248	242	226	250
7	244	262	278	280	244	214	A	218	230	208	186	190	Y 246	Y	Y	212	A	A	272	248	236	220	234	A 272
8	A 302	282	290	272	242	242	230	222	206	210	212	H 188	A	Y 224	230	226	244	250	244	240	228	256	238	244
9	248	258	266	232	270	278	224	220	208	210	182	A 250	Y	214	A 244	228	A	A	226	218	238	E A 374	264	254
10	250	234	280	258	244	246	222	230	232	208	202	A 228	202	210	240	220	234	230	244	238	238	268	240	244
11	260	248	270	268	256	238	A 256	E A 266	A	202	204	Y	Y	A	A	A	A	244	232	212	258	252	286	274
12	298	282	280	260	A 266	A 310	A	228	222	Y	Y	A	Y 226	Y	Y 254	C	A	240	244	270	264	278	258	A 322
13	292	320	A 322	302	276	310	250	A	A	220	A	Y	Y	A	A	A	A	A	E A 292	A 258	252	A 326	308	A
14	A 324	278	248	244	304	A 332	A	H 202	H 208	212	194	H 192	228	Y	236	H 214	222	228	234	256	254	238	314	290
15	268	244	288	278	284	270	236	226	222	198	190	Y	Y	198	238	240	248	252	256	270	250	234	218	276
16	256	236	274	264	282	280	226	226	H 224	204	198	194	202	194	230	220	230	246	228	220	222	240	E A 324	302
17	264	282	286	264	300	280	240	222	224	224	A	208	208	220	H 174	236	E A 276	A 248	224	226	246	244	232	254
18	264	270	264	264	262	260	242	226	208	208	202	192	198	H 182	208	216	238	226	232	226	266	310	260	296
19	304	258	276	240	238	278	A	240	A	A	214	206	A	A	A 238	H 232	256	A	248	232	234	240	240	280
20	272	274	222	234	336	314	246	236	A 240	A	A	226	218	212	202	H 198	244	252	244	224	258	296	260	258
21	280	292	272	274	244	246	222	240	E A 246	212	208	H 220	206	202	220	212	242	242	222	224	250	270	254	252
22	A	316	272	282	298	256	218	220	A	224	212	224	204	206	H 192	236	220	238	236	224	242	254	256	274
23	314	296	326	258	264	246	210	228	236	210	214	192	200	244	Y 244	230	228	240	234	208	264	304	244	274
24	302	304	290	256	272	314	248	A 254	224	208	A	194	218	196	254	248	250	A 252	242	236	248	296	278	266
25	272	290	266	240	238	274	222	226	210	H 206	220	210	202	216	222	210	H 192	238	244	230	264	260	290	250
26	264	262	254	240	272	254	258	A 258	224	220	198	180	H 168	210	220	H 222	230	246	250	228	268	288	310	272
27	246	250	262	280	214	282	258	246	A 228	212	A	198	214	226	212	234	226	H 240	226	210	276	296	328	260
28	254	264	240	240	238	252	244	H 212	228	212	188	198	206	208	216	244	240	244	208	224	242	274	262	262
29	248	276	276	252	238	228	214	224	226	214	H 194	184	228	244	222	214	242	236	220	230	250	250	260	266
30	268	272	276	250	224	264	226	236	220	214	204	A	228	A	248	A 248	A 248	236	214	210	258	268	298	292
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	30	28	29	25	27	23	25	19	21	22	21	26	23	22	25	27	30	30	30	29	28
MED	272	278	276	258	263	264	233	227	224	212	202	198	208	212	222	226	236	240	235	230	248	256	260	273
U Q	304	294	289	274	279	288	247	A 242	230	217	212	216	228	223	238	236	248	247	244	244	258	288	303	289
L Q	258	260	266	244	240	249	222	222	220	208	194	192	202	200	216	214	226	237	226	224	234	242	242	256

IONOSPHERIC DATA STATION Kokubunji

SEP. 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							A	A	A	108	110	A	A	112	A	112	112	A	B					
2							A	118	112	120	A	112	114	A 130	A	120	116	120	B					
3							124	116	118	114	114	114	A	A	A 122	110	A 130	A	B					
4							A	A	A	112	A	A	A	A	A 128	A 132	116	120	A					
5							130	120	114	114	A	A	A	114	A	A 126	120	120	B					
6							A	A	A 128	A	A	A	A	A	A	A	A	A	B					
7							132	126	A 122	A	120	A	114	120	A	A 122	A 126	A	B					
8							122	122	120	120	A	120	A	120	A 126	118	A 124	120	B					
9							A	A 136	A	A	A	122	A	A	A	A	A	120	B					
10							122	126	A	A	A	A	A	124	A	A	120	116	B					
11							A	A 122	A	A	A	A	118	A 126	122	118	116	120	B					
12							A	A	A	A	A	A	116	114	116	C	116	120						
13							A	116	A	A 122	A	A	116	A	120	114	A	A						
14							A	A 130	124	122	116	118	112	114	116	110	116	118						
15							A	A	120	112	A	114	118	122	126	118	118	A 136						
16							A	A	A	126	122	120	116	A	A 126	116	118	134						
17							A	120	114	A	A	116	112	108	118	120	122	126						
18							A	122	118	116	116	116	112	114	116	116	118	A						
19							128	118	124	112	110	A 114	112	126	A	124	126	126						
20							A	120	116	114	114	116	A	A	118	120	118	A						
21							A	118	114	A	A	124	116	110	A	A	A	A						
22							A	A 128	A 122	A 122	A 122	A	A	114	118	116	122	A 130						
23							126	A	A	112	A	A	118	118	116	116	A 130	E B 130						
24							130	126	116	116	116	116	120	120	114	114	118	B 126						
25							B	126	A 124	126	A	120	118	120	A	A	E A 138	A						
26							A	A	114	A 126	120	114	122	122	120	116	118	120						
27							142	122	118	118	116	A	A	118	116	122	A	128						
28							A	A	A 128	114	116	122	122	118	118	116	120	A						
29							146	A 126	122	114	114	112	114	118	122	120	122	150						
30							140	A	A 132	114	118	114	118	118	A	114	114	134						
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							11	20	21	22	15	18	19	23	19	24	25	20						
MED							130	122	120	115	116	116	116	118	118	117	118	122						
U Q							140	A 126	A 124	122	120	120	118	122	A 122	120	A 123	130						
L Q							124	119	115	114	114	114	114	114	116	115	116	120						

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

IONOSPHERIC DATA STATION Kokubunji

SEP. 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	110	B	108	118	128	120	104	104	106	118	116	112	114	114	108	112	106	106	102	106	104	B	B	118
2	110	108	106	108	110	106	120	120	114	116	116	122	G	108	106	114	116	128	124	108	112	108	116	110
3	B	B	B	104	110	108	130	122	116	114	112	112	112	110	110	G	104	160	110	110	108	106	104	102
4	100	104	98	102	102	100	100	102	102	118	108	104	104	106	150	130	118	118	110	108	106	108	106	108
5	110	104	104	104	106	106	152	132	126	116	112	110	106	G	112	110	110	G	124	106	118	112	110	108
6	106	110	116	112	108	108	108	130	114	106	106	106	108	104	108	100	102	100	98	102	100	B	114	B
7	114	112	112	106	112	B	136	134	122	118	102	102	104	102	102	104	116	114	112	110	116	112	110	108
8	108	108	110	110	110	102	122	120	108	122	114	114	106	110	110	156	142	126	122	114	112	112	110	106
9	104	104	B	B	B	132	118	112	112	110	122	158	152	112	112	110	114	118	114	112	114	112	110	114
10	114	114	130	B	120	118	134	118	138	112	112	112	112	114	104	102	100	108	98	100	102	B	B	102
11	B	B	B	B	126	122	118	116	104	104	102	104	104	138	128	124	122	116	110	118	114	118	110	110
12	B	B	128	134	116	112	114	110	110	112	112	108	G	G	134	C	124	124	112	114	110	108	108	106
13	110	106	106	126	126	118	112	110	106	104	98	102	120	116	116	110	110	106	104	108	108	110	104	104
14	104	106	106	104	102	112	108	114	112	114	106	104	104	G	G	G	132	114	98	B	B	B	110	B
15	124	B	B	108	B	114	112	138	108	G	112	102	148	G	E 196	G E 202	178	166	102	112	B	108	108	104
16	104	B	B	B	104	S	116	116	114	112	G	G	G	110	126	G	G	138	118	B	108	106	110	106
17	120	114	102	106	104	100	120	120	112	118	100	108	104	G	102	144	128	124	114	120	120	B	B	B
18	B	102	B	B	110	B	120	130	128	126	118	114	114	124	G	132	G	148	112	106	106	114	110	108
19	102	102	128	124	108	164	126	124	116	118	120	126	118	122	128	130	144	122	112	112	112	148	110	110
20	108	112	110	102	B	108	136	134	120	116	120	120	112	112	G	184	132	118	120	110	106	106	106	104
21	106	106	106	100	108	124	128	118	116	118	114	114	G	G	100	106	100	108	102	100	B	132	108	108
22	102	104	100	102	106	106	130	126	114	118	100	98	98	104	102	102	146	136	124	B	118	112	B	106
23	104	108	112	110	B	B	G	116	116	110	106	104	106	174	102	160	134	124	118	B	B	B	B	104
24	B	B	102	B	106	B	138	134	128	134	116	126	130	G	G	148	126	118	120	122	112	102	104	108
25	106	B	B	B	B	110	B	118	110	110	108	180	108	106	102	102	106	100	106	100	100	100	106	B
26	B	B	B	B	B	B	116	112	132	112	G	G	G	110	G	174	138	126	110	120	108	112	106	B
27	B	B	B	B	B	B	144	136	124	118	114	114	110	G	106	148	120	138	110	108	104	104	112	106
28	100	120	120	118	118	114	112	108	112	G	G	112	108	106	146	160	144	114	114	B	112	B	B	98
29	B	B	B	B	B	126	118	112	168	G	140	G	164	176	172	G	170	150	B	B	B	B	B	B
30	B	B	B	B	B	128	162	144	142	138	130	122	122	124	94	144	138	130	128	B	112	112	110	112
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	18	19	19	21	23	28	30	30	27	27	27	25	22	25	25	28	29	29	23	25	22	23	24
MED	106	107	108	108	110	112	120	119	114	116	112	112	110	111	109	127	123	122	112	110	110	111	110	107
U Q	110	112	116	118	117	122	132	130	124	118	116	120	119	122	128	152	138	133	119	114	113	112	110	109
L Q	104	104	104	104	106	106	113	112	110	112	106	104	105	106	102	108	110	114	105	106	106	106	106	104

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

IONOSPHERIC DATA STATION Kokubunji

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

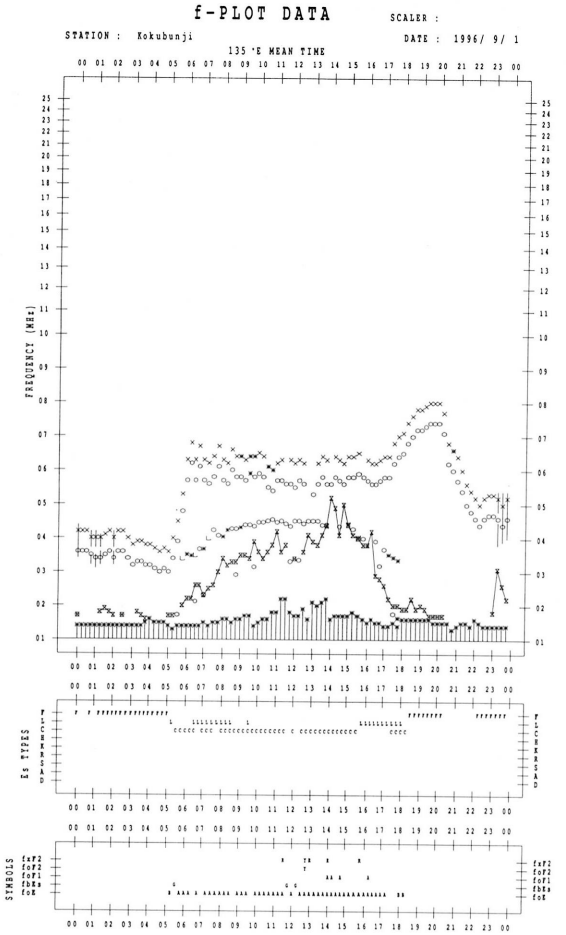
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

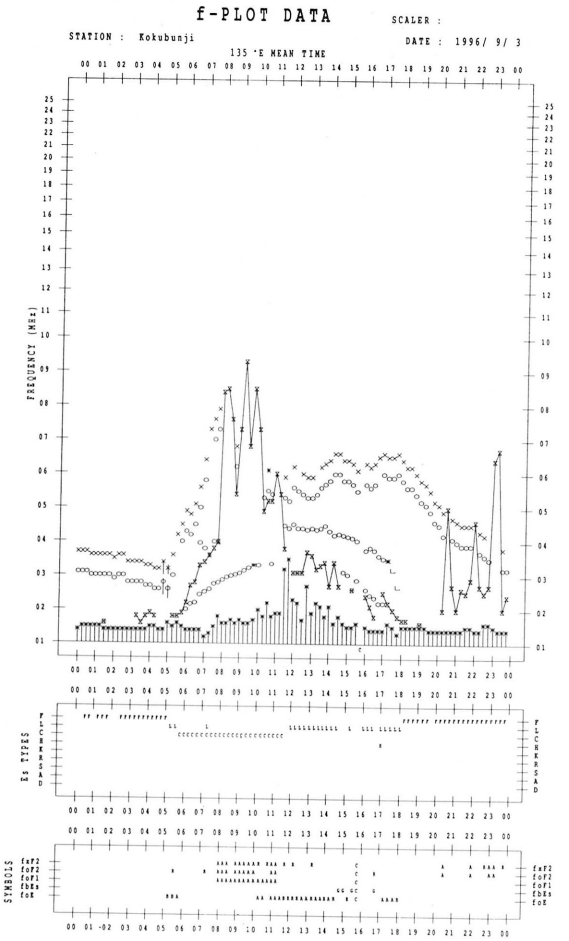
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 12		F 1	FF 11	F 1	F 1	C 2	LC 21	LC 21	C 1	C 1	C 1	C 1	C 1	C 2	C 2	L 2	L 2	LC 21	F 3	F 1			F 3
2	FF 12	F 3	F 4	F 3	F 2	F 3	C 2	CL 31	C 2	CL 12	C 1	C 1		L 1	L 1	CL 21	C 2	C 2	CL 42	F 2	F 3	F 1	FF 11	F 1
3				F 1	F 2	F 1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

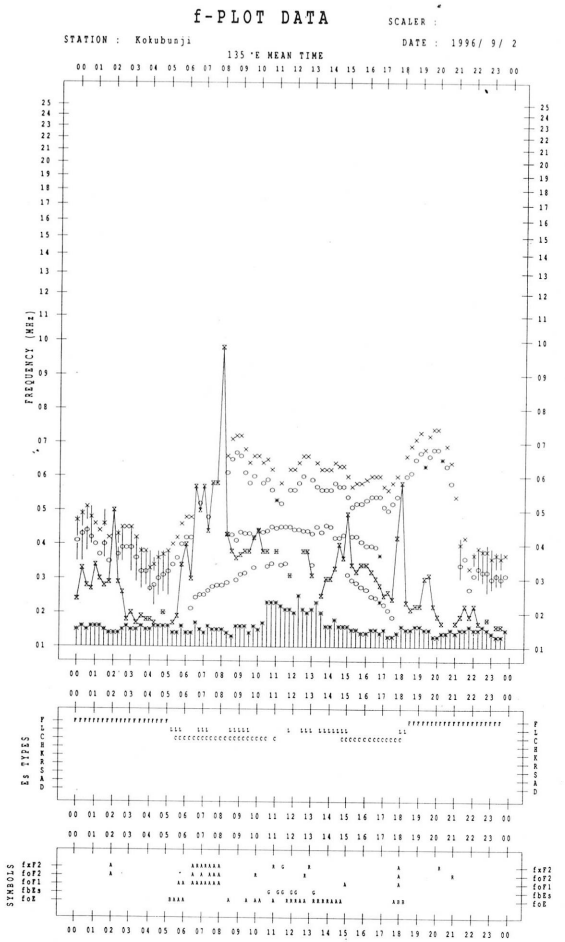
SEP. 1996 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

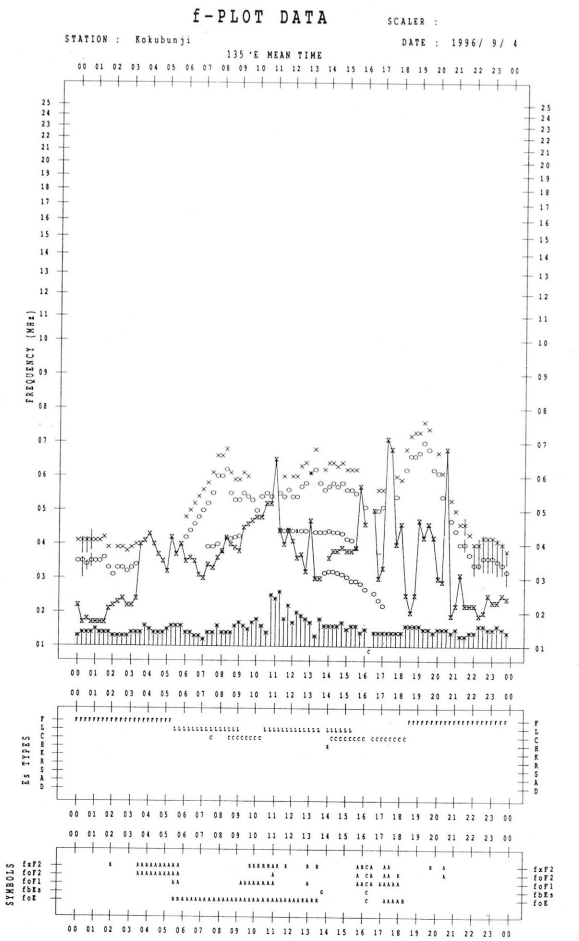
f-PLOTS OF IONOSPHERIC DATA

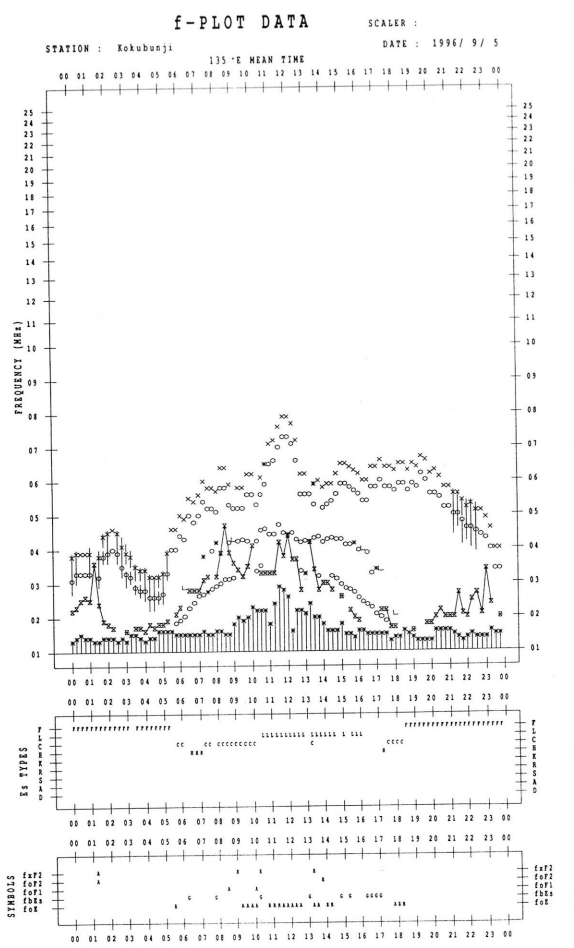
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

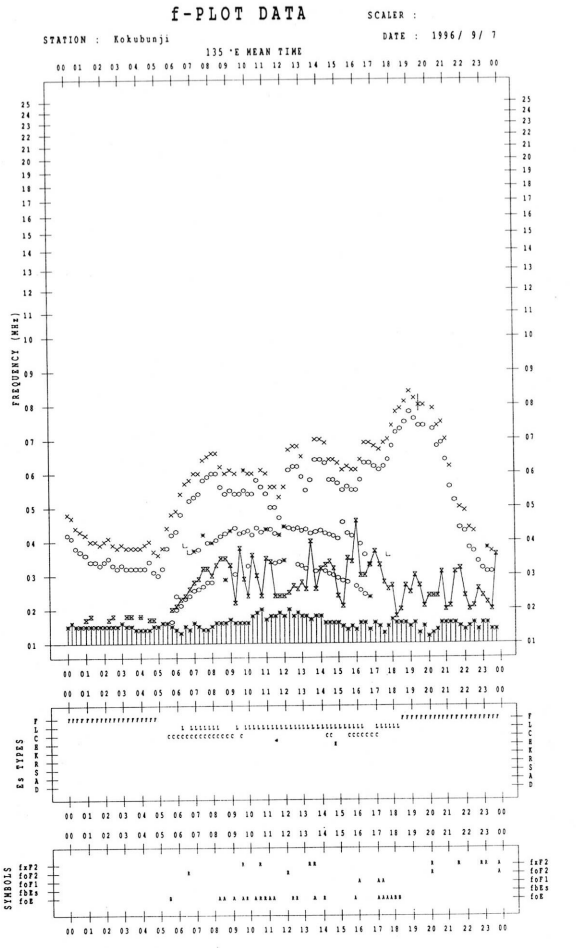

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE

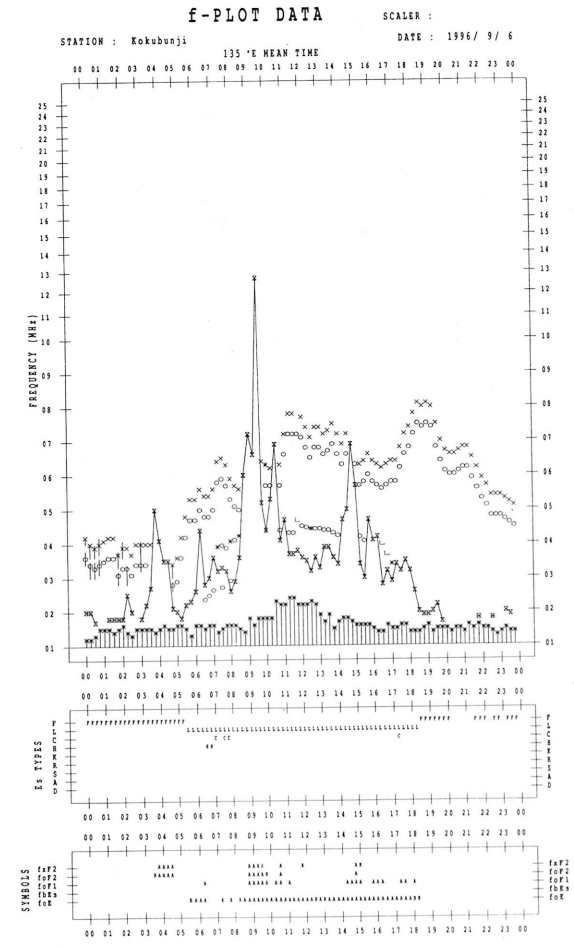

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE

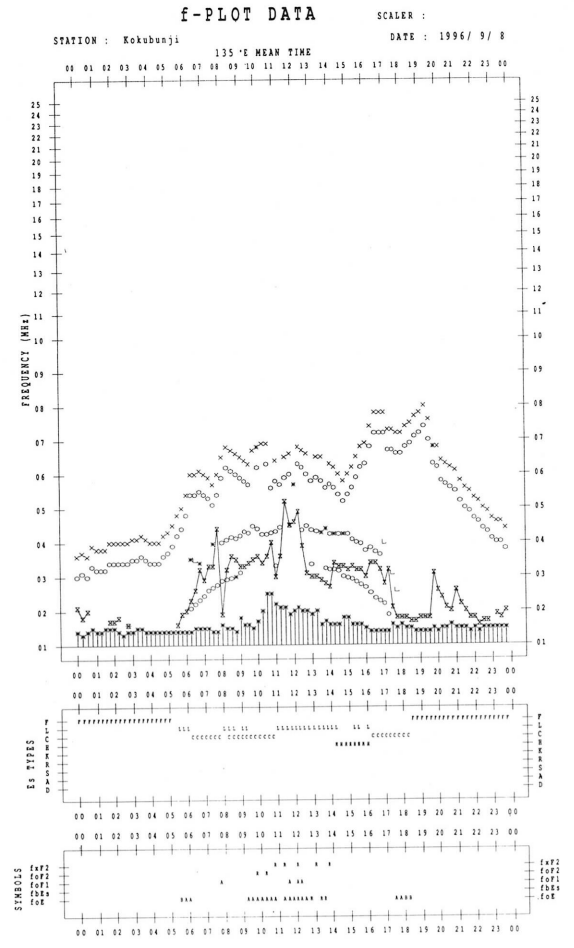

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE

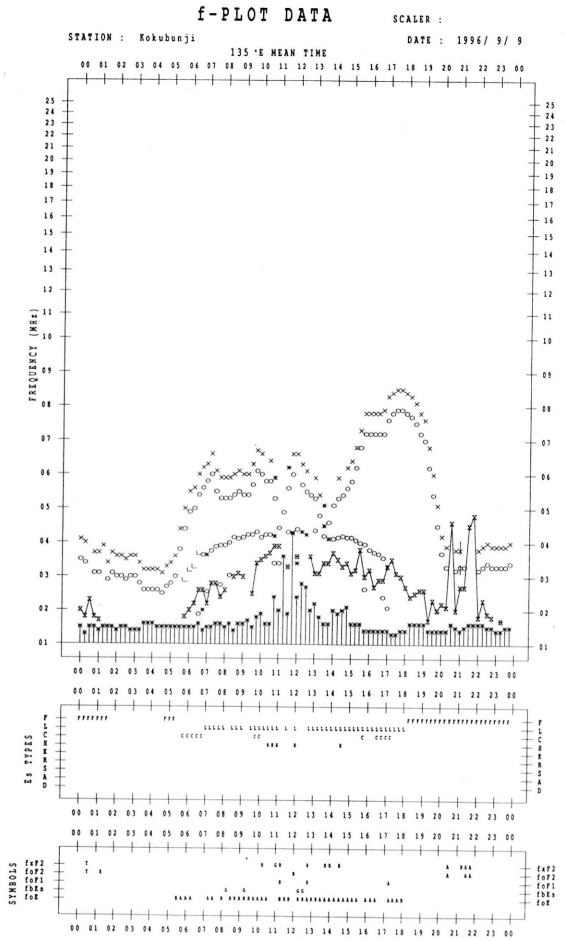

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foE

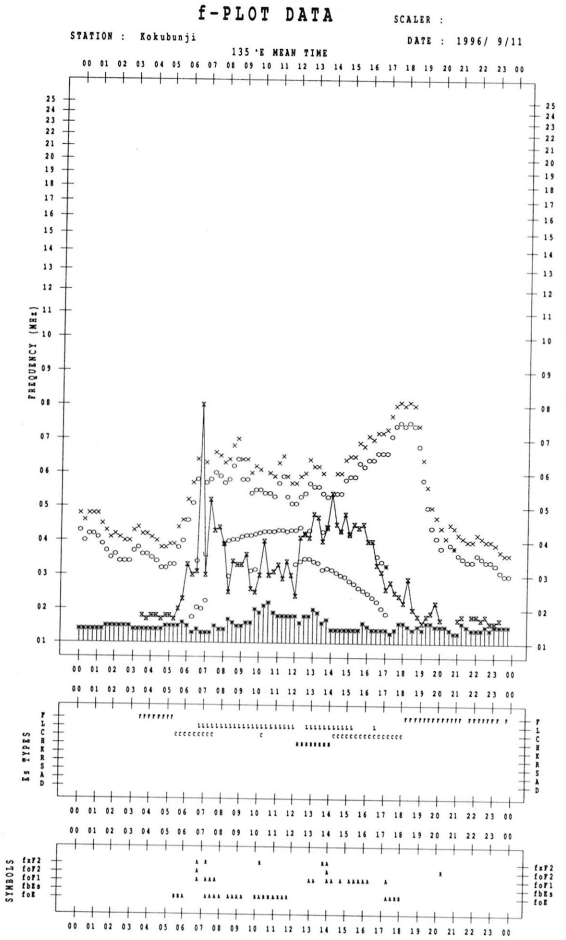

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

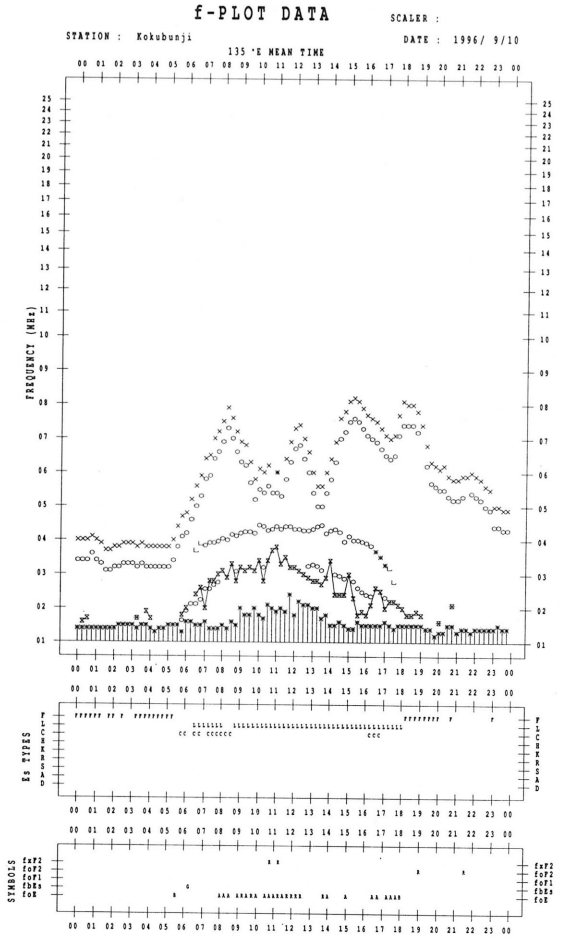

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

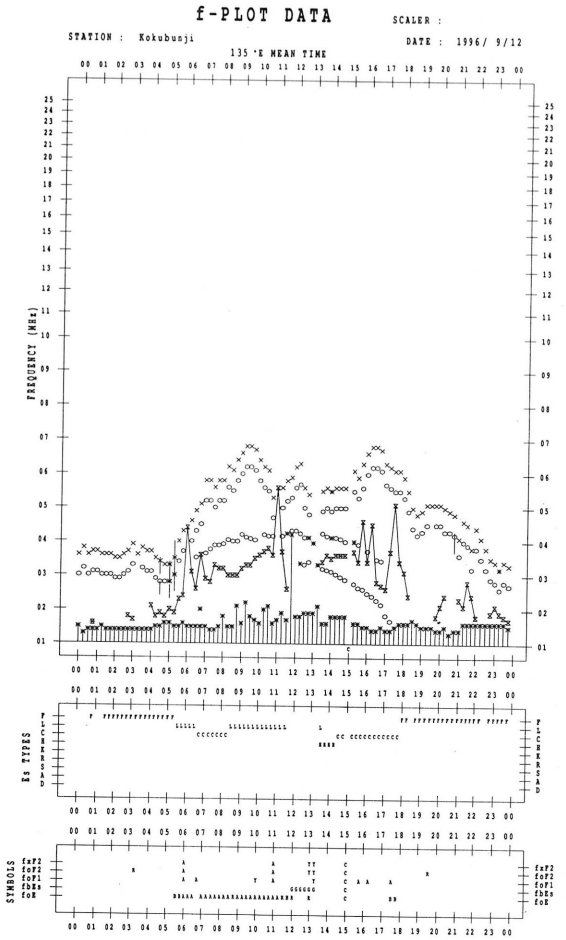

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

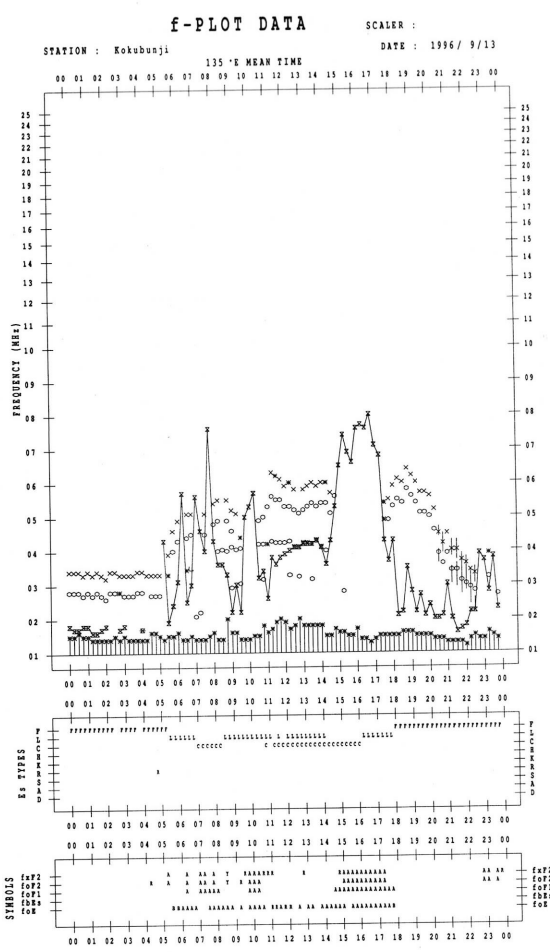

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

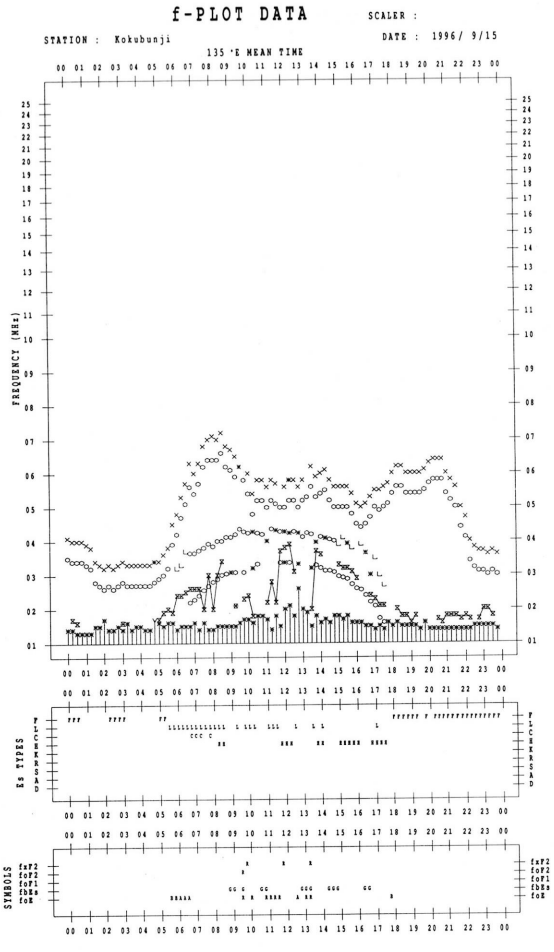

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

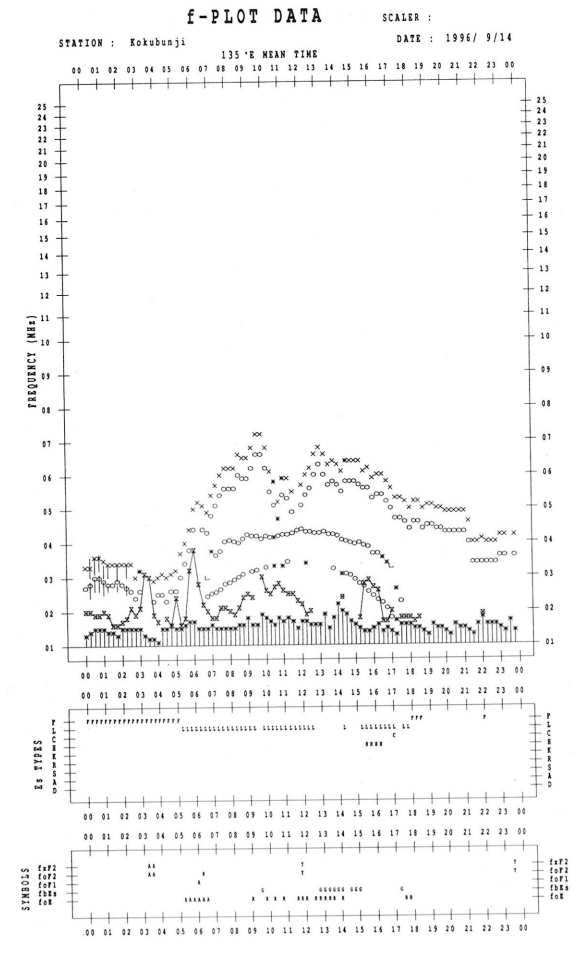

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

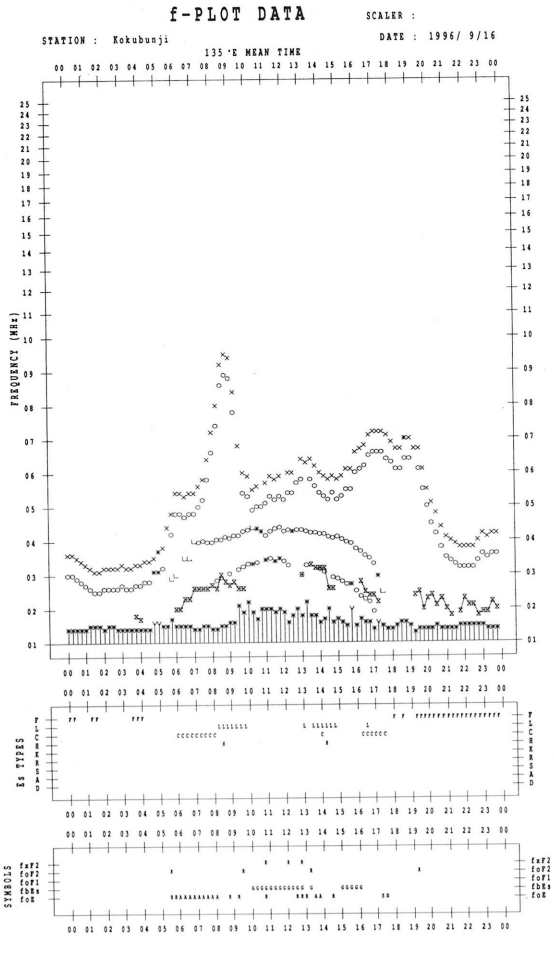

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

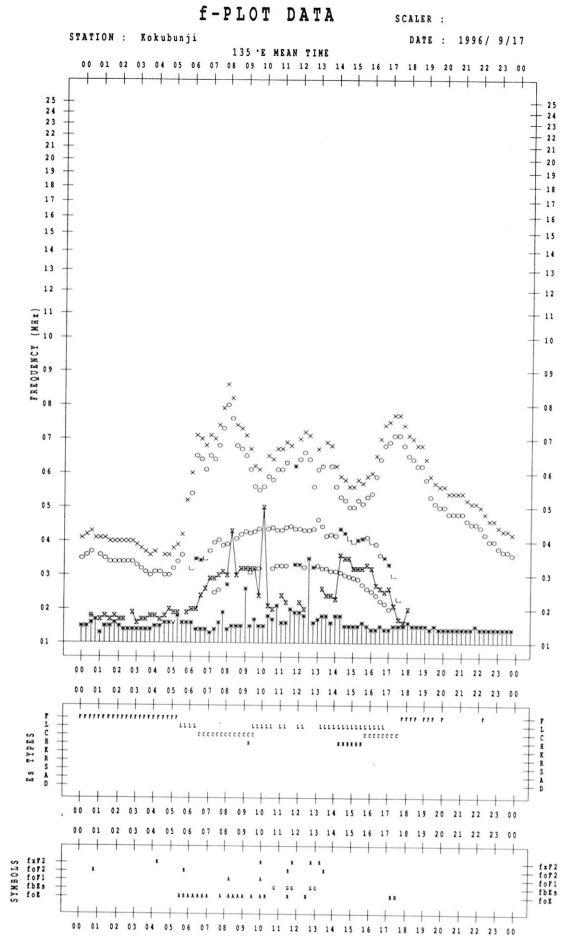

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

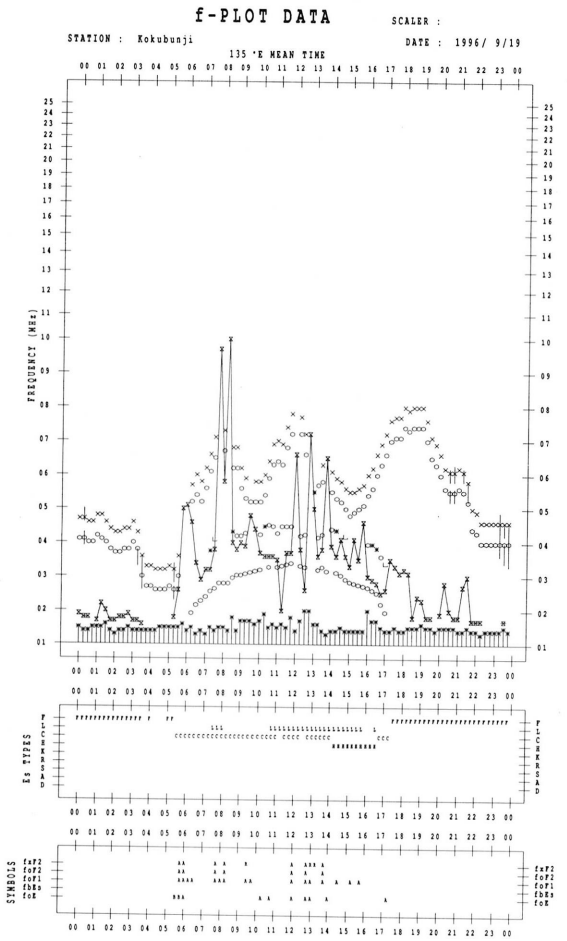

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

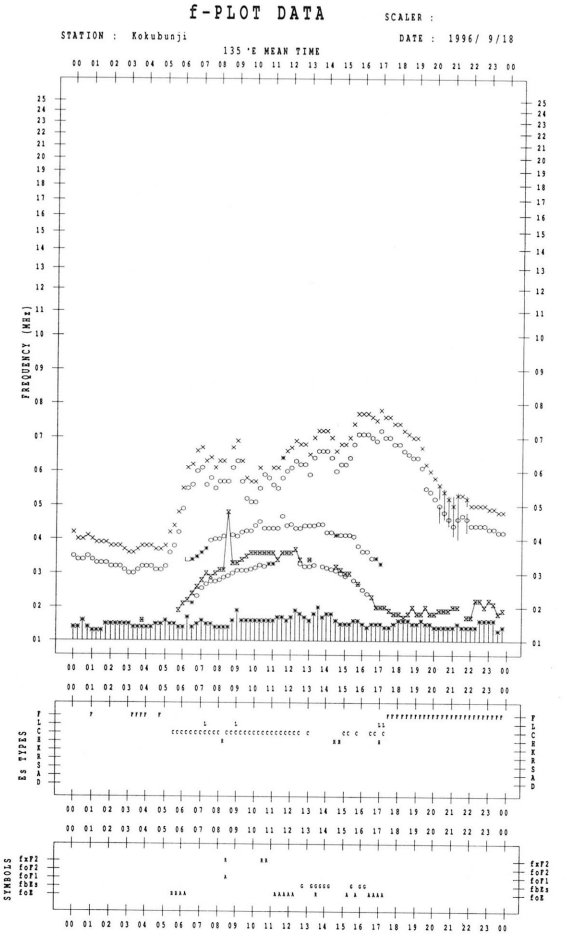

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

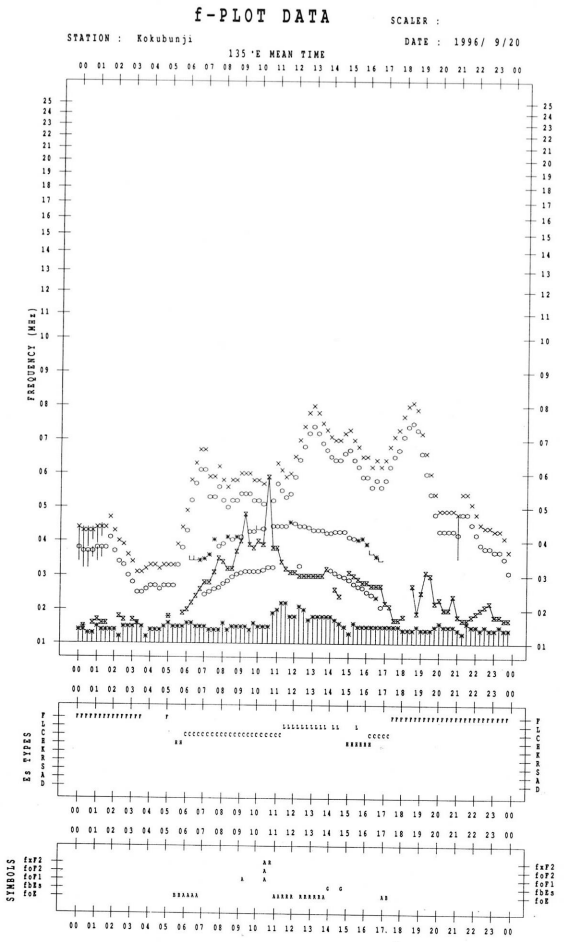

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

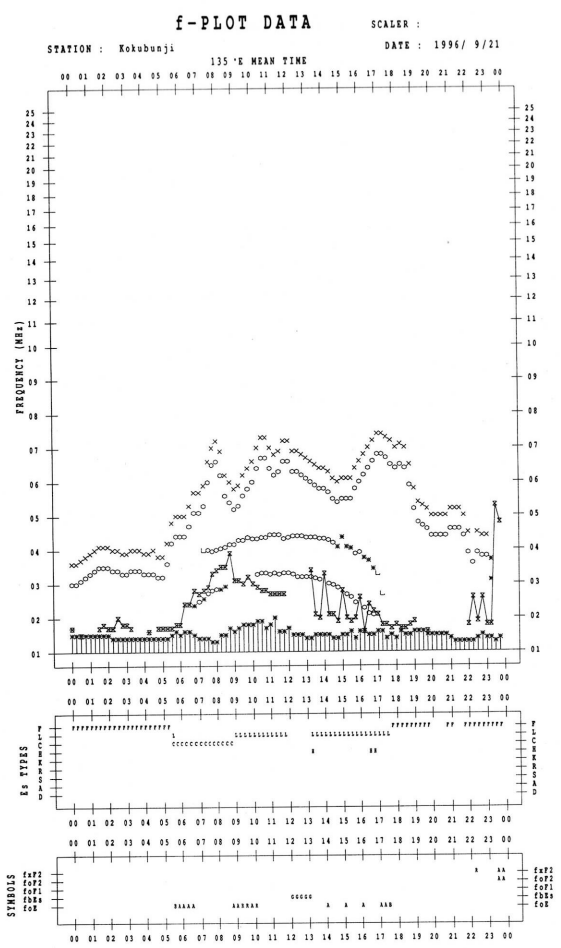

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
foF2
foF2
foF1
fbEs
foE

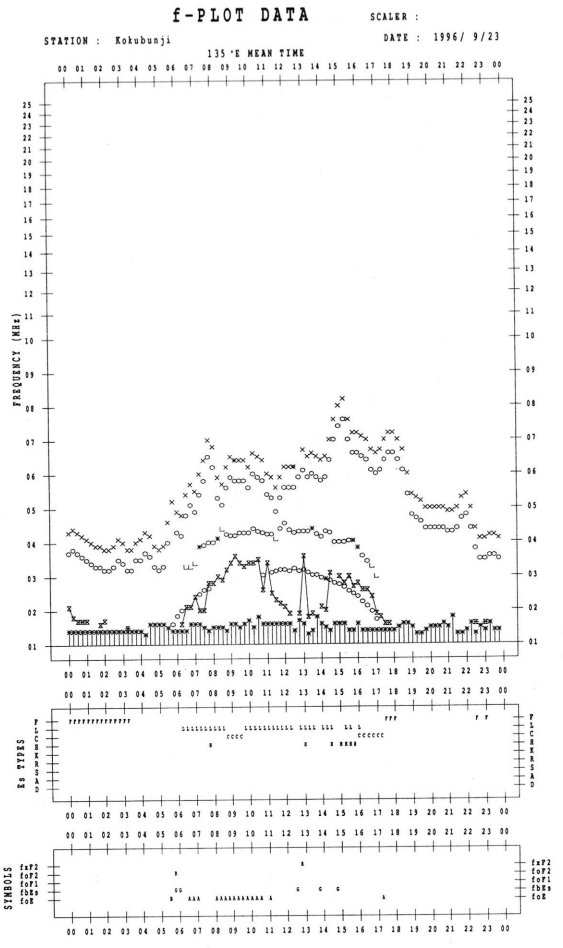

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

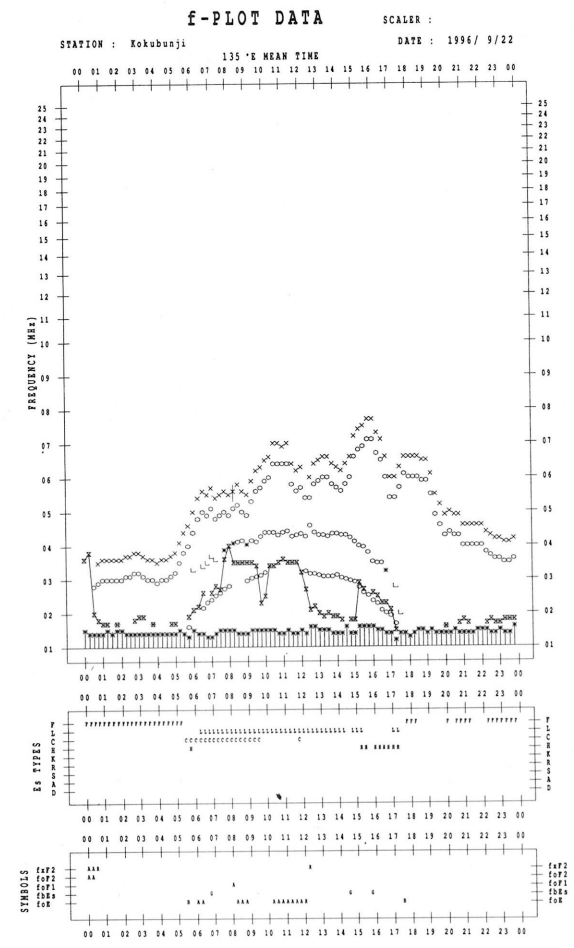

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

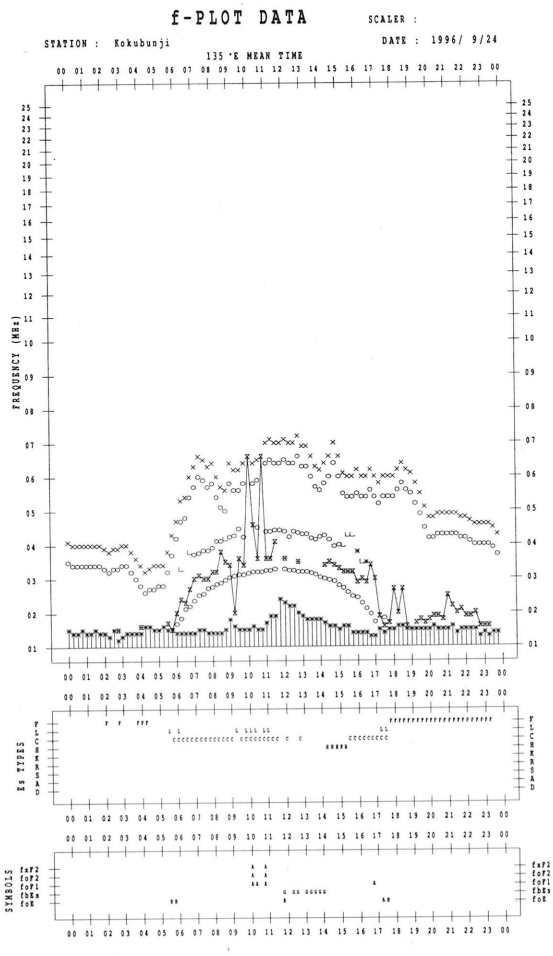

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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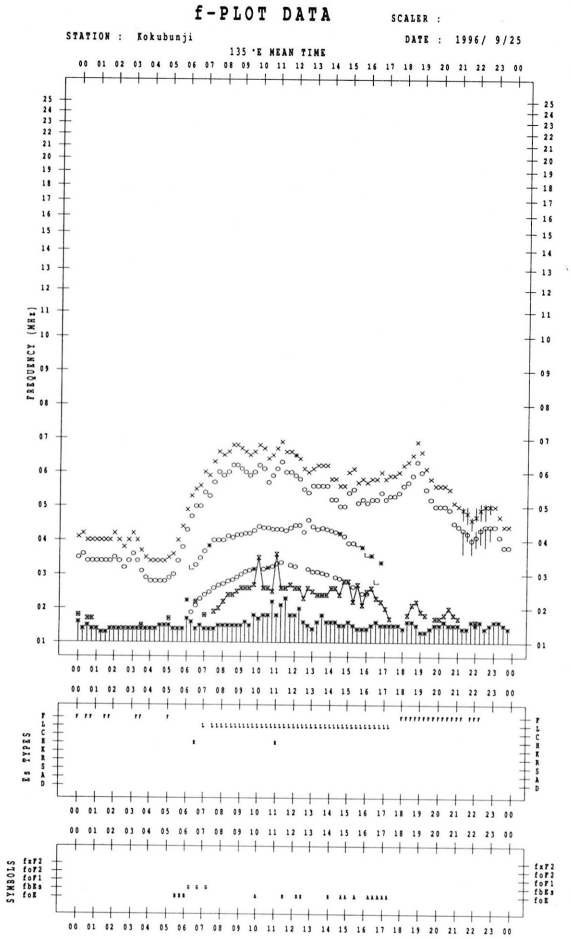
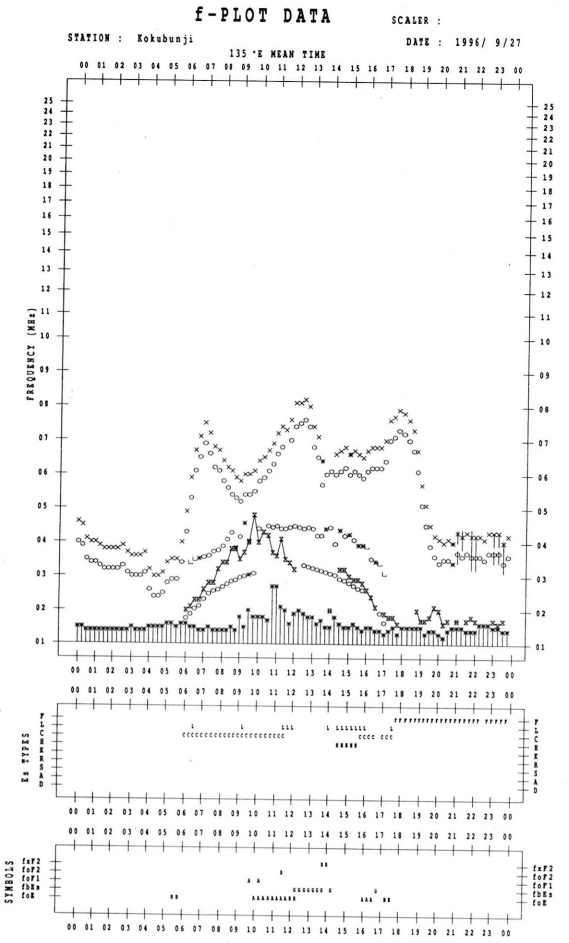
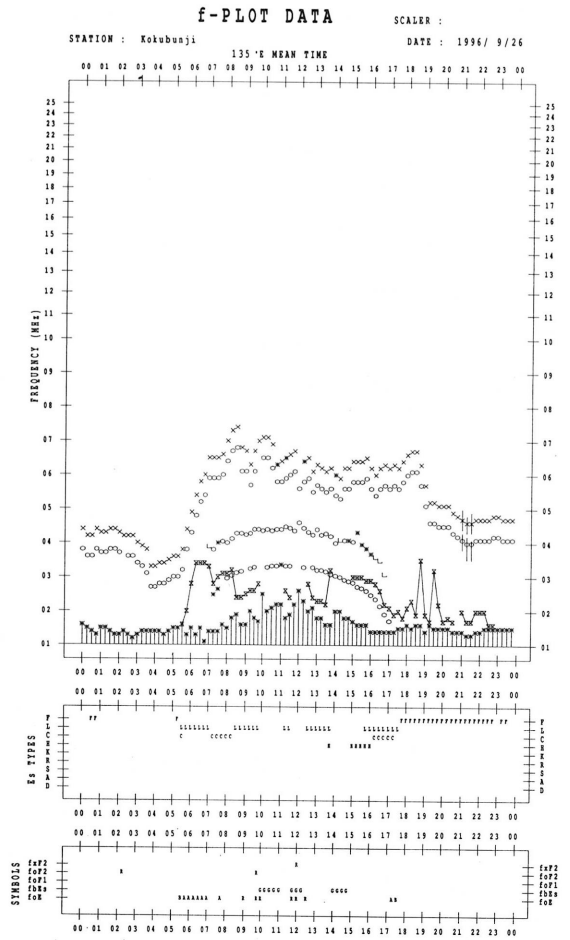
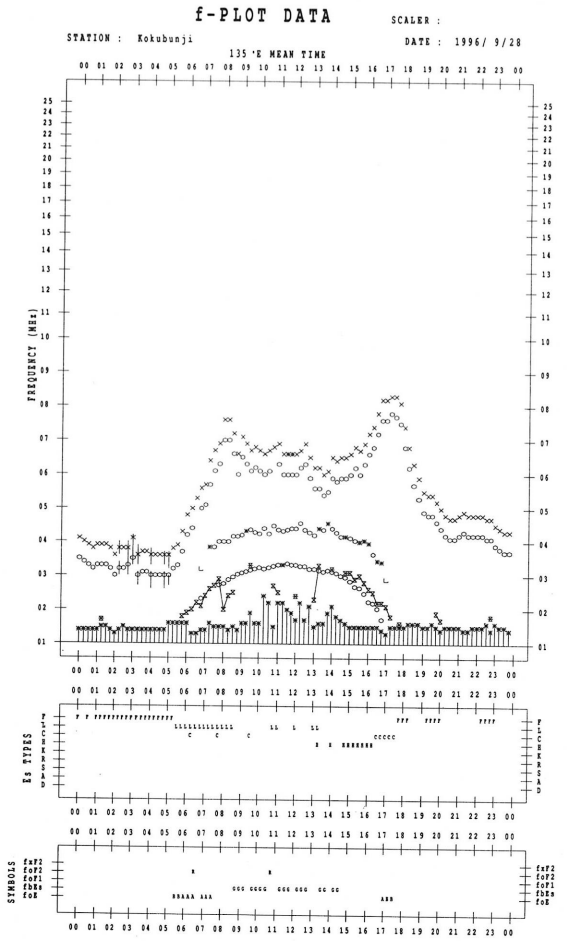
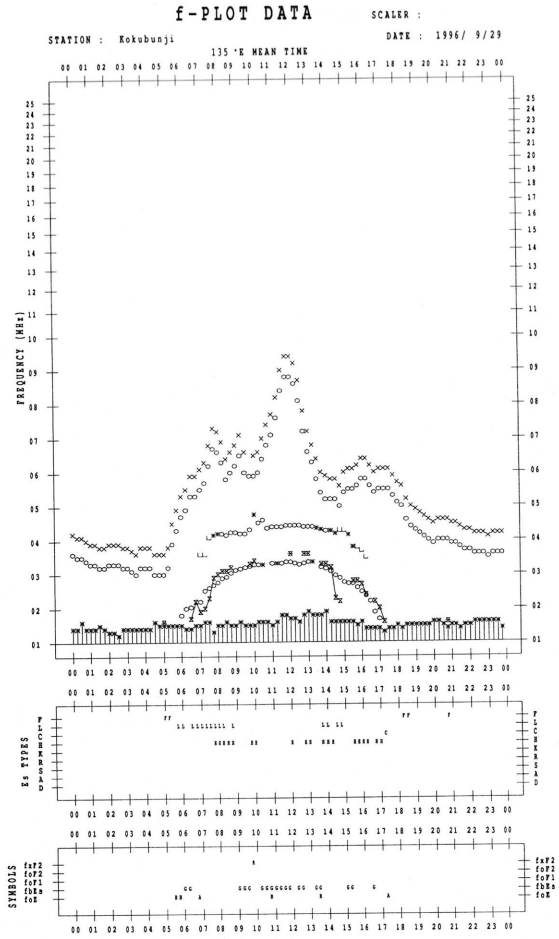
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

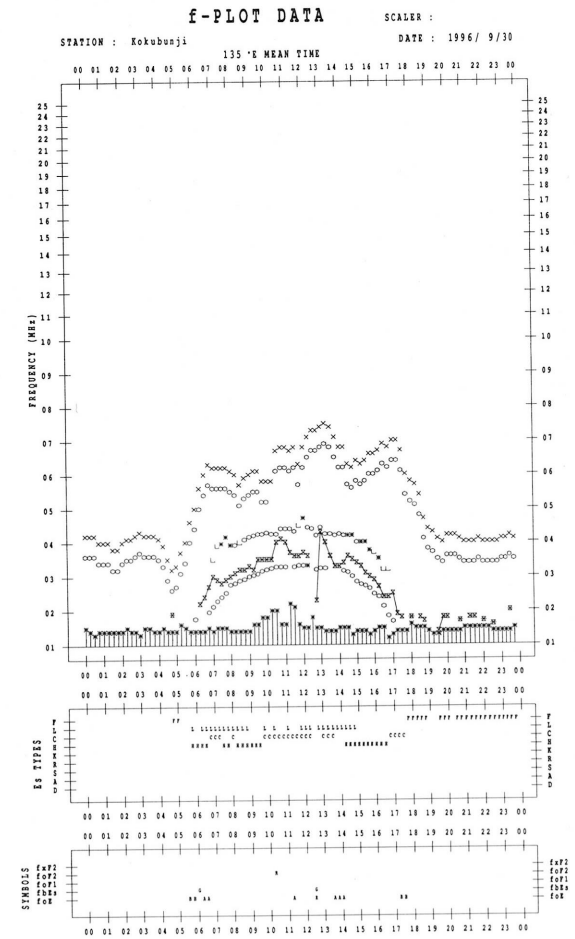

f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER :
STATION : Kokubunji
DATE : 1996/ 9/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Hiraiso September 1996

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

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

Note: No observations during the following periods.
21st 2100 - 30th 2400

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso September 1996

Single-frequency observations

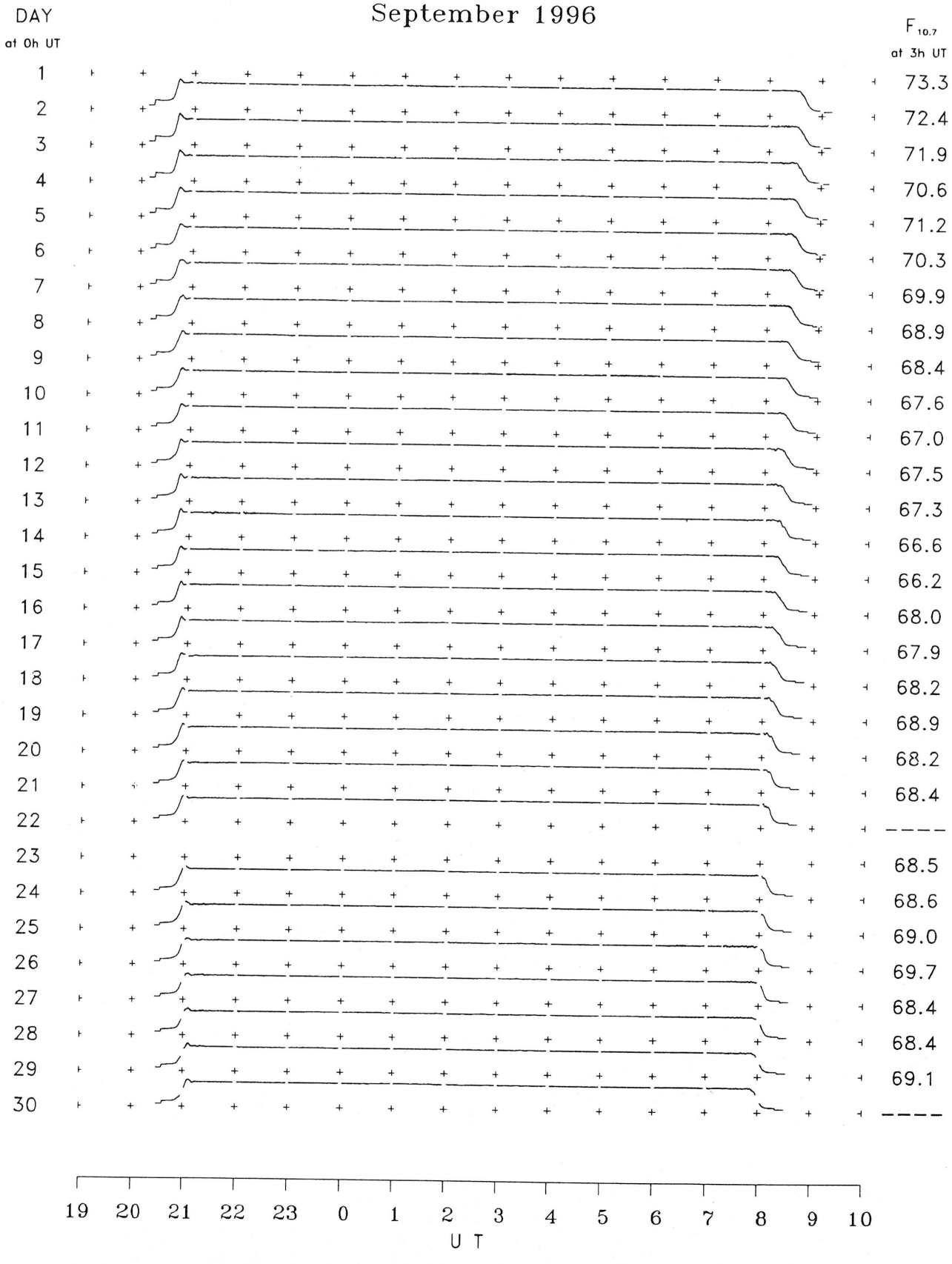
Normal observing period: 2030 - 0845 U.T. (sunrise to sunset)

SEP. 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
	(N o n e)							

B. Solar Radio Emission

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

September 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)

SEP 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
	ES	ES	ES			ES		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
1	-25	-25	-25	-3	-2	-25	2	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
		ES					ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	
2	-4	-4	-4	3	-2	1	-9	-9	-9	-4	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-4
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	
3	-25	-25	-25	-25	3	-25	-4	-25	-25	-25	-4	-9	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-2
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			ES
4	1	3	-25	-25	-9	1	1	-4	-4	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-15	-4	-15	-15
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		ES
5	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-3	-25
		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
6	-4	-25	-4	-25	-25	-25	-9	-25	-4	-4	-4	-15	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
7	-25		-4	-4	-11	-15	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES		ES	ES	ES	ES	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
8	-25	-4	-2	1	-4	-25	-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
9																								
	ES	ES	ES	ES		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
10	-25	-25	-25	-25	-4	-25	-25	-25	-24	-25	-9	-9	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES	ES	ES	ES	ES	ES	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
11	-25	-25	-25	-25	-25	-25	-25		1	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
		ES	ES	ES	ES	ES	ES	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
12	-2	-25	-25	-25	-25	-25	-25			-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	S	S	S	US		S	S	ES	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
13	-25				5	4			-4		-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	
14	-9	-25	-25	-25	-4	-25	-25	-25	-4	-9	-9	-9	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-2
		ES	ES			ES	ES	S	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
15	-4	-25	-25	1	3	-25	-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
16																								
	ES		ES	ES	ES	ES	ES	ES	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	
17	-25	-1	-25	-25	-25	-25	-25	-25		-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-1
	ES	S			ES	ES	ES	ES		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
18	-25		-2	2	-25	-25	-25	-25	-2	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	S	S	S		ES	ES	ES	S	S	S		ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
19	-25				1	1	-4	-4				-4	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES	ES	ES	ES	ES		S	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
20	-25	-25	-25	-25	-25	-25	-4				-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
21	-25	-25	-25	-4	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES	ES	ES	ES	ES	ES	C	C	C	C	C	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
22	-25	-25	-25	-25	-25	-25	-25						-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
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	ES					ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	
24	-25	1	4	1	3	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-2
	ES	S	ES	ES	ES	ES	ES	S	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES		
25	-25		-25	-25	-25	-25	-25				-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-15	-25	1	2
	ES	ES	ES	ES	ES	ES	ES	ES	S	S	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
26	-25	-25	-25	-25	-25	-25	-25	-25			-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
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28	-2	1	-25	-25	-25	-25	-25	-25	-25	-1	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-4	-25
	ES	ES			ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	
29	-25	-25	2	3	-25	-25	-25	-25	-25	-25	-25	-25	-24	-24	-24	-24	-24	-24	-24	-24	-25	0	-25	-2
	ES			ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
30	-25	-4	4	-25	-25	-25	-25	-4	-4	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-4	-2	1

CNT	28	23	26	26	28	28	27	20	19	20	24	25	26	26	26	26	26	26	26	26	26	26	26	26
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
MED	-25	-25	-25	-25	-25	-25	-25	-25	-24	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25
	ES	ES				ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES			
UD	-2	1	2	2	3	1	1	-4	-2	-4	-4	-9	-25	-25	-25	-25	-25	-25	-25	-25	-25	-4	-3	-1
	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
LD	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25

C. RADIO PROPAGATION

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

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

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

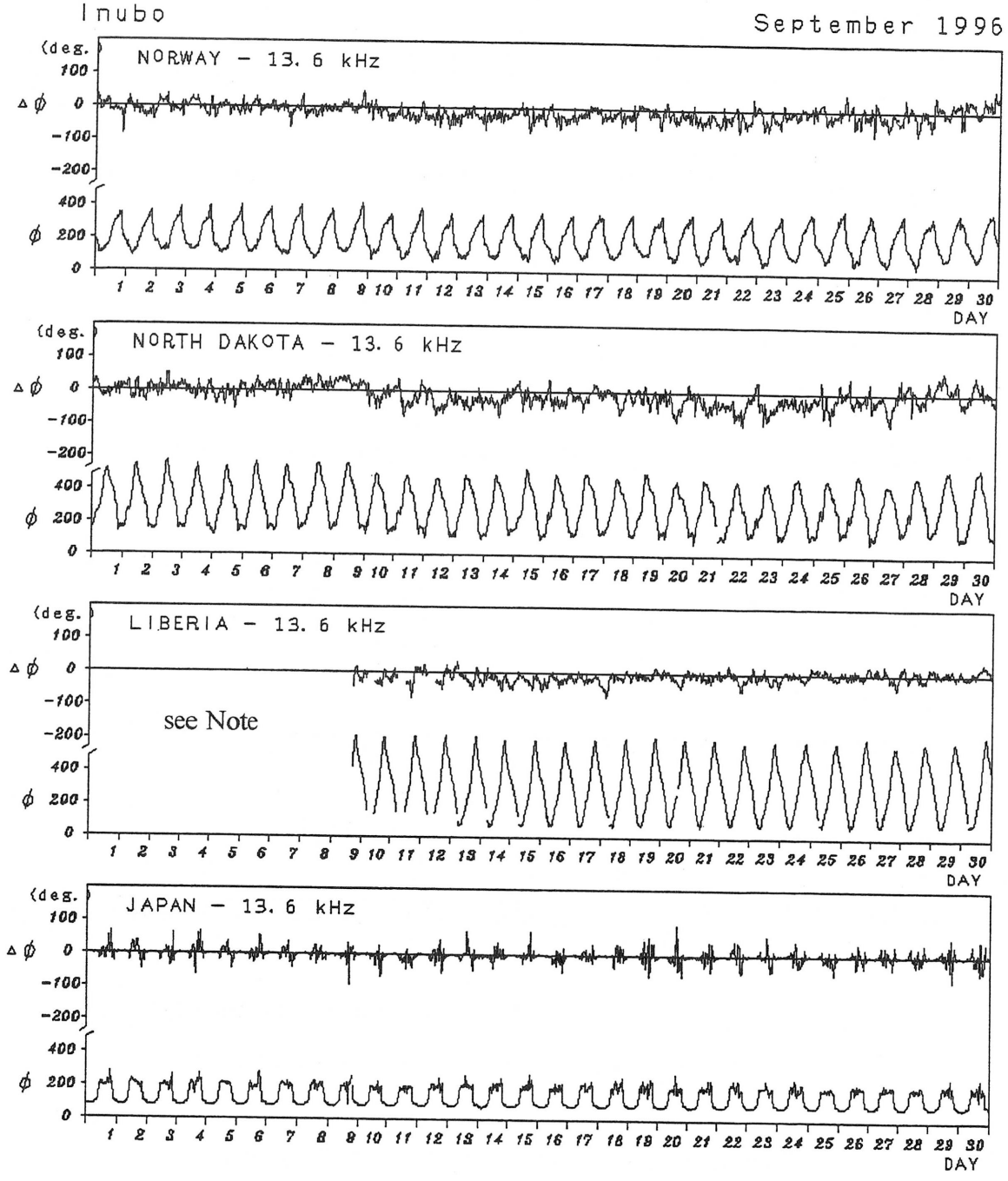
Hiraiso

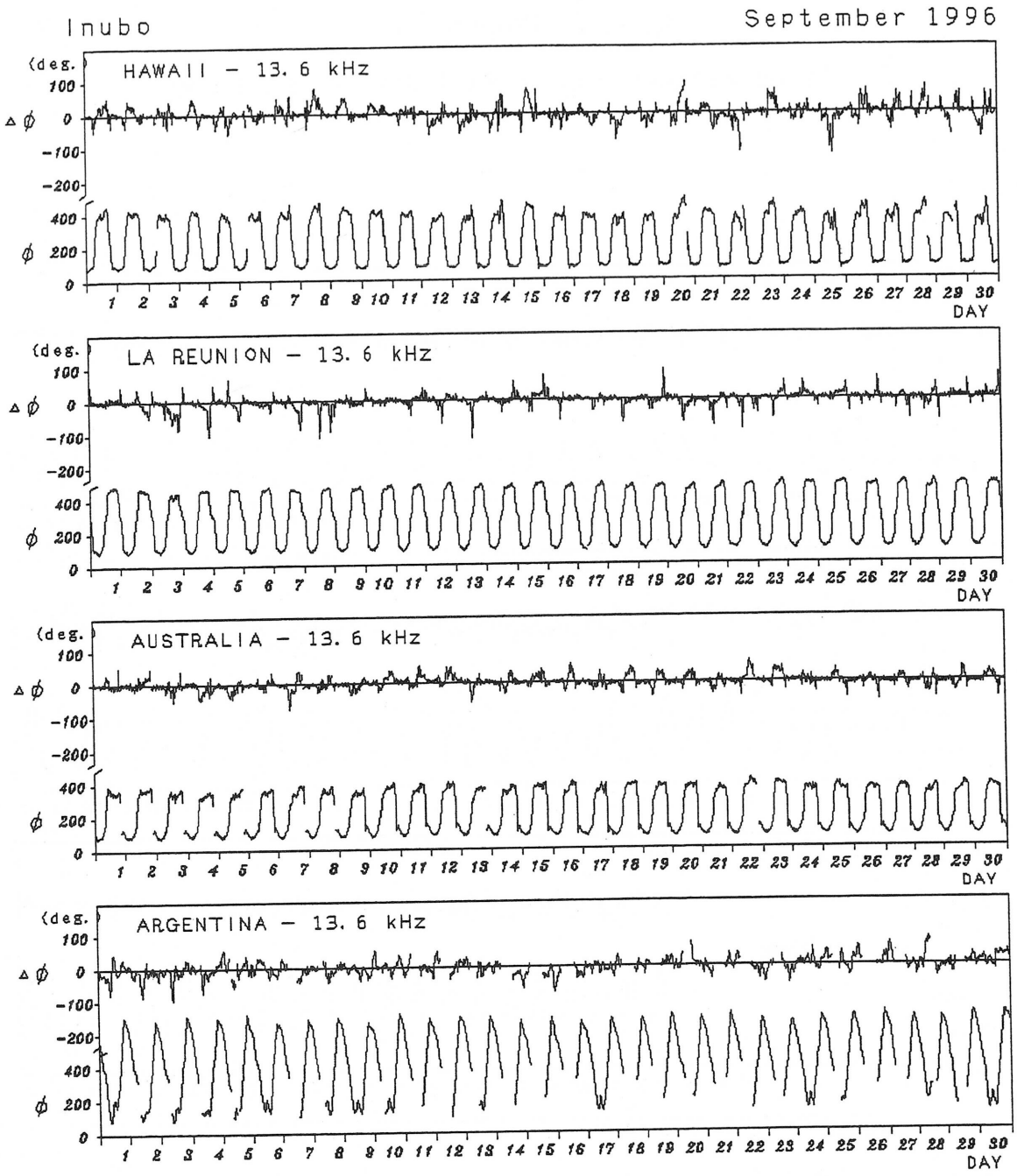
Time in U.T.

SEP. 1996	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m / End h / Range nT
1	4+ U	5U - - -	4 5U - 4	N N N N	None
2	4+ U	5U - - -	4 5U - 4	N N N N	
3	4- U	- - - -	3 5U - 3U	N N N N	
4	4+ U	- - - 5U	4 4U - 4	N N N N	
5	4+ U	- - - -	4 5U - 4	N N N N	
6	4+ U	- - - -	4 5U 5U 3	N N N N	
7	4o U	- - - -	4 4 - 4	N N N N	
8	C	- C C C	4 C C C	N N N N	
9	-	- - - -	C C C C	N N N N	
10	5- U	- - - -	5 5U - 4	N N N N	
11	4o U	- - - -	4 4 - 4	N N N N	
12	4o U	- - - -	4 - - 4	N N N N	
13	4o U	5U - - -	4 4U - 3	N N N N	
14	4+ U	- - - -	4 4U - 5	N N N N	
15	4+ C	5U C C C	4 4 C C	N N N N	
16	C	C C C C	C C C C	N N N N	
17	4o U	- - - -	4 4 - 4	N N N N	
18	4o U	5U - - -	4 3 - 4	N N N N	
19	4- U	- - - -	3 4 - 4	N N N N	
20	4o U	- - - -	4 4U - 4	N N N N	
21	3+ U	- - - -	4 2U - 4	N N N N	
22	4o C	- C - -	4 C - 4	N N N N	
23	3+ C	- - - -	4 2U - 4	N N N N	
24	4+ C	5U - - -	4 4 - 4	N N N N	
25	4o C	- - - 5U	3 4U - 4	N N N N	
26	4- U	- - - -	4 4 - 3	N N N N	
27	4- U	- 5U - -	4 3 - 3	N N N N	
28	4+ U	5U - - -	4 4U - 4	N N N N	
29	4o U	5U - - 5U	4 2U - 4	N N N N	
30	4+ U	5U - - 5U	4 3U - 4	N N N N	

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo





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.

SEP. 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

Sep. 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
			NONE						

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