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IONOSPHERIC DATA IN JAPAN

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CONTENTS

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INTRODUCTION

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

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

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

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

B1. Daily Data at Hiraiso

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

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

0 quiet or no burst,

1 a few bursts,

2 many bursts,

3 very many bursts.

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

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

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

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

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

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

C2. Radio Propagation Quality Figures at Hiraiso

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

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

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

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

C	artificial accident,
S	propagational accident,
U	inaccurate.

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

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

N normal,
U unstable,
W disturbed.

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

C3. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C4. Sudden Ionospheric Disturbances

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

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

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

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

Types of fade-out are as follows:

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

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

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

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	37		A	58	41	41	40	55	70	90	81	72	82	68	76	84	72	A	A	A	35	A	A	
2	38	40	38	48	41	30	29		72		70	68	A	A	A		A	49	A	A	A	A		A
3	38	36	36	A	A	A	30	56	69	81	82		78	68	60	67		A	A	A	A	A	A	A
4	A	35	40	35	34	35	35	58	67	68	A	71	72	61	63	60	67	A	A	A	A	29	A	B
5	N	29	31	32	34	37	A	42	56	68	71	76	80	77	72			A	A	A	A	A	A	A
6	35	40	38	35	31	35	32		58	70	81		73	65	A	69	68	A	35	28	A	A	A	35
7	35	37	A	N	36	32	35	48		57	78			71	A	A	60	A	A	A	A	35		A
8	35	32	35	28	N	A	A	58	69	67	77	70	81	59	71	57	61	35		B	A	A	A	38
9										69	68	71	75	66	69	60			A	A	35	35	37	
10	35	32	32	29	32	35		31	57	58	69			57	59	60	48		B	B	B	35	37	29
11		34	35	31	32		23	53	67	58		74		64	71	69		29	29	29		59		37
12	30	35	32	35	35		31	57	67	65	62	70	68	59	67	58	57		A	40		30	35	
13	49	38	37	38	32	38	38	58		70	73	76	68	60	68	70	69		38	35	40	37	40	36
14	40	34	32	36	30	29	29	56	60	68		72	74	69	69	67	56		28	32		40	49	47
15	46	56		44	38	35	32	50	55	57	62	68	68		65	60	58	36	29	35	A	35	A	35
16	36	38	32	32	38	32	35	50	56	59	62	80	83	61	60	58	58	37			36	40	38	35
17	37	38	30	30	35	38		57	68	70	66	68	76	66	60	61	60		B	35	A		59	
18	37	35	31	28	35	34	35	41	57	61	59	77	74	81		63		35	32	35	30	35	A	A
19	35	N	34	N	59	A	28	48	68	58	68	76	73	62	60	60	68		29	28	37	35	35	35
20	28	38	26	28	32	28	59		60	68	68	81	66	71	74	64	50	32	35	28		29	36	
21	38	38	35	34		31	31	56	60	60	60	74	70	68	60	56	57		32	35	29	35	35	A
22	30		N	28	30	38	35	39	57	60	55	60	83		62	51	43	37		35	35	32	35	38
23	30	35	35	29	31	34	30	35		70	58	71	69	56	60		43	30	35	29	32	29	35	35
24		A	34		29	31	31		59	70	70	N	70	59	60	69	46	35	29	35	A	29	A	35
25	A	40		A	41	38	29	33	42	56	52	74	71	58	58	50		N	B	B	N	35		35
26	35		25	30	N	28	A	38	57	58	58	60	58	58	49	55	A	32	28	N	N	29	31	35
27	38	30			29	31	B	40	58	58	54		57		61	57	48	B	28	38	31	29		N
28	35		A	A	A	A	N	31	A	49	52	61	54	68	60	59	35	A	A	A	31	37	36	35
29	A	37	30	36	35	38	28		66	58	56	57	68	68	68	58	35	31	35			A	A	29
30	33	A	34	34	35	32			58	68	64	68	72	A	57	60		28	A	31	35	B		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	23	22	22	22	24	23	21	23	25	29	27	24	26	25	26	26	21	13	14	16	12	21	14	17
MED	35	36	34	33	34	34	31	50	60	65	66	71	72	65	62	60	57	35	30	35	35	35	36	35
U Q	38	38	35	36	37	38	35	56	67	69	71	75	76	68	69	67	64	36	35	35	35	36	38	36
L Q	35	34	31	29	31	31	29	39	57	58	58	68	68	59	60	58	47	30	29	29	31	29	35	35

HOURLY VALUES OF fEs AT WAKKANAI

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	32	G	32	G	G		34		59	47	40	32	39	36	G	61	44	63	55	59	54	
2	G	G	G	G	G	G	G		39		49				58	35		33	45	48	49	52	44	35
3	40	44	39			26	29	35	34	43	44		61		53	41	42	91	76	61		77	62	60
4	60		29	26		G	G	29	30	36	77	60	42	44	34	41	42	36	35	30	29	26	27	B
5	G	G	G	G	29	29	34	33	27	32	62	34	32	38	35	32		44	42	39	42	35	38	35
6	24	28	27	38	31	28	28		29	28	26	31	40	54	62	36	31	36	34	30	37	39	29	28
7	28	31	36	G	G	27	29	G	G	29	35	45	36		80	98	38	38	40	29	32	34	26	34
8	27	28	G	30	30	30	29	G	25	24	30	31	31	26	25	G	G	29	G	B	30	30	27	27
9										30	33	35	36	32	34	G	29	30	37	40	28	25	30	24
10	G	30	G	24	26	G		34	26	28	31	26	28	28	25	28	28	G	B	B	B	G	G	G
11	G	G	25	G	26	G	G	20	28	30		34	34	28	24	G	31	G	G	G	G	G		G
12	G	G		G	G	G	G	G	25	27	38	36	32	37	30	30	38		66	42	30	33	28	31
13	29	28	24	G	G	G	G		40	34	38	51	44		24	28	G	G	G	29	31	25	30	28
14	26	24	G	G	G	G	27	33	34	33	36	45	28	26	30	25	G	G	G	G	G	G	G	G
15	G	G		G	G	G	G		32	35		32			30	25	G	24	G	28	33	30	34	G
16	G	G	G	G	G	G	G	11	38	35	28	32	40	25	29	G	27	27	32	25	38	G	G	G
17	G	G	G	G	G	G	G		23	30	30	30	32	30	N	24	42	28	B	G	30	G	G	G
18	G	29	G	24	28	G	G		42	25	27	28	28	43	36	32	32	29	G	25	G	26	28	24
19	23	G	G	23	31	32	28	34	G	25	36	35	34	37	31	28	G	24	25	G	G	G	G	G
20	G	G	24	28	G	G	G	G	22	29		46	35	28		G	25	G	29	24	G	G	25	G
21	G	G	G	G	G	G	G		31	30	34	32	35	25	23	27	G		G	G	G	G	G	34
22	G	G	G	G	G	G	G	G	42	36	41	36	33	33	25	20	32	G	G	G	G	25	G	G
23	G	25	27	G	G	G	G	G		33	32	29	27	26	G	G	32	26	G	G	G		28	24
24	31	36	G	24	31	G	G		30	35	30	36	34	27	33	31	G	G	G	G	56	40	33	35
25	44	33	44	38	26	G	G		34	34	29	32	32	34	30	37	34	30	B	B	G	G	G	G
26	G	G	G	G	G	G	24	29		30	30	28	38	36	28	29	28	G	G	G	G	G	G	G
27	G	G	G	G	G	G	B	28	27	27	28		36		38	25	27	B	32	G	G	G	G	G
28	G	25	26	29	38	25	23	34	40	36	46	53	33	70	26	59	32	30		37		30	28	28
29	53	38	39	25	G	26	26	28	35	44	57	29	30	34	G	G	11	28	33	31	25	34	28	G
30	32	34	28	26	G	G	33		30	29	26	26	32	24	34	32	40	34	32	G	26	B	G	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	29	28	27	28	27	29	27	18	27	28	27	27	28	24	28	30	28	27	26	27	27	28	29	28
MED	G	12	G	G	G	G	G	28	30	30	34	34	34	32	30	28	28	28	30	25	28	26	27	24
U Q	28	29	28	25	29	25	28	33	35	35	44	45	37	37	35	35	33	34	37	37	33	34	30	30
L Q	G	G	G	G	G	G	G	G	26	28	30	30	32	26	25	20	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT WAKKANAI

NOV. 1995

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT KOKUBUNJI

NOV. 1995

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	56	40		43	35		59		62	76	82	96	95	85	92	92	86	42	35	35	38	43	38	A
2	46	37	45	A	A	A	69	67	71	63	78	86	91	87	75	70	74	60		34	A	A	A	A
3	37	34	32		A	29		58	70		94		80	66	76	81	74		B	37		29		49
4	35	36	A	36	34		40	58	69	60	74	68	67	66	76		68	46		22	A	59	31	
5	A	59	31	A	40	B		70	56	77	81		66	81	82	70	57	45	38	38	A	46	A	34
6	34	36	34	34		34	37	69	73	68	95	99	96	71	96	81	57	44	45			B	69	30
7	30	35	34	A	36	B		55	70	81	75	80	86	88	83	68	58	50	45	44			69	35
8	A	A		26	N	N	36	69		80	74	87	77	75	82	82		40	B	A	35		59	
9	35	31	30	32	31			57	68	67	80	86	85	77	74	76		A	35	36			48	
10	58		34	35	35				75	60	56	62	72	80		68	54	40		49	A	47	A	56
11	A	32			34			57	56	70	81	70	70	71	67	68	71	40	A			69	59	69
12	35	35	34	32	35	32			72	69	68	62	76	71	69	66	60	A	N		A	43	36	
13	A	32	A		38	A		70	70	63	66		76	68	60	73	56	60	N	36		32	32	A
14	32	32	30	28	32	30	A	70	58	66	68	76		75	82			52		N	69	36		
15		32	31	35		59	B		68	68	61	67	66	68	80	83	57	57	36	A	30	A	38	
16	A	36		37	32	35			70	67	63	61	67	75	82	69	57	41	35	A	A	A	A	A
17	58	A	A	32	35	69	69	69	74	68	68	73	72	81	63	66	58			A		A	32	36
18	35	32		37	36	N	A	57	58	68	75	83	66	67	66	68	55		37	A	35	B		N
19	49	B	29	34	32	34		68	62		65	66	70	67	61	65	60	60	30				59	69
20		49		56				58	68	60	68	80	75	66	66	68		37		35	32			
21		35	35	38		B	69	60	67	69	64	66	64	86	82	64	54	42	A	29		69	B	35
22		36	29		34				68	59	66	70	60	73	73	61		38	28		B		89	B
23	31			30	B	N		58	62	70	80		66	67	69	54	48	A	A	38		29	A	31
24		34	A	25	28	29	A	58	58		72	75	67	70	62	58	60	32		43	38			28
25	35		58		35			60	68	73	76		65	64		52	53		31			37		59
26			N	N				A	57	57	58	59	60	59	60	59		A	A	A	A	32	A	A
27			35	B		N		89		58	57	58	66	62	67		57	A	A	35			89	
28		45			36	35		46		81	82	90	77		68	56	57	A		A	49	30	A	A
29	A	35	31	A	59	26			67		65	A	61	68	83	52	55	A		34	40	37		23
30	32	36	35	32	A	31	A	38	57	68	63	68	61	72	82	58	55	37	36			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	16	22	17	18	19	12		22	27	24	30	24	29	29	28	27	24	19	12	15		16	14	13
MED	35	35	34	34	35	33		59	68	68	70	72	70	71	74	68	57	42	36	36		37	54	35
U Q	47	36	35	37	36	35		69	70	71	80	84	77	78	82	73	60	52	37	38		46	69	57
L Q	33	32	30	32	32	29		57	58	61	65	66	66	67	66	59	55	40	33	34		32	36	30

HOURLY VALUES OF fEs AT KOKUBUNJI

NOV. 1995

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	29		40	G	G	27	30	34	51	50		43	88	34	31	30	25	G	G	G	37	28	34
2	38	62	35	53	32	25	G	36	31	26	55		30	53	47	48	30		34	32	30	30	29	
3	G	32	40	37	36	30	44	30	40	43	57		48	35	31	31	36	G	B	29	28	G	G	G
4	G	G	30	26	28	26	30	G	32	35	35	44	31	40	42		41	52		25	26	G	G	G
5	33	28	G	29	33	B	G		31	35	34	49	37	42		48	32	26	32	G	25		27	G
6	G	G	30	G	G	G	30	G	30	33	46	40	29	28	43	38	27	G	29	54		B	G	G
7	G	G	G	40	26	B	G	G	27	30	34	46	36	38	31	34	29	29	28	G	G	G	G	G
8	34	38	30	46	32	G	G	30	40	48	46	51	54	53	59	32	33	G	B	26	G	G	G	G
9	G	G	G	G	G	G	G		31	34	29	28	27	37	40	39	57	35	31	G	G	G	G	G
10	G	G	G	26	G	G	G		24	43	31		36	35	29	30	G	G	28	G	38	G	27	G
11	26	G	G	G	G	G	G	26	31	33	28	48	34	32	30	33	G	G	27	G	24	G	28	G
12	G	G	G	G	G	G	G	29	32	33	29	35	37	32	33	45	58	43	32	42	40	G	G	G
13	31	24		26	G		G	26	30	33	38		49	30	27	29	34	26	G	G	G	24	G	26
14	23	G	G	G	G	G	29	30	32	44	34	39	45	40	28	28	G	30	G	G	G	G	G	G
15	G	G	G	G	G	G	B		30	48	40	35	37	36	43	55	53	39	37	26	G	24	30	24
16	31	G	G	G	24	G	G		36	39	40	43	44	40	30	33	G	G	31	52	44	34	31	32
17	30		29	26	G	G	G	G		33	33		41	40	41	28	34	29	30	32	33	33	27	26
18	G	G	G	G	G	G	32	37	32		36	31	31	50	52	44	40	31	G	40	38	B	G	G
19	G	B	G	G	24	G	G	G		26	46	48	47	43	40	34	G	G	G	G	25	G	G	G
20	G	G	G	G	G	G	G	32	30	34	30	31	52	49	35	32	34	26	29	G	G		G	25
21	G	G	G	G	G	B	G	G	32	34	35	40	32	30	26	34	29	30	36	30	G	G	B	G
22	G	24	24	24	G	G	G	G	26	31	37	35	30	31	32	30	G	G	G	G	B		G	B
23	29	24		G	B	G	G	G	37	40	35	38	36	35	28	31	39	32	40	30	29	35	31	G
24	G	31	37	33	30	27	29	28	32	34	33	35	36	37	35	30	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	32	31	36	42	40	34	38	29	27	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	29	30	41	53	50	48	44	44	30	32	33	32	26	25	G		37
27	G	G		B	G	G	G	29	29	34	36	29	31	49	50		44	30	26	G	G		G	G
28		G	G	33	G	G	G	30		29	34	53	34	64	58	58	43	39	G	34			33	40
29	28		26	26	G	G	G	G	32	39	56		46	31	35		36	31	24	26	G	G	G	G
30	G	G	G	G	28	27	30	28	33	32	40	32	49	41	40	34		G	27	G	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	27	26	29	29	26	29	25	27	29	30	23	30	30	29	27	29	29	27	30	27	23	28	28
MED	G	G	G	G	G	G	G	28	32	34	36	40	37	39	35	33	32	26	28	13	G	G	G	G
U Q	29	24	29	31	27	G	28	30	32	40	46	48	46	44	43	39	39	31	32	30	29	24	27	24
L Q	G	G	G	G	G	G	G	G	30	32	34	35	32	34	30	30	14	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

NOV. 1995

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

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

NOV. 1995

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

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

HOURLY VALUES OF fEs AT YAMAGAWA

NOV. 1995

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	28			35	G	G		31	31		49	37	29	40	71	32	40	38	41	G	G	27	28
2	28	G	G	G		G	G	27	31	41	55	42	49	30	29		35	25		29	38		37	32
3		28	G	25	26	B	G		30	37	43	49			33	49		34		33	28	G	G	G
4	G		G	G	25	G	G	G	30	32	30	32	32	37	57		33	33		G	G	30	27	24
5	29	30	G	G	G		32	38	27	31		29	55	50	49	44	39	33	G	G	G	G	25	30
6	28	26	G	G	G	G	G	G	29	44	34	31	31	30	30	28	34	28	25	32	26	27	24	28
7	G	G	G	G	G	32	24	G		30	30	48	47	39	46	50	35	28	35	32	31	30	G	25
8	G	G	G	G	24	25	G	26			62	56	56	47	45	42	39	44	50	30	G	30	33	G
9	G	G	G	G	G	G	G		28	29	30	30	30	30	27	42	30	26	30	32	G	G	G	G
10	G	G	G	G	36	G	G	25	29	31	30	29	30	30	29	26	31	G	24	32	G	G	G	G
11	G	G	G	G	G	G	G		30		30	31	30	31		43	41	47	33	37	32	28	G	G
12	G	G	26	G	G	G	G	G	30	30	28	37	42	40	32	55				26	32	31	G	25
13	G	G	31	30	27	G	G		29	31	29	49		29	35		32	24		33	26	G	G	G
14	G	28	26	G	G	G	G	G		33	40	30	32	31	28	34	28	50	46	G	G	G	G	G
15	G	G	G	G	G	G	G	24	32	30	39	31	29	33	40	32	36		40	38	24	G	G	G
16	G	G	26	28	G	G	G	28	29	30	40	45	42	59	40	52		52	48	34	34	G	G	G
17	G	G	G	28	32	28	G		28	29	40		54	55	30	40	36	34	34	33	29	30	28	24
18	G	25	G	G	G	28	G	27	30	39	39	55	40	43	46	40	55	52	48	33	34	25	G	G
19	G	G	G	24	G	G	G	25		30	35	47	50	57	51	31	53	40	26	27	27	G	G	G
20	G	G	G	G	G	G	G		30	32	30	37	38	55		37	30	28	27	27	28	G	G	
21	G	G	G	G	G	B	G	26	30	31	32	31	32	34	40	29	32	29	25	40	30	28	G	25
22	G	G	G	27	G	G	G	28	28	28	29	37	44	44	54	44	36	30	G	G	G	47		G
23	39	26	G	G	G	G	G	G	29	43	44	34	41	54	40	39		29	48	41	26	G	G	G
24	G	33	G	24	G	G	28	25		31	64		40	54	62	31	43	32	26		G	G	B	G
25	G	G	G	G	24	B	B	29	30	41	42	41	48	77	58	78	60		37	29	30	B	G	G
26	G	G	G	G	24	G	B	G	28	29	33	29	28	29	35	30	29	38	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	30	33	54	43	51		54	44	44	28	26	26	33	27	G	25
28	31	G	26	26			24	32	44	51	60	66	60	51	50	51	30		31		34	32	24	29
29	32	32	29	G	26	27	G	G	28	31		46	41	51	57	29	30	27	G	24	G	G	G	G
30	G	24	24	G	26	26	G	G	29	31	32	39	48	49	34	44	29	32	32	32	32	24		24
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	29	29	29	28	25	28	23	25	28	27	28	27	27	27	27	26	26	25	28	30	28	27	29
MED	G	G	G	G	G	G	G	25	30	31	35	38	41	43	40	42	34	32	31	32	26	G	G	G
U Q	G	26	12	24	25	13	G	27	30	35	43	47	49	54	51	49	39	40	39	33	32	29	24	25
L Q	G	G	G	G	G	G	G	G	28	30	30	31	32	30	32	31	30	28	25	26	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

NOV. 1995

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

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

HOURLY VALUES OF foF2 AT OKINAWA

NOV. 1995

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B		B	44	59	A		66	58	68	81		108		110	127	130		64	68	A	A	A	A
2	48		41	B	B	B	B	43		60	64		104	114	115	118	92	94	57	47	50		43	B
3	89		32			A	A	59	66	68	80	92	97	104	106		85	92	68	A	A	59	38	B
4		38	37	N	59		B	39		58	71	92	92	84	92	102	84	66	A	44	47		A	
5	B		B	69		A	B		59	60	78	106		63	85	78	66	57	61	55	47	56		
6		30		A	56	B	B	49	45		83		107	91	110	112			N	82	69	41	48	B
7	B		69	32	55	B	B	39		80	93	92	87	95	112	124	126	112	78	70	57	A	69	A
8		46	58	41	38	38	B		86	80	81	92	100	105		161	159		96	82	67		A	A
9	A	B		44	41	44	B	48			82	94	90	88	91	97	116	84		A	46	54	48	44
10	46	34			35	30	B	48	72	66		81	88	92		91	82	72		56	47			
11	B	37	37						61		63	80	74	67	83	98	95	84	62	A	A	49		
12	44	26					89	39	61	69	65	82	82	91	100	104	87	73			A	52	59	B
13	B		B		55		A	39	63	59		76	88	96	105	93	92	91	93	74	A	44	38	A
14	A	59			37	32		79	59	57	67	94	80	81	81	92	98	62	42		A	A	89	
15	B	B		30		44	49	39		69	63	70	67	63	78	106	108	83	67		A	A		38
16		59	35	B		58	A	39	61	68	67	67	60	70	83	100		A	56			59	B	
17		B			69	35			45	67	68	83	87	97	104	94	78			A	A	69	A	69
18	36		B	58		39	B		45		76	91	90	81	81	96	95	80	57	48	56	51	52	
19		35			49	35	A	79	60	66	94	82	66	67	70	74	91	96	72	44		49		43
20		B	42		59	B		31			82	81	87	73	84		84	83		A		B	45	37
21		59	41	48	40	A	A	59	57	62	68	94	114	114	151	162	120	128	81		42	50		
22			47	50			B	69		70	81	96	90	105	110	121	110				43	37		
23	69	36	A	31		N	B	39	70	70	74	84	78	94	104	83			52	59	44	57	59	B
24		B	N	A	40				50	60			92	105	106	67	73	68	46	B	46	46		
25	B	B	N		69	B	B	32	54	60	86	76	95	95	96	68	73	A	A	A	44	42		
26	43		44	28		N		49	40	60	62	66	96	68	71	72			38	44				
27	44	N	31		N	38	B	29		57			68	62	83	92	94	94	85	66	65	71	51	52
28		57	A	59	A	A	49		A	91	81	85	86	87	83	94	93	94	51	B	A	A	B	B
29	B	B	B	B		A		A	69	66	64	67	68	84	96	104	83	70	38		47	B		B
30		B	46	A	36	A		49	70	73	74	82	84	116	104	94	95	79	60	A	55	A	46	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		12	13	12	16	10		22	21	25	26	25	29	29	28	28	25	21	21	14	17	17	13	
MED		38	41	44	52	38		46	60	66	75	83	88	91	96	96	92	83	61	58	47	51	48	
U Q		58	46	54	59	44		59	67	69	81	92	95	100	106	109	103	94	75	70	56	58	59	
L Q		34	36	31	39	35		39	52	60	67	78	79	71	83	91	83	71	51	47	45	45	44	

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

NOV. 1995

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	G	B	G	G	25	G	G	23	28	G	49	72		38	34	43		G	28	77	58	49	48
2	G	G		B	B	B	B	G		38	37	39	45	65	67	53	40	35	44	G	G	G	G	B
3	G	G	24	25	G	27	36	33	G	26	25	46		39	63	62	35		G	60	40		34	B
4	G		G	G	G	G	B	G	28	26	33	38	42	40	37	42	24	38	44	G	G	G	34	G
5	B	G	B	G	G	26	B	26	23	39	40	47	49	46	56	60	48	39	G	G	G	G	G	G
6	G	G	G	28	G	B	B	G	25	34	48	39	G	G	54	68	61	36	G	G	G	G	G	B
7	B	G	G	G	G	B	B	35			38	49	47	47	46	38	39	51	25		42			29
8	G	G	G	G	G	G	B	G		40	48	59	66	55	43	42	25	44	38	38	50	34	43	32
9	29	B	G	G	G	G	B	G	24	36	32	36	34	32	24	34	46	40	34	69	32	G	G	G
10	G	G	G	G	G	G	B	G	25	32	30	G	24	G	38	50	38	40	G	30	24	G	G	G
11	B	G	G	G	G	G	G	28	28	N	44	40	40	47	40	49	53	41	40	29	31	G		G
12	G	G	G	G	G	G	G	G	G	G	36		40	38	40	42	45	26	G	11		G	G	B
13	B	G	B	G	G	G		G	24	34	41	40	50	G	36	26	26	25	G		41	G	G	
14	42	G	G	G	G	G	G	34	30	35	38	62	N	40	51	38	34	34	25	G	34		G	G
15	B	B	G	G	G	G	G	G		39	44		47	53	47	46	43	33	G	25	31	24	G	G
16	G	G	G	B	G	26		48	29	28	37	47	37	42	45	39	77		25	26	G	G	B	G
17	G	B	G	G	G	G	G		43	33	38	42	60	55	41	40	42	48	40	39	46		29	
18	G	G	B	G	G	G	B	24	33	39	32		40	39	39	42		41	36	26	G	G	G	G
19	G	G	G	G	G	G		24	26	31	26	31	48	48	55		34	34	G	G	G	G	G	G
20	G	B	G	G	G	B	G			37	35	40	37	50	38	45	35	31	26	28	G	B	G	G
21	G	G	G	26	38	30	33	35	31		33	32	47	50	46	64	62	58	48	39	G	G	G	
22	G	G	G	G	G	G	B	G		32	41	39	43	43	42		31	31	G	G	24	G	G	G
23	G	G		G	G	G	B	34	38	32	42	40	45	36	46	35	N	44	32	G	26	G	G	B
24	G	B	26	28	G	G	G		28	31	45	40	38	41	31	38	G	29	G	B	24	G	G	G
25	B	B	G	G	G	B	B	39	32	33	48	72	68	57	42	44	68	92	40	39	G	G	G	G
26	G	G	G	G	G	G	G	G		25	36	45	25	G	40	24	33		G		G	G	G	G
27	G	G	G	G	G	G	B	39	48	31			54	50	62	68	37	38	23	G	G		G	G
28	G	34	28	24	37	27		36	28	39	40	44		G	41	42	25	27	25	B	66	30	B	B
29	B	B	B	B	G		G	33	29	32	28	46		55		58	23	34	28	37	G	B	G	B
30	G	B	G	28	26	26		G	G	25	32	35	41	46	51	50	24			29				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	22	21	23	27	29	24	12	27	23	27	29	26	26	29	29	28	28	25	29	25	28	22	25	20
MED	G	G	G	G	G	G	G	24	28	32	37	40	44	43	42	42	38	38	25	26	24	G	G	G
U Q	G	G	G	G	G	25	G	34	31	37	41	47	49	50	51	51	45	42	37	37	37	G	G	G
L Q	G	G	G	G	G	G	G	G	24	28	32	39	38	37	38	38	28	32	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT OKINAWA

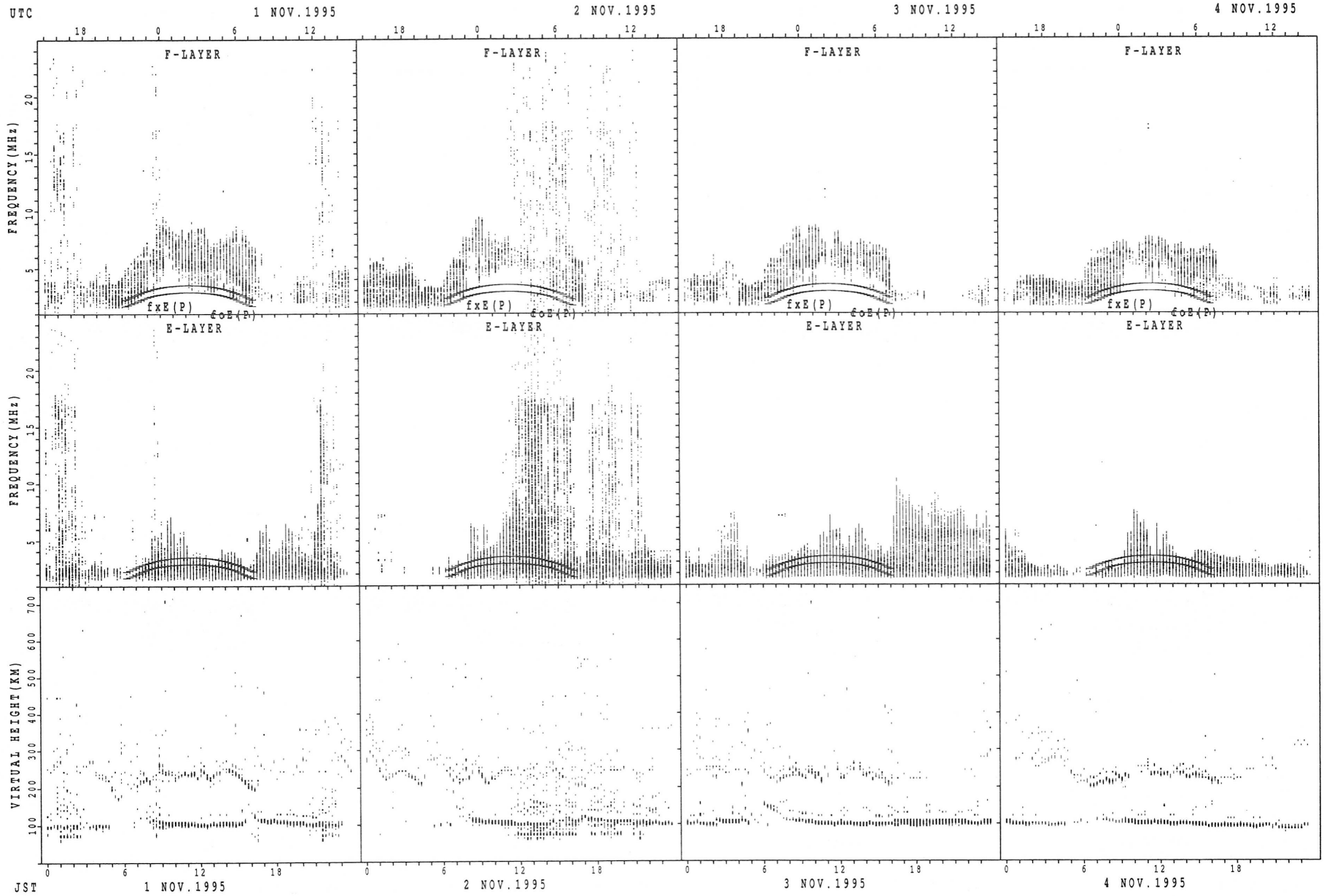
NOV. 1995

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

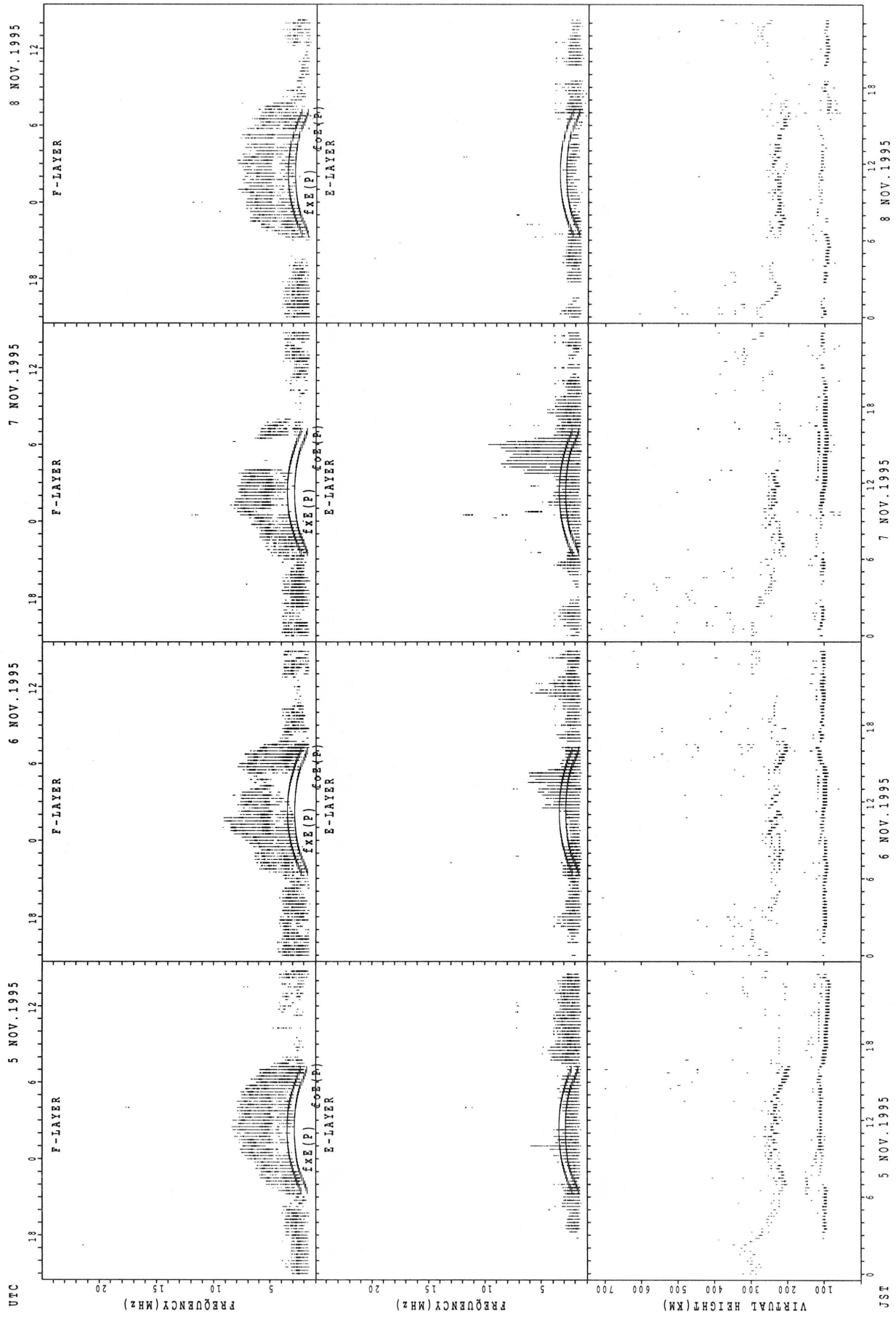
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	15	B	20	18	15	18	16	15	15		34	35		42	42			16	15	15	14	15	15
2	16			B	B	B	B	18		16	17		24	20	16	15	15	15	15	16	15	21	15	B
3	15	14	14	15	15	14	15	15	14	18	17			32	29	27	17	15	20	15	15	15	15	B
4	16	14	15	16	16	15	B	16	14	15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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

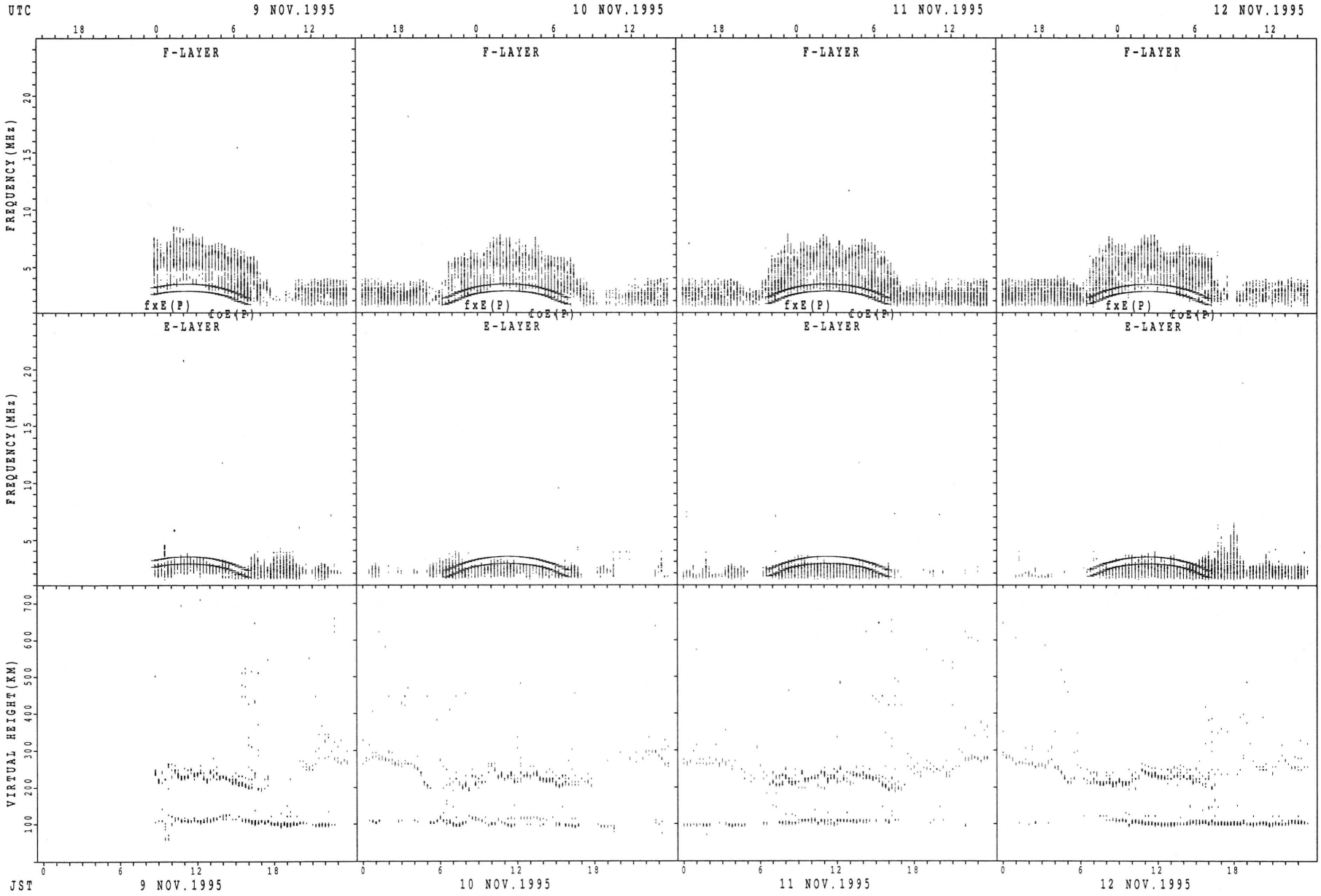
SUMMARY PLOTS AT WAKKANAI



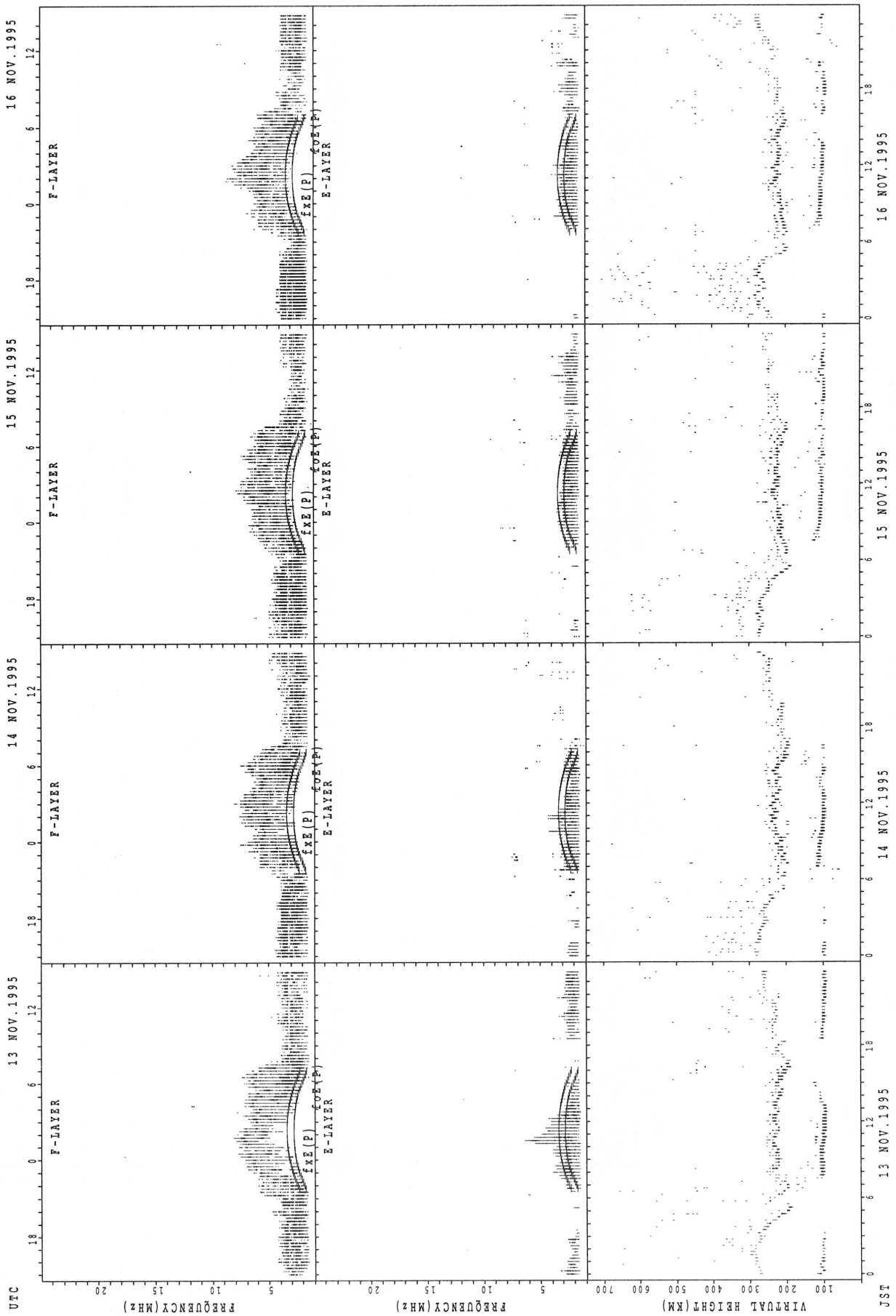
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

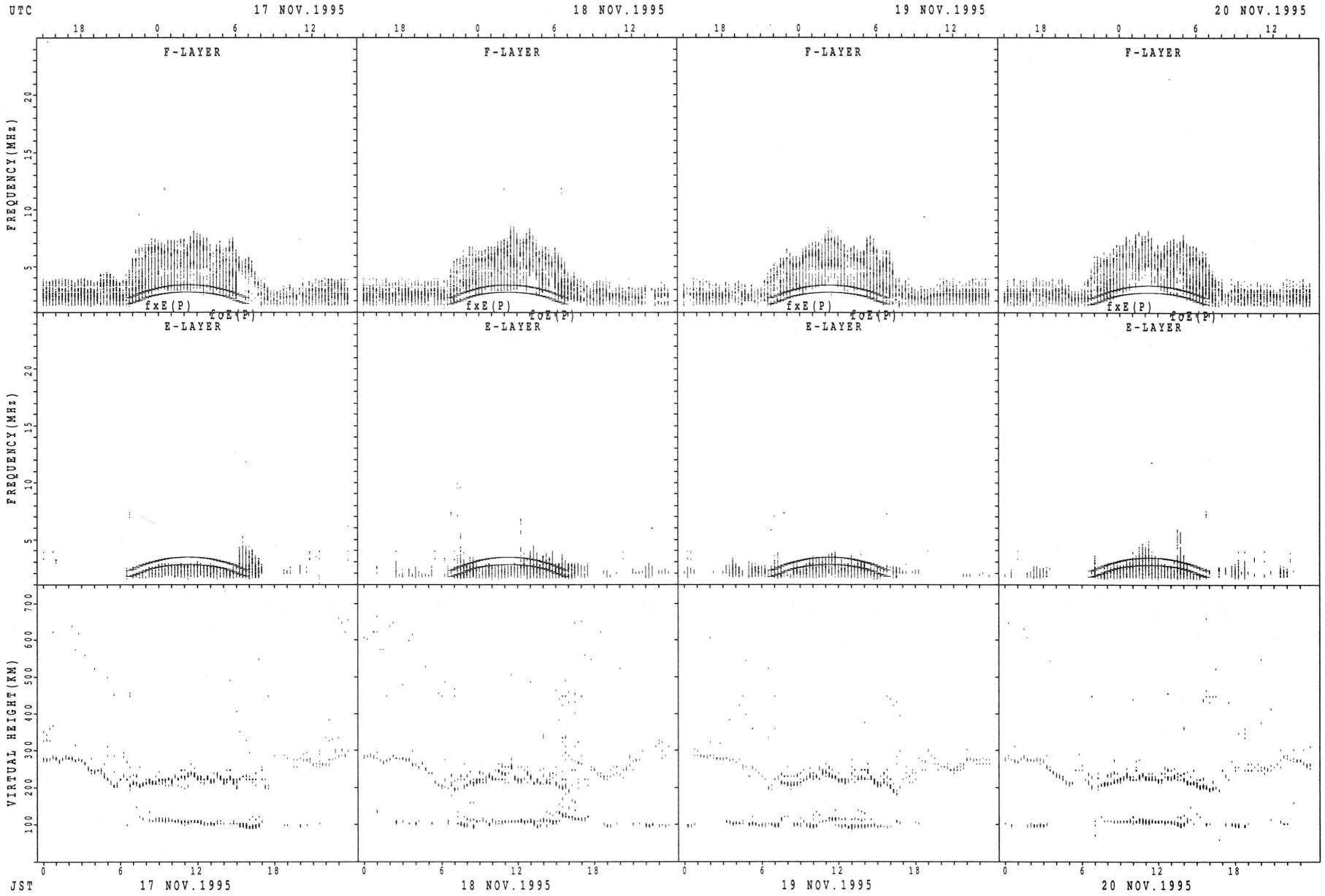
SUMMARY PLOTS AT WAKKANAI



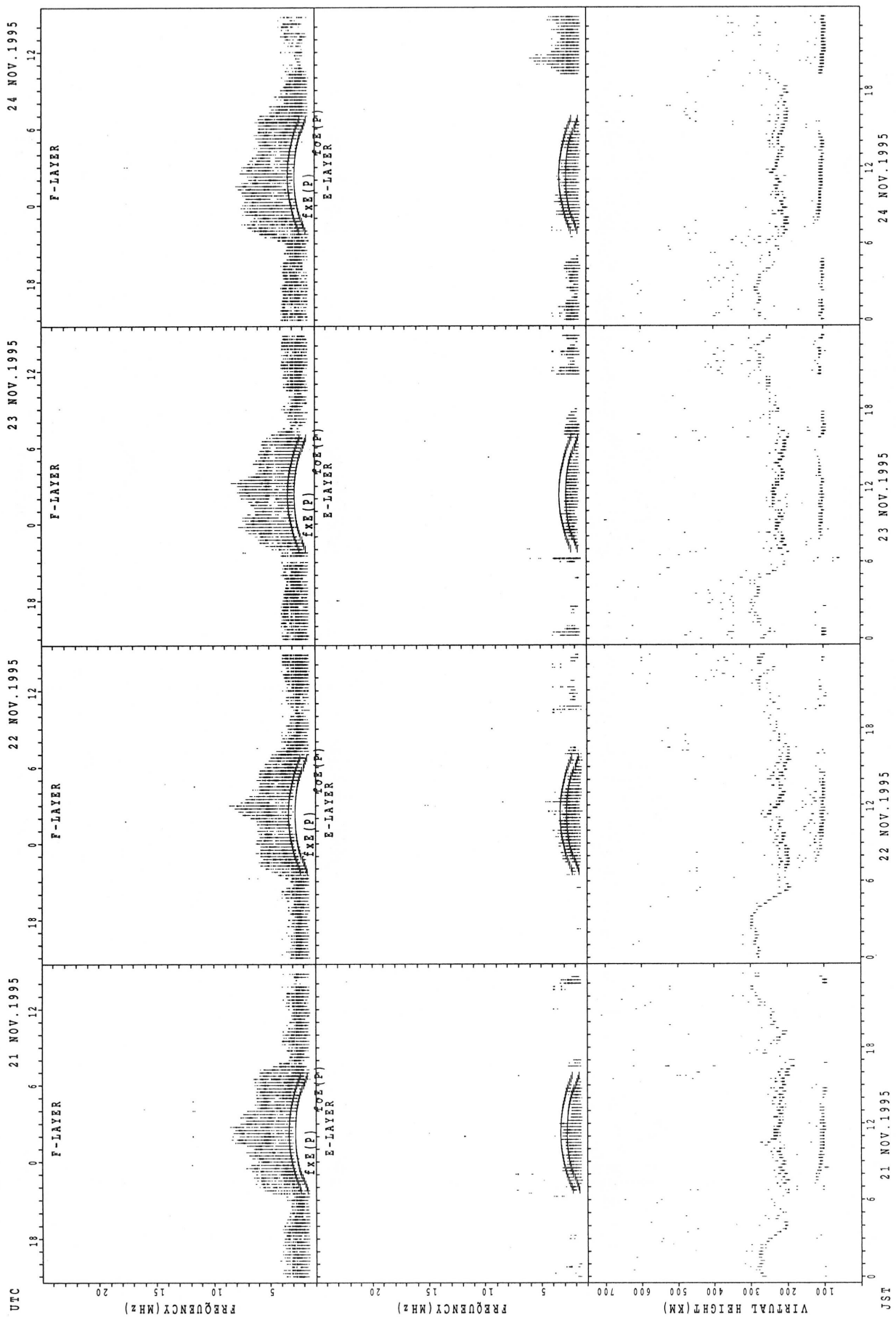
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

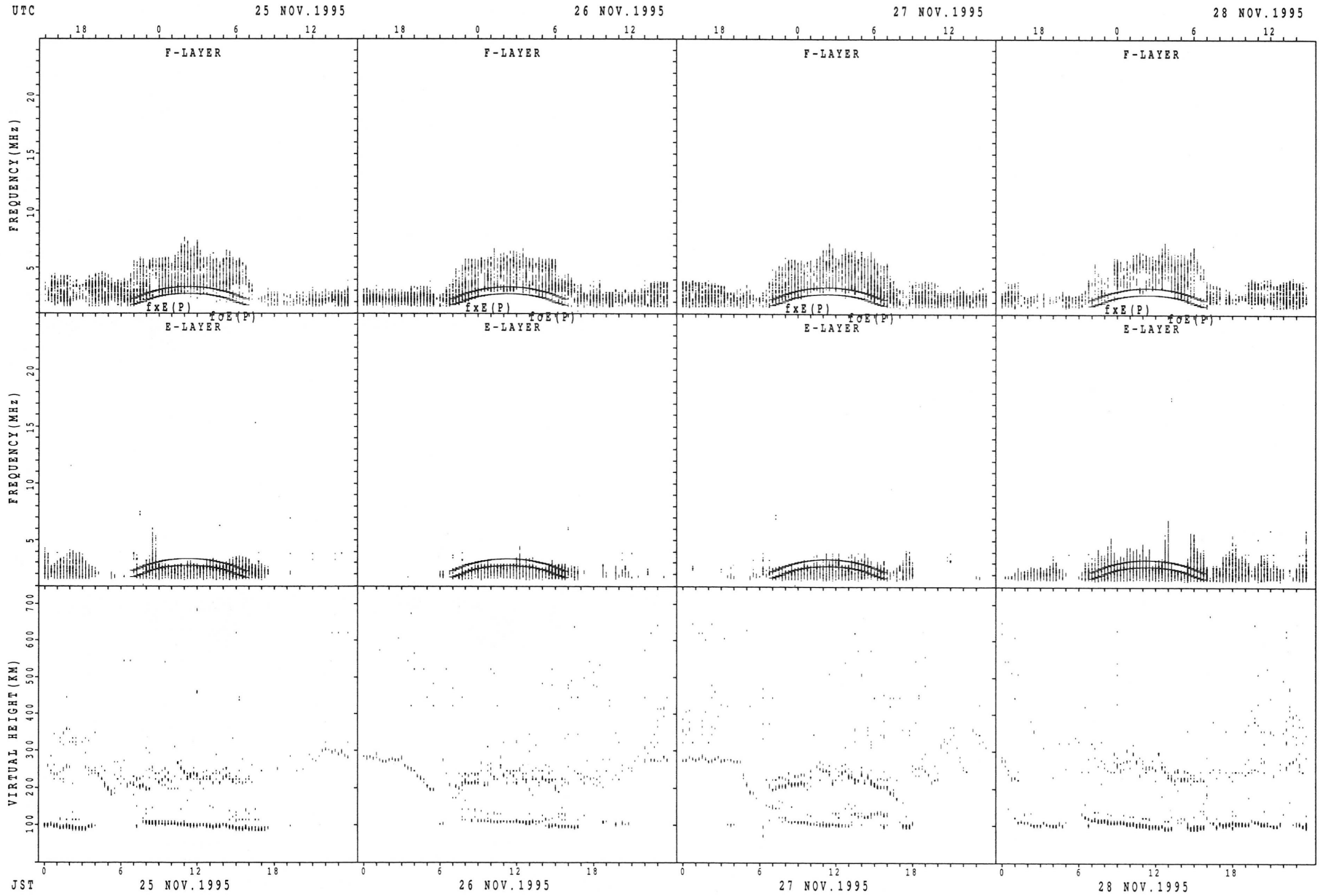
SUMMARY PLOTS AT WAKKANAI



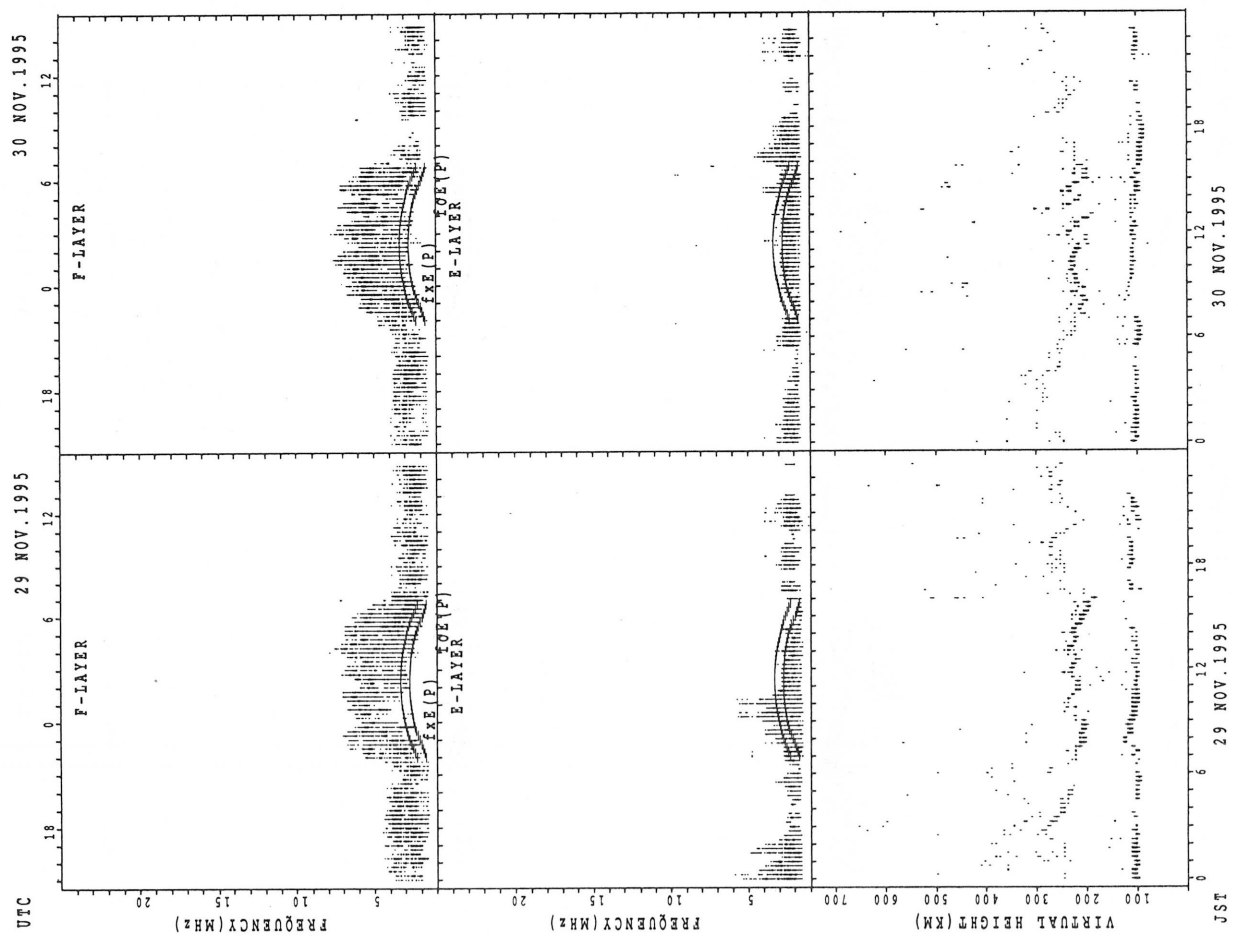
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

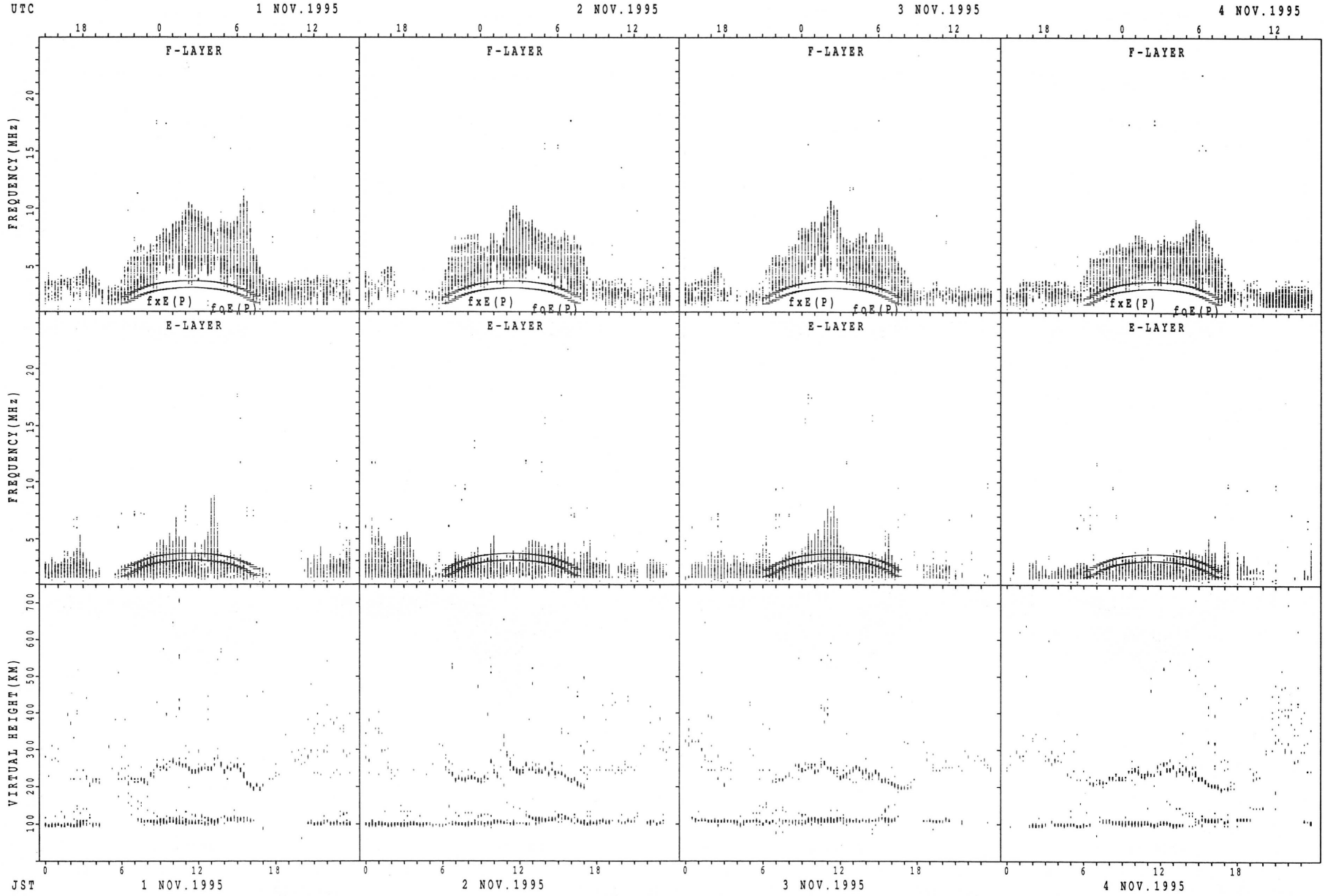
SUMMARY PLOTS AT WAKKANAI



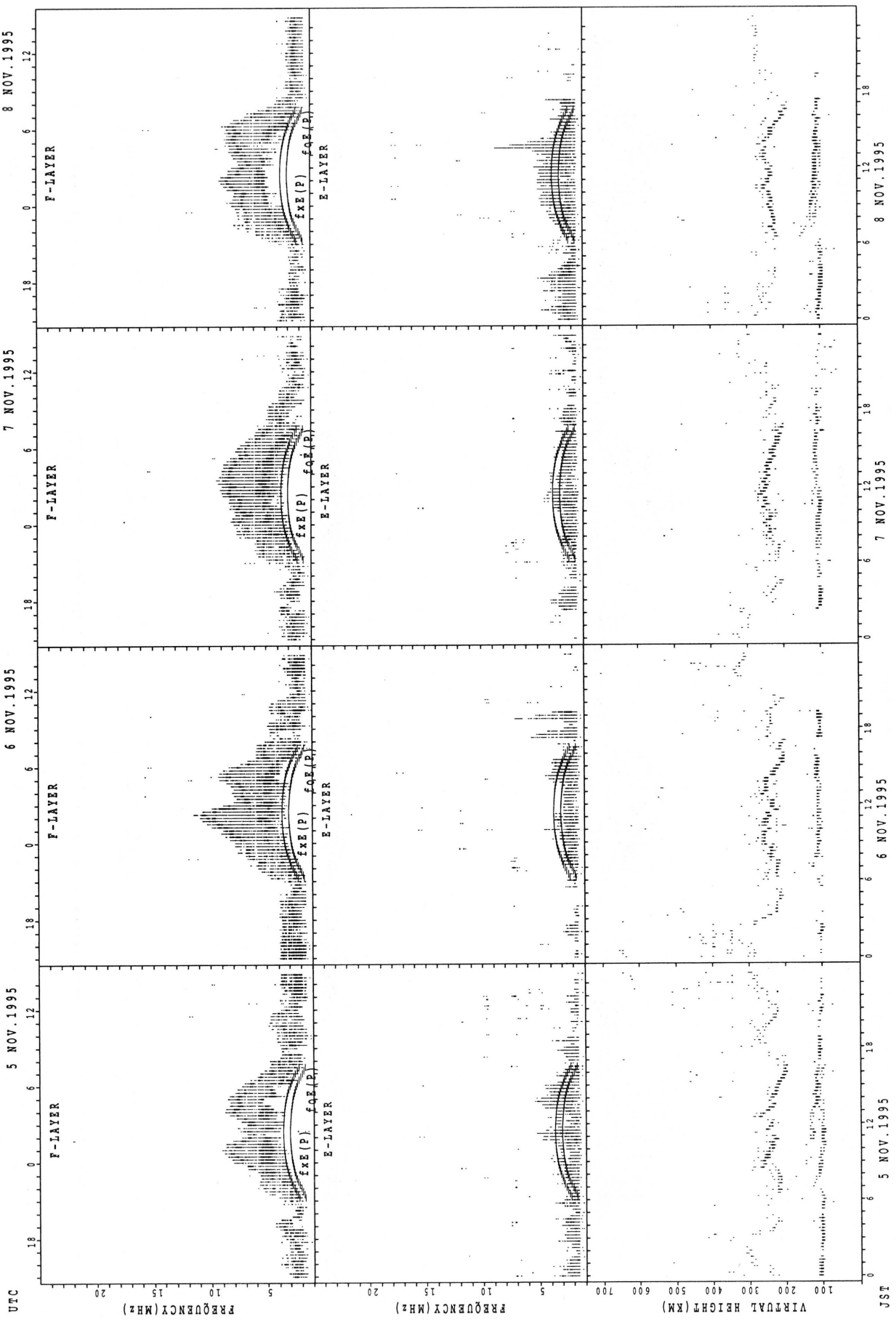
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

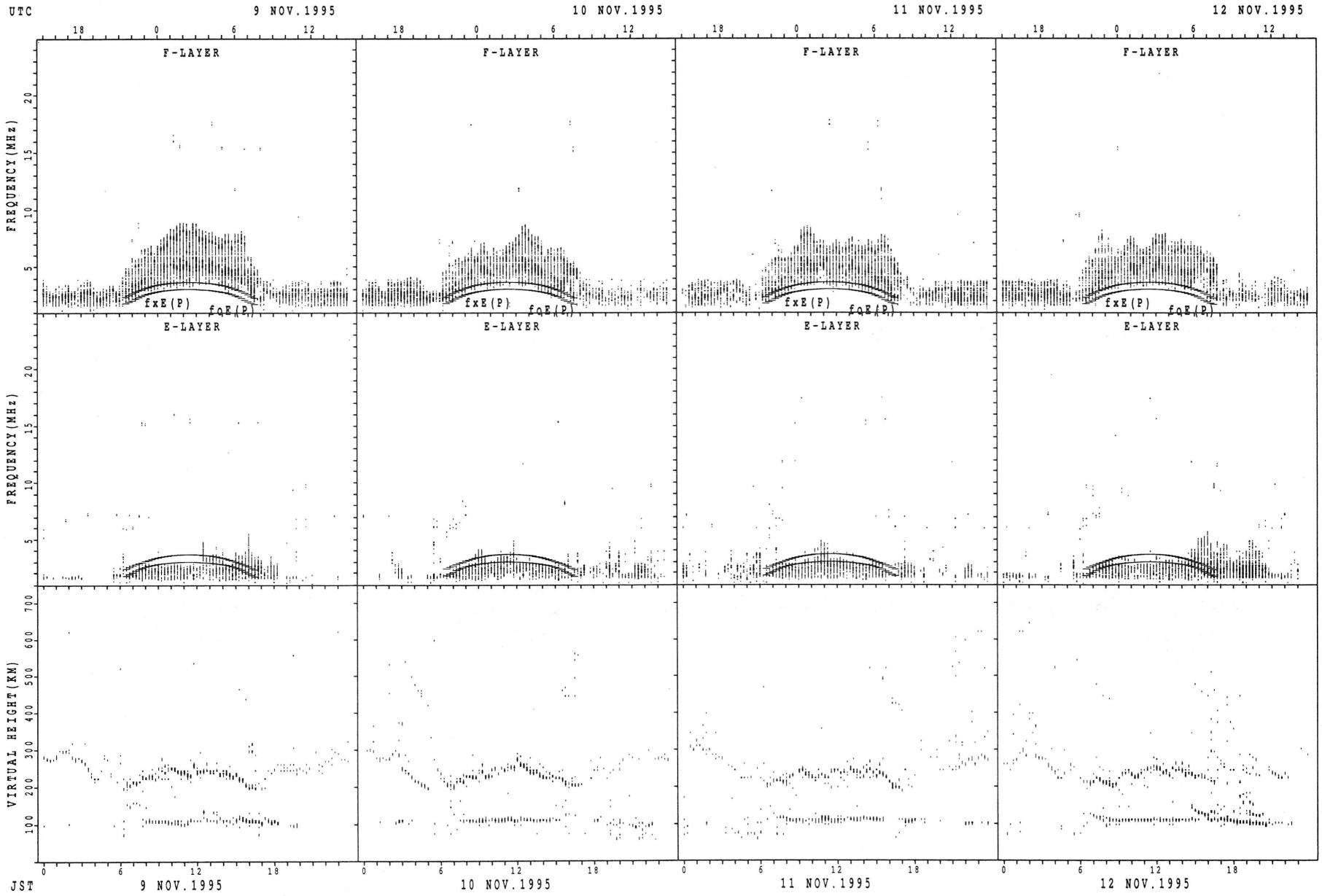
SUMMARY PLOTS AT KOKUBUNJI TOKYO



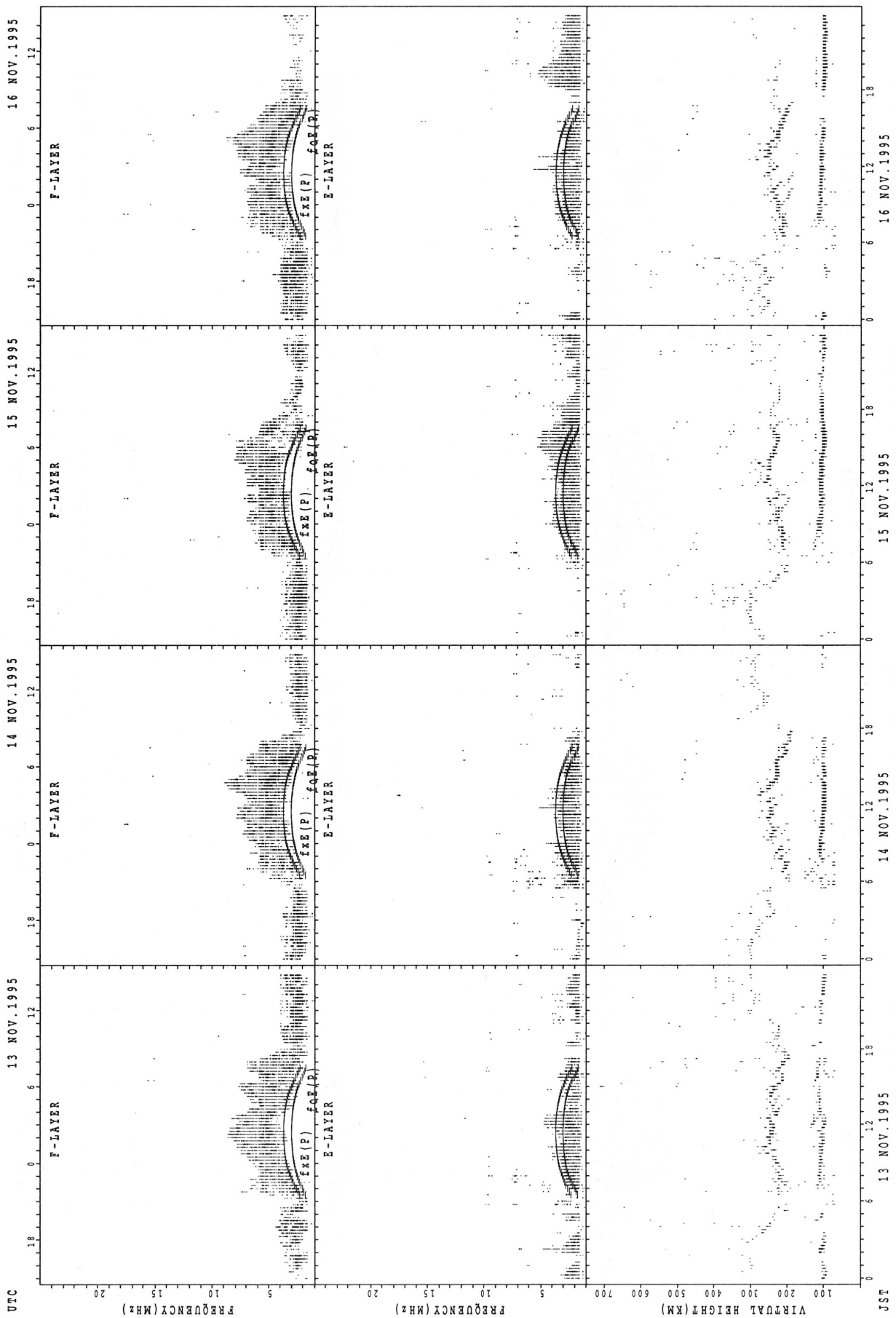
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
5 NOV.1995
6 NOV.1995
7 NOV.1995
8 NOV.1995
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

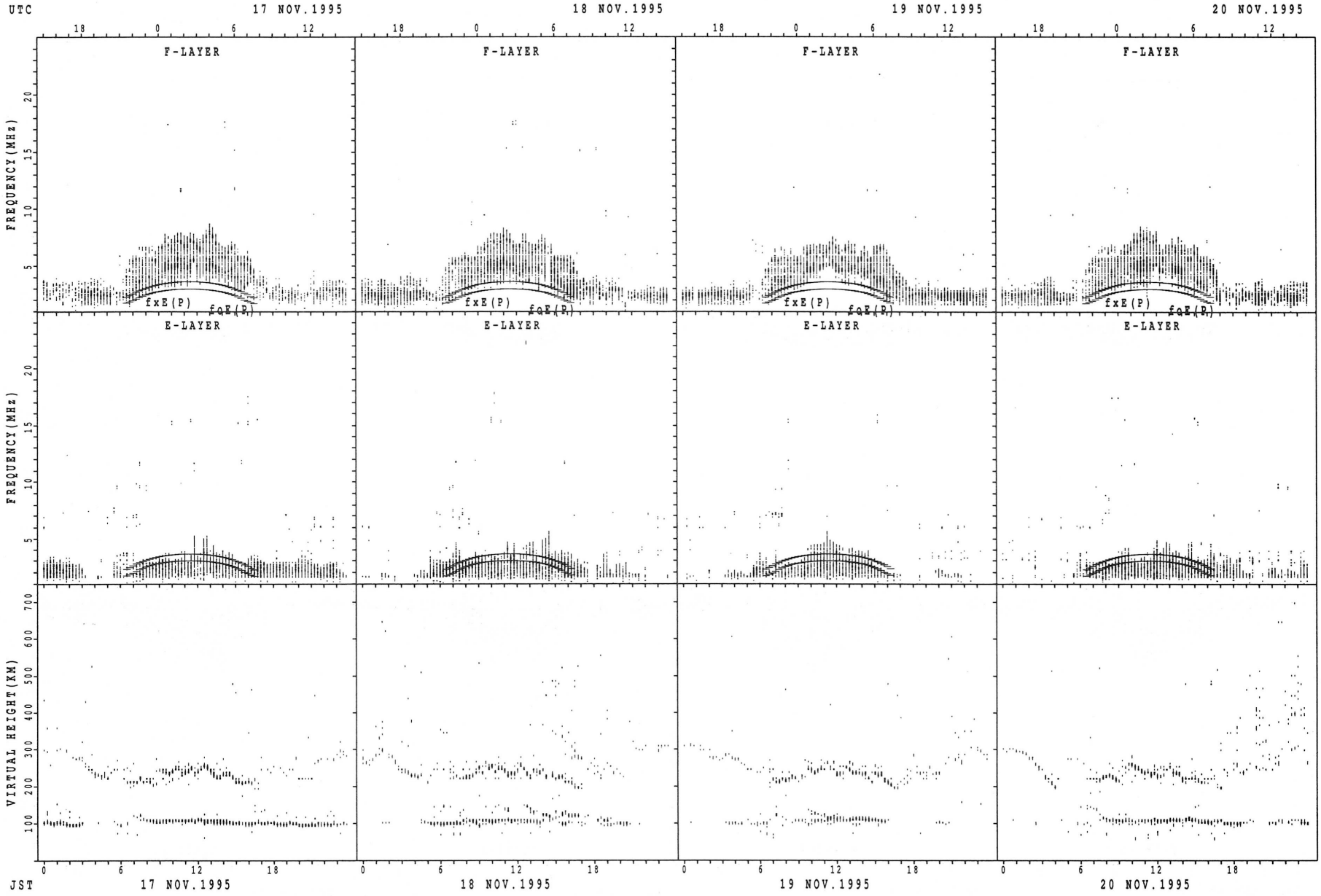
SUMMARY PLOTS AT KOKUBUNJI TOKYO



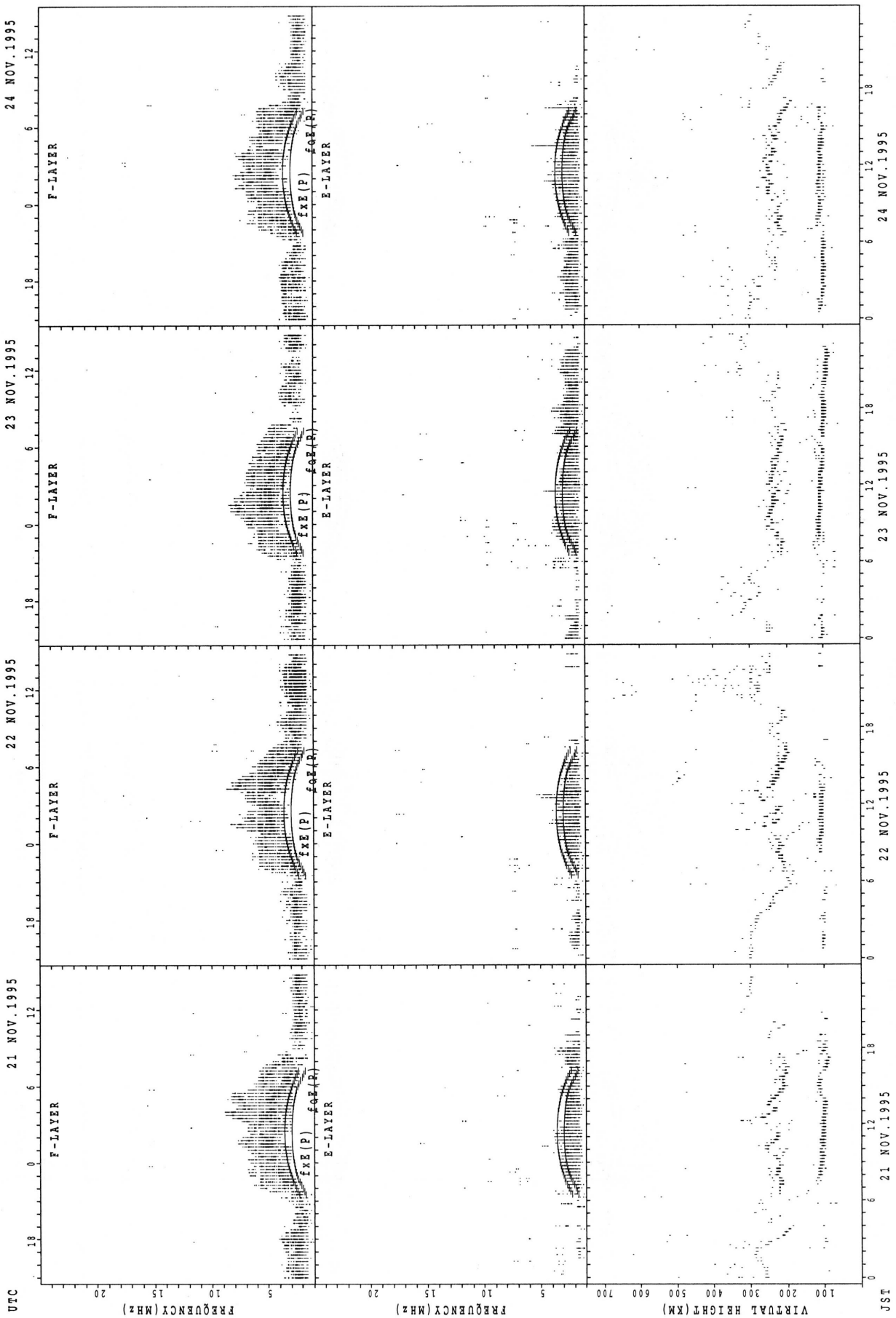
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

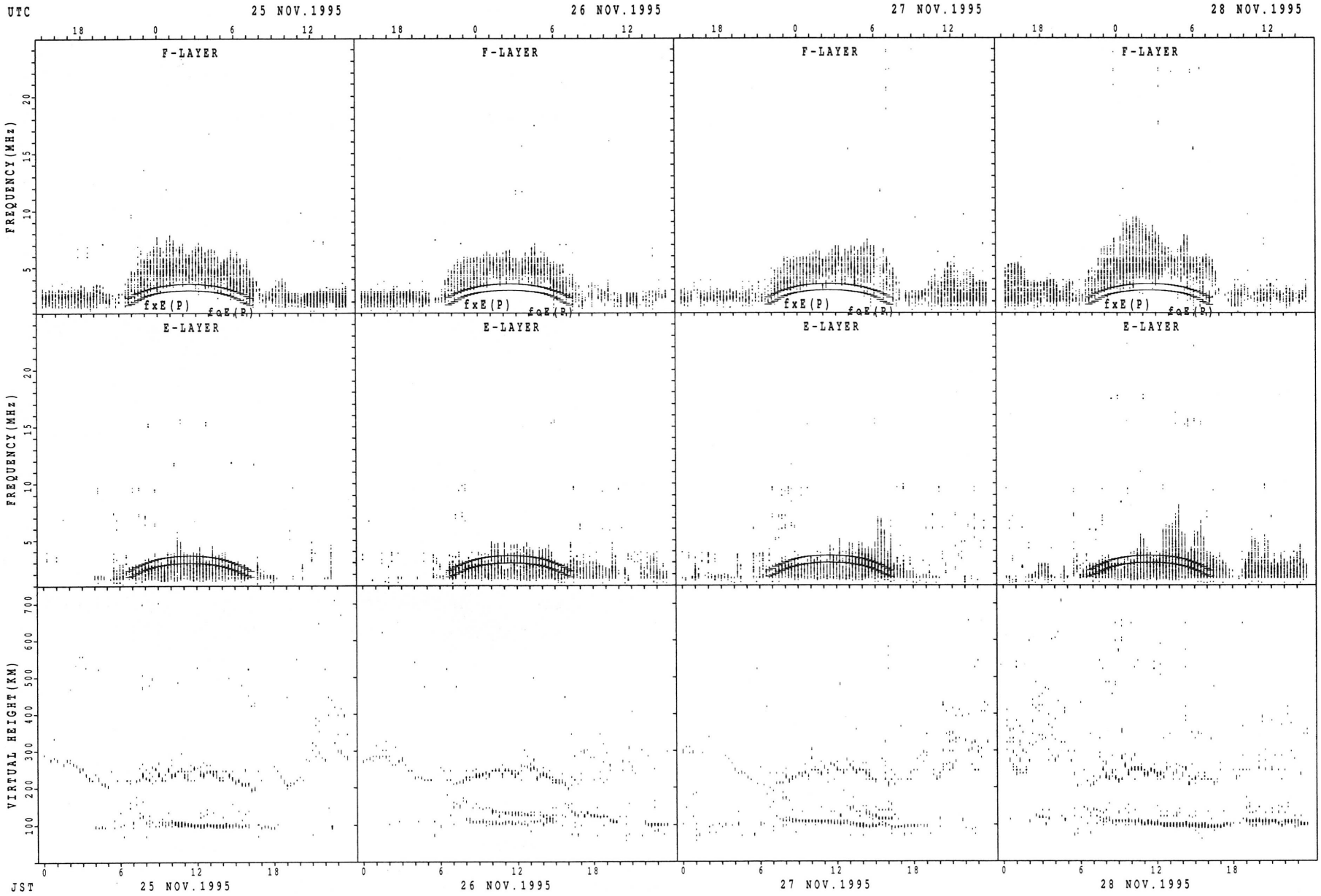
SUMMARY PLOTS AT KOKUBUNJI TOKYO



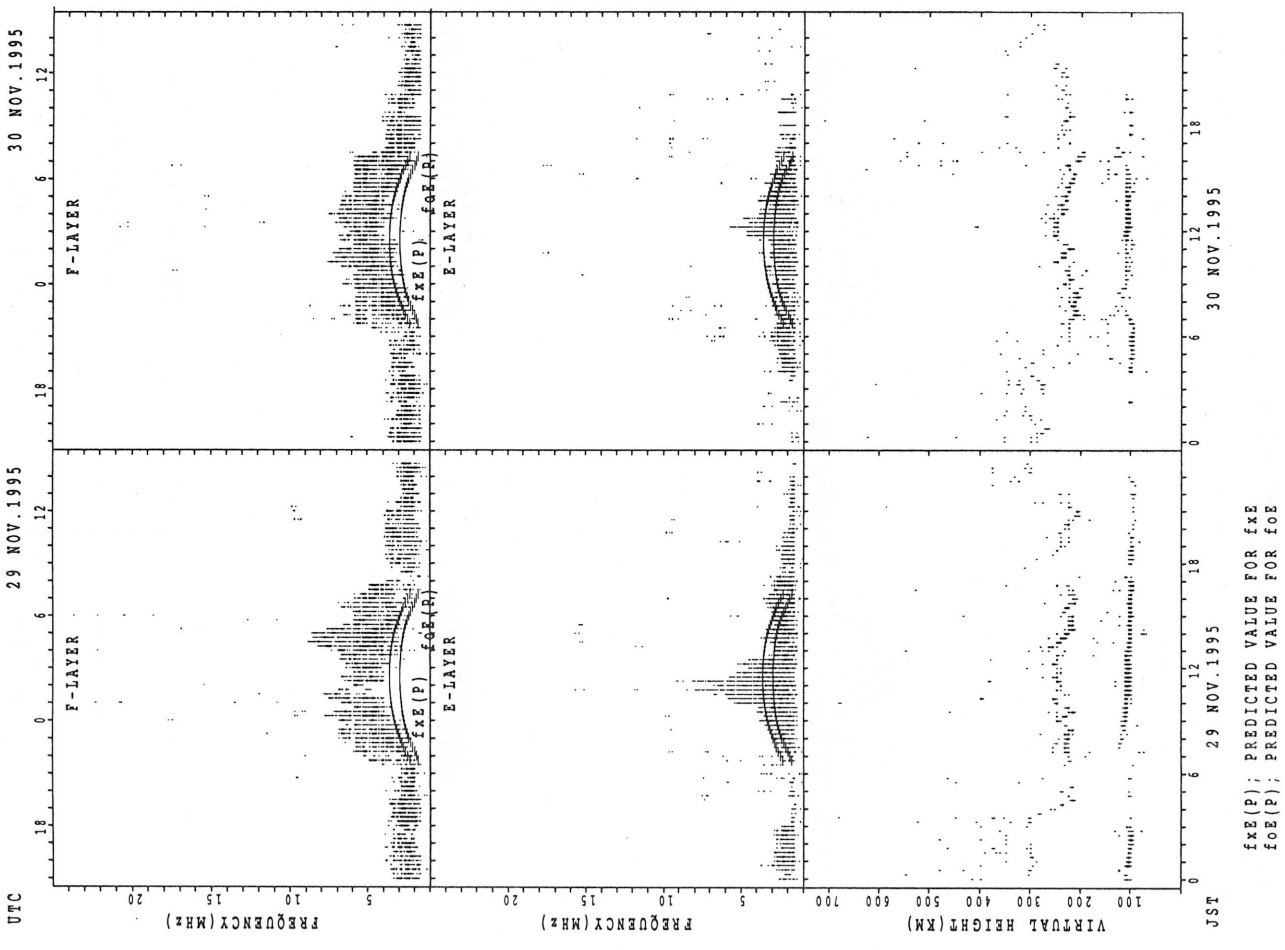
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
21 NOV.1995
22 NOV.1995
23 NOV.1995
24 NOV.1995
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

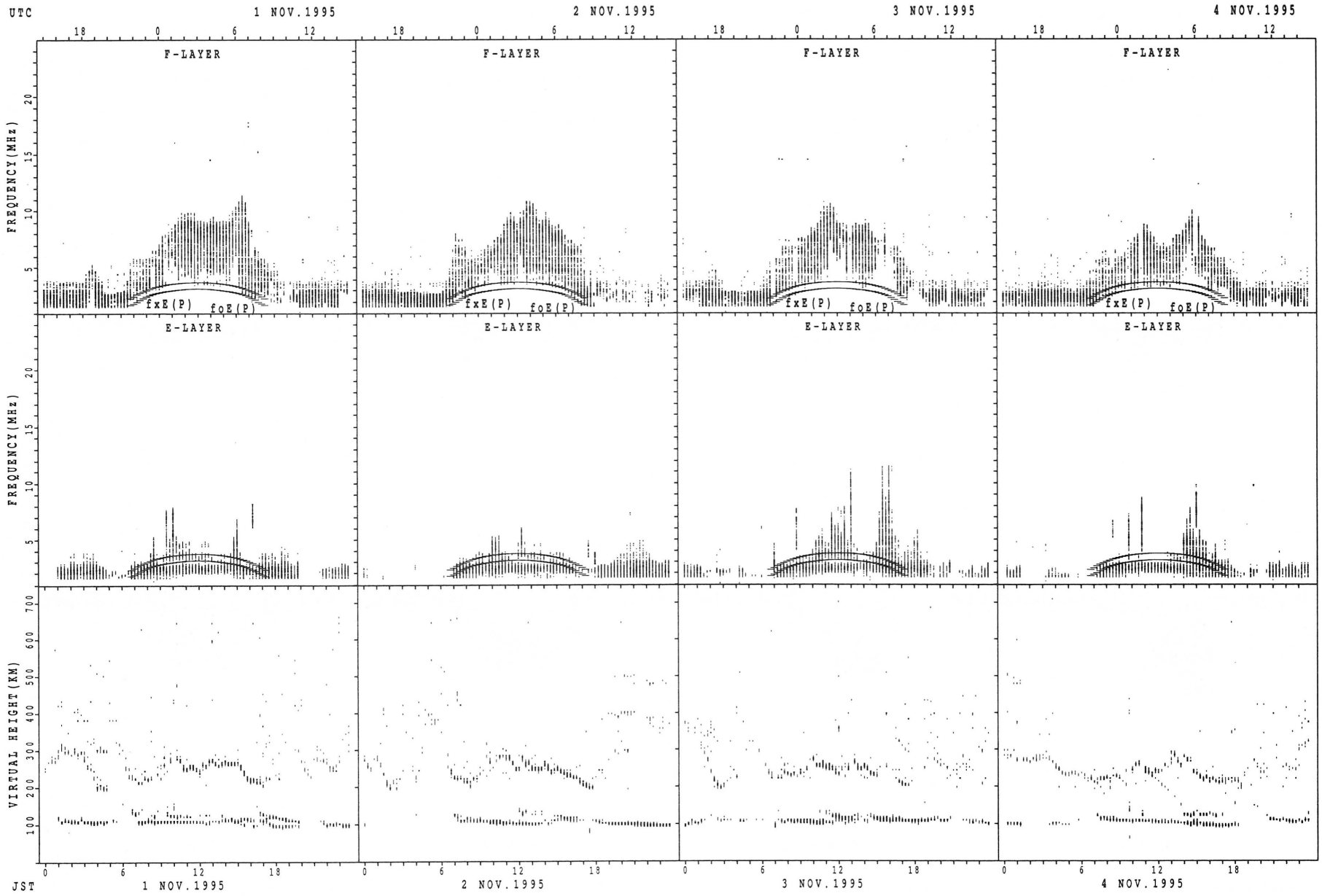
SUMMARY PLOTS AT KOKUBUNJI TOKYO



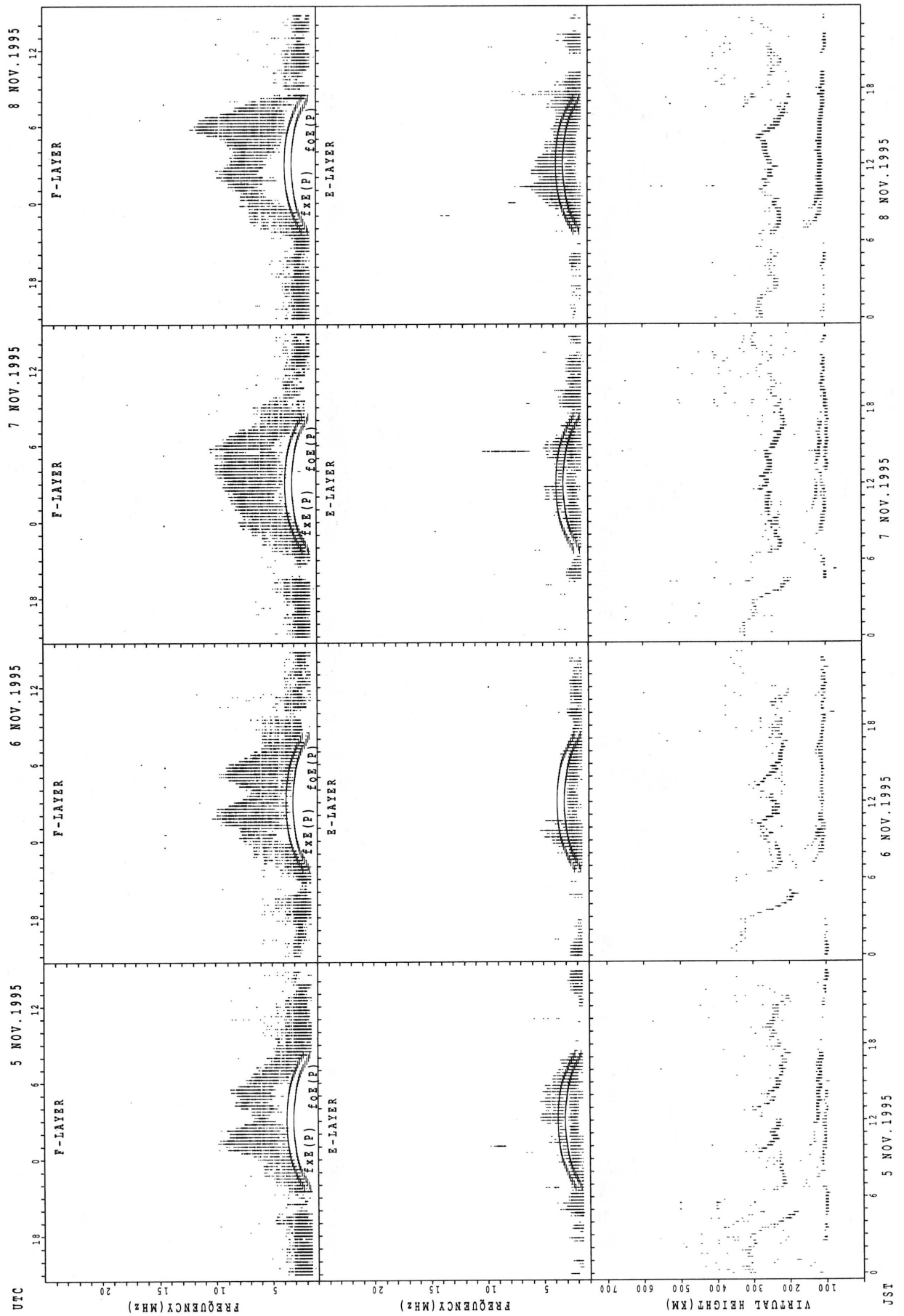
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
29 NOV.1995
30 NOV.1995
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

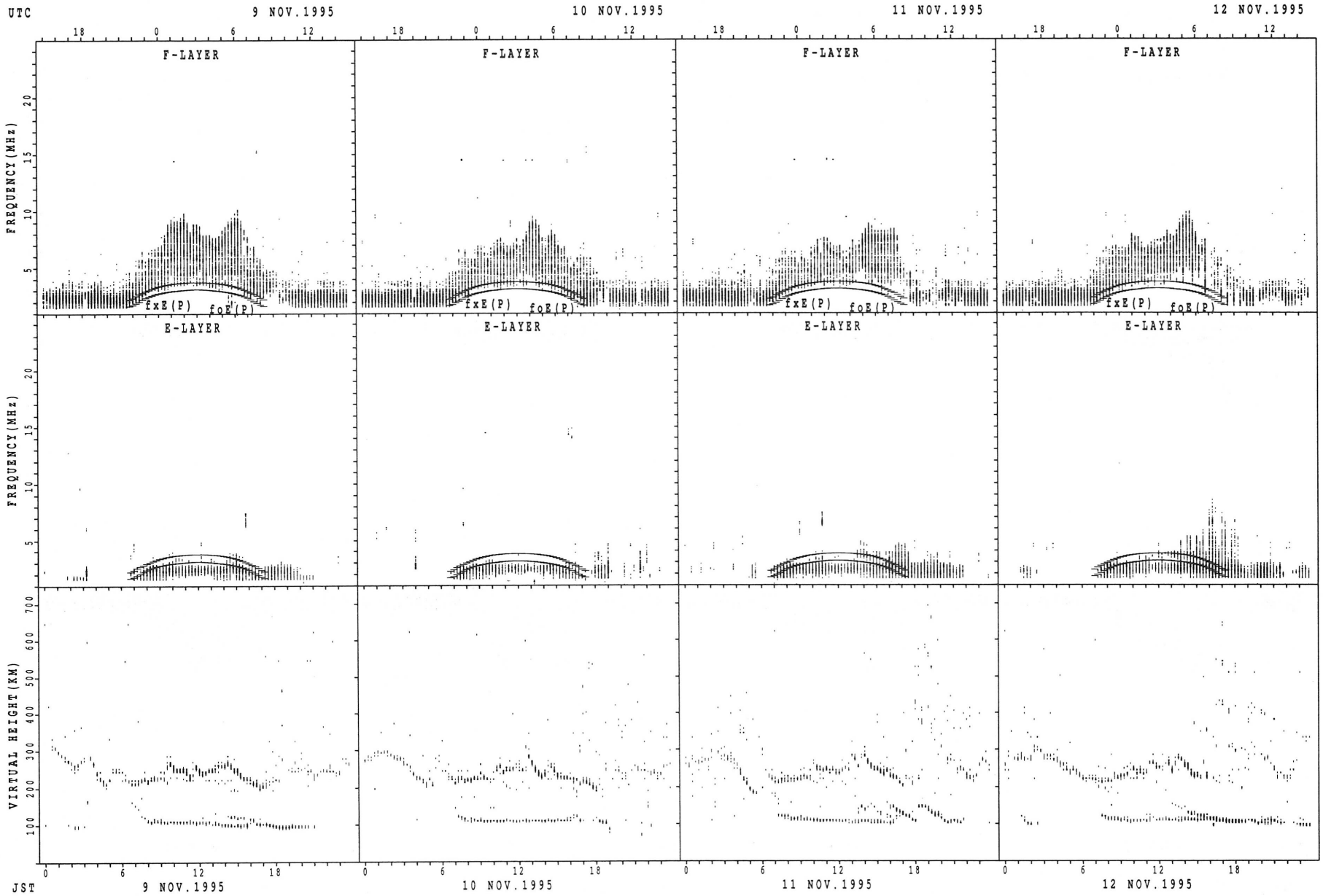
SUMMARY PLOTS AT YAMAGAWA



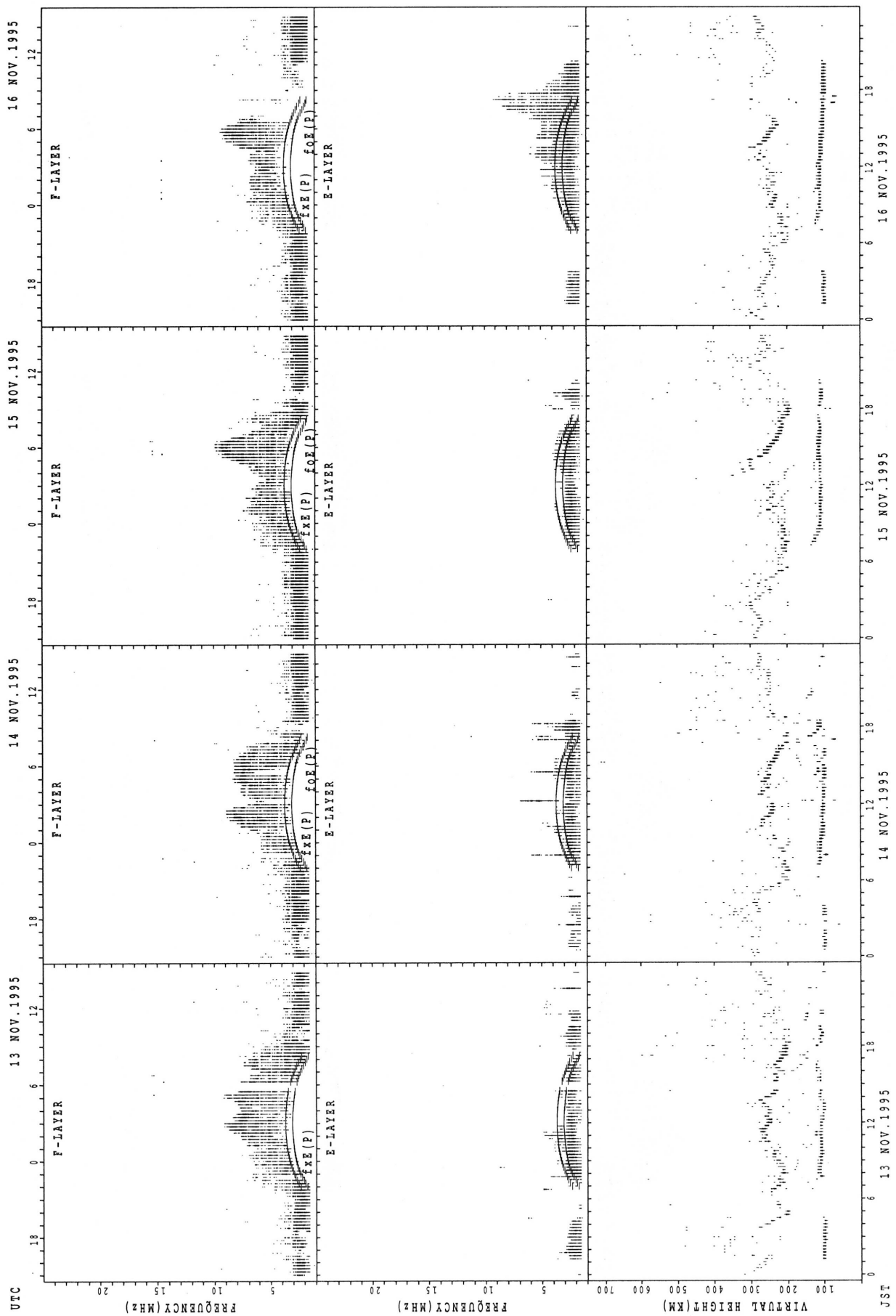
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

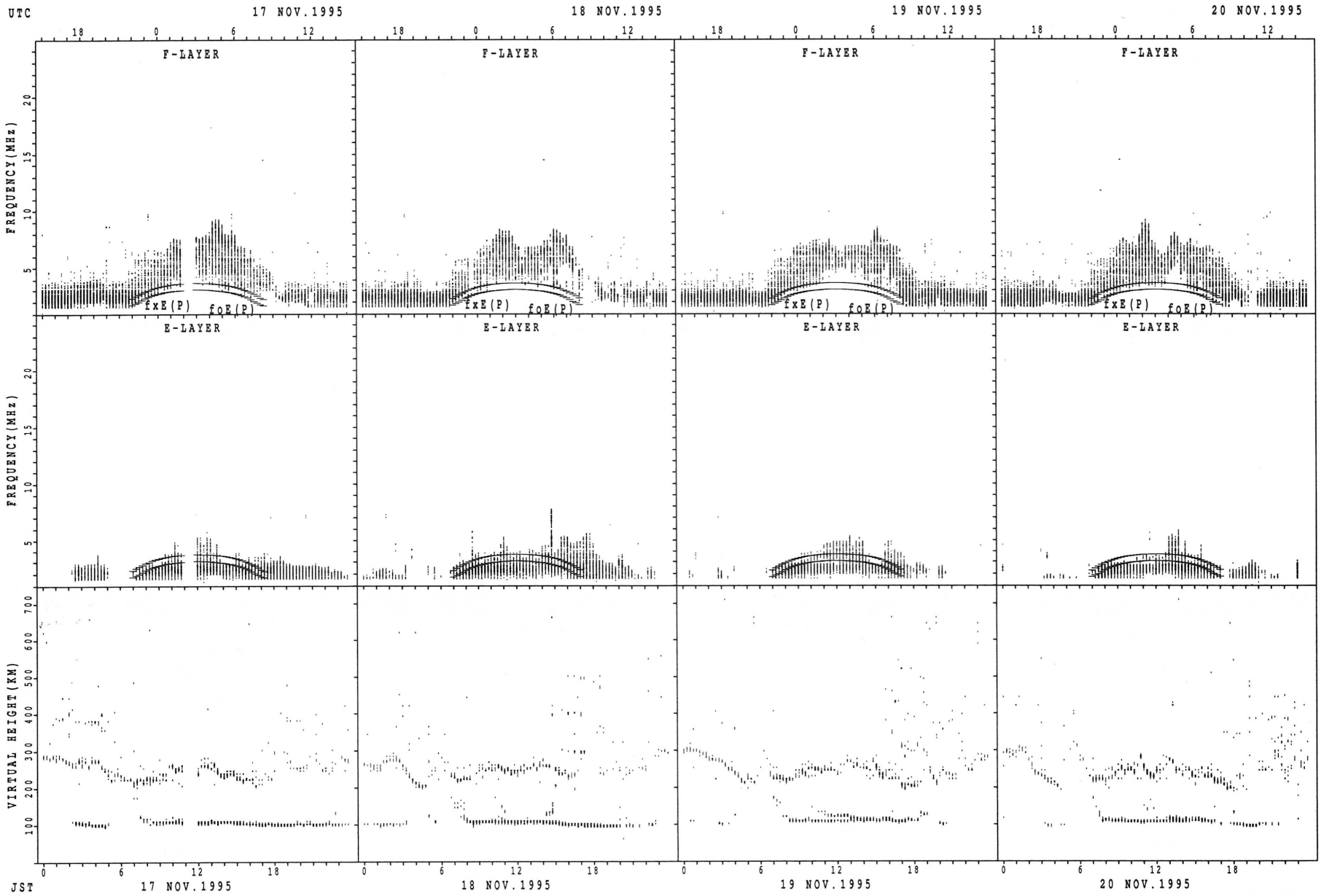
SUMMARY PLOTS AT YAMAGAWA



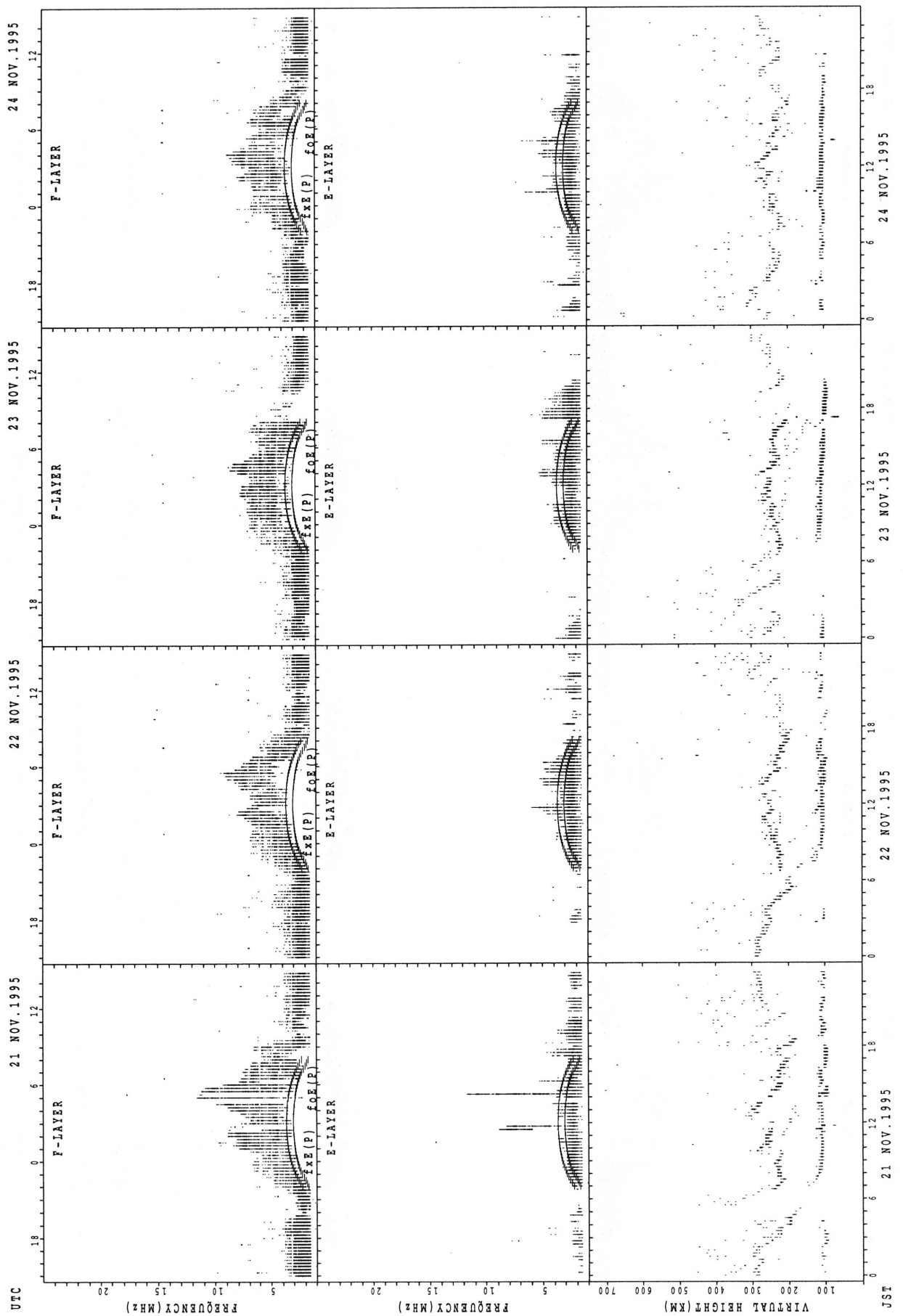
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
13 NOV.1995
14 NOV.1995
15 NOV.1995
16 NOV.1995
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

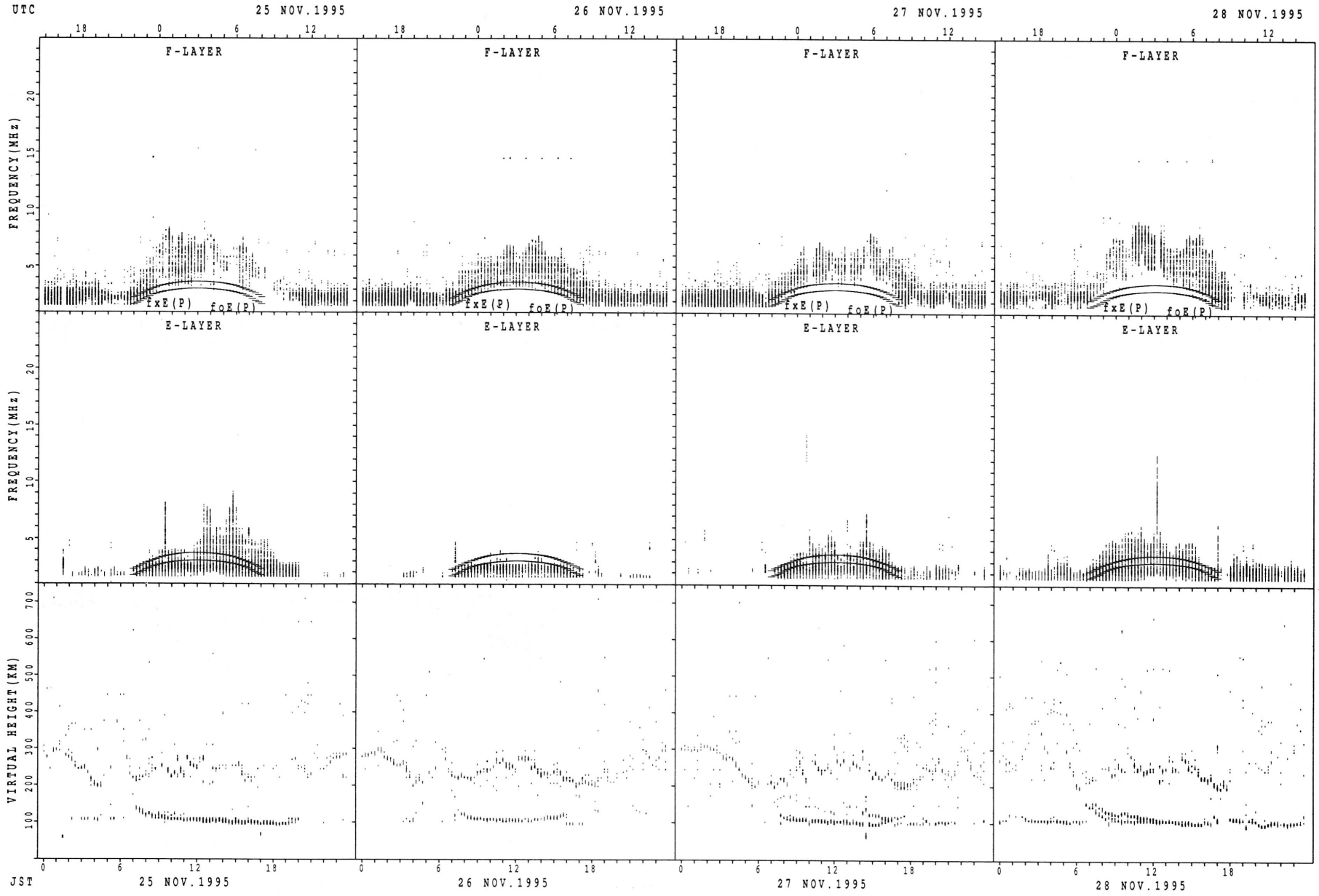
SUMMARY PLOTS AT YAMAGAWA



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

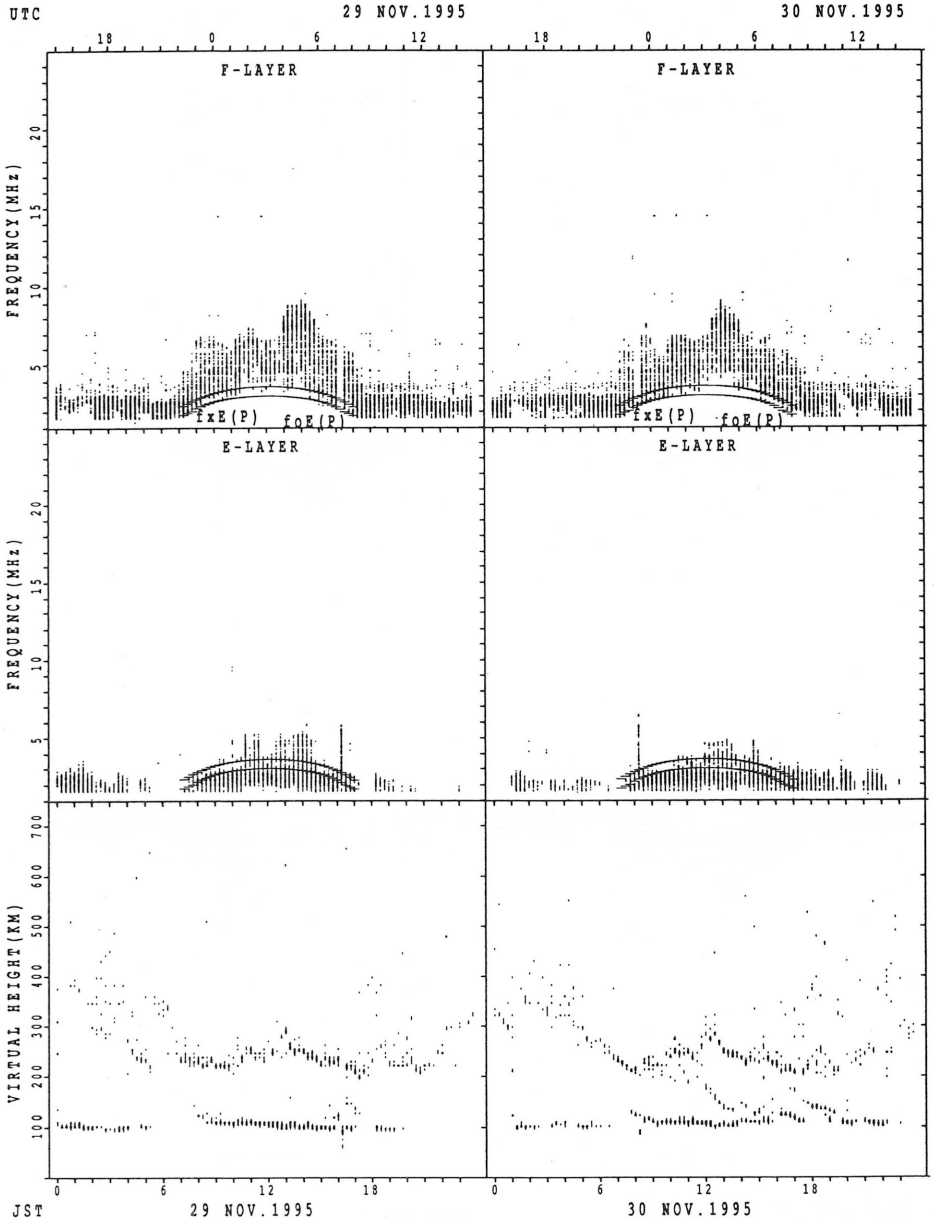

SUMMARY PLOTS AT YAMAGAWA
UTC
21 NOV.1995
22 NOV.1995
23 NOV.1995
24 NOV.1995
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
JST
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA



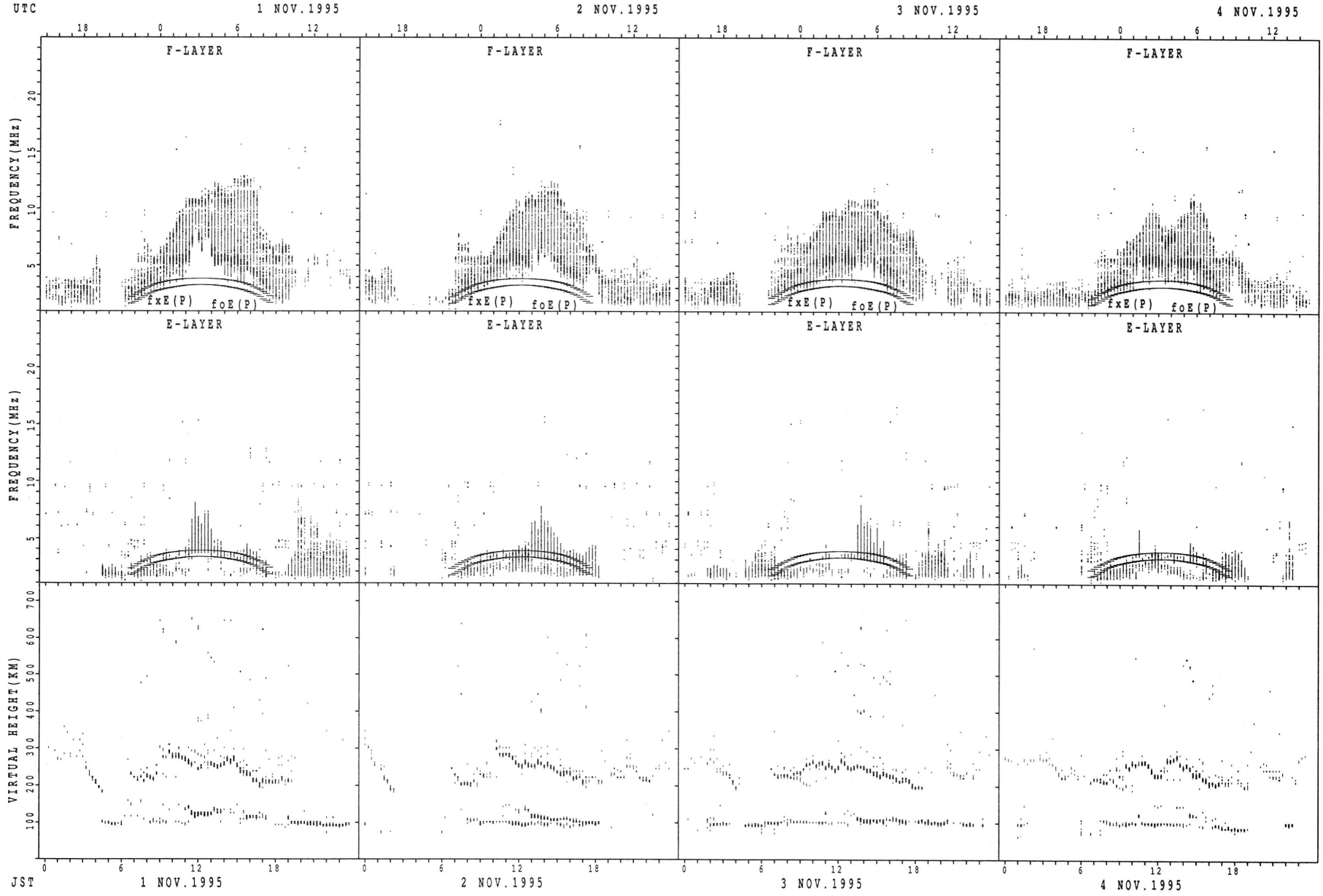
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT YAMAGAWA

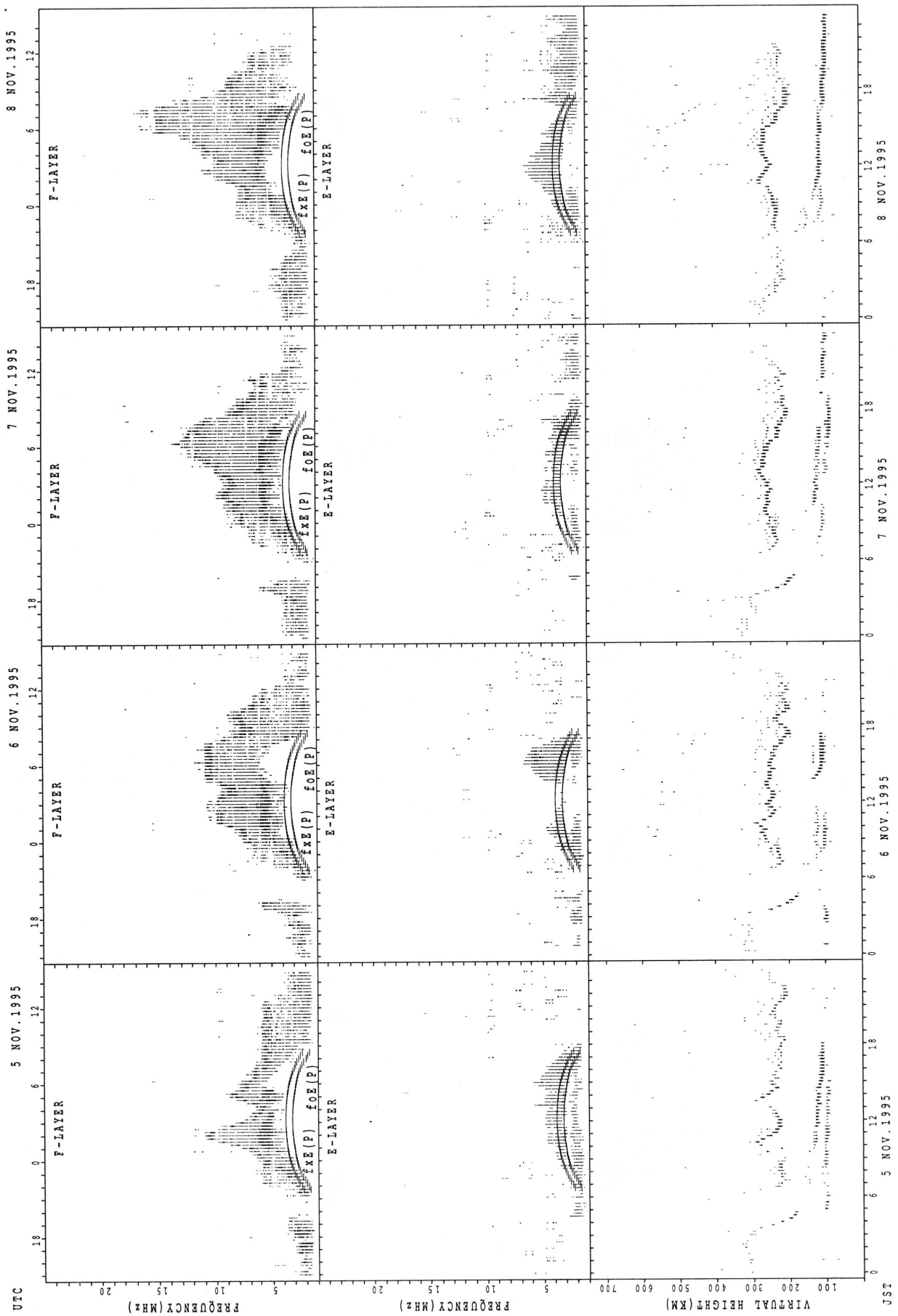


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

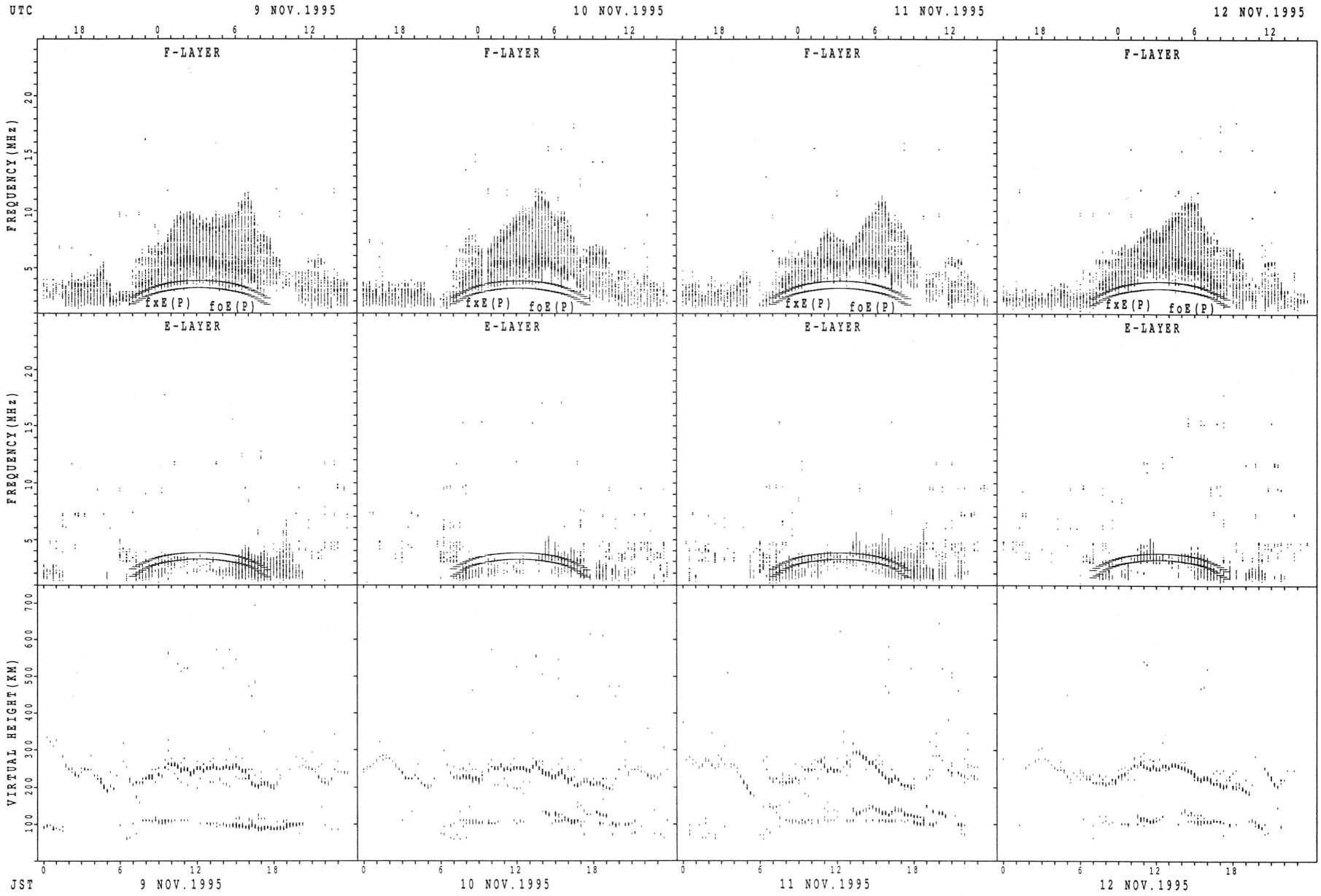
SUMMARY PLOTS AT OKINAWA



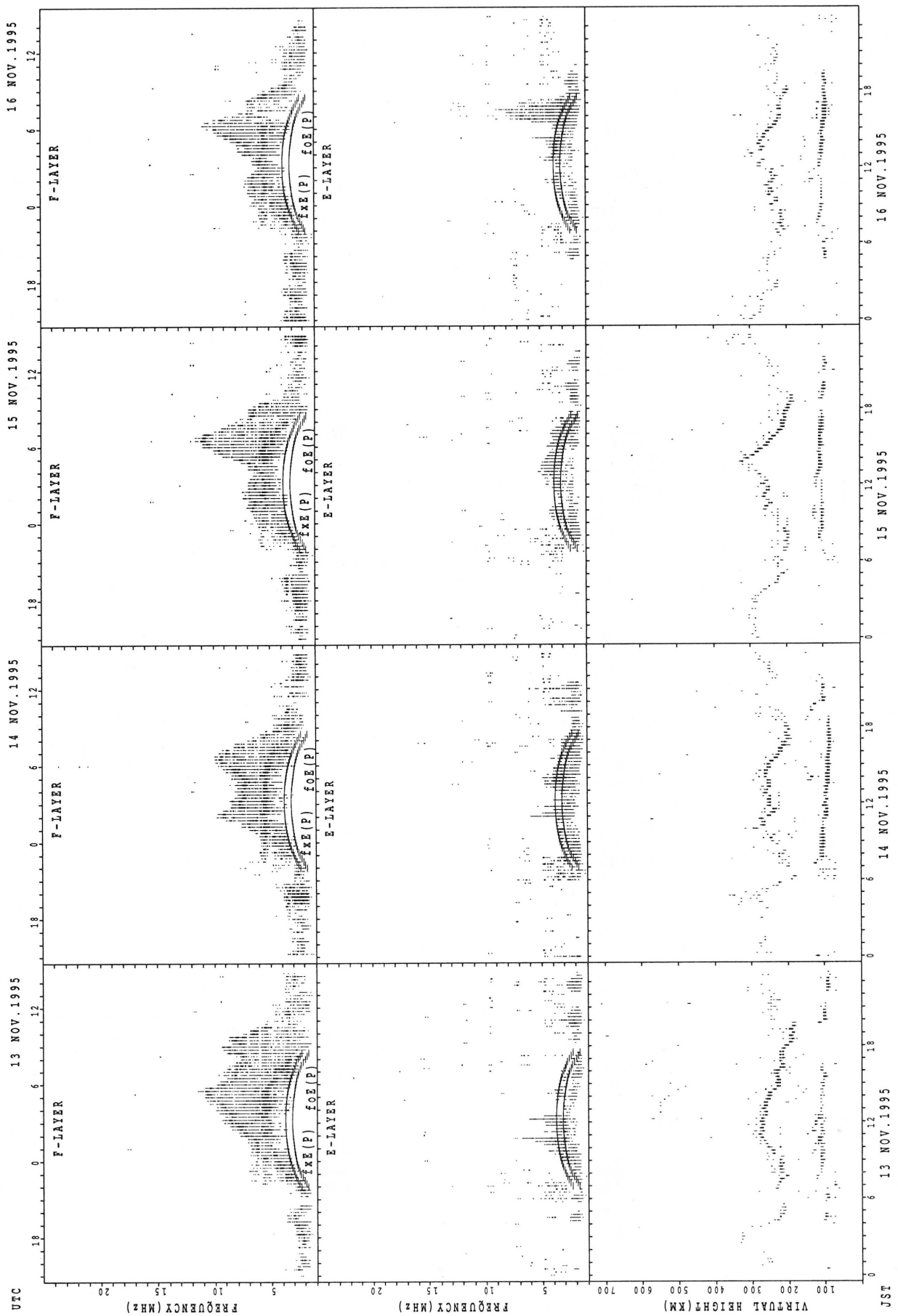
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

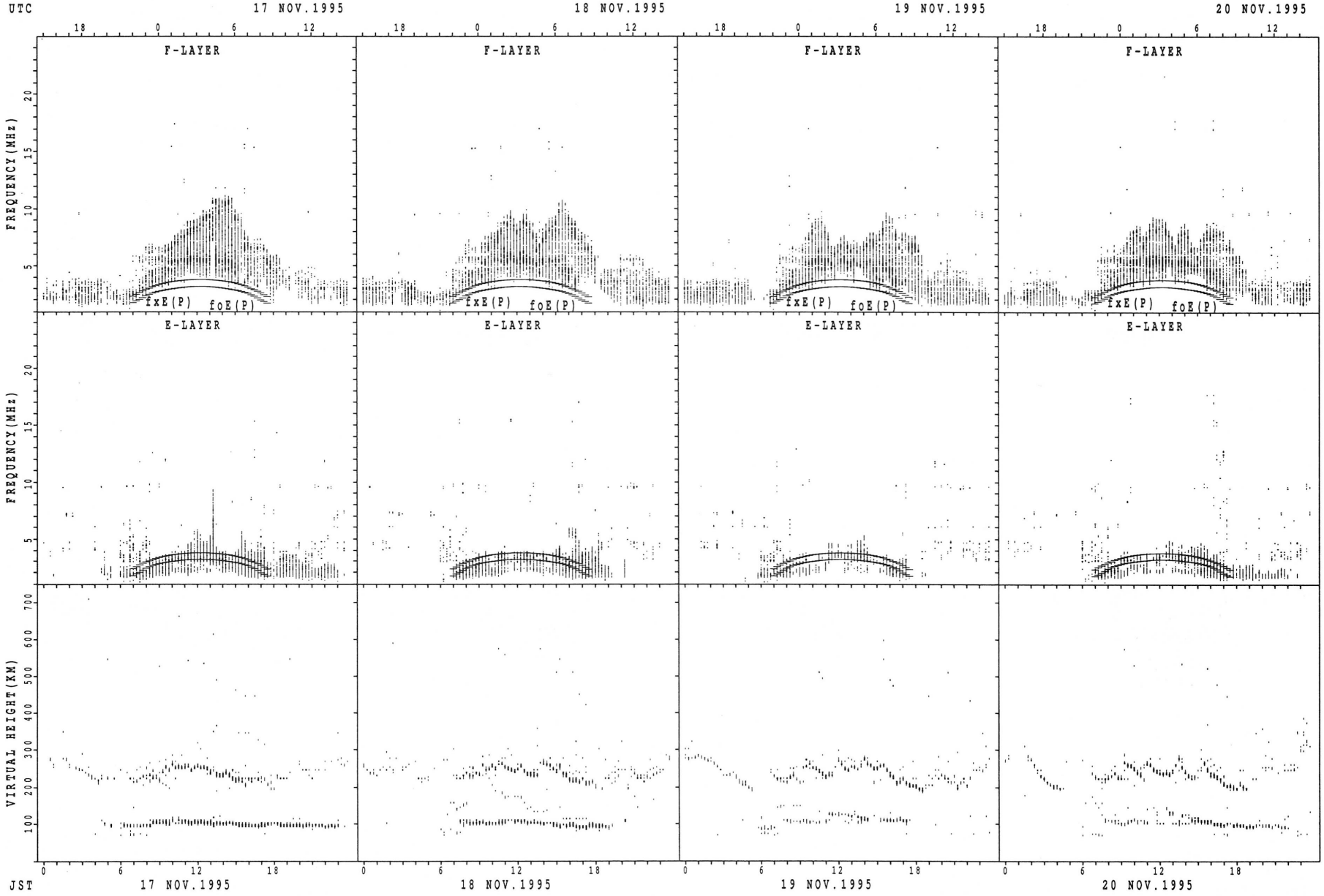
SUMMARY PLOTS AT OKINAWA



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

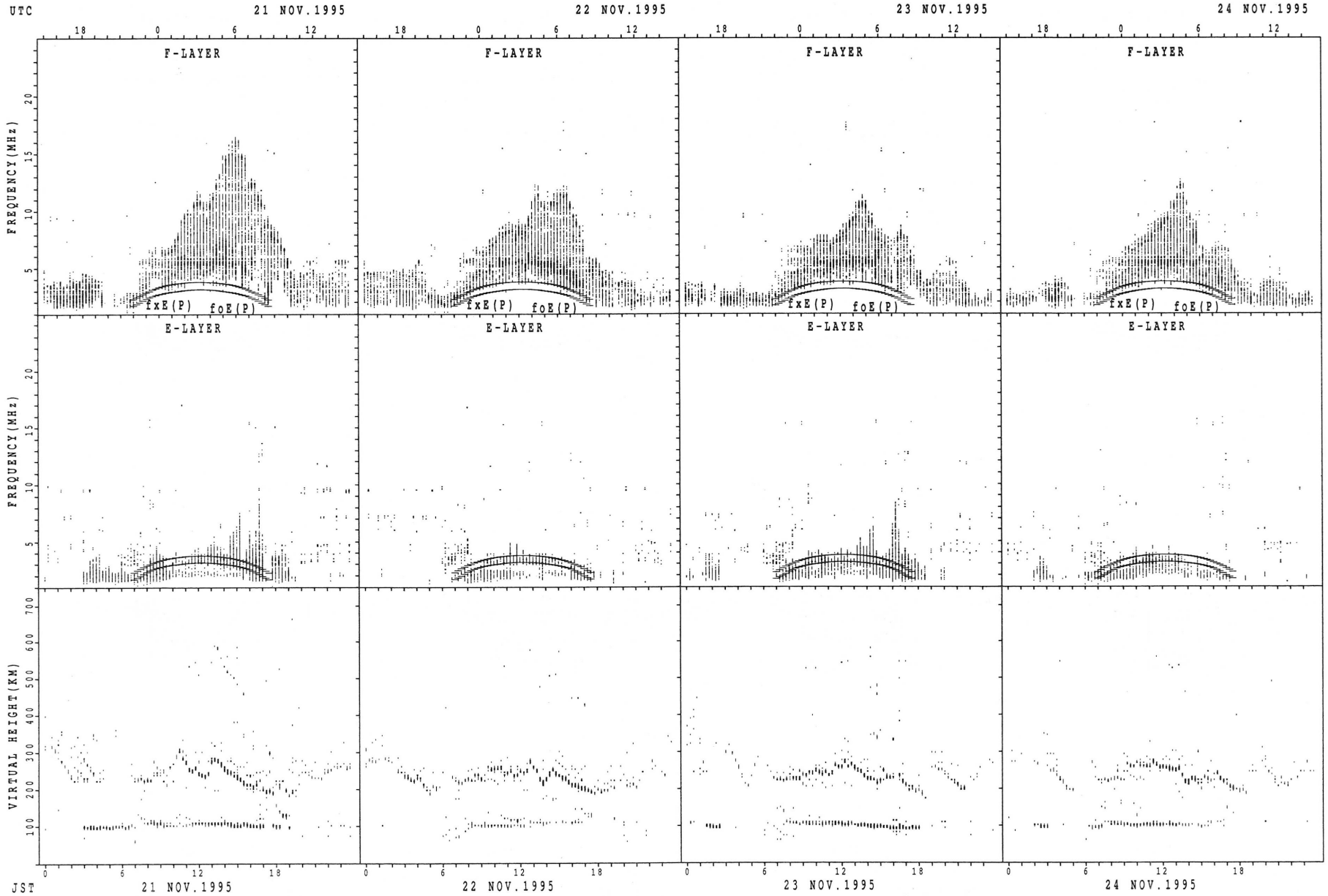

SUMMARY PLOTS AT OKINAWA
UTC
JST
13 NOV.1995
14 NOV.1995
15 NOV.1995
16 NOV.1995
F-LAYER
E-LAYER
FREQUENCY (MHz)
VIRTUAL HEIGHT (KM)
fxE(P)
foE(P)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



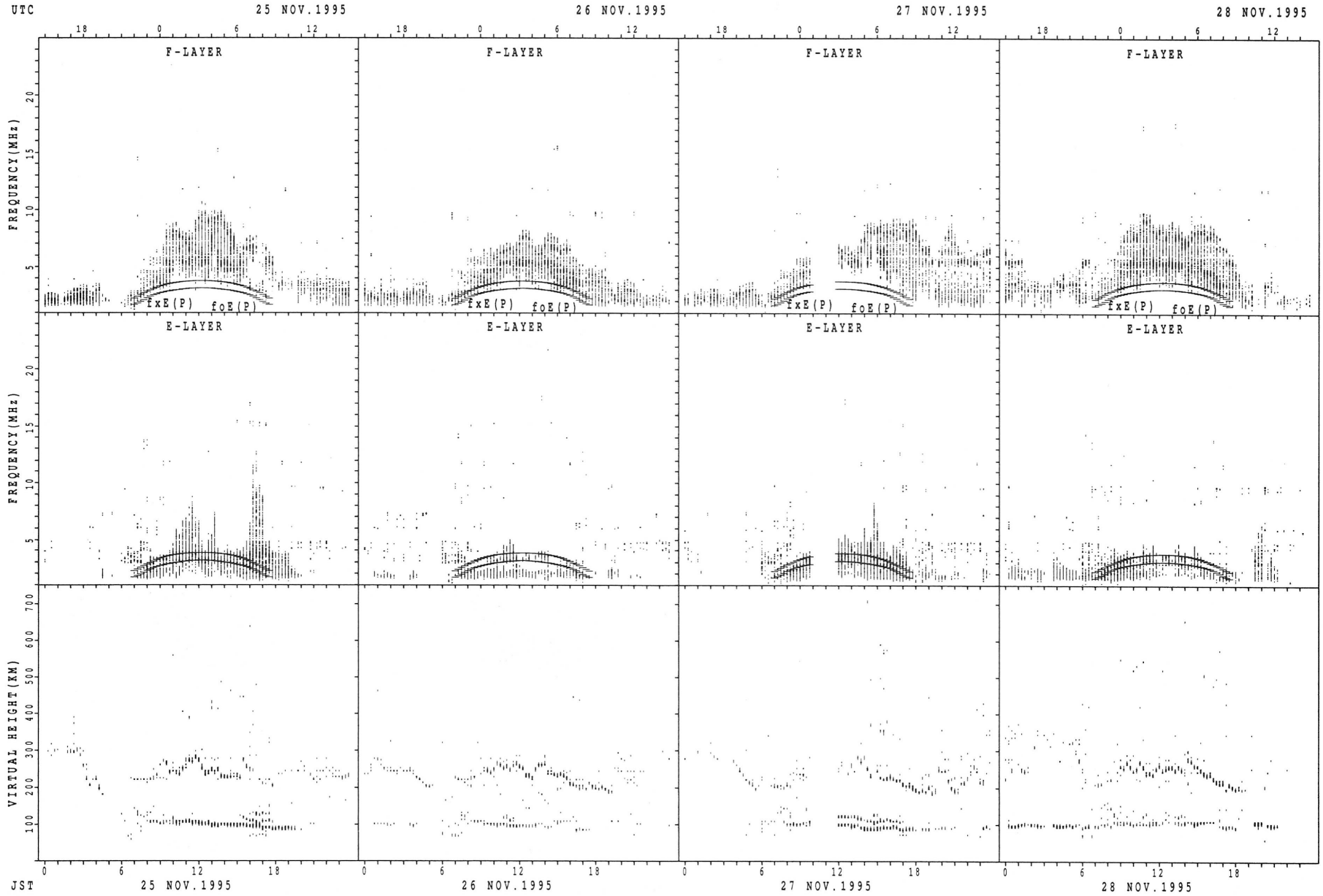
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA

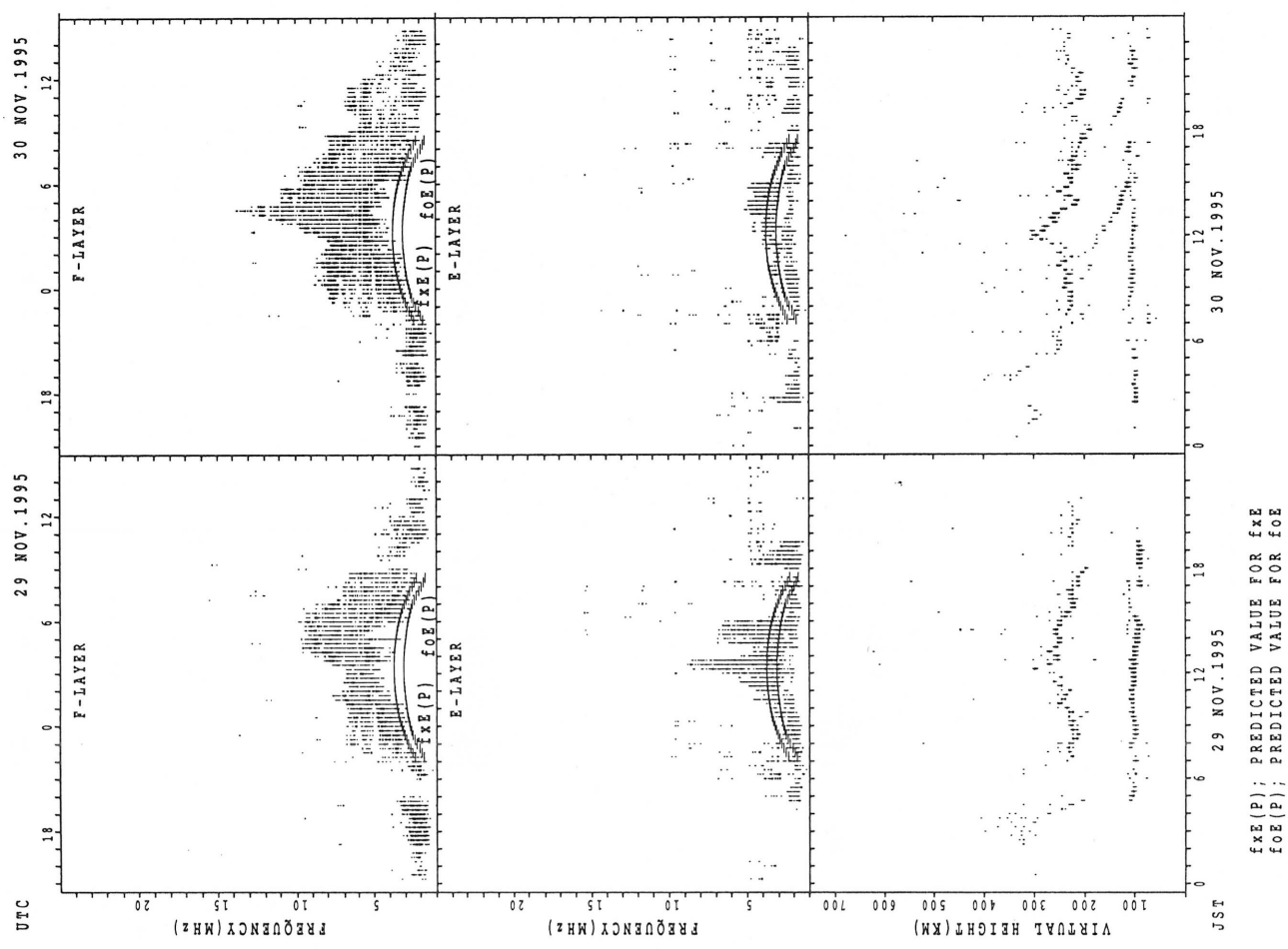


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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


SUMMARY PLOTS AT OKINAWA
UTC
29 NOV.1995
30 NOV.1995
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

MONTHLY MEDIANS OF h'F AND h'Es

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

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									13	20	20	25	25	20	15	16								
MED									234	238	239	242	238	244	250	232								
U Q									242	251	249	251	247	260	254	237								
L Q									229	228	232	234	234	235	240	226								

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	12	15	14	13	13		11	18	26	29	29	28	30	28	27	23	20	21	16	16	18	18	19	15
MED	107	105	103	103	103		105	143	119	111	109	107	107	107	107	107	103	109	105	102	103	103	103	103
U Q	110	117	105	111	106		113	161	137	119	118	113	113	111	113	129	109	114	109	108	107	107	107	107
L Q	104	103	99	99	99		97	107	113	109	105	105	101	100	103	101	95	101	97	96	99	95	99	99

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									19	15	24	22	24	28	27	19								
MED									238	254	250	241	246	252	248	240								
U Q									242	260	257	256	260	266	254	250								
L Q									232	244	240	234	237	246	238	232								

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	11	11	11	14	10			18	29	30	30	28	30	30	30	28	23	19	18	15	14	10	11	
MED	105	105	103	105	103			131	113	113	115	111	108	113	113	113	113	103	105	109	108	104	103	
U Q	107	107	105	111	105			161	119	115	137	119	119	119	119	114	115	111	109	113	113	113	107	
L Q	103	101	99	103	99			121	111	107	107	105	105	105	105	106	105	97	103	105	99	97	99	

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										16	21	29	25	24	26	24	18							
MED										261	264	254	256	272	257	246	241							
U Q										278	278	264	264	293	270	252	254							
L Q										247	255	246	245	259	250	234	232							

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		10			13			20	29	30	30	29	29	30	30	28	29	29	25	25	19	14		12
MED		107			109			155	119	113	116	115	113	113	113	113	113	113	111	103	107	107		105
U Q		121			115			172	124	129	137	122	119	119	123	117	117	118	117	110	111	113		109
L Q		105			104			137	115	111	111	113	108	107	107	106	108	105	99	99	103	103		104

MONTHLY MEDIANS OF h'F AND h'Es

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

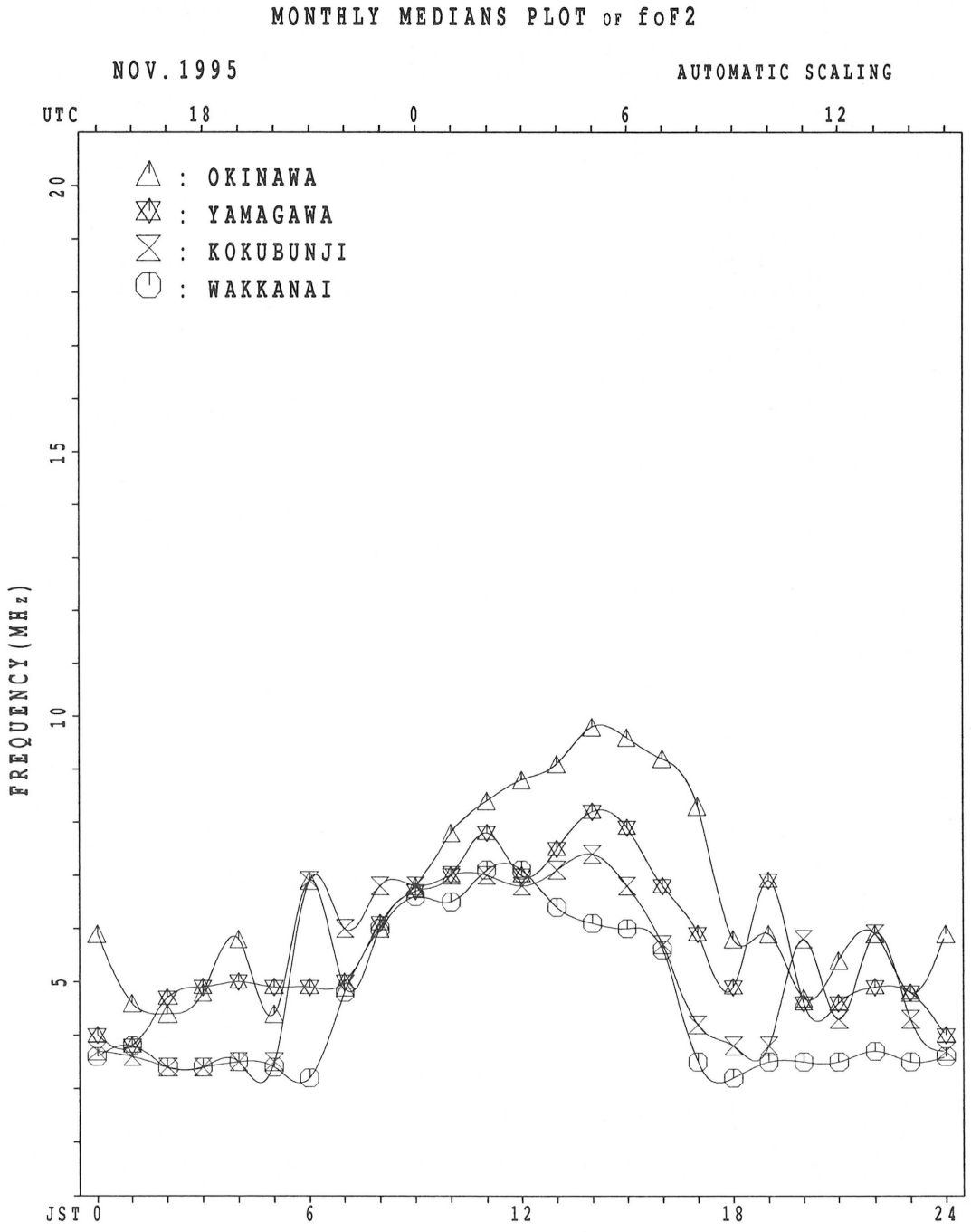
STATION OKINAWA LAT. 26.3N LON. 127.8E

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									10	16	25	29	27	27	30	27	28	23	10					
MED									244	251	258	254	250	256	253	246	224	224	225					
U Q									252	267	273	266	258	270	266	254	232	232	234					
L Q									240	244	251	241	246	248	240	230	217	214	214					

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	24	28	28	28	28	24	30	30	28	28	18	18	17	10		
MED								141	110	107	113	118	113	115	113	108	110	104	95	105	103	99		
U Q								157	118	128	132	135	124	130	137	117	113	113	101	111	116	103		
L Q								99	107	104	107	109	107	105	105	101	101	95	91	95	98	89		


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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 44	X 44	42	X 48	X 40	X 32												X 48	X 39	X 41	X 43	44	44	44
2	46	42	50	O X 42	O X 34	X 27												X 64	X 40	X 40	X 38	X 34	X 34	X 36
3	39	38	48	X 40	X 30	X 31												X 50	X 31	X 38	X 36	X 34	X 34	X 34
4	X 36	X 38	38	41	X 39	X 37												X 51	X 33	X 39	X 32	33	36	34
5	37	37	X 36	X 36	X 44	O X 30												X 50	X 43	X 46	X 53	X 45	X 36	X 40
6	41	40	39	X 38	X 39	X 36												X 54	X 51	X 46	X 48	X 29	X 34	X 36
7	X 37	X 40	X 38	X 39	X 40	X 29												X 51	X 50	X 42	X 33	X 38	X 34	X 35
8	X 37	X 38	X 38	X 37	X 32	X 31												X 44	X 30	X 34	X 36	X 36	X 35	X 37
9	X 39	X 36	X 37	X 38	X 38	X 36												X 44	X 37	X 38	X 38	X 37	X 34	X 39
10	X 36	X 38	39	X 38	X 42	X 31												X 44	X 36	X 37	X 34	X 34	X 37	X 40
11	X 37	38	40	X 39	X 40	X 34												X 50	X 35	X 38	X 40	X 39	X 37	39
12	X 40	39	X 38	X 38	X 40	X 36												X 45	X 32	X 40	X 39	X 42	X 37	X 33
13	X 35	X 37	X 37	X 40	46	X 41												X 71	X 40	X 40	35	X 34	37	37
14	37	X 36	X 37	X 37	X 37	X 36												X 58	X 27	X 33	X 37	X 36	X 36	X 36
15	X 38	X 38	X 37	38	35	X 36	X 34											X 58	X 38	X 36	X 32	X 31	X 35	37
16	39	X 40	X 38	44	42	X 38	X 38											X 47	X 40	X 40	A	X 35	X 37	X 38
17	X 38	39	X 38	X 38	X 40	X 37	X 40											X 45	X 36	X 36	X 35	X 40	X 38	X 40
18	X 41	X 39	X 42	X 42	X 44	X 35	X 38											X 39	X 41	X 38	X 38	X 32	X 33	X 34
19	X 35	X 36	X 37	X 37	X 37	X 36	X 37											X 47	X 34	X 38	X 34	X 34	36	X 37
20	X 36	X 37	X 38	X 39	X 37	X 30	X 35											X 44	X 35	X 36	X 34	X 35	35	X 33
21	37	37	X 38	43	X 28	X 28	X 32											X 47	X 34	X 34	X 30	X 31	X 33	X 34
22	X 36	X 36	X 36	X 36	X 38	X 39	X 32											X 38	X 38	X 37	X 32	37	40	X 35
23	X 34	X 36	35	35	X 33	X 33	X 34											X 36	X 34	X 41	X 36	38	X 35	37
24	38	38	39	38	39	X 34	X 36											X 42	X 39	X 44	X 32	X 34	X 33	X 33
25	X 34	X 36	X 37	X 37	X 37	X 30	X 30											X 36	X 35	X 38	X 27	30	33	34
26	X 34	X 33	X 35	X 34	X 34	X 31	X 28											X 38	X 39	X 33	X 29	X 31	X 31	X 33
27	X 34	X 35	X 33	X 32	X 34	X 32	X 27											X 38	X 32	X 40	X 43	56	41	X 38
28	C	56	40	36	42	37	X 32											X 39	X 36	X 36	37	38	35	34
29	36	36	36	35	X 36	X 32	X 30											X 41	X 38	X 44	X 44	41	X 29	X 32
30	38	37	X 36	38	36	36	X 38											X 42	X 42	X 40	X 36	X 33	X 30	X 33
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	16											30	30	30	29	30	30	30
MED	X 37	X 38	X 38	X 38	X 38	X 34	X 34											X 45	X 36	X 38	X 36	X 35	X 35	X 36
U Q	39	39	39	X 40	X 40	X 36	X 38											X 50	X 40	X 40	X 38	X 38	X 37	X 38
L Q	X 36	X 36	X 37	X 37	X 35	X 31	X 31											X 41	X 34	X 36	X 32	X 33	X 34	X 34

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	38	38	F 35	42	34	26	S 37	61	62	H 76	83	96	94	84	86	93	86	42	33	35	37	35	F 37	F 36
2	F 38	F 34	F 44	36	28	21	33	72	74	H 66	74	86	92	86	75	70	69	58	34	34	32	28	28	30
3	F 31	F 32	F 40	34	24	25	34	54	63	80	85	97	80	70	75	80	64	44	25	32	30	28	28	28
4	30	32	F 32	F 35	33	31	39	57	62	64	74	68	67	70	76	84	64	45	27	33	25	F 24	F 27	F 26
5	F 28	F 30	30	30	39	24	32	52	52	77	87	71	V 70	84	82	70	52	44	37	40	46	39	30	34
6	F 33	F 32	F 32	32	33	30	35	55	71	75	88	105	86	76	88	80	58	48	45	40	42	24	28	30
7	31	34	32	33	34	23	38	56	70	76	75	78	85	87	82	72	57	45	44	36	27	S 32	28	29
8	32	32	32	31	26	25	34	63	69	75	72	88	75	74	80	80	65	38	24	28	30	30	29	31
9	33	30	31	32	32	30	32	53	63	66	80	86	84	76	72	76	61	38	31	32	32	31	R 28	33
10	30	32	F 31	32	36	25	32	47	58	60	56	61	72	78	64	61	52	38	30	S 31	U S 28	28	31	34
11	31	F 30	F 33	33	34	28	S 35	56	59	72	80	70	69	71	65	68	72	44	29	32	34	33	31	32
12	34	32	32	32	R 34	30	38	59	70	58	73	64	76	68	71	66	60	38	26	Z 33	33	36	31	27
13	29	31	31	34	F 38	35	S 28	63	61	61	68	83	75	68	63	72	58	65	34	34	F 28	28	F 28	F 30
14	F 30	30	31	31	31	30	37	58	60	59	68	76	67	75	82	65	65	52	21	27	31	30	30	30
15	32	32	31	F 30	F 27	30	28	J R 53	62	61	63	68	66	68	77	76	58	52	32	30	26	25	29	F 30
16	F 28	34	32	F 36	F 34	32	32	56	S 63	65	64	62	63	73	82	66	54	41	34	34	A	29	31	32
17	32	F 30	32	32	33	31	34	58	63	63	69	72	72	83	64	64	60	39	30	30	29	34	32	34
18	34	33	36	36	38	29	32	56	60	65	74	79	66	66	75	60	58	34	35	32	32	26	27	28
19	29	30	31	31	31	30	31	57	61	58	64	64	69	69	62	64	59	41	28	32	28	28	F 28	31
20	30	31	32	33	31	24	29	57	63	58	70	79	77	66	68	65	54	38	29	30	S 28	29	F 28	S 27
21	F 31	F 31	31	F 36	24	22	26	55	66	61	65	69	64	84	78	59	53	41	28	28	24	25	27	28
22	30	30	30	30	32	33	S 26	48	60	58	R 65	69	61	72	72	60	46	32	32	31	26	F 30	F 32	29
23	28	30	F 28	F 28	27	27	28	54	62	66	78	75	66	64	59	54	48	30	28	35	30	F 29	29	F 30
24	31	F 30	F 31	F 32	F 32	28	30	50	60	56	70	75	66	69	61	56	54	36	33	38	26	28	J R 27	27
25	28	30	31	31	31	24	24	42	J R 61	73	R 74	69	66	64	51	56	53	30	29	32	20	24	F 27	F 27
26	28	27	29	28	28	25	22	47	53	56	58	60	54	58	60	51	40	32	33	27	23	25	25	27
27	28	29	27	26	28	26	21	40	54	54	58	V 59	64	61	66	66	57	32	26	34	37	F 42	F 34	32
28	C	F 43	F 29	F 26	F 32	F 29	S 26	43	65	59	82	86	76	63	69	54	58	33	30	30	F 27	F 31	F 28	F 26
29	F 28	F 28	F 27	F 27	30	26	S 24	47	65	69	64	61	59	71	81	54	54	35	32	38	38	32	23	26
30	F 31	30	30	F 31	F 29	F 30	32	59	61	62	J R 63	66	61	71	64	54	56	36	36	34	30	27	24	27
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30
MED	31	31	31	32	32	28	32	56	62	64	71	72	69	71	72	66	58	38	30	32	30	29	28	30
U Q	32	32	F 32	34	34	30	34	58	65	72	78	83	76	76	80	72	61	44	34	34	32	32	31	32
L Q	28	30	30	30	28	25	28	50	60	59	64	66	66	68	64	59	54	35	28	30	26	27	27	27

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	U L 436	U L 436	L	U L 428	L								
2									324	U L 400	A	L 468	L 420	A	L	L	U L 256							
3										U L 416	L	A	U L 440	L 420	L 400	L 348	L							
4									L	L	L 424	L 424	U L 452	L	U L 428	L								
5									L	U L 428	L 436	U L 432	L	L 440	A	A								
6								L	L	U L 440	L	L 440	U L 440	L 428	400	L	232							
7									L	L 424	U L 428	L	L	L 440	U L 416	U L 368	L							
8									L	L	L	A	L 440	U L 432	U L 424	U L 352								
9									304	L	U L 460	L 440	U L 428	L 424	L	L								
10								256	L 344	L	L 400	L 432	L 460	L 428	U L 400	U L 344								
11								L	U L 364	L	L 440	U L 440	U L 440	U L 424	L	272								
12									L	L 400	U L 444	420	U L 432	L	L									
13										L	U L 416	U L 448	L	U L 420		L								
14									L		L 420	U L 440	420	U L 436	U L 400	L								
15									L 304	L	L	L 420	U L 488	L	U L 400	L 372	A							
16									L	L	L 408	L	L 408	L	U L 428	U L 360								
17									L 312	L	U L 432	L 440	U L 448	U L 436	U L 396	L								
18									L 300	U L 412	U L 440	408	U L 416	L	L	L								
19									L	L	L	L	L	U L 412	L	L								
20									L		L	U L 432	L 432	L	L	L								
21									L	L	L 428	U L 424	L 448	L 424	U L 400	L 336								
22									L 304	L	452	U L 432	452	440	U L 388	L								
23									L	U L 428	L 420	420	U L 436	L 408	L 380									
24									L	L	L 420	L 444	U L 440	L	L	L								
25									L	U L 400	L 420	U L 420	U L 416	400		L								
26									L	L	A	L	U A 404	U L 408	L	L								
27								L		L	L 440	412	H 408	U A 408	L	A								
28									U L 336		404	U L 432	L 428	A	L									
29										L	L	A	L	L	L									
30									U L 304	U L 416	U L 440	L 400	A	L	L									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	10	10	20	23	24	18	14	8	2							
MED								256	L 308	U L 416	L 428	L 432	U L 436	L 424	U L 400	L 350	244							
U Q									U L 336	U L 428	U L 440	L 440	U L 444	L 436	U L 424	U L 364								
L Q									L 304	U L 400	L 420	420	L 420	U L 412	U L 400	L 340								

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								B 228	280	296	A 300	308	312		A 268	A	A							
2								B A 260	284	A 300	312		316	300	276	248	A							
3								B 196	A	288	308	A 312	A		312	296	A							
4								B 192	252	288	308	A 316	324	308	276	248	A							
5								B 216	260	296	308	316	316	300	280	A 252	A							
6								B 204	268	296	292	A 312	316	300	276	244	A							
7								B 208	252	280	304	304	A 308	292	272	U A 244	A							
8								B 228	248	H 288	308	312	312	U A 300	U A 264	A	B							
9								B H 228	252	284	304	304	U R 312	296	280	A 248	A							
10								B 208	256	292	300	A 308	312	312	288	248	A							
11								B 200	260	284	308	A	A	A	A	A	160							
12								B A	248	284	U R 308	308	316	304	284	252	A 192							
13								B 192	252	284	300	308	308	300	284	248	A							
14								B A	A	A	300	A	A	A	268	228	168							
15								196	264	A 288	A	A	A	304	A	A	A							
16								204	A	A	A	A	A	296	280	A	176							
17								200	236	280	A	A	A	A	A	A	A							
18								A	A	288	308	312	R 324	304	276	244	A							
19								192	248	280	300	308	308	292	272	A	B							
20								184	240	280	292	304	A 304	A	A	A	A							
21								184	252	292	300	A	300	296	276	A 240	B							
22								188	256	284	300	308	308	296	264	240	B							
23								200	A	A	A	296	A	288	268	236	A							
24								A	240	A	304	A	A 304	284	272	A	168							
25								192	252	276	296	308	304	300	A	A	176							
26								A	240	H 268	292	312	304	296	268	236	H 196							
27								B	228	272	292	304	296	296	A	236	A							
28								A	236	284	292	A	A	A	A	A	A							
29								184	240	252	A	A	A	284	A	236	180							
30								172	240	264	288	A 304	A	A	272	232	184							
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								22	25	26	25	21	20	23	22	18	9							
MED								198	252	284	300	308	310	300	276	244	176							
U Q								208	258	288	308	312	316	304	280	248	188							
L Q								192	240	280	294	304	304	296	268	236	168							

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 26	J A 24	J A 30	J A 39	J A 20	E B 14	J A 21	G	J G 27	J A 44	J A 44	J A 47	38	J A 87	35	28	23	J A 18	E B 14	E B 14	E B 14	J A 31	J A 21	J A 26
2	J A 32	J A 58	J A 32	J A 48	31	J A 21	20	J A 28	J G 25	34	J A 49	37	38	J A 46	J A 40	40	J A 24	J A 43	J A 28	J A 25	J A 23	J A 25	28	J A 27
3	19	J A 26	39	J A 31	J A 30	J A 22	J A 38	26	39	38	J A 50	J A 76	J A 46	36	G	30	J A 30	E B 16	J A 27	J A 23	J A 21	E B 13	E B 15	E B 14
4	E B 14	E B 13	J A 24	J A 20	J A 22	J A 19	J A 24	24	G 25	34	35	38	34	35	37	31	J A 36	51	J A 32	J A 19	J A 19	J A 26	E B 13	E B 14
5	J A 28	J A 21	19	J A 22	32	21	21	G	29	33	34	42	37	37	J A 48	J A 42	25	J A 20	J A 25	20	J A 19	23	26	20
6	E B 14	E B 14	J A 25	17	18	E B 14	J A 23	G	G	31	39	41	G	G	36	31	J A 21	J A 14	29	J A 48	E B 14	E B 15	E B 15	E B 14
7	19	E B 14	E B 14	J A 34	26	J A 16	J A 19	G 18	G 22	31	33	38	34	33	31	J A 28	J A 23	J A 22	J A 22	J A 19	18	E B 15	19	22
8	J A 27	J A 34	J A 25	J A 40	J A 26	21	19	J A 24	32	J A 41	38	J A 45	J A 48	J A 47	J A 53	J A 26	J A 27	J A 26	E B 14	J A 21	19	E B 15	E B 15	E B 14
9	21	E B 15	18	18	E B 15	E B 15	J A 19	G	28	J G 27	G 24	33	G	37	33	34	J A 51	J A 28	J A 26	18	19	E B 14	E B 14	21
10	17	19	E B 14	24	E B 13	18	J A 18	G	G 21	36	32	37	G 26	34	G	28	22	E B 15	J A 22	J A 16	J A 18	17	23	E B 15
11	E S 18	E B 13	E B 14	E B 13	E B 14	E B 15	E B 16	23	G 22	31	33	J A 41	34	31	30	J A 27	20	J A 23	J A 21	E B 16	23	E B 15	J A 21	20
12	E B 16	18	20	E B 13	E B 14	E B 15	E B 16	J A 25	J A 25	32	G 27	33	36	35	33	38	J A 52	J A 36	J A 26	J A 35	39	19	18	E B 14
13	J A 25	J A 19	J A 44	J A 20	19	32	E B 16	24	30	32	37	34	42	34	34	28	27	J A 21	E B 15	E B 14	22	22	20	J A 22
14	J A 17	20	19	E B 13	E B 13	E B 15	26	23	32	J A 40	G 26	33	J A 42	J A 34	J G 22	25	J A 18	J A 22	E B 13	E B 16	E B 16	E B 15	E B 16	20
15	E B 15	E B 13	E B 13	E B 12	E B 13	E B 14	19	26	G 19	J A 42	J A 33	J A 33	32	34	J A 38	J A 48	J A 46	J A 32	J A 29	25	20	23	J A 23	24
16	J A 32	E B 17	E B 14	19	21	19	E B 14	G	J A 30	31	35	J A 38	J A 39	34	G J A 23	26	G	E B 13	J A 26	J A 48	J A 38	J A 27	J A 26	J A 26
17	28	J A 26	28	26	E B 13	E B 15	22	G	29	G 26	33	J A 38	J A 37	36	J A 35	29	J A 28	27	J A 25	J A 24	J A 27	J A 26	J A 21	24
18	E B 16	E B 15	20	E B 15	E B 13	21	29	36	J A 27	33	34	39	G	J A 44	J A 45	J A 38	J A 33	J A 25	E B 16	J A 33	J A 22	19	E B 15	E B 15
19	E B 14	18	E B 15	E B 13	22	19	J A 19	G	28	30	39	J A 41	40	J A 36	34	27	20	E B 15	E B 14	17	23	18	18	E B 14
20	E B 13	E B 14	E B 14	E B 14	E B 13	E B 14	E B 16	25	30	34	31	35	J A 46	J A 42	36	26	J A 27	J A 20	J A 23	21	E B 15	E B J A 19	E B 14	23
21	18	E B 14	18	19	E B 15	E B 14	E B 15	G	J G 25	31	J G 29	J A 34	32	29	29	28	22	J A 22	J A 29	J A 25	E B 15	19	20	E B 14
22	E B 16	J A 19	J A 19	J A 18	E B 14	19	E B 16	J A 22	27	30	36	34	G 27	32	30	24	E B 17	J A 18	J A 16	18	E B 15	E B 15	18	E B 14
23	J A 23	J A 18	19	20	18	18	E B 15	G	J A 31	J A 36	34	J A 32	32	J G 28	G 21	26	J A 32	J A 25	J A 34	J A 23	J A 23	J A 29	J A 25	E B 14
24	E B 15	J A 26	J A 30	J A 27	J A 23	J A 21	J A 22	J A 23	G	J A 29	J G 30	J A 33	32	30	J A 28	29	21	E B 15	E B 14	19	18	E B 15	E B 15	E B 15
25	E B 14	E B 14	E B 15	E B 14	20	E B 14	E B 16	J A 22	28	G	36	J A 35	J A 34	J A 28	J A 33	28	21	J A 20	20	E B 14	E B 14	E B 15	E B 13	E B 14
26	E B 15	E B 15	J A 24	18	E B 14	E B 16	E B 15	24	29	35	J A 45	44	41	38	37	29	26	J A 21	J A 26	J A 22	J A 23	E B 14	J A 21	J A 30
27	18	E B 17	20	20	17	E B 13	J A E B 20	16	29	G 26	36	32	37	44	J A 44	50	J A 41	27	J A 18	20	16	E B 15	E B E B 13	18
28	C	E B 14	19	J A 27	18	22	22	J A 25	29	34	34	J A 48	35	J A 63	J A J A 52	J A 52	J A 37	J A 34	J A 18	33	J A 51	J A 27	J A 27	J A 36
29	J A 21	J A 26	J A 19	26	E B 14	19	E B 16	G	G	33	J A 50	J A 67	J A 42	J A J G 26	34	J G 23	J A 31	J A 25	22	25	19	20	J A 18	19
30	18	E B 13	E B 14	E B 14	28	27	J A J A 28	21	27	G 20	34	32	J A 42	J A 36	34	28	23	E B 14	J A 21	J A 16	E B 16	E B 15	E B 15	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	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	18	18	19	20	18	18	19	22	28	32	34	38	36	35	34	28	J A J A 26	22	J A 22	22	20	19	18	18
U Q	J A 24	J A 21	J A 25	J A 26	22	21	J A 22	24	29	J A 35	J A 38	J A 41	J A 41	J A 38	J A 37	34	J A 32	J A 27	J A 26	J A 25	J A 23	J A 23	J A 21	J A 23
L Q	E B 15	E B 14	E B 15	E B 14	E B 14	E B 15	E B 16	G	G 25	G 30	G 33	33	G 32	32	G 30	27	21	E B 18	E B 16	E B 17	E B 16	E B 15	E B 15	E B 14

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	18	18	18	19	16	E B 14	17	G	G 23	G 26	40	40	33	40	31	27	21	E B 14	E B 14	E B 14	E B 14	16	17	20
2	21	20	19	23	23	16	E B 16	23	G 20	33	46	36	36	U Y 44	35	36	20	23	17	E B 13	E B 12	E B 14	E B 13	E B 15
3	E B 12	20	19	19	16	16	18	23	32	33	38	42	36	33	G	28	20	E B 16	E B 14	17	14	E B 13	E B 15	E B 14
4	E B 14	E B 13	18	17	E B 14	18	19	23	G 22	34	34	36	33	34	36	30	33	42	21	17	17	E B 12	E B 13	E B 14
5	17	18	16	17	23	17	20	G	28	32	34	38	36	35	42	37	22	18	24	E B 14	18	20	17	E B 15
6	E B 14	E B 14	16	E B 14	E B 12	E B 14	E B 16	G	G	31	39	34	G	G	33	30	18	E B 16	18	19	E B 14	E B 15	E B 15	E B 14
7	E B 14	E B 14	E B 14	25	17	E B 14	E B 15	G 13	G 18	29	32	34	33	32	30	26	20	22	E B 15	17	E B 15	E B 15	17	E B 15
8	19	19	17	21	17	17	18	24	30	34	36	41	37	34	32	26	22	22	E B 14	19	E B 14	E B 15	E B 15	E B 14
9	E B 15	E B 15	E B 14	16	E B 15	E B 15	E B 16	G	27	G 20	G 22	32	G	36	32	31	28	17	17	16	16	E B 14	E B 14	E B 14
10	E B 13	E B 14	E B 14	16	E B 13	17	E B 15	G	G 20	34	32	33	G 25	34	G	26	21	E B 15	16	E B 13	16	16	17	E B 15
11	E S 18	E B 13	E B 14	E B 13	E B 14	E B 15	E B 16	22	G 19	31	33	35	32	30	29	23	20	E B 15	E B 14	E B 16	E B 14	E B 15	17	16
12	E B 16	E B 14	E B 14	E B 13	E B 14	E B 15	E B 16	19	G	30	G 26	33	36	33	32	35	50	28	18	24	28	E B 12	17	E B 14
13	17	17	16	16	17	20	E B 16	G	29	31	34	34	39	34	32	26	24	E B 14	E B 15	E B 14	16	E B 15	E B 15	17
14	16	E B 14	17	E B 13	E B 13	E B 15	E B 16	20	27	27	G 24	33	32	33	G 18	G 17	G 15	E B 15	E B 13	E B 16	E B 16	E B 15	E B 16	E B 15
15	E B 15	E B 13	E B 13	E B 12	E B 13	14	18	G 18	G 17	32	31	32	31	32	27	35	41	18	25	17	18	18	E B 15	17
16	17	E B 17	E B 14	E B 13	17	17	E B 14	G	27	31	34	31	34	33	G 22	23	G	E B 13	18	22	A A 38	20	19	21
17	18	17	16	17	E B 13	E B 15	18	G	G 22	G 22	32	34	34	32	31	24	20	18	18	20	19	19	17	18
18	E B 16	E B 15	E B 15	E B 15	E B 13	E B 14	19	32	26	31	32	36	G	41	39	28	23	22	E B 16	20	18	E B 14	E B 15	E B 15
19	E B 14	U Y 16	E B 15	E B 13	16	16	18	G	27	30	38	38	35	33	32	26	19	E B 15	E B 14	E B 15	E B 14	16	E B 14	E B 14
20	E B 13	E B 14	E B 14	E B 14	E B 13	E B 14	E B 16	22	27	32	31	32	39	32	30	25	20	E B 16	17	E B 14	E B 15	18	E B 14	19
21	17	E B 14	E B 14	E B 16	E B 15	E B 14	E B 15	G	G 21	30	G 23	33	31	G 22	29	26	21	17	17	17	E B 15	E B 14	18	E B 14
22	E B 16	16	16	E B 14	E B 14	E B 15	E B 16	G 18	26	29	36	32	G 25	30	30	G 21	E B 17	16	E B 13	E B 15	E B 15	E B 15	16	E B 14
23	E B 14	E B 14	E B 14	E B 13	E B 13	16	E B 15	G	24	28	32	G 22	31	G 23	G 19	25	18	18	22	18	17	20	20	E B 14
24	E B 15	17	18	20	18	17	18	18	G	29	G 24	31	32	G 25	G 23	27	19	E B 15	E B 14	E B 15	E B 15	E B 15	E B 15	E B 15
25	E B 14	E B 14	E B 15	E B 14	E B 13	E B 14	E B 16	G 14	27	G	32	G 25	G 27	G 24	28	26	20	E B 16	16	E B 14	E B 14	E B 15	E B 13	E B 14
26	E B 15	E B 15	E B 12	E B 14	E B 14	E B 16	E B 15	22	28	34	43	39	40	35	34	25	22	20	22	17	19	E B 14	16	18
27	16	E B 17	17	16	E B 14	E B 13	E B 14	E B 16	27	G 24	36	31	34	41	31	41	28	18	13	17	E B 13	E B 15	E B 13	16
28	C E B 14	16	18	13	16	E B 15	21	27	34	33	40	32	45	31	35	24	25	16	22	18	18	17	17
29	17	17	16	17	E B 14	E B 14	E B 16	G	G	29	34	43	30	G 24	28	G 20	G 17	E B 14	E B 12	17	16	18	17	E B 13
30	E B 14	E B 13	E B 14	E B 14	17	20	17	G 12	26	G 18	33	32	38	34	30	27	21	E B 14	17	E B 14	E B 16	E B 15	E B 15	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	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	† B 16	† B 15	16	16	† B 14	† B 15	† B 16	G	26	30	33	34	33	33	30	26	20	16	16	17	16	† B 15	† B 16	† B 15
U Q	17	17	17	17	17	17	18	22	27	32	36	38	36	35	32	30	23	20	18	18	18	18	17	17
L Q	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14	E B 15	G	G 22	G 28	G 32	32	G 31	G 30	G 28	25	19	E B 15	E B 14	E B 14	E B 14	E B 14	E B 15	E B 14

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

IONOSPHERIC DATA STATION Kokubunji

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

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

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

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	307	318	F 298	347	378	315	S 338	364	337	H 324	323	328	338	341	345	333	382	363	333	296	305	284	F 280	F 272
2	F 320	F 293	F 361	346	369	284	318	365	358	H 346	368	325	362	361	354	347	359	375	328	316	328	340	295	298
3	F 273	F 293	F 335	382	306	306	347	377	333	353	360	346	385	343	359	363	381	360	297	324	320	337	312	323
4	319	309	F 300	F 306	316	345	352	357	375	359	361	357	352	345	353	360	377	381	334	342	311	F 291	F 290	F 331
5	F 298	F 316	301	314	369	404	354	357	352	342	366	354	V 340	353	362	373	392	359	300	296	337	333	323	307
6	F 303	F 307	F 276	328	351	364	347	358	340	330	333	338	368	349	352	382	343	364	317	317	363	290	294	309
7	296	299	292	349	367	340	361	373	351	344	342	340	341	349	364	369	378	334	344	334	294	S 342	297	300
8	304	317	324	342	337	321	334	348	366	360	352	353	357	350	352	356	387	348	313	334	321	319	322	306
9	315	317	313	311	357	320	344	376	369	347	344	347	361	360	347	364	376	379	343	319	327	338	R 339	296
10	310	312	F 316	329	366	389	338	375	370	352	362	357	338	366	373	367	390	380	364	S 344	U 332	S 332	312	308
11	313	F 298	F 311	317	344	355	S 352	369	381	340	382	378	355	353	338	343	383	364	372	307	327	342	329	304
12	315	318	314	324	R 342	333	369	353	383	363	367	321	345	353	350	360	375	373	362	Z 326	323	350	341	306
13	307	295	304	309	F 332	376	S 381	358	373	369	343	357	362	364	343	366	332	365	373	356	F 352	305	F 333	F 318
14	F 312	312	308	325	343	313	369	393	350	344	367	355	357	335	369	346	381	398	369	294	334	295	301	314
15	322	300	303	F 313	F 311	367	341	J R 391	379	369	378	372	325	336	355	367	359	371	344	362	371	293	301	F 309
16	F 295	335	311	F 328	F 313	327	352	374	S 389	367	365	325	357	351	360	379	379	371	339	349	A	308	310	307
17	310	F 327	303	314	345	343	355	368	360	360	359	349	351	361	352	379	374	340	320	317	316	306	317	303
18	313	318	320	335	340	335	340	363	367	350	357	364	346	362	357	356	371	364	333	313	348	298	304	316
19	304	299	309	310	314	347	349	370	374	350	353	354	371	358	350	356	374	356	327	327	342	322	F 319	291
20	308	305	301	343	381	327	333	361	365	344	340	356	368	348	370	367	381	362	335	329	S 349	355	F 301	S 316
21	F 335	F 328	323	F 344	339	335	326	364	368	352	351	384	333	365	364	377	376	371	356	337	335	316	297	311
22	306	306	308	316	325	363	S 370	363	379	349	R 325	349	318	332	362	377	364	367	345	373	316	F 310	F 337	330
23	329	345	F 301	F 308	316	311	343	362	371	368	363	385	352	367	372	363	358	386	327	345	335	F 306	325	F 299
24	284	F 334	F 306	F 320	F 334	330	334	352	374	359	345	351	351	373	367	372	373	396	329	363	391	331	J R 336	304
25	322	310	319	335	333	350	341	352	J R 404	361	R 365	374	337	349	367	374	389	353	336	396	384	290	F 302	F 306
26	328	329	326	329	359	351	354	370	359	367	360	354	371	357	364	377	384	338	364	342	A 338	345	300	293
27	303	305	298	314	348	349	366	368	354	374	341	V 334	363	347	343	370	386	381	312	313	351	F 340	F 294	323
28	C	F 343	F 330	F 318	F 310	F 306	S 360	360	354	363	345	365	372	348	343	379	371	386	338	356	F 348	F 349	F 312	F 314
29	F 317	F 320	F 329	F 325	335	346	S 349	359	371	347	360	368	319	323	383	357	384	381	313	341	336	361	376	304
30	F 312	311	295	F 325	F 316	F 342	358	364	383	363	J R 374	378	347	372	358	372	377	311	337	347	331	332	283	302
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30
MED	310	312	308	325	340	341	349	364	368	352	360	354	352	352	358	367	377	366	336	334	335	326	311	306
U Q	318	F 320	320	335	357	351	358	370	375	363	365	365	362	361	364	374	383	380	345	347	348	340	325	314
L Q	304	305	301	314	316	321	340	358	354	346	344	346	340	347	350	357	371	359	327	317	322	305	297	302

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										L	L	A	H 359	L	L	L								
2									421	U L 389	A	L 349	L 380	A	L	L	L							
3										U L 366	L	A	L	L 385	L 368	L 369	L							
4									L	L	L 385	L 399	U L 383	L	U L 355	L								
5									L	U L 362	L 363	A 392	L	L 362	A	A								
6								L	L	U L 356	L	L 380	U L 356	L 363	368	L	419							
7									L	L 371	U L 387	L	L	L 369	L	L	L							
8									L	L	L	A	L 396	L	U L 367	U L 377								
9									415	L	U L 360	L 364	H 377	L 376	L	L								
10								416	L 401	L	L 395	L 381	L 365	L 366	L	U L 381								
11								L	U L 400	L	L 367	U L 389	U L 372	U L 379	L	399								
12									L	L 414	U L 375	398	U L 373	L	L									
13										L	U L 380	L	L	U L 384		L								
14									L		L 384	U L 369	393	U L 360	U L 362	L								
15									L 420	L	L	L 383	U L 351	L	U L 363	A	A							
16									L	L	L 392	L	L 409	L	U L 346	U L 390								
17									L 414	L	U L 384	L 381	U L 368	U L 358	A 379	L								
18									L 424	U L 383	U L 365	A 386	U L 391	L	L	L								
19									L	L	L	L	L	U L 378	L	L								
20									L		L	U L 372	A	L	L	L								
21									L	L	L 370	U L 388	L 366	H 370	L	L 404								
22									L 423	L	357	U L 366	384	H 363	U L 386	L								
23									L	L	L 368	L 365	U L 373	L 389	U L 374									
24									L	L	L 369	L 360	U L 356	L	L	L								
25									L	H 372	H 380	U L 376	U L 392	384		L								
26									L	L	A	L	A	A	L	L								
27								L		L	L 360	382	H 401	A	L	A								
28									U L 380		381	A	L 365	A	L									
29									L	L	L	A	L	L	L									
30									U L 401	H 357	U L 381	L 402	A	L	L									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	10	9	20	20	21	15	10	6	1							
MED								416	L 414	U L 371	L 378	L 381	L 373	L 370	U L 368	L 386	419							
U Q									L 421	U L 386	L 384	L 388	L 392	L 384	U L 374	399								
L Q									U L 401	U L 360	L 366	L 368	L 365	L 363	U L 362	L 377								

NOV. 1995 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										254	270	260	248	252	244	262								
2									226	218	242	290	242	252	254	242	220							
3										246	244	254	228	252	246	240	214							
4									230	228	252	240	246	260	254	228								
5									228	266	242	238	246	252	238	226								
6								224	246	264	250	246	236	256	252	222	210							
7									252	260	248	256	248	250	238	230	214							
8									230	244	244	242	238	250	250	236								
9									226	258	256	244	244	246	242	236								
10								206	236	240	234	250	276	244	230	224								
11								230	220	246	228	226	250	252	258	232								
12									210	222	236	238	256	236	248									
13										236	240	250	242	234		240								
14									220		240	254	234	272	232	234								
15									218	238	230	236	292	278	252	232	226							
16									218	230	246	280 L	236	248	246	218								
17									224	248	244	240	242	246	240	220								
18									228	256	256	244	248	224	246	222								
19									224	240	250	250	234	248	240	244								
20									236		264	242	230	262	218	226								
21									236	242	260	234	266	238	240	216								
22									224	250	308	262	324	290	232	228								
23									230	238	244	234	260	242	234									
24									222	246	256	266	260	232	234	240								
25									242	240	238	236	264	248		220								
26									234	240	246	252	244	254	240	222								
27								216		242	282	252	256	268	250	222								
28									236		250	238	236	246	244									
29									226	246	252	226	248	274	232									
30									218	238	290	222	244	240	234									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								4	26	27	30	30	30	30	28	25	5							
MED								220	227	242	247	244	246	250	241	228	214							
U Q								227	236	250	256	254	256	256	249	238	223							
L Q								211	222	238	242	238	238	244	234	222	212							

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	288	272	312	246	214	290	230	220	212	234	A	A	H 194	A	246	218	206	196	240	288	264	298	298	330
2	290	A 322	230	216	A 246	370	270	222	206	218	A	240	234	A	A	A	234	206	240	248	242	246	308	304
3	310	324	262	208	248	284	246	218	244	248	A	A	A	218	226	226	228	200	260	270	238	248	274	270
4	250	280	A 310	284	272	226	228	218	H 190	222	214	218	210	232	A 266	236	210	A	A 264	244	282	322	312	286
5	306	298	296	316	232	208	234	222	216	A 240	236	A	226	242	A	A	206	216	A 298	262	240	226	260	268
6	294	302	314	252	218	214	238	218	H 216	220	A 232	H 190	214	222	244	A 228	196	204	246	244	222	256	304	320
7	310	302	312	A 276	216	248	220	218	212	H 194	218	H 198	H 172	228	230	226	226	228	226	230	240	258	300	312
8	318	288	254	A 258	254	270	240	232	232	230	A 234	A	200	232	A 242	216	206	208	E B 228	262	264	256	266	278
9	282	282	292	276	220	264	200	216	216	H 192	208	208	H 174	A 236	230	A 240	202	200	232	246	242	230	270	280
10	286	280	270	254	218	200	226	212	208	220	214	198	182	246	232	218	202	200	222	226	248	266	278	264
11	276	308	286	264	242	214	228	214	208	H 196	224	210	204	H 200	230	A 224	216	190	214	268	252	242	260	278
12	266	274	286	268	240	254	224	214	H 194	196	206	206	250	232	236	228	A 236	226	234	E A 278	E A 320	242	230	296
13	282	288	306	286	256	228	208	226	222	220	A 238	240	A	224	232	228	216	210	210	228	224	292	280	298
14	298	298	282	266	238	272	210	206	208	214	212	194	208	218	H 200	216	208	196	214	290	254	278	286	286
15	266	290	300	290	290	226	236	212	202	218	218	198	H 194	230	222	A	A	208	A 266	216	242	330	278	292
16	292	262	280	248	264	262	236	218	222	214	212	196	H 194	226	226	222	212	192	248	240	A	308	278	320
17	300	304	288	264	236	224	232	216	206	H 184	222	224	220	228	A 230	222	218	218	240	274	296	296	272	284
18	264	282	278	242	228	216	266	230	198	232	230	A	210	A 236	A	224	218	214	242	258	228	286	306	294
19	302	Y 326	288	274	264	244	234	222	222	222	A 250	A	A 242	A 228	A 228	H 218	216	206	244	230	224	262	270	292
20	284	292	276	238	202	264	264	224	232	222	H 212	222	A	H 216	232	216	214	202	238	230	252	254	292	316
21	262	264	280	236	224	270	256	228	230	222	210	224	206	H 188	250	204	212	204	218	238	224	292	310	302
22	300	298	286	284	252	230	198	214	218	H 200	242	234	186	H 168	228	224	198	204	236	210	262	278	268	240
23	268	244	314	300	272	292	244	218	220	228	218	206	192	182	200	224	212	202	A 308	238	248	322	274	302
24	298	292	310	294	252	244	230	226	214	204	206	H 192	210	H 202	222	236	220	194	256	230	208	256	282	304
25	286	278	266	256	234	206	242	224	H 210	H 210	H 182	A 226	214	210	222	212	214	210	252	206	222	304	280	306
26	274	284	272	276	234	226	264	228	222	234	A	A	A	A	A 238	224	202	238	236	222	A	244	304	A 322
27	308	278	316	288	250	230	216	178	232	H 172	240	220	196	A	A 244	A	216	204	236	274	232	262	320	250
28	C	244	258	338	276	310	206	212	A 230	220	236	A	222	A	A 232	224	218	A 244	256	254	256	244	354	282
29	300	290	296	310	252	230	260	222	H 212	H 186	A 224	A	202	H 184	H 220	220	210	200	280	234	232	208	226	284
30	298	264	300	272	304	272	242	222	210	H 186	222	214	A	A 250	234	222	212	206	242	220	232	238	316	300
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	30	30	30	30	30	30	30	30	26	21	25	25	27	26	29	29	30	30	28	30	30	30
MED	290	288	287	270	244	244	234	218	215	219	220	210	206	226	230	224	212	204	240	240	242	260	280	293
U Q	300	298	306	286	256	270	244	224	222	222	234	224	217	232	A 238	226	218	212	256	262	255	292	304	304
L Q	275	278	276	252	228	226	224	214	208	H 196	212	198	H 194	H 206	226	218	206	200	232	230	230	244	270	280

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

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B 126		A	E A 148	A	A 134	A	A	122	122	A							
2							B	A	A 140	A 126	A	A 130	112	118	118	122	A							
3							B 132		A 134	120	112	112	114	130	120	A	A							
4							B 144		E A 142	134	E A 142	A	A 124	A 124	116	114	A							
5							B	B 156	116	116	112	118	116	120	112	116	A							
6							B 128		120	A 126	126	116	110	112	116	116	A							
7							B 140		126	124	A 124	A 126	114	120	116	118	A							
8							B 146		126	116	116	114	116	114	118	A	B							
9							B 158		118	128	122	118	116	118	128	116	A							
10							B 126		128	A 128	118	112	124	120	116	A	A							
11							B 140		128	128	116	A	A	A	A	A	142							
12							B	A	120	A 130	124	138	126	118	120	A 138	A							
13							B 136		A	128	130	126	116	118	120	134	124							
14							B	A	A	A	120	A	A	A	120	A 124	124							
15								E A 156	124	114	A	A	A	A 138	A	A	A							
16								140	A	116	A	A	A	A 138	118	A	134							
17								128	122	A 126	A	A	A	A	A	A	A							
18								A	A	E A 154	E A 146	A 128	116	130	122	130	A							
19								140	138	A 124	124	A 126	114	A 138	116	A	B							
20								140	120	128	120	116	108	A	A	A	A							
21								136	A 134	A 128	128	A	128	120	120	112	B							
22								E A 146	132	118	E A 138	A 132	128	124	120	E A 156	B							
23								128	A	A	A	130	A	A 130	122	136	A							
24								A	120	A	A 140	A	A	E A 146	A 130	A	128							
25								138	138	118	A 138	A 134	134	A 132	A	A	116							
26								A	142	124	116	124	124	116	124	118	E B 156							
27								B	120	A	E A 144	120	A 132	A	A	E A 140	A							
28								A	A	A 142	124	A	A	A	A	A	A							
29								164	122	116	112	A	A	A 132	A	E A 150	140							
30								140	124	122	118	120	A	A	A 142	A 128	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								22	23	26	24	20	19	22	22	18	9							
MED								140	125	125	122	125	116	121	120	120	131							
U Q								146	134	A E 128	A 134	A 130	126	A 132	122	E A 136	141							
L Q								132	120	118	117	117	114	118	116	116	124							

NOV. 1995 h'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	104	102	114	114	106	B	164	G	112	114	122	118	132	114	120	122	114	94	B	B	B	104	114	108
2	104	104	102	108	104	106	102	106	104	124	116	172	142	120	116	126	138	114	108	110	114	118	110	110
3	106	116	112	112	110	114	106	144	130	130	122	118	120	140	G	124	114	B	136	116	120	B	B	B
4	B	B	102	108	104	104	102	186	114	164	160	144	E G 188	158	134	124	118	114	118	120	150	186	B	B
5	110	108	110	106	106	110	104	G	170	150	154	134	136	132	118	116	118	114	110	114	112	108	108	108
6	B	B	106	108	106	B	110	G	G	158	134	126	G	G	120	118	116	116	108	108	B	B	B	B
7	102	B	B	102	108	104	114	112	108	128	142	124	120	122	118	120	114	110	112	116	118	B	112	108
8	106	108	106	104	100	100	104	174	132	128	122	120	116	118	114	114	120	110	B	114	108	B	B	B
9	106	B	106	102	B	B	118	G	154	116	112	146	G	136	128	124	110	110	112	104	102	B	B	108
10	100	112	B	116	B	110	108	G	114	122	134	118	112	162	G	154	126	B	112	114	114	96	102	B
11	S	B	B	B	B	B	B	174	112	158	142	118	114	116	118	116	144	116	116	B	112	B	106	112
12	B	102	100	B	B	B	B	124	100	162	116	176	174	158	160	140	124	118	108	106	124	106	104	B
13	104	100	118	106	100	110	B	122	184	156	132	162	130	136	E G 196	148	120	116	B	B	114	112	114	102
14	100	108	102	B	B	B	108	130	116	108	108	104	102	100	108	104	104	104	B	B	B	B	B	106
15	B	B	B	B	B	B	106	126	114	118	114	118	110	162	108	104	104	108	108	112	114	110	108	104
16	114	B	B	98	98	106	B	G	118	118	114	114	110	176	110	106	G	B	106	102	102	104	104	106
17	106	106	100	108	B	B	102	G	118	110	114	112	112	110	106	108	102	108	106	104	102	100	100	104
18	B	B	110	B	B	110	102	106	112	168	152	146	G	140	126	138	126	124	B	118	110	100	B	B
19	B	100	B	B	108	116	104	G	176	E G 194	132	128	120	124	116	114	158	B	B	100	110	108	106	B
20	B	B	B	B	B	B	B	146	118	134	142	132	112	112	118	118	110	110	108	106	B	106	B	120
21	110	B	108	100	B	B	B	G	112	178	108	108	E G 194	106	E G 186	120	116	98	118	116	B	118	106	B
22	B	108	108	110	B	106	B	98	E G 198	156	166	140	114	138	156	124	B	102	144	104	B	B	112	B
23	110	132	112	122	110	106	B	G	116	118	114	112	112	110	106	172	106	104	102	108	104	100	96	B
24	B	110	106	102	102	104	106	130	G	116	108	112	168	110	110	106	136	B	B	102	102	B	B	B
25	B	B	B	B	100	B	B	110	158	G	146	106	104	104	98	104	138	100	98	B	B	B	B	B
26	B	B	108	116	B	B	B	166	170	144	142	136	132	130	128	136	158	138	130	124	124	B	116	104
27	108	B	104	100	120	B	112	B	176	112	146	156	134	150	102	126	118	98	98	100	122	B	B	124
28	C	B	118	120	134	128	122	142	146	136	132	108	108	100	104	94	98	98	108	112	114	112	112	110
29	112	108	104	110	B	108	B	G	G	116	112	106	108	110	104	102	104	104	102	100	102	98	98	106
30	132	B	B	B	102	104	102	104	164	112	186	122	112	110	144	138	150	B	104	120	B	B	B	B
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	17	15	21	21	17	17	19	18	27	29	30	30	27	29	28	30	28	24	23	25	22	17	18	16
MED	106	108	106	108	106	106	106	128	118	128	132	121	115	122	117	120	118	110	108	110	113	106	107	108
U Q	110	110	111	113	109	110	112	146	164	157	142	140	134	140	128	126	131	115	116	116	118	112	112	110
L Q	104	102	103	102	101	104	102	110	112	116	114	112	112	110	108	108	110	103	106	104	104	100	104	105

IONOSPHERIC DATA STATION Kokubunji

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

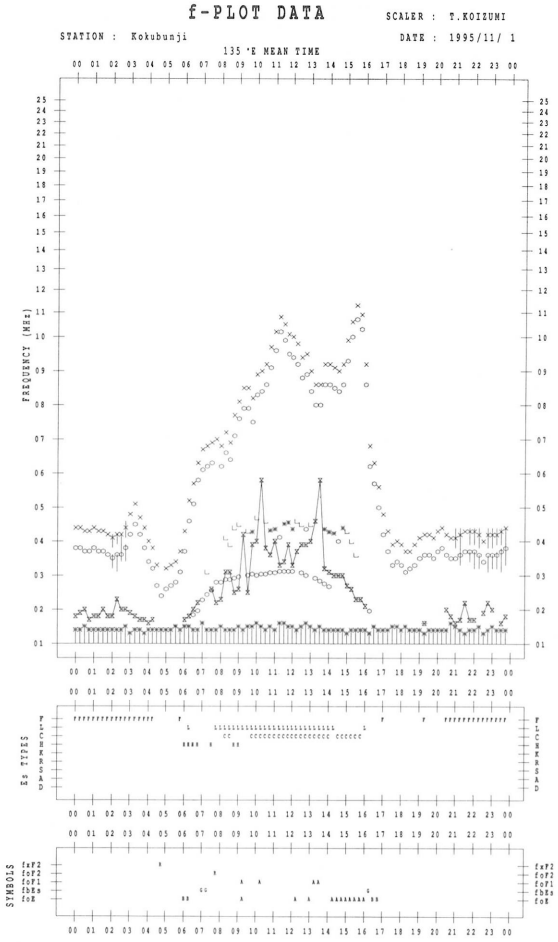
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

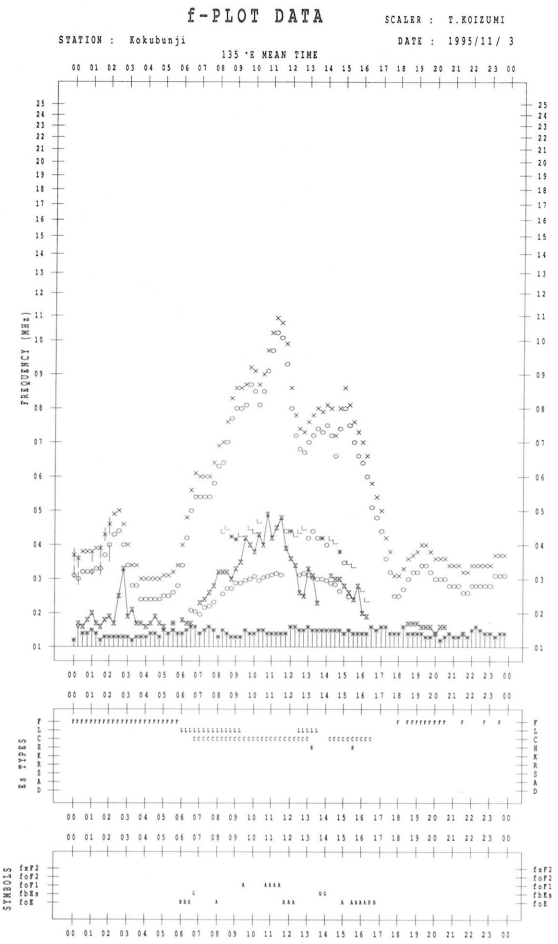
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FF 21	F 2	FF 22	FF 21	F 1		H 1		L 2	LH 21	CL 11	CL 21	CL 11	CL 21	CL 21	C 1	L 2	F 1				F 2	F 2	FF 31
2	F 4	F 3	F 3	FF 11	F 3	F 2	L 2	LQ 11	L 1	CL 11	CL 22	HL 11	H 1	CL 21	CL 21	CL 21	CL 12	FF 12	F 2	F 2	F 1	F 1	F 2	F 2
3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

NOV. 1995 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

f-PLOTS OF IONOSPHERIC DATA

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


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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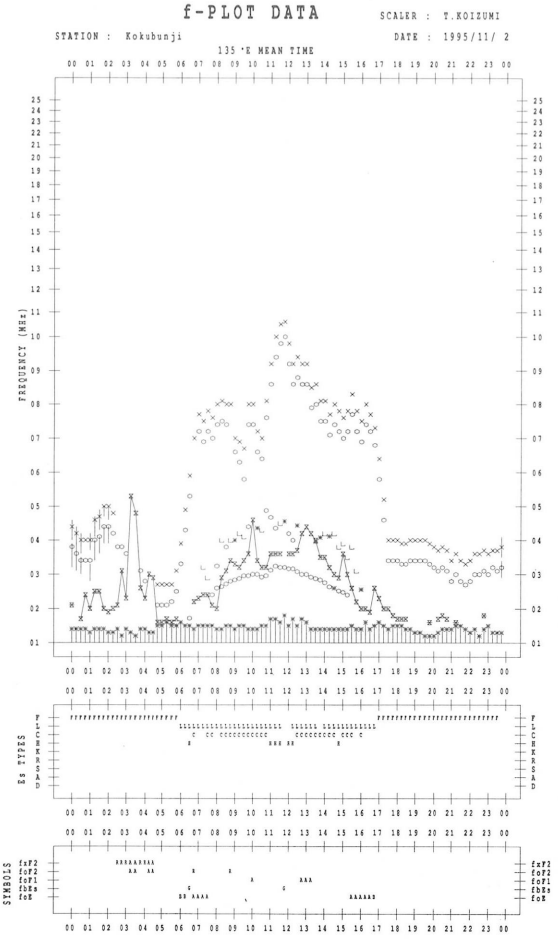
STATION : Kokubunji
DATE : 1995/11/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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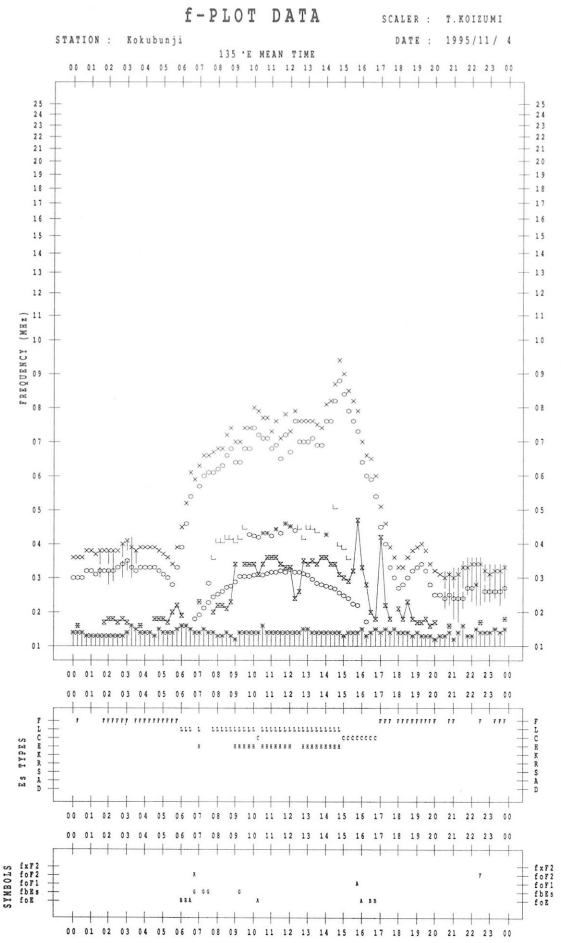
STATION : Kokubunji
DATE : 1995/11/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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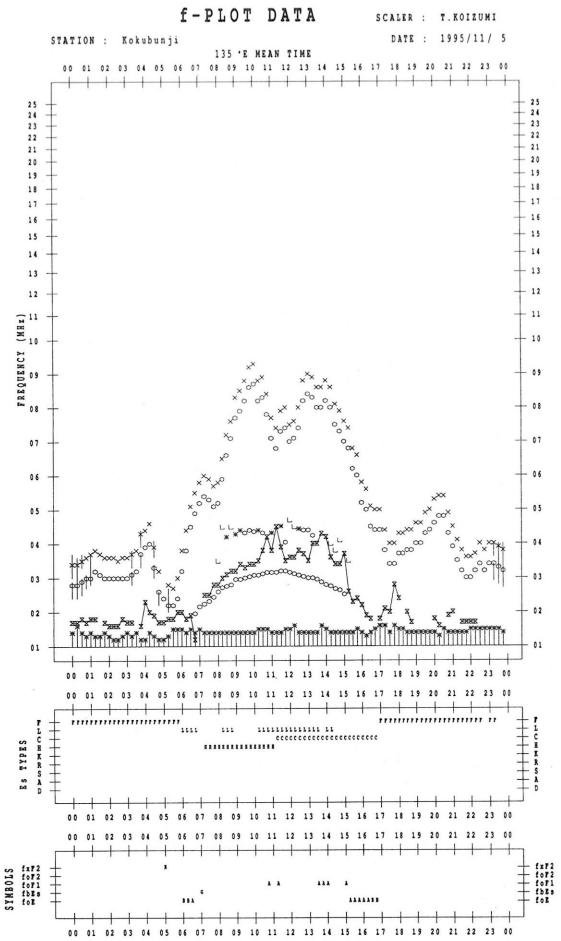
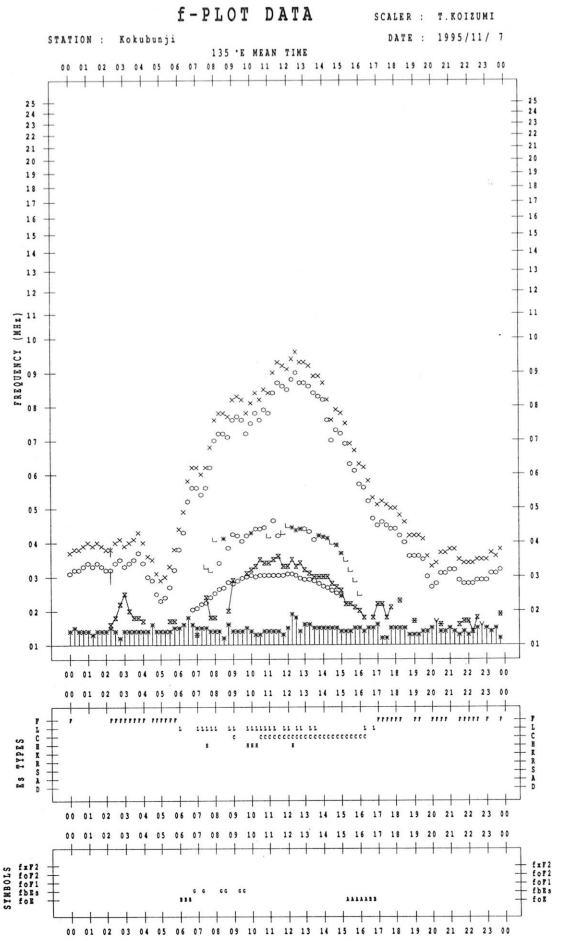
STATION : Kokubunji
DATE : 1995/11/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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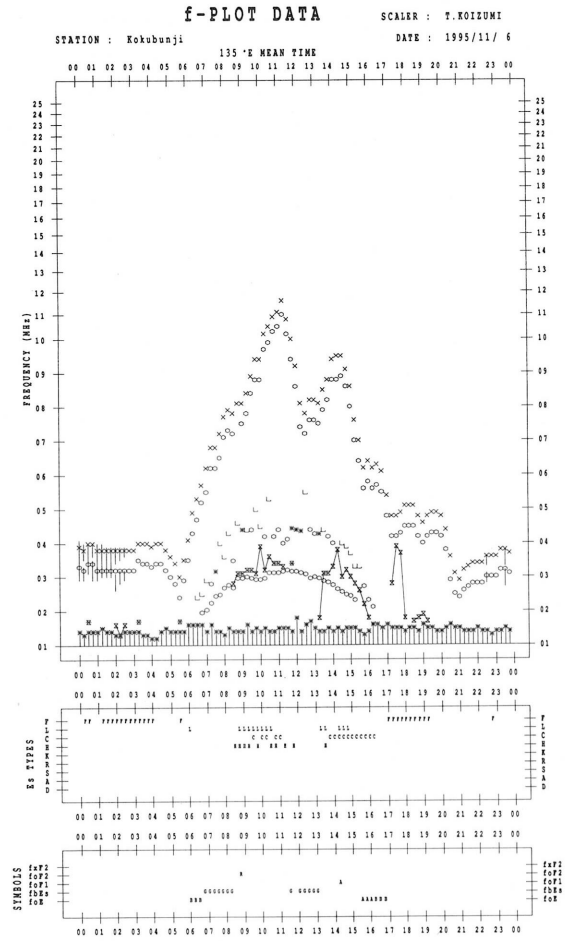
STATION : Kokubunji
DATE : 1995/11/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


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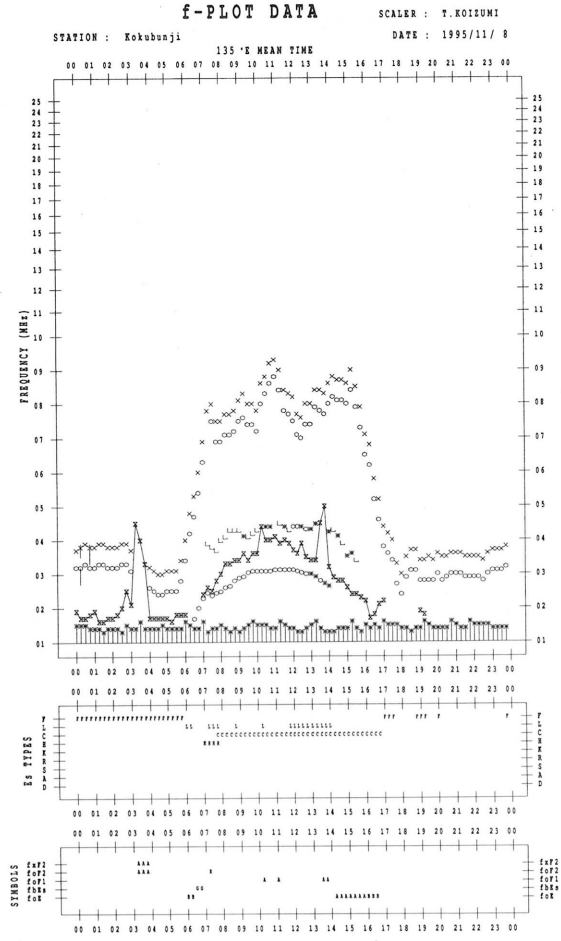
STATION : Kokubunji
DATE : 1995/11/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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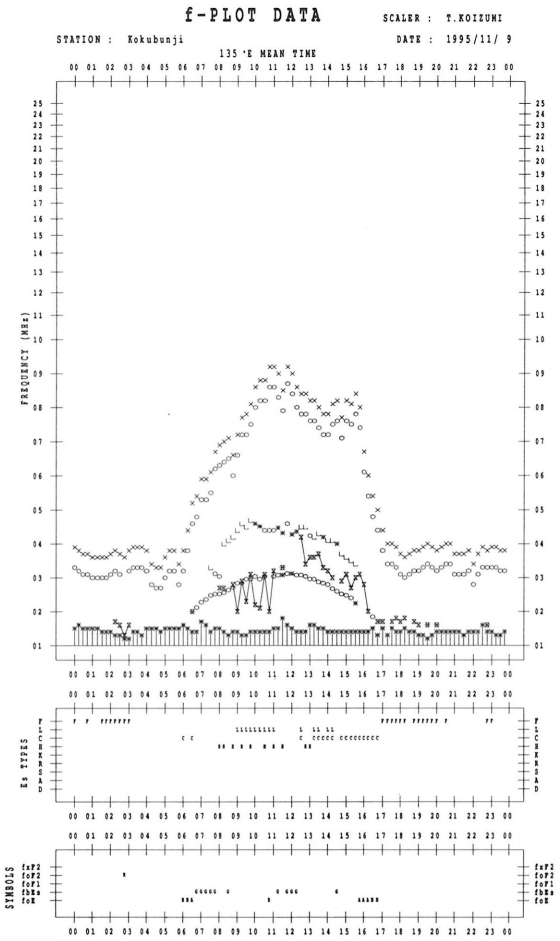
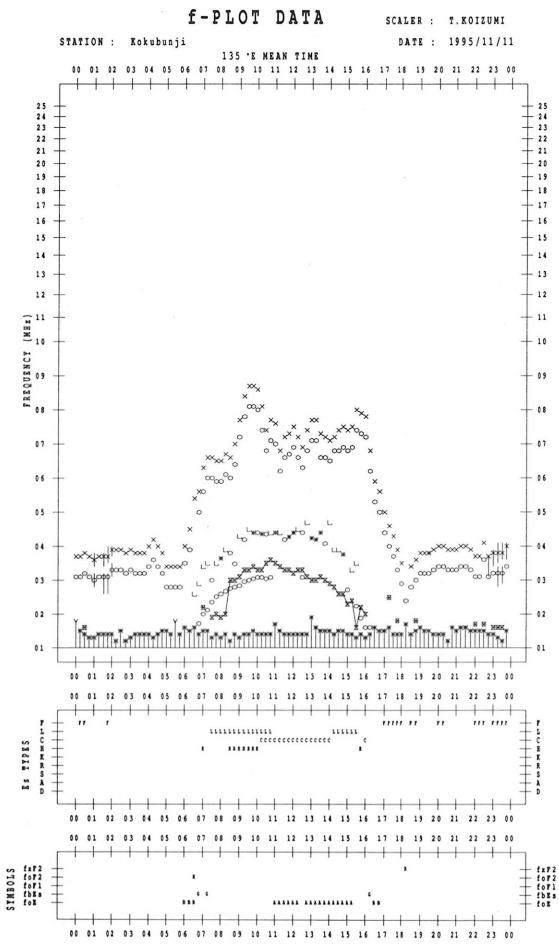
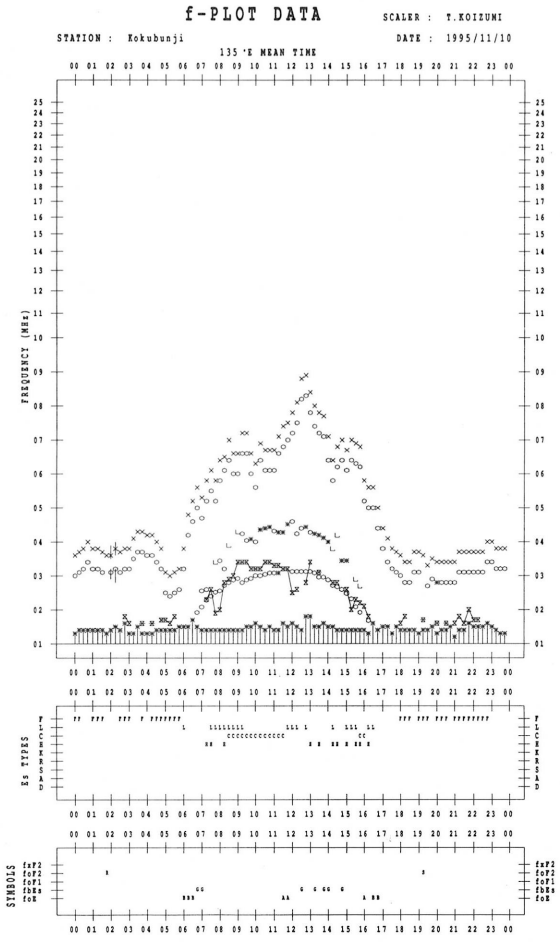
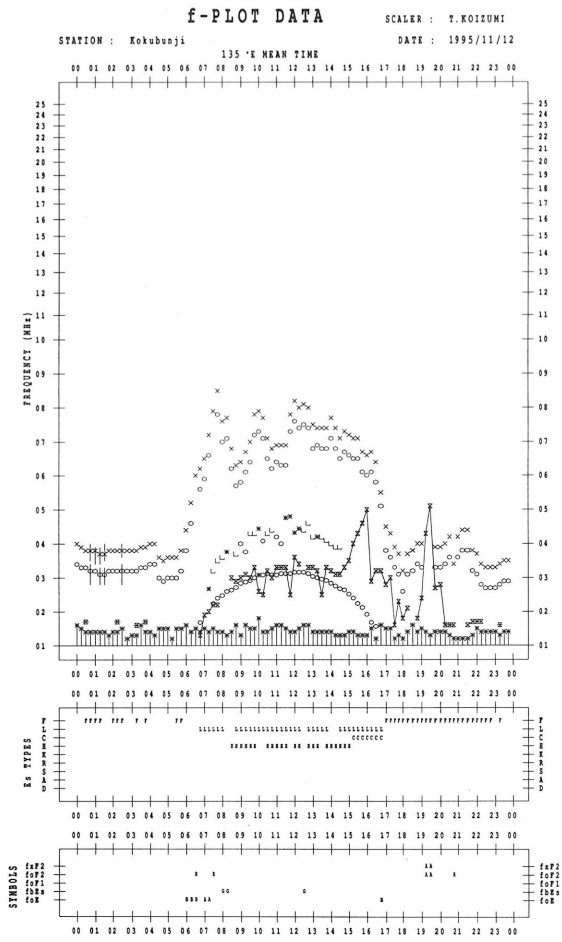
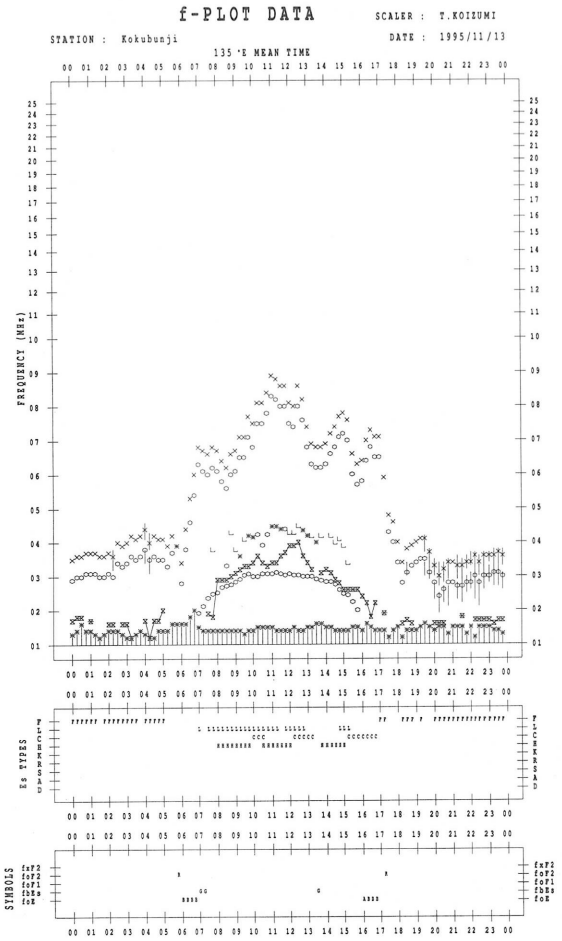
STATION : Kokubunji
DATE : 1995/11/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

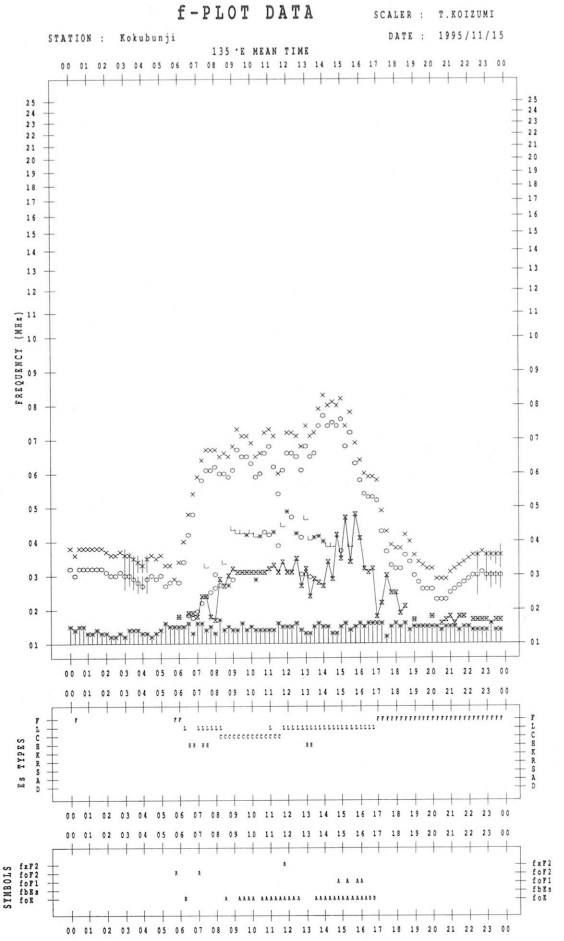

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


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


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


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/12
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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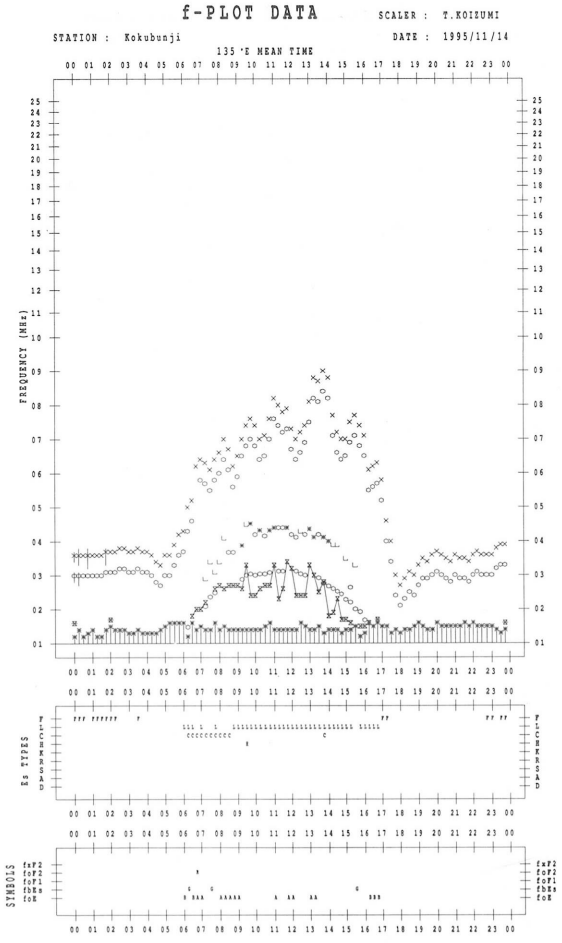
STATION : Kokubunji
DATE : 1995/11/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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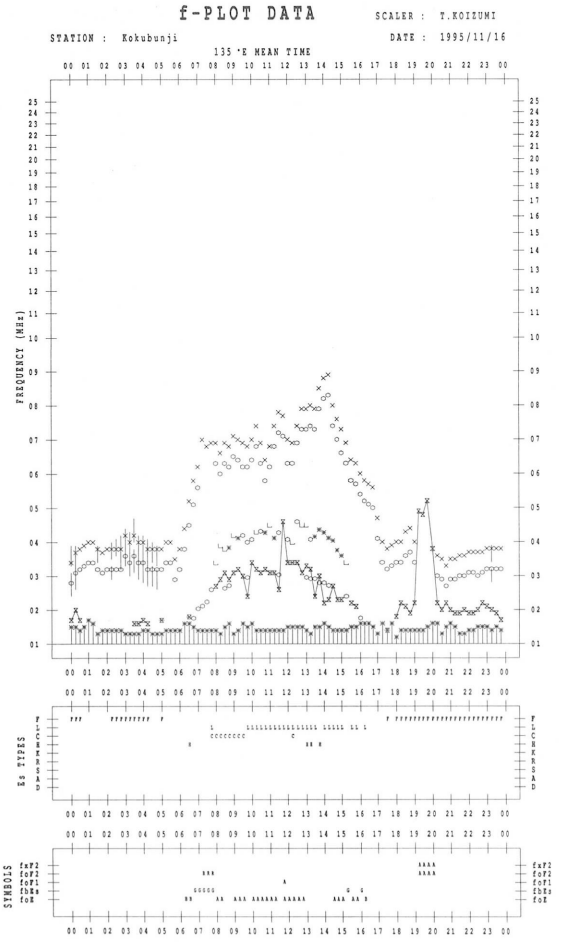
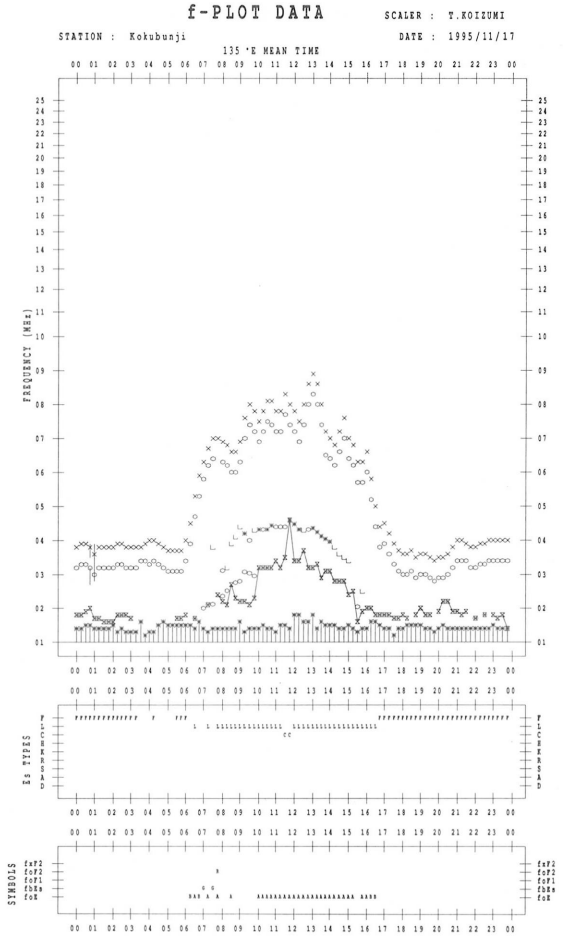
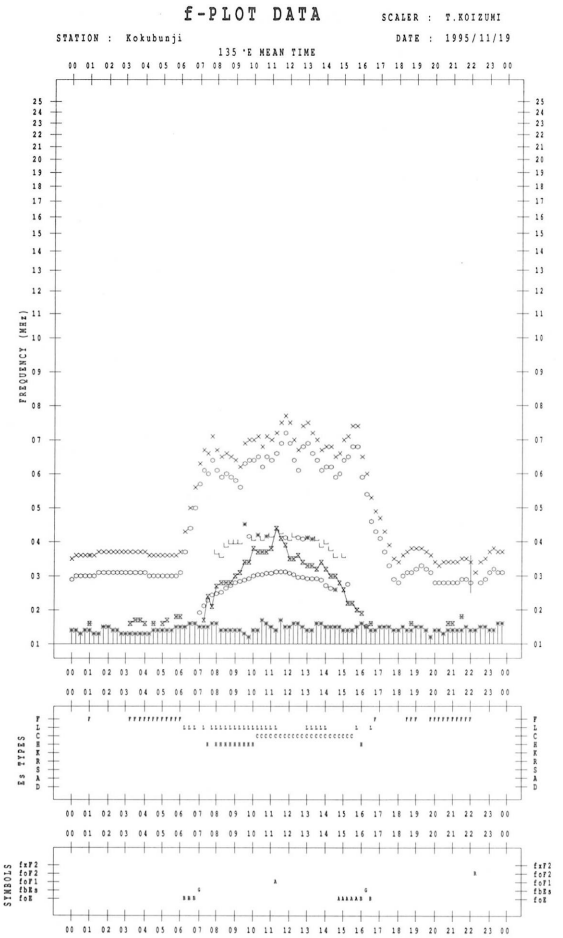
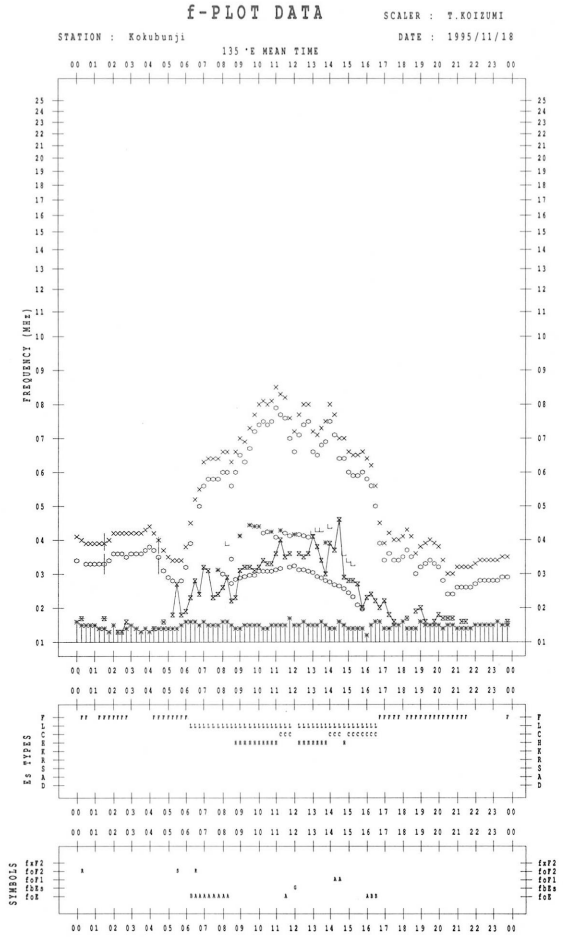
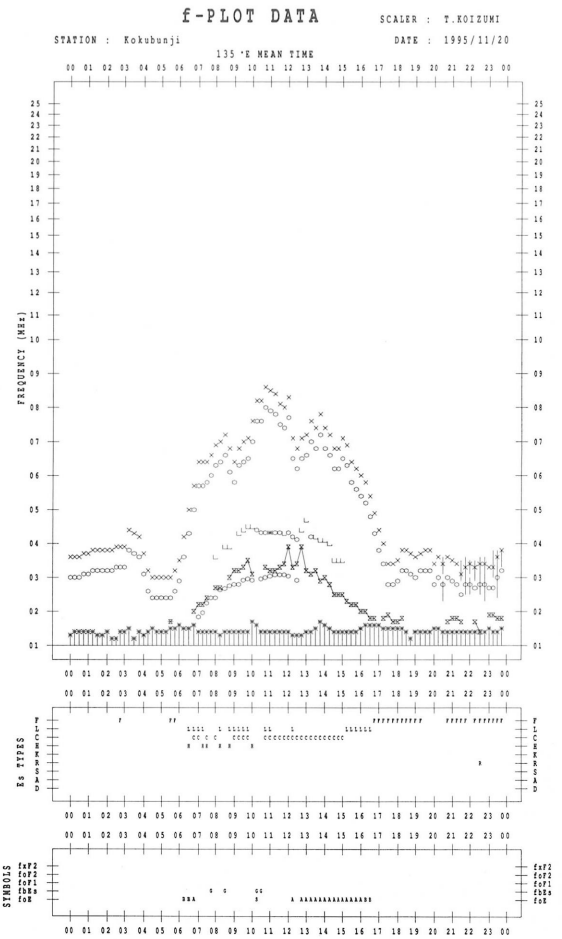
STATION : Kokubunji
DATE : 1995/11/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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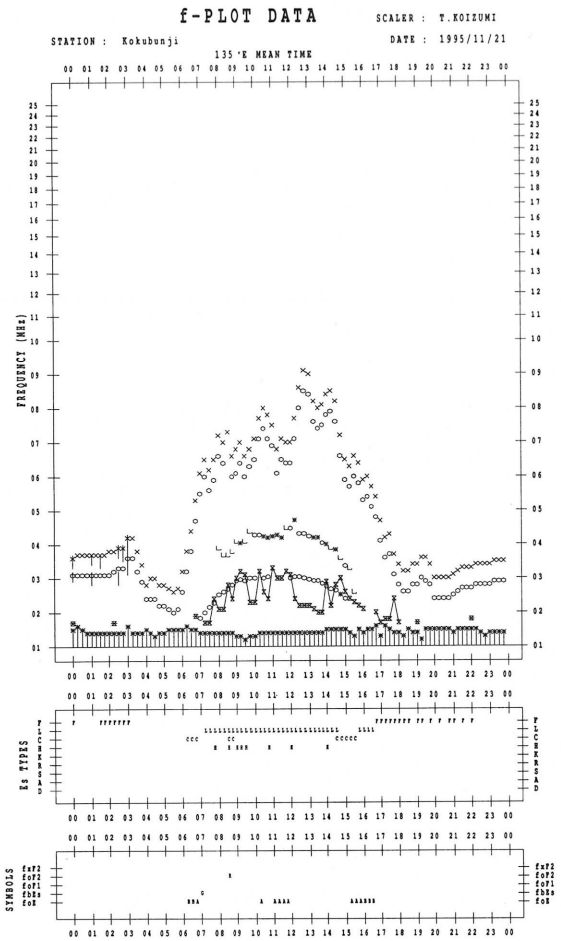
STATION : Kokubunji
DATE : 1995/11/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
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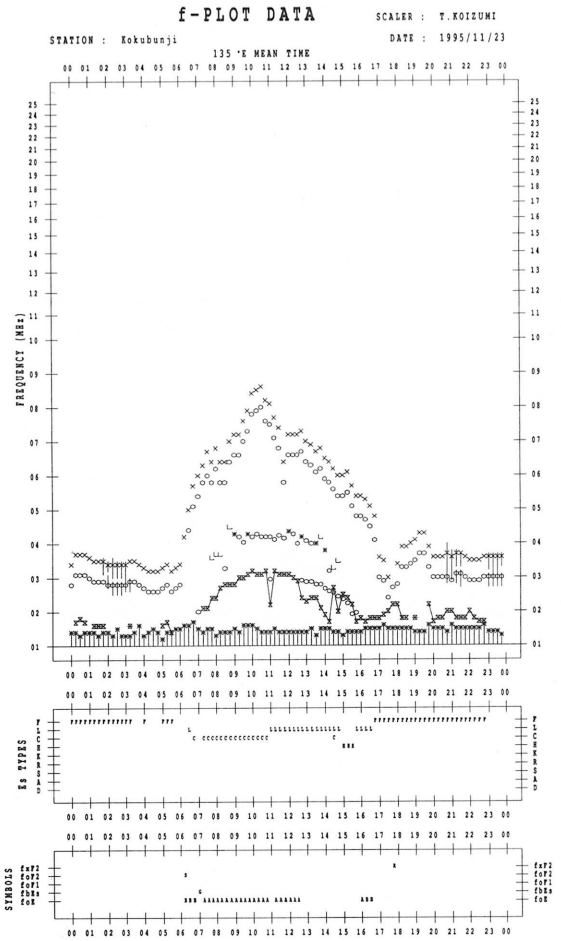
STATION : Kokubunji
DATE : 1995/11/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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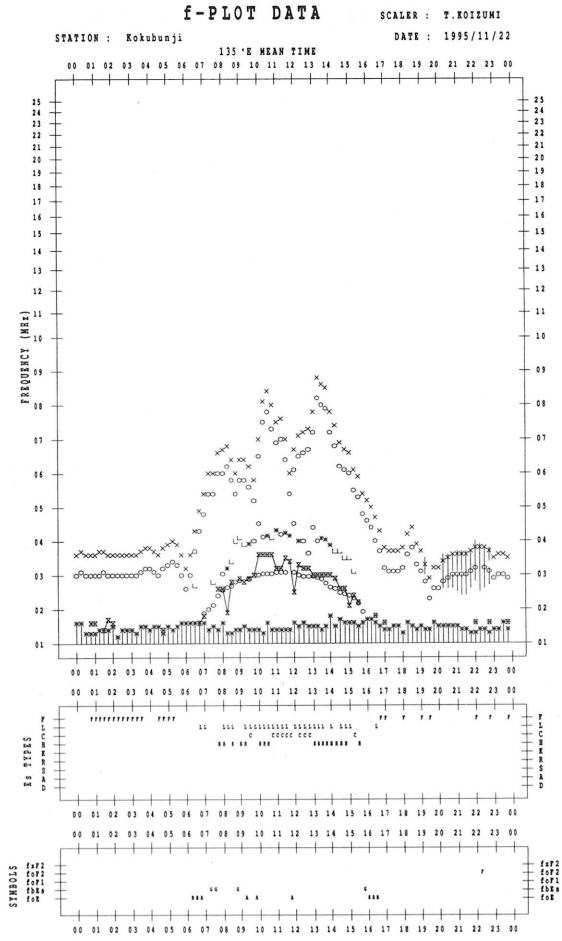
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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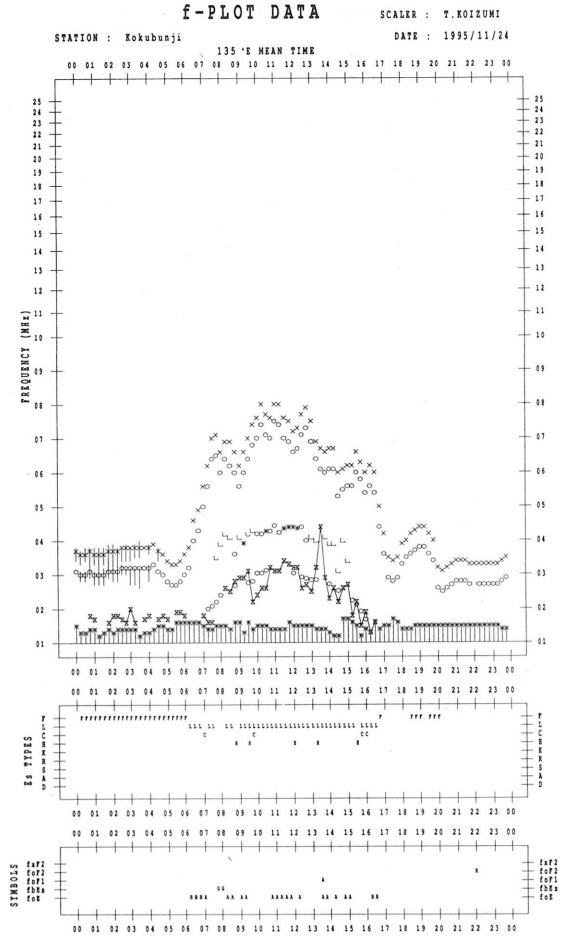
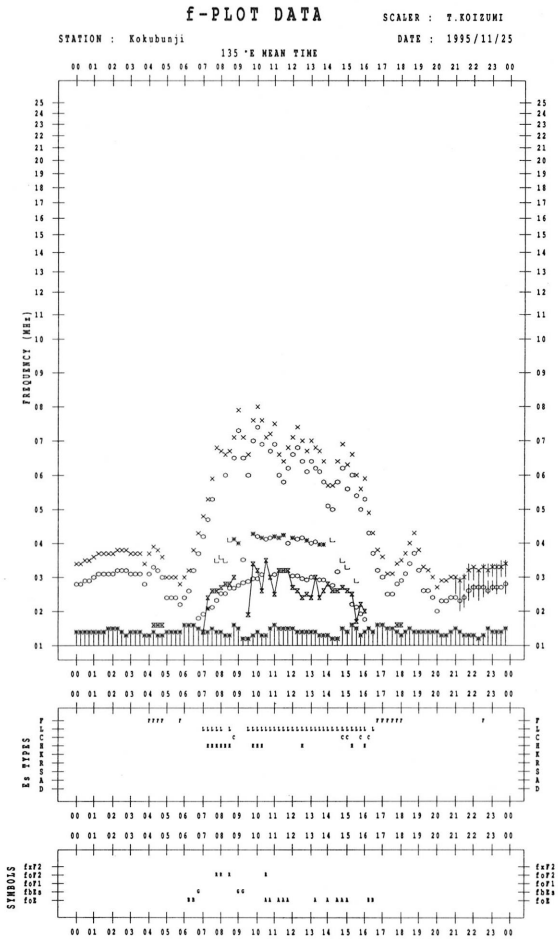
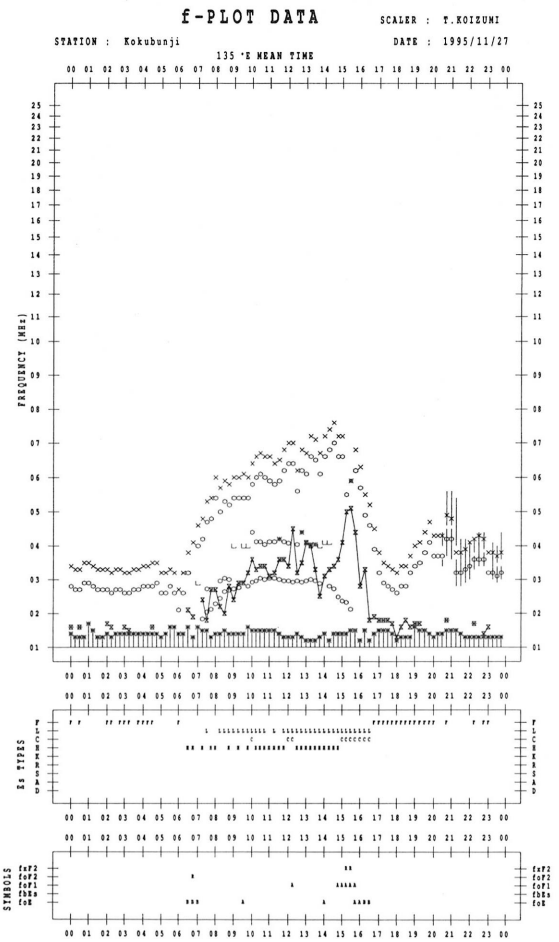
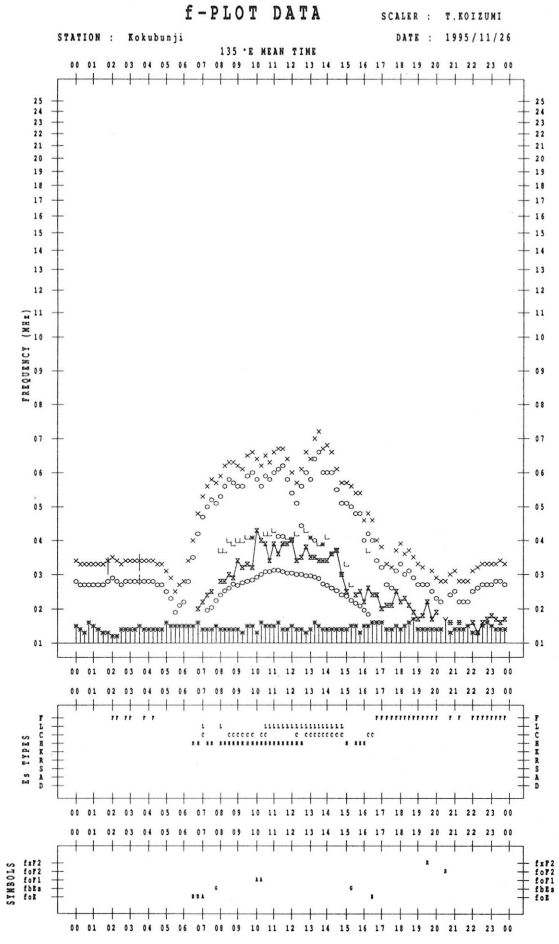
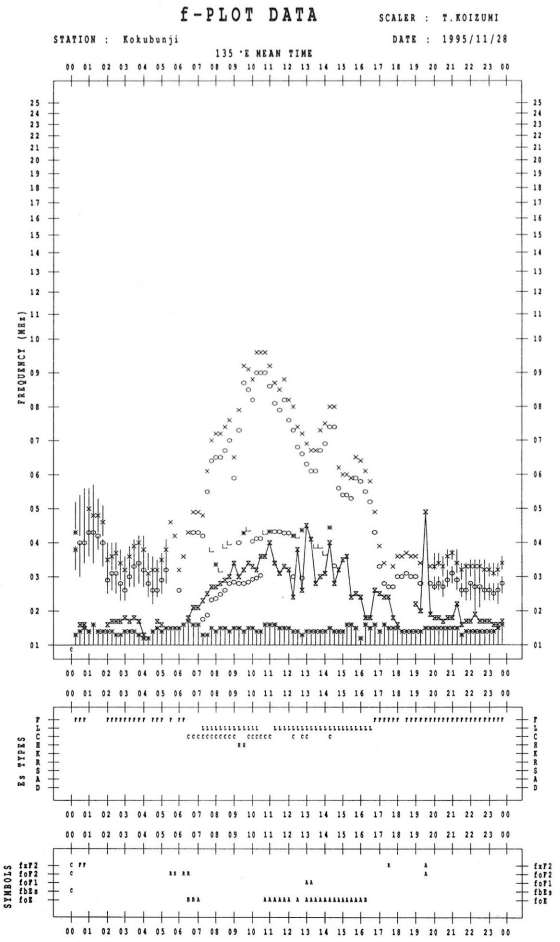
STATION : Kokubunji
DATE : 1995/11/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

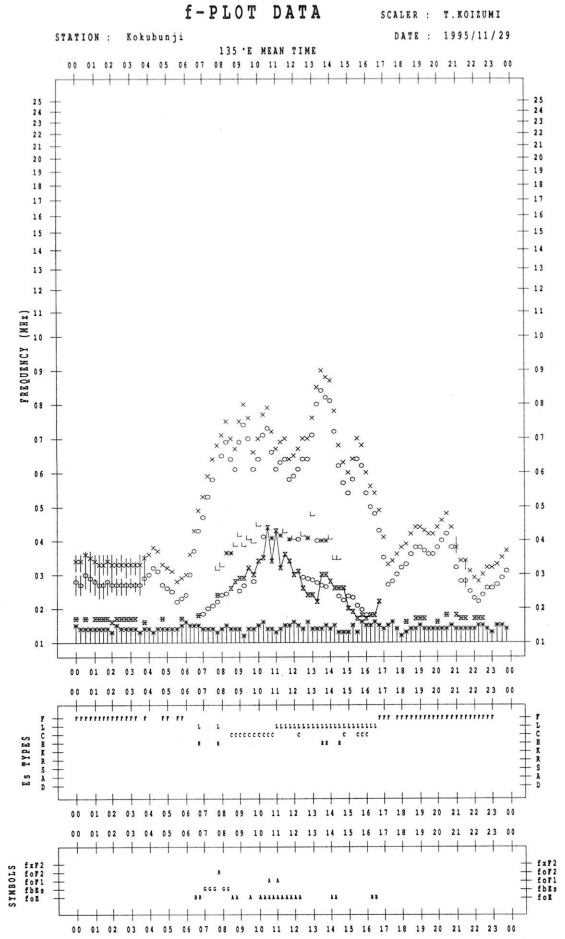

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

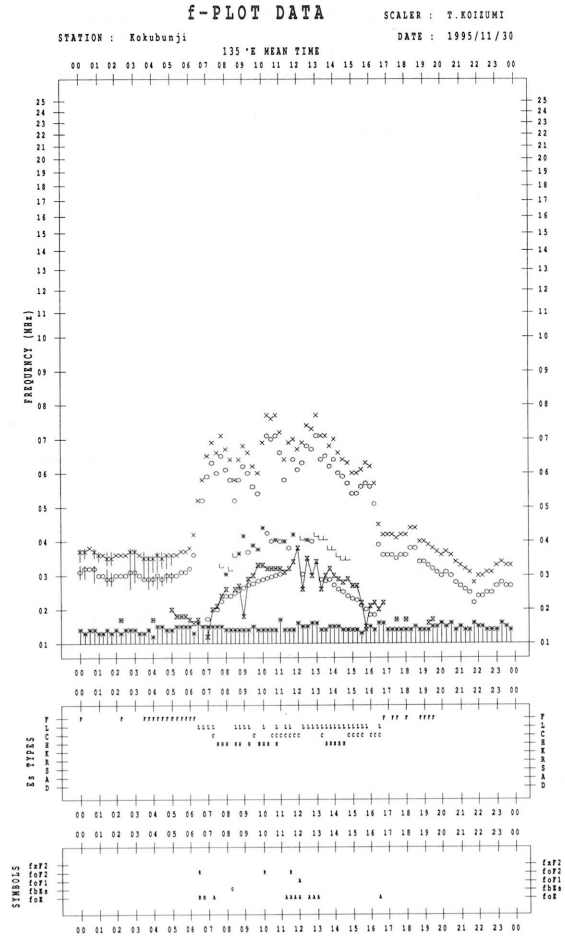

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

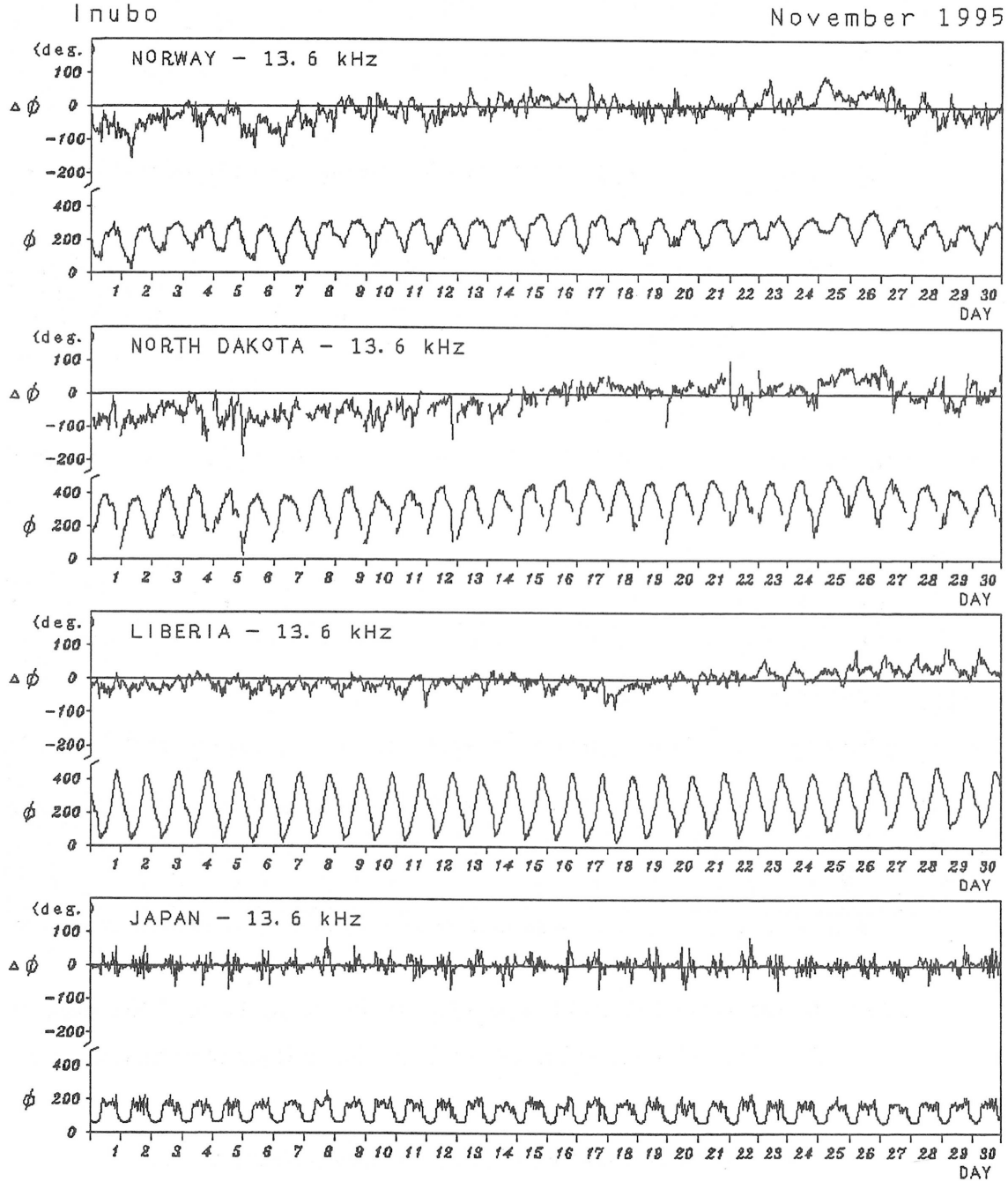

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

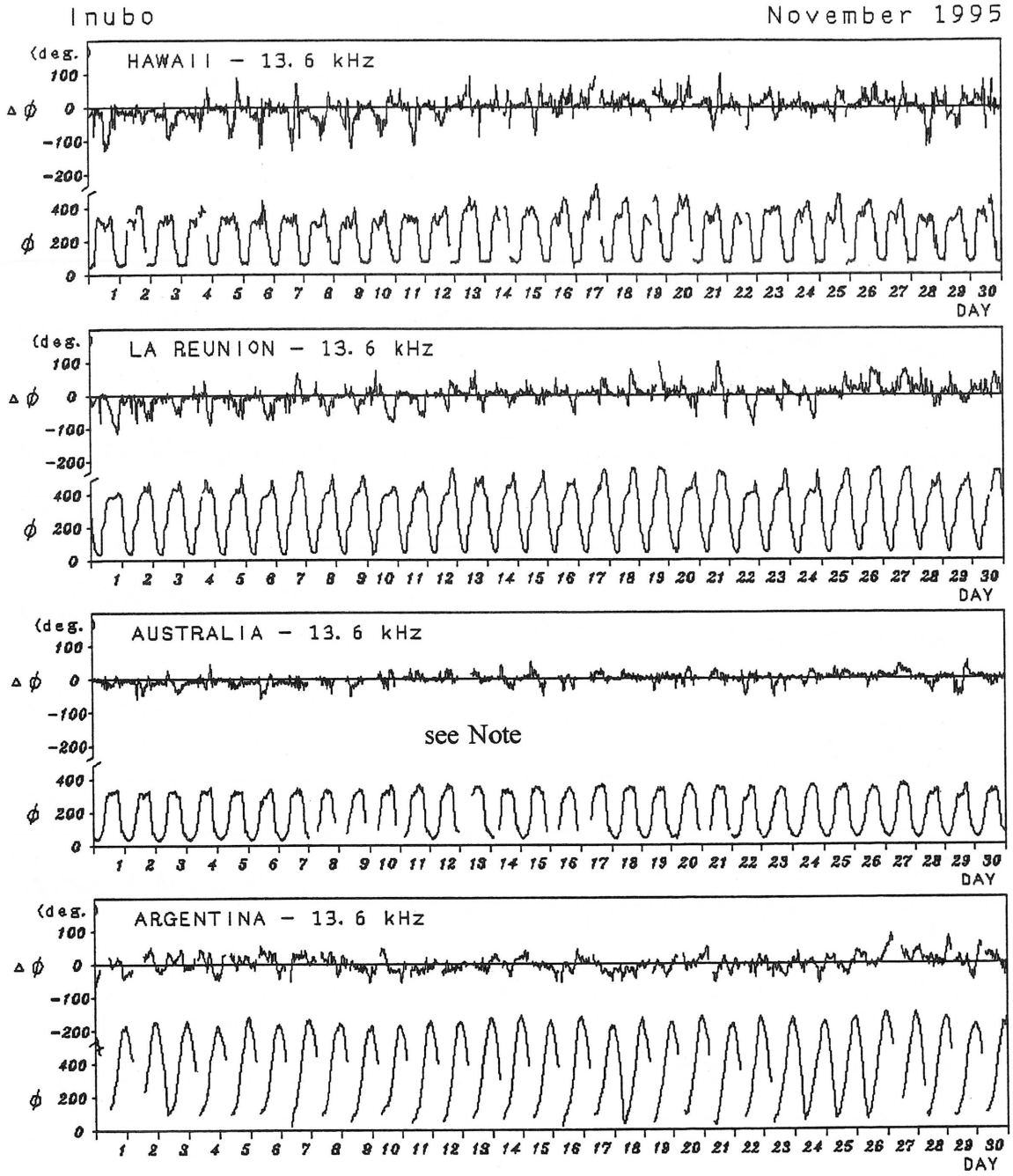

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/11/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for AUSTRALIA-13.6kHz, Gaps in the record during 7 November 2000 UT to 24 November 0800 UT are due to transmitter maintenance.

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

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Nov. 1995	S P A								
	Phase Advance (degrees)						Time (U.T.)		
Date	Ω/N	Ω/L	Ω/LR	Ω/AU	Ω/H	Ω/ND	Start	End	Maximum
10			50	–			0344	0446	0355
16				–	58		2150	2240	2155

IONOSPHERIC DATA IN JAPAN FOR NOVEMBER 1995
F-563 Vol.47 No.11 (Not for Sale)

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☎ (0423) (21) 1211(代)

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Communications Research Laboratory, Ministry of Posts and Telecommunications,
2-1 Nukui-Kitamachi 4-chome, Koganei-shi, Tokyo 184 JAPAN.