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IONOSPHERIC DATA IN JAPAN

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CONTENTS

COMMUNICATIONS RESEARCH LABORATORY
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INTRODUCTION

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

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

A. IONOSPHERE

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

A1. Automatic Scaling

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

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

a. Characteristics of Ionosphere

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

b. Descriptive Letters

The following descriptive letters are used in the tables.

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

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

C Impossible measurement because of any failure in observation.

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

N Impossible automatic scaling because of complex echoes.

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

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

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

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

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

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

d. Reliability of Automatic Scaling

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

e. Summary Plot

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

A2. Manual Scaling

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

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

a. Characteristics of Ionosphere

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

b. Symbols

(i) Descriptive Letters

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

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

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

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

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

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

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

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

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

K Presence of particle *E* layer.

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

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

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

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

Q Range spread present.

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

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

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

V Forked trace which may influence the measurement.

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

X Measurement refers to the extraordinary component.

Y Lacuna phenomena, severe layer tilt.

Z Third magneto-electronic component present.

(ii) Qualifying Letters

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

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

D Greater than.

E Less than.

I Missing value has been replaced by an interpolated value.

J Ordinary component characteristic deduced from the extraordinary component.

M Mode interpretation uncertain.

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

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

U Uncertain or doubtful numerical value.

Z Measurement deduced from the third magneto-electronic component.

(iii) Description of Types of *Es*

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

The types are:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B. SOLAR RADIO EMISSION

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

B1. Daily Data at Hiraiso

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

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

0 quiet or no burst,

1 a few bursts,

2 many bursts,

3 very many bursts.

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

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

* Measurement impossible because of interference.

B Measurement impossible because of bursts.

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

B2. Outstanding Occurrences at Hiraiso

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

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

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

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

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

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

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

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

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

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

C. RADIO PROPAGATION

C1. H.F. Field Strength at Hiraiso

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

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

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

C2. Radio Propagation Quality Figures at Hiraiso

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

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

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

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

C	artificial accident,
S	propagational accident,
U	inaccurate.

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

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

N normal,
U unstable,
W disturbed.

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

C3. Phase Variation in OMEGA Radio Waves at Inubo

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

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

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

C4. Sudden Ionospheric Disturbances

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

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

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

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

Types of fade-out are as follows:

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

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

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

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

Transmitting Stations

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

HOURLY VALUES OF foF2 AT WAKKANAI

DEC. 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	34	35	28	32	28	A	29	38	58	69	61	68	61	60	57	58		32	B	A	58	31		38
2		18		59		29		30	58	68	72	68	68	69	71	66	51	44		38	40	37	56	40
3	35	31	51	52	57	36	40	47	52	61	57	57	68	54	60	60		36	31	36	35	35		35
4	35	35	26	32	37	35	35	32	68	58	57	61	70		N	57	40	A	A	35	B		25	30
5	31	28	35	29	30	38	32	41	49	57	63	61	69	67	61			24	A	N	35	N	28	31
6	25	28	25	24	30	31	N	38	30	39	54	61	62	55	52		29	A	A	A	28	28	30	29
7	35	28	31	28	31	28	31	29	55		64	A	A	58		28		B	35	N	29	35	29	28
8	29	28	28	28	34	24	N	40	56	56	N	54	49	56	A	39	30	24		28	28	28	31	28
9	31	29	30	25	29	29	26			50	59	A	A	52	A	A	A	26	29	B	32	35	34	30
10	A	30	29	31	29	28	26	38	56	59	39	64	54	58	54	42	40	A	19	A	A	A	B	A
11	24	30	A	N	28	B	N	29	35	51	39	60		46	A	50		A	B	B	28	N		29
12	31	35	23	29	28	29	N	31		38	59	49	63	59		38	40	B	N	31	29		28	34
13	28	31	29	29	30		N	29	26	53	64	62	57	54	41	55	34	B	29	B	A		B	29
14	30	N	29	30	N	29	28	30	30	25	52	55		A	A	30	34	N	35	29	29	A	29	32
15	35	28	29	31	30	30	24	36		37	42	39	61		53	37	39	29		29	N	26	29	29
16	29	B	29	29	N	N	26	31		28	57	74	59		31	56	56	A	31	30	35	A	31	35
17	25	31	35	35	A	28	31	40	59	56	65	61	54	A	23	57	40	A	25	A	A	34	32	28
18	31	29	29	28	B	28	29	30		51	A	55	A	A	A	48	A	25	A	N	29	N	29	23
19	35	35	29	26	30	25	A	34	30	36			56	A	46	59		25	A	N	28	28	29	31
20	25	26	28	29	32	24	26	34	39		61		57	50	51	43		23	A	28	34	29	B	29
21	29	23	30	37	35	28	29	36	29	29		53	52	66	A	A	37		29	25	A		30	35
22	35	40	34	29	31	34	B	35		34		62	59		49	49	35	32	31	28	32	35	31	28
23	28	31	29	28	28	B	B	31	61	43	A	A	49	60	70	54	35	30	35	41	35	35		48
24	35		34	36	29	34	35	37	35	55	58	63	61	A	58		38	26	25	35	29	28	29	35
25	28	N	29	30	23	B	B	32	A	56	65		A	52	36	30	38	30		28	B	28	26	26
26	26	N	N	B	26	25	N	35	48	48		A	N	56	52	61	54	36	30	35	29	34	29	35
27	29	34	35	28	28	28	B	34	47	42		54		N	60	60		N	B	26	28	29	B	28
28	30	29	31	25	29	N		29	33			57	A	70	A	42	40	32	B	N	29	N	28	28
29	29	29	30	28	28	N	28	32	37		54	65	63	57	56	56			N	B		N	29	28
30	22	26	29	29	29		B	35	40	59	57	57			50		29	B	N	N	29	B	30	31
31	31	32	32	29		N	A	30	38	37	53	38	64	37	59	62		N	N	N	28	N	N	29
	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	26	28	29	25	21	16	30	24	27	22	24	21	20	21	25	19	16	13	16	22	17	22	30
MED	30	30	29	29	29	29	29	34	44	51	58	60	61	56	53	54	38	30	30	30	29	31	29	30
U Q	34	32	31	31	31	32	31	37	56	57	63	62	63	60	59	58	40	32	33	35	35	35	31	35
L Q	28	28	29	28	28	28	26	30	34	37	54	54	55	53	47	40	34	25	27	28	28	28	29	28

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HOURLY VALUES OF fEs AT WAKKANAI

DEC. 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	G	G	G	G	G	32	G	25	29	26	28	32	36	31	29	30	28	G	B	33	G	G	G	G
2	G	G	G	G	G	G	G	26	26	32		50	57		29	44	45	30	G	G	G	G	26	G
3	G	G	G	G	G	G	27	26	32	35	33	30	32	37	44	36	G	25	G	28	26	25	25	G
4	27	40	29	25	30	27	28	31	G	32	29	34	42	33	67	46	44	39	30	G	B		G	G
5	G	G	G	G	G	G	G	G	G	27	38	34	42	39	34			28	30	G	G	G	26	24
6	G	G	26	24	27	G	G	26	39	26	35	31	32	32	26	31	29	28	29	28	G	G	37	G
7	G	G	G	G	G	G	G	G	31	29	31	32	25	30	26	G	28	B	G	26	G	G	G	G
8	G	G	G	G	G	G	G	G	23	23	30	30	35	33	29	32	G	34	36	25	26	G	G	G
9	G	G	36	29	G	G	G	G		28	37	63	34	32	46	44	36	34	31	B	G	G	G	31
10	39	28	28	27	G	G	G	G	30	36	32	36	35	37	37	33	31	40	33	37	40	28	B	36
11	30	24	24	24	G	B	G	26	35	29	41	29		26	37	35	32	24	B	B	G	G	G	G
12	G	G	G	G	G	G	G	G		33	32	29	34	29	23	G	26	B	G	G	G	G	36	G
13	G	G	G	G	G	G	G	24	35	40	35	35	30	32	30	G	G	B	G	B	26	G	B	25
14	G	G	G	G	G	G	G	G	30	30	32	27	32	32	30	G	25	G	G	G	G	33	G	G
15	G	G	G	G	G	G	G	28	32	32	27	30	32	29	29	G	G	G	G	G	G	G	G	G
16	G	B	G	28	G	G	G	G		34	35	29	29	28	28	G	38	30	G	G	G	28	G	G
17	G	G	G	G	30	G	G	G	23	29	30	34	36	37	27	22	36	34	36	37	26	G	G	27
18	G	G	G	G	B	G	G	G	25	32	77	38	87	44	47	36	29	G	28	G	24	G	G	34
19		30	G	G	G	G	28	27	36	30	32	40	40	38	26		G		29	28	26	G	G	G
20		G	G	G	G	G	G	28	32	30	32	28	29	29	22	G	G		34	35	30	G	B	25
21	28	G	G	G	G	G	G	G	23	30		34	26		32	44	G	G	34	35	43		G	30
22	28	26	G	G	G	G	B	25	27	27	26	30	27	27	23	G	26	G	G	G		28	G	
23	28	G	G	G	G	B	B	28	30	36	42	96	37	43		39	29	G	G	G	G	G	G	24
24	G	G	G	G	G	G	G	G	29	34	36	26	39		25	G	24	G	24	G	G	G	G	G
25	G	G	G	G	G	B	B	G	65	55	28	31	26	27	26	28	28	G	G	G	B	G	G	G
26	G	G	G	B	G	G	G	24	24	26	31	36	30	24	26	28	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	B	G	G	27	28	31	30	34	G	G	G	G	B	G	G	G	B	G
28	25	27	40	26	G	G	G	G	22	38	36	29	37	29	25	24	G	G	B	G	G	G	G	G
29	G	G	G	G	G	G	G	G	26	28	38	30	30	30	27	G	G	G	G	B		G	G	G
30	G	G	G	G	G	G	B	G	G	26	32	27	G	29	24	G	G	B	G	G	G	B	G	G
31	G	G	G	G	G	G	24	G	24	28	30	31	29	30	26	G	G	G	G	G	G	G	G	G
	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	31	30	30	28	26	31	28	31	29	31	30	28	30	29	30	25	27	27	27	28	27	30
MED	G	G	G	G	G	G	G	G	28	30	32	31	32	32	28	24	26	G	G	G	G	G	G	G
U Q	13	G	G	G	G	G	G	26	32	34	36	35	37	35	32	35	29	30	30	28	26	G	G	24
L Q	G	G	G	G	G	G	G	G	23	27	30	29	29	29	26	G	G	G	G	G	G	G	G	G

HOURLY VALUES OF fmin AT WAKKANAI

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

HOURLY VALUES OF foF2 AT KOKUBUNJI

DEC. 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		B	N	30	28	B	N	55		60	58	68	60	57	59	67	52	25	35	35		59		49
2		N	59	34	31	N	N	42	70	70	92	78		69	75	63	62	40	31	28	28		59	59
3		35	A		A	28	A	56	68		60	74	70	65	59	66	68		31	35			A	B
4	28	N	35	34	31	A	A	49		68	63	64	62										69	B
5	49	A	29	28	34	N	35	54		60	59		56	59	68	64	52	35	B	34	B	N		B
6	28	26	N	59		29	B	37	49	56	59	56	57	51	56	56			35	30		B	49	B
7	29	35	N	34	31	B		48	58	59	64	62	58	50	60	50	51					69	N	N
8	B	29	35	N	28	34	B	34	60	58	65		52	51		51	48		34	28	29	39		
9	30	30		32	34	31	N	47	45	54	44	63	54	60	60		45		29		35	31	59	33
10	N	34	34	31				39	58	68	65	57	60	60	66	53	48		31	A	59	59		31
11	30	N	35	35	29	28	28	46	46	50	63	60	50	59		62	46	A	N	N	29		56	N
12	36		31	N	32		N	42		67	56	48	48	63	59		41		28	36	35	31		26
13		36	35	30	26	N	B	50	48	49	52	74	82		61	54	46						30	B
14	28	31	N	31	29		B	45	56	56		64	56	59		39	45	32	25	35		30		B
15	B	N	30	29	31	30		35		54	60	64	54	51	59	59	47	31	B		29		26	35
16	N	58	35	B	B	B	A	58	56	59	55	54	67	52	59	60		40	35	35	N	A	31	
17	A		A	A	26	B	N	47	45	45	N	62		42	51	42	52	30	N		35	N	28	28
18		59	59	31		N	B			69	53	58	54	65	52	55	A	A	A	A	35	34	N	28
19	35	B	30		30	28	25		56	49	54	58	63	54	51	56	53			B	B	59	69	N
20	28	29	35	29	28	28	B	38	47	49	54	52	58	58	52	48	50	42	29	N	B	35		
21			35	30	30	32	30		54	47	55	67	59	58	50	50	58		34			69		
22	25	36	34			29	A	44		68	65	71	75	81			52		36	38	28		B	28
23	29	29	A	29	35	28	B	38	55	68	74	69	A	70	64		32	37	43		37		32	
24	35	30	28	31	30	31	34	47	57		54	68	70	63	58		A	31	B		32		38	37
25	43		46	25	A	N	B	34	57	80	68	72	56	66	A	48	39	34	A	A	A	B	A	29
26	B	34	35	B	N	A	A	37	56		50	63	70	80	59	51	54	40		59	28	A	A	
27	29	A	30	35	37		23			68	50	52	63		63	58	47	38	B		B	35		B
28	31	28	N	28	30		B	38	48	53	60	52	52	63	60	60	54	A	38		B	37	N	N
29	28	N	28	29	30	N	B	59	58	54	51	55		66		62			59		N	B	34	35
30	B	29			N	B	N	46	45	59	62	53	58	60	52		47	35	28	32	N	A	N	36
31	B	59	32		N	B	B	37		49	54	51	58	77	58	59	52		B	28	37		59	
	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	18	21	21	21	12		27	22	28	29	29	27	28	24	24	25	14	17	13	14	13	14	13
MED	29	32	35	31	30	29		45	56	58	59	62	58	60	59	56	50	35	34	35	34	37	44	33
U Q	35	36	35	34	31	31		49	58	68	63	68	63	65	60	61	52	40	35	35	35	59	59	36
L Q	28	29	30	29	28	28		38	48	51	54	54	54	55	54	50	46	31	29	29	29	32	31	28

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT KOKUBUNJI

DEC. 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	G	B	G	G	G	B	G		33	34	34	31	32	34	33		25	25	G	G	G	G	G	G
2	G	G	G	28	G	G	G		29	30	44	44		33	29	29	21	G	G	26	G	G	G	G
3	G	23	26	24	29	28	28	G	29	31	35	34	41	51		47	25	58	40	34	25	28	25	B
4	G	G	G	30	38	34	26	28	28	35	31	40	30										G	B
5	G	32	G	G	G	G	27	G	30	25	33		33	52	46	40	40	31	B	G	B	G	G	B
6	G	G	G	G	G	G	B	G		30	28	27	44	35	30	24	G	G	G	G	G	B	G	B
7	28	28	G	G	G	B	G	G	30	32	35	35	31	28	30		39	24	G	G	G	G	G	G
8	B	G	G	G	G	G	B	30	28	30	31	27	31	28		26	31	G	G	G	G	G	G	G
9	G	G	G	G		G	G	G		32		42	47	32	40	36	36	32	25	G	G	G	G	G
10	G	G	34	G	G	G	G	26	34	38	31	28	31	33	32	42	40		32	32	31	G	G	G
11	G	G	G	G	G	G	G	27	30	33	40	29	30	34	N	37	G	26	G	G	G	G	G	G
12	G	G	G	G	G	G	G	26	33	30	30	27		34	26	30	29		G	G	G	G	G	G
13	26	23	G	G	24	G	B	26	34	33	43	39	47	36	32	32	G	24	G	G	G	G	G	B
14	G	G	G	G	G	G	B	25	30	33	37	33	32	38	32	G	G	G	25	G	G	G	G	B
15	B	G	G	G	G	G	G		30	34	42	48	31	30	32	30	26	G	B	G	G	G	G	G
16	G	G	G	B	B	B	27	37	33	32	32	53	37	34	35	30	31	G	G	G	28	29	24	25
17	40	33	49	27	G	B	G	25	32	42	72	52	47	26	30	37	G	G	G	G	G	G	34	25
18	G	28	G	24	G	G	B			37	43	43	34	42	42	60	77	70	54	30	24	G	27	G
19	G	B	32	G	30	G	G		30	30	36	27	29	27	28	30	30	G	G	B	B	G	G	G
20	G		G	G	G	G	B	35	29	33	33	47	36	33	32	34	34	25	G	G	B	G	G	G
21	G		G	G	G	G	G	25		30	33	38	31	27	30	N	G	25	28	G	G	G		G
22	28	29	30	27		28	25	11		36		32	30	26	26		30	30	G	G	G	G	B	G
23	G	25	32	24	G	G	B	G	30	30	51	76	60	35	31	24	G	G	G		G	G	G	G
24	G	G	G	G	G	G	G	G	28	34	36	34	36	41	40	34	35	31	B	G	G	G	G	G
25	G	G	G	G	28	G	B	G	32	32	34	58	41	38	50	55	57	37	28	29	24	B	25	G
26	B	G	G	B	G	24	27		31	31	34	34	34	44	37	30	30	27	G		58	56		G
27	G			G	G	G	G	G		30	32	44	40		58	26	34	26	B	G	B	G	G	B
28	G	G	G	G	G	G	B	G	27	30	40	41	35	50	25	24	G	26	24	G	B	G	G	G
29	G	G	G	G	G	G	B	G	26	26	32	42	34	37	37	35	25		G	G	25	B	G	G
30	B	G	G	G	G	B	G	G	24	31	32	38	32	31	31		30	24	G	G	G	24	G	24
31	B	G	G	G	G	B	B	G	24	31	28	34	50	36	29	24	G	24	B	G	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	30	29	28	25	20	25	24	31	29	30	29	29	27	25	30	27	25	27	25	27	28	24
MED	G	G	G	G	G	G	G	G	30	32	34	38	34	34	32	30	30	25	G	G	G	G	G	G
U Q	G	23	G	12	G	G	25	26	32	34	40	44	41	38	37	37	34	30	25	G	24	G	G	G
L Q	G	G	G	G	G	G	G	G	28	30	32	32	31	30	30	26	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT KOKUBUNJI

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

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF foF2 AT YAMAGAWA

DEC. 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		79		N	48	42	31		A	62	62	A	53	64	61	66	68	53	59	59	43			
2				A	49	A	69		A	79	83	84	76	81	73	84	A	74	54	A			34	N
3	46	35	A	N	31	A	A	46	70	68	72	70	72	75	67	62	62	58	35	A	A	A	A	A
4	26	35	43	31	38	23				67	66	59	62	73	70	62	60	53	A	69		34	37	
5	N	42	A	40	48		A		60	68	59	69	60	57	72	73	82	58	A	89	32		N	59
6	N	38	37		57	35	B	37		53	62	69	58	62		54		53	37				50	59
7		49	59	32		59		37		A	62	59	76	A	62	66	60			59		89		31
8		53	59			48	28		49			62	58	48	58	60	59	53	42	44		A	36	
9	34	41		49	48	49	N	43		68	A	71	A	63	68	56	59		49	46	B	48	49	49
10	49	59		37	31	38	N	59	58	69	83	86	76	70	78	77	74		A	A	36	41	30	N
11	46	49	37	37		69			44	50		72		61	A	50	52	53	47			69	A	43
12	29	31		58	48	N	A	37	48		75		A	62	66	50	54	41						
13		30		N	42	49	N	A		55	A	67	78	81	78	66	A		69	34	79			
14			36			32	N	49	A	59		76	50	54	60	56	47	54	37			59	52	59
15			69	69	59	69		69	60	60	59	68	55	A	71	59	A	54		89	89		31	
16		69	A	36	N	39	B	44	56	49	A	67	54	86	67	59	57	52		A	A	69	69	59
17	28	38	36		N																			
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21												62	57	72	67	A	49	34	A	A	89	N	59	
22	N	59	58	37			49	44	46	60	56	72	83	94	87	62	57				62	36	69	
23	27	26	35	36		69		59	48		60	67	76	80	66	71	59	54	59	60			N	34
24		B	N	A	41	37		59	48		56		83	87	68	A	58	A	59	A	52		54	44
25	50		59	56	60		36		61	82	94	156	A	A		95	C	A	69			A	59	A
26	A	59			69	N	N	59	C		62	66	66	C	61	60	54	53	A	69	24	69	34	37
27		N	59			42		37	40		A	A	58	69	66	69	57	48	A	43		69		B
28		N	47	49	40		B	69	48	48	71	58	62	61	117	66	67	48	49		34			
29	22			59	59	N	39	34	54		76	68	68	66	74	78	54	53	49	43	49	N	A	N
30	69	N	30	40	49	24	N	32	48	60	70	63	53	68	73	66		48	48	A	A	A	N	32
31	34		59	49		69	23		59	44			66	74	84	82	62	67	48			49		
	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	17	15	16	17	17		17	17	18	18	22	23	23	24	25	20	20	16	12	11	11	14	11
MED	34	42	47	40	48	42		44	49	60	64	68	62	69	68	66	59	53	49	59	49	59	50	44
U Q	47	59	59	52	58	64		59	59	68	75	72	76	80	73	72	62	54	59	69	79	69	59	59
L Q	27	35	36	36	40	36		37	48	53	60	63	57	62	66	59	54	50	44	43	34	41	34	34

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT YAMAGAWA

DEC. 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	G	G	G	G	G	G	26			42		48		30	31	28	24	G	G	G	G	G	G
2	G	G	G	32	G	33	25	G			31	44	53	40	32	30	50	29	26	32	G	G	G	G
3	G	G		G	27	31	24	25			34	30	30	40	58		42	27	30	40		33	33	27
4	28	28	28	G	26	30	G	27	31	31	33	31	41	32	31	33	40	G		G	G	G	27	G
5	G	G	27	G	27	25	26	27	30	30	28	36	32	35	42	29	55	26	32	26	G	G	G	G
6	G	G	G	G	G	G	B	G	32	31	40	45	84	41		28		29	29		G	G	G	G
7	G	G	G	G	G	G	G	G		49	31	39	35	54	39	38	39	27	25	27		29	G	23
8	G	G	G	G	G	G	G	G		30		42	41	41	44	31	34	33	G	G	G	43	G	28
9	G	G		G	G	G	G	G	28	37		42	39	53	33	34	40	30	G	G	B	G	G	G
10	G	G	G	G	G	G	G	G	27	27	32	29	46	44	40	40	35	39	60	29	24	G	G	
11	G	26	G	G	G	G	G	G	34	36	40	49	30	30	56	30	32	G	G	G	G	G	28	G
12	27	G	G	G	G	G	27	G	30		30	32	31		28	30	37	33	23	24		G	G	G
13	G	G	G	G	G	G	G	32		34	52		49	41	42	39	28		33	33	G	G	G	G
14	G	G	G	G	G	G	G	G	40	31	46	44	40	48	42	30	30	33	G	G	G	G	G	G
15	G	G	G	G	G	G	G	G	29	34	36	32	30	36	30	30	60	G	G	G	G	G	G	30
16	G	G	32	G	G		B	G	30	30		40	39	36	32	39	47	29	G	33	30	G	G	G
17	G	G	G	G	G																			
18	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
21												46	50		26	57	30	33	40	33	29	G	G	G
22	G	G	G	27	34	G	G	G	26	30	29	30	50	31	N	48	30	40		23	G	G	G	G
23	G	G	G	G	G	G	G	25		37	33	36		41	38	51	41	47	30	G	G	G	25	G
24	G	B	G	28	G	G	G	G	G	55	36		41	35	29	55	28	40	30	28	22	G	G	G
25	G	32	G	G	G	G	G	G	27	30	30	67	81	C			36	47	29	30	34	29	31	31
26		G	G	G	G	G	G	G	C	29	32	42	28	75	45	33	32	32	39	25	G	G	G	G
27	G	G	G	24	G	G	27	26	34	29		49	33	41	30	N	27	40	34	G	G	G	G	B
28	G	G	G	G	G	G	B	G	29	30	39	31	40	39	45	32	26	G	G	G	G	24	G	G
29	G	G		G	G	G	G	G	28	30	29		34	40	37	28	N	G	G	G	G	G	30	G
30	G	G	G	G	G	G	G	G	G		32			41	42	28	24	G	29		33	28	G	G
31	G	G	G	G	G	G	G	G	32	31	38	30	44	29	54	28	26	G	G	G		G	24	29
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	26	24	27	27	25	23	26	18	21	22	22	25	23	24	24	25	26	25	25	22	27	27	25
MED	G	G	G	G	G	G	G	G	30	31	33	40	40	40	38	32	34	29	26	23	G	G	G	G
U Q	G	G	G	G	G	G	G	25	32	35	39	44	48	41	43	39	40	33	31	29	22	G	24	12
L Q	G	G	G	G	G	G	G	G	27	30	31	31	32	35	30	30	28	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fmin AT YAMAGAWA

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

HOURLY VALUES OF foF2 AT OKINAWA

DEC. 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	38	36			56	B		48	43		68	60	60	77	69	67	74	58				42		69
2				47		69		47	A	96	86	87	94	112	108	126	122	102	80	69	60	A	49	B
3	B	59	38	N	A		B		38	67	70	66	78	80	81	76	73	66	71		58	36		69
4	B			59		B		59	A	66	65	68	67	80	92	81	72	70	63	56	52	49	47	B
5	46	B	40	39		38		43	51	60	67		67	60	68	92		80		44	46	43		38
6			38	36	36	N	69		59	68	65	64	A	61	74	77	67	92	47	58				38
7		59	59		35	B		34	54	68							87		57	43	A	A		A
8	A	38	43	44		69			A	A	69	64			60			A	50		43	43	A	49
9		69	69						39		90	85	83		84	92		69	61			A		43
10			49		69	59			A	A	81		119	99	110	126	104		66	37	A		A	
11	34	32			60					A		78	87					A	50	59	A	59	A	A
12			46	49	59				A	66		95	65	81	95	83		A	A	A		A		
13		B	49						A	A			82	84		119	87	90	83		62			53
14	46			37		49			A	A	68	78	83	73	76	64			48		69			38
15			B	36		B	A		A	57		73	64		75		64	A	55	A			89	
16		49	44		37	B			A	A		102	80	77	86	69	A		47		A			69
17		59	59		44				A	45	79	A		62	82	82	79	87	64	40			A	A
18	48			A	29			A	A	54		76	84		80	69		A	A	A	A	A	A	59
19		37	A	69	A				A	A		89	82	84	84	81	69	47	A		47		49	44
20		38	42		69			A	A	70		68	74	80	95	82	80	A	A	B	69			A
21	35		30	40	40				A	A		50		59	75	76	83	A	40	A		69		
22	24	34	B	69	69	A			A	52		91	83	101		84	A	A	A	49	45	A		50
23				59	49	B					64		74		71		53	A	56	36	A	A	89	A
24		B	69		41						72	72	82		82	66	60	62	43	A	58	36		35
25		44	43	44			A			A		108	90	76			66	A	A	58		38	A	A
26		46			44	B			A		80	66	58	61	83			A	46		49	A	B	
27			B	36	30	B			A	35		62	66		A	93	84			A		69	A	A
28	A		49		36	B		B	A	35		81	71	76	84	88	93		46	A	A	A		69
29	B	59	30					A	A	A	90	92	66		98		66	66			40	43		46
30	49	59	69	B	42				A	59	83	94	82	84	124		83	A	60	A		38	A	59
31		38	N	37		B		A	A		83	92	103	96	95	124		A	83	38		A	44	
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT		16	18	15	18					15	17	25	26	21	24	22	20	12	21	12	13	12		16
MED		45	45	44	43					60	72	78	81	80	84	82	76	70	56	46	52	43		50
U Q		59	59	59	59					68	83	91	83	84	95	92	85	88	65	58	61	54		64
L Q		37	40	37	36					52	67	66	67	67	75	76	66	64	47	39	45	38		40

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF fEs AT OKINAWA

DEC. 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	G	G	G	G	G	B	G	G	38	42	45	41	41	57	34	G	26	G	11	G		G	G	G
2	G	G	G	G	G	G	G	G		33	28	42	57	57	69	88	51	32	27	G	G	26	G	B
3	B	G	G	G	29	G	B	G		49	37	38	47	47	43	100		42	62	25	24	G	G	G
4	B	G	G	G		B	G	G	31	39	34	36		43	G	38	40	48	33	G	G	G	G	B
5	G	B	G	G	G	G		G	28	32	33	38	38	41	40		46	33	25	G	G	G	G	G
6	G	G	G	G	G	G	G	G	32	38	45	57	62	G	42	61	25	38	40	28	G	G	G	G
7	G	G	G	G	G	B	G	G	35	32						42	44	41	50		38	48	G	30
8	29	G	G	G	G	G	G	G		42	32	39	48	41	37	48		40			22	G		G
9	G	G	G		G	G	G	G	38	38	36	42	40		58	44	65	42	34	G	G		G	G
10	G		G	G	G	G	G	G		42	35	34	34	41	58				11		39	G		G
11	G	G	G	G	G	G	G	G	G	41		42	40					46	G	48		G	48	
12	G	G	G	G	G	G	G	G	45	34		41			44			47	43	59	G		G	G
13	G	B	G	G	G	G	G	G	47	36			48	55	69	49	48	45	38	45	24			G
14	G	G	G	G		G	G	G			56	44	46	46	45	36	33		42	G	G	G	G	G
15	G	G	B	G		B		G	43	36	42	38	33	32	33		41	34	28	41	G	G		G
16	G	G	G	G	G	B	G	G	46	46	46	46	43	45	47	44	43		33	26	39	G	G	G
17	G	G	G	G	G	G	G	G		38	46	69	G	41	40	57	40	42	42	G	G	G	26	27
18	G	G	G		G	G	G	34	45	48		52	44	54	67		44	51	40	36	48		38	
19	G	G	36	29	28	G	G	G	44	48		52	50		36	38	34	30	40	G	G	G	G	G
20	G	G	G	G	G	G	G	40	43	32	38	50	65	47	51	38		65	52	B	G	G	G	30
21	G	G	G	G		G	G	G		48	32	46	46	43	42	36	45	46	46	33	G	G	G	G
22	G	G	B	G	G		G	G	36	33	35	44	38	43	34	49	72		40	32		30	G	G
23	G	G	G	G	G	B	G	G	G		44	43	44		61	35	45	46	G	G	40			38
24	G	B	G	G	G	G	G	G	G		36	44	38	38		36	32	40	30	40	G	G	G	G
25	G	G	G	G	G	G	40	G	G	34		47	38		48	44	40	78	36	34			65	65
26	G	G		G	G	B	G	G	35		36			38	43	48		33	26	36	G		B	G
27	G	G	B	G	G	B	G	G	44	40	34	45	38		96	46	30	40	43	34	G	24	36	34
28	65	G	G	G	32	B	G	B	38	56	40	35	38	38	41	33	44	37	39	38	44	42		38
29	B	G	G	G	38	G	G	31	33	39	G	42	43	44	44		32	32	G	G	G	G	G	G
30	G	G	G	B	G	G	G	G		32		48	48	51	68		64		40	36	G	G	28	G
31	G	G	G	G	G	B	G	34	42	34	36	36	39	32	46	38	72	69	35	36	25	36	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	27	28	27	20	28	30	23	27	23	28	27	22	28	23	24	26	30	27	27	24	24	27
MED	G	G	G	G	G	G	G	G	38	38	36	42	43	43	44	44	44	42	37	32	G	G	G	G
U Q	G	G	G	G	G	G	G	G	44	42	44	46	48	47	58	49	47	46	42	36	25	12	13	27
L Q	G	G	G	G	G	G	G	G	31	34	34	38	38	38	40	36	33	34	27	G	G	G	G	G

HOURLY VALUES OF fmin AT OKINAWA

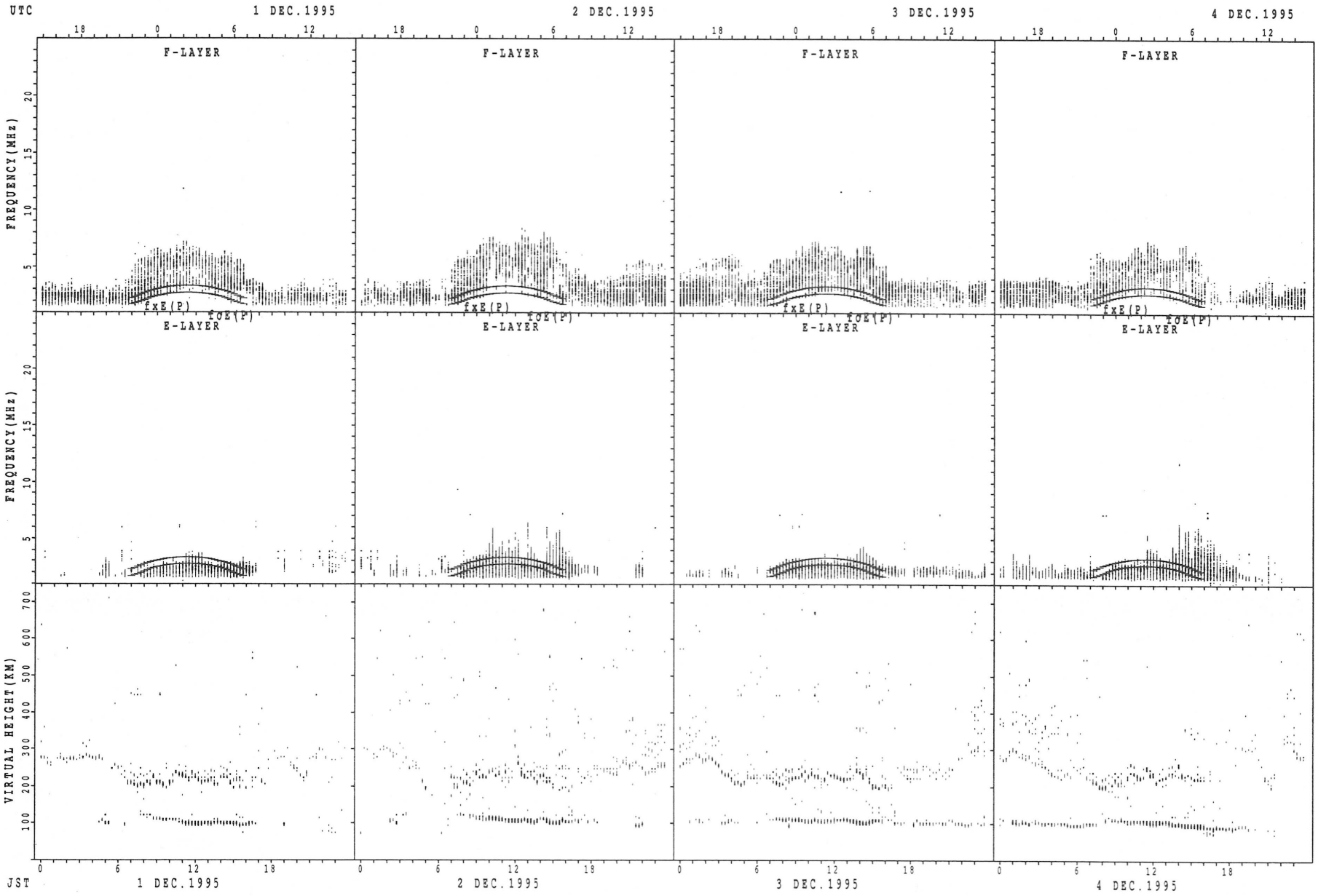
DEC. 1995

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

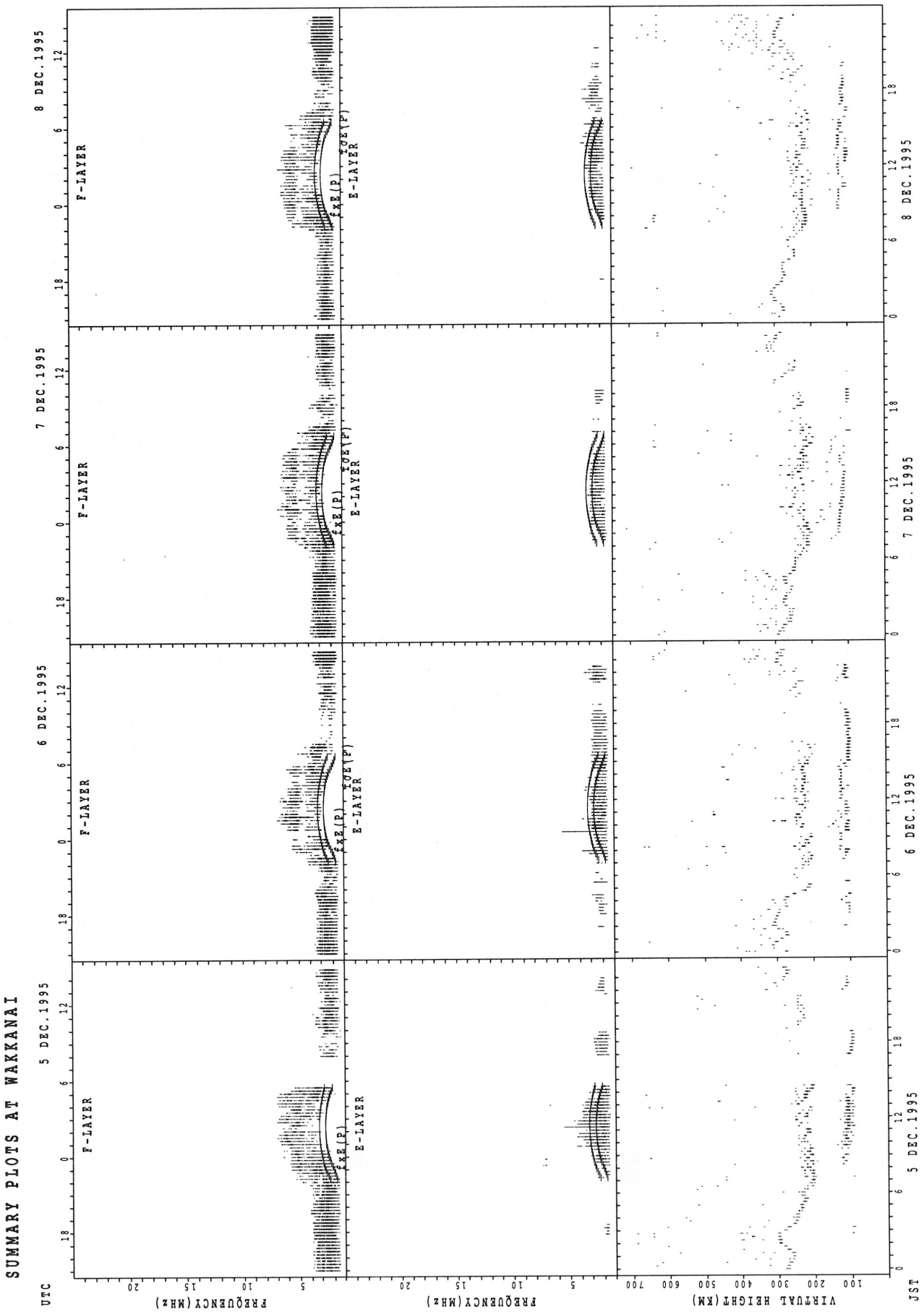
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	20	16	17	15	B	15	14	17	15	16	17	20	17	16	29	15	15	15	15		14	16	17
2	15	16	17	15	15	18	15	15	24	15	17	20	18	16	17	20	15	15	15	16	15	16	14	B
3	B	14	16	16	15	17	B	18	26	17	16	17	20	29	17	18	15	15	15	17	15	16	16	16
4	B			15		B		14	14	14	15	16	17		38	17	16	16	16	17	15	18	15	B
5	15	B	16	14	15	14		18	14	15	17	17		26	26	17	15	14	15	17	17	15		16
6		18	14	14	16	15	18	15	15	15	17	17	18			15	16	14	15	14	17	27		15
7	16	15	15	15	15	B		14	18	15						15	14	15	14	14	14	14	14	14
8	15	14	16	14	15	15	15	14	18	14	15	15	15	16	16	15		15	14		14	15	18	15
9	15	15	14	15	15	15	15	15	14	14	15	16	16	16	16	16	14	14	15	15	14	15	15	14
10	16	14	15	14	16	15	15	15	15	14	15	18	16	17	17	16	15		15	15	15	15	14	16
11	15	15	15	15	15	15	15	18	15	14		15	14					14	16	14	14	14	14	14
12	14	18	15	15	14	14	18	15	16	14		15	15	15	18	15		15	14	14	18	14	14	14
13		B	15	15	15	14	18		14	14			16	15	17	15	15	14	14	14	15	14	15	15
14	15	15	15	15		15	18	14	14	15	15	16	17	15	16	14	14		15	16	16	14	15	14
15	15		B	15		B	16		18	14	16	15	17	15	17		15	18	14	15	18	15	14	15
16	14	14	14	15	15	B	18	14	15	14	16	15	16	16	18	16	14		14	15	14		15	15
17	15	15	15	15	14	14	18	18	14	15	15	17		26	21	14	15	14	15	15	15	15	15	15
18	16	15	14	14	14	18	16	15	15	15		17	16	16	16	16	14	14	14	14	14	14	15	14
19	14	18	14	14	15		30	14	14	14		17	18	16	17	14	15	14	14	15	17	15	18	14
20	15	14	15	15	15	14	18	14	14	15	14	15	15	16	15	14	14	15	14	B	16	18		15
21	18	14	14	14	14	15	15	14	15	14	15	17	17	16	16	15	14	14	14	14	15		16	18
22	14	14	B	15	14	14	17	14	23	16	15	15	15	17	15	15	14	14	14	15	15	17	15	14
23	18	14	15	15	15	B	18	14	24		15	15	16		15	14	15	15	15	15	14	14	14	14
24		B	18		14	14	18	14	20		14	17	16	16		15	18	14	14	14	16	15	14	17
25	14	14	15	14		18	16	16	16	14		15	16	15	15	14	14	14	14	14	14	15	14	15
26	15	14	14	15	15	B	15		15		15	15	17	17	17	14		15	14	14	14		B	
27	18	15	B	15	15	B	18	14	14	15	15	15	16		15	15	14	14	14	14	14	14	15	14
28	15	15	18		15	B	27	B	15	14	15	16	15	17	15	16	16	16	14	15	14	15		14
29	B	15	15	15	14	15	15	14	15	15	18	16	15	17	17	16	15	17	15	14	15	14	16	14
30	14	14	15	B	15	14	16	15	21	15	15	15	16	16	16		14	14	15	14	18	18	14	15
31	15	15	14	18	15	B	29	20	14	15	15	15	15	16	14	14	14	14	14	18	14	14	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	26	27	28	27	20	27	27	31	28	24	29	28	25	27	28	27	28	31	29	30	28	26	28
MED	15	15	15	15	15	15	17	14	15	15	15	16	16	16	16	15	15	14	14	15	15	15	15	15
U Q	15	15	16	15	15	15	18	15	18	15	16	17	17	17	17	16	15	15	15	15	16	15	15	15
L Q	14	14	14	14	14	14	15	14	14	14	15	15	15	16	15	14	14	14	14	14	14	14	14	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

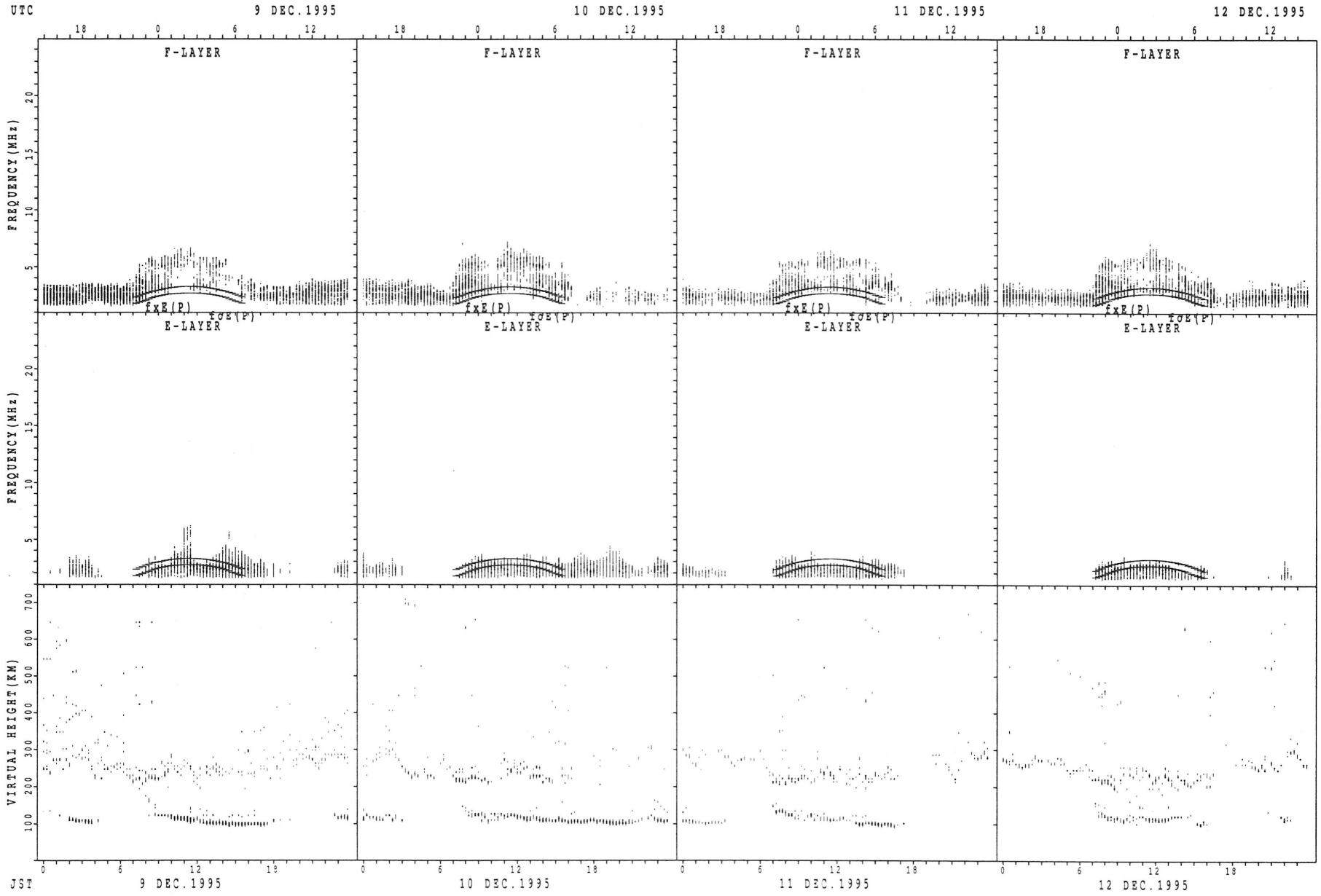
SUMMARY PLOTS AT WAKKANAI



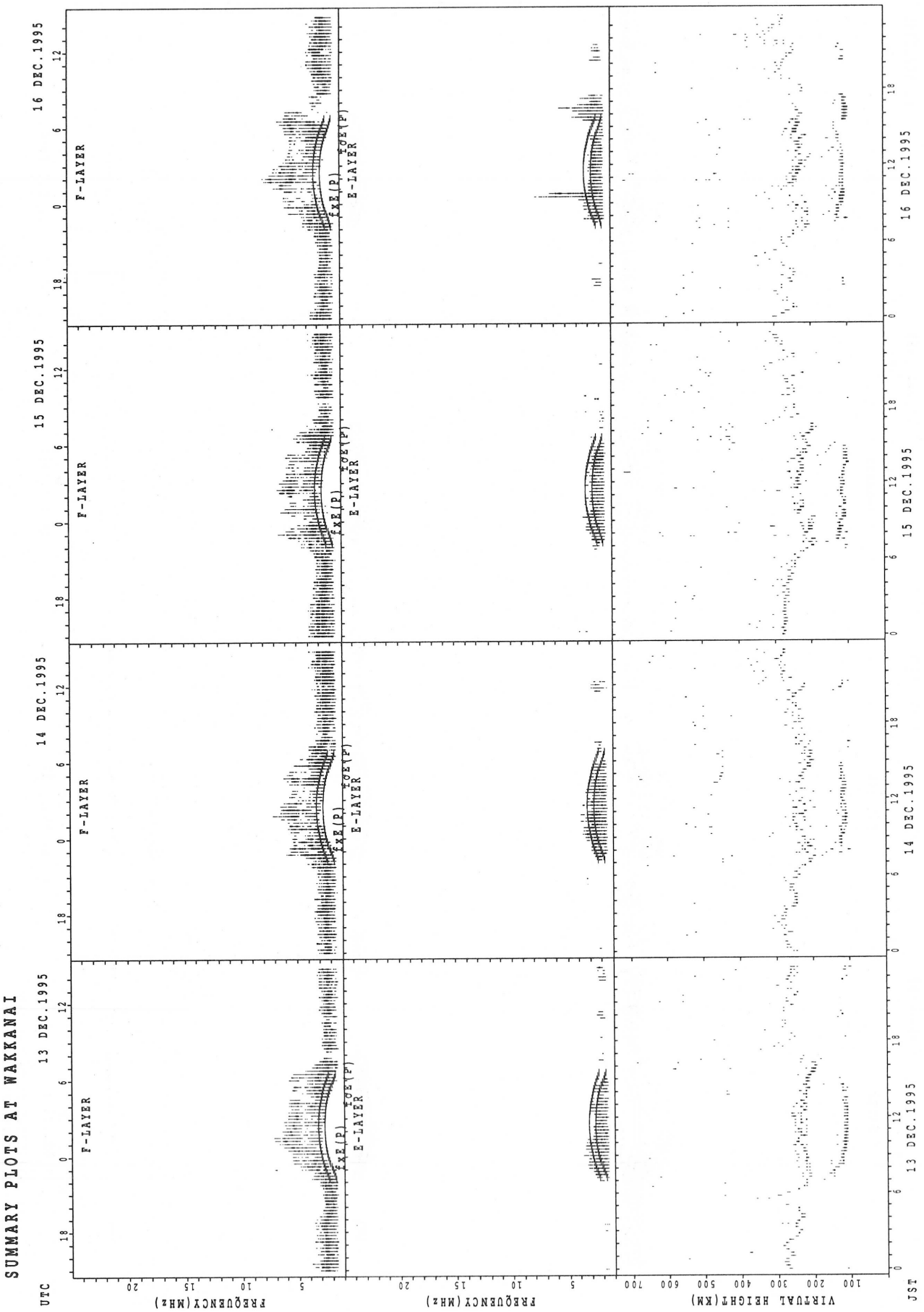
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

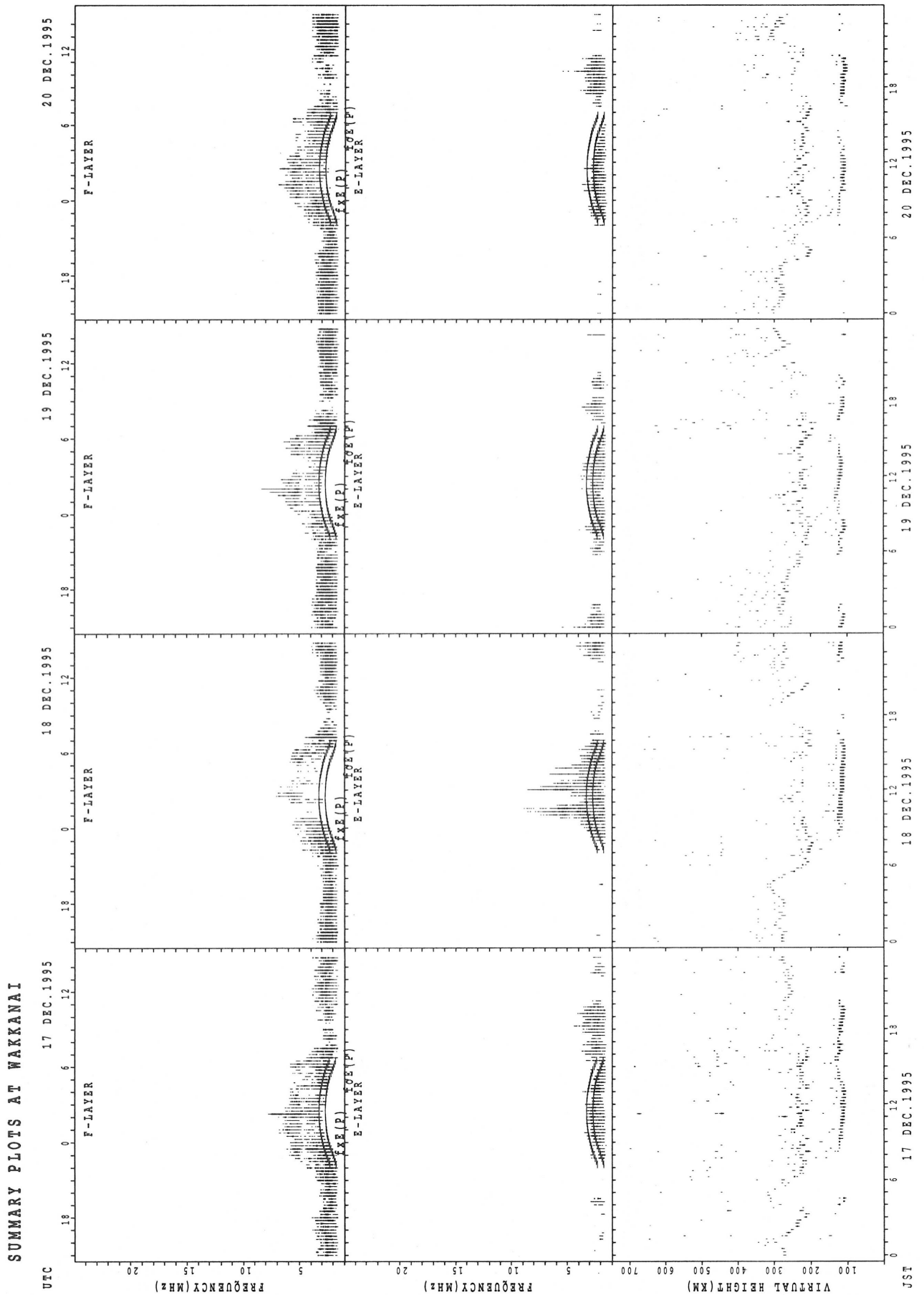

SUMMARY PLOTS AT WAKKANAI
UTC
JST
5 DEC.1995
6 DEC.1995
7 DEC.1995
8 DEC.1995
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

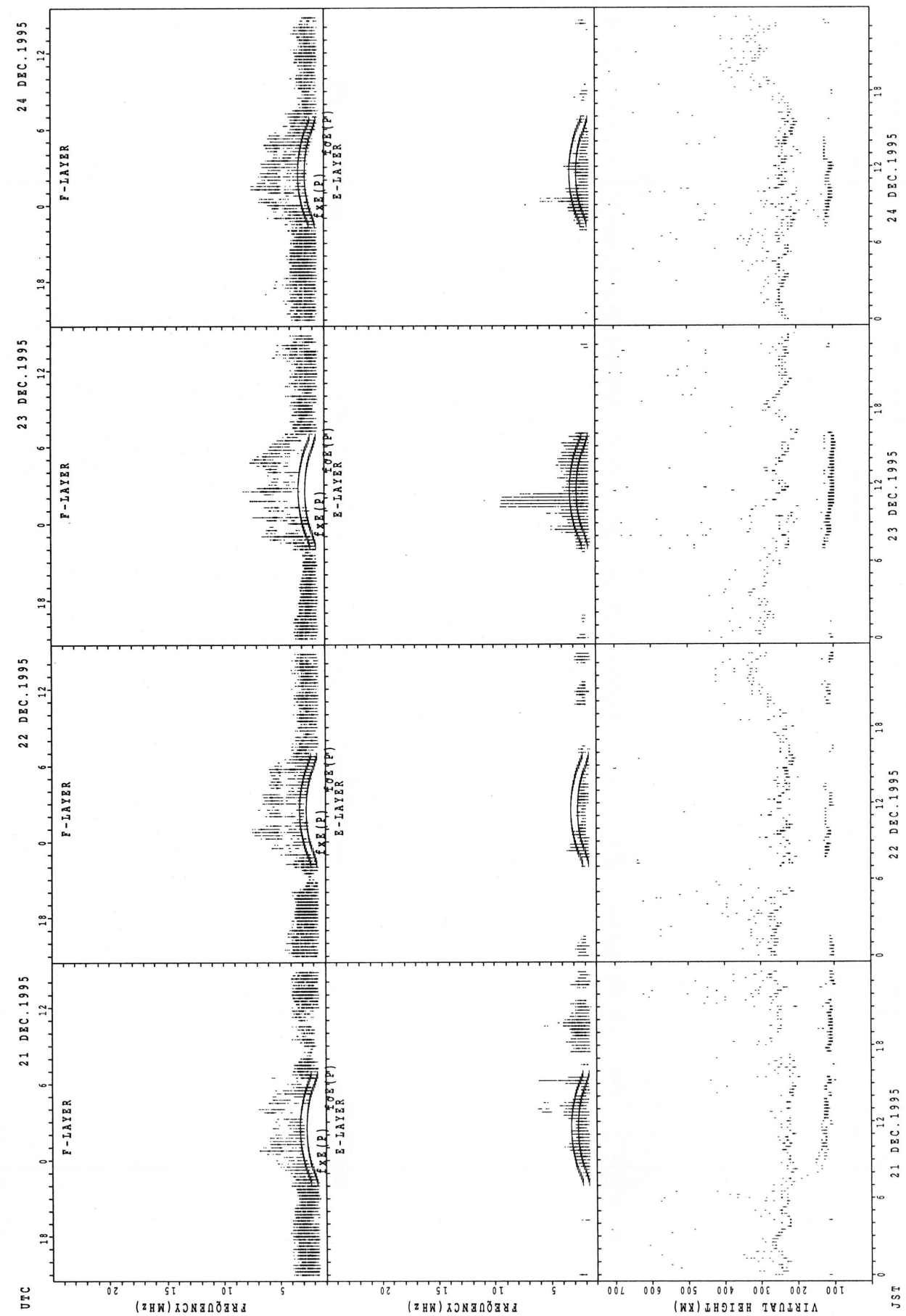
SUMMARY PLOTS AT WAKKANAI



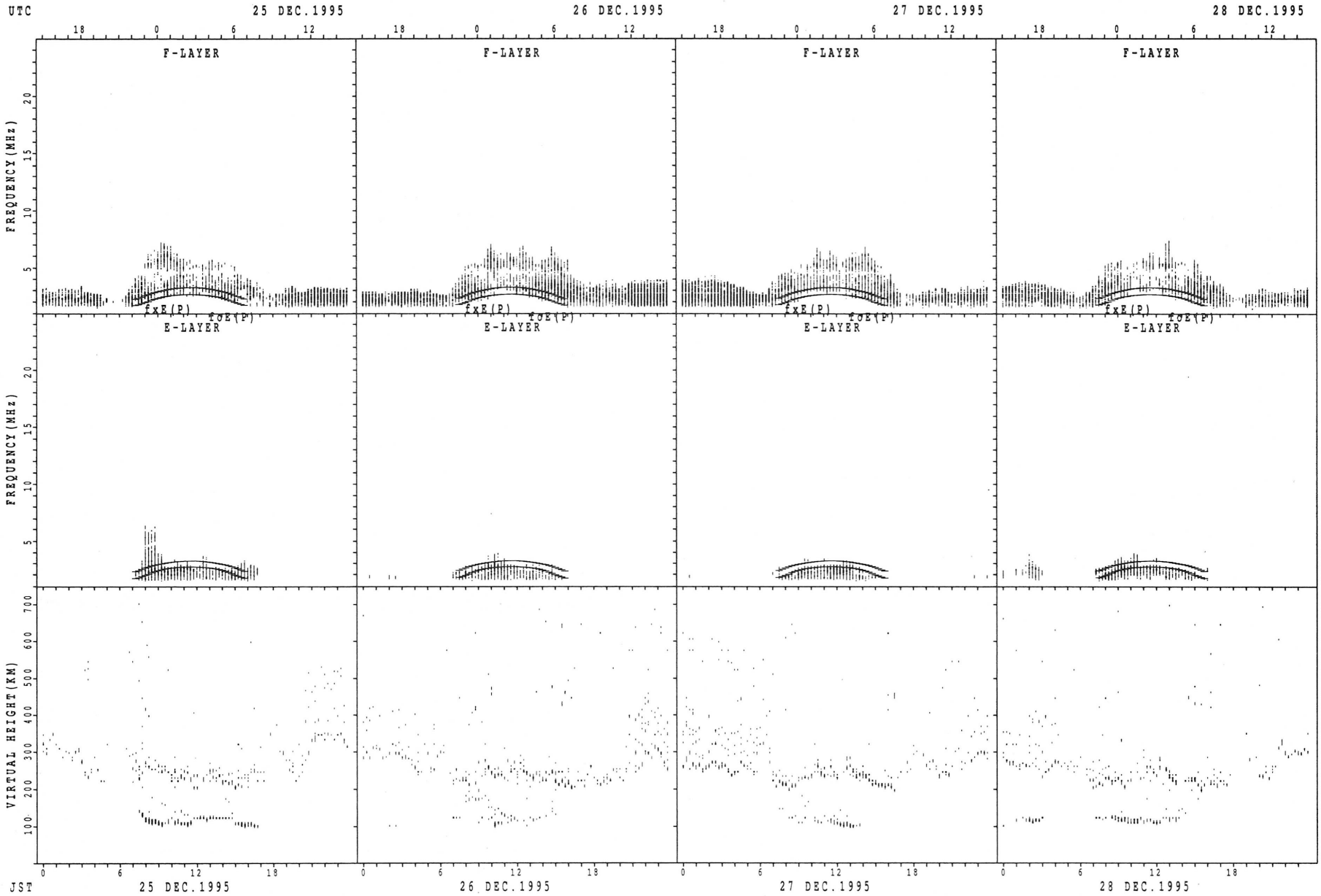
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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


SUMMARY PLOTS AT WAKKANAI
UTC
JST
17 DEC.1995
18 DEC.1995
19 DEC.1995
20 DEC.1995
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fx3(P); PREDICTED VALUE FOR fx3
fo3(P); PREDICTED VALUE FOR foE

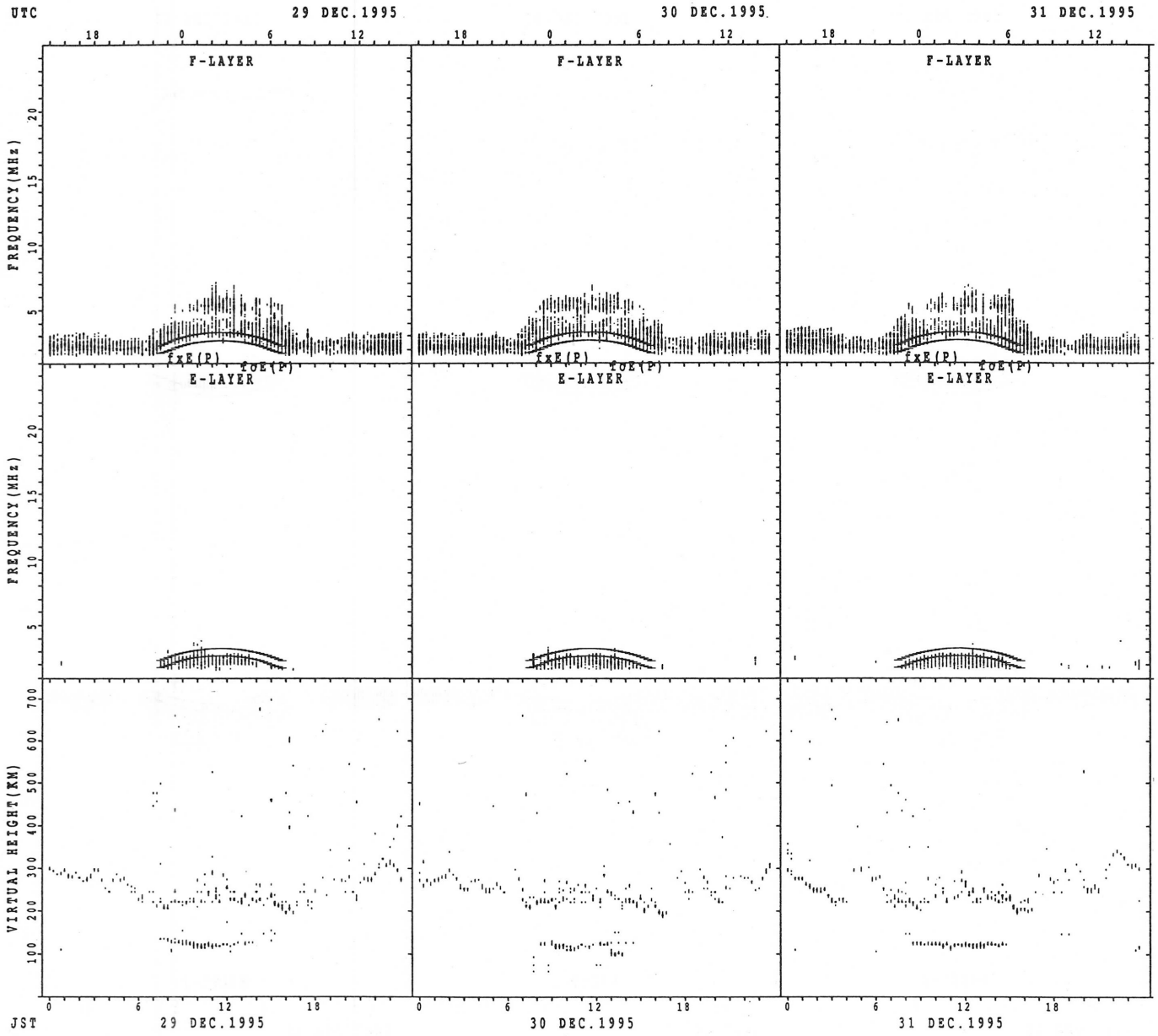

SUMMARY PLOTS AT WAKKANAI
UTC
JST
21 DEC.1995
22 DEC.1995
23 DEC.1995
24 DEC.1995
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI



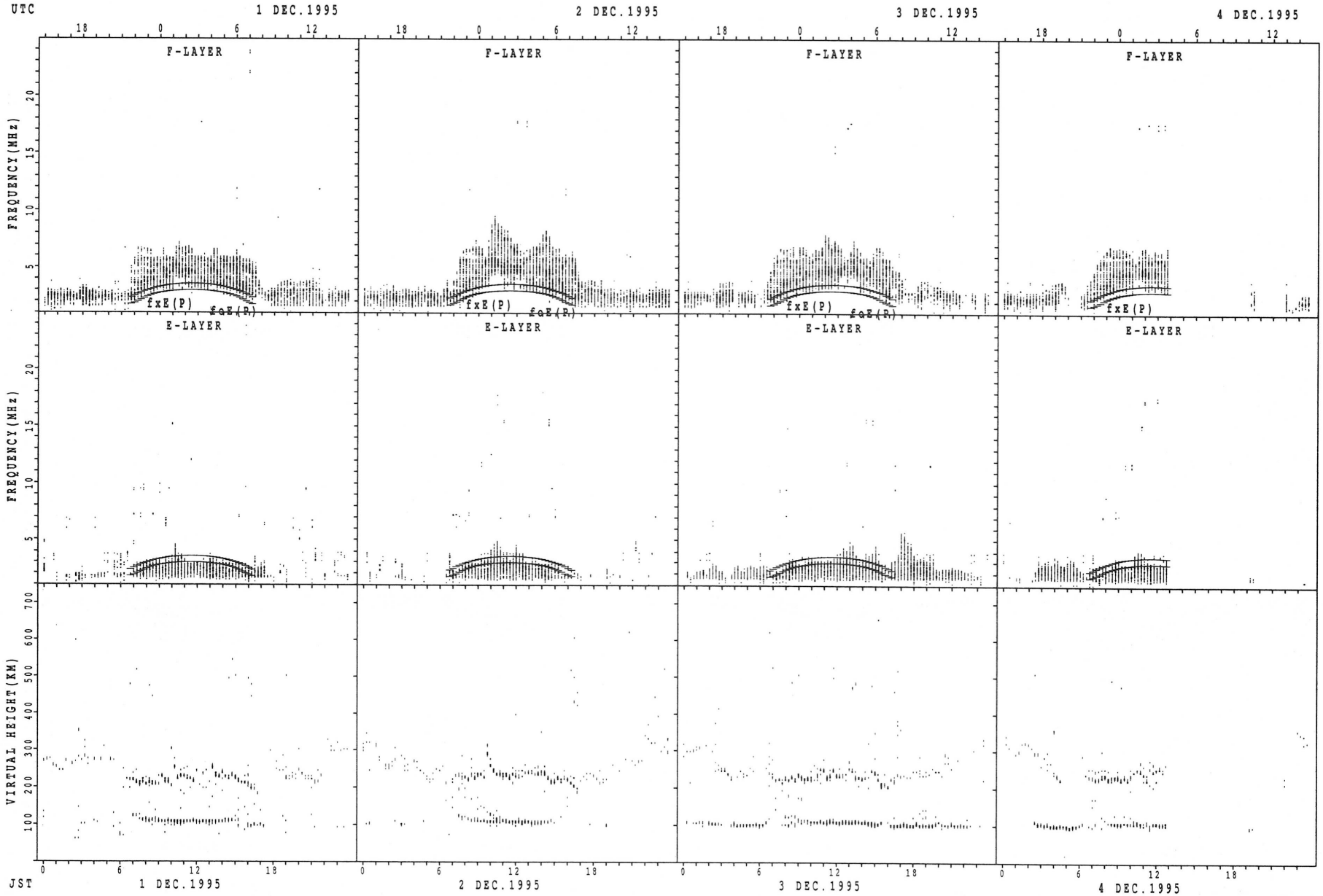
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

SUMMARY PLOTS AT WAKKANAI

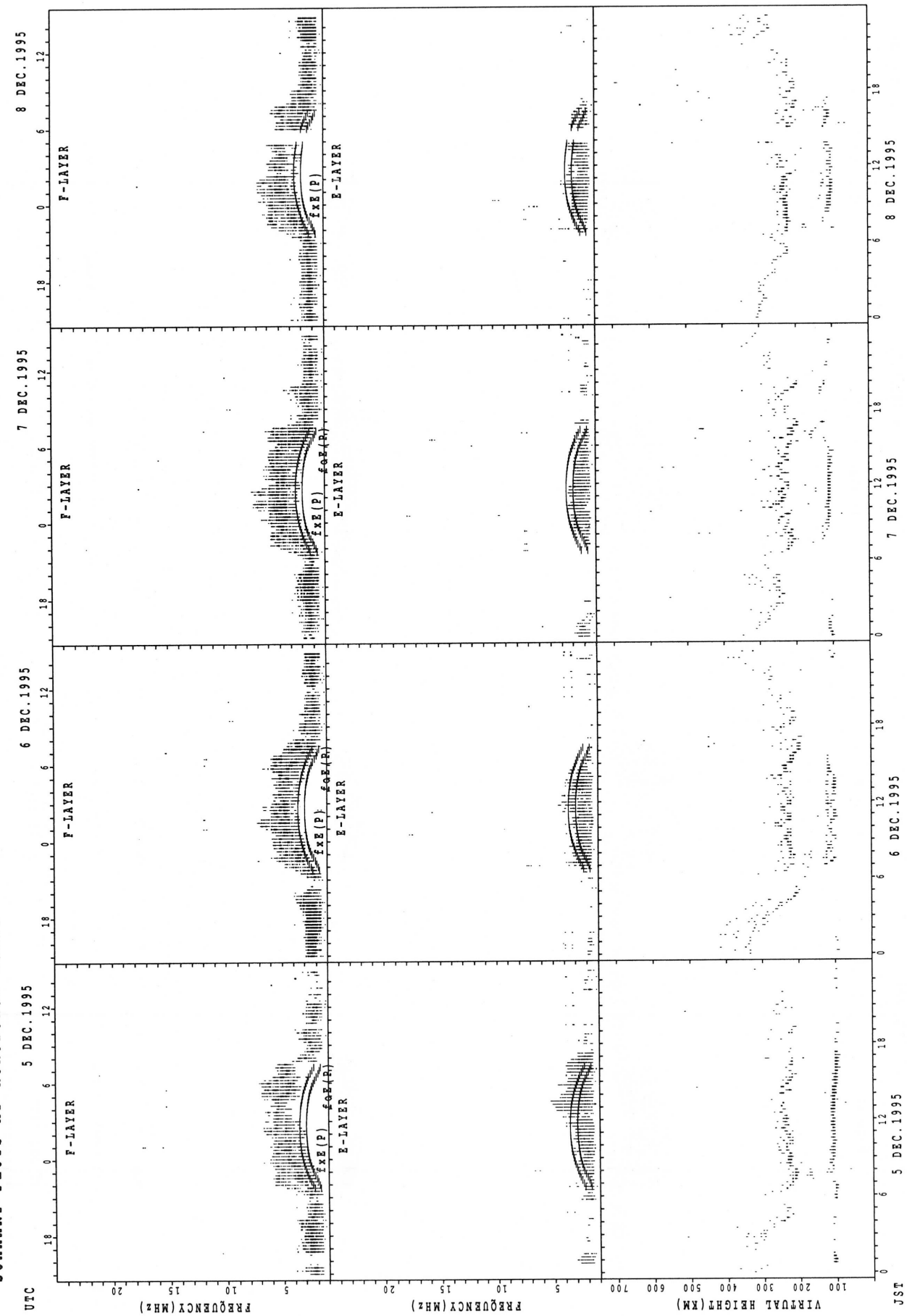


fx3(P); PREDICTED VALUE FOR fxE
fo3(P); PREDICTED VALUE FOR foE

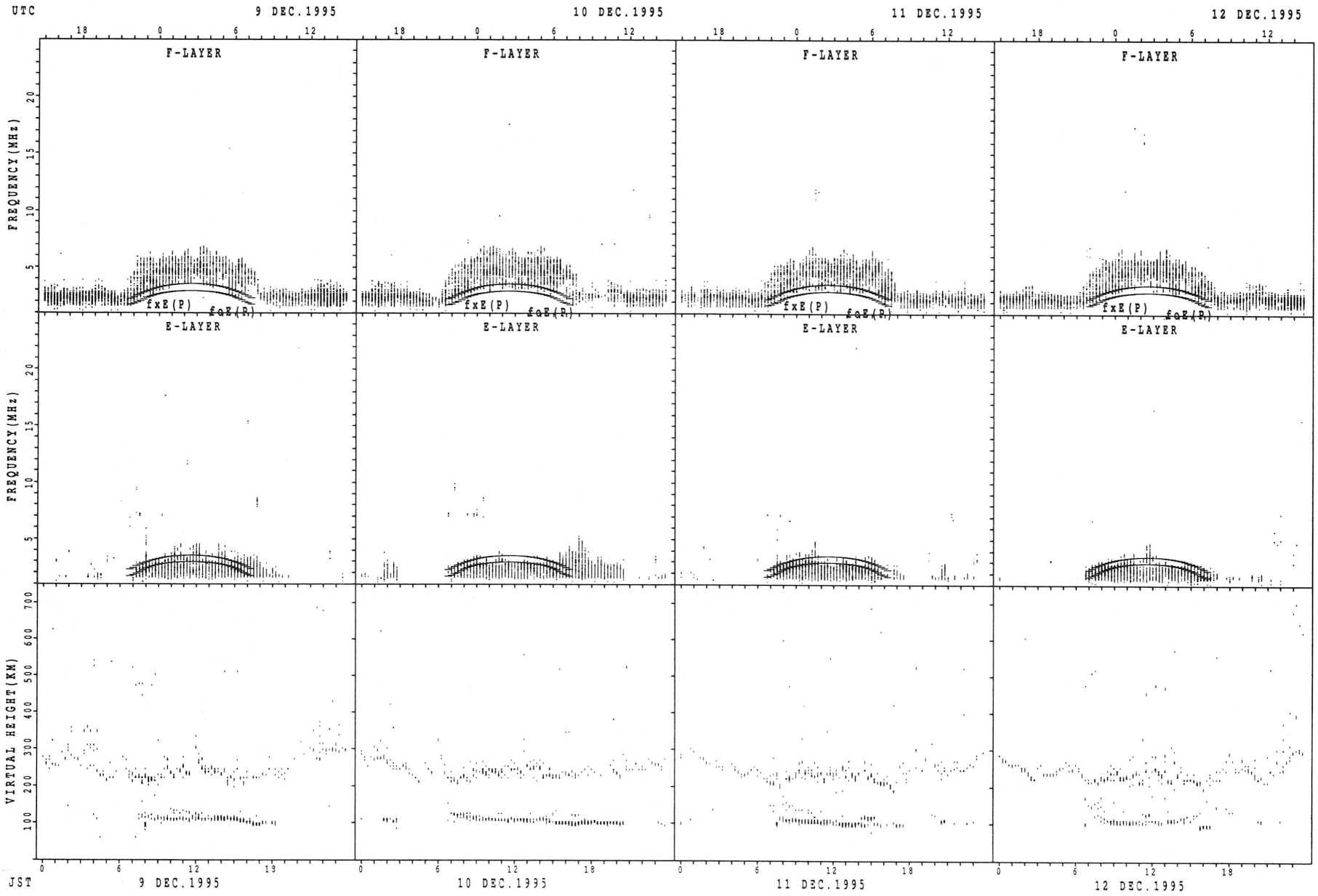
SUMMARY PLOTS AT KOKUBUNJI TOKYO



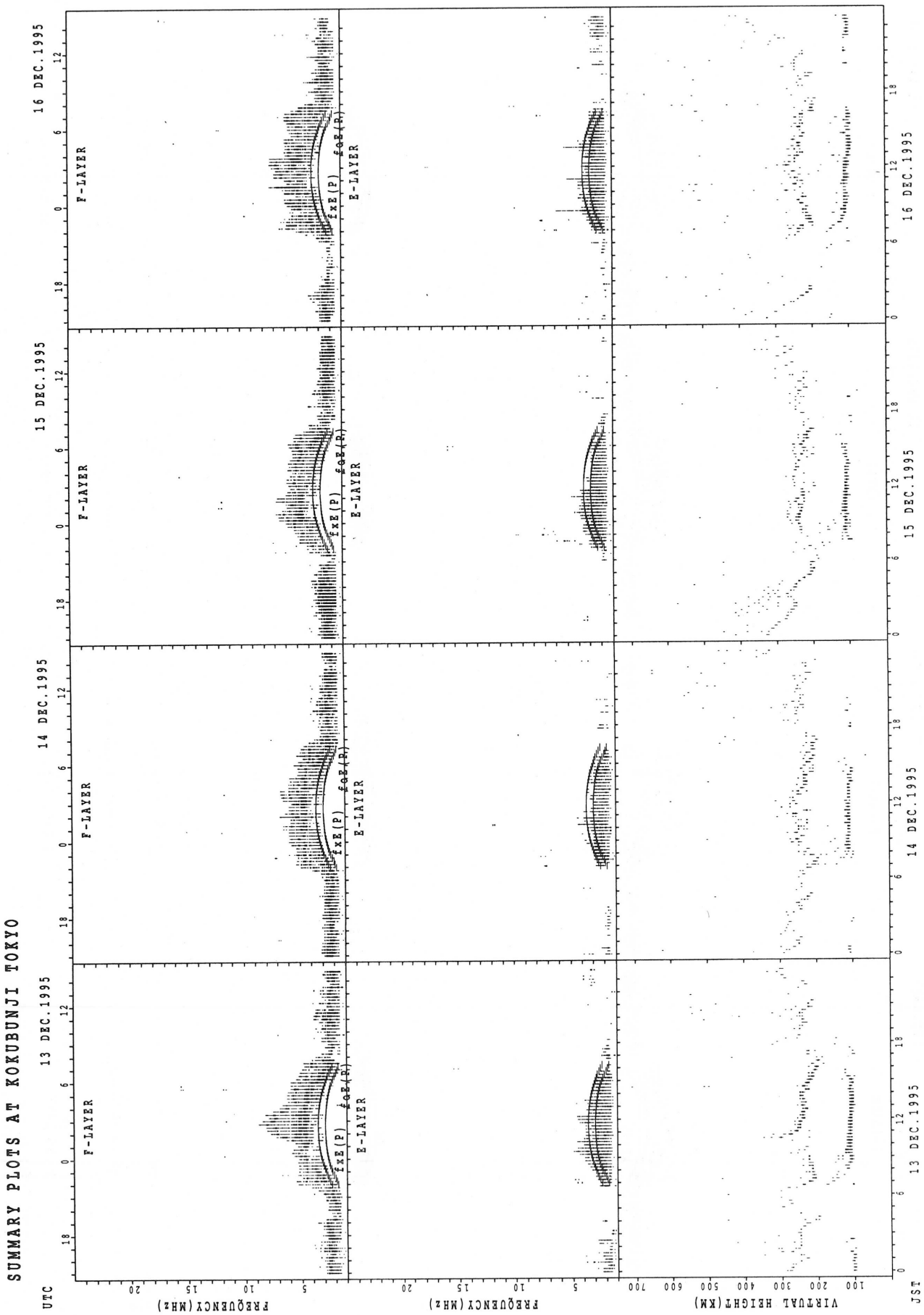
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

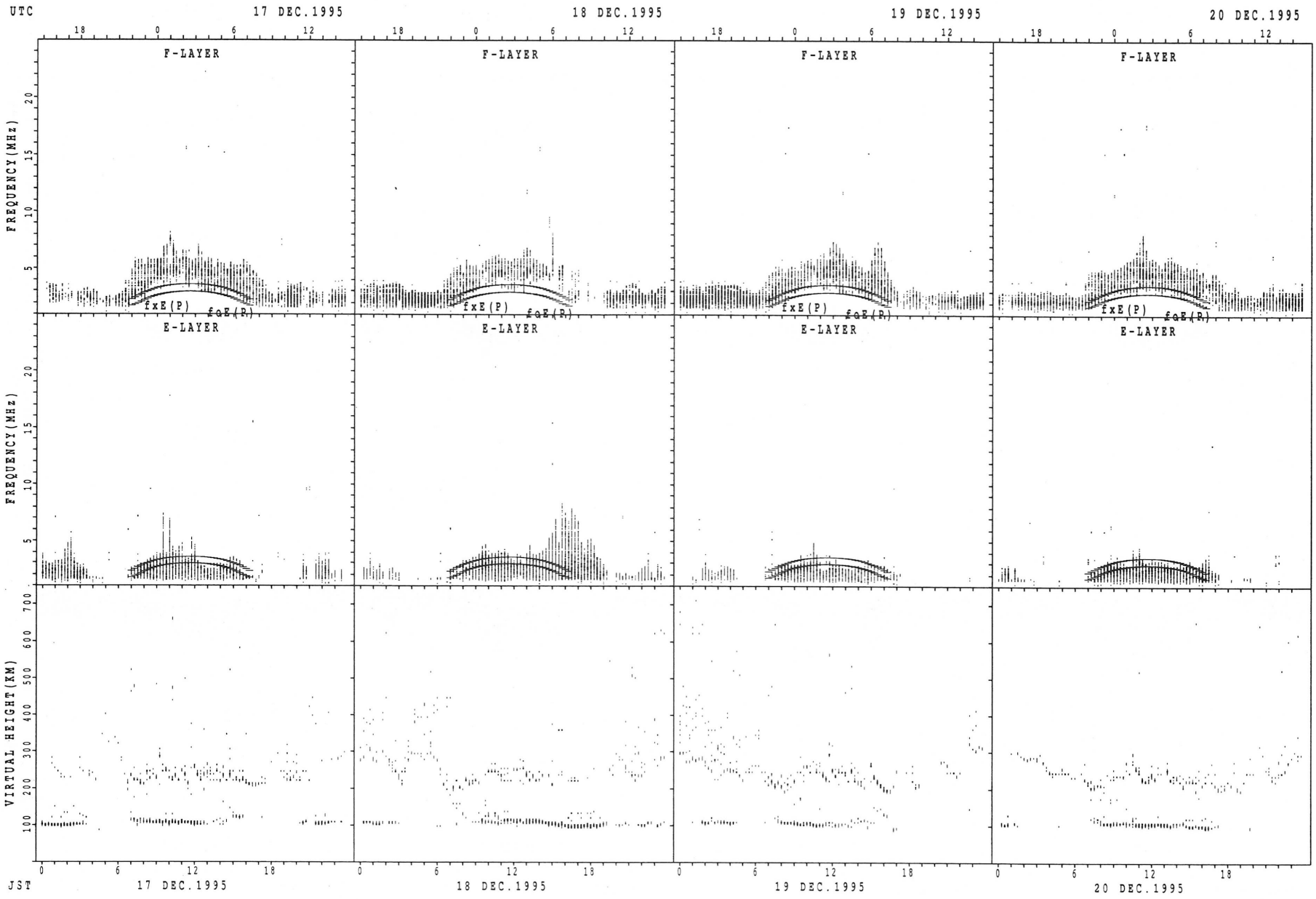
SUMMARY PLOTS AT KOKUBUNJI TOKYO



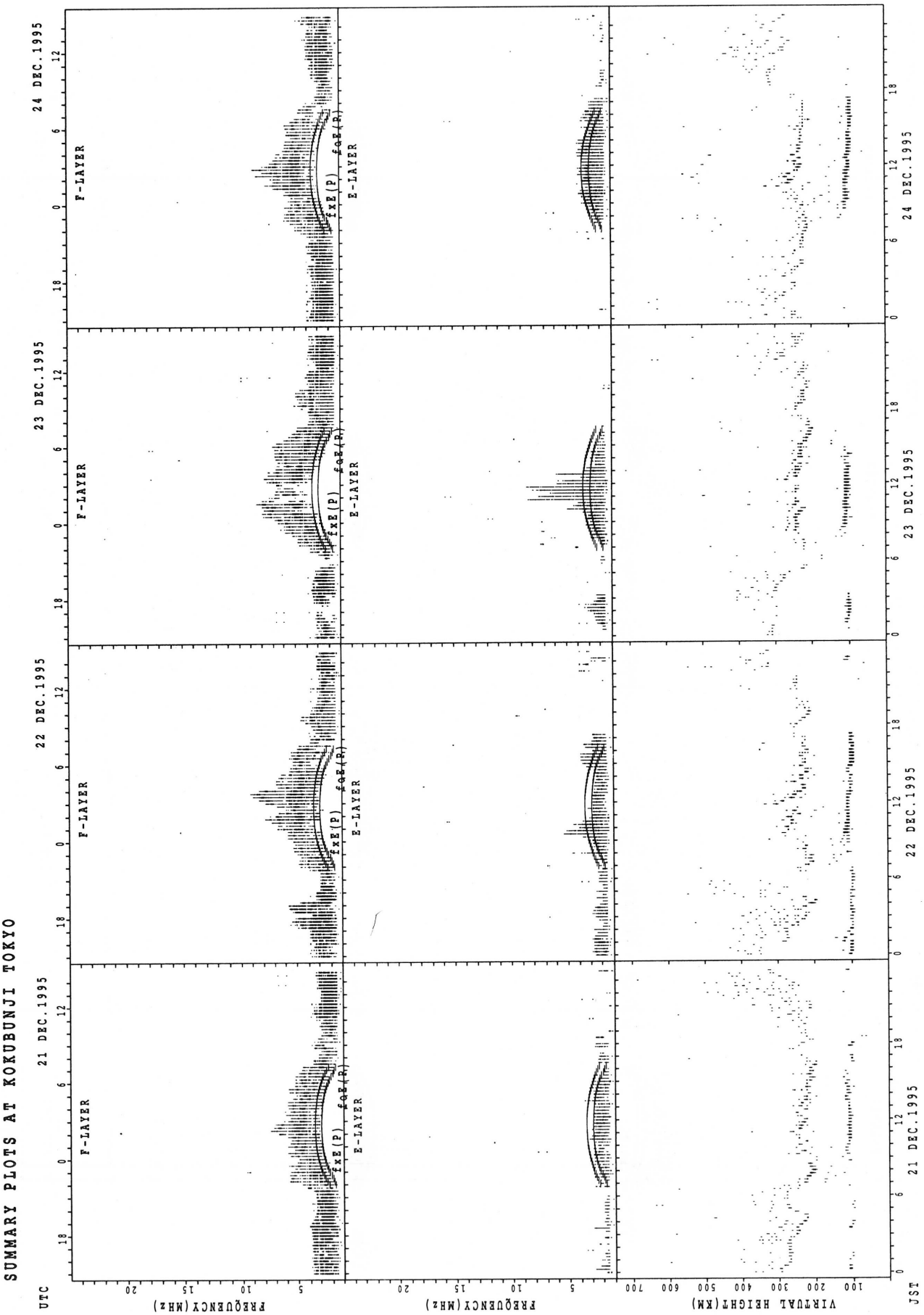
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

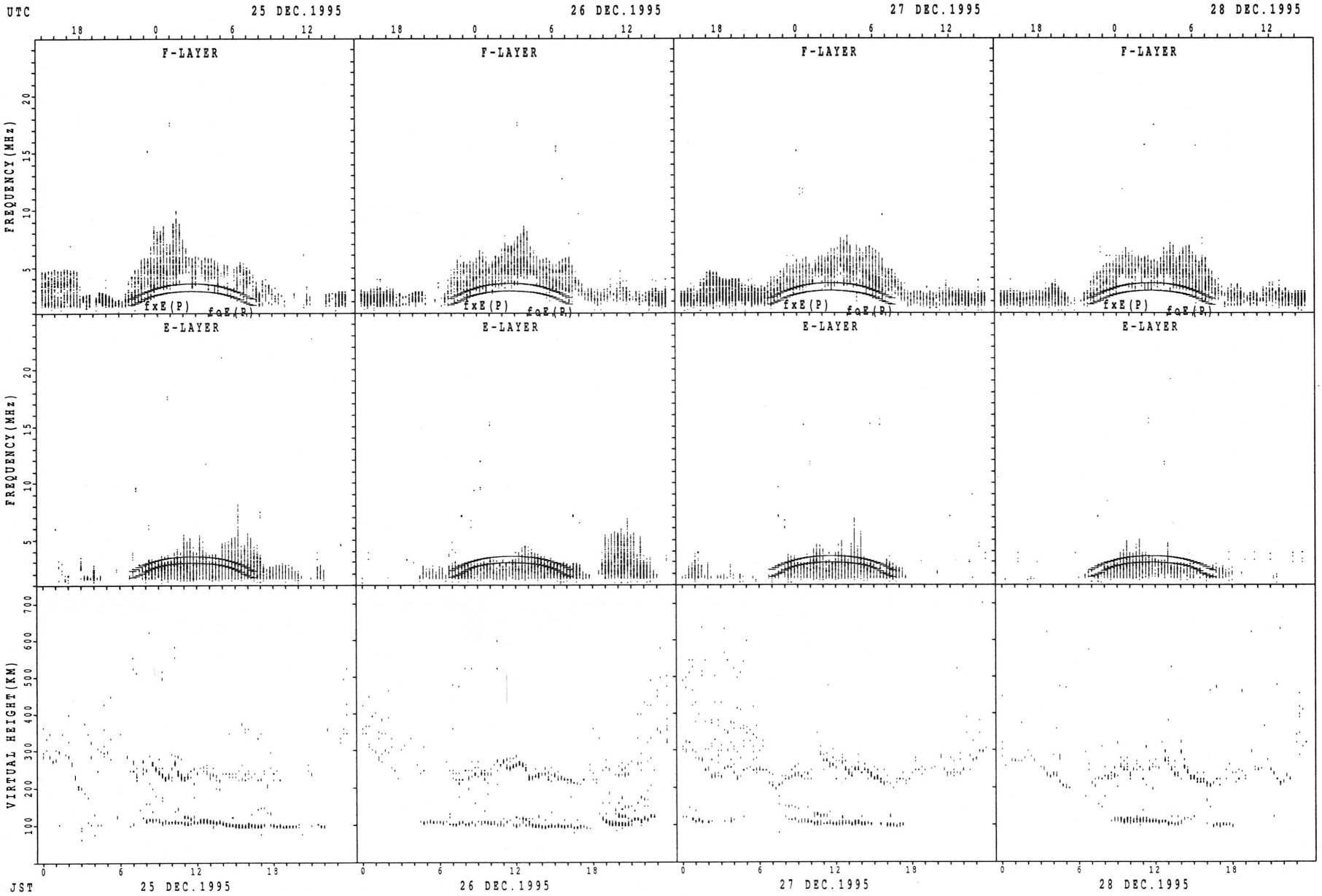
SUMMARY PLOTS AT KOKUBUNJI TOKYO



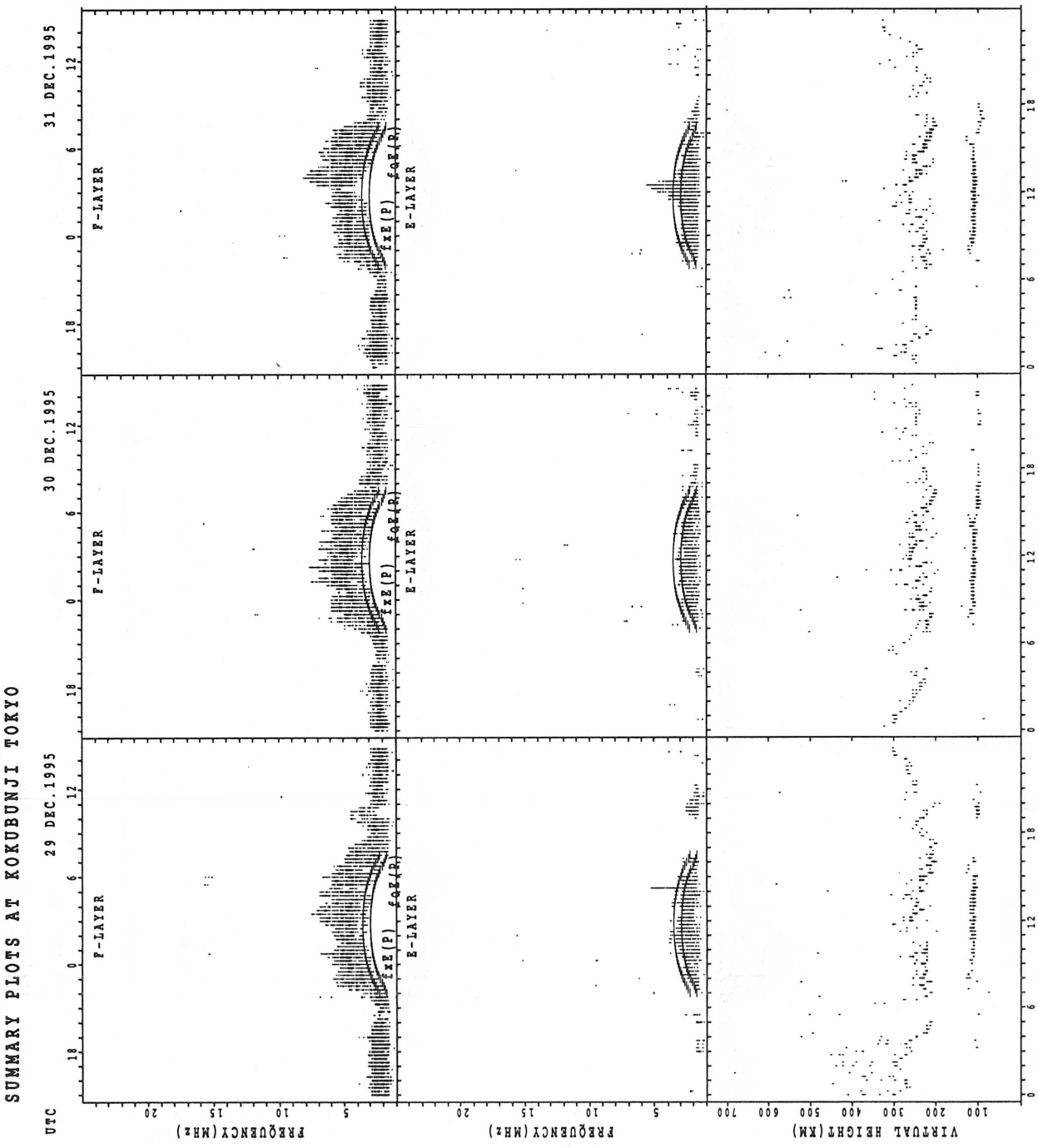
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

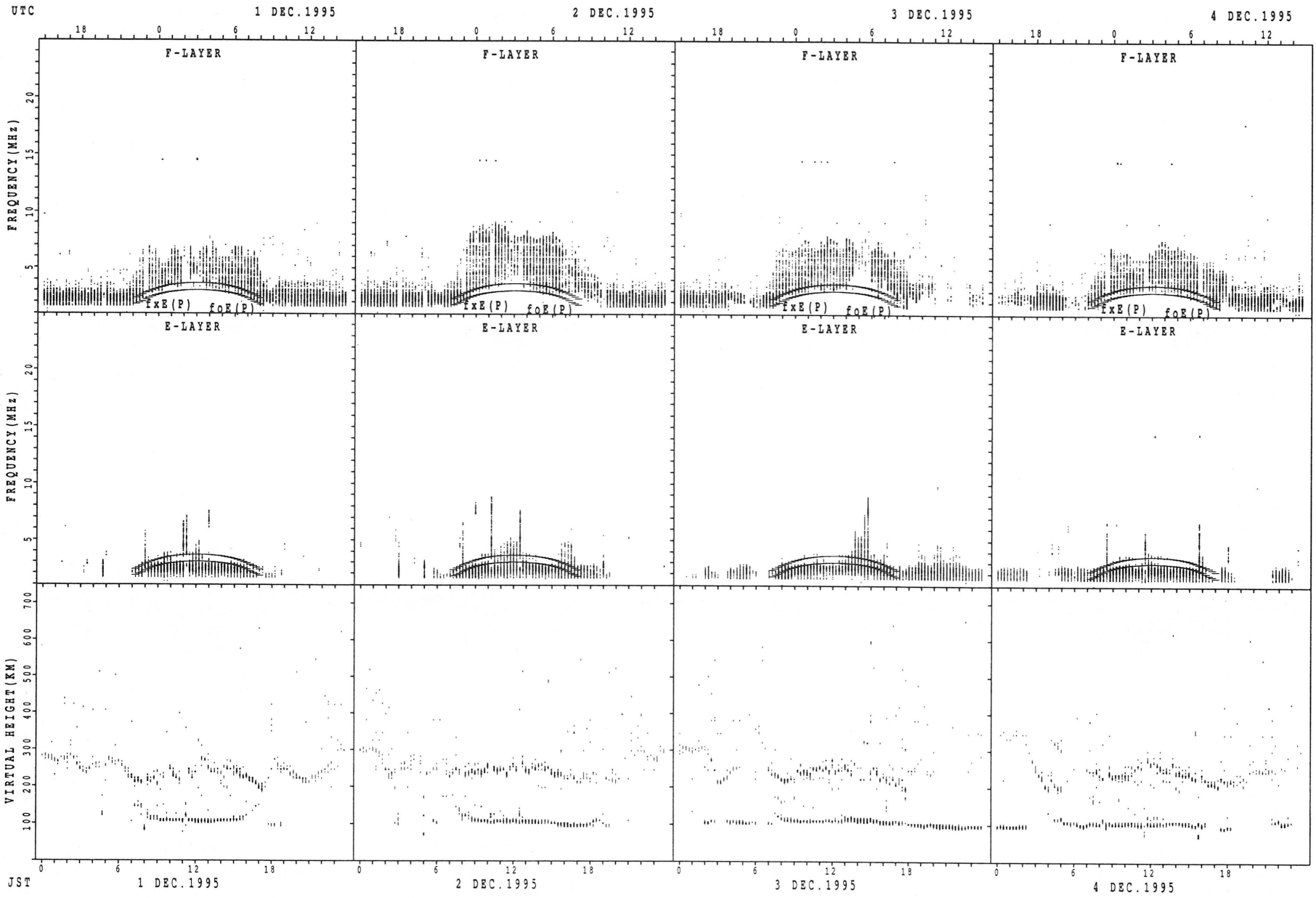
SUMMARY PLOTS AT KOKUBUNJI TOKYO



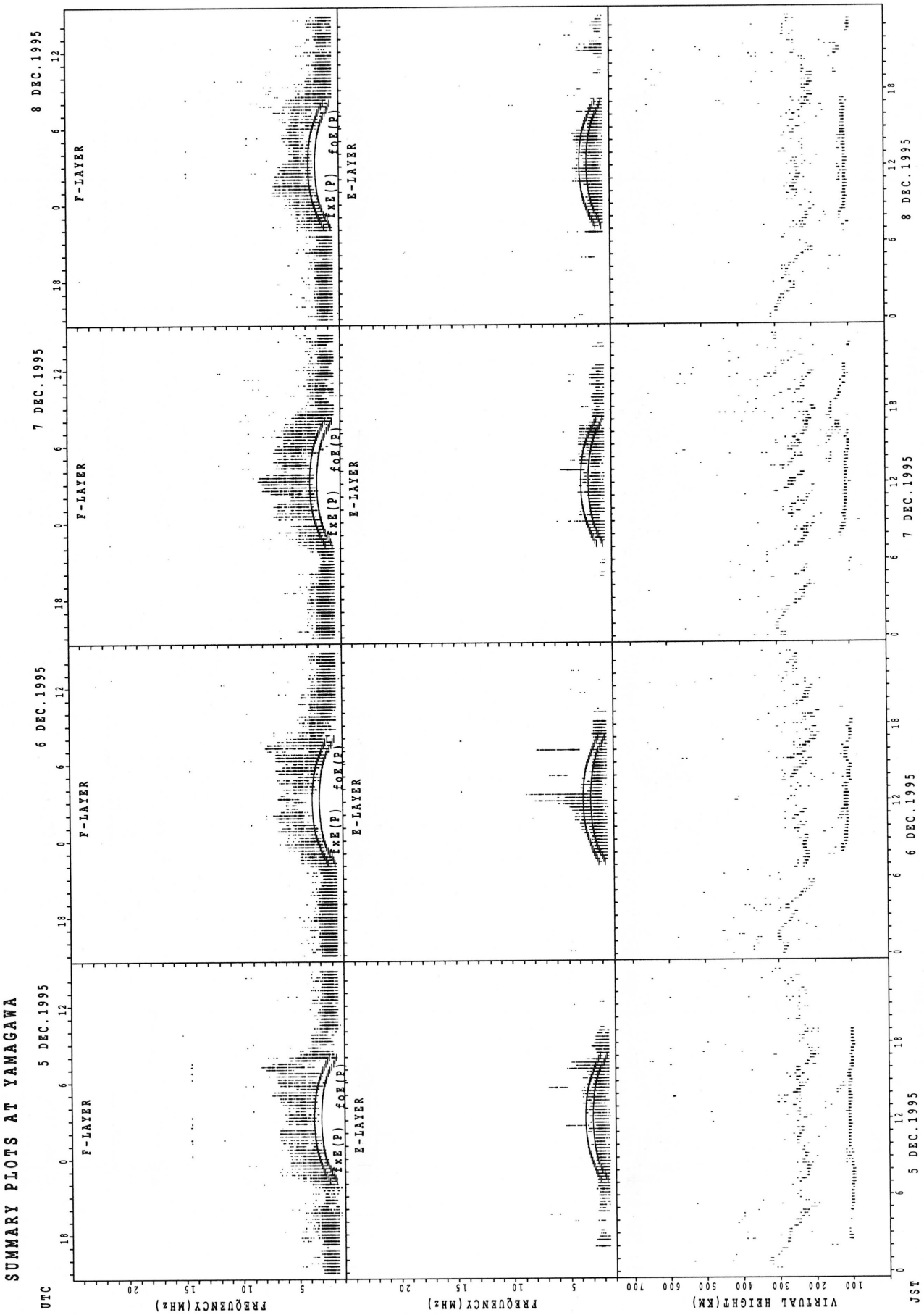
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
29 DEC.1995
30 DEC.1995
31 DEC.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

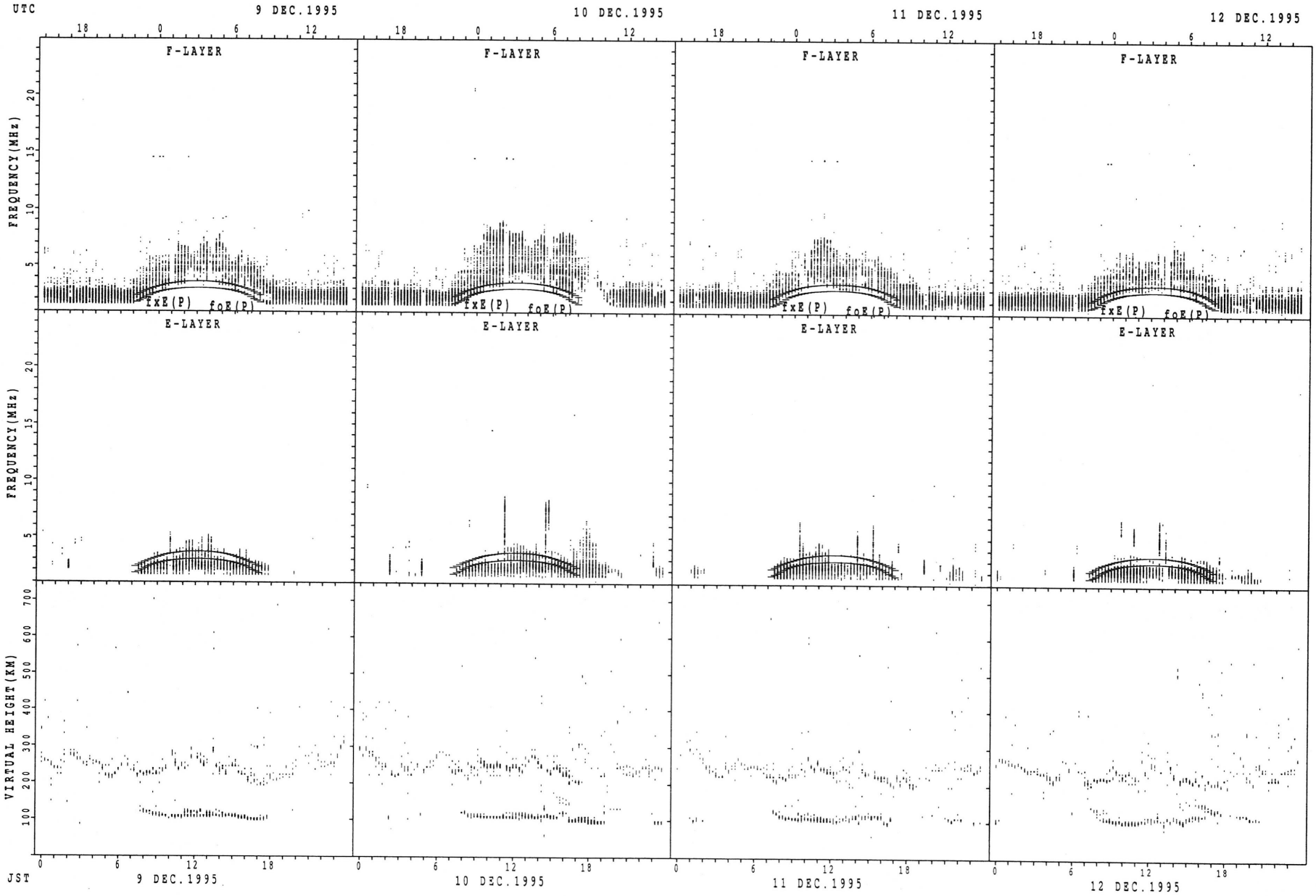
SUMMARY PLOTS AT YAMAGAWA



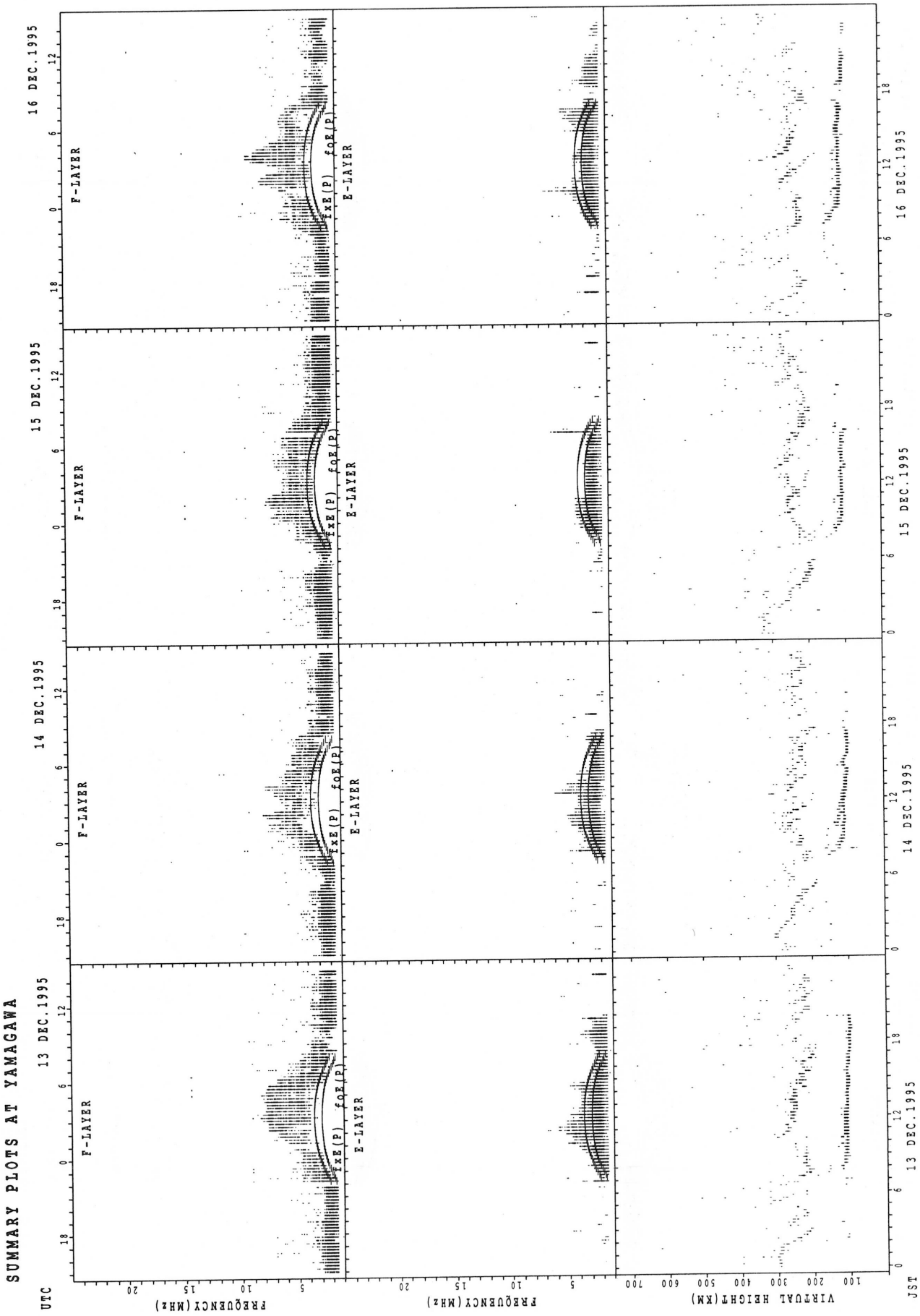
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
5 DEC.1995
6 DEC.1995
7 DEC.1995
8 DEC.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

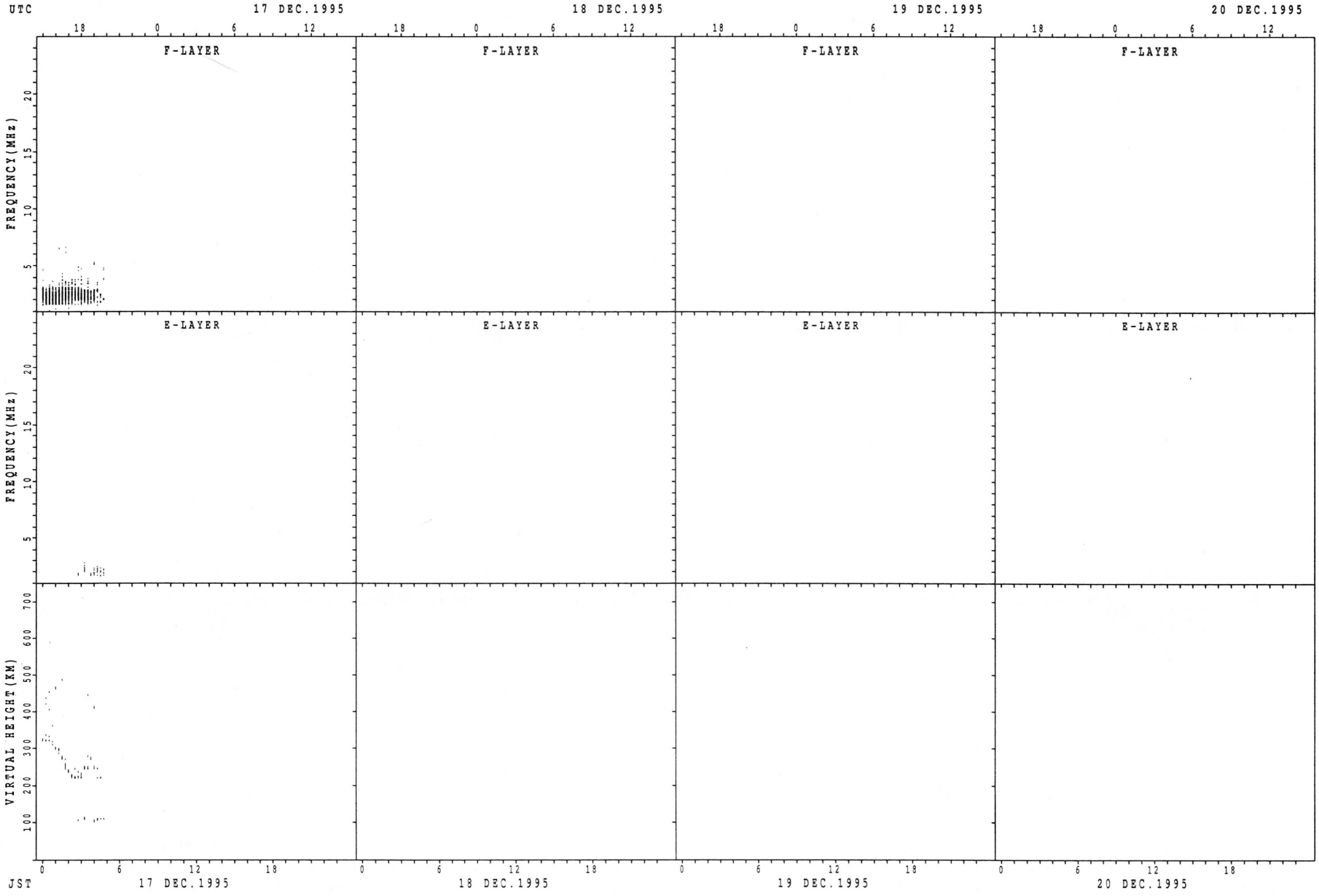
SUMMARY PLOTS AT YAMAGAWA



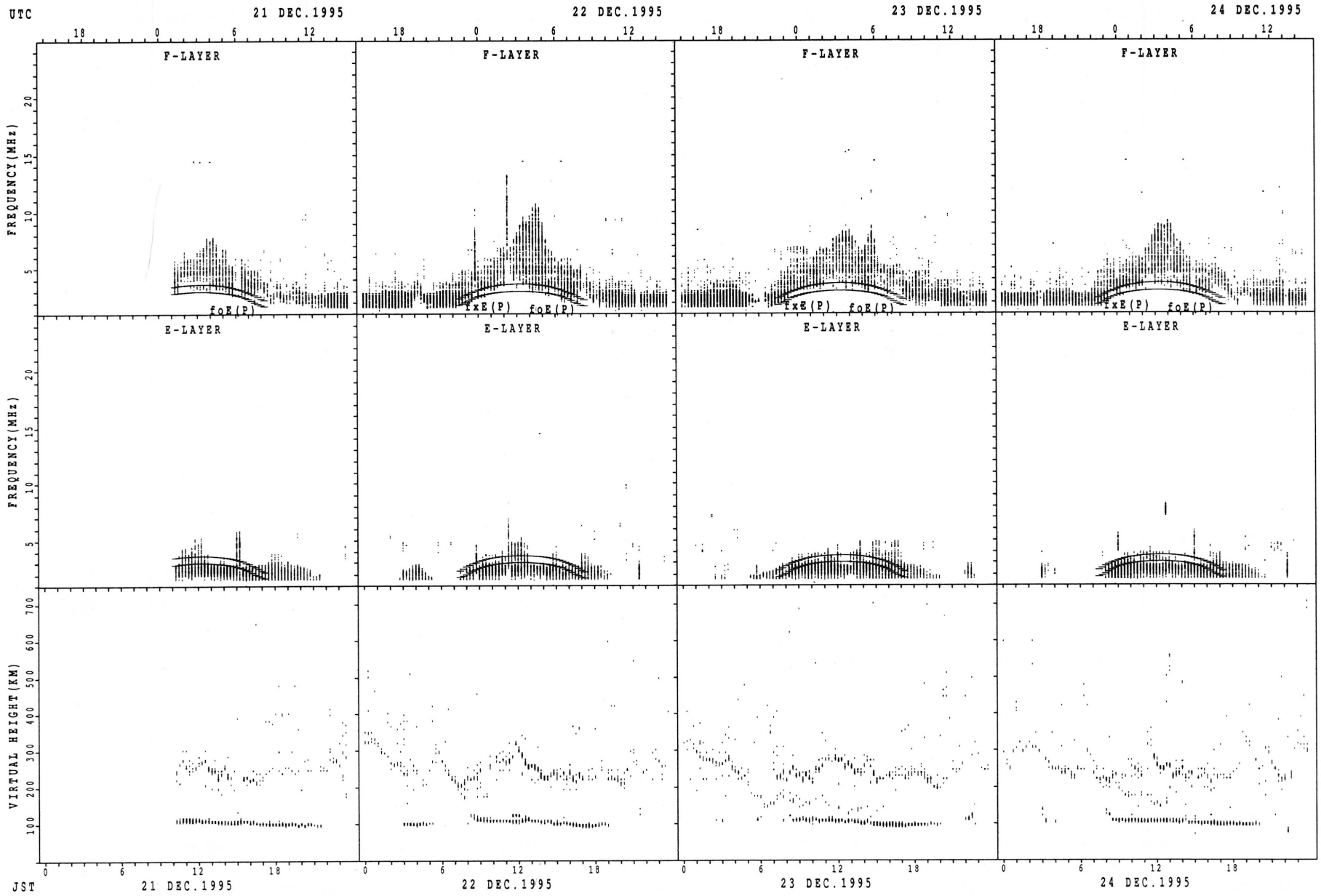
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
13 DEC.1995
14 DEC.1995
15 DEC.1995
16 DEC.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

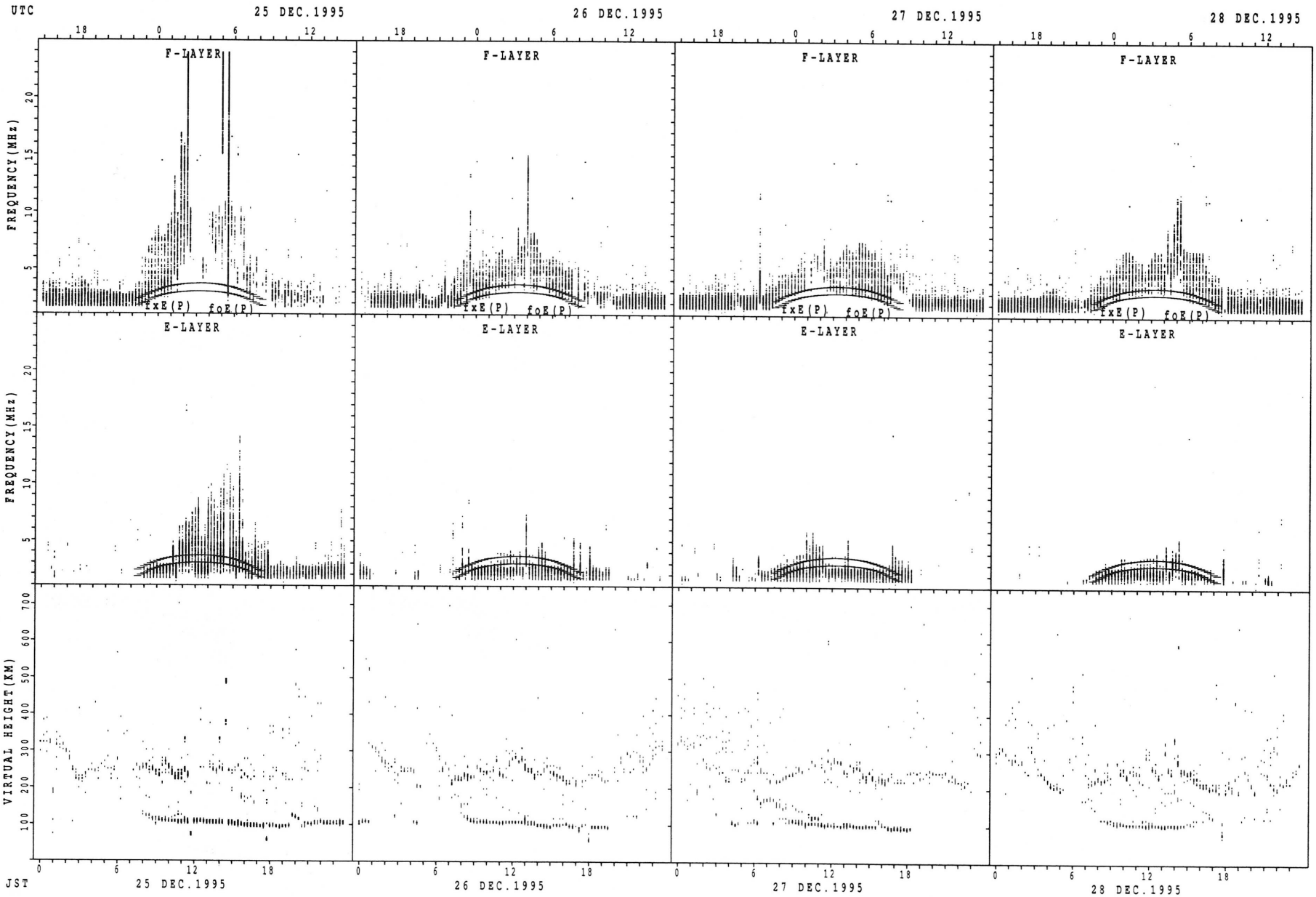


SUMMARY PLOTS AT YAMAGAWA

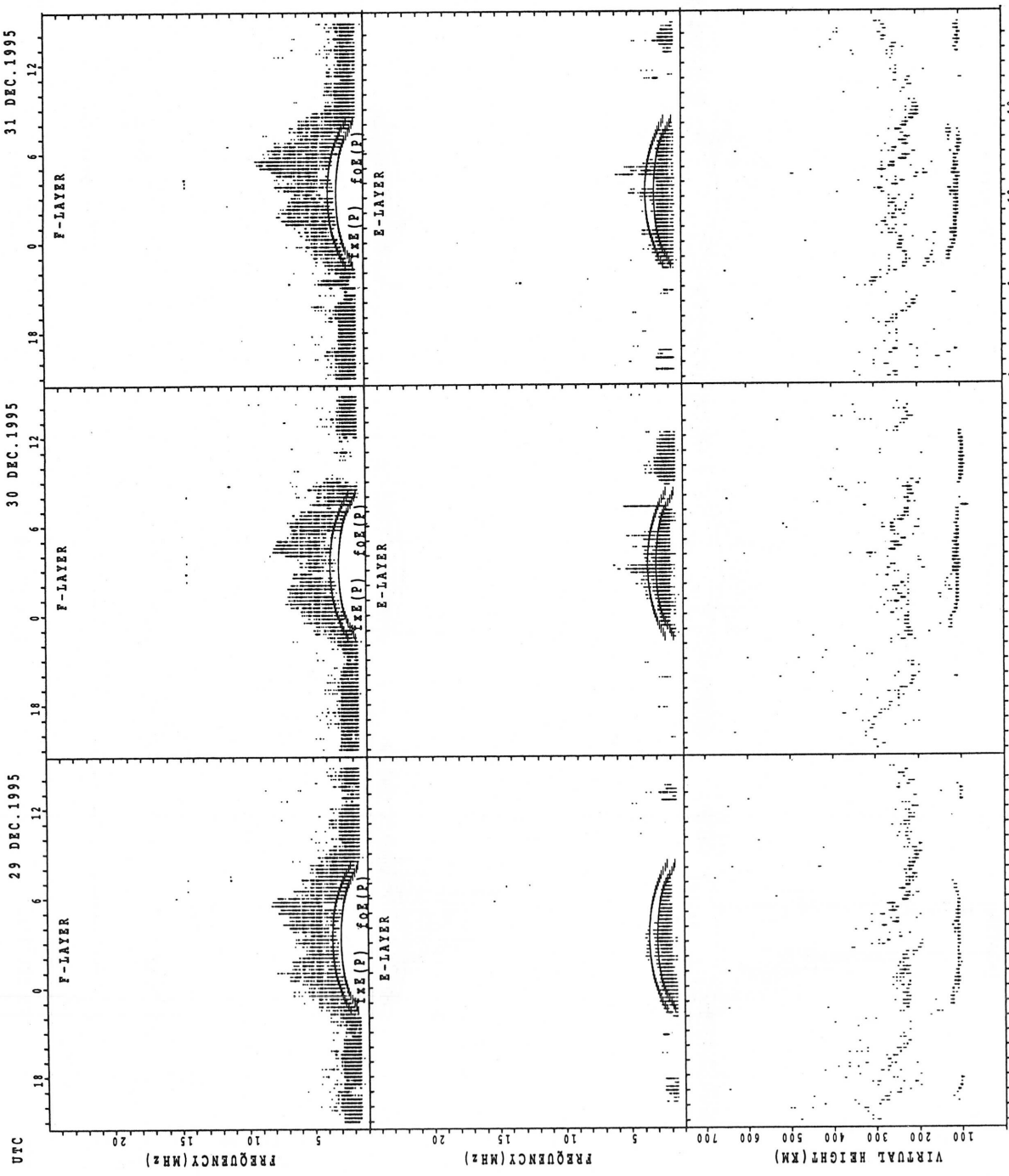


fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE

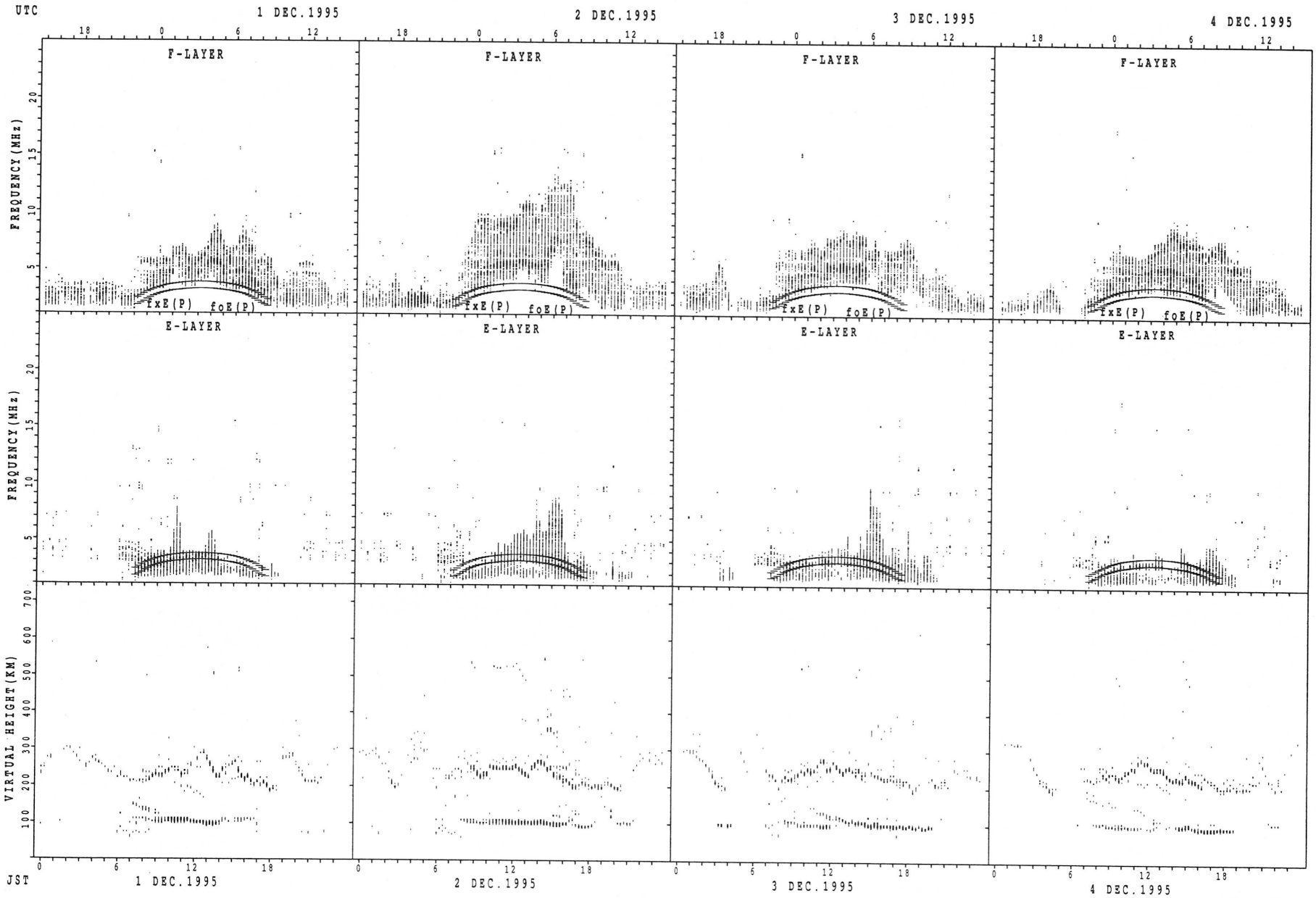
SUMMARY PLOTS AT YAMAGAWA



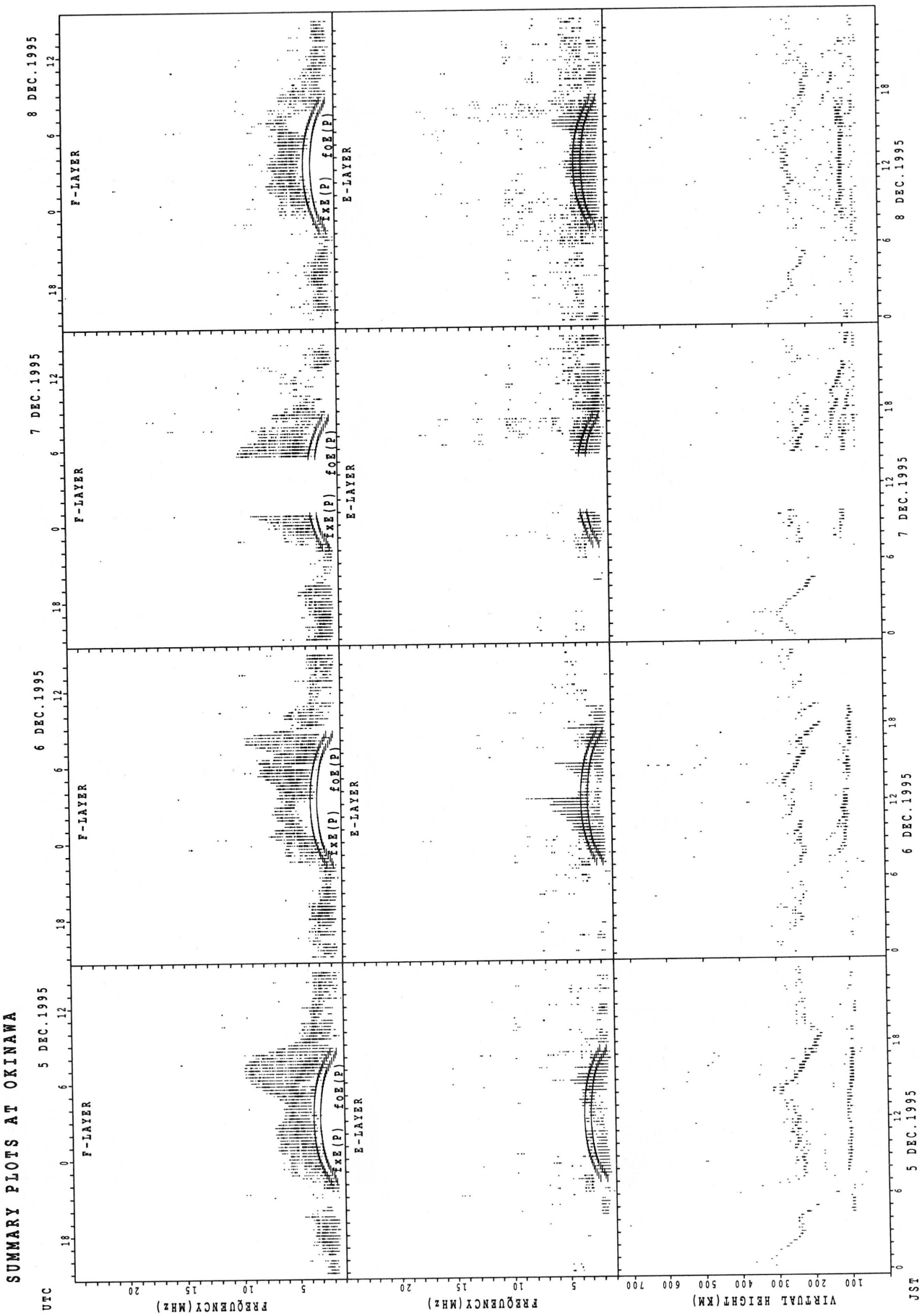
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


SUMMARY PLOTS AT YAMAGAWA
UTC
29 DEC.1995
30 DEC.1995
31 DEC.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

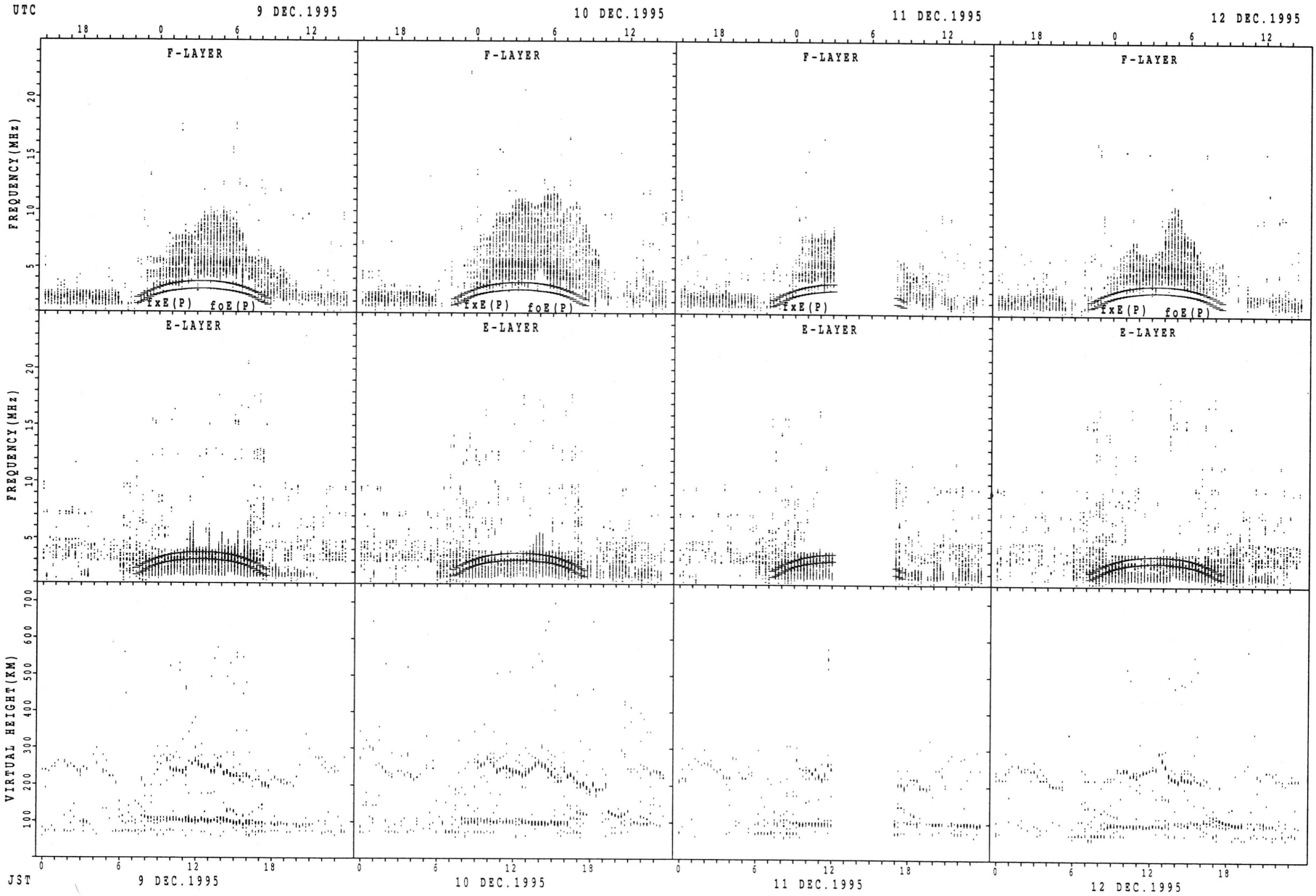
SUMMARY PLOTS AT OKINAWA



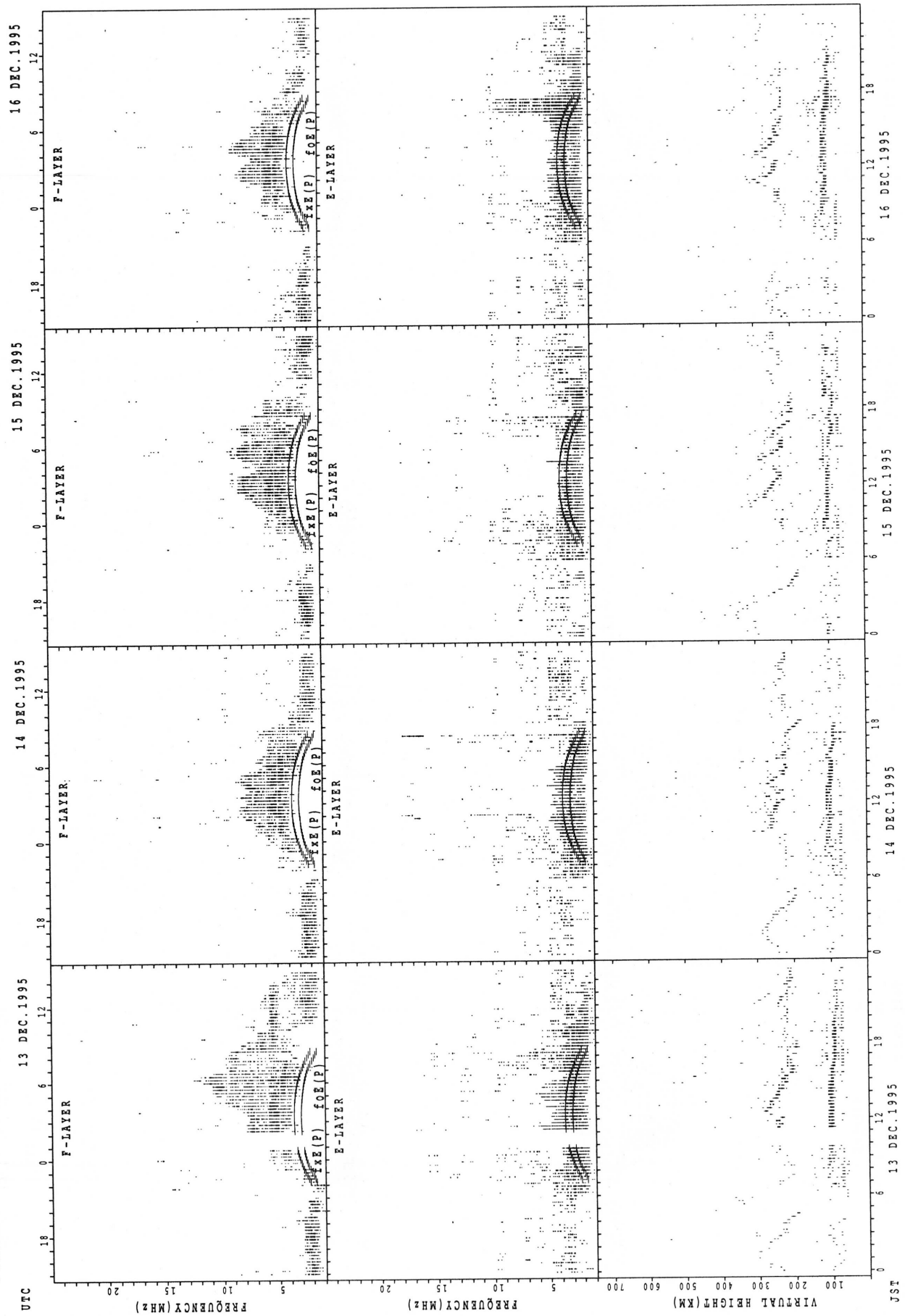
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

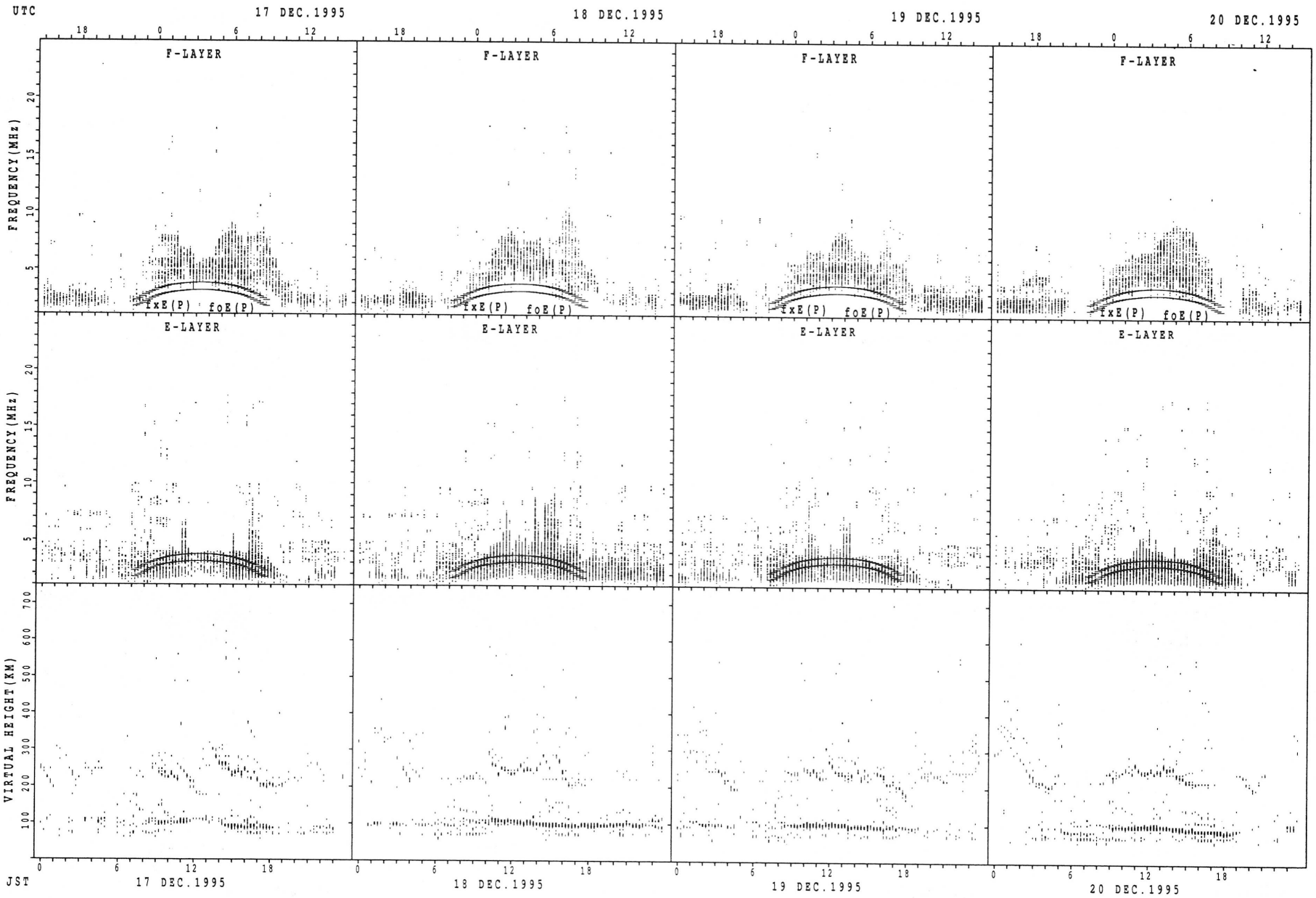
SUMMARY PLOTS AT OKINAWA



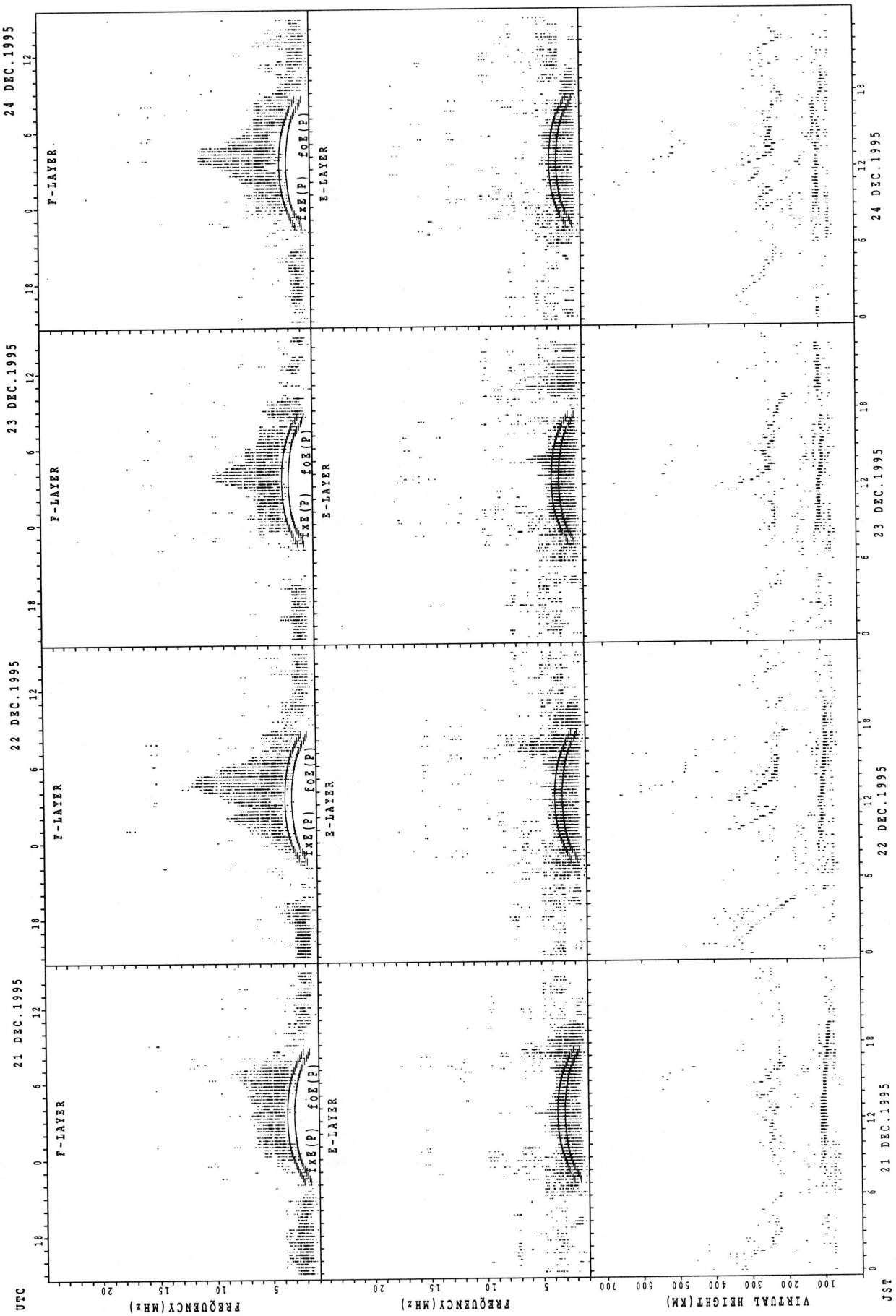
fxE(P); PREDICTED VALUE FOR fxE
foE(P); PREDICTED VALUE FOR foE


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

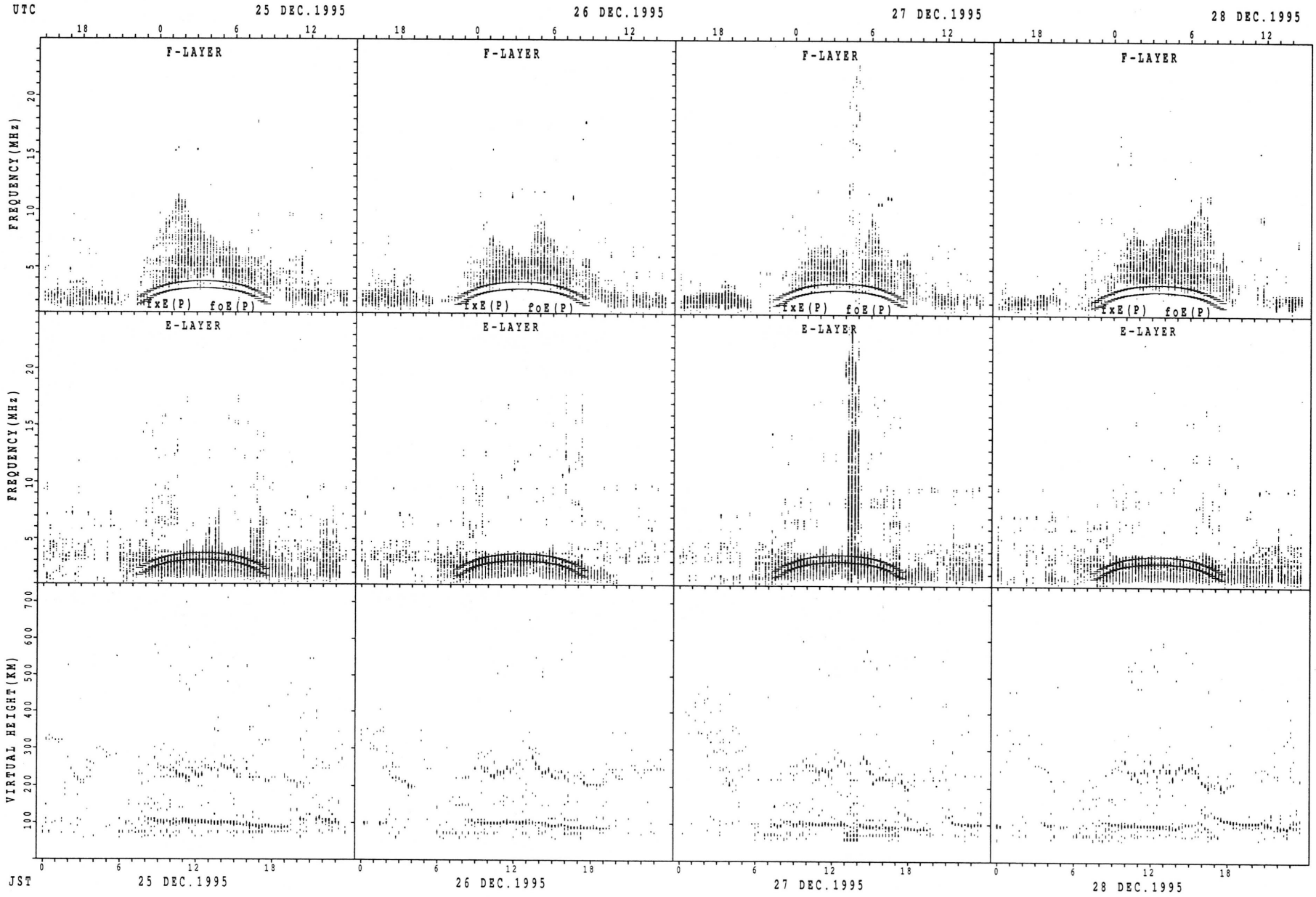
SUMMARY PLOTS AT OKINAWA



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

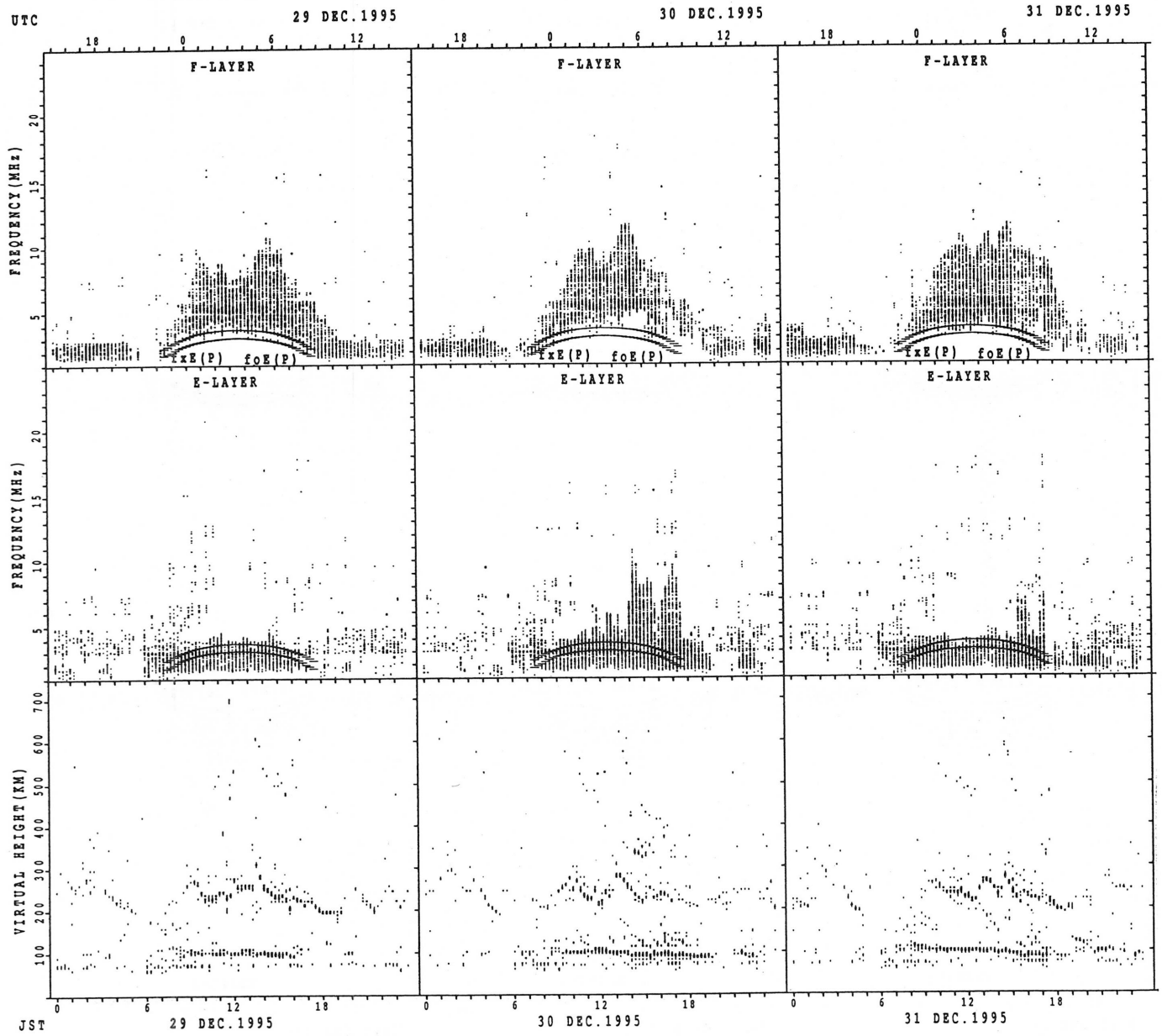

SUMMARY PLOTS AT OKINAWA
21 DEC.1995
22 DEC.1995
23 DEC.1995
24 DEC.1995
F-LAYER
E-LAYER
fxE(P)
foE(P)
FREQUENCY(MHz)
VIRTUAL HEIGHT(KM)
UTC
JST
fxE(P) ; PREDICTED VALUE FOR fxE
foE(P) ; PREDICTED VALUE FOR foE

SUMMARY PLOTS AT OKINAWA



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

SUMMARY PLOTS AT OKINAWA



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

MONTHLY MEDIANS OF h'F AND h'Es

DEC. 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											14	15	13											
MED											249	246	256											
U Q											258	258	282											
L Q											238	230	237											

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								13	25	31	31	31	28	31	30	17	17	13	12	10	10			10
MED								123	137	129	121	119	113	115	121	111	107	107	113	111	115			114
U Q								153	151	155	131	131	119	125	137	127	110	115	115	113	121			119
L Q								112	119	119	115	113	111	109	107	102	101	106	105	103	111			113

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											14	15	13	14		10								
MED											258	248	258	251		242								
U Q											272	258	276	266		260								
L Q											248	240	244	242		240								

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						16	30	31	31	29	30	29	28	26	21	18						
MED		108						149	116	119	115	113	111	107	108	113	103	99						
U Q		111						161	149	149	125	124	113	113	113	121	112	105						
L Q		107						122	113	113	111	111	107	107	107	105	98	97						

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											12	22	14	20	22	15								
MED											253	256	273	257	254	262								
U Q											263	268	290	264	264	274								
L Q											246	246	260	254	244	240								

h'Es

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									22	25	24	26	27	26	25	26	26	19	16	14	10			
MED									131	117	124	117	113	113	113	112	113	105	103	101	103			
U Q									161	134	140	121	119	119	125	115	147	141	104	103	119			
L Q									109	113	113	113	111	111	109	105	103	99	99	97	97			

MONTHLY MEDIANS OF h'F AND h'Es

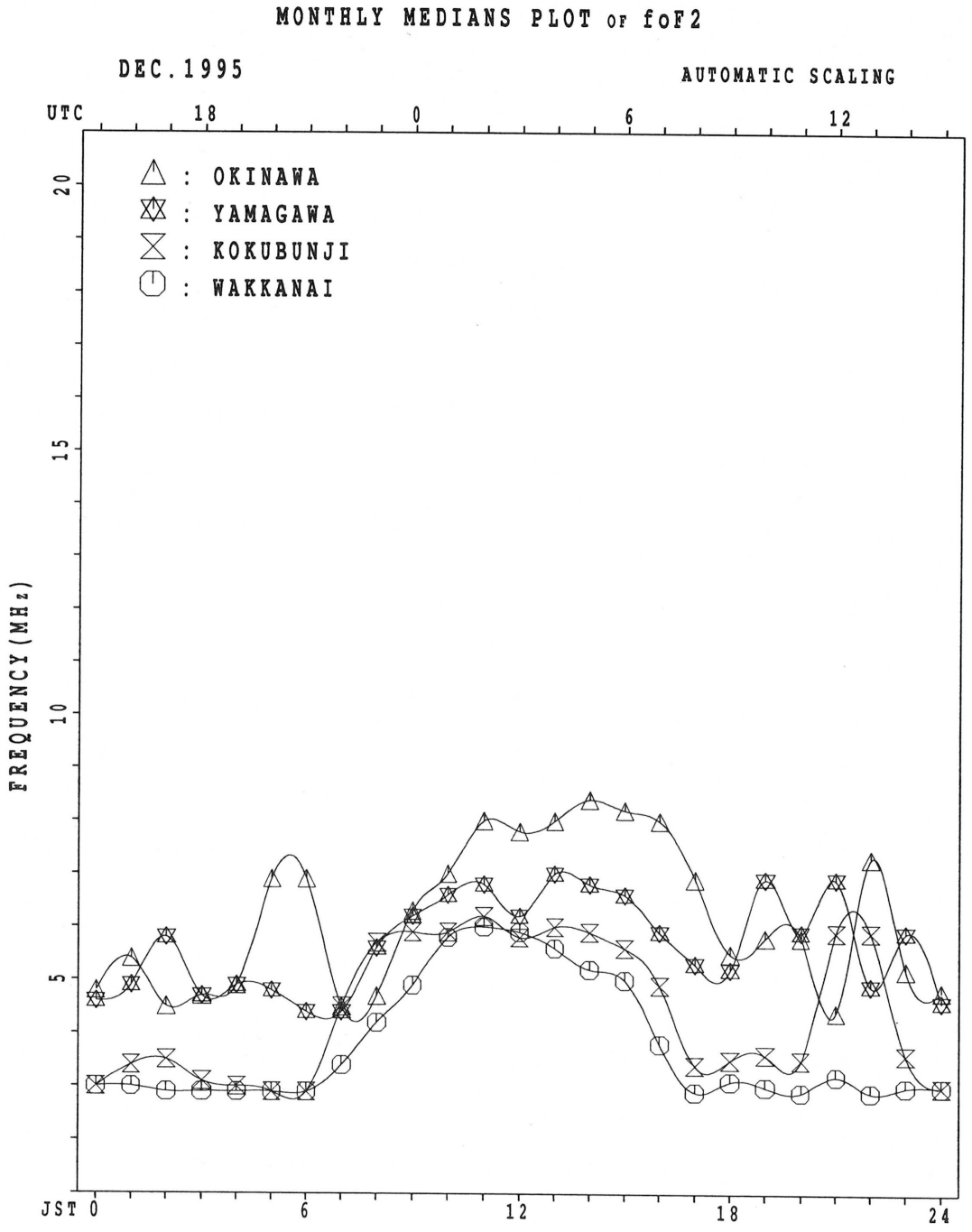
DEC.1995 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

h'F STATION OKINAWA LAT. 26.3N LON. 127.8E

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT											19	24	27	23	26	24	19							
MED											254	244	252	258	251	242	238							
U Q											266	256	286	270	262	256	250							
L Q											240	236	238	246	232	230	224							

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									27	28	23	29	29	26	27	27	27	27	27	19	13	13	11	
MED									119	106	105	111	105	106	105	97	97	95	95	95	95	103	89	
U Q									137	134	115	119	107	111	125	103	111	109	107	105	107	107	95	
L Q									111	95	97	105	99	101	99	95	89	83	89	89	88	98	89	


MONTHLY MEDIANS PLOT OF foF2
DEC.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

DEC. 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 34	X 35	X 34	X 34	X 32	X 33	X 34											X 32	X 35	X 41	X 40	X 40	X 30	X 33
2	X 34	X 35	X 38	X 35	X 35	X 37	X 26											X 45	X 43	X 34	X 32	X 34	X 32	X 35
3	X 37	X 37	O X 35	X 38	X 37	X 33	X 31											X 46	X 37	X 41	X 36	X 34	X 30	X 32
4	X 33	X 34	X 34	X 35	X O 40	X 34	X 29							C	C	C	C	C	C	C	C	C	X 32	X 30
5	X O 33	X 36	X 35	X 36	X 38	X 33	X 32											X 40	X 34	X 39	X 33	X 32	X 30	X 28
6	X 30	33	32	33	X 35	X 34	X 24											X 41	X 40	X 36	X 30	X 27	X 32	X 30
7	32	X 32	X 34	X 36	38	35	X 29											X 36	X 33	X 43	X 33	X 31	X 32	X 32
8	X 32	X 33	X 33	X 32	X 33	X 34	X 30								C			X 45	X 40	X 33	X 33	X 30	X 32	35
9	X 35	X 33	34	X 34	X 34	X 32	X 28											X 36	X 34	X 34	X 31	X 34	37	37
10	X 37	X 38	X 38	X 35	X 36	X 30	X 27											A	X 37	X 34	X 40	X 35	X 34	X 36
11	X 35	X 37	X 37	X 36	X 34	X 33	X 32											X 34	X 30	X 31	X 34	X 34	X 34	X 33
12	X 34	X 34	X 37	X 33	X 32	X 30	X 30											X 36	X 32	X 36	X 41	X 34	X 35	35
13	X 36	X 36	X 36	X 34	X 37	X 28	X 30											X 38	X 33	X 40	X 38	X 36	X 34	X 31
14	34	X 33	X 31	X 33	X 35	X 31	X 29											X 39	X 33	37	X 37	X 36	X 38	X 28
15	31	35	37	36	X 35	X 35	X 27											X 34	X 31	X 35	X 33	X 31	30	X 30
16	X 29	X 34	X 40	X 25	X 24	X 25	X 27											X 45	X 38	X 40	X 35	X 35	X 34	X 32
17	O X 33	X 38	A	X 32	X 31	X 26	X 28											X 43	X 32	X 34	38	X 30	X 32	X 35
18	X 36	37	38	39	32	32	X 31											A	O X 34	X 30	32	X 37	33	34
19	36	34	35	36	37	34	31											X 35	X 36	X 30	X 30	X 33	X 30	X 31
20	X 32	X 32	X 33	X 31	X 33	X 31	X 27											X 49	X 34	X 29	X 31	X 36	X 36	X 33
21	40	X 39	X 38	40	42	37	36											X 36	X 42	X 30	X 33	36	34	34
22	35	37	47	53	60	35	X 30											X 40	X 42	X 42	X 34	X 37	X 32	35
23	35	X 34	X 34	36	37	35	X 21											X 40	X 49	X 48	X 42	41	37	40
24	41	36	38	36	40	37	40											X 37	X 31	X 36	X 37	40	43	42
25	X 46	X 49	X 51	X 36	X 28	X O 29	O X 29											X 40	X 36	X 28	O X 28	X 30	X 27	X 30
26	28	X 31	34	X 28	X 28	X 26	X 25											X 45	X 36	X 34	A	A	29	33
27	33	32	48	45	41	36	35											X 42	X 31	X 30	X 32	X 34	X 32	X 28
28	31	X 31	X 31	X 32	36	X 28	X 24											X 37	X 39	X 30	X 31	X 39	X 32	29
29	32	33	33	33	35	X 29	X 24											X 49	X 34	X 46	X 32	X 33	X 33	X 32
30	X 31	X 32	X 34	X 33	X 31	X 27	X 28											X 41	X 34	X 33	X 32	X 35	X 36	X 33
31	X 34	35	X 36	X 30	X 30	X 27	X 26											X 38	X 34	X 37	X 34	X 34	X 34	X 32
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31											28	30	30	29	29	31	31
MED	X 34	X 34	X 35	X 35	X 35	X 33	X 29											X 40	X 34	X 34	X 33	X 34	X 32	X 33
U Q	X 36	X 37	X 38	36	37	35	X 31											X 44	X 38	X 40	X 37	X 36	X 34	35
L Q	32	X 33	34	X 33	X 32	X 29	X 27											X 36	X 33	X 31	X 32	X 32	X 32	X 30

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

IONOSPHERIC DATA STATION Kokubunji

DEC.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	28	29	28	28	26	27	28	56	61	54	58	66	59	58	58	60	52	26	29	35	34	34	S 24	27
2	28	29	32	29	29	31	20	40	64	67	86	79	67	63	R 76	63	61	39	37	28	26	28	26	29
3	31	31	29	32	31	27	25	52	R 64	68	58	76	68	H 66	57	65	54	40	31	35	30	28	24	26
4	27	28	28	29	34	28	23	45	68	65	57	65	61	C	C	C	C	C	C	C	C	C	26	24
5	27	30	29	30	32	27	26	54	53	60	58	62	62	58	67	65	51	34	28	33	27	26	24	22
6	24	F 26	F 24	F 25	29	28	18	42	49	54	60	58	58	J R 53	54	V 60	45	34	34	J R 30	24	21	26	24
7	25	26	28	30	F 29	F 27	23	47	56	60	66	H 64	54	H 54	58	51	57	30	27	37	27	25	26	26
8	26	27	27	26	27	28	24	46	59	61	64	62	55	51	C	50	49	39	34	27	27	25	26	F 26
9	28	27	26	28	28	26	22	43	J R 59	H 54	60	63	58	57	55	48	44	30	28	28	25	28	F 30	F 30
10	31	32	32	29	30	24	21	46	54	60	64	57	59	61	66	53	50	A	31	28	34	29	28	30
11	29	31	31	30	28	27	26	42	R 51	J R 48	H 63	58	V 56	60	V 49	R 62	44	28	24	25	29	28	28	27
12	28	28	31	27	26	24	24	42	52	54	58	J R 66	52	64	56	49	41	30	26	30	35	28	29	F 26
13	30	30	30	28	31	22	24	48	47	48	51	74	80	65	60	54	45	32	27	34	32	30	28	25
14	F 27	27	25	27	29	25	23	46	52	R 56	60	64	J R 54	R 63	R 55	51	44	33	27	30	31	30	J R 32	22
15	F 26	28	F 29	F 28	29	29	21	39	44	55	59	64	52	54	51	52	46	28	25	29	27	25	F 24	24
16	24	28	34	19	18	19	21	46	51	53	J R 58	H 60	68	58	60	52	61	39	32	U R 34	29	29	28	26
17	27	32	A	26	25	20	22	46	49	R 56	79	62	64	R 57	50	48	51	37	26	R 28	30	24	26	29
18	30	F 30	F 31	F 31	F 24	F 23	25	42	H 47	49	56	58	55	64	52	Z 54	A	A	28	24	25	31	F 26	F 26
19	F 29	F 27	F 28	F 30	F 30	F 26	F 24	42	46	48	54	60	69	J R 61	50	58	53	29	30	24	24	27	24	25
20	26	26	27	25	27	25	21	41	48	46	55	73	58	54	52	47	R 45	43	28	23	25	30	30	27
21	F 32	33	32	F 33	F 34	29	F 29	43	53	46	55	64	R 59	57	49	49	42	29	36	24	27	F 28	F 25	F 28
22	F 28	F 29	F 32	F 45	F 53	F 27	24	42	46	51	64	71	75	81	62	49	51	34	36	36	28	31	26	F 28
23	F 28	28	28	F 28	F 30	F 27	J R 15	36	48	62	74	71	H 64	69	62	67	48	33	43	42	36	F 33	F 30	F 34
24	F 32	F 28	F 30	F 29	F 32	J F 30	F 32	J R 46	54	50	53	66	74	R 62	52	52	40	31	24	30	31	F 33	F 36	F 36
25	40	43	45	S 30	J S 22	24	23	39	54	78	68	70	57	53	R 50	47	46	34	30	22	22	24	22	24
26	F 24	25	F 26	22	22	20	19	41	50	57	52	64	68	78	52	50	54	39	30	28	A	A	F 22	F 26
27	F 26	F 28	F 40	F 34	F 34	F 26	F 27	37	45	51	48	58	61	72	63	61	45	36	25	24	27	28	26	22
28	F 24	25	25	26	F 30	22	R 18	36	48	53	59	52	52	62	60	60	53	31	33	24	25	34	26	F 24
29	F 25	F 26	F 25	F 26	F 29	23	18	34	53	56	54	56	66	64	66	62	45	43	28	40	26	27	27	26
30	25	26	28	27	25	21	22	39	46	58	62	67	58	63	52	58	46	36	28	27	26	29	30	27
31	28	27	30	24	24	21	20	33	47	H 50	H 54	F 56	50	77	58	61	52	32	28	31	28	28	28	26
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	31	31	31	31	31	30	29	30	29	28	30	30	29	29	31	31
MED	28	28	29	28	29	26	23	42	51	54	58	64	59	62	56	54	48	34	28	28	27	28	26	26
U Q	29	30	31	F 30	31	27	25	46	54	60	64	67	67	64	61	61	52	38	32	34	30	30	28	F 28
L Q	26	27	27	26	26	23	21	39	47	50	55	58	55	57	52	50	45	30	27	25	26	26	25	24

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

IONOSPHERIC DATA STATION Kokubunji

DEC.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 460	L 412	L 412	L 460	U L 340	L									
2											U L 432	U L 428	L 420	L 400	L 360	L								
3									U L 324	L	L	U L 400	L 412	U L 400	U L 388									
4									L	U L 360	372	U L 412	U L 408	C	C	C	C							
5										L	U L 400	U L 420	L	A	L	L								
6										L	U L 400	L	L	U L 384	U L 364	L	L							
7									U L 292	L	U L 440		U L 400	L	L									
8										L	L 400	400	U L 408	L	C		L							
9									L	L	380	L 420	L 448	U L 400	L	U L 284								
10										L	U L 400	U L 400	L 400	L 416	L 400									
11										U L 332	L	U L 408	L 400	U L 396	L	L								
12										L	L	U L 408		392	U L 384									
13											L	L 420	L 412	L 400	U L 380	L	L 216							
14											L	U L 412	U L 472	U L 396	L		L 216							
15								L 220		L	L	L 400	U L 400	U L 392	L	L								
16										L	U L 396	L	U L 432	U L 372	L	L	L 228							
17									L 260	U L 360	L	U L 400	380	U L 400	L									
18											L	U L 400	U L 400	U L 400		A	A							
19									280	L	L 376	L 400	L 388	372	L	316								
20									272	316	L	L 384	L 400	L	U L 348	U L 284	212							
21									L		U L 380	408	L 400	U L 400	L 312									
22										L 400	400	L 392	420	L 404	L	L								
23										L	L	A	A	L 412	U L 380	L 300								
24										L 332	L	U L 432	408	U L 420	L	U L 344								
25									L	U L 356	L	U A 408	396	U L 388	A	A								
26										U L 408	L	L 400	L 420	412	U L 400	320	224							
27												L 396	L 408	L 404	U L 392	U L 340								
28										L 316	U L 404	U L 400	L 412	U L 412	L 424	L								
29									L	L	L	L	L 432	L 408	L 380	L	L 236							
30									U L 284	L	L 404	408	L 400	U L 412	U L 384	L								
31											L	408	A	U L 420	396	U L 352	L							
	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	6	9	15	26	26	26	16	8	6							
MED								L 220	L 282	U L 356	U L 400	L 408	L 408	U L 400	U L 382	U L 318	L 220							
U Q									U L 292	U L 380	U L 404	U L 412	L 420	U L 412	L 394	U L 342	L 228							
L Q									272	L 324	380	400	L 400	U L 396	L 362	U L 292	216							

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

IONOSPHERIC DATA STATION Kokubunji

DEC. 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	232	268	312	312	308	284	260	240	172							
2								168	224	276	296	A	A	A	260	224	152							
3								204	228	260	296	304	300	296	264	A	B							
4								200	224	A	288	A	A	C	C	C	C							
5								A	220	260	276	300	300	A	A	A	B							
6								188	228	268	300	R 300	300	288	A 272	A 236	R 176							
7								172	232	280	292	A 296	A	292	268	232	168							
8								184	H 228	252	284	300	308	292	C	A	A							
9								B	228	276	292	300	300	292	A 268	228	A							
10								B	A	A	288	296	308	296	A	248	A							
11								B	240	276	284	300	304	296	276	A	164							
12								172	228	260	292	300	304	292	288	244	B							
13								A	248	272	A	292	A	A	272	240	152							
14								A	232	264	A 288	A	A	A	272	220	B							
15								B	236	264	A	A	304	292	264	228	160							
16								180	A	264	276	A	300	292	268	224	B							
17								A	A	A	A	A	A 300	288	256	220	A							
18								160	H 252	268	288	A 296	300	A 284	A	A	A							
19								B	A	252	272	284	300	284	268	232	A							
20								B	208	252	288	A 292	A	284	260	228	A							
21								B	196	H 248	280	300	304	284	268	244	176							
22								B	240	264	A	296	R 304	288	264	A	A							
23								164	220	256	A 284	A	A	288	248	192	148							
24								B	212	252	292	A 284	A 292	296	A	A	A							
25								B	A	256	284	292	300	A	A	A	A							
26								B	204	244	280	296	296	A 284	A	224	A							
27								B	H 236	268	276	284	292	A	A	232	180							
28								B	220	272	A	A	A	A	268	236	A							
29								B	240	272	284	296	A	A	A	A	A							
30								B	A	268	288	A	304	292	A	248	A							
31								B	212	272	288	300	A	A	280	244	180							
	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	25	28	26	22	21	21	20	21	11							
MED								176	228	264	288	296	300	292	268	232	168							
U Q								188	236	272	292	300	304	292	272	242	176							
L Q								168	220	256	284	292	300	284	262	224	152							

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

IONOSPHERIC DATA STATION Kokubunji

DEC. 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	E B 15	E B 15	E B 14	J A 21	17	E B 15	E B 15	20	28	33	32	G 28	G 28	32		G	G	20	J A 19	E B 14	E B 15	E B 15	E B 13	E B 16	E B 15
2	E B 14	E B 14	E B 14	J A 19	E B 14	E B 16	18	G	27	32	37	J A 37	J A 42	30	J G 24	25	20	E B 14	E B 16	J A 19	19	E B 13	E B 14	E B 14
3	E B 15	22	25	22	J A 23	26	J A 22	G	G 20	31	32	32	J A 34	J A 42	J A 30	J A 41	J A 18	J A 52	J A 38	33	J A 18	J A 22	25	19
4	E B 13	18	E B 14	J A 24	J A 32	J A 28	J A 21	22	28	29	G	34	32	C	C	C	C	C	C	C	C	C	E B 13	E B 14
5	E B 14	J A 25	E B 14	E B 14	E B 13	E B 13	E B 20	J A 20	G	G	30	35	34	J A 45	J A 40	J A 34	J A 32	J A 25	J A 20	22	E B 14	E B 15	E B 16	24
6	22	22	E B 13	E B 14	E B 13	E B 16	E B 14	J A 33	28	30	33	34	37	35	31	26	G	E B 14	E B 14	E B 14	E B 18	E B 14	18	E B 13
7	J A 22	J A 22	J A 19	18	E B 14	E B 13	E B 15	19	G	30	34	33	31	G 27	30	G	22	J A 18	E B 14	J A 15	22	E B 14	E B 13	J A 18
8	E B 11	E B 12	E B 14	E B 13	E B 14	E B 14	E B 15	J A 23	G	30	31	34	34	G	C	26	J A 24	J A 20	E B 13	E B 14	19	E B 15	E B 13	E B 14
9	E B 14	E B 15	E B 15	E B 13	J A 21	E B 15	E B 16	E B 18	J A 51	G	37	36	40	32	34	J A 32	J A 30	J A 27	J A 19	18	E B 16	E B 14	E B 14	E B 15
10	19	E B 14	J A 33	E B 13	E B 15	E B 14	E B 15	J A 19	J A 27	31	31	34	G 30	J A 30	29	G 21	J A 35	J A 48	J A 26	J A 24	J A 25	E B 14	E B 15	E B 14
11	22	22	E B 14	E B 14	E B 14	E B 14	E B 14	20	30	34	36	G 28	32	34	30	30	G	J A 23	E B 16	E B 14	18	18	E B 13	20
12	18	E B 13	E B 14	E B 14	E B 14	E B 14	E B 15	G	28	30	35	34	38	G	G	26	J A 23	J A 17	22	E B 16	18	E B 15	E B 15	E B 14
13	24	22	18	E B 14	E B 14	E B 14	E B 12	J A 20	30	33	J A 37	34	J A 41	34	G 27	J A 28	G	J A 20	16	E B 14	E B 12	E B 13	18	E B 16
14	21	E B 14	19	18	E B 14	E B 14	E B 14	24	J A 24	32	35	32	31	31	G 25	25	E 17	E B 15	J A 20	J A 24	J A 27	E B 12	E B 13	E B 13
15	17	E B 13	E B 13	E B 14	E B 13	E B 14	E B 14	E B 18	30	32	J A 42	J A 41	G 26	G	G 22	G 22	19	18	E B 14	18	E B 14	16	E B 14	E B 14
16	19	E B 14	17	E B 14	19	E B 13	J A 22	J A 24	29	J G 26	32	J A 46	33	J A 30	J A 31	J A 24	J A 27	E B 13	E B 14	E B 15	J A 22	J A 26	J A 18	J A 21
17	J A 34	J A 26	J A 42	26	19	E B 14	E B 14	J A 23	J A 26	J A 34	J A 66	J A 48	J A 42	G 24	28	29	21	J A 17	E B 12	18	E B 12	16	J A 31	24
18	E B 14	J A 22	E B 12	23	E B 14	E B 14	19	G	G	31	39	J A 39	33	37	J A 36	59	J A 70	J A 63	J A 48	J A 26	23	21	J A 21	20
19	17	20	31	J A 18	J A 24	19	E B 13	E B 15	29	G 24	33	33	33	G	28	G	22	J A 18	E B 15	E B 14	E B 16	E B 13	E B 13	18
20	18	18	E B 13	E B 13	E B 16	E B 13	E B 14	E B 15	J A 24	J A 27	31	J A 42	J A 30	J A 28	G	G J A 28	J A 28	J A 21	E B 14	E B 16	19	E B 16	E B 15	E B 12
21	18	24	E B 13	E B 12	21	21	18	E B 15	25	27	30	G 28	G 27	31		G	G	G J A 18	J A 22	E B 14	19	E B 15	E B 14	E B 13
22	J A 20	J A 25	J A 24	26	21	J A 22	24	E B 17	J A 46	30	J A 42	J G 28	G 26	30	G 26	J A 34	J A 22	J A 22	E B 14	E B 15	E B 12	E B 16	E B 15	J A 24
23	E B 15	J A 19	J A 24	24	17	E B 15	E B 15	G	J A 24	J A 26	J A 46	J A 70	J A 53	34	G 24	24	G	E B 15	E B 15	E B 14	E B 13	E B 13	E B 12	E B 12
24	E B 13	E B 13	E B 13	E B 13	E B 12	E B 14	E B 15	E B 14	G 20	J A 29	G 29	34	32	36	J A 33	J A 28	J A 31	J A 25	E B 13	19	E B 16	16	19	18
25	E B 15	E B 12	E B 15	E S 15	17	E B 18	13	25	33	29	32	J A 52	J A 35	33	49	J A 51	J A 52	J A 33	J A 25	J A 23	23	19	24	19
26	E B 15	E B 14	18	E B 13	E B 15	23	J A 24	28	J A 24	29	34	33	35	J A 40	36	29	J A 23	J A 23	18	J A 49	J A 52	J A 49	J A 26	21
27	E B 14	J A 26	J A 31	19	J A 22	E B 15	E B 14	E B 16	G	30	34	37	35	32	J A 52	G	J A 28	25	E B 14	E B 16	E B 13	E B 14	E B 14	E B 14
28	E B 15	E B 14	E B 14	E B 15	E B 12	E B 13	E B 14	E B 16	26	G	J A J A 34	39	34	48	30	26	21	26	J A E 16	B E 14	B E 13	B E 15	B E 13	16
29	E B 11	E B 15	E B 15	E B 19	E B 14	E B 15	E B 13	E B 15	26	G	32	36	34	31	30	J A 30	J A 22	E B 13	E B 14	18	J A 20	19	E B 14	E B 14
30	E B 12	E B 13	E B 14	E B 14	18	E B 13	E B 15	E B 15	24	G 26	31	33	32	G J A 28	29	G 19	29	22	20	E B 12	16	23	19	22
31	E B 13	E B 12	E B 13	E B 13	E B 13	E B 12	E B 14	E B 15	26	30	G 22	33	J A 44	35	G 28	G 20	J A 20	23	19	E B 16	E B 15	E B 15	E B 14	E B 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	30	30	31	31
MED	† B 15	† B 15	† B 14	† B 14	† B 15	† B 14	† B 15	G	26	30	33	34	34	32	29	26	J A 22	J A 20	† B 16	† B 16	18	† B 15	† B 15	† B 15
U Q	19	J A 22	J A 19	19	J A 19	16	J A 18	22	29	31	J A 37	J A 39	J A 37	35	J A 32	30	J A 28	J A 25	J A 20	J A 19	J A 20	18	18	20
L Q	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	E B 14	E B 16	G 24	G 26	31	33	G 31	G	G	G	G 19	E B 17	E B 14	E B 14	E B 14	E B 14	E B 13	E B 14

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

IONOSPHERIC DATA STATION Kokubunji

DEC.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	E B 15	E B 15	E B 14	17	16	E B 15	E B 15	E B 15	27	G 21	G 30	G 27	G 26	30	G	G	19	E B 15	E B 14	E B 15	E B 15	E B 13	E B 16	E B 15
2	E B 14	E B 14	E B 14	E B 13	E B 14	E B 16	E B 15	G	26	30	36	32	31	29	G 21	24	20	E B 14	E B 16	E B 15	E B 13	E B 13	E B 14	E B 14
3	E B 15	17	18	16	18	17	E B 14	G	G 17	30	30	31	G 25	G 26	G 20	30	E B 16	34	17	18	E B 13	12	17	17
4	E B 13	E B 15	E B 14	14	14	22	17	E B 16	26	26	G	32	31	C	C	C	C	C	C	C	C	C E 13	B E 14	B
5	E B 14	23	E B 14	E B 14	E B 13	E B 13	18	18	G	G	29	31	33	42	34	30	26	21	E B 13	E B 14	E B 14	E B 15	E B 16	E B 17
6	E B 13	E B 13	E B 13	E B 14	E B 13	E B 16	E B 14	G	26	29	33	34	36	33	29	25	G E 14	B E 14	B E 14	B E 14	E B 15	E B 14	E B 13	E B 13
7	15	E B 14	E B 14	E B 13	E B 14	E B 13	E B 15	18	G	30	34	32	31	G 25	29	G	22	16	E B 14	E B 14	17	E B 14	E B 13	13
8	E B 11	E B 12	E B 14	E B 13	E B 14	E B 14	E B 15	E B 15	G	30	30	33	33	G	C	24	22	17	E B 13	E B 14	16	E B 15	E B 13	E B 14
9	E B 14	E B 15	E B 15	E B 13	16	E B 15	E B 16	E B 18	G	G	35	35	38	32	32	G 18	20	20	17	16	E B 16	E B 14	E B 14	E B 15
10	E B 14	E B 14	16	E B 13	E B 15	E B 14	E B 15	E B 14	24	29	30	32	G 27	G 24	27	G 19	27	A A 48	20	20	19	E B 14	E B 15	E B 14
11	17	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14	18	28	29	30	G 22	32	G 22	28	28	G E 15	B E 16	B E 14	B E 13	E B 13	E B 15	E B 13	16
12	16	E B 13	E B 14	E B 14	E B 14	E B 14	E B 15	G	27	28	33	34	37	G	G	25	20	E B 15	16	E B 16	E B 14	E B 15	E B 15	E B 14
13	E B 14	18	E B 14	E B 14	E B 14	E B 14	E B 12	19	26	31	33	32	30	30	G 23	G 21	G E 14	B E 14	B E 14	B E 12	E B 13	E B 16	16
14	14	E B 14	E B 14	15	E B 14	E B 14	E B 14	19	G 19	30	31	31	31	30	G 22	24	E B 17	E B 15	E B 14	14	17	E B 12	E B 13	E B 13
15	E B 13	E B 13	E B 13	E B 14	E B 13	E B 14	E B 14	E B 18	27	G 23	25	32	G 25	G	G 20	G 18	18	17	E B 14	16	E B 14	16	E B 14	E B 14
16	17	E B 14	E B 14	E B 14	16	E B 13	E B 15	E B 16	25	G 22	30	36	31	G 24	G 20	G 17	18	E B 13	E B 14	E B 15	16	E B 13	12	16
17	22	18	A A 42	16	E B 12	E B 14	E B 14	17	21	27	33	31	G 29	G 18	27	28	18	E B 14	E B 12	16	E B 12	15	16	17
18	E B 14	16	E B 12	E B 13	E B 14	E B 14	17	G	G	30	32	31	G 23	31	33	46	A A 70	A A 63	20	E B 14	B E 14	B E 14	18	16
19	E B 14	E B 14	18	E B 13	E B 14	17	E B 13	E B 15	22	G 22	32	31	32	G	27	G	20	16	E B 15	E B 14	B E 16	B E 13	B E 13	16
20	15	16	E B 13	E B 13	E B 16	E B 13	E B 14	E B 15	G 17	G 20	G 28	31	30	G 25	G	G 20	18	E B 14	E B 14	E B 16	E B 14	E B 16	E B 15	E B 12
21	16	E B 14	E B 13	E B 12	18	E B 13	E B 14	E B 15	24	26	29	G 23	G 23	30	G	G	G	16	19	E B 14	18	E B 15	B E 14	B 13
22	E B 15	E B 13	18	18	13	18	17	E B 17	G 18	29	31	G 22	G 24	30	G 21	25	18	E B 15	E B 14	E B 15	B E 12	B E 16	B E 15	16
23	E B 15	E B 14	17	E B 14	15	E B 15	E B 15	G	G 18	G 18	35	66	45	G 24	G 18	23	G E 15	B E 15	B E 14	B E 13	B E 13	B E 12	B E 12	B
24	E B 13	E B 13	E B 13	E B 13	E B 12	E B 14	E B 15	E B 14	G 17	G 18	G 25	33	30	35	29	25	20	18	E B 13	15	E B 16	16	16	E B 13
25	E B 15	E B 12	E B 15	E B 15	E B 17	S E 13	E B 13	E B 16	22	27	31	41	34	31	44	35	20	18	18	18	18	17	16	17
26	E B 15	E B 14	13	E B 13	E B 15	E B 14	17	22	G	28	34	32	34	35	28	G 18	18	E B 15	16	17	A A 52	A A 49	17	13
27	E B 14	E B 14	20	16	E B 14	E B 15	E B 14	E B 16	G	28	33	34	32	32	30	G	G 16	17	E B 14	E B 16	E B 13	E B 14	E B 14	E B 14
28	E B 15	E B 14	E B 14	E B 15	E B 12	E B 13	E B 14	E B 16	25	G	31	35	30	35	30	26	20	E B 15	E B 14	E B 14	E B 13	E B 15	E B 13	15
29	E B 11	E B 15	E B 15	E B 16	E B 14	E B 15	E B 13	E B 15	25	G	31	35	32	30	28	27	20	E B 13	E B 14	E B 14	E B 14	E B 14	E B 14	E B 14
30	E B 12	E B 13	E B 14	E B 14	16	E B 13	E B 15	E B 15	23	G 20	G 24	31	32	G 23	26	G 18	19	E B 16	E B 15	E B 12	E B 16	17	13	E B 14
31	E B 13	E B 12	E B 13	E B 13	E B 13	E B 12	E B 14	E B 15	25	30	G 20	G 26	41	33	G 22	G 20	G	E B 15	E B 14	E B 16	E B 15	E B 15	E B 14	E B 14
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	30	29	30	30	30	30	30	30	30	31	31
MED	† B 14	† B 14	† B 14	† B 14	† B 14	† B 14	† B 15	† B 17	22	27	31	32	31	30	27	24	18	† B 15	† B 14	† B 15	† B 14	† B 14	† B 14	† B 14
U Q	15	15	15	15	16	15	15	18	26	30	33	34	33	32	29	26	20	17	16	16	16	15	16	16
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	E B 15	G	G 23	G 30	G 31	G 29	G 25	G 22	G 20	G	E B 15	E B 14	E B 14	E B 13	E B 13	E B 13	E B 13

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

IONOSPHERIC DATA STATION Kokubunji

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

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

IONOSPHERIC DATA STATION Kokubunji

DEC. 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	336	346	339	303	323	324	348	374	376	374	330	364	360	326	355	371	380	395	324	356	341	362	S 307	301
2	298	302	326	326	326	329	369	357	347	349	346	364	375	345	R 315	353	364	345	343	355	335	327	304	290
3	320	306	307	347	358	358	317	355	R 361	363	361	361	370	H 321	384	349	378	356	329	360	347	333	324	302
4	288	310	295	325	344	321	310	354	354	369	370	370	348	C	C	C	C	C	C	C	C	C	377	270
5	290	313	285	301	339	362	329	359	374	373	375	347	356	355	358	370	350	345	307	363	330	359	347	306
6	307	F 298	F 321	F 320	345	385	295	357	360	374	352	371	365	J R 348	356	V 369	382	373	349	J R 335	343	322	325	325
7	292	321	327	322	F 346	F 319	311	367	372	352	347	H 326	372	H 354	355	380	341	383	338	340	400	317	331	297
8	305	306	312	319	323	360	315	356	367	342	371	374	351	361	C	368	336	389	374	360	352	367	292	F 339
9	323	324	307	346	354	359	330	378	J R 396	H 335	364	349	321	361	371	348	377	359	333	348	310	311	F 301	F 300
10	307	313	316	321	346	324	316	379	361	357	354	369	358	344	363	347	369	A	338	314	353	315	329	330
11	314	308	317	329	330	352	337	384	R 348	J R 313	H 342	370	V 369	380	V 358	R 374	386	365	364	338	326	331	352	318
12	319	340	341	327	337	328	336	362	371	356	378	J R 410	337	372	376	373	383	344	315	315	353	343	326	F 307
13	316	361	329	333	389	323	296	375	384	366	338	348	363	363	362	384	391	361	309	331	328	361	351	309
14	F 302	329	337	323	338	352	340	374	360	R 352	365	350	J R 298	R 371	R 385	384	374	339	341	321	328	340	J R 395	H 305
15	F 288	302	F 318	F 335	342	389	396	389	362	356	372	375	356	356	366	362	379	372	315	342	345	314	F 319	308
16	305	327	385	412	312	304	337	352	388	375	J R 442	H 336	340	379	350	366	353	365	320	U R 362	326	354	328	286
17	290	340	A	335	364	295	311	357	365	R 364	384	366	341	R 364	374	342	367	371	340	R 353	340	394	332	328
18	315	F 314	F 310	F 363	F 332	F 324	324	364	H 346	378	362	376	355	366	379	Z 356	A	A	345	359	311	336	F 368	F 338
19	F 304	F 328	F 327	F 346	F 325	F 350	F 346	361	371	362	345	333	361	J R 360	375	339	400	337	337	342	319	333	343	296
20	300	308	321	319	343	343	341	373	381	369	351	360	363	343	361	364	R 379	367	357	391	310	323	336	312
21	F 295	315	325	F 329	F 355	326	F 310	369	396	365	367	342	R 382	368	336	375	374	351	372	357	334	F 380	F 334	F 316
22	F 294	F 315	F 316	F 361	F 376	F 285	313	364	353	316	342	359	320	377	370	378	379	336	324	367	342	323	328	F 283
23	F 295	299	320	F 302	F 313	F 320	J R 384	349	345	349	378	A 357	H 290	366	367	368	364	329	319	333	366	F 346	F 313	F 330
24	F 334	F 325	F 327	F 326	F 332	J F 339	F 337	J R 405	383	363	349	334	347	R 371	370	360	378	359	329	293	278	F 310	F 298	F 280
25	291	282	294	S 374	J S 374	329	296	338	330	346	325	383	367	376	R 376	365	364	324	355	425	321	344	275	310
26	F 275	328	F 309	325	315	371	295	376	350	342	313	326	343	379	360	363	344	386	370	355	A	A	F 324	F 290
27	F 305	F 281	F 319	F 351	F 356	F 337	F 352	376	374	365	370	339	352	370	353	375	381	352	327	328	311	359	344	321
28	F 338	328	313	331	F 351	379	R 326	356	361	322	365	369	353	344	330	372	371	391	338	368	307	323	351	F 310
29	F 291	F 308	F 321	F 329	F 342	383	343	374	373	377	377	332	351	356	368	379	394	368	346	348	404	330	314	315
30	298	315	337	347	350	342	324	341	357	352	340	335	337	362	361	366	387	307	357	334	328	336	329	326
31	352	293	346	334	345	333	327	379	362	H 321	H 324	F 343	361	366	348	367	363	359	308	343	363	311	317	304
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	31	31	31	31	31	31	31	31	30	29	30	29	28	30	30	29	29	31	31
MED	304	314	320	329	343	337	327	364	362	357	361	359	355	362	362	368	377	359	338	348	334	333	328	308
U Q	316	328	327	346	354	359	341	376	374	369	371	370	363	371	372	374	382	372	349	360	350	356	344	321
L Q	292	306	312	322	330	324	311	356	354	346	342	339	341	354	355	360	364	344	324	334	320	322	314	297

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

IONOSPHERIC DATA STATION Kokubunji

DEC.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		H	L	U L	H									
											382	393	390	357	398										
2											U L	U L	L	L	H	L								
											346	378	382	376	398										
3									U L	L	L	U L	L	U L	U L									
									385			369	386	383	375										
4									L	U L		U L	U L	C	C	C	C							
										395	396	385	383											
5										L	U L	U L	L	A	L	L								
											390	385												
6										L	U L	L	L	U L	U L	L	L							
											380			400	382										
7									U L	L	U L		U L	L	L									
									395		359		394											
8										L	L		U L	L	C		L							
											391	382	386											
9									L	L	A	L	L	U L	L	U L								
												375	365	385		430								
10										L	U L	U L	L	L	L									
											381	384	397	364	355									
11										U L		L	U L	L	H	L	L							
										424			387	395	373									
12										L	L	U L				U L								
												393		398	380									
13											L	L	L	L	H	L	L							
												364	363	381	379		406							
14											L	U L	U L	U L	L		L							
												377	351	366			445							
15								L		L	L	L	U L	U L	L	L								
								448				389	387	382										
16										L	U L	L	U L	H	L	L	L							
											367		341	379			397							
17										L	U L	U L		U L	L									
									415	366		391	434	375										
18												L	U L	U L	U L		A	A						
												387	381	371										
19										L	L	H	L			L								
									432		393	376	384	387		391								
20											L	L	H		L	U L	U L							
									429	426		408	375		405	418	468							
21									L		U L		H	U L	L									
											372	397	383	377	443									
22										L		L	L	L	L	L								
										371	359	382	346	367										
23										L	L	A	A	L	U L	L								
														364	357	399								
24										L	L	U L		L	L	L								
										411		368	374											
25									L	U L	L	A		U L	A	A								
										367			413	394										
26										U L	L	L	L		U L									
										372		372	362	372	380	401	425							
27											L	L	L	L	U L	L								
												383	387	370	387									
28										L	U L	U L	L	U L	L	L								
										426	387	403	378	376	352									
29									L	L	L	L	L	L	L	L	L							
													355	376	370		420							
30									U L	L	H		L	U L	U L	L								
									419		384	408	392	386	363									
31												L	A	U L		L	L							
												394		373	380									
	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	6	9	14	25	26	25	16	5	6							
MED								L	L	U L	U L	L	L	U L	L	L	L							
								448	417	395	382	385	383	376	380	401	422							
U Q										L	L	L	L	U L	L	U L								
									429	425	390	393	390	384	392	424	445							
L Q									U L	U L	U L	L	L	L	L	L	L							
									395	369	367	376	365	370	366	395	406							

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

IONOSPHERIC DATA STATION Kokubunji

DEC.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										234	308	234	248	298	244									
2											262	236	236	248	H 250	236								
3									226	240	234	248	236	254	230									
4									240	234	238	244	256	C	C	C	C							
5										232	232	246	244	250	252	230								
6										240	250	236	226	242	254	228	200							
7									H 218	252	270		232	238	240									
8										234	240	232	252	250	C		258							
9									228	236	240	254	306	246	238	226								
10										248	246	244	252	262	254									
11										234	254	242	236	232	240	236								
12										248	236	216		248	236									
13											L 278	260	242	242	244	224	206							
14											244	258	326	238	228		212							
15								216		252	234	228	256	254	234	238								
16										228	270	248	274	228	254	236	228							
17									218	230	220	232	264	244	226									
18											250	242	254	240		A	A							
19									216	228	264	272	254	246	246	270								
20									218	236	256	252	244	264	238	228	214							
21									208		246	270	230	244	224									
22										326	276	246	288	228	240	224								
23										250	226	A	A 268	240	232	234								
24										230	246	272	234	242	238	242								
25									258	244	254	226	248	232	244	226								
26										276	L 334	274	264	230	244	238	224							
27											244	272	260	242	230	228								
28										H 244	238	242	262	268	296	228								
29									238	236	230	260	264	246	242	232	208							
30									216	252	274	288	266	244	246	226								
31											268	310	258	248	252	228	218							
	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	11	24	31	29	30	30	28	20	9							
MED								216	218	238	246	246	254	244	241	229	214							
U Q									238	249	268	265	264	250	248	236	226							
L Q									216	234	238	236	242	240	235	227	207							

DEC.1995 h'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

DEC. 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	264	260	260	286	274	276	248	226	214	196	214	H 186	204	184	H 188	228	216	192	266	226	238	220	E B 328	308
2	302	316	256	276	260	226	234	220	232	238	E A 264	228	212	196	H 184	216	224	212	238	222	242	254	306	306
3	288	308	308	250	222	236	290	238	194	236	H 198	H 210	216	A 240	206	242	H 206	A	242	228	230	242	278	300
4	322	292	320	266	250	A	294	236	238	H 198	198	214	216	C	C	C	C	C	C	C	C	C	214	326
5	302	E A 330	332	298	248	230	278	224	214	H 206	214	H 208	242	A	A	A	216	A 232	260	224	248	236	252	A 320
6	296	320	306	290	244	206	E B 352	228	224	224	A 232	226	A 224	220	214	226	210	196	224	212	246	292	270	288
7	312	292	268	248	254	262	296	H 222	212	230	238	236	220	204	220	224	H 216	192	230	238	202	258	264	312
8	310	288	284	286	270	230	252	232	230	226	220	222	196	204	C	220	230	204	208	224	240	236	304	278
9	278	270	286	248	240	222	286	220	228	204	A	220	A 250	A 236	226	198	210	222	256	226	270	294	284	298
10	282	270	270	246	234	254	290	222	234	210	226	226	210	206	208	230	224	A	A 254	A 316	234	242	250	258
11	274	284	264	254	258	234	236	214	212	200	H 204	H 202	204	H 184	206	244	210	194	228	226	246	236	238	262
12	286	260	250	254	238	252	268	220	226	226	A 228	232	236	180	218	224	204	224	256	256	234	218	250	290
13	282	230	252	246	206	280	306	222	218	224	222	222	A 232	214	H 198	218	204	206	278	250	244	220	242	278
14	296	254	270	272	242	232	234	212	224	256	236	196	204	216	230	220	184	212	240	244	242	246	214	H 204
15	324	298	260	266	248	206	E B 218	180	218	222	234	214	194	216	H 200	H 188	216	208	242	226	232	272	282	B 282
16	316	278	218	214	E A 406	350	276	236	210	210	230	A 234	H 212	H 190	232	228	210	196	240	212	234	220	272	338
17	E A 382	260	A	252	226	B 336	298	240	198	204	A	212	188	H 194	200	234	220	212	234	234	240	208	254	270
18	270	284	284	232	296	294	278	208	208	222	A 242	228	220	218	230	A	A	A	A 242	238	268	240	234	282
19	290	282	276	226	258	234	242	218	202	170	216	H 202	222	200	H 176	H 178	204	H 198	230	218	258	248	234	316
20	316	294	280	276	250	248	244	H 218	192	184	H 194	H 184	H 194	H 198	214	204	178	216	210	198	236	256	228	288
21	290	274	270	256	236	258	270	234	212	206	204	H 194	H 174	220	190	220	214	222	228	216	300	212	272	282
22	326	290	290	226	208	296	270	218	224	H 216	222	194	236	234	H 196	A	222	228	250	212	220	256	E B 248	318
23	316	306	304	308	290	264	180	230	242	H 208	A	A	A	216	208	198	208	216	246	228	212	224	280	242
24	232	264	262	262	242	256	228	216	222	196	222	242	232	A 232	A 224	224	212	216	234	306	328	280	276	324
25	288	276	288	204	252	290	350	246	H 206	194	230	A	214	H 200	A	A	226	232	228	A 228	A 298	244	344	292
26	E B 356	292	282	272	290	232	E A 382	226	224	226	240	196	248	A 248	208	196	192	206	226	244	A	A	326	358
27	308	282	236	232	242	252	244	210	230	234	222	226	226	A 234	A 224	228	214	206	234	244	276	232	244	274
28	290	274	292	256	232	202	280	218	236	206	226	A 230	192	A 226	232	234	216	200	242	212	248	248	212	300
29	308	272	296	270	250	220	290	216	234	230	228	212	196	216	190	A 236	200	218	226	238	202	252	256	272
30	310	292	258	236	250	260	268	228	210	H 188	H 182	200	212	226	202	224	214	232	218	222	256	256	242	288
31	240	284	246	256	246	E B 252	288	218	226	H 238	224	224	A	A	210	220	220	208	256	236	222	288	240	310
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	31	31	30	31	31	31	31	28	29	29	28	27	26	29	27	30	30	29	29	31	31
MED	293	283	273	256	248	252	273	222	222	210	222	214	214	216	208	224	214	212	239	227	242	244	253	290
U Q	316	292	290	272	258	264	290	230	230	226	231	227	229	A 226	224	228	218	222	250	238	257	256	280	312
L Q	282	270	260	246	238	230	244	218	210	200	214	201	200	199	H 198	216	205	200	228	222	233	228	240	278

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

IONOSPHERIC DATA STATION Kokubunji

DEC.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	A	A		A	A											
										142	120	134	128	130	118	122	146							
2									A	A	A	A	A	A										
								164	146	154	136				128	124	146							
3															A	A	B							
								172	130	138	140	138	134	132	136									
4										A	A	A	A	C	C	C	C							
								160	124		136													
5								A							A	A	B							
									118	116	116	116	114	114										
6														A		A								
								156	122	118	118	120	120	124	120		144							
7								B				A	A											
									122	118	122			128	122	122	154							
8								E B							C	A	A							
								174	124	122	130	114	126	118										
9								B								E A	A							
									122	122	118	116	116	116	118	146								
10								B	A				A		A		A							
										114	130	114	132	134		134								
11								B	E A						A	A	E B							
									160	132	144	130	128	124	134		148							
12									A		A						B							
								158	144	132	128	122	120	120	122	134								
13								A	A	A	A		A	A	A	A								
									136	130		130			136	126	126							
14								A					A	A			B							
									132	126	118	112			130	130								
15								B		A	A	A				A								
									144	136			128	124	120	144	124							
16									A			A		A			B							
								144		140	118		134	132	126	120								
17								A	A	A	A	A	A		A		A							
														126	132	120								
18																A	A							
								152	134	126	118	112	136	118	114									
19								B	A	E A		A					A							
										150	136	122	126	116	122	118								
20								B		A E A		A	A	A			A							
										154	140			136	114	124								
21								B				A	A	A										
									122	126	122	138	138	134	120	124	148							
22								B	A		A	A			A	A	A							
									134	126		134	130	120	122									
23								E B	A	A		A	A											
								182	158	142	118			130	122	120	132							
24								B		A	E A	A	A	A	A	A	A							
									142	140	156			130										
25								B	A		E A				A	A	A							
										132	148	130	118											
26								B			A				A	A	A							
									132	128	136	124	120	122		126								
27								B						A	A		A							
									130	118	126	122	122			118								
28								B				A	A	A			A							
									130	128	114				122	126								
29								B					A	A	A	A	A							
									128	122	118	112												
30								B	A	A	A	A		A	A		A							
										142			130	136		124								
31								B					A	A		A								
									144	128	126	126			132	136	128							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								9	23	29	26	20	19	22	21	20	10							
MED								158	131	128	124	122	128	125	122	124	142							
U Q								E B	A	A	A			A	A									
								173	144	140	136	130	132	132	131	132	148							
L Q								154	124	122	118	115	120	120	120	121	128							

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

IONOSPHERIC DATA STATION Kokubunji

DEC. 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	B	B	B	108	120	B	B	128	164	116	114	112	112	152	G	G	158	106	B	B	B	B	B	B
2	B	B	B	106	B	B	168	G	176	170	132	118	112	114	110	174	160	B	B	104	102	B	B	B
3	B	114	110	108	106	106	104	G	110	170	156	160	114	114	112	106	110	106	106	106	114	110	106	110
4	B	110	B	112	104	102	110	110	176	112	G	118	124	C	C	C	C	C	C	C	C	C	B	B
5	B	110	B	B	B	B	110	112	G	G	136	124	120	112	108	106	104	106	102	104	B	B	B	104
6	100	100	B	B	B	B	B	128	172	156	156	150	122	120	124	E G 194	G	B	B	B	108	B	98	B
7	104	110	116	120	B	B	B	E G 196	G	178	168	156	126	114	164	G	160	128	B	136	120	B	B	112
8	B	B	B	B	B	B	B	100	G	168	152	166	130	G	C	122	112	120	B	B	134	B	B	B
9	B	B	B	B	122	B	B	B	96	G	144	134	122	128	116	114	106	98	104	102	B	B	B	B
10	114	B	108	B	B	B	B	122	120	118	160	134	112	108	116	108	104	102	106	102	104	B	B	B
11	102	110	B	B	B	B	B	138	176	142	138	106	154	102	166	118	G	98	B	B	126	114	B	110
12	104	B	B	B	B	B	B	G	152	140	140	140	180	G	G	190	102	148	142	B	124	B	B	B
13	106	106	108	B	B	B	B	152	152	136	118	126	110	110	108	110	G	108	144	B	B	B	120	B
14	114	B	110	106	B	B	B	144	116	148	126	120	118	114	112	166	B	B	108	116	112	B	B	B
15	118	B	B	B	B	B	B	B	168	114	112	114	112	G	110	114	144	100	B	120	B	112	B	B
16	156	B	140	B	178	B	102	102	136	112	128	108	180	106	100	104	104	B	B	B	108	116	116	106
17	106	106	104	108	120	B	B	138	114	112	110	114	110	112	154	132	124	124	B	98	B	106	108	114
18	B	110	B	110	B	B	102	G	G	148	128	122	116	118	114	108	104	100	104	108	110	108	106	120
19	112	118	114	120	112	120	B	B	118	112	154	148	142	G	148	G	138	96	B	B	B	B	B	140
20	118	112	B	B	B	B	B	B	118	114	160	108	110	108	G	106	106	122	B	B	100	B	B	B
21	132	112	B	B	106	104	110	B	152	168	170	114	112	140	G	G	G	108	108	B	210	B	B	B
22	108	126	104	104	112	104	104	B	112	138	120	112	112	184	108	102	106	104	B	B	B	B	B	114
23	B	114	106	108	108	B	B	G	112	116	116	112	108	108	112	148	G	B	B	B	B	B	B	B
24	B	B	B	B	B	B	B	B	124	112	112	160	160	130	100	100	100	100	B	106	B	B	122	120
25	B	B	B	B	S	120	B	110	116	170	158	128	122	118	110	104	106	102	118	102	116	102	100	120
26	B	B	106	B	B	116	110	106	104	184	182	148	124	116	100	104	100	96	98	112	106	126	122	180
27	B	118	116	118	120	B	B	B	G	148	140	126	124	126	110	G	100	102	B	B	B	B	B	B
28	B	B	B	B	B	B	B	B	176	G	116	120	114	108	166	160	168	102	100	B	B	B	B	120
29	B	B	B	108	B	B	B	B	168	G	132	120	114	118	112	108	112	B	B	108	104	108	B	B
30	B	B	B	B	100	B	B	B	116	116	122	114	162	114	118	102	104	100	104	B	B	98	102	102
31	B	B	B	B	B	B	B	B	186	166	112	114	112	110	116	116	98	96	98	B	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	14	15	12	13	12	7	9	14	26	27	30	31	31	26	25	25	24	24	14	14	16	10	10	14
MED	110	110	109	108	112	106	110	121	130	140	134	120	118	114	112	109	106	102	105	106	111	109	107	114
U Q	118	114	115	115	120	120	110	138	168	168	156	140	126	120	121	140	131	108	108	112	122	114	120	120
L Q	104	110	106	107	106	104	103	110	116	114	118	114	112	110	109	105	104	100	102	102	105	106	102	110

DEC. 1995 h'Es (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION Kokubunji

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

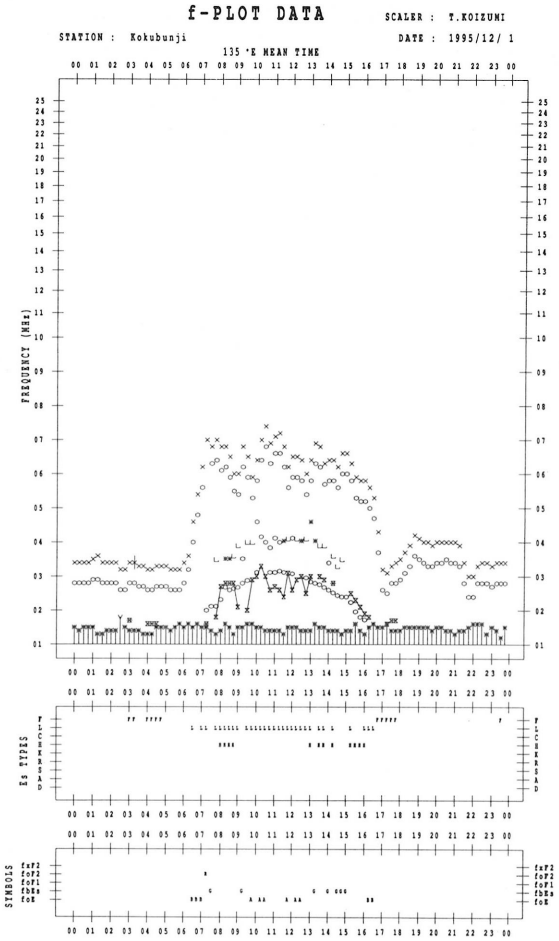
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHz TO 25.0MHz IN 24.0SEC IN MANUAL SCALING

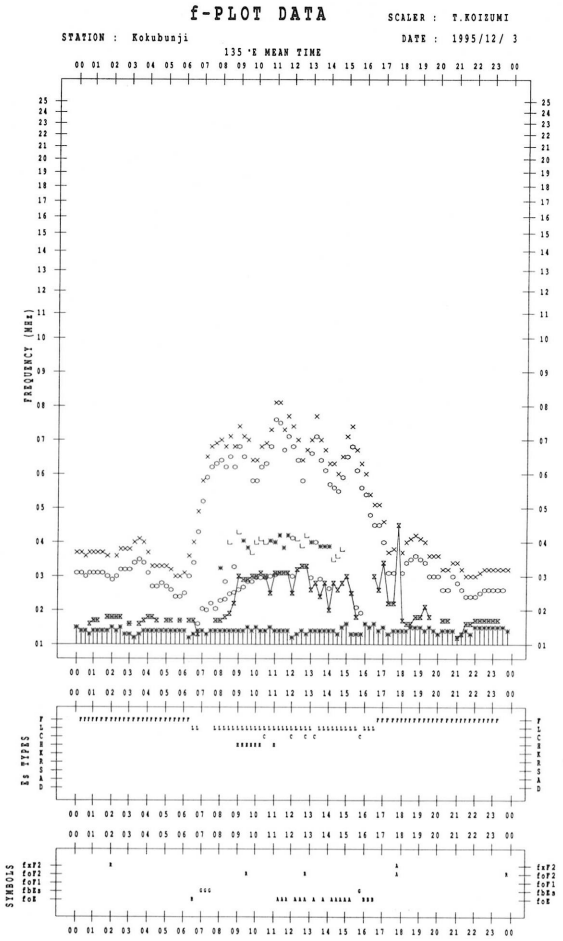
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1				F 1	F 1			L 1	HL 12	L 1	L 2	L 1	L 1	HL 11			HL 11	F 1						
2				F 2			F 1		HL 11	HL 11	CL 22	C 1	L 1	L 1	L 1	HL 11	H 1			F 1	F 1			
3		F 1	F 2	F 2	F 2	F 2	F 2		L 1	HL 11	HL 11	HL 11	LC 11	L 2	L 1	L 3	L 1	F 4	F 3	F 2	F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

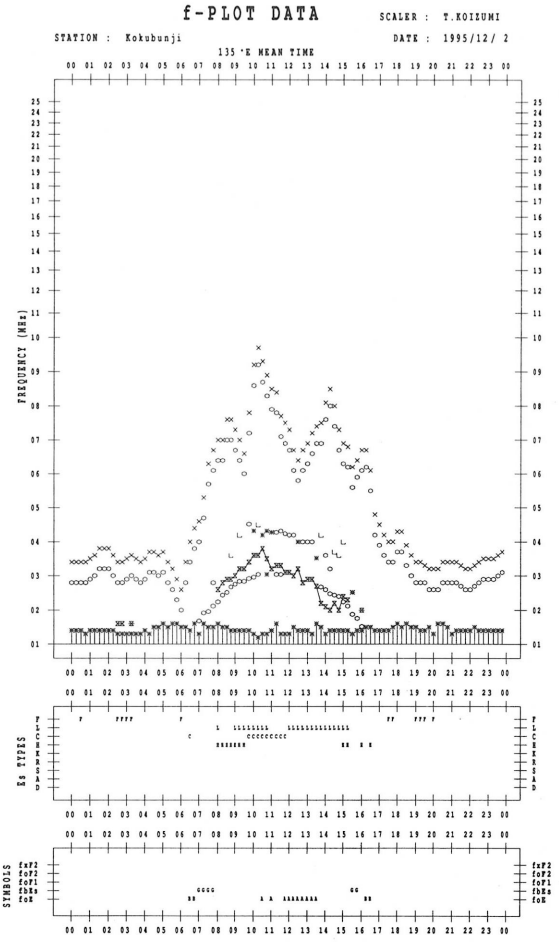
DEC. 1995 TYPES OF Es COMMUNICATIONS RESEARCH LABORATORY, JAPAN

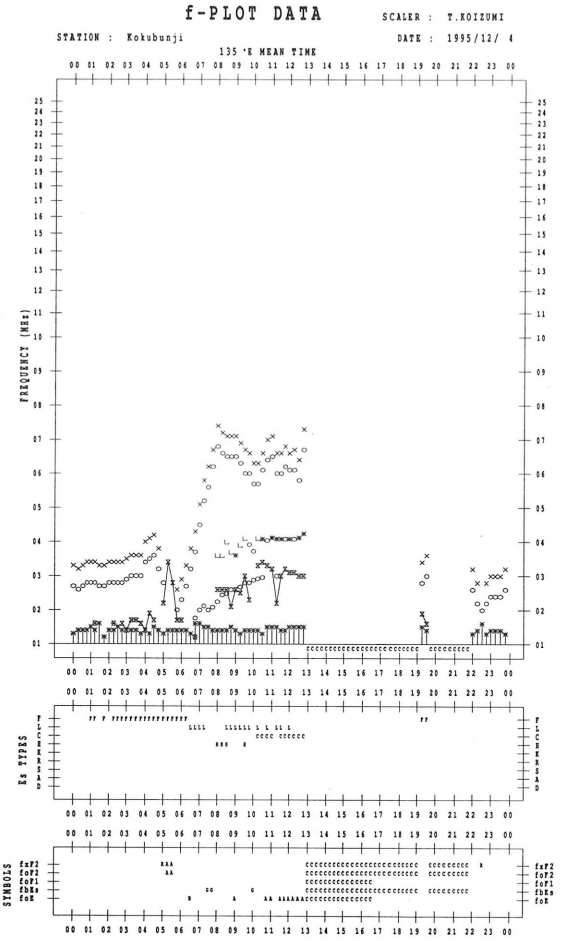
f-PLOTS OF IONOSPHERIC DATA

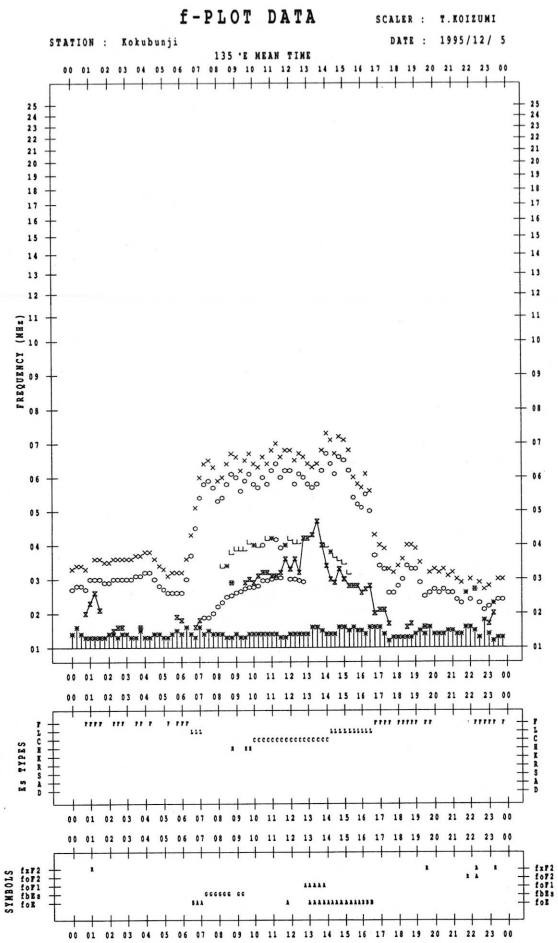
KEY OF f-PLOT	
	SPREAD
	foF2, foF1, foE
	fxF2
	DOUBTFUL foF2, foF1, foE
	fbEs
	ESTIMATED foF1
	fmin
	GREATER THAN
	LESS THAN

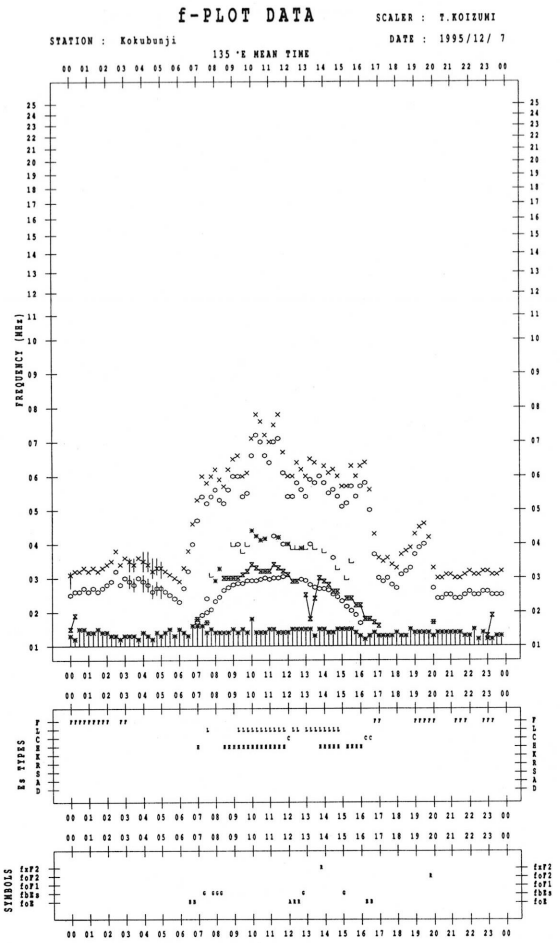

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 1
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

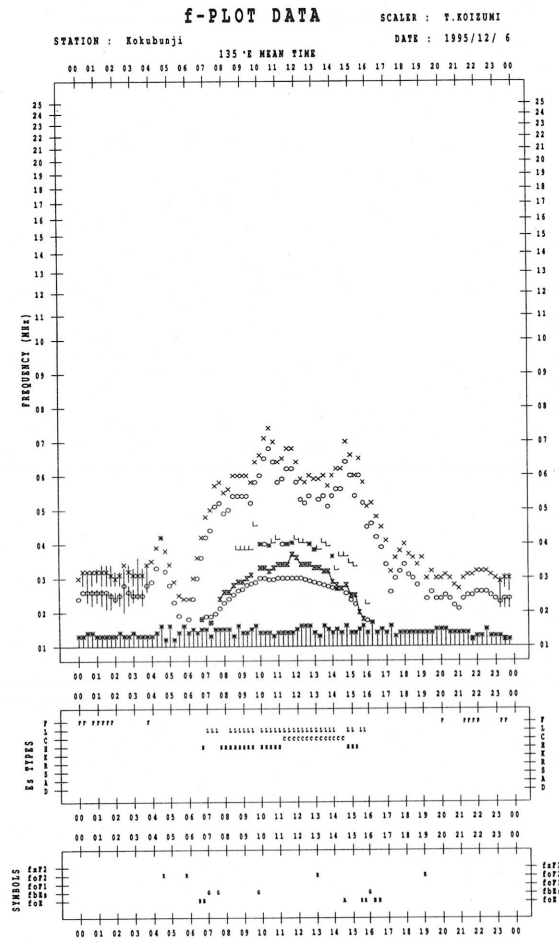

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 3
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

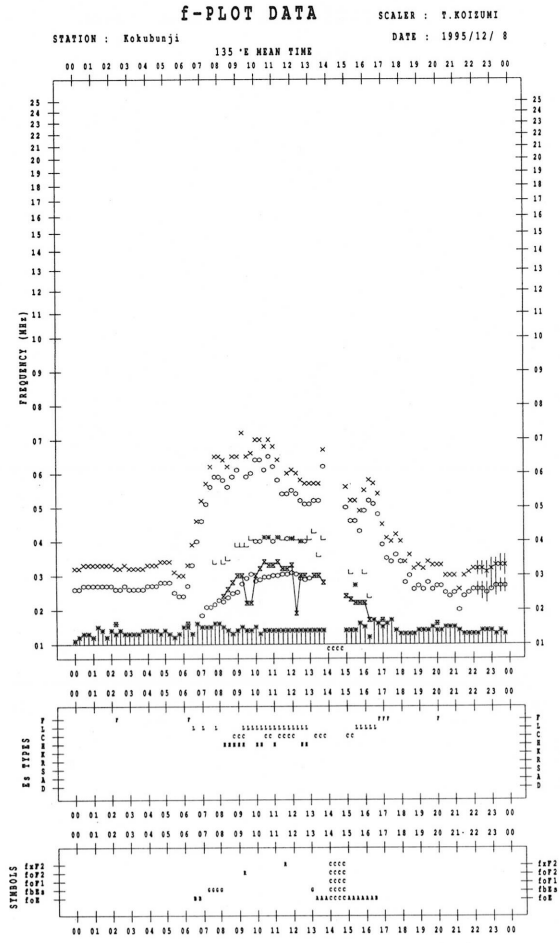

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 2
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

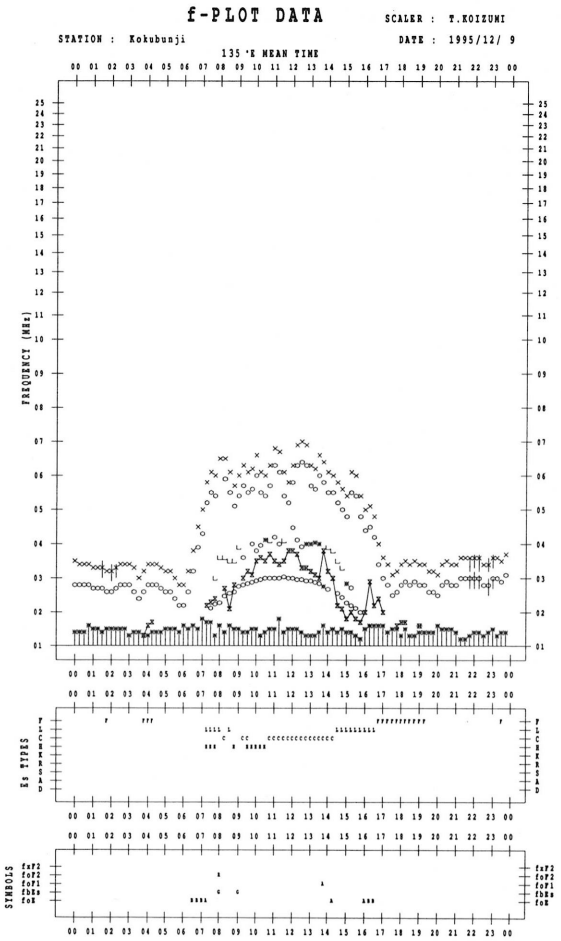

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 4
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

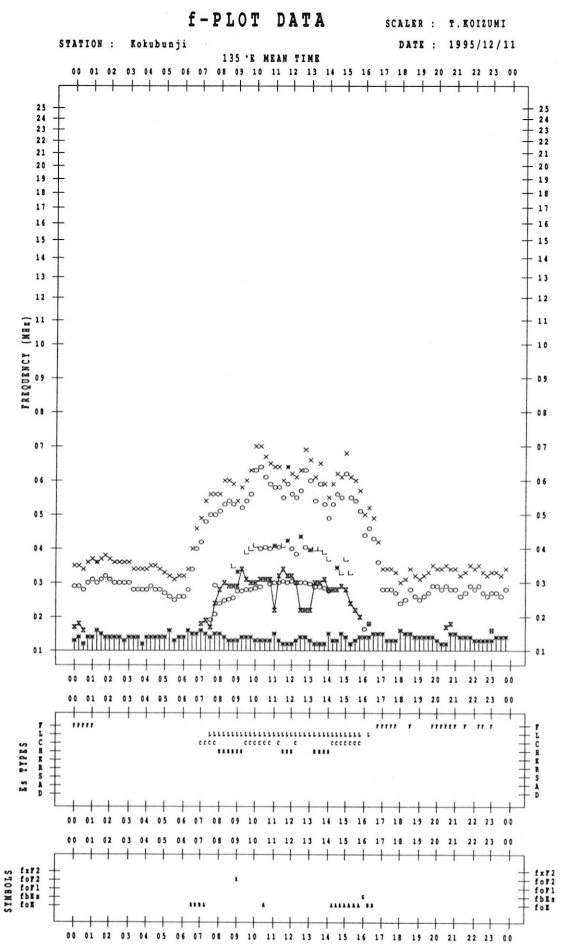

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 5
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

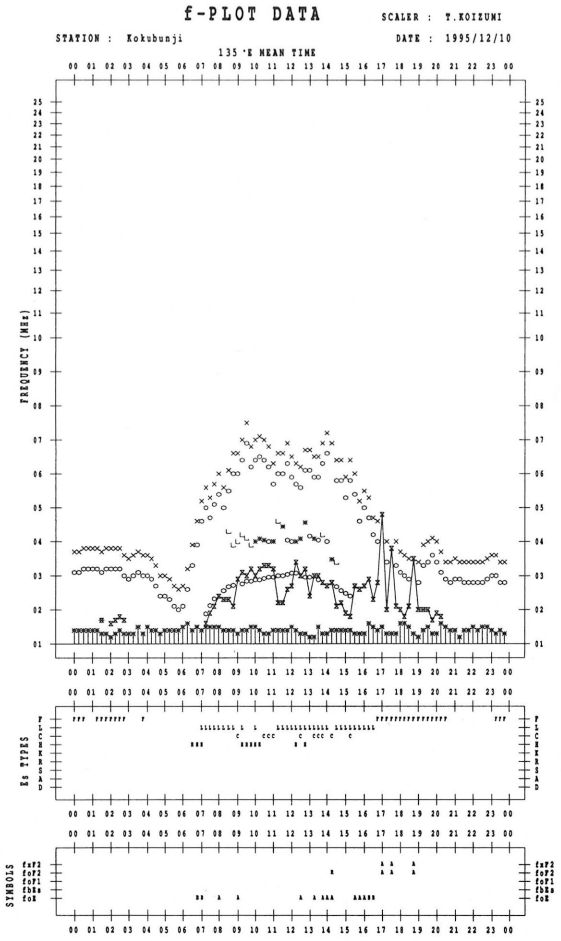

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 7
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

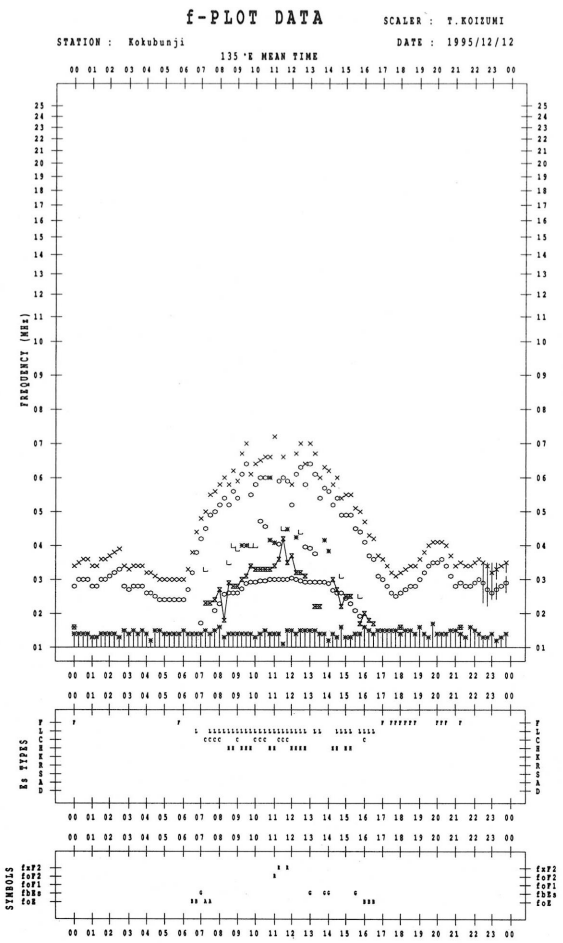

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 6
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

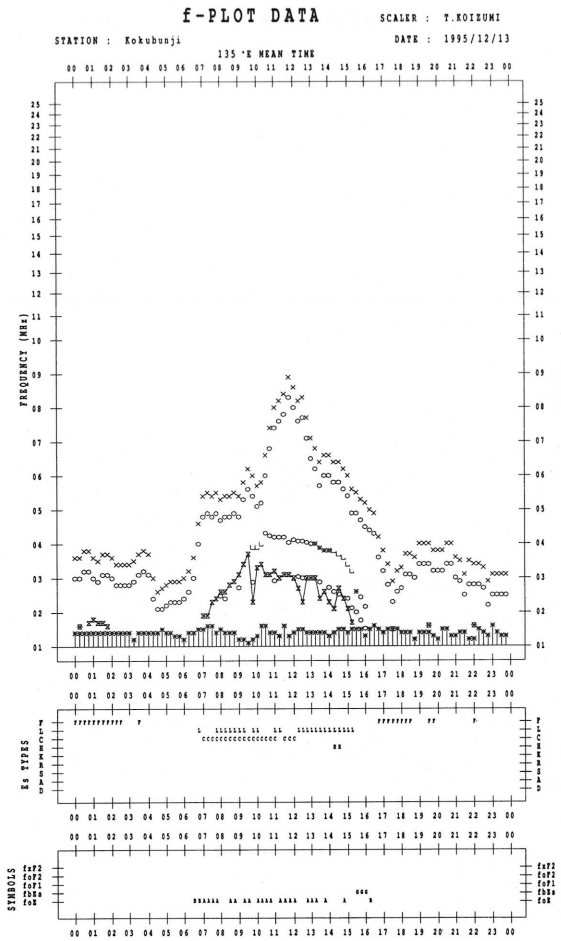

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 8
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

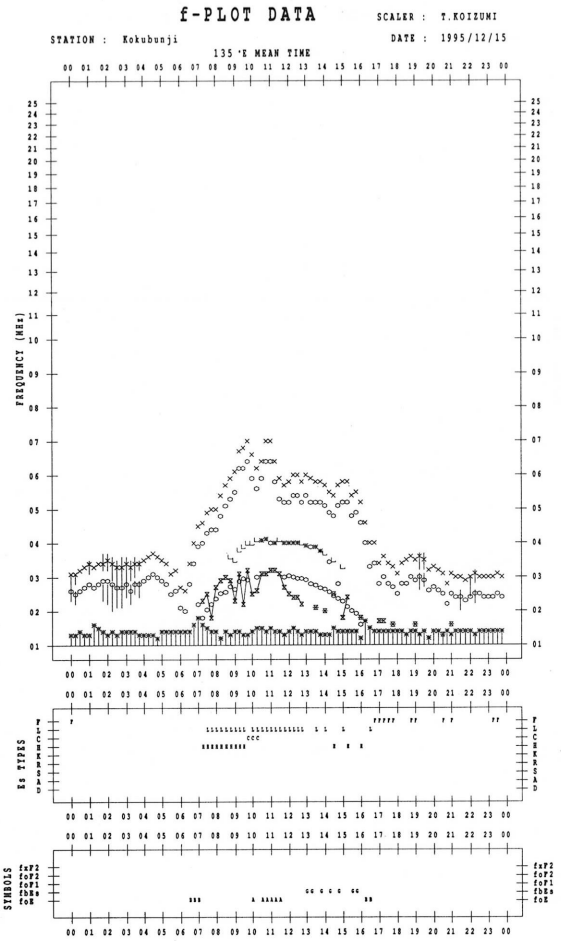

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/ 9
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

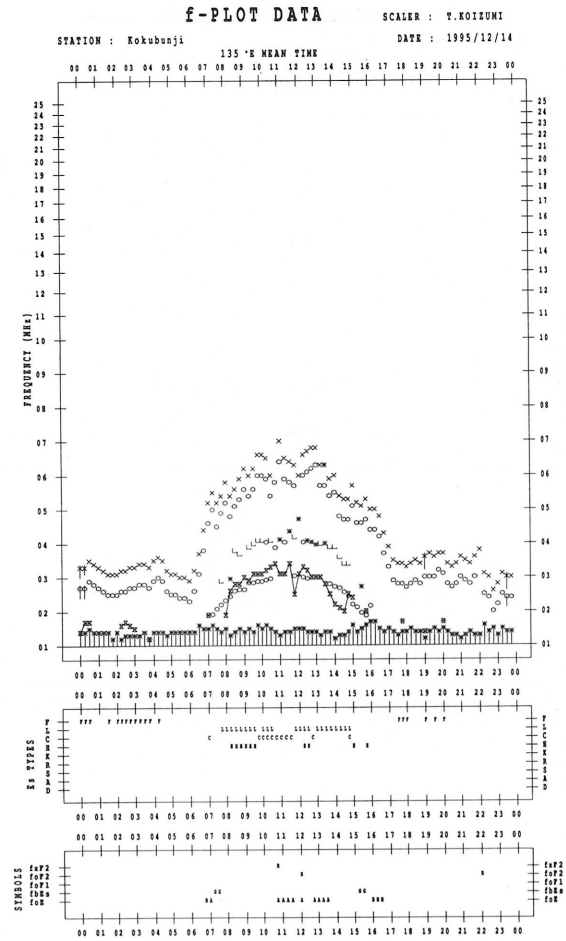

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/11
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/10
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


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


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/13
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/15
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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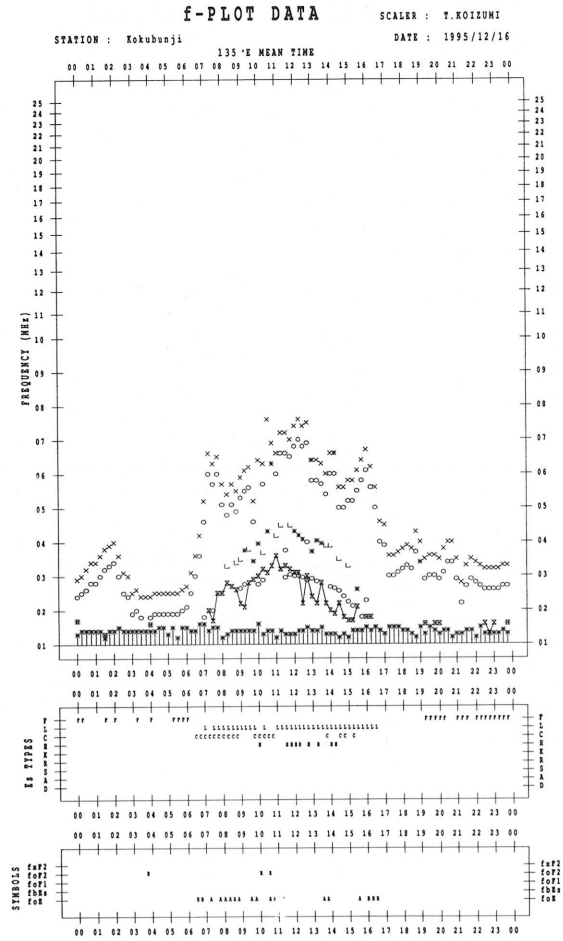
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/14
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE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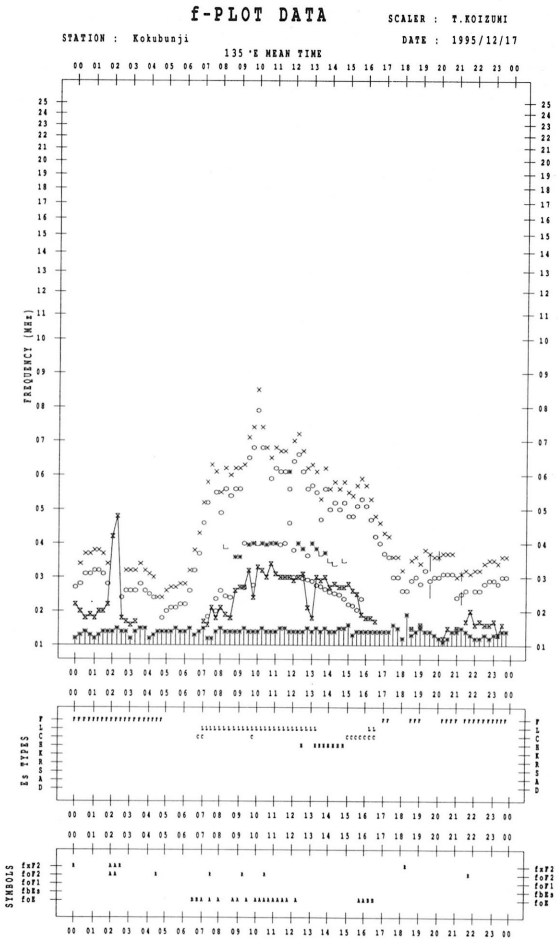
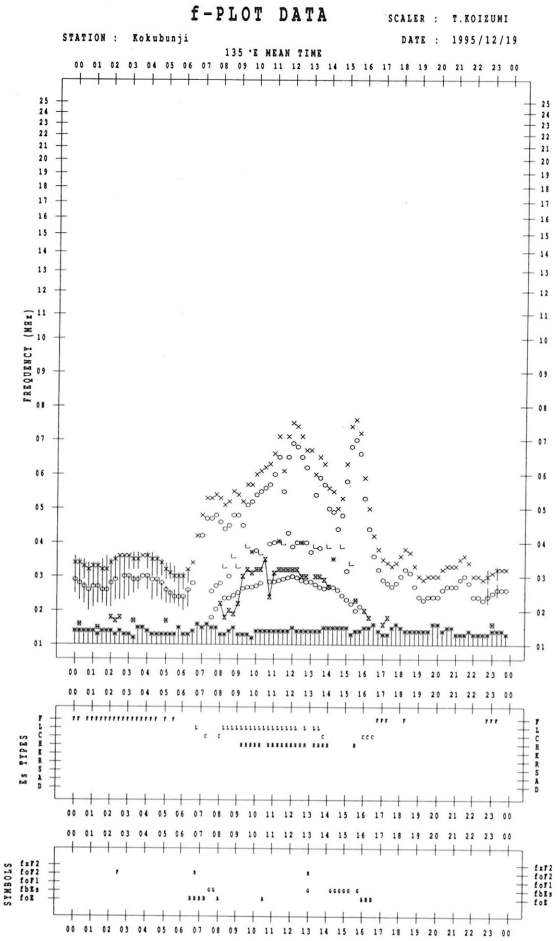
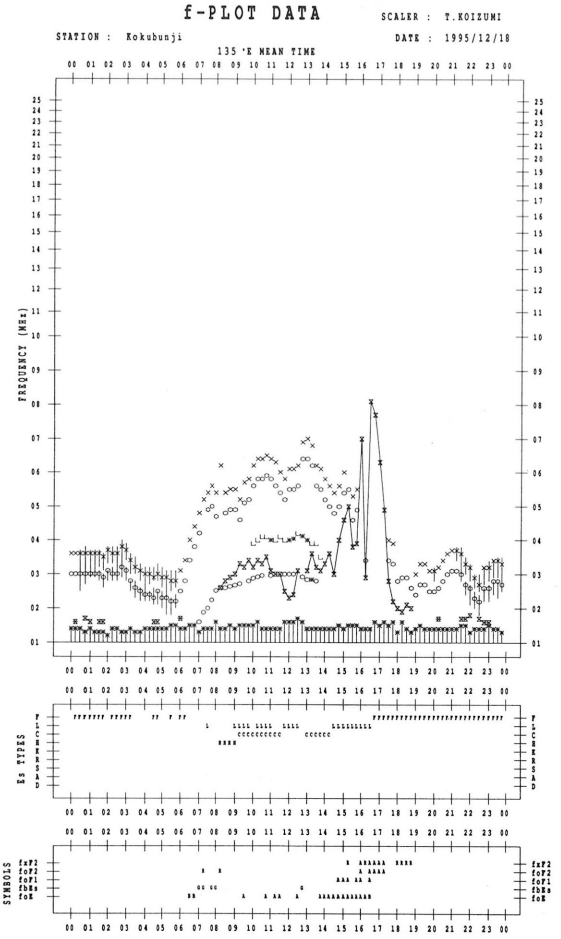
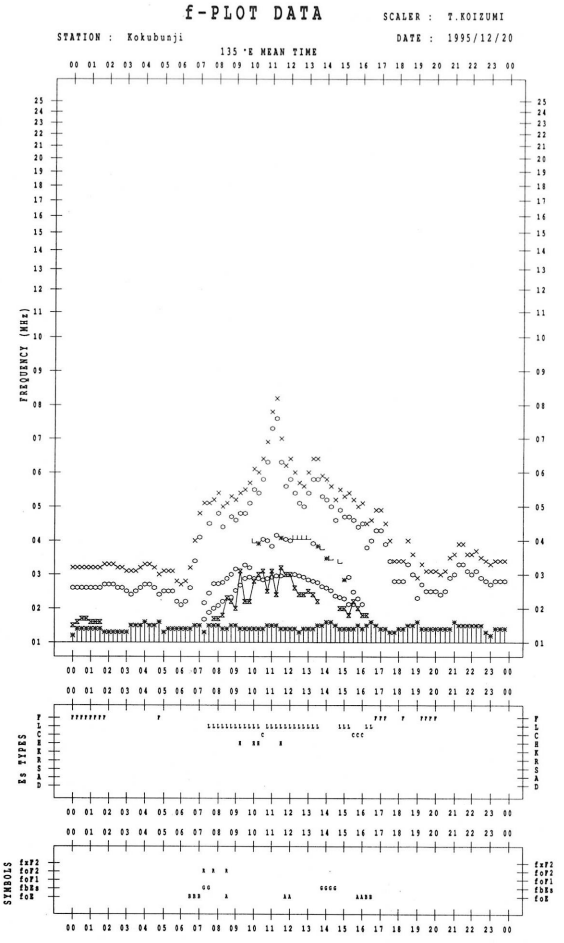
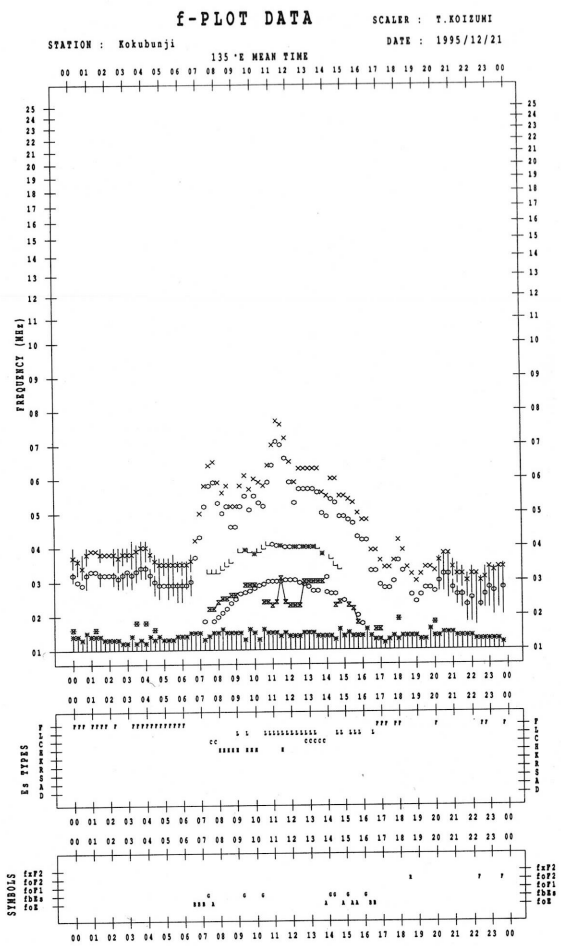
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/16
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS
fxF2
foF2
foF1
fbEs
foE

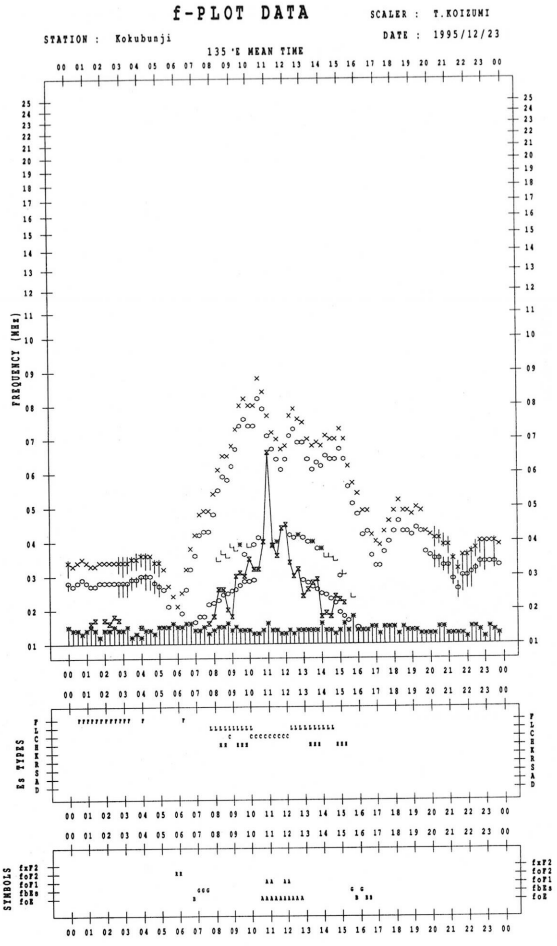

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/17
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/19
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/18
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/20
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/21
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS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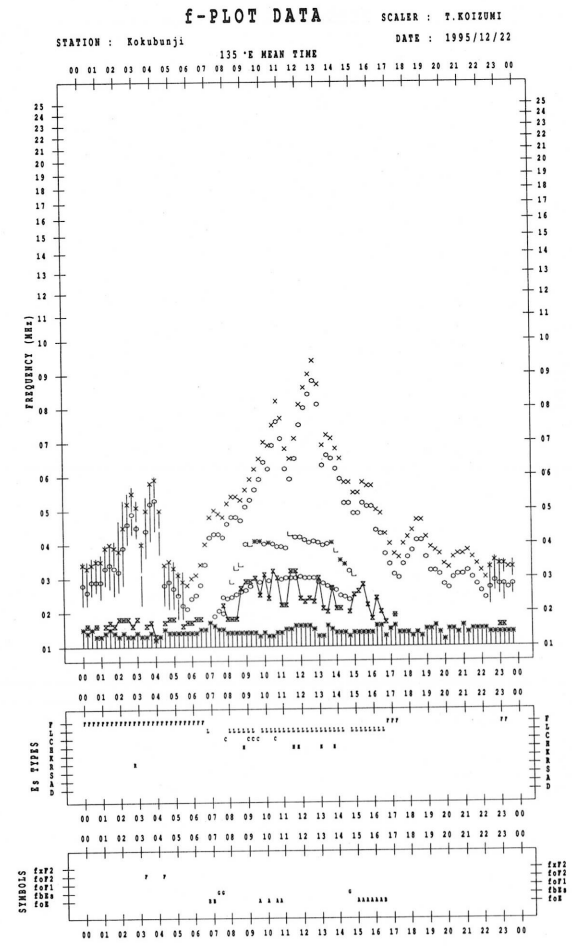
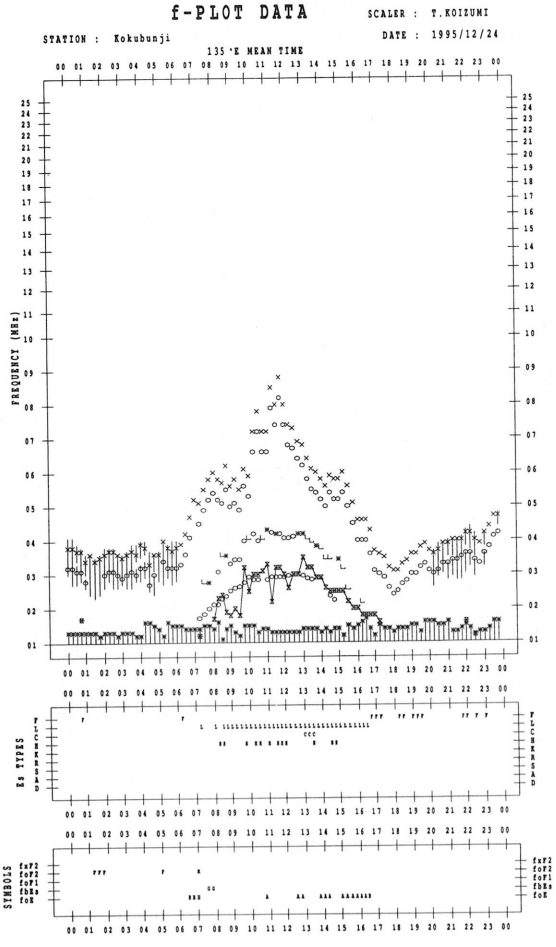
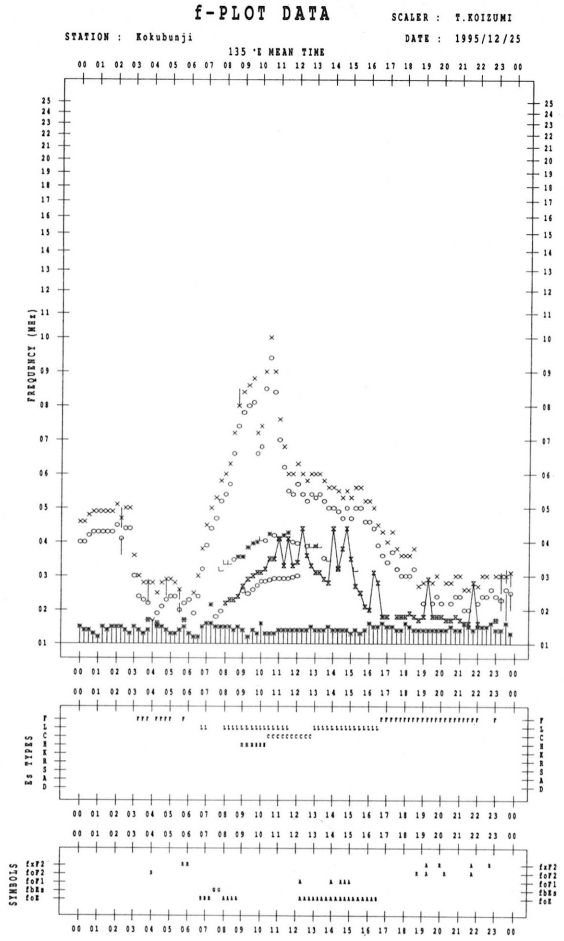
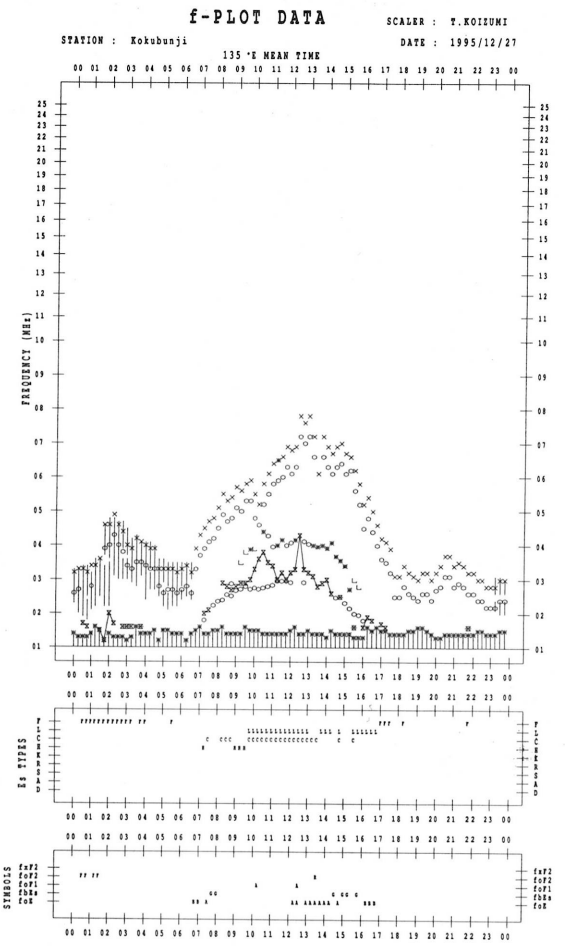
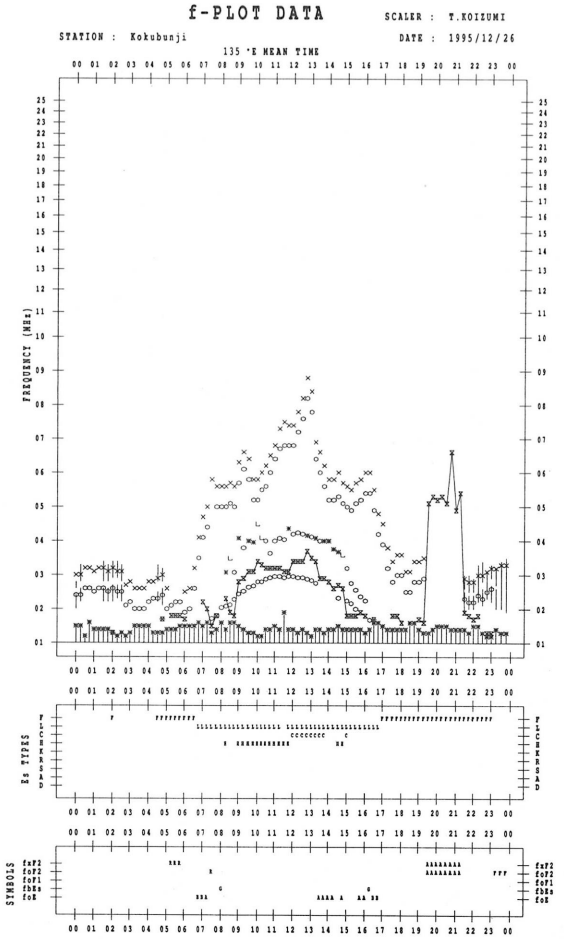
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/23
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

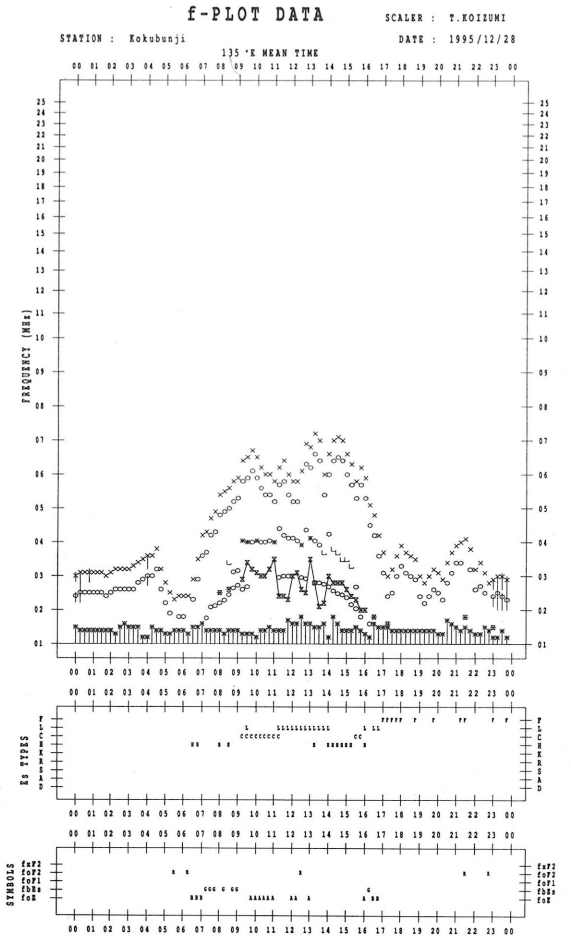

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/22
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

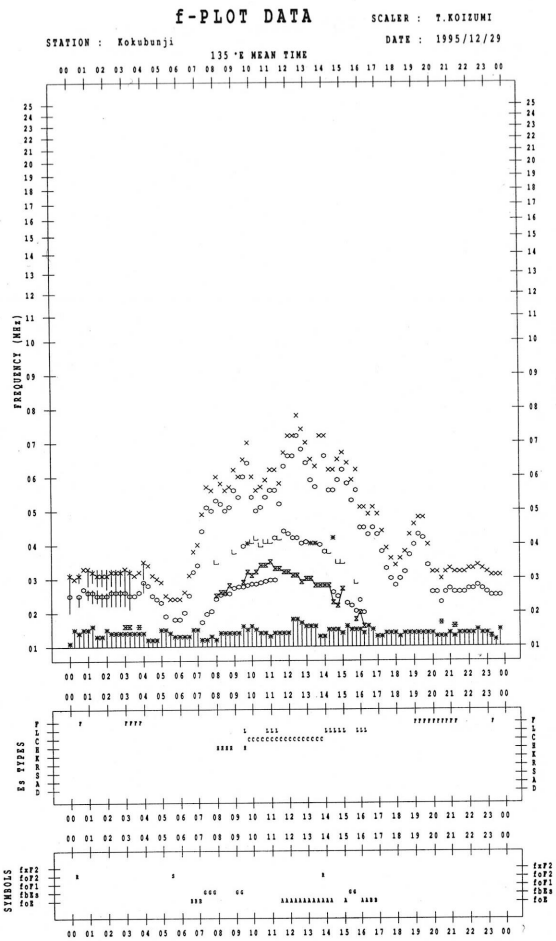

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/24
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

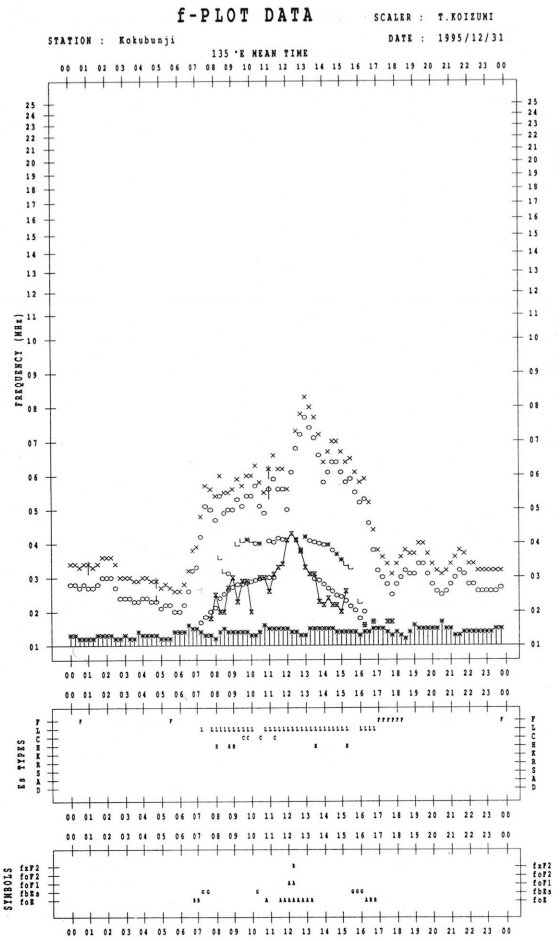

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/25
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

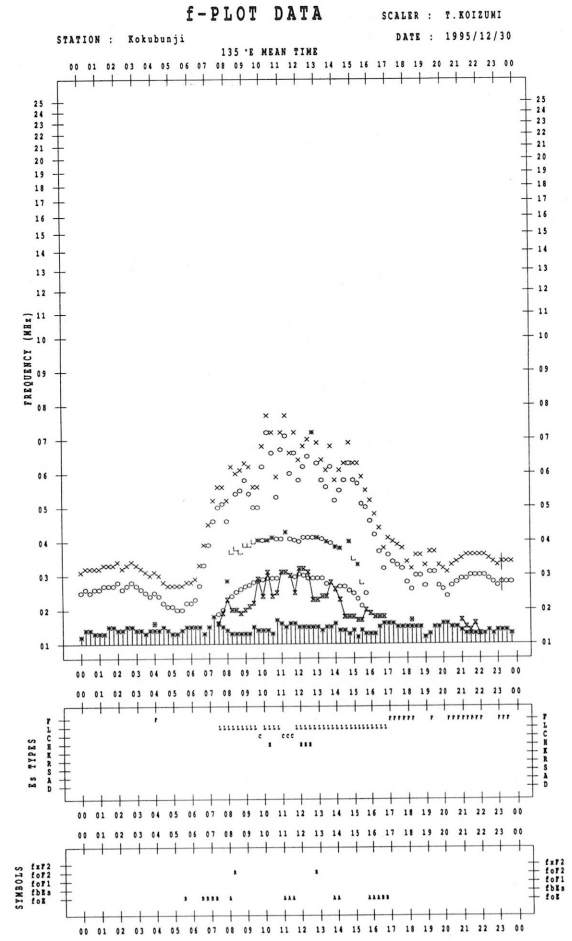

f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/27
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/26
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/28
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/29
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/31
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS


f-PLOT DATA
SCALER : T.KOIZUMI
STATION : Kokubunji
DATE : 1995/12/30
135 °E MEAN TIME
FREQUENCY (MHz)
Es TYPES
SYMBOLS

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso December 1995

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} Wm^{-2}Hz^{-1}					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	26	26	(26)	26	26
2	26	26	(26)	26	26
3	26	26	(26)	26	26
4	26	26	(26)	27	26
5	27	27	(27)	26	27
6	26	26	(26)	28	26
7	28	28	(28)	27	28
8	27	27	(27)	27	27
9	27	27	(27)	27	27
10	27	27	(27)	27	27
11	27	28	(28)	27	28
12	27	27	(27)	27	27
13	27	27	(27)	27	27
14	27	27	(27)	26	27
15	26	26	(26)	26	26
16	26	26	(26)	26	26
17	26	26	(26)	26	26
18	26	26	(26)	26	26
19	26	26	(26)	26	26
20	26	26	(26)	26	26
21	26	26	(26)	26	26
22	26	26	(26)	25	26
23	25	25	(25)	26	25
24	26	26	(26)	27	26
25	27	27	(27)	28	27
26	28	28	(28)	27	28
27	27	27	(27)	27	27
28	27	27	(27)	26	27
29	26	26	(26)	26	26
30	26	26	(26)	27	26
31	27	27	(27)	27	27

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso December 1995

Single-frequency observations

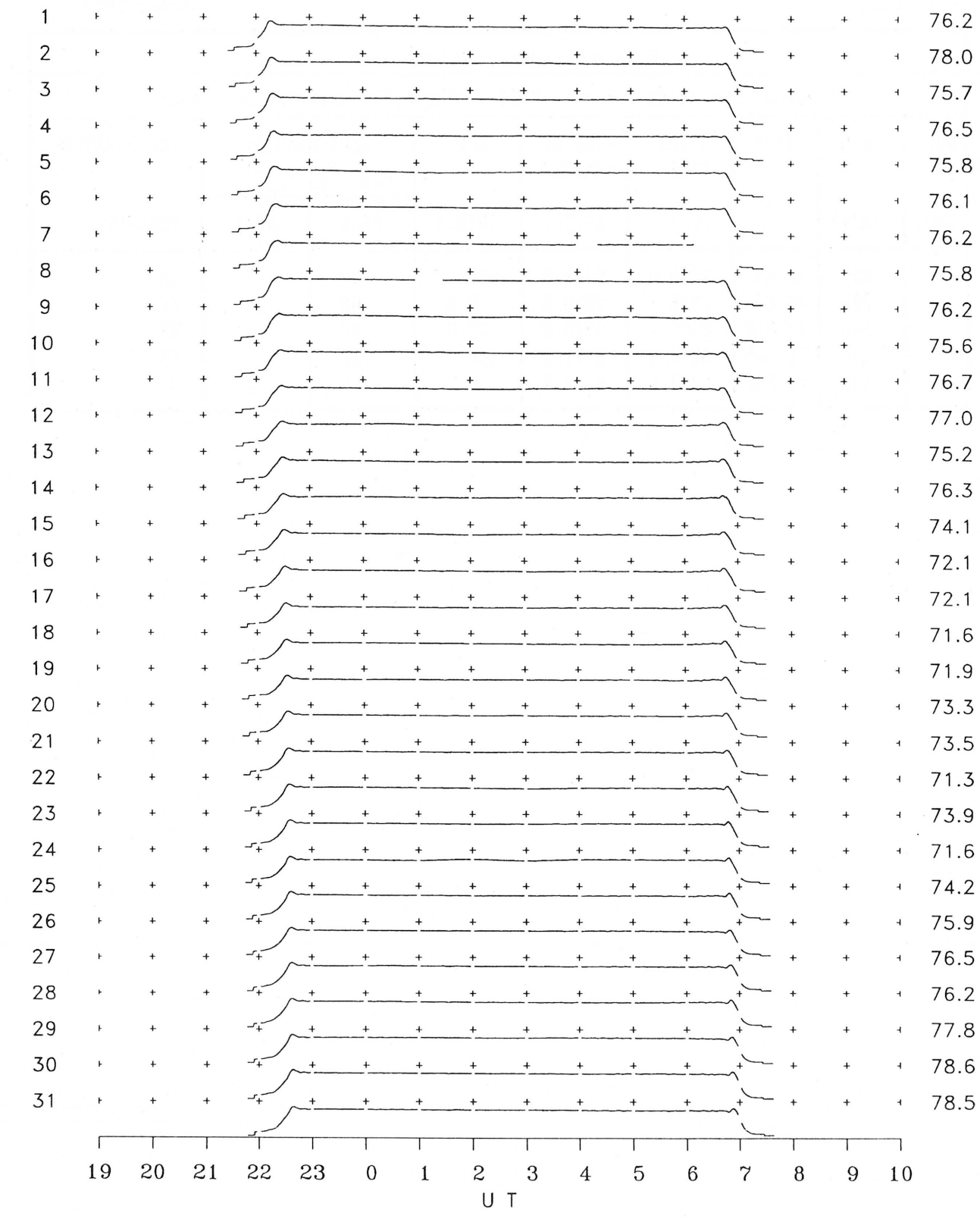
Normal observing period: 2140 - 0730 U.T. (sunrise to sunset)

DEC. 1995	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
6	200	43 NS	2233.0	0142.0	510	47	7	MR
	200	46 C	2238.1	2240.2	3.0	60	25	MR
	200	42 SER	2309.4	2315.0	13.0	80	-	MR
11	200	21 GRF	0343.0	0431.2	140	26	5	WR
	500	21 GRF	0347.0	0407.7	56	8	3	0

B. Solar Radio Emission

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

December 1995



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. RADIO PROPAGATION

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

DEC 1995 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

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

C. RADIO PROPAGATION

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

DEC 1995 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

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

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

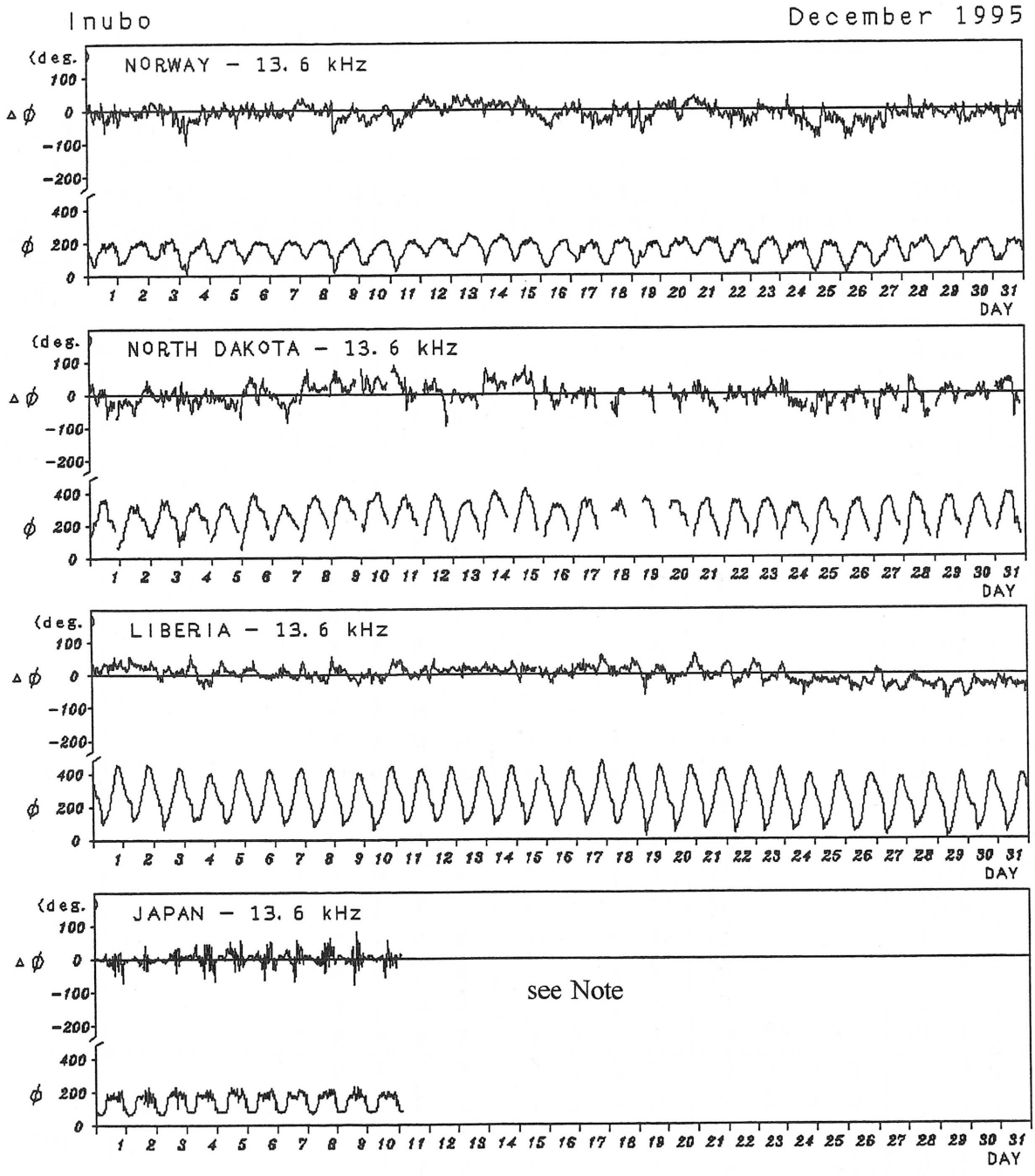
Hiraiso

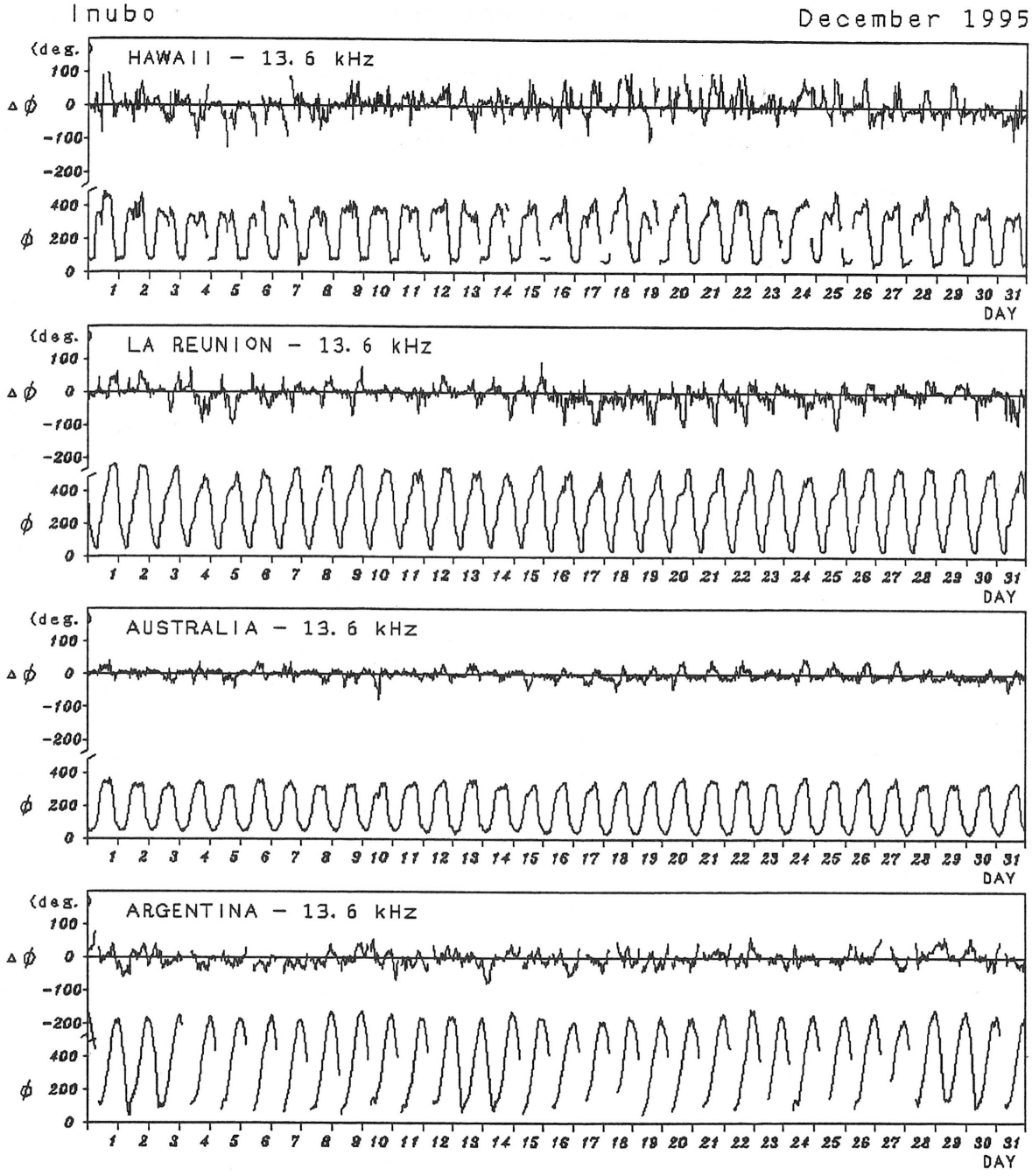
Time in U.T.

Dec. 1995	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	3+ U	- - - 2U	4 - - 4	N N N N			
2	3+ U	- - - 2U	4 - - 4	N N N N			
3	C	C - - C	C C C C	N N N N			
4	4+ U	- - - 5U	4 - - 4	N N N N			
5	4o U	- - - 4U	4 - - 4	N N N N			
6	4o U	- - - 5U	4 - - 3	N N N N			
7	4o U	- - - 4U	4 - - 4	N N N N			
8	4- U	- - - 4U	3 - - 4	N N N N			
9	4o U	- - - 4U	4 - - 4	N N N N			
10	4o U	- - - 4U	4 - - 4	N N N N			
11	4+ U	- - - 4U	4 5U - 4	N N N N			
12	4o U	- - - 4U	4 - - 4	N N N N			
13	4o U	- - - 4U	4 C C C	N N N N			
14	4o U	- - - 4U	4 C C C	N N N N			
15	4o U	- - - 4U	4 C C C	N N N N			
16	4- U	- - - 3U	4 - - 4	N N N N			
17	4+ U	- - - 4U	4 5U - 4	N N N N			
18	4o U	- - - 4U	4 - - 4	N N N N			
19	4+ U	- - - 4U	4 5U - 4	N N N N			
20	4- U	- - - 3U	3 5U - 4	N N N N			
21	4+ U	- - - 4U	4 5U - 4	N N N N			
22	4+ U	5U - C C	4 - C C	N N N N			
23	C	C C C C	C C C C	N N N N			
24	C	C C C C	C C C C	N N N N	0600	--- 23	121
25	4o U	C C - 4U	C C - 4	N N N N			SSC
26	4+ U	5U - - 4U	4 - - 4	N N N N			
27	4- U	- - - 3U	4 - - 4	N N N N			
28	4+ U	- - - 4U	5 - - 4	N N N N			
29	4+ U	- - - 4U	5 - - 4	N N N N			
30	4+ U	5U - - 4U	4 - - 4	N N N N			
31	3+ U	- - - 3U	4 - - 3	N N N N			

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo





Note : As for JAPAN-13.6kHz, no record during 11 December 0310 UT 1995 to 5 January 0100 UT 1996, due to the receiver trouble.

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

NONE

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso

Time in U.T.

DEC. 1995	S W F						Correspondence	
	Drop-out Intensities(dB)				Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS BBC						
None										

NOTE CO:Colorade(WWV) HA:Hawaii(WWVH) AUS:Australia MOS:Moscow BBC:London

* Optical and X-ray Flares

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Dec. 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
			NONE						

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Not available until system improvement is completed.

B. Solar Radio Emission

B1. Daily Data at Hiraiso

500 MHz

Hiraiso November 1995

Single-frequency total flux observations at 500 MHz					
Flux density: 10^{-22} $Wm^{-2}Hz^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	-	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	(27)	26	(27)
10	26	26	(26)	27	26
11	27	27	(27)	27	27
12	27	27	(26)	26	27
13	26	26	(25)	26	26
14	26	26	(26)	27	26
15	27	27	(27)	27	27
16	27	27	(27)	27	27
17	27	26	(26)	26	26
18	26	27	(26)	26	26
19	26	26	(25)	26	26
20	27	27	(27)	27	27
21	27	26	(27)	26	27
22	26	26	(26)	26	26
23	26	26	(26)	26	26
24	26	25	(25)	26	25
25	26	26	(26)	26	26
26	26	25	(26)	26	26
27	26	26	(26)	26	26
28	26	26	(26)	26	26
29	26	26	(26)	26	26
30	26	26	(26)	26	26

Note: No observations during the following periods.

1st 0000 - 9th 0545

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso November 1995

Single-frequency observations

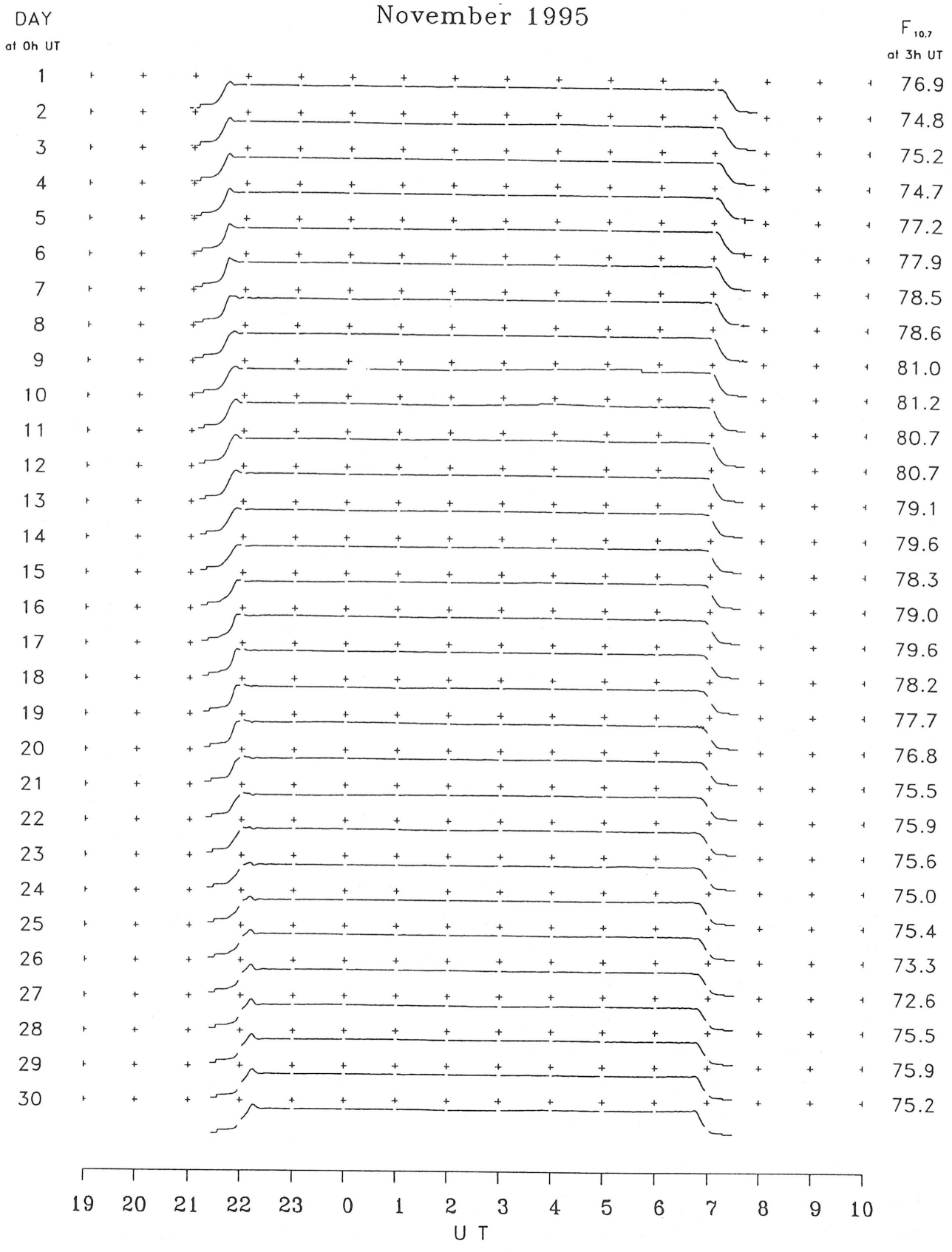
Normal observing period: 2115 - 0735 U.T. (sunrise to sunset)

NOV. 1995	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22} Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
10	2800	20 GRF	0341.7	0344.5	65	5	3	0
	500	8 S	0345.5	0345.7	0.4	2	-	0
	500	8 S	0348.3	0348.3	0.2	3	-	0
16	500	46 C	2151.0U	2152.5	3.0	14	9	WR, sunrise
17	200	42 SER	2259.2	2259.5	2.0	18	6	0
18	200	46 C	0101.0	0101.8	2.0	20	5	0

B. Solar Radio Emission

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

November 1995



Note: A vertical grid space corresponds to a 100 sfu.
Elevation angle range ≧ 6°.

C. RADIO PROPAGATION

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

NOV. 1995 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

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

C. RADIO PROPAGATION

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

NOV. 1995 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

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

C. Radio Propagation

C2. Radio Propagation Quality Figures at Hiraiso

Hiraiso

Time in U.T.

Nov. 1995	Whole Day Figure	W W V 00 06 12 18 / 06 12 18 24	W W V H 00 06 12 18 / 06 12 18 24	Condition 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	C	C C C C	C C C C	N N N N			
2	C	C C C C	C C C C	N N N N			
3	C	C C C C	C C C C	N N N N			
4	C	C C C C	C C C C	N N N N			
5	C	C C C C	C C C C	N N N N			
6	C	C C C C	C C C C	N N N N			
7	C	C C C C	C C C C	N N N N			
8	C	C C C C	C C C C	N N N N			
9	C	C C C C	C C C C	N N N N			
10	C	C C C C	C C C C	N U U U			
11	C	C C C C	C C C C	U N N N			
12	C	C C C C	C C C C	N N N N			
13	C	C C C C	C C C C	N N N N			
14	C	C C C C	C C C C	N N N N			
15	C	C C C C	C C C C	N N N N			
16	C	C C C C	C C C C	N N N N			
17	C	C C C C	C C C C	N N N N			
18	C	C C C C	C C C C	N N N N			
19	C	C C C C	C C C C	N N N N			
20	C	C C C C	C C C C	N N N N			
21	C	C C C C	C C C C	N N N N			
22	C	C C C C	C C C C	N N N N			
23	C	C C C C	C C C C	N N N N			
24	C	C C C C	C C C C	N N N N			
25	C	C C C C	C C C C	N N N N			
26	C	C C C C	C C C C	N N N N			
27	C	C C C C	C C C C	N N N N	06.2	-- 21	119
28	C	C C C C	C C C C	N N N N			
29	C	C C C C	C C C C	N N N N			
30	C	C C C C	C C C C	N N N N			

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso

Time in U.T.

Nov. 1995	S W F						Correspondence	
	Drop-out Intensities(dB)				Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS BBC						
16		>38	23		2145	15	SL	2-	-	-

NOTE CO:Colorade(WWV) HA:Hawaii(WWVH) AUS:Australia MOS:Moscow BBC:London

* Optical and X-ray Flares

IONOSPHERIC DATA IN JAPAN FOR DECEMBER 1995
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