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IONOSPHERIC DATA IN JAPAN

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CONTENTS

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INTRODUCTION

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

Station	Geographic		Geomagnetic		Technical Method
	Latitude	Longitude	Latitude	Longitude	
Wakkanai	45°23.5'N	141°41.2'E	35.3°N	206.5°	Vertical Sounding (I)
Akita	39°43.5'N	140°08.0'E	29.5°N	205.9°	" (I)
Kokubunji	35°42.4'N	139°29.3'E	25.5°N	205.8°	" (I)
Yamagawa	31°12.1'N	130°37.1'E	20.4°N	198.3°	" (I)
Okinawa	26°16.9'N	127°48.4'E	15.3°N	196.0°	" (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°	" (P)

A. IONOSPHERE

Ionospheric observations are carried out at the above five 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 descriptive letter 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 1-4, 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 transmission by *F2* and *F1* layers, respectively
h'F2 *h'F* *h'E* *h'Es*	Minimum virtual height on the ordinary wave for the *F2*, whole *F*, *E* and *Es* layers, respectively
Types of *Es*	See below b. (iii)

b. Symbols

(i) Descriptive Letters

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

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

(ii) Qualifying Letters

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

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

(iii) Description of Types of *Es*

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

The types are:

f An *Es* trace which shows no appreciable increase of height with frequency.
l A flat *Es* trace at or below the normal *E* layer minimum virtual height or below the particle *E* layer minimum virtual height.
c An *Es* trace showing a relatively symmetrical cusp at or below *foE*. (Usually a daytime type.)
h An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above *foE*. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *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 100, 200 and 500 MHz are carried out at Hiraiso. The observation equipment consists of two parabolic antennas, one with 10-meter diameter for 100 and 200 MHz measurements and one with 6-meter diameter for 500 MHz measurements, each being equipped with a pair of crossed doublet antennas as a primary radiator, and three appropriate receivers. Each pair of the crossed doublet antennas is used as a polarimeter. 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 at the base-level are tabulated separately for 200 and 500 MHz measurements. Here, the base-level intensity is defined as the intensity recorded during the time when no radio emission burst is taking place. 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 Hiraiso 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.

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 660 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 in 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	influenced 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.

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 per hour from JJY (Japan Standard Wave) station. The conditions are denoted as follows:

N	normal,
U	unstable,
W	disturbed.

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

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

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

C4. Sudden Ionospheric Disturbances

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

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

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

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

Types of fade-out are as follows:

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

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

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

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

b. Sudden Phase Anomaly (SPA) at Inubo

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

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

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

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

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

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

HOURLY VALUES OF FOF2 AT WAKKANAI

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

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	50	A	A	51	A	41	50	75	107	122	122	126	124	107	103	88	80	66	58	56	56	A	A	38
2	38	31	35		34	59	49	86	105	89	119	122		91	101	109	106	84	62	64	54	60	48	50
3	53	50	50	42	37		62	82	105	130	110	87	116	88	96	106	90	83	61	43	40	43	58	38
4	38	38	40	42	42	37	53	73	109	90	118	125	112	101	97	101	90	93	51	A	27	A	A	
5	38	38	32	38	41	36	A	86	104	135	128	141	133	114	97	89	84	67	62	66	55	43	41	51
6	38	38	51	60	57	59		100	87	107	121	122	115	101	87	90	86	66	54	58	51	40	38	A
7	A		38	38	38	86	110	74	105	118	122	125	112	107	92	91	78	52	50	40	A	A	A	A
8	A	A	36	37	35	44	61	88	111	90	111	102	104	91	86	91	85	52	34	A	38	59	38	A
9	A	A	36	46	42	38	60	71	91	86	101	97	103	106	85	87	86	85	78	58	38	51	63	46
10			43	A	A			53	48	53	62	62		57	60	54	53	41	A	A	A	59	A	A
11	A	62	44	47	47	37	50	58	84	91	87	110	102	95	85	84	84	61	58	30	40	64	41	42
12	A	A	38	A	38	40	61	82	87	92	91	110	112	112	106	93	88	60	52	41	38	35	A	A
13	37	A	38	40	40		40	84	102	106	96	106	98	90	111	104	85	64	58	51	40	41	43	A
14	46	67	54	48	54	42	54	100	89	88	104	111	96	90	87	87	86	67	32	40	38	29	42	38
15	41	A	47	40	43	43	46	66	106	91	96	107	112	92	90	86	83	66	42	43	52	38	32	38
16	51	40	40	43	48	35		78	89	114	108	111	108	88	91	91	86	67	51	40	42	47	38	51
17	38	61	41	43	44	65	31	65	79	96	106	111	104	108	102	107	A	52	53	32	N	51	45	38
18	38	38	41	40	38			66	86	93	87	107	100	86	112	89	60	A	41		42	38	37	38
19	38	37	38	40	42	64		82	88	86	107	111	90	104	102	90	84	51	44	43	31	31	A	36
20	37	40	35	23	37		79	62	90	103	88	110	90	91	101	84	70	61	A	42		28	65	
21	65	61	38	38	40	34	32	72	102	85	88	90	109	87	90	89	89	54	60			37	37	
22		34	34	36	35	42	34	88	85	109	101	107	86	85	87	86	65	52	53	50	36	32		
23	37	38	42	35	34	38	32	63	107	140	144	137	122	121	121	100	100	62	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	112	62	55	53	34	40	34	37
26	35	64	41	40	42	43	52	84	107	106	111	115	107	106	107	107	91	72	52	64	39	64	38	36
27	42	43	44	46	44	38	34	86	101	107	122	118	118	102	96	88	76	62	53	35	34	31	51	34
28	51	37	35	37	38	38	26	70	87	90	102	102	106	106	106	87	64	51	42		A	A	69	37
29				40	40		91	59	87	90	104	91	108	91	92	81	72	62	58	37	40	50		59
30		40	42	43	46	47	60	66	86	103	109	90	108	91	88	89	66	53	45	34	31		N	32
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	19	26	25	26	22	22	28	28	28	28	28	26	28	28	28	28	28	26	22	22	23	19	18
MED	38	40	40	40	40	42	51	74	90	94	106	110	108	94	96	89	84	62	53	43	40	41	41	38
U Q	50	61	43	44	44	47	61	85	105	108	118	120	112	106	102	96	88	67	58	56	42	51	51	46
L Q	38	38	36	38	38	38	34	66	87	90	96	102	102	90	87	87	74	52	45	40	36	35	38	37

HOURLY VALUES OF FES AT WAKKANAI

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	56	60	60	58	60	G	G	49	40	G	G	74	G	G	G	G	G	G	37	32	69	60	35	29
2	30	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G	36	30	G	G	G	G	G	26
3	G	29	35	33	28	26	G	G	36	G	G	G	65	G	39	G	G	G	G	G	G	G	G	G
4	28	G	35	26	26	G	G	G	G	G	G	G	G	G	G	G	G	38	53	59	58	58	30	37
5	G	G	28	26	G	32	55	33	40	51	G	40	56	38	38	G	28	30	26	G	57	G	26	G
6	G	23	G	G	G	G	G	G	G	G	G	G	G	G	45	G	36	G	G	33	58	39	35	46
7	55	36	39	28	29	G	G	G	G	G	G	G	G	G	G	G	38	G	36	55	72	65	38	41
8	34	36	26	26	G	G	G	G	41	G	40	64	66	127	63	37	37	40	46	66	33	34	30	40
9	39	42	G	27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
10	G	26	28	30	41	28		G	39	G	G	G	G	G	G	G	G	G	40	38	55	95	65	56
11	38	54	28	G	G	G	G	G	G	G	G	G	G	58	G	G	G	33	41	33	28	30	G	61
12	70	45	58	34	G	G	G	G	G	G	G	G	G	G	54	G	29	35	36	26	29	G	58	61
13	58	34	34	37	G	G	G	G	G	38	G	G	53	G	51	35	G	54	93	56	31	35	32	38
14	36	G	G	G	33	24	G	G	66	46	G	G	G	G	36	45	38	39	G	G	G	G	G	G
15	33	38	28	29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G	G
16	G	G	G	G	28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	48	65	110	33	38	30	G	29	G
18	24	26	29	32	G	G	G	G	G	G	G	G	52	G	54	38	37	72	57	68	38	33	28	G
19	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	58	26	59	32	33	32
20	G	G	G	28	G	G	G	G	G	G	G	G	G	G	G	G	36	G	55	33	G	32	78	28
21	29	G	G	G	G	G	G	G	101	G	G	G	G	G	G	G	G	G	G	G	G	G	25	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	25	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	G	24	G	26	G	24	G	G
26	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	G	G	G	G	G	G	G
27	27	G	G	G	G	G	G	G	40	36	56	G	G	G	G	G	G	G	G	G	G	G	30	G
28	G	G	G	G	G	G	G	G	G	G	48	G	G	G	G	G	G	G	G	30	34	38	33	G
29	G		G	G	G	G	40	G	40	64	38	G	G	G	G	G	G	G	32	33	G	G	27	38
30	38	28	27	24	G	G	G	G	G	G	G	G	G	G	38	G	33	G	G	G	G	G	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	28	27	28	28	28	28	27	28	28	28	28	28	28	28	28	28	29	29	28	28	28	28	28	28
MED	26	G	G	12	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	26	14	G	28	G
U Q	37	36	28	28	13	G	G	G	39	18	G	G	G	G	38	G	36	36	40	35	46	34	33	38
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT WAKKANAI

NOV. 1992

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	16	16	15	14	15	15	18	17	20	22	39	46	45	21	32	29	23	17	15	17	15	15	15	15
2	15	16	14	17	15	17	21	26	21	24	32	34	111	76	46	48	21	16	17	18	16	18	16	16
3	15	16	15	16	16	20	18	26	30	20	21	22	20	32	20	27	23	22	15	15	16	15	16	16
4	16	15	15	15	15	16	21	26	30	30	27	27	33	32	26	30	23	17	14	18	16	16	16	16
5	16	15	15	15	15	15	17	22	24	21	26	26	23	21	21	26	21	16	17	17	16	17	15	18
6	16	16	15	15	15	15	28	23	28	30	32	23	20	33	20	18	18	16	15	16	16	15	16	15
7	16	15	14	16	16	17	20	29	20	29	33	33	46	33	23	27	17	17	15	16	15	15	15	16
8	15	16	14	14	15	16	22	26	20	23	24	23	22	26	20	21	16	18	16	15	15	18	15	16
9	16	16	17	16	15	16	20	24	48	29	32	32	32	32	30	28	22	17	15	16	16	15	16	
10		16	15	14	14	18		30	23	29	24	44	22	28	29	23	28	17	15	15	15	16	16	15
11	16	15	15	15	15	15	21	23	27	22	22	24	22	21	30	27	21	17	16	15	17	15	17	15
12	16	15	15	15	15	16	18	27	20	24	33	33	23	32	22	27	18	16	17	15	16	17	16	14
13	16	16	15	15	16	17	16	24	20	23	23	22	18	18	21	21	20	20	15	16	15	15	16	15
14	17	15	14	15	14	16	20	22	21	20	22	27	30	32	18	24	17	17	22	16	16	20	17	15
15	16	15	16	16	15	17	27	22	29	21	34	42	34	29	30	24	17	20	17	17	16	16	16	15
16	15	16	15	15	14	16		22	28	46	47	32	40	32	28	27	20	20	15	15	16	16	15	18
17	16	16	15	15	15	14	22	23	29	32	45	36	33	46	30	20	20	20	17	16	17	18	17	17
18	15	15	14	15	15	15		24	29	29	32	43	29	22	30	22	18	18	15	15	16	16	17	15
19	16	15	15	15	15	15	17	26	33	32	35	45	42	46	30	32	17	16	16	16	16	14	16	15
20	15	16	15	15	14	15	16	23	28	44	40	46	45	29	17	30	21	16	15	16	15	16	15	16
21	15	16	15	15	16	15	21	23	35	30	42	35	46	30	33	26	17	17	15	17	16	16	16	17
22	16	15	16	15	15	15	20	22	28	30	45	39	45	45	30	29	20	20	15	15	16	15	16	18
23	15	16	15	15	14	15	18	22	28	41	24	41	41	32	30	27	20	22	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	20	16	15	16	16	16	16	15
26	16	15	15	15	15	15	17	20	26	18	33	46	35	23	29	27	22	22	15	15	16	17	16	15
27	16	17	14	15	14	16	17	22	21	18	20	22	30	22	28	29	20	18	15	16	15	17	16	15
28	16	16	16	15	14	16	21	22	30	29	23	23	22	29	18	27	17	24	16	17	17	17	17	17
29				15	15	18	18	21	16	21	20	21	20	30	27	28	18	16	16	17	16	17	16	15
30	15	16	15	14	14	15	17	23	27	18	18	22	21	21	18	26	17	17	17	15	15	16	18	15
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	27	28	28	28	25	28	28	28	28	28	28	28	28	28	29	29	28	28	28	28	28	27
MED	16	16	15	15	15	16	20	23	28	26	32	32	31	30	28	27	20	17	15	16	16	16	16	15
U Q	16	16	15	15	15	16	21	26	29	30	34	41	41	32	30	28	21	20	16	17	16	17	16	16
L Q	15	15	15	15	14	15	17	22	21	21	23	23	22	22	20	24	17	16	15	15	15	15	16	15

HOURLY VALUES OF FOF2 AT AKITA

NOV. 1992

LAT. 39.7N LON. 140.1E 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																								
2										97	117	121	B	94	106	100	105	86	76	63	49	48	48	52
3	56	50	48	41		35	50	80	90	112	118	106	101	111	105	101	96	73	55	56	53	53	25	46
4	42	40	43																					
5																								
6													117	115	97	90	90	77	53	51	46	26	40	A
7	40	A	A	37	37	35	45	86	110	127	136	134	127	119	111	97	84	60	50	A	43	38	A	A
8	A	48	37	64	62	64	64	86	108	111	111	110	102	110	111	101	87	52	54	50	63	41	38	41
9	A	44	45	48	52	38	43	77	90	166	90	106	96	103	102	94	103	78	52	64	57	50	51	35
10	30	26	A	44	35	A	42	53	52	66	75	65	60	64	63	65	87	72	A	29	A	36	32	
11	36	36	A	37	A	35					96	98	100	102	98	87	82	65	50	42	41	43	42	35
12	38	38	38	40	50	38	46	82	90	98	106	110	115	111		102	81	53	55	63	38	31	35	36
13	35	65	40	37	42	55		87	96	98	96	104	97	98	97	107	91	64	58	43	30	34	35	A
14	A	A	47	N	40	46	38	90	108	84	106	102	91	93	94	77	82	65	64	41	42	35	35	38
15		56	48	40	40	37	48	85	88	91	91	100	101	105	93	86	78	64	54	42	44	42	36	50
16	35	36	38	41	44	31	38	55				111	105	86	100	90	38	A	A	34	43	44	38	37
17	46	38	38	37	40	48	35	75	88	105	100	111	111	100	104	101	83		A	35	30	51	35	36
18	38	40	38	40	40	38	42	71	80	86	87	97	110	93	96	87	78	41	46	38	40	49	A	37
19	37	A	40	40	40	32	40	80	90	95	106	118	108	101	101	90	80	54	47	65	38	38	51	50
20	40	41	43	46	61	34	41	71	86	100	107	100	100	90	91	86	71	60	36	48	35	50	A	A
21	A	51	36	37	35	31	64	81	85	98	96	102	96	105	98	86	63	62	57	33	64	65	51	51
22	35	35	34	36	65	49	38	79	88	97	87	87	90	93	93	87	74	51	46	43	40	38	35	31
23	32	34	43	37	32	38	40	74	108	145	141	127	108	112	112	110	82	63	63	64	64	65	60	64
24	59	64	50	37	64	37	62	84	104	118	118	122	112	121	111	100	87	52	55	60	38	36	35	38
25	37										133	133	115	124	114	112	86	73	54	57	A	28	A	26
26	A	A	37	64	A	36	64	80	90	107	114	117	110	118	115	104	98	40	52	63	65	A	35	A
27	42	43	42	42	40	37	43	78	111	112	112	112	111	112	92	90	87	63	51	43	35		25	
28	29	50	32	51	47	36	34	68	93	103	97	107	97	108	101	84	80	60	60	38	61	35	31	35
29	34	36	35	38	40	58	38	69	80	100	113	103	98	102	95	86	59	63	58	A	65	50	31	32
30	A	32	38	42	52	41	40	71	86	90	104	115	100	90	86	87	68	50	43	N	51	59	31	31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	21	22	23	21	23	22	23	22	23	25	26	26	27	26	27	27	25	24	24	25	25	23	20
MED	37	40	39	40	40	37	42	79	90	100	106	108	102	103	99	90	82	63	54	46	43	42	35	37
U Q	42	50	43	44	52	46	48	84	104	112	115	117	111	112	106	101	87	68	57	61	59	50	42	48
L Q	35	36	37	37	40	35	38	71	86	95	96	102	97	93	94	86	78	52	50	39	38	35	32	35

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT AKITA

NOV. 1992

LAT. 39.7N LON. 140.1E 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																								
2										46	G	G	B	G	G	G	30	35	164	29	G	G	G	G
3	G	57	27	G		G	G	G	G	G	G	G	53	G	G	34	38	37	28	G	G	41	32	25
4	24	24	G																					
5																								
6													G	46	49	44	36	30	26	29	G	32	50	86
7	32	24	25	G	G	67	G	30	37	G	59	G	56	50	42	47	32	34	37	82	G	28	36	94
8	91	40	G	G	G	G	G	G	55	72	93	56	51	110	43	40	28	G	G	G	G	G	G	52
9	54	29	G	G	28	69	G	G	G	G	54	G	G	41	158	G	54	59	68	30	26	27	G	G
10	G	G	28	25	27	34	G	40	G	G	46	G	G	42	40	50	74	115	154	G	32	30	40	G
11	25	40	56	37	37	26					40	G	49	G	G	G	G	33	37	70	G	G	G	G
12	58	28	G	G	G	G	28	G	G	40	43	G	58	74		G	43	54	73	27	G	G	G	29
13	G	G	G	69	G	G	G	G	36	40	158	G	G	59	G	G	G	G	31	31	G	G	G	34
14	58	54	32	28	G	26	G	29	34	44	43	55	41	G	58	50	37	28	G	G	G	46	28	27
15		G	G	26	26	G	G	28	G	G	G	G	46	G	G	G	G	26	G	28	24	G	G	G
16	G	G	G	G	G	G	G	29	G			56	G	G	G	G	34	56	46	40	G	G	G	G
17	G	96	70	G	G	G	G	32	G	G	46	47	61	53	50	42	39	28	47	G	69	G	G	G
18	G	G	G	G	G	G	G	43	58	G	40	G	116	68	G	60	49	49	30	G	55	57	41	31
19	30	30	26	G	59	G	G	29	G	G	161	G	G	G	G	40	51	34	50	30	G	G	G	G
20	25	G	G	G	G	G	G	G	G	G	G	46	54	48	43	55	40	40	49	G	29	G	32	36
21	30	G	G	25	G	G	G	37	38	53	46	54	41	40	G	G	G	G	G	G	30	G	G	G
22	G	G	G	G	G	28	G	G	G	G	46	40	42	G	42	41	G	G	G	G	G	G	G	G
23	G	G	28	27	G	G	G	29	33	42	48	49	57	55	37	49	30	30	G	G	G	G	G	G
24	G	G	68	30	G	G	G	G	34	38	58	44	51	G	G	G	27	33	31	G	G	26	G	24
25	G										43	40	40	41	39	34	31	28	35	38	55	54	30	40
26	52	51	39	G	33	G	G	49	33	37	43	58	48	51	42	37	56	44	36	29	28	40	29	30
27	G	G	G	G	G	G	G	29	35	44	71	58	45	42	55	46	35	35	28	26	24		G	
28	G	G	G	G	G	G	G	G	G	40	41	G	41	61	41	G	G	30	30	G	G	124	G	G
29	G	G	28	G	G	G	G	30	G	G	55	56	G	G	G	51	76	28	62	36	G	G	G	G
30	28	26	30	31	G	G	G	43	G	G	G	G	G	39	39	G	G	G	G	G	G	24	G	G
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	25	24	23	24	23	23	23	23	25	26	26	27	26	27	27	27	27	27	27	26	27	26
MED	G	G	G	G	G	G	G	29	G	G	46	20	44	41	39	37	34	33	31	26	G	G	G	G
U Q	31	35	29	26	26	13	G	32	35	42	56	54	53	53	43	47	43	40	49	30	28	32	30	31
L Q	G	G	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	28	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT AKITA

NOV. 1992

LAT. 39.7N LON. 140.1E 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																								
2										17	18	20	B	52	45	36	20	16	17	17	18	17	16	16
3	20	17	16	16		17	17	20	18	21	18	20	23	20	17	16	16	16	17	18	16	17	17	17
4	16	16	17																					
5																								
6													20	17	16	16	15	16	18	17	17	16	15	16
7	16	17	16	17	17	17	17	16	16	15	17	20	20	18	18	16	17	16	16	20	17	16	18	16
8	16	15	16	16	17	16	16	18	16	17	17	18	20	17	17	16	18	16	16	16	16	17	16	16
9	16	16	16	16	15	18	17	22	17	16	21	17	17	17	16	16	16	16	18	17	17	17	16	16
10	17	17	15	15	16	15	17	16	16	18	20	18	21	22	17	16	16	15	16	15	17	16	16	
11	17	16	15	16	16	17					20	18	21	17	16	17	16	15	15	18	17	16	17	17
12	16	17	17	18	17	17	17	22	17	18	18	18	20	17		16	17	16	15	16	17	17	16	18
13	20	16	16	17	16	16	16	20	16	17	18	20	21	18	17	17	21	16	16	18	16	17	18	16
14	16	16	17	17	17	17	16	18	16	16	18	16	16	16	15	20	18	16	20	17	17	18	16	16
15		17	17	16	18	18	16	14	16	17	17	17	17	16	16	16	18	16	18	17	16	18	17	17
16	20	21	17	18	16	18	18	16	17			23	20	20	16	16	16	16	16	17	17	17	16	16
17	17	16	15	15	15	17	18	17	16	17	20	16	17	16	18	17	16	18	16	15	18	17	16	17
18	17	16	16	17	18	15	17	17	17	16	16	18	21	14	16	17	16	16	16	18	16	16	16	16
19	16	17	16	17	16	17	17	16	18	20	20	18	22	21	21	17	16	16	16	18	17	17	18	17
20	16	17	16	16	15	17	16	20	17	21	22	21	20	20	17	17	16	16	16	16	18		16	17
21	16	18	17	16	17	20	17	17	17	17	17	18	20	21	20	17	18	17	15	16	16	17	17	16
22	17	16	18	16	16	17	17	23	18	16	18	17	16	21	17	16	20	16	16	17	17	16	16	18
23	16	17	16	17	16	17	16	18	16	16	18	20	20	17	16	16	17	17	16	17	16	18	17	16
24	16	17	16	15	15	18	17	18	17	16	17	17	16	20	18	17	16	16	16	16	17	17	17	17
25	16										17	20	18	20	16	16	15	16	16	17	16	18	16	16
26	16	16	16	16	17	16	17	16	17	17	18	18	18	17	20	16	16	16	16	16	18	16	18	17
27	17	16	17	16	16	17	16	17	16	16	17	16	17	17	17	16	16	16	16	16	17		18	
28	18	16	16	16	16	16	18	20	17	17	18	21	16	16	17	17	21	16	16	17	18	16	18	16
29	17	18	16	17	17	16	17	16	16	16	17	17	17	16	17	16	16	16	16	15	16	17	18	18
30	18	17	16	15	16	17	16	18	15	16	18	16	17	18	17	16	20	16	16	16	17	16	18	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	25	25	25	24	23	24	23	23	23	23	25	26	26	27	26	27	27	27	27	27	27	25	27	25
MED	16	17	16	16	16	17	17	18	17	17	18	18	20	17	17	16	16	16	16	17	17	17	17	16
U Q	17	17	17	17	17	17	17	20	17	17	19	20	20	20	18	17	18	16	16	17	17	17	18	17
L Q	16	16	16	16	16	16	16	16	16	16	17	17	17	17	16	16	16	16	16	16	16	16	16	16

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT KOKUBUNJI

NOV. 1992

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	58	60	55	60	46	45	58	101	114	124	124	122	131	135	127	115	98	66	52	54	51	43	42	A
2	47	A	38	40	38	41	56	78	101	96	125	125	B	106	108	107	106	94	72	71	55	58	56	56
3	57	60	44	40	A	38	55	93	97	104	115	111	91	108	112	105	97	86	58	63	56	50	56	50
4	37	38	41	45	36	35	52	86	102	115	120	120	127	113	112	108	97	82	74	60	55	44	A	48
5	A	41	38	41		41	55	84	114	137	142	137	133	123	113	104	94	77	75	62	57	62	A	46
6	A	49	41	A	41	40	48	90	116	131	157	126	124	132	120	102	101	84	62	63	54	56	47	46
7	A	37	44	46	44	39	45	92	118	132	136	138	138	132	128	106	91	71	53	52	52	44	A	A
8	38	48	A	38	37	42	58	82	95	115	126	124	105	123	122	98	95	66	48	46	52	46	40	47
9	44	44	47	46	44	34	46	77	95	103	96	105	111	105	98	100	100	78	56	54	70	60	51	58
10	51	46	38	38	46	51	46	70	85	92	111	100	72	70	72	74	68	61	57	46	46	47	N	28
11	35	38	36	34	34	34	47	84	94	115	117	105	106	116	112	100	96	64	51	46	48	54	46	48
12	38	A	36	40	40	41	58	73	94	104	120	125	107	115	114	101	87	84	62	47	44	44	38	38
13	44	41	38	49	41	35	57	96	92	95	105	98	104	100	106	106	98	66	57	43	47	47	31	
14	38	48	38	A	36	35	46	86	104	99	114	96	110	95	95	94	83	64	62	45	47	46	35	A
15	41	48	43	42	36	32	50	86	92	98	105	92	105	104	98	90	80	66	62	44	46	43	35	A
16	49	34	50	43	37	36	46	80	100	101	127	112	107	102	96	101	82	70	58	71	48	45	47	43
17	56	46	44	38	37	35	44	72	100	117	116	113	107	116	115	95	94	71	61	46	46	36	37	51
18	48	42	36	38	38	36	44	85	92	91	104	101	105	106	97	100	86	64	62	46	43	39	43	A
19	41	40	43	41	40	42	48	77	92	104	105	120	120	115	112	98	87	71	53	43	48	46	41	41
20	46	44	44	56	44	29	44	80	86	100	107	113	107	103	97	92	80	61	62	50	44	37	32	38
21	39	37	44	44	34	40	38	84	98	100	106	105	102	105	97	92	88	78	58	47	46	44	56	46
22	50	40	42	42	32	32	46	73	97	117	105	84	91	98	92	94	81	64	45	47	46	47	48	55
23	38	41	60	29	41	38	40	87	115	140	147	122	113	116	120	118	96	79	58	63	69	46	55	49
24	48	44	44	35	47	43	48	88	107	124	141	127	126	127	131	114	104	71	63	58	43	36	43	A
25	38	43	40	36	36	43	48	92	96	126	122	135	123	126	140	115	97	76	62	50	43	35	A	34
26	40	46	35	34	32	32	40	94	101	108	131	135	112	134	118	99	105	72	54	62	38	A	32	37
27	A	38	41	41	35	32	40	84	105	121	132	113	114	126	105	94	102	73	52	50	48	36	35	N
28	30		30	34	35	30	35	81	80	96	101	94	97	97	110	88	88	56	50	46	46	40	38	38
29	32	44	41	35	43	37	43	71	94	105	114	111	95	114	98	92	84	65	58	50	33	A	37	N
30	34	31	35	37	38	38	37	80	87	95	121	114	101	102	105	90	82	59	50	59	A	42	32	A
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	26	27	29	28	28	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	29	28	25	20
MED	41	43	41	40	38	38	46	84	97	104	118	113	107	114	111	100	94	71	58	50	47	44	41	46
U Q	48	46	44	43	42	41	52	88	104	121	127	125	121	123	118	106	98	78	62	60	53	47	47	49
L Q	38	38	38	36	36	34	44	78	92	99	106	105	103	103	98	94	84	64	53	46	45	41	35	38

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT KOKUBUNJI

NOV. 1992

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	30	37	26	G	G	G	G	G	37	G	53	G	43	48	46	G	39	31	G	G	G	G	33	44
2	30	44	39	30	26	25	G	G	G	G	59	G	B	G	48	G	36	37	G	G	G	26	G	32
3	28	G	G	G	28	G	G	35	40	N	G	G	G	44	G	G	G	34	G	G	G	G	G	G
4	25	22	G	G	G	G	G	G	G	G	G	67	58	50	42	40	35	G	G	G	G	G	28	60
5	59	30	37	37		G	24	G	G	76	47	85	68	58	110	83	71	48	30	G	G	24	45	32
6	55	38	G	30	26	G	26	60	G	41	G	G	54	48	G	G	G	G	24	G	G	26	G	G
7	61	42	26	G	G	G	G	30	42	G	47	G	G	G	G	G	G	G	G	33	24	G	38	29
8	28	59	41	G	G	G	G	G	38	40	86	68	49	44	46	44	30	31	27	G	40	37	35	32
9	60	40	25	G	G	G	G	G	G	44	44	44	G	G	G	G	G	G	G	31	25	G	35	G
10	23	G	24	G	G	G	23	G	G	G	41	G	45	55	G	39	41	28	28	G	28	26	G	G
11	G	G	G	G	30	35	50	30	G	G	G	G	G	G	G	G	G	G	39	30	33	29	29	G
12	G	30	G	G	G	G	G	G	G	41	G	G	47	G	G	G	31	G	37	29	27	25	G	G
13	G	G	G	G	G	G	G	30	37	43	42	G	42	44	40	G	30	46	G	G	G	G	G	G
14	G	39	28	39	30	28	25	30	38	G	G	G	G	G	46	47	39	31	43	40	G	G	G	28
15	40	G	G	G	G	G	G	31	37	55	52	N	78	56	60	G	31	26	26	24	G	G	G	33
16	25	G	24	23	23	G	G	29	36	G	G	G	G	G	46	51	45	51	41	29	31	42	29	G
17	G	G	G	G	G	G	G	32	37	124	G	G	G	47	49	40	42	31	29	40	25	G	G	G
18	G	G	G	G	G	G	G	48	G	G	50	G	46	59	58	36	31	G	G	G	G	G	34	33
19	26	28	28	28	G	G	G	30	G	44	41	49	G	51	68	40	46	G	G	34	G	G	26	G
20	G	24	G	G	G	G	G	G	G	41	46	52	44	49	40	38	31	G	55	G	G	G	G	G
21	31	28	24	G	G	G	G	34	43	46	53	49	50	44	G	G	G	G	G	G	36	G	30	G
22	G	G	G	G	G	G	G	G	G	G	48	47	G	45	55	43	30	G	G	27	G	33	G	G
23	G	G	G	G	G	G	G	148	G	39	45	49	53	G	40	G	36	26	G	G	G	G	28	G
24	G	G	G	G	G	G	G	32	38	G	46	41	G	G	48	36	28	24	24	27	32	25	G	46
25	33	29	G	G	G	G	G	G	G	G	60	54	44	46	48	37	38	30	27	26	26	38	48	G
26	24	G	G	G	G	G	G	29	43	41	45	44	60	74	51	37	56	28	26	43	G	40	32	G
27	28	27	G	G	30	G	G	29	37	43	40	G	49	49	43	G	32	24	G	G	G	26	G	G
28	G	G	G	G	G	G	G	G	G	48	40	G	G	42	G	42	32	G	G	25	G	G	G	G
29	G	G	G	G	G	G	G	44	G	G	G	G	44	G	G	G	G	G	G	G	40	38	G	G
30	G	G	25	G	G	G	G	37	49	G	G	G	G	44	45	40	G	G	27	26	35	G	G	29
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	29	30	30	30	30	29	30	29	29	30	30	30	30	30	30	30	30	30	30	30
MED	24	12	G	G	G	G	G	30	G	39	43	G	44	44	44	36	31	24	12	12	G	G	G	G
U Q	30	30	25	G	12	G	G	32	38	43	48	49	49	49	48	40	39	31	28	29	28	26	32	32
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT KOKUBUNJI

NOV. 1992

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	20	15	15	16	16	16	15	15	17	17	20	17	18	18	22	14	15	15	15	16	14	15	14
2	15	14	15	14	14	14	15	15	16	17	18	18	B	80	40	35	28	15	15	16	16	14	15	15
3	14	15	14	14	15	15	16	15	17	17	18	17	18	21	21	16	17	18	15	15	15	15	15	15
4	15	14	14	14	14	15	16	15	17	16	18	26	18	18	20	16	15	16	15	15	15	15	15	14
5	15	14	14	14		15	16	15	15	18	17	18	20	18	16	15	14	15	14	15	15	15	15	14
6	15	15	14	14	15	15	15	16	16	15	18	18	18	20	15	16	14	15	15	14	14	15	14	15
7	15	14	14	14	15	14	15	14	15	16	17	20	20	32	17	16	17	15	14	14	15	15	15	15
8	16	15	15	15	14	15	16	15	15	16	16	20	18	20	18	16	14	14	16	15	14	15	14	15
9	15	14	14	14	14	14	16	15	16	16	20	18	17	18	16	15	15	15	15	14	15	15	14	14
10	15	14	14	14	15	15	15	14	15	16	22	17	17	16	15	15	15	15	14	14	15	14	15	15
11	15	14	14	14	14	14	14	15	14	16	17	18	18	20	18	15	15	14	15	14	14	14	14	14
12	15	14	15	15	15	16	16	14	15	21	18	23	17	17	16	16	16	18	15	15	15	16	15	15
13	14	16	15	15	15	15	14	14	16	15	16	21	20	18	17	16	15	15	14	16	14	15	15	15
14	15	14	14	14	14	14	15	14	14	16	17	16	17	16	17	15	15	15	15	15	15	15	15	14
15	15	14	15	15	15	15	15	14	14	16	16	17	20	20	15	14	15	16	14	15	16	15	15	15
16	15	15	14	14	14	15	15	14	15	16	17	22	17	17	17	15	15	21	14	15	15	15	15	15
17	14	15	14	15	14	15	15	14	15	18	17	18	16	16	15	14	14	15	15	15	15	15	15	16
18	15	14	15	14	14	14	14	14	15	16	16	22	17	18	17	15	14	15	14	15	15	15	15	17
19	15	15	15	15	14	15	15	14	14	15	17	18	23	18	18	15	17	18	16	14	15	15	15	15
20	15	14	14	14	14	16	15	18	14	18	20	30	24	20	17	16	15	15	14	15	14	15	15	14
21	15	14	14	14	15	15	15	15	14	16	16	17	18	21	20	16	17	15	14	14	14	15	15	15
22	15	15	15	14	15	15	15	14	15	15	17	16	16	24	16	16	15	16	15	15	15	15	15	15
23	15	14	14	15	16	15	15	15	15	16	17	18	21	20	18	15	15	16	14	15	14	15	15	14
24	15	14	15	15	15	15	15	15	14	16	16	18	16	18	26	16	17	15	14	15	14	14	15	15
25	15	15	15	16	15	15	15	15	15	15	15	21	17	17	16	15	15	14	14	15	16	15	15	14
26	15	15	15	15	16	15	15	14	15	15	17	18	18	20	17	16	14	14	15	16	17	15	15	16
27	15	15	14	16	15	15	15	15	15	15	17	18	18	18	16	16	15	16	15	15	15	15	17	15
28	18		14	15	15	15	15	20	16	15	17	18	18	18	17	16	15	14	15	16	15	17	23	15
29	16	16	15	15	14	15	16	16	15	15	16	16	18	16	17	15	15	18	16	15	15	15	17	16
30	15	15	15	14	15	15	15	15	14	15	15	16	15	14	15	15	16	14	14	15	14	15	15	14
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	29	30	30	29	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	15	14	14	14	15	15	15	15	15	16	17	18	18	18	17	16	15	15	15	15	15	15	15	15
U 0	15	15	15	15	15	15	16	15	15	16	18	20	19	20	18	16	16	16	15	15	15	15	15	15
L 0	15	14	14	14	14	15	15	14	14	15	16	17	17	17	16	15	15	15	14	15	14	15	15	14

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT YAMAGAWA

NOV. 1992

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	42	41	45	53	34			73	102	112	122	137	135	135	153	142	124	90	72	54	66		52	41
2	40	42	30	37		35					111	142	B	113	132	117	110	114	96	76	77	86	78	
3	62		48	40	32	46	34	75	97	96		111	104	112	127	122	112		80	66	72	67	53	60
4		46	32				31	73	88	104	134	127	115		131	116	110	110	85	78	84	81	59	53
5	52		A		A		A		101	126	144	146	126	131		114	105	91	86	78	62	52		52
6	53	42		52			42	78	108	114	122	135	127	153	158	145	138	133		78	77	71	52	
7	43	44	40	42	38	36	38	61	108	132	145	156	147	154	161	150	125	104	87	74		63	50	39
8	32		35	46		35		74	98	112	125	141	133	147	162	146	128	109		66	58	53	49	
9	38	44	38		42				90	86	95	107	118	122	135	126	117	91	78	66	87		62	54
10		42	53	50	54	58	52	72	121	108	144	138	96	87	85	85		78		53	48		38	46
11	33	N	43	32	37	46			101	107	116	112	112	115	121	136	114		80	51	58	58		
12	30		36		34	34	46	54	87	100	108	107		111	130	123	107	87	75	63	51	41	41	
13			38					63			105		106	118	126	126	130			60	52	35	58	34
14		43	34		34	33	31	60	86	90	111	101	95	105	102	108	107	90	72	64	66	51	36	
15	38	37	34	30	46	29	35	64	94	94	98	92	92	101	110	102	91		84	66	59		40	36
16	46	46		42	49			63	96	105	121	126	107	116	113	107	101	90	71	65	76	54		34
17	41	37		33	36		26		86	101	107	108	102	116	130	122	120	97	73	50		49		29
18		40	36	30		36	34	68			97	108	100	112	112	114	103		80	58	51	52		42
19	37	42						60	85	97	114	110	114	116		102	101	87		64	63	58		32
20	70	34	38	42	41	49	41	62	87	101	111	106	105		105		95	81	73	71	66	53	41	
21	40	44		40		46	36		88	118	114	112	122	124	121	118	112	112	104	84		76	72	62
22	52	52			40		28	52	88	111	105	95	98	107	105	112	105	90	73		A	63		71
23	44	52	52	42	28	36		53	104	128	141	125	122	128	128	127	117	111	90	81		62		
24	52	53	30	48	34	31	36	63		131	141	131	134	110	137	125	128	114	86	68		84		
25		A	41	38	A	46			96		122	138	138	137	145	134	122	108	80	58		53	A	69
26	25	68		37	40	46		54	88	108	130	140	122	126	138	124			66	60	66		52	53
27	38		52	40	43				102	128	122	120	128	132	141	137	142	138	111	86	86		52	
28		46	36	51		36	41		80	108	108	105	105	102	113	108	111	85	73	72	64	61	52	
29					30	29	34	52	82	106	101	112	100	104	112	112	111		78		62	A	A	
30	37	43		43	48	46	36	62	88	100	111	118	121	115	114	110	105	98	72	64	63	59	52	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	21	20	21	19	19	17	21	26	26	29	29	28	28	28	29	28	23	25	28	23	23	19	17
MED	40	43	38	42	38	36	36	63	92	108	114	118	114	116	128	122	112	97	80	66	64	58	52	46
U Q	52	46	44	47	43	46	41	72	101	114	127	137	126	129	137	130	123	111	86	75	76	67	58	57
L Q	37	41	34	37	34	34	32	57	87	100	107	107	103	110	112	111	105	90	73	60	58	52	41	35

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT YAMAGAWA

NOV. 1992

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	G	G	G	G	G	G	45	G	48	24	33	G		G	G
2	G	G	G	44		G					G	G	B	G	G	G	G	G	G	G	G	G	31	
3	G		G	G	G	G	22	G	G	48	G	G	G	G	G	G	G		G	G	G	G	G	G
4		G	G				G	G	G	G	G	G	53	G	46	41	G	G	38	28	30	33	G	G
5	G		46		36		36		40	40	G	G	G	G	G	G	G	31	24	G	40	32		G
6	G	49		36			G	G	35	43	G	44	G	44	G	G	G	G	G	G	28	28	26	
7	G	30	24	36	G	G	G	G	G	G	51	48	49	51	G	G	56	G	G	G		G	39	G
8	G		G	G		G		G	G	42	71	96	G	46	51	44	44	85		G	G	26	G	
9	G	G	G		G				35	42	44	72	49	G	G	G	G	G	60	G	G		G	G
10		G	32	26	G	G	G	30	G	48	G	54	66	G	44	G		G		36	32		G	G
11	G	G	G	G	G	24			49	G	G	47	50	42	45	G	G	G	G	28	G	G		
12	G		G		32	23	G	G	G	42	G	G		50	49	51	40	G	24	38	34	G	G	
13			G					G		G	47		G	46	G	G	G			33	G	29	G	G
14		G	G		G	G	G	G	G	G	G	G	G	G	51	53	38	G	G	40	32	G	G	
15	G	G	G	G	G	G	G	G	G	47	60	68	46	G	47	44	G		G	G	G		G	G
16	G	G		G	G			G	G	G	G	G	G	G	G	G	G	G	24	27	G	G		G
17	G	G		G	G	G	G		G	44	50	G	G	G	45	G	66	44	32	G		G		G
18		G	G	G		G	G	G			48	82	44	57	61	G	G		29	34	G	G		G
19	G	G						G	G	38	47	G	47	53		45	G	48		G	G	G		G
20	G	G	G	G	G	G	G	G	G	G	G	47	53		50		G	39	24	G	G	G	G	
21	G	G		G		G	G		G	45	G	64	66	G	G	48	38	G	G	G		30	32	24
22	G	G			G		G	G	G	G	45	59	G	G	45	42	42	39	34		36	24		25
23	G	G	G	G	G	G		G	G	G	G	G	47	50	52	G	38	G	42	23		G		
24	G	G	G	G	G	23	G	G		G	G	54	46	G	46	42	G	G	24	G		26		
25		40	41	30	30	G			G		50	G	49	53	49	G	39	G	23	G		G	40	24
26	24	30		G	G	G		G	G	G	41	43	46	44	42	40			25	G	G		G	G
27	G		G	G	G				G	G	40	42	42	42	44	G	G	49	G	G	G		G	
28		G	G	G		G	G		G	G	G	42	G	56	47	G	G	28	46	32	31	23	G	
29					G	G	24	G	38	G	G	G	48	G	G	G	G		24		33	40	49	
30	24	G		G	G	G	G	G	G	G	G	47	46	48	45	G	G	G	G	26	26	G	G	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	21	21	21	20	18	21	26	27	30	29	28	29	29	29	28	24	26	28	24	24	21	17
MED	G	G	G	G	G	G	G	G	G	G	G	42	46	G	45	G	G	G	24	G	G	G	G	G
U Q	G	G	G	13	G	G	G	G	G	42	47	54	49	49	48	43	38	39	29	30	31	27	28	G
L Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT YAMAGAWA

NOV. 1992

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	15	16	16	15	15			15		17	35				35	15		15	15	15	15		15	15
2	15	15	15	15		15					35	38	B	84	57	45	33	29	15	16	15	15	15	
3	15		15	15	15	15	15	16	16	17		36		33		18	18		15	15	15	15	15	15
4		15	15				15	15		18	36	36	35		33	17	17	15	15	15	15	15	16	15
5	15		15		15		15		15	16		35	36		14	18		16	16	15	15	15		15
6	15	15		15			15	18	15	15		36		34	22	20	15	16		15	15	15	15	
7	15	15	15	15	15	15	15	17	15		23	29	24	27	22	21	16	16	15	15		15	15	15
8	16		15	15		15		21	16	17	18	17		30	28	18	16	15		15	15	15	15	
9	15	15	16		15				16	17	32	29	29				15		15	15	15		15	15
10		15	15	15	15	15	15	15	15	16		33	24	23	17	16		15		15	15		15	15
11	15	16	15	15	15	15			15				16	15	18		16		15	15	15	15		
12	16		16		15	15	15	20	15	18	21	35		22	23	17	16		15	15	15	15	15	
13			15					17			16		36	32	20		16			15	15	15	15	15
14		15	17		15	15	15	18	16	15		17	18		18	17	15	20	15	15	15	15	16	
15	15	15	15	15	15	15	15	20	17	15	17	34	34		18	16	15		15	15	15		15	15
16	15	15		15	15			18	15	16			35	17		33	16	16	15	15	15	15		15
17	15	15		15	15	18	16		15	15	16		36	36	23		16	15	15	15		15		15
18		15	15	15		15	15	20			18	35	38	18	33				15	15	15	15		15
19	15	15						15	15	16	17	26	39	35		16		17		15	15	15		16
20	17	15	15	15	15	18	15	20	15	33	39	34	26		22		16	15	16	15	15	15	15	
21	15	16		15		15	15			16		34	32			16	17		15	15		15	15	15
22	15	15			15		15	20	15	15	16	34			33	17	16	15	15		15	16		16
23	15	15	15	15	16	16		18	15	16		35	39	32	35		15		15	15		15		
24	16	15	15	15	15	15	15	20		15		33	33		20	16	15	21	15	15		15		
25		15	15	15	15	15			16		16		30	33	23		15	21	15	15		15	15	16
26	15	16		15	15	15		17	16		17	33	32	18	16	21			15	15	15		15	15
27	15		15	15	15				16		17	18	26	22	18	16	15	15	15	15	15		15	
28		15	15	15		15	15		16	16	16	17		18	18	17		15	15	15	15	15	15	
29					15	15	16	15	15		18	16	38	20	20	18			15		15	15	15	
30	15	15		15	15	15	15	17	18		16	18	18	21	17	16	17	15	15	15	15	15	15	
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	22	23	21	21	21	20	18	21	23	20	20	24	22	20	25	22	22	19	25	28	24	24	21	17
MED	15	15	15	15	15	15	15	18	15	16	18	34	32	25	22	17	16	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	15	20	16	17	27	35	36	33	30	18	16	17	15	15	15	15	15	15
L Q	15	15	15	15	15	15	15	15	15	15	16	22	26	19	18	16	15	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT OKINAWA

NOV. 1992

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	62	53	54	71	45		30	67	108	111	121	146	162	166	189	168	167	162	145	111	111	111	90	85
2	74	62	53	52	40	A	52	90	90	94	111	144	B		145	136	120	120	110	90	94	109	90	87
3	78	66	53	32	35	32	31	66	90	100	104	110	112	111	111	138	123	108	109	90	103	90	81	66
4	38	25	34	43	32			62	87	111	C	C			145	128	137	131	103	104	120	120	90	83
5	66	35	49	53	45	A	31	66	90	111	144	146	127	128	128	121	111	104	91	87	77	73	53	53
6	60	53	34	43	25	32	32	77	107	104	111	140	142	164	171	168	193	188	170	162	144	120	90	86
7	85	79	35	64	49	35	32	66	105	131	157	170	167	174	199	193	170	167	168	144	111	104	106	80
8	77	66	54	58	54	53	43	78	104	120	146	146	161	169	197	194	191	170	162	122	106	87	90	84
9	77	54	66	75	65	35	35	62	87	85	92	111	120	130	146	164	145	121	110	87	121	121	85	66
10	42	53	58	54	35	54	A	66	110	128	155	152	132	120	105	95	90	90	84	85	73	76	66	54
11	42	41	38	32	31	37	29	62	90	111	112	121	120	143	143	157	130	111	110	87	86	86	90	62
12	43	34	31	35	43	43	29	58	86	102	122	111	111	128	146	141	141	138	104	90	87	77	66	66
13	43	52	43	52	52		26	62	81	90	105	111	119	142	163	170	170	168	144	90	88	87	78	66
14	53	52	31		26	N	31	60	87	90	105	110	101	122	111	111	110	130	104	86	90	82	51	54
15	52	52	44	42	32	43	33	72	88	102	100	95	94	107	107	121	108	108	107	90	77	66	63	49
16	39	34	N	35	40	28	28	66	105	104	114	138	111	120	130	121	137	122	110	87	85	90	90	74
17	52	53	52	52	37	32	N	54	88	108	104	111	111	121	142	146	146	121	107	83	78	78	78	62
18	54	52	43	42	43	31	31	62	83	85	104	111	111	121	122	131	120	121	94	87	81	84	73	62
19	52	58	50	43	44	37	34	62	84	105	111	119	122	138	111	111	111	94	84	66	78	83	78	53
20	35	58	49	44	38		28	54	87	111	111	121	105	121	121	121	114	102	107	90	90	84	74	54
21	42	44	34	35	35	29	28	54	104	121	122	122	136	158	165	167	165	168	161	145	144	117	122	105
22	86	84	62	54	38			54	90	105	96	121	126	146	144	146	140	143	136	88	86	86	84	66
23	62	65	66	43	32	30	36	54	103	121	141	140	144	138	138	128	120	141	111	104	103	103	87	77
24	26	35	42	35	42	38	32	54	90	129	146	137	144	161	161	161	161	162	145	109	123	111	90	66
25	54	53	44	43	37	26	34	62	104	111	124	141	161	168	171	184	169		121	90	90	90	86	77
26	A	66	54	45	46	32	31	55	86	111	147	144	144	145	162	164	145	121	103	90	111	109	90	86
27	53	62	66	66	54	29	26	54	105	122	144	137	146	171	196	191	190	164	166	143	125	129	90	62
28	52	43	44	51	66	37	31	53	88	111	127	117	111	118	112	130	124	110	90	86	86	85	78	52
29	42	31	32	30	37	31	32	51	89	90	106	103	111	111	118	128	111	127	90	88	82	73	61	62
30	55	60	62	67	73	42	37	66	106	111	124	123	138	131	138	145	146	145	146	87	87	87	66	46
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	29	30	29	29	30	22	26	30	30	30	29	29	28	28	30	30	30	29	30	30	30	30	30	30
MED	53	53	49	44	40	34	31	62	90	111	114	122	124	134	144	143	138	127	110	90	90	87	84	66
U Q	64	62	54	54	46	38	34	66	104	111	142	142	144	159	163	167	165	162	145	104	111	109	90	80
L Q	42	43	36	38	35	31	29	54	87	102	105	111	111	121	121	128	120	110	103	87	85	83	73	54

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT OKINAWA

NOV. 1992

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		G	G	G	G	44	64	46	G	50	46	44	38	29	G	G	40	G	G
2	G	G	G	G	G	36	30	32	58	39	G	61	B	G	G	G	G	39	38	G	G	G	G	G
3	G	G	G	26	G	G	G	G	G	G	G	G	48	G	56	47	41	40	30	G	G	G	G	G
4	G	G	G	G	29		G	G	G	40	C	C			46	44	42	67	54	41	G	23	G	G
5	G	G	24	33	33	42	29	32	G	54	G	60	G	G	49	44	38	33	29	G	25	G	G	G
6	G	G	G	31	32	G	G	G	34	G	45	46	45	45	G	G	G	G	24	G	G	G	G	G
7	G	G	G	34	G	G	G	G	G	43	50	69	78	G	G	G	G	G	G	11	G	G	G	G
8	G	G	G	G	G	22	G	G	G	G	49	62	60	72	81	47	G	G	G	52	G	43	29	G
9	G	G	G	G	11	G	G	G	G	G	G	G	G	60	62	40	50	G	G	G	G	24	G	G
10	G	G	G	23	G	47	38	G	G	43	51	49	53	G	64	50	40	40	48	38	G	G	G	G
11	G	G	G	G	G	G	G	28	G	39	56	46	58	49	46	G	41	37	29	27	33	G	G	G
12	G	G	G	G	G	G	G	G	34	G	46	G	51	57	50	50	43	33	30	38	30	32	24	G
13	G	G	G	G	G		G	G	39	44	49	73	53	G	G	51	40	40	32	34	40	25	G	G
14	G	G	G		G	G	G	G	34	G	44	50	52	48	42	46	G	41	39	44	57	38	28	G
15	G	G	G	G	G	G	G	G	G	43	50	48	63	48	64	42	37	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	162	G	G	G	46	47	G	G	G	44	G	G	G	G	G	23	G
17	G	G	G	32	G	G	58	28	36	46	51	57	43	G	48	51	49	37	G	G	24	25	25	G
18	G	26	G	G	G	G	G	G	48	46	51	50	54	52	66	80	70	30	G	G	58	G	G	G
19	G	G	G	25	28	G	24	G	33	G	50	48	61	58	51	47	G	36	44	28	26	G	G	G
20	G	G	G	G	G		G	G	G	G	G	47	58	55	57	49	48	G	G	31	G	G	G	G
21	G	G	G	G	G	G	G	G	36	43	58	58	78	66	58	42	37	G	G	33	44	34	G	G
22	G	G	37	33	31		G	G	G	G	45	52	80	49	51	45	42	37	44	61	32	45	G	G
23	G	G	G	G	G	G	G	G	35	38	45	G	58	47	54	G	46	G	G	29	G	G	28	32
24	32	G	25	G	G	G	24	G	G	G	45	50	G	50	50	61	37	31	G	G	G	35	24	G
25	24	G	25	G	23	G	G	G	36	G	47	48	48	49	45	44	G		G	G	G	G	24	G
26	59	G	24	28	G	G	G	G	G	G	G	G	G	49	45	48	42	34	29	25	24	33	38	33
27	G	G	G	G	G	G	G	29	34	41	43	45	46	45	G	40	G	48	G	28	40	24	38	31
28	G	G	G	G	G	G	30	G	G	G	44	48	47	G	58	46	37	40	36	24	G	24	60	48
29	G	G	G	G	G	G	G	26	G	44	45	46	G	51	50	G	40	39	28	23	28	G	G	G
30	33	28	29	G	G	G	G	G	35	G	44	50	48	54	48	G	G	G	23	24	G	33	G	37
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	29	30	25	30	30	30	30	29	29	28	29	30	30	30	29	30	30	30	30	30	30
MED	G	G	G	G	G	G	G	G	G	G	45	48	50	48	50	44	40	34	26	24	G	12	G	G
U Q	G	G	G	25	G	G	G	G	35	43	50	57	58	53	57	48	43	39	32	33	30	33	24	G
L Q	G	G	G	G	G	G	G	G	G	G	22	46	45	G	45	G	G	G	G	G	G	G	G	G

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FMIN AT OKINAWA

NOV. 1992

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	15	15	15	15		15	15	15	24	20	24	24	24	22	16	16	15	14	18	16	15	15	15
2	15	15	15	15	15	14	15	15	20	17	21	27	B	76	58	49	36	15	14	15	15	15	15	15
3	15	15	14	15	15	15	15	22	18	20	21	22	35	26	24	22	14	15	15	15	15	15	15	15
4	15	15	15	15	15		18	21	15	17	C	C			26	22	16	16	15	15	16	15	15	15
5	15	15	15	15	15	15	15	15	14	16	18	23	22	20	26	21	21	15	15	15	15	16	15	15
6	15	15	15	15	14	15	16	20	15	16	18	24	26	26	24	24	20	15	15	15	15	15	15	15
7	15	15	16	15	16	15	15	17	15	18	18	22	27	26	26	23	18	16	15	15	15	15	15	15
8	15	15	15	15	15	15	15	21	15	14	23	27	24	26	24	21	20	15	15	15	15	14	15	15
9	15	15	15	14	15	16	15	18	18	23	26	24	27	26	24	22	17	20	15	15	15	15	15	15
10	15	15	15	15	15	15	14	15	15	15	16	17	24	22	18	17	15	14	14	15	15	15	15	15
11	15	15	15	15	15	15	15	15	15	16	17	17	17	15	15	15	21	14	15	15	15	15	15	15
12	15	15	15	15	15	15	15	15	15	15	22	23	24	24	22	20	17	15	15	15	15	15	15	15
13	15	15	15	15	15		21	18	15	21	24	27	28	27	27	24	22	15	14	16	14	15	15	15
14	15	15	15		15	15	15	17	14	16	22	21	26	24	26	22	16	15	14	15	15	15	15	15
15	15	15	15	15	15	15	15	16	16	15	21	23	24	27	27	21	21	15	15	15	15	14	14	15
16	15	15	15	14	15	15	15	18	16	16	20	24	23	20	24	16	20	15	15	16	15	15	15	15
17	15	15	15	15	15	16	17	15	16	17	22	22	27	27	22	23	16	15	15	15	15	15	15	15
18	15	15	15	15	14	15	14	20	16	17	20	22	27	26	23	22	18	14	15	15	15	15	15	15
19	15	15	15	15	15	15	15	21	15	16	18	17	22	23	20	21	15	15	14	15	15	15	15	16
20	16	15	15	15	15		15	18	15	17	23	24	26	21	20	16	20	15	15	14	15	15	15	15
21	15	15	15	15	15	15	15	18	15	16	18	21	22	23	22	18	17	15	16	14	15	16	15	15
22	15	15	15	15	15		15	18	16	15	20	22	22	24	23	18	16	15	14	14	15	14	15	16
23	15	15	15	15	15	15	15	18	15	15	17	20	40	23	27	23	18	14	15	15	15	15	15	15
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25	15	15	15	14	14	15	15	18	16	15	22	26	26	24	21	18	16		15	15	15	15	16	15
26	15	15	15	14	15	15	15	17	18	16	17	24	23	24	22	21	18	15	14	15	15	15	15	15
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30	15	15	15	15	15	15	15	17	15	17	18	21	21	22	20	16	15	14	15	15	15	15	15	15
31																								
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CNT	30	30	30	29	30	25	30	30	30	30	29	29	28	29	30	30	30	29	30	30	30	30	30	30
MED	15	15	15	15	15	15	15	17	15	16	20	22	24	24	23	21	17	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	15	18	16	17	22	24	27	26	26	22	20	15	15	15	15	15	15	15
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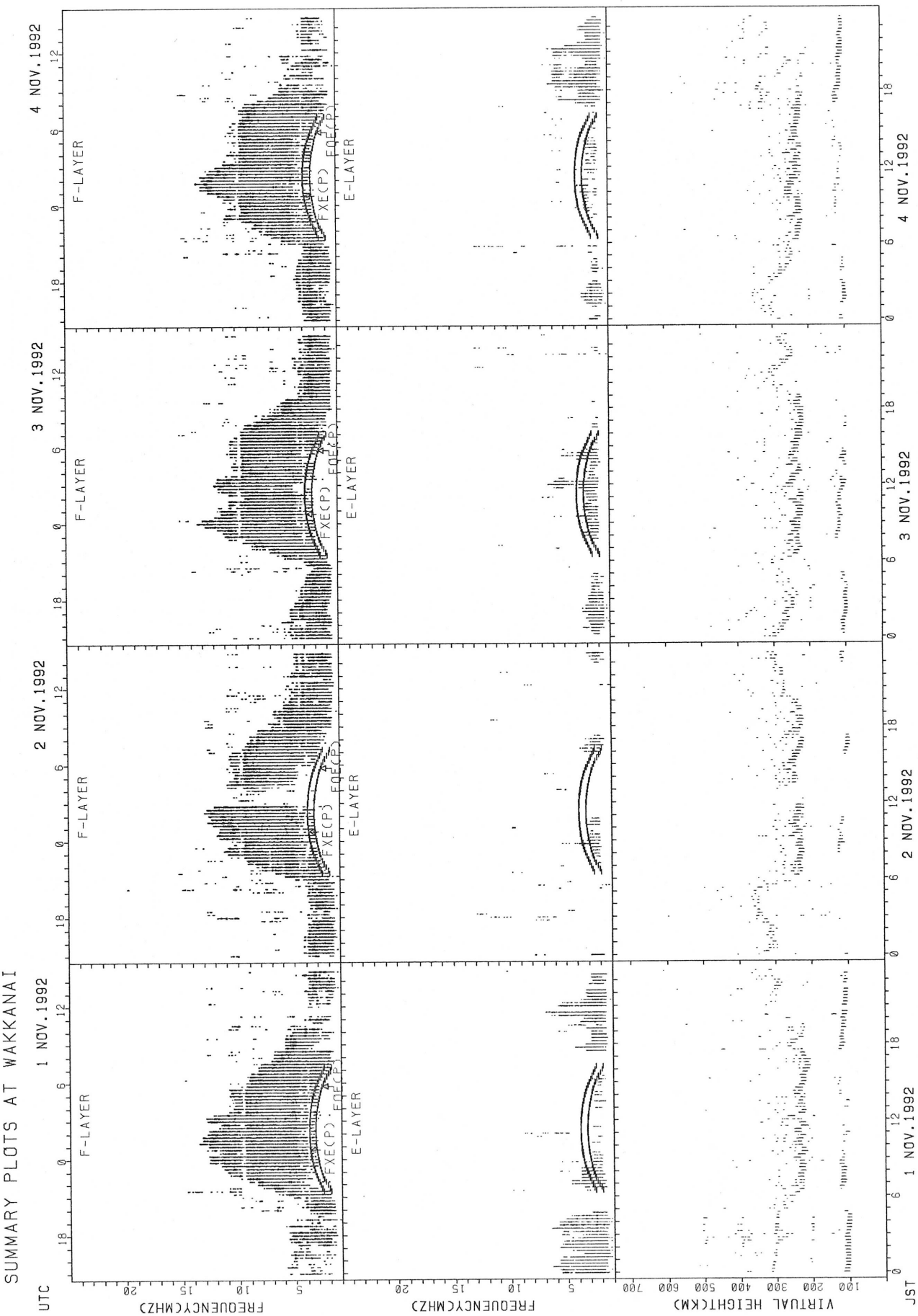
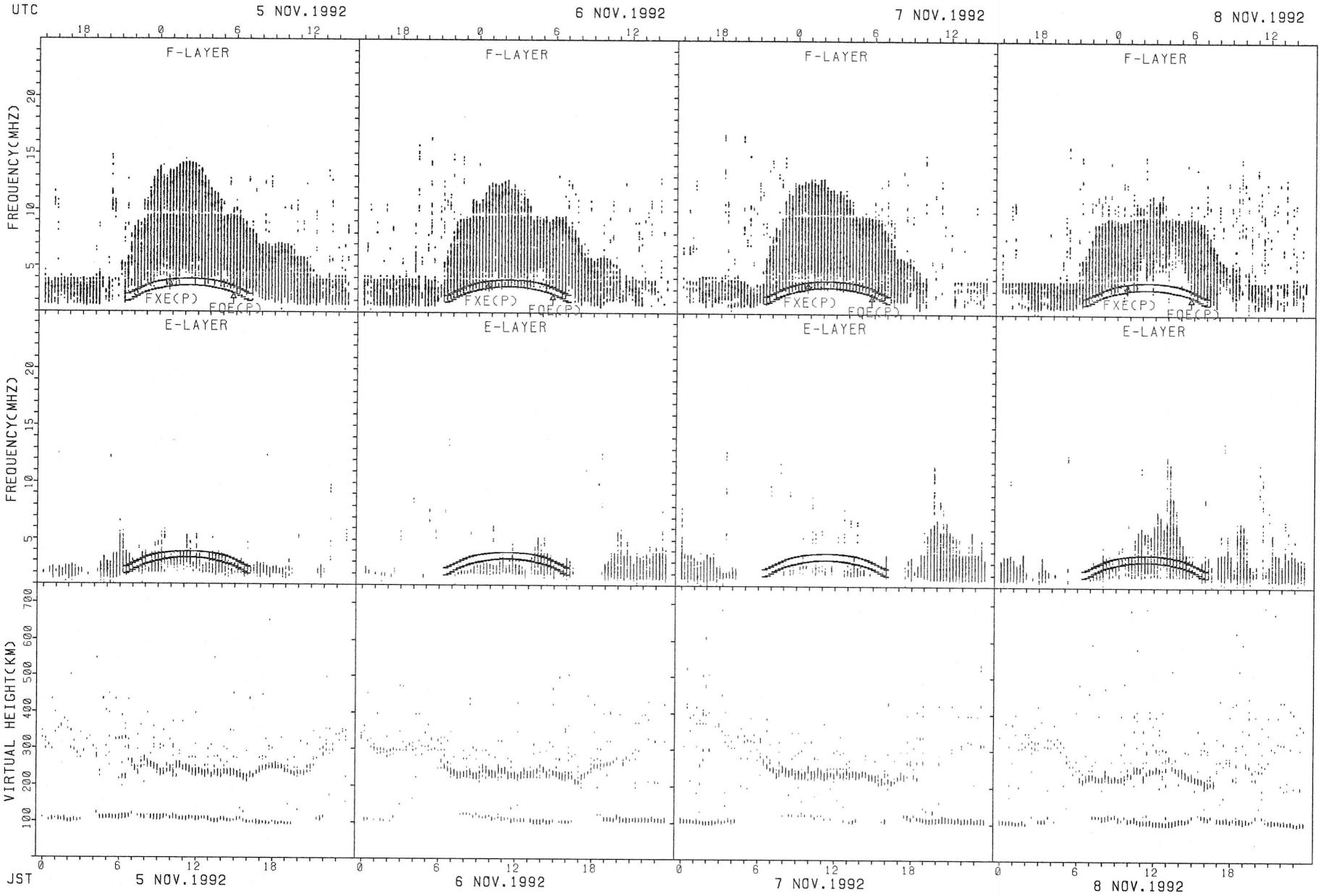
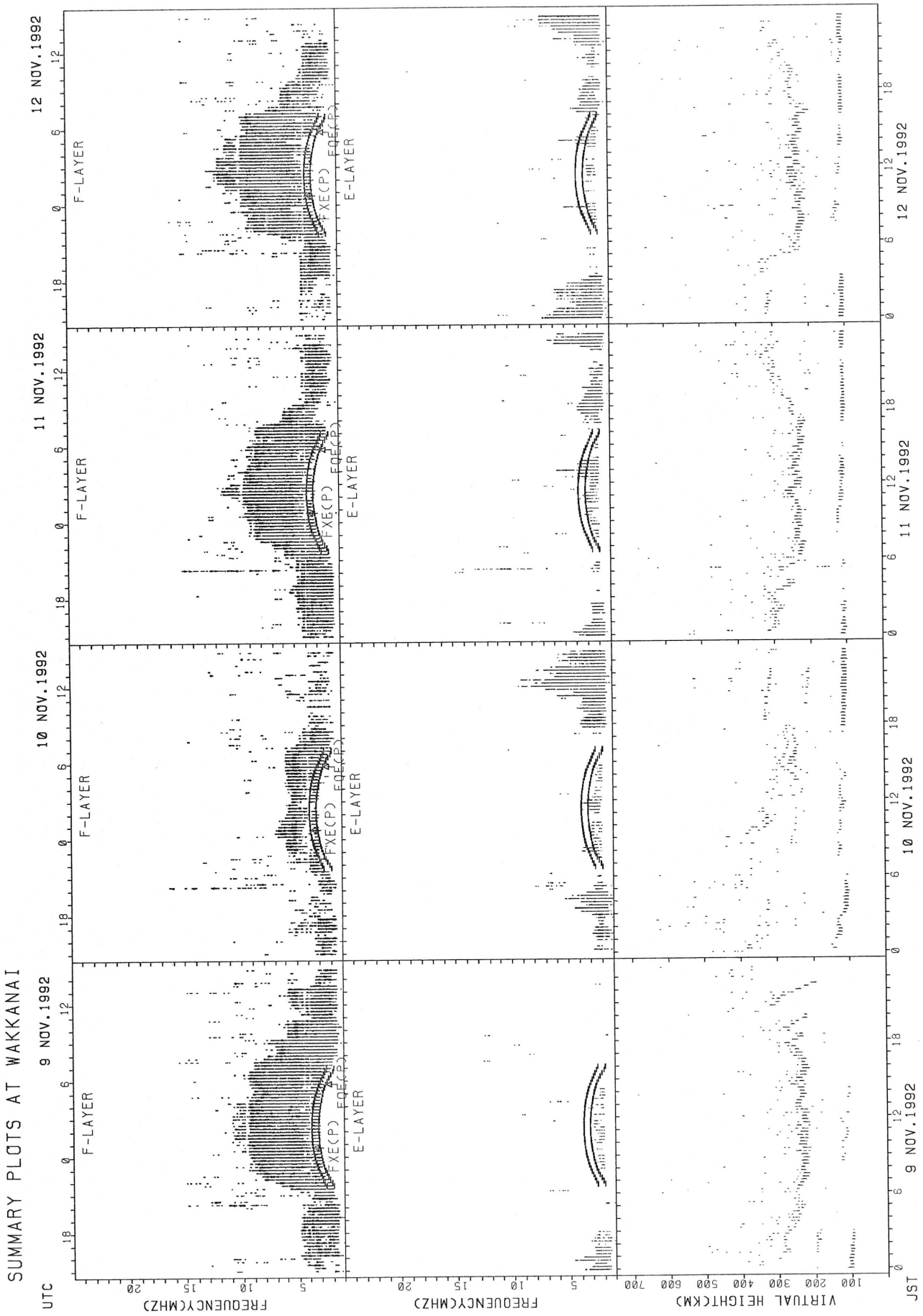
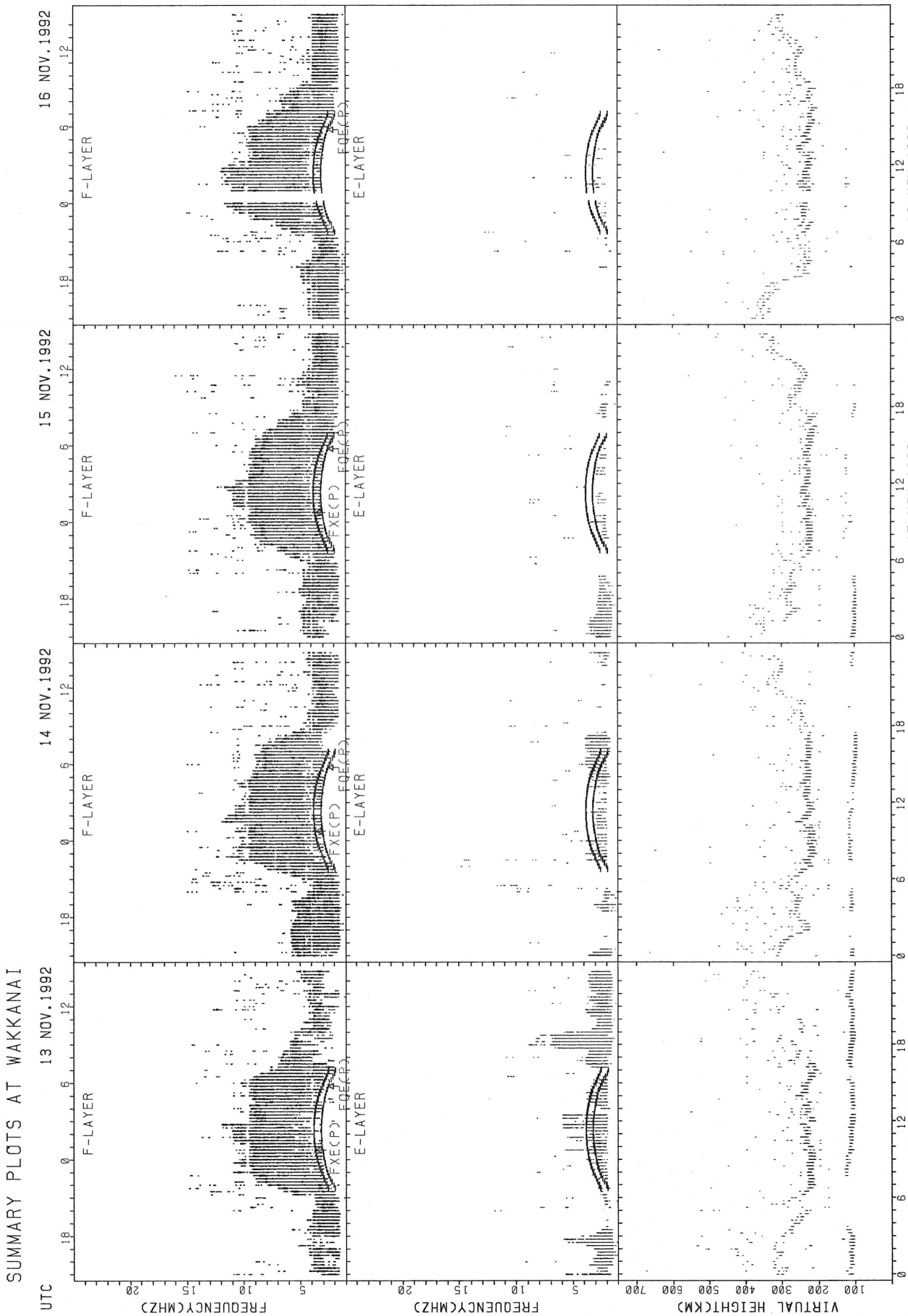

SUMMARY PLOTS AT WAKKANAI
1 NOV.1992
2 NOV.1992
3 NOV.1992
4 NOV.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT WAKKANAI



FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT WAKKANAI
9 NOV.1992
10 NOV.1992
11 NOV.1992
12 NOV.1992
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 WAKKANAI
UTC
13 NOV.1992
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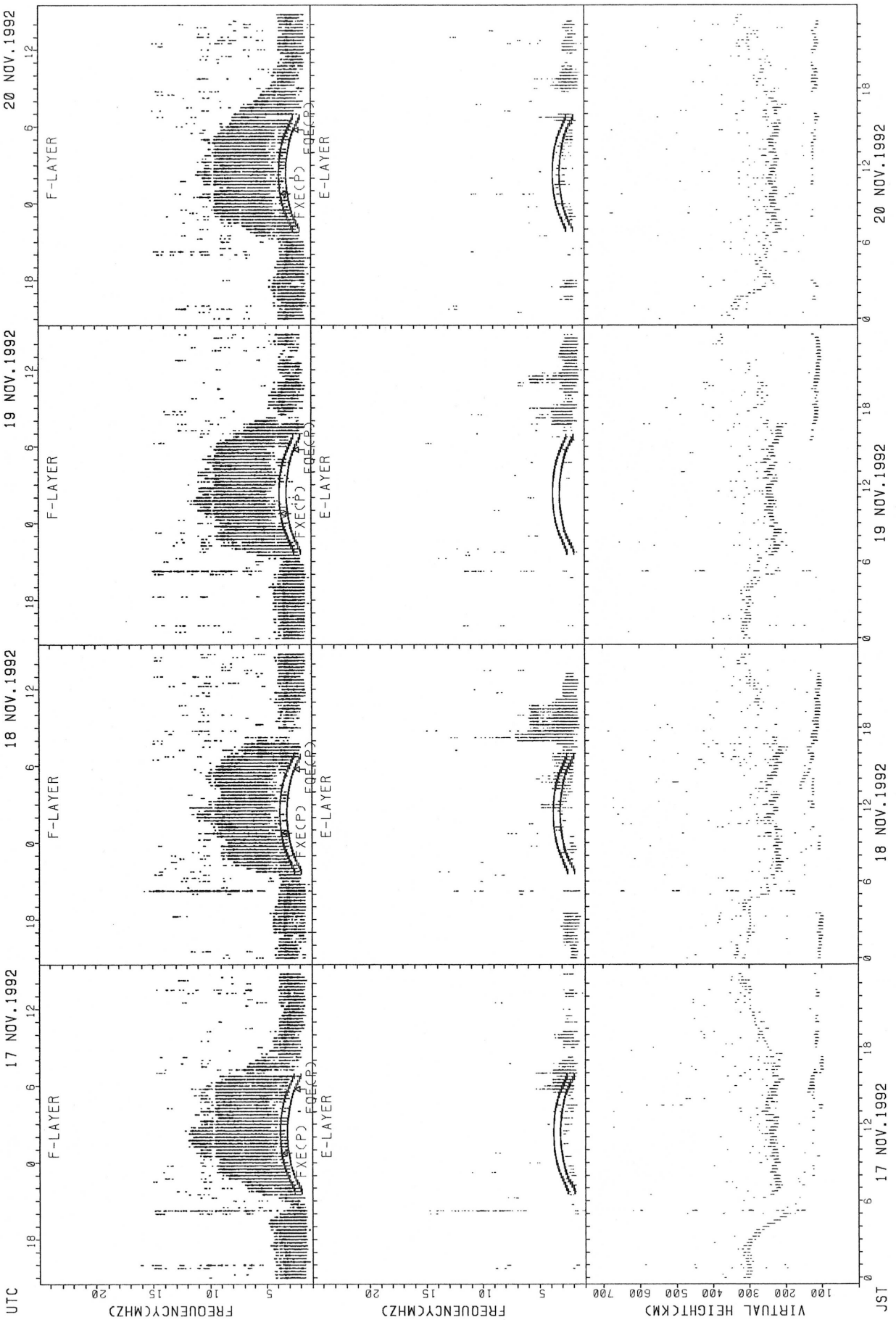
15 NOV.1992
16 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT WAKKANAI
UTC
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19 NOV.1992
20 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
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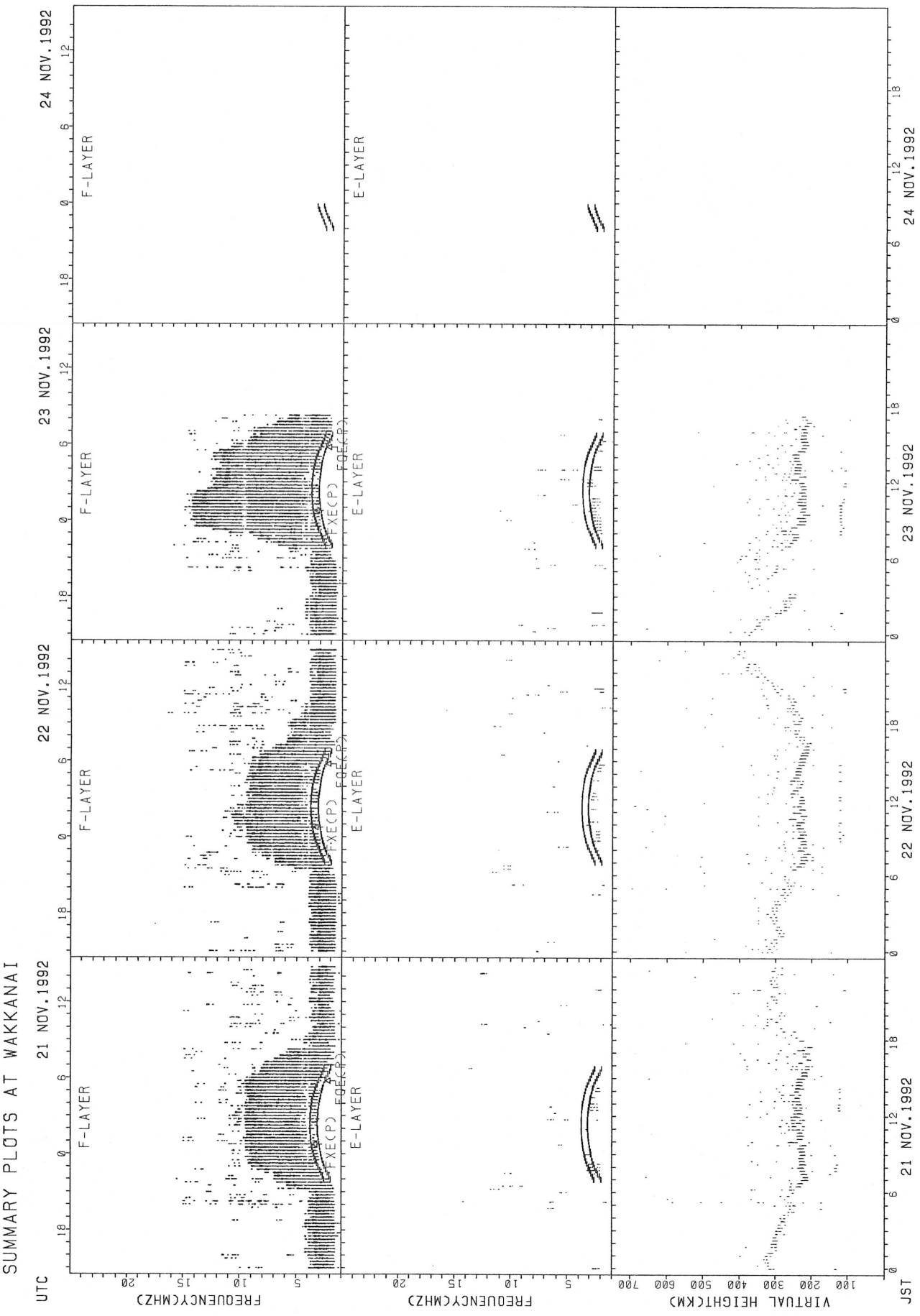
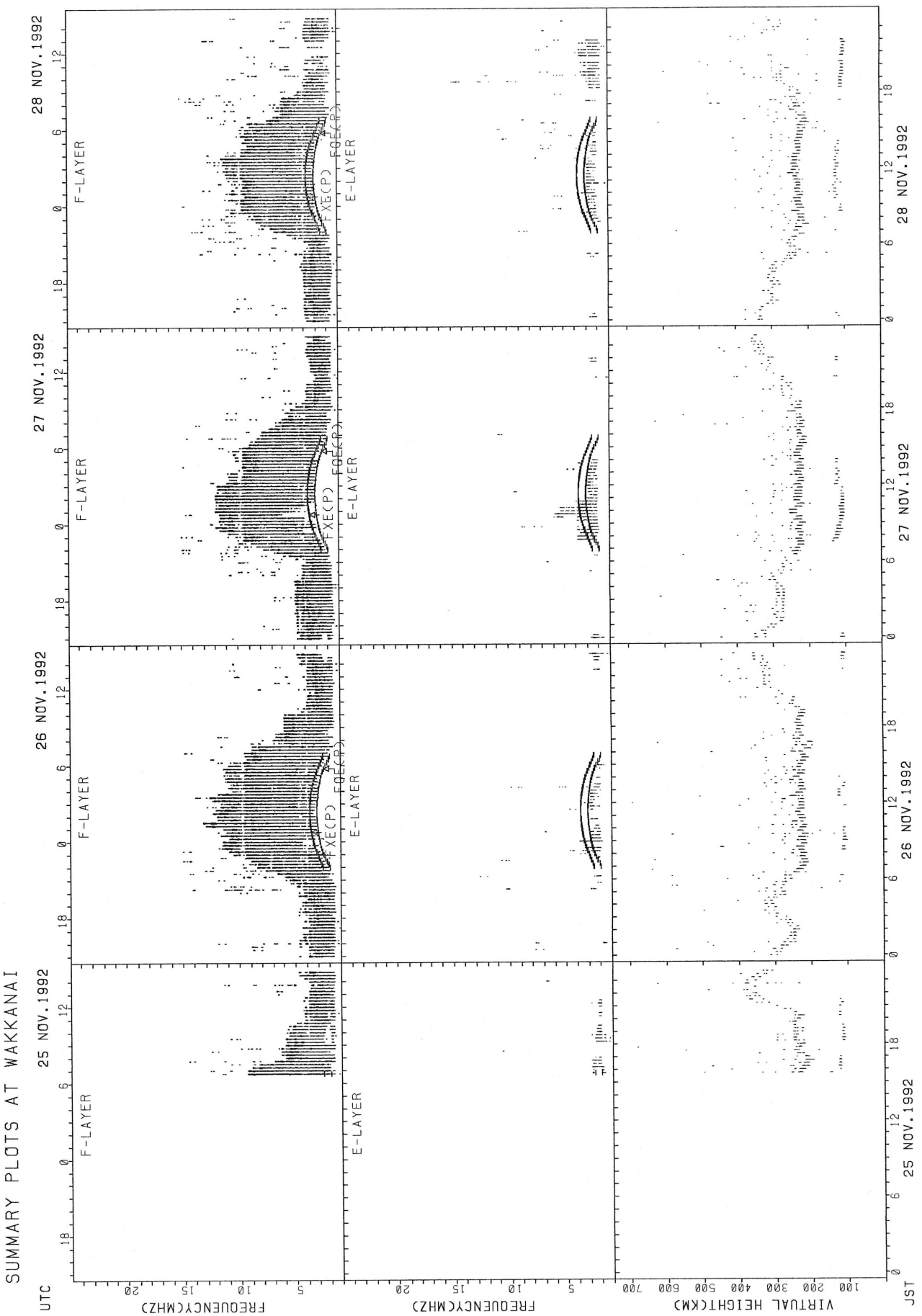
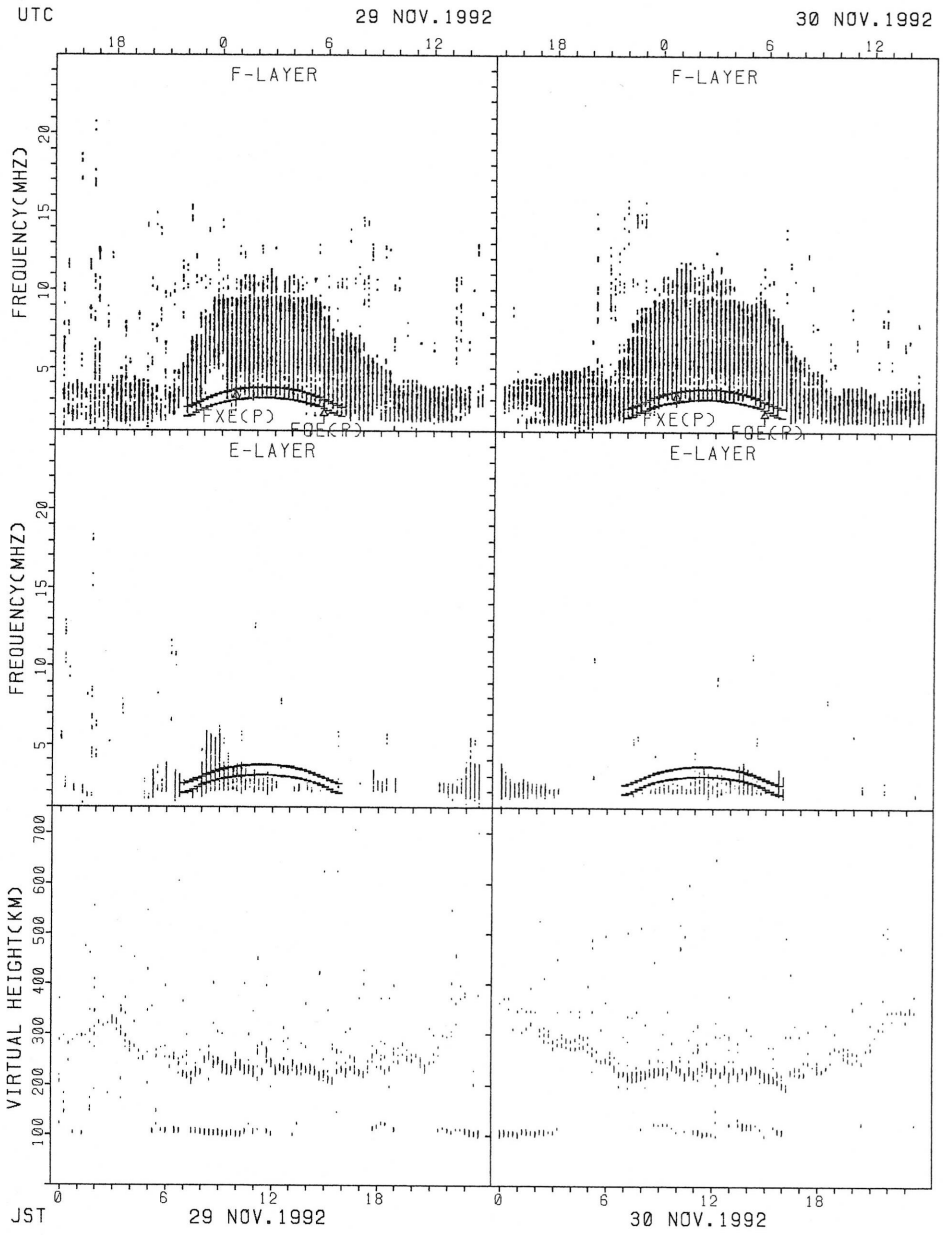

SUMMARY PLOTS AT WAKKANAI
UTC
JST
21 NOV.1992
22 NOV.1992
23 NOV.1992
24 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

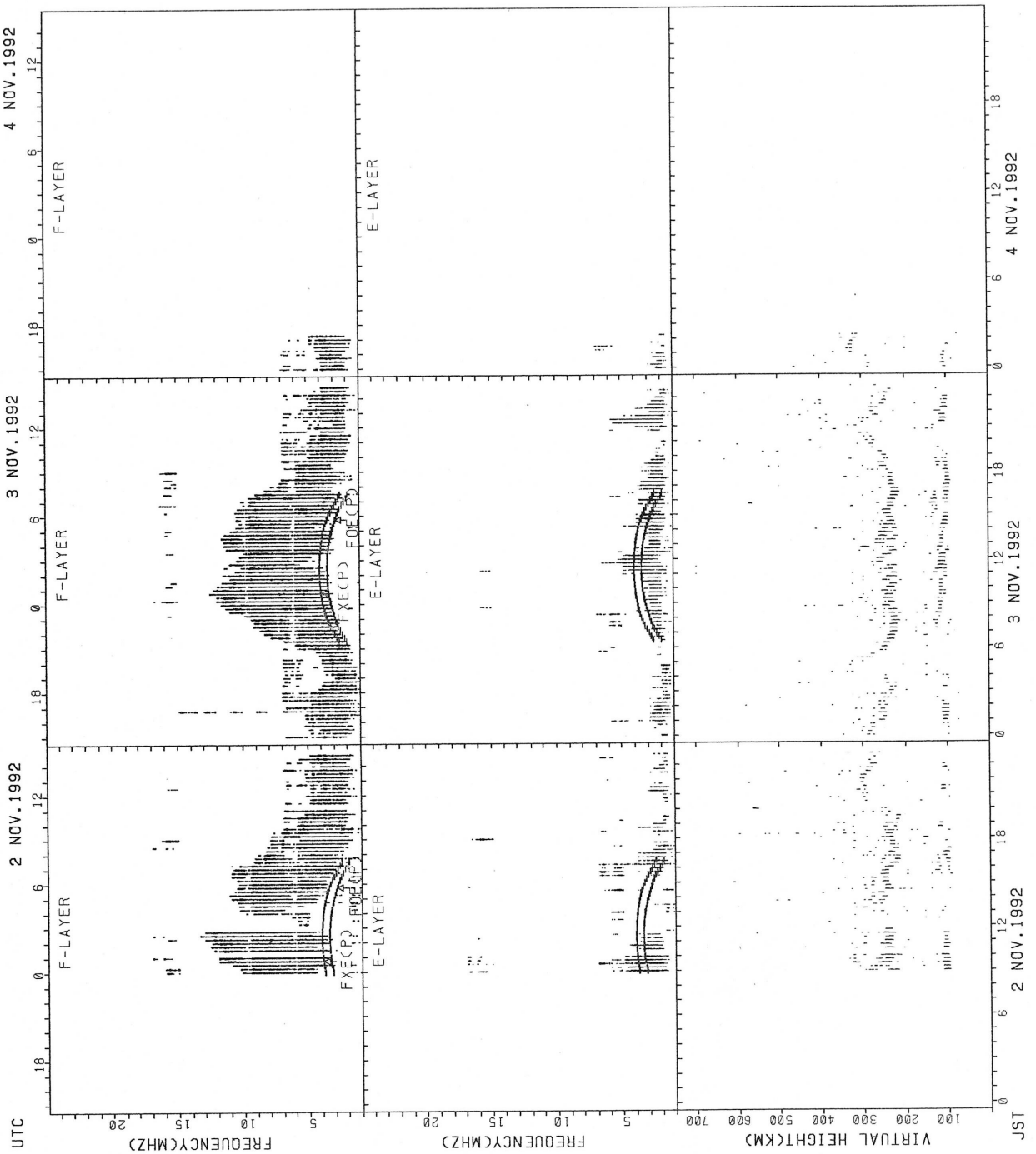

SUMMARY PLOTS AT WAKKANAI
UTC
JST
25 NOV.1992
26 NOV.1992
27 NOV.1992
28 NOV.1992
F-LAYER
E-LAYER
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P)
FOE(P)
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

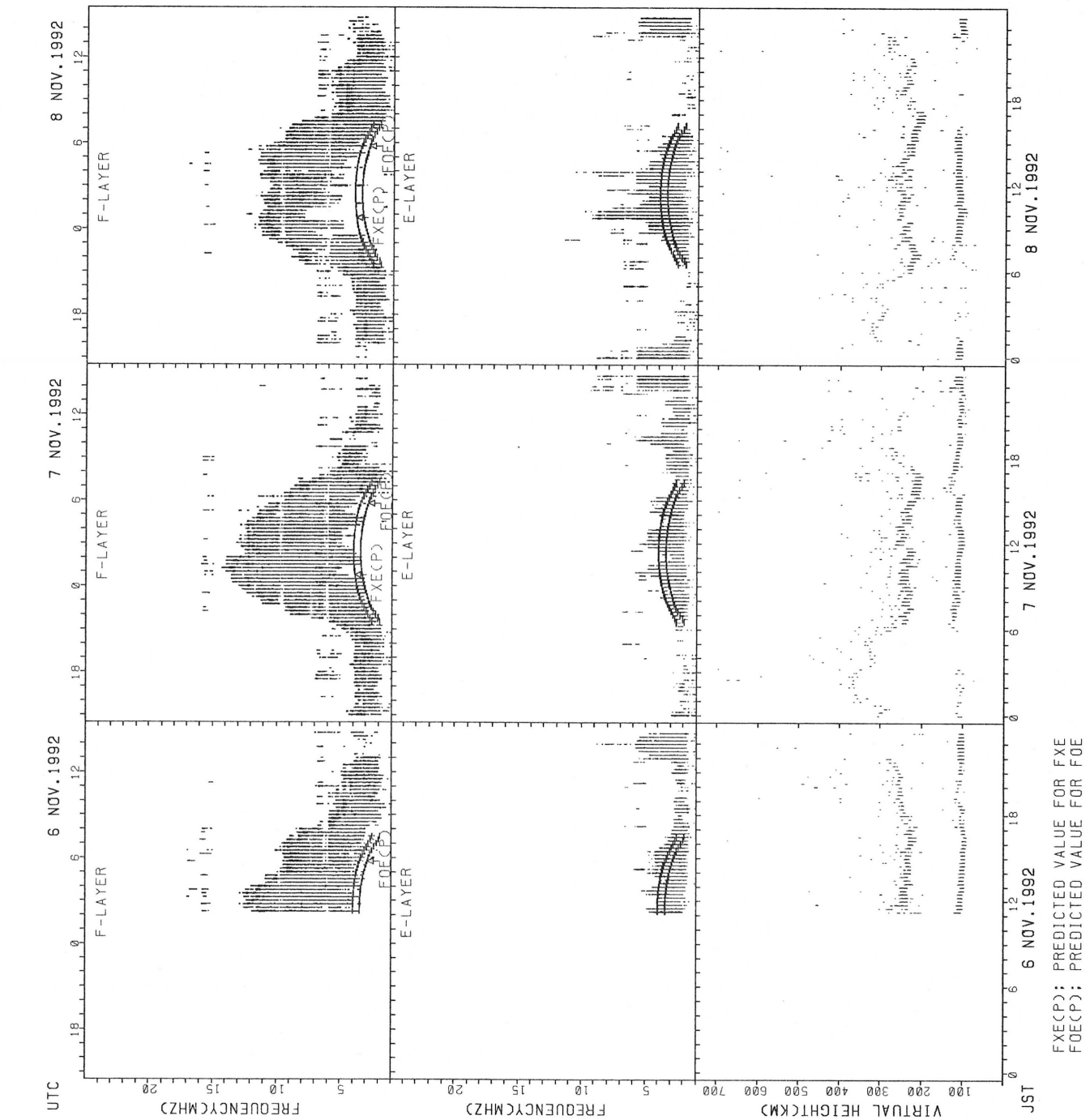
SUMMARY PLOTS AT WAKKANAI

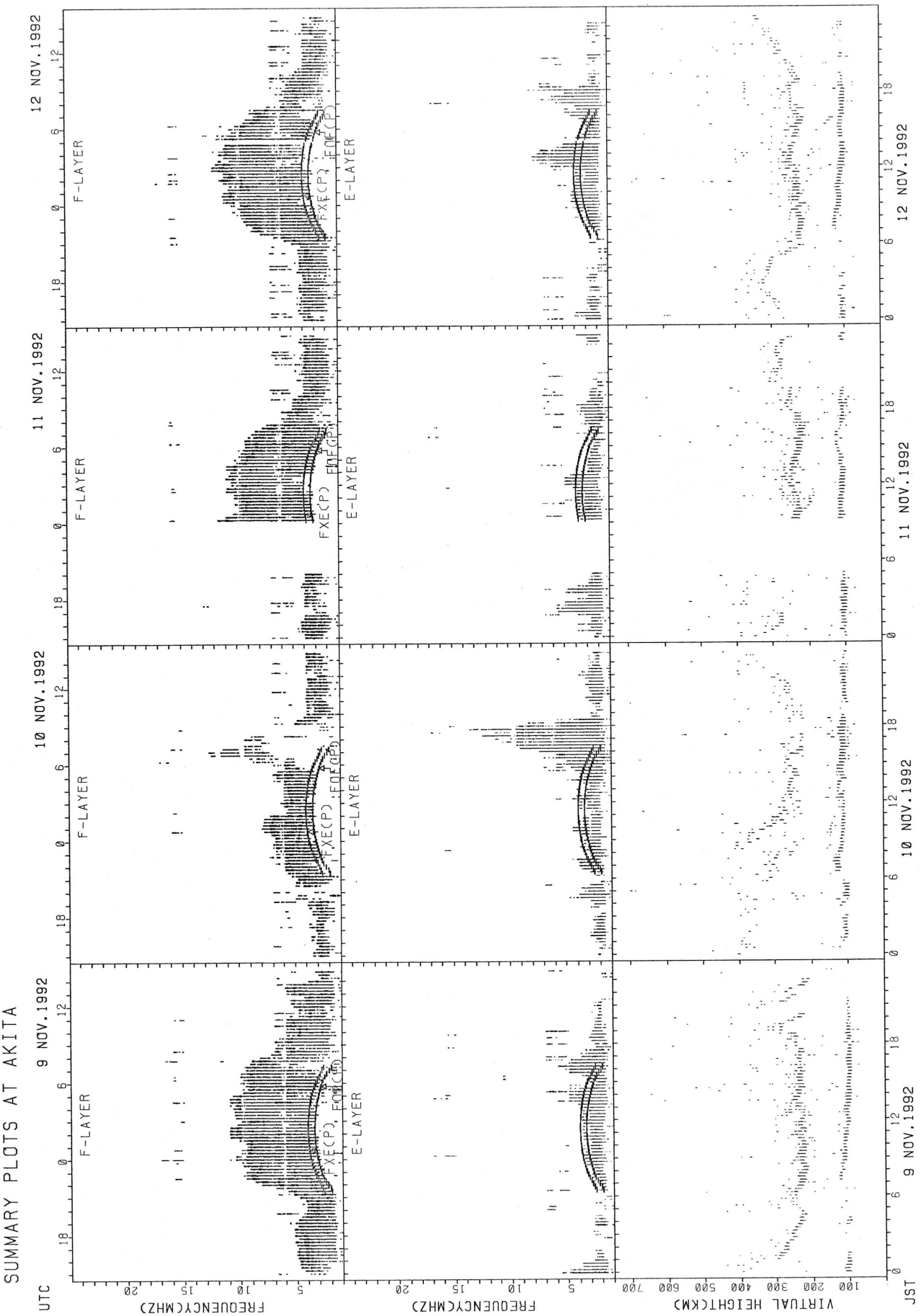


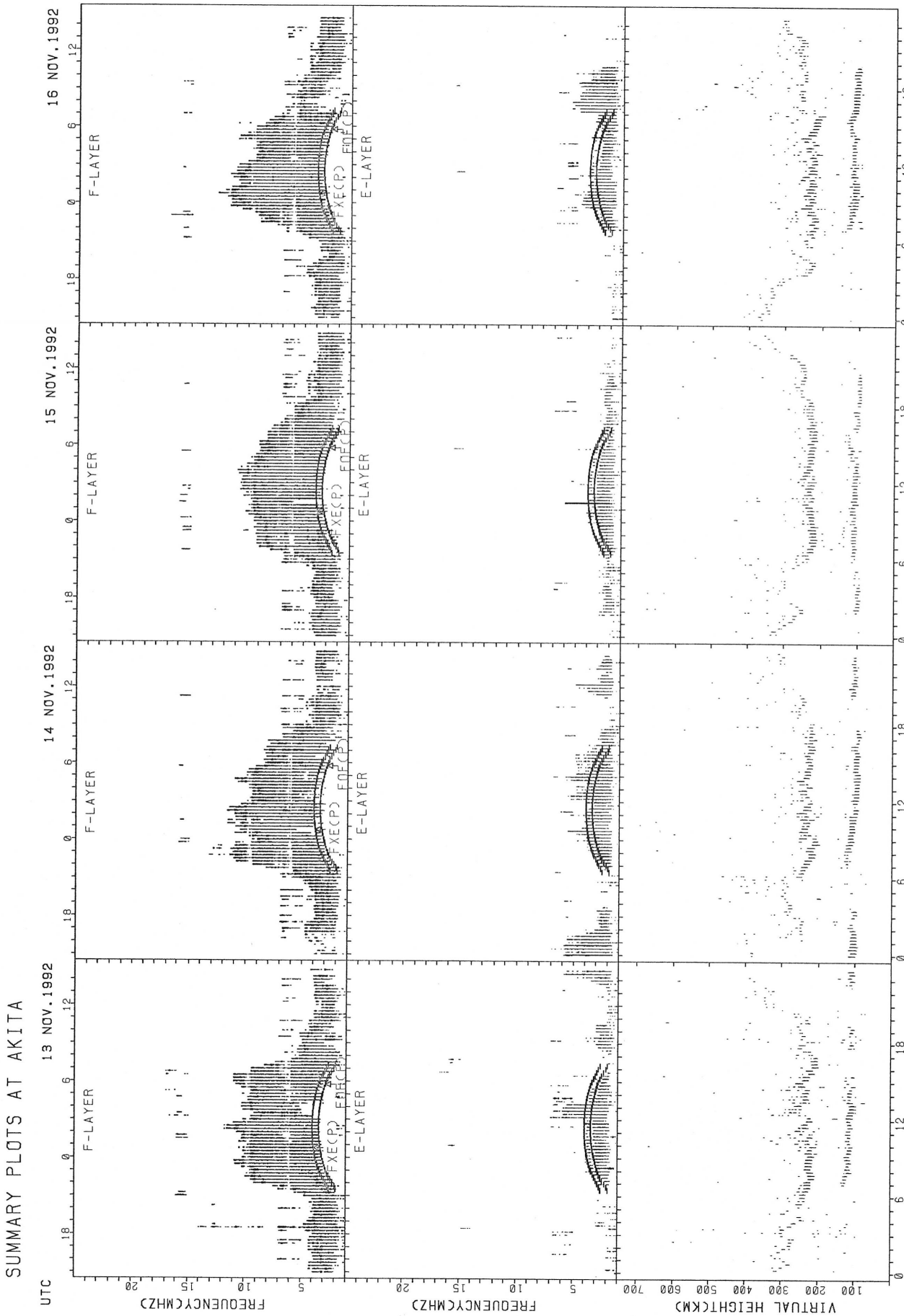
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT AKITA




SUMMARY PLOTS AT AKITA
UTC
6 NOV.1992
7 NOV.1992
8 NOV.1992
F-LAYER
E-LAYER
FOE(P)
FXE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT AKITA
UTC
JST
9 NOV.1992
10 NOV.1992
11 NOV.1992
12 NOV.1992
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 AKITA
UTC
13 NOV.1992
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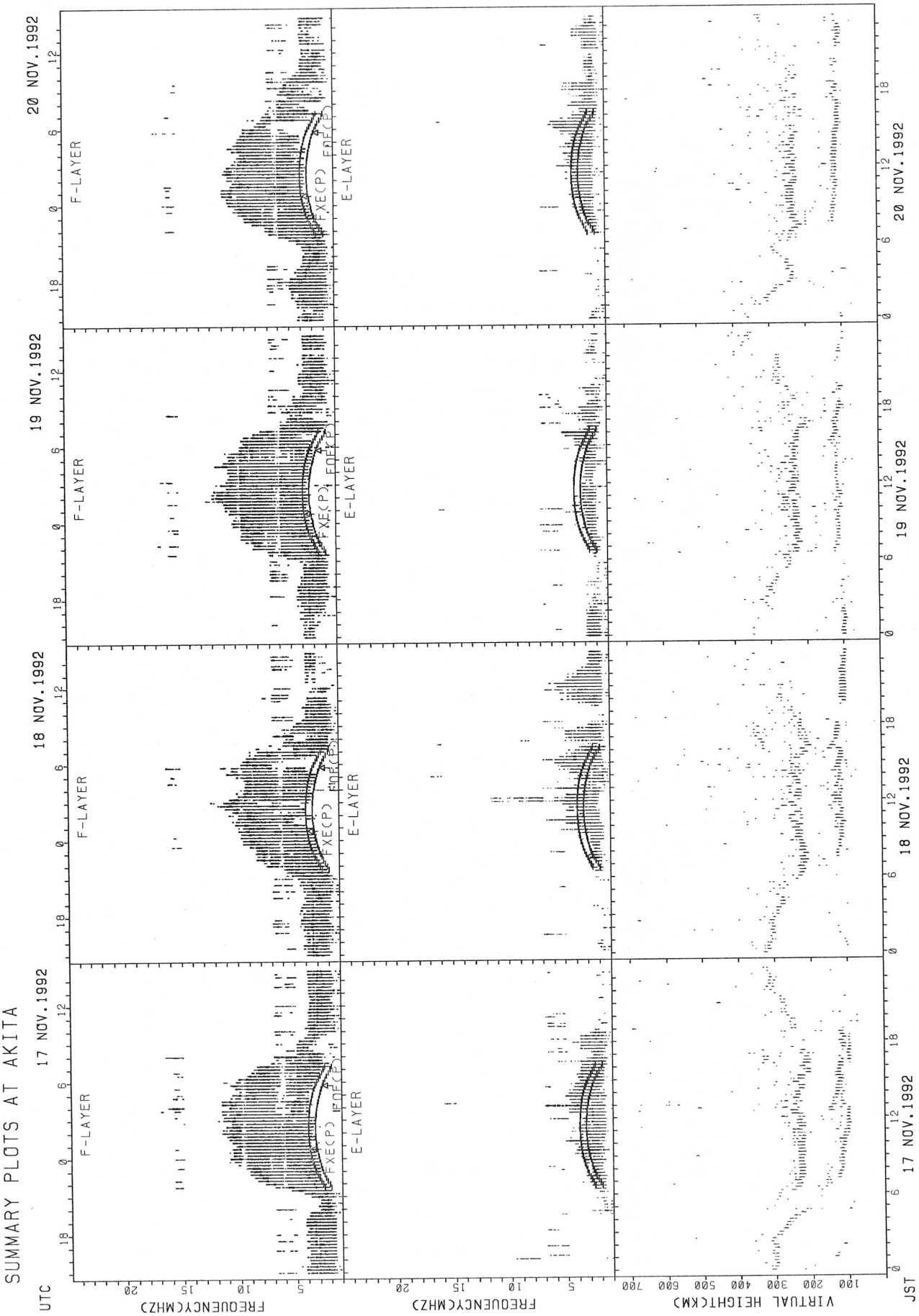
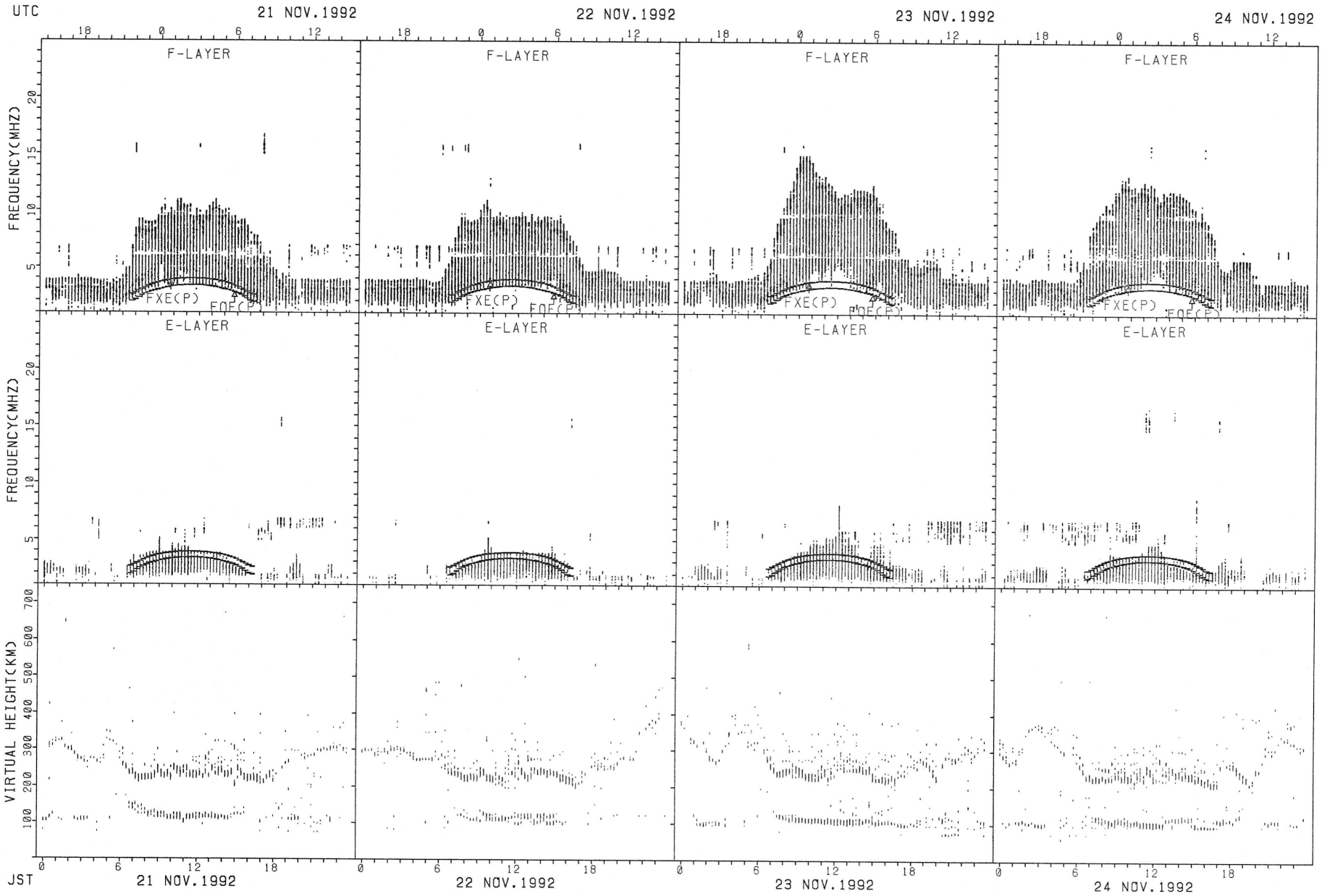
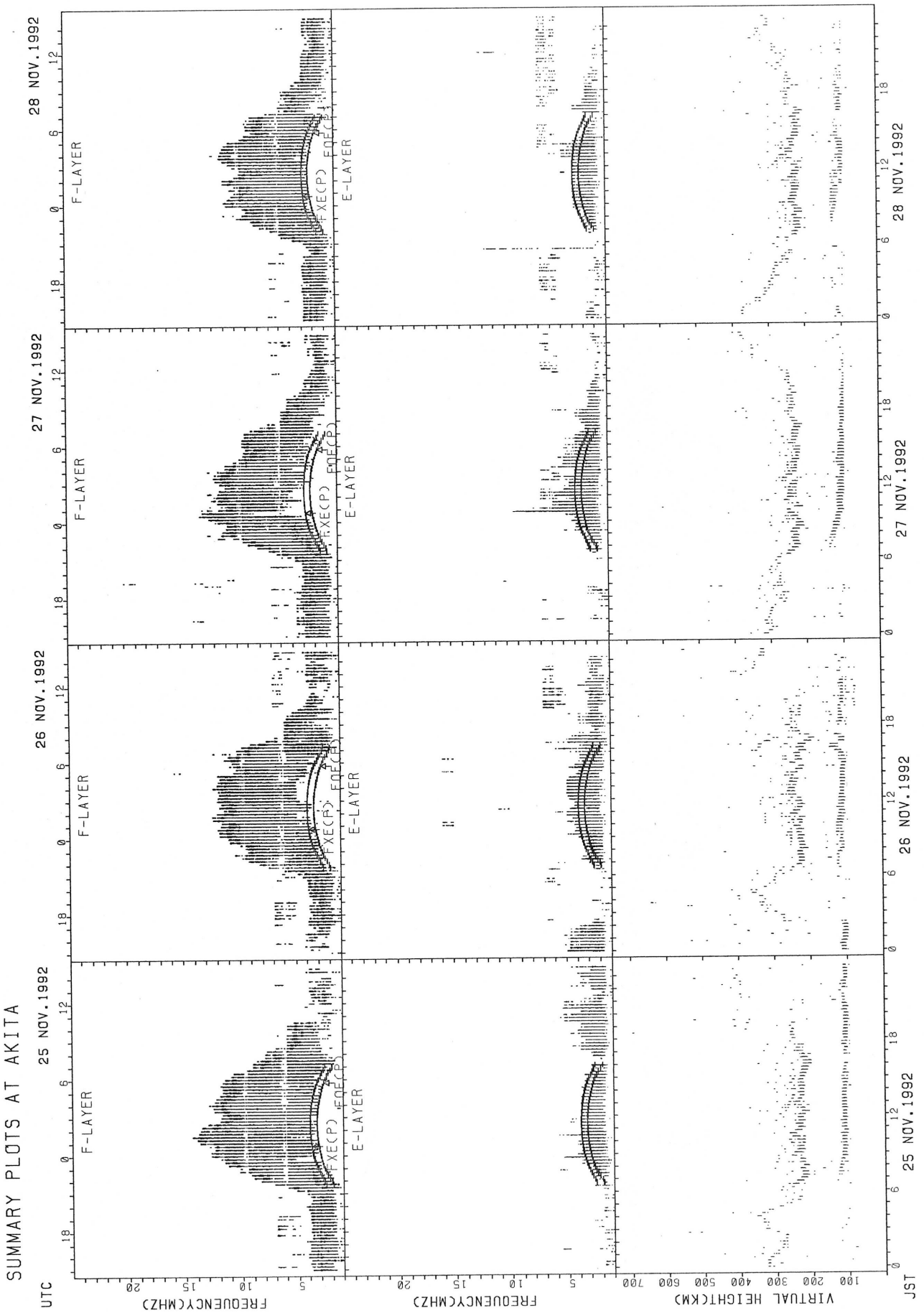
15 NOV.1992
16 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT AKITA
17 NOV.1992
18 NOV.1992
19 NOV.1992
20 NOV.1992
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 AKITA



FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT AKITA
UTC
25 NOV.1992
26 NOV.1992
27 NOV.1992
28 NOV.1992
F-LAYER
E-LAYER
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FOE(P)
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VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
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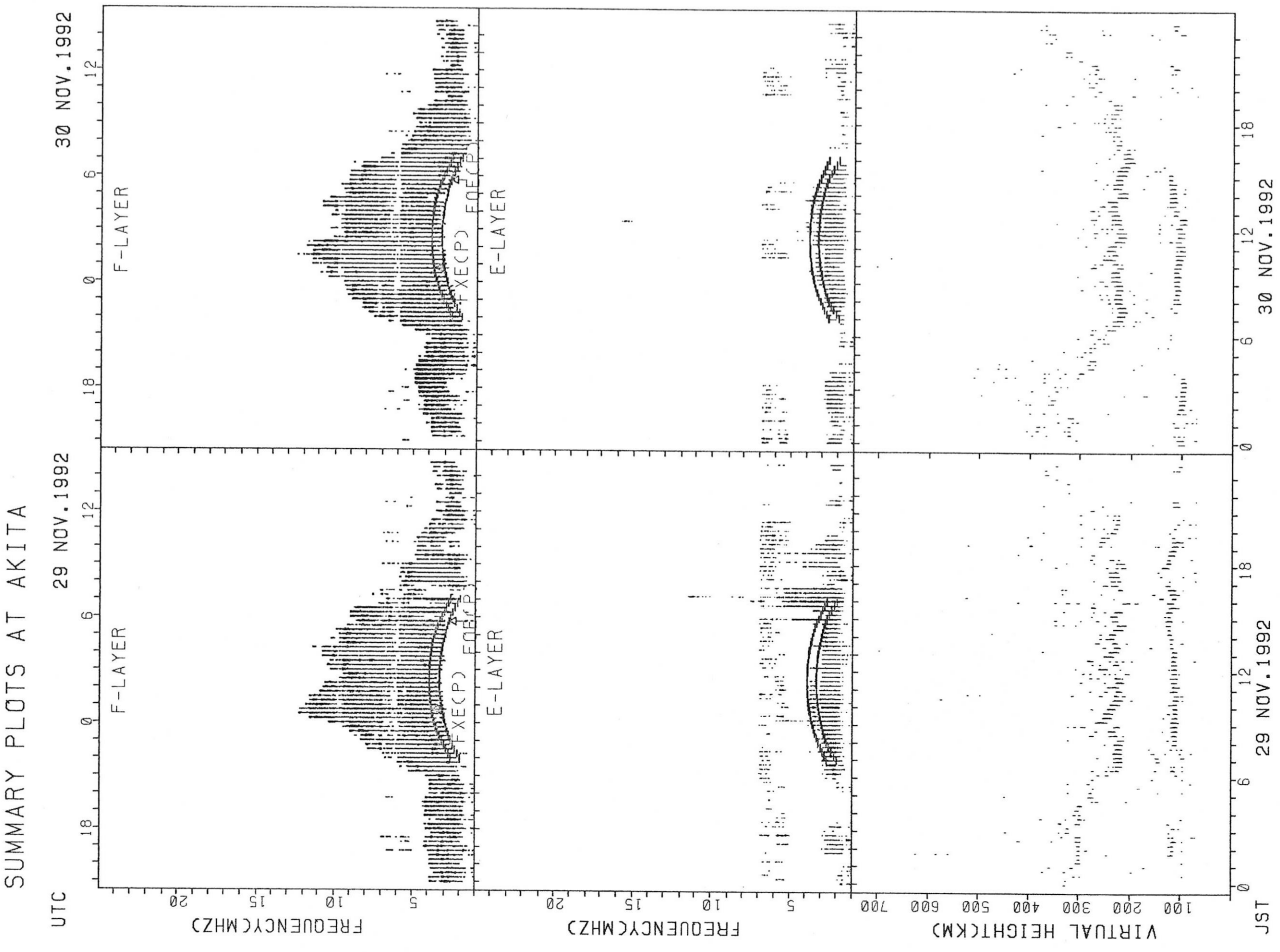
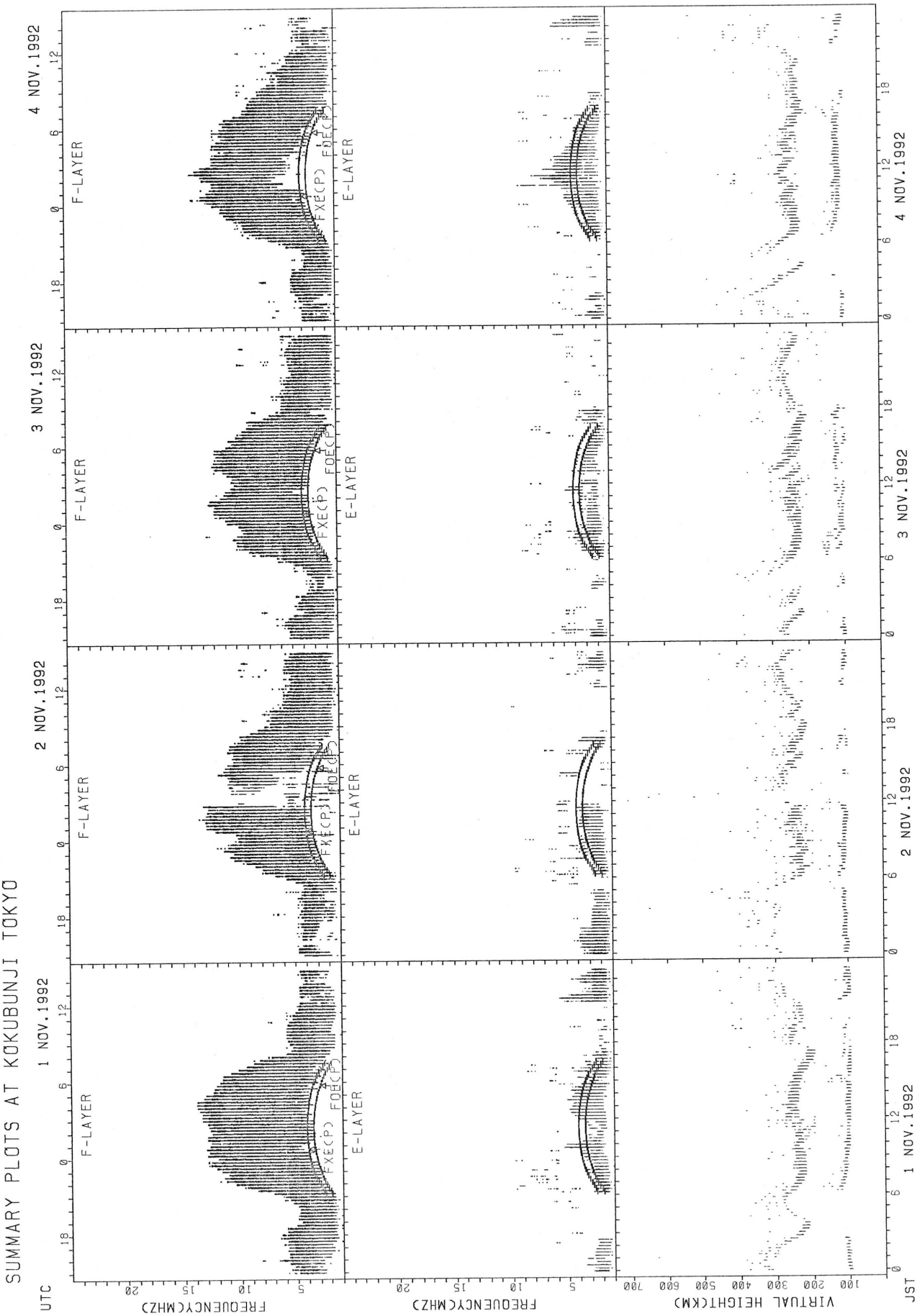
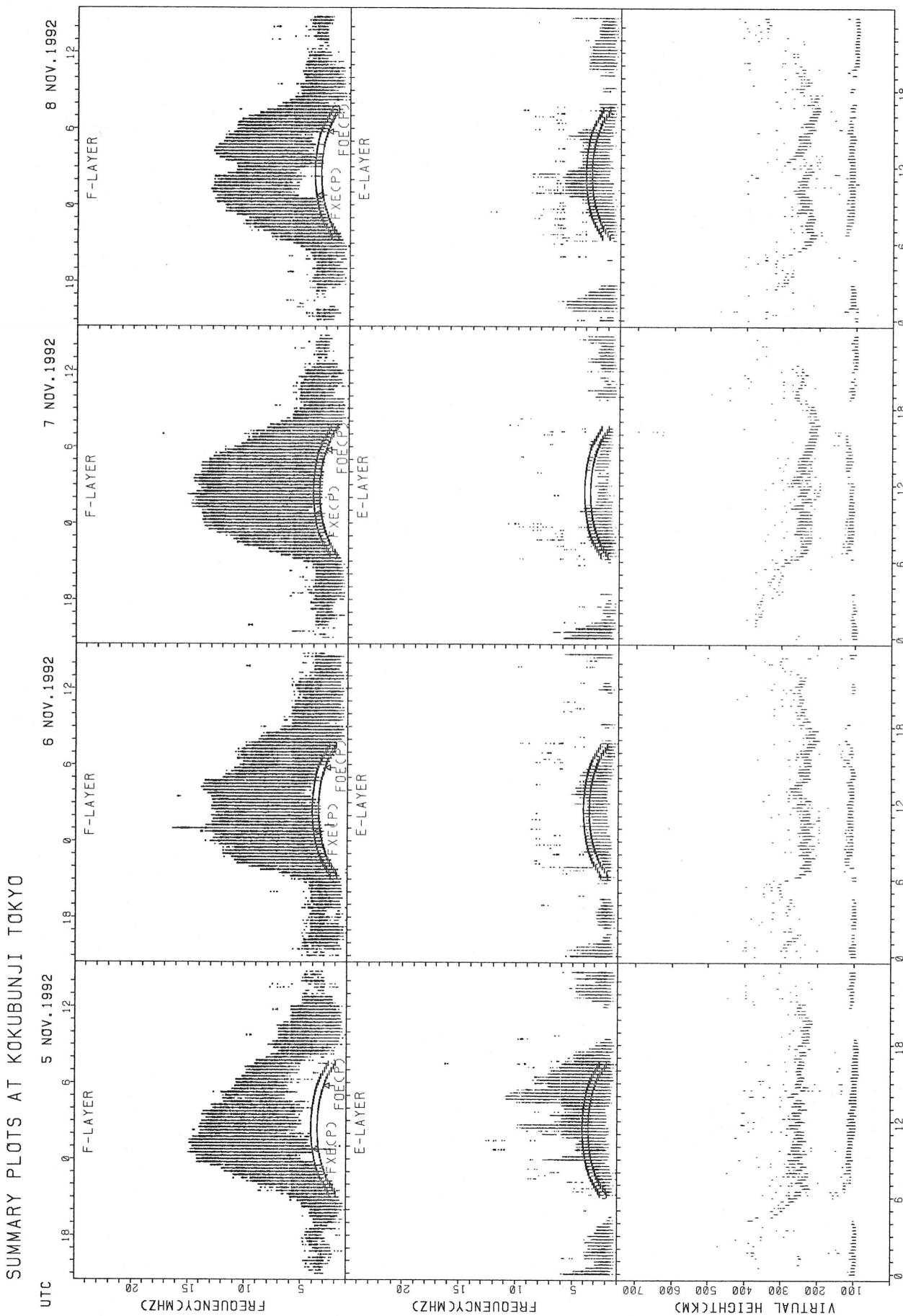

SUMMARY PLOTS AT AKITA
UTC
29 NOV.1992
30 NOV.1992
F-LAYER
E-LAYER
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P) FOE(P)
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
1 NOV.1992
2 NOV.1992
3 NOV.1992
4 NOV.1992
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 KOKUBUNJI TOKYO
UTC
5 NOV.1992
6 NOV.1992
7 NOV.1992
8 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
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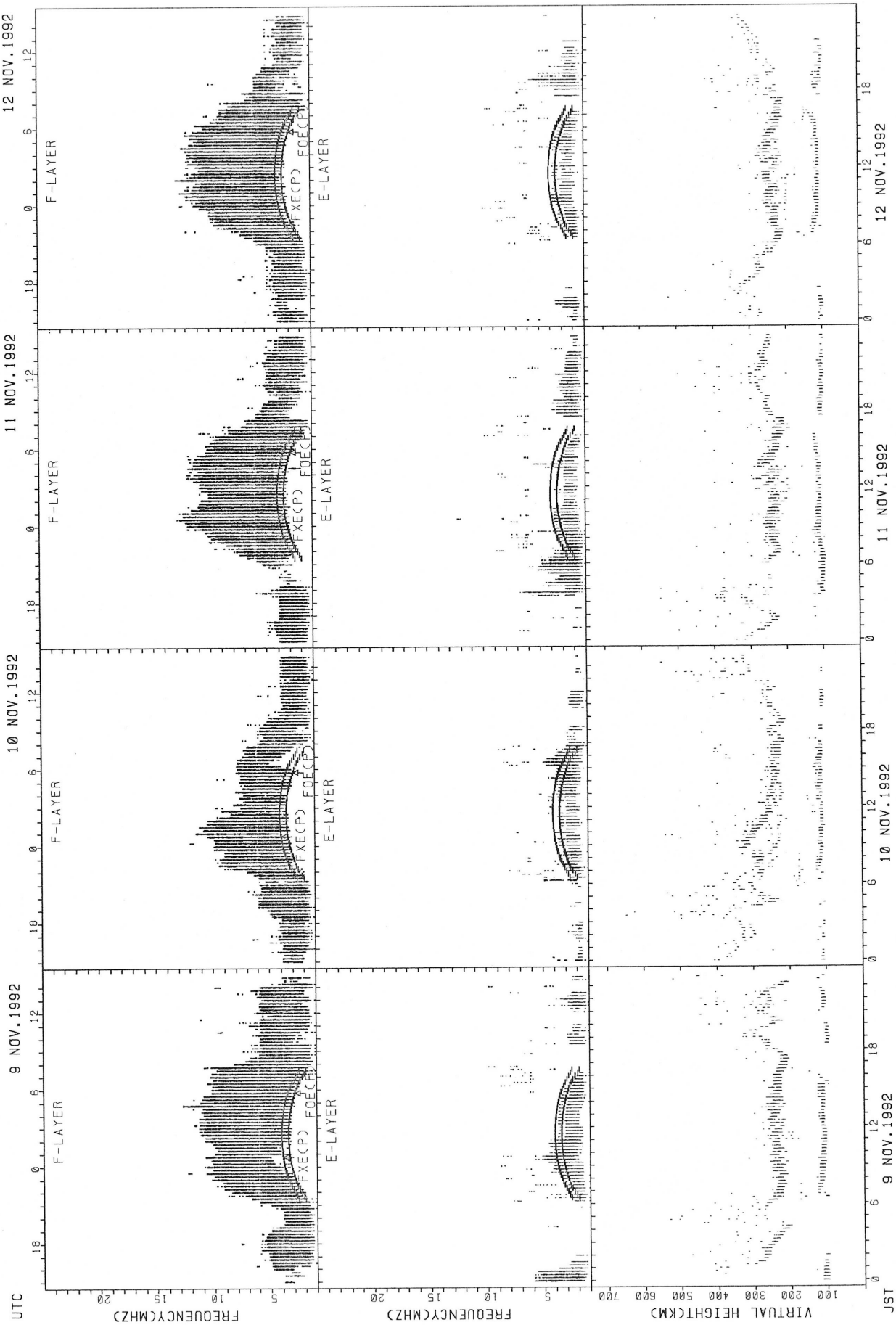
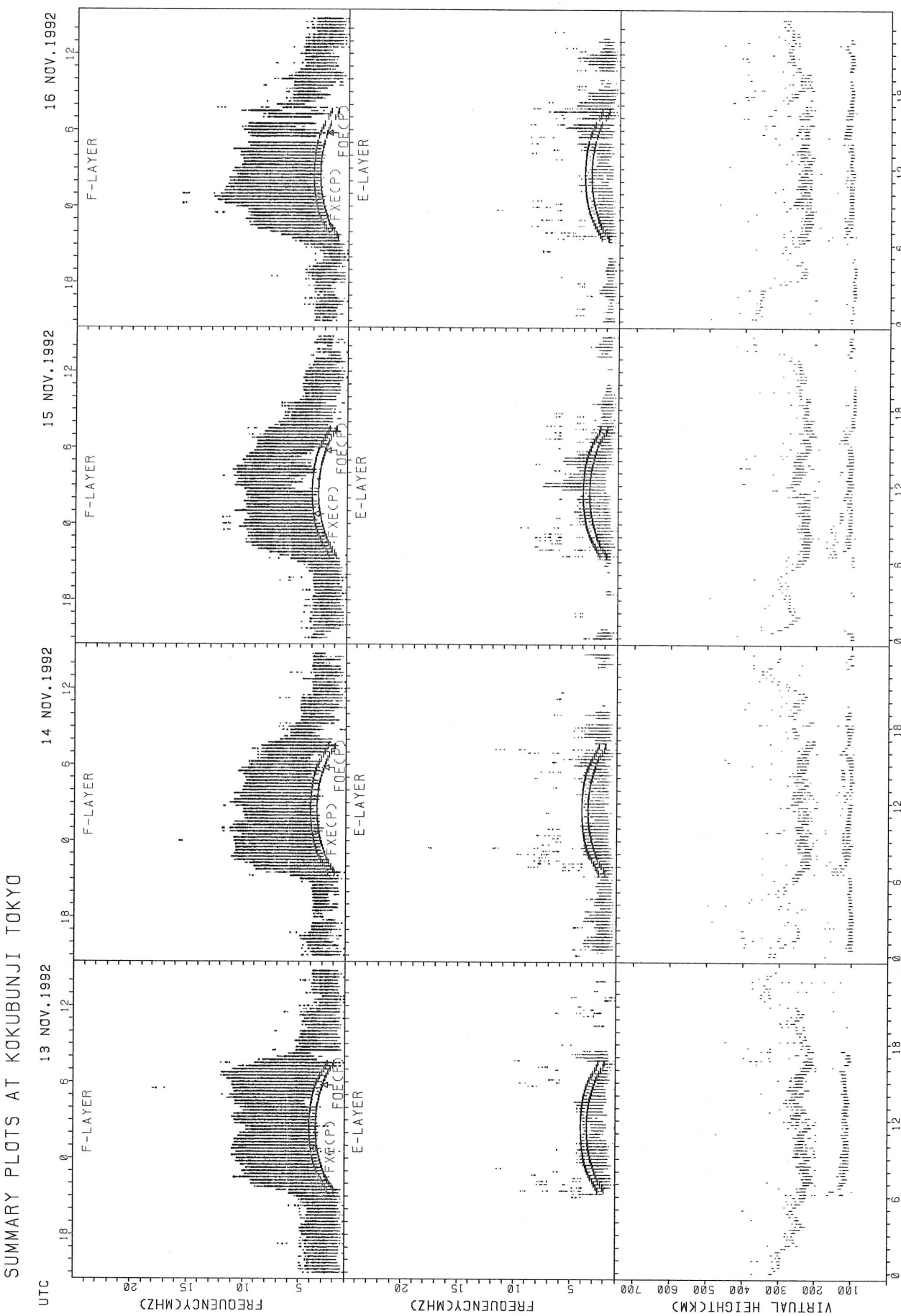
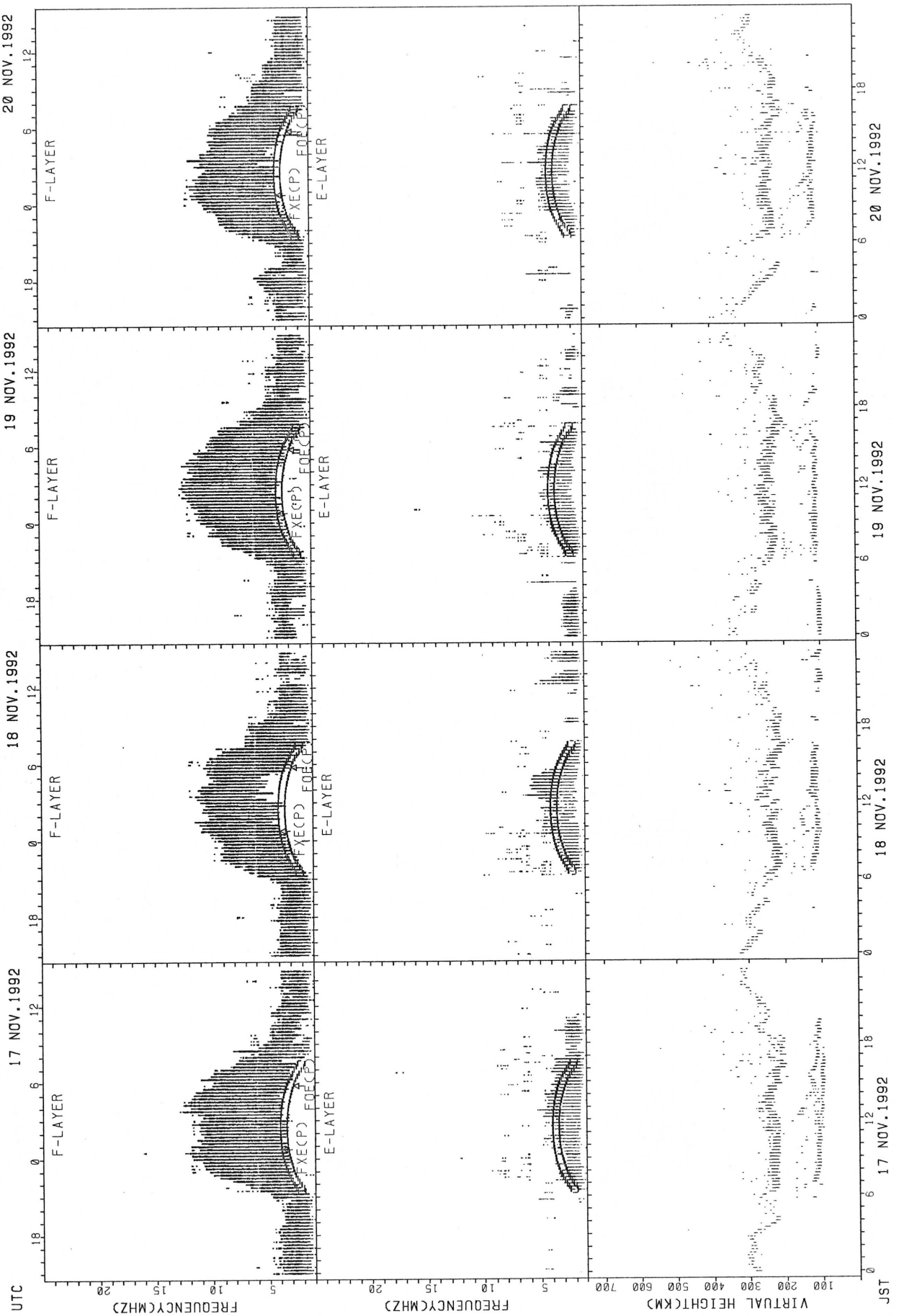
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
9 NOV.1992
10 NOV.1992
11 NOV.1992
12 NOV.1992
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 KOKUBUNJI TOKYO
UTC
13 NOV.1992
14 NOV.1992
15 NOV.1992
16 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
17 NOV.1992
18 NOV.1992
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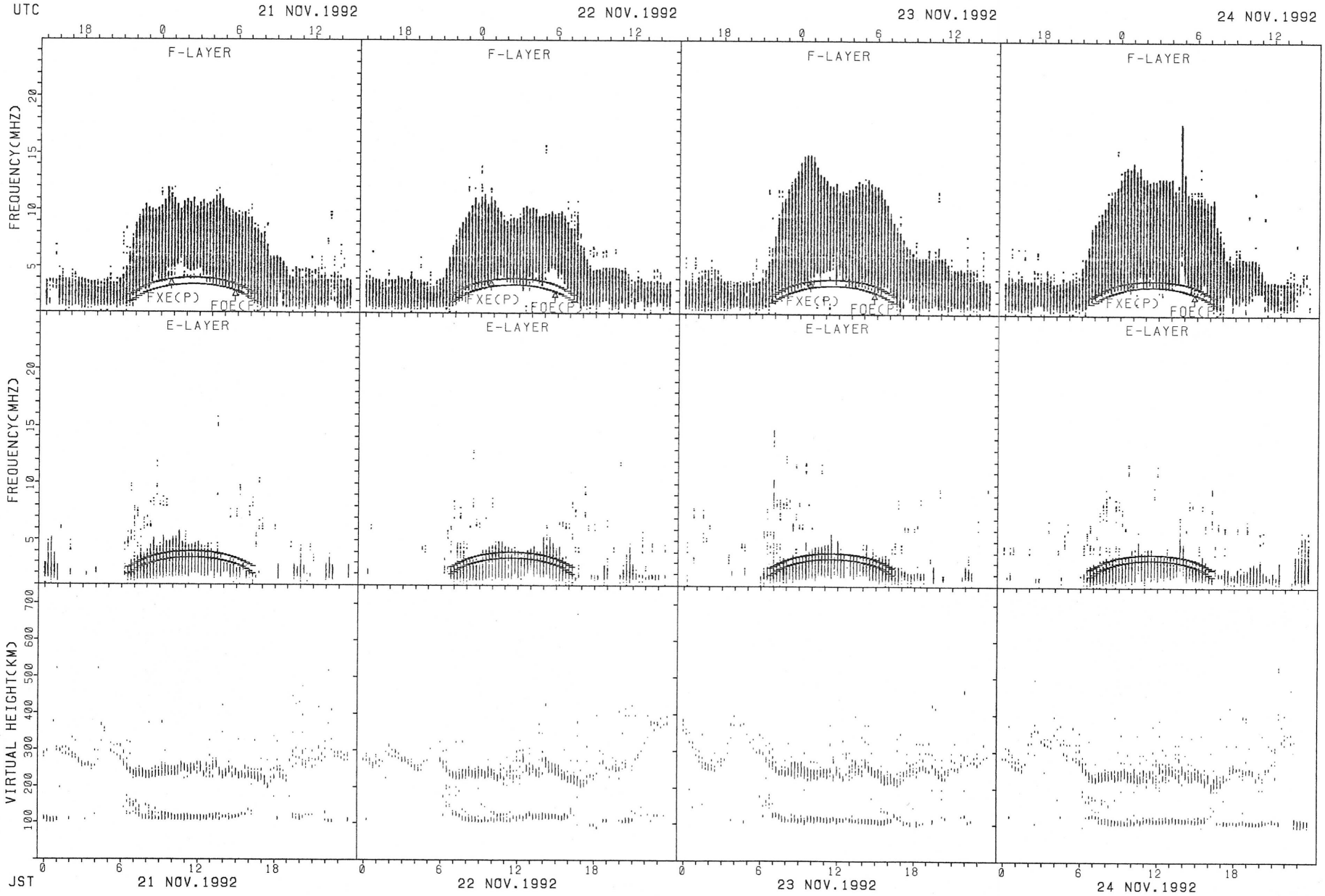
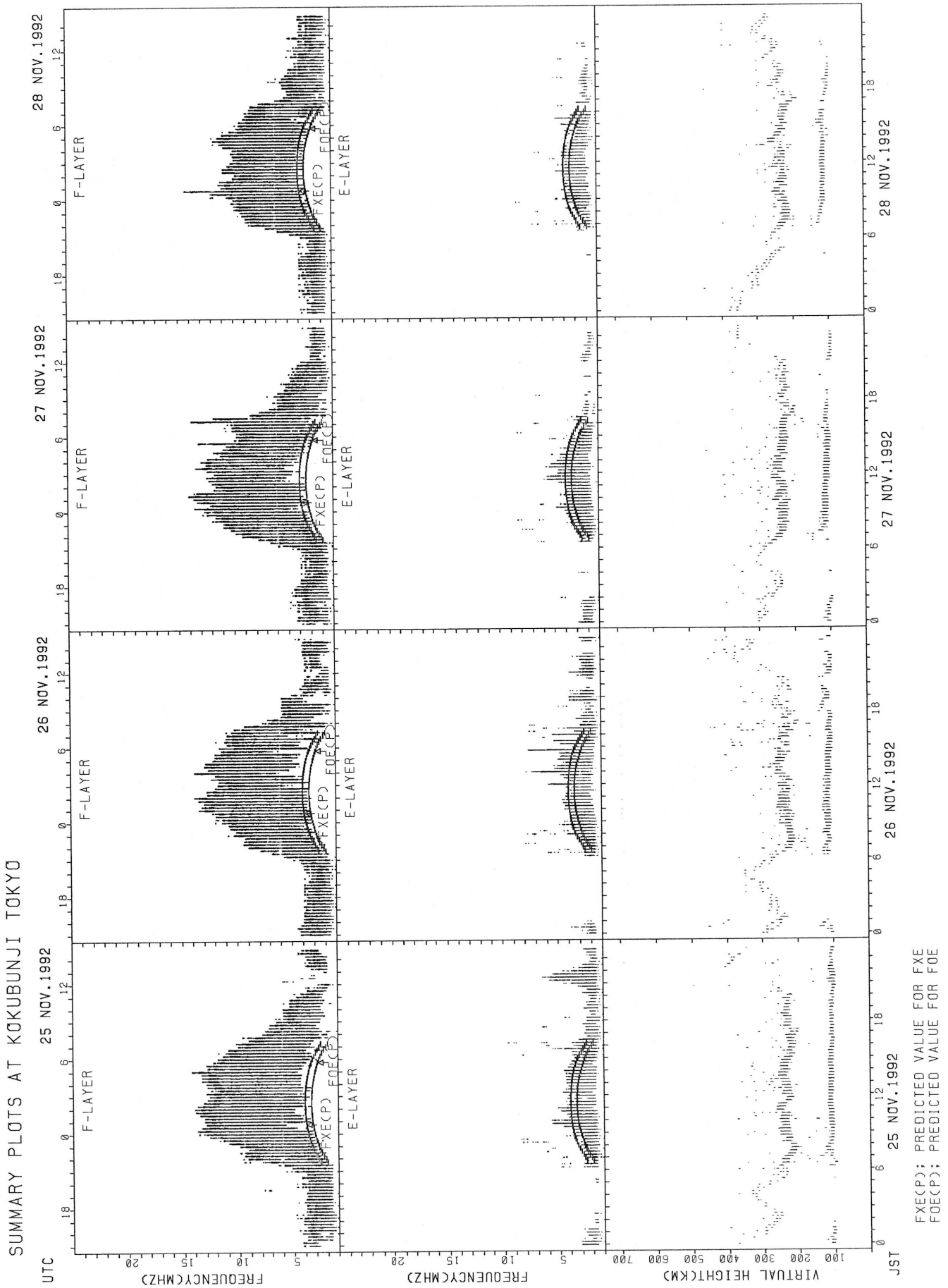
20 NOV.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

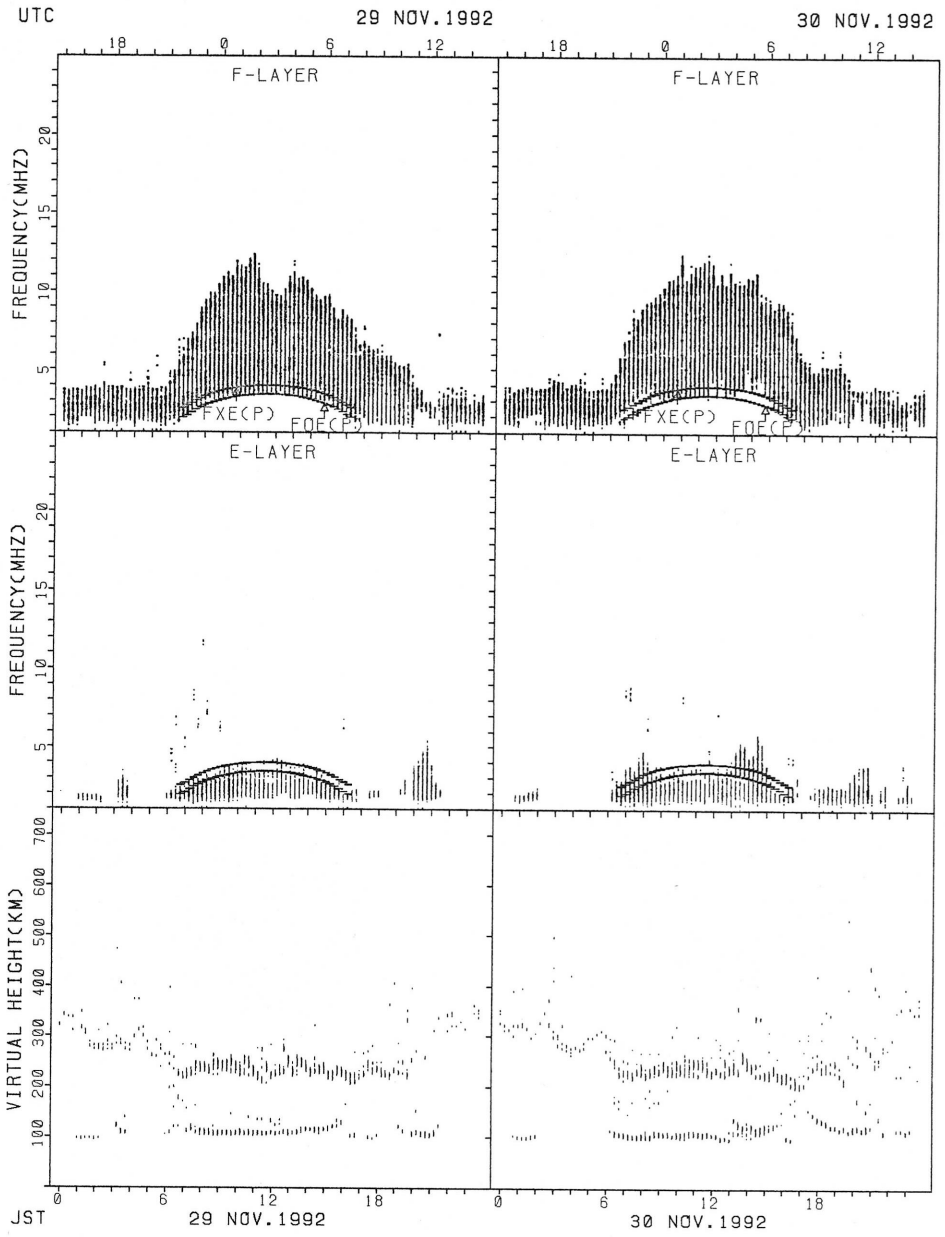
SUMMARY PLOTS AT KOKUBUNJI TOKYO



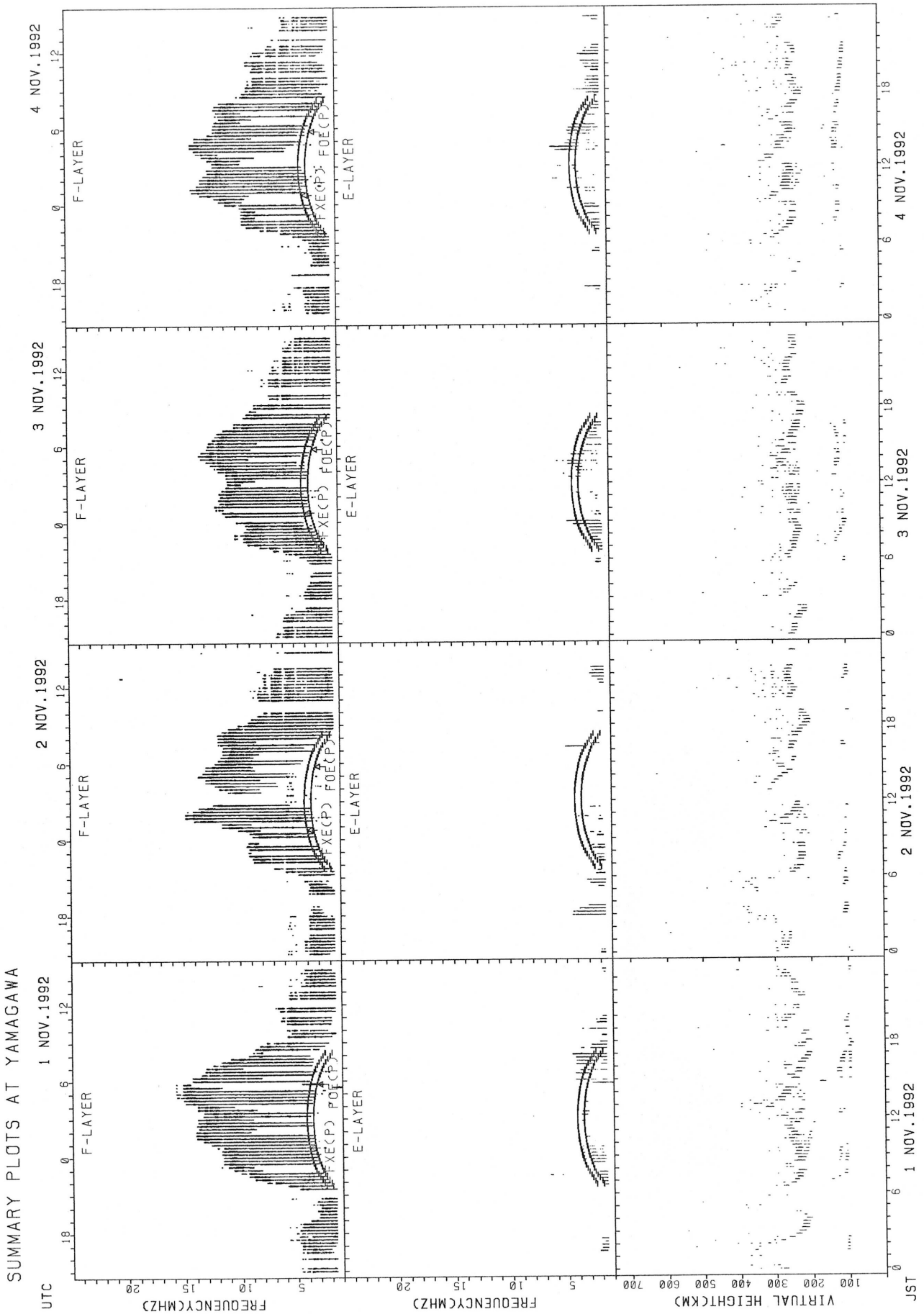
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
25 NOV.1992
26 NOV.1992
27 NOV.1992
28 NOV.1992
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

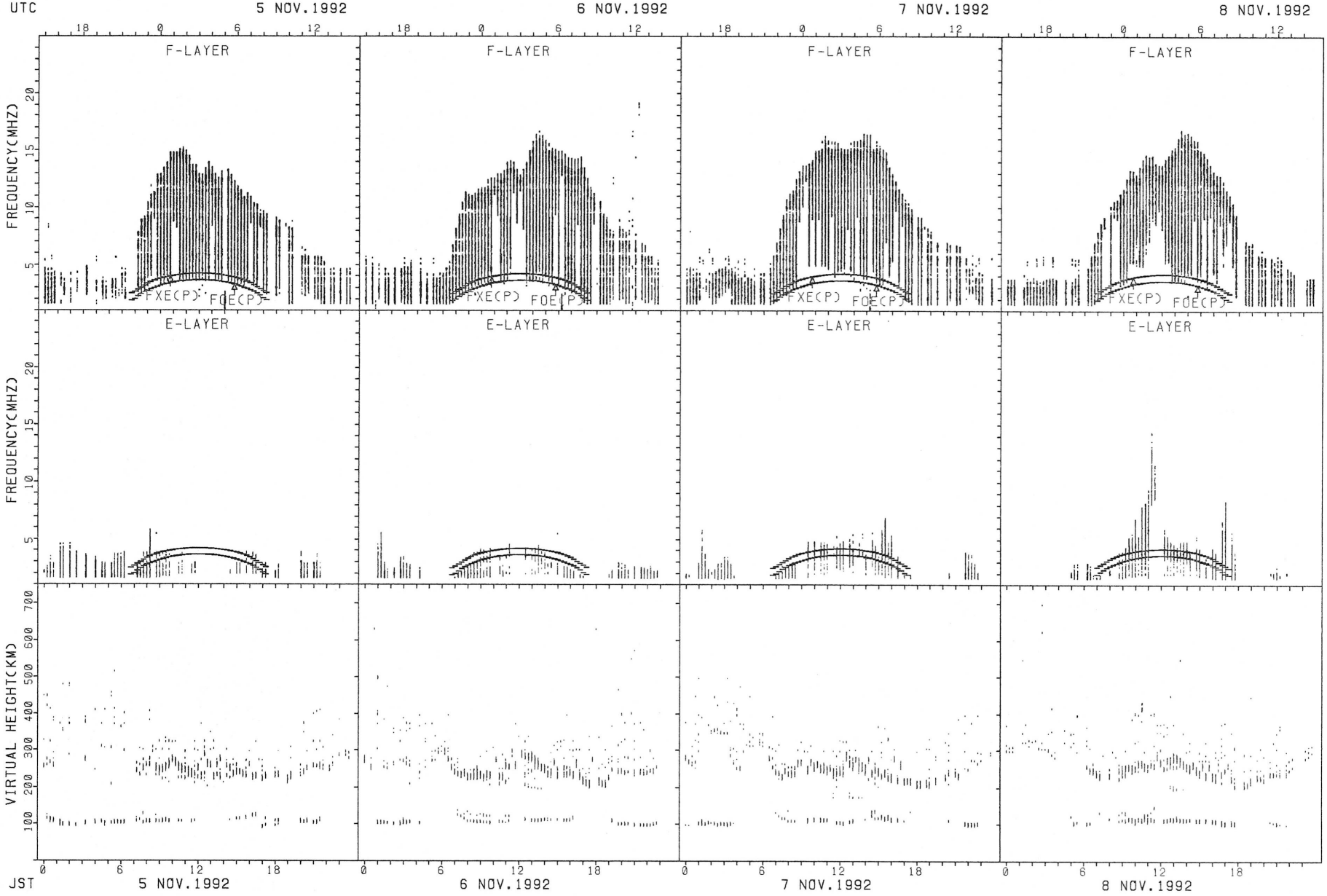
SUMMARY PLOTS AT KOKUBUNJI TOKYO



FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT YAMAGAWA
1 NOV.1992
2 NOV.1992
3 NOV.1992
4 NOV.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT YAMAGAWA



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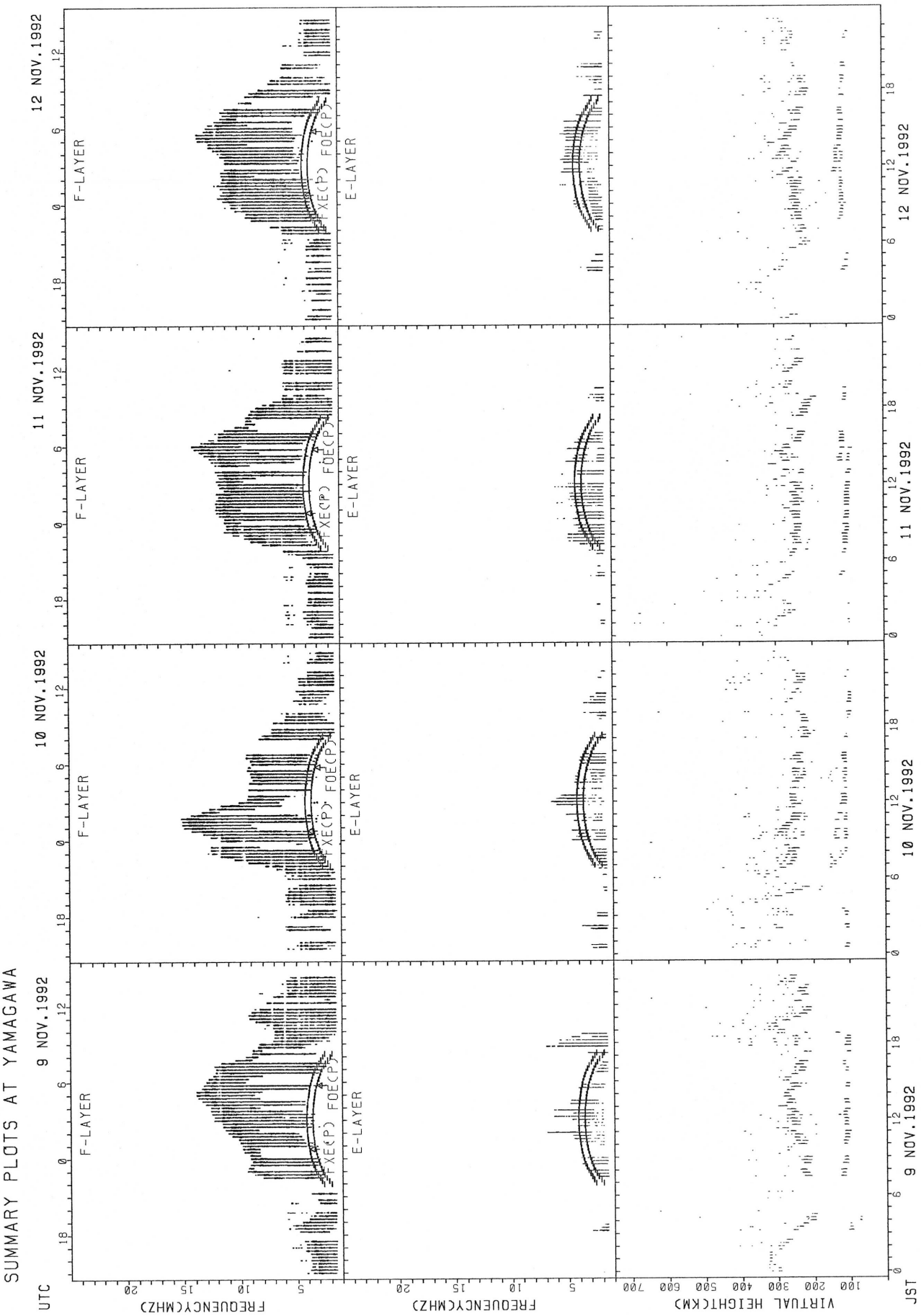
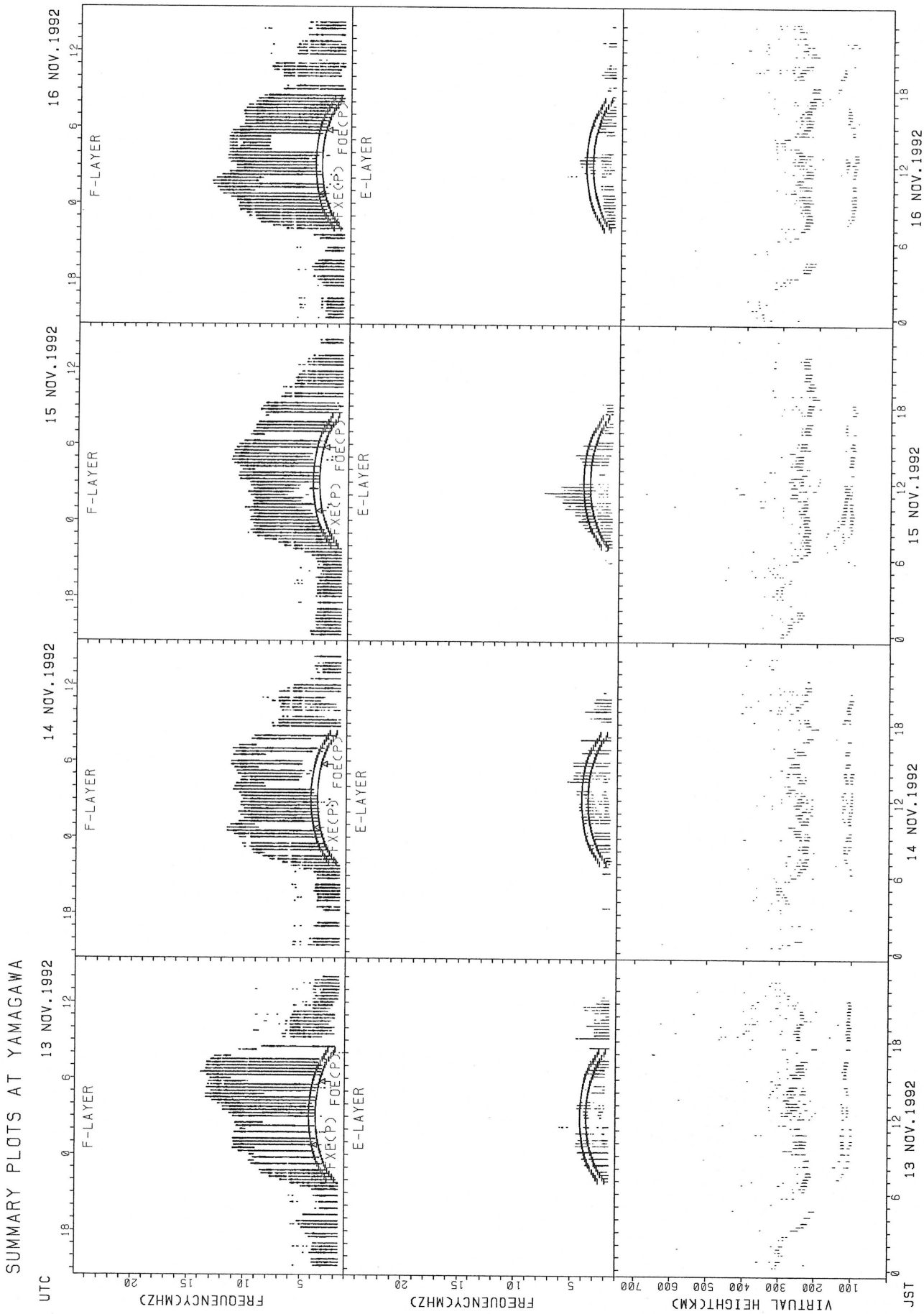
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT YAMAGAWA
UTC
JST
9 NOV.1992
10 NOV.1992
11 NOV.1992
12 NOV.1992
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
UTC
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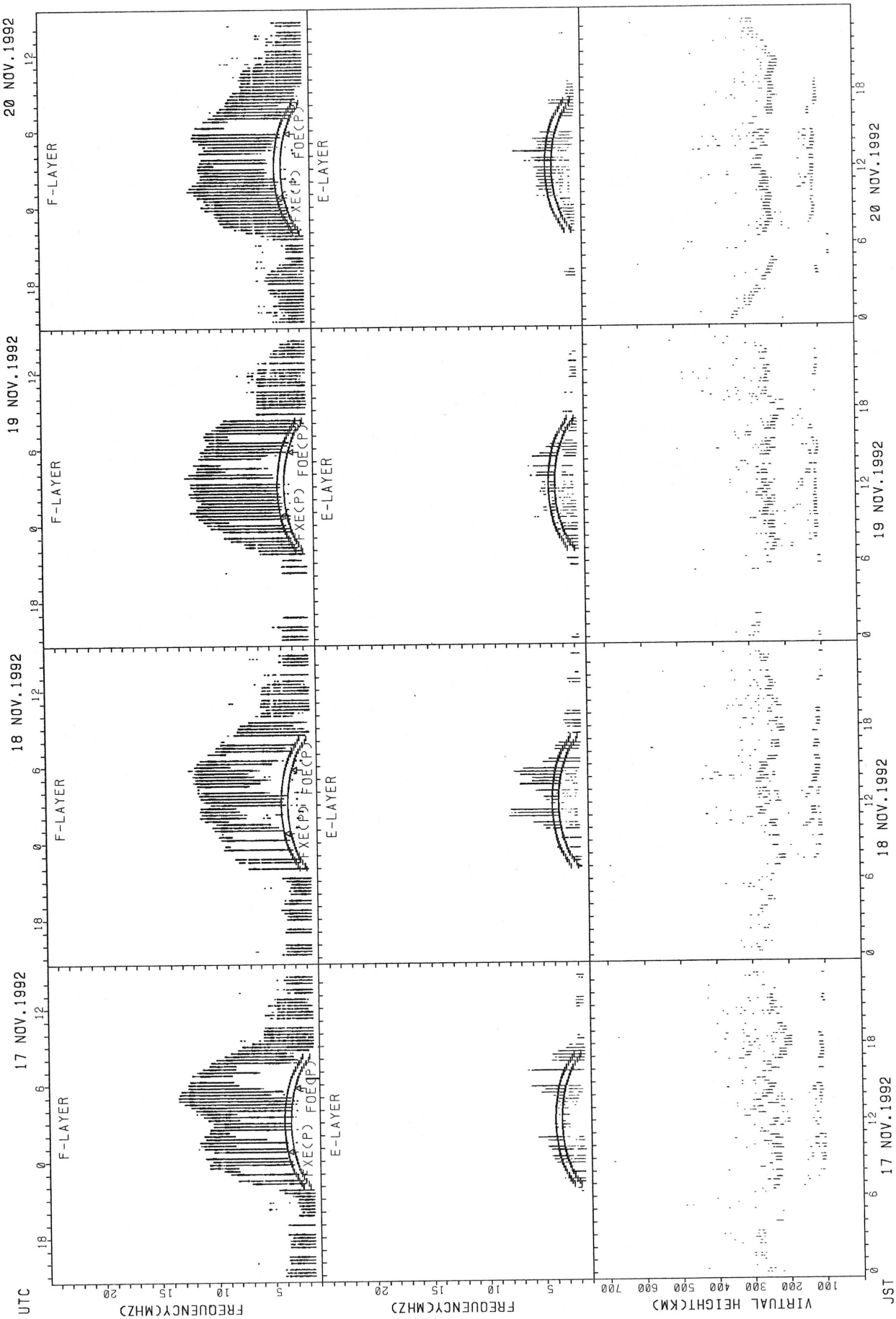
15 NOV.1992
16 NOV.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT YAMAGAWA
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18 NOV.1992
19 NOV.1992
20 NOV.1992
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E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
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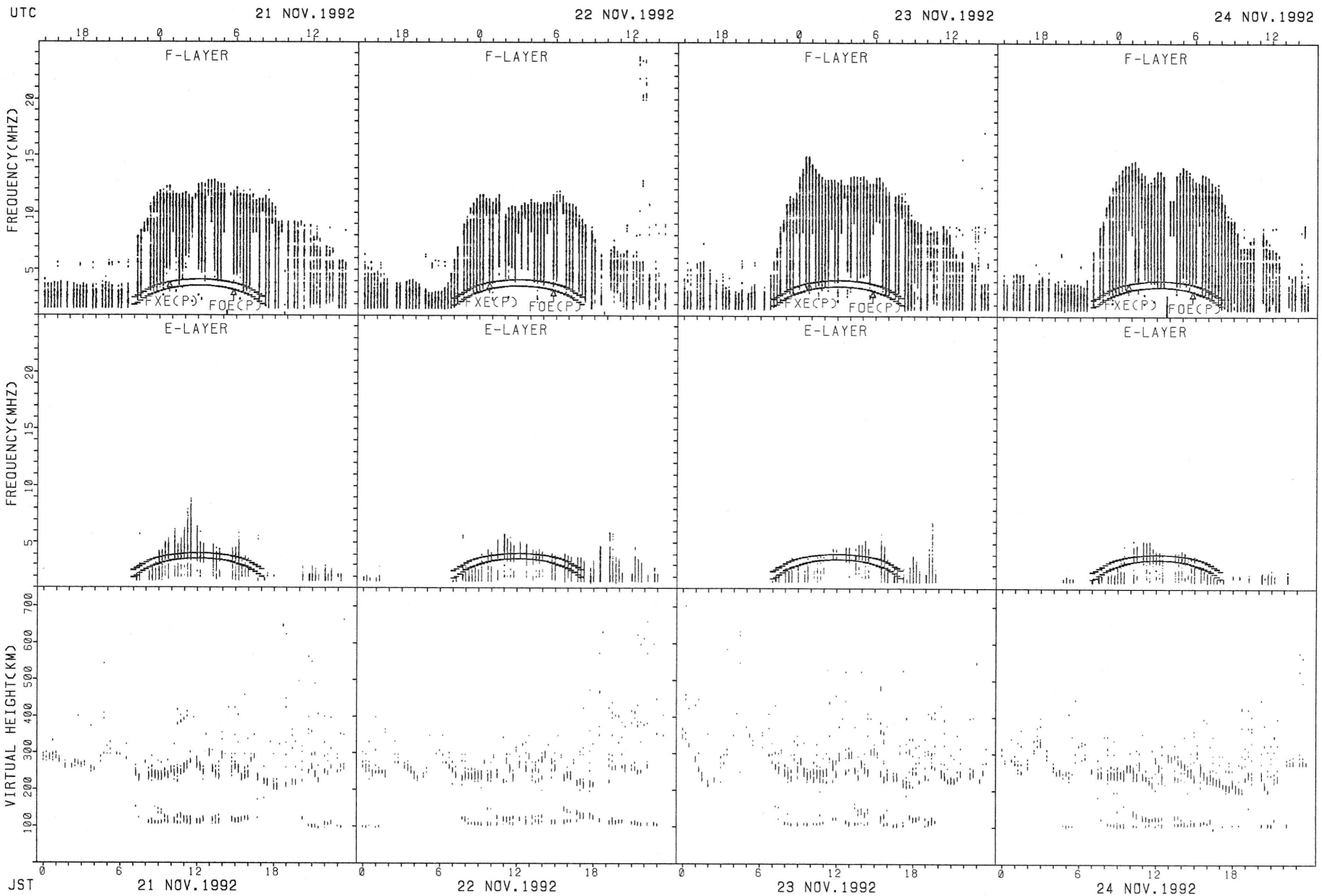
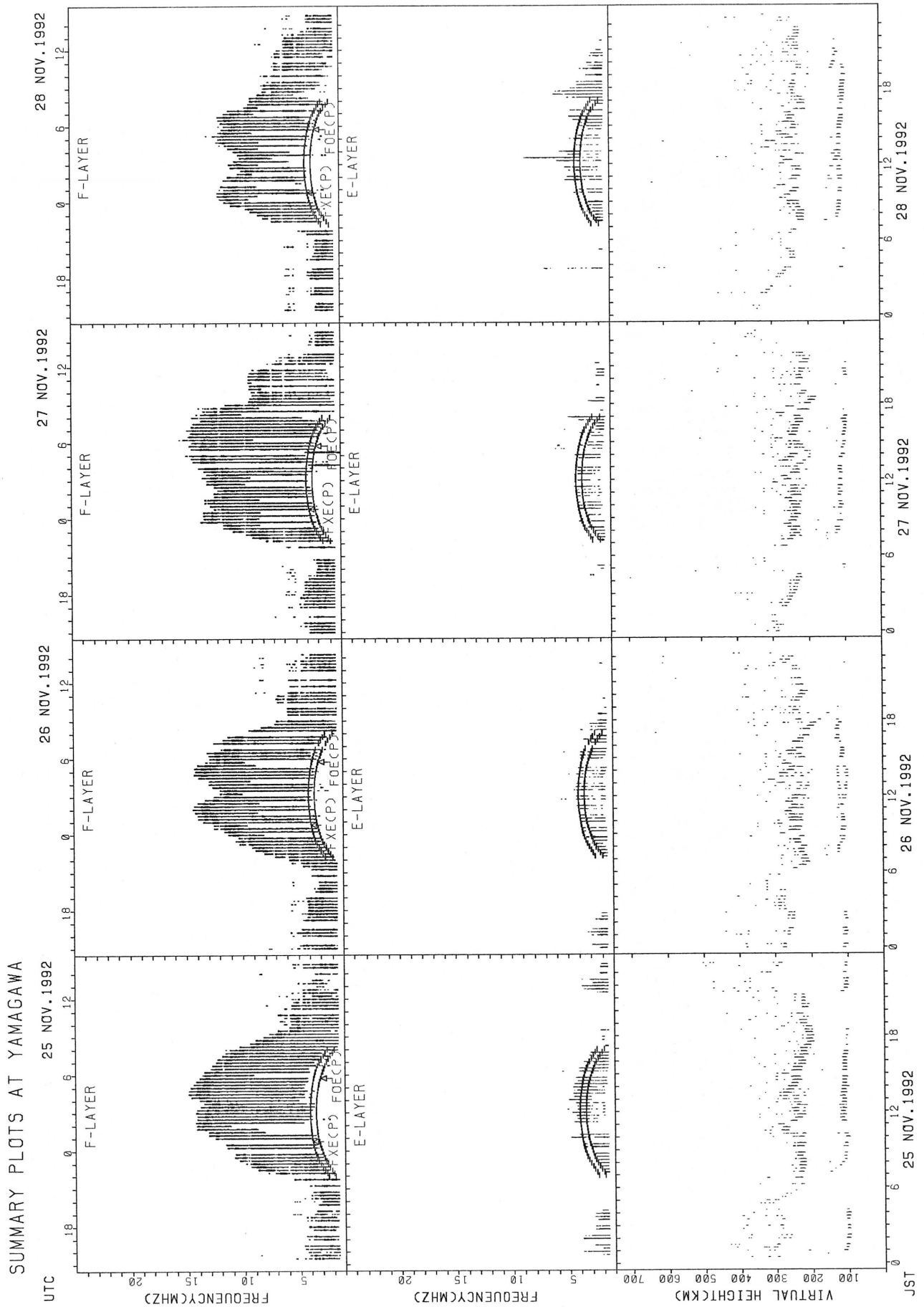
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT YAMAGAWA



FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT YAMAGAWA
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27 NOV.1992
28 NOV.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
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VIRTUAL HEIGHT(KM)
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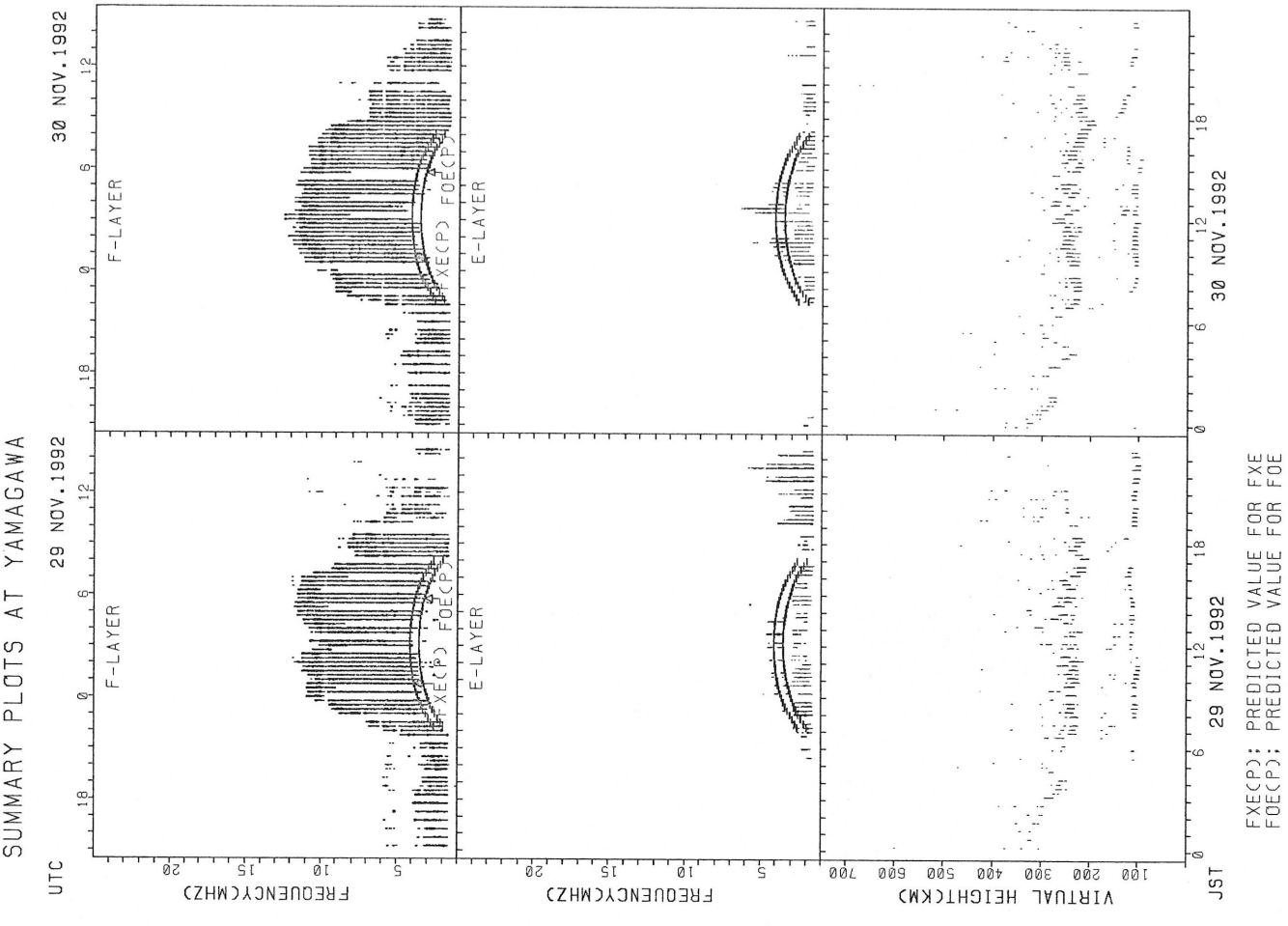
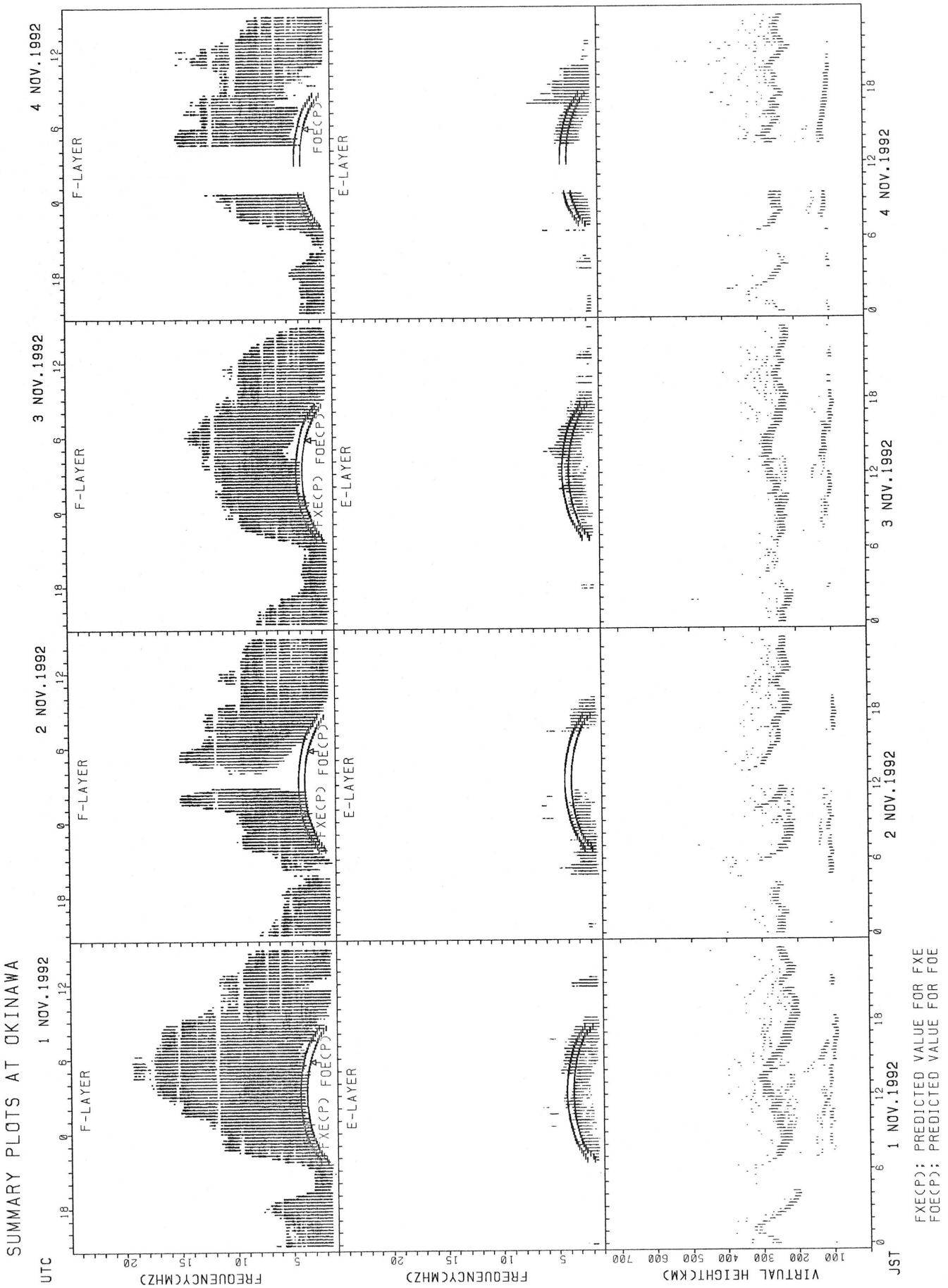
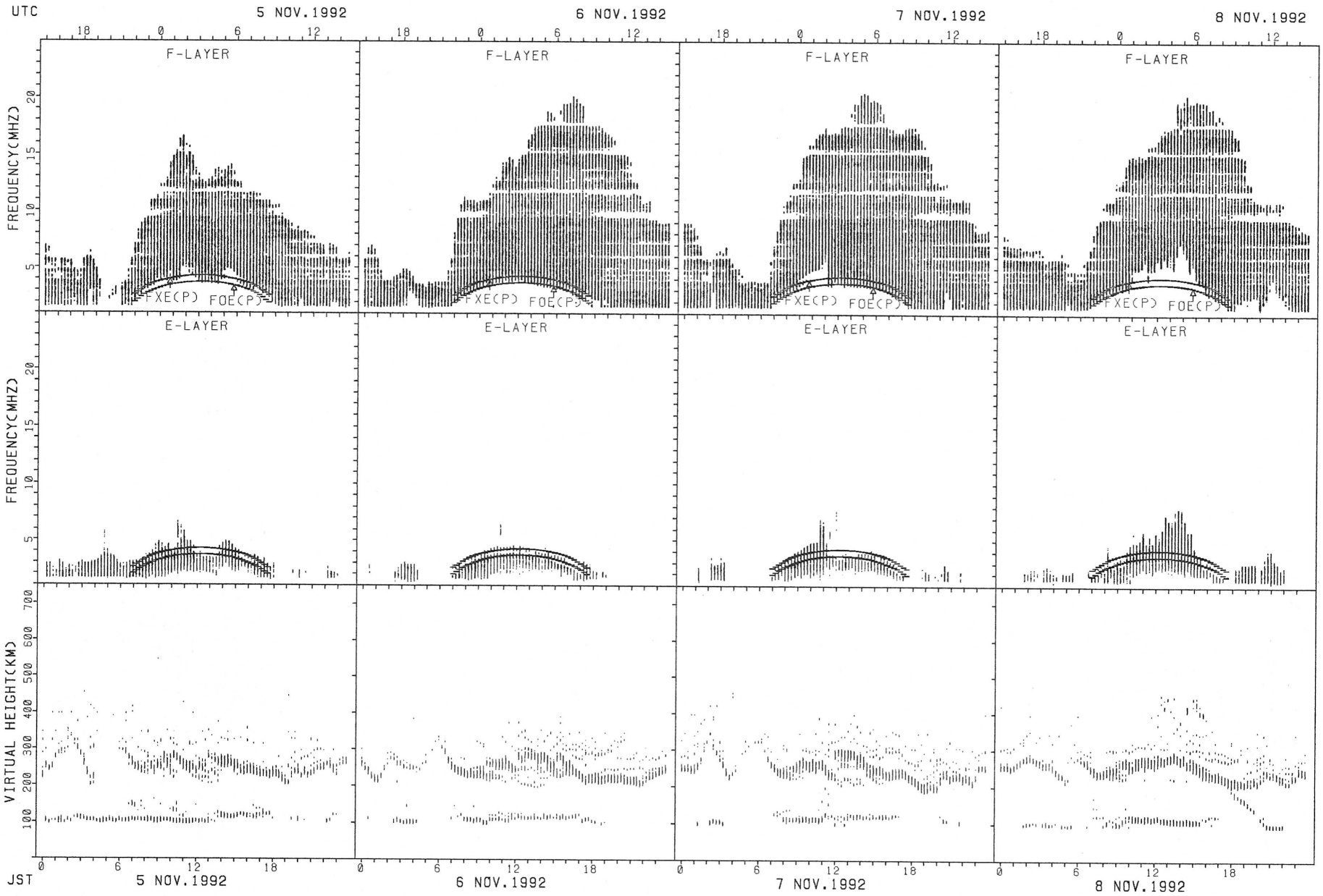
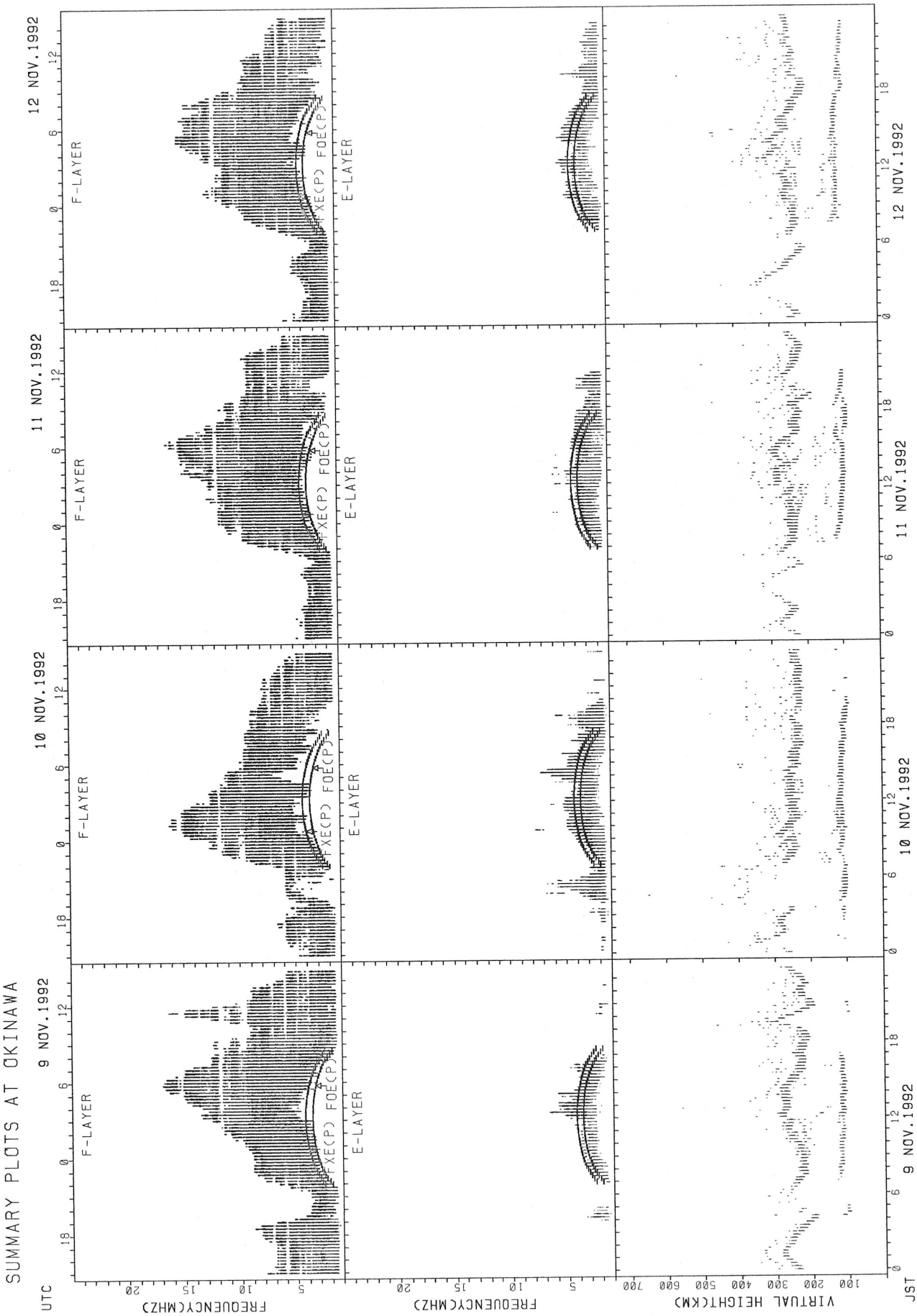

SUMMARY PLOTS AT YAMAGAWA
UTC
29 NOV.1992
30 NOV.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
1 NOV.1992
2 NOV.1992
3 NOV.1992
4 NOV.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

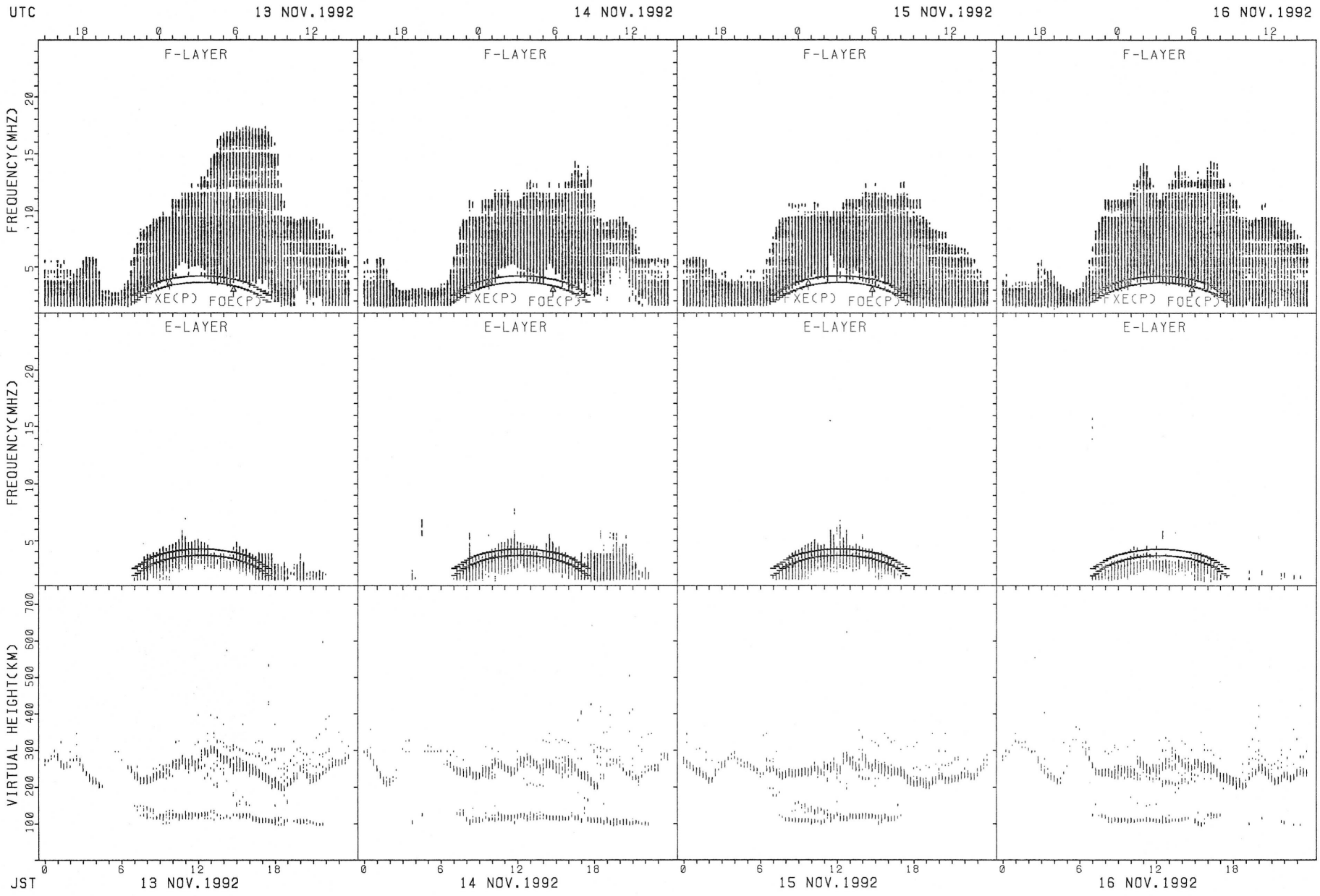
SUMMARY PLOTS AT OKINAWA



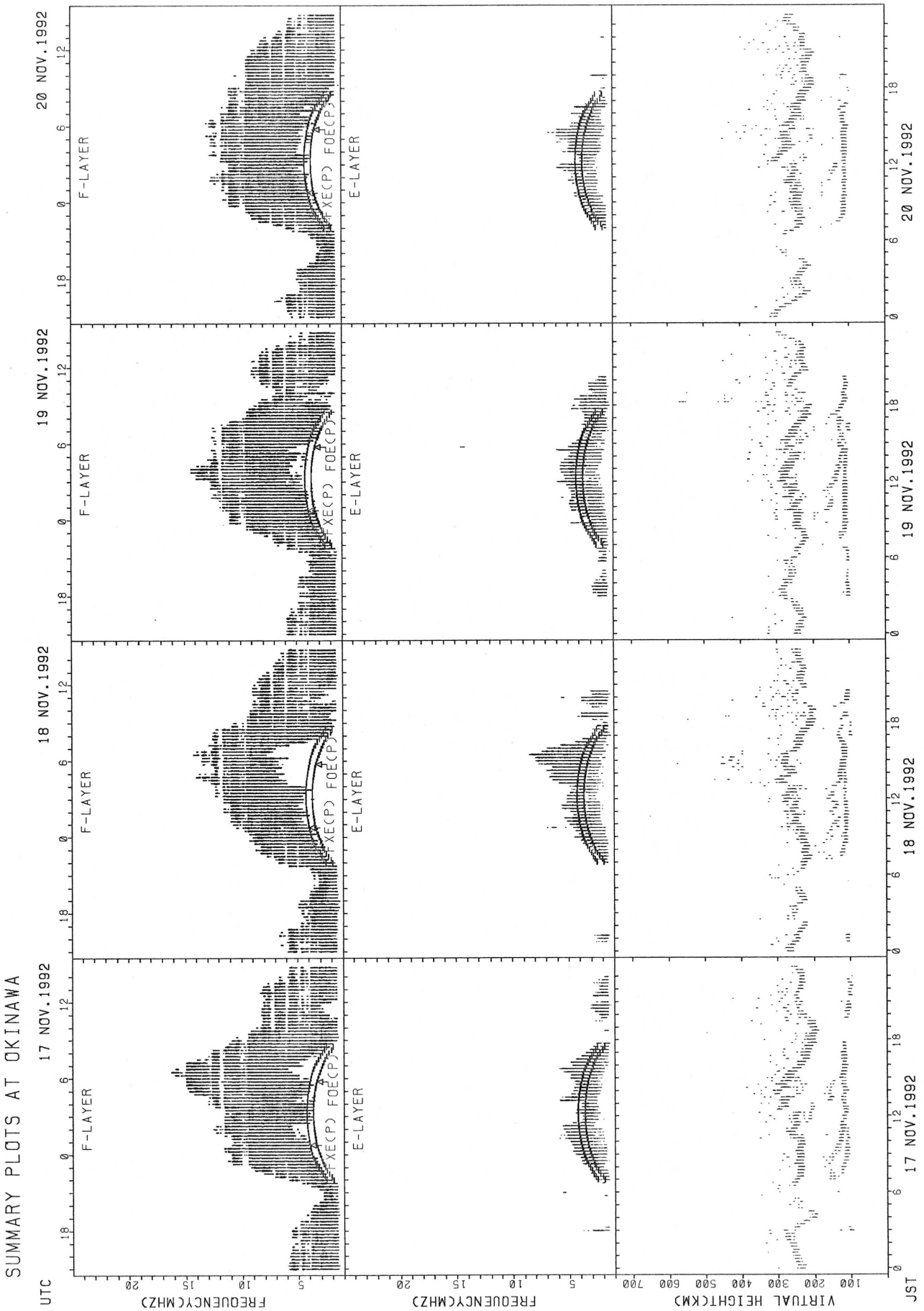
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

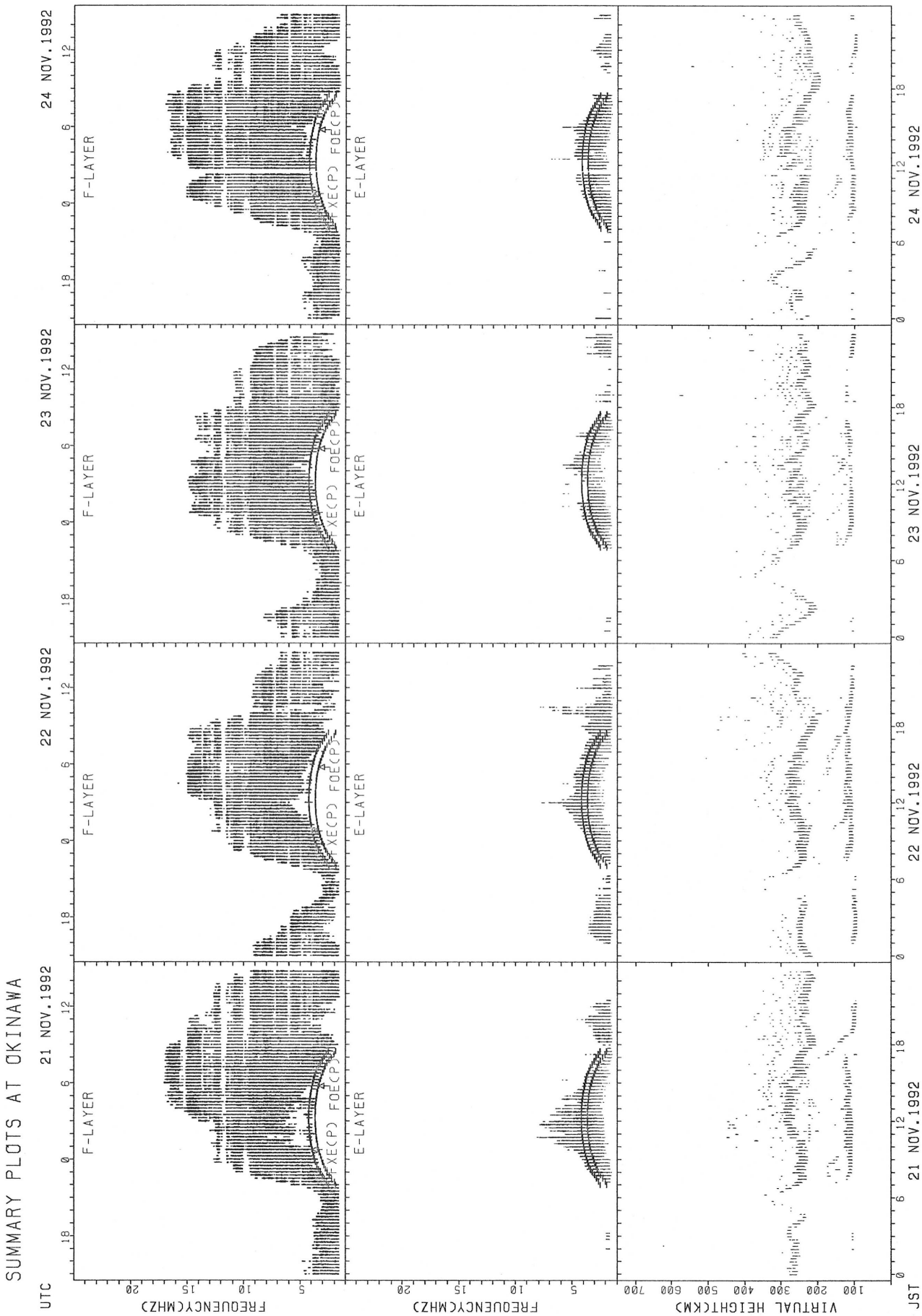

SUMMARY PLOTS AT OKINAWA
9 NOV.1992
10 NOV.1992
11 NOV.1992
12 NOV.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE

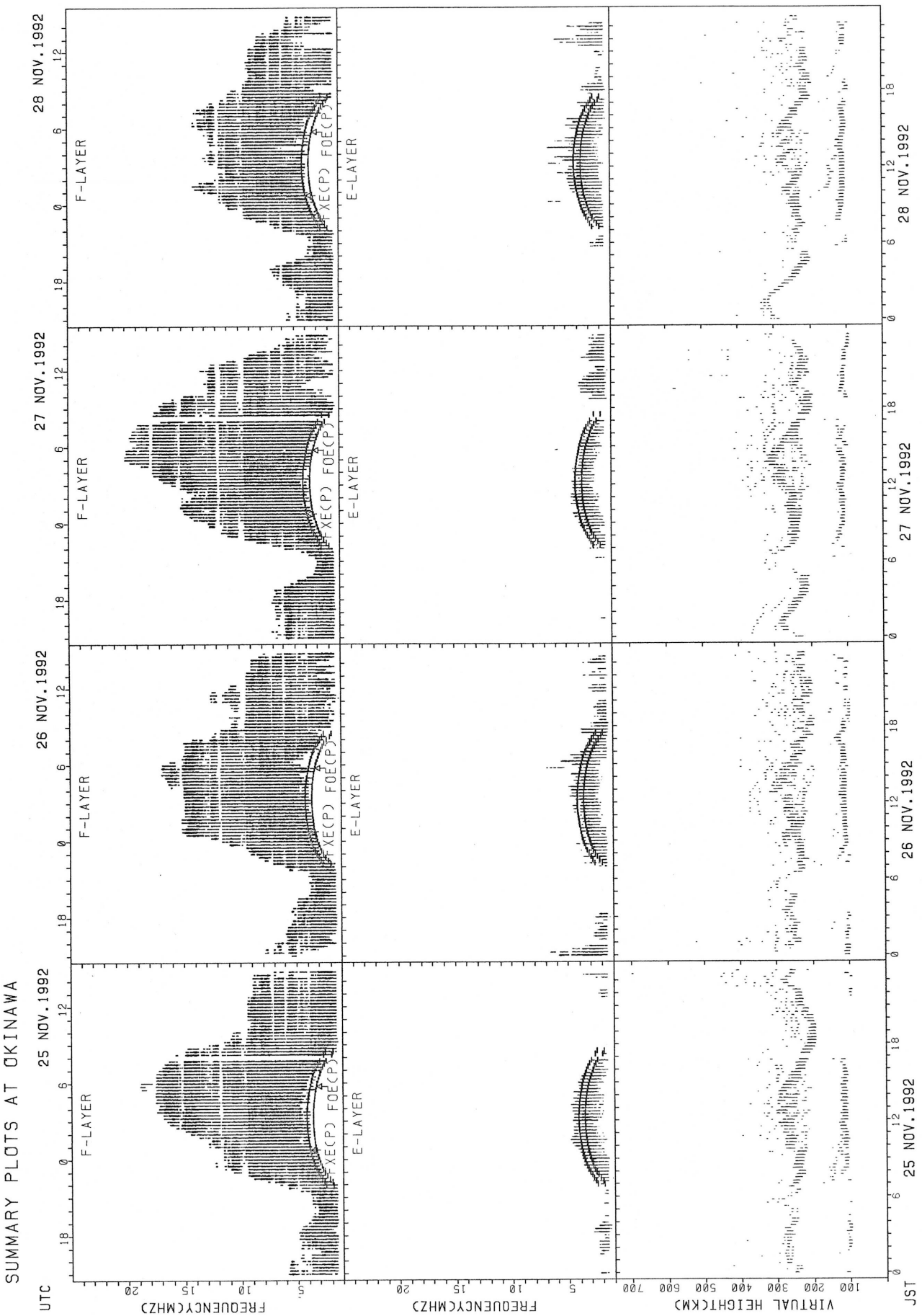
SUMMARY PLOTS AT OKINAWA



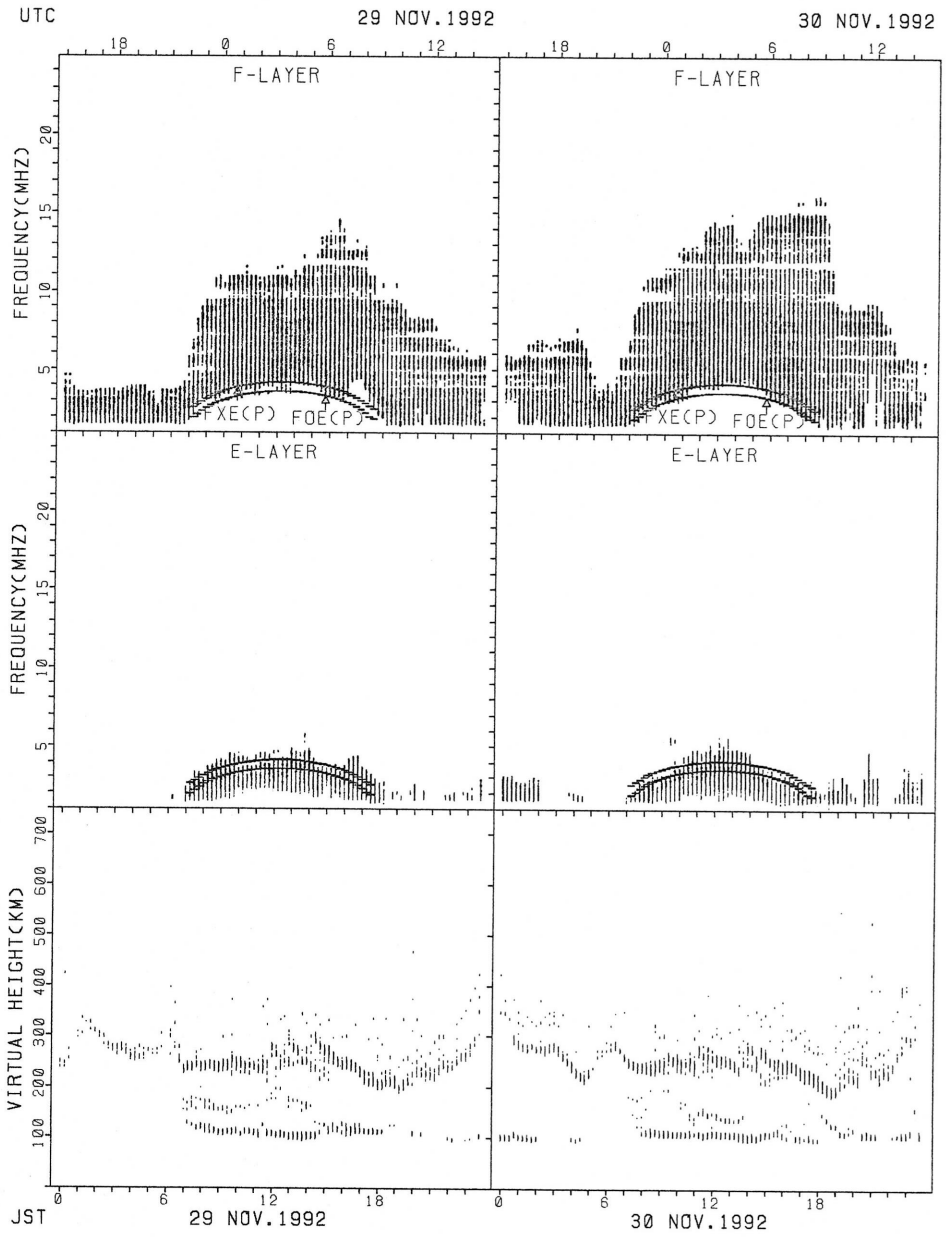
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
17 NOV.1992
18 NOV.1992
19 NOV.1992
20 NOV.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P)
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
UTC
JST
21 NOV.1992
22 NOV.1992
23 NOV.1992
24 NOV.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
UTC
25 NOV.1992
26 NOV.1992
27 NOV.1992
28 NOV.1992
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 OKINAWA



FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

MONTHLY MEDIANS OF H'F AND H'ES

NOV.1992 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								23	29	30	30	30	29	30	30	30	28							
MED								252	234	228	237	234	232	241	243	235	247							
U Q								256	243	236	242	238	239	254	248	240	266							
L Q								240	227	220	226	228	225	228	234	230	234							

H'ES

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	14	14	15					11	10					12		13	14	16	17	15	14	18	14
MED	109	109	107	109					123	117					114		111	112	117	117	115	112	113	109
U Q	111	113	109	113					171	236					197		125	117	125	119	133	117	117	113
L Q	107	107	103	103					115	111					108		106	101	110	113	109	109	111	109

H'F STATION AKITA LAT. 39.7N LON. 140.1E

	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	14	14	15					11	10					12		13	14	16	17	15	14	18	14
MED	109	109	107	109					123	117					114		111	112	117	117	115	112	113	109
U Q	111	113	109	113					171	236					197		125	117	125	119	133	117	117	113
L Q	107	107	103	103					115	111					108		106	101	110	113	109	109	111	109

H'ES

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	16	14	14	15					11	10					12		13	14	16	17	15	14	18	14
MED	109	109	107	109					123	117					114		111	112	117	117	115	112	113	109
U Q	111	113	109	113					171	236					197		125	117	125	119	133	117	117	113
L Q	107	107	103	103					115	111					108		106	101	110	113	109	109	111	109

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								29	31	31	31	29	28	31	31	31	31	13						
MED								242	230	240	238	240	245	250	242	238	236	260						
U Q								254	240	246	244	246	257	262	252	242	242	282						
L Q								235	226	234	232	232	239	244	238	232	226	238						

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	18	16	13					19	15	15	20	13	18	21	21	17	23	17	16	16	14	15	15	12
MED	107	104	105					145	121	115	118	117	116	117	115	123	115	111	115	111	108	109	107	107
U Q	109	108	110					161	155	125	132	122	119	131	123	125	131	115	127	113	113	113	119	114
L Q	103	103	102					125	115	113	113	111	109	109	110	116	111	106	109	107	107	105	101	103

MONTHLY MEDIANS OF H'F AND H'ES
NOV. 1992 135E MEAN TIME(UTC+9H) AUTOMATIC SCALING

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									25	25	29	29	20	25	29	29	29	20	19					
MED									242	240	246	246	251	268	258	246	242	232	260					
U Q									252	259	262	255	264	284	267	261	255	241	278					
L Q									231	235	240	239	242	258	250	239	234	226	238					

H'ES

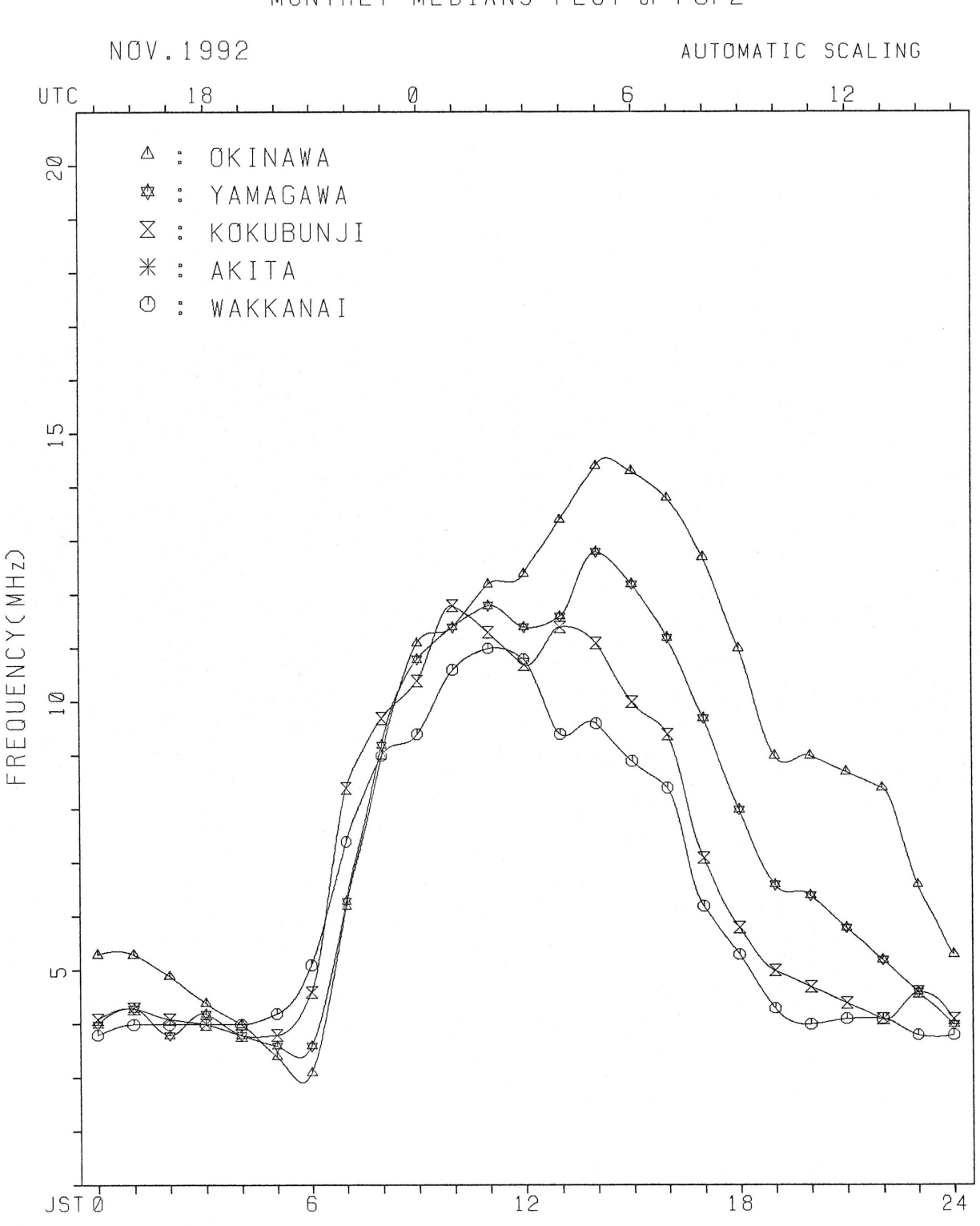
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT										12	13	17	18	15	19	12	11	10	17	13	11	11		
MED										128	119	121	120	121	119	116	115	109	113	109	109	107		
U Q										136	138	126	131	127	139	128	131	129	142	124	115	115		
L Q										119	115	117	113	117	111	112	113	101	106	105	103	101		

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									31	31	30	26	14	18	31	31	31	31	31	28	28	26	23	
MED									240	248	249	253	274	275	270	260	244	230	226	261	271	256	268	
U Q									264	254	258	258	286	286	282	270	254	238	244	273	286	280	276	
L Q									236	240	244	244	260	264	262	252	236	226	220	233	265	248	256	

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					14	15	24	25	24	20	25	23	22	21	18	18	14	16	12	
MED				107					140	137	142	131	128	119	119	117	119	113	108	118	110	106	106	
U Q				109					149	143	154	155	149	129	130	125	129	139	115	147	111	111	110	
L Q				103					131	121	124	119	118	117	115	115	113	105	101	107	105	103	101	


MONTHLY MEDIANS PLOT OF FOF2
NOV. 1992
AUTOMATIC SCALING
UTC
18
0
6
12
△ : OKINAWA
✡ : YAMAGAWA
⧖ : KOKUBUNJI
✳ : AKITA
◔ : WAKKANAI
FREQUENCY(MHz)
20
15
10
5
JST 0
6
12
18
24

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FXI (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D/H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	X 55	X 58	X 60	X 65	X 50	X 51													X 57	X 61	X 54	X 47	X 47	X 46
2	X 47	X 45	X 45	X 45	X 43	X 44													X 77	X 72	X 60	X 56	X 55	X 57
3	X 54	X 57	X 46	X 45	X 36	X 37													X 62	X 58	X 56	X 54	X 56	X 53
4	X 43	X 43	X 46	X 49	X 41	X 39													X 78	X 64	X 57	X 48	X 48	X 47
5	X 47	X 46	X 44	X 46	X 40	X 46													X 78	X 73	X 61	X 58	X 48	X 49
6	X 48	X 49	X 45	X 44	X 45	X 46												X 89	X 66	X 58	X 55	X 56	X 45	X 43
7	X 44	X 42	X 44	X 42	X 41	X 40												X 73	X 54	X 54	X 52	X 47	X 39	X 40
8	X 40	X 41	X 43	X 43	X 41	X 45												X 71	X 53	X 50	X 50	X 45	X 40	X 46
9	X 46	47	51	54	50	38												X 83	X 61	X 59	X 70	X 60	X 57	X 59
10	X 41	X 41	X 44	X 43	X 52	56												X 65	X 58	X 46	X 39	X 41	X 34	X 36
11	X 40	44	X 38	39	40	X 39												X 69	X 56	X 46	X 47	X 48	X 49	X 45
12	X 42	X 41	X 42	X 45	X 45	X 44												X 76	X 61	X 59	X 43	X 42	X 42	X 42
13	X 43	X 45	X 45	X 47	X 46	X 44												X 71	X 53	X 48	X 47	X 37	X 39	X 39
14	X 41	X 46	X 39	X 39	X 38	X 39												X 69	X 61	X 50	X 51	X 41	X 39	X 41
15	X 41	X 44	X 41	X 40	X 40	X 40												X 73	X 63	X 48	X 50	X 47	X 38	X 39
16	X 39	X 41	X 41	X 43	X 45	X 35												X 65	X 63	X 60	X 50	X 51	X 48	X 44
17	X 43	X 43	X 42	X 42	X 40	X 37	X 43											X 72	X 56	X 48	X 45	X 41	X 39	X 40
18	X 42	X 42	X 40	X 42	X 42	X 40	X 49											X 72	X 61	X 45	X 45	X 44	X 40	X 42
19	X 43	X 45	X 46	X 46	X 45	X 44	X 50											X 70	X 57	X 47	X 45	X 49	X 47	X 43
20	X 44	X 47	X 49	X 56	X 44	X 34	X 45											X 64	X 62	X 52	X 47	X 42	X 41	X 43
21	X 41	X 41	X 42	X 40	X 37	X 38	X 43											X 81	X 59	X 48	X 48	X 46	X 44	X 44
22	X 44	X 42	X 41	X 42	X 40	X 36	X 42											X 63	X 50	X 51	X 48	X 45	X 41	X 41
23	X 41	X 45	X 45	X 41	X 38	X 41	X 44											X 77	X 66	X 63	X 67	X 51	X 48	X 46
24	X 44	X 46	X 41	X 43	X 41	X 44	X 54											X 72	X 59	X 64	X 49	X 42	X 42	X 44
25	X 43	X 45	X 45	X 41	X 41	X 42	X 47											X 80	X 66	X 59	X 48	X 37	X 38	X 39
26	X 45	X 44	X 40	X 39	X 38	X 36	X 45											X 77	X 58	X 56	X 44	X 37	X 39	X 41
27	X 42	X 43	X 46	X 43	X 37	X 37	X 44											X 77	X 63	X 53	X 46	X 39	X 34	X 36
28	X 36	X 36	X 37	X 37	X 38	X 34	X 38											X 62	X 54	X 49	X 44	X 44	X 38	X 39
29	X 38	X 38	X 41	X 40	X 38	X 39	X 42											X 67	X 64	X 54	X 42	X 34	X 36	X 36
30	X 38	X 39	X 39	44	X 42	X 39	X 45											X 58	X 54	X 54	X 40	X 42	X 37	X 37
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	14											25	30	30	30	30	30	30
MED	X 43	X 44	X 44	X 43	X 41	X 40	X 44											X 72	X 61	X 54	X 48	X 45	X 41	X 42
U Q	X 44	X 46	X 45	X 45	X 45	X 44	X 47											X 77	X 63	X 59	X 54	X 49	X 48	X 46
L Q	X 41	X 41	X 41	X 41	X 38	X 37	X 43											X 66	X 56	X 48	X 45	X 41	X 39	X 39

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FOF2 (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	49	52	54	59	44	45	56	100	R 112	119	123	121	127	133	126	113	95	64	51	55	48	41	41	40
2	41	39	39	39	37	38	53	81	100	96	118	125	B	R 108	108	106	98	92	71	66	54	50	49	51
3	48	51	40	39	30	31	50	88	93	100	114	111	96	106	112	103	91	79	56	52	50	48	50	47
4	37	37	40	43	35	34	51	85	101	112	120	120	126	112	110	106	95	81	72	58	51	42	42	41
5	41	40	38	40	34	40	53	82	112	138	148	138	132	122	111	103	93	77	72	67	55	52	42	43
6	42	43	39	38	39	40	47	91	114	122	128	122	122	132	117	100	99	83	60	52	49	50	39	37
7	38	36	38	36	35	34	44	84	109	132	136	144	137	138	128	106	84	67	48	48	46	41	34	34
8	34	35	37	37	35	39	57	82	93	116	122	121	103	123	117	104	93	65	47	44	44	39	34	40
9	40	F 36	F 43	F 46	F 41	F 31	44	77	99	96	95	100	109	105	102	93	98	77	55	53	64	54	51	53
10	35	35	38	37	46	F 45	44	69	90	91	99	H 100	69	67	71	72	70	59	52	40	33	35	28	30
11	34	F 36	32	F 33	F 29	33	48	72	94	112	116	102	104	108	110	98	87	63	50	39	41	42	43	39
12	36	35	36	39	39	38	49	71	93	103	114	111	107	114	108	100	84	70	55	53	37	36	36	36
13	37	39	39	41	40	38	47	86	96	100	103	95	102	98	103	105	101	65	47	42	41	31	33	33
14	35	40	33	33	32	33	43	84	102	102	109	94	104	97	92	88	81	63	55	44	45	35	33	35
15	35	38	35	34	34	34	48	83	92	98	100	90	105	102	98	84	77	67	57	42	44	41	32	33
16	33	35	35	37	39	29	41	S 74	92	106	118	110	102	94	93	91	77	59	57	54	44	45	42	38
17	37	37	36	36	34	31	37	69	98	108	107	108	105	114	112	94	89	66	50	41	39	35	J R 33	34
18	36	36	34	36	36	34	43	72	86	89	102	94	105	106	97	99	84	66	55	39	39	38	34	36
19	37	39	41	40	39	38	44	76	96	103	105	118	118	113	108	95	86	64	51	41	39	43	41	37
20	38	41	43	50	38	29	39	74	84	99	107	107	106	97	90	90	74	58	56	46	41	36	35	37
21	35	35	36	34	31	32	37	81	96	97	104	105	101	105	V 98	91	84	75	53	42	42	40	38	38
22	38	36	35	36	34	30	36	70	94	104	103	86	89	98	92	92	79	57	44	45	42	39	35	35
23	35	39	39	35	32	35	39	76	113	138	144	122	113	115	118	117	91	71	60	57	61	45	42	40
24	38	40	35	37	35	38	48	86	105	122	135	127	125	121	121	108	98	66	54	58	43	36	36	38
25	37	39	39	35	35	36	41	84	96	125	127	134	121	126	126	114	96	74	60	53	42	31	32	33
26	39	38	34	33	32	30	39	85	92	104	127	124	110	116	117	105	105	71	53	50	38	31	33	J R 35
27	36	37	40	37	31	31	38	87	103	116	128	112	116	124	105	92	93	71	57	47	39	33	28	30
28	30	30	31	31	32	28	32	75	82	93	107	94	97	98	106	86	81	56	48	43	38	38	32	33
29	32	32	35	34	32	34	36	63	90	104	111	109	92	106	97	91	81	61	58	48	36	28	30	30
30	32	33	33	35	36	34	39	72	89	98	108	112	100	101	104	88	80	52	48	48	S 34	36	31	31
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	37	37	38	37	35	34	44	81	96	104	114	111	105	108	108	98	88	66	55	48	42	39	35	36
U Q	38	39	39	39	39	38	48	85	102	116	127	122	120	121	117	105	95	74	57	53	48	43	42	40
L Q	35	35	35	35	32	31	39	72	92	98	105	100	102	101	98	91	81	63	50	42	39	35	33	33

NOV. 1992 FOF2 (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FOF1 (0.01MHZ) 135° E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L								
2								L	L	L	L	L												
3										L	L	L 440	L	U L 540		L								
4										L	L	L	L	L	L									
5									L	L	L	L	L											
6								L	L	L	L	L 400	L	L	L									
7									L	L	L	L	L	L	L									
8										L	L	L	L	U L 480										
9										L	L	L	L		L									
10									L 450	L 480	450	420	U L 470	L 405	U L 380									
11										L	L	L	U L 550	L	L									
12									L	L	L	U L 510	L	L	L									
13									L	L	L	L	L	L		L								
14										L	L 450	L	420		L	L								
15										L	L			L	L									
16										L	L	L	L	L										
17										L	L	L	L											
18										L	L	L	L		L									
19										L	L	L	L		L									
20											L		L	L	L		U L 320							
21											L	L				L								
22											L	L	L	L	L									
23									L	L	L			L										
24										L		L	L	L	L 420									
25										L	L	L	L	L										
26											L	L	L		L									
27										L	L	L	L	L										
28										L	L		L	L										
29										L	L	L	L	L	L									
30											L	L	L	L	L									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	2	4	3	3	2		1							
MED									L 450	L 480	450	L 430	U L 470	U L 480	L 400		U L 320							
U Q												L 475	U L 550	U L 540										
L Q												410	420	L 405										

NOV. 1992 FOF1 (0.01MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FOE (0.01MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D/H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	230	280	315	A	345	345	A	A	270	A	B						
2							B	240	285	310	335	345	B	B	B	B	240	B						
3							B	220	275	315	325	335	330	A 325	A	A	210	B						
4							B	220	280	320	335	A 345	A 340	A	A	A	A	B						
5							B	225	280	A	A	A	A	A	A	A	A	B						
6							B	215	A	A	A 325	A	A	A	310	265	200							
7							B	215	A	A	A	R 330	325	U R 315	A	265	H 210							
8							B	220	A	295	A	A	A	A	A	265	A							
9							B	H 230	275	U A 290	A	345	335	325	300	A 255	200							
10							B	200	265	305	R 320	315	325	315	305	265	A							
11							B	220	265	305	A	330	325	315	295	265	190							
12							B	200	265	300	320	U R 330	A 325	R 320	295	265	H 200							
13							B	210	A	U A 300	A	325	A	A	A	A 250	A							
14							B	210	A	305	330	335	340	320	300	A	210							
15							B	190	H 260	305	330	335	A	A	A	265	175							
16							B	205	265	285	335	335	U A 325	A	305	270	U A 185							
17								200	265	310	330	340	335	335	305	265	A 190							
18								185	270	320	330	345	340	335	310	A	A							
19								200	285	315	335	A 345	340	340	R 305	270	195							
20								195	265	315	345	350	A 350	A	A	265	A							
21								205	285	315	340	A 345	A	A	305	H 265	205							
22								205	265	305	335	340	345	A 340	U A 325	A	A 205							
23								195	275	320	A	A	A	335	A	H 275	200							
24								195	270	315	U A 315	A	335	335	315	275	185							
25								175	250	305	340	A	A	A	A	A	A							
26								190	260	300	A	335	A	A	A	A	210							
27								185	A 260	A	A	340	A	A	305	260	180							
28								195	265	300	330	A	A	A	300	245	A							
29								175	H 265	280	315	325	325	315	300	255	200							
30								205	270	295	325	335	330	325	300	255	H 200							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								30	25	26	20	23	18	15	17	21	20							
MED								205	265	305	330	335	335	325	305	265	200							
U Q								220	278	315	335	345	340	335	308	268	208							
L Q								195	265	300	325	330	325	315	300	258	190							

NOV. 1992 FOE (0.01MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FOES (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	J A 22	J A 21	J A 21	E B 14	E B 15	E B 13	E B 14	G 23	31	G 31	J A 46	G 27	J A 37	J A 41	J A 39	32	J A 31	J A 25	23	22	E B 14	E B 14	30	J A 37
2	J A 23	J A 37	J A 34	J A 24	J A 18	J A 18	J A 18	G 24	G	G	G 30	G 29	B	E B 78	47	E B 35	29	J A 30	E B 15	E B 16	E B 14	B J 19	A E 15	B J A 26
3	26	21	E B 13	E B 13	J A 21	20	16	28	32	G	37	37	34	37	32	29	25	J A 23	J A 18	E B 13	E B 14	E B 13	E B 13	E B 13
4	J A 18	21	21	E B 13	E B 13	18	E B 14	24	29	38	36	J A 55	J A 52	J A 44	36	32	22	21	E B 15	E B 14	E B 14	E B 15	J A 22	J A 53
5	J A 52	J A 25	J A 29	J A 30	J A 16	E B 14	J A 18	G	G 27	J A 71	42	J A 73	61	J A 51	J A 104	70	J A 66	J A 42	28	E B 13	E B 14	23	J A 38	30
6	J A 48	J A 30	18	J A 23	J A 20	E B 14	J A 20	J A 52	29	J A 35	35	34	J A 47	J A 42	J A 33	G	21	J A 19	J A 17	E B 14	E B 14	J A 21	E B 14	E B 14
7	J A 55	J A 37	J A 19	20	E B 13	E B 13	J A 14	G	J A 35	J A 32	J A 40	G 30	G 27	G	32	30	26	E B 14	E B 13	J A 26	22	J A 19	J A 33	J A 23
8	J A 27	J A 52	J A 35	E B 14	E B 13	E B 13	E B 13	G	33	35	J A 65	J A 62	48	37	J A 40	G 27	24	J A 24	J A 21	E B 14	J A 32	J A 31	J A 27	J A 24
9	J A 53	J A 33	J A 19	E B 13	E B 13	E B 14	E B 15	G	29	J A 37	J A 42	J A 36	G	G	G	28	22	E B 15	E B 16	J A 24	J A 19	20	28	E B 13
10	21	20	20	20	E B 14	E B 13	J A 16	25	29	34	G	36	36	37	34	33	J A 34	J A 21	J A 21	E B 13	J A 21	J A 19	21	E B 15
11	E B 14	E B 13	E B 13	E B 13	J A 22	J A 28	J A 43	J A 23	30	G	33	G	G	G	35	G	G	E B 13	B J 32	A J 23	A J 24	A J 22	A J 21	A 20
12	21	J A 24	23	E B 13	E B 13	E B 13	E B 14	23	G	G 29	G 31	G 29	36	J A 47	32	30	24	20	36	J A 46	J A 20	24	E B 13	E B 14
13	E B 13	E B 13	E B 13	E B 14	E B 13	E B 13	E B 13	G	28	35	35	G 33	34	36	32	27	23	J A 41	E B 14	E B 15	E B 13	E B 14	E B 15	E B 15
14	E B 14	B J 34	A J 21	A J 34	A J 23	A J 21	A J 18	G	J A 33	G 20	G	G	G 31	34	35	J A 40	J A 32	J A 24	41	J A 32	J A 17	E B 14	E B 15	27
15	J A 24	19	E B 13	E B 14	20	19	20	G	G	37	40	41	J A 72	J A 52	J A 54	G	23	J A 20	J A 20	24	20	E B 14	B J 22	A J 26
16	24	20	23	22	22	20	E B 13	39	29	30	G	38	37	32	38	J A 41	44	39	40	22	J A 24	A J 35	A J 24	E B 13
17	E B 13	E B 13	E B 13	E B 15	E B 13	E B 13	E B 14	G	G	33	35	36	38	39	41	33	J A 35	J A 24	J A 24	J A 34	20	E B 14	E B 15	E B 15
18	E B 13	E B 13	E B 14	E B 13	E B 13	E B 13	B J 46	G	G	35	42	37	40	J A 53	J A 50	30	J A 24	E B 13	E B 13	E B 13	E B 14	20	J A 27	A J 26
19	23	J A 22	J A 21	J A 21	20	E B 15	E B 15	G 18	G	J A 37	41	42	37	42	G 25	36	22	E B 13	18	J A 28	E B 14	E B 14	B J 19	A 18
20	E B 14	21	E B 13	E B 13	E B 13	E B 15	E B 15	G 19	G	36	42	J A 45	39	37	33	33	24	E B 13	J A 48	A J 16	E B 13	E B 13	E B 15	E B 13
21	J A 24	J A 21	23	21	E B 14	E B 14	E B 14	26	35	38	J A 47	42	J A 43	J A 38	G	G	G	E B 14	E B 14	E B 13	J A 27	E B 14	J A 24	E B 14
22	J A 18	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	G	28	33	40	40	G	39	J A 48	J A 36	24	E B 14	20	26	20	J A 22	17	20
23	E B 13	E B 13	E B 14	E B 14	E B 13	E B 14	E B 15	J A 149	G	G	J A 40	J A 42	J A 46	G 31	33	30	J A 31	J A 21	22	E B 14	E B 13	19	J A 22	E B 13
24	18	E B 13	E B 13	E B 14	E B 14	E B 14	E B 13	G 21	31	34	38	J A 36	35	G	J A 33	29	G	J A 17	23	J A 21	J A 24	J A 19	E B 15	J A 47
25	J A 28	J A 22	19	E B 14	E B 13	18	18	J A 19	28	34	J A 54	J A 45	36	J A 39	J A 39	30	J A 32	J A 23	J A 20	J A 19	J A 18	J A 33	J A 41	J A 17
26	22	J A 19	20	E B 13	E B 13	E B 13	E B 15	J A 21	29	J A 34	J A 37	36	J A 53	J A 54	J A 44	30	J A 49	21	J A 20	J A E 30	E B 13	B J 33	A J 25	E B 13
27	27	J A 21	20	E B 13	J A 21	E B 16	E B 14	G	30	J A 36	J A 34	G 34	J A 42	J A 42	J A 39	28	24	J A 16	E B 13	E B 13	E B 14	B J 18	A J 17	20
28	E B 14	E B 15	E B 13	E B 13	E B 13	E B 13	E B 13	G	G	J A 36	G	J A 35	J A 33	35	G 28	34	J A 25	E B 13	20	J A 18	E B 14	E B 14	B J 19	A E 14
29	E B 15	19	19	E B 13	E B 13	E B 15	21	G	G	30	34	34	35	35	32	29	G	J A 15	22	E B 14	B J 33	A J 31	A E 14	E B 15
30	E B 14	20	J A 19	E B 13	21	E B 14	E B 14	J A 33	J A 43	34	34	35	34	37	38	34	G	E B 13	J A 20	J A 19	J A 29	20	E B 13	J A 22
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	22	21	19	E B 14	E B 14	E B 14	E B 15	G	29	34	37	36	37	38	35	30	24	J A 20	20	18	18	19	20	18
U Q	J A 26	J A 24	J A 21	J A 20	J A 20	18	J A 18	24	31	J A 36	J A 42	J A 42	J A 44	J A 42	J A 40	34	J A 31	J A 24	23	J A 24	J A 22	J A 22	J A 25	J A 26
L Q	E B 14	E B 15	E B 13	E B 13	E B 13	E B 13	E B 14	23	G	G	G 34	G	G 34	G 35	32	G 28	G 22	E B 14	E B 16	E B 14	E B 14	E B 14	E B 15	E B 14

NOV. 1992 FOES (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FBES (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	18	18	17	E B 14	E B 15	E B 13	E B 14	G 17	29	G 28	34	G 26	G 32	35	34	32	26	22	17	E B 15	E B 14	E B 14	19	18
2	17	20	19	17	16	E B 13	16	G 20	G	G	G 28	G 27	B	E B 78	U Y 47	E B 35	U Y 28	24	E B 15	E B 16	E B 14	16	E B 15	16
3	18	E B 13	E B 13	E B 13	20	E B 13	15	26	31	G	35	35	34	36	32	28	23	16	15	E B 13	E B 14	E B 13	E B 13	E B 13
4	E B 13	17	E B 14	E B 13	E B 13	E B 13	E B 14	24	29	36	35	50	37	35	34	31	22	E B 16	E B 15	E B 14	E B 14	E B 15	15	E B 13
5	34	19	20	23	E B 14	E B 14	E B 15	G	G 26	33	34	40	40	40	65	56	44	30	16	E B 13	E B 14	E B 14	25	20
6	16	20	E B 13	16	15	E B 14	E B 13	E B 16	28	32	35	34	35	34	G 27	G	G 16	15	E B 13	E B 14	E B 14	E B 13	E B 14	E B 14
7	28	20	17	E B 13	E B 13	E B 13	E B 14	G	27	32	38	G 29	G 26	G	31	30	23	E B 14	E B 13	22	E B 13	17	23	18
8	20	19	29	E B 14	E B 13	E B 13	E B 13	G	30	33	42	39	35	34	36	G 24	21	19	E B 13	E B 14	24	26	22	17
9	20	23	E B 13	E B 13	E B 13	E B 14	E B 15	G	G 20	34	33	G 25	G	G	G	27	21	E B 15	E B 16	19	E B 13	E B 14	16	E B 13
10	E B 13	E B 13	E B 14	E B 14	E B 14	E B 13	E B 15	22	27	32	G	34	35	34	G	31	32	18	17	E B 13	E B 13	16	E B 16	E B 15
11	E B 14	E B 13	E B 13	E B 13	19	22	24	G 18	30	G	32	G	G	G	32	G	G	E B 13	18	19	18	18	17	E B 13
12	E B 13	18	E B 13	E B 13	E B 13	E B 13	E B 14	22	G	G 28	G 30	G 27	35	G	30	29	23	E B 13	31	18	19	E B 15	E B 13	E B 14
13	E B 13	E B 13	E B 13	E B 14	E B 13	E B 13	E B 13	G	26	33	34	G	34	34	32	G 25	21	29	E B 14	E B 15	E B 13	E B 14	E B 15	E B 15
14	E B 14	21	15	26	16	15	16	G	28	G 19	G	G	G 28	34	34	31	G 19	21	26	23	E B 13	E B 14	E B 15	16
15	16	E B 13	E B 13	E B 14	E B 14	E B 14	E B 15	G	G	34	40	39	58	34	32	G	21	17	16	17	E B 15	E B 14	E B 14	19
16	16	E B 13	16	E B 14	16	E B 13	E B 13	G 15	28	30	G	35	35	U Y 32	34	37	38	28	32	E B 13	E B 14	16	E B 13	E B 13
17	E B 13	E B 13	E B 13	E B 15	E B 13	E B 13	E B 14	G	G	32	35	35	37	38	40	33	32	20	E B 15	18	E B 14	E B 14	E B 15	E B 15
18	E B 13	E B 13	E B 14	E B 13	E B 13	E B 13	E B 13	G	G	34	41	37	37	51	48	28	21	E B 13	E B 13	E B 13	E B 14	E B 13	18	E B 13
19	15	16	17	16	E B 14	E B 15	E B 15	G 16	G	35	37	36	36	42	G 25	29	21	E B 13	16	19	E B 14	E B 14	16	E B 14
20	E B 14	E B 13	E B 13	E B 13	E B 13	E B 15	E B 15	G 16	G	35	37	42	36	36	33	31	22	E B 13	E B 14	E B 15	E B 13	E B 13	E B 15	E B 13
21	E B 13	E B 13	E B 13	E B 13	E B 14	E B 14	E B 14	25	32	36	38	41	39	35	G	G	G	E B 14	E B 14	E B 13	E B 18	E B 14	17	E B 14
22	E B 14	E B 14	E B 15	E B 14	E B 14	E B 14	E B 14	G	28	32	39	38	G	35	38	34	22	E B 14	E B 14	18	E B 13	E B 13	E B 14	E B 14
23	E B 13	E B 13	E B 14	E B 14	E B 13	E B 14	E B 15	E B 14	G	G	36	40	41	G 30	32	29	G	17	E B 13	E B 14	E B 13	16	E B 13	E B 13
24	E B 14	E B 13	E B 13	E B 14	E B 14	E B 14	E B 13	G 16	29	33	34	34	34	G	G 29	G 24	G	E B 14	E B 13	18	19	E B 13	E B 15	20
25	17	E B 14	E B 14	E B 14	E B 13	E B 14	E B 14	G	27	32	G	35	35	34	37	29	21	20	17	18	16	17	17	E B 13
26	16	E B 14	E B 13	E B 13	E B 13	E B 13	E B 15	G 16	28	G 30	35	36	40	51	41	30	G 17	18	E B 13	18	E B 13	15	E B 14	E B 13
27	16	16	E B 13	E B 13	E B 13	E B 16	E B 14	G	27	31	34	G 31	35	34	G 26	G 22	G 16	15	E B 13	E B 13	E B 14	E B 13	E B 15	17
28	E B 14	E B 15	E B 13	E B 13	E B 13	E B 13	E B 13	G	G	G 25	G	34	33	34	G 28	30	20	E B 13	E B 13	E B 15	E B 14	E B 14	E B 15	E B 14
29	E B 15	16	E B 13	E B 13	E B 13	E B 15	E B 14	G	G	30	34	33	34	35	31	28	G	E B 14	E B 14	E B 14	20	16	E B 14	E B 15
30	E B 14	E B 13	E B 13	E B 13	E B 14	E B 14	E B 14	G 16	G 24	32	34	34	34	35	36	32	G	E B 13	16	17	23	E B 13	E B 13	16
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	E B 14	E B 14	E B 13	E B 14	E B 14	E B 14	E B 14	G	27	32	34	34	35	34	32	29	21	16	E B 15	E B 15	E B 14	E B 14	E B 15	E B 14
U Q	17	18	15	14	14	E B 14	E B 15	G	28	33	37	38	37	36	36	31	23	20	16	18	16	16	17	16
L Q	E B 13	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G 16	G	G	G 32	G	G 34	G 34	G	G	G	E B 14	E B 13	E B 14	E B 13	E B 13	E B 14	E B 13

NOV. 1992 FBES (0.1MHZ) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 FMIN (0.1MHZ) 135°E MEAN TIME (G.M.T. + 9H)

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

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	13	13	13	14	15	13	14	14	14	16	18	20	17	17	19	18	13	13	14	15	14	14	16	13
2	13	13	13	13	13	13	13	14	17	16	18	18	B	78	39	35	E S 21	13	15	16	14	13	15	13
3	13	13	13	13	14	13	13	14	16	16	18	19	19	17	18	14	17	13	13	13	14	13	13	13
4	13	13	14	13	13	13	14	14	16	17	17	19	18	18	18	16	15	16	15	14	14	15	14	13
5	14	14	13	14	14	14	15	15	16	18	17	18	19	18	15	16	14	14	13	13	14	14	13	13
6	14	13	13	14	13	14	13	16	17	15	18	18	18	19	16	15	13	13	13	14	14	13	14	14
7	13	13	13	13	13	13	14	14	14	15	15	16	17	18	18	16	15	14	13	13	13	14	14	14
8	16	13	14	14	13	13	13	13	15	16	16	17	18	20	17	15	14	13	13	14	14	14	13	13
9	14	13	13	13	13	14	15	13	16	16	18	17	17	18	15	15	14	15	16	13	13	14	13	13
10	13	13	14	14	14	13	15	14	15	15	17	17	17	16	17	16	13	13	14	13	13	13	16	15
11	14	13	13	13	13	13	14	14	14	16	17	18	17	18	17	14	15	13	14	13	13	14	13	13
12	13	13	13	13	13	13	14	14	14	16	20	21	17	17	16	16	15	13	14	13	13	15	13	14
13	13	13	13	14	13	13	13	14	13	16	15	19	18	18	16	15	15	15	14	15	13	14	15	15
14	14	14	13	14	13	14	13	13	13	16	16	16	17	17	15	16	13	14	15	14	13	14	15	13
15	13	13	13	14	14	14	15	14	13	17	16	16	19	17	15	14	14	13	13	15	15	14	14	14
16	13	13	13	14	13	13	13	13	15	15	16	20	16	17	17	14	12	15	13	13	14	13	13	13
17	13	13	13	15	13	13	14	13	13	16	17	18	16	16	15	14	13	13	15	14	14	14	15	15
18	13	13	14	13	13	13	13	13	15	16	15	17	17	18	17	14	15	13	13	13	14	13	13	13
19	13	13	14	14	14	15	15	13	14	16	17	17	20	17	17	15	14	13	13	13	14	14	13	14
20	14	13	13	13	13	15	15	13	13	17	20	24	20	19	17	15	13	13	14	15	13	13	15	13
21	13	13	13	13	14	14	14	15	14	16	16	17	17	18	19	15	14	14	14	13	13	14	14	14
22	14	14	15	14	14	14	14	14	14	14	17	16	17	21	17	16	14	14	14	13	13	13	14	14
23	13	13	14	14	13	14	15	14	14	16	17	18	18	19	18	13	13	15	13	14	13	13	13	13
24	14	13	13	14	14	14	13	13	13	16	14	15	17	17	18	17	14	14	13	13	13	13	15	15
25	14	14	14	14	13	14	14	15	14	13	16	18	17	18	15	15	15	13	13	13	13	14	14	13
26	14	14	13	13	13	13	15	13	16	15	17	18	18	19	17	16	13	14	13	13	13	13	14	13
27	13	14	13	13	13	16	14	13	14	14	16	17	18	18	16	15	13	13	13	13	14	13	15	14
28	14	15	13	13	13	13	13	15	14	16	18	18	18	18	14	16	14	13	13	15	14	14	15	14
29	15	14	13	13	13	15	14	14	15	14	17	17	16	16	16	16	13	14	14	14	13	13	14	15
30	14	13	13	13	14	14	14	14	13	14	16	17	16	13	15	15	13	13	13	13	13	13	13	13
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
MED	13	13	13	14	13	14	14	14	14	16	17	18	17	18	17	15	14	13	13	13	13	14	14	13
U Q	14	14	14	14	14	14	15	14	15	16	18	18	18	18	18	16	15	14	14	14	14	14	15	14
L Q	13	13	13	13	13	13	13	13	14	15	16	17	17	17	15	15	13	13	13	13	13	13	13	13

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 M(3000)F2 (0.01) 135°E MEAN TIME (G.M.T. + 9H)

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

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	280	275	290	335	285	280	300	335	R 340	325	320	310	310	310	325	330	345	350	300	315	315	300	300	280
2	290	280	270	280	265	270	335	345	335	325	310	315	B	R 315	310	330	310	315	300	315	295	285	285	295
3	290	330	305	325	270	290	325	350	360	325	330	340	310	310	315	345	325	325	300	305	295	280	305	325
4	310	275	275	315	365	280	305	345	335	320	330	305	325	325	330	340	345	320	325	315	325	290	255	275
5	305	275	260	280	265	285	295	305	310	320	320	310	305	315	320	330	335	320	320	315	320	320	290	280
6	285	305	290	285	295	275	290	340	345	330	330	325	310	315	320	320	330	320	320	305	305	320	315	290
7	285	270	270	265	270	275	295	320	320	330	315	315	310	325	335	340	345	340	320	305	320	330	285	285
8	280	255	275	290	275	275	330	340	325	335	335	325	310	320	320	320	350	340	295	315	325	330	285	280
9	270	F 310	F 320	F 325	F 360	F 300	315	345	355	340	355	320	330	325	320	330	340	340	285	280	310	270	300	355
10	255	260	285	260	260	F 285	270	295	310	280	295	H 295	335	335	340	340	345	335	320	325	300	320	300	280
11	275	F 320	325	F 275	F 280	280	330	355	340	335	345	335	315	310	325	330	350	330	325	315	305	305	305	300
12	290	290	275	285	305	295	345	345	340	330	340	315	305	315	320	340	340	340	330	340	310	305	290	280
13	275	285	290	300	305	300	320	365	350	335	335	340	315	310	320	330	350	345	295	320	320	295	275	270
14	280	305	335	315	275	290	310	355	355	350	345	330	340	335	315	340	330	330	330	310	330	290	265	285
15	275	295	305	290	290	285	325	345	360	350	350	340	320	325	330	330	330	330	325	320	315	325	315	265
16	270	260	265	290	340	280	305	S 335	345	315	335	330	335	325	325	340	340	315	320	320	320	300	300	285
17	300	285	295	300	320	310	305	340	340	340	330	320	325	315	335	330	350	320	335	305	300	325	J R 300	280
18	275	300	285	295	310	290	315	355	365	335	335	330	320	325	315	340	345	320	355	320	310	305	305	295
19	280	265	295	285	305	290	320	335	350	340	325	325	320	315	320	325	335	320	330	300	305	305	305	245
20	270	270	300	330	365	265	300	345	345	335	330	345	320	335	325	340	340	325	345	330	295	275	280	290
21	290	290	290	300	265	290	300	345	360	335	340	335	310	305	V 295	330	330	325	325	290	285	300	290	295
22	295	310	295	300	325	290	300	345	345	335	355	320	320	325	315	335	340	335	290	305	315	295	265	255
23	260	285	320	305	245	270	275	300	320	310	320	305	300	295	295	310	315	315	295	295	330	290	295	295
24	285	300	275	270	255	285	285	335	330	315	320	315	305	305	320	320	355	340	300	320	330	280	250	275
25	265	285	305	285	280	300	300	355	320	325	325	320	310	300	315	320	340	335	330	330	345	285	255	265
26	285	325	310	285	275	280	300	360	345	325	330	325	315	305	315	325	325	320	305	345	325	280	270	J R 275
27	285	275	295	335	290	280	295	345	335	330	340	315	310	320	320	325	335	330	325	310	320	340	270	265
28	265	265	290	295	315	300	295	355	355	345	340	335	325	305	335	335	340	340	320	330	305	320	265	290
29	265	290	300	290	300	290	315	345	345	340	340	345	310	325	340	335	345	315	325	325	330	280	280	280
30	275	280	270	295	295	280	300	340	355	325	340	330	325	320	330	335	335	330	325	335	S 320	320	290	260
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	30	30
MED	280	285	290	292	290	285	302	345	345	330	332	325	315	315	320	330	340	330	320	315	315	300	290	280
U Q	290	300	305	305	310	290	320	350	355	335	340	335	325	325	330	340	345	340	325	325	325	320	300	290
L Q	270	275	275	285	270	280	295	335	335	325	325	315	310	310	315	325	330	320	300	305	305	285	270	275

NOV. 1992 M(3000)F2 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 M(3000)F1 (0.01) 135°E MEAN TIME (G.M.T. + 9H)

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

HD	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									L	L	L	L	L	L	L	L								
2								L	L	L	L	L	B	B										
3										L	L	L 380	L	U L 350		L								
4										L	L	L	L	L	L									
5									L	L	L	L	L		A	A								
6								L	L	L	L	L 445	L	L	L									
7									L	L	L	L	L	L	L									
8										L	L	L	L	U L 355										
9										L	L	L	L		L									
10									L 330	L 330	345	375	U L 385	L 405	U L 390									
11										L	L	L	L	L	L									
12									L	L	L	U L 360	L	L	L									
13									L	L	L	L	L	L		L								
14										L	L 395	L	425	L	L									
15										L	L		A	L	L									
16										L	L	L	L	L										
17										L	L	L	L											
18										L	L	L	L	A	L									
19										L	L	L	L		L									
20											L		L	L	L		U L 405							
21											L	L				L								
22											L	L	L	L	L									
23									L	L	L			L										
24										L		L	L	L	L 375									
25										L	L	L	L	L										
26											L	L	L		L									
27										L	L	L	L	L										
28										L	L		L	L										
29										L	L	L	L	L	L									
30											L	L	L	L	L									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	2	4	2	3	2		1							
MED									L 330	L 330	370	L 378	405	U L 355	L 382		U L 405							
U Q												L 412		L 405										
L Q												368		U L 350										

NOV. 1992 M(3000)F1 (0.01) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 H'F2 (KM) 135°E MEAN TIME (G.M.T. + 9H)

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

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									235	235	235	230	270	265	255	240								
2								235	215	230	260	240	B	E 280	B									
3										240	250	230	L 290	285		230								
4										255	240	270	255	250	240									
5									265	255	255	235	235		270	A 245								
6								225	230	235	235	230	240	270	230									
7									230	245	245	230	255	240	240									
8										245	245	240	230	260										
9										225	235	240	255		240									
10									285	315	300	270	260	245	240									
11										250	235	235	260	240	255									
12									225	255	240	250	300	250	235									
13									225	H 220	240	235	280	235		240								
14										235	240	240	255	245	H 240									
15										230	245		275	245	245									
16										270	235	240	240	240										
17										235	235	250	255											
18										230	250	230	280	250	265									
19										240	245	260	240		230									
20											240		275	250	250		240							
21											235	250				235								
22											235	250	280	260	300									
23									240	250	230			250										
24										255		250	275	255	255									
25										250	240	250	250	280										
26											255	240	235		255									
27										230	240	235	240	230										
28										250	220		255	235										
29										250	240	230	230	255	240									
30											240	250	235	255	250									
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								2	9	25	29	26	27	24	19	5	1							
MED								230	230	245	240	240	255	250	245	240	240				.			
U Q									252	252	245	250	275	260	255	242								
L Q									225	232	235	235	240	242	240	232								

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 H'F (KM) 135° E MEAN TIME (G.M.T. + 9H)

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

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	290	315	285	230	230	280	270	235	225	220	220	210	H 205	H 205	235	A 235	220	205	260	250	230	240	280	310
2	290	310	320	300	330	320	230	225	220	H 200	215	215	B	B	E A 255	245	245	225	210	240	250	265	275	270
3	260	250	220	240	A 350	305	250	230	220	220	220	210	H 210	220	240	245	220	215	220	250	260	275	250	235
4	245	310	320	270	215	305	265	220	230	235	225	A 245	A 240	225	230	235	215	215	225	230	220	255	325	300
5	E A 345	310	360	A 320	H 270	300	260	230	225	240	215	A 245	A	230	A	A	A 240	235	240	230	220	235	A 315	320
6	290	280	270	280	270	300	285	230	210	H 200	H 210	190	225	225	230	225	230	205	225	240	245	255	240	305
7	E A 340	A 325	340	340	305	300	280	235	225	225	225	210	H 190	230	230	220	210	220	220	255	245	245	A 310	310
8	320	A 385	E A 360	290	280	305	230	220	220	235	A 240	A 240	205	200	235	220	215	215	230	235	A 255	A 265	A 340	310
9	335	A 340	260	245	210	270	260	230	225	215	220	205	210	235	225	235	230	220	240	290	245	280	255	225
10	370	350	300	315	340	260	310	270	240	240	230	210	235	220	210	240	225	220	240	225	255	250	270	310
11	325	255	240	300	A 330	A 350	A 250	220	230	H 205	225	205	H 200	220	240	225	220	210	235	235	280	270	265	250
12	260	290	310	300	260	260	225	210	215	H 200	H 195	200	H 220	220	225	220	220	215	230	240	250	275	280	305
13	320	300	290	265	240	265	235	220	220	220	205	H 205	H 205	215	235	240	220	210	220	240	250	255	330	340
14	320	285	230	A 325	285	295	255	220	220	210	190	220	190	220	220	230	230	210	255	A 270	240	260	325	320
15	320	285	260	275	290	300	245	230	230	230	230	225	A	235	235	220	210	215	220	220	255	250	260	A 350
16	355	350	335	290	230	255	260	240	230	230	230	225	225	215	235	235	230	250	260	235	240	255	260	275
17	280	295	290	285	230	245	265	230	235	230	225	215	230	245	245	225	210	210	210	240	250	260	305	315
18	315	290	285	290	250	270	220	215	225	225	240	225	220	A	A 240	230	215	220	220	225	245	255	285	285
19	310	300	280	300	260	275	235	220	230	A 235	220	220	225	240	230	230	210	205	220	250	260	260	260	350
20	330	310	280	240	215	315	275	225	225	230	230	240	220	A 240	220	230	205	210	220	220	245	270	310	290
21	280	300	285	260	255	305	275	235	225	230	240	235	235	230	225	240	230	220	225	220	270	260	285	280
22	280	270	290	275	250	270	275	230	235	230	235	H 205	210	240	240	240	220	205	220	260	240	255	320	360
23	360	295	255	265	355	345	305	260	240	235	220	230	235	225	240	235	215	215	240	255	235	260	265	270
24	290	260	305	335	330	290	270	225	230	230	230	230	H 210	225	220	235	225	215	245	240	A 225	270	330	320
25	320	300	265	290	320	270	240	230	215	230	215	205	215	225	230	220	215	205	220	230	215	275	405	360
26	290	240	255	270	290	320	270	220	220	220	225	210	A 230	A 245	230	230	225	200	230	240	230	270	330	330
27	310	290	260	235	250	285	285	240	220	225	H 210	225	210	230	230	225	230	205	235	225	220	230	320	355
28	355	350	295	290	265	225	H 250	225	215	H 210	230	220	210	215	H 220	225	220	190	260	225	245	250	270	290
29	300	315	275	280	270	270	245	220	235	H 215	235	235	220	235	235	235	230	220	235	235	240	255	310	315
30	330	310	310	300	270	280	270	220	230	230	225	225	225	230	240	220	220	210	245	235	A 280	255	260	350
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	30	30	30	30	30	30	30	30	30	27	28	29	29	30	30	30	30	30	30	30	30
MED	314	300	285	288	270	288	260	228	225	228	225	220	220	225	230	230	220	215	230	238	245	258	285	310
U Q	330	315	310	300	305	305	275	230	230	230	230	230	225	235	240	235	230	220	240	250	255	270	320	330
L Q	290	285	260	265	250	270	245	220	220	H 215	215	210	H 210	220	225	225	215	205	220	230	235	255	265	285

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 H'E (KM) 135°E MEAN TIME (G.M.T. + 9H)

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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							B	A 130	115	E A 140		A 125				A 125	A	B						
2							B	A 130	110	110	A 125	A 120	B	B	B	B	E S 140	B						
3							B	120	115	110	A 115	A 115	A 120	115	120	A 120	130	B						
4							B	130	115	110	110	110	110	115	115	A	A	B						
5							B	120	115	A	A	A	A	A	A	A	A	B						
6							B	125	115	110	A	A	A	A	A 130	120	A 125							
7							B	120	115	A	A	A 125	A 120	115	A	115	120							
8							B	125	115	115	110	115	A	115	115	A 135	A							
9							B	120	110	110	A	A 120	110	120	115	A	120							
10							B	120	115	115	115	110	110	115	115	120	125							
11							B	A 125	115	110	A	110	110	110	115	115	125							
12							B	120	115	A	E A 135	A 125	A	E A 130	120	120	125							
13							B	130	120	115	110	120	A	A	A	A	A							
14							B	130	115	115	110	115	A 130	120	A 120	A	A							
15							B	115	115	110	A 120	A 120	A	A	A	115	120							
16							B	130	115	110	110	110	110	110	115	120	125							
17								125	115	115	115	115	115	120	115	A 120	A							
18								120	115	115	115	110	115	115	115	115	A							
19								A 125	115	115	110	110	A 125	115	A 125	110	130							
20								A 150	115	A 130	E A 145	115	115	A	115	A 135	A							
21								135	115	115	110	110	115	A	115	120	130							
22								130	A 125	110	110	110	110	120	115	115	A							
23								B 135	115	110	A	A	A	A 120	A	A 120	130							
24								A 135	115	110	110	115	110	115	E A 140	A 130	125							
25								140	115	110	A	A	A	A	A	A	A							
26								A 140	A 135	A	A	115	110	110	110	A	E A 155							
27								130	115	A	110	A 135	A	A	A 120	A 135	A 140							
28								145	120	A 135	115	A	A	A	A 130	115	A							
29								145	A 135	110	110	110	115	115	120	120	135							
30								E A 160	A	110	110	110	A 120	115	115	120	130							
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								30	29	25	21	25	18	19	22	22	18							
MED								130	115	110	110	115	115	115	115	120	126							
U Q								135	115	115	A 115	A 120	A 120	120	A 120	A 120	130							
L Q								120	115	110	110	110	110	115	115	115	125							

NOV. 1992 H'E (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 H'ES (KM) 135°E MEAN TIME (G.M.T. + 9H)

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

H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	105	110	110	B	B	B	B	120	125	110	110	110	105	105	100	140	100	120	120	115	B	B	100	110
2	110	110	110	110	115	115	115	110	G	G	110	105	B	B	110	B	130	120	B	B	B	115	B	105
3	105	105	B	B	105	110	150	140	140	G	140	125	130	120	125	120	140	120	115	B	B	B	B	B
4	105	105	105	B	B	110	B	160	E G 190	130	140	115	115	120	120	115	110	115	B	B	B	B	110	110
5	100	100	100	100	105	B	B	G	120	105	110	105	100	105	95	95	100	100	100	B	B	110	110	105
6	105	100	110	105	100	B	100	105	120	115	170	110	115	110	110	G	110	125	125	B	B	120	B	B
7	105	100	110	110	B	B	110	G	115	115	110	110	110	G	115	155	150	B	B	110	105	110	100	105
8	105	110	110	B	B	B	B	G	125	120	110	110	115	115	115	120	110	110	115	B	100	100	100	100
9	105	105	100	B	B	B	B	G	120	115	110	110	G	G	G	175	180	B	B	100	105	120	110	B
10	110	115	110	110	B	B	B	170	160	135	G	130	135	150	145	140	120	115	110	B	110	110	115	B
11	B	B	B	B	110	105	100	105	165	G	115	G	G	G	135	G	G	B	105	110	105	105	105	105
12	110	100	110	B	B	B	B	E G 175	G	115	115	115	175	110	130	160	140	125	120	125	105	105	B	B
13	B	B	B	B	B	B	B	G	125	120	115	120	115	115	115	120	120	110	B	B	B	B	B	B
14	B	105	105	105	105	110	110	G	120	110	G	G	105	135	125	100	115	110	110	110	120	B	B	105
15	105	120	B	B	110	105	105	G	G	155	130	125	110	110	110	G	125	110	100	100	100	B	120	105
16	120	110	100	105	100	105	B	120	130	135	G	130	125	125	135	125	120	115	110	115	110	110	110	B
17	B	B	B	B	B	B	B	G	G	E G 180	155	155	E G 185	150	130	130	125	120	120	115	120	B	B	B
18	B	B	B	B	B	B	120	G	G	170	150	155	140	125	120	125	115	B	B	B	B	110	100	135
19	100	100	100	100	110	B	B	110	G	120	145	120	170	140	110	140	160	B	140	115	B	B	100	105
20	B	110	B	B	B	B	B	135	G	170	160	130	125	115	120	135	130	B	125	135	B	B	B	B
21	110	110	110	115	B	B	B	150	150	130	120	120	115	115	G	G	G	B	B	B	115	B	130	B
22	110	B	B	B	B	B	B	G	E G 200	E G 190	125	120	G	130	120	120	145	B	95	110	110	130	135	120
23	B	B	B	B	B	B	B	125	G	G	115	110	110	115	110	E G 170	110	115	105	B	B	115	120	B
24	110	B	B	B	B	B	B	120	160	160	120	125	120	G	115	115	G	115	110	115	110	115	B	110
25	110	105	115	B	B	110	110	115	180	145	145	115	115	110	110	110	110	110	110	110	110	105	105	110
26	110	115	115	B	B	B	B	115	E G 190	115	115	120	110	110	110	110	105	110	130	110	B	105	105	B
27	105	105	100	B	105	B	B	G	125	115	110	110	110	105	105	105	110	110	B	B	B	110	105	100
28	B	B	B	B	B	B	B	G	G	120	G	115	115	115	115	125	115	B	110	105	B	B	125	B
29	B	100	100	B	B	B	115	G	G	155	140	140	130	E G 165	150	160	G	110	110	B	110	130	B	B
30	B	105	105	B	110	B	B	105	105	170	E G 185	170	160	150	125	125	G	B	140	125	120	120	B	115
31																								
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	20	22	19	9	11	8	10	17	20	26	26	28	26	25	28	25	25	20	22	17	16	19	19	16
MED	105	105	110	105	105	110	110	120	126	122	119	120	115	115	115	125	120	115	110	110	110	110	110	105
U Q	110	110	110	110	110	110	115	145	162	155	145	128	130	132	125	140	135	120	120	115	112	120	120	110
L Q	105	100	100	102	105	105	105	110	120	115	110	110	110	110	110	115	110	110	110	110	105	105	100	105

NOV. 1992 H'ES (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

NOV. 1992 TYPES OF ES 135°E MEAN TIME (G.M.T. + 9H)

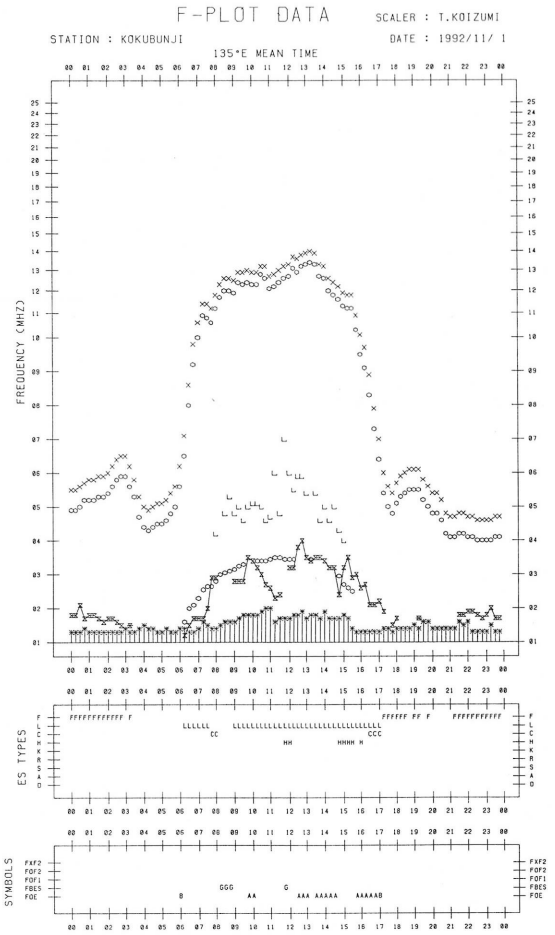
LAT.35°42.4'N LON.139°29.3'E SWEEP 1.0MHZ TO 25.0MHZ IN 24.0SEC IN MANUAL SCALING

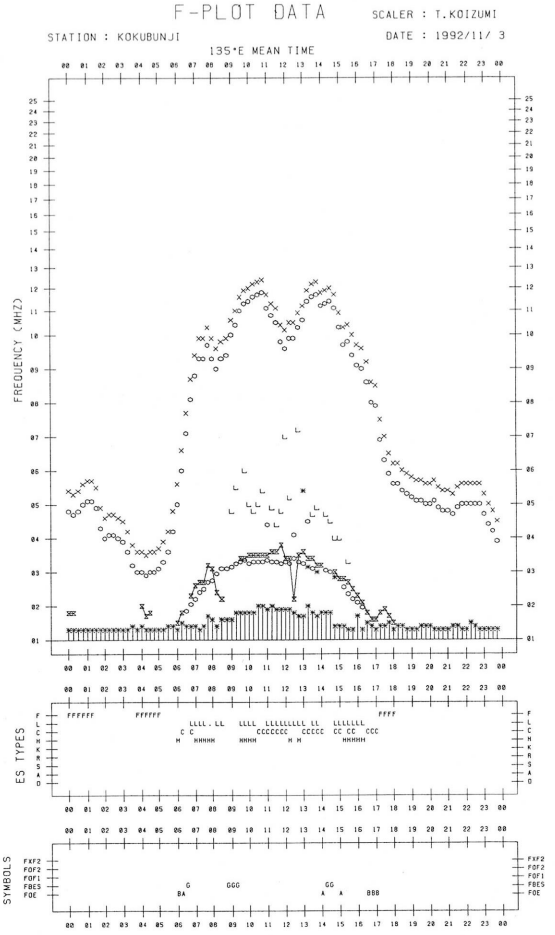
H / D	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F 1	F 2	F 1					L 1	C 1	L 2	L 2	L 1	LH 11	L 2	L 2	HL 11	LH 21	CL 21	FF 11	F 2			F 2	FF 22
2	F 2	F 2	F 2	F 2	F 2	F 2	L 1	L 2			L 1	L 1			L 1		C 1	CL 31				F 2		F 2
3	F 3	F 1			F 1	F 1	H 1	HL 21	H 1		HL 11	CL 11	CL 11	CL 11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

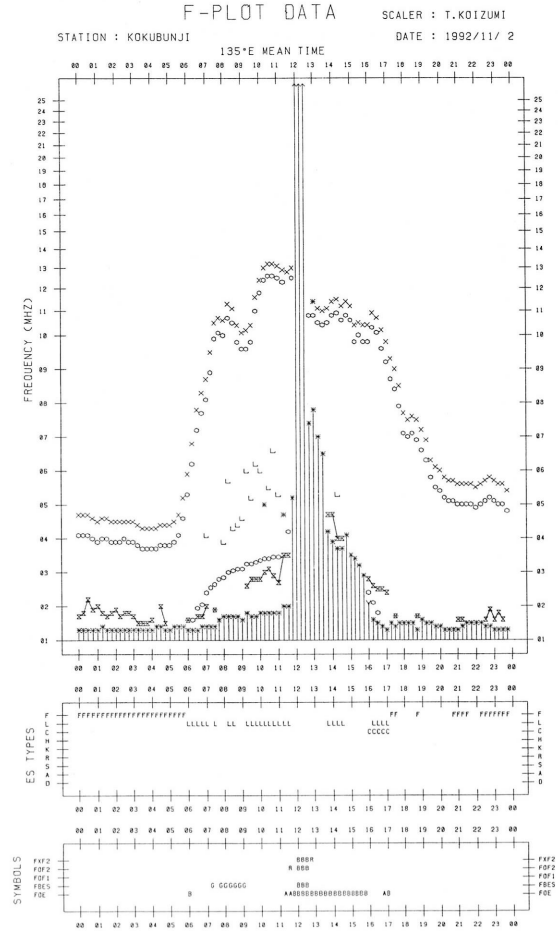
NOV. 1992 TYPES OF ES COMMUNICATIONS RESEARCH LABORATORY, JAPAN

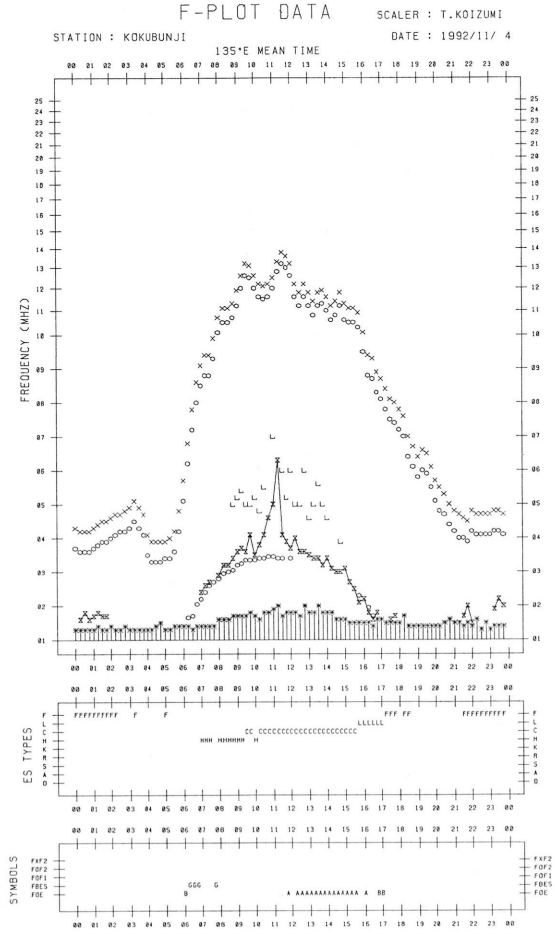
f-PLOTS OF IONOSPHERIC DATA

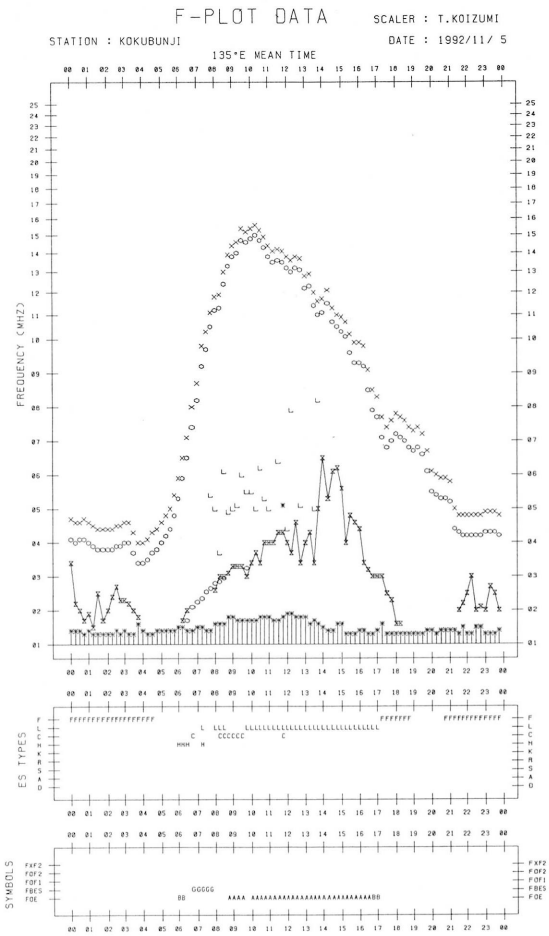
KEY OF F-PLOT	
I	SPREAD
○	FOF2, FOF1, FOE
×	FXF2
✳	DOUBTFUL FOF2, FOF1, FOE
⧖	FBES
⌊	ESTIMATED FOF1
↑, Y	FMIN
∧	GREATER THAN
∨	LESS THAN

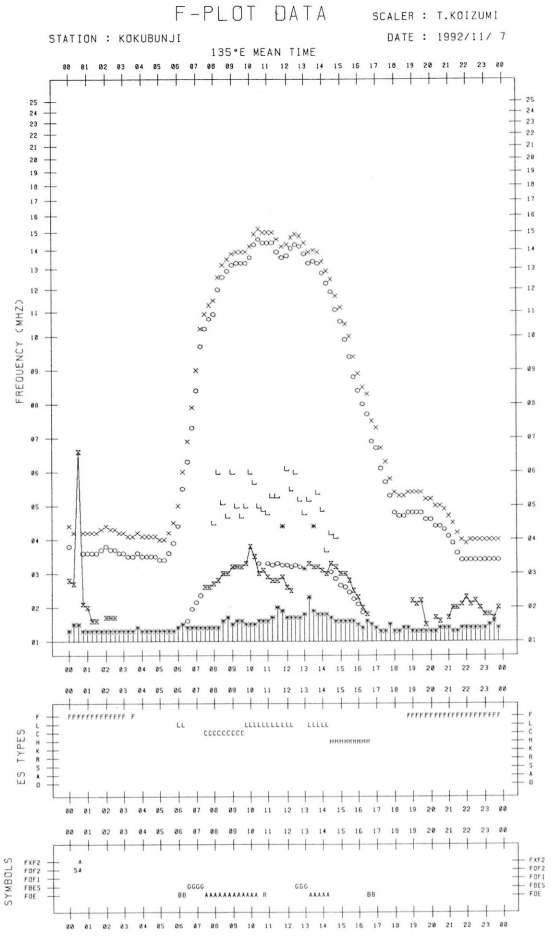

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 1
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

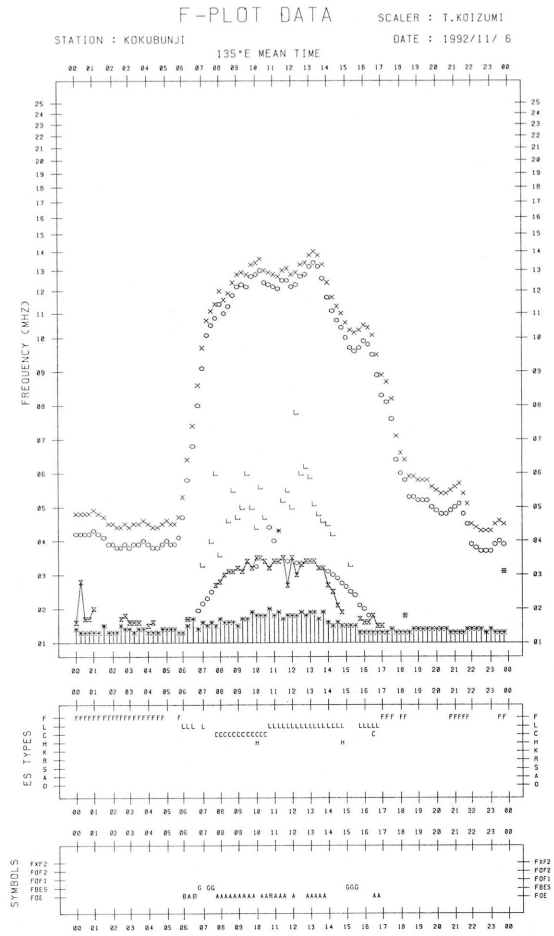

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 3
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

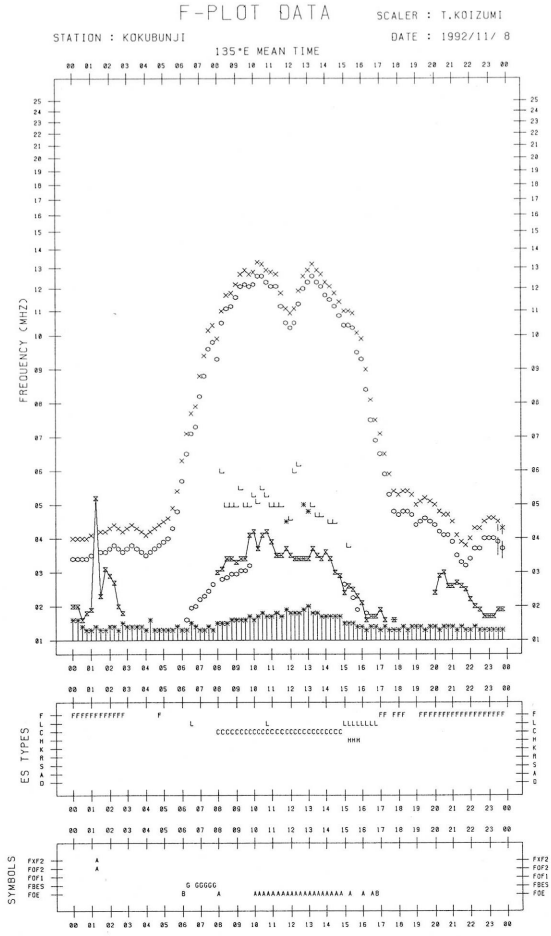

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 2
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

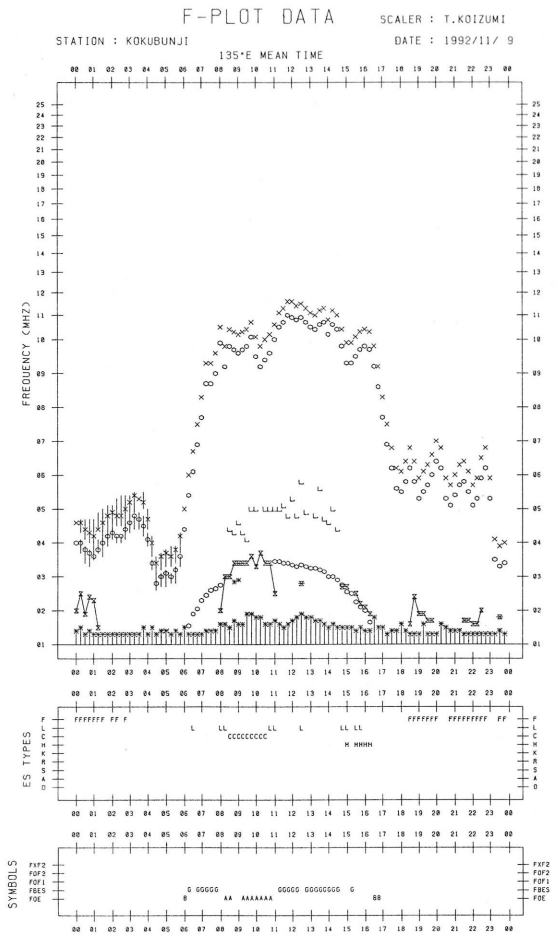

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 4
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

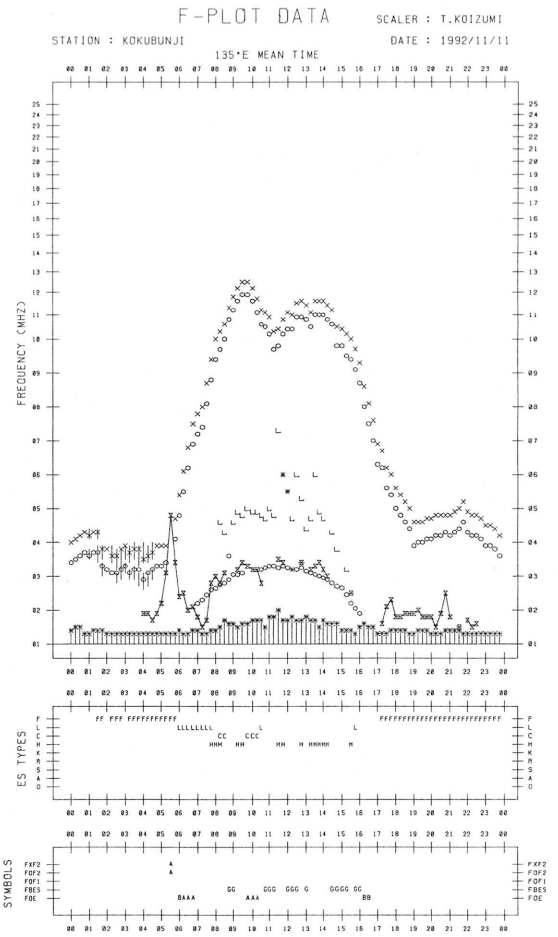

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 5
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

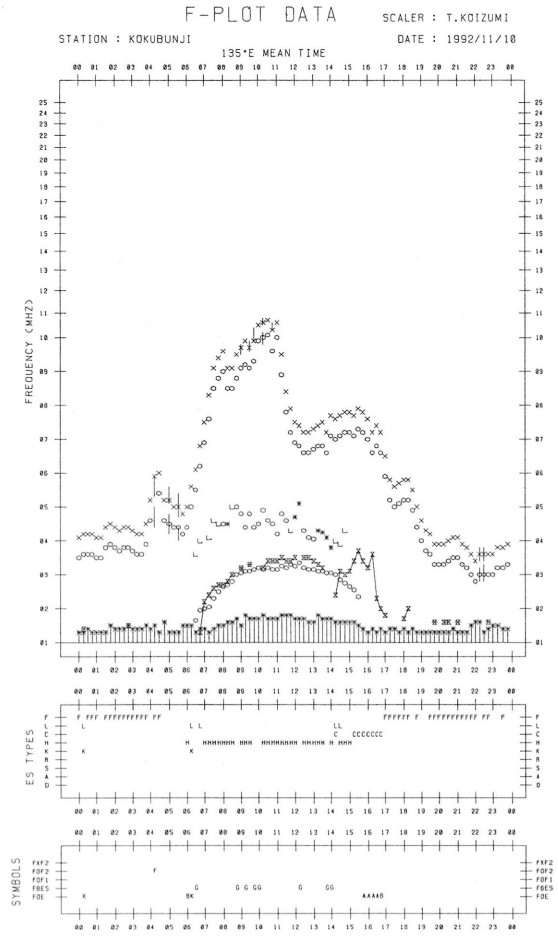

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 7
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

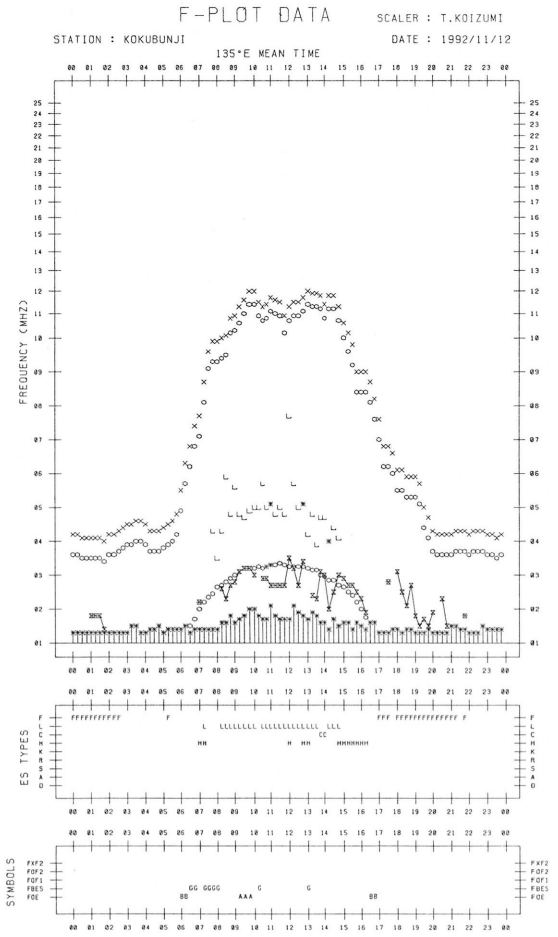

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 6
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

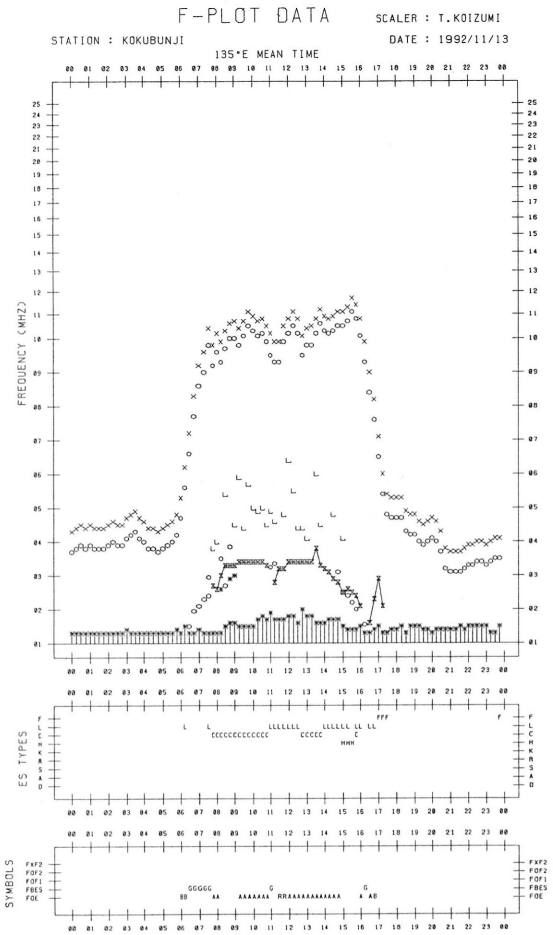

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 8
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

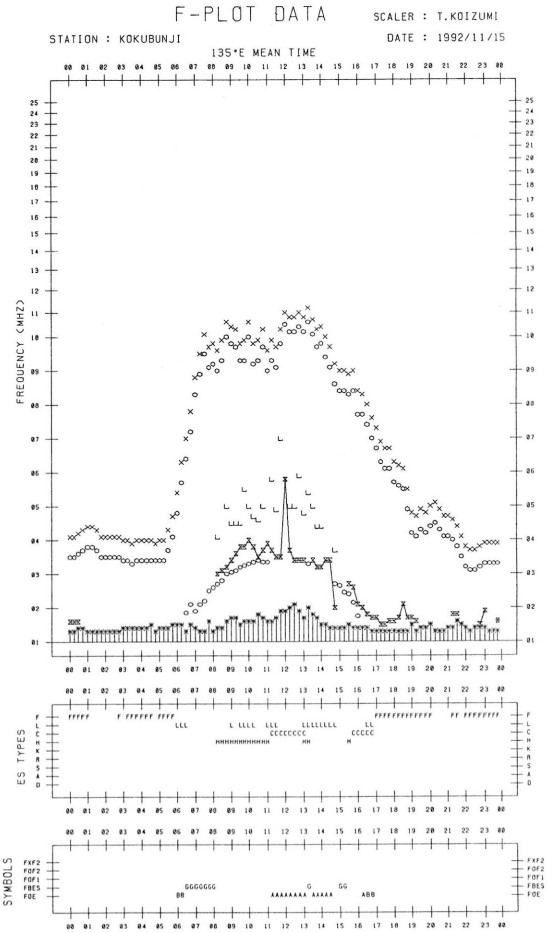

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/ 9
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

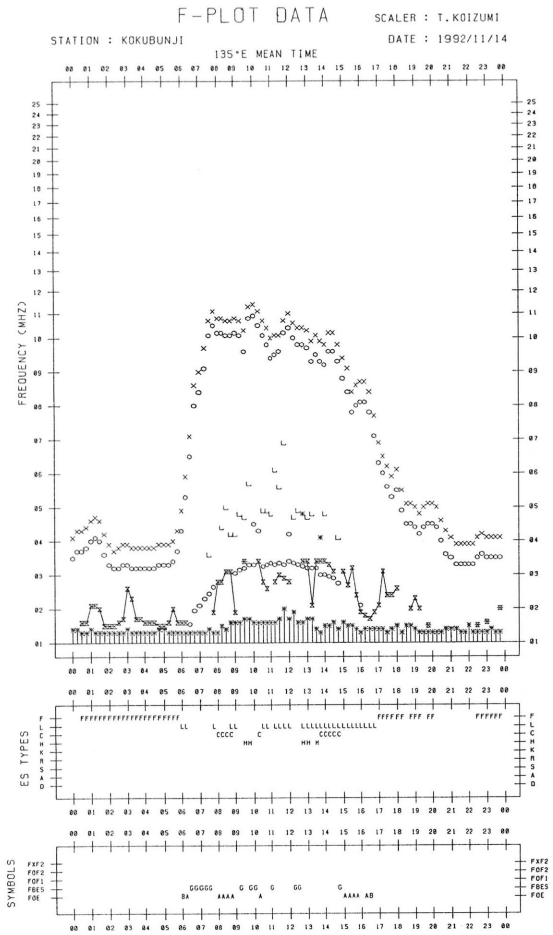

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/11
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

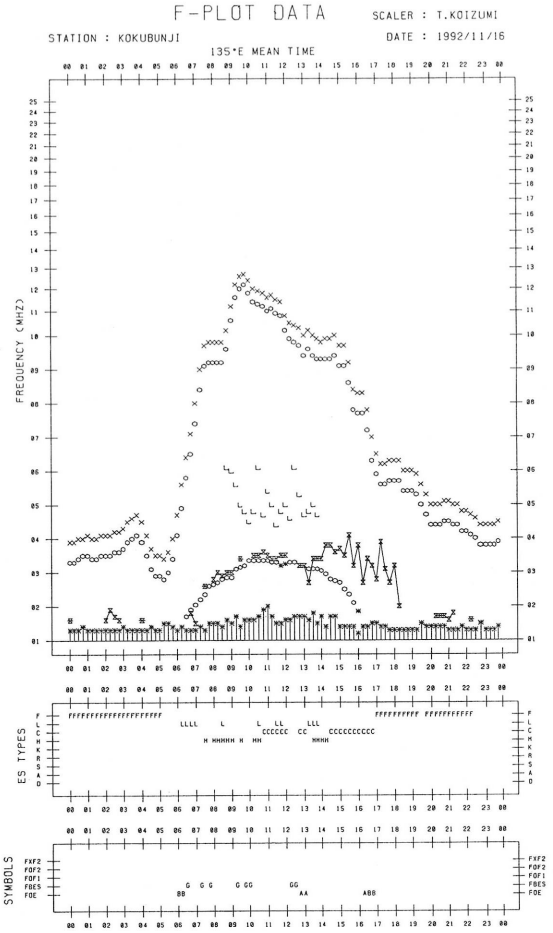

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/10
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

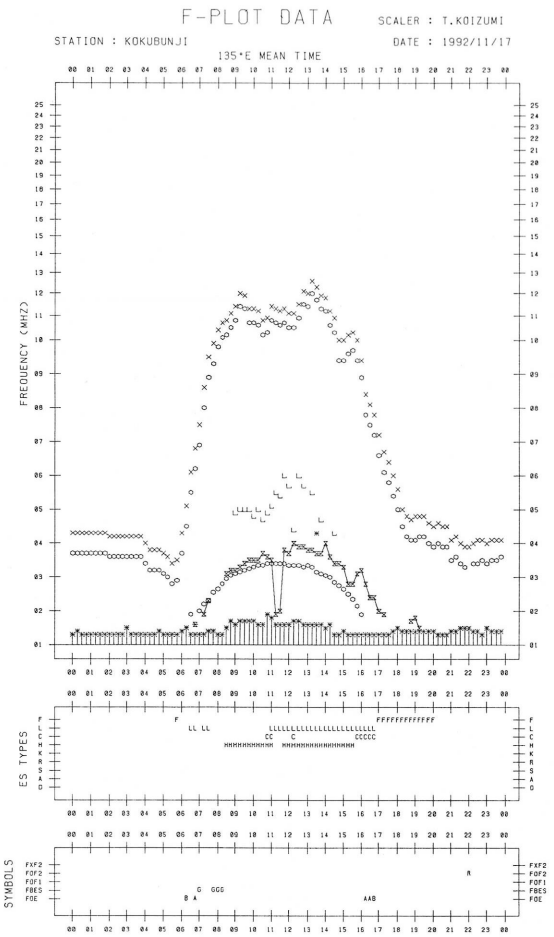

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/12
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

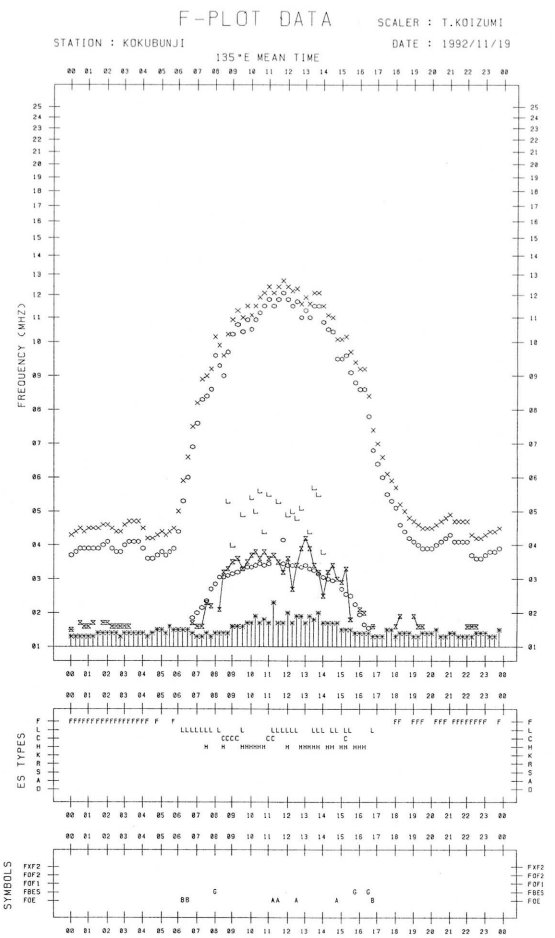

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/13
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

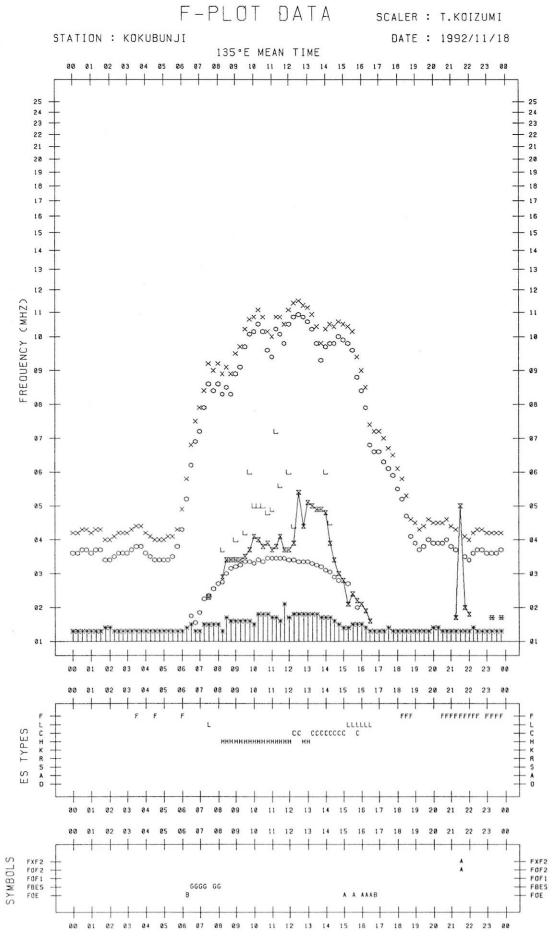

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/15
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

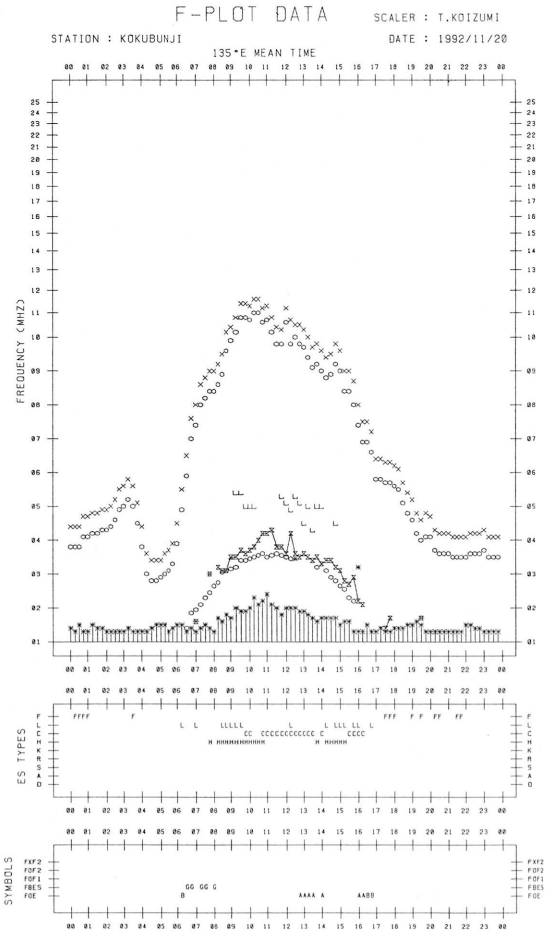

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/14
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

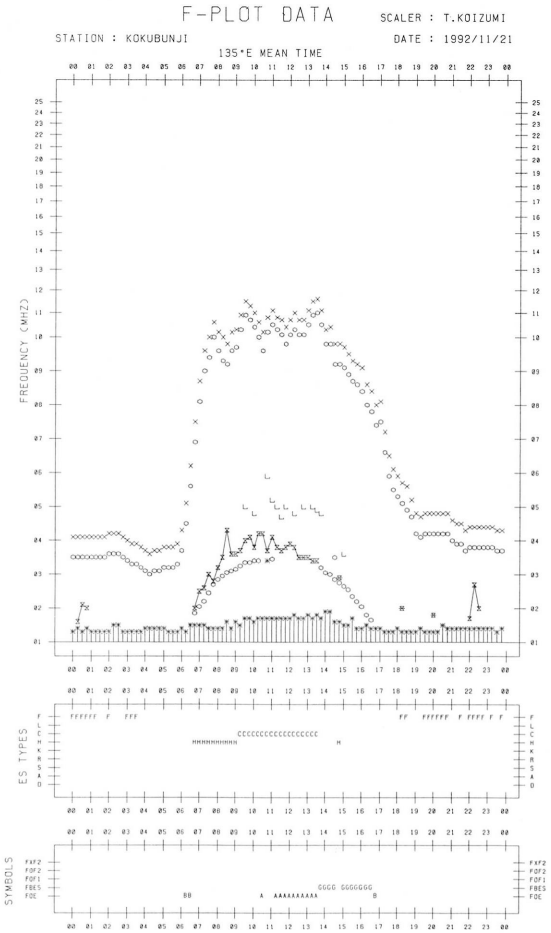

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/16
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

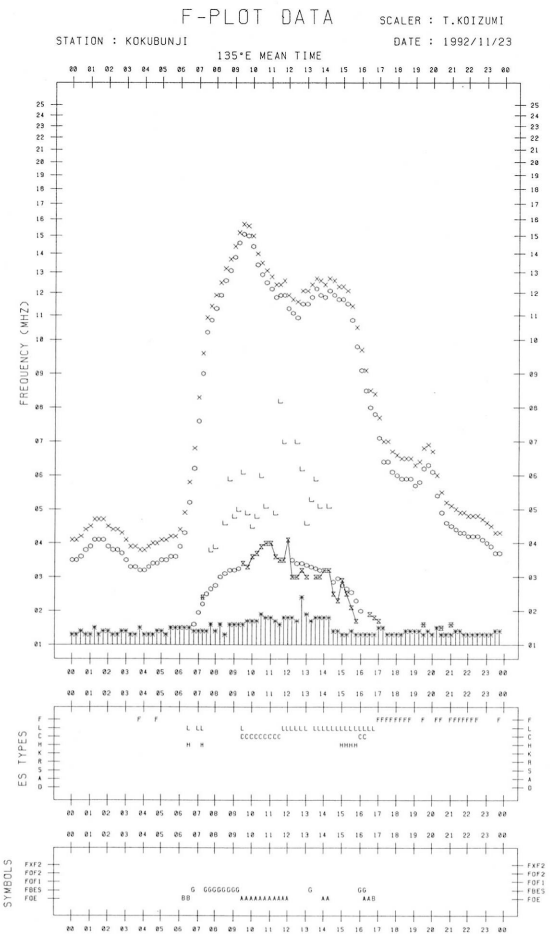

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/17
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

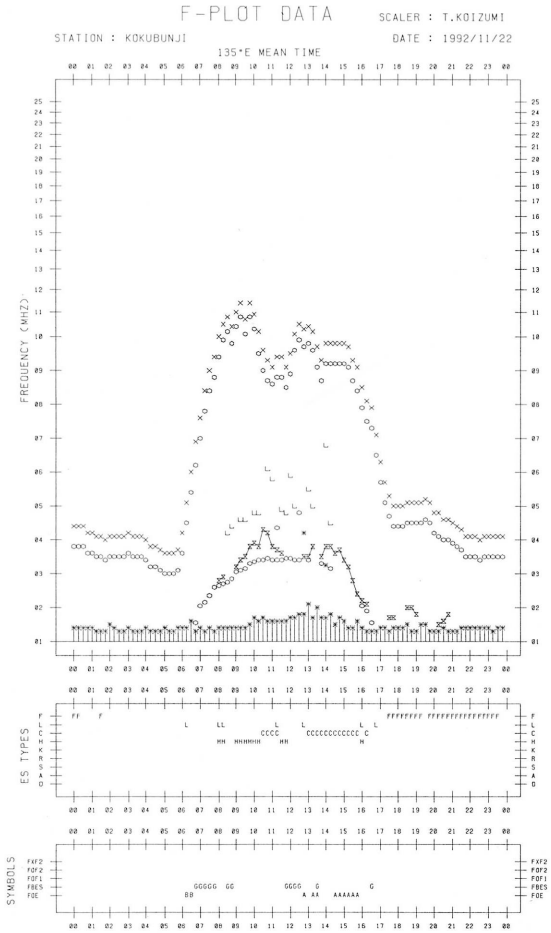

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/19
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

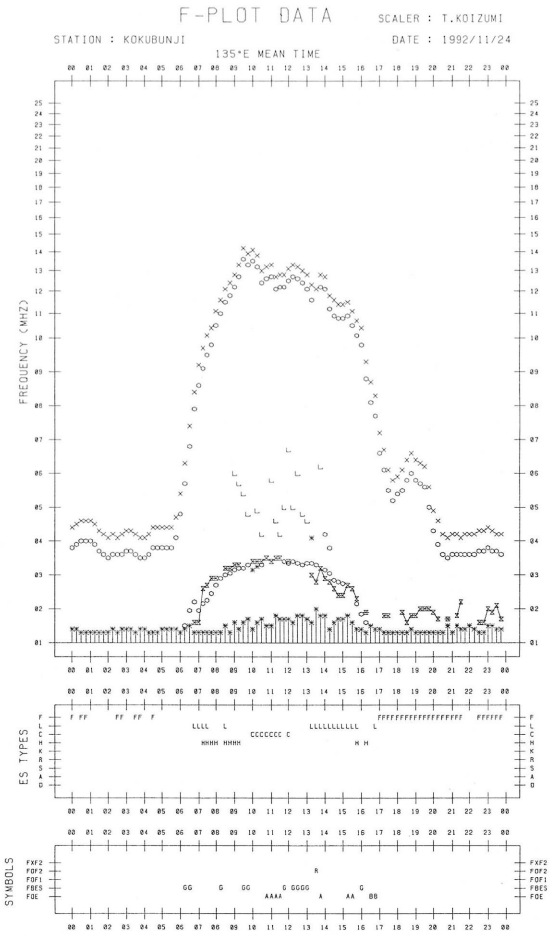

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/18
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

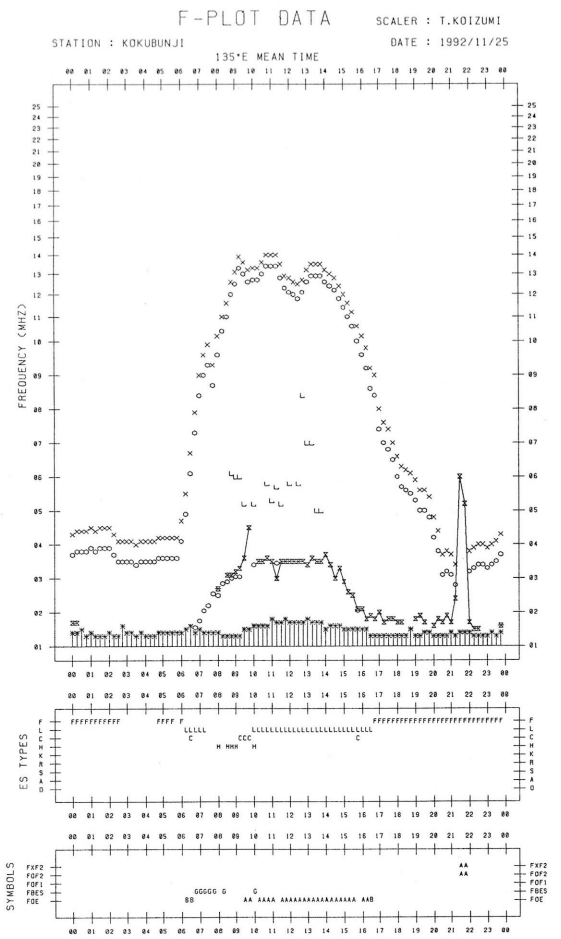

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/20
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

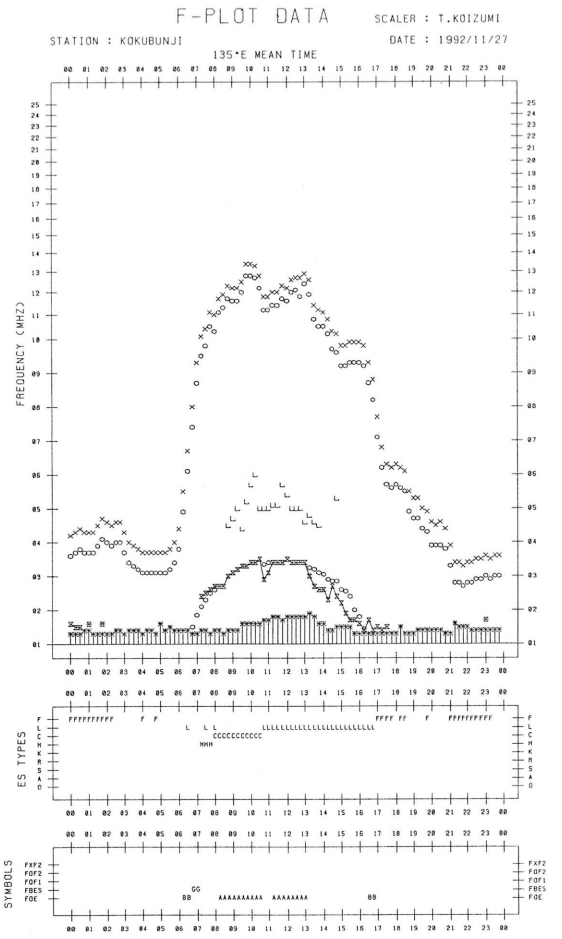

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

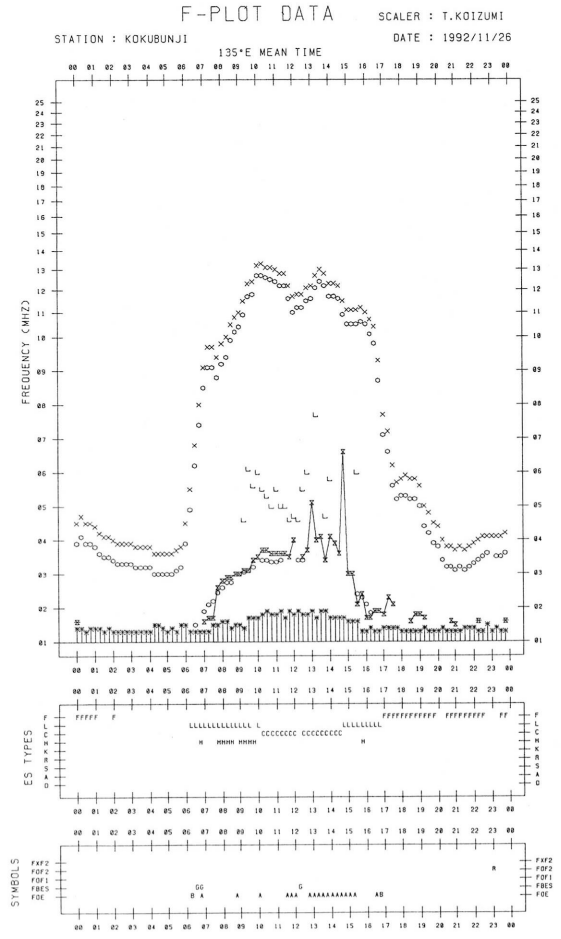

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

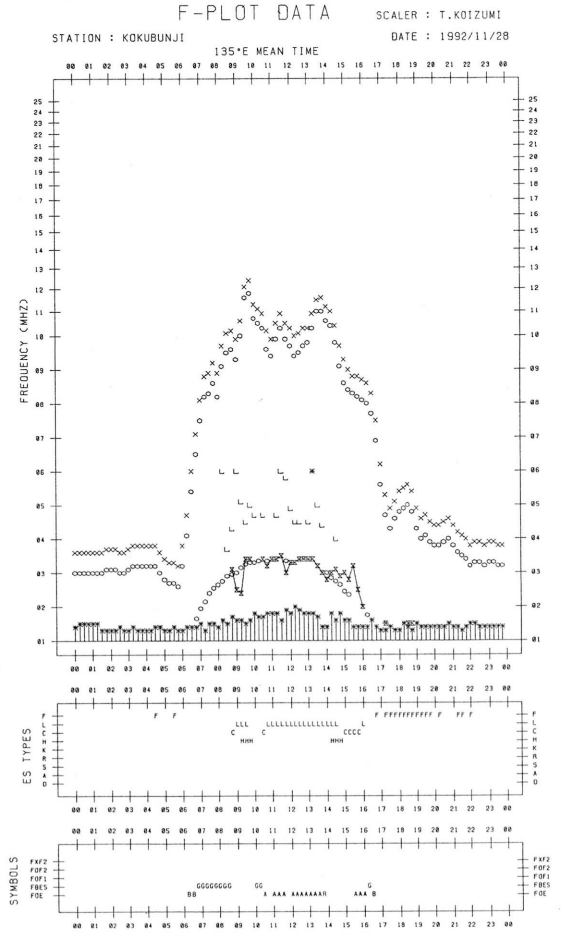

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

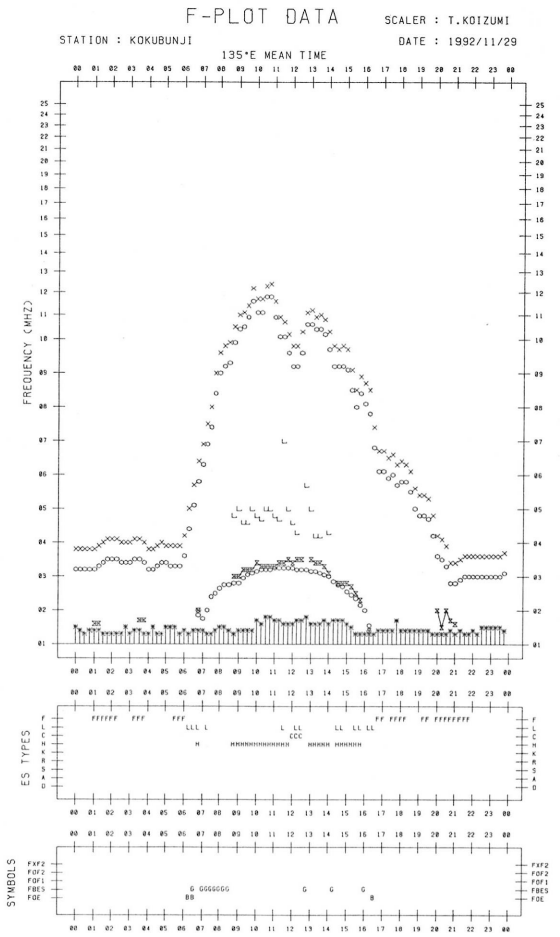

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

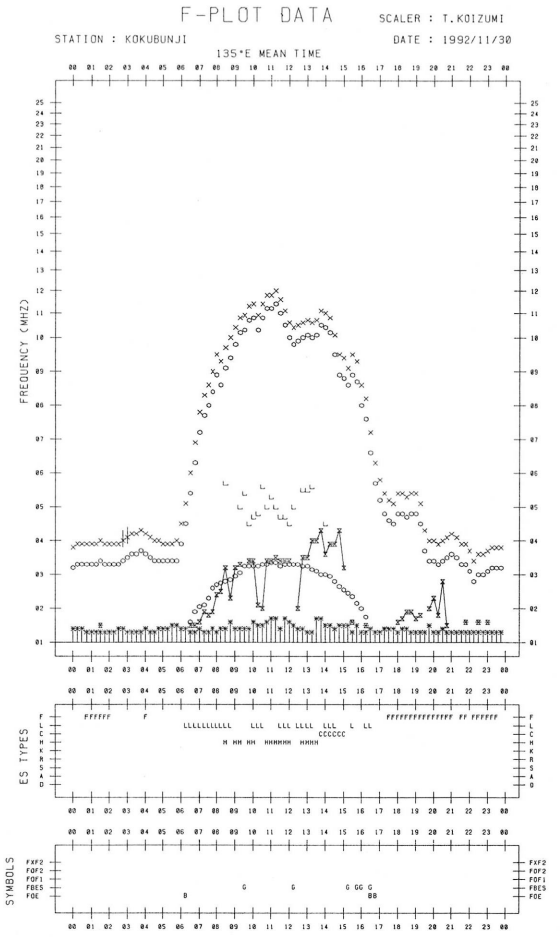

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/25
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/27
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/26
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/28
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/29
135*E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/11/30
135*E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

B. Solar Radio Emission

B1. Daily Data at Hiraiso

200 MHz

Hiraiso — November 1992

Single-frequency total flux observations at 200 MHz

	Flux density: 10^{-22} Wm^{-2}Hz^{-1}					Variability: 0 to 3				
UT	00-03	03-06	06-09	21-24	Day	00-03	03-06	06-09	21-24	Day
Date										
1	B	B	B	B	B	1	2	2	3	1
2	B	B	B	B	B	3	3	2	2	3
3	B	B	B	B	B	2	2	1	1	2
4	B	B	*	*	B	1	1	*	*	1
5	*	*	*	10	*	*	*	*	0	*
6	9	8	8	*	9	0	0	0	*	0
7	*	*	-	-	*	*	*	-	-	*
8	*	*	*	10	*	*	*	*	0	*
9	10	-	-	-	10	0	-	-	-	0
10	*	*	*	6	*	*	*	*	0	*
11	6	6	6	B	6	0	0	0	1	0
12	7	6	6	6	B	0	0	0	0	0
13	6	6	6	6	6	0	0	0	0	0
14	6	6	-	-	6	0	0	-	-	0
15	-	-	-	B	-	-	-	-	1	-
16	B	B	10	*	B	1	0	0	*	1
17	*	9	9	*	9	*	0	0	*	0
18	10	10	10	*	10	0	0	0	*	0
19	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*
21	*	*	*	*	*	*	*	*	*	*
22	B	B	B	*	B	1	1	1	*	1
23	10	10	*	*	10	0	0	*	*	0
24	B	B	B	*	B	1	1	2	*	1
25	B	B	B	*	B	1	2	1	*	2
26	10	-	-	*	-	0	-	-	*	-
27	B	B	B	*	B	2	2	2	*	2
28	8	9	8	*	8	0	0	0	*	0
29	8	8	8	*	8	0	0	0	*	0
30	8	8	8	*	8	0	0	0	*	0

Notes: No observations during the following periods.

7th 0553 - 2355 9th 0110 - 10th 0055 14th 0425 - 15th 2100
26th 0200 - 0600

No observations for 500 MHz due to equipment failure by lightning.

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso

November 1992

Single-frequency observations

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

NOV. 1992	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) PEAK	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) MEAN	POLARIZATION REMARKS
1	200	44 NS	2105E	2247	600D	200	100	SL
	100	44 NS	2105E	2247	600D	600	300	SL
2	200	46 C	0248.2	0248.8	10	3500	250	WL
	100	46 C	0249.2	0254.0	6.5	500	120	WL
	200	44 NS	2105E	0330	600D	70	30	ML
	100	44 NS	2105E	0515	600D	150	30	WL
3	200	44 NS	2110E	0433	600D	50	25	ML
11	200	42 SER	0426.0	0429.1	5.3	150	50	MR
	200	44 NS	2110E	2151	140D	80	25	MR
15	200	43 NS	2208	0155	320	70	18	0
18	200	46 C	2153	2221.3	50	200	80	SL
22	200	44 NS	0000E	0220	435D	40	25	WL
24	200	44 NS	0100E	0425	360D	80	40	0
25	200	44 NS	0000E	0532	420D	120	50	0
27	200	44 NS	0000E	0039	420D	200	60	SL

Note: No observations for 500 MHz due to equipment failure by lightning.

C. RADIO PROPAGATION

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

NOV 1992 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	-1	-1	-7	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-17	-1	0	-1
2	-8	-3	1	ES -29	ES -29	ES -29	ES -29	ES -29	-14	ES -29	ES -29	ES -29	ES -28	ES -29	ES -29	ES -29	ES -29	-16	ES -29	ES -29	-20	-3	-5	-5
3	-2	-1	-5	4	ES -29	ES -14	ES -14	ES -14	ES -14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-11	-1	-1	-4
4	-6	0	-1	ES -29	ES -29	ES -29	ES -29	ES -29	C	C	C	C	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-2	0	3	-1
5	0	1	0	9	ES -29	ES -14	ES -14	ES -14	ES -14	ES -20	ES -20	-25	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-15	-8	-7	-7
6	-5	1	1	ES -14	-11	ES -14	ES -14	ES -8	ES -8	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-5	-5	-1
7	2	5	ES -14	ES -14	ES -14	ES -14	ES -14	ES -14	ES -20	ES -29	-11	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-9	-6	-1	-1
8	3	4	6	ES -14	ES -20	ES -20	ES -8	ES -8	ES -14	-3	ES -23	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-20	-1	-3	3
9	-2	C	C	C	C	C	C	C	C	C	C	C	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	9	-1
10	4	-3	-14	ES -20	ES -14	-11	ES -14	ES -14	ES -14	S -3	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-8	ES -29	ES -29	0	0	-2
11	-1	2	7	10	ES -20	ES -20	ES -20	-14	-8	ES -29	ES -29	ES -20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-20	-1	1	-3
12	1	1	1	ES -14	ES -8	ES -16	ES -8	ES -8	ES -8	ES -8	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-20	ES -29	ES -29	ES -29	-7	-3	-8
13	-8	-1	0	ES -8	ES -14	ES -8	ES -3	2	-16	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-14	-16	ES -29	ES -29	ES -29	-4	4	3
14	1	4	1	ES -29	ES -20	ES -14	ES -29	ES -14	ES -14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-20	-7	0	-1
15	1	1	11	6	ES -20	ES -20	ES -29	ES -14	-14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	3	ES -29	ES -29	4	2	4
16	4	4	1	10	-16	ES -20	-14	ES -20	ES -20	ES -29	ES -8	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	3	1	2
17	1	1	4	11	ES -14	ES -14	ES -8	ES -14	ES -3	ES -20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	3	1	3
18	2	5	1	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	0	1	5
19	4	5	0	-10	ES -20	ES -29	ES -29	ES -29	-9	ES -29	-10	-10	ES -29	ES -29	C	C	C	C	C	C	C	C	C	C
20	0	-1	-3	-1	ES -20	ES -20	ES -20	ES -14	ES -14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	2	ES -29	-21	-3	-1	2
21	5	6	10	2	ES -20	ES -20	ES -20	ES -14	ES -14	ES -29	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-2	-2	1
22	4	8	1	ES -20	ES -20	ES -20	ES -20	ES -20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-5	-3	-3
23	2	6	8	5	3	-14	ES -8	ES -8	ES -8	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-7	1	5
24	7	13	9	-1	S	ES -20	ES -14	ES -3	-11	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	2	4	4
25	5	9	9	13	ES -14	ES -14	ES -14	-20	ES -14	ES -20	ES -20	ES -29	ES -29	ES -29	ES -29	-12	ES -29	ES -29	ES -29	ES -29	ES -29	2	5	5
26	7	7	C	C	C	C	C	ES -20	ES -14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	0	4	-1
27	-1	5	0	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-1	9	0
28	-1	5	2	3	-25	-20	ES -29	ES -14	-11	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	3	-1	-1
29	-3	2	7	4	ES -14	ES -14	ES -14	ES -14	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	-1	2	4	-8	-20	ES -29	ES -8	ES -8	ES -14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	4	1	2
CNT	30	29	28	28	27	28	28	29	27	27	27	27	29	29	28	28	28	28	28	28	28	28	28	28
MED	1	2	1	US -8	ES -20	ES -20	ES -14	ES -14	ES -14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-1	0	-1
UD	5	8	9	10	ES -11	ES -14	ES -8	ES -8	ES -8	ES -8	ES -11	ES -25	ES -29	ES -29	ES -29	ES -29	ES -29	-20	-8	ES -29	-11	3	5	5
LD	-6	-1	-7	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-7	-5	-5

C. RADIO PROPAGATION

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

NOV 1992 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	14	3	2	9	11	8	0	6	7	-16	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	1	11	-1	1
2	2	1	ES -29	ES -29	-5	5	11	9	16	11	-14	-20	-20	-20	-20	-16	ES -29	ES -29	ES -29	-20	9	5	3	4
3	-1	3	6	14	16	11	16	16	13	-11	-14	-20	-18	-1	ES -29	ES -29	ES -29	ES -29	ES -29	-7	11	10	1	3
4	2	5	4	9	11	14	13	10	C	C	C	-10	-20	-25	ES -29	ES -29	ES -29	ES -29	ES -29	-1	12	10	4	7
5	4	7	10	11	19	7	11	15	4	28	-3	-10	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-7	-2	14	1	-1
6	5	4	11	7	20	13	4	24	14	-5	-11	-14	-11	ES -29	-20	ES -29	ES -29	-25	ES -29	-17	4	11	1	4
7	3	2	7	10	9	3	-4	4	-11	-17	-9	-11	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-18	11	4	10	3
8	9	8	11	11	15	16	-5	11	-9	-14	-12	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-14	6	7	6	9
9	1	C	C	C	C	C	C	C	C	C	C	C	ES -29	ES -29	ES -29	ES -29	ES -29	-23	-8	-20	7	8	15	4
10	5	11	9	15	16	10	-3	7	0	3	-8	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-9	12	7	8	5
11	9	10	18	16	18	11	18	-5	-1	-14	-20	ES -20	-20	-23	ES -29	ES -29	ES -29	ES -29	ES -29	-8	16	17	11	9
12	8	14	11	10	15	15	-4	-2	-5	-16	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-28	12	18	8	6
13	7	15	11	15	19	12	2	1	-8	-21	-20	ES -29	ES -29	ES -29	ES -29	-20	ES -29	ES -29	ES -29	ES -29	5	10	10	3
14	6	14	11	21	16	14	-8	19	-12	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-7	-11	8	2	8
15	5	4	7	13	17	21	7	-6	-7	-10	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	4	11	5	6
16	-1	3	11	16	24	11	18	5	-8	-12	-14	-18	-18	-20	ES -29	ES -29	ES -29	ES -29	ES -29	-8	6	10	11	6
17	5	7	8	12	21	17	2	-3	6	-9	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-15	13	8	3	5
18	5	7	12	18	19	17	22	12	-4	3	-9	-14	-17	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-20	10	11	5	8
19	4	9	9	17	17	27	-1	-3	3	-9	-14	-14	-11	-9	C	C	C	C	C	C	C	C	C	-6
20	1	7	7	9	18	15	1	-7	-6	-11	-20	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	9	10	9	10
21	12	15	12	16	17	30	24	1	-9	-14	-18	-15	-14	-14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	6	11	15	11
22	9	11	12	14	17	13	18	16	11	14	-17	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	15	12	11	7
23	8	11	8	12	15	21	18	18	15	5	15	-7	ES -29	-16	-20	ES -29	ES -29	ES -29	ES -29	ES -29	-5	5	7	4
24	8	14	13	17	18	15	-1	-2	-8	-5	-9	-3	-16	ES -29	ES -29	ES -29	ES -29	-7	-20	ES -29	8	7	14	10
25	6	10	14	12	18	22	22	-3	8	11	-12	ES -29	ES -29	ES -29	ES -29	-8	ES -29	ES -29	ES -29	ES -29	4	15	11	9
26	5	9	C	C	C	C	C	16	-5	-11	-14	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-25	-14	ES -29	10	7	11	5
27	5	9	16	16	14	4	10	5	8	-11	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	11	12	10	5
28	13	9	10	16	19	12	-3	-6	-14	-11	-16	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	7	14	7	8
29	5	5	12	16	13	12	12	22	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
30	10	10	9	18	16	23	10	-8	-14	-8	-11	-16	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	10	16	12	5
CNT	30	29	28	28	28	28	28	29	27	27	27	28	29	29	28	28	28	28	28	28	28	28	28	29
MED	5	9	10	14	17	14	8	5	-4	-11	-14	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-24	8	10	8	5
UD	12	14	14	18	20	23	22	19	14	11	-8	-10	-14	-14	-20	-20	ES -29	-25	-20	-7	13	16	14	10
LD	1	3	4	9	11	5	-4	-6	-12	-17	-20	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	ES -29	-2	5	1	1

C. Radio Propagation

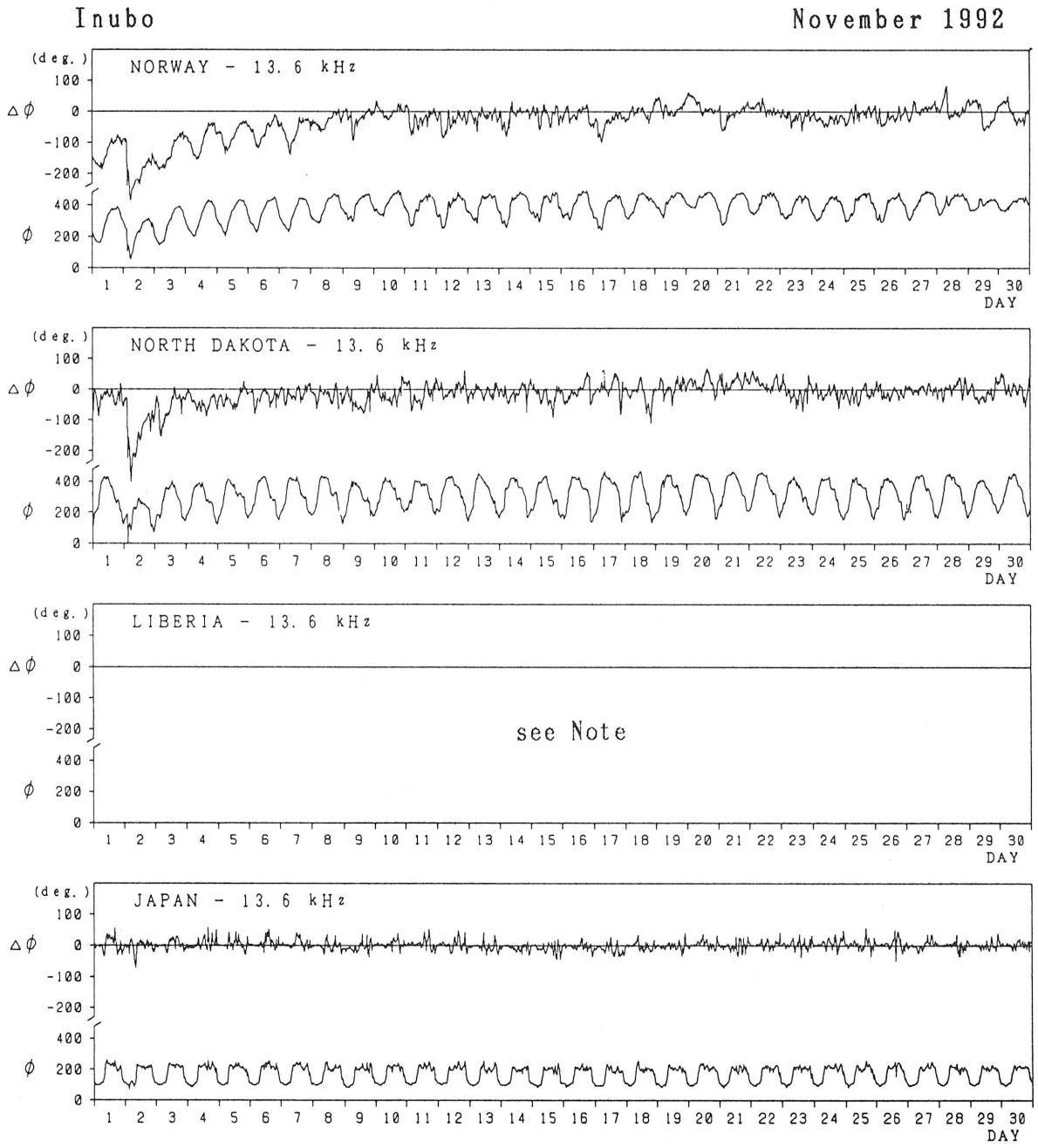
C2. Radio Propagation Quality Figures at Hiraiso

Hiraiso — Time in U.T.

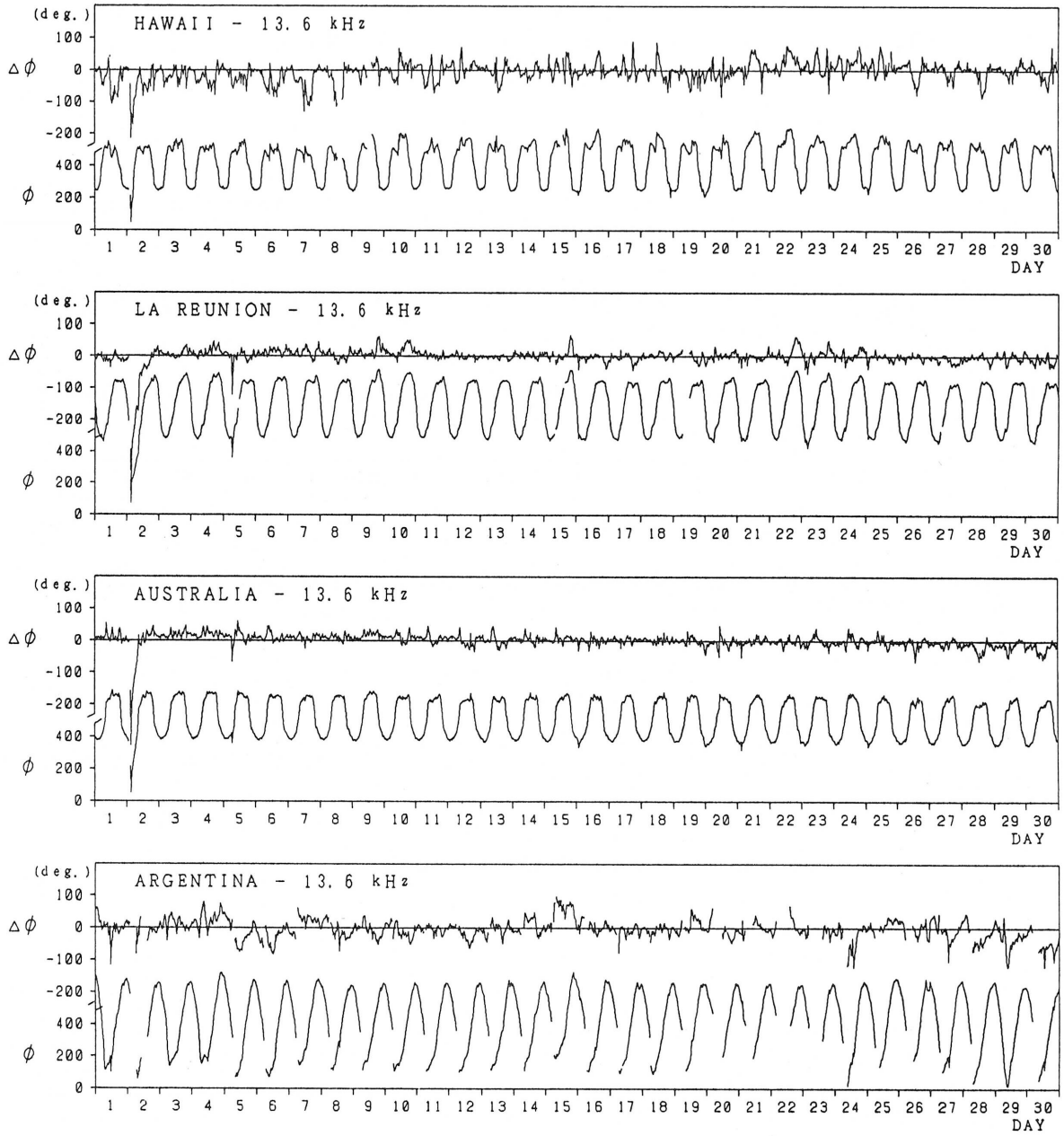
Nov. 1992	Whole Day Figure	WWV 00 06 12 18 / 06 12 18 24	WWVH 00 06 12 18 / 06 12 18 24	Conditions 00 06 12 18 / 06 12 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	3+	3 - - 4	3 3 - 3	N N N N	2146	---	87
2	4-	(3) - - 4	3 4 (5) 3	N N N N	---	15	SSC
3	4+	4 - - 4	4 5 (5) 4	N N N N			
4	4o	(3) - - 4	4 (5 5)4	N N N N			
5	4o	4 - - 3	4 5 - 4	N N N N			
6	4o	3 - - 4	4 5 (5) 4	N N N N			
7	4-	(3) - - 4	3 4 - 4	N N N N			
8	4o	(4) - - 4	4 4 - 4	N N N N			
9	C	C C - (3)	C C (5) 4	N N N N	05.8		172
10	4-	3 - - 4	4 4 - 4	N U U U	---	03	---
11	4o	4 4 - 4	4 4 (5) 4	U U U U			
12	4-	4 - - 3	4 3 - 4	N N N N			
13	4-	4 4 - 4	4 3 - 4	N N N N			
14	4-	3 - - 4	4 3 - 4	N N N N			
15	4-	4 - - 4	4 3 - 4	N N N N			
16	4o	4 - - 4	4 4 - 4	N N N N			
17	4o	4 - - 4	4 4 - 4	N N N N			
18	4o	3 - - 4	4 5 - 4	N N N N			
19	4o	4 4 - C	4 4 (5 3)	N N N N			
20	4-	4 - - 4	4 3 - 4	N N N N			
21	4o	4 - - 4	4 4 (5) 4	N N N N			
22	4o	4 - - 4	4 5 - 4	N N N N	06.2	---	117
23	4+	5 - - 4	4 5 (5) 4	N N N N	---	24	SSC
24	4+	5 - - 4	4 4 (5) 4	N N N N			
25	4+	5 - - 4	4 4 - 4	N N N N			
26	4o	C - - 4	4 4 (4) 4	N N N N			
27	4-	3 - - 4	4 4 - 4	N N N N			
28	4-	4 - - 4	4 3 - 4	N N N N			
29	C	4 C C C	4 5 C C	N N N N			
30	4o	4 - - (4)	4 4 - 4	N N N N			

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo November 1992



Note: As for LIBERIA-13.6kHz, no record during 18 October - 30 November, due to the maintenance of transmitter.

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

Start (U.T.)	End (U.T.)	Max. (U.T.)	Max. Phase Deviation (negative value, deg.)
Nov.02/0342E	Nov.08/1510	NOV.02/0550	256

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso

Time in U.T.

Nov. 1992	S W F								Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
2	>42	>47	>16			0232	36	2 SL	3+	x	x
2			18			0533	15	2 SL	1+	-	-
5		20				0602	50	3 G	2+	x	-
16		x	10			0145	29	2 SL	1-	x	x
22	x	30	10			2302	20	2 SL	3	x	x
23			5			0230	15	2 SL	1-	x	-
23			6			0246	24	1 S	1-	x	-
23			10			0338	22	2 SL	1-	x	x

NOTE CO:Colorado(WWV) HA:Hawaii(WWVH) Aus:Australia Mos:Moscow BBC London
* Optical and X-ray Flares

(b) Sudden Phase Anomaly (SPA) at Inubo

Inubo

Nov. 1992	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
1		—		8	6		0104	0126	0110
1		—		7	7		0132	0152	0136
1		—	6				0704	0726	0710
1		—	5				0830	0854	0834
1		—	4				1006	1016	1010
1		—	14				1146	1208	1154
2		—		7	6		0044	0120	0058
2	83	—	439	342	229	154	0232	0940	0304
4		—		6	4		0134	0158	0138
4		—	22	13			0452	0542	0504
4		—	16				1056	1124	1104
4		—		9	4		2328	2358	2338
5	24	—	147	76		20	0618	0738	0624
5		—	11				0910	0930	0914
5		—			29		2030	2058	2042

Inubo

Nov. 1992	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
6		—		6	4		0128	0156	0134
6		—	18	12			0544	0620	0550
9		—	17	36	25	23	0028	0128	0038
10		—	14				0954	1014	1000
10		—		18	11		2348	0022	2356
12		—		9	4		0142	0212	0150
14		—		17	13		2234	2308	2240
15		—	12	12			0416	0444	0426
15		—	37				0840	0912	0846
15		—	7				0954	1008	0958
16		—	48	49	29		0148	0234	0156
16		—		22	14		2130	2214	2146
16		—		22	14		2330	2358	2336
19		—	11	6			0304	0334	0314
19		—			40		2020	2100	2032
19		—		48	35		2300	0336	0004
21		—	12	11	11		0342	0416	0350
21		—	89	13			0710	0746	0714
22		—	6				1304	1318	1306
22		—		5	7		2204	2224	2208
22	31	—	27	102	109	54	2306	2354	2312
23		—	45	37	19		0232	0330	0254
23		—	78	53	32		0338	0416	0344
23		—	74	58	32		0430	0542	0436
23		—	30				0848	0920	0854
23		—	18				0938	1014	0948
23		—		43	72		2018	2130	2040
24		—		16	13		0102	0128D	0112
24		—	7	14	12		0128E	0150	0132
24		—	8	7			0358	0422	0402
24		—	7				0534	0608	0542
24		—	50				0838	0930	0848
24		—	24				1000	1028	1004
24		—		32	65		2030	2100	2038
25		—	38	45	30		0146	0238D	0158
25		—	7	9			0238E	0300	0242
26		—	54	23			0530	0616	0542
27		—	7				1242	1314	1248
28		—		14	11		0016	0044	0022
29		—	27				0824	0948	0846
29		—	11				1230	1252	1234
29		—		18	12		2342	0016	2350
30		—		9	7		0024	0040	0028
30		—	20				0656	0730	0702
30		—	7				1246	1316	1250
30		—			68		1928	2012	1942
30		—		11	11		2238	2306	2244

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