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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

MAR. 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	64	43	31	31	35	37	81	85	120	141	137	151	146	152	145	141	132	128	121	87	85	75	79	72
2	67	66	64	61	53	60	85	128	143	150	144	148	141	144	138	140	141	131	111	97	91	84	73	67
3	72	62	63	66	64	N	86	106	135	140	141	141	137	140	136	136	139	126	111	97	83	68	61	64
4	64	63	64	53	55	56	66	102	126	143	142	155	145	140	138	136	133	128	116	98	97	91	73	66
5	71	68	60	61	62	63	88	114	138	146	151	138	143	142	141	134	140	130	111	101	86	79	72	73
6	64	68	62	61	60	66	104	128	128	130	142	138	141	135	136	134	130	120	108	91	82	70	68	67
7	66	65	63	60	61	58	66	118	127	145	142	134	132	130	132	128	123	113	101	84	82	73	66	66
8	64	67	57	56	54	56	72	108	126	129	137	134	141	134	130	133	128	126	102	93	78	74	66	72
9	73	67	72	67	70	61	66	130	143	142	148	138	144	137	133	134	131	127	101	86	90	83	79	78
10	82	69	66	67	70	66	84	107	127	140	142	144	148	146	145	135	133	128	111	87	80	71	58	66
11	65	66	69	62	63	57	94	87	126	138	153	153	145	144	137	128	144	130	122	109	82	76	68	72
12	72	72	58	62	53	63	88	102	127	141	140	148	140	140	131	130	128	135	106	83	64	84	64	65
13	70	73	66	66	59	72	86	89	125	142	142	138	140	136	131	127	126	126	90	90	87	94	70	74
14	69	69	86	81	62	63	77	106	130	141	140	141	134	136	127	128	126	124	111	98	83	77	65	71
15	79	69	74	74	67	63	84	125	130	146	151	136	137	132	136	127	129	120	101	93	89	77	92	86
16	78	64	75	61	63	62	88	103	127	142	150	144	138	131	123	127	117	112	97	84	77	70	95	70
17	58	64	64	60	54	70	88	97	99	125	132	120	126	125	123	126	124	100	97	79	70	71	67	65
18	66	64	54	58	42	31	30	66	67	73	73	70	72	70		62	68	66	62	53	70	58	62	59
19	58	55	63	62	61	61	84	99	114	117		112	123	122	121	124	115	102	90	93	92	90	74	73
20	68	63	67	73	63	66	95	108	129	129	126	134	129	128	124	124	119	116	100	92	93	88	97	91
21	91	77	73	73	73	72	90	106	127	130	130	131	128	127	121	122	126	114	104	90	95	89	75	83
22	N	59	72	66	57	58	70	90	110	105	119	130	126	125	122	122	116	98	94	77	83	73	82	70
23	82	73	86	78	66	67	85	108	127	125	137	134	137	133	132	127	138	121	103	86	92	88	79	66
24	72	72	82	80	65	65	90	131	138	138	132	130	130	140	133	130	124	124	100	96	92	76	75	77
25	73	73	66	68	64	66	101	91	120	142	132	132	131	129	122	127	127	119	108	92	92	87	79	73
26	66	68	72	64	73	66	84	108	125	138	141	136	138	131	129	127	101	109	108	90	92	92	74	88
27	84	78	72	66	70	66	90	93	125		137	135	134	130	134	128	125	122	113	108	92	99	77	90
28	73	74	83	73	85	61	98	105	129	128	131	135	137	138	135	124	127	122	124	113	99	89	73	76
29	75	73	77	67	67	72	110	123	128	130	134	131	128	130	128	128	116	144	109	109	91	82	83	79
30	83	71	86	65	94	91	87	104	106	123	128	127	133	140	127	119	95	114	108	89	112	81	70	86
31	85	67	67	73	67	70	105	129	126	125	128	126	134	131	142	122	130	112	110	88	88	83	77	74
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	31	31	30	31	31	31	30	30	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	72	68	67	66	63	63	86	106	127	138	138	135	137	134	132	128	127	122	108	91	88	81	73	72
U Q	78	72	74	73	67	66	90	118	129	142	142	141	141	140	136	134	132	128	111	97	92	88	79	78
L Q	66	64	63	61	57	60	81	97	125	128	132	131	130	130	127	124	119	113	100	86	82	73	67	66

HOURLY VALUES OF FES AT WAKKANAI

MAR. 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	G	G	G	G	G	G	G	G	G	47	60	G	G	G	G	G	G	G	31	37	34	34	33	32
2	G	G	G	G	G	G	G	G	72	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	G	G	G	G	G	28	G
4	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	94	G	61	G	G	G	G	G	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	43	G	G	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24	G	G	G	28
9	G	G	G	G	G	G	G	G	49	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
10	G	28	24	G	G	28	G	32	G	G	53	G	G	G	49	G	G	G	G	G	G	G	G	G
11	G	G	G	32	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
12	G	G	G	G	G	G	G	G	G	G	47	49	G	G	G	G	G	G	G	G	G	G	G	G
13	G	G	G	G	30	G	143	G	G	G	G	G	G	G	42	52	52	G	G	G	G	68	G	G
14	G	G	G	G	50	G	G	G	G	G	G	G	G	G	G	44	49	G	G	G	G	G	G	G
15	G	G	25	G	G	G	30	G	47	45	G	G	G	G	G	G	G	G	G	G	G	G	G	G
16	G	G	G	G	G	G	G	G	G	44	44	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	G	G	G	G	G	G	G	G	G
18	G	G	G	G	G	G	48	G	45	G	44	G	G	G		120	122	G	G	G	G	G	G	G
19	25	24	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	G	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	47	G	G	G	G	G	G	G	45	G	G	G	G	G
21	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
22	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	28	26	G	G	G	G
23	G	24	28	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	48	G	G	G	G	G	G	G	G	G	G	G	28	G	G	G	G
26	G	G	G	G	G	G	G	G	G	46	54	G	G	G	G	G	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	44		G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	24	G	88	G	G	G	G	G	G	G	G	G	G	G	G	25	G	G	G	G
29	G	G	25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
30	G	G	147	G	G	G	G	G	G	G	G	G	G	G	G	G	79	G	G	G	G	G	G	G
31	G	G	G	G	G	G	G	G	G	G	G	G	G	50	G	G	G	G	G	G	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	G	44	G	G	G	G	G	G	G	G	G	G	G	G	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 WAKKANAI

MAR. 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				17	17	27	21	23	29	27	29	27	23	24	18	20	17	15	15	17	14	18
2	16	16	16	16	15	16	20	26	21	34	24	24	28	41	24	21	18	23	17	17	16	16	16	16
3	15	15	18	16	17	16	18	23	33	23	28	24	17	23	21	20	28	22	16	15	15	16	18	15
4	16	18	16	20	16	16	17	18	20	22	23	26	26	28	26	22	18	23	17	16	16	15	16	16
5	15	15	14	14	15	16	17	26	20	23	27	40	41	40	36	35	18	23	16	15	18	16	15	15
6	18	15	17	16	18	16	17	17	23	24	39	39	39	36	23	21	27	23	16	17	16	15	15	16
7	15	15	15	15	16	16	17	17	17	23	24	26	28	38	24	21	18	23	16	15	15	16	15	15
8	17	15	16	15	16	15	18	18	32	26	40	42	40	39	22	20	17	23	16	17	16	16	16	15
9	15	16	16	15	15	15	21	27	20	23	39	39	26	39	38	22	18	23	16	15	15	15	17	16
10	15	15	18	21	18	14	18	17	18	23	27	29	27	27	28	22	18	23	16	23	16	16	23	16
11	16	15	15	17	15	18	18	27	18	24	39	38	27	39	24	24	20	24	16	16	15	15	16	20
12	20	15	16	15	17	15	20	27	20	20	27	28	29	26	24	23	28	21	16	17	18	15	18	18
13	16	18	21	20	16	15	17	28	18	20	38	38	39	26	24	24	20	23	14	15	18	15	21	16
14	16	21	16	20	18	17	20	27	32	24	38	30	30	24	26	22	18	22	16	16	18	15	18	17
15	17	18	15	18	15	15	16	18	33	27	28	113	49	40	27	27	21	24	17	17	20	20	20	22
16	18	20	20	17	16	16	18	18	20	23	23	40	28	30	26	21	21	18	17	15	17	18	16	16
17	16	17	15	18	21	21	20	21	22	28	42	40	40	28	23	26	20	26	17	16	16	17	17	17
18	17	17	16	16	15		18		20	21	34	28	40	40		14	14	23	17	15	16	16	16	17
19	17	17	17	15	15	16	21	29	20	23	56	40	30	28	28	26	21	23	16	15	16	16	15	17
20	16	16	16	14	16	17	22	29	33	24	27	42	39	40	36	38	22	24	18	16	17	17	16	17
21	17	17	18	17	16	17	18	30	21	26	39	43	44	28	39	38	30	24	18	16	16	16	15	17
22	16	16	17	16	18	17	24	18	22	35	39	40	43	26	40	23	28	24	17	15	17	17	17	17
23	17	17	17	16	17	17	22	32	20	36	28	40	42	42	27	23	20	23	17	17	17	16	17	17
24	16	18	15	15	15	17	24	20	24	24	32	29	42	39	26	33	32	20	17	16	16	16	18	16
25	18	17	16	18	16	16	23	18	23	40	49	48	45	40	39	35	32	26	18	17	16	17	16	17
26	16	15	17	18	15	16	22	18	26	28	29	29	42	40	42	36	20	24	18	17	16	17	15	16
27	16	16	17	16	17	17	24	18	30		39	42	45	42	37	35	30	17	17	16	17	16	17	17
28	17	17	17	17	17	16	24	18	35	39	40	40	40	39	39	36	18	26	17	17	17	16	17	17
29	17	16	15	16	15	17	24	29	35	39	40	40	42	40	26	34	22	23	18	17	17	16	17	17
30	17	17	17	16	18	16	24	18	34	27	40	45	49	44	36	33	21	24	17	17	15	16	17	17
31	15	15	16	16	17	17	23	18	23	38	40	40	40	28	40	26	30	26	18	18	17	17	16	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	30	30	30	30	31	30	31	30	31	31	31	31	30	31	31	31	31	31	31	31	31	31
MED	16	16	16	16	16	16	20	20	22	24	38	40	40	39	26	24	20	23	17	16	16	16	16	17
U Q	17	17	17	18	17	17	23	27	32	28	40	40	42	40	37	34	28	24	17	17	17	17	17	17
L Q	16	15	16	15	15	16	18	18	20	23	27	29	28	28	24	22	18	23	16	15	16	16	16	16

HOURLY VALUES OF FOF2 AT AKITA

MAR. 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	80	63	24	42	37	61	73	114	137	138	151	145	141	144	141	136	133	131	118	90	90	86	84	80
2	74	67	68	68	54	51	76	109	146	141	137	141	146	144	137	135	140	128	108	90	90	88	80	67
3	74	54	54	54	54	52	71		131	140	144	145	145	137	138	136	137	130	108	90	90	79	52	52
4		64	66	63	51	51	70	109	132	131	138	146	145	137	137	156	138	132	111	100	90	87	80	67
5	52	79	65	66	67	66	83	98	131	138	142	138	142	142	138	136	131	129	111	89	86	65	52	64
6	52	67	64	55	51	56	80	90	120	124	136	143	138	140	138	135	134	127	110	90	87	52	62	62
7	46	66	55	60	57	54	63	105	118	120	130	138	138	137	137	137	130	120	100	87	80	73	74	68
8	64	50	51	52	54	52	66	108	125	130	140	140	138	136	133	137	133	121	106	87	78	66	53	52
9	61	52	67	52	52		62	103	137	137	140	139	140	140	131	136	131	118	111	87	87	86	64	86
10	85	73	62	68	N	60	80	110	131	140	153	144	152	144	138	137	137	131	117	90	87	86	66	67
11	64	73	66	63	62	58	78	102	124	138	189	144	139	143	141	137	134	131	118	90	86	84	58	48
12	71	78	66	63	53	55	73	111	131	140	140	144	145	146	140	132	131	130	111	C	80	66	51	63
13	74	61	74		62		79	106	121	131	138	141	138	135	131	130	132	120	110	92	87	84	79	67
14	67	63	69	72	63	52	74	108	127	131	138	140	138	136	135	131	128	117	111	86	84	80	80	84
15	79	78	78	58	62	54	72	110	120	135	136	138	137	133	128	126	122	120	111	87	87	86	86	84
16	79	62	68	51	56	62	70	101	118	134	140	140	134	130	122	120	118	118	101	86	80	72	84	79
17	63	63	56	52	51	54	78	104	118	129	141	131	133	131	126	121	118	108	102	87	84	56	74	57
18	72	52	52	56	53	31	61	67	65	81	78	73	71	59	A		52	68	59	46	63	67	64	62
19	64	52	60	57	56	63	74	88	112	128	122	120	126	133	132	131	120	111	101	86	86	87	82	79
20	68	67	54	60	62	63	86	103	112	122	133	137	136	131	131	128	121	120	107	86	81	87	86	86
21	80	77	74	70		52	86	106	120	121	127	133	135	132	126	130	126	117	107	86	81	80	79	78
22	67	53	64	68	51	54	76	102	118	120	133	135	134	131	126	120	117	118	104	80	75	80	79	78
23	77	77	76	71		66	86	109	131	132	136	135	136	137	133	131	136	130	117	91	86	87	79	73
24	84	65	80	84	55	57	85	127	141	136	132	136	139	139	138	136	131	132	111	90	91	86		84
25	77	76	68	68	58	66	103	107	126	137	141	138	136	140	136	132	130	120	110	106	89	82	86	65
26	76	79	83	76	66	67	86	110	122	138	141	145	141	136	135	130	120	111	113	90	87	83	83	67
27	86	84	67	68	69	56	85	110	131	135	138	137	138	138	139	136	130	118	118	90	87	86	86	79
28	67	67	80	72	66	62	77	109	112	126	134	134	137	136	136	127	130	126	127	111	81	84	82	81
29	67	63	64	74	69	64	88	106	126	131	135	127	132	135	129	131	119	126	121	87	86	87	86	86
30	75	71	74		72	80	85	108	118	126	131	131	137	129	124	126	120	117	111	90	90	84	68	66
31	66	71	74	66	63	70	85	108	118	121	131	128	137	138	132	131	126	126	111	90	90	80	83	69
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	29	28	29	31	30	31	31	31	31	31	31	30	30	31	31	31	30	31	31	30	31
MED	72	67	66	63	56	57	78	108	124	131	138	138	138	137	135	132	130	120	111	90	86	84	79	68
U Q	77	76	74	69	63	63	85	109	131	138	141	143	141	140	138	136	133	130	113	90	89	86	83	80
L Q	64	62	60	55	53	53	72	103	118	126	133	134	136	133	131	130	120	118	107	87	81	73	64	64

HOURLY VALUES OF FES AT AKITA

MAR. 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	G	G	G	G	G	G	G	G	G	G	G	G	65	68	67	40	38	30	G	G	G	G	38	G
2	G	G	G	G	G	G	G	G	G	G	G	G	44	50	G	G	G	31	25	G	G	G	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
4		G	G	G	G	G	G	G	G	G	42	52	G	G	42	G	39	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G	38	G	29	G	G	G	G	G
6	G	G	G	G	G	G	24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	32
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31	G	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	44	G	G	68	32	31	27	G	G	G
9	164	G	28	G	G		G	G	G	G	G	G	G	G	G	G	G	G	28	G	G	G	G	G
10	G	G	G	G	G	G	G	G	40	41	G	56	58	48	G	G	G	G	G	G	G	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	G	G	G	G	G
12	G	G	G	G	G	G	G	G	G	G	G	54	G	G	G	44	G	G	G	C	G	G	G	G
13	G	G	G		G		27	G	G	G	G	G	G	G	G	46	41	47	30	32	G	G	G	G
14	G	G	G	G	G	G	G	G	G	G	G	50	45	50	46	41	58	33	G	G	G	G	G	G
15	G	G	G	G	G	G	29	34	38	G	G	G	G	G	G	40	G	G	29	G	G	G	G	G
16	G	G	G	G	G	G	29	G	G	G	G	G	G	G	G	G	37	G	G	G	G	G	G	G
17	G	G	G	32	G	165	G	48	G	G	G	G	70	G	G	42	37	G	G	G	26	G	G	G
18	G	G	G	G	G	G	30	G	43	59	48	47	G	G	91		G	G	28	25	G	G	G	G
19	G	G	G	G	G	G	G	G	G	G	G	49	47	51	50	49	38	34	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	G	G	G	58	68	G	G	G	G	G	G	24	G	G
21	G	G	G	G		G	28	G	G	48	G	55	G	G	G	G	G	G	28	G	G	G	G	G
22	G	G	G	G	G	G	G	G	44	54	56	G	47	G	51	G	G	36	G	G	G	G	G	G
23	G	26	G	G		G	29	G	G	G	G	49	47	54	70	72	G	33	28	33	29	28	24	G
24	G	G	G	G	G	G	G	G	G	43	50	G	G	G	G	G	G	G	28	24	G	G		G
25	G	G	G	G	G	G	G	G	G	G	54	G	G	G	95	G	111	34	35	24	G	G	G	G
26	G	G	G	G	G	G	38	G	40	56	G	G	G	G	G	G	G	36	G	G	G	G	G	G
27	G	G	G	G	G	G	30	G	47	57	48	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	G	G	28	G	G	G	G	G	G	51	G	G	G	38	28	26	G	G	G	G
29	G	G	G	G	G	G	41	G	G	58	G	G	G	G	G	46	50	G	G	G	G	G	G	G
30	G	G	G		G	G	28	G	G	G	G	G	G	G	G	G	G	G	G	27	G	G	G	G
31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	25	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	31	31	29	29	29	31	31	31	31	31	31	31	31	31	30	31	31	31	30	31	31	30	31
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	28	G	G	41	G	47	44	48	46	40	38	33	28	24	G	G	G	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

HOURLY VALUES OF FMIN AT AKITA

MAR. 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	20	18				18	18	28	21	17	22	24	20	27	23	20	17	17	16	18	16	17	18	16
2	18	17	16	17	18	17	18	26	17	18	22	23	23	21	18	17	18	16	16	17	18	18	18	17
3	17	15	16	15	15	18	17		16	20	21	22	39	23	21		18	22	16	18	17	18	16	18
4		16	15	15	16	17	17	20	18	18	20	23	26	24	27	18	17	27	16	18	18	18	18	17
5	20	15	15	15	16	20	17	28	17	18	21	20	26	29	21	17	17	26	17	17	18	17	16	20
6	17	15	15	16	18	16	20	28	21	22	38	30	22	28	27	21	20	26	17	18	20	17	.18	16
7	20	18	18	18	17	18	18	16	17	21	21	24	21	20	23	21	18	17	17	17	17	16	20	18
8	15	18	20	20	21	18	18	18	17		38	31	26	23	23	20	17	16	15	17	18	18	20	20
9	20	20	17	20	18		20	17	17	21	22	26	44	22	20	17	18	23	20	18	17	16	20	18
10	17	15	16	15	15	17	20	17	20	20	23	23	26	30	22	21	18	24	18	18	18	16	18	18
11	17	17	18	18	18	20	20	18	17	20	23	26	28	26	27	21	21	26	20	18	17	17	17	18
12	16	18	16	16	17	18	20	17	17	18	20	28	21	22	18	18	17	17	17	C	20	18	18	18
13	16	18	16		17		18	18	16	18	20	22		24	23	22	17	17	17	17	16	18	17	18
14	18	17	20	17	17	16	20	17	17	17	21	27	24	23	21	21	16	15	16	17	16	16	17	18
15	17	16	16	16	16	20	21	17	17	17	22	74	49		28	20	17	20	16	17	16	18	18	17
16	18	18	17	17	17	16	16	17	18	17	18	23	24	27	28	22	17	24	16	17	18	17	18	16
17	17	15	15	15	15	17	21	16	16	20	20	22	30	24	22	17	18	24	18	17	18	20	18	17
18	16	17	18	18	18		16	16	17	20	22	23	28	29	21		18	21	17	17	16	17	17	16
19	16	16	18	16	16	17	20	17	16	18	21	23	26	27	22	16	17	16	18	17	18	17	18	17
20	18	16	16	17	17	17	16	17	17	20	21	43	26	22	22	18	18	16	17	17	15	16	18	17
21	17	18	17	17		17	22	17	15	20	22	23	32	24	21	20	20	16	16	16	17	17	17	16
22	17		18	18	18	17	22	17	20	18	20	22	23	30	20	20	16	17	17	18	18	18	17	18
23	17	16	16	17		16	22	18	17	20	21	20	22	24	16	15	18	17	17	17	20	20	18	20
24	17	15	15	15	16	18	22	17	18	20	22	23	24		23	20	16	16	17	17	20	18		18
25	18	15	16	15	16	17	17	17	18		23	23	43	43	28	23	21	18	17	17	17	17	18	18
26	17	16	15	15	15	17	17	18	17	20	24	29	24	23	20	22	16	17	17	16	18	17	18	17
27	17	18	17	17	17	17	17	16	16	20	23	29	27	26	26	21	18	17	18	17	18	17	17	18
28	17	20	17	17	18	16	18	17	16	18	24	22	23	36	24	21	17	17	16	17	17	17	17	17
29	18	17	16	16	16	17	23	16	17	21	22	40	40	26	18	21	16	16	20	16	17	17	17	18
30	16	16	17		18	16	18	17	20	21	20	21	27	24	21	18	18	17	18	16	21	18	17	17
31	18	15	16	16	15	16	17	16	21	14	27	26	23	26	22	22	18	18	20	16	17	17	16	17
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	30	30	30	28	28	28	31	30	31	29	31	31	30	29	31	29	31	31	31	30	31	31	30	31
MED	17	16	16	16	17	17	18	17	17	20	22	23	26	24	22	20	18	17	17	17	18	17	18	18
U Q	18	18	17	17	18	18	20	18	18	20	23	28	28	27	24	21	18	23	18	18	18	18	18	18
L Q	17	15	16	15	16	16	17	17	17	18	21	22	23	23	21	18	17	16	16	17	17	17	17	17

HOURLY VALUES OF FOF2 AT KOKUBUNJI

MAR. 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	85	52	49	50	44	52	86	122	136	140	145	148	147	141	143	137	134	133	123	104	100	98	86	86
2	81	71	63	68	58	49	73	118	138	140	137	141	147	144	137	140	135	132	112	104	104	96	94	82
3	79	71	67	73	68	63	74	114	130	137	142	144	146	145	138	136	140	136	123	100	94	83	77	71
4	74	68	68	62	56	58	72	114	130	131	135	141	142	135	135	141	137	136	116	102	103	92	82	79
5	72	77	67	61	70	66	78	99	125	140	138	137	137	140	137	138	134	131	119	98	85	82	82	83
6	73	70	65	55	58	55	78	104	117	128	133	145	145	145	140	138	140	137	119	102	81	73	66	73
7	69	67	66	61	51	50	61	105	110	128	128	136	146	142	140	137	138	132	107	88	86	87	82	80
8	81	67	60	49	57	58	67	107	125	131	134	136	140	138	137	138	131	122	108	87	87	74	76	75
9	70	60	77	60	56	51	63	104	132	141	137	134	138	136	131	129	131	122	102	102	96	90	81	92
10	86	67	69	57	73	67	80	107	125	138	142	146	142	141	141	141	137	134	123	105	97	97	86	79
11	78	80	69	68	65	60	74	105	130	136	147	142	141	140	138	138	138	137	123	97	86	90	82	68
12	76	80	72	67	60	58	67	113	128	140	141	147	146	145	148	137	135	130	116	90	87	86	75	83
13	77	82	73	73	57	60	80	106	124	131	142	141	138	138	134	135	133	128	112	101	92	87	86	81
14	70	80	82	74	48	48	68	104	125	127	136	135	141	140	138	135	130	126	108	97	87	86	90	86
15	84	91	80	74	58	51	64	105	123	131	135	135	136	135	136	132	124	118	116	101	87	92	90	86
16	78	76	74	56	44	57	65	101	120	131	137	138	134	130	124	120	118	120	108	97	83	80	86	78
17	63	58	57	54	55	58	81	110	121	135	139	136	131	127	127	128	120	119	111	98	87	87	85	91
18	82	76	67	66	60	45	63	66	66	71	72	61	A	54	59	67	73	95	84	69	74	83	76	62
19	58	61	61	59	58	54	77	98	114	125	127	134	132	135	137	131	126	133	111	96	85	91	90	86
20	82	85	71	68	59	62	82	107	114	123	131	137	137	138	135	131	127	125	113	90	90	92	90	92
21	85	80	80	75	73	61	83	108	117	121	128	131	133	140	135	139	131	121	111	101	90	84	92	82
22	76	57	76	76	53	55	83	114	122	128	133	141	139	131	130	123	121	125	111	84	80	82	82	77
23	76	71	74	73	65	60	83	112	131	133	133	136	135	140	137	136	145	137	122	111	101	85	87	81
24	83	82	82	84	70	64	90	126	136	130	125	138	142	144	140	136	133	137	127	103	88	86	88	87
25	82	82	77	76	76	71	101	120	127	136	144	144	141	141	143	138	134	127	121	111	101	92	92	90
26	81	84	88	88	66	64	84	107	124	140	144	142	141	138	135	133	128	118	111	98	88	89	89	92
27	92	90	68	63	73	70	91	112	136	136	130	137	144	141	141	135	136	128	124	108	96	83	90	86
28	86	77	81	80	63	57	77	111	112	121	130	137	136	138	135	131	131	131	126	105	86	84	92	82
29	84	84	71	74	73	71	87	106	122	128	125	130	127	131	132	135	126	127	124	101	87	91	87	90
30	78	77	68	76	73	73	90	112	116	125	127	136	133	135	133	131	125	126	126	104	88	82	81	81
31	77	78	80	82	72	72	98	108	116	116	127	131	135	137	137	132	132	132	128	108	90	80	85	84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31
MED	78	77	71	68	60	58	78	107	124	131	135	137	140	138	137	135	132	128	116	101	88	86	86	82
U Q	83	82	77	75	70	64	84	113	130	137	141	142	142	141	140	138	136	133	123	104	96	91	90	86
L Q	74	67	67	60	56	54	68	105	117	127	128	135	135	135	134	131	126	122	111	97	86	83	82	79

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FES AT KOKUBUNJI

MAR. 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	G	G	G	G	G	G	G	G	G	G	43	G	48	50	58	48	G	G	24	26	27	G	G	25
2	G	35	29	26	24	23	G	G	G	G	G	G	G	G	G	59	46	G	29	24	G	G	G	G
3	G	29	G	G	G	G	G	48	G	G	G	G	G	G	44	48	39	G	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	49	G	G	G	44	37	G	G	G	G	G	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	58	G	G	G	G	G	G	43	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	33	27	G	G	G	G	G
8	G	G	G	G	G	G	G	40	G	G	G	G	45	G	G	G	42	31	25	G	G	G	G	G
9	G	G	G	43	G	G	G	G	G	G	G	G	G	54	44	G	37	G	G	G	G	G	G	G
10	G	G	G	G	G	31	G	G	G	G	G	G	48	50	49	50	46	40	38	28	G	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
12	G	G	G	G	G	G	G	G	G	G	54	G	G	48	G	43	41	G	25	G	G	G	G	G
13	G	G	G	G	G	G	27	G	G	45	G	G	G	45	48	45	48	48	36	31	41	33	G	G
14	G	G	G	G	G	G	27	G	G	G	G	G	G	G	49	46	42	36	26	G	G	G	G	G
15	G	G	G	G	G	G	G	G	40	43	G	G	G	G	47	42	39	G	G	24	G	G	G	G
16	G	G	G	G	G	G	30	42	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	46	46	47	G	G	48	47	35	47	G	G	G	G	G
18	G	G	G	G	G	G	27	G	G	G	51	G	61	G	44	44	43	36	G	G	G	G	G	G
19	G	G	G	G	G	G	G	G	G	46	49	52	53	G	49	51	56	46	31	26	31	G	G	G
20	G	G	G	G	G	G	56	54	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
21	G	G	G	G	G	G	G	49	G	43	G	48	G	G	44	43	46	40	G	G	G	25	G	G
22	G	G	G	G	G	G	G	G	G	42	50	68	51	80	62	48	44	50	58	52	G	G	G	G
23	G	G	G	G	G	G	28	G	G	G	G	50	50	49	49	51	40	32	31	29	38	28	G	G
24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	33	29	25	G	G	G
25	G	G	G	G	G	G	G	N	G	G	G	46	G	G	G	G	G	33	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	43	45	G	G	G	61	52	50	56	56	28	G	G	G	G
27	G	G	G	G	G	G	G	G	44	51	49	G	51	48	47	G	G	G	31	32	G	G	G	G
28	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G	G	38	34	G	G	G	G	G
29	G	G	G	G	G	G	G	G	G	G	G	G	G	G	48	G	G	G	G	G	G	G	G	G
30	G	G	G	G	27	G	G	G	G	G	G	46	G	G	G	42	G	G	28	G	G	G	G	G
31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	25	G	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	43	42	37	G	25	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	G	43	46	47	45	48	48	44	38	31	26	G	G	G	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 KOKUBUNJI

MAR. 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	15	15	15			15	17	27	16	17	18	26	22	28	20	20	18	15	16	15	16	16	15	15
2	15	14	15	15	15	16	16	15	16	18	21	20	42	30	38	16	15	14	14	16	15	15	15	15
3	15	14	16	14	15	15	17	28	16	18	20	26	39	21	21	20	16	15	16	16	14	14	15	15
4	15	14	14	14	14	15	16	15	16	17	20	28	32	23	17	20	17	15	15	14	15	15	15	15
5	15	15	15	14	15	15	17	15	15	20	18	22	39	24	23	20	15	15	15	15	14	15	15	15
6	15	14	15	14	14	15	18	15	18	21	33	29	40	30	33	27	16	16	16	16	15	15	15	15
7	15	15	14	15	15	15	17	15	16	18	20	21	30	21	16	14	14	18	16	14	15	16	15	14
8	15	15	15	15	15	15	17	15	16	18	39	44	32	42	26	18	16	14	14	14	15	15	15	15
9	15	14	15	14	15	15	18	15	16	20	24	28	40	26	30	21	14	14	15	15	15	15	15	16
10	15	14	14	15	15	15	17	15	16	17	39	22	34	34	33	17	15	14	14	15	15	15	15	15
11	15	15	15	14	15	15	20	15	15	18	23	21	30	42	39	35	16	15	15	16	15	15	15	15
12	15	15	14	15	15	15	20	15	15	16	18	23	43	34	23	18	14	15	15	15	15	15	15	15
13	15	15	14	15	15	15	18	16	15	17	17	18	39	34	21	18	16	14	15	15	15	15	16	15
14	16	15	14	14	14	15	16	15	16	18	21	27	30	28	23	18	17	15	16	15	15	15	15	15
15	15	15	14	14	15	15	15	15	15	20	20	80	49	42	28	22	15	14	17	15	15	15	15	15
16	15	14	14	14	15	15	15	15	17	18	20	24	22	32	21	17	15	15	17	15	15	15	15	15
17	15	15	15	14	16	15	21	15	16	18	30	21	22	18	18	18	15	15	14	15	15	15	15	15
18	15	15	14	14	15		15	15	15	16	20	21	34	30	18	21	16	21	17	15	15	15	15	15
19	15	15	14	15	14	15	21	15	16	18	18	23	21	21	27	18	18	15	14	15	15	17	15	15
20	15	15	15	14	15	16	15	14	17	20	21	39	40	40	20	18	16	15	17	15	15	15	15	15
21	15	14	15	15	14	15	20	15	16	18	23	26	34	28	21	18	16	15	17	15	15	15	15	14
22	15		15	15	14	16	21	15	16	20	23	22	28	20	18	20	15	15	14	15	15	15	15	15
23	15	15	14	14	15	14	16	15	16	17	22	23	28	24	26	20	16	14	15	14	14	15	15	15
24	15	15	14	14	14	15	16	15	16	21	29	29	42	30	21	17	15	14	15	14	15	15	15	14
25	16	15	15	15	15	15	16	16	17	21	31	44	44	42	22	17	16	14	18	15	14	15	15	15
26	15	15	14	14	14	15	23	15	16	21	23	41	44	26	20	16	17	16	15	14	15	15	15	15
27	15	14	14	15	15	15	17	15	16	18	27	33	34	33	28	17	16	14	15	15	15	15	15	15
28	15	14	15	15	15	15	15	16	18	17	21	21	42	21	18	21	16	15	14	15	15	15	15	15
29	15	14	15	14	15	14	18	15	17	23	33	33	32	32	27	22	14	14	18	15	15	15	15	15
30	15	14	15	15	15	15	15	15	16	18	22	32	34	26	32	20	16	15	15	15	15	15	15	15
31	15	14	15	15	15	15	16	15	16	18	20	41	32	41	38	18	20	16	18	15	15	15	15	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	30	31	30	30	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	15	15	15	14	15	15	17	15	16	18	21	26	34	30	23	18	16	15	15	15	15	15	15	15
U Q	15	15	15	15	15	15	18	15	16	20	27	33	40	34	28	20	16	15	17	15	15	15	15	15
L Q	15	14	14	14	14	15	16	15	16	17	20	22	30	24	20	17	15	14	15	15	15	15	15	15

HOURLY VALUES OF FOF2 AT YAMAGAWA

MAR. 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	110	87	61	60	64	66	77	112	137	143	162	167	164	162	161	146	145	144	139	131	130	140	112	105
2	110	107	88	90	78	63	66	90	122	134	138	143	152	151	147	146	147	148	145	137	130	128	110	101
3	88	84	81		74		64	87	108	128	144	148	146	151	146	145	144	144	134	110	110	108	88	86
4	87	86	80	72	60	52	62	88	118	128	146	146	151	145	143	142	138	144	137	127	130	136	121	110
5	145	110	89	86	88	82	66	86	107	138	146	146	145	148	142	137	138	139	137	118	105	108	88	109
6		85	84		66	63		84	110	129	144	146	146	144	142	141	146	139	136	127	111	100		
7	77	82	83	70	58	53	54	82		126	131	141	146	161	160	162	165	163	154	146	141	144	130	110
8	112	82	80		53	52	61	87	118	117	131	144	145	146	145	146	134	128	125	111	108	100	87	88
9	84	87	106		57	53	48		110	134	140	141	138	146	139	133	128	127	123	118	107		86	86
10	86	66	66	58		44		82	111	131	145	154	158	154	145	147	144	144	145	136	111	117	107	90
11	87	86	80	77	66	62	52	88	109	138	141	142	142	146	145	151	147	148	134		106		90	
12	84	90	84	77	63		54		115	135	146	157	157	157	158	160	153	145	137	131	109	110	89	87
13	87	87	86	78	60	54				131	140	142	137	140	142	146	137	137	132	122	108	106	90	88
14	86	85	84	80	54	49	52		110	123	130	137	144	153	150	142	137	137	127	121	121	110	125	117
15	108	108	106	106	74	57	61	86	122	126	131	141	146	143	146	141	133	130	130	126	107	110	129	90
16	81	78		62	44	60		87	110	126	128	137	138	135	128	129	128	129	130	111			97	81
17	62	59	64	61	54	61	78	102	111	131	138	137	135	140	141	141	134	137	136	136	134	110		110
18	111	85		79	73																			
19															144									
20		85					107								145									
21	66							112		125										138				
22																89							88	83
23									136			142												
24									108			144	157	158	148	143	145	145	144	123	108	105	105	105
25		90	83	84	78		86	106	122	131	137	151	153	162	166	162	160	158	145	152	146	110	108	118
26	107	103		106	86	62	66	88	126	141	134	147	151	153	157	145	143	135	128	123	111	108	111	106
27	108	98		68		66	78	103	126	132	122	139	153	155	153	146	140	138	138	133	110	108	106	108
28	109	87	86	85	74	60	54	87	111		121	137	146	140	142	144	142	140	136	126	110		107	105
29	85			84	80	66	76		111	118	122	126	135	145	145	145	141	135	134	124	104	93	106	107
30				80	72	67	79	96	112	112	121	138	141	143	143	136	132	130	140	131	108		88	97
31	86	90	87	87		66	79	98	111	108	125	137	142	133	146	141	137	144	145	142	111	88	103	100
	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	24	19	21	22	21	21	20	24	24	24	26	25	25	27	26	25	25	25	25	24	20	24	24
MED	87	86	84	79	66	61	66	88	111	130	138	142	146	146	145	144	141	139	136	127	110	109	106	103
U Q	109	90	87	85	74	66	78	100	122	134	144	146	152	154	150	146	145	144	142	136	125	113	110	108
L Q	84	84	80	69	58	53	54	86	110	125	129	138	141	143	142	141	135	135	131	121	108	105	88	88

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HOURLY VALUES OF FES AT YAMAGAWA

MAR. 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	G	G	G	55	38	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	45	G	G	G	G	G	G	G
3	29	24	38		G		G	G	G	G	42	G	G	G	G	G	G	G	G	G	G	26	G	G
4	G	G	G	G	G	G	G	G	G	G	44	G	G	52	G	44	G	G	31	G	G	G	G	G
5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	40	G	G	G	G	G	G	G
6		24	G		G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		
7	G	G	G	G	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
8	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
9	G	30	27		24	32	G		G	G	G	G	G	G	G	G	G	G	G	G	G		G	G
10	G	G	G	G		G		G	G	G	G	G	G	G	48	G	44	37	G	24	G	G	G	G
11	G	G	G	G	G	G	G	32	G	G	G	G	G	50	48	G	G	G	G		G	G	G	
12	G	G	G	G	G		G		G	G	50	G	G	62	G	54	41	G	30	G	G	G	G	G
13	G	G	G	G	G	G				G	G	G	G	46	G	G	41	38	47	30	G	35	G	33
14	26	28	30	24	26	26	G		G	G	G	G	G	G	49	48	50	43	32	24	G	G	G	G
15	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	42	58	32	24	G	G	G	G
16	G	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	31	G	G	G	50	G	G	55	47	46	G	G	30	24	25		G
18	G	G		G	G																			
19															G									
20		G					28								G									
21	G							40		43										34				
22																G							G	G
23									G			G												
24									41			G	48	48	80	G	G	G	G	G	G	G	G	G
25		G	G	G	G		G	52	G	G	G	G	G	G	G	G	G	G	G	27	43	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	47	G	G	G	G
27	G	G		G		G	G	G	G	G	50	50	G	52	73	G	G	G	G	G	40	G	G	G
28	G	G	G	G	G	G	G	G	G		G	G	G	G	G	54	46	48	81	36	G		G	G
29	G			G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	24	25	57	29	G
30				G	G	G	24	G	G	G	G	G	G	G	G	G	G	G	G	28	G		G	G
31	G	G	G	G		G	G	G	G	G	G	G	G	G	G	G	G	G	33	G	29	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	23	24	20	21	22	21	21	20	24	24	24	26	25	25	27	26	25	25	25	25	24	21	24	24
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	G	G	G	G	23	G	G	43	19	31	27	G	G	G	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

MAR. 1992

LAT. 31.2N LON. 130.6E 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	16	15	15	15	15	15		17		39	14	41	42		38	18	16	21	15	15	16	15	15
2	15	15	15	15	15	15	15	15		18		41		43	39	23	20	15	23	15	15	15	15	15
3	15	15	15		15		15	15	18	18	24	40	43	42				17	15	15	15	15	15	15
4	15	15	15	15	15	15	15	23	16	22	23	30	43	27	35	21	17		15	15		15	15	15
5		15	15	15	15	15	15	22		22	23				39		24	16	21	15	15	15	15	15
6		15	15		15	15		16	17	23	38	40	42	42	38	38	22	16	20	15	15	15		
7	15	15	15	15	15	15	15	21		17	24	39		44	36	26	21	14	20			15	15	15
8	15	15	15		15	15	15	15	15	18		40	44	44			18	15		15	15	15	15	15
9	15	15	15		15	15	15		16			40	42	43	42	38	22	17	15	15	15		15	15
10	15	15	15	15		15		23	15	20	39	40	40	43	36	22	18	16	16	15	15	15	15	15
11	15	15	15	15	15	15	15	15	16				35	39	26	24	23	16	15		15		15	
12	15	15	15	15	15		15		15	20	18	42	23	29		23	16	15	15		15	15	15	15
13	15	15	15	15	15	15				17	20	42		40		26	21	16	15	16	16	15	15	15
14	17	15	15	15	15	15	15		15	18	38		44		38	35	21	16	15	15		15		
15	15	15	15	15	15	15	15	16	17	20	24	70		45	35	38	20	15	15	15		15	15	15
16	15	15		15	15	15		18		17	38	28		40	24	24	18	18	22	15			15	15
17	15	15	15	15	15	15	15	17	16	24	21	35	43	44	36	34	22		22	15	14	15		15
18	16	15		15	15																			
19															34									
20		15					17								20									
21	15							22		26										15				
22																15							15	15
23									40			43												
24									26			42	33	30	33	24				15	15		15	15
25		15	15	15	15		15	15	20	22		43	44	45	42	39	35	17	15	15	15	15	15	15
26	15	15		15	15	15	15	15	18	22		45	46	44			23		16	15		15	15	15
27	15	15		15		15	15	26	18	21	35	38		35	34	38		17	16		15	15	15	15
28		15	15	15	15	15	15	15	17		40	44	43	43		38	22	17	15	15	15		15	15
29	15			15	15	15	16		16	22	36	43	42	42	40	36	22	17	15	15	15	15	15	16
30				15	15	15	16	16	17	20	38	43	43	44	41	36	18	16	18	15	15		15	15
31	15	15	15	15		16	15	15	16	22	35	41	42		39	38	21	17	16		15	15	15	16
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	21	24	19	21	22	21	21	19	21	21	18	23	18	22	20	22	22	21	23	21	19	19	23	23
MED	15	15	15	15	15	15	15	16	17	20	35	41	42	42	36	34	21	16	16	15	15	15	15	15
U Q	15	15	15	15	15	15	15	22	18	22	38	43	43	44	39	38	22	17	20	15	15	15	15	15
L Q	15	15	15	15	15	15	15	15	16	18	23	39	41	40	34	24	18	15	15	15	15	15	15	15

COMMUNICATIONS RESEARCH LABORATORY, JAPAN

HOURLY VALUES OF FOF2 AT OKINAWA

MAR. 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	170	127	76	66	67	76	85	131	104	147	159	161	158	163	156	151	148	153	145	146	160	171	175	161
2	139	130	110	111	100	53	54	85	111	125	142	146	150	160	159	146	159	160	176	146	187	185	171	146
3	130	126	110	108	86	66	63	87	106	120	145	146	147	156	152	146	146	152	146	147	146	145	145	146
4	130	128	112	100	86	66	66	86	108	134	145	145	148	146	146	146	125	145	146	146	163	197	199	188
5	170	173	145	130	111	104	66	84	107	138	153	146	146	150	157		160	146	144	146	186	189	144	182
6	158	145	145	136	100	84	84	87	108	121	146	148	146	146	147	146	160	160	160	146	162	145	146	109
7	110	110	110	76	63	44	43	66	108	111	132	146	146	146	N	170	192	190	162	166	176	175	188	143
8	145	142	138	110	86	79	66	86	111	117	133	146	144	146	150	146	131	146	112	130	127	108	127	145
9	126	138	108	110	66	31	43	77	110	126	132	144	140	146	145	146	138	144	131	132	146	108	108	107
10	111	78	67	66	56	34	34	65	108	111	146	136	159	153	146	160	146	161	169	177	179	170	171	159
11	144	110	110	106	86	64	54	85	111	137	140	136	131	147	157	160	163		160	146	159	145	146	107
12	111	110	110	86	63	54		86	111	131	146	156	150	149	157	162	176	174	162	162	170	146	145	131
13	130	110	110	86	66	32	37	84	110	126	138	133	136	146	152	160	145	146	146	146	145	111	110	111
14	108	86	88	84	52	34	37	66	107	123	131	145	150	164	159	163	160	162	160	146	160	190	198	153
15	170	161	143	128	86	66	66	86	107	123	135	120	146	152	131	158	153	158	146	170	168	170	168	146
16	108	108	87	86	43	37		80	111	128	131	146	146	146	147	150	146	146	145	146	146	111	131	108
17	87	78	66	68	56	63	81	90	111	131	142	132	146	146	146	147	146	156	157	146	171	168	170	168
18	177	136	130	110	85	36	35	84	106	112	138	130	130	135	144	143	146	145	145	146	145	145	130	110
19	110	86	86	86	64	54	37	86	108	111	124	141	148	146	159	146	146	160	160	146	184	175	186	170
20	170	175	144	110	85	47	47	84	108	111	131	133	147	148	N	166	164	163	169	168	176	144	187	158
21	146	146	130	118	86	54	37	77	104	111	133	132	147	159	162	145	171	175	170	165	169	146	146	N
22	122	62	84	86	85	54	77	109	110	112	146	146	158	146	158	161	160	147	144	131	146	110	127	110
23	110	109	86	86	82	54	54	86	110	122	121	131	145	147	157	146	146	147	146	146	131	111	106	111
24	111	110	109	86	83	66	54	85	108	108	118	145	160	163	160	161	168	168	160	146	146	146	146	146
25	146	130	111	88	87	86	84	110	105	127	131	146	156	163	171	161	189	183	170	189	187	147	158	168
26	170	146	145	131	86	54	37	85	124	145	134	147	159	176	179	176	170	152	162	161	157	N	169	164
27	131	127	110	82	66	63	66	87	110	131	119	143	156	148	169	160	160	164	162	159	N	N	170	157
28	146	130	110	110	86	35	37	85	110	98	111	138	145	146	146	146	150	146	146	145	104	159	168	146
29	125	110	110	108	87	66	64	87	103	111	117	132	134	122	163	164	163	146	146	146	146	108	111	110
30	110	86	82	86	64	54	62	88	110	110	111	132	146	146	146	146	144	146	146	146	119	110	109	111
31	110	110	110	88	66	52	53	84	105	110	112	146	144	146	158	146	156	162	168	146	122	124	146	108
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	29	31	31	31	31	31	31	31	29	30	31	30	31	31	30	29	31	30
MED	130	126	110	88	85	54	54	85	108	122	133	145	146	147	157	150	156	154	157	146	160	146	146	146
U Q	146	138	130	110	86	66	66	87	110	131	145	146	150	156	159	161	163	162	162	161	171	170	171	159
L Q	110	109	87	86	64	44	37	84	107	111	124	133	145	146	146	146	146	146	146	146	146	111	130	110

HOURLY VALUES OF FES AT OKINAWA

MAR. 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	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
3	40	30	25	G	30	G	G	G	G	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	51	G	G	37	G	G	G	G	G	G
5	G	G	G	G	G	G	G	38	44	G	G	G	G	G	G		G	G	G	G	G	24	G	28
6	G	G	G	26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
9	G	G	G	37	24	26	G	G	G	G	G	G	G	G	G	G	45	40	G	G	G	G	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	50	G	46	40	G	G	G	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	50	50	G	G		G	G	G	G	G	G
12	G	G	G	G	G	G	G	G	35	41	G	G	G	G	G	49	G	G	34	G	24	G	G	G
13	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	37	33	28	G	G	G	G
14	G	G	G	G	G	32	30	31	G	G	G	G	G	G	55	53	51	46	37	G	G	G	G	G
15	G	G	G	G	G	G	26	34	42	G	G	G	G	G	G	G	G	61	36	G	24	G	G	G
16	G	G	G	G	G	G	G	31	G	44	G	G	G	G	G	G	G	G	G	25	G	G	G	G
17	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	G	G	G	G	G	G
18	G	G	G	G	G	G	G	G	G	G	49	G	G	G	52	G	G	G	G	26	G	G	G	G
19	30	G	G	G	G	G	30	G	G	G	G	G	G	G	G	G	44	38	G	G	G	G	G	G
20	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	49	49	45	40	38	24	G	G	G
21	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
22	G	G	59	24	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	32	G	G	G	G	G	G	G	64	G	G	G	G	G	G	25	29	G	G	G
24	G	G	G	G	G	G	G	G	G	42	G	G	G	G	G	48	G	G	G	40	G	G	G	G
25	G	G	G	G	G	G	G	31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	47	34	G	G	G	G
27	G	G	G	G	G	G	G	G	G	41	G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	34	29	34	G	G	G
29	G	G	G	G	G	G	G	G	41	G	G	G	G	G	52	G	G	G	31	G	G	G	G	G
30	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	26	29	G	G	G
31	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	42	54	34	G	G	G
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	31	30	31	31	31	31	31	31
MED	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
U Q	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	38	33	26	G	G	G	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 OKINAWA

MAR. 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	16	16	16	16	21	16	16	23	30	22	29	32	46	48	46	30	42	32	24	18	18	16	16	17
2	16	17	16	16	18	18	17	24	29	21	23	30	45	46	30	44	35	20	23	15	16	16	15	15
3	15	15	16	15	15	15	15	22	18	24	29	32	46	46	30	42	30	23	23	16	16	15	16	16
4	16	15	15	15	15	16	16	23	18	35	42	31	30	46	29	26	29	18	24	16	16	16	16	16
5	15	15	16	16	15	15	16	16	18	35	24	29	30	46	45		23	20	22	15	15	17	16	16
6	16	16	15	16	15	15	15	22	21	38	30	44	45	46	45	30	27	21	23	16	16	16	15	16
7	15	15	15	15	15	15	17	23	16	21	40	44	32	32	44	31	34	30	23	16	16	16	16	15
8	15	16	16	15	15	15	16	28	18	35	46	46	46	46	45	46	30	22	23	16	17	16	16	16
9	16	16	15	15	15	15	15	16	30	24	28	30	46	45	46	45	32	23	26	16	16	15	15	16
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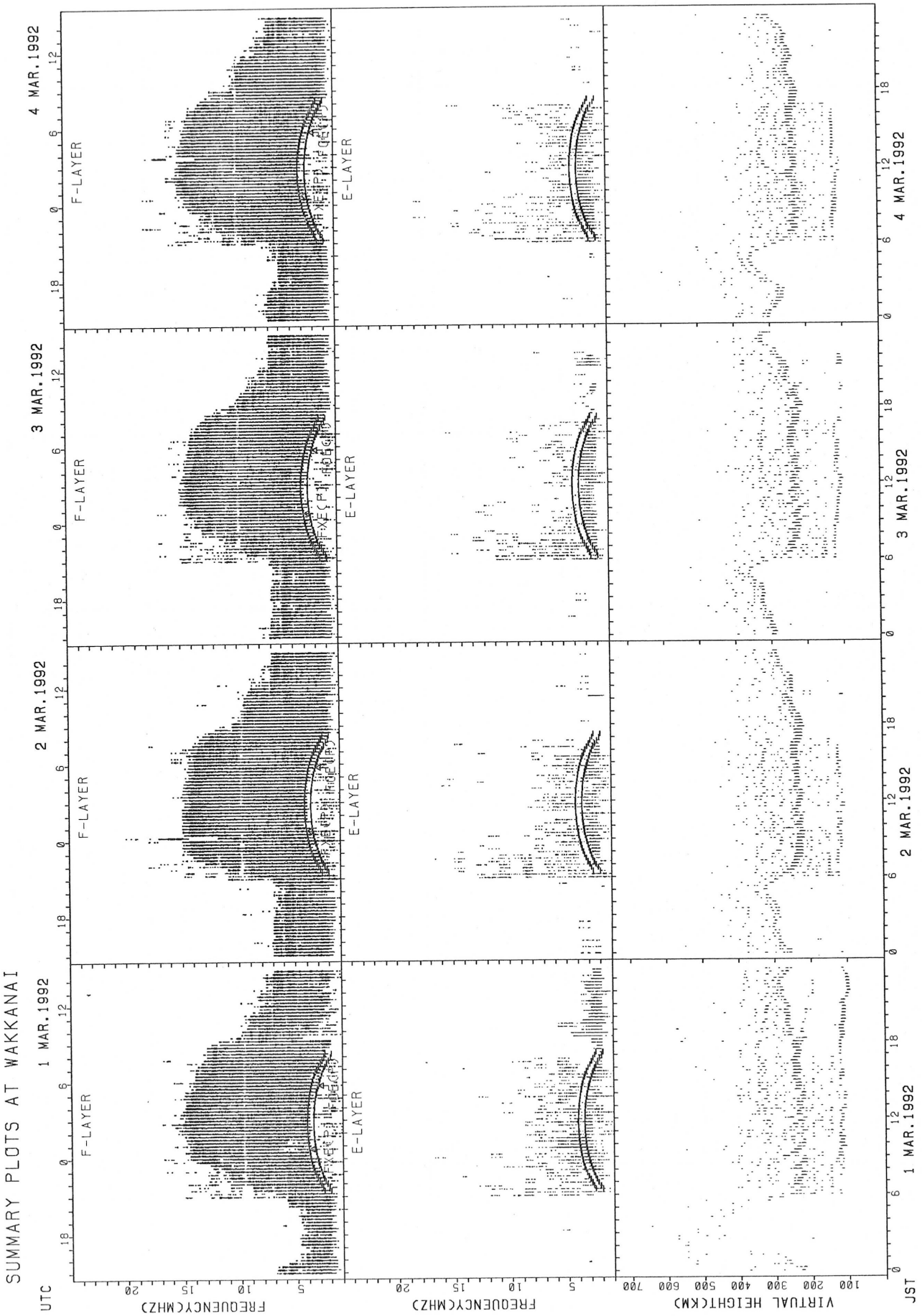
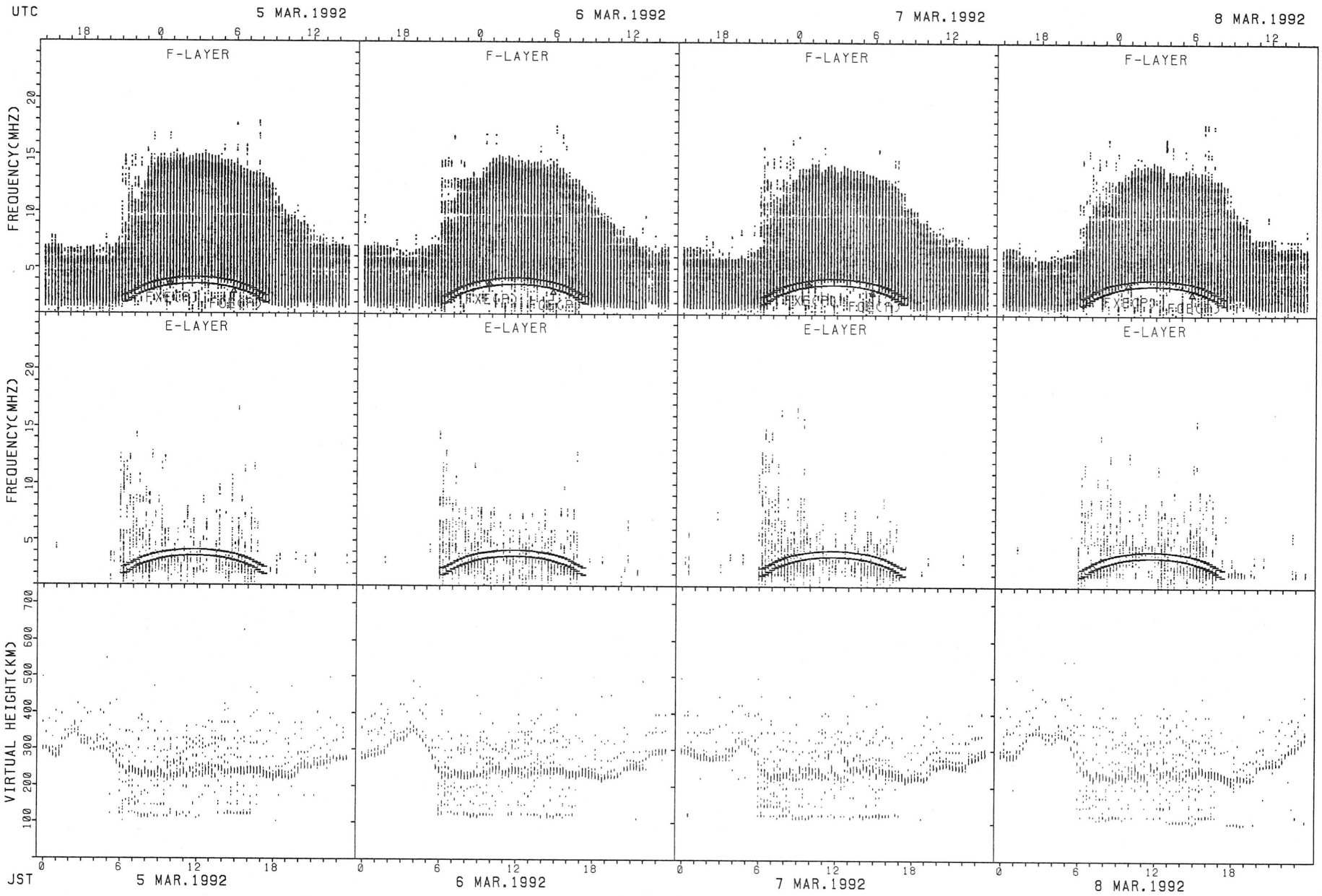
L Q	15	15	15	15	15	15	16	18	17	22	29	32	45	46	33	30	24	20	16	16	16	16	16	16

COMMUNICATIONS RESEARCH LABORATORY, JAPAN


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

SUMMARY PLOTS AT WAKKANAI



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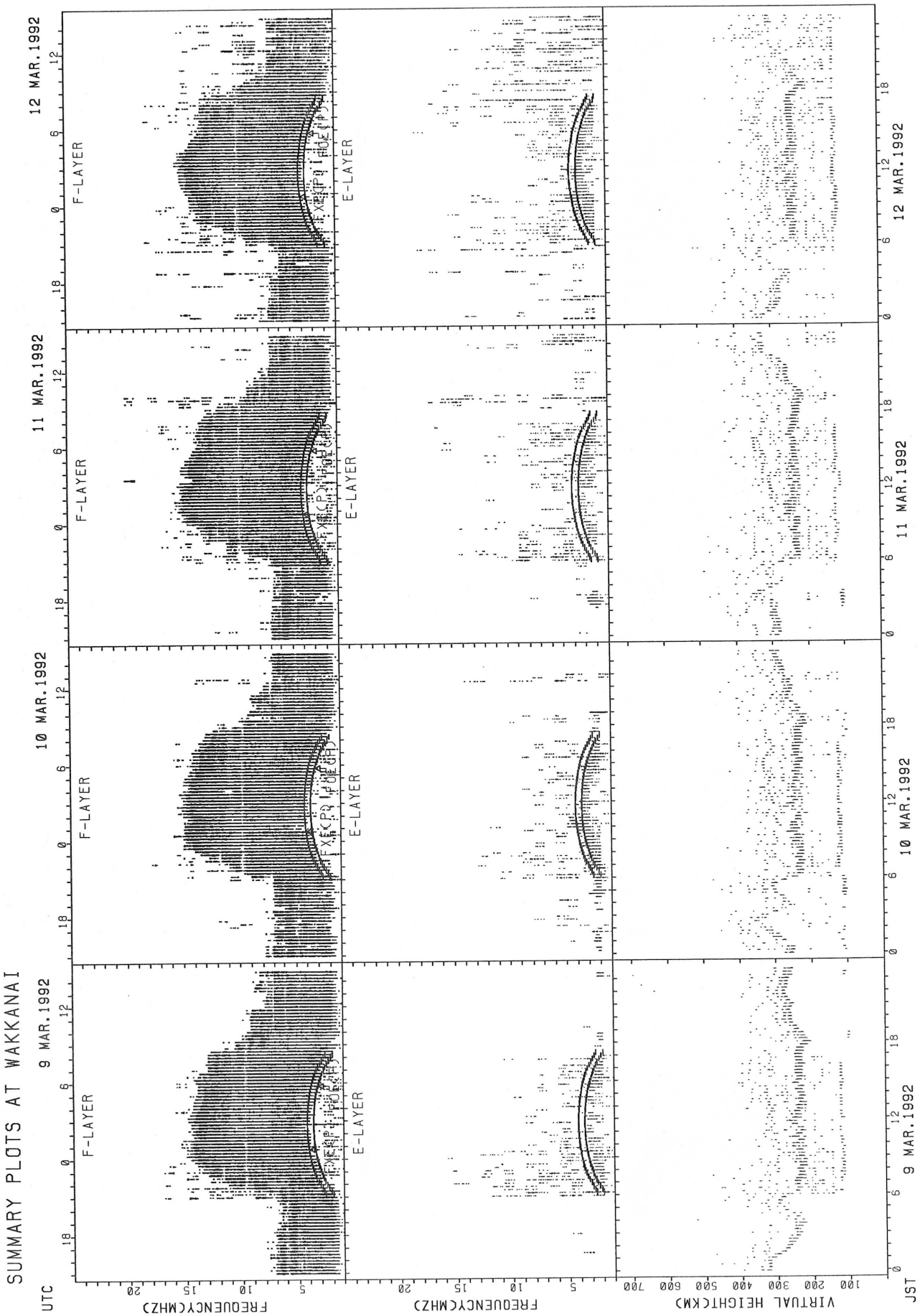
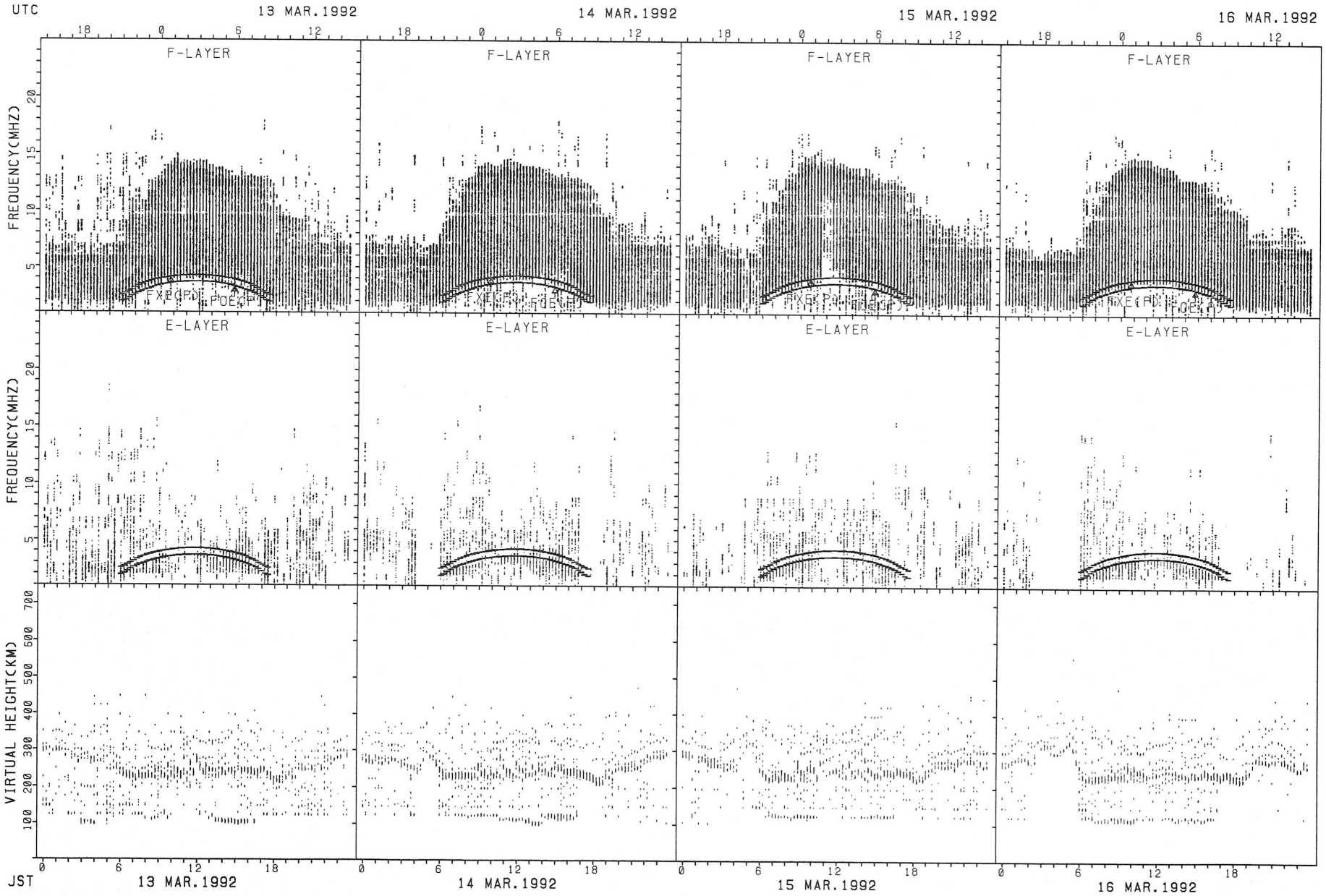
FOE(P); PREDICTED VALUE FOR FOE


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

SUMMARY PLOTS AT WAKKANAI



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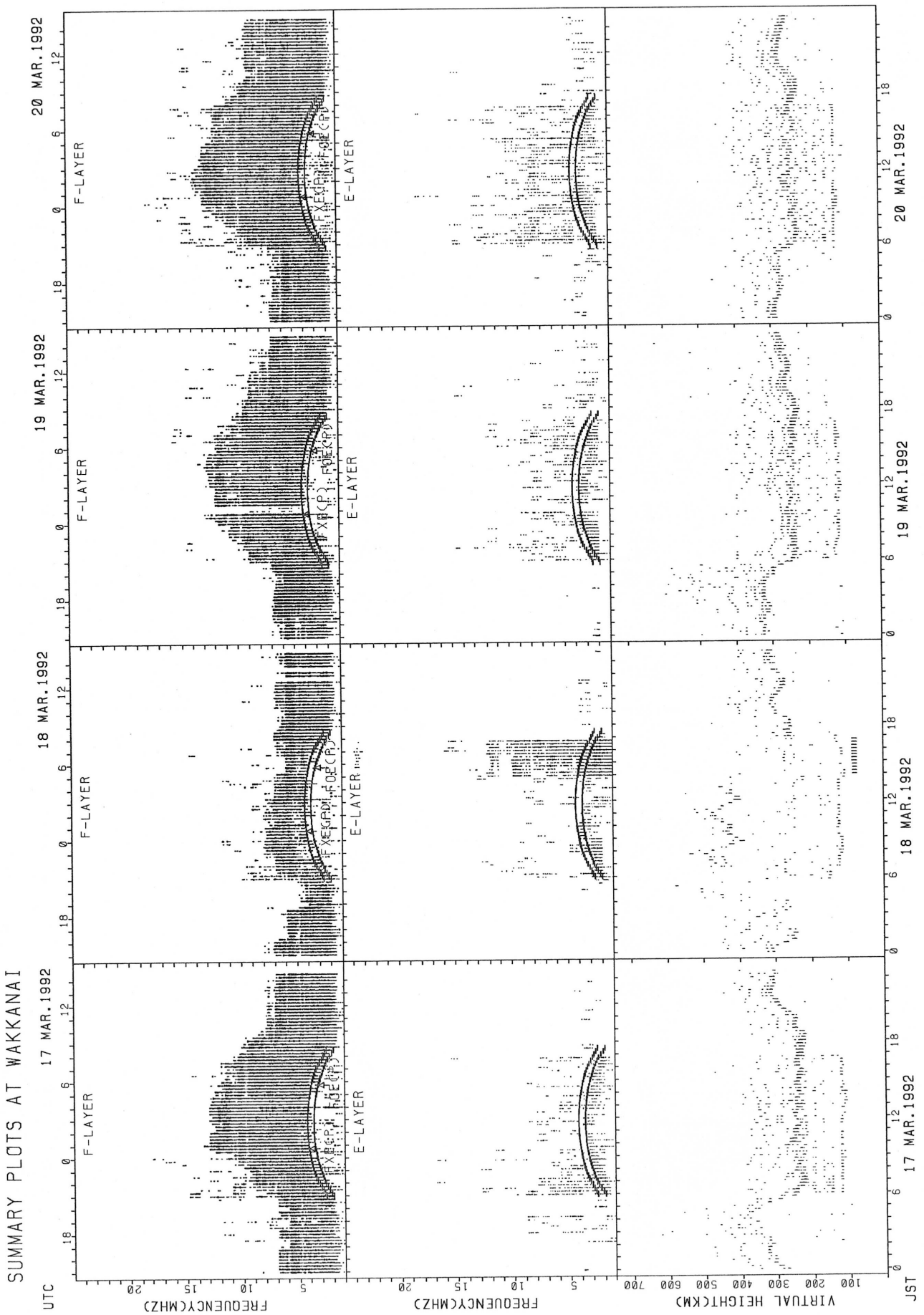
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E-LAYER
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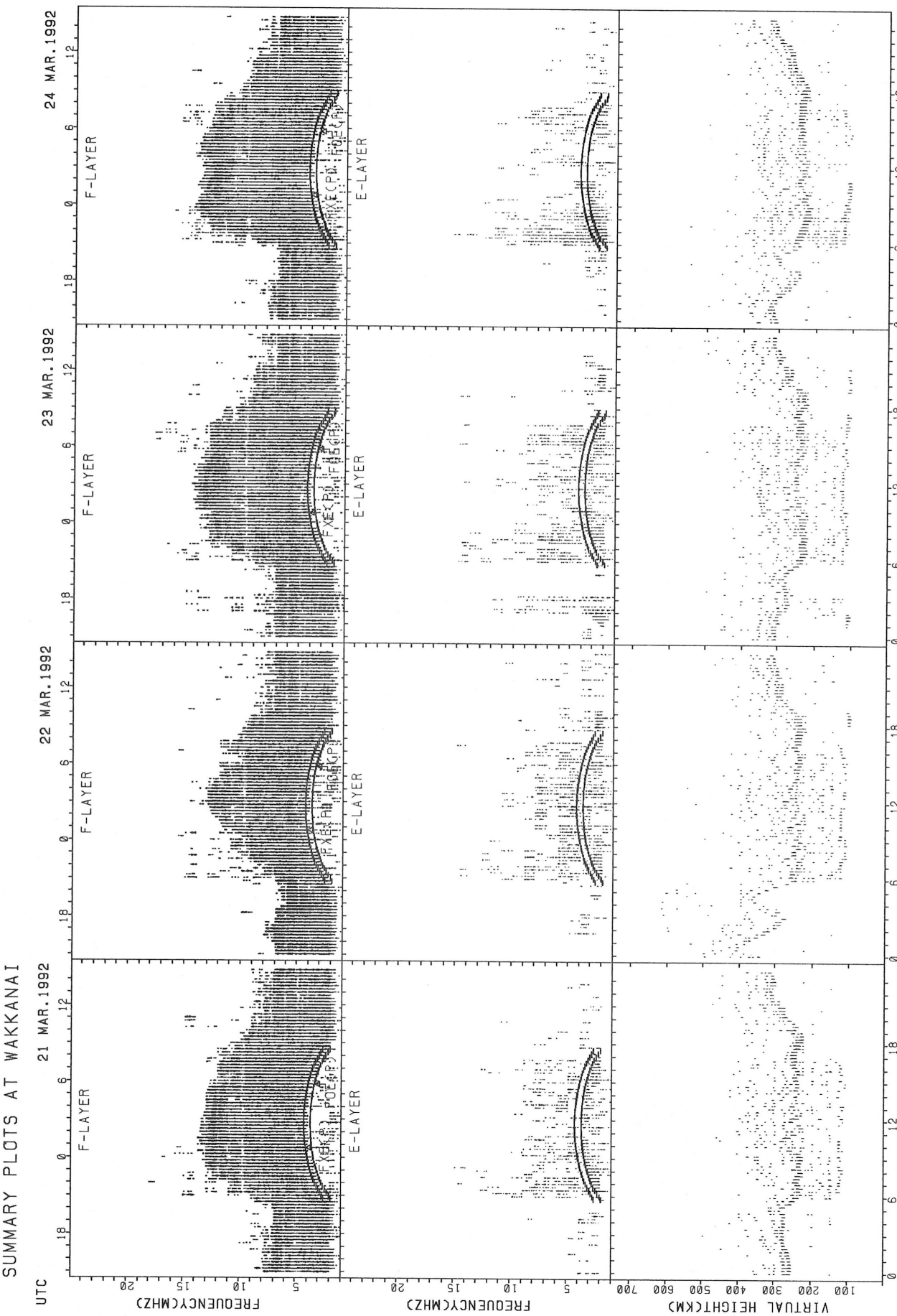
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT WAKKANAI
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JST
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23 MAR.1992
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F-LAYER
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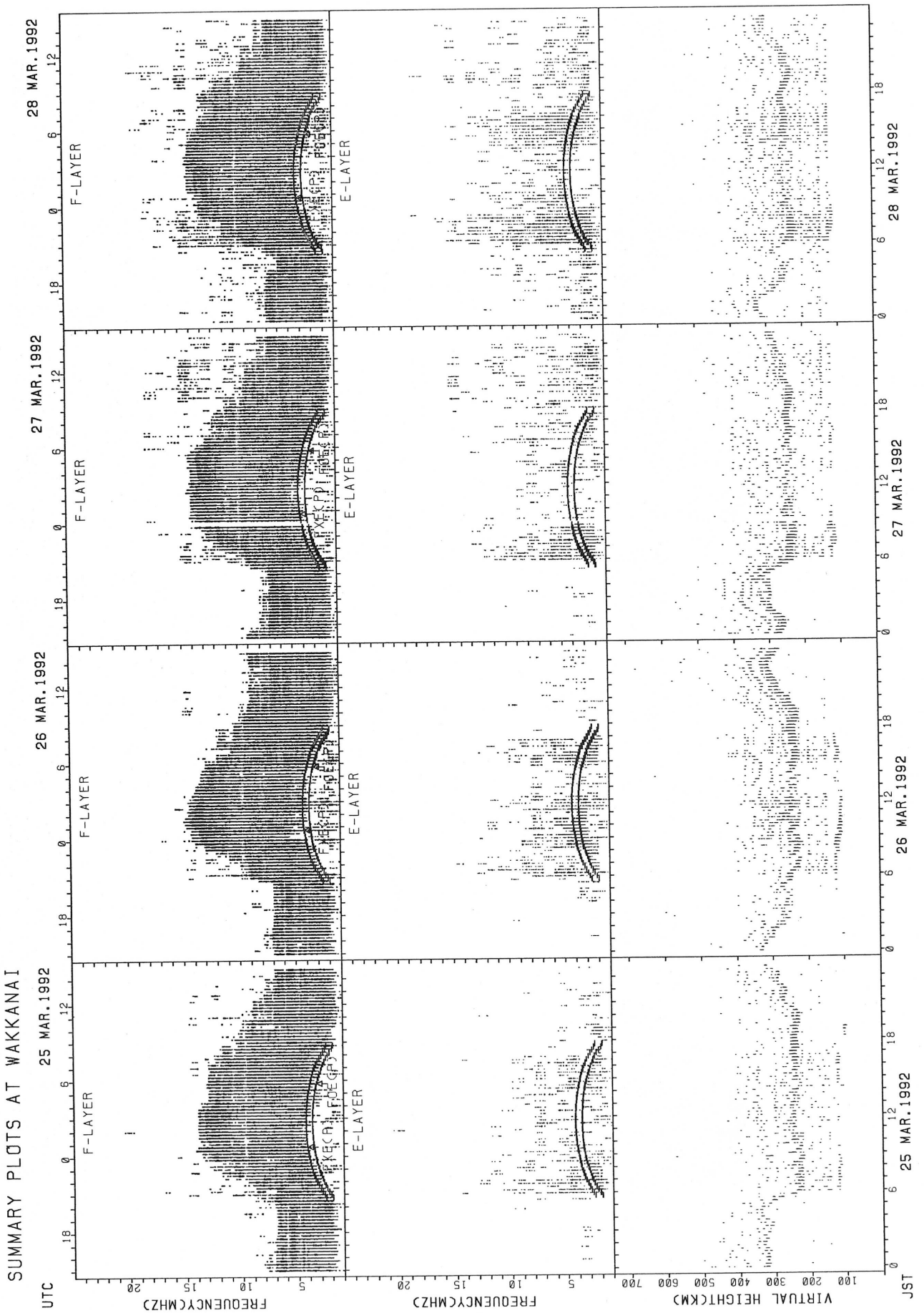
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE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25 MAR.1992
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F-LAYER
E-LAYER
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VIRTUAL HEIGHT(KM)
JST
FXE(P); PREDICTED VALUE FOR FXE
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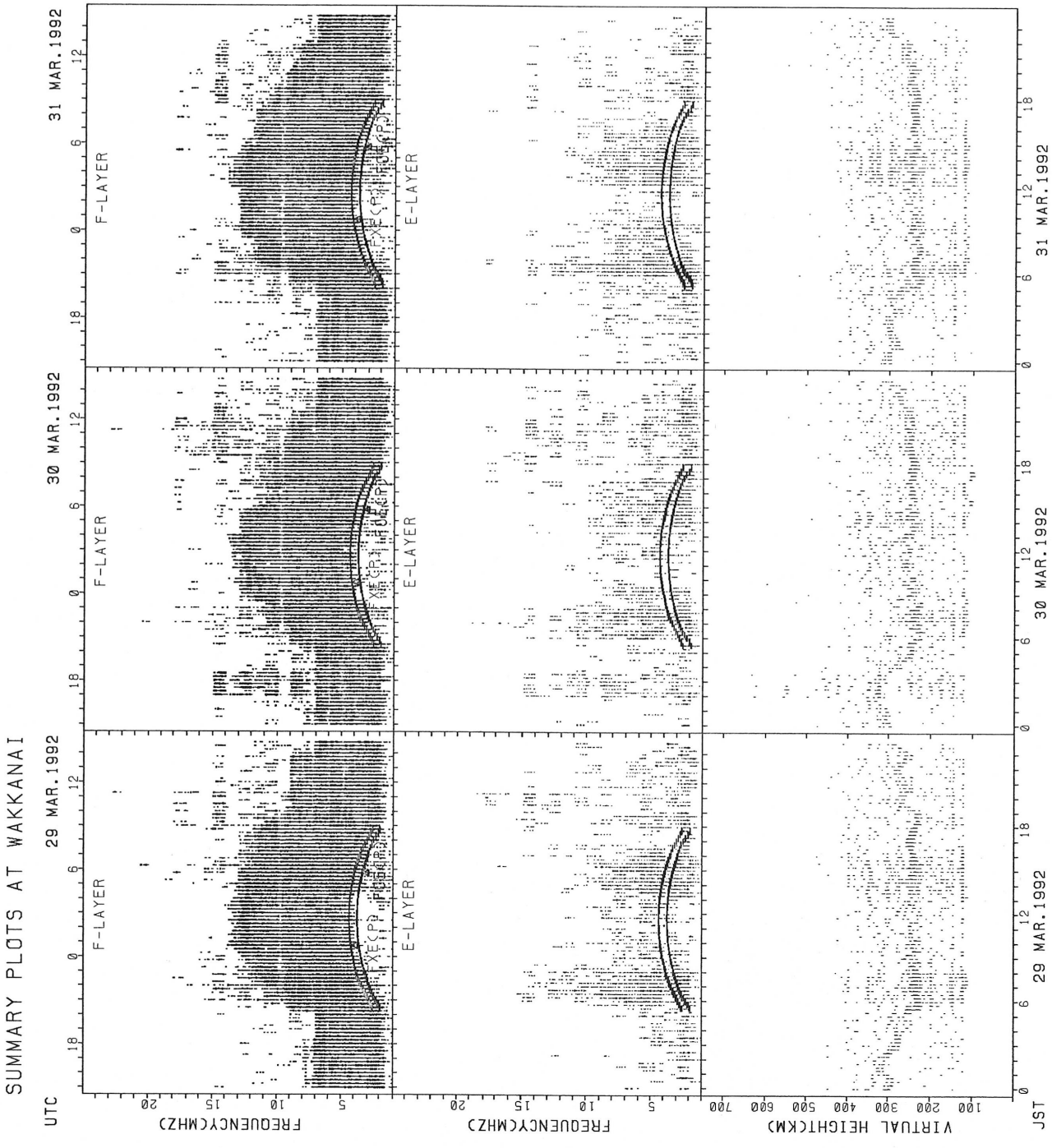
SUMMARY PLOTS AT WAKKANAI
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E-LAYER
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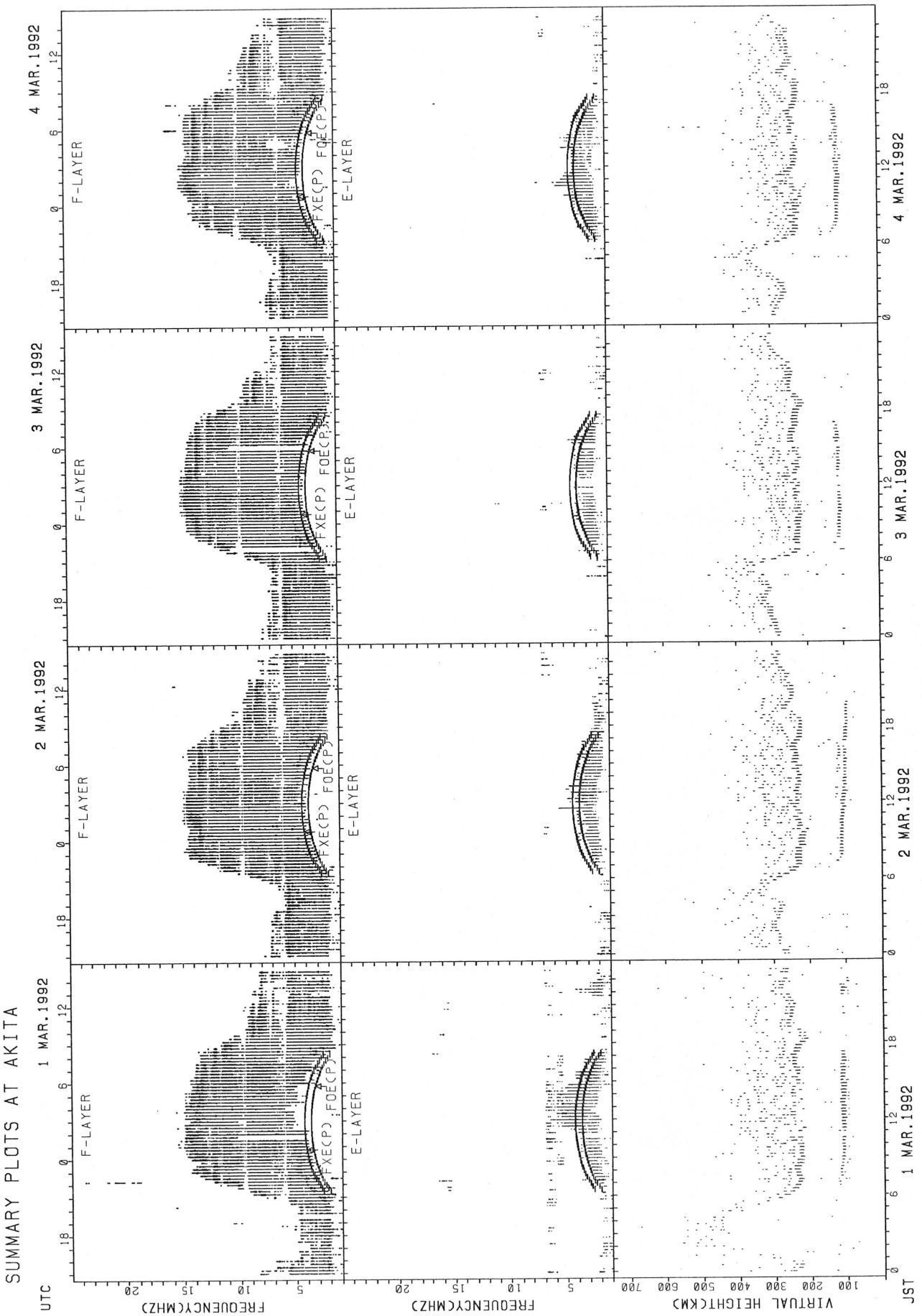
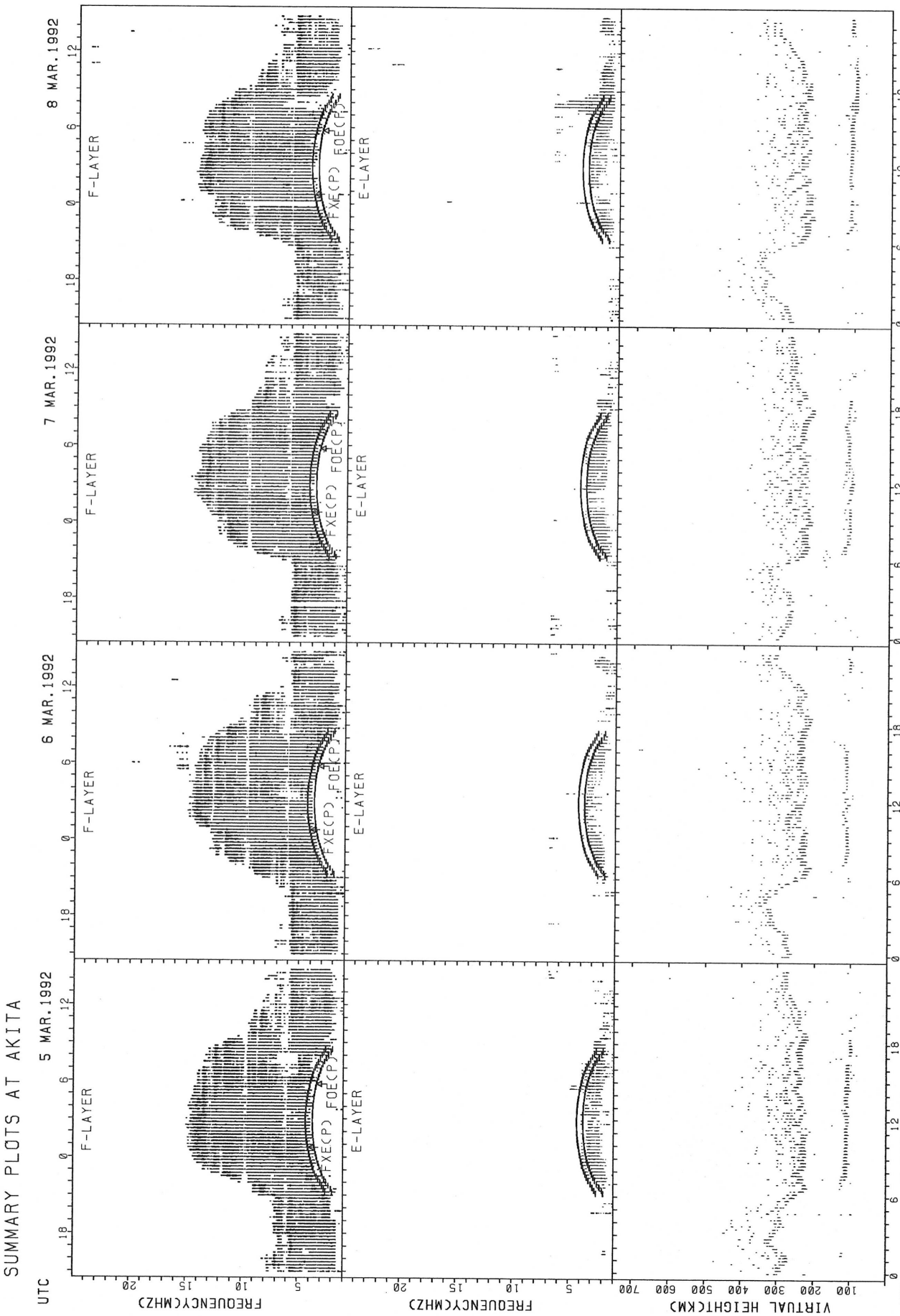
FOE(P)
JST
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


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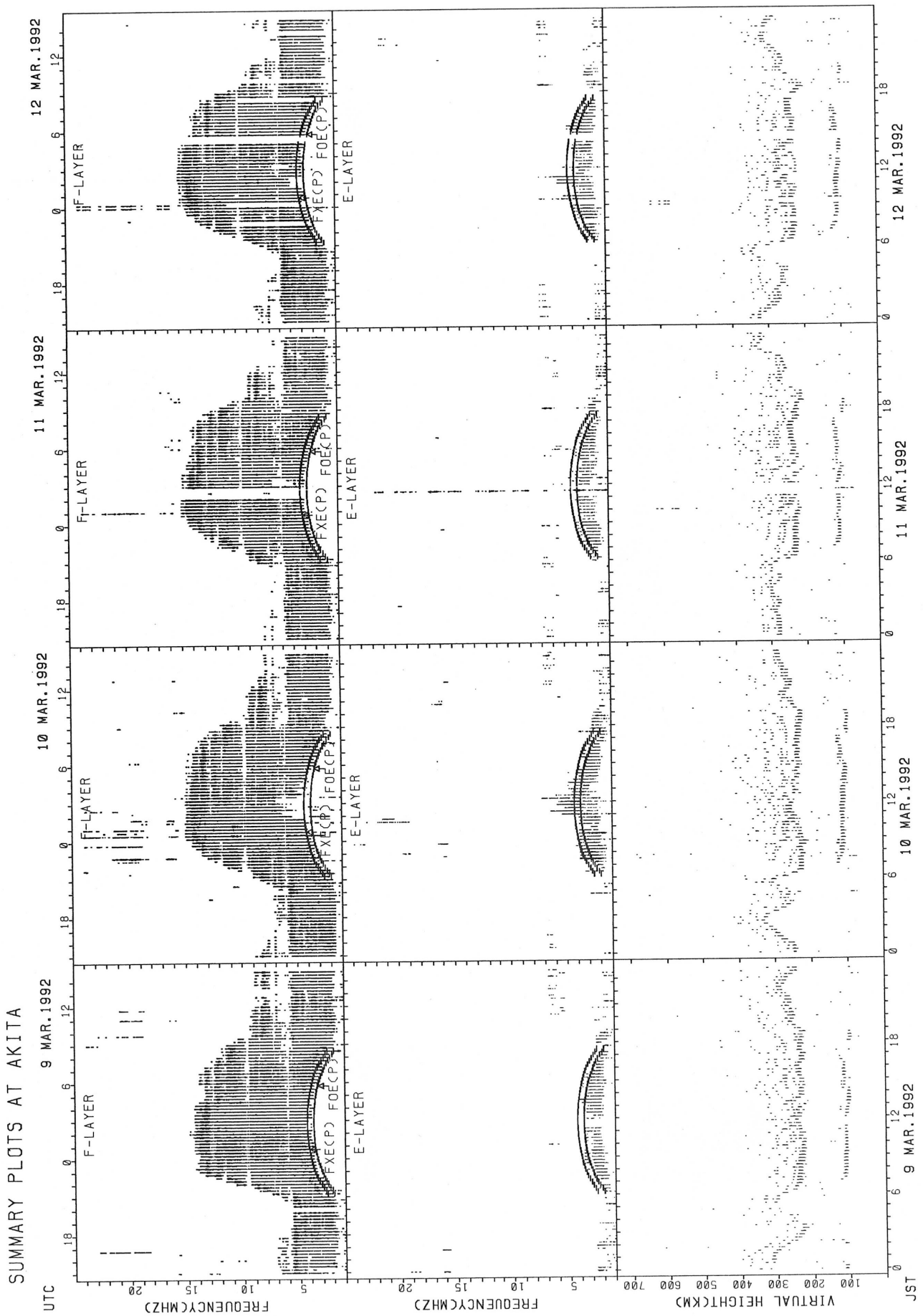
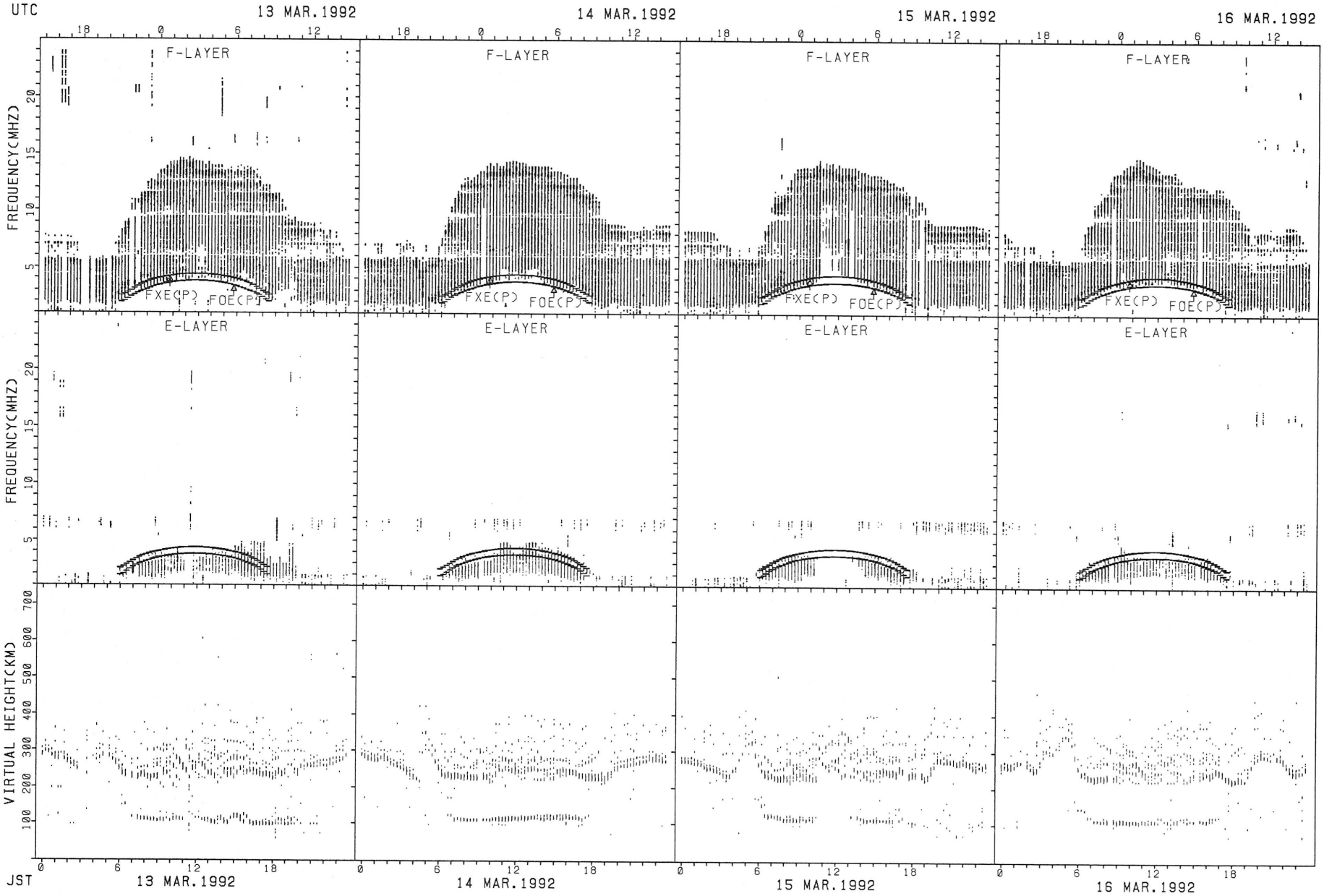
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT AKITA
UTC
9 MAR.1992
10 MAR.1992
11 MAR.1992
12 MAR.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



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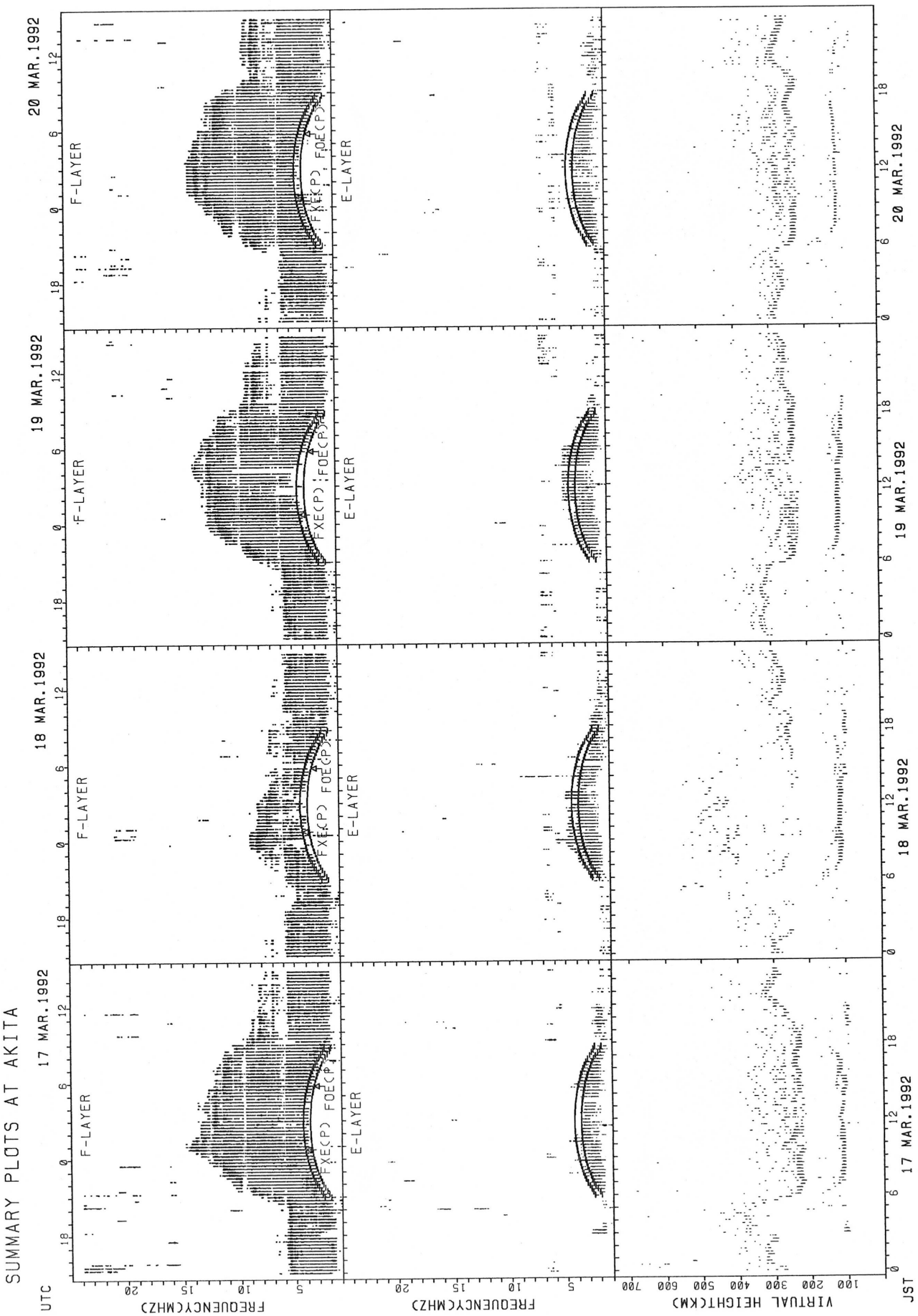
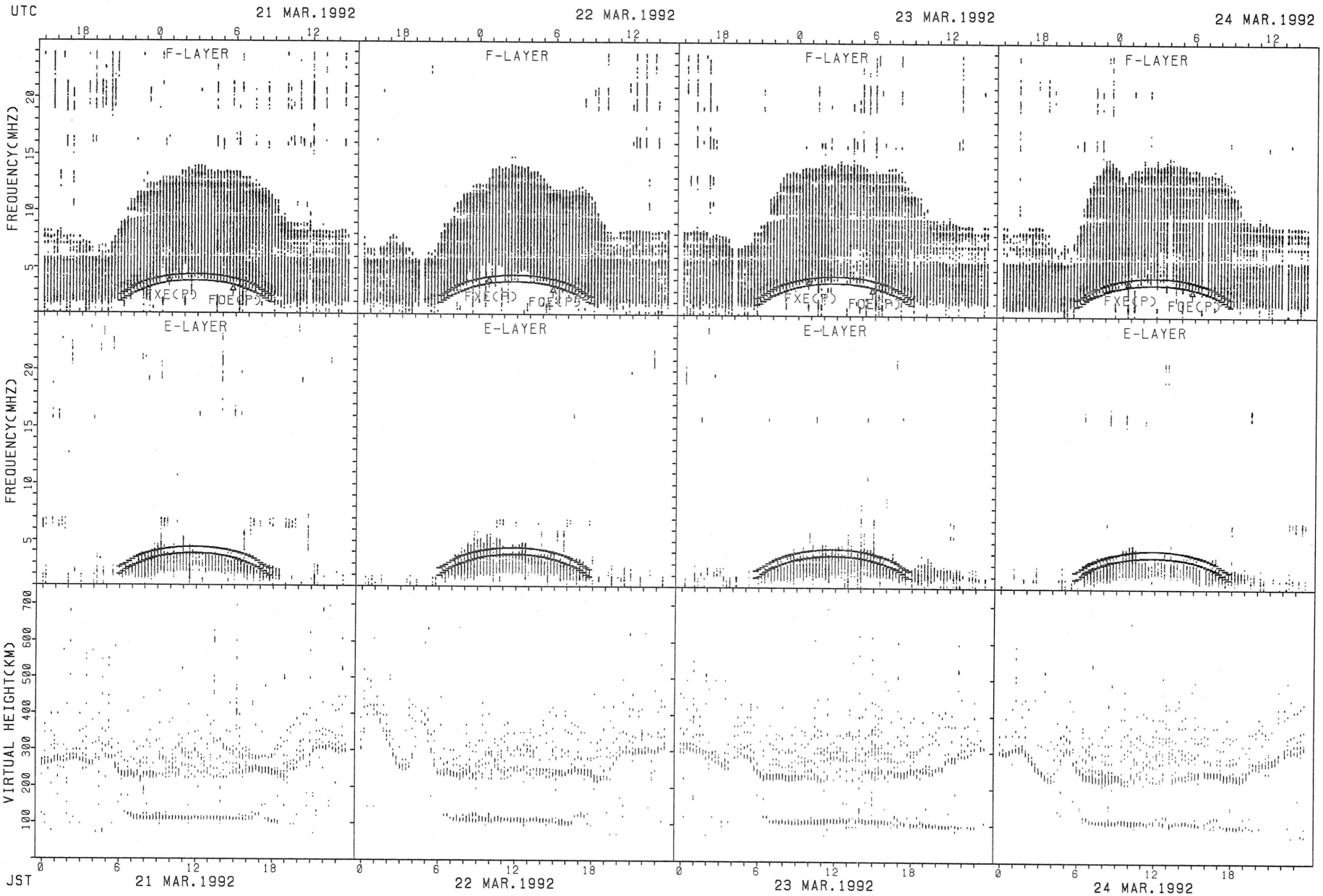
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT AKITA
UTC
17 MAR.1992
18 MAR.1992
19 MAR.1992
20 MAR.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



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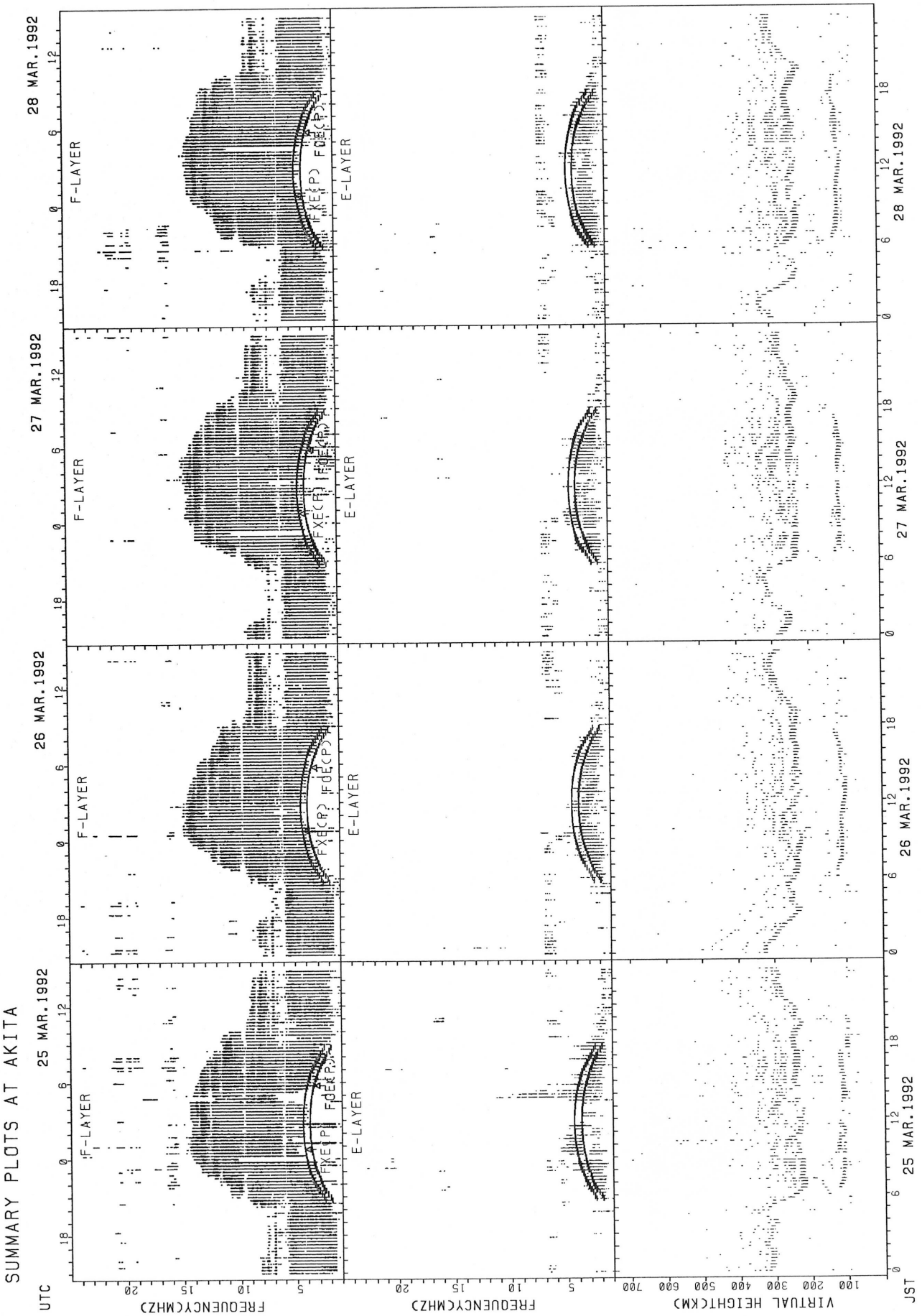
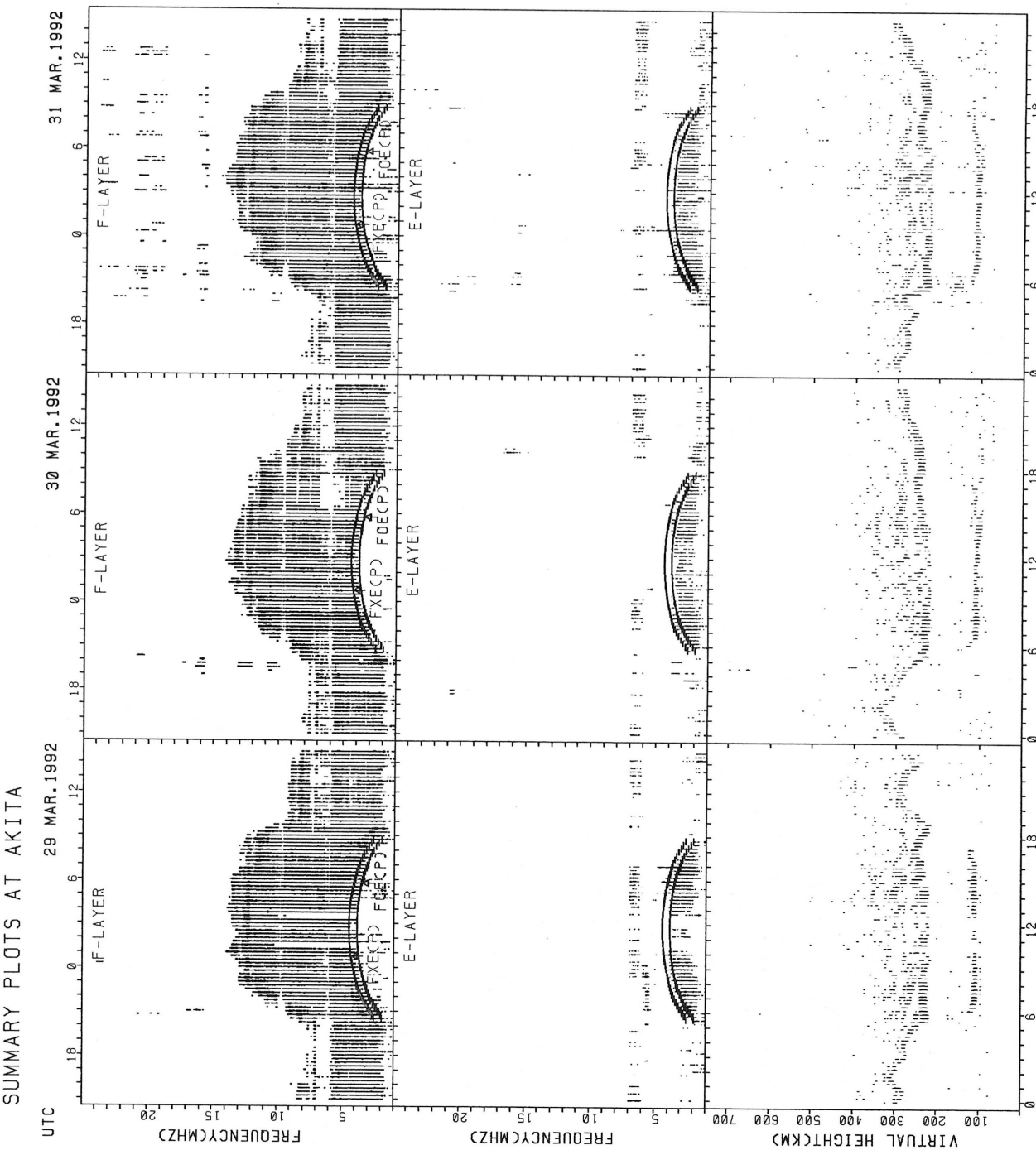
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT AKITA
UTC
25 MAR.1992
26 MAR.1992
27 MAR.1992
28 MAR.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 AKITA
29 MAR.1992
30 MAR.1992
31 MAR.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P)
FOE(P)
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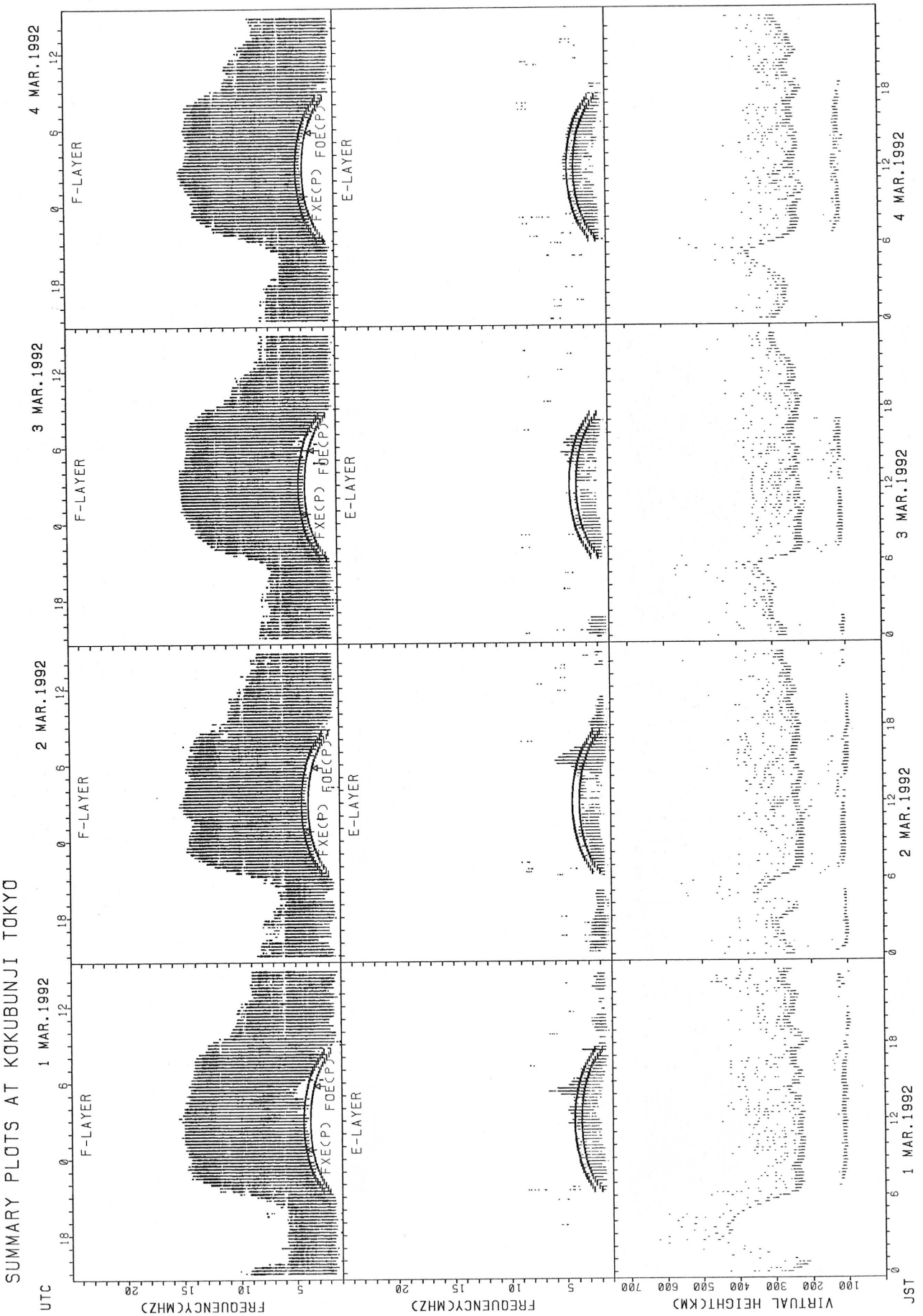
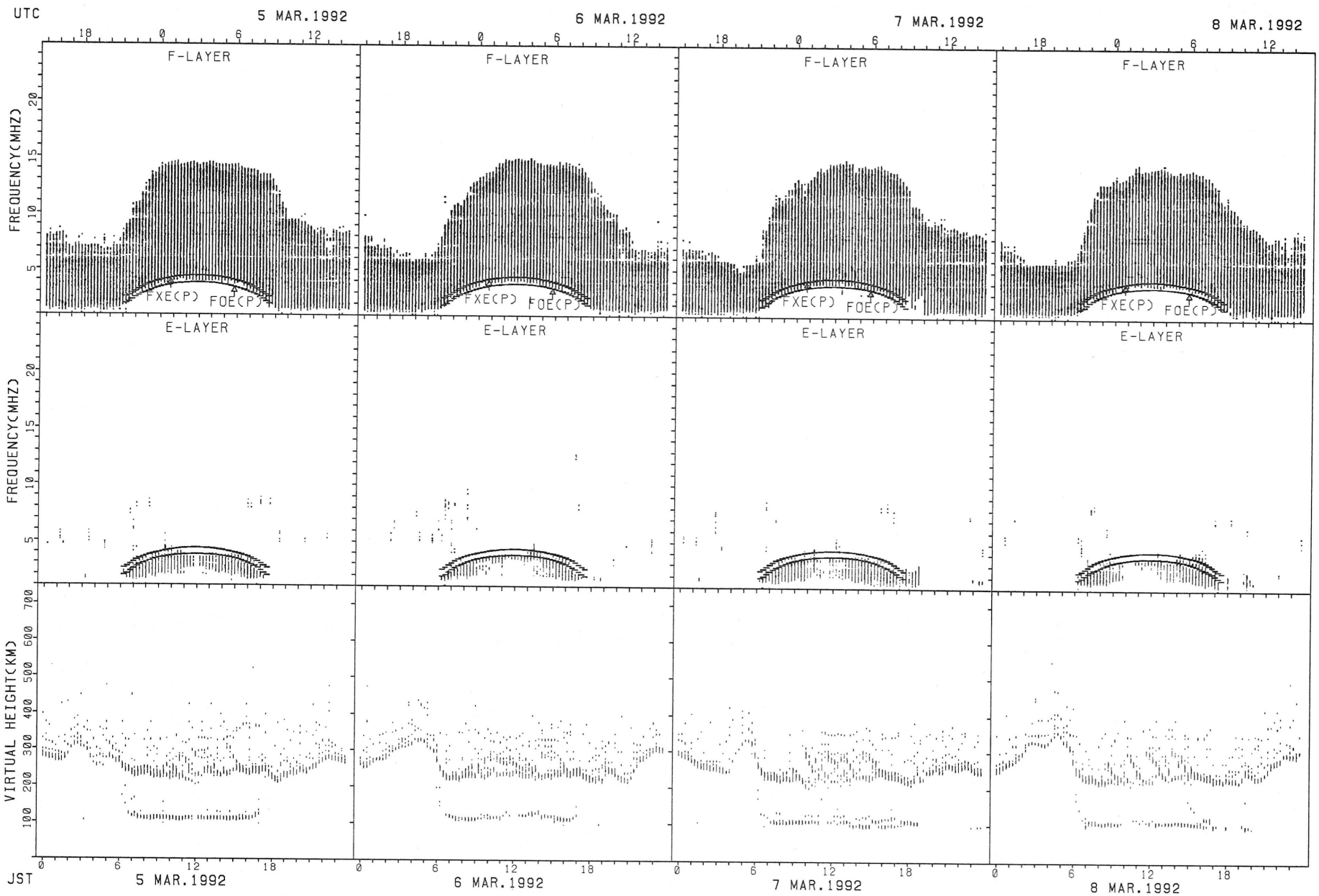
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
1 MAR.1992
2 MAR.1992
3 MAR.1992
4 MAR.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 KOKUBUNJI TOKYO



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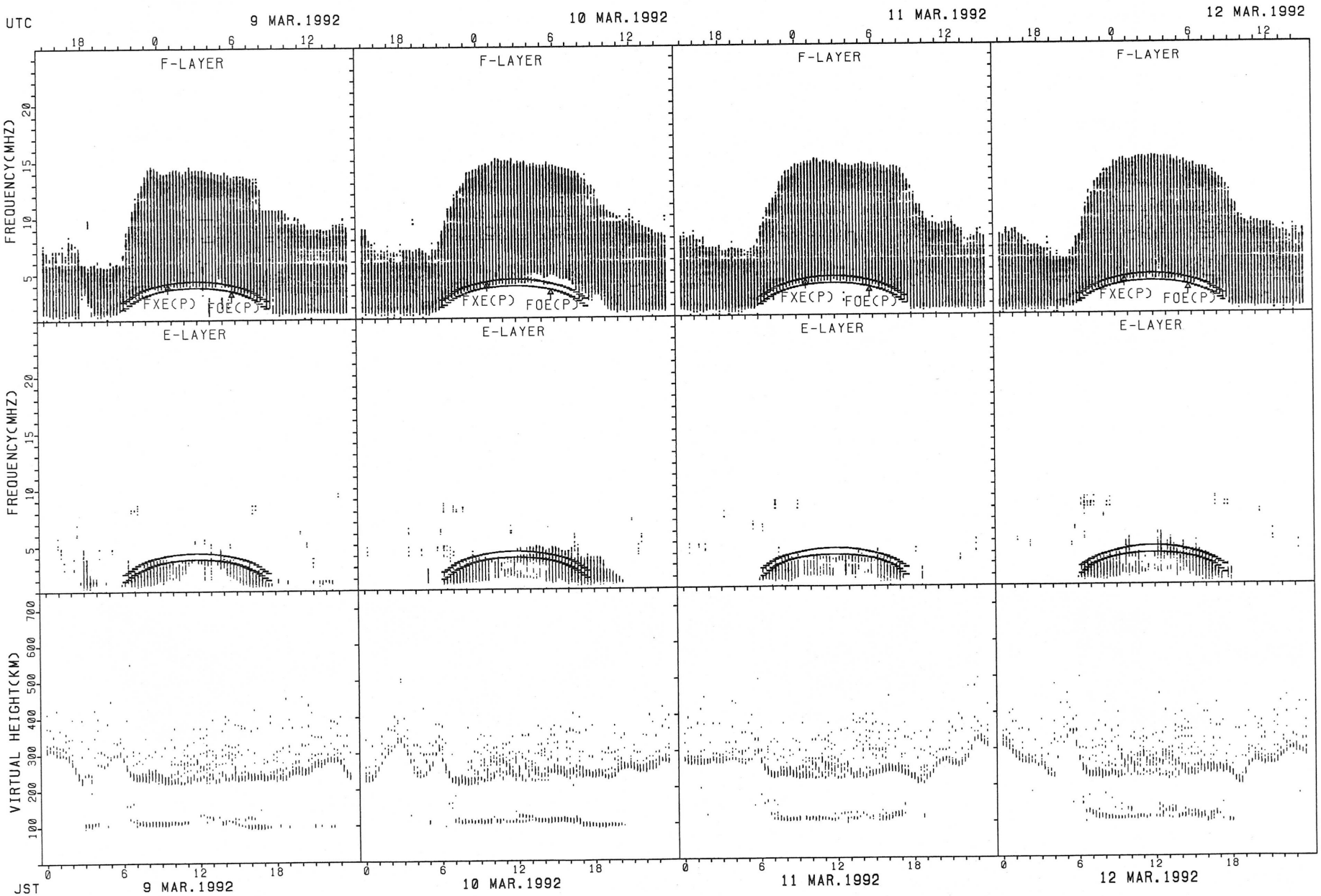
FOE(P): PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT KOKUBUNJI TOKYO



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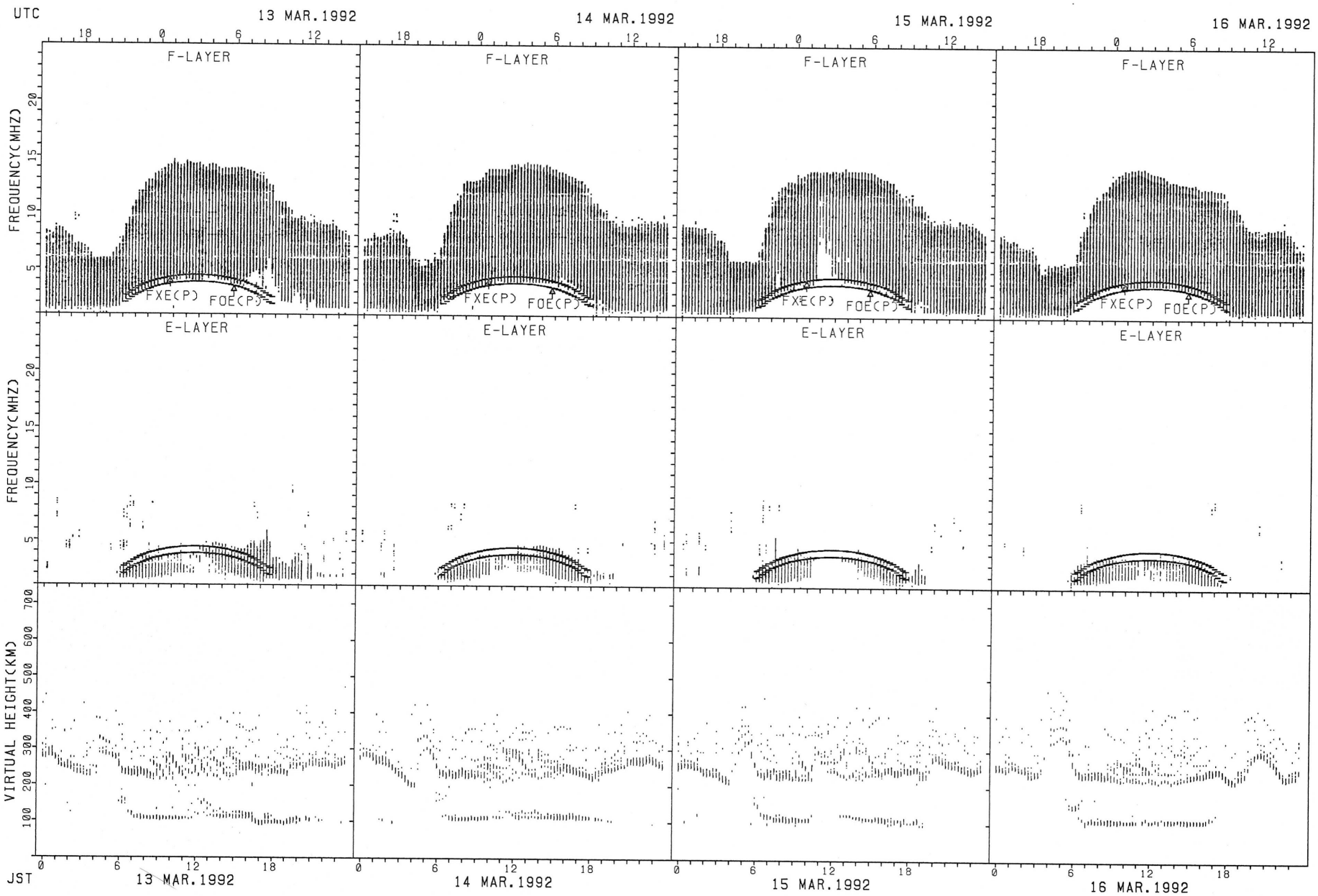

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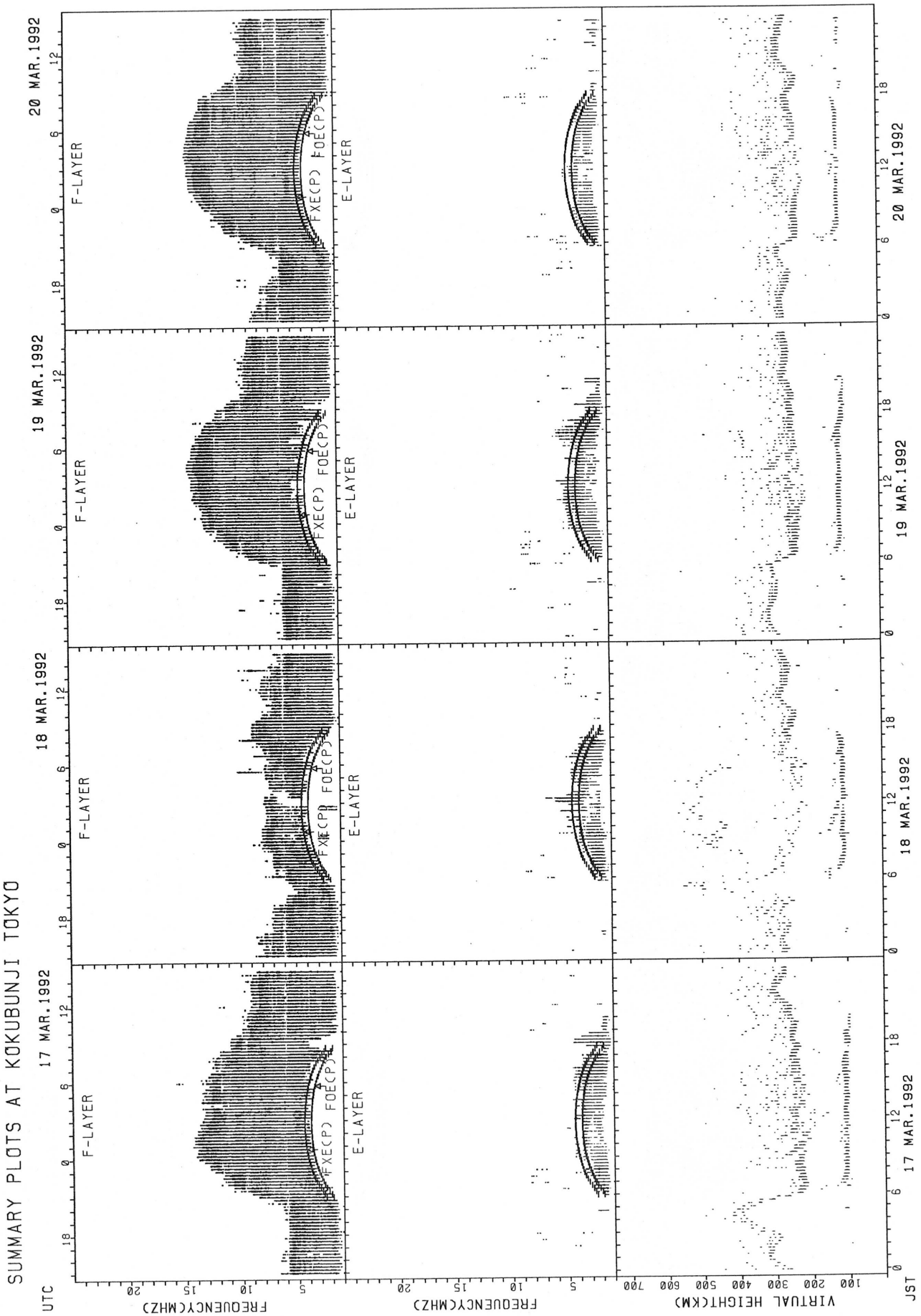
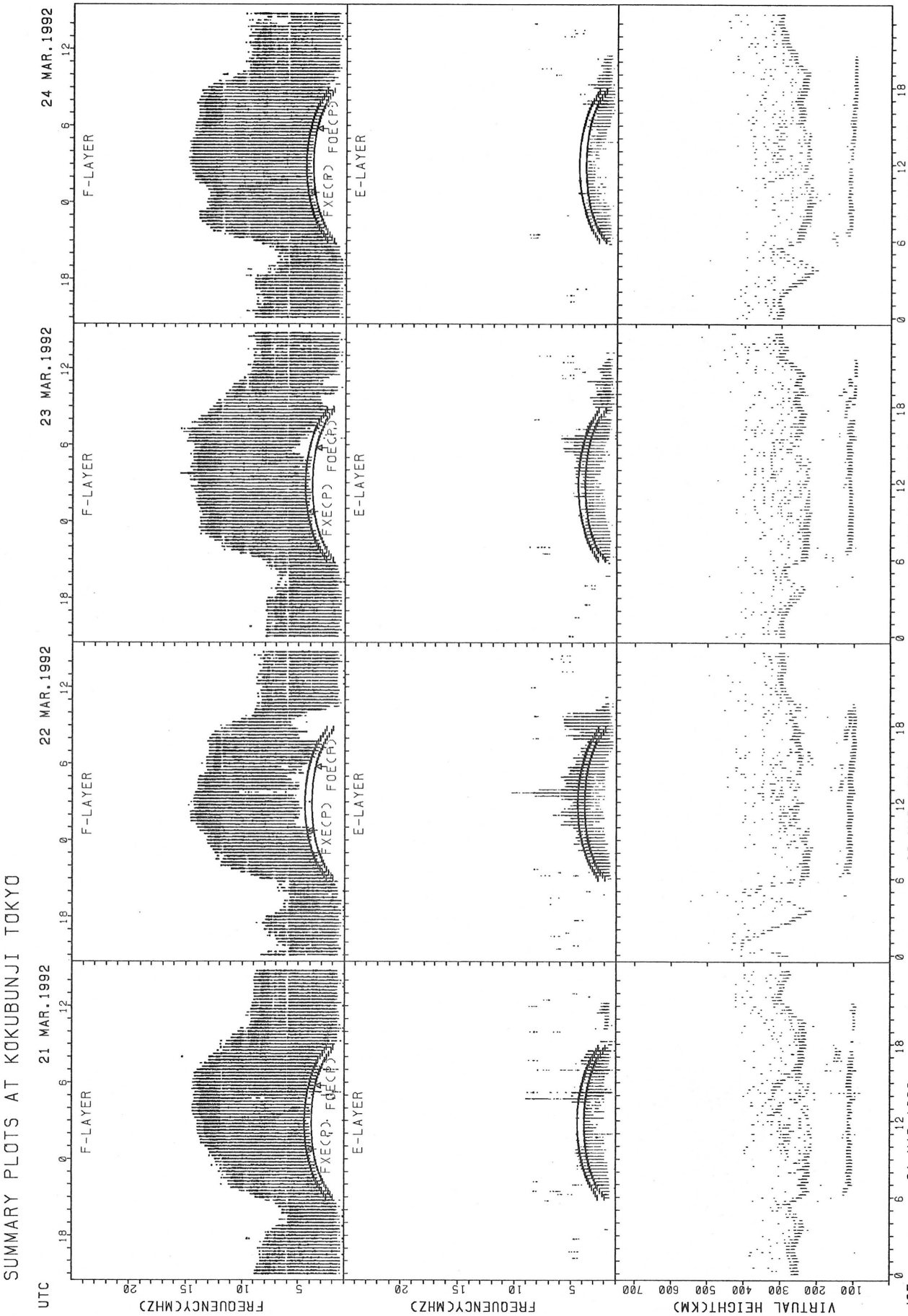

SUMMARY PLOTS AT KOKUBUNJI TOKYO
17 MAR.1992
18 MAR.1992
19 MAR.1992
20 MAR.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
21 MAR.1992
22 MAR.1992
23 MAR.1992
24 MAR.1992
F-LAYER
E-LAYER
FXE(P) FOE(P)
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VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
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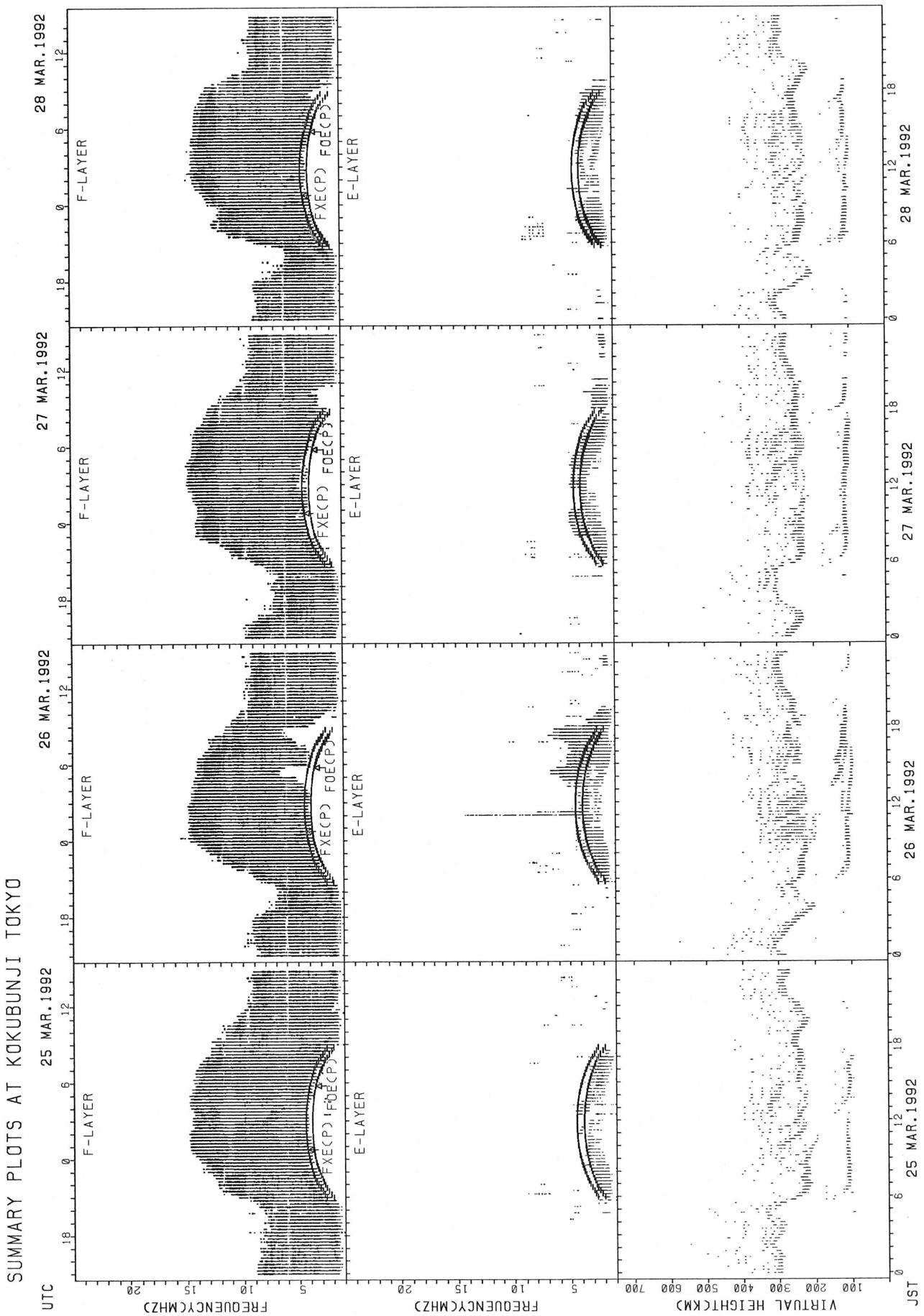
SUMMARY PLOTS AT KOKUBUNJI TOKYO
UTC
JST
25 MAR.1992
26 MAR.1992
27 MAR.1992
28 MAR.1992
F-LAYER
E-LAYER
FXE(P)
FOE(P)
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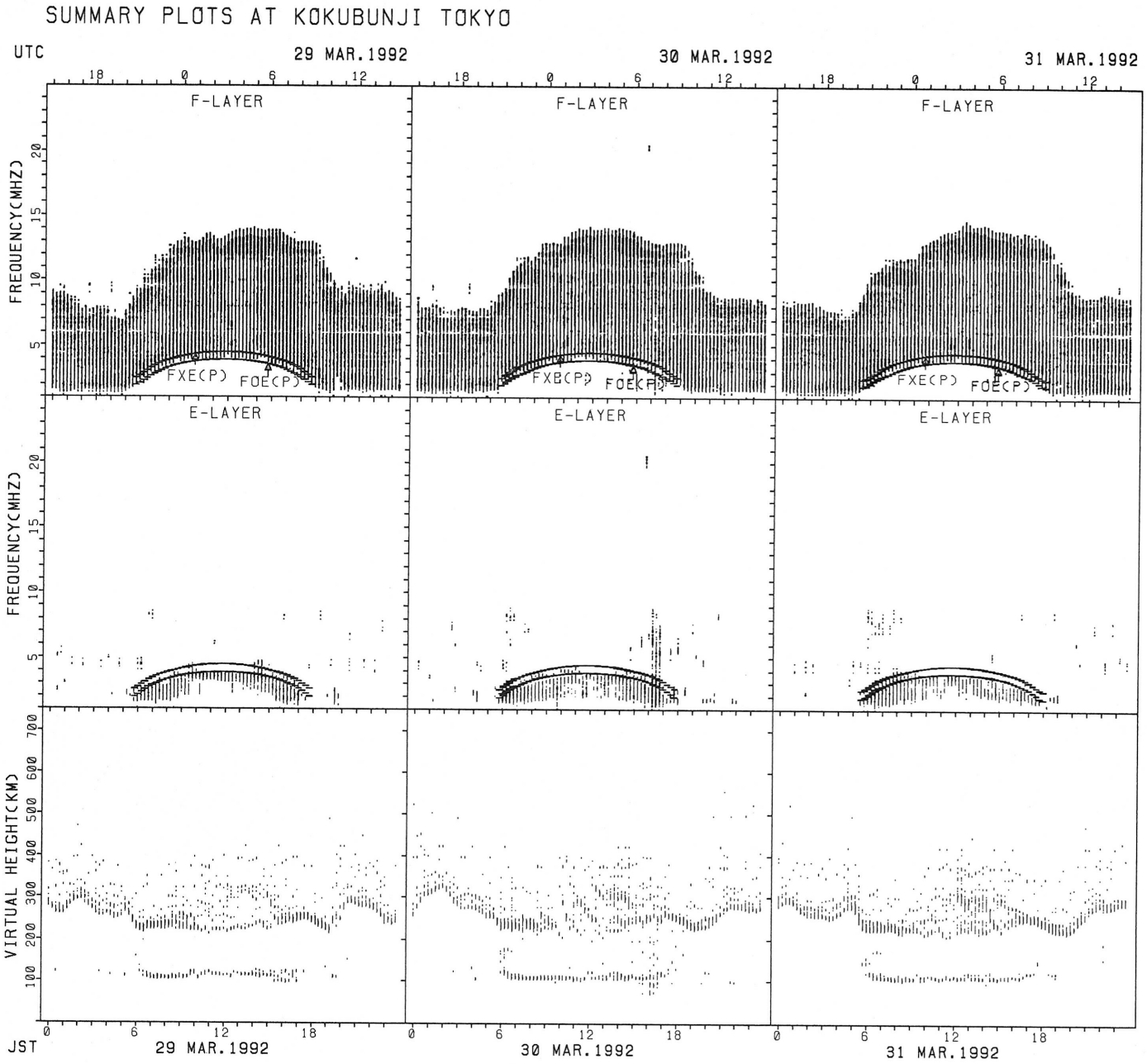
FOE(P): PREDICTED VALUE FOR FOE



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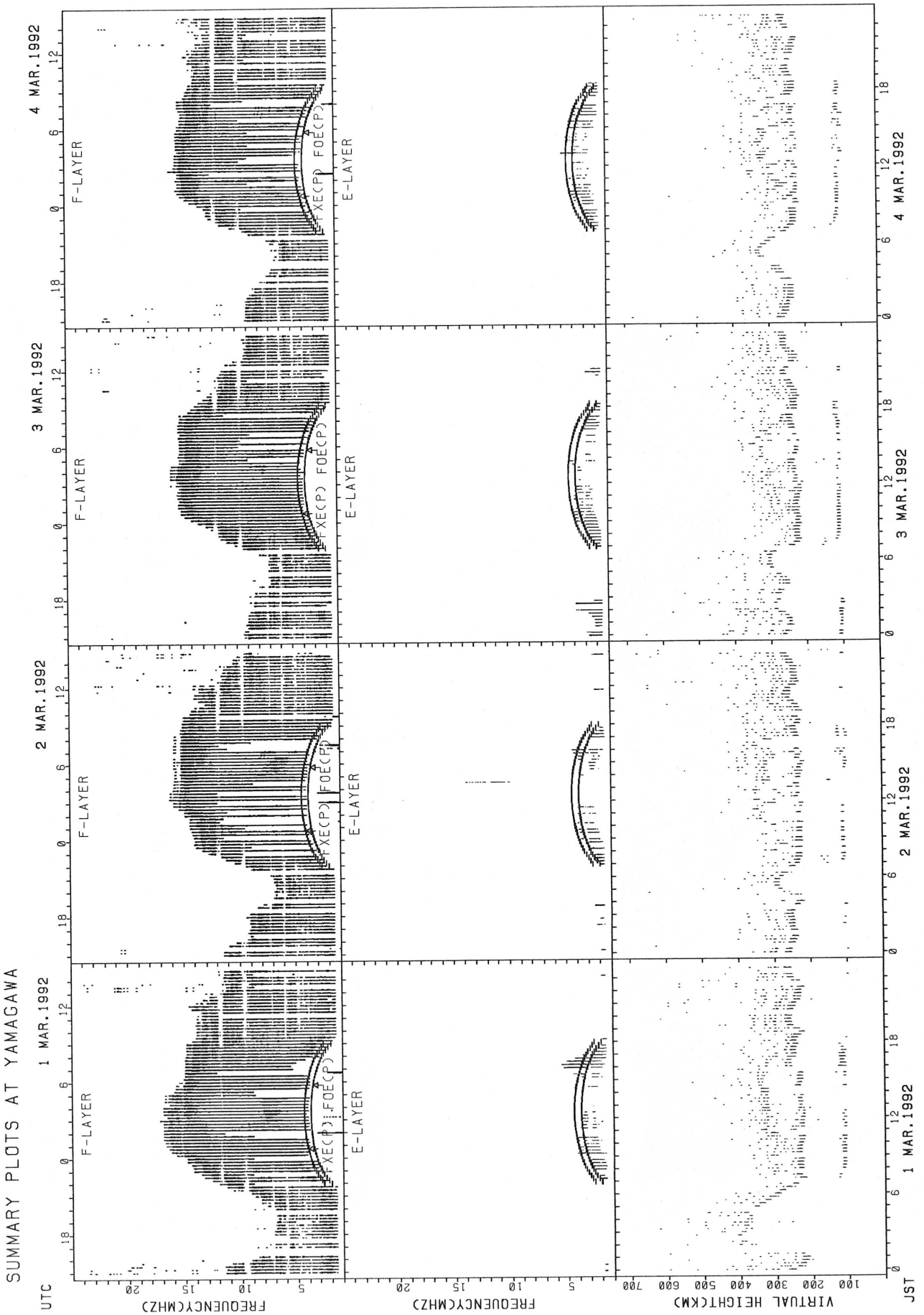
FOE(P); PREDICTED VALUE FOR FOE


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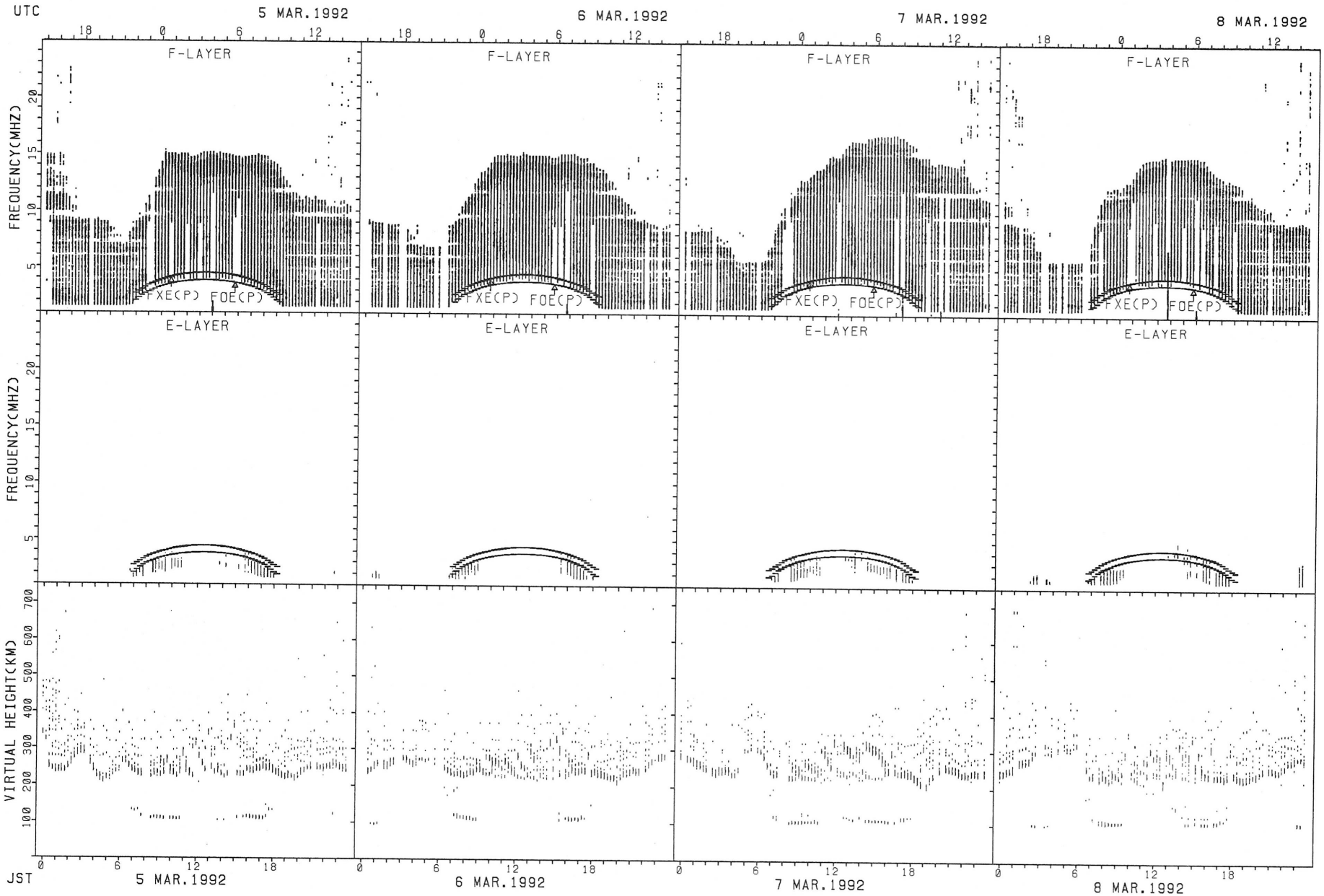
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT YAMAGAWA



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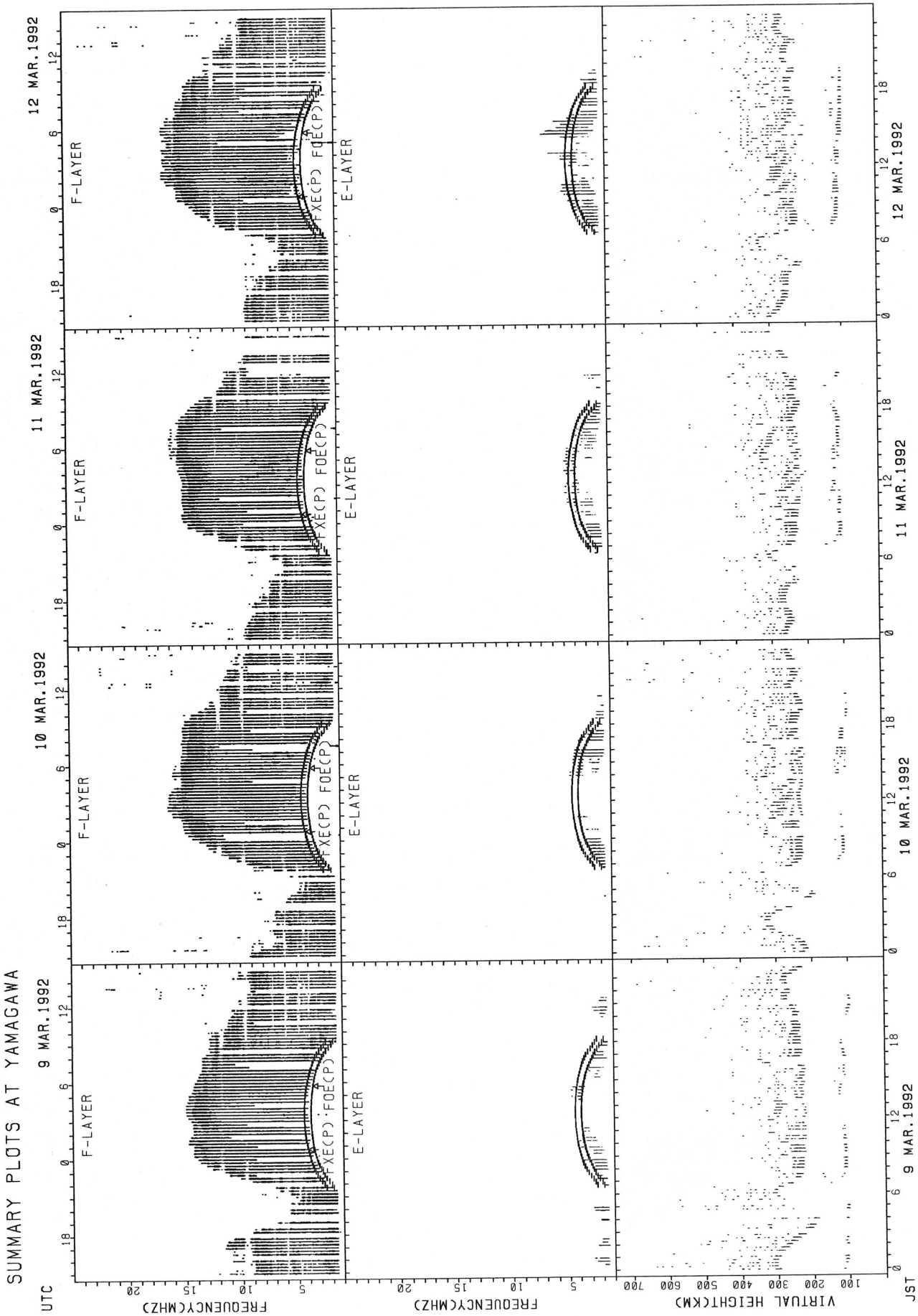
SUMMARY PLOTS AT YAMAGAWA
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11 MAR.1992
12 MAR.1992
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E-LAYER
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FREQUENCY(MHZ)
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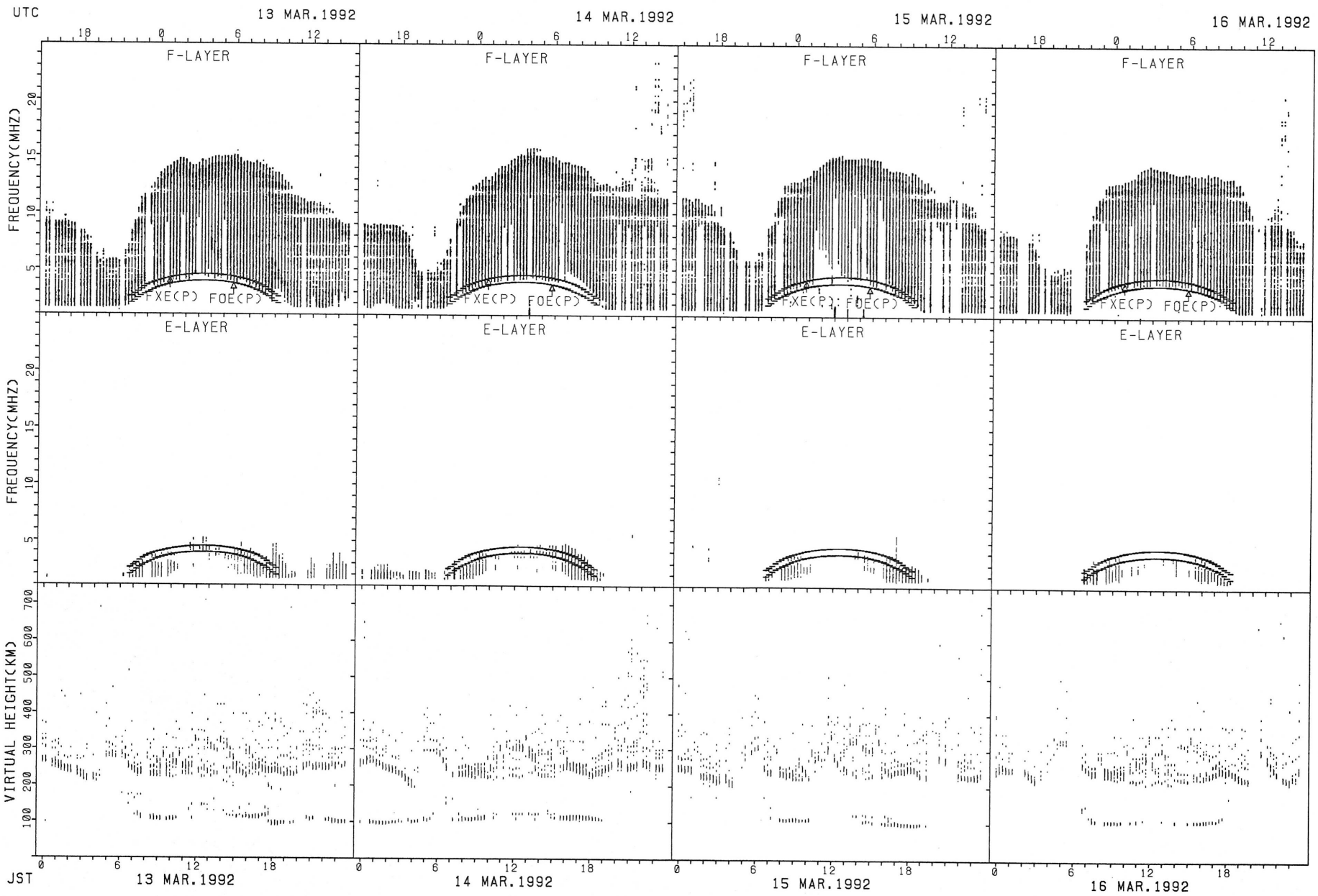
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

SUMMARY PLOTS AT YAMAGAWA



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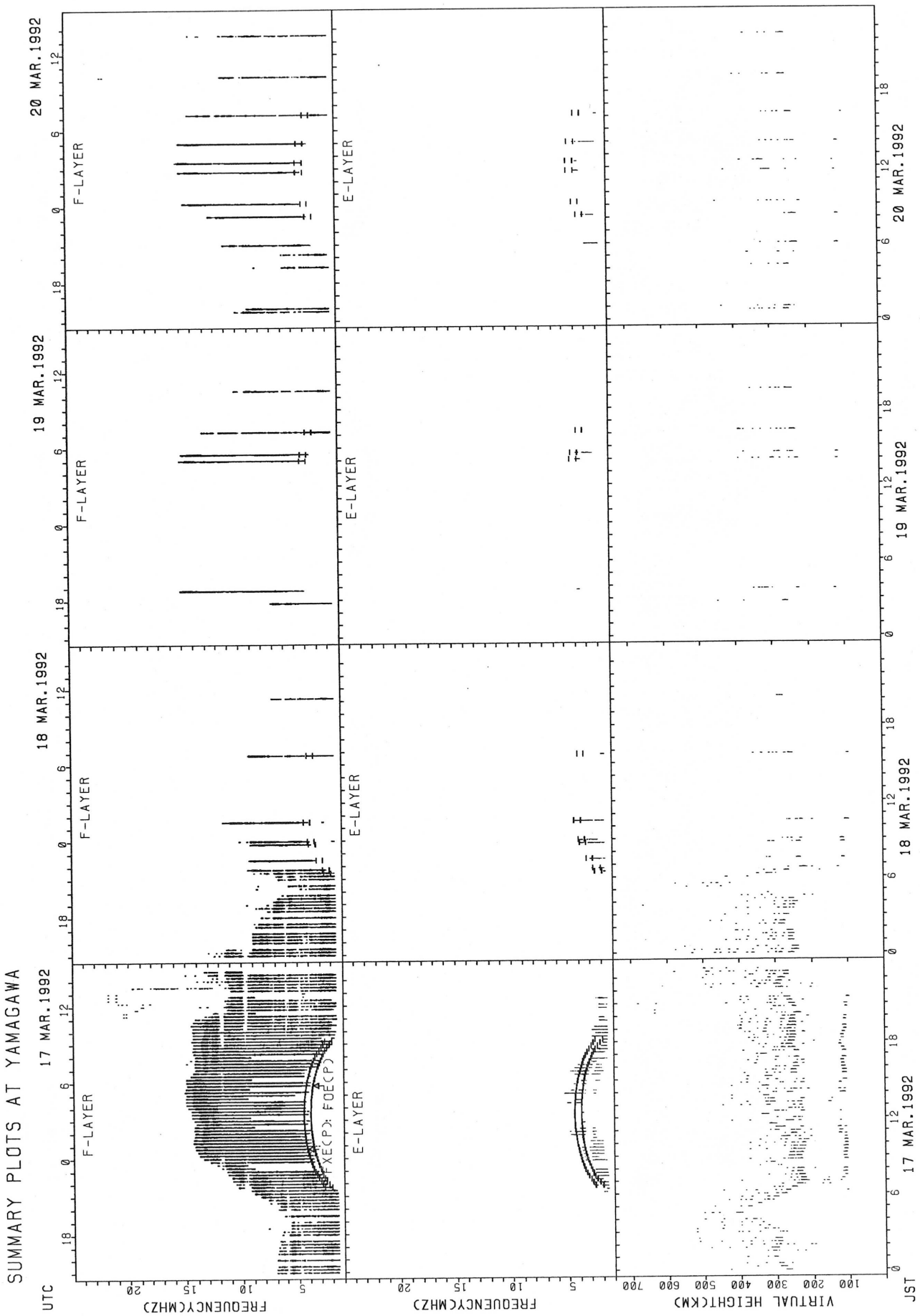
SUMMARY PLOTS AT YAMAGAWA
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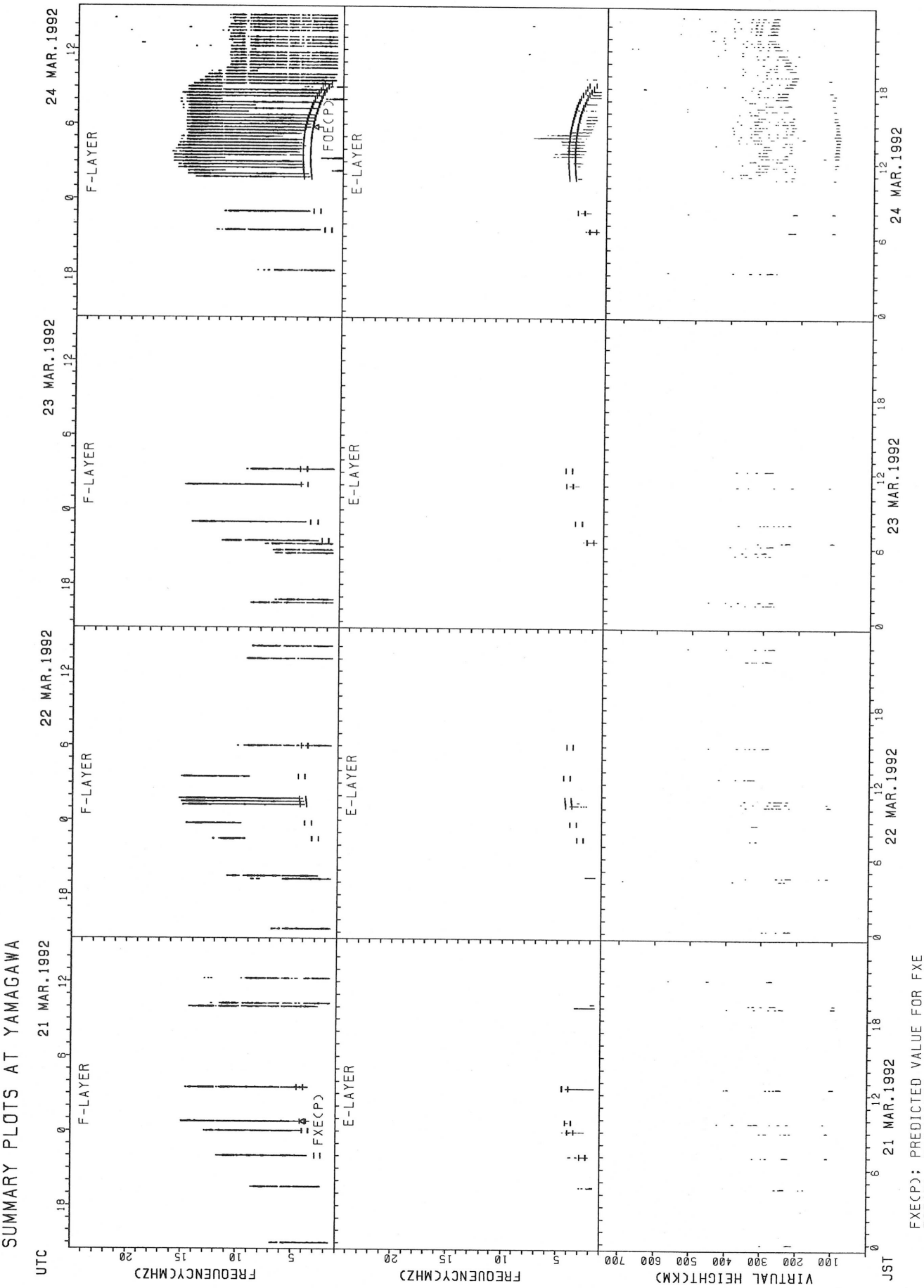
F-LAYER
E-LAYER
FXE(P); FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
UTC
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE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E-LAYER
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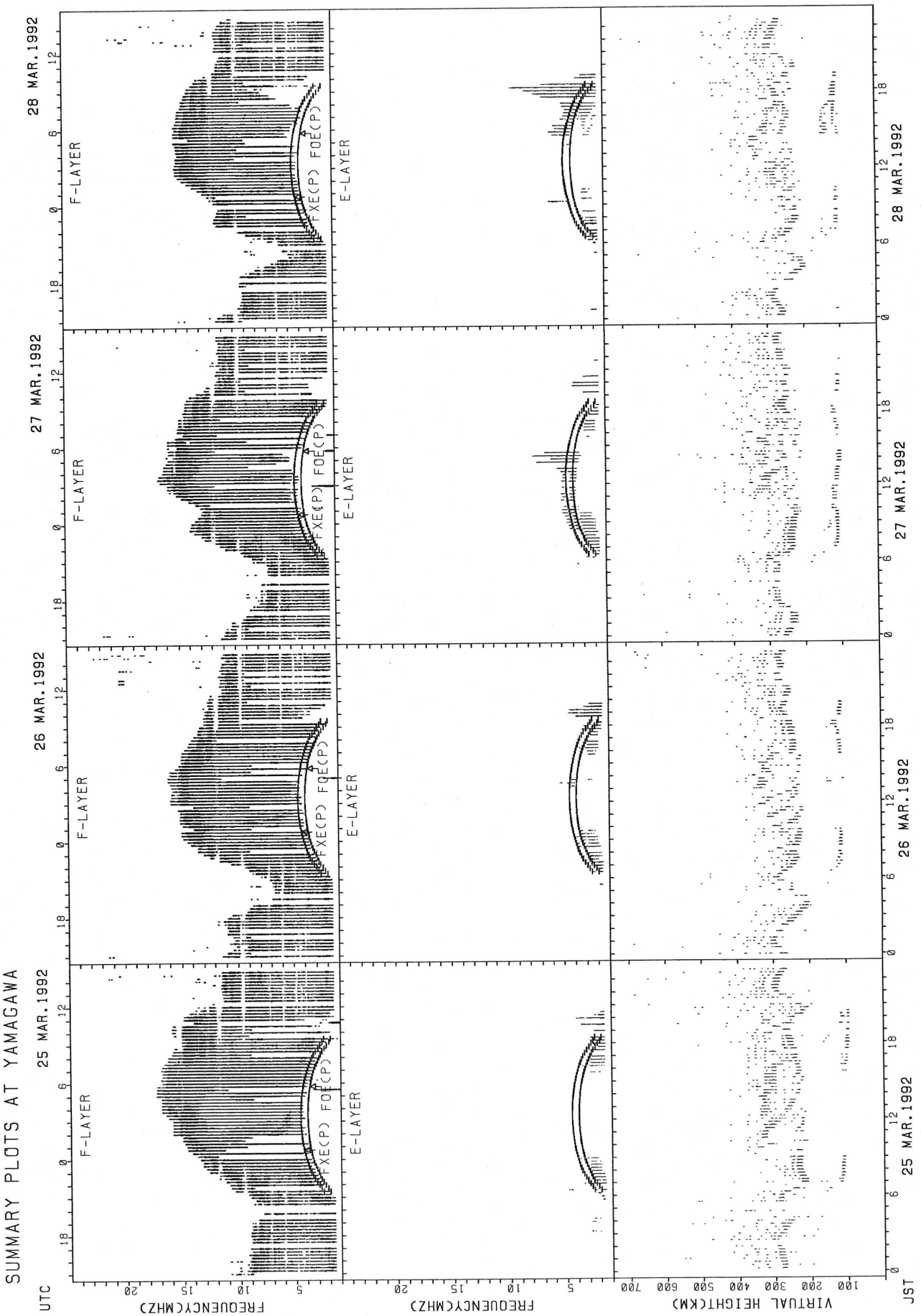
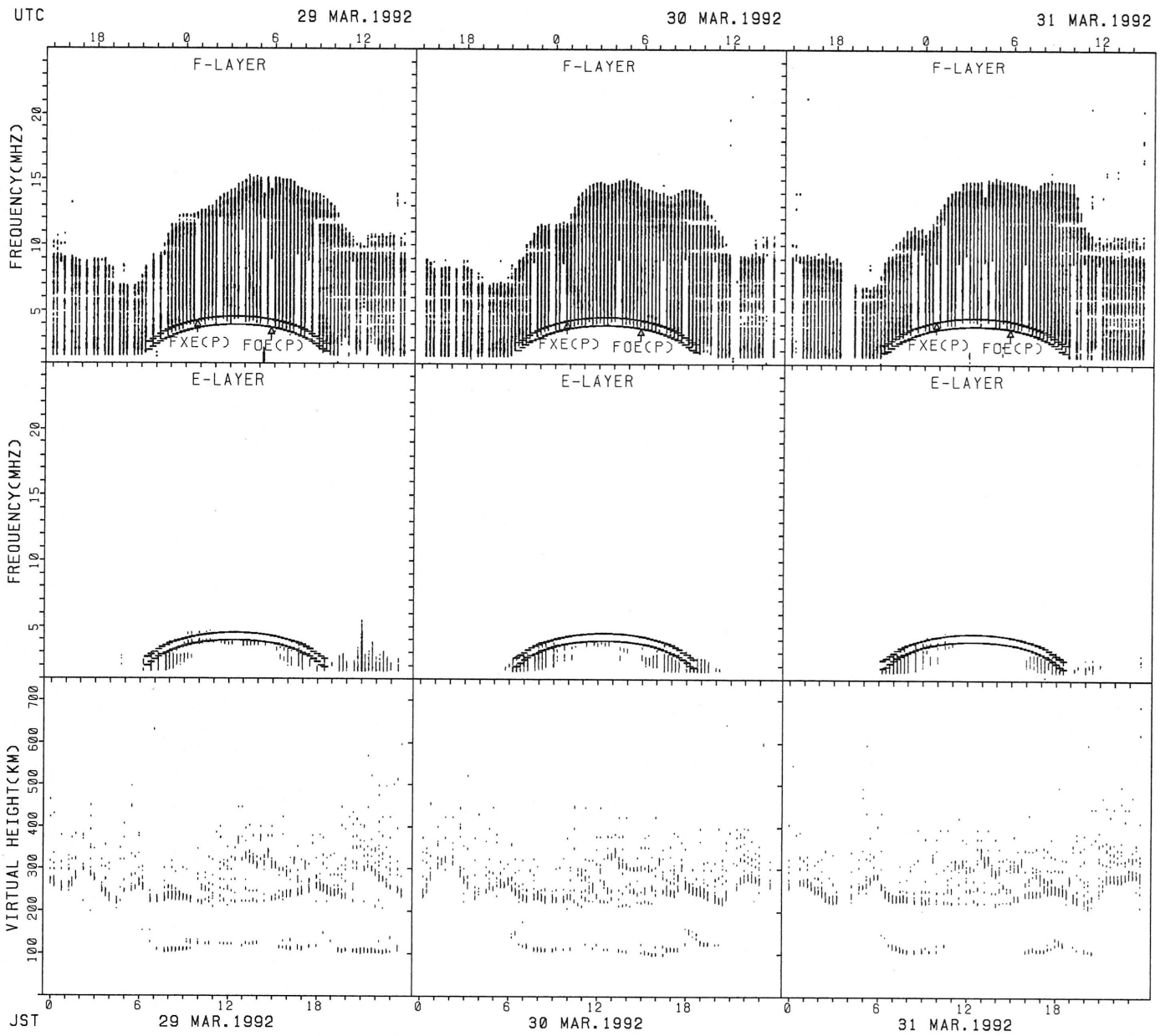
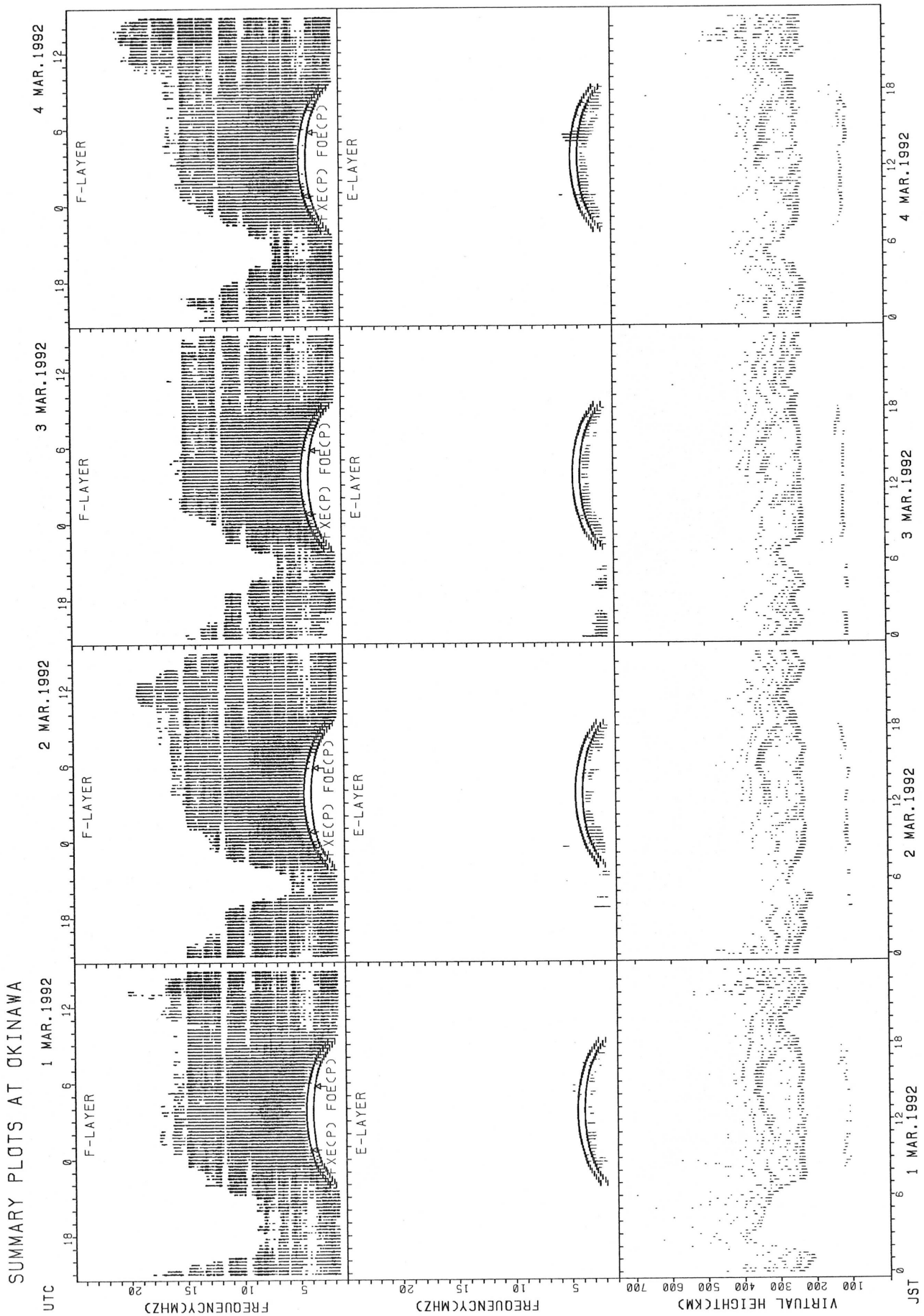
FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
JST
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT YAMAGAWA
UTC
25 MAR.1992
26 MAR.1992
27 MAR.1992
28 MAR.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

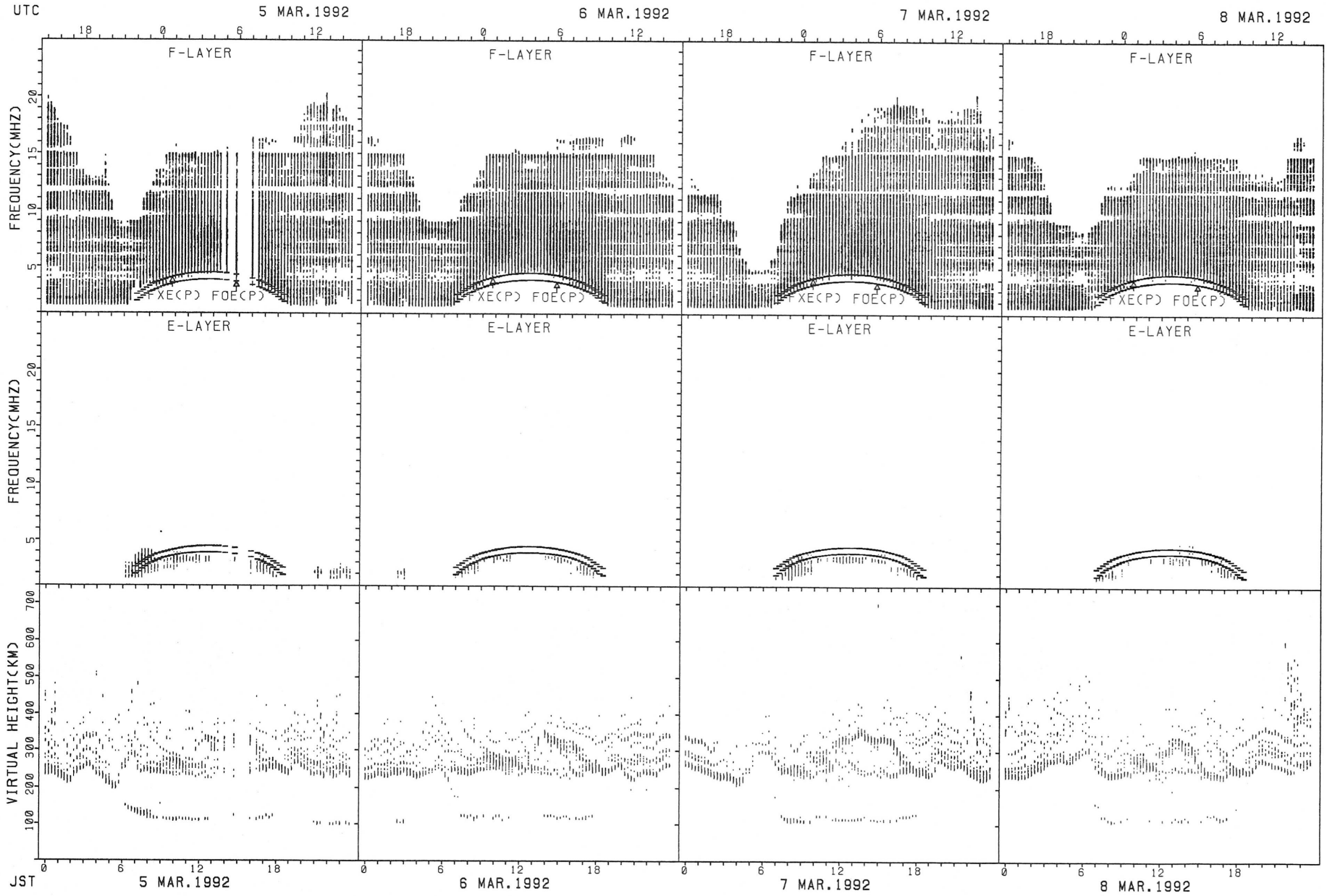
SUMMARY PLOTS AT YAMAGAWA



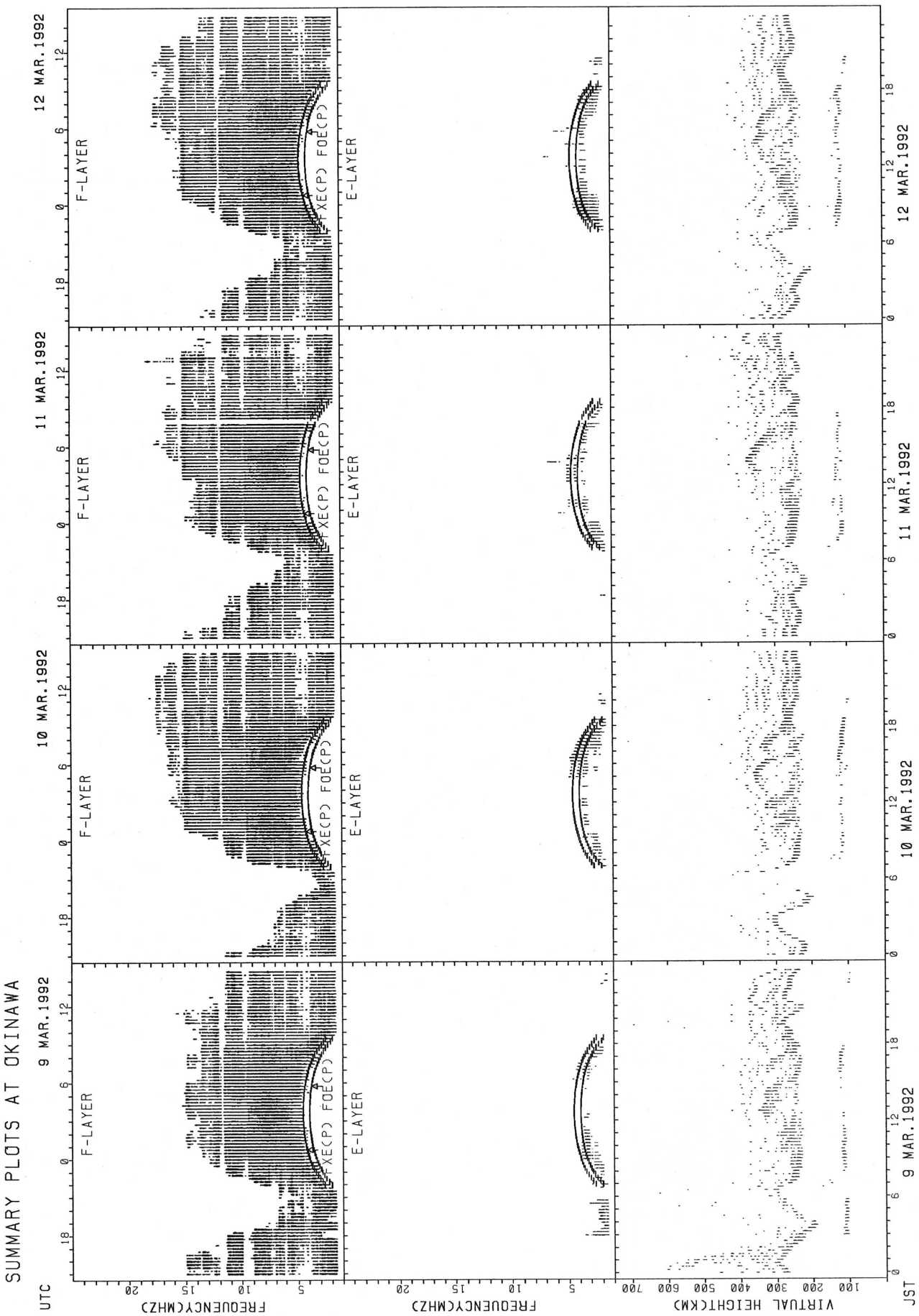
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
UTC
1 MAR.1992
2 MAR.1992
3 MAR.1992
4 MAR.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

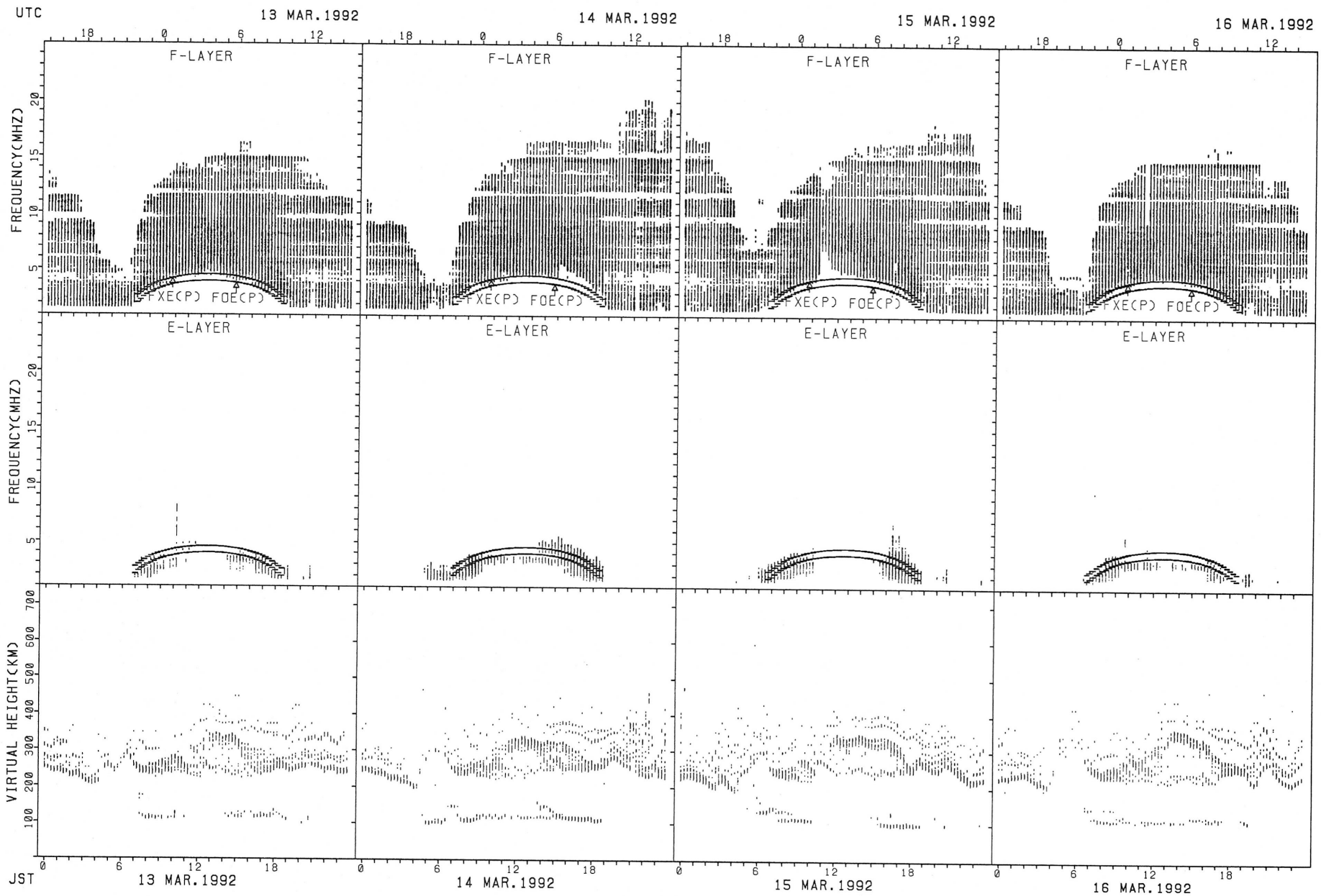
SUMMARY PLOTS AT OKINAWA



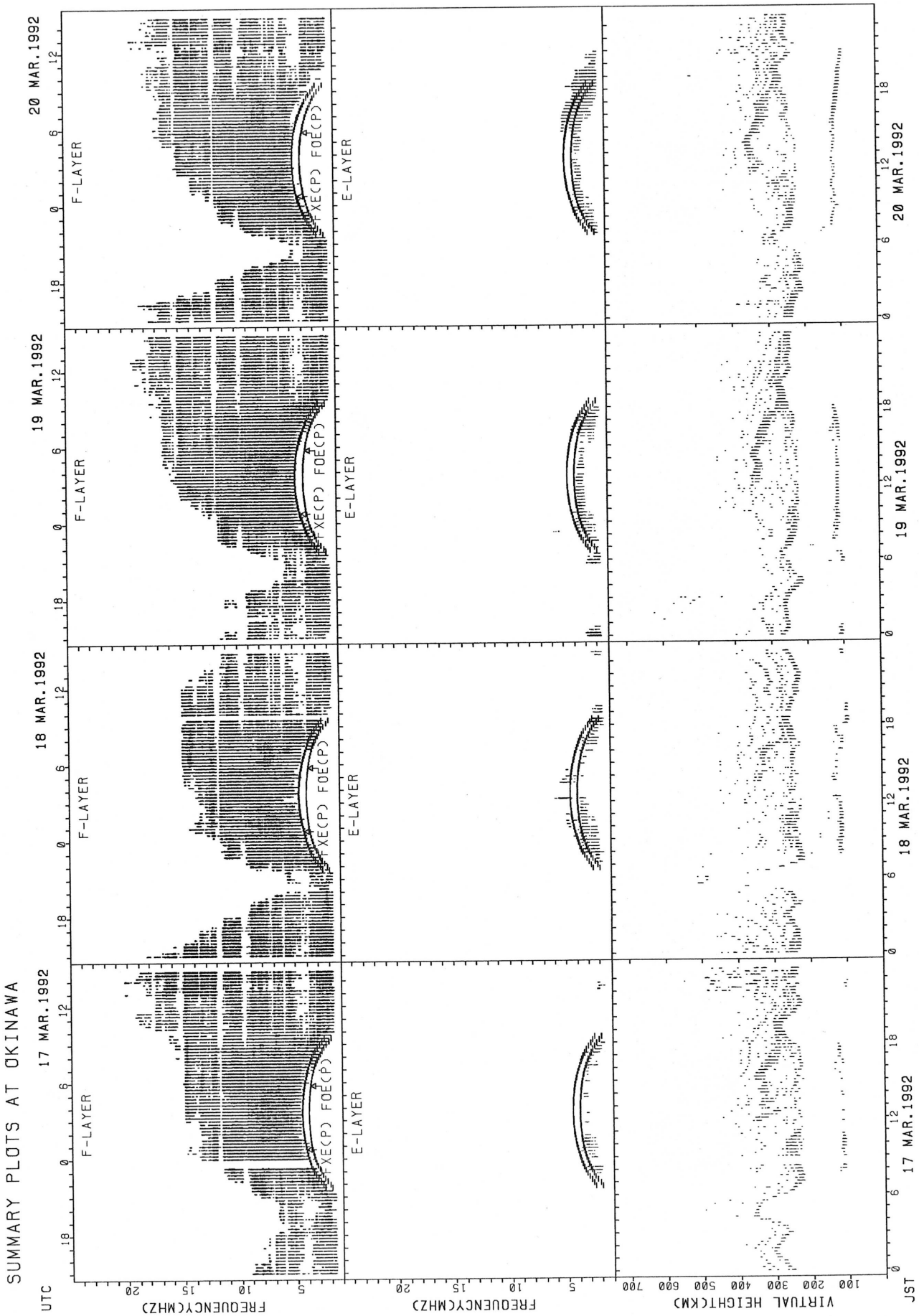
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

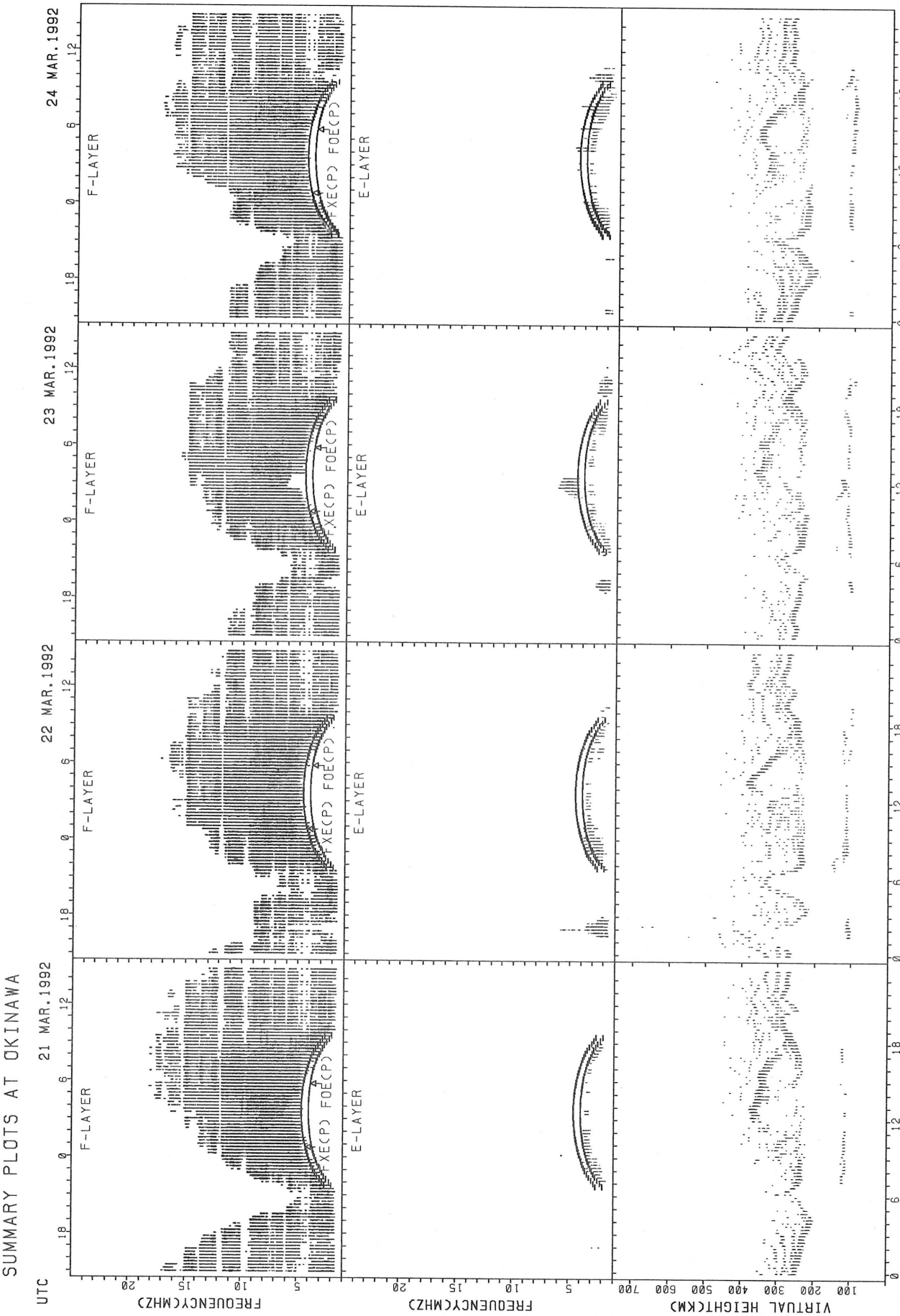

SUMMARY PLOTS AT OKINAWA
9 MAR.1992
10 MAR.1992
11 MAR.1992
12 MAR.1992
UTC
JST
F-LAYER
E-LAYER
FXE(P) FOE(P)
FREQUENCY(MHZ)
VIRTUAL HEIGHT(KM)
FXE(P); PREDICTED VALUE FOR FXE
FOE(P); PREDICTED VALUE FOR FOE

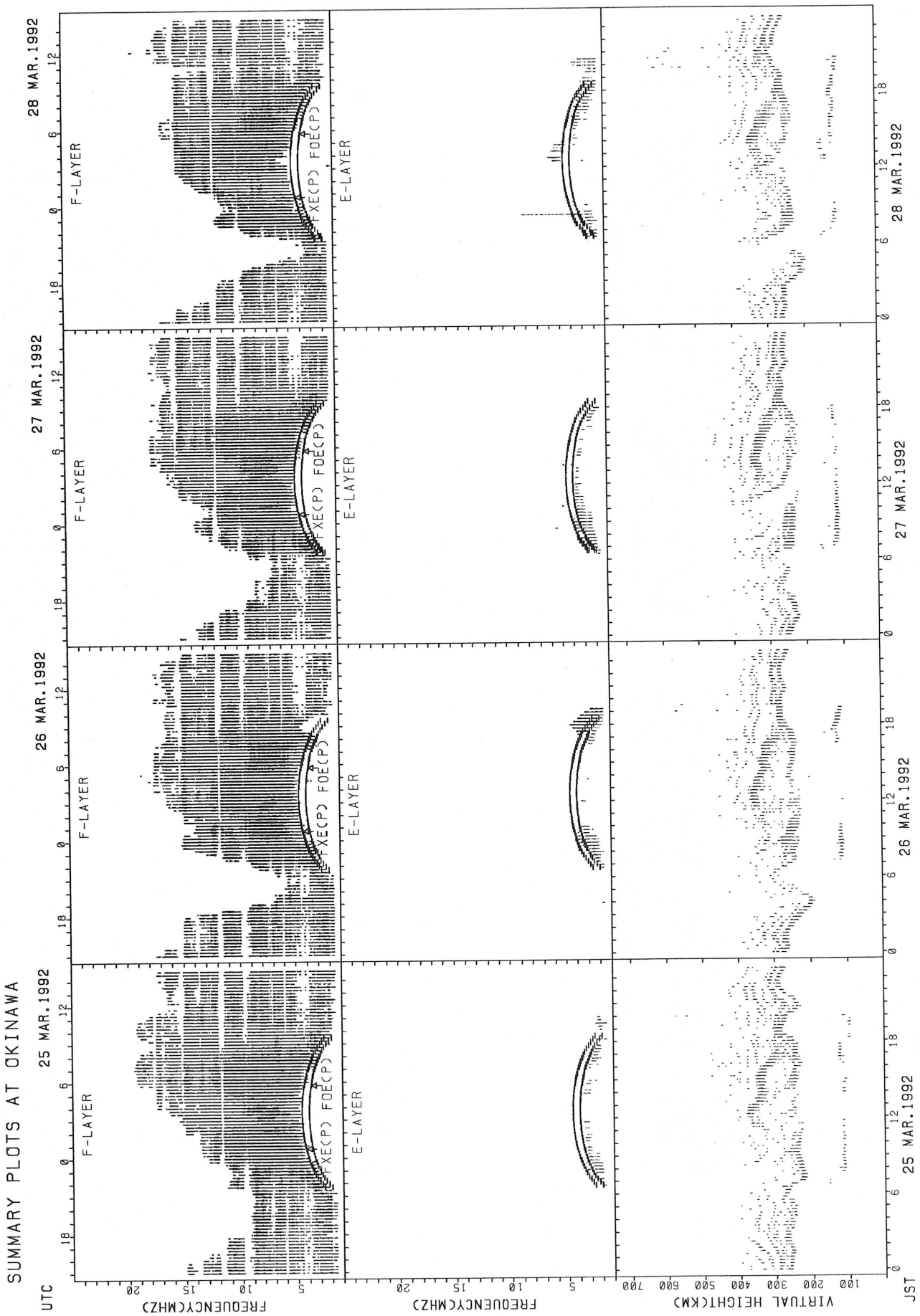
SUMMARY PLOTS AT OKINAWA



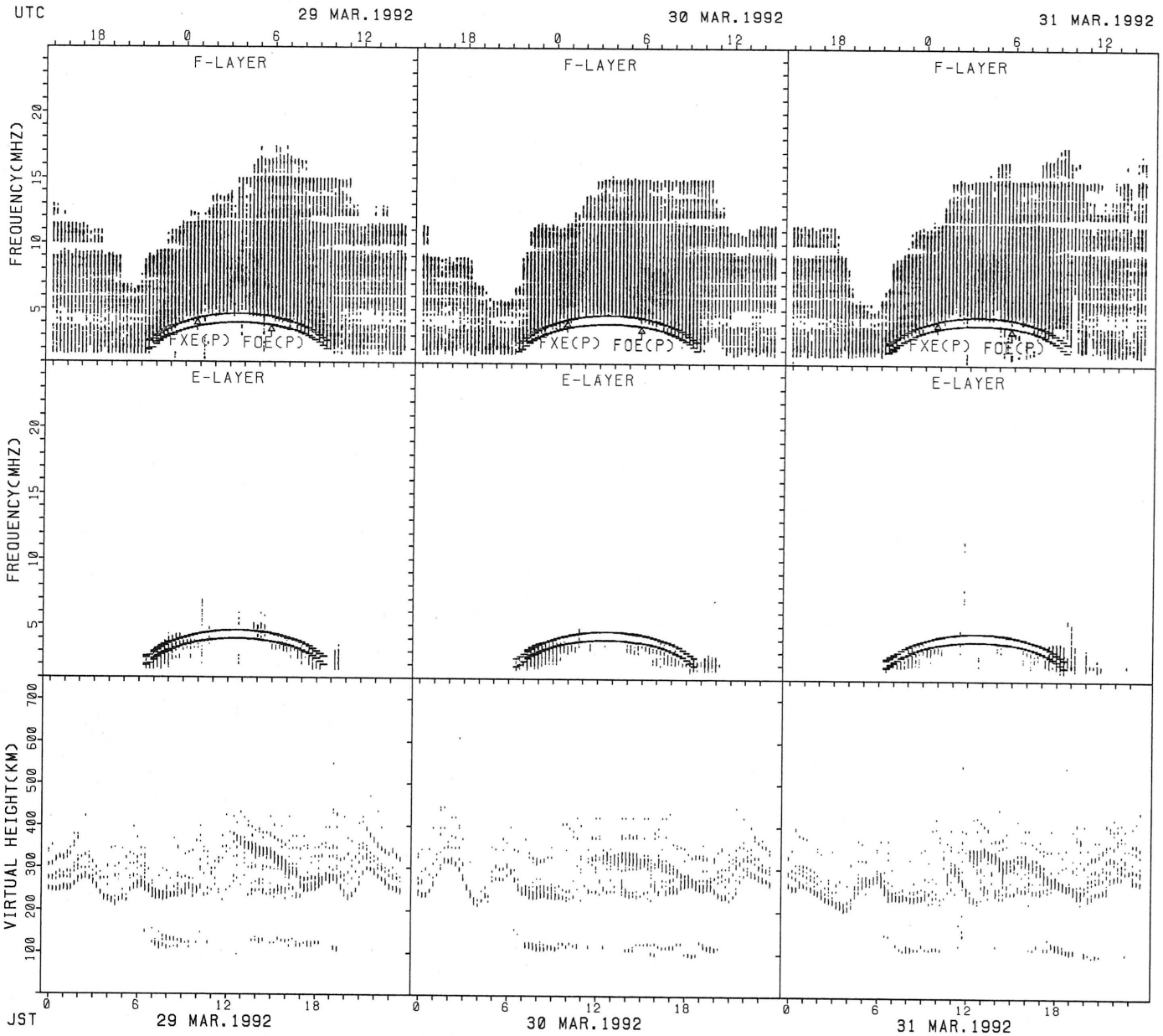
FXE(P): PREDICTED VALUE FOR FXE
FOE(P): PREDICTED VALUE FOR FOE


SUMMARY PLOTS AT OKINAWA
UTC
17 MAR.1992
18 MAR.1992
19 MAR.1992
20 MAR.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
UTC
21 MAR.1992
22 MAR.1992
23 MAR.1992
24 MAR.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
UTC
25 MAR.1992
26 MAR.1992
27 MAR.1992
28 MAR.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

MAR. 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							27	30	30	26					18	30	30	30	30	28	25	23	15	13
MED							276	249	241	243					249	257	256	250	256	283	330	328	352	360
U Q							320	258	250	258					252	288	264	256	260	296	346	350	372	384
L Q							258	244	232	240					244	248	246	244	246	274	305	310	324	316

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																								
MED																								
U Q																								
L Q																								

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							12	29	30	26					11	30	30	30	30	17				
MED							294	252	245	250					274	274	270	267	272	302				
U Q							323	264	252	262					298	290	288	274	284	336				
L Q							266	243	238	234					264	266	262	256	256	286				

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								10		10	12	13					
MED							164								111		115	114	103					
U Q							173								119		119	122	106					
L Q							149								109		111	105	99					

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

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	19	13					13	30	30	29						30	30	31	31	29	26	27	26	21
MED	352	366					288	246	243	250						282	267	258	264	288	314	336	341	344
U Q	370	408					308	254	254	263						304	284	270	274	303	326	352	370	371
L Q	326	312					258	238	236	236						276	258	250	252	276	298	314	320	311

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	17	17	15	17	12				
MED															118	117	113	119	111	103				
U Q															121	120	116	123	117	113				
L Q															111	113	109	103	99	98				

MONTHLY MEDIANS OF H'F AND H'ES

MAR. 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	21	22	15	13				19	23	24	17					22	31	30	31	26	21	19	24	24
MED	310	310	314	316				274	246	246	256					284	266	262	256	267	292	306	317	312
U Q	323	328	330	347				286	256	268	275					312	284	274	266	284	304	320	331	326
L Q	291	292	294	271				252	240	240	244					246	250	252	238	258	275	286	295	296

H'ES

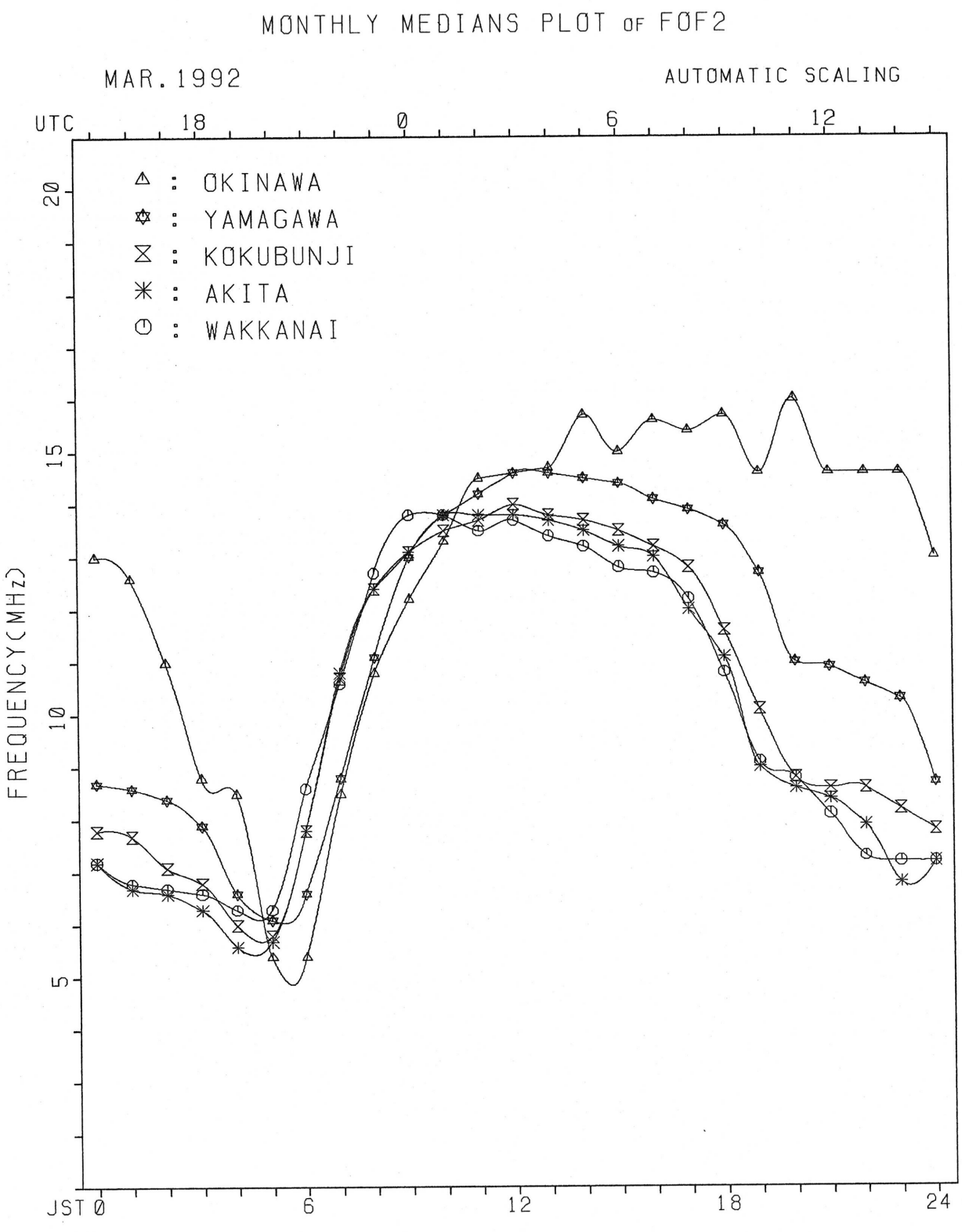
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								10			11					10	16	12	14	16	11	10		
MED								256			244					202	122	194	129	114	282	291		
U Q								274			254					280	278	272	264	267	292	306		
L Q								161			117					119	118	117	109	100	111	109		

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	28	26	27	16			28	31	31	26					12	31	30	31	31	31	31	31	31
MED	272	267	272	278	281			295	246	252	268					318	322	296	274	282	290	288	280	288
U Q	292	291	292	300	306			311	256	264	292					339	328	324	284	292	314	318	306	304
L Q	262	252	256	256	259			270	240	246	256					274	308	280	264	274	280	278	262	270

H'ES

	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																		11		10				
MED																		117		115				
U Q																		127		127				
L Q																		115		105				


MONTHLY MEDIANS PLOT OF FOF2
MAR. 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

MAR. 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 97	X 68	X 62	X 63	X 60	X 64													X 130	X 111	X 105	X 103	X 92	X 92
2	X 90	X 81	X 79	O X 81	X 68	X 65													X 126	X 114	X 109	X 102	X 96	X 88
3	X 83	X 80	X 77	X 75	X 73	X 71													X 128	X 107	X 100	X 89	X 81	X 81
4	X 80	X 76	X 75	X 68	X 64	X 64													X 123	X 108	X 109	X 97	X 89	X 86
5	X 83	X 83	X 75	X 74	X 73	X 71													X 126	X 103	X 97	X 89	X 84	X 84
6	X 82	X 75	X 71	X 67	X 65	X 67													X 125	X 107	X 97	X 78	X 72	X 70
7	X 72	X 72	X 70	X 66	X 59	X 58													X 118	X 101	X 97	X 92	X 89	X 86
8	X 80	X 71	X 66	X 61	X 60	X 62													X 114	X 99	X 92	X 83	X 82	X 84
9	X 78	X 76	X 81	X 67	X 61	X 57													X 121	X 107	X 101	X 96	X 90	X 96
10	X 92	X 74	X 74	X 73	X 74	X 69													X 129	X 111	X 102	X 104	X 92	X 86
11	X 84	X 82	X 76	X 73	X 72	X 68													X 128	X 103	X 93	X 94	X 86	X 81
12	X 82	X 85	X 78	X 74	X 67	X 65													X 121	X 96	X 95	X 91	X 84	X 84
13	X 86	X 87	X 80	X 72	X 65	X 65													X 124	X 107	X 98	X 94	X 92	X 87
14	X 80	X 81	X 83	X 82	X 60	X 56													X 115	X 102	X 94	X 94	X 96	X 98
15	X 95	X 91	X 86	X 80	X 63	X 61														X 108	X 98	X 98	X 98	X 93
16	X 84	X 80	X 75	X 61	X 59	X 59														X 103	X 89	X 90	X 91	X 83
17	X 69	X 69	X 68	X 64	X 64	X 65														X 103	X 97	X 93	X 93	X 94
18	X 85	X 83	X 75	X 72	X 68	X 55														X 79	X 78	X 81	X 78	X 69
19	X 68	X 67	X 68	X 67	X 65	X 65														X 100	X 96	X 98	X 95	X 91
20	X 85	X 82	X 77	X 70	X 68	X 67														X 104	X 96	X 97	X 98	X 96
21	X 91	X 84	X 84	X 81	X 68	X 67														X 107	X 96	X 93	X 92	X 91
22	X 85	X 73	X 82	X 81	X 65	X 66														X 92	X 86	X 87	X 88	X 84
23	X 83	X 82	X 82	X 79	X 71	X 71														X 116	X 107	X 97	X 94	X 91
24	X 94	X 90	X 90	X 90	X 75	X 74														X 109	X 100	X 97	X 97	X 94
25	X 92	X 90	X 85	X 85	X 83	X 86														X 123	X 109	X 98	X 98	X 98
26	X 91	X 91	X 94	X 92	X 73	X 70														X 105	X 99	X 98	X 97	X 95
27	X 99	X 95	X 75	X 74	X 76	X 78														X 118	X 102	X 98	X 97	X 95
28	X 91	X 87	X 87	X 86	X 68	X 59														X 113	X 91	X 93	X 95	X 92
29	X 92	X 90	X 81	X 81	X 79	X 77														X 106	X 94	X 98	X 96	X 96
30	X 84	X 83	X 81	X 79	X 79	X 82														X 113	X 96	X 88	X 89	X 88
31	X 84	X 85	X 84	X 81	X 76	X 77														X 116	X 97	X 90	X 94	X 90
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31													14	31	31	31	31	31
MED	X 84	X 82	X 78	X 74	X 68	X 66													X 124	X 107	X 97	X 94	X 92	X 90
U Q	X 91	X 87	X 83	X 81	X 73	X 71													X 128	X 111	X 101	X 98	X 96	X 94
L Q	X 82	X 75	X 75	X 67	X 64	X 62													X 121	X 103	X 94	X 90	X 88	X 84

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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

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	91	62	56	57	54	58	S 80	121	143	142	152	156	155	154	151	144	139	137	124	105	99	97	86	86
2	84	75	73	75	62	59	S 72	117	140	142	139	148	156	151	145	143	141	135	120	108	103	96	90	82
3	77	74	71	69	67	65	73	112	129	137	147	R 151	R 153	152	143	140	141	135	122	101	94	83	75	75
4	74	70	69	62	58	58	71	110	128	132	136	148	149	139	139	142	138	136	J R 117	102	103	91	83	80
5	77	77	69	68	67	65	78	R 102	124	138	144	144	144	145	140	140	134	131	120	97	91	83	78	78
6	76	69	65	61	59	61	76	103	117	128	134	149	153	151	146	145	142	137	119	101	91	72	66	64
7	66	66	64	60	53	52	60	104	116	127	127	141	149	150	144	144	139	131	R 112	96	91	86	83	80
8	74	65	60	55	54	56	63	107	125	130	134	142	145	141	138	140	131	120	108	93	86	77	76	78
9	72	R 70	75	61	55	51	62	102	133	139	138	139	141	140	135	132	132	122	J R 115	101	95	90	84	90
10	86	68	68	67	68	63	77	108	129	140	150	155	U R 153	149	146	144	139	133	123	105	96	98	86	80
11	78	76	70	67	66	62	74	105	128	141	148	150	148	143	143	142	139	138	122	97	87	88	80	75
12	76	79	72	68	61	59	72	108	128	141	147	R 155	156	154	148	140	135	129	115	90	89	85	78	78
13	80	81	S 74	66	59	60	75	105	123	131	145	146	142	140	134	136	133	127	R 118	101	92	88	86	81
14	74	75	77	76	54	50	67	103	125	126	136	136	142	144	140	134	130	125	109	96	88	88	90	92
15	89	85	80	74	57	55	63	104	121	129	134	U R 139	139	138	136	134	127	117	113	102	92	92	92	87
16	78	74	69	55	53	54	62	100	119	131	137	142	135	131	127	123	120	120	111	97	84	84	85	77
17	63	63	62	58	58	59	80	109	121	133	139	137	131	130	130	128	120	118	110	97	91	87	87	88
18	79	77	69	66	62	49	62	68	70	79	77	72	74	70	71	72	72	81	83	73	72	75	72	63
19	62	61	62	61	59	59	75	101	113	125	128	134	135	139	139	134	128	120	R 112	94	90	92	89	85
20	79	76	71	64	62	61	80	102	112	122	131	137	138	142	139	135	129	125	R 114	98	90	91	92	90
21	85	78	78	75	62	61	84	107	117	120	129	134	137	142	140	143	135	124	112	101	90	87	86	85
22	79	67	76	75	59	60	81	113	120	127	136	144	142	136	134	128	126	125	R 113	86	80	81	82	78
23	77	76	76	73	65	66	82	110	129	133	134	139	143	145	143	140	140	136	122	110	101	91	88	86
24	88	84	84	84	69	68	91	126	136	130	129	146	149	149	145	140	137	137	127	103	94	91	91	88
25	86	84	79	79	77	80	100	118	127	136	R 151	151	146	148	148	142	137	128	122	117	103	92	92	92
26	85	85	88	86	67	64	83	107	124	140	149	149	147	141	139	136	128	121	112	99	93	92	91	89
27	93	89	69	68	70	72	91	111	135	136	133	140	149	148	143	138	137	129	123	109	95	92	91	89
28	85	81	81	80	62	53	77	109	115	120	131	140	140	140	138	135	134	130	126	107	85	87	89	86
29	86	84	75	75	73	71	92	105	119	127	126	130	131	135	136	135	129	126	124	R 100	88	92	90	90
30	78	77	75	73	73	76	90	110	116	124	129	138	137	139	136	133	126	125	125	107	90	82	83	82
31	78	79	79	75	70	71	97	107	115	117	128	134	138	144	140	135	132	131	128	110	91	84	88	84
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	78	76	72	68	62	60	77	107	124	131	136	142	143	142	140	138	134	128	118	101	91	88	86	84
U Q	85	81	77	75	67	65	83	110	129	138	145	149	149	149	144	142	139	135	123	105	95	92	90	88
L Q	76	69	69	61	58	56	71	103	117	126	129	137	138	139	136	134	128	122	112	97	88	84	82	78

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

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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							
2										L		L	L		L	L								
3											L		L	L	L	L								
4												L		L	L									
5											L	L	L	L		L								
6											L	L	L		L	L								
7										L	U L 640		L	L	L	L								
8									L	L	L	L	L	L	L	L								
9									L	L	L	L	L		L	L								
10										L	L	L	L	L	L									
11										L	L	L	L	L	L	L								
12										L	L	L	L	L	L									
13										L	L	L	L	L	L	L								
14									L		L	L	L	L	L	L								
15									L	L	L		L	L	L	L	L							
16										L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18								L	L 480	490	500	520	U A 540	550	540	L								
19										L		L	L	L	L									
20									L	L	L	L	L	L	L	L	L							
21									L		L	L	L	L	L	L								
22										L	L	L	L	L		L								
23													L	L	L	L								
24									L	L		L	L	L	L	L								
25										L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L		L						
27									L		L	L	L	L		L	L							
28										L	L	L	L	L	L	L	L							
29										L	L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31											L	L	L	L	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	2	1	1	1	1									
MED									L 480	490	570	520	U A 540	550	540									
U 0																								
L 0																								

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

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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 235		305	340	365	380	390	A	A	A	290	220						
2							B 235		285	R 335	365	375	390	380	365	335	A	210						
3							B	H 250	285	340	360	375	375	370	360	335	U A 290	220						
4							B	H 245	300	340	360	380	A	375	355	A 340	A 275	A						
5							B 225		300	340	365	365	370	360	360	335	295	220						
6							B 240		310	350	375	390	395	385	365	340	290	H 215						
7							B 240		305	340	365	375	380	380	365	345	295	A 215						
8							150	230	305	340	370	390	A	370	365	335	285	A 205						
9							H 165	H 255	R 300	345	360	375	385	A	A	345	300	A 200						
10							155	H 250	310	345	370	385	370	360	A	A 315	A	A						
11							170	250	305	340	365	370	385	380	360	340	300	235						
12							175	H 260	305	340	365	375	390	380	365	335	A	210						
13							B	255	305	335	350	370	385	385	365	345	295	A						
14							145	245	305	335	355	R 380	385	375	370	345	A 295	A						
15							155	265	330	A	380	B	B	400	A 380	345	A	210	B					
16							A	260	315	340	365	385	385	380	365	340	290	225	B					
17							180	250	310	340	355	U A 355	400	395	365	345	A	230	B					
18							A	265	310	340	365	385	A	380	370	340	300	240	B					
19							170	250	310	350	360	A	A	385	A	350	A	A	B					
20							210	265	315	350	375	385	390	380	375	345	310	235	B					
21							160	270	320	345	375	A 375	A 390	375	A 360	A	A	255	140					
22							175	255	325	350	375	A	A	A	365	A 340	A	245	A					
23							170	255	310	345	370	380	U A 375	A	A	A	A	A	B					
24							H 205	270	320	360	R 375	R	385	380	355	340	305	240	B					
25							170	270	335	365	385	395	400	400	375	345	305	245	B					
26							200	270	315	350	A	390	395	390	370	345	310	250	B					
27							180	270	325	350	360	A	A	A	A	340	305	235	B					
28							205	275	330	350	A	380	395	385	370	345	310	245	B					
29							195	270	320	355	A	385	390	390	A	350	310	240	B					
30							205	270	320	345	365	A	390	375	365	345	305	235	B					
31							H 220	275	335	355	375	R	395	380	R 360	335	310	250	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							21	31	31	30	28	24	24	26	24	28	22	25	1					
MED							175	255	310	345	365	380	390	380	365	340	300	235	140					
U Q							202	270	320	350	375	385	392	385	370	345	305	242						
L Q							162	245	305	340	360	375	385	375	360	338	290	215						

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

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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

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	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14	E B 15	G	G	36	G	40	J A 42	J A 46	J A 51	J A 41	33	24	J A 16	J A 19	J A 22	E B 15	E B 13	J A 19
2	E B 13	28	J A 22	J A 19	23	23	E B 14	G	30	G	G	G	42	G	G	J A 53	J A 41	22	J A 22	22	21	E B 14	E B 14	20
3	21	J A 22	E B 15	E B 14	E B 13	E B 14	E B 15	G	G	G	37	40	G	39	39	40	33	G 21	E B 15	E B 13	E B 13	E B 14	E B 15	E B 15
4	E B 13	E B 13	E B 13	E B 13	E B 14	E B 15	E B 15	G	G	36	G	41	41	41	38	37	30	22	E B 13	E B 13	E B 14	E B 14	E B 14	E B 14
5	E B 15	E B 13	E B 13	19	E B 14	E B 14	E B 15	G	32	36	G	G 33	G 35	G 34	G 32	G 31	G	G	E B 14	E B 14	E B 13	E B 14	E B 16	E B 15
6	E B 15	E B 13	E B 14	E B 13	E B 14	E B 14	E B 14	G	G	G	G	40	G	43	42	G	G	G	E B 15	E B 16	E B 14	E B 14	E B 14	E B 13
7	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13	E B 15	G	G 25	35	G	G	G	G	G 23	G 27	G 20	26	21	E B 13	E B 14	E B 15	E B 13	20
8	E B 13	E B 13	E B 13	E B 14	E B 14	E B 14	G	J A 36	G	37	G	41	39	G 35	41	37	34	24	J A 18	J A 14	18	E B 13	E B 13	E B 13
9	E B 14	E B 14	E B 14	J A 34	J A 18	E B 14	G	G	G	G	G	40	G	41	37	G 25	G 25	24	E B 14	20	E B 13	20	20	E B 16
10	E B 14	E B 13	E B 13	E B 14	E B 14	J A 24	G	G	G	G	G	G	41	43	43	J A 42	J A 39	J A 35	J A 33	J A 21	20	E B 15	E B 14	E B 13
11	E B 14	E B 13	E B 14	E B 13	E B 14	E B 14	G	27	G	G	39	38	G 35	G	G	37	G 18	G	E B 15	E B 14	E B 15	E B 14	E B 14	E B 14
12	E B 14	E B 14	E B 14	E B 14	E B 13	E B 13	G	G	32	G	J A 47	40	G	49	38	J A 36	J A 38	24	J A E B 18	E B 15	E B 14	E B 13	E B 14	E B 14
13	E B 14	E B 14	E B 13	E B 15	E B 15	E B 13	E B 15	G	G	36	38	39	G	44	40	38	J A 40	J A 43	J A 28	J A 24	J A 34	J A 29	20	20
14	E B 15	E B 14	E B 13	E B 13	E B 13	E B 14	G	G	G	G	G	G 38	40	40	41	39	33	29	19	21	E B 14	E B 15	E B 14	E B 14
15	E B 15	E B 13	E B 13	E B 13	E B 13	E B 13	G	G	G	J A 36	G 35	E B 77	E B 48	G	39	G 35	32	23	J A 15	J A 18	E B 15	E B 13	E B 14	E B 14
16	E B 14	E B 14	E B 13	E B 13	E B 14	E B 13	23	J A 39	G	G	G	G	G	G	G	G	G	G	E B 14	E B 14	E B 13	E B 13	E B 15	E B 14
17	E B 15	E B 14	E B 14	E B 13	E B 16	E B 14	G	G	G	37	39	39	46	G	G	J A 41	J A 43	J A 28	J A 40	20	20	23	E B 14	E B 14
18	E B 14	E B 13	19	E B 14	E B 13	E B 14	20	29	33	36	43	42	J A 54	G 35	J A 38	38	J A 36	G 23	E B 15	E B 15	E B 14	E B 14	E B 14	E B 14
19	E B 14	E B 13	E B 13	E B 14	E B 14	E B 13	G	G	G	40	42	J A 45	J A 46	G 38	J A 42	J A 44	J A 51	J A 39	J A 23	J A 19	J A 24	E B 17	E B 15	E B 14
20	E B 15	E B 14	E B 14	E B 13	E B 14	E B 16	J A 37	29	G	37	39	40	41	40	39	G	G	G	J A 16	E B 14	E B 13	E B 14	E B 13	E B 15
21	E B 13	E B 13	E B 13	E B 13	E B 14	E B 14	G	G	34	39	G	40	41	G 37	40	37	30	34	18	E B 14	20	J A 18	E B 13	E B 13
22	E B 14	E B 13	E B 14	E B 13	E B 14	E B 15	G	G	35	39	42	J A 62	J A 44	J A 74	60	42	42	J A 43	J A 51	J A 44	E B 13	E B 13	E B 15	E B 14
23	E B 13	E B 14	E B 13	E B 14	E B 14	J A 16	G	G	34	36	J A 38	J A 44	44	42	42	43	J A 34	25	J A 24	J A 23	J A 32	J A 21	E B 15	E B 14
24	E B 14	E B 13	E B 13	E B 13	E B 14	E B 14	G	28	G	G	G	G 38	G	G	G 31	G 28	G 21	28	33	J A 20	22	E B 14	E B 14	E B 14
25	E B 14	E B 14	E B 13	E B 13	E B 15	E B 15	21	G	G	G	40	45	42	43	G	G 28	G	G 17	E B 17	E B 15	E B 14	20	E B 15	E B 15
26	E B 13	E B 14	E B 14	E B 13	E B 14	E B 14	G	29	33	G	38	G	G	44	54	45	43	J A 50	J A 48	J A 21	20	E B 14	E B 14	20
27	E B 13	E B 13	E B 13	E B 13	E B 13	E B 14	G	30	37	43	42	39	43	40	J A 40	G 32	G 27	G 20	24	J A 24	E B 13	E B 14	21	21
28	22	E B 13	E B 15	E B 13	E B 14	E B 14	23	30	35	G	38	G 33	41	42	41	G 19	35	31	J A 28	E B 14	E B 13	E B 13	E B 13	E B 13
29	E B 14	E B 13	E B 13	E B 13	E B 13	E B 13	G	30	34	G	41	G 39	G	G	40	G	G 21	G 19	E B 16	21	E B 14	E B 13	E B 13	E B 15
30	E B 15	E B 13	E B 13	E B 13	J A 21	E B 14	G	G	G	G	39	40	G	G	G	G	G	G	20	E B 14	20	E B 14	18	E B 13
31	E B 14	E B 13	E B 13	E B 13	E B 13	E B 14	G	30	38	38	39	G	G 39	G	G	G	G	G	17	J A 17	E B 14	E B 14	E B 14	E B 15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E B 14	E B 13	E B 13	E B 13	E B 14	E B 14	G	G	G	35	38	40	40	39	39	37	32	24	18	17	E B 14	E B 14	E B 14	E B 14
U Q	E B 15	E B 14	E B 14	E B 14	E B 14	E B 14	G	29	33	37	39	41	42	43	41	J A 41	J A 38	J A 29	J A 24	J A 21	20	15	15	15
L Q	E B 14	E B 13	E B 13	E B 13	E B 13	E B 14	E B 15	G	G	G	G	G	G	G	G	G 35	G	G	E B 15	E B 14	E B 13	E B 14	E B 14	E B 14

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

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

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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	15	14	14	14	14	14	15	17	16	17	18	21	22	24	18	19	17	13	14	14	15	15	13	13
2	13	13	14	13	13	14	14	14	16	17	20	19	20	30	20	17	14	13	13	16	14	14	14	14
3	13	14	15	14	13	14	15	17	16	19	18	19	30	20	20	19	17	15	15	13	13	14	15	15
4	13	13	13	13	14	15	15	13	16	17	18	25	21	24	17	18	17	13	13	13	14	14	14	14
5	15	13	13	13	14	14	15	14	15	20	19	18	26	24	22	19	15	15	14	14	13	14	16	15
6	15	13	14	13	14	14	14	15	18	20	26	27	32	30	26	21	16	15	15	16	14	14	14	13
7	14	13	13	13	13	13	15	15	16	17	20	20	22	19	16	13	13	14	15	13	14	15	13	14
8	13	13	13	14	14	14	13	14	16	18	33	34	27	30	24	18	16	13	13	14	13	13	13	13
9	14	14	14	13	14	14	14	14	16	19	21	27	29	E S 32	30	20	14	13	14	14	13	15	14	16
10	14	13	13	14	14	14	13	14	16	17	32	22	20	18	17	16	14	13	13	14	13	15	14	13
11	14	13	14	13	14	14	14	15	15	18	20	20	31	27	22	E S 30	14	14	15	14	15	14	14	14
12	14	14	14	14	13	13	14	14	13	16	20	20	23	21	20	18	13	13	13	15	14	13	14	14
13	14	14	13	15	15	13	15	14	15	16	18	19	31	27	20	17	17	13	16	14	15	15	15	14
14	15	14	13	13	13	14	13	13	16	17	19	25	27	23	22	19	18	15	13	15	14	15	14	14
15	15	13	13	13	13	13	14	13	14	20	19	77	48	35	25	21	14	13	14	14	15	13	14	14
16	14	14	13	13	14	13	15	14	17	18	18	24	22	31	18	18	16	14	14	14	13	13	15	14
17	15	14	14	13	16	14	14	13	16	15	18	20	22	18	17	18	15	15	13	13	14	14	14	14
18	14	13	13	14	13	14	13	14	15	16	18	19	20	29	18	18	15	16	15	15	14	14	14	14
19	14	13	13	14	14	13	15	13	14	18	20	24	20	21	20	19	18	14	13	13	13	17	15	14
20	15	14	14	13	14	16	14	14	17	18	20	27	34	23	18	18	15	15	15	14	13	14	13	15
21	13	13	13	13	14	14	14	14	16	19	23	26	32	25	20	18	16	14	11	14	13	14	13	13
22	14	13	14	13	14	15	15	14	16	19	23	22	23	20	19	19	16	13	13	13	13	13	15	14
23	13	14	13	14	14	14	14	14	16	17	20	25	24	23	23	21	16	14	13	13	14	14	15	14
24	14	13	13	13	14	14	16	16	17	18	27	22	27	27	21	18	14	14	14	14	14	14	14	14
25	14	14	13	13	15	15	14	14	17	20	31	31	31	35	18	17	14	12	17	15	14	14	15	15
26	13	14	14	13	14	14	15	13	16	21	21	31	22	25	20	16	14	16	14	13	13	14	14	13
27	13	13	13	13	13	14	13	14	16	18	24	31	33	33	25	18	17	13	15	15	13	14	15	14
28	14	13	15	13	14	14	15	17	18	18	20	21	26	21	19	17	16	14	13	14	13	13	13	13
29	14	13	13	13	13	13	13	15	16	18	32	32	30	30	24	22	14	13	16	13	14	13	13	15
30	15	13	13	13	13	14	14	15	17	19	20	22	28	26	19	18	16	15	14	14	13	14	13	13
31	14	13	13	13	13	14	15	14	16	17	20	21	31	33	31	18	18	16	13	13	14	14	14	15
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	14	13	13	13	14	14	14	14	16	18	20	22	27	25	20	18	16	14	14	14	14	14	14	14
U Q	15	14	14	14	14	14	15	15	16	19	23	27	31	30	23	19	17	15	15	14	14	14	15	14
L Q	13	13	13	13	13	14	14	14	16	17	19	20	22	21	18	18	14	13	13	13	13	14	13	13

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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	260	215	220	220	240	S 285	300	305	290	290	285	275	270	265	270	270	280	270	275	280	280	275	275
2	270	265	260	300	255	250	S 280	315	310	305	295	275	290	280	275	280	275	280	280	275	280	280	285	270
3	275	270	255	255	255	245	265	320	305	295	290	R 285	R 285	280	275	275	280	290	290	280	295	285	270	265
4	270	275	285	275	250	245	275	320	315	300	290	285	295	280	275	280	285	300	J R 285	280	285	285	275	275
5	270	280	255	250	260	270	285	R 315	300	305	300	290	285	285	280	285	280	290	295	280	285	275	265	285
6	290	275	280	255	250	255	285	320	305	295	290	295	295	290	285	280	290	295	290	285	300	285	275	275
7	275	290	290	295	265	255	280	330	300	325	300	290	290	295	285	285	290	300	R 300	280	285	285	290	295
8	290	280	265	250	250	250	265	315	320	315	285	300	285	285	280	285	290	300	290	290	295	275	280	275
9	255	R 265	290	315	265	265	275	305	310	315	290	290	290	280	275	280	290	290	J R 285	290	290	275	265	280
10	300	285	255	250	265	290	270	310	290	295	295	300	U R 295	285	275	280	280	290	290	290	285	290	290	275
11	275	285	275	270	265	255	275	305	310	305	300	295	285	280	275	275	285	300	295	285	275	285	270	255
12	255	280	280	275	260	250	275	305	300	295	300	R 305	295	290	285	285	290	295	300	275	275	275	265	270
13	280	290	S 295	280	255	270	305	310	315	300	300	295	290	285	280	290	290	300	R 300	295	290	280	285	295
14	275	290	295	315	270	265	295	320	320	300	300	280	285	285	285	290	295	300	295	285	280	275	285	290
15	295	295	300	310	260	260	290	310	320	300	295	U R 295	285	285	275	285	285	290	295	290	270	280	295	305
16	295	295	295	315	250	245	295	305	310	305	300	295	285	280	275	275	280	285	295	290	265	270	295	300
17	275	255	255	250	235	245	290	325	300	305	285	295	285	280	280	280	285	290	290	285	275	280	260	280
18	265	255	260	250	260	210	235	245	240	230	245	225	235	245	250	265	275	285	290	270	270	285	295	280
19	260	260	260	265	260	260	300	315	310	300	290	290	285	280	280	285	290	290	R 295	285	275	285	295	290
20	290	285	285	295	275	275	315	320	310	295	290	285	280	280	275	275	280	290	R 305	280	270	280	290	295
21	295	290	295	295	280	275	305	325	310	295	285	280	275	280	270	275	285	285	290	285	270	265	265	270
22	270	220	250	305	260	240	285	310	305	295	280	285	275	270	275	275	275	290	R 295	280	265	265	270	265
23	265	265	265	270	265	260	290	305	300	295	280	275	275	270	265	270	275	280	280	290	280	270	260	255
24	260	260	265	295	275	260	285	310	310	285	270	275	275	275	275	275	275	290	295	285	275	270	270	270
25	260	260	250	255	255	255	295	315	295	290	R 295	280	270	270	275	275	280	280	280	285	270	270	270	275
26	260	260	280	305	265	275	295	295	285	290	295	290	290	275	275	280	285	290	295	280	280	270	265	265
27	290	305	280	250	260	260	290	305	315	300	280	275	280	285	275	280	280	285	290	290	275	275	275	280
28	285	260	275	315	285	270	290	315	315	295	285	285	280	280	280	275	280	290	295	290	260	265	270	270
29	280	280	265	275	280	280	320	315	305	305	285	290	275	275	275	275	280	285	295	R 295	260	270	270	290
30	270	260	250	265	270	285	310	310	305	295	280	280	270	275	275	285	285	285	300	305	290	270	270	275
31	265	270	280	280	280	285	325	320	310	285	290	285	275	285	280	280	290	300	305	305	290	270	275	265
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	275	275	275	275	260	260	290	315	310	295	290	285	285	280	275	280	285	290	295	285	280	275	275	275
U Q	290	285	285	300	270	270	295	320	310	305	295	295	290	285	280	285	290	295	R 295	290	285	285	285	290
L Q	265	260	255	255	255	250	275	305	300	295	285	280	275	275	275	275	280	285	290	280	270	270	270	270

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

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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

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							
2										L		L	L		L	L								
3											L		L	L	L	L								
4												L		L	L									
5											L	L	L	L		L								
6											L	L	L		L	L								
7										L	U L 350		L	L	L	L								
8									L	L	L	L	L	L	L	L								
9									L	L	L	L	L		L	L								
10										L	L	L	L	L	L									
11										L	L	L	L	L	L	L								
12										L	L	L	L	L	L									
13										L	L	L	L	L	L	L								
14									L		L	L	L	L	L	L								
15									L	L	L	B	L	L	L	L	L							
16										L	L	L	L	L	L	L								
17										L	L	L	L	L	L	L								
18								L	L 315	335	355	370	A	335	330	L								
19										L		L	L	L	L									
20									L	L	L	L	L	L	L	L	L							
21									L		L	L	L	L	L	L								
22										L	L	L	L	L		L								
23													L	L	L	L								
24									L	L		L	L	L	L	L								
25										L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L		L						
27									L		L	L	L	L		L	L							
28										L	L	L	L	L	L	L	L							
29										L	L	L	L	L	L	L								
30									L	L	L	L	L	L	L	L								
31											L	L	L	L	L	L	L							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT									1	1	2	1		1	1									
MED									L 315	335	352	370		335	330									
U Q																								
L Q																								

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

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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											300		330	320	345	L 340	300							
2										260		330	275		310	305								
3											300		300	310	L 320	300								
4												310		L 335	L 330									
5											280	300	295	L 300		290								
6											260	300	270		310	300								
7										255	290		285	300	300	300								
8									255	260	255	260	305	310	310	300								
9									255	240	300	260	270		L 335	310								
10										285	295	270	260	270	310									
11										250	270	265	270	315	310	L 310								
12										305	265	280	270	280	300									
13										260	280	300	310	L 305	260	285								
14									255		260	L 305	300	265	295	270								
15									240	270	260	E B 295	310	310	310	290	285							
16										265	265	280	260	300	305	300								
17										270	305	255	L 305	330	310	L 315								
18								L 410	425	455	435	525	495	490	475	L 380								
19										255		300	290	310	290									
20									260	260	L 300	290	280	305	305	305	275							
21									270		L 300	300	L 315	310	L 320	310								
22										270	300	300	340	L 335		320								
23													L 320	L 315	330	320								
24									250	L 320		320	320	320	310	310								
25										300	295	310	L 330	330	310	310	310							
26										L 300	285	280	295	L 330	L 330	310		280						
27									255		260	320	320	305		305	290							
28										310	305	275	310	305	310	L 310	L 300							
29										255	235	255	L 340	315	300	310								
30									250	255	325	300	270	305	300	300								
31											270	310	315	300	310	305	290							
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT								1	10	21	26	27	30	28	28	27	7	1						
MED								L 410	255	265	288	300	302	310	310	305	290	280						
U Q									260	300	300	310	320	320	L 320	L 310	300							
L Q									250	255	265	275	275	302	302	300	285							

MAR. 1992 H'F2 (KM) COMMUNICATIONS RESEARCH LABORATORY, JAPAN

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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	260	250	390	435	425	375	270	230	235	230	220	230	225	225	230	235	240	245	220	240	270	250	245	270
2	255	265	290	270	240	330	290	230	225	H 220	220	220	235	230	225	235	240	230	220	245	255	245	260	270
3	265	280	305	305	295	335	295	220	220	220	H 210	220	220	H 230	230	235	245	230	225	230	245	235	260	290
4	290	260	260	265	320	360	290	230	225	225	H 210	H 210	240	235	230	235	240	245	220	250	260	230	250	270
5	285	270	290	310	270	280	265	240	235	230	H 220	230	210	H 215	230	230	240	240	225	230	240	250	270	280
6	260	270	280	310	325	325	275	225	230	235	235	H 235	240	230	230	230	245	240	220	220	240	220	275	295
7	300	275	260	255	260	320	290	235	225	225	205	H 225	220	H 225	235	230	245	235	220	230	255	265	260	260
8	250	270	300	335	335	350	280	230	220	230	230	215	225	245	235	240	245	230	230	225	250	250	280	300
9	310	300	275	A 225	270	295	290	235	230	230	H 220	230	235	240	235	235	240	235	235	245	250	270	285	280
10	230	260	315	325	240	260	285	225	220	H 210	230	235	240	230	225	240	240	240	235	230	260	255	250	270
11	270	270	270	270	280	275	270	230	235	225	230	H 220	220	H 205	230	240	245	240	225	220	260	260	270	330
12	310	280	265	260	H 220	335	270	230	225	220	230	H 220	230	H 220	H 220	230	240	240	225	230	265	260	280	290
13	280	275	250	235	230	285	260	230	230	220	H 200	230	H 195	H 230	220	225	245	245	230	235	250	265	260	255
14	280	275	260	230	H 205	300	260	230	235	H 225	210	225	220	235	230	230	240	240	225	230	250	265	270	270
15	255	260	240	235	215	310	265	240	225	225	225	B	B 250	240	230	235	235	245	245	230	280	265	260	245
16	255	260	255	240	310	350	270	235	240	230	220	230	225	225	220	230	235	245	235	235	290	300	260	230
17	265	320	310	320	390	365	240	225	230	230	H 225	210	250	230	225	230	240	250	245	250	260	270	305	285
18	270	275	265	290	250	440	325	280	260	255	240	240	A	225	230	235	245	255	250	240	285	265	260	265
19	280	310	310	290	290	300	260	235	H 220	225	225	210	220	220	220	240	235	245	250	240	255	260	255	255
20	265	270	265	250	265	280	250	230	230	225	220	215	215	225	235	H 230	235	245	235	225	260	275	275	265
21	255	255	265	255	245	275	250	235	225	230	H 220	220	H 205	230	235	225	250	240	240	235	250	280	305	290
22	285	410	330	250	265	370	240	230	H 220	H 220	225	240	235	A 255	E A 265	240	255	255	A 250	E A 270	275	295	300	290
23	295	300	290	255	245	290	240	230	230	225	230	225	240	230	230	240	255	245	245	250	240	260	305	300
24	305	305	290	245	220	290	255	245	225	H 215	220	225	235	230	225	225	240	250	235	225	265	270	290	300
25	305	305	315	300	290	320	250	220	220	225	210	240	H 235	230	230	240	235	240	260	250	225	245	285	290
26	285	305	275	235	210	255	245	235	225	H 210	H 200	225	240	H 230	A 255	245	A 250	A 250	A 250	245	260	290	295	300
27	270	240	240	295	305	305	240	230	235	235	220	215	235	230	H 220	225	240	245	250	240	240	260	280	280
28	275	300	290	230	215	260	250	235	225	H 215	230	220	H 230	225	225	230	245	250	250	225	215	290	295	295
29	285	260	300	275	260	260	225	230	225	225	225	215	220	225	230	225	240	245	240	225	250	290	280	240
30	260	310	330	285	280	255	230	230	225	215	215	235	215	210	H 220	H 220	240	250	250	230	230	260	280	270
31	280	290	260	260	260	280	230	230	230	220	215	230	H 210	225	215	235	250	250	240	225	220	255	280	280
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	275	275	280	265	265	300	260	230	225	225	220	225	228	230	230	235	240	245	235	230	255	260	275	280
U Q	285	300	305	300	295	335	280	235	230	230	230	230	235	230	230	240	245	250	250	245	260	270	285	290
L Q	260	260	260	245	240	280	245	230	225	220	215	220	220	225	225	230	240	240	225	225	240	250	260	265

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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 125	115	110	110	110		115	115	115	115	A	A 135						
2							B 115	110	110	110	110		110	120	110	A 125	A	A 140						
3							B 120	110	110	110	110		B 120	115	115	115	115	E A 165						
4							B 120	115	110	115	115		115	A 120	115	115	115	A						
5							B 120	115	115	115	A 125		A 130	A 135	A 130	A 130	115	120						
6							B 120	115	115	120	120		B 120	125	120	115	115	130						
7							B 115	A 130	A 125	115	115		120	115	115	A 120	115	120						
8							B 180	120	115	110	B 130	B 125	A	A	E A 150	E A 140	A 120	A						
9							170	115	115	110	115	115	120	A	A	A 120	125	A						
10							180	115	110	110	B 120	115	115	Y 130	115	115	115	A						
11							B 175	115	110	110	115	115	E A 145	115	115	E S 130	120	115						
12							160	115	115	110	110	110	115	115	115	115	A	120						
13							B 115	110	110	110	110		125	120	120	115	115	A						
14							B 115	115	115	115	120		120	115	120	115	115	A						
15							155	120	115	115	A 125	B	B	B 125	120	A	A	120	B					
16							A 115	115	110	110	115		115	B 120	115	115	115	120	B					
17							B 160	115	110	110	110	115	120	110	110	A 135	A	A	B					
18							A 115	110	110	115	115		A	A 130	A 140	A 125	115	A 135	B					
19							180	115	110	115	115	A	115	A 135	A	A 125	A	A	B					
20							150	115	110	110	115	120	B 125	115	115	115	115	120	B					
21							140	115	110	110	115	115	125	A 130	A	A	A	A 125	120					
22							140	120	115	A 130	115	115	115	A	E A 135	A	A	A	A					
23							130	115	115	115	A 135	110	115	115	115	115	A	A	B					
24							150	115	115	120	120	A	115	115	A 120	A 120	A 120	A 120	B					
25							140	115	115	115	115	120	115	B 130	115	A 120	115	115	B					
26							B 145	115	110	110	A	125	115	A 125	120	A 120	A 115	120	B					
27							B 140	115	A 135	110	115	A	A	A	A	A 130	A 130	A 115	B					
28							B 150	115	115	110	A	A 120	Y 130	A 125	120	120	115	120	B					
29							135	E A 140	E A 145	115	A	A 130	120	115	115	115	A 115	115	B					
30							145	110	110	110	E A 130	A	120	115	110	110	110	115	B					
31							140	115	110	110	110	115	A 125	B 125	120	110	115	120	B					
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT							20	31	31	31	28	26	27	27	27	28	22	21	1					
MED							150	115	115	110	115	115	120	120	115	116	115	120	120					
U Q							165	120	115	115	118	120	125	A 125	A 120	A 125	A 115	A 128						
L Q							140	115	110	110	110	115	115	115	115	115	115	118						

IONOSPHERIC DATA STATION KOKUBUNJI

MAR. 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

D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	B	B	B	B	B	B	B	G	G	E G 180	G	E G 175	115	115	110	110	130	135	115	105	105	B	B	115
2	B	105	105	105	110	130	B	G	155	G	G	G	E G 190	G	G	100	100	105	95	95	100	B	B	110
3	110	105	B	B	B	B	B	G	G	G	E G 170	145	G	125	130	130	120	115	B	B	B	B	B	B
4	B	B	B	B	B	B	B	G	G	145	G	130	130	130	130	125	120	115	B	B	B	B	B	B
5	B	B	B	110	B	B	B	G	160	E G 160	G	110	115	110	110	110	G	G	B	B	B	B	B	B
6	B	B	B	B	B	B	B	G	G	G	G	120	G	140	140	G	G	G	B	B	B	B	B	B
7	B	B	B	B	B	B	B	G	110	125	G	G	G	G	105	100	100	125	115	B	B	B	B	105
8	B	B	B	B	B	B	G	110	G	135	G	150	115	115	155	165	130	105	110	115	100	B	B	B
9	B	B	B	110	115	B	G	G	G	G	G	125	G	125	115	110	105	145	B	105	B	105	105	B
10	B	B	B	B	B	115	G	G	G	G	G	G	130	120	115	115	115	100	100	100	105	B	B	B
11	B	B	B	B	B	B	G	E G 175	G	G	125	125	115	G	G	140	110	G	B	B	B	B	B	B
12	B	B	B	B	B	B	G	G	E G 180	G	130	E G 190	G	135	140	130	120	145	100	B	B	B	B	B
13	B	B	B	B	B	B	B	G	G	150	130	150	G	150	135	135	120	115	115	100	110	110	110	105
14	B	B	B	B	B	B	G	G	G	G	G	115	130	130	125	125	120	115	115	115	B	B	B	B
15	B	B	B	B	B	B	G	G	G	120	110	B	B	G	125	120	115	150	110	110	B	B	B	B
16	B	B	B	B	B	B	150	110	G	G	G	G	G	G	G	G	G	G	B	B	B	B	B	B
17	B	B	B	B	B	B	G	G	G	145	125	120	175	G	G	110	120	110	110	105	105	130	B	B
18	B	B	115	B	B	B	150	E G 180	E G 180	E G 165	140	140	110	115	115	120	125	120	B	B	B	B	B	B
19	B	B	B	B	B	B	G	G	G	125	120	115	110	110	110	120	140	105	100	110	120	B	B	B
20	B	B	B	B	B	B	100	E G 175	G	E G 150	150	145	135	135	140	G	G	G	105	B	B	B	B	B
21	B	B	B	B	B	B	G	G	140	125	G	120	125	120	E G 190	115	110	140	155	B	105	100	B	B
22	B	B	B	B	B	B	G	G	155	125	120	110	115	105	125	135	105	125	120	115	B	B	B	B
23	B	B	B	B	B	110	G	G	E G 175	E G 160	110	125	120	120	115	115	115	130	120	105	115	100	B	B
24	B	B	B	B	B	B	G	E G 175	G	G	G	115	G	G	110	110	105	105	100	100	100	B	B	B
25	B	B	B	B	B	B	155	G	G	G	E G 150	150	155	155	G	110	G	105	B	B	B	120	B	B
26	B	B	B	B	B	B	G	145	125	G	115	G	G	160	140	140	130	120	120	120	120	B	B	110
27	B	B	B	B	B	B	G	175	150	125	120	120	115	115	110	110	110	110	130	120	B	B	115	115
28	110	B	B	B	B	B	E G 200	170	135	G	110	110	170	150	160	110	170	145	115	B	B	B	B	B
29	B	B	B	B	B	B	G	175	165	G	120	120	G	G	120	G	100	100	B	140	B	B	B	B
30	B	B	B	B	135	B	G	G	G	G	150	105	G	G	G	G	G	G	135	B	125	B	100	B
31	B	B	B	B	B	B	G	165	140	145	145	G	115	G	G	G	G	G	140	120	B	B	B	B
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT	2	2	2	3	3	3	5	11	13	16	18	24	19	21	24	25	24	24	21	17	12	6	4	6
MED	110	105	110	110	115	115	150	172	148	135	122	121	118	125	124	115	118	115	115	110	105	108	108	110
U O				110	135	130	178	175	E G 170	E G 155	145	145	135	138	140	130	122	132	120	118	118	120	112	115
L O				105	110	110	125	145	138	125	120	115	115	115	112	110	108	105	102	102	102	100	102	105

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

IONOSPHERIC DATA STATION KOKUBUNJI

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

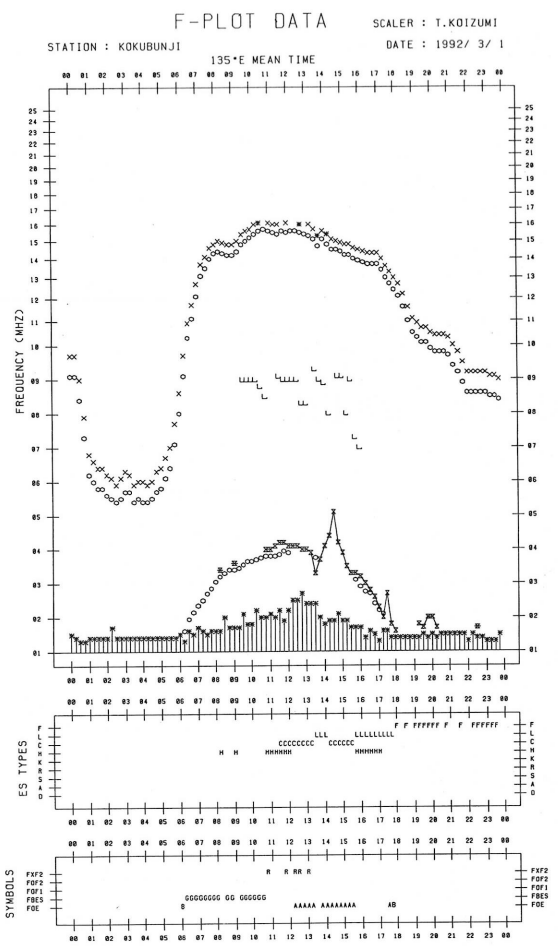
LAT. 35°42.4'N LON. 139°29.3'E SWEEP 1.0MHZ TO 25.0MHZ IN 24.0SEC IN MANUAL SCALING

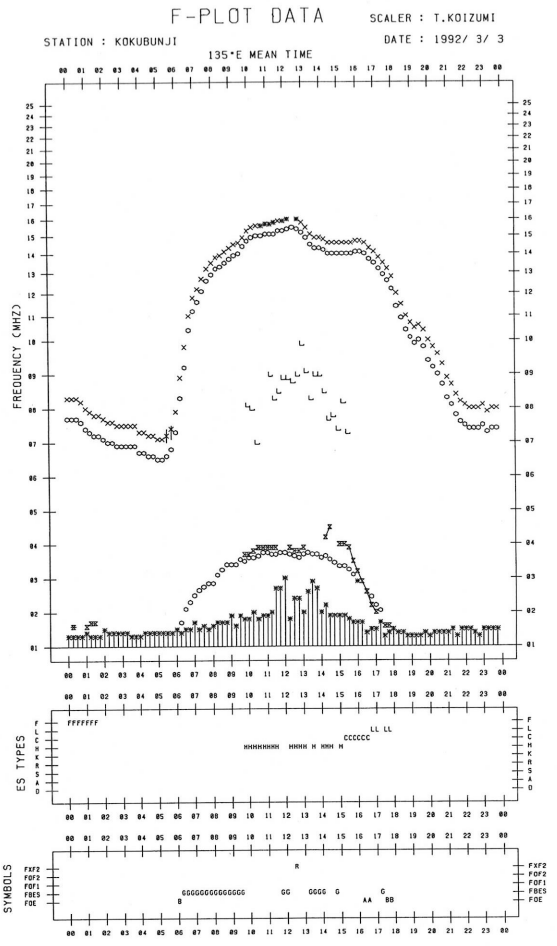
D \ H	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1										H 1		H 1	CH 11	C 1	L 2	C 2	HL 11	HL 12	F 1	F 2	F 2			F 2
2		F 2	F 2	F 1	F 2	FF 12			H 1				H 1			LH 21	L 3	L 1	F 3	F 1	F 1			F 1
3	F 2	F 2									H 1	H 1		H 1	H 1	H 2	C 1	L 2						
4										H 1		C 1	C 1	C 1	HL 11	C 1	C 1	L 2						
5				F 2					H 1	H 1		L 1	L 1	L 1	L 1	L 1								
6												C 1		H 1	H 2									
7									L 2	LL 11					L 1	L 2	L 1	CL 31	F 1					F 1
8								LH 11		H 1		H 1	L 1	L 1	HL 11	HL 11	CL 12	LH 31	F 2	F 1	F 1			
9				F 3	F 1							H 1		C 1	C 1	L 1	L 2	HL 22		F 1		F 1	F 1	
10						F 1							H 1	CL 11	C 2	C 2	C 3	L 3	F 3	F 2	F 1			
11								H 1			H 1	C 1	L 1			H 1	L 1							
12									H 1		H 1	HH 11		H 1	H 1	C 1	CL 12	HL 11	F 2					
13										HL 11	H 1	H 1		H 1	H 1	H 1	C 2	CL 23	FF 32	F 2	FF 42	F 4	F 1	F 1
14												L 1	H 1	H 1	C 1	C 1	C 2	C 4	F 1	F 1				
15										C 1	L 1				C 1	L 1	L 2	HL 11	L 1	FF 11				
16							H 2	L 1																
17										H 1	H 2	C 1	H 1			L 1	CL 12	L 3	L 4	F 2	F 1	F 1		
18			F 1				C 2	H 1	H 1	H 1	H 1	H 1	C 2	L 1	L 2	CL 11	C 1	L 1						
19										H 1	C 2	C 1	C 2	L 1	L 2	L 1	HL 11	L 3	L 3	F 1	FF 21			
20							L 1	H 1		H 1	H 1	H 1	H 1	H 1	H 1				L 1					
21									H 1	H 1		C 1	C 1	L 1	HL 12	L 1	L 1	HL 22	H 1		F 2	F 2		
22									H 1	CL 21	C 1	C 2	C 1	L 2	HL 22	CL 22	L 3	CL 33	CL 43	FF 61				
23						F 1			H 1	H 1	L 1	C 1	C 1	C 1	C 1	C 2	L 2	CL 22	L 2	FF 33	FF 31	F 2		
24								H 1				L 1			L 1	L 1	L 1	L 2	L 3	F 2	F 2			
25							H 1				H 1	H 1	H 1	H 1		L 1		L 1				F 1		
26								H 1	C 1		L 1			HL 11	HL 21	HL 21	HL 31	C 4	C 4	F 3	F 1			F 2
27								H 1	HL 11	C 2	C 1	L 1	L 1	L 1	L 2	L 1	L 3	L 2	C 3	F 3			F 2	F 1
28	F 1						H 1	H 1	H 1		L 2	L 1	HL 11	HL 11	HL 11	L 1	H 1	H 2	C 2					
29								HL 12	HL 11		C 1	L 1			L 2		L 2	L 2		F 1				
30					F 1						HL 11	L 1							H 2		F 1		F 1	
31								H 1	H 2	H 1	H 1		L 1						H 1	F 1				
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CNT																								
MED																								
U Q																								
L Q																								

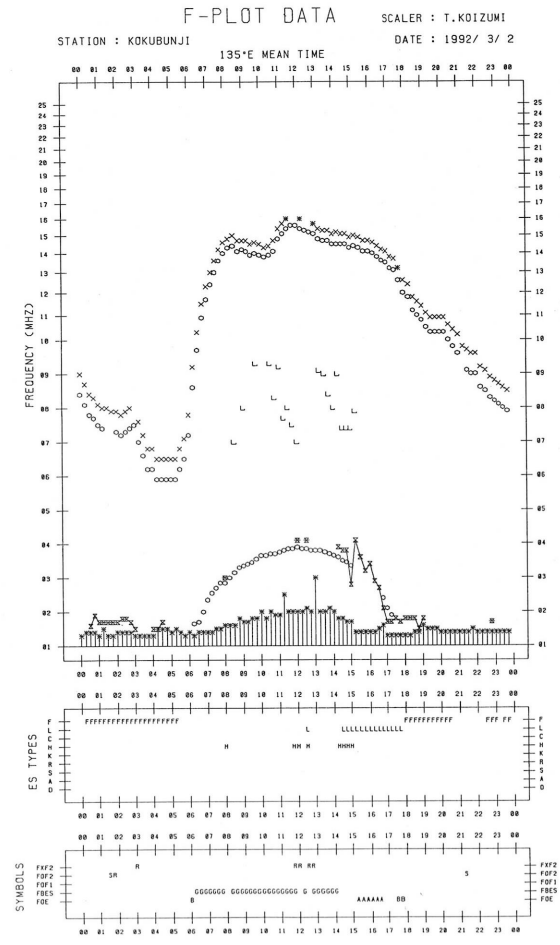
MAR. 1992 TYPES OF ES COMMUNICATIONS RESEARCH LABORATORY, JAPAN

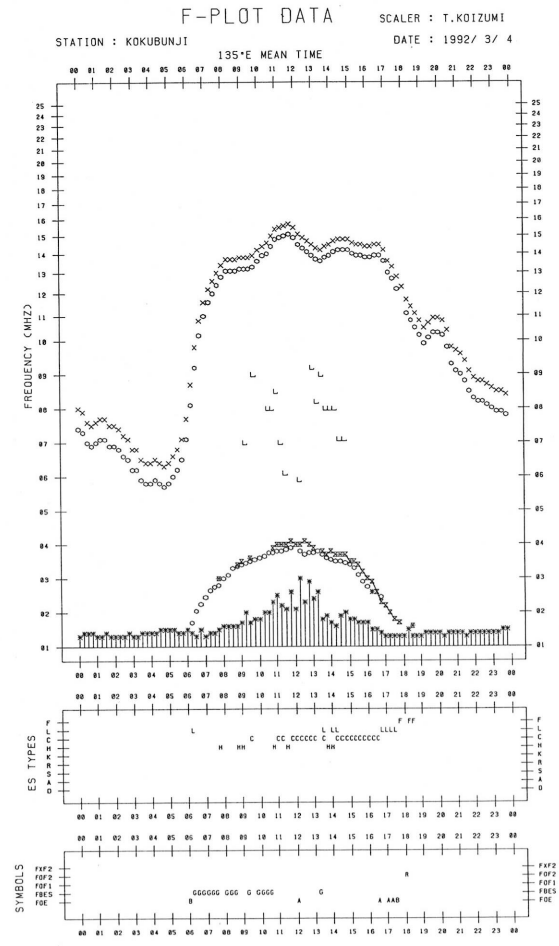
f-PLOTS OF IONOSPHERIC DATA

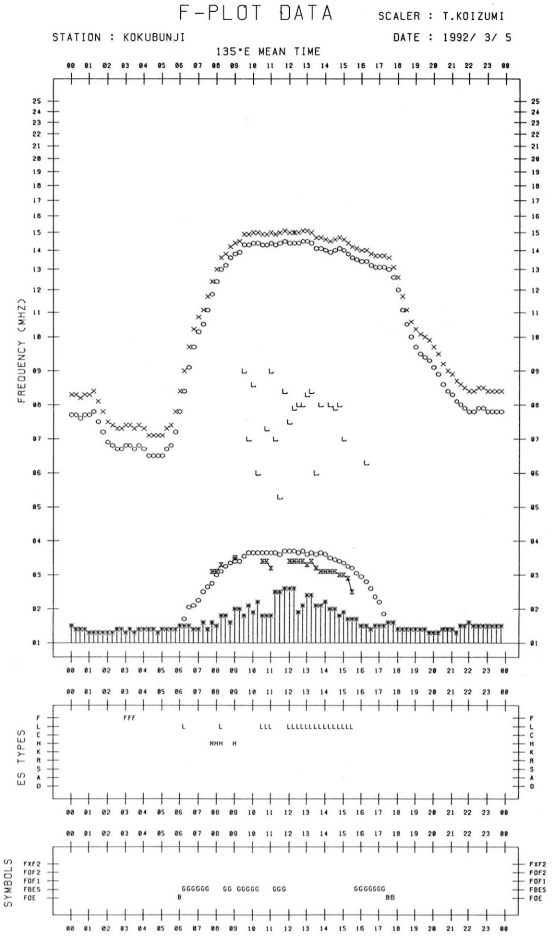
KEY OF F-PLOT	
|	SPREAD
⬡	FOF2, FOF1, FOE
×	FXF2
✳	DOUBTFUL FOF2, FOF1, FOE
⧖	FBES
⌊	ESTIMATED FOF1
↑, Y	FMIN
∧	GREATER THAN
∨	LESS THAN

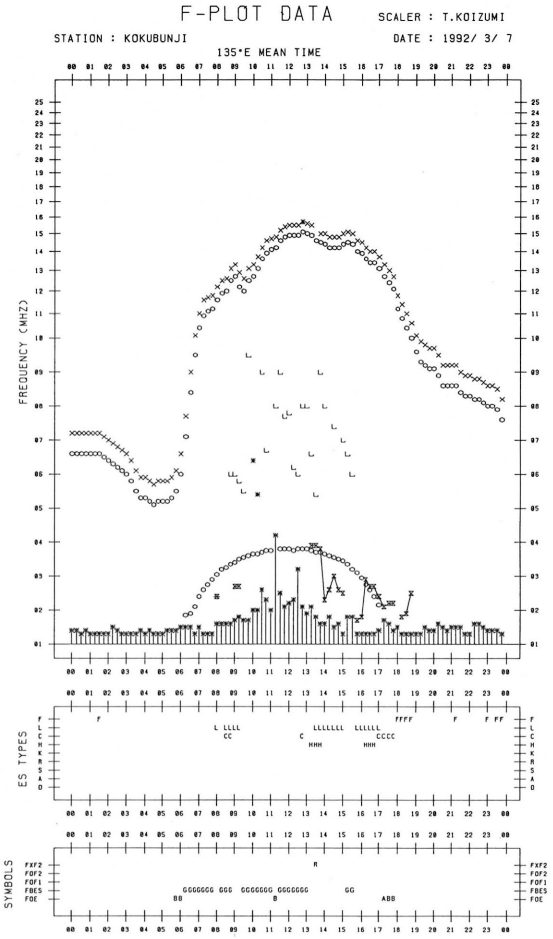

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 1
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

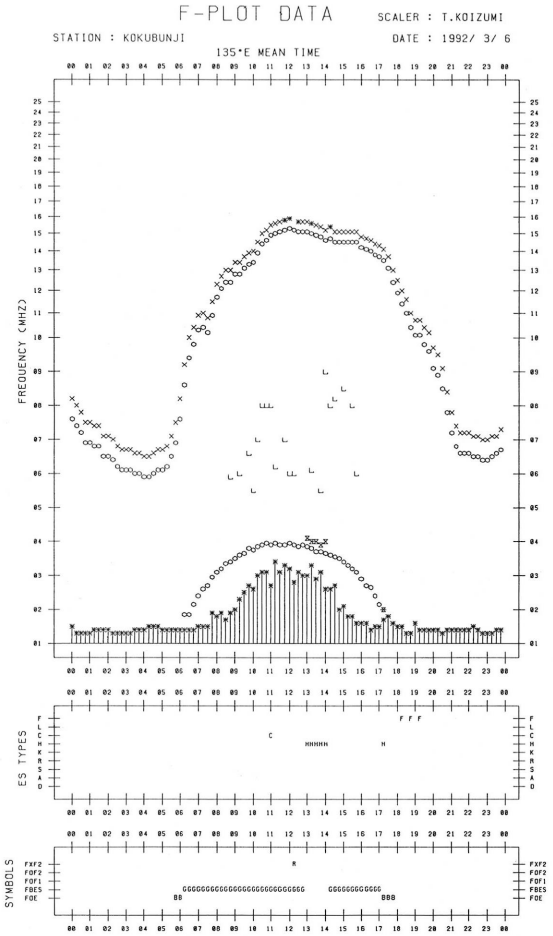

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 3
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

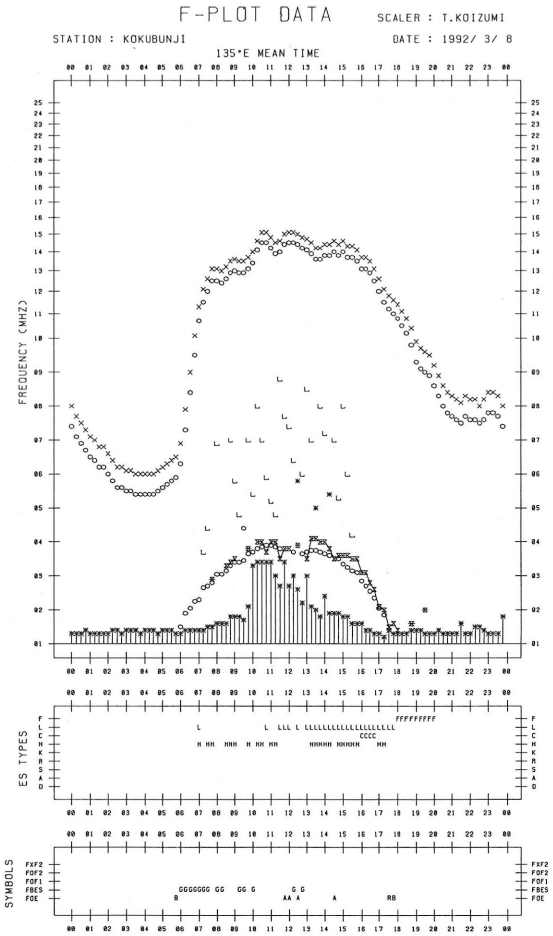

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 2
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

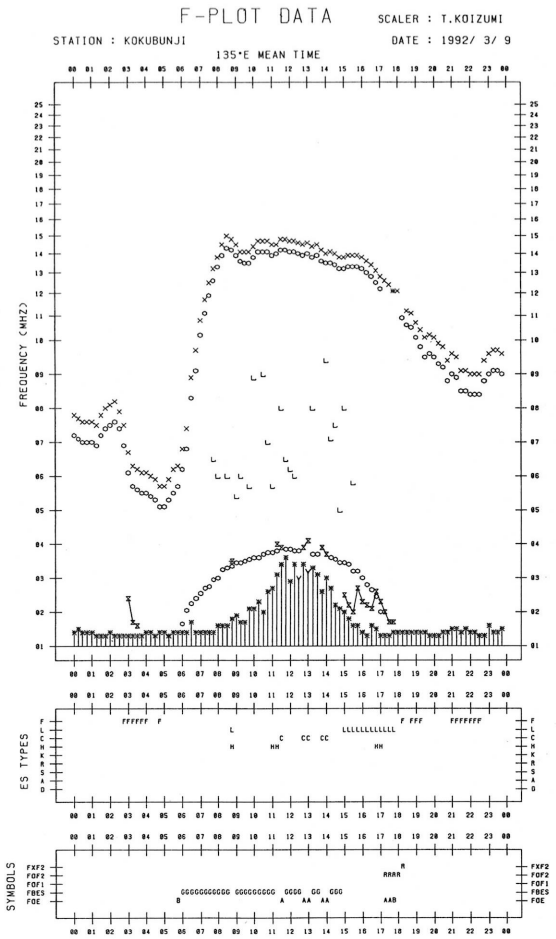

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 4
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

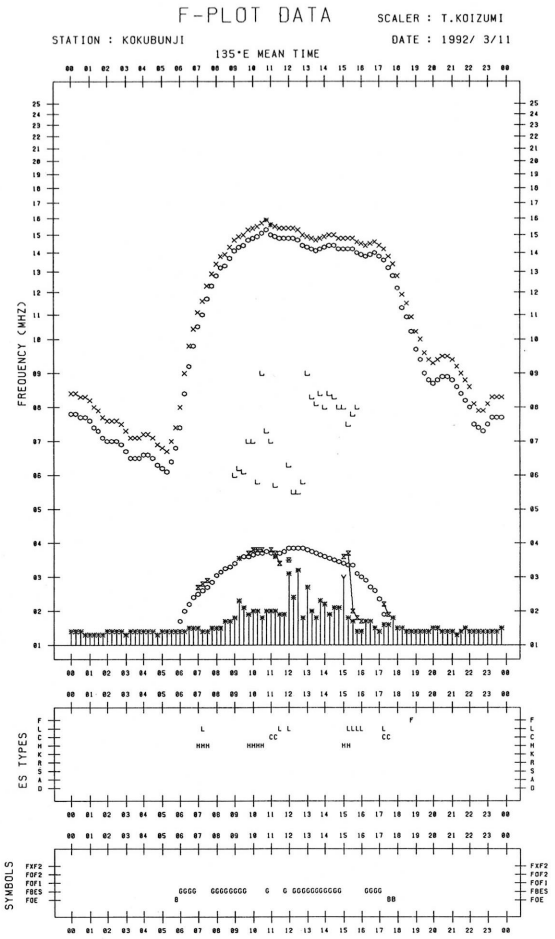

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 5
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

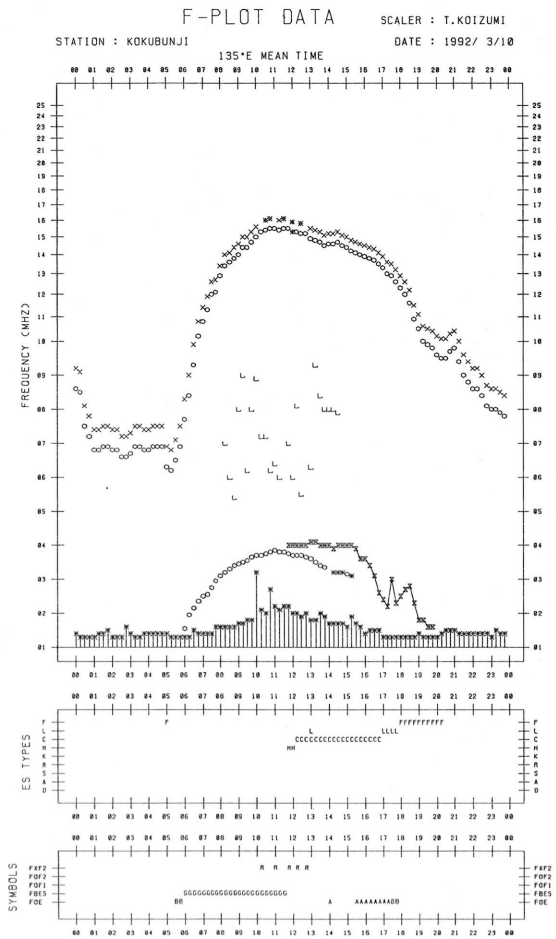

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 7
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

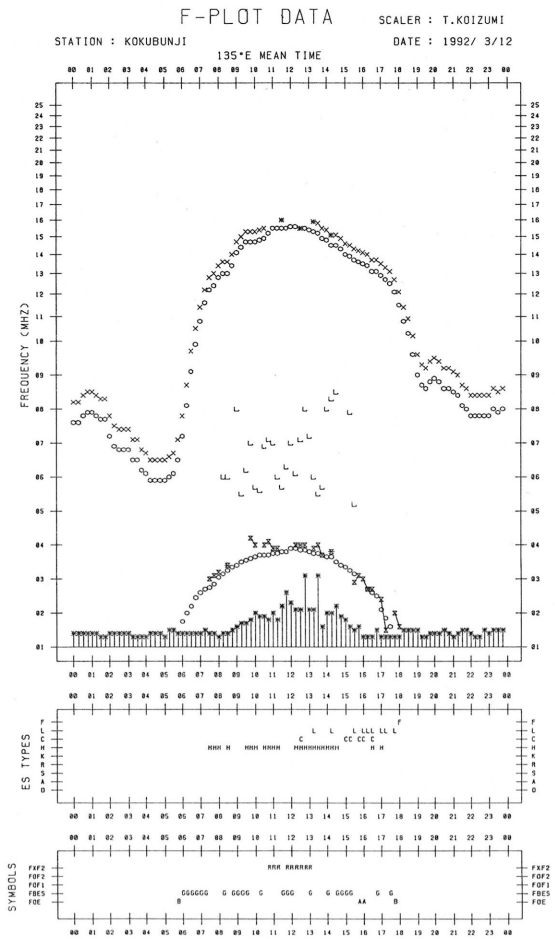

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 6
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

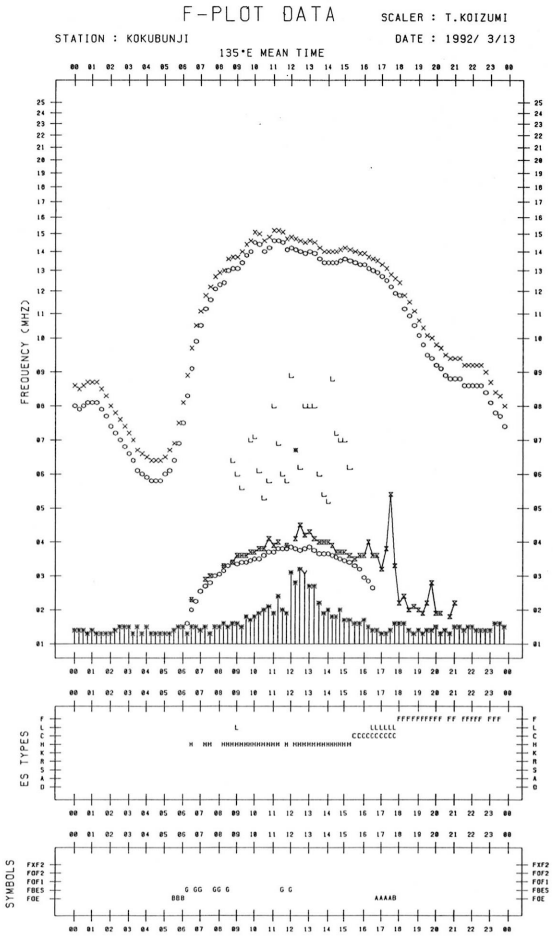

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 8
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

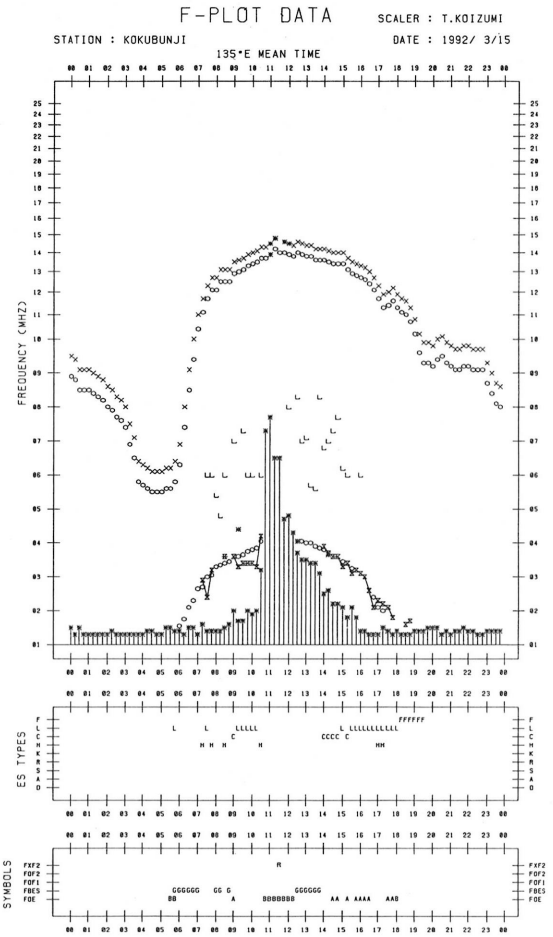

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/ 9
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

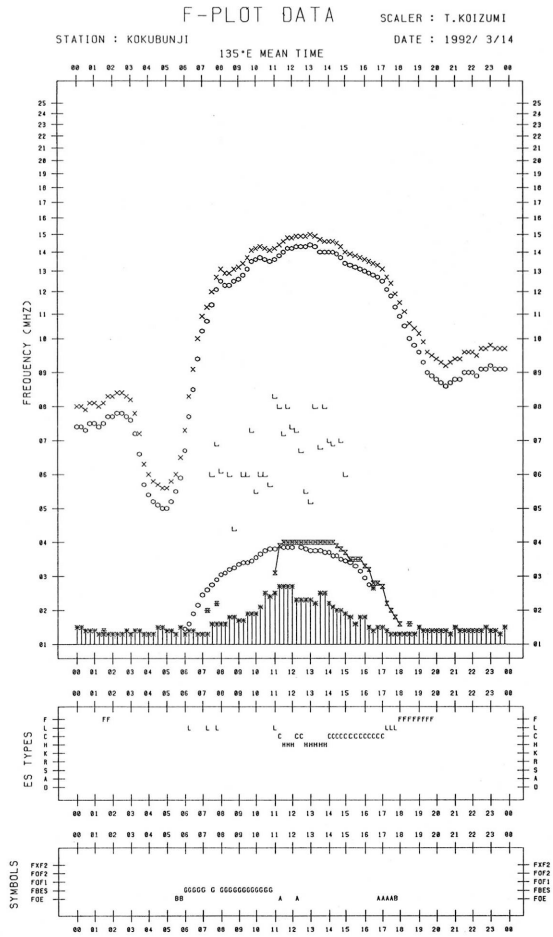

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/11
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

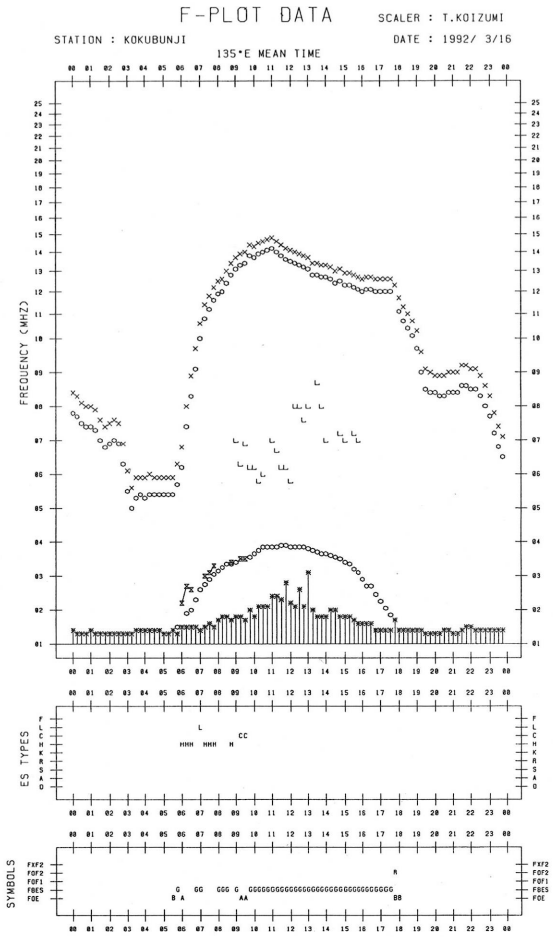

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/10
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

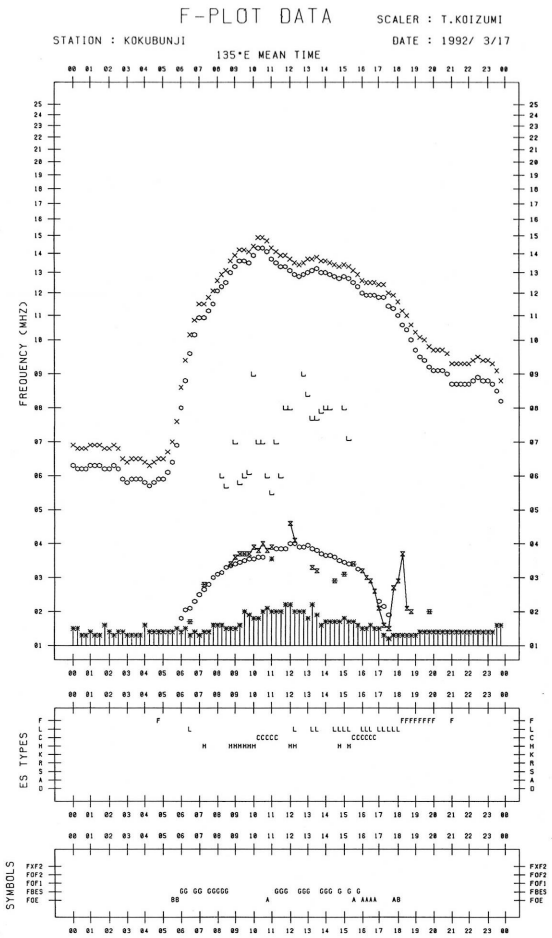

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/12
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

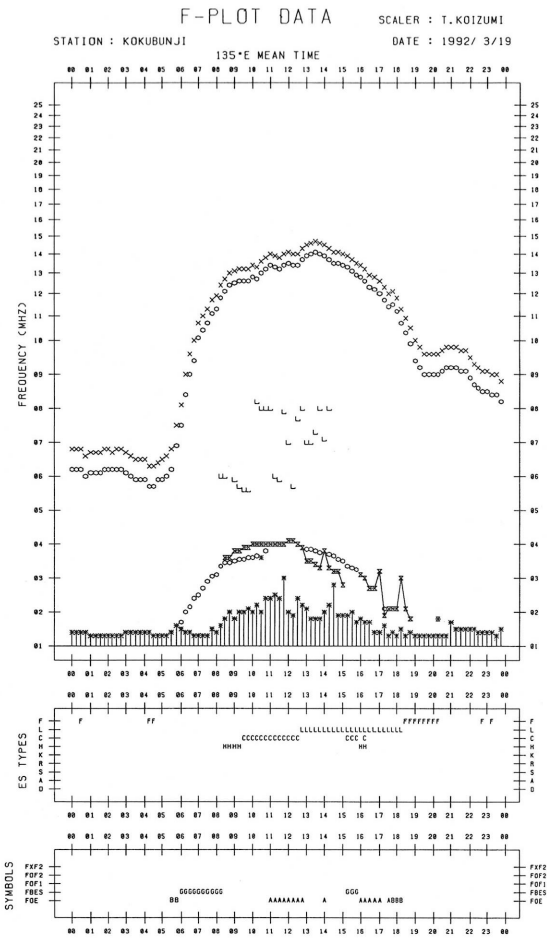

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/13
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

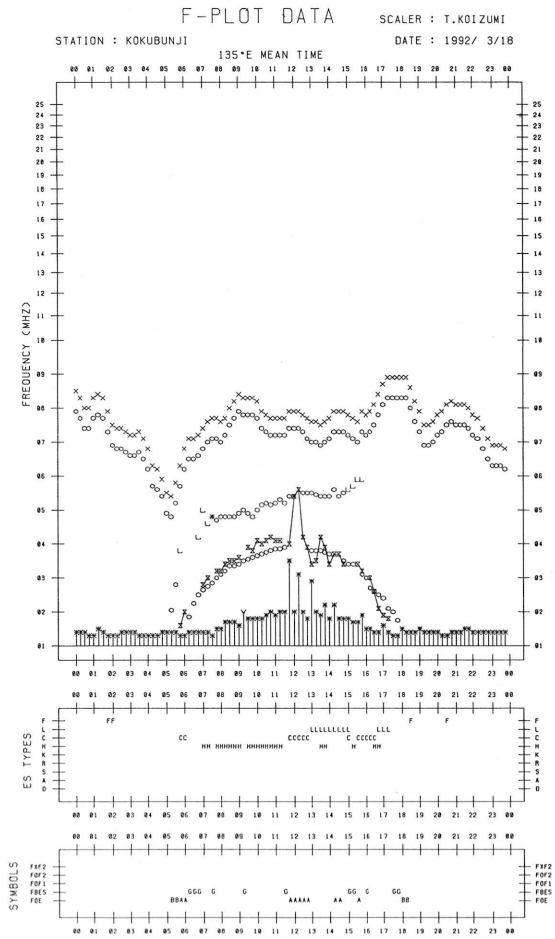

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/15
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

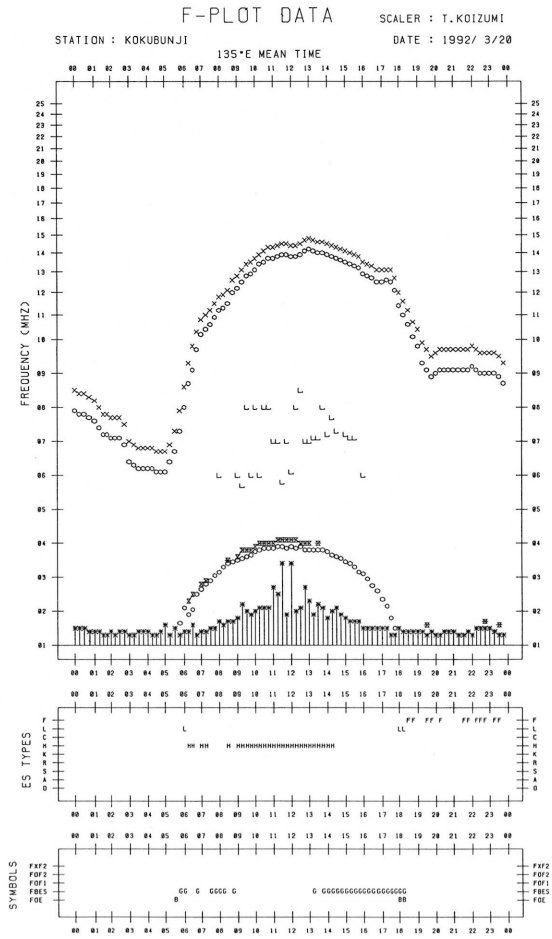

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/14
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

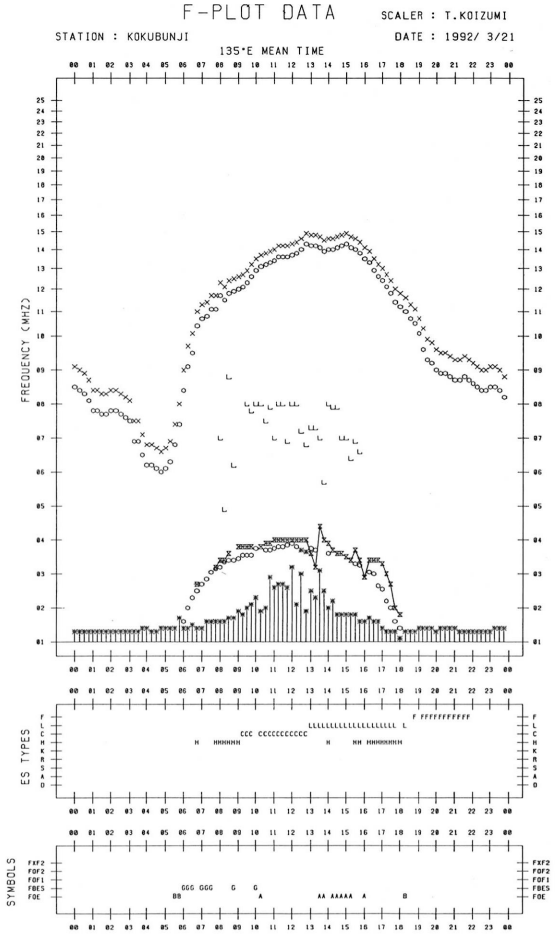

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/16
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

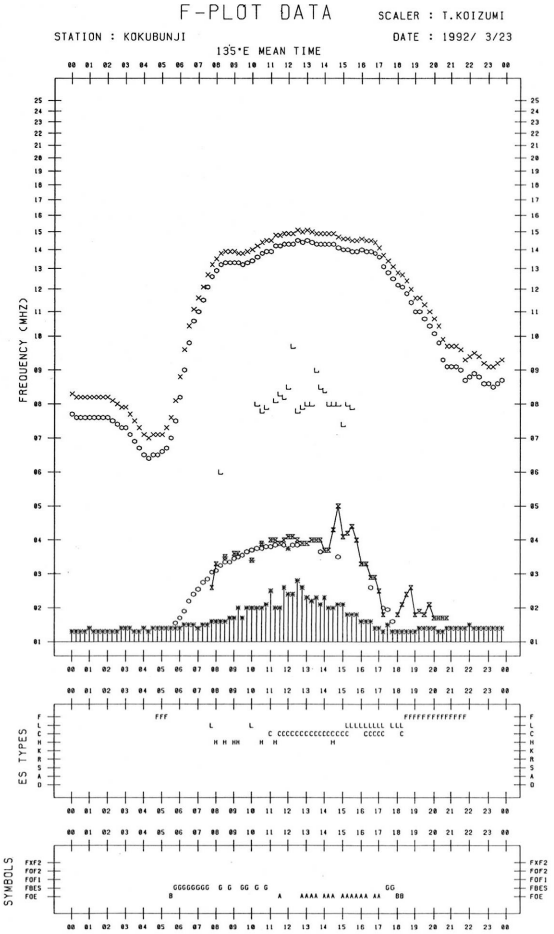

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/17
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

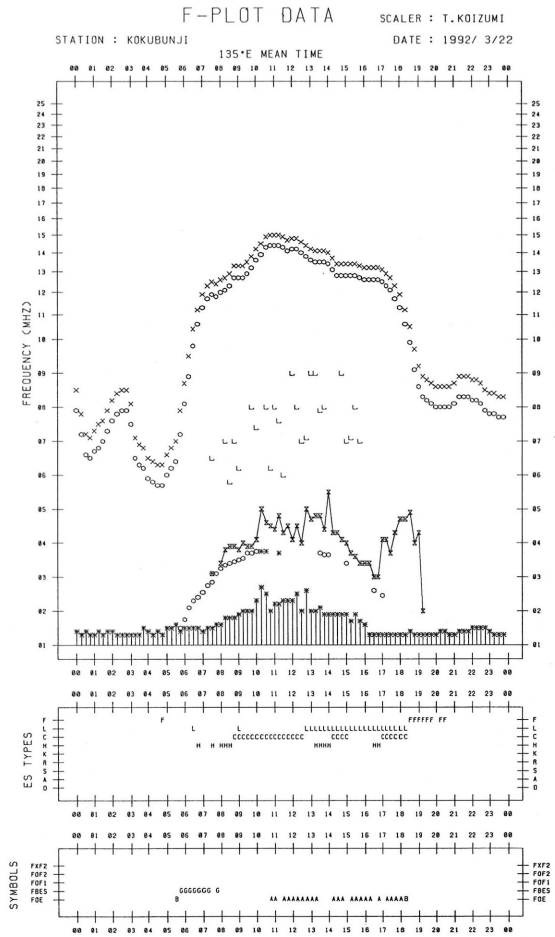

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/19
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

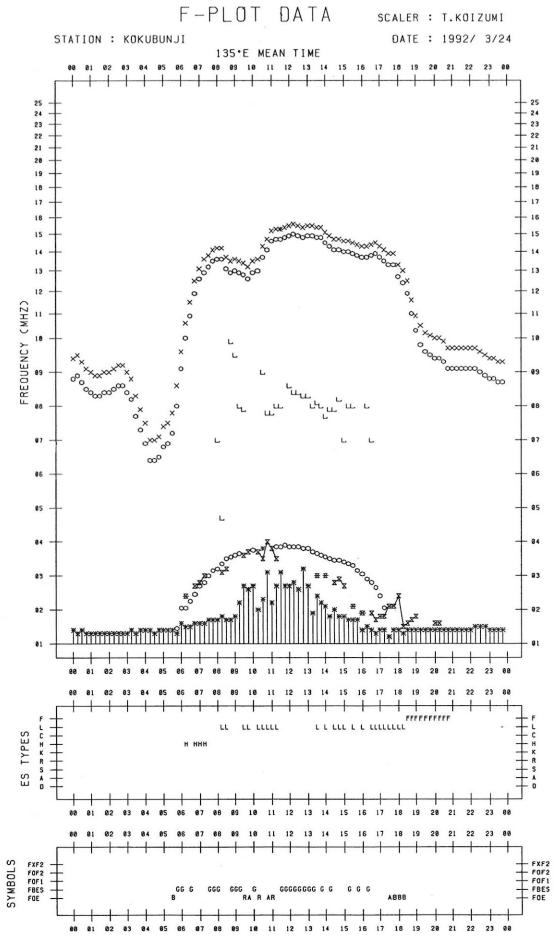

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/18
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

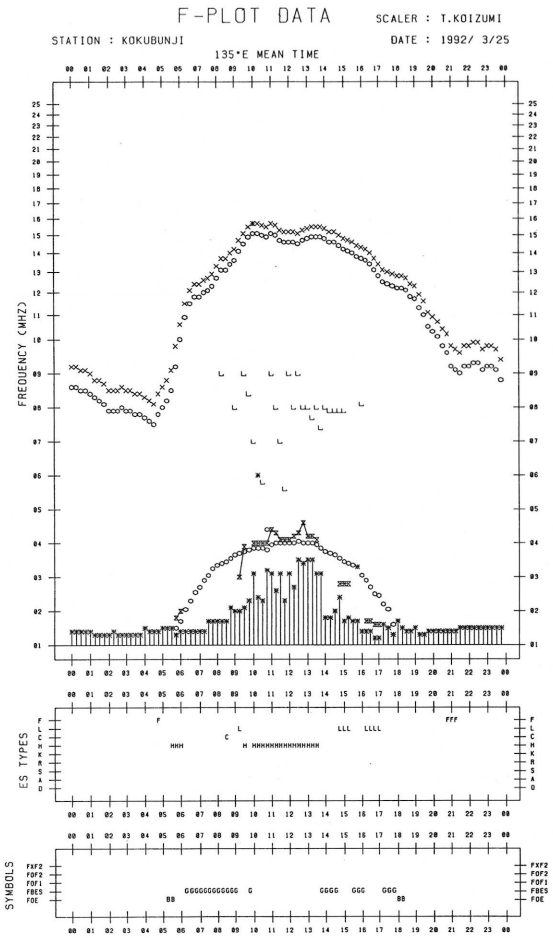

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/20
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

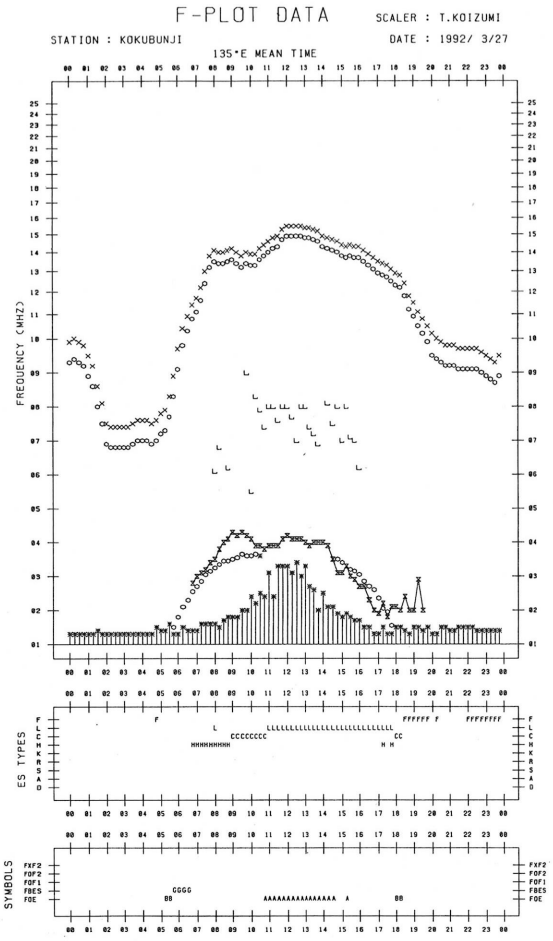

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/21
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

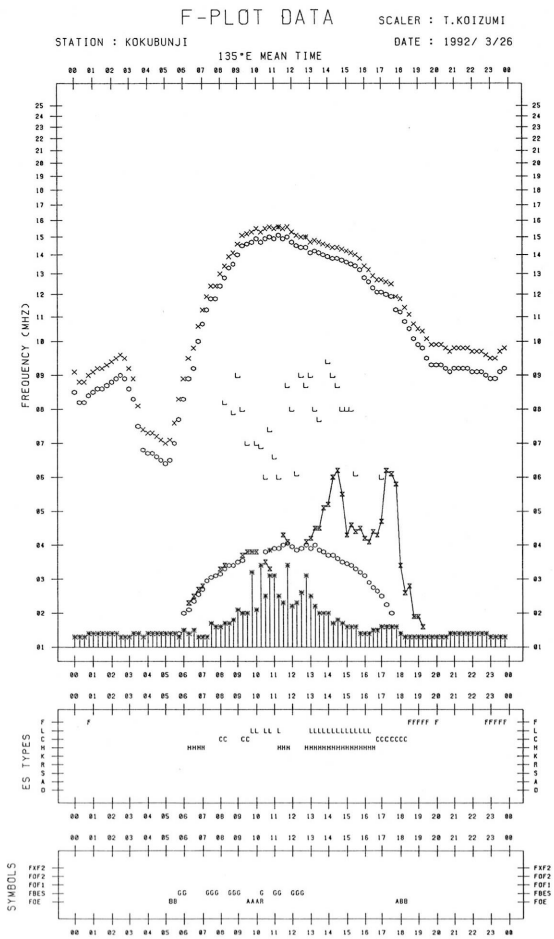

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/23
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

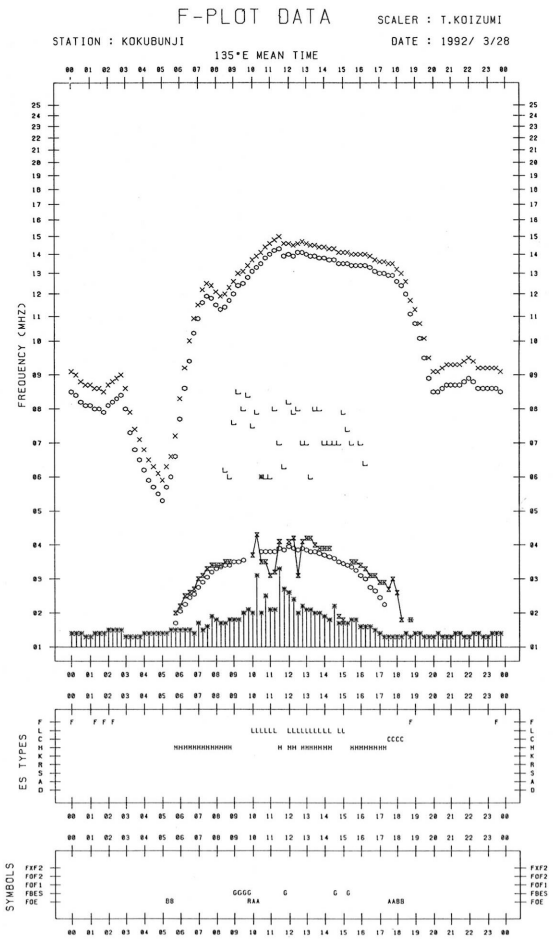

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/22
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

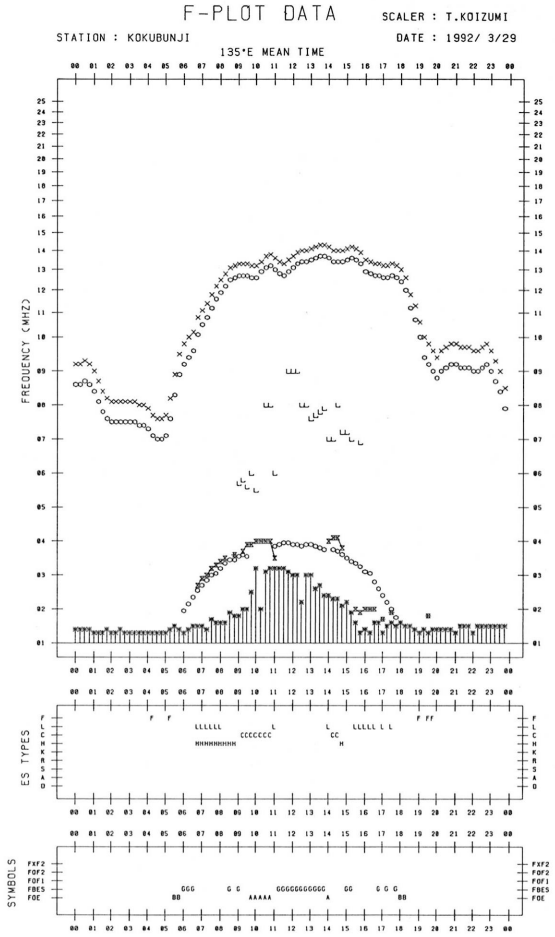

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/24
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE

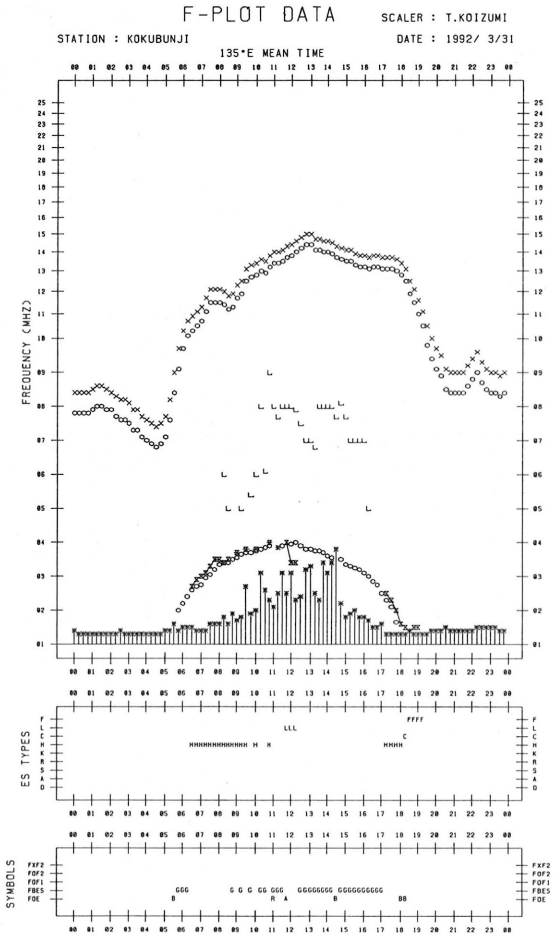

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/25
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS

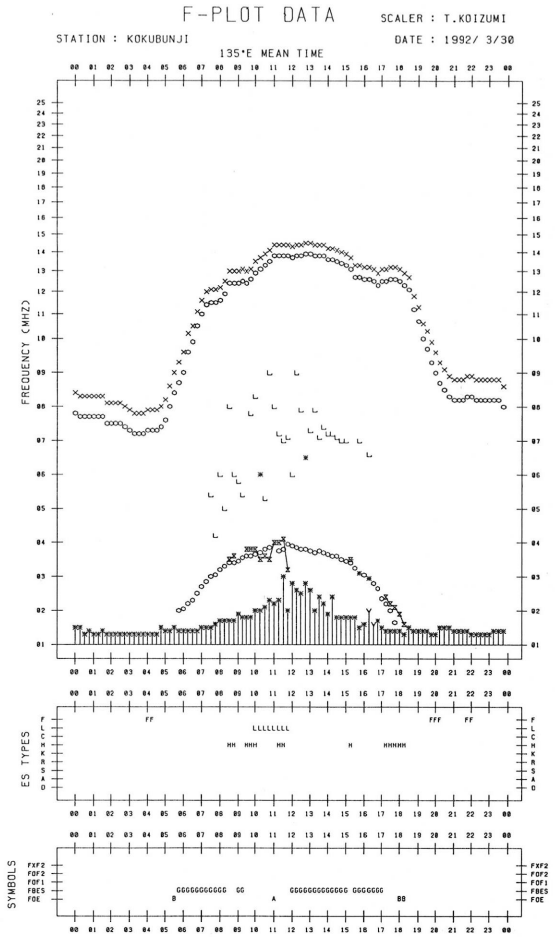

F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/27
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/26
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/28
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/29
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/31
135°E MEAN TIME
FREQUENCY (MHZ)
ES TYPES
SYMBOLS
FXF2
FOF2
FOF1
FBES
FOE


F-PLOT DATA
SCALER : T.KOIZUMI
STATION : KOKUBUNJI
DATE : 1992/ 3/30
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 March 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	12	11	11	11	12	0	0	0	0	0
2	11	11	11	12	11	0	0	0	0	0
3	11	10	11	11	11	0	0	0	0	0
4	11	10	10	11	11	0	0	0	0	0
5	10	10	11	11	10	0	0	0	0	0
6	-	-	-	10	11	-	-	-	0	0
7	10	10	10	10	10	0	0	0	0	0
8	10	10	10	10	10	0	0	0	0	0
9	10	10	10	10	10	0	0	0	0	0
10	9	*	*	*	*	0	*	*	*	*
11	9	9	9	9	9	0	0	0	0	0
12	9	9	9	*	9	0	0	0	*	0
13	*	-	*	*	*	*	-	*	*	*
14	9	9	10	*	9	0	0	0	*	0
15	*	*	*	B	*	*	*	*	1	*
16	B	B	B	B	B	1	1	1	2	1
17	B	B	B	12	B	2	1	1	0	2
18	11	10	10	*	11	0	0	0	*	0
19	*	*	*	*	*	*	*	*	*	*
20	10	10	10	12	10	0	0	0	0	0
21	11	11	12	*	11	0	0	0	*	0
22	10	10	10	9	10	0	0	0	0	0
23	9	9	9	*	9	0	0	0	*	0
24	*	*	*	*	*	*	*	*	*	*
25	*	*	*	B	*	*	*	*	3	*
26	B	B	B	B	B	3	2	2	2	3
27	B	B	B	B	B	2	2	1	3	2
28	B	B	B	20	B	3	3	3	1	3
29	15	*	*	12	17	1	*	*	0	1
30	B	B	B	14	B	1	3	3	1	2
31	12	11	12	18	12	1	0	0	0	0

Notes: No observations during the following periods.

6th 0030 - 0742 13th 0200 - 0638

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

B. Solar Radio Emission

B2. Outstanding Occurrences at Hiraiso

Hiraiso March 1992

Single-frequency observations

Normal observing period: 2010 - 0915 U.T. (sunrise to sunset)

MAR. 1992	FREQ. (MHz)	TYPE	START TIME (U.T.)	TIME OF MAXIMUM (U.T.)	DUR. (MIN.)	FLUX DENSITY (10^{-22}Wm^{-2}Hz^{-1}) PEAK	MEAN	POLARIZATION REMARKS
1	200	46 C	0531.6	0533.4	2.0	170	50	0
	100	46 C	0531.7	0532.5	2.6	160	110	WL
15	200	7 C	0126.7	0126.9	153	1300	120	WL
				0201.0		350		SL
	100	48 C	0128.2	0133.1	153	4300	180	WL
				0214.7		700		SL
	100	44 NS	2100E	0018	700D	200	60	ML
	200	44 NS	2100E	0728	700D	120	15	ML
16	200	44 NS	2100E	2222	700D	120	40	SL
	100	44 NS	2100E	2308	700D	400	80	SL
17	100	44 NS	2100E	2213	480D	130	20	WL
25	200	44 NS	2100E	0009	700D	500	30	SR
26	200	44 NS	2100E	0343	700D	110	15	MR
27	100	44 NS	2100E	0051U	700D	1000D	200D	SLMR
	200	44 NS	2100E	0143	700D	400	200	MR
30	200	43 NS	2347	0636	540D	150	30	WR

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)

MAR 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	9	6	7	18	13	-13	ES -22	-7	ES -3	9	1	-5	-1	0	-7	-16	3	4	-7	-22	-7	0	-2
2	-8	-8	0	7	9	10	15	-7	-4	1	-9	0	0	3	15	9	-7	14	7	ES -25	-13	-13	-1	1
3	ES -13	ES -13	0	0	10	14	19	13	14	13	5	ES -22	ES -9	-1	0	5	-5	7	ES -27	ES -18	ES -27	-6	ES -4	1
4	-11	-13	-5	3	14	14	20	6	-9	ES -1	-3	-7	ES 3	ES -21	14	-5	6	30	-5	5	-7	-5	6	2
5	-5	-3	6	3	10	18	19	19	18	17	18	26	6	14	-1	1	1	11	-1	ES -12	-14	-9	ES 2	ES -18
6	ES -13	-13	-9	-3	7	9	14	-13	ES -7	ES -7	-3	-2	ES -2	-23	-4	-26	-12	3	-2	-17	ES -28	ES -11	ES 1	-10
7	-10	-6	-4	3	2	12	15	16	6	12	-7	-8	9	3	9	-15	-19	1	-2	ES -28	ES -28	-6	2	-4
8	-7	ES -19	-4	3	3	10	16	14	12	17	12	-4	-4	-8	8	-5	-4	3	-2	-2	-4	-1	10	4
9	-3	-6	-3	0	0	9	14	16	-4	7	-8	ES -10	-4	-4	11	1	-13	9	-4	1	-10	-3	-2	0
10	-4	0	3	6	9	10	14	16	-18	7	ES -3	-1	ES -14	-2	-1	-2	-8	18	4	8	0	3	-2	0
11	ES -23	-15	2	4	11	14	-8	-8	-2	0	0	-5	ES -5	-17	5	1	-6	5	5	ES -6	1	3	0	4
12	3	0	3	6	18	2	-5	-14	-2	ES -4	-4	7	0	0	8	6	-4	8	3	0	-4	-3	-2	-1
13	0	ES -2	0	2	8	13	13	-8	0	ES -7	-8	-6	ES -11	-8	2	-4	-8	2	-2	-8	-14	-3	2	-2
14	-5	-2	1	5	8	18	10	0	2	-2	9	-14	ES -8	-11	-8	-5	-5	2	3	2	-9	-6	-4	2
15	4	4	ES -19	-8	12	20	27	27	20	ES -2	ES -14	1	3	8	17	6	-10	-4	1	-14	-17	-8	-6	-2
16	-6	-5	1	3	8	8	13	7	-7	ES -13	-13	-5	-4	3	11	-14	0	9	ES -14	ES -14	-14	3	-4	-2
17	-2	-4	-1	8	8	16	15	16	23	-4	-17	ES -23	ES -4	-8	ES -11	ES -4	ES -4	ES -11	ES -23	C	C	C	-6	0
18	6	3	3	8	8	8	-2	-14	-11	ES -8	ES -8	-10	ES -13	ES -19	-13	ES -13	ES -13	ES -13	ES -13	ES -13	-15	-10	ES -13	ES -13
19	-2	-4	3	3	7	19	19	21	18	17	12	11	0	26	4	14	9	-1	4	1	ES 1	1	-4	1
20	-1	-1	1	2	5	13	17	16	17	21	4	-1	2	17	12	9	5	-5	-5	-4	-13	-7	-7	-2
21	-8	-3	-3	0	12	10	18	20	26	21	-4	-8	1	-1	6	4	17	7	8	-13	-1	6	-1	2
22	-4	-5	3	3	3	7	2	-3	8	6	15	-4	-3	-1	5	-2	-7	-7	-3	6	-13	4	-4	-13
23	-7	-3	-3	4	7	-22	-13	-5	-13	-3	9	-2	-3	9	-1	7	17	4	4	-1	-1	ES -1	ES 4	ES 4
24	ES -1	ES -1	ES -1	4	11	4	1	ES -7	-1	ES -1	ES 1	5	4	7	7	1	1	9	7	-22	-3	ES -1	ES -1	ES -7
25	ES -3	ES -3	4	4	7	4	-4	-3	ES -1	4	14	21	ES -13	-5	ES -7	-13	-2	4	1	8	-10	-10	-3	-16
26	-22	-22	-9	-8	4	11	15	12	-5	1	-3	-10	7	9	2	-5	5	3	2	-8	-11	-8	ES -1	-10
27	-10	-7	-2	-1	8	7	14	9	17	15	13	-2	ES -13	5	-2	1	0	-1	2	-3	-8	-3	-7	-3
28	ES -7	-13	-5	1	7	9	17	5	18	18	7	13	5	14	21	17	1	-4	-2	2	-7	-7	ES -1	ES -13
29	-9	-2	-1	5	7	14	9	17	13	8	2	5	15	21	6	-2	-3	1	7	-3	-2	-2	-1	-8
30	1	-3	8	5	16	16	ES -7	ES -7	ES -7	ES 0	-1	-4	ES 4	-3	0	0	0	0	4	-7	-4	-10	4	-10
31	-4	-1	0	1	6	8	8	18	14	4	-4	-13	5	0	2	9	13	4	6	5	3	-10	-4	-7
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31
MED	US -5	ES -3	0	3	8	10	14	7	0	1	US -1	-4	ES -2	-1	4	0	-4	3	1	US -5	US -10	US -6	ES -1	US -2
UD	3	3	6	7	16	18	19	20	20	18	14	13	7	17	15	9	13	14	7	6	ES 1	3	4	ES 4
LD	ES -13	ES -15	ES -9	-3	3	4	ES -8	ES -14	ES -11	ES -7	ES -13	ES -14	ES -13	ES -19	ES -8	ES -14	ES -13	-7	ES -14	ES -22	ES -27	ES -10	ES -7	ES -13

C. RADIO PROPAGATION

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

MAR 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	-7	0	3	9	15	21	31	25	33	28	29	7	-1	7	-2	-7	7	25	19	-1	13	4	3	-3
2	-5	0	3	8	13	24	26	32	29	29	32	29	17	18	23	24	-13	29	19	-3	13	3	1	-7
3	1	0	9	6	10	20	26	27	25	31	25	10	15	1	1	-5	-12	18	12	-6	10	9	3	1
4	0	1	4	13	20	20	20	34	31	34	32	20	28	15	-7	4	-9	35	19	10	14	13	7	3
5	-3	-3	5	7	17	17	25	22	29	23	28	26	24	9	9	1	-3	22	24	-1	9	9	ES -27	-6
6	-7	-3	1	8	10	20	19	27	27	29	29	19	20	6	-25	-26	-26	15	-1	-11	9	6	0	2
7	-3	-6	-2	8	15	18	20	26	20	25	18	22	9	8	-7	-19	ES -28	-19	-13	ES -28	11	2	2	-10
8	-11	-13	8	11	17	21	23	26	27	29	23	10	12	2	-7	-7	-4	20	23	8	13	2	3	2
9	-2	-4	3	17	12	20	18	27	18	27	23	18	16	6	8	-19	-19	8	26	13	9	3	2	1
10	-3	-4	3	6	18	19	28	26	23	26	26	16	18	18	11	-4	-8	25	12	11	3	8	3	-2
11	-4	-14	3	17	13	20	25	23	28	30	28	28	8	-5	1	5	-4	21	18	0	14	5	5	1
12	-2	-1	8	12	18	18	23	28	28	28	23	20	10	20	14	16	1	23	22	5	5	2	-2	1
13	0	2	6	12	17	18	27	27	27	27	28	27	18	15	-6	-11	-14	16	13	2	11	12	2	-2
14	2	-4	2	8	13	17	17	20	26	9	20	16	18	23	8	-14	-23	24	19	-2	8	0	2	-1
15	3	ES -19	ES -19	4	22	32	30	37	30	37	32	31	27	10	-14	ES -23	-26	10	-2	10	6	1	-2	-6
16	3	-5	8	11	14	21	23	26	25	21	19	16	23	15	-14	-23	-26	-6	ES -14	3	8	1	8	0
17	2	2	-5	11	15	19	23	30	28	30	16	21	17	-3	ES -11	ES -4	-8	-6	-11	C	C	C	4	-17
18	-14	-17	-5	8	13	13	20	20	23	16	8	8	-5	-2	ES -13	ES -13	ES -13	8	-2	-2	3	-3	-5	-7
19	-2	-3	3	5	17	19	19	21	23	22	21	8	15	21	9	ES -1	-16	19	20	6	7	4	3	0
20	-1	-3	2	9	14	19	23	28	26	28	26	10	23	16	3	-10	-9	26	25	4	9	7	-1	-1
21	-4	-3	1	9	17	20	26	24	31	26	29	26	24	24	14	2	4	23	19	7	7	-1	2	-3
22	-3	-3	1	7	16	21	22	26	29	23	15	22	19	16	21	17	9	12	26	11	4	-1	-7	-9
23	-3	-3	3	11	17	21	22	24	30	29	32	12	20	26	12	15	16	16	21	9	9	6	1	ES 4
24	ES -1	ES -1	4	9	16	20	20	24	20	27	31	20	29	8	20	19	25	14	12	7	-1	1	ES -1	ES -7
25	ES -3	-1	4	4	15	19	20	18	27	29	24	25	29	15	18	23	21	29	19	11	8	1	-3	-13
26	-9	-7	-3	8	11	14	26	26	25	29	29	21	25	9	9	5	6	20	15	9	7	4	1	-10
27	-7	-4	-2	9	16	21	24	22	26	22	32	22	22	28	11	12	11	29	15	13	9	1	1	-3
28	-9	-8	6	7	11	20	21	22	21	29	29	27	29	19	17	12	15	17	18	9	10	5	1	-7
29	-9	-7	3	6	19	22	20	27	27	29	22	14	18	31	6	-1	-10	21	27	12	7	9	0	-11
30	0	0	5	17	20	26	24	31	30	26	27	30	31	33	20	21	31	18	24	14	9	4	1	0
31	0	1	4	6	19	21	25	30	34	31	29	16	24	13	25	31	24	19	13	15	3	-1	-13	-4
CNT	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	31	31
MED	US -3	US -3	3	8	16	20	23	26	27	28	27	20	19	15	8	-1	-8	19	19	7	9	4	1	US -3
UD	2	1	8	17	20	24	28	32	31	31	32	29	29	28	21	23	24	29	26	13	13	9	5	ES 2
LD	ES -9	ES -14	-5	5	11	17	19	20	20	21	16	8	8	-2	ES -14	ES -23	ES -26	-6	-11	-6	3	-1	ES -7	ES -11

C. Radio Propagation

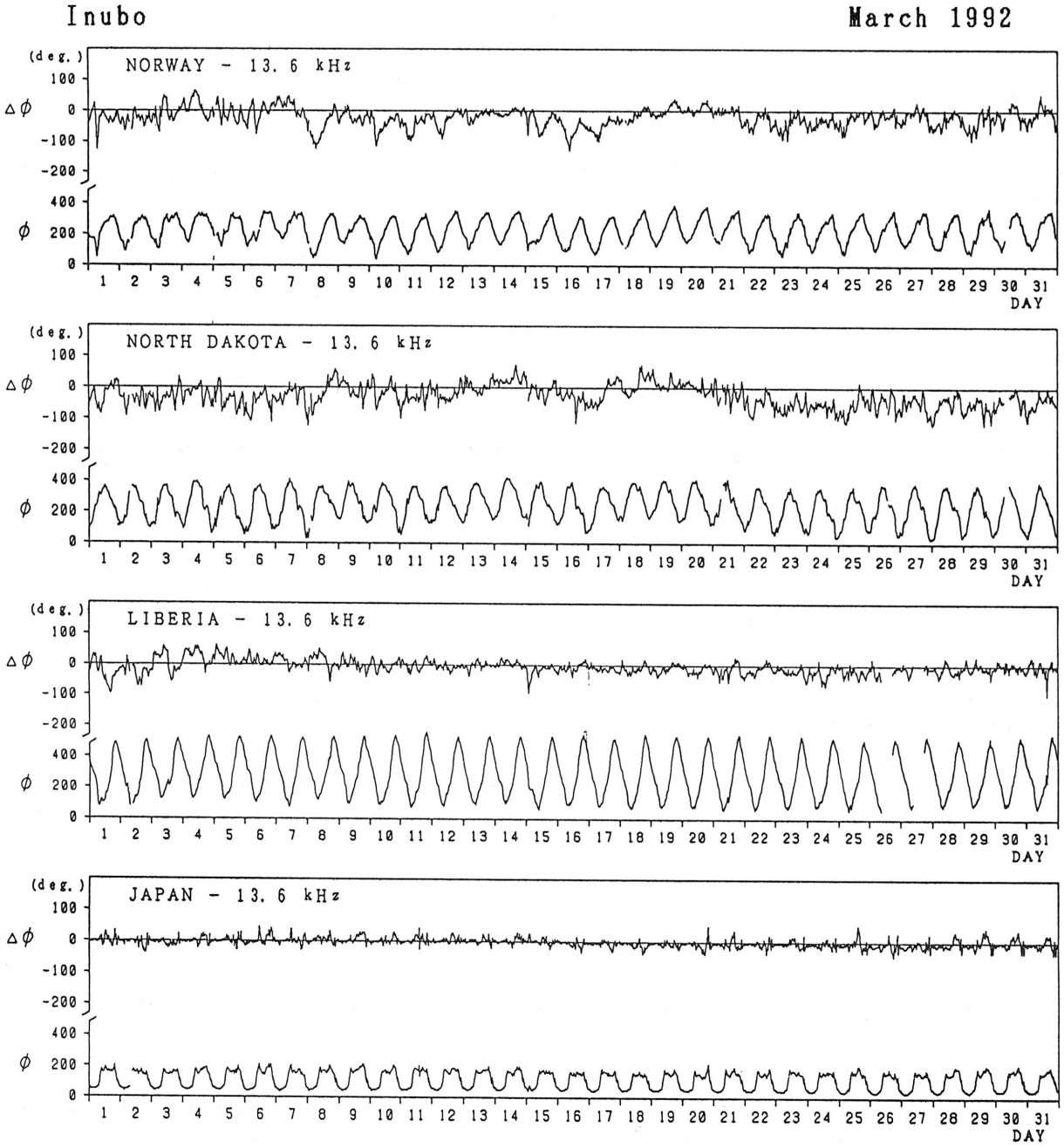
C2. Radio Propagation Quality Figures at Hiraiso

Hiraiso — Time in U.T.

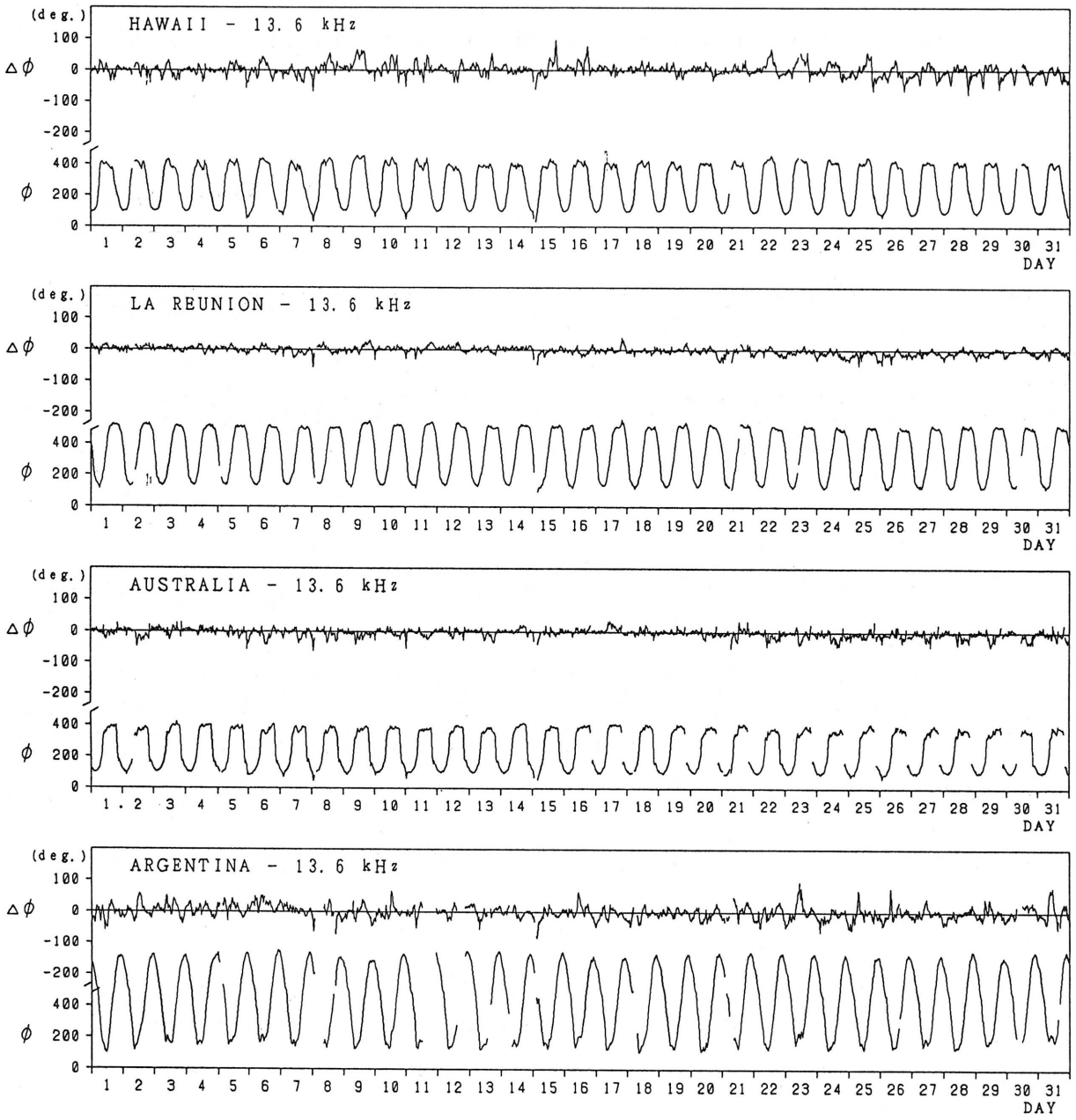
Mar. 1992	Whole Day Figure	W W V 00 06	W W V 12 18	W W V 06 12	W W V 18 24	W W V H 00 06	W W V H 12 18	W W V H 06 12	W W V H 18 24	Conditions 00 06	Conditions 12 18	Conditions 06 12	Conditions 18 24	Principal Geomagnetic Storms Start h m	End h	Range nT
1	4o	5	3	4	4	4	4	4	4	N	N	N	N	none		
2	4o	4	4	5	4	4	4	4	4	N	N	N	N			
3	4-	4	4	3	3	4	4	4	4	N	N	N	N			
4	4o	4	4	4	3	4	4	4	4	N	N	N	N			
5	4o	4	5	4	3	4	4	4	4	N	N	N	N			
6	3+	3	4	3	3	4	4	4	3	N	N	N	N			
7	3+	4	4	4	3	4	4	2	3	N	N	N	N			
8	4o	4	5	4	4	4	4	3	4	N	N	N	N			
9	4o	4	4	4	4	4	4	3	4	N	N	N	N			
10	4o	4	4	4	4	4	4	4	4	N	N	N	N			
11	4o	4	3	4	5	4	4	3	4	N	N	N	N			
12	4o	4	3	4	4	4	4	4	4	N	N	N	N			
13	4-	4	3	4	4	4	4	3	4	N	N	N	N			
14	4-	4	4	3	4	4	3	4	4	N	N	N	N			
15	4o	4	4	4	4	4	4	3	4	N	N	N	N			
16	4-	4	4	4	4	4	4	2	4	N	N	N	N			
17	3+	4	4	3	3	4	4	3	3	N	N	N	N			
18	3o	4	3	3	3	3	3	2	3	U	U	U	U			
19	4o	4	5	4	4	4	3	4	4	N	N	N	N			
20	4o	4	4	4	4	4	4	4	4	N	N	N	N			
21	4o	4	4	4	4	4	4	4	4	N	N	N	N			
22	4o	4	4	4	4	4	4	4	3	N	N	N	N			
23	4-	3	3	4	4	4	4	4	4	N	N	N	N			
24	4o	4	4	5	4	4	4	4	4	N	N	N	N			
25	4o	4	4	4	4	4	4	5	4	N	N	N	N			
26	4-	3	4	4	4	3	4	4	4	N	N	N	N			
27	4o	4	4	4	4	4	4	5	4	N	N	N	N			
28	4+	4	5	4	4	4	4	5	4	N	N	N	N			
29	4o	4	5	4	4	4	4	4	4	N	N	N	N			
30	4o	4	4	4	4	4	4	5	4	N	N	N	N			
31	4o	4	4	4	4	4	4	4	4	N	N	N	N			

C. Radio Propagation

C3. Phase Variation in OMEGA Radio Waves at Inubo



Inubo March 1992



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

Start (U.T.)	End (U.T.)	Max. (U.T.)	Max. Phase Deviation (negative value, deg.)
Mar.07/2205	Mar.09/0320	Mar.08/0650	109.8
Mar.15/0815	Mar.16/0334D	Mar.15/1257	80.3
Mar.16/0334E	Mar.18/1700	Mar.16/0925	124.2

C. Radio Propagation

C4. Sudden Ionospheric Disturbance

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

Hiraiso — Time in U.T.

Mar. 1992	S W F								Correspondence	
	Drop-out Intensities(dB)					Start	Dur.	Type	Imp.	Solar * Flare	Solar Burst
	CO	HA	AUS	MOS	BBC						
1			9			0534	8	1	1	x	x
7			11			0203	24	2	1-	x	
11			18			0003	23	2	1+	x	
15	>34	>44	>20			0106	187	3	2-	x	x
29			7			0337	21	2	1-	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

Mar. 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		27	40	23	23	13	0533	0623	0541
2		18	17	18	14		0246	0309	0253
4				4	3	12	0146	0206	0150
4			4	5			0345	0417	0359
4			4				0602	0621	0610
5		17	20				0714	0807	0727
5		10	18	60	65	58	2225	2338D	2247
5				37	40	45	2327E	0056	2323
6			8				0745	0810	0751
7		17	12	10	8		0103	0131D	0120
7		14		9	4		0131E	0215	0150
7	22	23	46	51	36	38	0205E	0324	0215
7	15	23	15				0832	0906	0843
7			18				0906E	1038	0931
7				16	20	20	2322	0034D	2342
8	26	28	46	80	68	55	0034E	——	0109
8		19					1509	1537	1520
8		35					1719	1823	1736
9	18	13	24	27	19		0224	0332	0242
9			11				0623	0705	0632
9				5	5		2354	0008	0001
10				4	4		0020	0037	0027
10	—	14		33	32	—	0045	0153	0103
11	35	24	24	68	58	35	0009	0129	0020
11				3	2		0237	0255D	0240

Inubo

Mar. 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
11				3			0255E	0309	0259
11		50	44	13			0656	0806	0711
12		20	8				0927	0959	0932
13		29	20				0921	1009	0929
14				5	4		0106	0135	0116
14				5	4		0241	0253	0247
14		21					1419	1511	1433
15	90	106	203	204	174	159	0120	0612	0152
15			18				0832	0934	0839
15		30					0902	0951	0920
16			8	11	8		0329	0346D	0336
16			12	14	4		0346E	0423	0352
16		16	21*	14			0535	0605D	0547
16		31	47	20	16		0605E	0724	0612
16		24	14*				1037	1114	1051
16				9	21		2139	2204	2146
20		40	12				1204	1240D	1213
20		33					1240E	1321	1245
20		17					1454	1522	1502
21				5	5		0135	0156	0144
21		46	12				1141	1307	1207
21		15					1702	1724	1707
22		34	20				0746	0820	0757
23			7	10			0520	0542	0527
23				14	12		2357	0050	0010
24			21	13	10	19	0430	0513D	0443
24			12				0513E	0540	0521
24	8				9		2211	2236	2220
24				14	12*	18	2300	2339D	2307
24	20*	15		11	9	10	2335	0003	2351
25			18	19	14		0151	0235	0159
25			9	14	6		0342	0408D	0355
25			19	12			0409E	0501	0425
25		24	42				0745	0841	0803
25			30				0937	1032D	1000
25			18				1032E	1101	1036
25					48	26	1844	1926	1855
26		31	40	44	34	29	0059	0227	0119
26			23	15	11		0347	0452	0407
26		37	13	8			0542	0612	0550
26			31				0754	0907	0814
26		—	11				0924	0945	0937
26				10*	7		2320	0003	2333
27				5	4		0049	0116	0054
29				14	9		0055	0200	0111
29			26	21	10		0341	0434	0350
29			18	8			0508	0539	0518
29		20					1402	1431	1410
30				5	6		0047	0111	0056
31		18	9	10	5		0222	0250	0233
31		37	40	21	9		0506	0607	0519
31		24	10				0616	0640	0626
31		29	29				0729	0822	0748
31		50					1415	1522	1435
31		117					1531	1702	1548

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